

Final

LOS ANGELES INTERNATIONAL AIRPORT

Title 14, Code of Federal Regulations (CFR) Part 150
Noise Exposure Map Report Update

Prepared for
City of Los Angeles
Los Angeles World Airports

August 2015



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Los Angeles World Airports

SPONSOR'S CERTIFICATION

The City of Los Angeles through its aviation department, Los Angeles World Airports, has completed a comprehensive update of the 14 Code of Federal Regulations (CFR) Part 150 Noise Exposure Map Report for Los Angeles International Airport. The 2015 Noise Exposure Map Report for Los Angeles International Airport replaces the Noise Exposure Maps accepted by the FAA on October 16, 1984.

The Noise Exposure Maps contained herein represent the noise exposure from aircraft operations at Los Angeles International Airport in 2015 and in 2020 and have been prepared with the best available information and are hereby certified as true. The data used to develop the 2015 Noise Exposure Map are representative of existing conditions and the data used to develop the 2020 Noise Exposure Map are representative of the five-year forecast condition. Exhibits 5-1 and 5-2 are scaled down representations of the 2015 and 2020 Noise Exposure Maps. Full size Noise Exposure Maps and the FAA's Noise Exposure Map Checklist – Part 1 are also provided in accordance with 14 CFR Part 150.

The Noise Exposure Maps and accompanying documentation including description of consultation and opportunity for public involvement, for Los Angeles International Airport are submitted in accordance with 14 CFR Part 150, and are hereby certified as true and complete under penalty of 18 U.S.C. 1001. It is hereby certified that interested persons were afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the 2020 Noise Exposure Map and description of forecast aircraft operations. It is further certified that the 2015 and 2020 Noise Exposure Maps and supporting data are fair and reasonable representations of existing conditions at the airport and the five year future forecast condition.

Deborah Flint
Executive Director
Los Angeles World Airports

Date Sept 16, 2015

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CHAPTER 1

Introduction

1.1 Airport Location and Setting

Los Angeles International Airport (LAX or the Airport) is the busiest commercial service airport in California and in 2014 was the third busiest airport in the United States in terms of total aircraft operations. LAX is owned and operated by the City of Los Angeles through its aviation department – Los Angeles World Airports (LAWA). LAX is located on the western side of the Los Angeles Basin, within the city limits of the City of Los Angeles. The Airport is bound by the communities of Playa Del Rey and Westchester (City of Los Angeles) to the north, the city of Inglewood and the community of Lennox (unincorporated Los Angeles County) to the east, the city of Hawthorne and the community of Del Aire (unincorporated Los Angeles County) to the southeast, the City of El Segundo to the south, and the Pacific Ocean to the west. **Exhibit 1-1** depicts the general location of LAX.

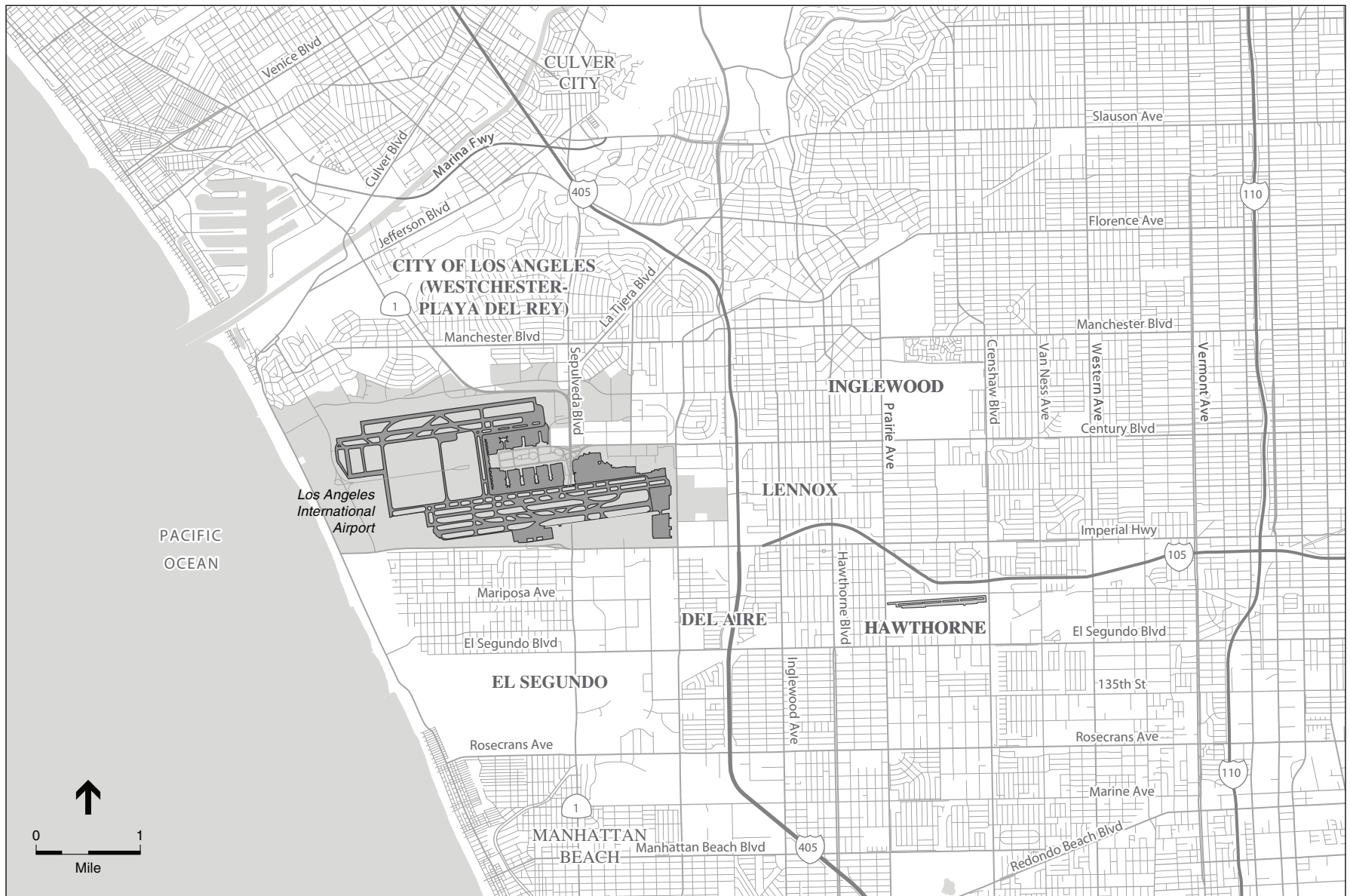
1.2 Airport History

The site occupied by LAX today was originally known as Mines Field and beginning in 1928 served as a general aviation airfield. During World War II, the airport was used for military flights. Commercial airline service started in December 1946. The present terminal complex at LAX was constructed in 1961. In the early 1980s, LAX added domestic and international terminals and a second-level roadway.

Starting in the mid-1990s, under Mayors Richard Riordan and James Hahn, a comprehensive Airport Master Plan¹ was prepared for LAX. While LAWA and the FAA successfully completed an EIR/EIS for the Airport Master Plan in the early 2000s, public opposition to certain elements of the Airport Master Plan threatened to derail implementation of the entire Master Plan. In late 2005, the City of Los Angeles was able to reach a compromise with parties that opposed the Airport Master Plan, allowing some of the elements of the Master Plan to proceed including the relocation of Runway 07R-25L 55 feet to the south and construction of a Midfield Satellite Concourse.

LAWA is in the midst of a multi-billion dollar modernization program that will transform LAX into a world-class airport and improve the overall traveling experience. The LAX Landside Access Modernization Program is the centerpiece of this effort, which includes the planning,

¹ City of Los Angeles, Los Angeles World Airports. *Taking Flight for a Better Future, Los Angeles International Airport Final Master Plan*. April 2004.



SOURCE: Thomas Guide; ESA Airports

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02

Exhibit 1-1
Los Angeles International Airport and Surrounding Environs

design and development of an Automated People Mover (APM) system connecting passengers from the airport terminals to new Intermodal Transportation Facilities (ITF), a new Consolidated Rental Car Facility (CONRAC) and the regional Metro transit system.

In addition to this program, LAWA continues to invest in its existing \$7 billion dollar capital improvement program at LAX, which includes several runway safety improvement projects and multi-million dollar renovations to the existing terminals at the airport. This investment has resulted in the completion of two award winning projects including the new Tom Bradley International Terminal, and the replacement Central Utility Plant.

1.3 Purpose of the Current Noise Exposure Map Update

LAWA is preparing updated noise exposure maps (NEMs) for LAX to ensure that ongoing aircraft noise mitigation programs that are managed by the Cities of Inglewood, Los Angeles, El Segundo, and the County of Los Angeles can continue to receive FAA grant funding. The ongoing funding of these noise mitigation programs is a critical part of LAWA's compliance with the State Noise Variance for LAX, and its obligations under the LAX Master Plan Stipulated Agreement, the Community Benefits Agreement, and the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP).² LAWA is not preparing an updated noise compatibility program (NCP) for LAX at this time.

1.4 Approach to Planning

This Title 14 Code of Federal Regulations Part 150 (14 CFR Part 150)³ NEM Report update describes existing and future aircraft noise levels in the areas around the Airport. This report describes the analysis, methodology, assumptions and findings associated with development of the NEMs. For LAX, the existing (2015) NEM is based on aircraft operations at the Airport in calendar year 2013, the most recent full calendar year for which aircraft operations (landings and takeoffs) information were available when the maps were prepared. The future NEM represents 2020 conditions in conformance with 14 CFR Part 150, which requires preparation of a NEM representing forecast aircraft operations five years after the NEM date of submittal to the FAA (anticipated in 2015).

1.5 Airport Noise Compatibility Planning Overview

LAWA has a long history of implementing noise abatement and mitigation measures at LAX dating back to the late 1950s. LAX was declared a “noise problem” airport by the County of Los Angeles in November 1972. As a noise problem airport under Title 21 of the California Code of

² City of Los Angeles, Los Angeles World Airports. *Alternative D Mitigation Monitoring and Reporting Program*. September 2004.

³ U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning*, Code of Federal Regulations, Title 14, Chapter I, Subchapter I, Part 150, January 18, 1985, as amended.

Regulations, LAWA was required to install an aircraft noise monitoring system in the neighborhoods around LAX to define and monitor the Community Noise Equivalent Level⁴ (CNEL) 65 decibel (dB) aircraft noise impact area. LAWA was also required to develop a comprehensive set of measures designed to minimize the impact of aircraft noise on noise sensitive land uses within the CNEL 65 and greater noise contours.

In 1981, the Los Angeles City Department of Airports in conjunction with the Los Angeles County Department of Regional Planning and the cities of El Segundo, Hawthorne, and Inglewood undertook an Airport Noise and Land Use Compatibility (ANCLUC) Study⁵ to quantify LAX's aircraft noise exposure and to identify measures to mitigate aircraft noise impacts on the noise sensitive land uses surrounding LAX. The ANCLUC study process was the predecessor to the 14 CFR Part 150 study process commonly referred to as a FAR Part 150 Study.

The LAX ANCLUC process was completed in June 1984. The LAX NEM report, included in the ANCLUC and submitted under 14 CFR Part 150, was accepted by FAA on October 16, 1984. The ANCLUC recommended 40 noise mitigation and abatement measures. The Airport Board of Commissioners reviewed the ANCLUC study results and approved the recommended measures. On June 25, 1984, the Department of Airports submitted the ANCLUC recommendations to the Federal Aviation Administration (FAA) and requested that the measures be evaluated as a NCP under 14 CFR Part 150. On April 13, 1985, the FAA issued a Record of Approval (ROA) approving 28 of the 40 recommended measures [**See Appendix E for a list of the approved and disapproved NCP measures**]. As a result, the 28 approved measures comprise the LAX's Part 150 NCP. LAWA has undertaken numerous efforts to identify and implement additional noise mitigation and abatement measures since the FAA issued its ROA in 1985, but has not prepared an update to the 1985 NCP pursuant to the 14 CFR Part 150 process.

1.6 1985 Noise Compatibility Program

The following describes measures included in the 1985 NCP that were approved by the FAA in the April 13, 1985 ROA. LAWA did not implement NCP measures that were disapproved by the FAA. Disapproved measures are not discussed below. The implementation status of the NCP measures is also described below.

A. Airport Noise Monitoring, Management and Coordination

A.1 Emphasize noise abatement and enforcement activities as a priority function under the responsibility of the Deputy General Manager in Charge of Operations.

FAA Action: Approved. This is a local administrative action within the authority of the Department of Airports (DOA). Implementation is aimed at increasing the effectiveness and accountability of this function.

⁴ Noise metrics including CNEL are defined in Chapter 4.

⁵ City of Los Angeles, Department of Airports; Los Angeles County Department of Regional Planning. *Airport Noise Control and Land Use Compatibility Study*. July 1981.

Status: Responsibility for the LAX Aircraft Noise Abatement Program rests with the staff in LAWA's Noise Management Section of the Environmental and Land Use Planning Division. Specific noise abatement restrictions are enforced by Airport Operations under the Deputy Executive Director of Operations and Emergency Management.

A.2a Develop computer-based noise performance/management system in the short-range (1984—86) implementation phase.

FAA Action: Approved. This action would develop a system with the capability to monitor progress in noise reduction as well as identify problem areas that would benefit from additional mitigation or corrective actions.

Status: LAWA employs a Bruel & Kjaer Airport Noise and Operations Management System (ANOMS) with sophisticated noise and radar flight track monitoring capabilities to monitor and report on its adherence to the approved NCP measures.

A.2b Install computer-based noise performance/management system to monitor implementation of the Noise Compatibility Program (NCP) elements and to refine NCP elements as appropriate based on the ongoing monitoring and noise modeling program.

FAA Action: Approved. This element would operationalize and refine the system developed in A.2a.

Status: LAWA uses the data collected by the ANOMS to prepare quarterly noise contours based on the modeled and measured levels. As a part of the State variance process (described in detail below) as well as it the LAX/Community Noise Roundtable Work Program, LAWA has and continues to refine the NCP elements.

A.3 Develop an ongoing airport/community compatibility forum in the short-range (1984—86) implementation phase and continuing through the medium and long-range phases.

FAA Action: Approved. This is the mechanism by which progress will be evaluated and revisions to the NCP developed. Representatives on the forum will be local elected officials, aviation industry representatives, airport officials and the FAA.

Status: LAWA created and supports the LAX/Community Noise Roundtable, which tracks LAWA's progress against its noise abatement and mitigation commitments.

A.4 Actively pursue amendment of California Airport Noise Standards during the short-range (1984-86) implementation phase to augment the definition of compatible land use.

FAA Action: Approved. The city has indicated that this action is to request the State of California to revise existing regulations covering state airport noise standards and definitions of compatible land uses. The concept implied here is that a consolidated effort under the aegis of an approved NCP would be more effective in achieving the revisions sought. This is a matter of local discretion; no Federal action or authorization is necessary. This approval does not endorse the amendment. Approval simply acknowledges that the proposed amendment would contribute to the reduction of noncompatible uses.

Status: LAWA has worked with, and continues to work with, state and federal officials to minimize aircraft noise impacts on noise sensitive land uses within LAX's noise impact area. LAWA has supported new, more stringent aircraft noise standards, pursued funding for land acquisition and sound insulation programs, sought clarification from the FAA on clarified sound insulation guidance included in FAA Order 5100.38D, *Airport Improvement Program Handbook*.⁶ LAWA collaborates with the Los Angeles County Airport Land Use Planning Staff and Commission to develop airside and landside development programs to comply with the California Airport Noise Standards. LAWA has not sought an amendment to the California Airport Noise Standards to augment the definition of compatible land use.

B. Flight Procedure Changes

No FAA-approved measures.

C. Airport Noise Limits, Use Restrictions, Technological Advances

C.la Maintain existing policy pertaining to Supersonic Transport (SST) access prohibition.

FAA Action: Approved. There is no ordinance or other airport rule in place to implement or enforce this policy with explicit reference to SST's. Board of Airport Commissioners Resolution No. 5456 (Oct. 22, 1969) stated that no commercial aircraft would be permitted to use LAX if it generated more noise than a Boeing 707-320-C. Resolution No. 8661 (Oct. 30, 1974) expresses Board's desire that FAR Part 36 noise certification standards be established for SST aircraft. Resolution No. 9022 (Apr. 28, 1975) expresses opposition to use of LAX by SST aircraft unless they meet FAR Part 36 requirements. A noise regulation, Los Angeles City Ordinance No. 152,455 (May 31, 1979), was adopted pursuant to Board Resolution No. 11650 (May 7, 1979). This noise regulation establishes noise limits and a phased compliance schedule essentially consistent with FAR's 36 and 91. Aircraft operators may, until January 1, 1985, use the airport if their aircraft will not exceed established noise limits on approach or departure. No aircraft type or model is named in the regulation, but the effect is to bar access to the noisiest aircraft, including the SST.

Status: LAWA has maintained existing policy regarding the prohibition of SSTs at LAX. In addition, there are currently no commercial passenger SSTs in operation.

C.lc The Los Angeles Board of Airport Commissioners will transmit to the FAA its proposed position on FAR Part 36, Stage III aircraft.

FAA Action: Approved. The FAA will consider the merits of the concept to retire or retrofit Stage II aircraft under a Federal regulatory schedule. A notice of petition for rulemaking to that effect was published in the Federal Register on April 4, 1984. Approval of this element within the context of this NCP does not constitute a commitment by the FAA to establish such a regulation. That action can only be taken after completion of the process for publishing a new regulation, including the opportunity to comment by interested parties.

⁶ U.S. Department of Transportation, Federal Aviation Administration. Order 5100.38D, *Airport Improvement Program Handbook*. September 30, 2014.

Status: The Board of Airport Commissioners has submitted letters to FAA and other governing bodies, such as the International Civil Aviation Organization (ICAO), supporting more stringent aircraft noise regulations including the support for Stage III, Stage 4, and Chapter 14 noise regulations as well as the phase out of Stage I and II aircraft. In 1993, the Los Angeles City Council adopted Ordinance 168.852 to ensure that the commercial fleet at LAX would be entirely Stage III compliant by the federal deadline of December 31, 1999 as established by the *Airport Noise and Capacity Act of 1990*.⁷

C.2 Continue to pursue a policy of accelerating the requirement for installation of fixed ground power and air conditioning units at all aircraft parking locations for fuel conservation and reduced ground noise emissions.

FAA Action: Approved. Such a policy is within the purview of local airport management. No Federal action or authorization is necessary.

Status: LAWA has pursued and installed fixed ground power and air conditioning units at all aircraft parking locations where it has been practical and cost effective to do so. As of November 2014, all passenger gates (i.e., terminal and regional boarding ramp gates) are electrified with 400 hertz ground power in compliance with commitments made by LAWA in the LAX Master Plan Community Benefits Agreement.⁸

C.3 Maintain voluntary preferential runway utilization system with inboard Runways 25R-7L and 24L-6R and Taxiways K and U being preferred during noise sensitive nighttime (10 p.m. to 7 a.m.) hours.

FAA Action: Approved. This procedure is currently used, traffic and other conditions permitting. No mandatory use of this procedure is contemplated.

Status: LAWA has worked closely with the FAA's Airport Traffic Control Tower (ATCT) Manager to maintain a voluntary Preferential Runway Use Program that seeks to maximize the use of the inboard runways during the nighttime hours. LAWA has also worked with the FAA to implement a voluntary over-ocean operation from midnight to 6:30 am. The voluntary Preferential Runway Use Program has been incorporated into the ATCT's Standard Operating Procedures.

C.5. The Los Angeles Board of Airport Commissioners will adopt a policy for the Imperial Terminal that would allow continued use without the operation of aircraft engines at the terminal area.

FAA Action: Approved. This is a change in operating policy in the vicinity of the Imperial Terminal which was adopted by the Board of Airport Commissioners on June 13, 1984 to provide some of the relief sought. This policy requires that all turbojet aircraft and turboprop aircraft over 65,000 pounds be towed between taxiway F and the Imperial Terminal when arriving or departing. It also prohibits jet engine runs and run-ups and limits the use of aircraft auxiliary power units on that terminal ramp. The Board's resolution adopting this policy includes no enforcement measures, but operators have complied voluntarily without significant complaints.

⁷ U. S. Congress. *Airport Noise and Capacity Act of 1990*. (49 U.S.C. § 47528). 1990.

⁸ City of Los Angeles, Los Angeles World Airports. *Community Benefits Agreement – LAX Master Plan Program*. 2004.

Status: This operating policy for the Imperial Terminal, located south of Runway 07R-25L, was adopted by the Board of Airport Commissioners on June 13, 1984. The policy requires that all turbojet aircraft and turboprop aircraft over 65,000 pounds be towed to or from the taxiway adjacent to the Imperial Terminal ramp when arriving or departing. It also prohibits engine runs and run-ups, and limits the use of aircraft auxiliary power units on the Imperial Terminal ramp.

C.6 Increase pilot awareness of Standard Instrument Departure (SID) requirement of not turning prior to the coastline upon departure from Runway 25 L&R and 24 L&R unless so instructed by air traffic control; increase pilot understanding of the adverse noise impacts resulting from premature turns and drifts over adjacent residential neighborhoods (short term); continuous monitoring and enforcement. (Element A.5, acquisition of ARTS IIIA data, would augment current enforcement capabilities.)

FAA Action: Approved. The SID procedure requires aircraft departing to the west to continue on runway heading and not turn to an easterly heading until a shoreline crossing of 8000' is assured. The major thrust of this measure is pilot education for the purpose of closer adherence to the published departure procedures. Current practice is that ATC notifies the airport noise abatement office of aircraft which are observed to turn east (prematurely) with respect to the SID procedure. Airport staff then notifies the aircraft operator, or chief pilot in case of air carriers, of the infraction. Enforcement measures are not punitive, rather they rely on "jawboning" techniques to elicit compliance. In the past, the effectiveness of this measure has been criticized because the letter of notification has not been timely. More recently, tower personnel have notified user's officials (e.g. chief pilots) at the same time the airport staff is notified. Although not in letter form, the timeliness of this notice has proven to be very effective. Previous items A2.a and A2.b when implemented will improve the efficiency of the notification system and reduce the workload of ATC.

Status: LAWA has continuously worked to increase pilot awareness of the SID requirement of not turning prior to the shoreline for west departures. LAWA uses its ANOMS to monitor aircraft flight tracks and identify deviations from the desired procedures, which are sent to the airlines/operators as part of the ongoing Early Turn Notification Program. LAWA regularly briefs the LAX/Community Noise Roundtable on the monitored results and seeks improvement in performance from the airline participants. LAWA has also worked with FAA to improve adherence to the procedure.

C.7 Maintain and enforce existing regulation of nighttime engine maintenance run-ups. Review current regulation to develop strengthened program of enforcement for adoption. Existing regulations regarding nighttime engine maintenance run-ups were assessed and found adequate if properly enforced. Sufficient manpower and monitoring sites now exist to enforce this regulation.

FAA Action: Approved. The city has determined that adequate regulations and hardware exists to enforce the current airport regulation of no run-ups between 11 p.m. and 7 a.m. The city advised that this measure is within the management authority of the Department of Airports and enforcement will be handled the same as other violations of lease agreements which require adherence to airport operating rules.

Status: Over the years, LAWA has reviewed and sought to improve its run-up policies as well as its ability to monitor run-up activity. LAWA has implemented a maintenance run-up curfew between 11 pm and 6 am that is still in effect.

D. Capital Improvements Projects

D.1 Prepare a detailed evaluation of the noise reduction benefits produced by a 2,000-foot westerly extension of the Runways 25/7 L&R together with a 2,600-foot take-off threshold relocation for a total landing threshold displacement of 4,600 feet (short range). Reverse thrust noise impact will be emphasized. Engineering feasibility and environmental assessment studies will also be included during the short range (1984-86) implementation phase.

FAA Action: Approved. This measure would produce a definitive study of the costs and benefits associated with a westerly extension of the south runways combined with landing threshold changes at the east ends. Noise exposure analysis indicates that this measure could have significant beneficial results, but reverse thrust noise impact as well as the cost, in both dollars and airfield efficiency, have not been fully addressed.

Status: No documentation was found regarding the proposed evaluation for Runways 07L-25R and 07R-25L described above. LAWA has examined the noise effects of a variety of runway improvement projects since the preparation of the NCP in state and federal environmental documents prepared for various capital improvement projects.

E. Residential Acoustical Insulation

E.1a Undertake initial acoustical insulation program using representative housing sample in terms of both construction type and predominant noise exposure within the projected 1987 CNEL contour set, in the short range implementation phase and monitor effectiveness.

Mitigation of sideline and takeoff noise impacts in the communities of El Segundo and Westchester is a key objective of the initial FAR Part 150 Noise Compatibility Program for LAX. Because these communities are comprised of sound, high quality residential neighborhoods, land use conversion is not considered a viable option. Instead, it is recommended that an acoustical insulation program be implemented, with first priority funding directed into those neighborhoods most heavily noise impacted (70 CNEL+). Fully implemented, this program will encompass over 4,200 dwelling units, and achieve a 16 percent reduction in the total number of incompatible residential units within the projected airport noise impact area.

FAA Action: Approved. This is the first phase of an acoustical treatment program for noise-impacted communities. Twenty dwelling units will be treated under this project to formulate better estimates of costs and to develop project management techniques applicable to future projects.

E.1b Expand voluntary residential acoustical insulation program to Los Angeles City and El Segundo Neighborhoods exposed to CNEL levels of 70 dBA or greater during the remainder of the short range (1984-86) implementation phase.

FAA Action: Approved. This measure is a companion to item E.1a, above.

E.1c Expand voluntary residential acoustical insulation program to neighborhoods within the projected target CNEL levels of 65 dBA in the cities of Los Angeles, El Segundo, Inglewood, and unincorporated Los Angeles County areas of Del Aire and Lennox during the remainder of the medium range (1986-90) implementation phase and the long range (1990+) as necessary.

An expanded acoustical insulation program in sound residential neighborhoods located within the 65 to 70 CNEL contour is recommended as the only off airport noise mitigation alternative. This program will involve both voluntary insulation of existing units, and mandatory insulation of proposed new residential units as a condition of development. Since nearly 13,000 dwelling units fall within this noise impact area, the recommended program will necessarily involve a long term, phased implementation effort.

FAA Action: Approved. This is a further expansion of the two areas immediately above.

Status: LAWA has supported the implementation and funding of a sound insulation program for residences within the noise impact boundary. LAWA employs a full time sound insulation program manager who is assisted by consultants to administer the program and assist participating jurisdictions. 18,011 dwelling units have been made compatible through sound insulation and/or property acquisition.

F. Actions and Projects to Reduce Incompatible Land Use

F.1 Redevelopment by the city of Inglewood in the Century and La Cienega Redevelopment Districts to airport compatible land uses. Action to commence in the short range and continue until completed. The recommended program is intended to support and accelerate efforts by the city of Inglewood to recycle portions of the La Cienega and Century Redevelopment Districts to airport compatible land uses. Once implemented, nearly 2,540 dwelling units will be removed from the projected airport noise impact area.

FAA Action: Approved. This project, although large in scope, falls within the concept of those voluntary measures described in FM Advisory Circular 150/5020-1, sections 3 and 4. The city of Inglewood has advised that it intends to initiate redevelopment in certain noncompatible high noise areas that have good potential for the introduction of compatible uses. The first steps in this project have been accomplished, and the city is now ready to implement the first acquisition and clearance measures. It should be emphasized that any relocation resulting from use of Federal funds will require the city to satisfy the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646). This measure, if fully implemented, could remove approximately 2,540 dwelling units from noncompatible use. The city has determined that it has the authority to initiate these actions, although some steps would involve state and/or Federal concurrence, particularly when outside funds are used. Approval of this concept within this NCP should not be construed as a commitment to future Federal funding under the AIP or successor legislation. (See FAA comment under item G.If, below.) Local, state, and other Federal agencies may assist with such projects according to their authority and funding capability provided that the sponsoring jurisdiction develops satisfactory plans proposals, and funding necessary for the local matching share.

Status: Through 2009, the City of Inglewood has acquired 816 dwelling units using federal and airport funds. On December 29, 2011 the California Supreme Court upheld Assembly Bill AB 26, which terminated all redevelopment agencies in the state of California, including the Inglewood Redevelopment Agency. As a result, the Century and La Cienega Redevelopment Districts in the City of Inglewood are no longer active redevelopment areas.

On January 10, 2012 the City of Inglewood elected to become the Successor Agency of the former Inglewood Redevelopment Agency and to carry out specific projects in various stages of implementation. No projects located within the previously existing Century and La Cienega Redevelopment Districts have been elected for further implementation.

F.2 Rezoning actions by the City of Inglewood in specific areas to foster development of airport compatible uses and to preclude the development of noise sensitive land uses within the established noise impact area. This action would occur in the short range.

FAA Action: Approved. The city of Inglewood has advised that it proposes to rezone existing neighborhoods to encourage current or subsequent land owners to convert properties to compatible uses. If fully implemented, 440 dwelling units could be removed from noise exposure in excess of 65 CNEL. The city has advised that it has the necessary authority to implement this action.

Status: The City of Inglewood is currently operating under the direction of a General Plan adopted in 1980. The Land Use Element of the General Plan was amended in 1986 and 2006.⁹ The General Plan does not specifically address rezoning actions to foster the development of airport compatible uses and/or to preclude the development of noise sensitive land uses within the established noise area. However, the 2006 Land Use Element does include overarching goals and policies to foster development of airport compatible land uses.

F.3a Development and adoption of a Revitalization Strategy and Implementation Program by Los Angeles County for the unincorporated Los Angeles County Lennox area to encourage development of airport compatible land uses (short range).

FAA Action: Approved. This measure is similar to that described under item F.1, above, except that the target area is under jurisdiction of Los Angeles County. FAA comments under items F.1 and G.1f are also applicable to this item. This project has the potential to benefit residents in approximately 3,900 dwelling units exposed to more than 65 CNEL (Ldn).

Status: The Department of Regional Planning (DRP) is not currently nor has it previously prepared and adopted a Revitalization Strategy and Implementation Program for Lennox to encourage the development of airport compatible land uses. However, in 2010, DRP did complete *Vision Lennox*¹⁰; a community plan with a goal of developing a shared vision for the future of the Lennox community. Through a series of community workshops DRP and community members were able to develop a land-use, transportation, and economic revitalization vision for the community. *Vision Lennox* does not provide the regulatory

⁹ City of Inglewood, 2006. *City of Inglewood General Plan Update Technical Background Report*. August 2006.

¹⁰ Los Angeles County, 2010. *Vision Lennox Plan*. Adopted June 30, 2010.

tools for Los Angeles County to encourage development of airport compatible land uses within the Lennox community.

F.3b Amendment of the Countywide General Plan to reflect the Lennox Revitalization Strategy and initiate the implementation programs (medium range and long range).

FAA Action: Approved. Los Angeles County intends to revise the county plan in accordance with the results of item F.3, above, and to implement certain actions within the plan. This measure can be initiated under existing county authority although state and/or Federal concurrence may be required for certain steps.

Status: DRP is not currently nor has it previously prepared a Lennox Revitalization Strategy or implementation program for Lennox. However, DRP is currently updating the general plan for Los Angeles County (Draft 2035 General Plan). The Draft 2035 General Plan provides the policy framework for future growth throughout Los Angeles County including the community of Lennox. As part of the general plan update, zone changes are being made to achieve consistency with the goals and policies included in the Draft 2035 General Plan. The general plan update also takes into consideration the recommendations of the *Vision Lennox* plan which was completed in 2010. Additional information regarding the Draft 2035 General Plan is provided in **Appendix B**.

F.3c Initiation of rezoning actions by the County of Los Angeles as necessary, to support the Lennox Revitalization Strategy and Implementation Program.

FAA Action: Approved. The city has identified that the proposed zoning changes are within the authority of Los Angeles County. They require no Federal action or concurrence.

Status: DRP is not currently nor has it previously prepared a Lennox Revitalization Strategy and Implementation Program. DRP is currently amending zoning in the Lennox community to achieve consistency with the goals and policies set forth in the Draft 2035 General Plan.

F.4a Preparation and adoption by the City of Los Angeles of amendments to the Westchester/Playa del Rey District Plan to foster development of airport compatible uses in areas adjacent to the north runway threshold. (Short range 1984—86).

FAA Action: Approved. The city has advised that the proposed plan revisions are within the authority of the city of Los Angeles. They require no Federal action or concurrence.

Status: In 1984, the City of Los Angeles approved 4,500,000 square feet of commercial development in the area located just north of Los Angeles International Airport (LAX), known as the LAX Northside Area. The LAX Northside Area was once primarily single-family homes but was acquired by LAWA prior to 1984 using FAA grant funds. Use of the FAA grant funds to purchase the properties within the LAX Northside Area triggered the need to convert the use of the properties into airport compatible land uses.

The following documents and ordinances were approved between 1984 and 1986 for the LAX Northside Area:

- 1984 Zoning Ordinances (159,526; 169,254; and 169,768) and Final Tract Map No. 34836

F.4b Rezoning actions by the City of Los Angeles to support the District Plan amendments in fostering airport compatible uses in areas adjacent to the north runway thresholds during the medium range (1986—90) implementation phase.

FAA Action: Approved. The proposed zoning changes are to be consistent with the plan changes adopted as a result of item F.4a, above. The city has advised that it has the necessary authority to initiate such changes, and no Federal action or concurrence is required.

Status: In addition to the 4.5 million square feet of commercial development approved in 1984, the City of Los Angeles prepared the *LAX Northside Design Plan and Development Guidelines*¹¹ in 1989 to provide additional guidance with development of the property located in the LAX Northside Area. The guidelines recommended land uses for each area of the property, established urban design standards for architectural and landscape designs including setbacks, height restrictions, lighting, signs and street furniture, as well as other standards such as design review processes and zone change conditions.

F.6 Adoption of a comprehensive Airport Land Use Compatibility Plan for LAX and environs reflecting the provisions of the FAR Part 150 action program by Los Angeles County Regional Planning Commission acting as the Airport Land Use Commission as mandated by Assembly Bill No. 2920 and codified as chapter 1041 (short range 1984—86).

FAA Action: Approved. Los Angeles County is designated by state law as the agency responsible for developing airport land use compatibility plans for the areas surrounding each airport in the county. This item emphasizes that responsibility and establishes the NCP as the basis for much of the plan. No Federal action or concurrence, beyond the approval or disapproval of this NCP, is required to implement this action.

Status: The DRP has prepared an airport land use compatibility plan for Los Angeles County Airports including LAX. The Los Angeles County Airport Land Use Plan¹² was adopted by the Los Angeles Airport Land Use Commission on December 19, 1991. A revised county-wide plan was adopted on December 1, 2004.

F.7 Evaluate and construct sound attenuation barriers in appropriate locations adjacent to residential areas within the city of El Segundo. The evaluation would occur in the short range with construction to occur during the remainder of that phase and into the medium range.

FAA Action: Approved. This measure would evaluate the feasibility and the expected benefits of a noise barrier to protect certain portions of El Segundo south of LAX. The barrier would be constructed if the evaluation resulted in a positive recommendation.

Status: An evaluation of the effectiveness of sound attenuation barriers adjacent to residential areas within the city of El Segundo was conducted. The evaluation concluded that noise barriers would not be effective due to the contribution of noise from aircraft in flight which would overtop the barriers.

¹¹ City of Los Angeles Department of Airports. *LAX Northside Design Plan and Development Guidelines*. April 20, 1989.

¹² Los Angeles County Department of Regional Planning. *Los Angeles County Airport Land Use Plan*. Adopted on December 19, 1991 (Revised December 1, 2004).

G. Noise Compatibility Program Implementation and Funding

G.1b Evaluate legality and feasibility of amending Federal law to allow the airport proprietor to implement a passenger facility charge which as a condition must have FAA and Congressional approval during the short range (1984-86) implementation phase to provide for the local share of noise compatibility program implementation funding.

FAA Action: Approved. Current legislation precludes the establishment by local airport authorities of certain charges on air passengers. This NCP item expresses the intent of the Board of Airport Commissioners to study and evaluate ways in which such charges can be levied. The proposal recognizes that new Federal legislation would be required to establish such authority at a local level. This approval does not endorse this legislative proposal. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

Status: LAWA was successful in obtaining federal legislation that permits airports to collect a passenger facility charge (PFC). LAWA has collected \$349,828,789 for LAX Land Acquisition, \$158,201,087 for LAX Soundproofing, and \$137,252,523 for local jurisdictions in PFCs to help fund the noise mitigation programs.

G.1d Evaluate legality and feasibility of additional NCP implementation funding sources including the following to provide the local share of noise compatibility program funding:

- Amendment of AIP Program through Federal legislation to provide 100 percent financing for approved noise compatibility program elements.
- Conversion of a portion of the 8 percent ticket tax to a levy permitting its applicability as a debt service fund enabling the issuance of special bonds for the specific purpose of implementing an approved element of the noise compatibility program.
- Application of “In-Kind Services” by local authorities.
- Provision of the local share should be by the local agency having jurisdiction.

FAA Action: Approved. As in item G.1b, above, this measure recommends local study to develop alternatives for reducing the financial burden on local communities for NCP projects. Approval of this study item does not constitute approval of any specific funding concept. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

Status: LAWA has explored a number of alternative funding sources and approaches. AIP, PFCs and Airport Revenue remain the primary source of funding for the sound insulation programs.

G.1e The Department of Airports will negotiate a contract with its Financial Consultant to provide an additional review of the possibilities existing for other alternative financing methods that might be used to accomplish the off-airport redevelopment and insulation actions included in the noise compatibility program.

FAA Action: Approved. This measure recommends further study of local initiatives which could be used to generate revenue for the local matching funds in AIP grants. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

Status: LAWA has not yet pursued a comprehensive review of all off-airport redevelopment around LAX as part of the noise compatibility program update. However, LAWA is seeking to entitle and develop the 340 acres of the LAX Northside Area to allow for 2.3 million square feet of compatible commercial development and to serve as a buffer zone between the Westchester community and LAX airfield operations. Additionally, LAWA is seeking an approximate 4 million square feet of compatible collateral development in the Century Corridor Business District as part of the LAX Landside Modernization Program.

1.7 Other Noise Mitigation Efforts

Over the years, LAWA has undertaken numerous noise abatement and noise mitigation efforts outside of the 14 CFR Part 150 process. The following sections describe noise abatement measures and program measures that are currently implemented at LAX.

1.7.1 Noise Abatement Measures

In addition to the measures described in Section 1.6, LAWA also implements other procedures to minimize aircraft noise. During standard westerly operations, civil turbojet aircraft are encouraged to adhere to reduced thrust climb procedures contained in FAA Advisory Circular 91.53A¹³ for westerly departures.¹⁴ LAWA's Noise Management Section actively monitors and promotes adherence to the measures by working with aircraft operators and the FAA to identify where improvements can be made.

LAWA has adopted rules and regulations regarding aircraft noise as it relates to aircraft operations at LAX. Noise abatement measures and related actions under Section 5 "Aircraft Noise Abatement Operating Procedures and Restrictions" of the *LAX Rules and Regulations*¹⁵ are summarized below.

Over-Ocean Operations

To minimize the nighttime noise impacts of LAX aircraft operations between midnight and 6:30 a.m., aircraft approach LAX from the west over the Pacific Ocean and depart to the west over the Pacific Ocean, unless Air Traffic Control (ATC) determines that weather and/or airport operational conditions are unsafe for such operations. The Over-Ocean Operations noise

¹³ U.S. Department of Transportation, Federal Aviation Administration. Advisory Circular 91.53A, *Noise Abatement Departure Profile*. July 22, 1993.

¹⁴ Use of a reduced thrust takeoff technique is allowed for westerly departures, but discouraged for easterly takeoffs.

¹⁵ City of Los Angeles, Los Angeles World Airports. *LAX Rules and Regulations*, Section 5 "Aircraft Noise Abatement Operating Procedures". September 2010.

abatement procedure seeks to have aircraft operations over the Pacific Ocean rather than over people's homes during the night.

Early Turn Restrictions

All aircraft departing to the west are to maintain runway heading until past the shoreline before commencing any turns, unless specifically instructed otherwise by ATC. LAWA staff members monitor all early turns to the north and south on a routine basis and use recordings of ATC communications to determine if ATC staff instructed the pilot to make the early turn. LAWA staff members send notification letters and graphics to the airlines and generate a monthly report and distribute it to interested communities, the FAA, and other interested parties.

Helicopter Operating Procedures

Helicopter operators must comply with the ATC requirements and procedures pertaining to helicopter routes and altitudes within the Los Angeles Class B Airspace. Operators arriving or departing LAX must carry a current Helicopter Route Chart and use the flight routes designated by the FAA for Visual Flight Rules (VFR) and Special Visual Flight Rules (SVFR) operations. Operators are requested to use the southerly (industrial) route when arriving or departing LAX during SVFR operations, unless instructed otherwise by ATC. In addition to using FAA-designated flight routes, operators will maintain an altitude of 2,000 feet, weather, traffic and safety permitting. Operators shall use noise abatement approach and departure flight techniques and avoid nighttime (10:00 p.m. to 7:00 a.m.) operations except in extreme emergency cases. Except for FAA certification flights, LAX restricts helicopter training operations such as touch-and-goes, stop-and-goes, and low approaches.

Preferential Runway Use

During the noise sensitive hours of 10:00 p.m. to 7:00 a.m., ATC maximizes use of the inboard Runways 06R-24L and 07L-25R and inboard Taxiways E and C, respectively. At all other times, the inboard runways are preferred over the outboard runways for departures and, except as required for Over-Ocean Operations, the outboard runways are preferred over the inboard runways for arrivals. In addition, intersection takeoffs are only to be used when they improve the overall efficiency of the traffic flow, and even then, are only to be accomplished from Taxiways E-8 and F when the Airport is operating in west flow. No intersection takeoffs are permitted during east flow.

Imperial Terminal Procedures

All turboprops over 65,000 pounds Maximum Gross Landing Weight and all turbojets, regardless of weight, arriving at the Imperial Terminal are required to shut down their engines on Taxiway A and be towed to their assigned parking position. On departure, these aircraft are towed to the taxiway and positioned facing east or west prior to starting engines. Jet engine runs and run-ups, and turbine-based ground power units are restricted on the Imperial Terminal ramp and auxiliary power units (APUs) may only be operated when required during tow-in or -out.

Engine Run-up Restrictions

Run-ups for maintenance or test purposes of engines mounted on aircraft are restricted between the hours of 11:00 p.m. and 6:00 a.m. unless waived on an individual case basis by the Executive Director, or the Director's duly authorized representative, subject to the following conditions:

- The engine(s) will be run in a sound suppression unit that will reduce the sound level at the airport perimeter to 8 dB or less above the ambient background level in surrounding residential areas at the time the run-up is conducted.
- A single engine will not be operated to exceed idle power at each leasehold area. If more than one engine is to be checked, each engine must be checked separately.
- APUs will be operated only for maintenance and preflight checks. Idle engine checks are to be operated at the minimum time required on an aircraft to accomplish the necessary maintenance or preflight check.

Maintenance or test running of jet engines not mounted on an aircraft is restricted unless performed in a test cell of adequate design. The test cell must reduce noise levels to meet specified criteria at a distance of 250 feet from the center of the test cell.

1.7.2 Aircraft Noise Community Response Program

LAWA maintains a noise complaint phone line (424-64NOISE) and there is a noise complaint form on the LAX website. Concerned citizens can access the noise complaint phone line and the website 24 hours a day, seven days a week. LAWA also provides a web-based flight tracking system where the public can research a particular aircraft operation that may have caused a disturbance. The web-based flight tracking system provides a link to submit a complaint with specific aircraft data included. Complaints received via email or fax, are also logged in the noise complaint database. Currently, staff members investigate one incident of disturbance per noise complaint and a maximum of five noise complaints per person per month. Response letters are provided to those residents requesting a written response to their noise complaints. A summary report is generated each month and is available on LAWA's website.

1.7.3 In-Flight Monitoring Program

LAWA monitors specific arrival and departure procedures for compliance with described minimum altitudes and/or location of aircraft, as established by the FAA or contained in the Aircraft Noise Abatement Operating Procedures and Restrictions section of the LAX Rules and Regulations. In addition to the regular monthly and quarterly programs described above, these ad hoc monitoring efforts include reviews of the following procedures:

- Short Turns (On North arrivals, turns to base leg prior to the Harbor Freeway);

- Monterey Park Overflights (Extended downwind approach legs);
- Go-arounds (Either ATC- or pilot-initiated; non-runway headings);
- Loop Departure Procedure (Improperly flown loop departures overflying communities south of LAX); and
- Palos Verdes Peninsula Overflights (Southbound turboprops and jets avoid overflying communities unless directed by ATC).

1.7.4 LAX/Community Noise Roundtable

The LAX/Community Noise Roundtable was created in September 2000 and is intended “to identify noise concerns in the surrounding communities and to recommend courses of action to LAWA, the FAA, or other responsible entity that could reduce noise over affected communities without shifting noise from one community to another”.¹⁶ Membership of the Roundtable consists of local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA (a non-voting member), airline representatives and LAWA Management. This forum provides a mechanism that attempts to ensure cooperation between LAWA and local impacted communities in achieving noise reduction in those communities wherever possible without shifting noise from one community to another.

1.8 Consultation and Public Involvement

The airlines serving the Airport, other Airport tenants and users, the FAA, local and regional planning agencies (including the City of Los Angeles, the County of Los Angeles, the City of El Segundo, and the City of Inglewood), local elected officials, the California Division of Aeronautics and the general public were consulted during the development of the NEMs for LAX. Management staff for residential sound insulation programs in the aforementioned jurisdictions were also consulted during the development of the NEMs and provided information regarding the location of noise mitigated parcels in the vicinity of LAX. The public involvement program for the NEM update included two rounds of public workshops, briefings to the LAX/Community Noise Roundtable, and a briefing to FAA ATCT staff.

Public information workshops occurred on May 12, 2014; May 13, 2014; May 11, 2015; and May 12, 2015. A briefing with FAA ATCT staff based at LAX occurred on March 11, 2015. LAX/Community Noise Roundtable briefings occurred on March 12, 2014; May 14, 2014; and May 13, 2015. As shown in **Table 1-1**, the LAX/Community Noise Roundtable membership includes local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA, the airlines, and LAWA management.

¹⁶ LAX/Community Noise Roundtable By-Laws, Article II – Mission, Approved by the Roundtable May 8, 2002 and amended March 9, 2011.

TABLE 1-1
LIST OF ATTENDEES – LAX/COMMUNITY NOISE ROUNDTABLE MEETINGS
MARCH 12, 2014; MAY 14, 2014; AND MAY 13, 2015

Name	Representing	Meeting(s) Attended
Denny Schneider (Chairman)	Westchester Neighbors Association	March 12, 2014 and May 13, 2015
Robert Ackerman	Westchester Neighbors Association	May 14, 2014
Carl Jacobson (Vice Chairman)	City of El Segundo	March 12 and May 14, 2014; May 13, 2015
Blake LaMar	City of Palos Verdes Estates	March 12 and May 14, 2014; May 13, 2015
Matt Waters	City of Rancho Palos Verdes	March 12, 2014
So Kim	City of Rancho Palos Verdes	May 14, 2014
Petra Schneider	City of Rancho Palos Verdes	May 13, 2015
Jessica Duboff	City of Los Angeles – Council District 11	May 13, 2015
June Lehrman	City of Culver City	May 13, 2015
Chris Arriola	City of Monterey Park	May 13, 2015
Olivia Valentine	City of Hawthorne	May 13, 2015
Jim Withrow ¹	City of Inglewood	March 12 and May 14, 2014; May 13, 2015
JoAnn Williams	United Homeowners Association	March 12, 2014
Danna Cope	LAX Area Advisory Committee	May 14, 2014 and May 13, 2015
Yvonne Bedford	Ladera Heights Civic Association	May 14, 2014 and May 13, 2015
John Bailey	Southeast Torrance Homeowners' Association	March 12, 2014 and May 14, 2014
Martin Rubin	North Westdale Neighborhood Association	March 12 and May 14, 2014; May 13, 2015
Rolan Morel	Federal Aviation Administration	March 12, 2014 and May 13, 2015
Faviola Garcia	Federal Aviation Administration	May 14, 2014
Scott Tatro	LAWA	March 12 and May 14, 2014; May 13, 2015
Kathryn Pantoja	LAWA	March 12 and May 14, 2014; May 13, 2015
David Chan	LAWA	March 12 and May 14, 2014; May 13, 2015
Georgiana Streeter	LAWA	March 12, 2014 and May 14, 2014
James Duke	LAWA	March 12, 2014
Lisa Trifiletti	LAWA	May 14, 2014
Rene Spencer	LAWA	May 13, 2014

NOTE:

¹ Mr. Withrow became an official member of the LAX/Community Noise Roundtable on May 13, 2015.

SOURCE: Los Angeles World Airports, July 2015.

Copies of correspondence letters between LAWA and the FAA related to the NEM Update are provided in **Appendix E**. Published notices, sign-in sheets, handouts, and presentation materials for the public workshops are provided in **Appendix F**. Also provided in Appendix F are copies of the presentation slides used for the LAX/Community Noise Roundtable briefings, presentation slides from the FAA ATCT staff briefing, and a list of agencies and individuals that were invited

to attend the public workshops and to submit comments regarding the Draft Noise Exposure Map Report. Comments received during the preparation of the updated noise exposure maps and responses to those comments are provided in **Appendix G**.

1.9 Report Organization

This report provides updated NEMs for LAX and the technical documentation required under 14 CFR Part 150. The remainder of this report is organized as follows:

- Chapter 2: Summary of the aviation activity forecast for the Airport.
- Chapter 3: Description of the existing Airport and currently planned improvements that could affect future noise exposure; existing and planned land use in the Airport environs; and zoning controls available to the local jurisdictions to achieve land use compatibility.
- Chapter 4: Summary of the aircraft noise analysis, including the assumptions and inputs used to develop the existing and future NEMs.
- Chapter 5: Delineation of the NEMs and documentation of the number of households, people and noise-sensitive land uses exposed to aircraft noise.
- Appendix A: Glossary of Terms
- Appendix B: Summary of Land Use Plans and Zoning
- Appendix C: Radar Flight Tracks for Los Angeles International Airport
- Appendix D: Annual Average Day Aircraft Operations: 2015 and 2020
- Appendix E: Correspondence and Consultation
- Appendix F: Public Involvement and Outreach
- Appendix G: Public Comments and Responses
- Appendix H: Los Angeles International Airport Airspace Overview
- Appendix I: Oversized Maps [**Provided under separate cover**]

CHAPTER 2

Aviation Activity Forecasts

2.1 Introduction

14 CFR Part 150 requires that noise exposure maps (NEMs) be prepared for two scenarios—existing conditions and conditions five years into the future. Each map reflects the annual average number of daily aircraft operations for the specified year. Typically, data for the most recent full calendar year for which data are available at the time the maps are prepared are used to represent existing conditions. In this 14 CFR Part 150 NEM Update, operations data for calendar year 2013 were used to represent the baseline condition in 2015 (the year of submittal of the NEMs to the FAA), and forecast operations in 2020 were used to represent five-year future conditions. Annual average day (AAD) operations and aircraft fleet mix data for the existing and future conditions is provided in Chapter 4.

Because the number of operations on the average day of the year (i.e., AAD operations) is determined by dividing the total number of operations throughout the year by 365, the number of aircraft operations on any given day at Los Angeles International Airport will be higher than the average number on some days and lower than the average number on other days. Factors that typically cause fluctuations in the daily number of aircraft operations include weekly, monthly, and seasonal variations in demand, weather conditions, patterns of tourism or business travel, and the economy.

Actual aircraft operations data for calendar year 2013 were used to develop the 2015 NEM. Aviation activity forecasts are used for the purpose of preparing future noise exposure map(s) in a 14 CFR Part 150 study. LAWA and its consultants submitted a technical memorandum (dated September 2, 2014) to the FAA on September 4, 2014 that recommended using the FAA’s 2014 Terminal Area Forecast (TAF)¹ to prepare the 2020 NEM for LAX. The FAA approved the use of the 2014 Terminal Area Forecast for the 14 CFR Part 150 NEM Update on October 9, 2014. The September 2, 2014 technical memorandum and the letter from the FAA approving the use of the 2014 TAF in the 14 CFR Part 150 NEM Update are provided in **Appendix E**.

¹ U.S. Department of Transportation. Federal Aviation Administration. *2014 Terminal Area Forecast (TAF)*. February 2014.

2.2. Historical Data for LAX

Table 2-1 presents historical aircraft operations data for LAX for calendar years 2000 through 2013. **Table 2-2** presents historical passenger statistics for LAX for calendar years 2000 through 2013. As shown in Tables 2-1 and 2-2, LAX aircraft operations and passenger numbers peaked in 2000. The 2001/2002 economic recession, the September 11, 2001 terrorist attacks, the Iraq War, and the 2008/2009 economic recession all served to weaken demand for air travel between 2001 and 2010 at LAX. Since 2010, the number of aircraft operations at LAX and the total number of passengers have grown steadily. In 2013, LAX served nearly 66.7 million passengers, processed more than 1.9 million tons of air cargo valued at over \$91.6 billion, and handled 614,917 aircraft operations (landings and takeoffs).

TABLE 2-1
AIRCRAFT OPERATIONS AT LOS ANGELES INTERNATIONAL AIRPORT – 2000 TO 2013

Calendar Year	Itinerant				Local		Total Operations
	Air Carrier	Air Taxi	General Aviation	Military	Civil	Military	
2000	565,705	198,567	16,969	2,300	143	0	783,684
2001	524,067	196,140	16,402	2,069	1	0	738,679
2002	449,207	177,069	16,407	2,171	0	0	644,854
2003	434,021	171,323	15,111	2,487	423	5	623,370
2004	458,543	179,323	13,997	2,924	0	0	654,787
2005	454,920	177,951	14,983	2,592	90	3	650,539
2006	463,341	174,745	15,991	2,609	151	5	656,842
2007	467,193	193,930	17,217	2,614	0	0	680,954
2008	453,232	150,561	16,397	2,316	0	0	622,506
2009	438,059	86,919	16,797	3,058	0	0	544,833
2010	455,340	97,723	20,050	2,712	10	0	575,835
2011	473,282	109,885	18,355	2,390	0	0	603,912
2012	481,338	103,159	18,334	2,649	0	0	605,480
2013	501,598	92,624	18,226	2,469	0	0	614,917

NOTE: One aircraft operation is equivalent to one aircraft landing or one aircraft takeoff.

SOURCE: Federal Aviation Administration. *Air Traffic Activity Data System (ATADS)*. December 2014.

TABLE 2-2
PASSENGER STATISTICS FOR LOS ANGELES INTERNATIONAL AIRPORT – 2000 TO 2013

Calendar Year	Enplaned Passengers	Deplaned Passengers	Total Passengers
2000	33,836,077	33,467,105	67,303,182
2001	31,007,930	30,598,274	61,606,204
2002	28,181,481	28,042,362	56,223,843
2003	27,544,606	27,438,232	54,982,838
2004	30,343,873	30,360,695	60,704,568
2005	30,649,324	30,840,074	61,489,398
2006	30,500,130	30,540,936	61,041,066
2007	31,244,261	31,194,322	62,438,583
2008	29,930,985	29,884,661	59,815,646
2009	28,288,211	28,232,632	56,520,843
2010	29,605,542	29,463,867	59,069,409
2011	30,923,005	30,939,047	61,862,052
2012	31,857,135	31,830,986	63,688,121
2013	33,335,489	33,332,130	66,667,619

SOURCE: Los Angeles World Airports, December 2014.

2.3 The 2014 Terminal Area Forecast

The TAF is an unconstrained forecast of future demand for an airport or air traffic facility which is used by the FAA to project future staffing and facility needs. The TAF is re-indexed each year based on activity that occurred during the previous federal fiscal year (October 1st through September 30th). While the TAF includes a projection of air carrier and commuter passengers, aircraft operations are of primary interest for the purposes of noise modeling. The current TAF was issued by the FAA in February 2014. LAX's portion of the TAF is presented in **Table 2-3**. The 2014 TAF projects an increase in air carrier and air taxi activity at LAX of approximately 73,300 operations between 2015 and 2020. Total aircraft operations at LAX are expected to increase by approximately 74,000 during the same period from 631,173 operations to 705,254 operations.

TABLE 2-3
FAA TERMINAL AREA FORECAST – OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT

Year (Federal Fiscal)	Air Carrier	Air Taxi	General Aviation	Military	Total
2015	513,784	96,263	18,592	2,534	631,173
2016	526,526	97,541	18,755	2,524	645,346
2017	539,793	99,113	18,919	2,514	660,339
2018	553,469	100,423	19,085	2,504	675,481
2019	567,541	101,449	19,252	2,494	690,736
2020	581,708	101,641	19,421	2,484	705,254

SOURCE: Federal Aviation Administration. *2014 Terminal Area Forecast (TAF)*. February 2014.

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CHAPTER 3

Existing and Future Airport and Environs Conditions

3.1 Existing Airport Facilities

LAX is located in Los Angeles County, California, approximately nine miles southwest of downtown Los Angeles near the Pacific Ocean coast. The Airport lies just west of Interstate 405, north of Interstate 105, east of S. Pershing Drive, and south of Westchester Parkway. The Airport is located within the city limits of the City of Los Angeles and is bound by the communities of Playa Del Rey and Westchester (City of Los Angeles) to the north, the city of Inglewood and the community of Lennox (unincorporated Los Angeles County) to the east, the city of Hawthorne and the community of Del Aire (unincorporated Los Angeles County) to the southeast, the City of El Segundo to the south, and the Pacific Ocean to the west (see **Exhibit 3-1**).

Existing facilities at LAX include runways, taxiways, passenger terminals, cargo facilities, general aviation support areas, an airport traffic control tower, navigation aids, and airport support facilities. The configuration of the major airfield and landside facilities at LAX is described in the following sections and shown on **Exhibits 3-2** and **3-3**.

3.1.1 Airfield Facilities

Airport Runways

LAX has four parallel runways oriented in an east-west direction. The four runways can be further divided into the north and south runway complexes of which two runways are located north of the main terminal facilities (Runways 06L-24R and 06R-24L); and two runways are located south of the main terminal facilities (Runways 07L-25R and 07R-25L). **Table 3-1** presents additional information regarding the runways at LAX.

According to LAWA's website for LAX, the airport reference code (ARC) is D-V which reflects large aircraft operations such as the Boeing 747-400 aircraft; however, LAX also operates under an FAA approved modification to standards that requires additional management of airfield operations to ensure safety whenever design group VI aircraft including Airbus 380 or Boeing 747-800 aircraft land or depart at LAX as the current runway configuration does not comply with current FAA runway and taxiway spacing standards prescribed for these aircraft.¹

¹ <http://www.lawa.org/ourLAX/ourLAX.aspx?id=9143>

**TABLE 3-1
EXISTING RUNWAY CHARACTERISTICS, LOS ANGELES INTERNATIONAL AIRPORT**

Runway Characteristics	Runway 06L-24R		Runway 06R-24L		Runway 07L-25R		Runway 07R-25L	
	06L	24R	06R	24L	07L	25R	07R	25L
Runway Length (Feet)	8,926	8,926	10,285	10,285	12,091	12,091	11,095	11,095
Runway Width (Feet)	150	150	150	150	150	150	200	200
Displaced Arrival Threshold (Feet)	0	0	331	0	0	957	0	0
Runway Landing Distance Available (Feet)	8,926	8,926	9,954	10,285	12,091	11,134	11,095	11,095
Approach Surface Slope	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1
Runway End Elevation (Feet above MSL)	113.1	118.9	109.9	112.9	120.4	94.0	121.7	97.8
Runway Markings	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Precision
Runway Lighting	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, PAPI	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI
Part 77 Runway Category and Navigational Aids	Precision ILS CAT I	Precision ILS CAT IIIb	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT IIIb
Runway Approach Lighting	MALSR	ALSF-II	MALSR	MALSR	MALSR	MALSR	MALSR	ALSF-II

NOTES:

MSL = Mean Sea Level

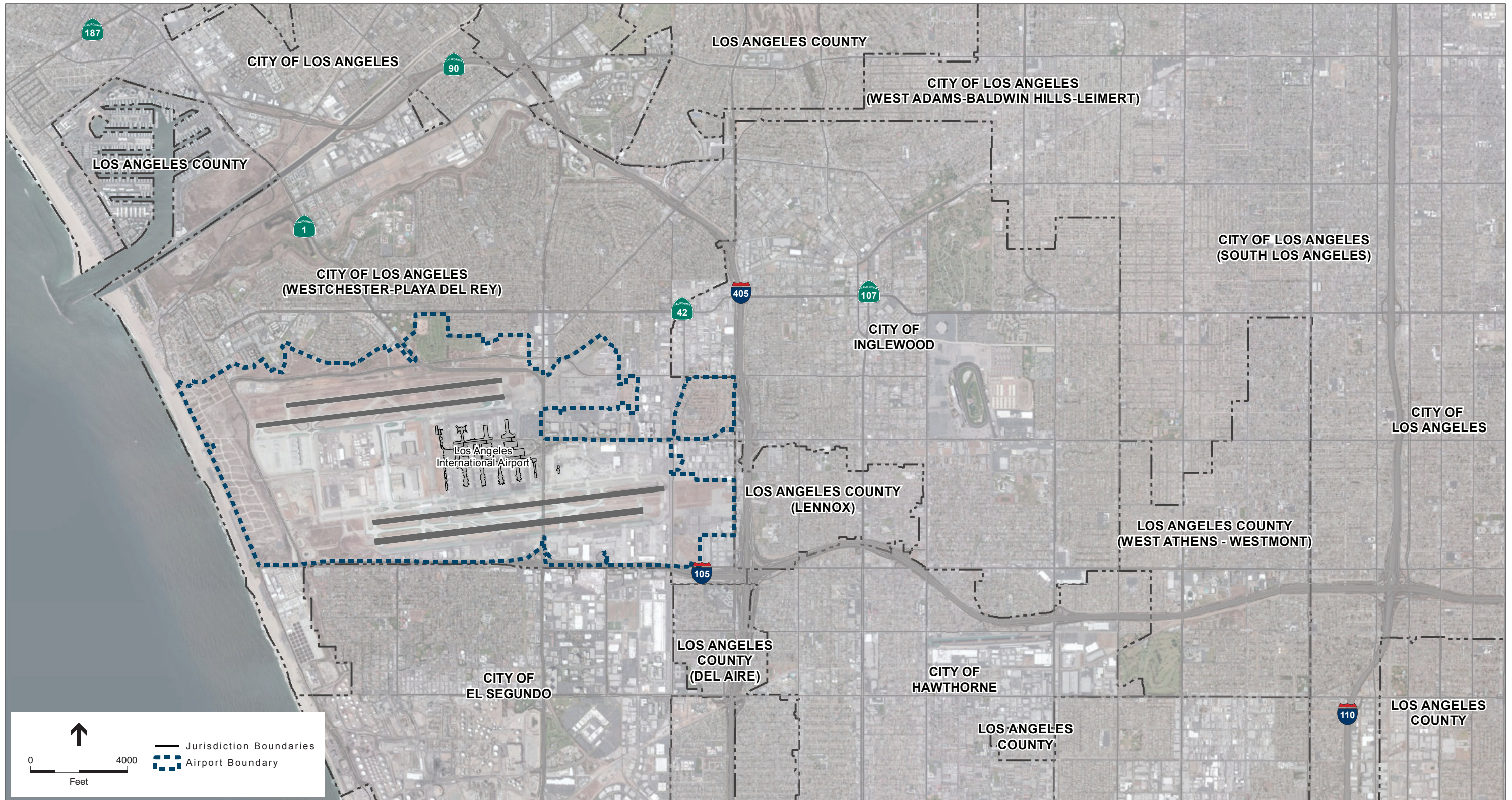
HIRL = High Intensity Runway Lighting; CL= Centerline Lighting

PAPI = Precision Approach Path Indicator; TDZ = Touchdown Zone lighting

REIL = Runway End Identifier Lights; ALSF-II = Approach Lighting System with Sequenced Flashing Lights

MALSR = Medium Intensity Approach Light System with Runway Alignment Indicator Lights; ILS CAT = Instrument Landing System Category

SOURCES: Airnav.com accessed December 5, 2014; HNTB. *Airport Layout Plan, Airport Data Sheet, Los Angeles International Airport*. September 5, 2012.

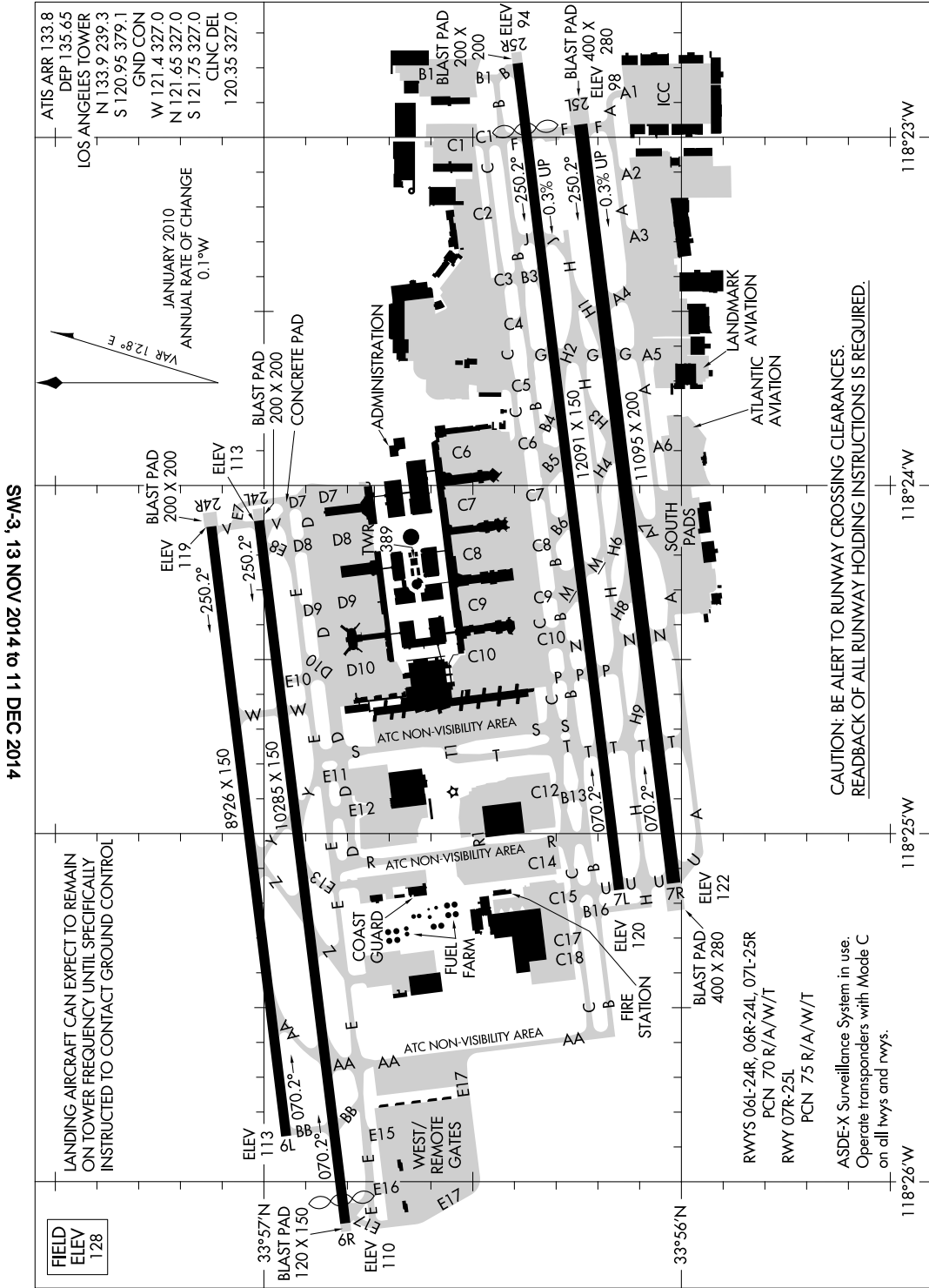


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AIRPORT DIAGRAM

AL-237 (FAA)

LOS ANGELES INTL (LAX)
LOS ANGELES, CALIFORNIA



SW-3, 13 NOV 2014 to 11 DEC 2014

SW-3, 13 NOV 2014 to 11 DEC 2014

AIRPORT DIAGRAM

LOS ANGELES, CALIFORNIA
LOS ANGELES INTL (LAX)

SOURCE: Federal Aviation Administration, 2014; ESA, 2014
NOTE: Not for Navigational Use

North Complex

Runway 06L-24R is the northernmost runway and is 8,926 feet long by 150 feet wide. Runway 06L-24R is primarily used for aircraft arrivals for safety and efficiency. Runway 06L-24R is constructed of concrete and is grooved.

Runway 06R-24L is located north of the main terminal complex, but south of Runway 06L-24R. Runway 06R-24L is 10,285 feet long by 150 feet wide and is primarily used for aircraft departures due to its longer length and LAWA's preferential runway use program, which designates the inboard runways as the preferred departure runways. Runway 06R has a displaced threshold of 331 feet that reduces the available landing distance for Runway 06R to 9,954 feet. Runway 06R-24L is constructed of concrete and is grooved.

South Complex

Runway 07L-25R is 12,091 feet long by 150 feet wide and is primarily used for aircraft departures as prescribed in LAWA's preferential runway use program. Runway 25R has a displaced threshold of 957 feet that reduces the available landing distance for Runway 25R to 11,134 feet. Runway 07L-25R is constructed of concrete and is grooved.

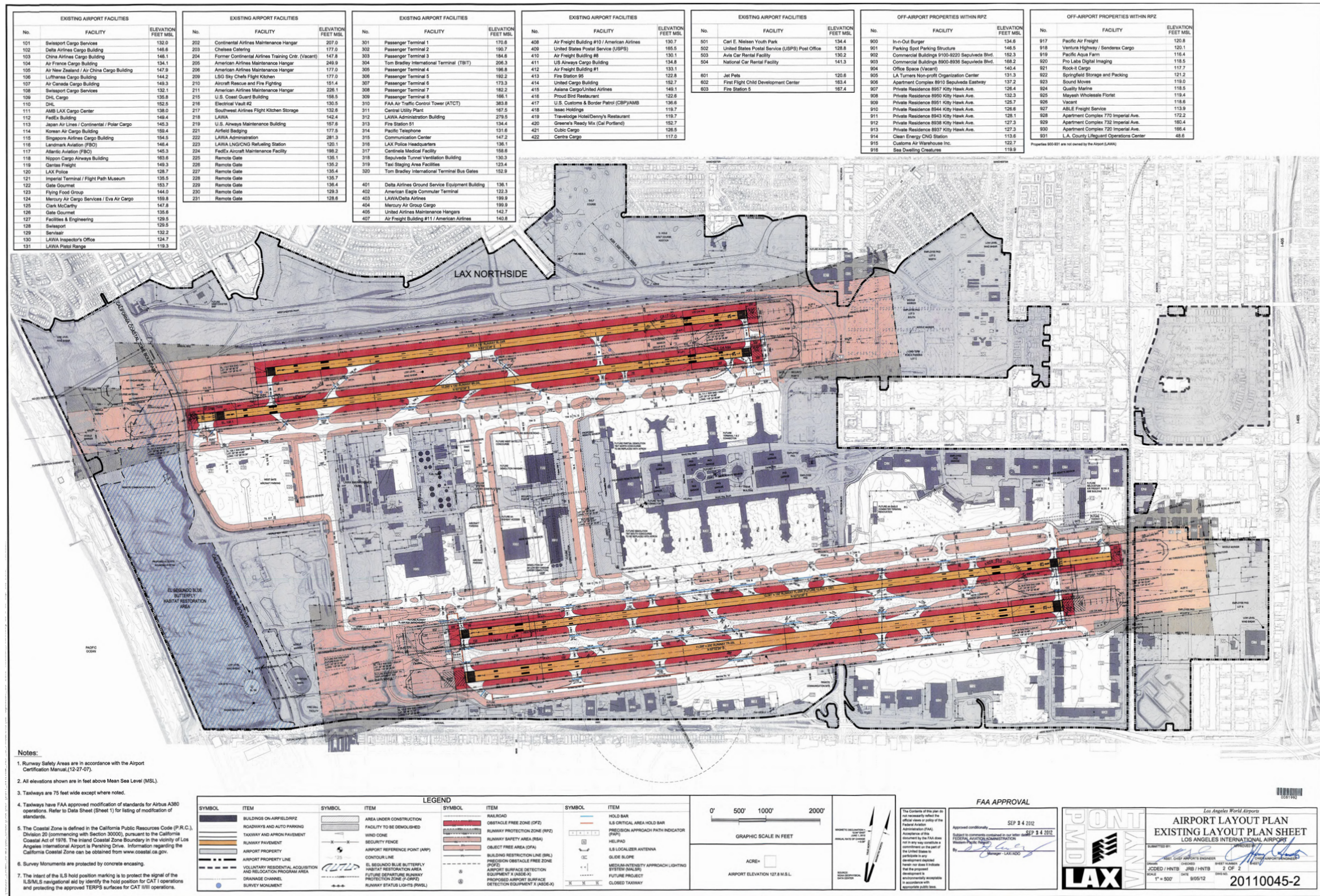
Runway 07R-25L is 11,095 feet long by 200 feet wide and is primarily used for aircraft arrivals. Runway 07R-25L is constructed of concrete and is grooved.

Taxiways

The existing taxiway system at LAX is also depicted on Exhibit 3-2. As shown on Exhibit 3-2, a series of taxiways connect the four runways to the passenger terminal complex, the air cargo aprons, fixed base operator (FBO) facilities, and general aviation areas. There are a series of taxiways that run parallel to the main runways that include taxiways: 'A', 'B', 'C', 'D', 'E', and 'H'. These taxiways move aircraft parallel to the active runways when departing aircraft position for takeoff, or when arriving aircraft taxi to their gates after arrival. Each of these primary taxiways also has individual connectors that connect the main runway with the parallel taxiway. There are also a series of taxiways that move aircraft from the north complex to the south complex and vice-versa. Individual taxiways and locations can be seen on Exhibit 3-2.

3.1.2 Passenger Terminal Facilities

There are nine terminals including the Tom Bradley International Terminal in the terminal complex located between the north and south runway complexes. Terminals One through Three are located on the north side of the terminal complex, while Terminals Four through Eight are located on the south side of the terminal complex. The Tom Bradley International Terminal is located west of Terminals One through Eight, and runs parallel to Taxiway 'S'. Passenger access to these terminals is via the two-level World Way roadway that runs counter-clockwise and allows departing/arriving passengers to be dropped off on the upper level or picked up on the lower level, respectively. There is also a West/Remote Gate area located just south of the end of Runway 06R, and an American Eagle Gate complex located east of Terminal Eight. Passenger access to these remote gate areas is via shuttle buses.



No.	FACILITY	ELEVATION FEET MSL
101	Swireport Cargo Services	132.0
102	Delta Airlines Cargo Building	146.6
103	China Airlines Cargo Building	146.1
104	Air France Cargo Building	134.1
105	Air New Zealand / Air China Cargo Building	147.9
106	Lufthansa Cargo Building	144.2
107	Air Canada Cargo Building	149.3
108	Swireport Cargo Services	132.1
109	DHL Cargo	135.8
110	DHL	152.5
111	AMM LAX Cargo Center	138.0
112	FacEx Building	149.4
113	Japan Air Lines / Continental / Polar Cargo	145.3
114	Korean Air Cargo Building	158.4
115	Singapore Airlines Cargo Building	154.5
116	Landmark Aviation (FBO)	148.4
117	Atlantic Aviation (FBO)	145.3
118	Nippon Cargo Airways Building	163.6
119	Qantas Freight	149.3
120	LAX Police	128.7
121	Imperial Terminal / Flight Path Museum	128.5
122	Gate Gourmet	153.7
123	Flying Food Group	144.0
124	Mansory Air Cargo Services / Eva Air Cargo	159.8
125	Clark McCaffery	147.8
126	Gate Gourmet	135.6
127	Facilities & Engineering	129.5
128	Swireport	128.6
129	Sevensair	132.2
130	LAWA Inspector's Office	124.7
131	LAWA Pistol Range	119.3

No.	FACILITY	ELEVATION FEET MSL
202	Continental Airlines Maintenance Hangar	207.0
203	Chelsea Catering	177.0
204	Former Continental Airlines Training Ctr. (Vacant)	147.9
205	American Airlines Maintenance Hangar	249.9
206	American Airlines Maintenance Hangar	177.0
208	LSG Sky Chefs Flight Kitchen	177.0
210	Aircraft Rescue and Fire Fighting	151.4
211	American Airlines Maintenance Hangar	177.0
215	U.S. Coast Guard Building	158.5
216	Electrical Vault #2	135.5
217	Southeast Airlines Flight Kitchen Storage	132.6
218	LAWA	142.4
219	U.S. Airways Maintenance Building	157.8
221	Artificial Building	177.5
222	LAWA Administration	281.3
223	LAWA LINGUING Refueling Station	120.1
224	FacEx Aircraft Maintenance Facility	188.2
225	Remote Gate	135.1
226	Remote Gate	135.2
227	Remote Gate	135.4
228	Remote Gate	135.7
229	Remote Gate	136.4
230	Remote Gate	129.3
231	Remote Gate	129.8

No.	FACILITY	ELEVATION FEET MSL
301	Passenger Terminal 1	170.8
302	Passenger Terminal 2	190.7
303	Passenger Terminal 3	184.8
304	Tom Bradley International Terminal (TBIT)	206.3
305	Passenger Terminal 4	196.8
306	Passenger Terminal 5	192.2
307	Passenger Terminal 6	173.3
308	Passenger Terminal 7	182.2
309	Passenger Terminal 8	186.1
310	FAA Air Traffic Control Tower (ATCT)	263.8
311	Central Lobby Plant	167.5
312	LAWA Administration Building	278.5
313	Fire Station 51	134.4
314	Pacific Telephone	131.6
315	Communication Center	147.2
316	LAX Police Headquarters	136.1
317	Centinela Medical Facility	158.6
318	Sequoyia Tunnel Ventilation Building	130.3
319	Taxi Staging Area Facilities	123.4
320	Tom Bradley International Terminal Bus Gates	152.9
401	Delta Airlines Ground Service Equipment Building	136.1
402	American Eagle Commuter Terminal	122.3
403	LAWA/Delta Airlines	199.9
404	Mansory Air Group Cargo	199.9
405	United Airlines Maintenance Hangars	142.7
407	Air Freight Building #11 / American Airlines	142.8

No.	FACILITY	ELEVATION FEET MSL
408	Air Freight Building #10 / American Airlines	130.7
409	United States Postal Service (USPS)	165.5
410	Air Freight Building #8	130.1
411	US Airways Cargo Building	134.8
412	Air Freight Building #1	133.1
413	Fire Station #5	122.6
414	United Cargo Building	152.7
415	Asiana Cargo/United Airlines	149.1
416	Proud Bird Restaurant	122.6
417	U.S. Customs & Border Patrol (CBP)/AMM	136.6
418	Isaac Holdings	119.7
419	Travelodge Hotel/Denny's Restaurant	119.7
420	Green's Ready Mix (Car Portland)	152.7
421	Cubic Cargo	128.5
422	Centra Cargo	117.0

No.	FACILITY	ELEVATION FEET MSL
501	Carl E. Nielsen Youth Park	134.4
502	United States Postal Service (USPS) Post Office	128.8
503	Ava Car Rental Facility	132.2
504	National Car Rental Facility	141.3
601	Jet Pals	120.6
602	First Flight Child Development Center	163.4
603	Fire Station 5	187.4

No.	FACILITY	ELEVATION FEET MSL
900	In-n-Out Burger	134.8
901	Parking Spot Parking Structure	148.5
902	Commercial Buildings 9100-9220 Sepulveda Blvd.	132.3
903	Commercial Buildings 8900-8938 Sepulveda Blvd.	168.2
904	Office Space (Vacant)	140.4
905	LA Turners Non-profit Organization Center	137.3
906	Apartment Complex 8910 Sepulveda Eastway	137.2
907	Private Residence 8957 Kitty Hawk Ave.	126.4
908	Private Residence 8950 Kitty Hawk Ave.	132.3
909	Private Residence 8951 Kitty Hawk Ave.	125.7
910	Private Residence 8944 Kitty Hawk Ave.	126.6
911	Private Residence 8943 Kitty Hawk Ave.	128.1
912	Private Residence 8938 Kitty Hawk Ave.	127.3
913	Private Residence 8937 Kitty Hawk Ave.	127.3
914	Custom Energy CNG Station	113.6
915	Customs Air Warehouse Inc.	122.7
916	Sea Dwelling Creations	119.9

No.	FACILITY	ELEVATION FEET MSL
917	Pacific Air Freight	120.8
918	Ventura Highway / Sanderex Cargo	120.1
919	Pacific Aqua Farm	116.4
920	Pro Labs Digital Imaging	116.5
921	Rock-A Cargo	117.7
922	Springfield Storage and Packing	121.2
923	Sound Moves	119.0
924	Quality Marine	118.5
925	Mayesh Wholesale Florist	119.4
926	Vacant	119.6
927	ABLE Freight Service	113.9
928	Apartment Complex 770 Imperial Ave.	172.2
929	Apartment Complex 732 Imperial Ave.	166.4
930	Apartment Complex 720 Imperial Ave.	166.4
931	L.A. County Lifeguard Operations Center	48.6

- Notes:**
- Runway Safety Areas are in accordance with the Airport Certification Manual (12-27-07).
 - All elevations shown are in feet above Mean Sea Level (MSL).
 - Taxiways are 75 feet wide except where noted.
 - Taxiways have FAA approved modification of standards for Airbus A380 operations. Refer to Data Sheet (Sheet 1) for listing of modification of standards.
 - The Coastal Zone is defined in the California Public Resources Code (P.R.C.), Division 20 (commencing with Section 30000), pursuant to the California Coastal Act of 1972. The Inland Coastal Zone Boundary in the vicinity of Los Angeles International Airport is Pershing Drive. Information regarding the California Coastal Zone can be obtained from www.coastal.ca.gov.
 - Survey Monuments are protected by concrete encasing.
 - The intent of the ILS hold position marking is to protect the signal of the ILS/MLS navigational aid by identify the hold position for CAT I operations and protecting the approved TERPS surfaces for CAT I/II operations.

LEGEND

SYMBOL	ITEM	SYMBOL	ITEM	SYMBOL	ITEM
[Symbol]	BUILDINGS ON AIRFIELD/RPZ	[Symbol]	AREA UNDER CONSTRUCTION	[Symbol]	RAILROAD
[Symbol]	ROADWAYS AND AUTO PARKING	[Symbol]	FACILITY TO BE DEMOLISHED	[Symbol]	OBSTACLE FREE ZONE (OFZ)
[Symbol]	TAXIWAY AND APRON PAVEMENT	[Symbol]	WIND CONE	[Symbol]	RUNWAY PROTECTION ZONE (RPZ)
[Symbol]	RUNWAY PAVEMENT	[Symbol]	SECURITY FENCE	[Symbol]	RUNWAY SAFETY AREA (RSA)
[Symbol]	AIRPORT PROPERTY	[Symbol]	AIRPORT REFERENCE POINT (ARP)	[Symbol]	OBJECT FREE AREA (OFA)
[Symbol]	AIRPORT PROPERTY LINE	[Symbol]	CONTOUR LINE	[Symbol]	BUILDING RESTRICTION LINE (BRL)
[Symbol]	VOLUNTARY RESIDENTIAL ACQUISITION AND RELOCATION PROGRAM AREA	[Symbol]	EL SEGUNDO BLUE BUTTERFLY HABITAT RESTORATION AREA	[Symbol]	PROPOSED OBSTACLE FREE ZONE (POFZ)
[Symbol]	DRAINAGE CHANNEL	[Symbol]	FUTURE DEPARTURE RUNWAY PROTECTION ZONE (FDRPZ)	[Symbol]	PROPOSED SURFACE DETECTION EQUIPMENT X (ASDE-X)
[Symbol]	SURVEY MONUMENT	[Symbol]	RUNWAY STATUS LIGHTS (RWL)	[Symbol]	PROPOSED AIRPORT SURFACE DETECTION EQUIPMENT X (ASDE-X)
[Symbol]		[Symbol]		[Symbol]	HOLD BAR
[Symbol]		[Symbol]		[Symbol]	LS CRITICAL AREA HOLD BAR
[Symbol]		[Symbol]		[Symbol]	PRECISION APPROACH PATH INDICATOR (PAPI)
[Symbol]		[Symbol]		[Symbol]	HOLD PAD
[Symbol]		[Symbol]		[Symbol]	LS LOCALIZER ANTENNA
[Symbol]		[Symbol]		[Symbol]	GLIDE SLOPE
[Symbol]		[Symbol]		[Symbol]	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM (MALSR)
[Symbol]		[Symbol]		[Symbol]	FUTURE PROJECT
[Symbol]		[Symbol]		[Symbol]	CLOSED TAXIWAY

FAA APPROVAL

SEP 24 2012

Approved conditionally

Subject to conditions contained in our letter of approval dated SEP 24 2012

By: [Signature]

Manager, LAX/ICDO

PMD

LAX

AIRPORT LAYOUT PLAN EXISTING LAYOUT PLAN SHEET

LOS ANGELES INTERNATIONAL AIRPORT

20110045-2

1" = 500'

8/25/12

2 OF 2

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3.1.3 Airport Traffic Control Tower

The Airport is serviced by an active FAA airport traffic control tower (ATCT) located in the center of the Terminal Complexes. The ATCT operates 24 hours a day, 365 days a year. Radar approach and departure control is operated by the Southern California Terminal Radar Approach Control (SOCAL TRACON) located in San Diego, California.

3.1.4 Other Facilities

General Aviation Facilities

General aviation includes all facets of aviation flying excluding military, cargo, and scheduled commercial passenger air carriers. Some of the major categories of general aviation include business/corporate aviation, air taxi operations, flight training, personal flying, and traffic reporting.

There are two fixed base operators (FBOs) at the Airport located south of Runway 07R-25L. These FBOs include Landmark Aviation and Atlantic Aviation, and offer general aviation services such as: aviation fuel, oxygen service, aircraft parking (ramp or tie-down), hangars, GA passenger terminal and lounge, aircraft maintenance, etc.

There is also a military/Coast Guard facility located at the center of the airport west of Taxiway 'R'.

Air Cargo Facilities

Air cargo and maintenance facilities are located sporadically around the Airport, however, the major cargo facilities, including the Imperial Cargo Complex and the South Pads, are located south of Runway 07R-25L. Other cargo and maintenance facilities are located just north of Runway 25R including the B-1 Cargo Area, and in the center of the Airport between the north and south runway complexes.

Other Aviation-related facilities

In addition to the passenger terminal, cargo facilities, and general aviation facilities, a number of aviation related support facilities are located on airport property. These facilities include:

- Aircraft Rescue and Firefighting Facility (ARFF)
- Aircraft Fueling Facility
- Airport Maintenance Facility
- Airport Surveillance Radar
- Airport Police Department and Pistol Range
- Police/ARFF Training Auditorium
- Airport Training and Conference Center

3.2 Future/Planned Airport Facilities

An analysis was conducted to determine if there are any planned projects at LAX that will be constructed and operational by 2020 that would have an influence on runway use, or may in some way have the potential to alter aircraft noise exposure patterns in the vicinity of LAX in 2020. Recent studies prepared by LAWA that were reviewed as part of this analysis included the LAX Master Plan Alternative D Report (2004), the LAX Specific Plan Amendment Study (SPAS) and Environmental Impact Report (EIR), the LAX Federal Aviation Regulations Part 161 Study, the Midfield Satellite Concourse North Draft EIR, the LAX Runway 06L-24R and 06R-24L Safety Area and Associated Improvements Draft EIR and Draft Environmental Assessment (EA), the LAX Runway 07L-25R Runway Safety Area (RSA) Project and Associated Improvements EA and EIR, and the West Aircraft Maintenance Area Draft EIR.

Based on this evaluation it was determined that there are two projects that will be operational by 2020 and that may affect future aircraft noise exposure in the vicinity of LAX: the proposed Runway 07L-25R and Runway 06R-24L Runway Safety Area (RSA) improvements.

Runway 07L-25R RSA improvements: The extension of Runway 07L-25R 832 feet to the west will result in a shift of the Runway 07L departure threshold 832 feet to the west. The Runway 07L landing threshold will remain in its current location (i.e., 832 feet east of the new end of pavement). The Runway 25R departure and landing thresholds will remain unchanged. The existing 957-foot displacement of the Runway 25R landing threshold will remain unchanged.

Runway 06R-24L RSA improvements: The proposed Runway 06R-24L RSA improvements will result in an approximately 800-foot eastward shift of the Runway 24L departure threshold. The Runway 24L landing threshold will remain in its existing location. The Runway 06R departure threshold will shift approximately 200 feet to the east and the Runway 06R landing threshold will shift approximately 420 feet to the east.

The runway threshold shifts described above were incorporated into the noise analysis conducted for future (2020) conditions and are reflected on the 2020 Noise Exposure Map presented in Chapter 5 (See Exhibit 5-2).

The FAA is currently assessing and addressing airspace inefficiencies to make the Southern California Metroplex airspace more efficient. The Metroplex project is a separate and independent project led by the FAA. On June 10, 2015, the FAA released a draft environmental assessment (EA)² that analyzes the potential environmental impacts of the recommended Metroplex changes including the effects on aircraft noise. The Draft Metroplex EA concludes that the noise analysis “. . . results indicate the Proposed Action would not result in a significant noise exposure impact on population exposed to DNL 65 dB or higher levels under the Proposed Action. . .”³ Based on this conclusion in FAA’s Draft Metroplex EA, LAWA has concluded that

² Draft Environmental Assessment for the Southern California Metroplex Project, United States Department of Transportation Federal Aviation Administration (June 2015)

³ *Ibid.*, Section 5.1.3, Potential Impacts – 2015 and 2020, p. 5-6.

implementation of the Metroplex procedure changes will not result in significant changes to the 2020 NEM for LAX.

3.3 Navigational Aids

Navigational aids, airport lighting, and airport markings help users of LAX to safely navigate around the Airport and through LAX airspace. The navigational aids include: Instrument Landing Systems (ILS), Area Navigation (RNAV)/Global Positioning Systems (GPS), and a VORTAC which is the combination of a Very High Frequency (VHF) Omni-Directional Range (VOR) and Tactical Air Navigation facility (TACAN).

An ILS is an electronic system that helps guide pilots to runways during periods of limited visibility or inclement weather. An ILS includes a localizer, which provides lateral course guidance to the runway, and a glide slope, which provides vertical course guidance.

The GPS uses a network of satellites that create reference points to enable aircraft equipped with GPS receivers to determine their latitude, longitude, and altitude. GPS systems can be used by aircraft during all phases of flight.

Area Navigation or RNAV is a method of navigation that permits aircraft operation on any desired flight path using the combination of both GPS and ground-based navigational aids. RNAV routes and terminal procedures, including departure procedures and standard terminal arrivals, are designed with RNAV systems in mind to save time and fuel, reduce aircraft dependence on air traffic control (ATC) vectoring, and provide for more efficient use of the airspace.

A VORTAC is a facility consisting of two components, VOR and TACAN, which provide three individual services: VOR azimuth, TACAN azimuth and TACAN distance at one site. This navigational aid works for civilian aircraft by using a VHF radio to project straight line courses (radials) from the station in all directions that pilots can use to navigate to and from the VORTAC stations. As mentioned above, VORTACs also have distance capability or distance measuring equipment (DME) that lets the pilot know their slant range distance from the station usually shown in the aircraft in nautical miles from the station. The TACAN part of the VORTAC is mostly used by military aircraft, but basically provides the same function as a VOR.

An FAA-operated VORTAC is located approximately 4,000 feet west of the end of Runway 07R. The VORTAC is a Class 'H' VORTAC, which has a standard service volume limit of 100 nautical miles (nm) between 14,500 feet and 60,000 feet. Between 18,000 feet and 45,000 feet, the service volume extends to 130 nm. Below 14,500 feet down to 1,000 feet above ground level (AGL), the standard service volume is 40 nm. The LAX VORTAC is not used to perform instrument approaches, but is utilized by aircraft executing missed approach procedures, or aircraft on Departures Procedures or Standard Terminal Arrivals.

3.4 Runway Instrument Procedures, Lighting, and Markings

Runway instrument procedures are published procedures that pilots use to navigate their aircraft to the runway. Runway instrument procedures fall into two categories, precision, and non-precision approaches. The ILS is a precision approach that has several categories of approaches including Category (CAT) I, CAT II, or CAT III A, B, or C. The category of approach that can be flown is based on airport capability (lighting, markings, etc.), aircraft capability, and pilot certification. The higher the category of approach, the lower the approach minimums (runway visual range (RVR) and cloud ceilings) the aircraft can fly before having to have the runway in sight, or executing a missed approach. At LAX, each runway end has a CAT I ILS; only Runways 24R and 25L have CAT II and CAT III ILS capability. **Table 3-2** presents visibility conversions for RVR values. Below the table is a brief description of each of the categories of ILS approaches that LAX employs.

**TABLE 3-2
RUNWAY VISUAL RANGE VALUE CONVERSIONS**

RVR	Visibility in Statute Miles
1600	1/4
2400	1/2
3200	5/8
4000	3/4
4500	7/8
5000	1
6000	1 1/4

SOURCE: U.S. Department of Transportation. Federal Aviation Administration. *Federal Aviation Regulations/Aeronautical Information Manual 2014*. August 23, 2013.

The CAT I ILS is the simplest of the ILS approaches that virtually all instrument rated pilots and aircraft can perform. The basic CAT I ILS allows aircraft to descend to an altitude, usually 200 feet above runway altitude, and usually requires a visibility of 2400 RVR or 1/2 statute miles. Some CAT I ILS will have lower visibility requirements such as 1800 RVR or 3/8 of a statute mile, or could have increased visibility requirements such as 1 statute mile depending on runway approach lighting, runway length, terrain, etc.

A CAT II ILS allows aircraft to fly the instrument approach to lower minimums than the CAT I ILS. Special aircraft and pilot certifications are required prior to executing a CAT II ILS approach. Generally, CAT II ILS approach minimums allow aircraft to descend to 100 feet above airport elevation, and have a visibility requirement of 1200 RVR at most airports.

CAT III ILS' allow aircraft to fly to the lowest visibility requirements of which there is no cloud ceiling requirement. There are three categories of CAT III ILS': CAT IIIA, CAT IIIB, and CAT IIIC. The ability to perform these categories of approaches is based on pilot and aircraft

certification, as well as specific runway capability (approach lighting, runway lighting, etc). The CAT IIIA ILS approach allows aircraft to execute the approach to 700 RVR at LAX. The CAT IIIB ILS approach allows aircraft to execute the approach down to 600 RVR at LAX. Lastly, the CAT IIIC ILS approach has no visibility requirement allowing aircraft to execute the approach down to zero visibility conditions. Aircraft capable of performing this CAT III approaches are able to autoland and track the runway centerline throughout the landing and rollout via the autopilot.

Non-Precision approaches including RNAV (GPS), VOR, and non-directional beacon (NDB) have higher approach minimums than ILS approaches due to their lower level of precision. Pilots utilize RNAV (GPS) non-precision approaches to LAX's runways when weather conditions permit.

3.4.1 Runway 06L

Runway 06L has precision approach markings and is in good condition. Runway 06L is served by a CAT I ILS approach that provides approach minima of 250-foot ceilings above the runway threshold, and 1 statute mile visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 06L has High Intensity Runway Lighting (HIRL) and Centerline Lighting (CL), as well as a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). A 3.0° Precision Approach Path Indicator (PAPI) is located on the left side of the approach end of Runway 06L for aircraft navigating to the runway visually.

3.4.2 Runway 06R

Runway 06R has precision approach markings and is in good condition. Runway 06R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 3/8 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 06R has HIRL, touchdown zone lighting, and CL; as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 06R for aircraft navigating to the runway visually.

3.4.3 Runway 07L

Runway 07L has precision approach markings and is in good condition. Runway 07L is served by a CAT I ILS approach that provides approach minima of 201-foot ceilings above the runway threshold, and 3/8 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 07L has HIRL, touchdown zone lighting, and CL; as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 07L for aircraft navigating to the runway visually.

3.4.4 Runway 07R

Runway 07R has precision approach markings and is in good condition. Runway 07R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway

threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 07R has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 07R for aircraft navigating to the runway visually.

3.4.5 Runway 24L

Runway 24L has precision approach markings and is in good condition. Runway 24L is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 24L has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the right side of the approach end of Runway 24L for aircraft navigating to the runway visually.

3.4.6 Runway 24R

Runway 24R has precision approach markings and is in good condition. Runway 24R is served by a CAT IIIB ILS approach that provides approach minima down to zero visibility conditions. There is also a non-precision RNAV (GPS) instrument approach. Runway 24R has HIRL, CL, and touchdown zone lighting, as well as an Approach Lighting System with Sequenced Flashing Lights (ALSF-II). When the airfield is operating under visual flight rules (VFR) (ceilings greater than 1,000 feet and greater than 3 statute miles visibility), the approach lighting system operates as a simplified short approach lighting system with runway alignment indicator lights (SSALR). A 3.0° PAPI is located on the left side of the approach end of Runway 24R for aircraft navigating to the runway visually.

Runways 24L and 24R have a visual approach procedure called the Stadium Visual for when weather conditions permit (3,000 foot-ceilings and more than 3 statute miles visibility); aircraft follow reference landmarks and altitudes to navigate to the runway ends.

3.4.7 Runway 25R

Runway 25R has precision approach markings and is in good condition. Runway 25R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 25R has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 25R for aircraft navigating to the runway visually.

Runways 25L and 25R have a visual approach procedure called the Harbor Visual for when weather conditions permit (3,000 foot-ceilings and more than 3 statute miles visibility); aircraft follow reference landmarks and altitudes to navigate to the runway ends.

3.4.8 Runway 25L

Runway 25L has precision approach markings and is in good condition. Runway 25L is served by a CAT IIIB ILS approach that provides approach minima down to zero visibility conditions. There is also a non-precision RNAV (GPS) instrument approach. Runway 25L has HIRL, CL,

and touchdown zone lighting, as well as an ALSF-II. When the airfield is VFR, the approach lighting system operates as a SSALR. A 3.0° PAPI is located on the right side of the approach end of Runway 25L for aircraft navigating to the runway visually.

3.5 Runway Assignments and Operational Flows

The runway assigned to an arriving or departing aircraft depends primarily on the wind direction and velocity, ATC procedures, air traffic demand, gate location, as well as other local factors such as aircraft performance and size. Typically, however, aircraft depart from the inboard runways (Runway 06R-24L and 07L-25R), and land on the outboard runways (Runways 06L-24R and 07R-25L) at LAX, which is in adherence to LAWA's preferential runway use program.

There are three basic operating patterns or flows at LAX including westerly operations, easterly operations, and over-ocean operations. The primary flow is westerly operations due to the onshore ocean breezes that flow from west to east (aircraft depart and land into the wind) as well as the preferential runway use program that specifies a preference for westerly departures over the Pacific Ocean for noise abatement purposes.

Westerly Operations

During Westerly Operations aircraft utilize Runways 24L, 24R, 25L, and 25R. Westerly operations are the normal traffic pattern at LAX between 6:30 a.m. and midnight. Aircraft approach and depart the Airport to the west due to prevailing westerly winds off of the Pacific Ocean. Departing aircraft primarily depart from the two inner runways and are routed over the Pacific Ocean, while arriving aircraft land to the west over several communities, primarily on the two outboard runways. This is the preferred runway use pattern during the daytime for noise abatement purposes. For nighttime operations (operations occurring between 10:00 p.m. and 7:00 a.m.), the preferential runway use program specifies that the use of inboard runways is to be maximized for both arrivals and departures.

Easterly Operations

During Easterly Operations aircraft utilize Runways 06L, 06R, 07L, and 07R. Easterly operations are implemented when wind conditions (generally during rainstorms and Santa Ana winds) require reversing the normal traffic flow of the Airport, so that aircraft arrive from the west and depart to the east. Departing aircraft are routed to the east and overfly communities to the north, east and south, while arriving aircraft approach from the west over the Pacific Ocean. Again, the inboard runways are primarily used for aircraft departures, while the two outboard runways are primarily used for arrivals.

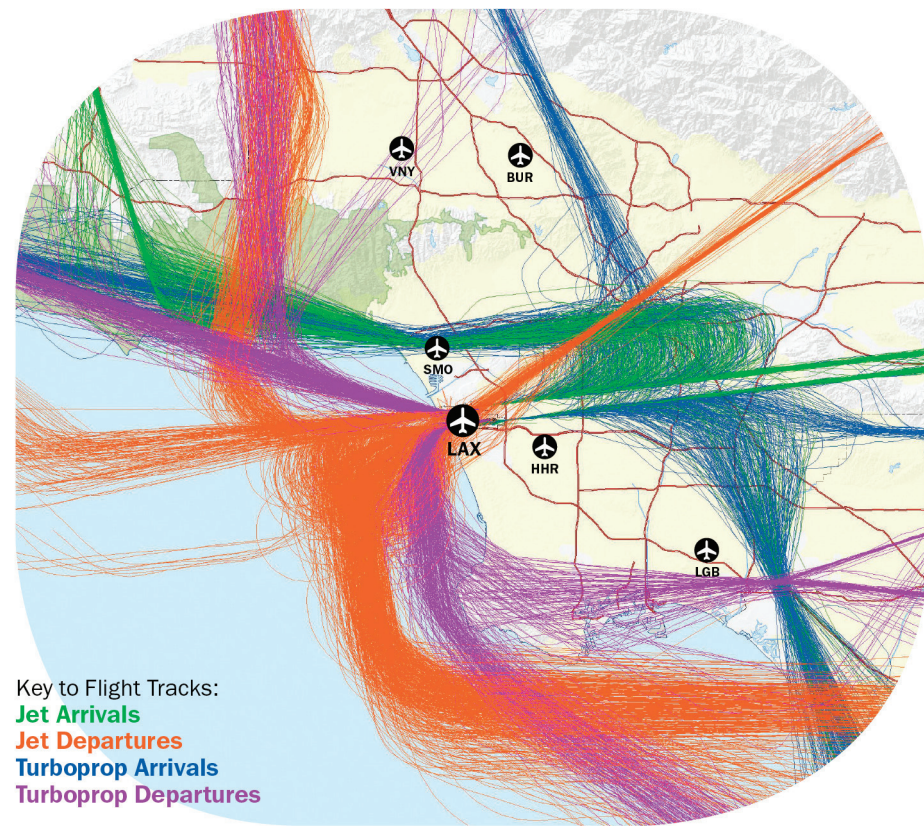
Over-Ocean Operations

During the more noise-sensitive time periods, usually between midnight and 6:30 a.m., LAX is normally operated in accordance with the Over-Ocean Operations. In this flow, departures and arrivals primarily utilize the inboard runways at LAX. Aircraft continue to depart to the west over

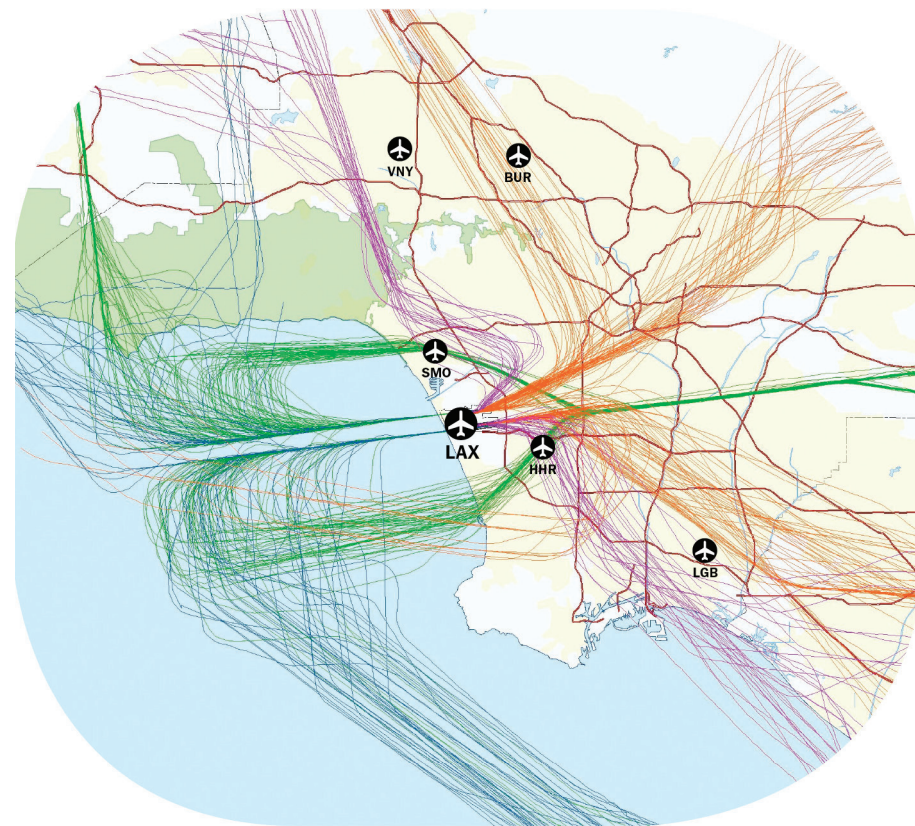
the Pacific Ocean as in westerly operations, but arrivals also arrive from the west over the Pacific Ocean. This reduces the potential for noise impacts to communities located to the east of the Airport during the most noise-sensitive time periods.

The three operational flows at LAX are shown on **Exhibit 3-4**.

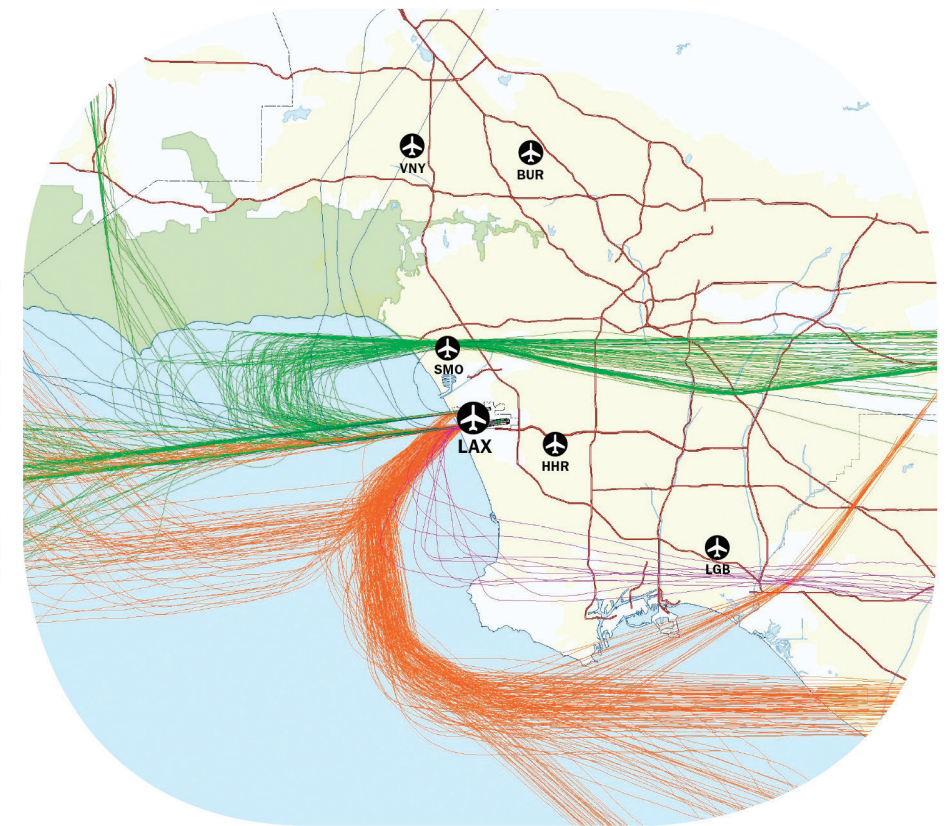
WESTERLY OPERATIONS



EASTERLY OPERATIONS



OVER-OCEAN OPERATIONS



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3.6 Airspace

The FAA has six classifications of airspace under the National Airspace System (NAS). These classifications, which are designated Class A, B, C, D, E, and G and shown on **Exhibit 3-5**, are critical to the safety of all flights and to the efficient operation of all air traffic control facilities. Based on the level of activity and type of operations, airports receive a classification of B, C, D, E, or uncontrolled airspace.

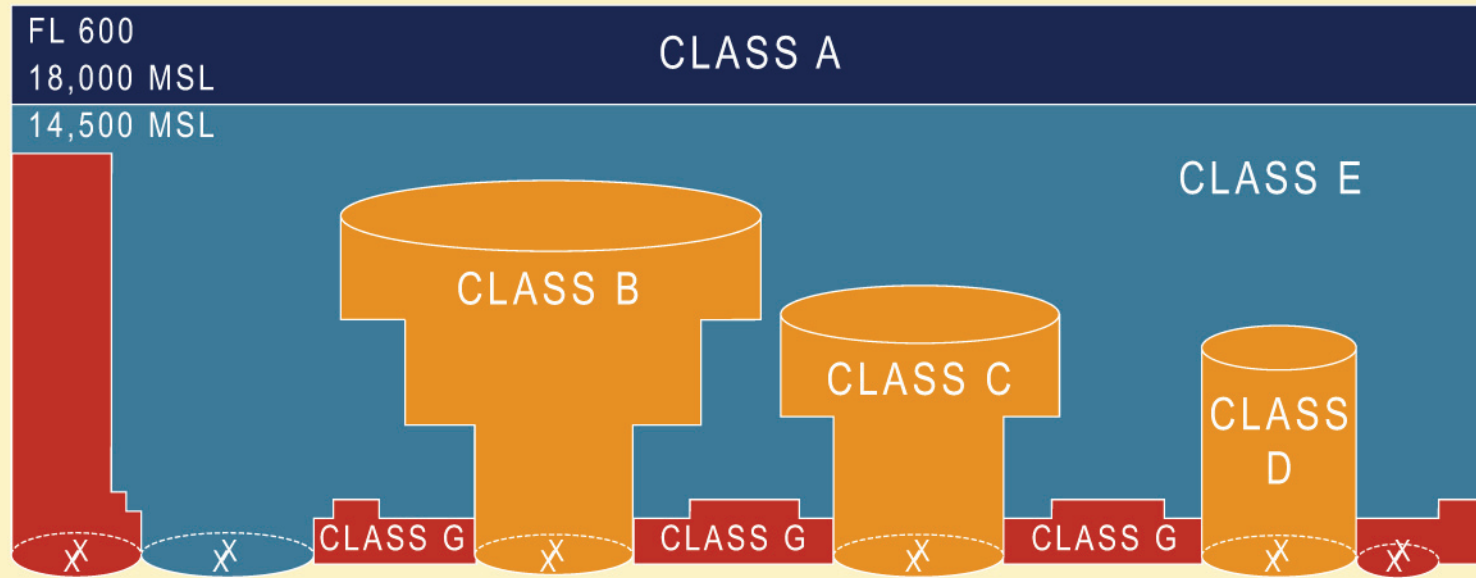
The following paragraphs describe each airspace classification in greater detail, as well as the applicability of each classification to airspace in the vicinity of LAX. Additional information is provided in **Appendix H. Exhibit 3-6** depicts the airspace in the vicinity of LAX.

Class A airspace is designated for positive control of aircraft and ranges from 18,000 feet above mean sea level (MSL) to 60,000 feet MSL. Within Class A airspace, only aircraft operating under instrument flight rules (IFR) that are on instrument flight plans are authorized. The aircraft must have specific equipment and ATC clearance before entering the airspace.

Class B airspace is generally defined as that airspace from the surface up to 10,000 feet above MSL. This airspace usually surrounds the nation's busiest airports, and is individually tailored consisting of a surface area and two or more layers. The airspace immediately surrounding Los Angeles International Airport is classified as Class B airspace as designated by solid blue lines shown on Exhibit 3-6. As shown on Exhibit 3-6, the layers are identified with blue numbers representing the base altitude of the airspace such as the surface (SFC) or 5,000 feet (50) which is shown as the bottom of the airspace. The upper limit of the airspace for LAX is 10,000 feet MSL designated by (100) as the upper number. Class B airspace can sometimes be described as an "upside down wedding cake" designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the airspace, and all aircraft that are so cleared receive separation services from other aircraft within the airspace.

Aircraft operating under VFR or IFR are permitted into Class B airspace; however, the aircraft must be equipped with a two-way radio capable of communicating with ATC on appropriate frequencies, and an operable radar beacon transponder with automatic altitude reporting equipment. For IFR operations, the aircraft must have an operable VOR or TACAN receiver. The pilot must hold at least a private pilots certificate. Further surrounding the Class B airport is a 30 nm mode C veil designated by a thin, solid magenta line that circles the Class B airspace and extends from the surface upward to 10,000 feet MSL. Unless otherwise authorized, an aircraft operating within the mode C veil must be equipped with automatic pressure altitude reporting equipment having Mode C radar capability so that the SOCAL TRACON can see all aircraft operating close to the Class B airspace and provide adequate aircraft separation minimums. As shown on Exhibit 3-6, the airspace in the Los Angeles region is highly complex with many airports, both commercial service and general aviation, surrounding LAX. These airports and airspaces that lie beneath, abeam, or above the LAX Class B airspace include Class C, D, and E airspace.

U.S. AIRSPACE CLASSES AT A GLANCE



AGL – Above Ground Level
 FL – Flight Level
 MSL – Mean Sea Level

Effective September 16, 1993



U.S. Department of
 Transportation
 Federal Aviation
 Administration



SOURCE: Federal Aviation Administration, 2013
 Note: Not for Navigational Use

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02
Exhibit 3-6
 Los Angeles International Airport Airspace

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Class C airspace is the airspace from the surface up to 4,000 feet above the airport elevation charted in MSL surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Class C airspace is represented by solid magenta lines, examples of which include John Wayne Orange County (SNA), LA/Ontario International (ONT), and Bob Hope (BUR) airports as shown on Exhibit 3-6. Like Class B airspace, Class C airspace is individually tailored to meet the needs of the respective airport. The airspace usually consists of a surface area with a 5 nm radius from the surface up to 4,000 feet above airport elevation, and a 10 nm radius that extends from 1,200 feet to 4,000 above airport elevation. An example of the extent of Class C airspace is ONT where magenta numbers represent the altitudes of the airspace. The extent of ONT's 5 nm radius is shown from the SFC to 5,000 feet MSL (50). Pilots must establish two-way radio communications with the ATC facility providing air traffic control services prior to entering the airspace. VFR aircraft are separated from IFR aircraft in Class C airspace.

Class D airspace is generally that airspace from the surface to 2,500 feet AGL. The configuration of Class D airspace are individually tailored and shown as a dashed blue line with an altitude representing the extent of the airspace from the surface. When instrument procedures are published, the airspace will normally be designed to contain the procedures with either Class D or E airspace. Class D airspace only surround airports that have an operational control tower of which pilots are required to establish and maintain two-way radio communication with the ATC facility. Examples of Class D airspace throughout the Los Angeles area include Long Beach/Daugherty (LGB), Santa Monica (SMO), Zamperini (TOA), and Northrop/Hawthorne (HHR) airports. For example, LGB's airspace is shown as a dashed blue circle and extends from the surface up to 2,600 feet AGL.

Class E airspace is generally controlled airspace that is not Class A, B, C, or D. Class E airspace extends upward from either the surface or designated altitude to the overlying or adjacent controlled airspace. Also in this class are Victor airways (airspace beginning at either 700 feet or 1,200 feet AGL used to transition to/from the terminal or en route environments) and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 feet MSL over the United States, including that airspace overlying the water within 12 nm off the coast of the 48 contiguous states and Alaska. It does not include airspace at or above 18,000 feet MSL. Class E airspace ensures that IFR aircraft remain in controlled airspace when approaching airports without Class D airspace or when flying on Victor airways that are below 18,000 feet MSL.

Most of the country has a Class E airspace limit of 1,200 feet AGL. Where it decreases to 700 feet AGL is depicted on Exhibit 3-6 by a shaded magenta line. The floor of Class E airspace near LAX is 700 feet AGL as depicted along the southern edge of the San Gabriel Mountains north of the City of Los Angeles, and along the Pacific coast line. The more defined side of the magenta line indicates areas where the floor of Class E airspace rises to 1,200 feet AGL. When Class E extends down to the surface, it is depicted by a dashed magenta line usually off-shooting a Class D airport such as HHR.

When the lower level of Class E airspace is not depicted, the airspace is considered uncontrolled or **Class G airspace**. Class G airspace begins at ground level and, in very remote areas, it has an upper limit of up to but not including 14,500 feet MSL. The top of Class G airspace is usually where Class E airspace begins, usually either 700 foot AGL depicted by magenta shading, or 1,200 foot AGL areas depicted by blue shading. Class G airspace begins at the surface throughout much of the area surrounding the Class B, C, D, and E airspaces throughout the Los Angeles area. Uncontrolled airports located in Class G airspace are depicted in magenta since they do not have a control tower. An example airport in the Los Angeles area located in Class G airspace would be the Compton Woodley Airport (CPM) on Exhibit 3-6. While VFR aircraft can operate in Class G airspace, IFR aircraft are not permitted.

Special Use airspace consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed on aircraft operations that are not a part of those activities, or both. There are currently no special use airspaces in the immediate vicinity of LAX.

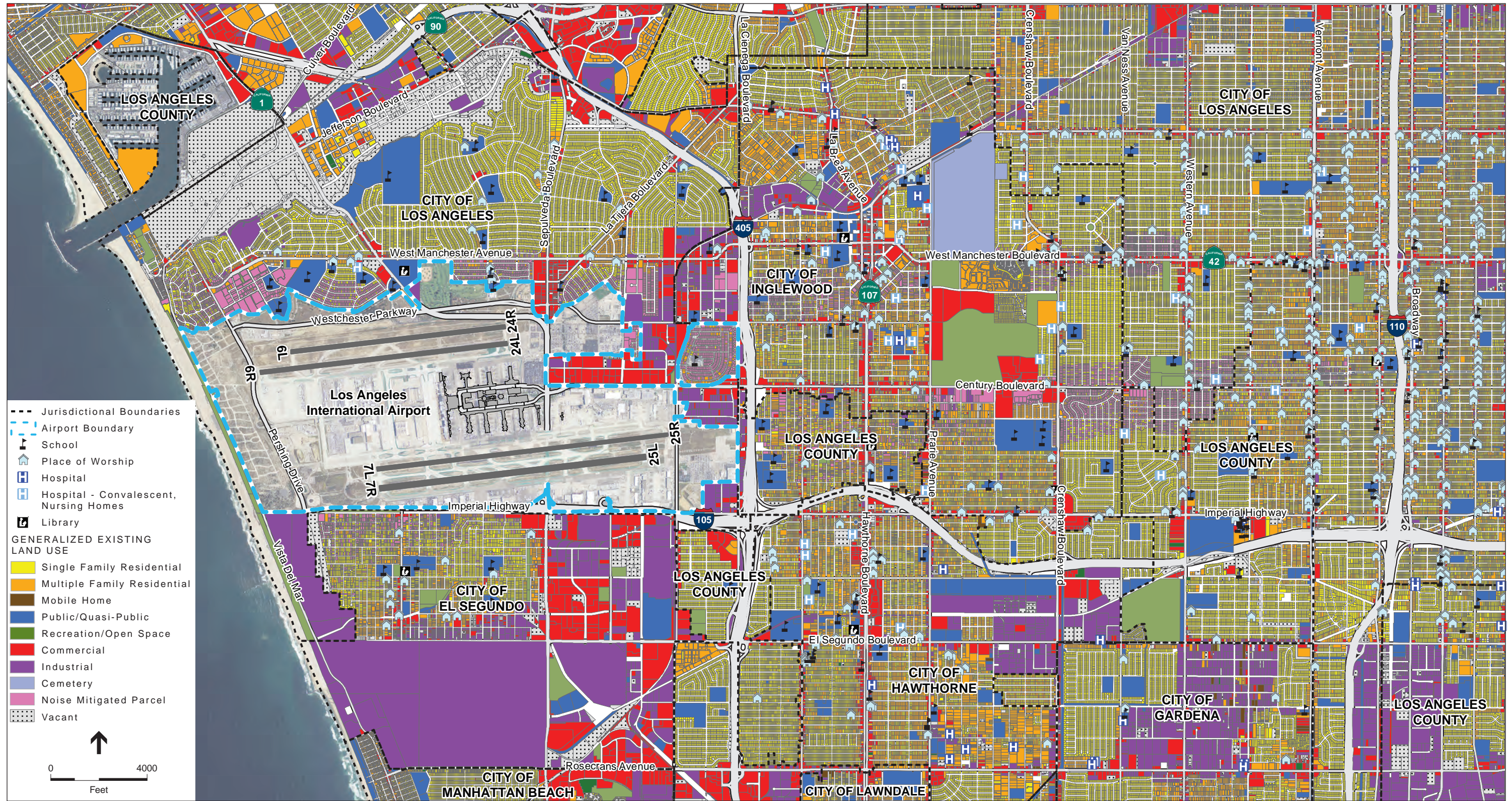
3.7 Generalized Existing Land Uses in the Airport Environs

The Airport is located within the city limits of the City of Los Angeles and is bound by the communities of Playa Del Rey and Westchester (City of Los Angeles) to the north, the city of Inglewood and the community of Lennox (unincorporated Los Angeles County) to the east, the city of Hawthorne and the community of Del Aire (unincorporated Los Angeles County) to the southeast, the City of El Segundo to the south, and the Pacific Ocean to the west. **Exhibit 3-7** presents generalized existing land uses in the vicinity of LAX.

Portions of unincorporated Los Angeles County located closest to LAX include the communities of Lennox, Del Aire, and West Athens-Westmont. The community of Del Aire is broken into two distinct areas; a northern portion located to north of El Segundo Boulevard and west of Interstate 405 and a southern area located south of El Segundo Boulevard and east of Interstate 405. Del Aire consists primarily of residential uses, with a mix of office, commercial, and public (i.e., schools and a park) uses located along major roadways. West Athens-Westmont consists mostly of residential uses, with a variety of public, commercial, and office uses also included within its planning area.

LAX is located within the borders of the City of Los Angeles, and is located in close proximity to the following City of Los Angeles planning areas: South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey. The communities of South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey can all be characterized as consisting predominately of residential land uses.

Existing land uses closest to LAX and within the City of Inglewood include office uses west of Interstate 405 and north of W. Arbor Vitae Street. East of Interstate 405, existing land uses within the City of Inglewood consist largely of residential uses, with commercial, industrial, and public uses making up the balance of existing uses within the City.



SOURCE: ESRI World Imagery - Aerial; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012; Los Angeles World Airports, 2014; ESA Airports, 2014

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit 3-7
Generalized Existing Land Uses in the Vicinity of
Los Angeles International Airport

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The City of El Segundo is characterized by existing residential uses in the northwestern portions of its planning area. The northeastern and eastern portions of El Segundo are made up predominately of office and commercial uses, and the central and southern portions of the City are made up of residential, industrial, and manufacturing uses. Existing land uses closest to LAX in the northwestern portions of the City of Hawthorne's planning area predominately consist of residential uses. Existing uses towards the central portions of Hawthorne are also predominately residential, with commercial uses clustered along major streets and transportation corridors. Towards the eastern side of the City, uses are predominately commercial and light industrial. Hawthorne Municipal Airport is also located in the northeastern portion of the City.

3.8 Generalized Planned Land Uses in the Airport Environs

Land use plans adopted by the County of Los Angeles, and the cities of Los Angeles, Inglewood, Hawthorne, and El Segundo are summarized in **Appendix B**. Generally, the planned land use pattern for the region surrounding LAX represents a continuation of the existing land use pattern.

3.9 Land Use Control Regulations

Zoning is the traditional mechanism used by local governments to control land use and implement the goals and policies of their general plans. Zoning controls the location, type, and intensity of new land uses, and is an important tool for preventing incompatible land uses from locating around airports. The legal basis for zoning powers is to protect the health, safety, and welfare of the public. Since the establishment of zoning powers in the early 1900s, the courts have been consistent in confirming broad discretion to local governments in exercising their zoning powers, provided that zoning designations are based on sound land use policy and plans. Zoning regulations adopted by jurisdictions in the vicinity of LAX are also summarized in **Appendix B**.

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CHAPTER 4

Aircraft Noise Analysis

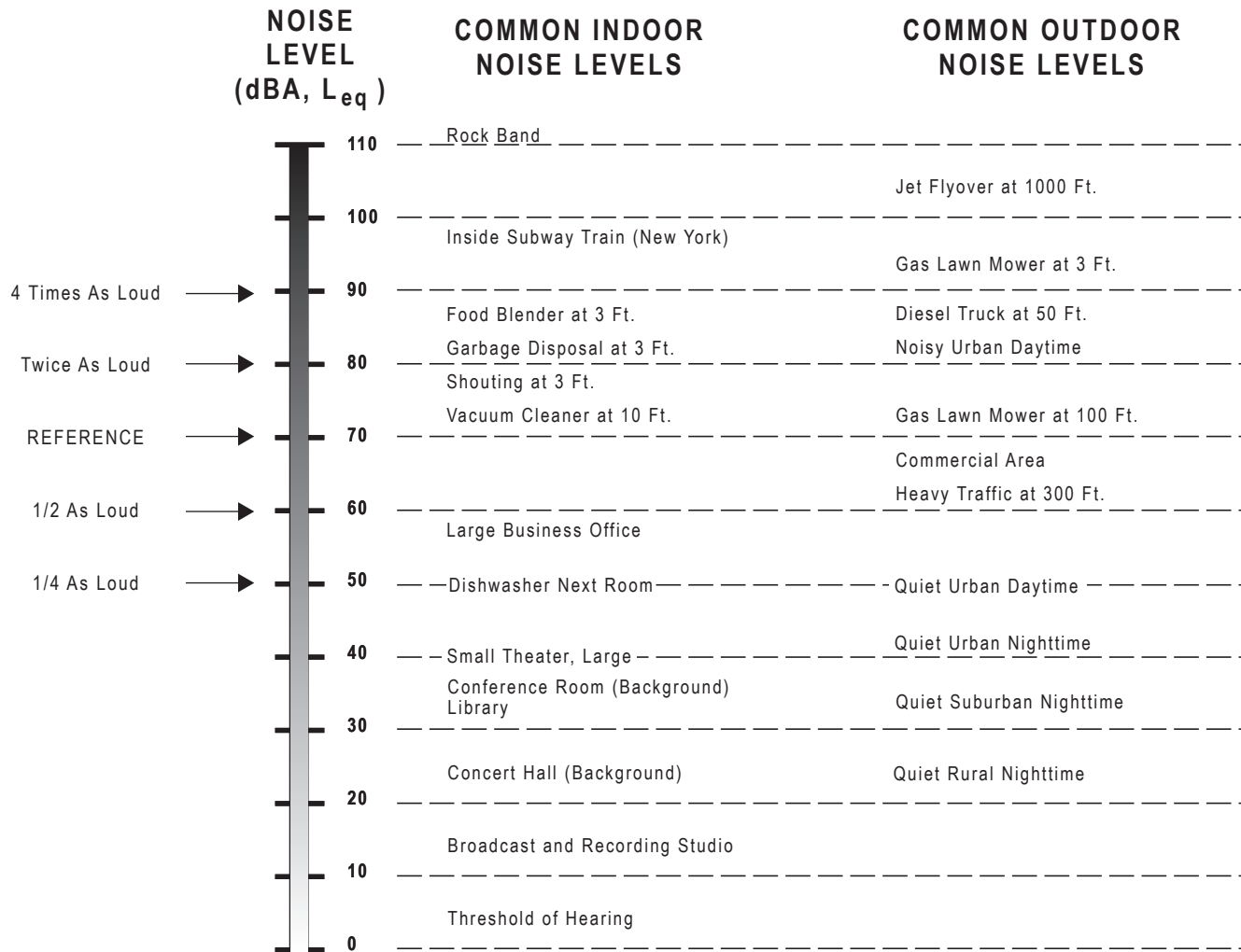
4.1 Environmental Noise Fundamentals

The measurement and human perception of sound involve two basic physical characteristics: intensity and frequency. Intensity is a measure of the acoustic energy of sound vibrations, expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency weighting and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on **Exhibit 4-1**.



4.2 General Characteristics of Aircraft Noise

Outdoor sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogenous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound power of the wave. Spherical spreading of the sound wave reduces the noise level, for most sound sources, at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the sound frequency, of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher sound levels that would result from spherical spreading as a result of channeling or focusing the sound waves.

Absorption effects in the atmosphere vary with frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated.

The effects of ground attenuation on aircraft noise propagation are a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of the noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces, such as vegetation, provide for more ground absorption than hard surfaces such as a large parking lot.

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are, by far, the more significant source of noise. Meteorological conditions affect the transmission of aircraft noise through the air. Wind speed and direction, and the temperature immediately above ground level, cause diffraction and displacement of sound waves. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air.

4.3 Noise Analysis Methodology

The methodology used for this aircraft noise analysis involved the: (a) use of noise descriptors developed for aircraft noise analyses, (b) development of basic data and assumptions as input to a computer model, and (c) application of a computer model that provides estimates of aircraft noise levels.

For this aircraft noise analysis, the patterns of aircraft-related noise are described using noise contours prepared with the FAA's Integrated Noise Model (INM), Version 7.0d. INM Version

7.0d was used to complete this NEM document prior to the FAA’s public release of the Aviation Environmental Design Tool (AEDT) on May 29, 2015. At the time of the LAX NEM analyses, INM 7.0d was the most current FAA-approved, industry-accepted model for determining the total effect of aircraft noise exposure at and around airports. The AEDT model has replaced the INM for modeling of aircraft related noise and emissions.

4.4 Aircraft Noise Descriptors

Noise levels are measured using a variety of scientific metrics. As a result of extensive research into the characteristics of aircraft noise and human response to that noise, standard noise descriptors have been developed for aircraft noise exposure analyses. The descriptors used in this noise analysis are described below.

4.4.1 A-Weighted Sound Pressure Level (dBA)

The decibel (dB) is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sounds on the dBA scale are listed in **Table 4-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10 dBA change in the sound level corresponds to a factor of 10 change in relative sound energy. Generally, sounds with differences of 2 dBA or less are not perceived to be noticeably different by most listeners.

**TABLE 4-1
COMMON SOUNDS ON THE A-WEIGHTED DECIBEL SCALE**

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

SOURCE: U.S. Department of Housing and Urban Development, Aircraft Noise Impact—Planning Guidelines for Local Agencies, 1972.

4.4.2 Maximum A-Weighted Sound Level (L_{max})

L_{max} is the maximum or peak sound level during a noise event. The metric only accounts for the instantaneous peak intensity of the sound, and not for the duration of the event. As an aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Some sound level meters measure and record the maximum or L_{max} level. The L_{max} for an aircraft flyover is illustrated on **Exhibit 4-2**.

4.4.3 Sound Exposure Level (SEL)

SEL, expressed in dBA, is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. Because of this compression of sound energy, the SEL of an aircraft noise event is typically 7 to 12 dBA greater than the L_{max} of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft. The SEL for an aircraft flyover is also illustrated on Exhibit 4-2.

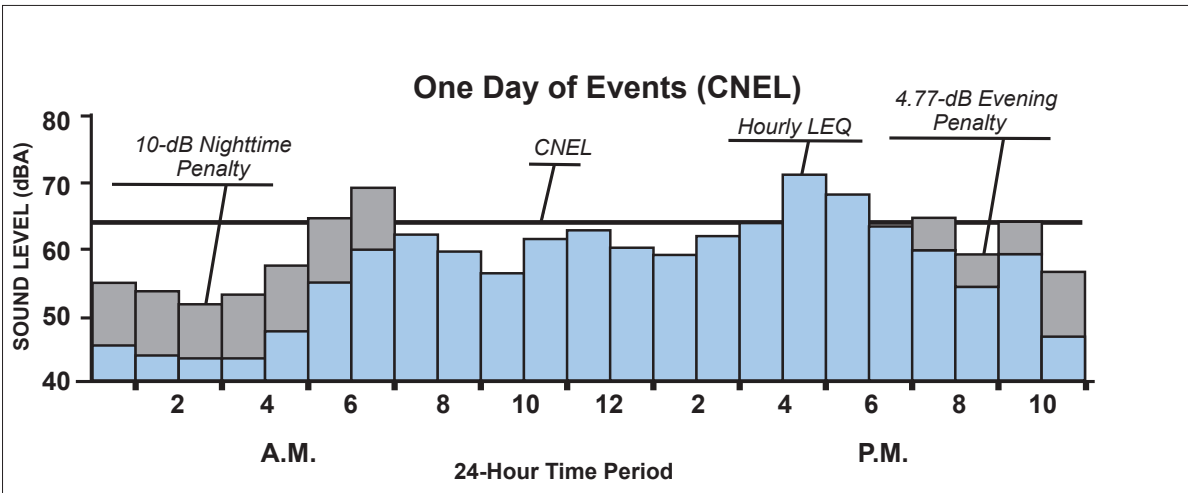
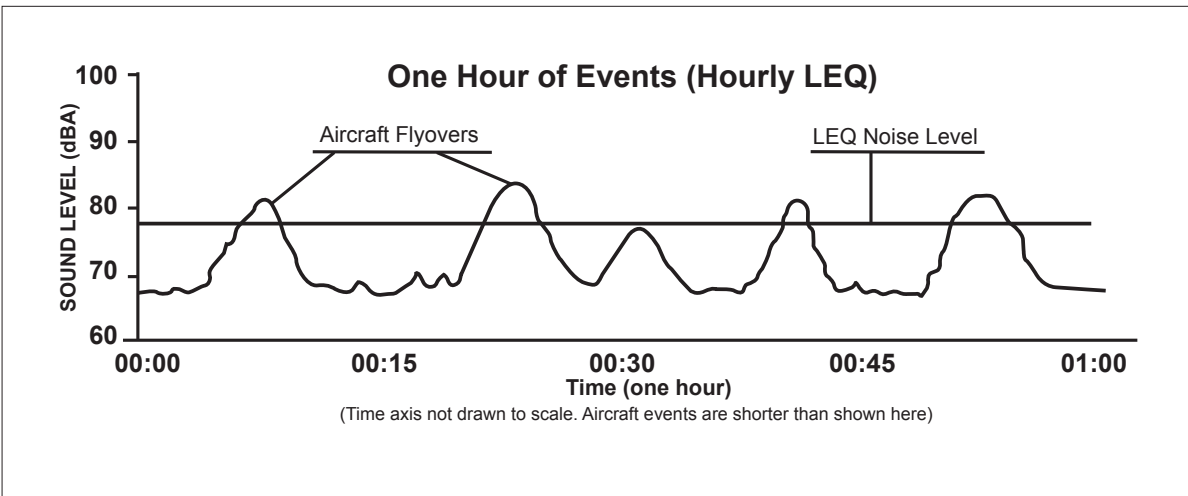
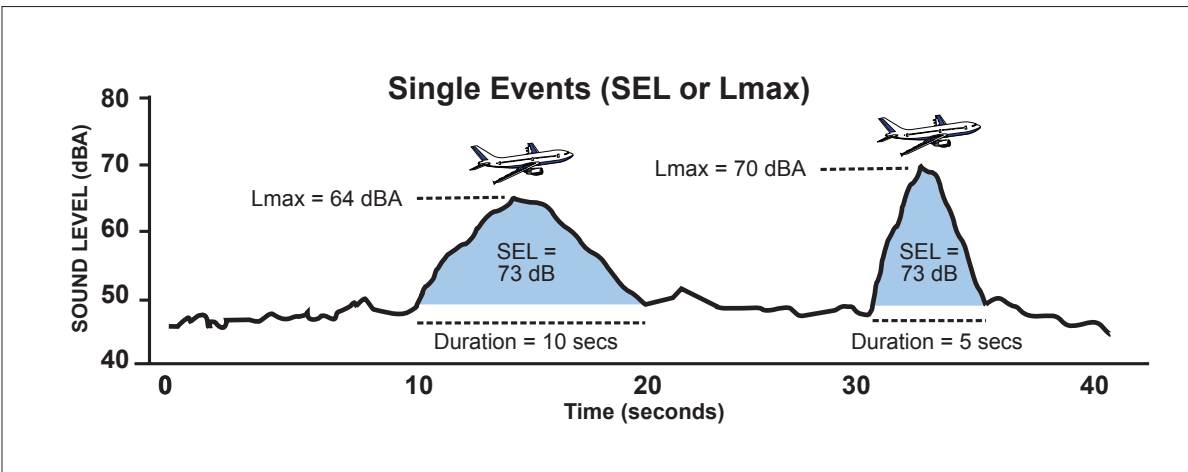
4.4.4 Equivalent Noise Level (LEQ)

LEQ is the sound level corresponding to a steady state, A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the “energy” average noise level during the time period of the sample. It is based on the observation that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. It is the energy sum of all the sound that occurs during that time period. This is graphically illustrated in the middle graph on Exhibit 4-2. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours.

4.4.5 Day-Night Average Sound Level (DNL)

DNL, formerly referred to as L_{dn}, is expressed in dBA and represents the average noise level over a 24-hour period. DNL includes the cumulative effects of a number of sound events rather than a single event. It also accounts for increased sensitivity to noise during relaxation and sleeping hours. In the calculation of DNL, for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.), the sound levels are increased by a 10 decibel-weighting penalty (equivalent to a 10 fold increase in aircraft operations) before the 24-hour value is computed. The weighting penalty accounts for the more intrusive nature of noise during the nighttime hours.

DNL is expressed as an average noise level on the basis of annual aircraft operations for a calendar year. To calculate the DNL at a specific location, the SELs at that location associated with each individual aircraft operation (landing or takeoff) are determined. Using the SEL for



Notes: SEL = Sound Exposure Level
 LEQ = Equivalent Noise Level
 CNEL = Community Noise Equivalent Level

each noise event and applying the 10-dB penalty for nighttime operations as appropriate, a partial DNL is then calculated for each aircraft operation. The partial DNLs for each aircraft operation are added logarithmically to determine the total DNL.

DNL is used to describe existing and predicted noise exposure in communities in airport environs based on the average daily operations over the year and the average annual operational conditions at the airport. Therefore, at a specific location near an airport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at the airport on that day.

The U.S. Environmental Protection Agency (EPA) introduced the DNL metric in 1976 as a single number measurement of community noise exposure. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for aircraft noise exposure analyses and land use compatibility planning under 14 CFR Part 150 and for federal environmental reviews of airport improvement projects (FAA Order 10501.F).

4.4.6 Community Noise Equivalent Level (CNEL)

The cumulative noise descriptor required for aircraft noise analyses in the State of California is the Community Noise Equivalent Level (CNEL). CNEL is used to describe cumulative noise exposure for an annual-average day of aircraft operations. The CNEL is calculated by mathematically combining the number of single events that occur during a 24-hour day with how loud the events were and what time of day they occurred.

As shown on Exhibit 4-2, CNEL includes additional sound weightings, or penalties, applied to noise events occurring after 7:00 p.m. and before 7:00 a.m., when noise is considered more intrusive. The penalized time period is further subdivided into evening (7:00 p.m. through 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.). CNEL treats every evening operation as though it were three operations and every night operation as though it were ten operations. This “weighting” adds a 4.77 dB penalty during the evening hours and a 10 dB penalty during the nighttime hours.

The CNEL metric used for this aircraft noise analysis is based on an average annual day of aircraft operations, generally derived from data for a calendar year. An annual-average day (AAD) activity profile is computed by adding all aircraft operations occurring during the course of a year and dividing the result by 365. As such, the AAD does not reflect activities on any one specific day, but represents average conditions as they occur during the course of the year. The evening weighting is the only difference between CNEL and DNL. For purposes of aircraft noise analysis in the State of California, the FAA recognizes the use of CNEL¹, and the metric is used to assess potentially significant impacts.

¹ Paragraph B-1 of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and Paragraph 9(n) of FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

4.5 Integrated Noise Model

INM Version 7.0d was used to complete this NEM document prior to the FAA's public release of the Aviation Environmental Design Tool (AEDT) on May 29, 2015. At the time of the LAX NEM analyses, INM 7.0d was the most current FAA-approved, industry-accepted model for determining the total effect of aircraft noise exposure at and around airports. The AEDT model has replaced the INM for modeling of aircraft related noise and emissions.

The INM 7.0d aircraft database contains representative data for commercial, general aviation, and military aircraft powered by turbojet, turbofan, or propeller-driven engines. For each aircraft in the database, the following information is provided: (1) a set of departure profiles for each applicable trip length, (2) a set of approach parameters, and (3) SEL versus distance curves for several thrust settings. The INM uses runway and flight track information, operation levels distributed by time of day, aircraft fleet mix, and aircraft profiles as inputs. This information is needed to develop noise exposure contours. The INM calculates noise exposure levels at a series of "noise grids", and produces noise exposure contours based on the grid results, for a variety of noise metrics including CNEL, DNL, Lmax, Leq, and SEL. For the purposes of 14 CFR Part 150 NEMs, the FAA requires the use of DNL or CNEL.

4.5.1 CNEL and Noise Exposure Ranges

Noise exposure values of CNEL 75, 70, and 65 were used as the criterion levels for the noise analysis. Three specific ranges of noise exposure were modeled: (1) CNEL 75 dB and higher, (2) CNEL 70 dB to 75 dB, and (3) CNEL 65 dB to 70 dB.

Although the FAA considers aircraft noise exposure lower than CNEL/DNL 65 dB to be compatible with residential land uses, persons residing outside the area exposed to CNEL/DNL 65 dB and higher may still be annoyed by aircraft noise. The frequently cited "Schultz Curve"² shows that, at an aircraft noise exposure of DNL 65 dB, approximately 15 percent of the population would be expected to be "highly annoyed". At DNL 60 dB, approximately nine percent of the population would be expected to be highly annoyed by aircraft noise. At DNL 55 dB, approximately five percent of the population would be expected to be highly annoyed by aircraft noise.

4.5.2 The CNEL Descriptor

The validity and accuracy of CNEL calculations depend on the basic information used in the calculations. For future airport activities, the reliability of CNEL calculations is affected by a number of variables:

- Future aviation activity levels—the forecast number of aircraft operations, the types of aircraft serving the airport, the times of operations (daytime and nighttime), and aircraft flight tracks—are estimates. The activity forecasts were developed using the best available

² Schultz, T.J. "Synthesis of Social Surveys on Noise Annoyance." *Journal of the Acoustical Society of America*. V. 64 (2). 1978.

information at the time they were prepared and achievement of the estimated levels of activity may not occur.

- Acoustical and performance characteristics of future aircraft types are also estimates. When new aircraft designs are introduced, aircraft noise data and flight characteristics may vary from current model aircraft. The INM uses existing aircraft data to represent future aircraft types.
- The noise descriptors used as the basis for calculating CNEL represent typical human response (and reaction) to aircraft noise. Because people vary in their responses to noise and because the physical measure of noise accounts for only a portion of an individual's reaction to that noise, CNEL can only be used to obtain an average response to aircraft noise that might be expected from a community.
- Single flight tracks used in computer modeling represent a wider band of actual flight tracks.

These uncertainties aside, CNEL mapping was developed as a tool to assist in land use planning around airports in California. The mapping is best used for comparative purposes rather than for providing absolute values. CNEL calculations provide valid comparisons between different projected conditions, as long as consistent assumptions and basic data are used for all calculations.

Thus, sets of CNEL calculations can show anticipated changes in aircraft noise exposure over time, or can indicate which of a series of simulated situations is better, and generally how much better, from the standpoint of noise exposure. However, a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. CNEL calculations are merely a means for comparing noise effects, not for precisely defining them relative to specific parcels of land. Nevertheless, CNEL contours can be used to: (1) highlight an existing or potential aircraft noise problem that requires attention, (2) assist in the preparation of noise compatibility programs, and (3) provide guidance in developing land use controls, such as zoning ordinances, subdivision regulations, and building codes. CNEL is still considered to be the best methodology available for depicting aircraft noise exposure in California.

4.5.3 Graphic Representation of Aircraft Noise Exposure

Contours are lines on a map that connect points of equal CNELs, much like topographic contour lines are drawn on maps to indicate ground elevation. For example, a contour may be drawn to connect all points of CNEL 70 dB; another may be drawn to connect all points of CNEL 65 dB; and so forth. Generally, noise contours are plotted at 5-dB intervals. Noise contours were developed for the Airport in conformance with FAA guidelines included in 14 CFR Part 150.

For this analysis, the INM was used to produce contours to delineate areas exposed to CNEL 65, 70, and 75 dB. These contours were used in conjunction with U.S. Census data and land use data provided by LAWA to estimate the numbers of dwelling units, residents, and noise-sensitive facilities located within the areas exposed to aircraft noise (1) of CNEL 75 dB and higher, (2) between CNEL 70 and 75 dB, (3) between CNEL 65 and 70 dB, and (4) CNEL 65 dB and higher.

4.6 Basic Data and Assumptions for Developing Noise Exposure Maps

The primary data required to develop noise exposure maps using INM 7.0d are:

- The existing and forecast number of aircraft operations by time of day, aircraft type, and stage length (nonstop departure trip length from the airport).
- Operational information, including runway use, location and use of flight tracks (the paths that pilots fly to arrive at and depart from the airport), departure profiles, and existing noise abatement procedures.

4.6.1 Aircraft Operations

To determine existing and projected aircraft noise exposure using the INM, aircraft operations associated with the average day of the year are used as input to the model. **Table 4-2** presents annual average day operations counts by INM aircraft type under existing (2015) conditions. **Table 4-3** presents annual average day operations counts by INM aircraft type for future (2020) conditions. **Tables D-1 and D-2** in **Appendix D** present AAD aircraft operations by INM aircraft type, type of operation, time of day, and departure stage length for existing and future conditions, respectively.

The annual and AAD aircraft operations data for the existing conditions are based on calendar year 2013 information collected by the FAA ATCT at LAX and operations flight information from LAX's ANOMS. The annual and AAD aircraft operations forecasts for 2020 are based on information contained in the FAA's 2014 TAF for LAX. The process used to calculate AAD operations is described on page 4-7. **Appendix E** contains a forecast technical memorandum and a letter from the FAA approving the use of the 2014 TAF in the 14 CFR Part 150 NEM Update.

Aircraft Fleet Mix

The INM aircraft types listed in Tables 4-2 and 4-3 have noise characteristics representative of a large variety of aircraft types that operate, or are anticipated to operate, at the Airport. In certain circumstances, it is appropriate to combine aircraft with similar engine types, numbers of engines, weights, performance characteristics, and (most importantly) noise exposure characteristics for the purposes of noise modeling. Examples of such circumstances include:

- A particular aircraft type that may not be included in the INM database may be modeled using a similar aircraft type that is included in the database.
- Only a small number of operations by a particular aircraft type may occur at an airport while a large number of operations by a similar aircraft type occur at the airport. The small number of operations of the first type could be combined with the operations of the more predominant aircraft type without resulting in a measurable effect on the noise analysis.
- The FAA has provided some aircraft types that are representative of a wide variety of specific aircraft types and can be used to represent the wide variety of aircraft types. The best examples of this are corporate and general aviation aircraft that can be modeled using a series of aircraft types that are representative of the overall fleet. For example, the INM aircraft type "GASEPV" is representative of a wide variety of single-engine propeller aircraft.

**TABLE 4-2
ANNUAL AVERAGE DAY OPERATIONS BY INM AIRCRAFT TYPE – 2015
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Aircraft Category	Arrivals	Departures	Total
1900D	Non-Jet Aircraft	8.62	8.62	17.24
727EM2	Large Narrow-Body Aircraft	0.22	0.22	0.43
737300	Small Narrow-Body Aircraft	25.34	25.34	50.67
737400	Small Narrow-Body Aircraft	7.11	7.11	14.23
737500	Small Narrow-Body Aircraft	0.07	0.07	0.14
737700	Small Narrow-Body Aircraft	84.74	84.74	169.48
737800	Small Narrow-Body Aircraft	122.50	122.50	245.00
747200	Large Wide-Body Aircraft	0.77	0.77	1.53
747400	Large Wide-Body Aircraft	19.50	19.50	39.01
7478	New Large Aircraft	3.53	3.53	7.05
757300	Large Narrow-Body Aircraft	14.27	14.27	28.55
757PW	Large Narrow-Body Aircraft	52.17	52.17	104.34
757RR	Large Narrow-Body Aircraft	22.14	22.14	44.28
767300	Small Wide-Body Aircraft	23.06	23.06	46.13
767400	Small Wide-Body Aircraft	0.22	0.22	0.44
767CF6	Small Wide-Body Aircraft	10.18	10.18	20.37
777200	Large Wide-Body Aircraft	12.51	12.51	25.02
777300	Large Wide-Body Aircraft	0.02	0.02	0.03
7773ER	Large Wide-Body Aircraft	23.26	23.26	46.52
7878R	Large Narrow-Body Aircraft	1.61	1.61	3.22
A300-622R	Small Wide-Body Aircraft	2.47	2.47	4.93
A300B4-203	Small Wide-Body Aircraft	1.56	1.55	3.11
A310-304	Small Wide-Body Aircraft	0.06	0.06	0.12
A319-131	Small Narrow-Body Aircraft	36.26	36.26	72.53
A320-211	Small Narrow-Body Aircraft	42.00	42.00	83.99
A320-232	Small Narrow-Body Aircraft	31.60	31.60	63.20
A321-232	Small Narrow-Body Aircraft	15.12	15.12	30.24
A330-301	Large Wide-Body Aircraft	1.35	1.34	2.69
A330-343	Large Wide-Body Aircraft	3.54	3.54	7.08
A340-211	Large Wide-Body Aircraft	3.67	3.67	7.34
A340-642	Large Wide-Body Aircraft	3.55	3.55	7.09
A380-841	New Large Aircraft	4.17	4.17	8.33
A380-861	New Large Aircraft	2.29	2.29	4.58
BEC58P	Non-Jet Aircraft	0.27	0.27	0.53
C17	Non-Jet Aircraft	0.03	0.03	0.07
C5A	Non-Jet Aircraft	0.01	0.01	0.03
CIT3	Small Jet Aircraft	0.13	0.13	0.26
CL600	Small Jet Aircraft	3.82	3.82	7.63
CL601	Small Jet Aircraft	66.84	66.84	133.69
CNA172	Non-Jet Aircraft	0.04	0.04	0.08
CNA182	Non-Jet Aircraft	0.01	0.01	0.02
CNA206	Non-Jet Aircraft	0.03	0.03	0.07
CNA208	Non-Jet Aircraft	0.53	0.53	1.06
CNA20T	Non-Jet Aircraft	0.01	0.01	0.02
CNA441	Non-Jet Aircraft	0.88	0.88	1.77
CNA500	Small Jet Aircraft	0.36	0.36	0.71

TABLE 4-2 (Continued)
ANNUAL AVERAGE DAY OPERATIONS BY INM AIRCRAFT TYPE – 2015
LOS ANGELES INTERNATIONAL AIRPORT

INM Aircraft Type	Aircraft Category	Arrivals	Departures	Total
CNA510	Small Jet Aircraft	0.74	0.74	1.49
CNA525C	Small Jet Aircraft	0.71	0.71	1.43
CNA55B	Small Jet Aircraft	0.52	0.52	1.04
CNA560E	Small Jet Aircraft	0.24	0.24	0.47
CNA560XL	Small Jet Aircraft	1.23	1.23	2.45
CNA680	Small Jet Aircraft	0.63	0.63	1.26
CNA750	Small Jet Aircraft	1.97	1.97	3.94
CRJ9-ER	Small Jet Aircraft	79.41	79.41	158.83
CVR580	Non-Jet Aircraft	0.61	0.61	1.23
DC1010	Large Wide-Body Aircraft	3.64	3.64	7.29
DC9Q9	Small Narrow-Body Aircraft	0.03	0.03	0.05
DHC6	Non-Jet Aircraft	0.06	0.06	0.13
DHC830	Non-Jet Aircraft	8.72	8.72	17.44
DO328	Non-Jet Aircraft	0.03	0.03	0.06
ECLIPSE500	Small Jet Aircraft	0.04	0.04	0.08
EMB120	Non-Jet Aircraft	47.91	47.91	95.81
EMB145	Small Jet Aircraft	1.46	1.46	2.92
EMB14L	Small Jet Aircraft	0.20	0.20	0.40
EMB170	Small Jet Aircraft	4.84	4.84	9.67
EMB190	Small Jet Aircraft	5.64	5.64	11.27
F10062	Small Jet Aircraft	1.12	1.12	2.25
FAL20	Small Jet Aircraft	0.09	0.09	0.17
GASEPV	Non-Jet Aircraft	0.11	0.11	0.21
GII	Small Jet Aircraft	0.12	0.12	0.24
GIIB	Small Jet Aircraft	0.53	0.53	1.06
GIV	Small Jet Aircraft	3.48	3.48	6.97
GV	Small Jet Aircraft	3.40	3.40	6.81
IA1125	Small Jet Aircraft	0.28	0.28	0.56
LEAR25	Small Jet Aircraft	0.06	0.06	0.12
LEAR35	Small Jet Aircraft	3.27	3.27	6.54
MD11GE	Large Wide-Body Aircraft	4.51	4.51	9.03
MD11PW	Large Wide-Body Aircraft	1.69	1.69	3.38
MD81	Small Narrow-Body Aircraft	0.03	0.03	0.07
MD82	Small Narrow-Body Aircraft	2.69	2.69	5.37
MD83	Small Narrow-Body Aircraft	5.07	5.07	10.14
MD9025	Small Narrow-Body Aircraft	0.02	0.02	0.03
MU3001	Small Jet Aircraft	1.17	1.17	2.34
PA28	Non-Jet Aircraft	0.02	0.02	0.05
PA31	Non-Jet Aircraft	0.02	0.02	0.03
PA42	Non-Jet Aircraft	0.02	0.02	0.04
SA365N	Helicopter	3.34	3.34	6.67
SD330	Non-Jet Aircraft	0.26	0.26	0.52
All Aircraft		842.35	842.35	1,684.70

NOTE: Values may not sum to totals shown due to rounding.

SOURCE: ESA Airports, October 2014.

**TABLE 4-3
ANNUAL AVERAGE DAY OPERATIONS BY INM AIRCRAFT TYPE – 2020
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Aircraft Category	Arrivals	Departures	Total
1900D	Non-Jet Aircraft	9.46	9.46	18.91
737700	Small Narrow-Body Aircraft	136.81	136.81	273.63
737800	Small Narrow-Body Aircraft	141.71	141.71	283.41
747400	Large Wide-Body Aircraft	17.10	17.10	34.19
7478	New Large Aircraft	4.08	4.08	8.16
757300	Large Narrow-Body Aircraft	16.51	16.51	33.02
757PW	Large Narrow-Body Aircraft	60.62	60.62	121.24
757RR	Large Narrow-Body Aircraft	25.65	25.65	51.30
767300	Small Wide-Body Aircraft	31.55	31.55	63.11
767400	Small Wide-Body Aircraft	0.25	0.25	0.51
767CF6	Small Wide-Body Aircraft	11.78	11.78	23.56
777200	Large Wide-Body Aircraft	26.22	26.22	52.43
777300	Large Wide-Body Aircraft	0.02	0.02	0.04
7773ER	Large Wide-Body Aircraft	26.90	26.90	53.81
7878R	Large Narrow-Body Aircraft	1.86	1.86	3.72
A319-131	Small Narrow-Body Aircraft	41.95	41.95	83.90
A320-211	Small Narrow-Body Aircraft	48.58	48.58	97.16
A320-232	Small Narrow-Body Aircraft	45.85	45.85	91.71
A321-232	Small Narrow-Body Aircraft	17.49	17.49	34.98
A330-301	Large Wide-Body Aircraft	1.56	1.56	3.11
A330-343	Large Wide-Body Aircraft	4.09	4.09	8.19
A340-211	Large Wide-Body Aircraft	4.24	4.24	8.49
A340-642	Large Wide-Body Aircraft	4.10	4.10	8.21
A380-841	New Large Aircraft	7.21	7.21	14.42
A380-861	New Large Aircraft	6.63	6.63	13.27
BEC58P	Non-Jet Aircraft	0.28	0.28	0.57
C17	Non-Jet Aircraft	0.03	0.03	0.07
C5A	Non-Jet Aircraft	0.01	0.01	0.03
CIT3	Small Jet Aircraft	0.14	0.14	0.27
CL600	Small Jet Aircraft	4.07	4.07	8.14
CL601	Small Jet Aircraft	73.33	73.33	146.65
CNA172	Non-Jet Aircraft	0.04	0.04	0.09
CNA182	Non-Jet Aircraft	0.01	0.01	0.02
CNA206	Non-Jet Aircraft	0.03	0.03	0.07
CNA208	Non-Jet Aircraft	0.56	0.56	1.13
CNA441	Non-Jet Aircraft	0.97	0.97	1.94
CNA500	Small Jet Aircraft	0.38	0.38	0.76
CNA510	Small Jet Aircraft	0.79	0.79	1.59
CNA525C	Small Jet Aircraft	0.76	0.76	1.52
CNA55B	Small Jet Aircraft	0.56	0.56	1.11
CNA560E	Small Jet Aircraft	0.25	0.25	0.50
CNA560XL	Small Jet Aircraft	1.31	1.31	2.61
CNA680	Small Jet Aircraft	0.67	0.67	1.34
CNA750	Small Jet Aircraft	2.10	2.10	4.20
CRJ9-ER	Small Jet Aircraft	91.87	91.87	183.73
DHC6	Non-Jet Aircraft	0.07	0.07	0.14

TABLE 4-3 (Continued)
ANNUAL AVERAGE DAY OPERATIONS BY INM AIRCRAFT TYPE – 2020
LOS ANGELES INTERNATIONAL AIRPORT

INM Aircraft Type	Aircraft Category	Arrivals	Departures	Total
DHC830	Non-Jet Aircraft	10.81	10.81	21.62
DO328	Non-Jet Aircraft	0.03	0.03	0.06
ECLIPSE500	Small Jet Aircraft	0.04	0.04	0.09
EMB120	Non-Jet Aircraft	52.55	52.55	105.10
EMB145	Small Jet Aircraft	1.60	1.60	3.21
EMB14L	Small Jet Aircraft	0.22	0.22	0.44
EMB170	Small Jet Aircraft	5.59	5.59	11.19
EMB190	Small Jet Aircraft	6.52	6.52	13.04
F10062	Small Jet Aircraft	1.20	1.20	2.40
FAL20	Small Jet Aircraft	0.09	0.09	0.18
GASEPV	Non-Jet Aircraft	0.12	0.12	0.25
GIV	Small Jet Aircraft	3.84	3.84	7.68
GV	Small Jet Aircraft	4.19	4.19	8.39
IA1125	Small Jet Aircraft	0.30	0.30	0.59
LEAR35	Small Jet Aircraft	3.55	3.55	7.10
MD9025	Small Narrow-Body Aircraft	0.02	0.02	0.04
MU3001	Small Jet Aircraft	1.25	1.25	2.49
PA28	Non-Jet Aircraft	0.03	0.03	0.05
PA31	Non-Jet Aircraft	0.02	0.02	0.03
PA42	Non-Jet Aircraft	0.02	0.02	0.04
SA365N	Helicopter	3.36	3.36	6.71
SD330	Non-Jet Aircraft	0.29	0.29	0.57
All Aircraft		966.10	966.10	1,932.20

NOTE: Values may not sum to totals shown due to rounding.

SOURCE: ESA Airports, October 2014.

The FAA has provided a list of pre-approved aircraft substitutions that can be used for noise modeling purposes using the INM. While some aircraft modeled in the existing and future year noise analyses appear on the pre-approved aircraft substitutions list, 24 aircraft types were found not to have INM standard substitutions. INM aircraft types used in the existing and future year noise analyses to model the 24 aircraft types without INM standard substitutions are described in a letter dated May 22, 2014 from the FAA’s Office of Environment and Energy to the FAA’s Los Angeles Airports District Office (See **Appendix E**).

Time of Day

FAA ATCT data and airline schedule data were used to determine the number of operations occurring during the daytime hours (7:00 a.m. to 7:00 p.m.), evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) at LAX. As stated in Section 4.4.6, the calculation of CNEL includes a 4.77-dB “weighting” penalty during the evening hours and a 10-dB penalty during the nighttime hours.

Table 4-4 presents time of day information for LAX by aircraft category under existing conditions. The daytime, evening, and nighttime splits data were developed using calendar year 2013 data from LAX's ANOMS. It is assumed that the split between daytime, evening, and nighttime operations for each INM aircraft type will be the same in 2015 and 2020; however, changes in the aircraft fleet mix between 2015 and 2020 will result in minor differences in the daytime, evening, and nighttime splits by aircraft category (see **Table 4-5**).

**TABLE 4-4
AIRCRAFT OPERATIONS BY TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.45%	25.66%	24.90%	100.00%	73.93%	2.36%	23.71%	100.00%
Large Wide-Body Aircraft	67.99%	11.99%	20.01%	100.00%	48.64%	13.53%	37.82%	100.00%
Non-Jet Aircraft	74.40%	15.19%	10.41%	100.00%	72.35%	15.49%	12.16%	100.00%
New Large Aircraft	64.44%	17.34%	18.22%	100.00%	45.02%	3.04%	51.94%	100.00%
Small Jet Aircraft	72.04%	19.37%	8.59%	100.00%	74.75%	16.21%	9.04%	100.00%
Small Narrow-Body Aircraft	66.62%	20.36%	13.01%	100.00%	70.58%	10.89%	18.53%	100.00%
Small Wide-Body Aircraft	50.50%	23.12%	26.38%	100.00%	56.80%	10.77%	32.43%	100.00%
All Aircraft¹	65.96%	19.61%	14.43%	100.00%	69.03%	11.65%	19.32%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

¹ Does not include helicopter operations

SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

**TABLE 4-5
AIRCRAFT OPERATIONS BY TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.38%	25.70%	24.92%	100.00%	73.91%	2.36%	23.74%	100.00%
Large Wide-Body Aircraft	75.55%	11.46%	12.99%	100.00%	54.66%	11.98%	33.36%	100.00%
Non-Jet Aircraft	75.12%	15.06%	9.81%	100.00%	72.93%	15.82%	11.25%	100.00%
New Large Aircraft	72.23%	13.31%	14.46%	100.00%	52.09%	2.54%	45.37%	100.00%
Small Jet Aircraft	72.01%	19.45%	8.54%	100.00%	74.70%	16.28%	9.03%	100.00%
Small Narrow-Body Aircraft	65.95%	20.38%	13.67%	100.00%	69.83%	10.93%	19.24%	100.00%
Small Wide-Body Aircraft	54.56%	24.69%	20.75%	100.00%	61.33%	11.89%	26.77%	100.00%
All Aircraft¹	66.60%	19.63%	13.78%	100.00%	69.51%	11.49%	19.00%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

¹ Does not include helicopter operations

SOURCE: ESA Airports, October 2014.

Departure Trip Length

Departure trip length, also called stage length (unrelated to “stage” classifications under 14 CFR Part 36 Noise Standards: Aircraft Type and Airworthiness Certification), refers to the nonstop distance an aircraft travels after departure. This information is needed to determine average gross takeoff weights for different aircraft types. Noise generated by departures of a specific aircraft type varies depending on the takeoff weight of the particular operation. For example, a fully loaded aircraft departing on a long flight will weigh more on departure than the same fully loaded aircraft departing on a shorter flight because the longer flight requires more fuel on board. It usually takes the heavier aircraft longer to reach its takeoff velocity, thereby using more runway length and climbing at a slower rate than a lighter aircraft. Therefore, more land area will be exposed to higher levels of aircraft noise by departures of heavier aircraft than by departures of the same aircraft with lighter loads. In the INM, nine different stage length categories have been established, representing different departure trip length distances, as presented in **Table 4-6**.

TABLE 4-6
INM DEPARTURE STAGE LENGTH CATEGORIES

Stage Length Category	Range of Departure Trip Length (nautical miles)
1	0-500
2	501-1000
3	1,001-1,500
4	1,501-2,500
5	2,501-3,500
6	3,501-4,500
7	4,501-5,500
8	5,501-6,500
9	Over 6,500

SOURCE: U.S. Department of Transportation. Federal Aviation Administration. *INM User's Guide*. April 2007.

Tables 4-7 and **4-8** present departure stage length information³ organized by INM aircraft type used to model existing (2015) and future (2020) conditions. The departure stage length breakdown by INM aircraft type is not expected to change in the future however the overall stage length breakdown in 2015 and 2020 will be slightly different due to anticipated changes in the aircraft fleet mix in the future.

³ The INM 7.0d database does not include stage length 8 or 9 departure profiles for the A330-301, A330-343, A340-211, or A340-642. Stage length 8 and 9 departures by these aircraft were modeled as stage length 7 departures. Similarly, the INM 7.0d database does not include stage length 9 departure profiles for the A380-841 or A380-861; stage length 9 departures by these aircraft were modeled as stage length 8 departures. These stage length adjustments are reflected in Tables 4-7 and 4-8.

**TABLE 4-7
DEPARTURE STAGE LENGTH BY INM AIRCRAFT TYPE - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Departures by Stage Length (%)								
	1	2	3	4	5	6	7	8	9
1900D	99.38%	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
727EM2	40.35%	50.88%	5.26%	3.51%	0.00%	0.00%	0.00%	0.00%	0.00%
737300	62.53%	19.28%	12.67%	5.52%	0.00%	0.00%	0.00%	0.00%	0.00%
737400	0.58%	66.23%	32.65%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%
737500	64.02%	27.99%	7.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
737700	53.47%	12.83%	13.33%	20.33%	0.04%	0.00%	0.00%	0.00%	0.00%
737800	15.99%	14.30%	18.09%	45.05%	6.57%	0.00%	0.00%	0.00%	0.00%
747200	2.22%	0.00%	0.37%	1.48%	95.94%	0.00%	0.00%	0.00%	0.00%
747400	9.35%	1.05%	1.29%	9.63%	1.30%	0.11%	18.14%	28.88%	30.25%
7478	35.19%	2.98%	5.41%	15.36%	0.00%	0.00%	5.56%	33.70%	1.80%
757300	4.90%	9.28%	8.56%	43.17%	34.09%	0.00%	0.00%	0.00%	0.00%
757PW	5.42%	12.27%	7.76%	64.04%	10.51%	0.00%	0.00%	0.00%	0.00%
757RR	1.25%	1.16%	30.23%	33.33%	34.02%	0.01%	0.00%	0.00%	0.00%
767300	0.31%	1.84%	17.06%	60.18%	8.58%	7.08%	4.95%	0.00%	0.00%
767400	5.13%	8.97%	41.03%	30.77%	14.10%	0.00%	0.00%	0.00%	0.00%
767CF6	7.27%	1.93%	2.91%	86.88%	0.98%	0.03%	0.00%	0.00%	0.00%
777200	0.36%	0.05%	4.51%	16.34%	1.22%	3.41%	34.03%	31.88%	8.20%
777300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
7773ER	0.06%	0.00%	0.06%	4.49%	0.15%	0.00%	19.97%	24.31%	50.96%
7878R	0.00%	0.17%	35.03%	0.17%	0.00%	14.14%	26.48%	24.01%	0.00%
A300-622R	53.09%	0.45%	3.15%	43.31%	0.00%	0.00%	0.00%	0.00%	0.00%
A300B4-203	0.00%	0.00%	65.01%	34.99%	0.00%	0.00%	0.00%	0.00%	0.00%
A310-304	0.00%	0.00%	4.56%	86.32%	4.56%	4.56%	0.00%	0.00%	0.00%
A319-131	36.76%	13.02%	20.11%	28.80%	1.31%	0.00%	0.00%	0.00%	0.00%
A320-211	21.79%	14.90%	4.34%	54.05%	4.92%	0.00%	0.00%	0.00%	0.00%
A320-232	15.30%	7.69%	11.65%	55.81%	9.55%	0.00%	0.00%	0.00%	0.00%
A321-232	27.18%	0.02%	0.07%	72.71%	0.02%	0.00%	0.00%	0.00%	0.00%
A330-301	0.41%	0.00%	0.00%	14.99%	0.21%	0.00%	84.39%	0.00%	0.00%
A330-343	0.08%	0.00%	0.63%	1.09%	68.80%	0.00%	29.40%	0.00%	0.00%
A340-211	0.00%	0.00%	0.00%	0.00%	0.23%	39.72%	60.05%	0.00%	0.00%
A340-642	0.00%	0.00%	0.00%	0.07%	0.00%	0.00%	99.93%	0.00%	0.00%
A380-841	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	28.50%	71.50%	0.00%
A380-861	0.00%	0.00%	0.00%	0.00%	0.12%	0.00%	0.00%	99.88%	0.00%
BEC58P	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C17	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C5A	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CIT3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CL600	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CL601	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA172	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA182	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA206	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA208	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA20T	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA441	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA500	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

TABLE 4-7 (Continued)
DEPARTURE STAGE LENGTH BY INM AIRCRAFT TYPE - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

INM Aircraft Type	Departures by Stage Length (%)								
	1	2	3	4	5	6	7	8	9
CNA510	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA525C	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA55B	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA560E	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA560XL	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA680	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA750	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRJ9-ER	55.20%	23.93%	20.83%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%
CVR580	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DC1010	18.36%	0.08%	14.31%	67.02%	0.23%	0.00%	0.00%	0.00%	0.00%
DC9Q9	39.99%	20.02%	39.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DHC6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DHC830	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DO328	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ECLIPSE500	78.58%	21.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB120	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB145	15.04%	78.52%	1.17%	5.27%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB14L	0.00%	4.23%	95.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB170	86.64%	0.69%	12.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB190	0.00%	3.24%	96.71%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%
F10062	74.15%	6.47%	19.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
FAL20	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GASEPV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GII	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GIIB	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GIV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IA1125	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LEAR25	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LEAR35	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MD11GE	0.19%	0.06%	0.86%	77.65%	16.11%	0.07%	5.06%	0.00%	0.00%
MD11PW	10.59%	0.32%	2.41%	78.81%	7.87%	0.00%	0.00%	0.00%	0.00%
MD81	90.03%	0.00%	0.00%	9.97%	0.00%	0.00%	0.00%	0.00%	0.00%
MD82	11.74%	6.28%	43.15%	38.83%	0.00%	0.00%	0.00%	0.00%	0.00%
MD83	6.37%	22.14%	38.14%	33.35%	0.00%	0.00%	0.00%	0.00%	0.00%
MD9025	83.33%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%
MU3001	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA28	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA31	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA42	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SA365N	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SD330	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Aircraft	39.55%	9.77%	11.58%	26.47%	4.53%	0.45%	2.80%	2.63%	2.24%

NOTES: Values may not sum to 100% due to rounding.

SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

**TABLE 4-8
DEPARTURE STAGE LENGTH BY INM AIRCRAFT TYPE - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Departures by Stage Length (%)								
	1	2	3	4	5	6	7	8	9
1900D	99.38%	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
737700	53.47%	12.83%	13.33%	20.33%	0.04%	0.00%	0.00%	0.00%	0.00%
737800	15.99%	14.30%	18.09%	45.05%	6.57%	0.00%	0.00%	0.00%	0.00%
747400	9.35%	1.05%	1.29%	9.63%	1.30%	0.11%	18.14%	28.88%	30.25%
7478	35.19%	2.98%	5.41%	15.36%	0.00%	0.00%	5.56%	33.70%	1.80%
757300	4.90%	9.28%	8.56%	43.17%	34.09%	0.00%	0.00%	0.00%	0.00%
757PW	5.42%	12.27%	7.76%	64.04%	10.51%	0.00%	0.00%	0.00%	0.00%
757RR	1.25%	1.16%	30.23%	33.33%	34.02%	0.01%	0.00%	0.00%	0.00%
767300	0.31%	1.84%	17.06%	60.18%	8.58%	7.08%	4.95%	0.00%	0.00%
767400	5.13%	8.97%	41.03%	30.77%	14.10%	0.00%	0.00%	0.00%	0.00%
767CF6	7.27%	1.93%	2.91%	86.88%	0.98%	0.03%	0.00%	0.00%	0.00%
777200	0.36%	0.05%	4.51%	16.34%	1.22%	3.41%	34.03%	31.88%	8.20%
777300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
7773ER	0.06%	0.00%	0.06%	4.49%	0.15%	0.00%	19.97%	24.31%	50.96%
7878R	0.00%	0.17%	35.03%	0.17%	0.00%	14.14%	26.48%	24.01%	0.00%
A319-131	36.76%	13.02%	20.11%	28.80%	1.31%	0.00%	0.00%	0.00%	0.00%
A320-211	21.79%	14.90%	4.34%	54.05%	4.92%	0.00%	0.00%	0.00%	0.00%
A320-232	15.30%	7.69%	11.65%	55.81%	9.55%	0.00%	0.00%	0.00%	0.00%
A321-232	27.18%	0.02%	0.07%	72.71%	0.02%	0.00%	0.00%	0.00%	0.00%
A330-301	0.41%	0.00%	0.00%	14.99%	0.21%	0.00%	84.39%	0.00%	0.00%
A330-343	0.08%	0.00%	0.63%	1.09%	68.80%	0.00%	29.40%	0.00%	0.00%
A340-211	0.00%	0.00%	0.00%	0.00%	0.23%	39.72%	60.05%	0.00%	0.00%
A340-642	0.00%	0.00%	0.00%	0.07%	0.00%	0.00%	99.93%	0.00%	0.00%
A380-841	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	28.50%	71.50%	0.00%
A380-861	0.00%	0.00%	0.00%	0.00%	0.12%	0.00%	0.00%	99.88%	0.00%
BEC58P	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C17	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C5A	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CIT3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CL600	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CL601	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA172	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA182	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA206	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA208	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA441	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA500	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA510	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA525C	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA55B	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA560E	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

TABLE 4-8 (Continued)
DEPARTURE STAGE LENGTH BY INM AIRCRAFT TYPE - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

INM Aircraft Type	Departures by Stage Length (%)								
	1	2	3	4	5	6	7	8	9
CNA560XL	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA680	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CNA750	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRJ9-ER	55.20%	23.93%	20.83%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%
DHC6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DHC830	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DO328	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ECLIPSE500	78.58%	21.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB120	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB145	15.04%	78.52%	1.17%	5.27%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB14L	0.00%	4.23%	95.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB170	86.64%	0.69%	12.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EMB190	0.00%	3.24%	96.71%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%
F10062	74.15%	6.47%	19.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
FAL20	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GASEPV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GIV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GV	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IA1125	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LEAR35	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MD9025	83.34%	0.00%	0.00%	16.66%	0.00%	0.00%	0.00%	0.00%	0.00%
MU3001	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA28	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA31	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PA42	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SA365N	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SD330	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Aircraft	38.82%	9.12%	11.22%	26.94%	4.52%	0.53%	3.20%	3.46%	2.18%

NOTES: Values may not sum to 100% due to rounding.

SOURCE: ESA Airports, October 2014.

4.6.2 Airport Operational Information

The existing and assumed future uses of the runways and flight tracks to and from an airport are important in determining where aircraft are flying and, consequently, the noise levels generated in the airport vicinity.

Existing and Future Runway Use

Runway use at an airport is typically a function of prevailing wind and weather conditions, the lengths and widths of the runways, runway instrumentation, and the effects of other airports or air facilities in the area. To a certain extent, runway use is also determined based on the destination of a departing aircraft or origination of an arriving aircraft and the location of the aircraft parking position on the airfield. All of these factors, to varying degrees, affect runway use at LAX.

The runways available for departure and arrival are a function of the designated flow configuration at the airport. Typically, prevailing wind and weather conditions and the preferential runway use program determine the flow configuration at LAX. The actual runways that are used when the Airport is in a specific flow configuration are not limited to those that are oriented in the direction of the flow configuration. This is especially true during periods of calm to light winds.

Table 4-9 presents arrival runway use data by aircraft category and time of day for 2015 existing conditions. **Table 4-10** presents departure runway use data by aircraft category and time of day for 2015 existing conditions. Runway use data presented in Tables 4-9 and 4-10 are based on a full calendar year (2013) of operations data from LAX's ANOMS. Runway use patterns by individual INM aircraft types are not anticipated to change between 2015 and 2020; however, due to anticipated changes in the aircraft fleet mix in the future overall runway use patterns in 2020 will be slightly different than in 2015 as shown in **Table 4-11** and **Table 4-12**.

Flight Tracks and Flight Track Use

Flight track information is another important input to the INM. However, inputting individual tracks for each aircraft operation is not practical and the FAA suggests that flight tracks be consolidated into a set of generalized flight tracks that are representative of all flight tracks into and out of the airport. Deviations from the generalized flight tracks occur because of weather conditions, pilot technique, air traffic control procedures, and aircraft weight. However, the generalized flight tracks are representative of the arrival and departure flight tracks at an airport.

Exhibits 4-3 through **4-10** present INM arrival and departure flight tracks (and subtracks) for each of the eight runway ends at LAX. Consistent with 14 CFR Part 150 the flight tracks are superimposed on a map showing generalized existing land uses in the vicinity of LAX. The generalized existing land use map is at the same scale as the noise exposure map exhibits presented in Chapter 5 (see Exhibits 5-1 and 5-2). For informational purposes the INM arrival and departure flight tracks have also been superimposed on an aerial photograph, which is at a scale of 1 inch = 10,000 feet, to show larger extents of the flight tracks (See **Exhibits 4-3a** through **4-10a**).

TABLE 4-9
ARRIVAL RUNWAY USE BY AIRCRAFT CATEGORY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Aircraft Category	06L	06R	07L	07R	24L	24R	25L	25R	Total
Daytime Arrivals									
Large Narrow-Body Aircraft	0.21%	0.00%	0.01%	0.90%	0.61%	20.54%	74.74%	2.99%	100.00%
Large Wide-Body Aircraft	0.72%	0.03%	0.00%	0.30%	3.24%	56.37%	37.93%	1.40%	100.00%
Non-Jet Aircraft	0.56%	0.01%	0.02%	0.47%	1.91%	45.85%	48.20%	2.98%	100.00%
New Large Aircraft	0.94%	0.04%	0.00%	0.34%	2.05%	72.68%	23.94%	0.00%	100.00%
Small Jet Aircraft	0.42%	0.01%	0.01%	0.54%	1.33%	41.93%	53.47%	2.29%	100.00%
Small Narrow-Body Aircraft	0.49%	0.01%	0.01%	0.52%	1.51%	52.03%	43.78%	1.65%	100.00%
Small Wide-Body Aircraft	0.13%	0.01%	0.06%	0.83%	0.74%	14.91%	80.04%	3.28%	100.00%
All Aircraft ¹	0.47%	0.01%	0.01%	0.54%	1.58%	45.91%	49.44%	2.04%	100.00%
Evening Arrivals									
Large Narrow-Body Aircraft	0.23%	0.00%	0.00%	0.38%	1.65%	30.36%	62.92%	4.47%	100.00%
Large Wide-Body Aircraft	0.36%	0.03%	0.00%	0.21%	8.61%	57.53%	32.07%	1.19%	100.00%
Non-Jet Aircraft	0.32%	0.00%	0.00%	0.25%	2.99%	43.69%	46.11%	6.64%	100.00%
New Large Aircraft	0.00%	0.00%	0.00%	0.32%	3.02%	42.69%	53.96%	0.00%	100.00%
Small Jet Aircraft	0.27%	0.00%	0.01%	0.22%	2.28%	49.18%	44.49%	3.53%	100.00%
Small Narrow-Body Aircraft	0.19%	0.00%	0.01%	0.25%	1.85%	51.86%	43.06%	2.77%	100.00%
Small Wide-Body Aircraft	0.16%	0.00%	0.00%	0.57%	1.97%	26.87%	67.03%	3.40%	100.00%
All Aircraft ¹	0.23%	0.00%	0.01%	0.28%	2.39%	46.64%	47.12%	3.33%	100.00%
Nighttime Arrivals									
Large Narrow-Body Aircraft	4.32%	20.51%	13.40%	6.20%	0.29%	9.95%	42.98%	2.34%	100.00%
Large Wide-Body Aircraft	5.73%	27.98%	16.35%	10.56%	0.59%	18.42%	18.15%	2.21%	100.00%
Non-Jet Aircraft	3.42%	17.31%	3.05%	1.86%	0.95%	30.38%	40.95%	2.07%	100.00%
New Large Aircraft	3.33%	23.49%	0.00%	27.41%	2.42%	27.28%	16.06%	0.00%	100.00%
Small Jet Aircraft	2.24%	10.36%	1.58%	1.74%	0.75%	29.92%	50.43%	2.99%	100.00%
Small Narrow-Body Aircraft	2.62%	9.52%	1.56%	1.04%	2.26%	49.70%	31.98%	1.32%	100.00%
Small Wide-Body Aircraft	5.06%	21.92%	11.55%	7.61%	0.56%	9.65%	40.57%	3.08%	100.00%
All Aircraft ¹	3.55%	15.73%	6.55%	4.30%	1.27%	30.97%	35.62%	2.01%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

¹ Does not include helicopter operations

SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

**TABLE 4-10
DEPARTURE RUNWAY USE BY AIRCRAFT CATEGORY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Aircraft Category	06L	06R	07L	07R	24L	24R	25L	25R	Total
Daytime Departures									
Large Narrow-Body Aircraft	0.01%	0.41%	0.64%	0.00%	16.46%	0.18%	1.73%	80.57%	100.00%
Large Wide-Body Aircraft	0.00%	0.19%	0.79%	0.03%	33.94%	0.23%	7.31%	57.50%	100.00%
Non-Jet Aircraft	0.08%	0.56%	0.51%	0.02%	41.11%	4.61%	4.73%	48.39%	100.00%
New Large Aircraft	0.00%	0.62%	0.00%	0.31%	81.85%	0.00%	17.22%	0.00%	100.00%
Small Jet Aircraft	0.01%	0.43%	0.53%	0.02%	28.17%	0.93%	6.35%	63.55%	100.00%
Small Narrow-Body Aircraft	0.02%	0.50%	0.52%	0.00%	60.92%	1.83%	0.81%	35.40%	100.00%
Small Wide-Body Aircraft	0.00%	0.53%	0.50%	0.01%	17.78%	0.23%	4.24%	76.70%	100.00%
All Aircraft ¹	0.02%	0.46%	0.55%	0.01%	43.20%	1.49%	3.23%	51.04%	100.00%
Evening Departures									
Large Narrow-Body Aircraft	0.00%	0.26%	0.26%	0.00%	8.95%	0.13%	4.48%	85.92%	100.00%
Large Wide-Body Aircraft	0.00%	0.21%	0.20%	0.18%	27.99%	0.10%	19.63%	51.69%	100.00%
Non-Jet Aircraft	0.03%	0.32%	0.27%	0.00%	45.11%	2.10%	2.96%	49.22%	100.00%
New Large Aircraft	0.00%	0.00%	0.00%	0.00%	49.98%	0.00%	50.02%	0.00%	100.00%
Small Jet Aircraft	0.00%	0.22%	0.29%	0.00%	13.06%	0.08%	4.29%	82.05%	100.00%
Small Narrow-Body Aircraft	0.01%	0.26%	0.30%	0.00%	66.54%	0.49%	0.45%	31.95%	100.00%
Small Wide-Body Aircraft	0.00%	0.14%	0.20%	0.00%	4.71%	0.00%	21.03%	73.92%	100.00%
All Aircraft ¹	0.01%	0.24%	0.28%	0.02%	40.02%	0.47%	5.05%	53.91%	100.00%
Nighttime Departures									
Large Narrow-Body Aircraft	0.00%	0.18%	0.49%	0.18%	1.14%	0.05%	15.92%	82.04%	100.00%
Large Wide-Body Aircraft	0.00%	0.06%	0.83%	0.38%	13.29%	0.06%	11.76%	73.62%	100.00%
Non-Jet Aircraft	0.03%	0.47%	0.17%	0.03%	45.36%	2.19%	10.30%	41.44%	100.00%
New Large Aircraft	0.00%	0.37%	0.00%	0.48%	49.69%	0.00%	49.45%	0.00%	100.00%
Small Jet Aircraft	0.02%	0.17%	0.51%	0.10%	12.98%	0.35%	5.90%	79.97%	100.00%
Small Narrow-Body Aircraft	0.01%	0.31%	0.45%	0.09%	41.67%	2.70%	6.14%	48.63%	100.00%
Small Wide-Body Aircraft	0.00%	0.07%	0.52%	0.18%	4.35%	0.11%	16.63%	78.14%	100.00%
All Aircraft ¹	0.01%	0.22%	0.51%	0.17%	25.87%	1.33%	10.82%	61.08%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

¹ Does not include helicopter operations

SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

**TABLE 4-11
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.47%	0.23%	3.55%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.73%	0.46%	0.24%	0.22%
07L	0.01%	0.01%	6.55%	0.55%	0.28%	0.51%
07R	0.54%	0.28%	4.30%	0.01%	0.02%	0.17%
24L	1.58%	2.39%	1.27%	43.20%	40.02%	25.87%
24R	45.91%	46.64%	30.97%	1.49%	0.47%	1.33%
25L	49.44%	47.12%	35.62%	3.23%	5.05%	10.82%
25R	2.04%	3.33%	2.01%	51.04%	53.91%	61.08%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

Does not include helicopter operations

SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

**TABLE 4-12
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

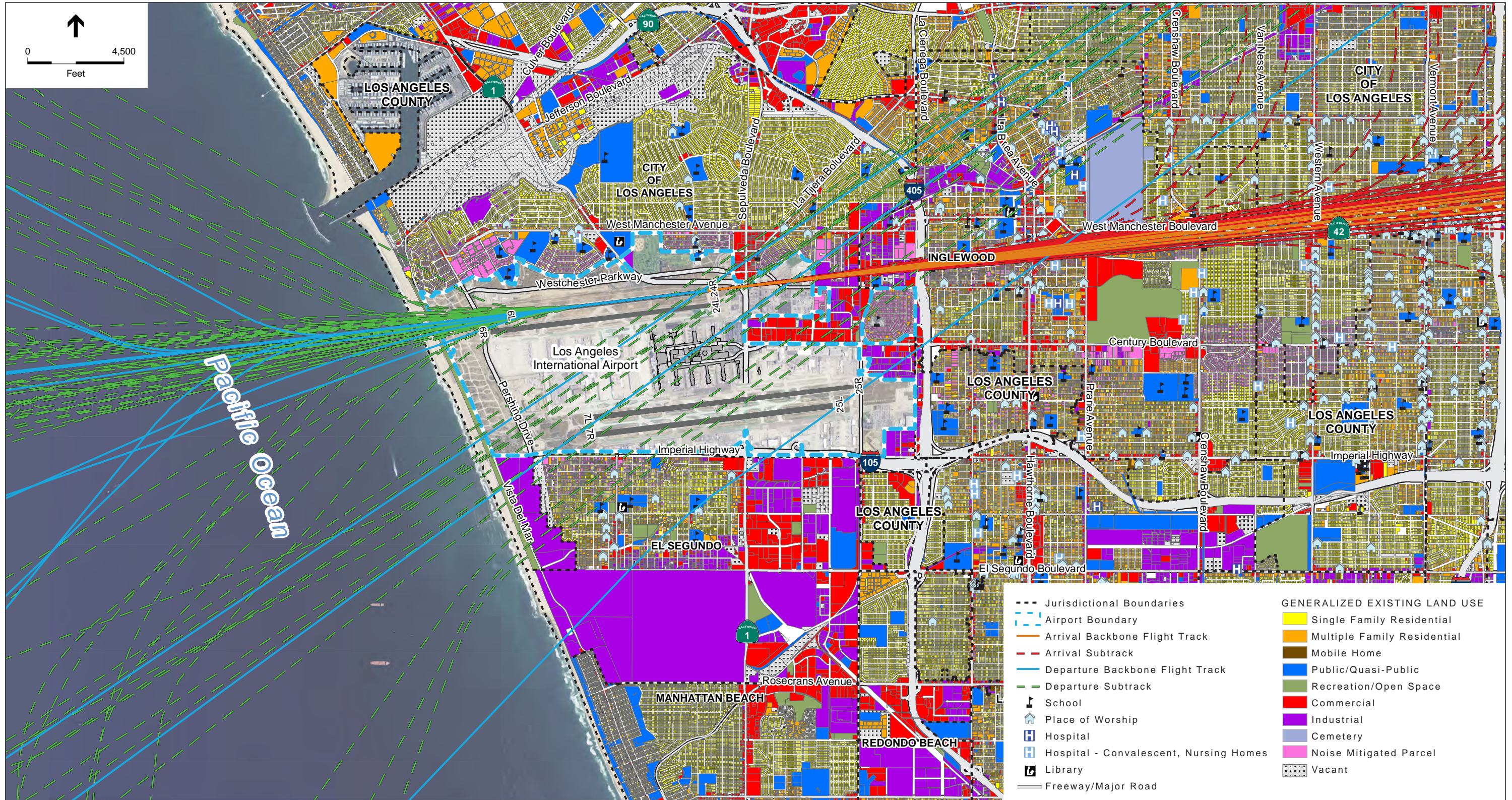
Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.48%	0.23%	3.38%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.00%	0.45%	0.26%	0.24%
07L	0.01%	0.01%	4.90%	0.55%	0.28%	0.50%
07R	0.53%	0.28%	3.17%	0.01%	0.01%	0.17%
24L	1.58%	2.39%	1.43%	44.22%	42.15%	28.55%
24R	46.53%	47.21%	34.12%	1.50%	0.49%	1.43%
25L	48.82%	46.52%	36.09%	2.90%	3.45%	9.60%
25R	2.04%	3.36%	1.92%	50.35%	53.35%	59.51%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

Does not include helicopter operations

SOURCE: ESA Airports, October 2014.

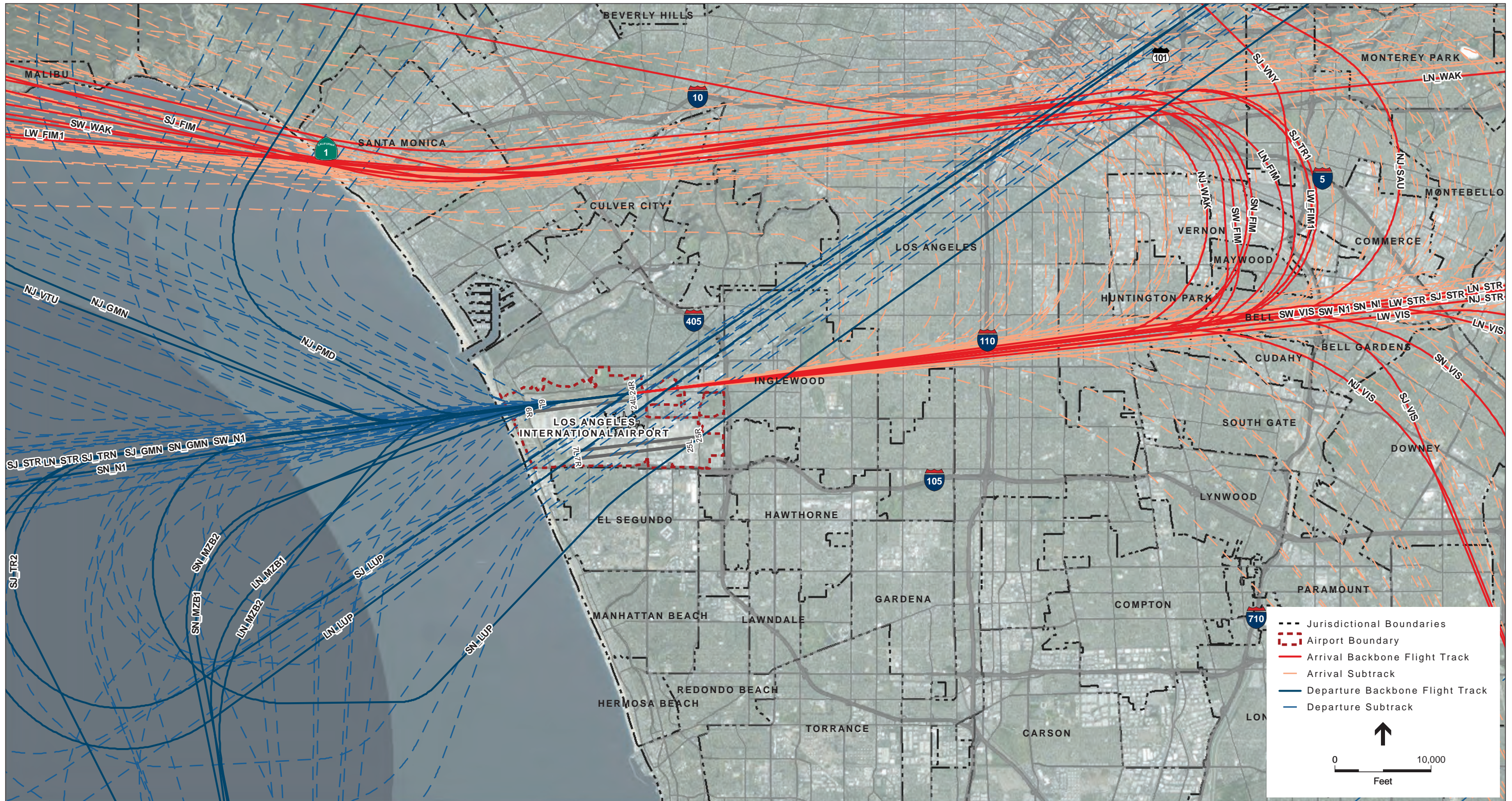


SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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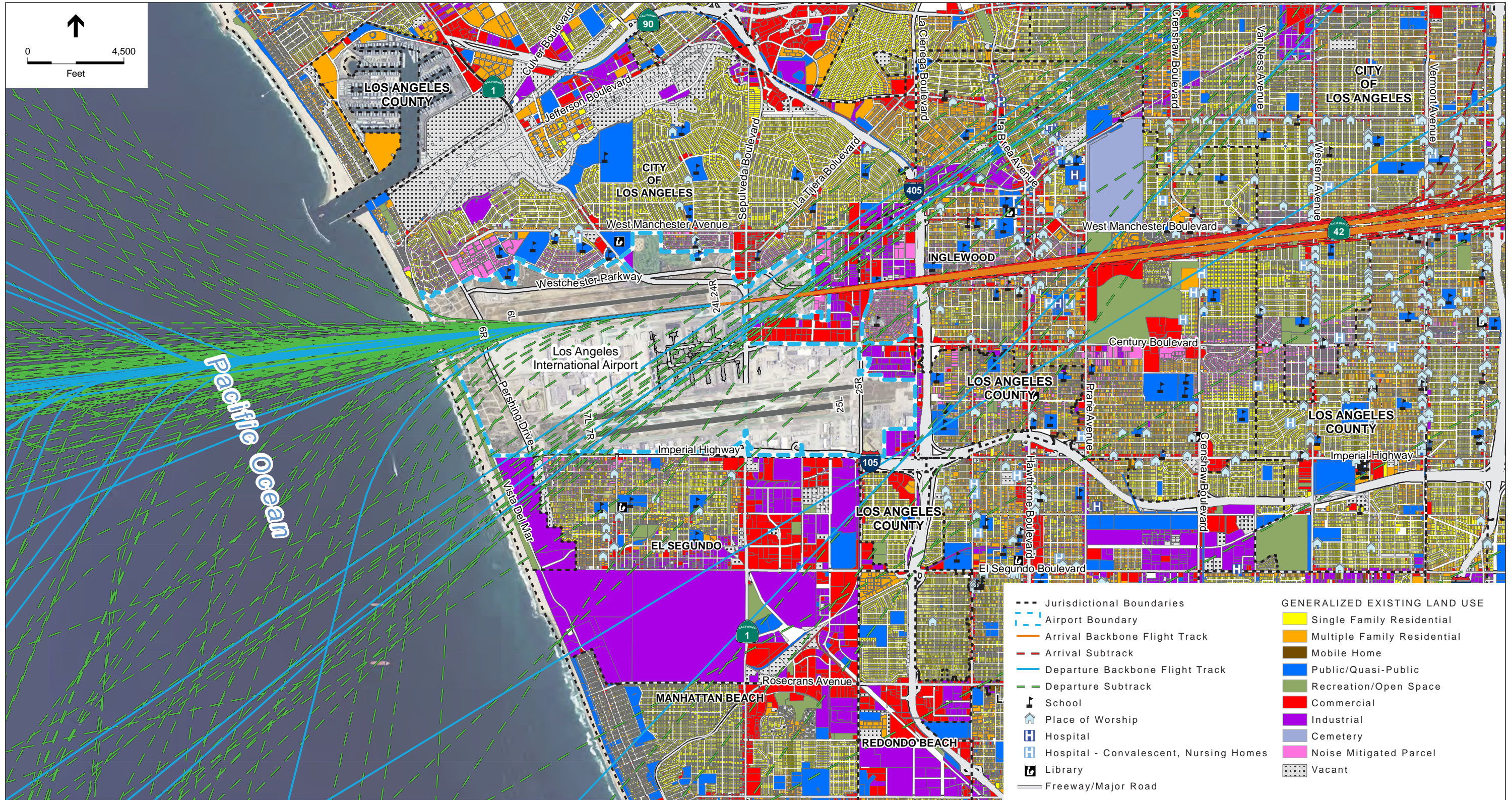
Exhibit 4-3
 INM Arrival and Departure Flight Tracks – Runway 24R

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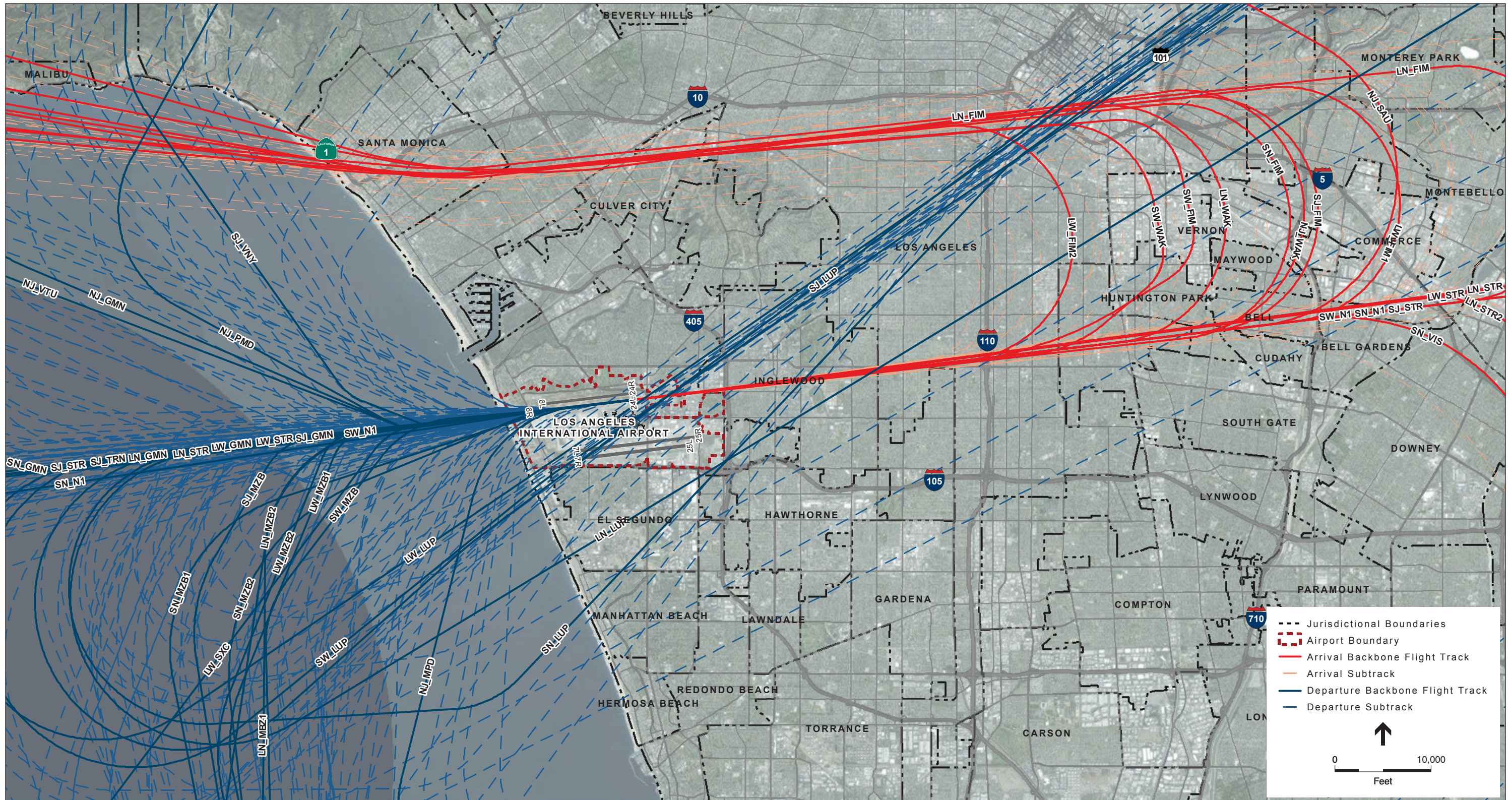
SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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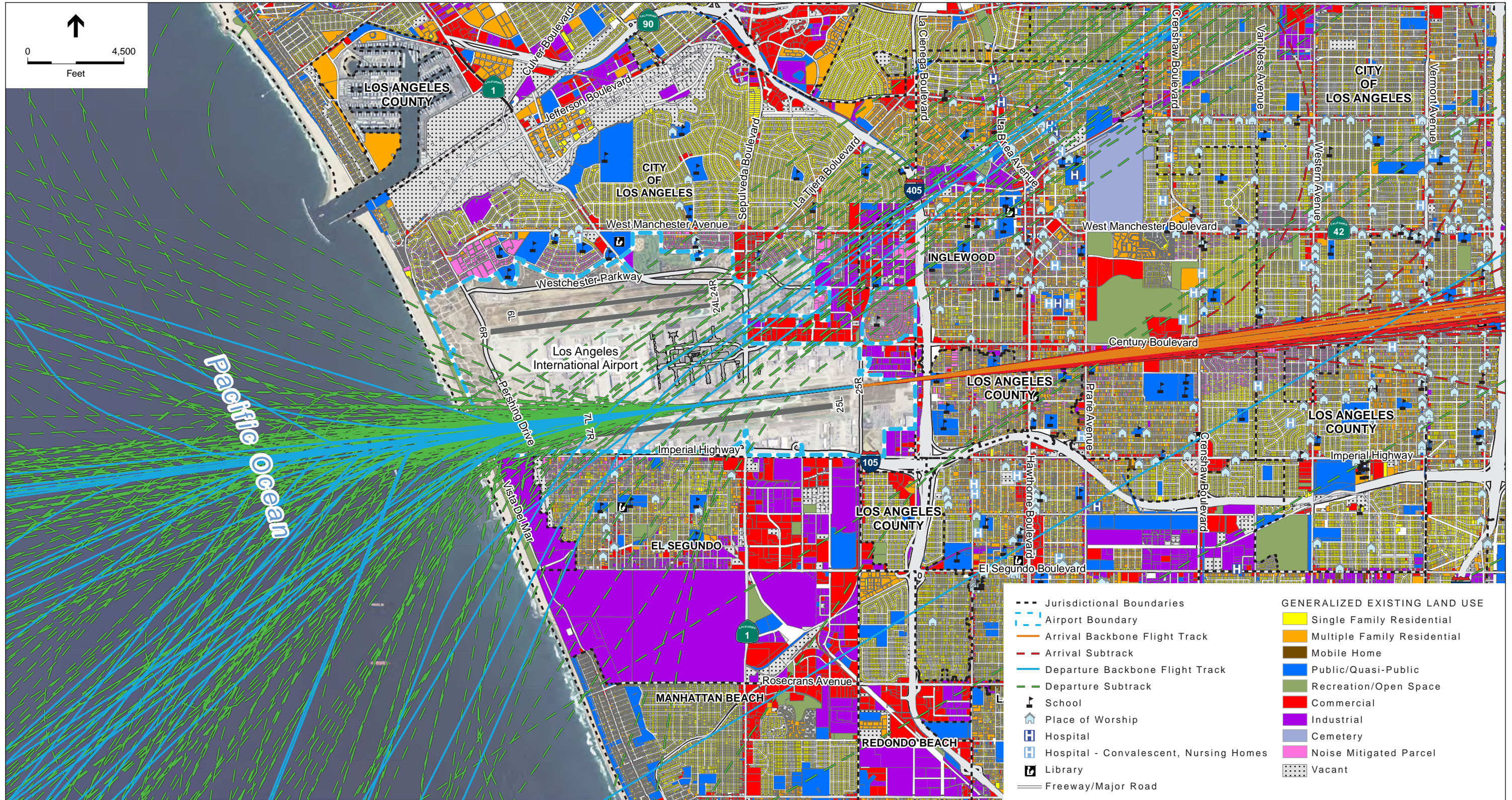
SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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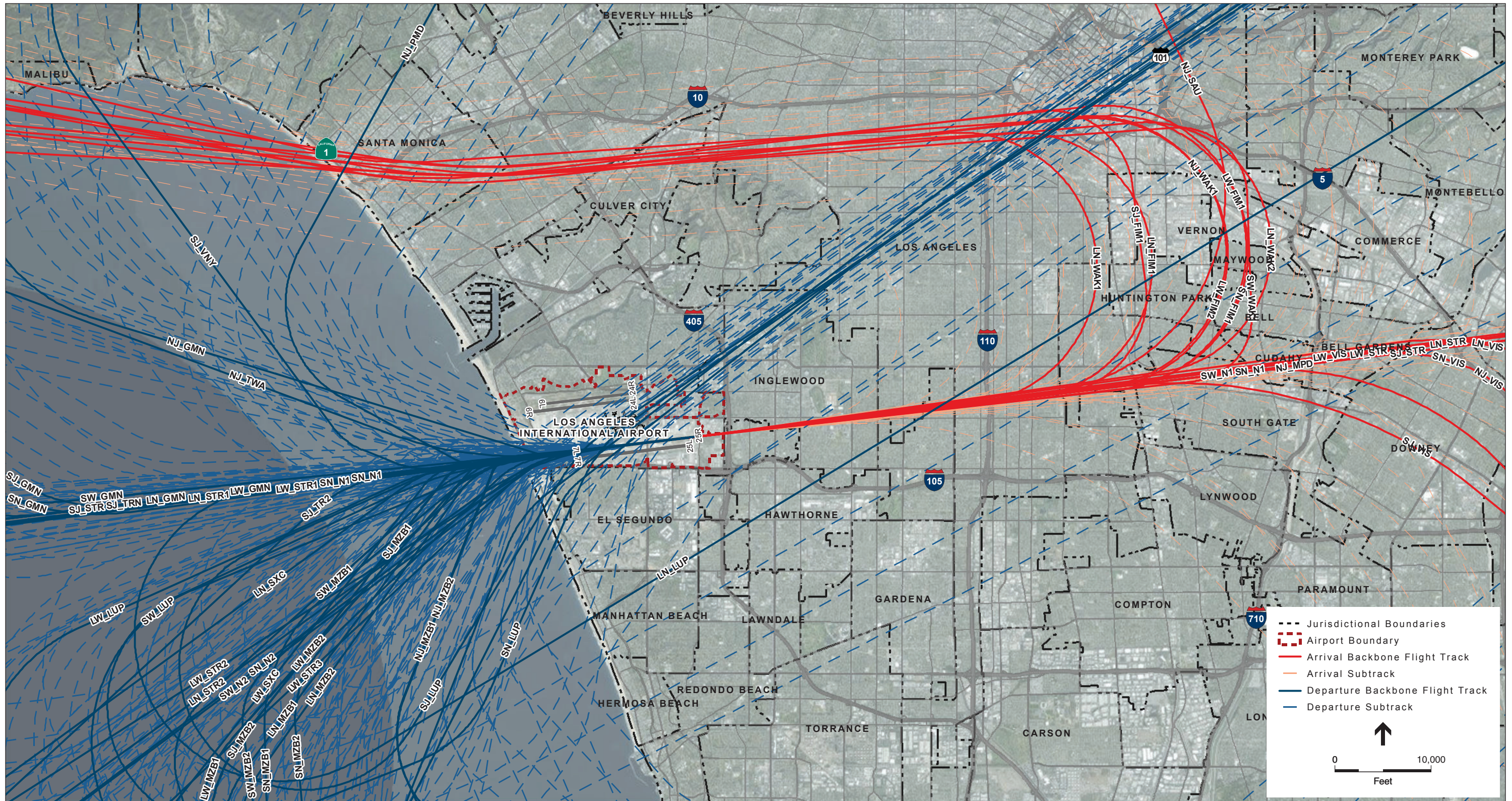


SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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Exhibit 4-5
 INM Arrival and Departure Flight Tracks – Runway 25R

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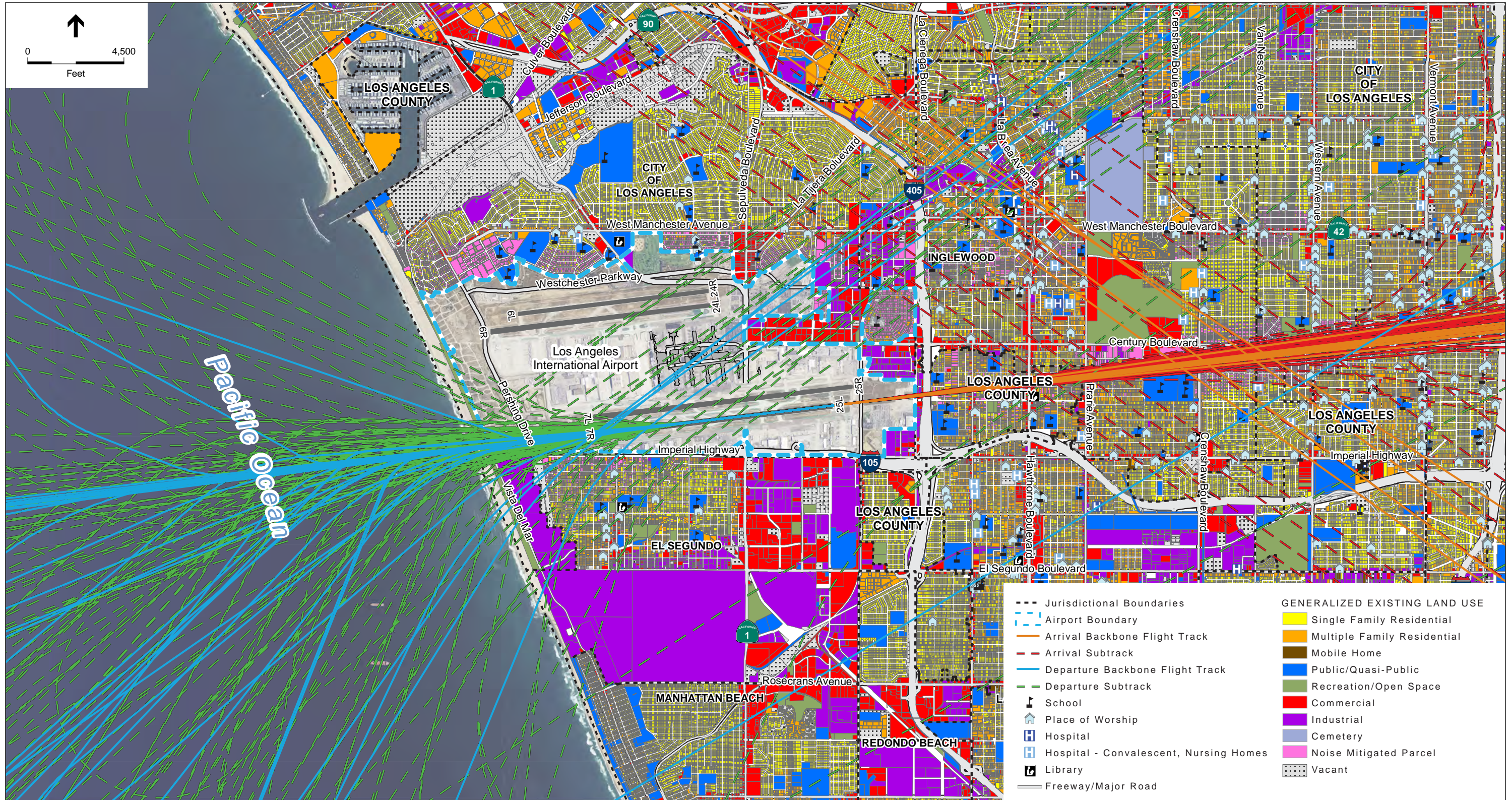


SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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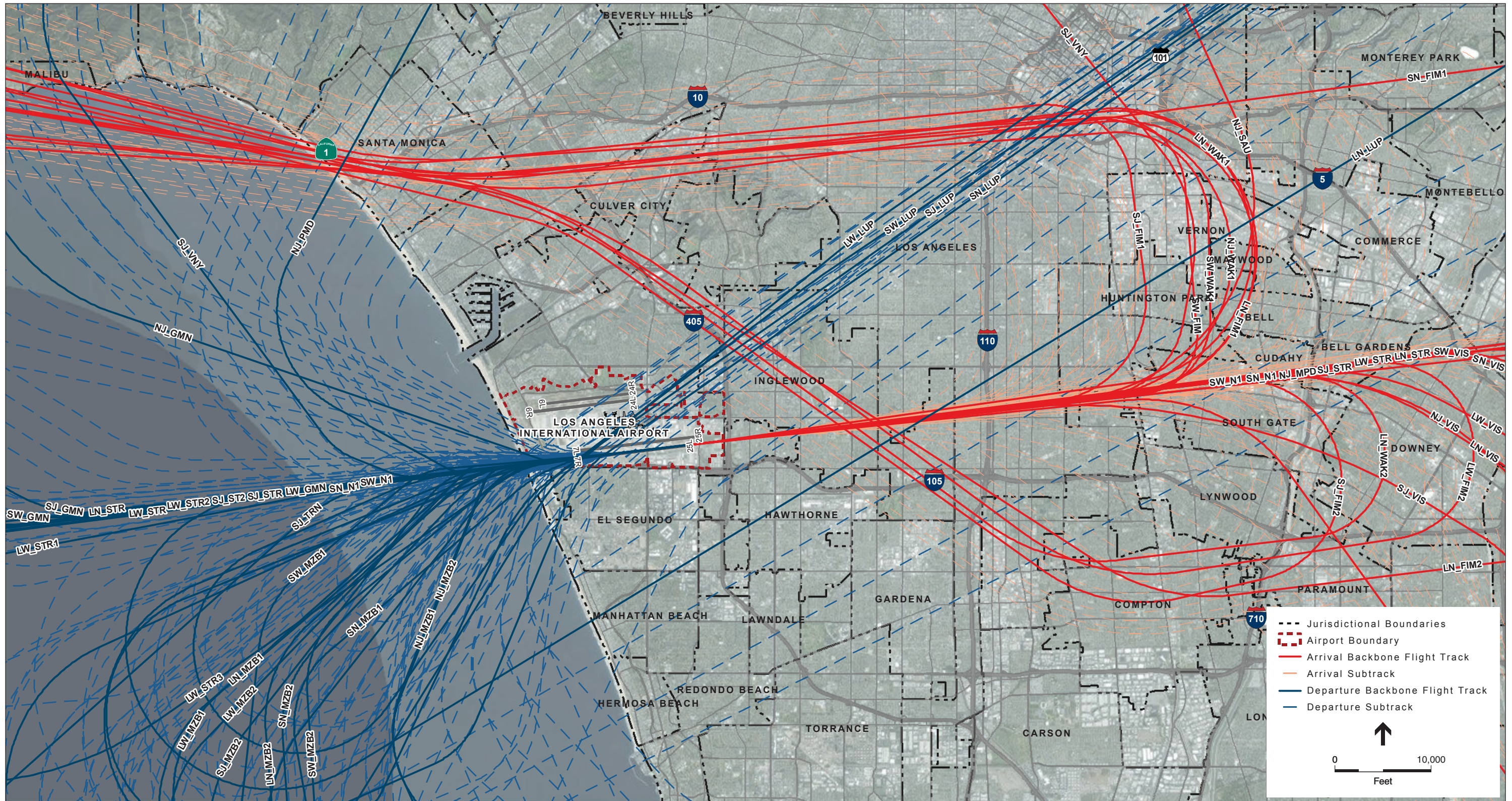
Exhibit 4-5a
 INM Arrival and Departure Flight Tracks – Runway 25R

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SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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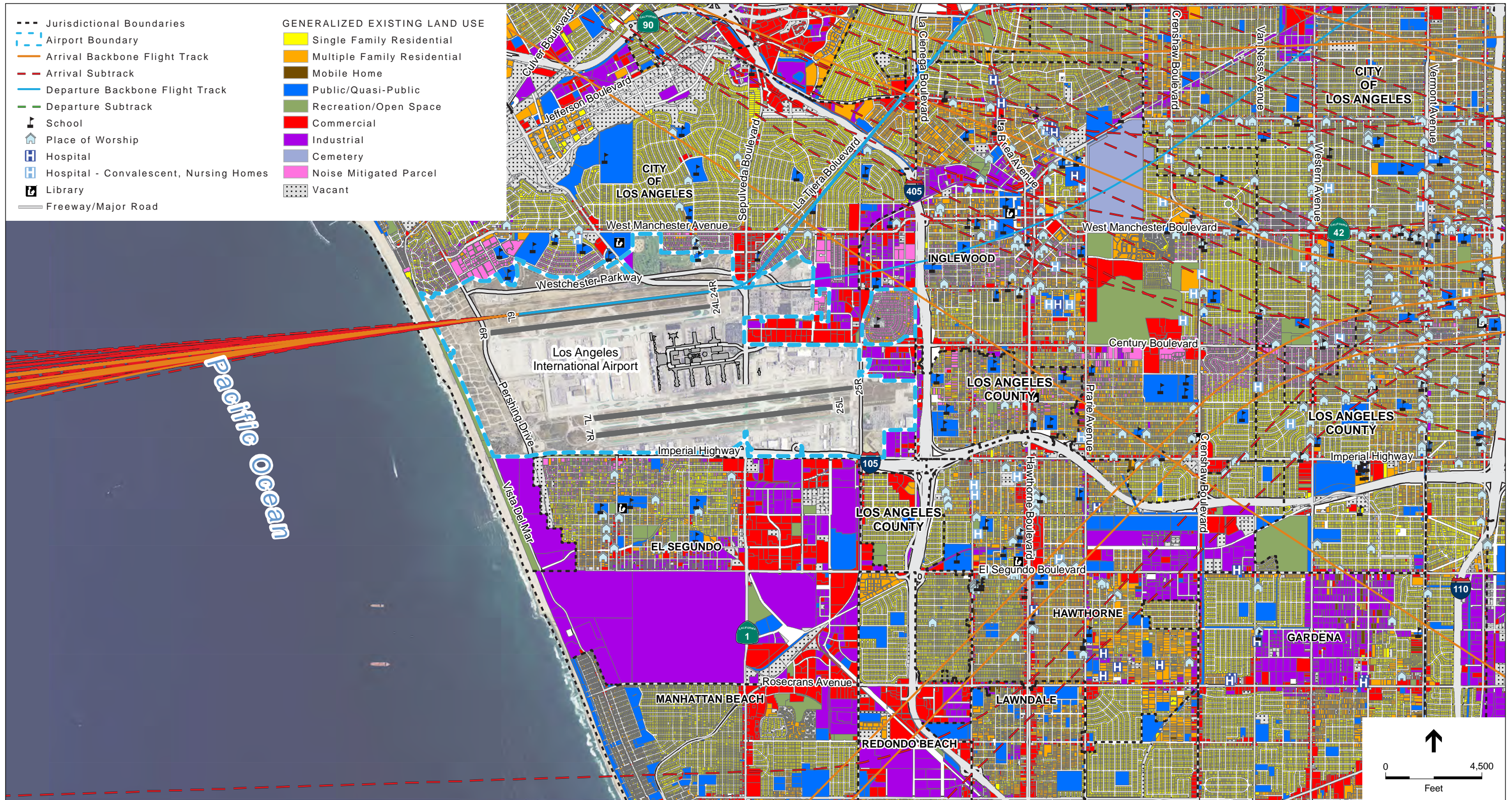


SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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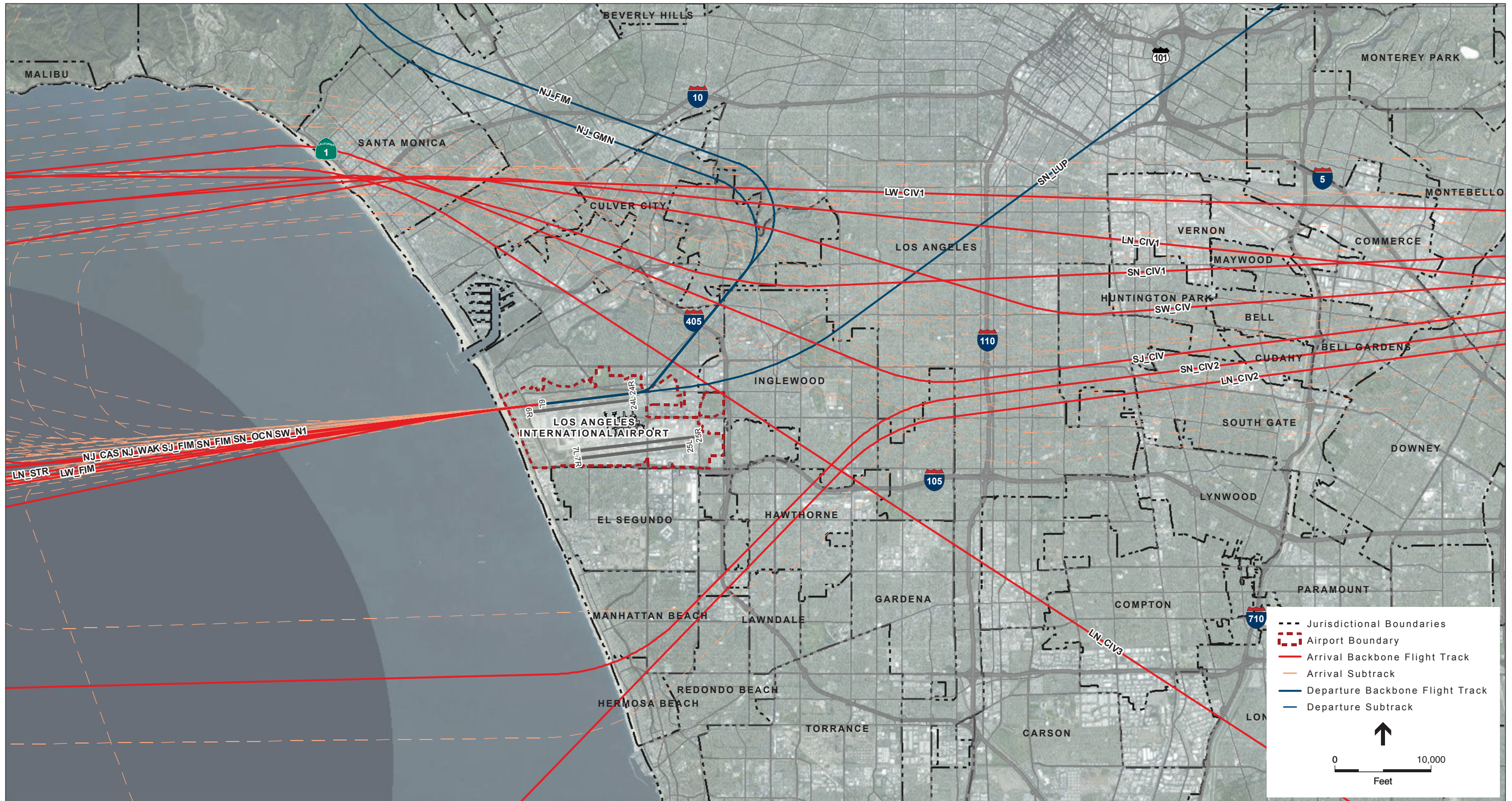
Exhibit 4-6a
 INM Arrival and Departure Flight Tracks – Runway 25L

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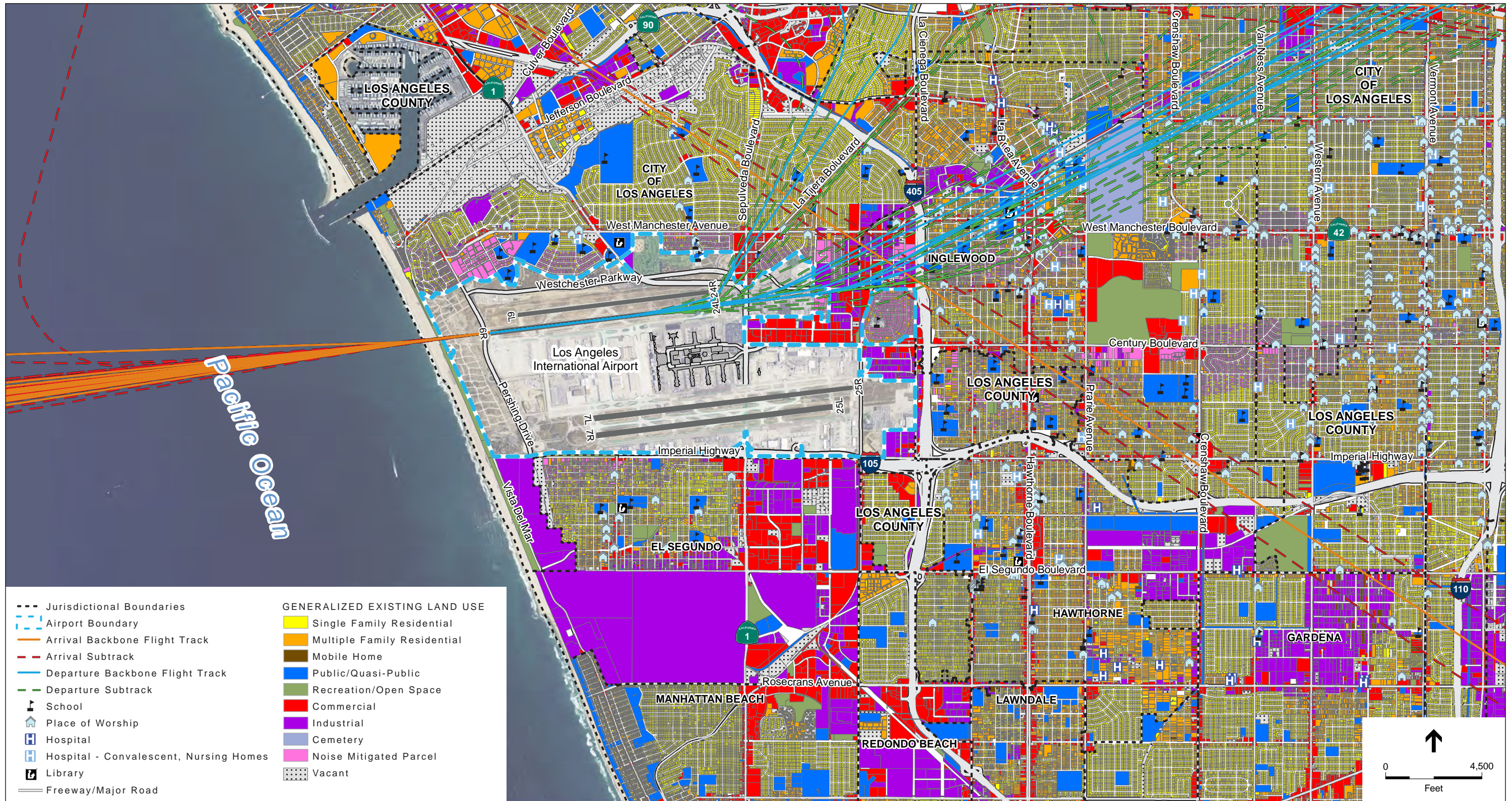
SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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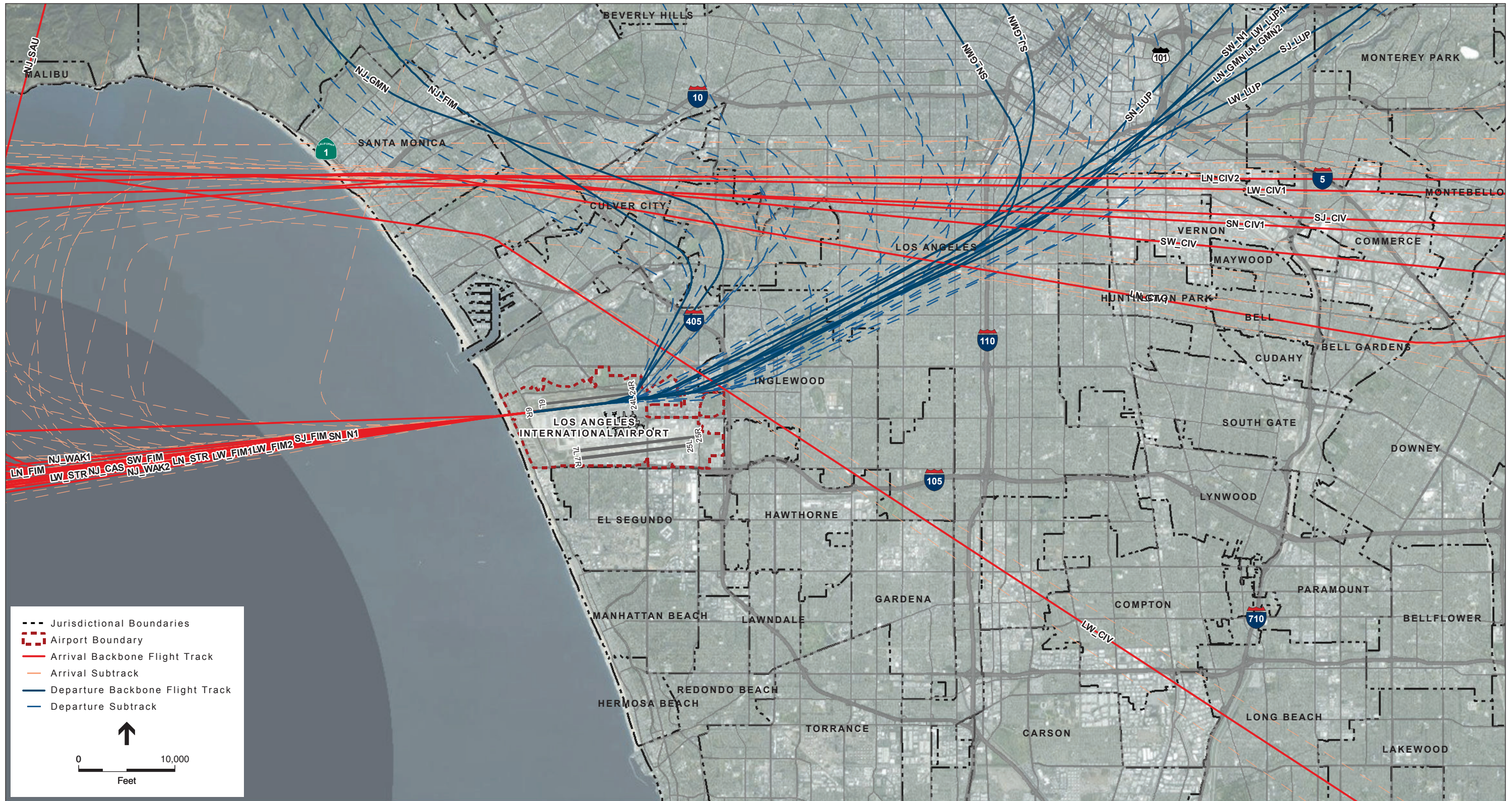
SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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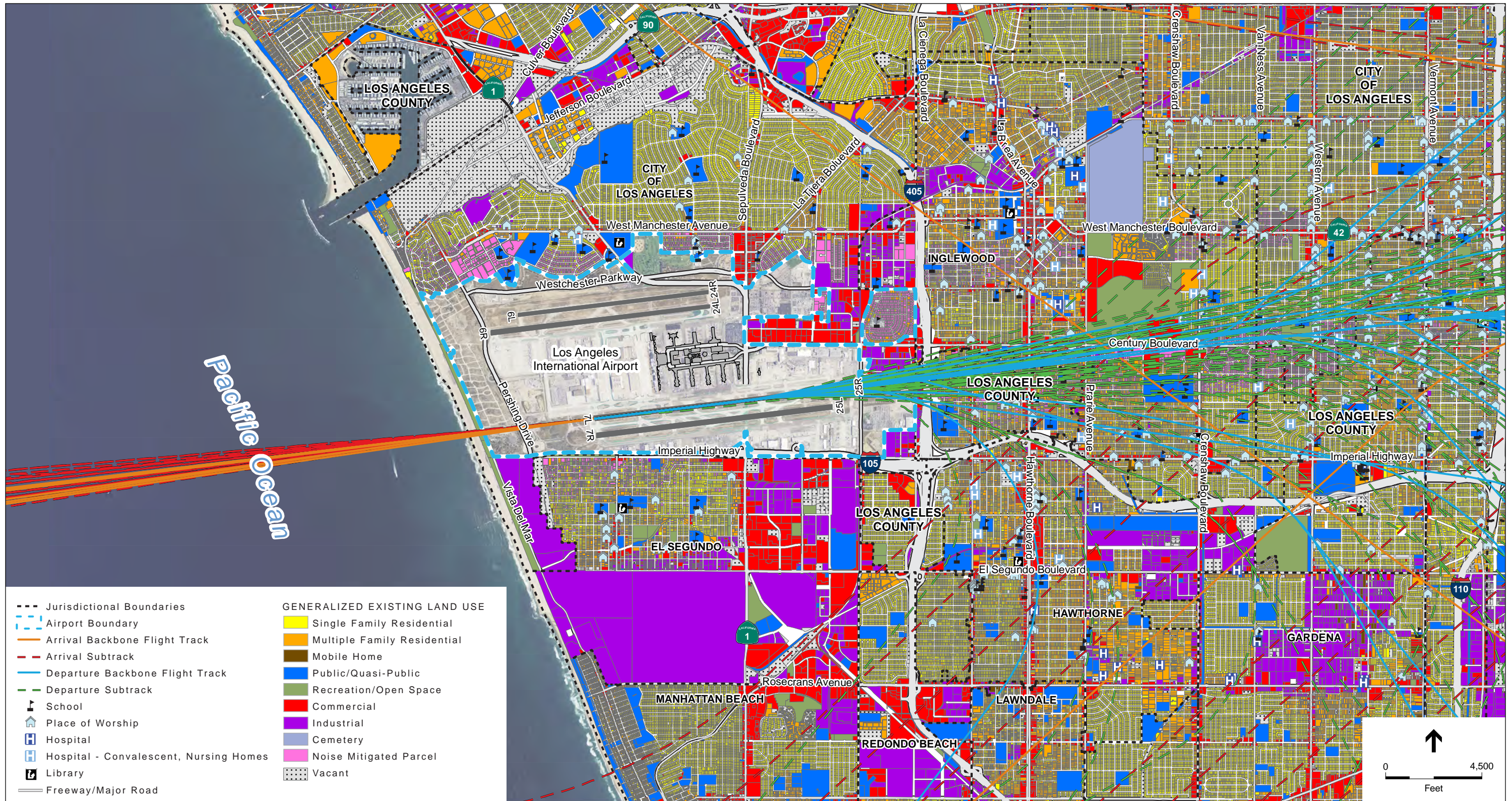


SOURCES: ESA Airports, 2014; LA Co. DRP, 2014; City of LA DCP, 2013; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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Exhibit 4-8a
 INM Arrival and Departure Flight Tracks – Runway 06R

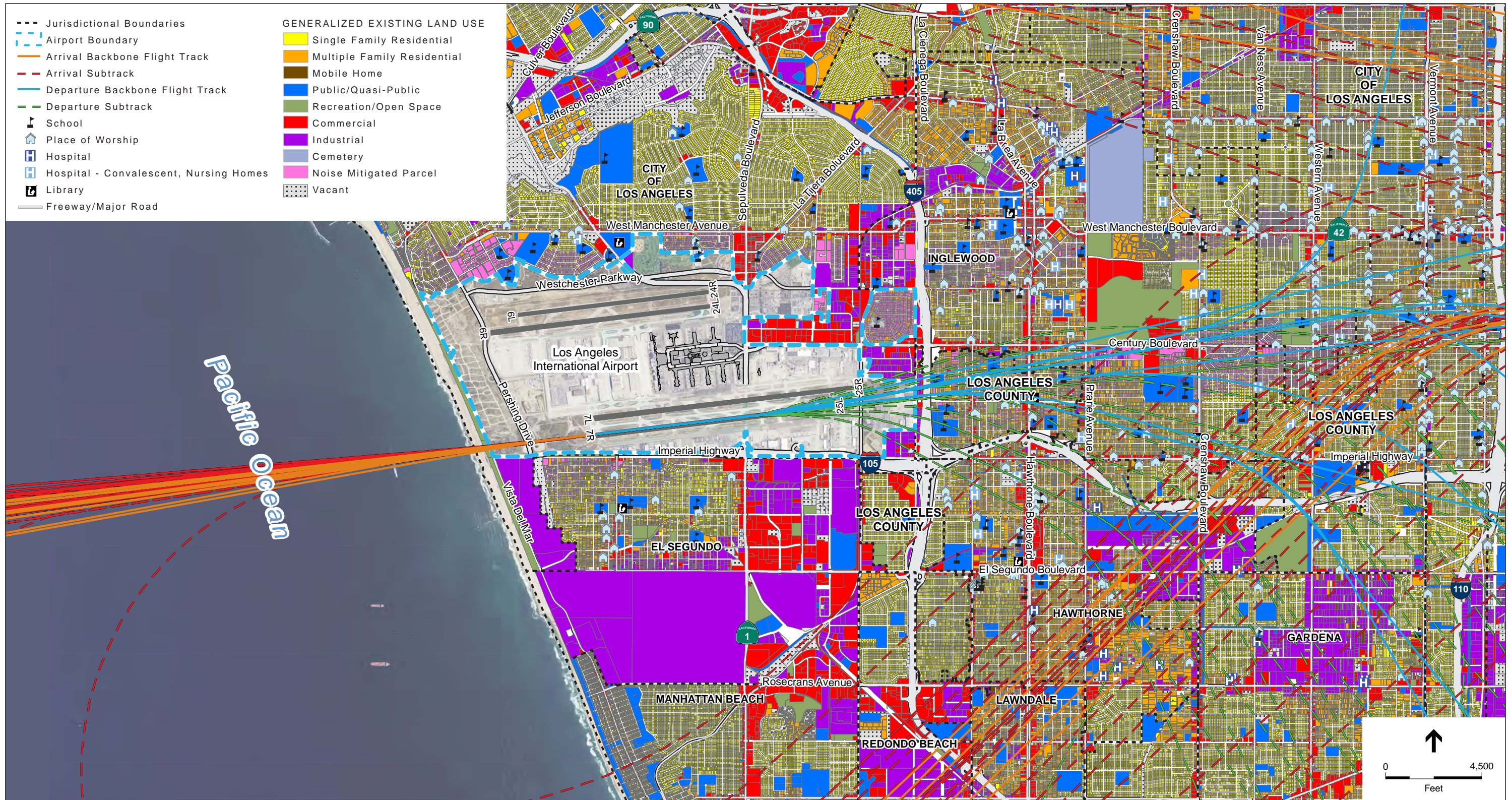
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SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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SOURCES: ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: INM = Integrated Noise Model

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Tables 4-13 and 4-14 present flight track use data for existing (2015) conditions and future (2020) conditions, respectively. The arrival and departure flight track use data are grouped by runway end. Flight tracks included in Tables 4-10 and 4-11 are labeled on Exhibits 4-3a through 4-10a. The flight track use values presented in Tables 4-10 are based on a full calendar year (2013) of flight track data from LAX's ANOMS. Anticipated changes in the aircraft fleet mix at LAX between 2015 and 2020 account for the minor differences in the flight track use values presented in Tables 4-13 and 4-14.

4.7 Aircraft Noise Monitoring System

The ANOMS operated by LAWA includes 39 noise monitoring stations located in the communities around LAX. Using state-of-the-art technology, LAWA can monitor noise levels and link aircraft noise events and/or complaints to specific flights and aircraft types

Table 4-15 presents information regarding the locations of the 39 noise monitoring stations and the annual average aircraft and community noise levels measured at those same locations in 2013. **Exhibit 4-11** presents a graphical depiction of the location of most of the noise monitoring stations in the vicinity of LAX, superimposed on a map showing generalized existing land uses. The aircraft CNEL figures in Table 4-15 represent noise levels associated with aircraft noise events only. The Community CNEL figures in Table 4-15 represent ambient noise levels in the vicinity of the permanent noise monitoring stations (i.e., noise levels associated with sources other than aircraft such as traffic on highways and major streets, railroad operations, barking dogs, children playing, mechanical equipment, wind, fireworks, and residential maintenance activities). The ambient noise level provides a sense of how quiet or noisy the community is in the absence of aircraft noise events, which helps put the effects of aircraft noise into perspective. As shown in Table 4-15, the Community CNEL values are lower than the Aircraft CNEL values at some locations (e.g., PDR1 and PDR2) and higher at other locations (e.g., WCH1 and WCH4). The data provided in Table 4-15 were not used to develop the 2015 or 2020 NEMs and are provided for informational purposes only.

**TABLE 4-13
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
06L								
LN_CIV1	1.29%	4.73%	8.03%	5.44%	0.00%	0.00%	0.00%	0.00%
LN_CIV2	1.16%	4.25%	7.23%	4.89%	0.00%	0.00%	0.00%	0.00%
LN_CIV3	0.26%	0.95%	1.61%	1.09%	0.00%	0.00%	0.00%	0.00%
LN_STR	1.54%	5.67%	9.63%	6.52%	0.00%	0.00%	0.00%	0.00%
LW_CIV1	14.91%	7.82%	19.49%	17.25%	0.00%	0.00%	0.00%	0.00%
LW_FIM	2.03%	1.07%	2.66%	2.35%	0.00%	0.00%	0.00%	0.00%
NJ_CAS	5.42%	4.47%	2.83%	3.85%	0.00%	0.00%	0.00%	0.00%
NJ_FIM	0.00%	0.00%	0.00%	0.00%	12.24%	16.86%	8.49%	12.11%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	24.46%	33.79%	16.99%	24.22%
NJ_WAK	5.42%	4.47%	2.83%	3.85%	0.00%	0.00%	0.00%	0.00%
SJ_CIV	2.74%	3.39%	1.06%	1.79%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	18.29%	22.58%	7.09%	11.91%	0.00%	0.00%	0.00%	0.00%
SN_CIV1	23.49%	18.82%	13.16%	17.16%	0.00%	0.00%	0.00%	0.00%
SN_CIV2	1.00%	0.80%	0.56%	0.73%	0.00%	0.00%	0.00%	0.00%
SN_FIM	19.98%	16.02%	11.20%	14.60%	0.00%	0.00%	0.00%	0.00%
SN_LUP	0.00%	0.00%	0.00%	0.00%	63.30%	49.36%	74.53%	63.66%
SN_OCN	1.50%	1.20%	0.84%	1.10%	0.00%	0.00%	0.00%	0.00%
SW_CIV	0.57%	2.25%	7.07%	4.49%	0.00%	0.00%	0.00%	0.00%
SW_N1	0.38%	1.50%	4.71%	2.99%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
06R								
LN_CIV1	0.00%	0.00%	4.03%	4.01%	0.00%	0.00%	0.00%	0.00%
LN_CIV2	0.00%	0.00%	1.57%	1.56%	0.00%	0.00%	0.00%	0.00%
LN_FIM	0.00%	0.00%	1.12%	1.12%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	5.95%	1.17%	8.43%	5.88%
LN_GMN2	0.00%	0.00%	0.00%	0.00%	5.95%	1.17%	8.43%	5.88%
LN_STR	0.00%	0.00%	21.73%	21.64%	0.00%	0.00%	0.00%	0.00%
LW_CIV	3.53%	7.37%	3.65%	3.65%	0.00%	0.00%	0.00%	0.00%
LW_CIV1	2.01%	4.20%	2.08%	2.08%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	13.61%	28.44%	14.06%	14.06%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	4.03%	8.41%	4.17%	4.17%	0.00%	0.00%	0.00%	0.00%
LW_LUP	0.00%	0.00%	0.00%	0.00%	2.53%	6.13%	6.48%	3.23%
LW_LUP1	0.00%	0.00%	0.00%	0.00%	1.27%	3.07%	3.24%	1.62%
LW_STR	1.01%	2.10%	1.04%	1.04%	0.00%	0.00%	0.00%	0.00%
NJ_CAS	0.51%	0.00%	0.40%	0.40%	0.00%	0.00%	0.00%	0.00%
NJ_FIM	0.00%	0.00%	0.00%	0.00%	6.48%	8.88%	6.79%	6.69%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	3.89%	5.33%	4.07%	4.01%
NJ_SAU	5.14%	0.00%	4.03%	4.03%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	0.51%	0.00%	0.40%	0.40%	0.00%	0.00%	0.00%	0.00%
NJ_WAK2	2.06%	0.00%	1.61%	1.61%	0.00%	0.00%	0.00%	0.00%
SJ_CIV	13.17%	0.00%	4.81%	4.84%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	10.13%	0.00%	3.70%	3.72%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	15.83%	19.96%	5.57%	14.98%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	5.93%	7.49%	2.09%	5.62%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
06R (cont.)								
SN_CIV1	32.80%	40.33%	16.31%	16.38%	0.00%	0.00%	0.00%	0.00%
SN_FIM	7.46%	9.14%	3.71%	3.72%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	18.08%	16.76%	19.80%	18.18%
SN_LUP	0.00%	0.00%	0.00%	0.00%	29.83%	27.66%	32.68%	29.99%
SW_CIV	1.83%	0.00%	5.24%	5.23%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.25%	0.00%	0.72%	0.72%	0.00%	0.00%	0.00%	0.00%
SW_N1	1.95%	0.00%	5.60%	5.59%	4.27%	2.36%	2.42%	3.93%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
07L								
LN_BLH1	0.00%	0.00%	0.00%	0.00%	2.20%	0.41%	2.02%	2.05%
LN_BLH2	0.00%	0.00%	0.00%	0.00%	5.13%	0.95%	4.71%	4.78%
LN_CIV2	1.60%	1.04%	8.00%	7.95%	0.00%	0.00%	0.00%	0.00%
LN_LUP	0.00%	0.00%	0.00%	0.00%	0.74%	0.14%	0.67%	0.69%
LN_STR	7.21%	4.64%	36.00%	35.77%	0.00%	0.00%	0.00%	0.00%
LN_VTU	0.00%	0.00%	0.00%	0.00%	8.06%	1.49%	7.41%	7.52%
LW_CIV1	0.00%	0.00%	2.45%	2.44%	0.00%	0.00%	0.00%	0.00%
LW_CIV2	0.00%	0.00%	9.82%	9.74%	0.00%	0.00%	0.00%	0.00%
LW_FIM	0.00%	0.00%	14.72%	14.60%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.19%	0.16%	0.61%	0.27%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.19%	0.16%	0.61%	0.27%
LW_STR	0.00%	0.00%	4.91%	4.87%	0.00%	0.00%	0.00%	0.00%
LW_SXC	0.00%	0.00%	0.00%	0.00%	0.96%	0.81%	3.03%	1.35%
LW_SXC1	0.00%	0.00%	0.00%	0.00%	0.38%	0.32%	1.21%	0.54%
LW_VTU	0.00%	0.00%	0.00%	0.00%	7.66%	6.46%	24.23%	10.77%
NJ_BLH1	0.00%	0.00%	0.00%	0.00%	3.50%	4.62%	0.77%	3.05%
NJ_BLH2	0.00%	0.00%	0.00%	0.00%	4.38%	5.77%	0.96%	3.81%
NJ_SAU	18.04%	0.00%	2.73%	2.82%	0.00%	0.00%	0.00%	0.00%
SJ_BLH	0.00%	0.00%	0.00%	0.00%	11.44%	15.99%	5.13%	10.52%
SJ_CIV1	9.52%	17.59%	1.74%	1.81%	0.00%	0.00%	0.00%	0.00%
SJ_CIV2	5.72%	10.54%	1.04%	1.09%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	1.90%	3.50%	0.35%	0.36%	0.00%	0.00%	0.00%	0.00%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	4.58%	6.39%	2.05%	4.21%
SJ_VTU	0.00%	0.00%	0.00%	0.00%	6.86%	9.59%	3.08%	6.31%
SN_BLH	0.00%	0.00%	0.00%	0.00%	22.63%	24.58%	20.06%	22.26%
SN_CIV2	8.12%	15.68%	0.89%	0.96%	0.00%	0.00%	0.00%	0.00%
SN_FIM	16.23%	31.34%	1.78%	1.92%	0.00%	0.00%	0.00%	0.00%
SN_N1	0.00%	0.00%	0.00%	0.00%	3.14%	3.41%	2.79%	3.09%
SN_OCN	8.12%	15.68%	0.89%	0.96%	0.00%	0.00%	0.00%	0.00%
SN_VTU	0.00%	0.00%	0.00%	0.00%	14.46%	15.70%	12.82%	14.23%
SW_BLH	0.00%	0.00%	0.00%	0.00%	1.31%	1.15%	2.94%	1.61%
SW_CIV1	13.08%	0.00%	8.17%	8.18%	0.00%	0.00%	0.00%	0.00%
SW_N1	10.47%	0.00%	6.53%	6.54%	0.65%	0.57%	1.47%	0.81%
SW_VTU	0.00%	0.00%	0.00%	0.00%	1.53%	1.34%	3.43%	1.88%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
07R								
LN_B LH1	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	15.28%	12.34%
LN_CIV1	4.68%	6.60%	8.50%	7.08%	0.00%	0.00%	0.00%	0.00%
LN_STR	11.70%	16.51%	21.25%	17.70%	0.00%	0.00%	0.00%	0.00%
LW_B LH	0.00%	0.00%	0.00%	0.00%	2.44%	7.27%	3.55%	3.53%
LW_CIV1	0.74%	0.65%	4.97%	3.28%	0.00%	0.00%	0.00%	0.00%
LW_CIV2	0.74%	0.65%	4.97%	3.28%	0.00%	0.00%	0.00%	0.00%
LW_CIV3	0.37%	0.33%	2.48%	1.64%	0.00%	0.00%	0.00%	0.00%
LW_CIV4	1.47%	1.31%	9.94%	6.56%	0.00%	0.00%	0.00%	0.00%
LW_FIM	2.02%	1.80%	13.67%	9.02%	0.00%	0.00%	0.00%	0.00%
LW_LUP	0.00%	0.00%	0.00%	0.00%	2.44%	7.26%	3.55%	3.53%
LW_STR	0.74%	0.65%	4.97%	3.28%	0.00%	0.00%	0.00%	0.00%
LW_VTU	0.00%	0.00%	0.00%	0.00%	28.55%	84.77%	41.52%	41.19%
NJ_B LH1	0.00%	0.00%	0.00%	0.00%	4.62%	0.00%	0.40%	1.21%
NJ_B LH2	0.00%	0.00%	0.00%	0.00%	6.93%	0.00%	0.60%	1.81%
NJ_OCN	6.28%	4.37%	2.00%	3.60%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	1.71%	1.19%	0.54%	0.98%	0.00%	0.00%	0.00%	0.00%
SJ_CIV1	5.78%	4.16%	1.27%	2.98%	0.00%	0.00%	0.00%	0.00%
SJ_CIV2	5.78%	4.16%	1.27%	2.98%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	1.45%	1.04%	0.32%	0.75%	0.00%	0.00%	0.00%	0.00%
SJ_H20	0.00%	0.00%	0.00%	0.00%	39.84%	0.00%	5.93%	12.29%
SJ_OCN	10.85%	7.79%	2.38%	5.59%	0.00%	0.00%	0.00%	0.00%
SN_B LH	0.00%	0.00%	0.00%	0.00%	6.99%	0.00%	21.06%	17.22%
SN_CIV1	24.68%	23.15%	4.12%	12.23%	0.00%	0.00%	0.00%	0.00%
SN_OCN	15.71%	14.73%	2.62%	7.79%	0.00%	0.00%	0.00%	0.00%
SW_CIV1	1.77%	3.64%	4.91%	3.76%	0.00%	0.00%	0.00%	0.00%
SW_CIV2	1.77%	3.64%	4.91%	3.76%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.63%	1.30%	1.75%	1.34%	0.00%	0.00%	0.00%	0.00%
SW_N1	1.01%	2.08%	2.80%	2.15%	1.29%	0.22%	2.70%	2.29%
SW_N2	0.00%	0.00%	0.00%	0.00%	2.59%	0.47%	5.40%	4.59%
SW_OCN	0.13%	0.26%	0.35%	0.27%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
24L								
LN_FIM	0.67%	1.91%	1.04%	1.06%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.11%	0.01%	0.07%	0.09%
LN_LUP	0.00%	0.00%	0.00%	0.00%	1.71%	0.19%	1.15%	1.46%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	1.86%	0.21%	1.24%	1.59%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	0.50%	0.06%	0.33%	0.43%
LN_STR	2.36%	6.69%	3.62%	3.70%	1.34%	0.15%	0.90%	1.15%
LN_STR2	0.34%	0.96%	0.51%	0.53%	0.00%	0.00%	0.00%	0.00%
LN_WAK	0.67%	1.91%	1.04%	1.06%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	17.17%	17.64%	7.15%	16.21%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.86%	0.88%	0.36%	0.81%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.34%	0.41%	0.79%	0.40%
LW_LUP	0.00%	0.00%	0.00%	0.00%	1.00%	1.20%	2.34%	1.19%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
24L (cont.)								
LW_MZB1	0.00%	0.00%	0.00%	0.00%	0.56%	0.68%	1.32%	0.67%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	1.37%	1.64%	3.21%	1.63%
LW_STR	3.15%	3.23%	1.31%	2.97%	3.30%	3.96%	7.74%	3.94%
LW_SXC	0.00%	0.00%	0.00%	0.00%	0.03%	0.04%	0.08%	0.04%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	3.38%	5.09%	3.75%	3.63%
NJ_MPD	0.00%	0.00%	0.00%	0.00%	0.29%	0.43%	0.32%	0.31%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.51%	0.76%	0.56%	0.55%
NJ_SAU	5.19%	3.67%	2.06%	4.43%	0.00%	0.00%	0.00%	0.00%
NJ_VTU	0.00%	0.00%	0.00%	0.00%	3.92%	5.90%	4.34%	4.21%
NJ_WAK	5.93%	4.20%	2.35%	5.06%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	16.24%	16.63%	6.19%	15.26%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	6.45%	4.15%	2.15%	5.64%
SJ_MZB	0.00%	0.00%	0.00%	0.00%	0.64%	0.41%	0.21%	0.56%
SJ_STR	3.78%	3.87%	1.44%	3.55%	1.96%	1.26%	0.65%	1.71%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	4.91%	3.16%	1.63%	4.29%
SJ_VNY	0.00%	0.00%	0.00%	0.00%	0.13%	0.08%	0.04%	0.11%
SN_FIM	18.62%	15.08%	30.73%	18.95%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	12.29%	13.46%	12.79%	12.49%
SN_LUP	0.00%	0.00%	0.00%	0.00%	15.70%	16.64%	15.45%	15.78%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	21.94%	24.03%	22.83%	22.30%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	1.95%	2.14%	2.04%	1.99%
SN_N1	22.40%	18.13%	36.95%	22.79%	12.27%	13.45%	12.78%	12.48%
SN_VIS	1.01%	0.82%	1.66%	1.02%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.41%	1.10%	0.90%	0.65%	0.00%	0.00%	0.00%	0.00%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.25%	0.08%	0.20%	0.22%
SW_MZB	0.00%	0.00%	0.00%	0.00%	0.43%	0.14%	0.36%	0.39%
SW_N1	0.41%	1.10%	0.90%	0.65%	0.86%	0.28%	0.71%	0.77%
SW_WAK	0.82%	2.20%	1.80%	1.31%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
24R								
LN_FIM	0.57%	1.38%	0.95%	0.78%	0.00%	0.00%	0.00%	0.00%
LN_LUP	0.00%	0.00%	0.00%	0.00%	0.34%	0.13%	0.35%	0.34%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	1.08%	0.42%	1.12%	1.06%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	0.16%	0.06%	0.16%	0.15%
LN_STR	3.13%	7.49%	5.18%	4.24%	0.13%	0.05%	0.14%	0.13%
LN_VIS	0.10%	0.23%	0.16%	0.13%	0.00%	0.00%	0.00%	0.00%
LN_WAK	0.70%	1.68%	1.16%	0.95%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	9.81%	5.74%	6.45%	8.62%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	1.34%	0.79%	0.89%	1.18%	0.00%	0.00%	0.00%	0.00%
LW_STR	2.18%	1.27%	1.43%	1.91%	0.00%	0.00%	0.00%	0.00%
LW_VIS	0.26%	0.15%	0.17%	0.23%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	9.84%	18.04%	3.16%	8.90%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	2.83%	5.18%	0.90%	2.56%
NJ_SAU	4.69%	3.02%	2.94%	4.16%	0.00%	0.00%	0.00%	0.00%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
24R (cont.)								
NJ_STR	0.06%	0.04%	0.04%	0.06%	0.00%	0.00%	0.00%	0.00%
NJ_VIS	0.11%	0.07%	0.07%	0.10%	0.00%	0.00%	0.00%	0.00%
NJ_VTU	0.00%	0.00%	0.00%	0.00%	13.68%	25.09%	4.39%	12.37%
NJ_WAK	4.29%	2.77%	2.70%	3.81%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	17.60%	18.37%	10.14%	17.00%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	6.05%	2.24%	1.11%	4.95%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	1.57%	0.58%	0.29%	1.29%
SJ_STR	2.30%	2.41%	1.33%	2.23%	1.58%	0.58%	0.29%	1.29%
SJ_TR1	1.20%	1.25%	0.69%	1.16%	0.00%	0.00%	0.00%	0.00%
SJ_TR2	0.00%	0.00%	0.00%	0.00%	1.58%	0.58%	0.29%	1.29%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	4.00%	1.48%	0.73%	3.27%
SJ_VIS	0.24%	0.25%	0.14%	0.23%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.33%	0.35%	0.19%	0.32%	0.00%	0.00%	0.00%	0.00%
SN_FIM	26.14%	26.00%	32.85%	26.80%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	11.42%	8.88%	17.59%	12.50%
SN_LUP	0.00%	0.00%	0.00%	0.00%	9.17%	7.13%	14.13%	10.04%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	17.59%	13.68%	27.11%	19.25%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	3.09%	2.40%	4.76%	3.38%
SN_N1	22.88%	22.76%	28.76%	23.45%	14.32%	11.13%	22.07%	15.67%
SN_VIS	0.93%	0.92%	1.16%	0.95%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.18%	0.49%	0.42%	0.27%	0.00%	0.00%	0.00%	0.00%
SW_N1	0.43%	1.17%	0.99%	0.64%	1.57%	2.34%	1.41%	1.57%
SW_VIS	0.02%	0.05%	0.04%	0.03%	0.00%	0.00%	0.00%	0.00%
SW_WAK	0.50%	1.36%	1.15%	0.75%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
25L								
25LRNP	10.11%	8.80%	8.95%	9.72%	0.00%	0.00%	0.00%	0.00%
LN_FIM1	0.19%	0.28%	0.32%	0.22%	0.00%	0.00%	0.00%	0.00%
LN_FIM2	0.04%	0.05%	0.06%	0.04%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.42%	0.21%	1.23%	0.74%
LN_LUP	0.00%	0.00%	0.00%	0.00%	1.21%	0.61%	3.50%	2.11%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	4.29%	2.17%	12.43%	7.50%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	1.03%	0.52%	2.98%	1.80%
LN_STR	13.12%	19.87%	22.34%	15.46%	0.48%	0.24%	1.40%	0.85%
LN_VIS	0.59%	0.88%	0.95%	0.68%	0.00%	0.00%	0.00%	0.00%
LN_WAK1	0.74%	1.12%	1.26%	0.87%	0.00%	0.00%	0.00%	0.00%
LN_WAK2	0.05%	0.08%	0.09%	0.06%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	1.60%	1.02%	1.46%	1.47%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.05%	0.03%	0.05%	0.05%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.97%	2.31%	1.76%	1.47%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.30%	0.72%	0.55%	0.46%
LW_MZB1	0.00%	0.00%	0.00%	0.00%	5.14%	12.25%	9.34%	7.78%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	0.85%	2.02%	1.54%	1.28%
LW_STR	3.62%	2.31%	3.31%	3.33%	4.60%	10.96%	8.35%	6.96%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25L (cont.)								
LW_STR1	0.00%	0.00%	0.00%	0.00%	0.67%	1.58%	1.21%	1.01%
LW_STR2	0.00%	0.00%	0.00%	0.00%	3.45%	8.21%	6.27%	5.22%
LW_STR3	0.00%	0.00%	0.00%	0.00%	2.90%	6.92%	5.28%	4.40%
LW_VIS	1.31%	0.83%	1.19%	1.20%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	0.63%	0.32%	0.25%	0.43%
NJ_MPD	1.42%	0.98%	1.07%	1.29%	0.00%	0.00%	0.00%	0.00%
NJ_MZB1	0.00%	0.00%	0.00%	0.00%	7.80%	3.96%	3.04%	5.31%
NJ_MZB2	0.00%	0.00%	0.00%	0.00%	3.66%	1.86%	1.43%	2.49%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.39%	0.20%	0.15%	0.27%
NJ_SAU	0.73%	0.50%	0.55%	0.66%	0.00%	0.00%	0.00%	0.00%
NJ_VIS	3.31%	2.28%	2.50%	3.02%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	0.80%	0.55%	0.60%	0.73%	0.00%	0.00%	0.00%	0.00%
SJ_FIM1	3.63%	2.87%	2.59%	3.37%	0.00%	0.00%	0.00%	0.00%
SJ_FIM2	0.17%	0.14%	0.12%	0.16%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	3.85%	2.14%	0.46%	2.20%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	9.79%	5.44%	1.17%	5.60%
SJ_MZB1	0.00%	0.00%	0.00%	0.00%	19.26%	10.71%	2.31%	11.02%
SJ_MZB2	0.00%	0.00%	0.00%	0.00%	3.69%	2.05%	0.44%	2.11%
SJ_ST2	0.00%	0.00%	0.00%	0.00%	3.21%	1.78%	0.38%	1.84%
SJ_STR	16.67%	13.16%	11.89%	15.46%	1.93%	1.07%	0.23%	1.10%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	0.96%	0.53%	0.12%	0.55%
SJ_VIS	2.44%	1.93%	1.74%	2.26%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.18%	0.15%	0.13%	0.17%	3.53%	1.96%	0.42%	2.02%
SN_FIM1	1.19%	1.23%	1.05%	1.18%	0.00%	0.00%	0.00%	0.00%
SN_LUP	0.00%	0.00%	0.00%	0.00%	1.36%	0.25%	2.98%	1.92%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	6.72%	1.24%	14.74%	9.48%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	1.52%	0.28%	3.33%	2.14%
SN_N1	30.09%	31.16%	26.72%	29.93%	0.48%	0.09%	1.05%	0.68%
SN_VIS	2.77%	2.80%	2.41%	2.74%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.11%	0.14%	0.18%	0.12%	0.00%	0.00%	0.00%	0.00%
SW_GMN	0.00%	0.00%	0.00%	0.00%	0.26%	0.94%	0.63%	0.50%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.50%	1.77%	1.19%	0.94%
SW_MZB1	0.00%	0.00%	0.00%	0.00%	3.55%	12.59%	8.43%	6.71%
SW_MZB2	0.00%	0.00%	0.00%	0.00%	0.21%	0.73%	0.49%	0.39%
SW_N1	4.33%	5.85%	7.25%	4.95%	0.38%	1.35%	0.91%	0.72%
SW_VIS	0.43%	0.58%	0.73%	0.50%	0.00%	0.00%	0.00%	0.00%
SW_WAK1	0.30%	0.40%	0.50%	0.34%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
25R								
LN_FIM1	0.28%	0.45%	0.51%	0.36%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.15%	0.03%	0.14%	0.13%
LN_LUP	0.00%	0.00%	0.00%	0.00%	4.09%	0.92%	3.92%	3.68%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	10.12%	2.27%	9.70%	9.10%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	2.40%	0.54%	2.30%	2.16%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25R (cont.)								
LN_STR	9.94%	15.78%	17.83%	12.60%	0.00%	0.00%	0.00%	0.00%
LN_STR1	0.00%	0.00%	0.00%	0.00%	3.99%	0.89%	3.82%	3.59%
LN_STR2	0.00%	0.00%	0.00%	0.00%	0.83%	0.19%	0.80%	0.75%
LN_SXC	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.03%	0.03%
LN_VIS	2.27%	3.61%	4.07%	2.88%	0.00%	0.00%	0.00%	0.00%
LN_WAK1	1.28%	2.03%	2.29%	1.62%	0.00%	0.00%	0.00%	0.00%
LN_WAK2	0.57%	0.90%	1.02%	0.72%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	1.39%	0.42%	3.02%	1.32%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.46%	0.14%	1.01%	0.44%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.19%	0.27%	0.58%	0.29%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.61%	0.87%	1.83%	0.91%
LW_MZB1	0.00%	0.00%	0.00%	0.00%	0.95%	1.34%	2.84%	1.41%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	0.76%	1.07%	2.26%	1.13%
LW_STR	2.44%	0.74%	5.28%	2.31%	0.00%	0.00%	0.00%	0.00%
LW_STR1	0.00%	0.00%	0.00%	0.00%	3.54%	5.00%	10.59%	5.27%
LW_STR2	0.00%	0.00%	0.00%	0.00%	1.13%	1.60%	3.39%	1.69%
LW_STR3	0.00%	0.00%	0.00%	0.00%	0.10%	0.14%	0.30%	0.15%
LW_SXC	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.02%
LW_VIS	2.21%	0.67%	4.78%	2.09%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	0.13%	0.15%	0.05%	0.11%
NJ_MPD	1.55%	1.46%	0.70%	1.42%	0.00%	0.00%	0.00%	0.00%
NJ_MZB1	0.00%	0.00%	0.00%	0.00%	4.90%	5.99%	2.11%	4.41%
NJ_MZB2	0.00%	0.00%	0.00%	0.00%	2.29%	2.80%	0.98%	2.06%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.51%	0.62%	0.22%	0.46%
NJ_SAU	1.19%	1.12%	0.54%	1.09%	0.00%	0.00%	0.00%	0.00%
NJ_TWA	0.00%	0.00%	0.00%	0.00%	0.25%	0.31%	0.11%	0.23%
NJ_VIS	9.56%	8.97%	4.31%	8.73%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	1.08%	1.01%	0.48%	0.98%	0.00%	0.00%	0.00%	0.00%
SJ_FIM1	4.69%	4.02%	3.40%	4.34%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	3.91%	6.13%	1.77%	3.70%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	3.98%	6.26%	1.81%	3.77%
SJ_MZB1	0.00%	0.00%	0.00%	0.00%	15.29%	24.01%	6.95%	14.47%
SJ_MZB2	0.00%	0.00%	0.00%	0.00%	0.71%	1.12%	0.32%	0.67%
SJ_STR	16.26%	13.93%	11.78%	15.03%	1.39%	2.18%	0.63%	1.31%
SJ_TR2	0.00%	0.00%	0.00%	0.00%	0.60%	0.95%	0.27%	0.57%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	2.86%	4.49%	1.30%	2.70%
SJ_VIS	5.63%	4.82%	4.08%	5.20%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.00%	0.00%	0.00%	0.00%	0.56%	0.87%	0.25%	0.53%
SN_FIM1	1.87%	1.92%	1.24%	1.80%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	0.71%	0.58%	0.78%	0.71%
SN_LUP	0.00%	0.00%	0.00%	0.00%	6.37%	5.28%	7.03%	6.39%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	15.14%	12.53%	16.69%	15.18%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	2.31%	1.91%	2.55%	2.32%
SN_N1	25.52%	26.18%	16.88%	24.62%	3.01%	2.49%	3.32%	3.01%

TABLE 4-13 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25R (cont.)								
SN_N2	0.00%	0.00%	0.00%	0.00%	0.54%	0.45%	0.60%	0.54%
SN_VIS	6.96%	7.10%	5.79%	6.85%	0.00%	0.00%	0.00%	0.00%
SW_GMN	0.00%	0.00%	0.00%	0.00%	0.16%	0.16%	0.27%	0.18%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.60%	0.61%	1.03%	0.70%
SW_MZB1	0.00%	0.00%	0.00%	0.00%	3.31%	3.37%	5.72%	3.85%
SW_MZB2	0.00%	0.00%	0.00%	0.00%	0.38%	0.38%	0.65%	0.44%
SW_N1	3.79%	3.70%	8.61%	4.37%	0.90%	0.91%	1.55%	1.04%
SW_N2	0.00%	0.00%	0.00%	0.00%	0.28%	0.29%	0.48%	0.33%
SW_WAK1	1.05%	1.03%	2.39%	1.21%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

Does not include helicopter operations.

SOURCES: ESA Airports, October 2014 using information presented in Appendix J1-1 of the Draft EIR for the LAX Specific Plan Amendment Study and LAX ANOMS data for calendar year 2013.

**TABLE 4-14
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
06L								
LN_CIV1	1.25%	4.75%	8.93%	5.76%	0.00%	0.00%	0.00%	0.00%
LN_CIV2	1.12%	4.27%	8.04%	5.18%	0.00%	0.00%	0.00%	0.00%
LN_CIV3	0.25%	0.95%	1.79%	1.15%	0.00%	0.00%	0.00%	0.00%
LN_STR	1.49%	5.70%	10.72%	6.91%	0.00%	0.00%	0.00%	0.00%
LW_CIV1	17.60%	7.59%	13.61%	14.82%	0.00%	0.00%	0.00%	0.00%
LW_FIM	2.40%	1.04%	1.86%	2.02%	0.00%	0.00%	0.00%	0.00%
NJ_CAS	5.17%	4.42%	2.98%	3.90%	0.00%	0.00%	0.00%	0.00%
NJ_FIM	0.00%	0.00%	0.00%	0.00%	11.71%	16.42%	7.41%	11.51%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	23.40%	32.89%	14.84%	23.01%
NJ_WAK	5.17%	4.42%	2.98%	3.90%	0.00%	0.00%	0.00%	0.00%
SJ_CIV	2.64%	3.31%	1.12%	1.82%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	17.63%	22.05%	7.48%	12.16%	0.00%	0.00%	0.00%	0.00%
SN_CIV1	22.58%	19.07%	15.38%	18.34%	0.00%	0.00%	0.00%	0.00%
SN_CIV2	0.96%	0.81%	0.65%	0.78%	0.00%	0.00%	0.00%	0.00%
SN_FIM	19.21%	16.23%	13.09%	15.61%	0.00%	0.00%	0.00%	0.00%
SN_LUP	0.00%	0.00%	0.00%	0.00%	64.89%	50.68%	77.75%	65.48%
SN_OCN	1.44%	1.22%	0.98%	1.17%	0.00%	0.00%	0.00%	0.00%
SW_CIV	0.65%	2.50%	6.23%	3.89%	0.00%	0.00%	0.00%	0.00%
SW_N1	0.43%	1.66%	4.15%	2.59%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
06R								
LN_CIV1	0.00%	0.00%	4.50%	4.48%	0.00%	0.00%	0.00%	0.00%
LN_CIV2	0.00%	0.00%	1.75%	1.74%	0.00%	0.00%	0.00%	0.00%
LN_FIM	0.00%	0.00%	1.25%	1.24%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	6.01%	1.13%	8.27%	5.90%
LN_GMN2	0.00%	0.00%	0.00%	0.00%	6.01%	1.13%	8.27%	5.90%
LN_STR	0.00%	0.00%	24.24%	24.14%	0.00%	0.00%	0.00%	0.00%
LW_CIV	3.49%	0.00%	2.82%	2.82%	0.00%	0.00%	0.00%	0.00%
LW_CIV1	2.00%	0.00%	1.61%	1.61%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	13.48%	0.00%	10.87%	10.88%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	3.99%	0.00%	3.22%	3.23%	0.00%	0.00%	0.00%	0.00%
LW_LUP	0.00%	0.00%	0.00%	0.00%	3.34%	7.45%	8.02%	4.19%
LW_LUP1	0.00%	0.00%	0.00%	0.00%	1.67%	3.73%	4.01%	2.10%
LW_STR	1.00%	0.00%	0.81%	0.81%	0.00%	0.00%	0.00%	0.00%
NJ_CAS	0.48%	0.00%	0.42%	0.42%	0.00%	0.00%	0.00%	0.00%
NJ_FIM	0.00%	0.00%	0.00%	0.00%	6.36%	8.28%	6.43%	6.51%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	3.82%	4.97%	3.86%	3.91%
NJ_SAU	4.82%	0.00%	4.22%	4.22%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	0.48%	0.00%	0.42%	0.42%	0.00%	0.00%	0.00%	0.00%
NJ_WAK2	1.93%	0.00%	1.69%	1.69%	0.00%	0.00%	0.00%	0.00%
SJ_CIV	12.63%	0.00%	5.07%	5.10%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	9.72%	0.00%	3.90%	3.93%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	15.56%	18.75%	5.36%	14.63%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	5.84%	7.03%	2.01%	5.49%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
06R (cont.)								
SN_CIV1	33.64%	81.47%	18.78%	18.86%	0.00%	0.00%	0.00%	0.00%
SN_FIM	7.64%	18.53%	4.27%	4.29%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	17.68%	17.01%	19.68%	17.86%
SN_LUP	0.00%	0.00%	0.00%	0.00%	29.17%	28.06%	32.47%	29.47%
SW_CIV	2.13%	0.00%	4.60%	4.59%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.29%	0.00%	0.63%	0.63%	0.00%	0.00%	0.00%	0.00%
SW_N1	2.28%	0.00%	4.91%	4.90%	4.54%	2.47%	1.61%	4.05%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
07L								
LN_BLH1	0.00%	0.00%	0.00%	0.00%	2.21%	0.41%	2.11%	2.08%
LN_BLH2	0.00%	0.00%	0.00%	0.00%	5.15%	0.95%	4.93%	4.84%
LN_CIV2	1.56%	1.03%	11.32%	11.21%	0.00%	0.00%	0.00%	0.00%
LN_LUP	0.00%	0.00%	0.00%	0.00%	0.74%	0.14%	0.70%	0.69%
LN_STR	7.03%	4.62%	50.93%	50.44%	0.00%	0.00%	0.00%	0.00%
LN_VTU	0.00%	0.00%	0.00%	0.00%	8.10%	1.49%	7.75%	7.60%
LW_CIV1	0.00%	0.00%	1.21%	1.19%	0.00%	0.00%	0.00%	0.00%
LW_CIV2	0.00%	0.00%	4.83%	4.77%	0.00%	0.00%	0.00%	0.00%
LW_FIM	0.00%	0.00%	7.24%	7.16%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.21%	0.18%	0.59%	0.28%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.21%	0.18%	0.59%	0.28%
LW_STR	0.00%	0.00%	2.41%	2.39%	0.00%	0.00%	0.00%	0.00%
LW_SXC	0.00%	0.00%	0.00%	0.00%	1.05%	0.89%	2.95%	1.39%
LW_SXC1	0.00%	0.00%	0.00%	0.00%	0.42%	0.35%	1.18%	0.56%
LW_VTU	0.00%	0.00%	0.00%	0.00%	8.39%	7.10%	23.57%	11.14%
NJ_BLH1	0.00%	0.00%	0.00%	0.00%	3.36%	4.37%	0.45%	2.89%
NJ_BLH2	0.00%	0.00%	0.00%	0.00%	4.21%	5.47%	0.57%	3.61%
NJ_SAU	17.27%	0.00%	3.65%	3.75%	0.00%	0.00%	0.00%	0.00%
SJ_BLH	0.00%	0.00%	0.00%	0.00%	11.12%	15.57%	5.20%	10.30%
SJ_CIV1	9.21%	17.61%	2.24%	2.34%	0.00%	0.00%	0.00%	0.00%
SJ_CIV2	5.52%	10.55%	1.34%	1.40%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	1.84%	3.52%	0.45%	0.47%	0.00%	0.00%	0.00%	0.00%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	4.45%	6.23%	2.08%	4.12%
SJ_VTU	0.00%	0.00%	0.00%	0.00%	6.67%	9.34%	3.12%	6.18%
SN_BLH	0.00%	0.00%	0.00%	0.00%	22.29%	24.60%	20.85%	22.17%
SN_CIV2	7.37%	15.67%	1.26%	1.35%	0.00%	0.00%	0.00%	0.00%
SN_FIM	14.74%	31.34%	2.52%	2.70%	0.00%	0.00%	0.00%	0.00%
SN_N1	0.00%	0.00%	0.00%	0.00%	3.10%	3.42%	2.90%	3.08%
SN_OCN	7.37%	15.67%	1.26%	1.35%	0.00%	0.00%	0.00%	0.00%
SN_VTU	0.00%	0.00%	0.00%	0.00%	14.25%	15.72%	13.32%	14.17%
SW_BLH	0.00%	0.00%	0.00%	0.00%	1.53%	1.35%	2.67%	1.73%
SW_CIV1	15.62%	0.00%	5.19%	5.26%	0.00%	0.00%	0.00%	0.00%
SW_N1	12.49%	0.00%	4.15%	4.21%	0.77%	0.68%	1.34%	0.87%
SW_VTU	0.00%	0.00%	0.00%	0.00%	1.79%	1.58%	3.12%	2.02%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
07R								
LN_BLH1	0.00%	0.00%	0.00%	0.00%	4.19%	0.00%	16.04%	13.12%
LN_CIV1	4.75%	6.55%	12.21%	8.72%	0.00%	0.00%	0.00%	0.00%
LN_STR	11.88%	16.37%	30.52%	21.79%	0.00%	0.00%	0.00%	0.00%
LW_BLH	0.00%	0.00%	0.00%	0.00%	3.21%	7.27%	3.49%	3.56%
LW_CIV1	0.77%	0.65%	3.30%	2.07%	0.00%	0.00%	0.00%	0.00%
LW_CIV2	0.77%	0.65%	3.30%	2.07%	0.00%	0.00%	0.00%	0.00%
LW_CIV3	0.38%	0.33%	1.65%	1.03%	0.00%	0.00%	0.00%	0.00%
LW_CIV4	1.54%	1.31%	6.60%	4.14%	0.00%	0.00%	0.00%	0.00%
LW_FIM	2.11%	1.80%	9.08%	5.69%	0.00%	0.00%	0.00%	0.00%
LW_LUP	0.00%	0.00%	0.00%	0.00%	3.21%	7.27%	3.49%	3.56%
LW_STR	0.77%	0.65%	3.30%	2.07%	0.00%	0.00%	0.00%	0.00%
LW_VTU	0.00%	0.00%	0.00%	0.00%	37.53%	84.78%	40.71%	41.54%
NJ_BLH1	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%	0.40%	1.22%
NJ_BLH2	0.00%	0.00%	0.00%	0.00%	6.83%	0.00%	0.60%	1.83%
NJ_OCN	6.09%	4.09%	2.66%	4.19%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	1.66%	1.12%	0.73%	1.14%	0.00%	0.00%	0.00%	0.00%
SJ_CIV1	5.65%	3.99%	1.75%	3.53%	0.00%	0.00%	0.00%	0.00%
SJ_CIV2	5.65%	3.99%	1.75%	3.53%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	1.41%	1.00%	0.44%	0.88%	0.00%	0.00%	0.00%	0.00%
SJ_H20	0.00%	0.00%	0.00%	0.00%	36.67%	0.00%	6.07%	12.02%
SJ_OCN	10.60%	7.48%	3.28%	6.62%	0.00%	0.00%	0.00%	0.00%
SN_BLH	0.00%	0.00%	0.00%	0.00%	3.63%	0.00%	21.89%	17.49%
SN_CIV1	24.57%	23.04%	5.96%	14.87%	0.00%	0.00%	0.00%	0.00%
SN_OCN	15.64%	14.66%	3.79%	9.46%	0.00%	0.00%	0.00%	0.00%
SW_CIV1	1.91%	4.11%	3.23%	2.73%	0.00%	0.00%	0.00%	0.00%
SW_CIV2	1.91%	4.11%	3.23%	2.73%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.68%	1.47%	1.15%	0.98%	0.00%	0.00%	0.00%	0.00%
SW_N1	1.09%	2.35%	1.84%	1.56%	0.05%	0.24%	2.44%	1.89%
SW_N2	0.00%	0.00%	0.00%	0.00%	0.12%	0.45%	4.88%	3.78%
SW_OCN	0.14%	0.29%	0.23%	0.20%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
24L								
LN_FIM	0.67%	1.94%	1.00%	1.05%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.10%	0.01%	0.07%	0.09%
LN_LUP	0.00%	0.00%	0.00%	0.00%	1.68%	0.19%	1.12%	1.43%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	1.83%	0.20%	1.22%	1.56%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	0.49%	0.06%	0.33%	0.42%
LN_STR	2.35%	6.77%	3.50%	3.69%	1.32%	0.14%	0.87%	1.12%
LN_STR2	0.33%	0.97%	0.50%	0.53%	0.00%	0.00%	0.00%	0.00%
LN_WAK	0.67%	1.94%	1.00%	1.05%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	18.39%	16.23%	7.00%	16.50%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.92%	0.81%	0.35%	0.82%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.40%	0.43%	0.92%	0.47%
LW_LUP	0.00%	0.00%	0.00%	0.00%	1.17%	1.28%	2.70%	1.39%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
24L (cont.)								
LW_MZB1	0.00%	0.00%	0.00%	0.00%	0.66%	0.72%	1.53%	0.78%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	1.61%	1.75%	3.71%	1.90%
LW_STR	3.37%	2.97%	1.28%	3.03%	3.87%	4.22%	8.94%	4.59%
LW_SXC	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%	0.09%	0.04%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	3.23%	4.91%	3.34%	3.44%
NJ_MPD	0.00%	0.00%	0.00%	0.00%	0.28%	0.42%	0.29%	0.29%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.48%	0.74%	0.50%	0.52%
NJ_SAU	4.99%	3.69%	1.82%	4.27%	0.00%	0.00%	0.00%	0.00%
NJ_VTU	0.00%	0.00%	0.00%	0.00%	3.74%	5.70%	3.88%	3.99%
NJ_WAK	5.71%	4.21%	2.08%	4.88%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	15.65%	16.36%	5.63%	14.70%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	6.18%	3.99%	1.95%	5.36%
SJ_MZB	0.00%	0.00%	0.00%	0.00%	0.61%	0.40%	0.19%	0.53%
SJ_STR	3.64%	3.81%	1.31%	3.42%	1.88%	1.21%	0.59%	1.63%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	4.70%	3.04%	1.48%	4.08%
SJ_VNY	0.00%	0.00%	0.00%	0.00%	0.12%	0.08%	0.04%	0.10%
SN_FIM	18.40%	15.59%	31.46%	19.13%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	12.24%	13.51%	12.60%	12.44%
SN_LUP	0.00%	0.00%	0.00%	0.00%	15.59%	16.66%	15.18%	15.66%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	21.85%	24.11%	22.49%	22.20%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	1.95%	2.15%	2.01%	1.98%
SN_N1	22.13%	18.74%	37.82%	23.00%	12.23%	13.49%	12.58%	12.42%
SN_VIS	0.99%	0.84%	1.70%	1.03%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.44%	1.28%	0.89%	0.72%	0.00%	0.00%	0.00%	0.00%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.28%	0.09%	0.22%	0.25%
SW_MZB	0.00%	0.00%	0.00%	0.00%	0.49%	0.16%	0.39%	0.43%
SW_N1	0.44%	1.28%	0.89%	0.72%	0.97%	0.32%	0.78%	0.87%
SW_WAK	0.89%	2.57%	1.78%	1.45%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
24R								
LN_FIM	0.56%	1.37%	0.92%	0.77%	0.00%	0.00%	0.00%	0.00%
LN_LUP	0.00%	0.00%	0.00%	0.00%	0.35%	0.13%	0.35%	0.34%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	1.09%	0.42%	1.11%	1.06%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	0.16%	0.06%	0.16%	0.15%
LN_STR	3.06%	7.47%	5.03%	4.17%	0.13%	0.05%	0.13%	0.13%
LN_VIS	0.10%	0.23%	0.15%	0.13%	0.00%	0.00%	0.00%	0.00%
LN_WAK	0.69%	1.67%	1.13%	0.94%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	11.57%	5.77%	6.54%	9.85%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	1.59%	0.79%	0.90%	1.35%	0.00%	0.00%	0.00%	0.00%
LW_STR	2.57%	1.28%	1.45%	2.19%	0.00%	0.00%	0.00%	0.00%
LW_VIS	0.30%	0.15%	0.17%	0.26%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	9.53%	17.43%	2.88%	8.53%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	2.74%	5.01%	0.82%	2.45%
NJ_SAU	4.49%	2.98%	2.68%	3.99%	0.00%	0.00%	0.00%	0.00%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
24R (cont.)								
NJ_STR	0.06%	0.04%	0.04%	0.05%	0.00%	0.00%	0.00%	0.00%
NJ_VIS	0.10%	0.07%	0.06%	0.09%	0.00%	0.00%	0.00%	0.00%
NJ_VTU	0.00%	0.00%	0.00%	0.00%	13.25%	24.24%	4.00%	11.87%
NJ_WAK	4.12%	2.73%	2.45%	3.66%	0.00%	0.00%	0.00%	0.00%
SJ_FIM	16.87%	17.86%	9.42%	16.29%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	5.90%	2.16%	1.05%	4.78%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	1.53%	0.56%	0.27%	1.24%
SJ_STR	2.21%	2.34%	1.23%	2.13%	1.53%	0.56%	0.27%	1.24%
SJ_TR1	1.15%	1.22%	0.64%	1.11%	0.00%	0.00%	0.00%	0.00%
SJ_TR2	0.00%	0.00%	0.00%	0.00%	1.53%	0.56%	0.27%	1.24%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	3.89%	1.42%	0.69%	3.16%
SJ_VIS	0.23%	0.24%	0.13%	0.22%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.32%	0.34%	0.18%	0.31%	0.00%	0.00%	0.00%	0.00%
SN_FIM	25.53%	26.14%	33.55%	26.50%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	11.67%	9.27%	17.77%	12.78%
SN_LUP	0.00%	0.00%	0.00%	0.00%	9.37%	7.44%	14.27%	10.27%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	17.98%	14.28%	27.38%	19.69%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	3.16%	2.51%	4.81%	3.46%
SN_N1	22.35%	22.88%	29.37%	23.19%	14.64%	11.62%	22.29%	16.03%
SN_VIS	0.90%	0.93%	1.19%	0.94%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.20%	0.56%	0.44%	0.30%	0.00%	0.00%	0.00%	0.00%
SW_N1	0.47%	1.33%	1.05%	0.71%	1.55%	2.29%	1.46%	1.56%
SW_VIS	0.02%	0.06%	0.04%	0.03%	0.00%	0.00%	0.00%	0.00%
SW_WAK	0.55%	1.55%	1.22%	0.83%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
25L								
25LRNP	10.02%	8.60%	8.48%	9.57%	0.00%	0.00%	0.00%	0.00%
LN_FIM1	0.19%	0.29%	0.33%	0.22%	0.00%	0.00%	0.00%	0.00%
LN_FIM2	0.04%	0.05%	0.06%	0.04%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.46%	0.30%	1.42%	0.86%
LN_LUP	0.00%	0.00%	0.00%	0.00%	1.32%	0.87%	4.05%	2.45%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	4.68%	3.08%	14.38%	8.71%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	1.12%	0.74%	3.44%	2.09%
LN_STR	13.27%	20.28%	23.47%	15.73%	0.53%	0.35%	1.62%	0.98%
LN_VIS	0.59%	0.89%	1.00%	0.70%	0.00%	0.00%	0.00%	0.00%
LN_WAK1	0.75%	1.15%	1.32%	0.89%	0.00%	0.00%	0.00%	0.00%
LN_WAK2	0.06%	0.08%	0.09%	0.06%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	1.59%	0.87%	0.97%	1.38%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.05%	0.03%	0.03%	0.04%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.83%	0.99%	1.58%	1.17%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.26%	0.31%	0.49%	0.36%
LW_MZB1	0.00%	0.00%	0.00%	0.00%	4.40%	5.27%	8.37%	6.19%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	0.73%	0.87%	1.38%	1.02%
LW_STR	3.60%	1.96%	2.19%	3.13%	3.94%	4.71%	7.48%	5.54%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25L (cont.)								
LW_STR1	0.00%	0.00%	0.00%	0.00%	0.57%	0.68%	1.08%	0.80%
LW_STR2	0.00%	0.00%	0.00%	0.00%	2.95%	3.53%	5.61%	4.15%
LW_STR3	0.00%	0.00%	0.00%	0.00%	2.49%	2.98%	4.73%	3.50%
LW_VIS	1.30%	0.70%	0.79%	1.13%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	0.67%	0.46%	0.19%	0.44%
NJ_MPD	1.37%	0.90%	0.93%	1.23%	0.00%	0.00%	0.00%	0.00%
NJ_MZB1	0.00%	0.00%	0.00%	0.00%	8.26%	5.63%	2.28%	5.44%
NJ_MZB2	0.00%	0.00%	0.00%	0.00%	3.87%	2.64%	1.07%	2.55%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.41%	0.28%	0.11%	0.27%
NJ_SAU	0.70%	0.46%	0.48%	0.63%	0.00%	0.00%	0.00%	0.00%
NJ_VIS	3.21%	2.10%	2.17%	2.88%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	0.77%	0.51%	0.52%	0.70%	0.00%	0.00%	0.00%	0.00%
SJ_FIM1	3.56%	2.84%	2.61%	3.32%	0.00%	0.00%	0.00%	0.00%
SJ_FIM2	0.17%	0.13%	0.12%	0.16%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	4.02%	2.99%	0.51%	2.41%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	10.23%	7.60%	1.30%	6.13%
SJ_MZB1	0.00%	0.00%	0.00%	0.00%	20.12%	14.96%	2.55%	12.07%
SJ_MZB2	0.00%	0.00%	0.00%	0.00%	3.86%	2.87%	0.49%	2.31%
SJ_ST2	0.00%	0.00%	0.00%	0.00%	3.35%	2.49%	0.42%	2.01%
SJ_STR	16.31%	13.04%	11.99%	15.21%	2.01%	1.50%	0.25%	1.21%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	1.00%	0.75%	0.13%	0.60%
SJ_VIS	2.39%	1.91%	1.76%	2.23%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.18%	0.14%	0.13%	0.17%	3.69%	2.74%	0.47%	2.21%
SN_FIM1	1.20%	1.25%	1.14%	1.20%	0.00%	0.00%	0.00%	0.00%
SN_LUP	0.00%	0.00%	0.00%	0.00%	1.43%	0.36%	3.49%	2.22%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	7.05%	1.80%	17.25%	10.95%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	1.59%	0.41%	3.90%	2.48%
SN_N1	30.30%	31.62%	29.01%	30.42%	0.50%	0.13%	1.23%	0.78%
SN_VIS	2.79%	2.84%	2.62%	2.78%	0.00%	0.00%	0.00%	0.00%
SW_FIM	0.12%	0.15%	0.16%	0.13%	0.00%	0.00%	0.00%	0.00%
SW_GMN	0.00%	0.00%	0.00%	0.00%	0.20%	1.49%	0.47%	0.44%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.37%	2.82%	0.89%	0.82%
SW_MZB1	0.00%	0.00%	0.00%	0.00%	2.63%	20.09%	6.32%	5.85%
SW_MZB2	0.00%	0.00%	0.00%	0.00%	0.15%	1.16%	0.37%	0.34%
SW_N1	4.71%	6.16%	6.52%	5.19%	0.28%	2.16%	0.68%	0.63%
SW_VIS	0.47%	0.61%	0.65%	0.52%	0.00%	0.00%	0.00%	0.00%
SW_WAK1	0.32%	0.42%	0.45%	0.36%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
25R								
LN_FIM1	0.28%	0.45%	0.57%	0.37%	0.00%	0.00%	0.00%	0.00%
LN_GMN	0.00%	0.00%	0.00%	0.00%	0.15%	0.03%	0.15%	0.14%
LN_LUP	0.00%	0.00%	0.00%	0.00%	4.12%	0.93%	4.15%	3.75%
LN_MZB1	0.00%	0.00%	0.00%	0.00%	10.19%	2.31%	10.26%	9.28%
LN_MZB2	0.00%	0.00%	0.00%	0.00%	2.42%	0.55%	2.44%	2.20%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25R (cont.)								
LN_STR	9.95%	15.82%	19.82%	12.79%	0.00%	0.00%	0.00%	0.00%
LN_STR1	0.00%	0.00%	0.00%	0.00%	4.02%	0.91%	4.05%	3.66%
LN_STR2	0.00%	0.00%	0.00%	0.00%	0.84%	0.19%	0.84%	0.76%
LN_SXC	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.03%	0.03%
LN_VIS	2.27%	3.62%	4.53%	2.92%	0.00%	0.00%	0.00%	0.00%
LN_WAK1	1.28%	2.03%	2.55%	1.64%	0.00%	0.00%	0.00%	0.00%
LN_WAK2	0.57%	0.91%	1.13%	0.73%	0.00%	0.00%	0.00%	0.00%
LW_FIM1	1.55%	0.41%	1.72%	1.24%	0.00%	0.00%	0.00%	0.00%
LW_FIM2	0.52%	0.14%	0.57%	0.41%	0.00%	0.00%	0.00%	0.00%
LW_GMN	0.00%	0.00%	0.00%	0.00%	0.22%	0.26%	0.51%	0.29%
LW_LUP	0.00%	0.00%	0.00%	0.00%	0.70%	0.82%	1.61%	0.91%
LW_MZB1	0.00%	0.00%	0.00%	0.00%	1.09%	1.27%	2.50%	1.42%
LW_MZB2	0.00%	0.00%	0.00%	0.00%	0.87%	1.01%	1.99%	1.13%
LW_STR	2.72%	0.71%	3.01%	2.17%	0.00%	0.00%	0.00%	0.00%
LW_STR1	0.00%	0.00%	0.00%	0.00%	4.06%	4.73%	9.31%	5.27%
LW_STR2	0.00%	0.00%	0.00%	0.00%	1.30%	1.51%	2.99%	1.69%
LW_STR3	0.00%	0.00%	0.00%	0.00%	0.12%	0.14%	0.27%	0.15%
LW_SXC	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.02%
LW_VIS	2.46%	0.65%	2.72%	1.97%	0.00%	0.00%	0.00%	0.00%
NJ_GMN	0.00%	0.00%	0.00%	0.00%	0.12%	0.15%	0.05%	0.11%
NJ_MPD	1.49%	1.38%	0.73%	1.37%	0.00%	0.00%	0.00%	0.00%
NJ_MZB1	0.00%	0.00%	0.00%	0.00%	4.74%	5.92%	1.89%	4.26%
NJ_MZB2	0.00%	0.00%	0.00%	0.00%	2.22%	2.77%	0.88%	1.99%
NJ_PMD	0.00%	0.00%	0.00%	0.00%	0.49%	0.62%	0.20%	0.44%
NJ_SAU	1.14%	1.06%	0.56%	1.05%	0.00%	0.00%	0.00%	0.00%
NJ_TWA	0.00%	0.00%	0.00%	0.00%	0.24%	0.30%	0.10%	0.22%
NJ_VIS	9.14%	8.48%	4.51%	8.42%	0.00%	0.00%	0.00%	0.00%
NJ_WAK1	1.03%	0.95%	0.51%	0.95%	0.00%	0.00%	0.00%	0.00%
SJ_FIM1	4.57%	3.93%	3.57%	4.27%	0.00%	0.00%	0.00%	0.00%
SJ_GMN	0.00%	0.00%	0.00%	0.00%	3.84%	6.17%	1.81%	3.67%
SJ_LUP	0.00%	0.00%	0.00%	0.00%	3.92%	6.29%	1.84%	3.75%
SJ_MZB1	0.00%	0.00%	0.00%	0.00%	15.03%	24.14%	7.08%	14.38%
SJ_MZB2	0.00%	0.00%	0.00%	0.00%	0.70%	1.12%	0.33%	0.67%
SJ_STR	15.83%	13.61%	12.37%	14.79%	1.36%	2.19%	0.64%	1.31%
SJ_TR2	0.00%	0.00%	0.00%	0.00%	0.59%	0.95%	0.28%	0.57%
SJ_TRN	0.00%	0.00%	0.00%	0.00%	2.81%	4.51%	1.32%	2.69%
SJ_VIS	5.48%	4.71%	4.28%	5.12%	0.00%	0.00%	0.00%	0.00%
SJ_VNY	0.00%	0.00%	0.00%	0.00%	0.55%	0.88%	0.26%	0.52%
SN_FIM1	1.87%	1.95%	1.44%	1.84%	0.00%	0.00%	0.00%	0.00%
SN_GMN	0.00%	0.00%	0.00%	0.00%	0.68%	0.57%	0.84%	0.70%
SN_LUP	0.00%	0.00%	0.00%	0.00%	6.13%	5.16%	7.61%	6.34%
SN_MZB1	0.00%	0.00%	0.00%	0.00%	14.57%	12.26%	18.08%	15.06%
SN_MZB2	0.00%	0.00%	0.00%	0.00%	2.23%	1.87%	2.76%	2.30%
SN_N1	25.48%	26.61%	19.62%	25.13%	2.89%	2.44%	3.59%	2.99%

TABLE 4-14 (Continued)
FLIGHT TRACK USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway/Flight Track	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
25R (cont.)								
SN_N2	0.00%	0.00%	0.00%	0.00%	0.52%	0.44%	0.65%	0.54%
SN_VIS	7.03%	7.30%	6.24%	7.01%	0.00%	0.00%	0.00%	0.00%
SW_GMN	0.00%	0.00%	0.00%	0.00%	0.18%	0.18%	0.24%	0.19%
SW_LUP	0.00%	0.00%	0.00%	0.00%	0.66%	0.70%	0.92%	0.72%
SW_MZB1	0.00%	0.00%	0.00%	0.00%	3.67%	3.86%	5.09%	4.00%
SW_MZB2	0.00%	0.00%	0.00%	0.00%	0.42%	0.44%	0.58%	0.46%
SW_N1	4.18%	4.15%	7.47%	4.55%	0.99%	1.04%	1.38%	1.08%
SW_N2	0.00%	0.00%	0.00%	0.00%	0.31%	0.33%	0.43%	0.34%
SW_WAK1	1.16%	1.15%	2.08%	1.26%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:

Values may not sum to 100% due to rounding.

Does not include helicopter operations.

SOURCE: ESA Airports, October 2014 using information presented in Appendix J1-1 of the Draft EIR for the LAX Specific Plan Amendment Study and LAX ANOMS data for calendar year 2013.

**TABLE 4-15
NOISE MONITORING STATIONS IN THE VICINITY OF LOS ANGELES INTERNATIONAL AIRPORT**

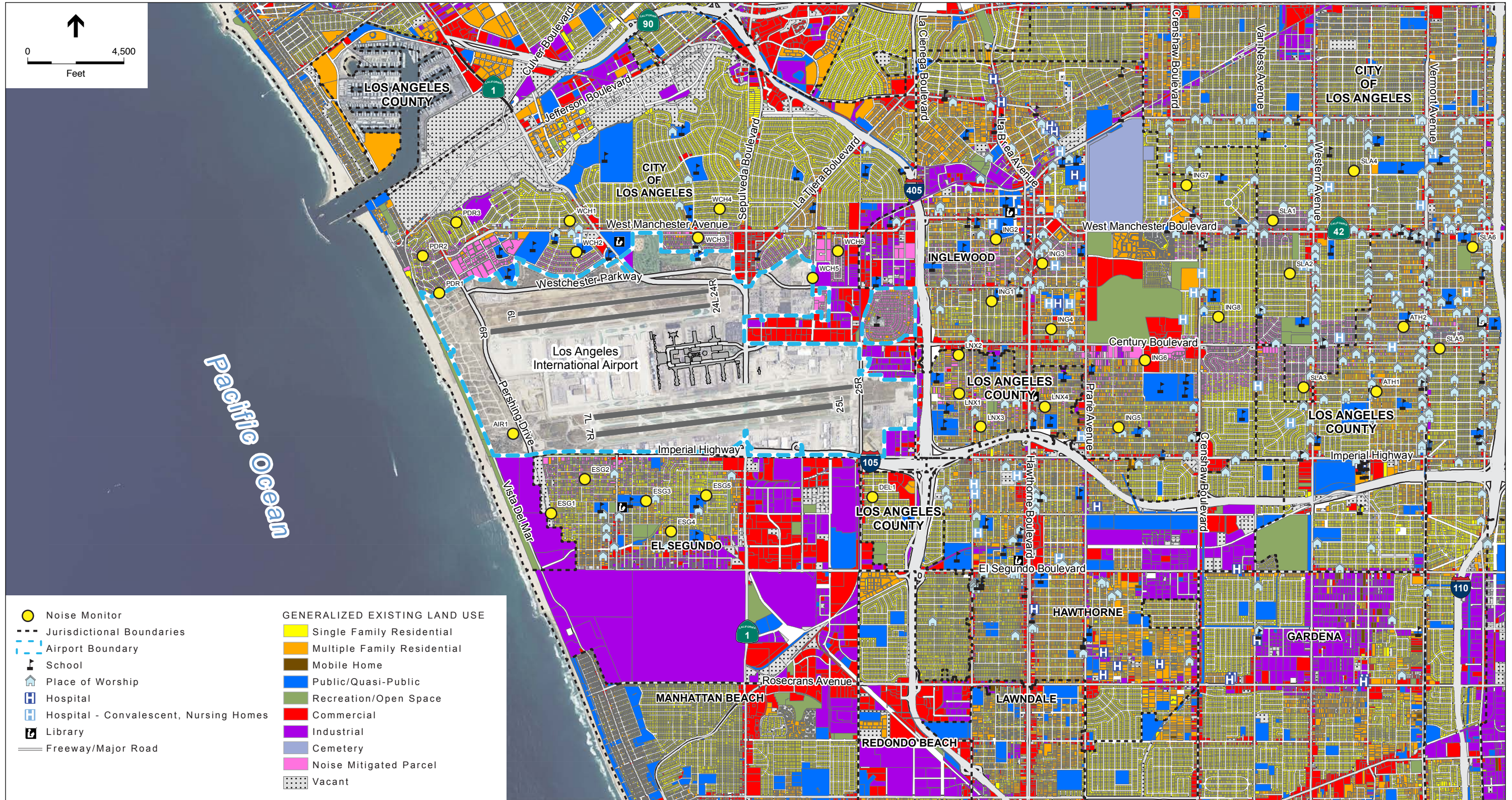
Site	Address	City	2013 CNEL (dBA)			
			LAX Aircraft	All Aircraft	Community	Total
AIR1	On Airport	Los Angeles	79.4	79.6	77.7	81.8
PDR1	255 Waterview St.	Playa Del Rey	68.3	68.3	60.5	69.0
PDR2	216 Sunridge St.	Playa Del Rey	62.2	62.2	57.2	63.4
PDR3	8151 Tuscany Ave.	Playa Del Rey	57.4	57.5	74.8	74.9
ESG1	745 W. Mariposa Ave.	El Segundo	n.a.	n.a.	n.a.	n.a.
ESG2	425 W Sycamore Ave.	El Segundo	68.5	68.5	60.1	69.1
ESG3	649 Sheldon St.	El Segundo	63.1	63.1	61.2	65.3
ESG4	333 Lomita St.	El Segundo	59.7	59.8	61.6	63.8
ESG5	Near 727 California St.	El Segundo	61.4	61.5	65.1	66.7
DEL1	Near 5501 119 th St.	Del Aire	54.7	55.4	84.0	84.0
WCH1	Near 7314 W. 85 th St.	Los Angeles	54.8	54.9	60.1	61.2
WCH2	8821 Villanova Ave.	Westchester	62.0	62.0	59.4	63.9
WCH3	6457 W. 87 th St.	Westchester	61.1	61.2	60.6	63.9
WCH4	6431 84 th Pl.	Los Angeles	58.2	58.4	64.7	65.6
WCH5	9131 Airport Bl.	Los Angeles	74.8	74.8	72.7	76.9
WCH6	8816 Ramsgate Ave.	Los Angeles	63.9	63.9	90.6	90.6
ING1	944 S. Eucalyptus Ave.	Inglewood	61.6	61.6	60.8	64.2
ING2	215 W. Kelso St.	Inglewood	66.5	66.5	95.4	95.4
ING3	800 La Brea Dr.	Inglewood	67.4	67.4	83.4	83.5
ING4	439 E. 98 th St.	Inglewood	n.a.	n.a.	n.a.	n.a.
ING5	11028 Doty Ave.	Inglewood	58.4	58.7	70.6	70.8
ING6	10220 South Yukon Ave.	Inglewood	69.6	69.6	67.8	71.8
ING7	3301 W. 81 st St.	Inglewood	n.a.	n.a.	n.a.	n.a.
ING8	9601 6 th Ave.	Inglewood	61.1	61.0	87.0	87.0
LNx1	10706 Buford Ave.	Lennox	74.2	74.2	66.7	74.9
LNx2	10121 Buford Ave.	Lennox	63.2	63.2	65.6	67.6
LNx3	11034 Dalerose Ave.	Lennox	62.5	62.4	95.4	95.4
LNx4	10820 Larch Ave.	Lennox	65.6	65.7	95.4	95.4
ATH1	1340 W. 106 th St.	Athens	60.3	60.7	62.3	64.5
ATH2	1147 W. 97 th St.	Los Angeles	66.0	66.1	64.9	68.5
SLA1	2058 W. 84 th Pl.	Los Angeles	64.9	64.9	60.5	66.3
SLA2	8956 S. Gramercy Pl.	South Los Angeles	59.3	59.4	59.4	62.4
SLA3	10525 S. Manhattan Pl.	Los Angeles	61.4	61.5	60.3	64.0
SLA4	1515 W. 79 th St.	South Los Angeles	59.4	59.6	58.5	62.1
SLA5	814 Century Blvd.	South Los Angeles	63.6	63.6	64.5	67.1
SLA6	8720 Regina Ct.	South Los Angeles	62.7	63.5	65.5	67.6
SLA7	Near 9605 Wall St.	South Los Angeles	63.8	64.1	61.8	66.1
SLA8	403 E. 104 th St.	South Los Angeles	61.2	62.2	95.4	95.4
SLA9	8022 McKinney Ave.	South Los Angeles	61.1	61.6	61.2	64.4

NOTES:

n.a. = missing or incomplete data; LAX = Los Angeles International Airport

All Aircraft CNEL values include aircraft noise associated with aircraft operating at LAX and at other airports in the region.

SOURCE: Los Angeles World Airports, April 2014.



SOURCES: LAWA, 2014; ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTE: The following LAX noise monitors are outside the geographic extents of the exhibit – SLA7, SLA8, and SLA9.

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CHAPTER 5

Noise Exposure Maps and Effects on Land Use

5.1 Introduction

The effect of aircraft noise on existing and future noise-sensitive land uses is important in relation to the forecast growth of the Airport and its environs. This section includes the existing (2015) conditions noise exposure map and the future (2020) conditions noise exposure map. The noise exposure maps (NEMs) were prepared on the basis of the aviation activity forecasts described in Chapter 2 and the airport operational assumptions and data described in Chapter 4. In addition to the NEMs, this chapter includes a description of existing noise-sensitive land uses that are or may be within areas exposed to aircraft noise levels of CNEL 65 dB and greater.

5.2 Existing Noise Exposure: 2015

The noise exposure map for existing (2015) conditions is presented on **Exhibit 5-1**. The map consists of CNEL contours superimposed on a map of generalized existing land uses in the Airport environs. The CNEL contours represent aircraft operations levels during the last full calendar year for which data were available when this study began – 2013. In accordance with 14 CFR Part 150, the following aircraft noise exposure contours are depicted on the map: CNEL 65, CNEL 70, and CNEL 75.

As shown on Exhibit 5-1, the 2015 CNEL 65 dBA contour extends east across Western Avenue (and almost to Vermont Avenue), north to West Manchester Boulevard, and south across the Imperial Highway. Portions of El Segundo, Inglewood, the City of Los Angeles, and Los Angeles County are exposed to aircraft noise levels greater than CNEL 65 dBA.

5.3 Future Noise Exposure: 2020

The noise exposure map for future (2020) conditions is presented on **Exhibit 5-2**. The noise exposure contours are based on the aircraft fleet mix forecast presented in Table 4-3 and runway use, flight track use, time of day, and departure stage length assumptions presented in Chapter 4.

As shown on Exhibit 5-2, the 2020 CNEL noise exposure contours are slightly larger than the 2015 noise contours. The increase in the size of the CNEL 65, CNEL 70, and CNEL 75 noise contours is attributable to projected growth in the number of annual and daily aircraft operations

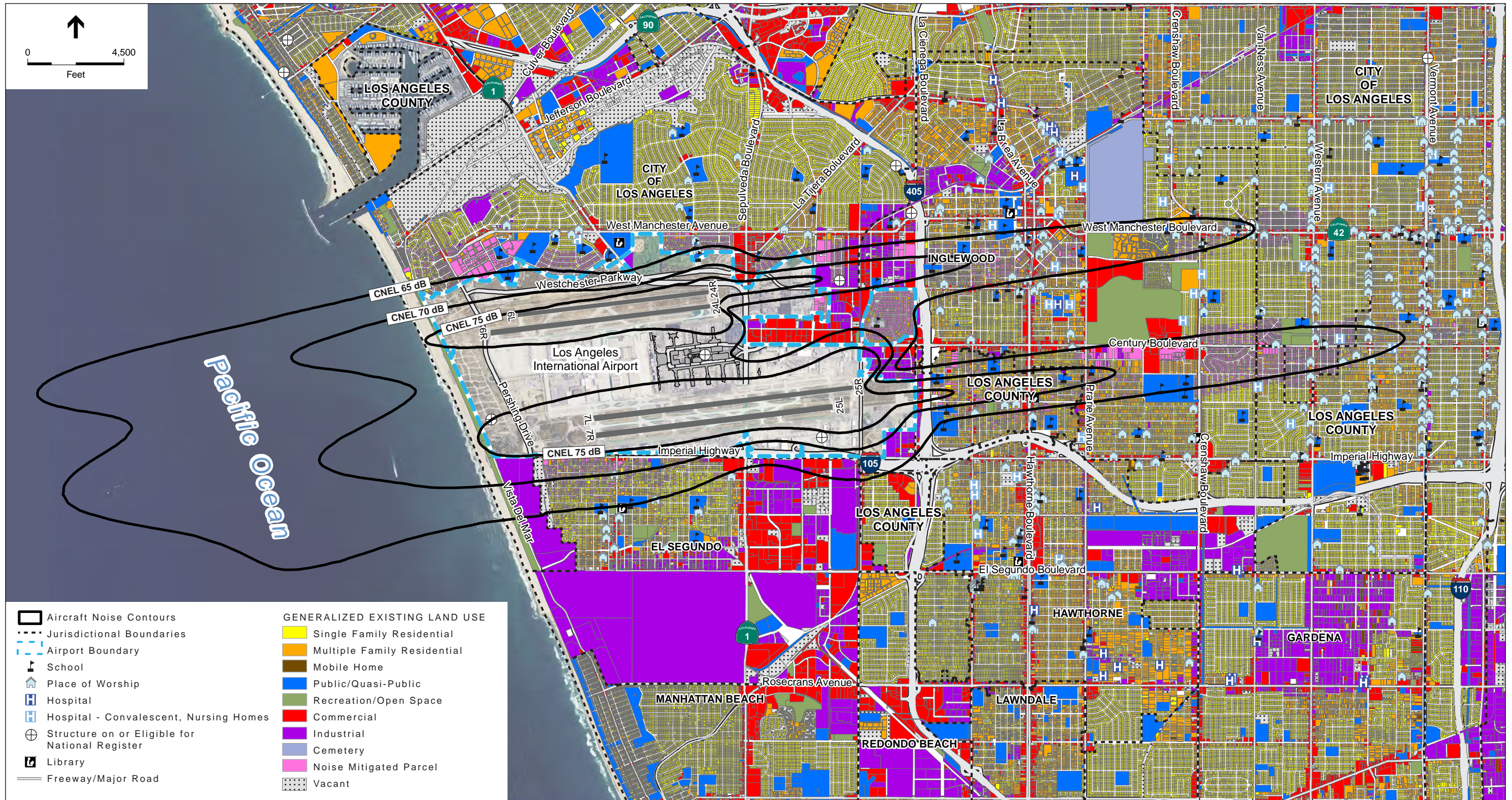
performed at LAX between 2015 and 2020. As discussed in Chapter 2, the number of annual aircraft operations performed at LAX is predicted to grow from 631,173 operations in 2015 to 705,254 in 2020, an increase of 74,081 operations. While the fleet of aircraft operating at LAX in 2020 is expected to be newer and quieter than the existing aircraft fleet, noise reduction benefits associated with the improvement in the aircraft fleet mix will be offset by the increase in the number of aircraft operations.

5.4 Land Use Compatibility Guidelines

Estimates of total noise exposure resulting from aircraft operations, as expressed in DNL or CNEL values, can be interpreted in terms of the probable effect on land uses. Suggested compatibility guidelines for evaluating land uses in aircraft noise exposure areas (A-weighted decibels only) have been developed by the FAA and are shown in **Table 5-1**. The FAA's land use compatibility guidelines are presented in Table 1 of the 14 CFR Part 150 regulations. The guidelines are based on the DNL metric and not the CNEL. For the purposes of this report, DNL and CNEL are considered to be equivalent in terms of application of the FAA's suggested compatibility guidelines.

The FAA's guidelines reflect the statistical variability of the responses of large groups of people to noise. Therefore, any particular level might not accurately assess an individual's perception of an actual noise environment. Compatible or incompatible land use is determined by comparing the predicted or measured DNL level at a site with the values given in the table. Each generalized land use listed in Table 5-1 includes a wide range of human activities having various sensitivities to noise intrusions.

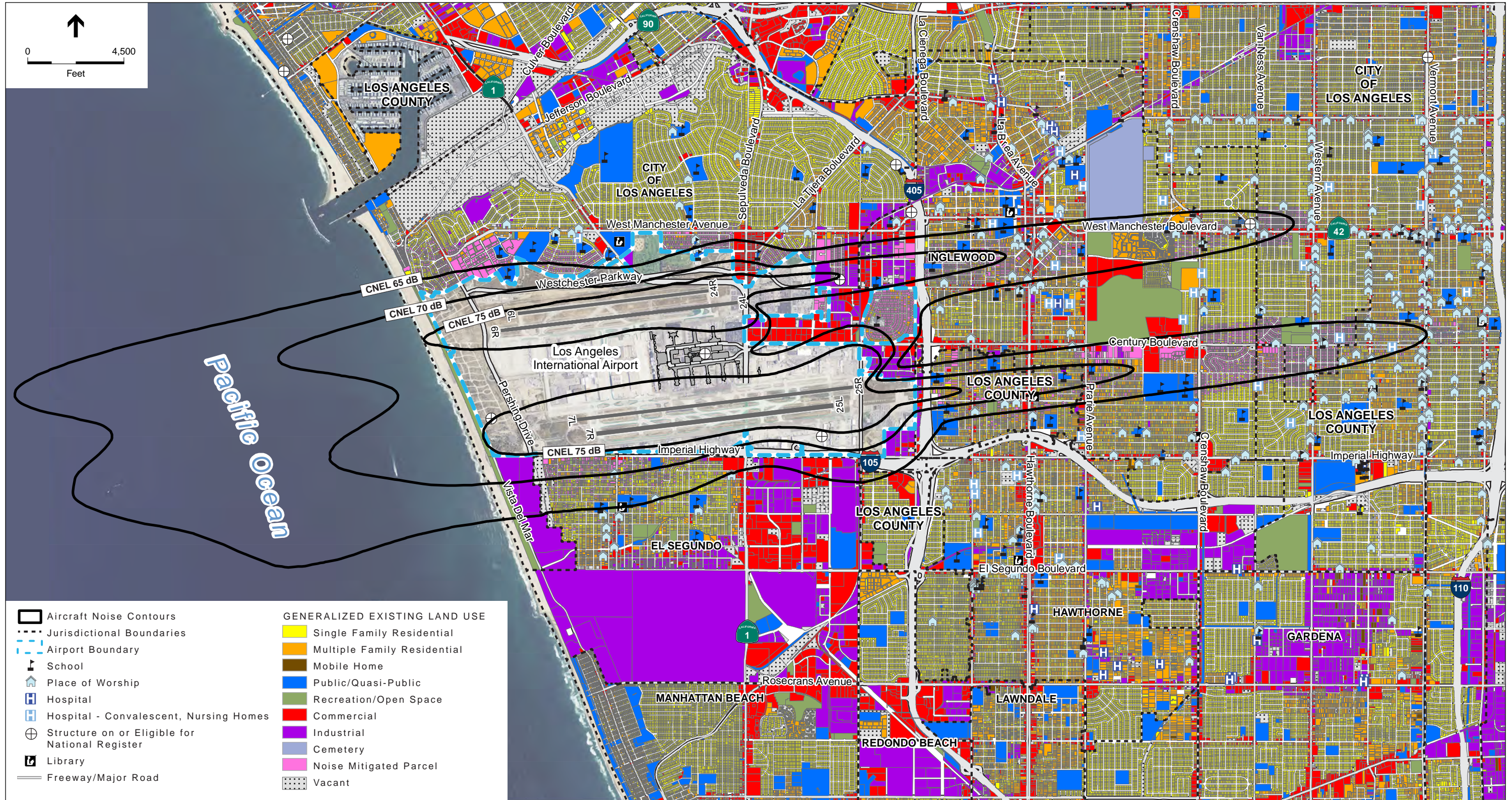
DNL values in the table should be interpreted only as indications of the potential effect aircraft noise has on people living and working in areas surrounding an airport. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.



SOURCES: LAWA, 2014; ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTES: CNEL = Community Noise Equivalent Level; dB = Decibel.

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SOURCES: LAWA, 2014; ESA Airports, 2014; ESRI ArcGIS Online, 2011; ESRI World Imagery - Aerial; PCR Services Corporation, 2012
 NOTES: CNEL = Community Noise Equivalent Level; dB = Decibel.

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TABLE 5-1
14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES IN AIRCRAFT NOISE EXPOSURE AREAS

Land Use	Yearly Day-Night Noise Level (DNL) in decibels					
	Below					Over
	65	65-70	70-75	75-80	80-85	85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail - building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, ridings tables and water recreation	Y	Y	25	30	N	N

TABLE 5-1 (Continued)
14 CFR PART 150 LAND USE COMPATIBILITY GUIDELINES IN AIRCRAFT NOISE EXPOSURE AREAS

Numbers in parenthesis refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table

SLUCM Standard Land Use Coding Manual

Y (Yes) Land use and related structures compatible without restrictions.

N (No) Land use and related structures are not compatible and should be prohibited.

NLR Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30 or 35 Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

Notes:

- (1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- (2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
- (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
- (4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
- (5) Land use compatible provided that special sound reinforcement systems are installed.
- (6) Residential buildings require an NLR of 25 dB.
- (7) Residential buildings require an NLR of 30 dB.
- (8) Residential buildings not permitted.

SOURCE: U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning*, Code of Federal Regulations, Title 14, Chapter I, Subchapter I, Part 150, January 18, 1985, as amended.

5.5 Noise Effects on Existing Land Uses

As described above, suggested land compatibility standards in aircraft noise exposure areas, as originally developed by the FAA, are shown in Table 5-1. The standards differentiate between noise-sensitive land uses, which are considered incompatible with or require noise attenuation to be acceptable in areas with specified ranges of aircraft noise exposure, and other land uses that are considered to be compatible with certain levels of aircraft noise.

Table 5-2 presents the estimated effects of existing and future noise exposure on residential and other noise-sensitive land uses in the airport environs. As shown in Table 5-2, the overall area exposed to CNEL 65 dB and higher in 2015 is 11,391 acres. The area exposed to aircraft noise of CNEL 65 dB and higher is expected to grow to 12,035.6 acres by 2020. The population and households exposed to aircraft noise of CNEL 65 dB and higher were estimated to have been 37,803 and 11,416, respectively in 2015 and are expected to increase to 42,959 and 13,045, respectively by 2020.

**TABLE 5-2
EFFECTS OF NOISE EXPOSURE IN THE AIRPORT ENVIRONS – 2015 AND 2020**

Noise Level	Area (acres)	Households	Population	Place of Worship	School	Hospital	Historic Structure
2015							
CNEL 65-70	6,581.1	9,323	29,585	32	19	2	1
CNEL 70-75	3,017.5	2,047	7,968	1	5	0	3
CNEL 75+	1,792.5	46	250	0	0	0	1
Total	11,391.0	11,416	37,803	33	24	2	5
2020							
CNEL 65-70	6,876.4	10,399	32,507	42	21	3	1
CNEL 70-75	3,229.9	2,575	10,068	1	5	0	3
CNEL 75+	1,929.4	71	384	0	0	0	1
Total	12,035.6	13,045	42,959	43	26	3	5

NOTES:

The households and population counts presented above do not include noise mitigated properties.

CNEL = Community Noise Equivalent Level

Values may not sum to totals shown due to rounding.

SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

The number of people and households exposed to aircraft noise of CNEL 65 dB and higher were estimated using a land use database developed by PCR Services Corporation in 2012, geographic information system (GIS) layers provided by LAWA including information regarding the aircraft noise mitigation programs at LAX, and the noise contours depicted on Exhibits 5-1 and 5-2. For the purposes of the household and population counts, residential parcels that were partially inside a noise contour were treated as being entirely within the noise contour.

Table 5-2 also presents information regarding structures on or eligible for the National Register of Historic Places and noise sensitive facilities (e.g., schools, places of worship, hospitals, etc.) exposed to aircraft noise of CNEL 65 dB and higher.¹ Five structures/buildings on or eligible for the National Register of Historic Places were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and will be exposed to aircraft noise of CNEL 65 dB and higher in 2020. These structures include: a WWII Munitions Storage Bunker (Eligible for National Register), the Theme Building (Eligible for National Register), Hangar One (Listed on National Register), the Merle Norman Complex (Eligible for National Register), and the Academy Theater (Eligible for National Register).

As shown in Table 5-2, it is estimated that there were 24 schools and 33 places of worship exposed to aircraft noise of CNEL 65 dB and higher in 2015 and there will be 26 schools and 43 places of worship exposed to aircraft noise of CNEL 65 dB and higher in 2020. Two hospitals were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and three hospitals will be

¹ The historic structures data were derived from environmental impact reports prepared for LAX including the *Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements* (April 2004). The noise sensitive facilities data are based on information assembled by PCR Services Corporation in 2012 which were updated by LAWA in 2014.

exposed to aircraft noise of CNEL 65 dB and higher in 2020. While not presented in Table 5-2, it is estimated that seven parks and one library were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and there will be nine parks and two libraries exposed to aircraft noise of CNEL 65 dB and higher in 2020. **Table 5-3** provides additional information regarding the schools located in areas exposed to aircraft noise of CNEL 65 dB and higher in 2015 and 2020. **Table 5-4** provides additional information regarding places of worship located in areas exposed to aircraft noise of CNEL 65 dB and higher in 2015 and 2020.

Table 5-5 provides acreage data for land uses that were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and that will be exposed to aircraft noise of CNEL 65 dB and higher in 2020. The figures provided in Table 5-5 were calculated using parcel level land use data provided by LAWA and PCR Services Corporation. As shown in Table 5-5, approximately 376 acres of land developed with single family residential land uses were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and approximately 457 acres of land developed with single family residential land uses will be exposed to aircraft noise of CNEL 65 dB and higher in 2020.

Approximately 420 acres of land developed with multi-family residential land uses were exposed to aircraft noise of CNEL 65 dB and higher in 2015 and approximately 470 acres of land developed with multi-family residential land uses will be exposed to aircraft noise of CNEL 65 dB and higher in 2020. As shown in Table 5-5, most of the area exposed to aircraft noise of CNEL 65 dB and higher in 2015 is airport property (approximately 3,618 acres) or water/beach (approximately 4,263 acres). In 2020, approximately 3,632 acres of airport land and approximately 4,410 acres of water/beach will be exposed to aircraft noise of CNEL 65 dB and higher.

5.6 Aircraft Noise Mitigation Program Summary

LAWA has established an Aircraft Noise Mitigation Program (ANMP) at LAX to fund the mitigation of existing incompatible land uses within the CNEL 65 dB contour. LAWA provides funding and program supervision for the Cities of Inglewood and El Segundo, and the County of Los Angeles. These jurisdictions implement the mitigation programs in accordance with LAWA and FAA requirements while retaining authority in the design, conduct and progress of their programs and in the choice of mitigation methods (sound insulation and/or property acquisition). LAWA directly manages the mitigation programs for the properties within the jurisdiction of the City of Los Angeles.

LAWA is responsible for reporting the progress of all of the mitigation programs as required under the Noise Variance issued by the State of California, in accordance with California Code of Regulations (CCR) Title 21, State Noise Standards. The latest annual information was included in the second quarter 2014 Quarterly Noise Report LAWA prepared for the County of Los Angeles and the California Department of Transportation with the following statistics:

- 18,011 dwelling units have been made compatible through LAWA's ANMP.
- 15,345 dwelling units remain to be treated.

**TABLE 5-3
SCHOOLS EXPOSED TO AIRCRAFT NOISE OF CNEL 65 dB AND HIGHER – 2015 AND 2020**

Name	Street Address	Jurisdiction	Within CNEL 65+ 2015 NEM	Within CNEL 65+ 2020 NEM
A Bright Beginning Preschool	2440 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Animo Inglewood Charter High School	3245 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Animo Leadership Charter High School	1155 W. Arbor Vitae Street	City of Inglewood	Yes	Yes
Anthony's Preschool	8708 Crenshaw Blvd	City of Inglewood	Yes	Yes
Buford Elementary School	4919 West 109 th Street	County of Los Angeles	Yes	Yes
California Technical High School	1717 W. Century Blvd.	City of Los Angeles	Yes	Yes
Century Academy for Excellence	2400 W. 85 th Street	City of Inglewood	Yes	Yes
Children's Enrichment Center	3209 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Clyde Woodworth Elementary School	3200 W. 104 th Street	City of Inglewood	Yes	Yes
Dolores Huerta Elementary School	4125 W. 105 th Street	County of Los Angeles	Yes	Yes
El Segundo High School	640 Main Street	City of El Segundo	Yes	Yes
Faith Lutheran Church and Preschool	3320 W. 85 th Street	City of Inglewood	Yes	Yes
Felton Elementary School	10417 Felton Ave.	County of Los Angeles	Yes	Yes
Hillcrest High School	441 W. Hillcrest Blvd.	City of Inglewood	Yes	Yes
Inglewood Christian School	215 East Hillcrest Blvd.	City of Inglewood	Yes	Yes
Jefferson Elementary School	10322 Condon Ave.	County of Los Angeles	Yes	Yes
Kelso Elementary School	809 E. Kelso Street	City of Inglewood	Yes	Yes
Morningside High School	10500 Yukon Ave. S.	City of Inglewood	Yes	Yes
Oak Street Elementary School	633 S. Oak Street	City of Inglewood	Yes	Yes
Richmond Street Elementary	615 Richmond Street	City of El Segundo	No	Yes
St. Bernard High School	9100 Falmouth Ave.	City of Los Angeles	Yes	Yes
Stella Middle Charter Academy	5431 W. 98 th Street	City of Los Angeles	Yes	Yes
Tijay Renee Academy	8722 Crenshaw Blvd.	City of Inglewood	Yes	Yes
Training and Research Foundation – Inglewood Southside	3937 W. 104 th Street	City of Inglewood	Yes	Yes
Westchester-Emerson Community Adult School ^a	8810 Emerson Ave.	City of Los Angeles	Yes	Yes
Wish Charter Elementary School	8740 La Tijera Blvd.	City of Los Angeles	No	Yes

NOTES:

^a Not considered a noise sensitive education facility for the purposes of 14 CFR Part 150.

CNEL = Community Noise Equivalent Level

NEM = Noise Exposure Map

SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

**TABLE 5-4
PLACES OF WORSHIP EXPOSED TO AIRCRAFT NOISE OF CNEL 65 dB AND HIGHER – 2015 AND
2020**

Name	Street Address	Jurisdiction	Within CNEL 65+ 2015 NEM	Within CNEL 65+ 2020 NEM
Academy Cathedral	3141 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Arabic of Evangelical Church	320 E. Hillcrest Blvd.	City of Inglewood	Yes	Yes
Asamblea Apostolica Amor Viviente	10906 S. Inglewood Ave.	County of Los Angeles	Yes	Yes
Bible Enrichment Fellowship International Church	400 E. Kelso Street	City of Inglewood	Yes	Yes
Breath of Life Worship Center	425 S. La Brea Ave.	City of Inglewood	Yes	Yes
Century Boulevard Church	1711 W. Century Blvd.	City of Los Angeles	Yes	Yes
Chosen Temple Christian	2222 W. Manchester Blvd.	City of Inglewood	No	Yes
Christs Community Church in Los Angeles	10216 S. Denker Ave.	County of Los Angeles	Yes	Yes
Church of Christ	10536 S. Grevillea Ave.	County of Los Angeles	Yes	Yes
Church Of God Pentecostal	733 S. Grevillea Ave.	City of Inglewood	Yes	Yes
Church Of The Living God	9800 S. Western Ave.	City of Los Angeles	Yes	Yes
Congregation Of Jehovah's Witnesses	3223 W. Century Blvd.	City of Inglewood	Yes	Yes
Crossroads Christian Center ^a	2615 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Crusade Christian Faith Center	801 S. La Brea Ave.	City of Inglewood	No	Yes
DO Right Christian Church	9815 S. Vermont Ave.	County of Los Angeles	No	Yes
Eternal Promise Baptist Church	2057 W. Century Blvd.	City of Los Angeles	Yes	Yes
Faith Christian Church	1406 W. 98th Street	County of Los Angeles	Yes	Yes
First Baptist Church	591 E. Palm Ave.	City of El Segundo	No	Yes
First United Methodist Church	411 E. Kelso Street	City of Inglewood	Yes	Yes
God's Rivers Of Living Waters ^a	3220 W. 85th Street	City of Inglewood	Yes	Yes
Greater True Vine Church of God in Christ	9616 S. Normandie Ave.	County of Los Angeles	No	Yes
Harvest Christian Center	2225 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Heavenly Rainbow Baptist Church ^a	10223 S. Western Ave.	City of Los Angeles	Yes	Yes
Holy Light Missionary Baptist Church	1404 W. 96th Street	County of Los Angeles	No	Yes
Iglesia De Cristo Ministerios ^a	8451 Crenshaw Blvd.	City of Inglewood	Yes	Yes
Iglesia Nuevas de Gozo	4454 Lennox Blvd.	County of Los Angeles	Yes	Yes
Inglewood Church of Christ	323 S. Eucalyptus Ave.	City of Inglewood	Yes	Yes

TABLE 5-4 (Continued)
PLACES OF WORSHIP EXPOSED TO AIRCRAFT NOISE OF CNEL 65 dB AND HIGHER – 2015 AND 2020

Name	Street Address	Jurisdiction	Within CNEL 65+ 2015 NEM	Within CNEL 65+ 2020 NEM
Inglewood Friends Church	800 S. Oak Street	City of Inglewood	Yes	Yes
Jehovah's Witnesses	3406 W. Manchester Blvd.	City of Inglewood	Yes	Yes
Joy Ministry for Christ	1459 W. 102nd Street	County of Los Angeles	Yes	Yes
Lennox United Methodist Church	4556 Lennox Blvd.	County of Los Angeles	Yes	Yes
Morningside United Church of Christ	8722 Crenshaw Blvd.	City of Inglewood	Yes	Yes
Mount Hebron Baptist Church ^a	10219 S. Western Ave.	City of Los Angeles	Yes	Yes
Mt Lebanon Missionary Baptist	9620 S. Western Ave.	City of Los Angeles	No	Yes
New Mount Pleasant Missionary Baptist Church	434 S. Grevillea Ave.	City of Inglewood	Yes	Yes
New Providence Baptist Church	10200 S. Normandie Ave.	County of Los Angeles	No	Yes
Pacific Baptist Church	859 Main Street	City of El Segundo	Yes	Yes
Praise Fellowship Community Church ^a	8471 S. Van Ness Ave.	City of Inglewood	No	Yes
Progressive Memorial COGIC	2112 W. Manchester Ave.	City of Los Angeles	No	Yes
Rehoboth Christian Church	226 E. Spruce Ave.	City of Inglewood	Yes	Yes
Son Shine Bible Church	1719 W. Century Blvd.	City of Los Angeles	Yes	Yes
Strait-Way Church	102 E. Kelso Street	City of Inglewood	Yes	Yes
Visitation Catholic Church	6561 W. 88th Street	City of Los Angeles	Yes	Yes

NOTES:
^a Not considered a noise sensitive religious facility for the purposes of 14 CFR Part 150.
 CNEL = Community Noise Equivalent Level
 NEM = Noise Exposure Map
 SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

**TABLE 5-5
LAND USE EVALUATION – 2015 AND 2020 NOISE EXPOSURE MAPS
LOS ANGELES INTERNATIONAL AIRPORT**

Land Use	Area Exposed to Aircraft Noise in 2015 (acres)				Area Exposed to Aircraft Noise in 2020 (acres)			
	CNEL 65-70	CNEL 70-75	CNEL 75+	Total	CNEL 65-70	CNEL 70-75	CNEL 75+	Total
Single family residential	303.9	69.8	2.0	375.7	370.4	84.4	2.4	457.2
Multiple family residential	349.7	68.2	2.0	419.9	383.0	82.5	4.0	469.5
Mobile Home	0.9	0.0	0.0	0.9	0.9	0.0	0.0	0.9
Public/Quasi-Public	145.9	24.5	0.0	170.3	165.1	31.1	0.0	196.1
Recreation/Open Space	79.9	38.1	4.7	122.8	87.5	41.8	2.0	131.3
Commercial	330.5	67.6	5.1	403.2	350.5	97.3	10.6	458.4
Industrial	217.5	123.5	12.2	353.2	218.3	132.0	21.7	371.9
Cemetery	22.2	0.0	0.0	22.2	33.4	0.0	0.0	33.4
Noise Mitigated Parcel	566.8	118.5	1.6	686.9	630.0	150.2	4.1	784.2
Airport	504.4	1,375.4	1,737.8	3,617.5	400.0	1,380.5	1,851.8	3,632.4
Water/Beach	3,338.8	918.3	5.6	4,262.8	3,429.6	973.5	6.4	4,409.5
Vacant	56.3	21.1	0.3	77.6	60.1	23.4	0.3	83.8
Transportation/Other	664.4	192.4	21.2	878.0	747.6	233.3	26.1	1,007.1
Total	6,581.1	3,017.5	1,792.5	11,391.0	6,876.4	3,229.9	1,929.4	12,035.6

NOTES:

CNEL = Community Noise Equivalent Level

Values may not sum to totals shown due to rounding.

SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

APPENDIX A

Glossary of Terms

Term	Definition
14 CODE OF FEDERAL REGULATIONS (CFR) PART 36	This regulation, titled "Noise Standards: Aircraft Type and Airworthiness Certification," establishes noise standards for the civil aviation fleet. Certain extensions for compliance are included in the Aviation Safety and Noise Abatement Act of 1979.
14 CFR PART 91	This regulation, titled "General Operating and Flight Rules," includes an amendment issued by the FAA on September 25, 1991 (to 14 CFR 91) in conformance with requirements of the Airport Noise and Capacity Act of 1990. The amendment to the aircraft operating rules required a phased transition to an all Stage 3 aircraft fleet operating in the 48 contiguous United States and the District of Columbia by December 31, 1999.
14 CFR PART 150	This regulation, titled "Airport Noise Compatibility Planning," sets forth criteria for developing an 14 CFR Part 150 Noise Compatibility Program, an FAA-assisted program designed to increase the compatibility of land and land uses in the areas surrounding an airport that are most directly affected by operation of the airport. The specific purpose is to reduce the adverse effects of noise as much as possible by implementing both on-airport noise abatement measures and off-airport noise mitigation measures. The basic products of an 14 CFR Part 150 program typically include (1) noise exposure maps for the existing condition and for 5 years in the future; (2) workable on-airport noise abatement measures (preferential runway use programs, new or preferential flight tracks), (3) off-airport noise mitigation measures (land acquisition, soundproofing, or special zoning); (4) an analysis of the costs and the financial feasibility of the recommended measures; and (5) policies and procedures related to the implementation of on- and off-airport programs. Community involvement opportunities are provided throughout all phases of noise compatibility program development.
14 CFR PART 158	This regulation, titled "Passenger Facility Charges," establishes a passenger facility charge (PFC) program. The regulation implements Sections 9110 and 9111 of the Airport Noise and Capacity Act of 1990, which requires the Department of Transportation to issue regulations under which a public agency may be authorized to impose a PFC per enplaned passenger at a commercial service airport it controls. The proceeds from such PFCs are to be used to finance eligible airport-related projects that preserve or enhance safety, capacity, or security of the national air transportation system, reduce noise from an airport that is part of such system, or furnish opportunities for enhanced competition between or among airlines. The rule sets forth procedures for public agency applications for authority to impose PFCs, for FAA processing of such applications; for collection, handling, and remittance of PFCs by airlines; for record keeping and auditing by airlines and public agencies; for terminating PFC authority; and for reducing federal grant funds apportioned to large and medium hub airports where a PFC is imposed.
14 CFR PART 161	This regulation, titled "Notice and Approval of Airport Noise and Access Restrictions," establishes a program for reviewing airport noise and access restrictions on the operations of Stage 2 and Stage 3 aircraft. This regulation is in response to specific provisions in the Airport Noise and Capacity Act of 1990 and is a major element of the national aviation noise policy required by that Act. Even if such an airport noise and access restriction is proposed as an element of an 14 CFR Part 150 Noise Compatibility Program, it is still subject to the guidelines of 14 CFR Part 161 prior to approval. Some of the public notice requirements, however, may be met during development of the 14 CFR Part 150 program.

Term	Definition
A-WEIGHTED SOUND LEVEL (dBA)	The ear does not respond equally to different frequencies of sound. It is less efficient at low and high frequencies than it is at medium or speech-range frequencies. Thus, to obtain a single number representing the sound level of a noise having a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are decibels (dB); hence, the abbreviation is dBA. The A-weighted sound level is also referred to as the noise level. Sound level meters have an A-weighting network for measuring noise in A-weighted decibels.
ABSORPTION	Absorption is a property of materials that reduces the amount of sound energy reflected. Thus, introduction of an "absorbent" into the surfaces of a room will reduce the sound pressure level in that room because sound energy striking the room's surfaces will be partially absorbed rather than totally reflected. The process of absorption is different from that of transmission loss through a material, which determines how much sound enters a room via the walls, ceiling, and floor. Absorption reduces the resultant sound level in the room produced by energy that has already entered the room.
ACOUSTICS	(1) The science of sound, including the generation, transmission, and effects of audible and inaudible sound waves. (2) The physical qualities (such as size and shape) of a room or other enclosure that determine the audibility and perception of speech and music.
ADVISORY CIRCULAR (AC)	An external Federal Aviation Administration (FAA) publication consisting of non-regulatory material of a policy, guidance, or informational nature.
AFFECTED LOCAL GOVERNMENT AGENCIES	The local government agencies that have the authority to control land uses in areas that may be adversely affected by aviation activities.
AIR CARRIER, CERTIFICATED ROUTE	An airline company that: (1) performs at least five round trips per week between two or more points and publishes flight schedules that specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a contract with the U.S. Postal Service, certificated in accordance with 14 CFR Parts 121 and 127.
AIR CARRIER, COMMUTER	An air taxi operator that (1) performs at least five round trips per week between two or more points and publishes flight schedules that specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a contract with the U.S. Postal Service.
AIRCRAFT OPERATION	An aircraft arrival (landing) or an aircraft departure (takeoff) represents one aircraft operation. A low approach, below traffic pattern or a touch-and-go operation is counted as both a landing and a takeoff, i.e., two operations. The Federal Aviation Administration (FAA) records aircraft operations in four categories: air carrier, air taxi, general aviation, and military.
AIR CARRIER	Operations performed in revenue service by certificated route air carriers.
AIR TAXI/COMMUTER	Operations performed by operators of aircraft holding an air taxi certificate. This category includes commuter airline operations (excluding certificated commuter airlines), mail carriers under contract with the U.S. Postal Service, and operators of nonscheduled air taxi service.
GENERAL AVIATION	All civil aircraft operations not classified as air carrier or air taxi operations.
MILITARY	Operations performed by military groups, such as the Coast Guard, Air National Guard, the U.S. Air Force, or the U.S. Marine Corps. Aircraft operations may also be described as local or itinerant:
LOCAL	Local operations are performed by aircraft that (1) operate in the local traffic pattern or within sight of the airport, (2) are known to be departing for, or arriving from, local practice areas within a 20-mile radius of the airport, or (3) execute simulated or practice instrument approaches or low passes at the airport. Touch-and-go operations are counted as two local operations.

Term	Definition
<i>ITINERANT</i>	All aircraft operations other than local operations.
AIR NAVIGATION FACILITY (NAVAID)	A facility designed for use as an aid to air navigation, including landing aids, lights, any apparatus or equipment for disseminating weather information; for signaling for radio direction-finding or for radio or other electronic communication; and any other structure or mechanism having a similar purpose for guiding and controlling flight in the air or the landing or takeoff of aircraft.
AIRPORT APPROACH AND RUNWAY PROTECTION ZONE LAYOUT PLAN	A plan map showing the imaginary surfaces that specify the maximum height of structures, trees, and other phenomena around an airport and that is prepared in accordance with 14 CFR Part 77, "Safe, Efficient Use and Preservation of the Navigable Airspace." The plan is required as part of an airport master plan.
AIRPORT ELEVATION	The highest point of an airport's usable runways measured in feet above mean sea level.
AIRPORT ENVIRONS	The area surrounding an airport that is considered to be directly affected by the presence and operation of the airport.
AIRPORT IMAGINARY SURFACES	Imaginary surfaces established at an airport for the purposes of identifying obstructions to air navigation. The imaginary surfaces consist of primary, approach-departure, horizontal, vertical, conical, and transitional surfaces.
AIRPORT IMPROVEMENT PROGRAM (AIP)	A program administered by the FAA to provide financial grants-in-aid for airport planning, airport development projects, and noise compatibility programs. The AIP was established through the Airport and Airway Improvement Act of 1982, which was incorporated as Title V of the Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248). Funds are appropriated by the U.S. Congress for the AIP annually.
AIRPORT LAND USE PLAN	A generalized plan depicting proposed land uses within the airport boundary. The land use plan is a required element of an airport master plan.
AIRPORT LAYOUT PLAN (ALP)	A plan showing boundaries and proposed additions to all areas owned or controlled by the airport sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed nonaviation areas and improvements thereon. The ALP is a required element of an airport master plan.
AIRPORT MASTER PLAN	An assembly of appropriate documents and drawings addressing the development of a specific airport from physical, economic, social, and political jurisdictional perspectives. The airport master plan includes forecasts of aviation demand, an airport land use plan, airport layout plan, airport approach and runway protection zone plan, terminal area plan, airport access and parking plan, staging plan, capital improvement plan, and financial plan.
AIRPORT NOISE AND CAPACITY ACT OF 1990	The Act was enacted on November 5, 1990 (Public Law 101-508). Two important provisions of the Act were the establishment of a national aviation noise policy (Sections 9308 and 9309) and the creation of a passenger facility charge (Sections 9110 and 9111), which enables airport sponsors to impose fees on the tickets issued to eligible enplaning passengers. An amendment to 14 CFR Part 91, "Transition to an All Stage 3 Fleet Operating in the 48 Contiguous United States and the District of Columbia," and new 14 CFR Part 161, "Notice and Approval of Airport Noise and Access Restrictions", implement the national noise policy. 14 CFR Part 158, "Passenger Facility Charges," implements that portion of the Act authorizing the imposition of such a charge.
AIRPORT NOISE CONTROL AND LAND USE COMPATIBILITY (ANCLUC) STUDY	A study designed to minimize aircraft noise and maintain compatible land use around airports. Certain noise control and land use compatibility studies are eligible for federal funding participation.
AIRPORT SPONSOR	A public agency, such as an airport authority, authorized to own and operate an airport, obtain property interests, obtain funds, and be legally, financially, and otherwise able to meet all applicable requirements of current laws and regulations.

Term	Definition
AIRPORT SURVEILLANCE RADAR (ASR)	Radar providing aircraft position data in terms of azimuth and range. ASR does not provide altitude data. It is designed for range coverage up to 60 nautical miles and is used by terminal area air traffic control.
AIRPORT TRAFFIC CONTROL TOWER (ATCT)	A central operations facility in the terminal area air traffic control system, consisting of a tower cab structure and an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling, and other devices, to provide safe and expeditious movement of terminal area air traffic.
AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)	A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.
AIRSPACE	Space in the air above the surface of the earth or a particular portion of such space, usually defined by the boundaries of an area on the surface projected upward.
AIR TRAFFIC CONTROL (ATC)	A service operated by appropriate authority (the FAA) to promote the safe, orderly, and expeditious flow of air traffic.
APRON	A paved area that provides the connection between the terminal buildings and the airfield. The apron includes aircraft parking areas, called ramps, and aircraft circulation and taxiing areas for access to these ramps. On the ramp, aircraft park in locations typically designated as gate positions or gates.
AUTOMATED RADAR TERMINAL SYSTEM (ARTS)	Computer-aided radar display subsystems capable of associating alphanumeric data with radar returns.
AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979	The purpose of the Act is to assist airport sponsors in preparing and carrying out noise compatibility programs and in assuring continued safety for aviation. The Act also contains provisions extending to January 1, 1988, the requirement for certain types of aircraft to comply with 14 CFR Part 36.
AVIGATION EASEMENT	A type of land acquisition that involves less-than-fee purchase. One form of aviation easement grants the right to perform aircraft operations over the designated property, including operations that might cause noise, vibration, and other effects. A stronger form of easement is a deed restriction that may include (1) the right to perform aircraft operations over the property, and (2) public acquisition of a landowner's rights restricting future development of the property in any use more intensive than that existing at the time of the transaction. This easement may also include specific prohibitions as to the uses for which the property may be developed. Maximum heights of structures and other objects may also be specified.
BACKBLAST	Noise generated by jet exhaust on takeoff characterized by high acoustic energy, low frequency, and high velocity air behind the aircraft engine.
BUILDING CODE	A legal document that sets forth requirements to protect the public health, safety, and general welfare as they relate to the construction and occupancy of buildings and structures. The code establishes the minimum acceptable conditions for matters found to be in need of regulation. Topics generally covered are exits, fire protection, structural design, sanitary facilities, lighting, and ventilation. Sound insulation may also be included.
BUILDING PERMIT	A permit issued by a local political jurisdiction (village, town, city, or county) to erect or modify a structure.
BUILDING RESTRICTION LINE (BRL)	The BRL should be located on an Airport Layout Plan to identify suitable locations for building areas on airports. It is recommended that the BRL encompass the runway protection zones, the runway visibility zone, areas required for airport traffic control tower clear lines of sight, and all airport areas with less than 35-foot clearance under the 14 CFR Part 77 surfaces.
CAPITAL IMPROVEMENT PROGRAM (CIP)	A multiyear (sometimes a single year) schedule of capital expenditures for construction or equipment at an airport.

Term	Definition
CEILING	The height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial."
COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)	A noise metric required by the California Airport Noise Standards for use by airport proprietors to measure aircraft noise levels. CNEL includes an additional weighting for each event occurring during the evening (7:00 p.m. – 10:00 p.m.) and nighttime (10:00 p.m. – 7:00 a.m.) periods to account for increased sensitivity to noise during these periods. Evening events are treated as though there were three and nighttime events are treated as though there were ten. This results in a 4.77 and 10 decibel penalty for operations occurring in the evening and nighttime periods, respectively.
DAY-NIGHT AVERAGE SOUND LEVEL (DNL)	A measure used to predict, by a single number rating, cumulative aircraft noise that affects communities in airport environs. DNL represents decibels of noise as measured by an A-weighted sound-level meter. In the DNL procedure, the noise exposure from each aircraft takeoff or landing is calculated at ground level around an airport, and these noise exposure levels are accumulated for a typical 24-hour period. (The 24-hour period is the annual average day aircraft operations for the year being analyzed.) Daytime and nighttime noise exposure is considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to operations between 10:00 p.m. and 7:00 a.m. to account for the increased sensitivity of people to nighttime noise. DNLs can be expressed graphically on maps using either contours or grid cells.
DECIBEL (dB)	A unit for measuring the volume of a sound, equal to the logarithm of the ratio of the intensity of the sound to the intensity of an arbitrarily chosen standard sound.
DEVELOPMENT PLAN	A detailed land use plan for all or specific areas of an airport. The plan usually includes a plot map depicting parcel size and configuration, access, land use categories, utilities, improvements, and performance standards for each parcel and use category.
DEVELOPMENT RIGHTS	Rights of landowners to develop a parcel of land according to the zoning of that parcel. Land is often assessed on a combination of its "resource" value and its "commodity" value. The resource value is the value of the property in its natural state; while the commodity value is an artificial value placed on it by the marketplace (that is, its value for development purposes). In less-than-fee acquisition, the airport sponsor may purchase only the development rights; the ownership of the land remains unchanged.
DISPLACED THRESHOLD	A runway threshold that is located at a point other than the designated beginning of the runway.
DISTANCE MEASURING EQUIPMENT (DME)	Equipment (ground and airborne) used to measure and report to the pilot the slant range distance, in nautical miles, of an aircraft from the DME navigational aid.
DURATION	The length of time that a noise event, such as an aircraft flyover, is experienced (typically reported in seconds). "Duration" may also refer to the length of time that the noise event exceeds a specified threshold noise level.
EMINENT DOMAIN (POWER OF)	In common law, power of a governmental unit (federal, state, or local) to condemn land for public purposes after having paid the owner of the land just compensation.
ENGINE RUNUP AREA	An area on an airport where aircraft engines are serviced or tested. The noise from such servicing or testing can affect neighborhoods adjacent to the airport.
ENPLANED PASSENGERS	The passengers on aircraft outbound (departing) from an airport. The total annual number of passengers at an airport is the total of enplaned and deplaned passengers.

Term	Definition
EQUIVALENT CONTINUOUS SOUND LEVEL (LEQ)	Leq is the sound level, expressed in dBA, of a steady sound which has the same A-weighted sound energy as the time-varying sound over the averaging period. Unlike Sound Exposure Level (SEL), Leq is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.). Leq is calculated by integrating the sound energy from all noise events over a given time period and applying a factor for the number of events.
FEDERAL AVIATION ADMINISTRATION (FAA)	The FAA, an agency of the U.S. Department of Transportation, is charged with (1) regulating air commerce to promote its safety and development; (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.
FAA ADVISORY CIRCULAR (AC) 150/5300-13A (Change 1)	This document, titled "Airport Design," contains airport design standards, including descriptions of various subdivisions of 14 CFR Part 77 (see also) such as obstacle free zones (OFZs), object free areas (OFAs), and runway protection zones (RPZs) – formerly referred to as "clear zones" – on airports. According to Paragraph 211, "Safe and efficient operations at an airport require that certain areas on and near the airport be clear of objects or restricted to objects with a certain function, composition, and/or height." To achieve this requirement, object clearing criteria contained in the AC describe the types of objects tolerated within various subdivisions of 14 CFR Part 77. Aircraft are controlled by aircraft operating rules and not by these criteria. However, objects not in conformance with these criteria may result in aircraft operating restrictions.
FAA HANDBOOK 7400.2K	This document, titled "Procedures for Handling Airspace Matters," contains procedures and guidelines for analyzing aeronautical operating conditions and determining the effects of existing or proposed objects that exceed 14 CFR Part 77 standards. Objects that exceed 14 CFR Part 77 standards are subject to an aeronautical review and are presumed to be hazards to air navigation unless an aeronautical review determines otherwise. However, once an aeronautical review is initiated, 14 CFR Part 77 standards are no longer the basis for determining whether or not an object would be a hazard. Other criteria, including operational, procedural, and electronic requirements, are used to determine if the object in question would be a hazard to air navigation. The outcome of an FAA aeronautical review is either a "Determination of No Hazard" or "Determination of Hazard to Air Navigation."
FAA HANDBOOK 8260.3B (Change 26)	This document, titled "TERPS" (terminal instrument procedures), contains obstruction clearance criteria for instrument procedures. Imaginary surfaces for each type of instrument procedure are described. If an object would penetrate the imaginary surfaces for a particular instrument procedure and could not be relocated or sufficiently reduced in height, one of the following would be necessary: (1) alteration of the procedure to minimize or eliminate effects; (2) increase in the minimum cloud ceiling and/or visibility requirements for conducting the procedure; (3) some combination of (1) and (2); or (4) preclusion of the particular procedure.
FEE SIMPLE LAND ACQUISITION	The full purchase of land and improvements by an airport sponsor. The land is usually maintained or leased for uses that are compatible with airport operations. Alternatively, the airport sponsor can resell the land with an aviation easement (see also) and deed restrictions that specify the compatible land uses that are permitted. One benefit of the resale option is that the land is returned to the local tax rolls.
FLIGHT TRACK	The average flight path flown by aircraft within specific corridors. Deviation from these tracks occurs because of weather, pilot technique, air traffic control, and aircraft weight. Individual flight tracks within a corridor are "averaged" for purposes of modeling noise exposure using the FAA's Integrated Noise Model.
GENERAL AVIATION (GA)	All civil aviation except that classified as air carrier, military, or air taxi. The types of aircraft typically used in GA activities vary from multiengine jet aircraft to single-engine piston aircraft.

Term	Definition
GENERAL PLAN	An overall plan of a political jurisdiction setting forth the goals and objectives of the jurisdiction, policies for development and redevelopment, and maps showing the spatial arrangement of land uses, circulation routes, and community facilities. This is sometimes referred to as a comprehensive plan or community plan.
GLIDE SLOPE	A FAA navigational system that: (1) provides the vertical (or altitude) profile followed by an aircraft during the approach and landing; (2) is an electronic vertical guidance provided by airborne and ground instruments for instrument approaches using equipment such as an instrument landing system (ILS) as well as visual ground aids, such as a visual approach slope indicator (VASI), for a visual flight rule (VFR) approach or for the visual portion of an instrument approach and landing.
GLOBAL POSITIONING SYSTEM (GPS)	A navigational system that uses a series of satellites orbiting the earth to provide non-precision guidance in azimuth, elevation, and distance measurement.
GROUND EFFECT	The excess attenuation of sound associated with absorption or reflection of noise by manmade and physical features on the ground surface.
GROUND TRACK	The trajectory of an aircraft flight path projected onto the ground surface.
HELIPAD	A small area designated for takeoff, landing, or parking of helicopters.
IFR AIRPORT	An airport with an authorized instrument approach procedure.
IFR CONDITIONS	Weather conditions that require aircraft to be operated in accordance with instrument flight rules.
IFR MINIMUMS AND DEPARTURE PROCEDURES (FAR PART 91)	Prescribed takeoff rules. For some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums or departure procedures, or both, to assist pilots in avoiding obstacles during climb to the minimum en route altitude.
INCOMPATIBLE LAND USE	Residential, public, recreational, and certain other noise-sensitive land uses that are designated as unacceptable within specific ranges of cumulative (DNL) noise exposure as set forth in 14 CFR Part 150, Appendix A, Table 1.
INFILL	The development of small pieces of property remaining in previously developed larger areas.
INSTRUMENT APPROACH	An aircraft approach to an airport, with intent to land, by a pilot flying in accordance with an IFR flight plan, when the visibility is less than 3 miles and/or when the ceiling is at or below the minimum initial approach altitude.
INSTRUMENT APPROACH RUNWAY	A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.
INSTRUMENT FLIGHT RULES (IFR)	Rules specified by the FAA for flight under weather conditions that do not meet the minimum requirements for VFR (see also). Under these conditions the pilot must rely on instruments to fly and navigate.
INSTRUMENT LANDING SYSTEM (ILS)	A system that provides, in the aircraft, the lateral and longitudinal (localizer), and vertical (guidance) electronic guidance necessary for an instrument landing.
INSTRUMENT OPERATION	An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.
INSTRUMENT RUNWAY	A runway equipped with electronic and visual air navigation aids and for which a straight-in (precision or nonprecision) approach procedure has been approved or is planned.
INTEGRATED NOISE MODEL (INM)	A computer model developed by the FAA and required by the FAA for use in environmental assessments, environmental impact statements, and 14 CFR Part 150 studies for developing existing and future aircraft noise exposure maps.

Term	Definition
LAND USE COMPATIBILITY	The compatibility of land uses surrounding an airport with airport activities and particularly with the noise from aircraft operations.
LAND USE CONTROLS	Controls established by local or state governments to implement land use planning. The controls include zoning, subdivision regulations, land acquisition (in fee simple, lease-back, or easements), building codes, building permits, and capital improvement programs (to provide sewer, water, utilities, or other service facilities).
LAND USE PLANNING	Comprehensive planning carried out by units of local government, for all areas under their jurisdiction, to identify the optimum uses of land and to serve as a basis for the adoption of zoning or other land use controls.
LESS-THAN-FEE ACQUISITION	The purchase of development rights from landowners by airport sponsors in areas that should remain at very low densities or in open space uses. The airport sponsor negotiates with the landowner to determine the fair market value of the unused development rights. Once sold, the land cannot be developed except in specified uses.
LOCALIZER (LOC)	Navigational equipment that provides electronic course guidance. The ground-based equipment sends two signals, which, when received and receded by airborne equipment with equal intensity, indicate that the aircraft is on course. If the received and receded signals have unequal intensity, then the aircraft is off course. A localizer is the part of an ILS that provides lateral and longitudinal course guidance to the runway.
LOCALIZER-TYPE DIRECTIONAL AID (LDA)	A navigational aid used for nonprecision instrument approaches with utility and accuracy comparable to a localizer; however, it is not part of a complete ILS and its signal is not typically aligned with the runway.
LOUDNESS	The judgment of the intensity of a sound by a person, loudness depends primarily on the sound pressure of the stimulus. Over much of the loudness range, it takes about a threefold increase in sound pressure (approximately 10 decibels) to produce a doubling of loudness.
MAXIMUM SOUND LEVEL (L_{max})	The maximum a-weighted sound level, in dBA, for a given noise event. The peak noise level reached by a single aircraft event.
MISSED APPROACH	An approach that is not completed with a landing due to lack of visual reference, the presence of other aircraft on or too near the runway, instructions from air traffic control to execute a missed approach, or other reasons.
MISSED APPROACH POINT (MAP)	A point during an instrument approach procedure at which, if the visual reference to continue the approach does not exist (i.e., the pilot cannot see the runway or visual guidance to the runway), a missed approach procedure must be executed.
NOISE	Noise is any sound that is considered to be undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.
NOISE ABATEMENT PROCEDURES	Changes in runway use, flight approach and departure routes and procedures, and other air traffic procedures that are intended to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).
NOISE ATTENUATION OF BUILDINGS	The use of building materials to reduce noise through absorption, transmission loss, and reflection of sound energy.
NOISE CONTOURS	Lines drawn on a map that connect points of equivalent noise exposure levels. For aircraft noise analyses conducted using DNL, noise contours are usually drawn in 5-DNL intervals, such as connections of DNL 75 exposure, DNL 70 exposure, DNL 65 exposure, and so forth.
NOISE EXPOSURE MAP (NEM)	A map prepared in accordance with 14 CFR Part 150 or other FAA environmental regulation that depicts actual (existing or historical conditions) or anticipated (future conditions) aircraft noise exposure and the affected land uses. NEMs for future conditions may take into account anticipated land use changes around the airport.

Term	Definition
NOISE LEVEL REDUCTION (NLR)	The noise reduction between two areas or rooms is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. Noise reduction is measured by combining the effect of the transmission loss performance of structures separating the two areas or rooms and the effect of acoustic absorption in the receiving room.
NOISE-SENSITIVE LAND USE	A land use that can be adversely affected by high levels of aircraft noise. Residences, schools, hospitals, religious facilities, libraries, and other similar uses are typically considered to be noise-sensitive.
NONDIRECTIONAL RADIO BEACON (NDB)	A low/medium frequency radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction-finding equipment can determine the aircraft's bearing to or from the radio beacon and track to or from the station.
NON-PRECISION INSTRUMENT APPROACH PROCEDURE	A standard instrument approach procedure for which no glide slope guidance is provided. Typical non-precision instrument approach procedures include VOR (see VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE), GPS (see GLOBAL POSITIONING SYSTEM), NDB (see NONDIRECTIONAL RADIO BEACON), and LOC (see LOCALIZER) approach procedures.
OBSTACLE FREE ZONE (OFZ)	The OFZ is a three-dimensional section of airspace that supports the transition of ground-to-airborne-aircraft operations (and vice versa). The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible NAVAIDS, the location of which is fixed by function. The runway OFZ; when applicable, the inner-approach OFZ; and the inner-transitional OFZ compose the obstacle free zone.
OBSTRUCTION	An object that exceeds a limiting height or penetrates an imaginary surface described by 14 CFR Part 77.
PATTERN	The configuration or form of a flight path flown by an aircraft, or prescribed to be flown, as in making an approach for landing.
PRECISION APPROACH PATH INDICATOR (PAPI)	An airport lighting facility in the terminal area navigation system used under VFR conditions, through a single row of two to four lights, radiating high intensity red or white beams to indicate whether the aircraft is on, above, or below the required runway glide slope.
PRECISION INSTRUMENT APPROACH PROCEDURE	A standard instrument procedure for a pilot to approach an airport, in which both electronic course guidance and an electronic glide scope are provided. For example, an approach using an ILS is considered a precision instrument approach.
PREFERENTIAL RUNWAY USE (PROGRAM)	A noise abatement action whereby the FAA Air Traffic Division, in conjunction with the FAA Airports Division and Aviation System Standards Division, assists the airport sponsor in developing a program that gives preference to the use of a specific runway(s), unless weather or other conditions prevail, to reduce overflights of noise-sensitive areas.
PROPRIETARY USE RESTRICTIONS	Restrictions by an airport sponsor on the number, type, class, manner, or time of aircraft operations at the airport. The ability of an airport sponsor to impose proprietary use restrictions was significantly affected by passage of the <i>Airport Noise and Capacity Act of 1990</i> .
RELIEVER AIRPORT	An airport accommodating general aviation aircraft operations that might otherwise have to be accommodated at a congested air carrier airport.
RETROFIT	The retroactive modification of existing jet aircraft engines for noise reduction purposes.
RUNWAY	A defined rectangular area on an airport for the purpose of landing and taking off of aircraft. Runways are numbered in relation to their magnetic direction, rounded to the nearest 10 degrees (i.e., Runway 14, Runway 32).

Term	Definition
RUNWAY OBJECT FREE AREA	The runway object free area (OFA) is a two-dimensional ground area surrounding the runway. The runway OFA clearing standard precludes parked aircraft and objects, except objects whose location is fixed by function.
RUNWAY PROTECTION ZONE (RPZ)	The RPZ (formerly referred to as the runway clear zone) is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet beyond the end of the area usable for takeoff or landing. Displacing the threshold does not change the beginning point of the RPZ unless declared runway distances have been established by the airport sponsor and approved by the FAA. The RPZ dimensions are functions of the design aircraft, type of operation, and visibility minimums.
RUNWAY THRESHOLD	The beginning of that portion of a runway usable for landing.
SHIELDING	The attenuation of a sound by placing walls, buildings, plants, or other barriers between a sound source and the receiver. Also used with light to minimize impacts by introducing manmade or natural elements to reduce or eliminate glare.
SINGLE EVENT	Noise generated by a single event, such as a single aircraft flyover.
SOUND EXPOSURE LEVEL (SEL)	SEL is a time-integrated measure, expressed in decibels, of the sound energy of a single noise event. The sound level is integrated over the period that the level exceeds a threshold (normally 65 dBA for aircraft noise events). Therefore, SEL accounts for the duration of the sound. SELs for aircraft noise events depend on the location of the aircraft, the type of operation (landing, takeoff, or overflight), and the type of aircraft.
SOUND INSULATION	(1) The use of structures and materials designed to reduce the transmission of sound from one room or area to another, or from the exterior to the interior of a building. (2) The degree of reduction in sound transmission, or noise level reduction, by means of sound insulating structures and materials.
SOUND LEVEL (NOISE LEVEL)	The weighted sound pressure level obtained by the use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.
SOUND LEVEL METER	An instrument consisting of a microphone, an amplifier, an output meter, and frequency-weighting networks used to measure noise and sound levels in a specified manner.
STANDARD TERMINAL ARRIVAL ROUTE (STAR)	A preplanned and published instrumental arrival route.
TERPS	Certain airspace needs to be cleared for aircraft operations. This airspace is determined by the application of operating rules and terminal instrument procedures (TERPS). Removing obstructions to air navigation, except those that an FAA aeronautical analysis determined need not be removed, satisfies these requirements. Subpart C of 14 CFR Part 77 defines obstructions to air navigation. (See FAA HANDBOOK 8260.3B.)
TERMINAL RADAR APPROACH CONTROL (TRACON)	Radar approach facility for an airport.
TRANSFER OF DEVELOPMENT RIGHTS (TDR)	TDR involves separate ownership and use of the various rights associated with a parcel of real estate. Under TDR, some of the property's development rights are transferred to another location, where they may be used to intensify allowable development. For example, lands within an area affected by aircraft noise could be kept in open space or agricultural uses, and development rights for residential or other uses could be transferred to locations outside the area. Landowners could be compensated for the transferred rights by their sale at the new locations, or the airport sponsor could purchase the rights. Depending on market conditions and legal requirements, the airport sponsor could either hold or resell the rights.

Term	Definition
URBAN GROWTH MANAGEMENT	The identification and management of the demands on municipal facilities, improvements, or services created by any proposed residential, commercial, industrial, or other type of development. Urban growth management is intended to (1) provide the means for satisfying such demands, (2) identify any harmful effects of development, and (3) protect the jurisdictions and their residents against such harmful effects by minimizing the costs of municipal facilities, improvements, and services. The intent of urban growth management is usually not to prevent development or growth, but rather to avoid free or disorganized development or growth in the urban growth management area, which is generally located in and around the fringe of an urban area. The urban growth management area usually is either relatively undeveloped or predominantly agricultural and lacks most, if not all, municipal facilities, improvements, or services.
VERY HIGH FREQUENCY (VHF) OMNIDIRECTIONAL RANGE (VOR)	A radio transmitter facility in the navigation system radiating a VHF radio wave modulated by two signals, the relative phases of which are compared, resolved, and displayed by a compatible airborne receiver to give the pilot a direct indication of bearing relative to the facility.
VFR AIRPORT	An airport without an authorized or planned instrument approach procedure.
VISUAL APPROACH	An approach to an airport wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to and land at the airport of destination, served by an operational ATCT, by visual reference to the surface.
VISUAL APPROACH SLOPE INDICATOR (VASI)	An airport lighting facility in the terminal area navigation system used primarily under VFR conditions. It provides vertical visual guidance to indicate whether the aircraft is on, above, or below the glide slope to the runway.
VISUAL FLIGHT RULES (VFR)	A set of regulations that a pilot may operate under when weather conditions meet certain minimum requirements. The requirements are designed to provide sufficient visibility so that other aircraft can be seen and avoided. Under VFR, the pilot generally controls the attitude of the aircraft by relying on what can be seen out the window, although this may be supplemented by referring to the instrument panel.
VISUAL FLIGHT RULE (VFR) CONDITIONS	Meteorological conditions under which VFR flight is permitted. For VFR flight certain requirements for visibility, ceilings (for takeoffs and landings), and cloud clearances must be met.
VISUAL RUNWAY	A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved Airport Layout Plan, or by any planning document submitted to the FAA by competent authority.
ZONING AND ZONING ORDINANCES	Ordinances that divide a community into zones or districts according to the current and potential use of properties for the purpose of controlling and directing the use and development of those properties. Zoning is concerned primarily with the use of land and buildings, the height and bulk of buildings, the proportion of a lot that buildings may cover, and the density of population of a given area. As an instrument for noise compatibility plan implementation, zoning deals principally with the use and development of privately owned land and buildings. The objectives of zoning are to establish regulations that provide locations for all essential uses of land and buildings and ensure that each use is located in the most appropriate place. In noise compatibility planning, zoning can be used to achieve two major aims: (1) to reinforce existing compatible land uses and promote the location of future compatible uses in vacant or underdeveloped land, and (2) to convert existing incompatible uses to compatible uses over time.

SOURCE: Environmental Science Associates, 2014.

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APPENDIX B

Summary of Land Use Plans and Zoning

B.1 Introduction

This technical appendix describes the existing and planned land use setting in the vicinity of Los Angeles International Airport (LAX). Information provided herein was derived from environmental planning studies prepared for LAX and from available planning documents developed by local jurisdictions. The LAX environs include portions of unincorporated Los Angeles County and the cities of Los Angeles, El Segundo, Hawthorne, and Inglewood (See **Exhibit B-1**). Existing and planned land uses in these communities are described in the following sections.

B.2 Los Angeles County

Los Angeles County is approximately 4,057 square miles in size, and has a population of approximately 10 million people (U.S. Census Bureau, 2014a). The portions of unincorporated Los Angeles County located closest to LAX include the communities of Lennox, Del Aire, and West Athens-Westmont. All three communities are located east of LAX, with Del Aire less than a mile to the southeast, Lennox less than a mile to the east, and Athens approximately three miles to the east.

B.2.1 Existing Land Uses

The communities of Del Aire, Lennox, and West Athens-Westmont can all be characterized as consisting predominately of residential land uses. The community of Del Aire is broken into two distinct areas; a northern portion located north of El Segundo Boulevard and west of Interstate 405 and a southern area located south of El Segundo Boulevard and east of Interstate 405. Del Aire consists primarily of residential uses, with a mix of office, commercial, and public (i.e., schools and a park) uses located along major roadways. The community of Lennox, which is located east of Interstate 405 and north of Interstate 105, consists primarily of residential uses, but also includes a mix of schools, commercial, and office uses. Lastly, West Athens-Westmont, which is located south of W. Manchester Avenue, north of El Segundo Boulevard, west of S. Vermont Avenue, east of S. Van Ness Avenue, and is partially bisected by Interstate 105, consists mostly of residential uses, with a variety of public, commercial, and office uses also included within its planning area.

B.2.2 Planned Land Uses

Future land use development within unincorporated Los Angeles County is guided by the Los Angeles County General Plan, which is currently going through the process of being updated. Development within the community of Del Aire is guided by the County’s General Plan, while the communities of Lennox and Athens have separate planning documents.

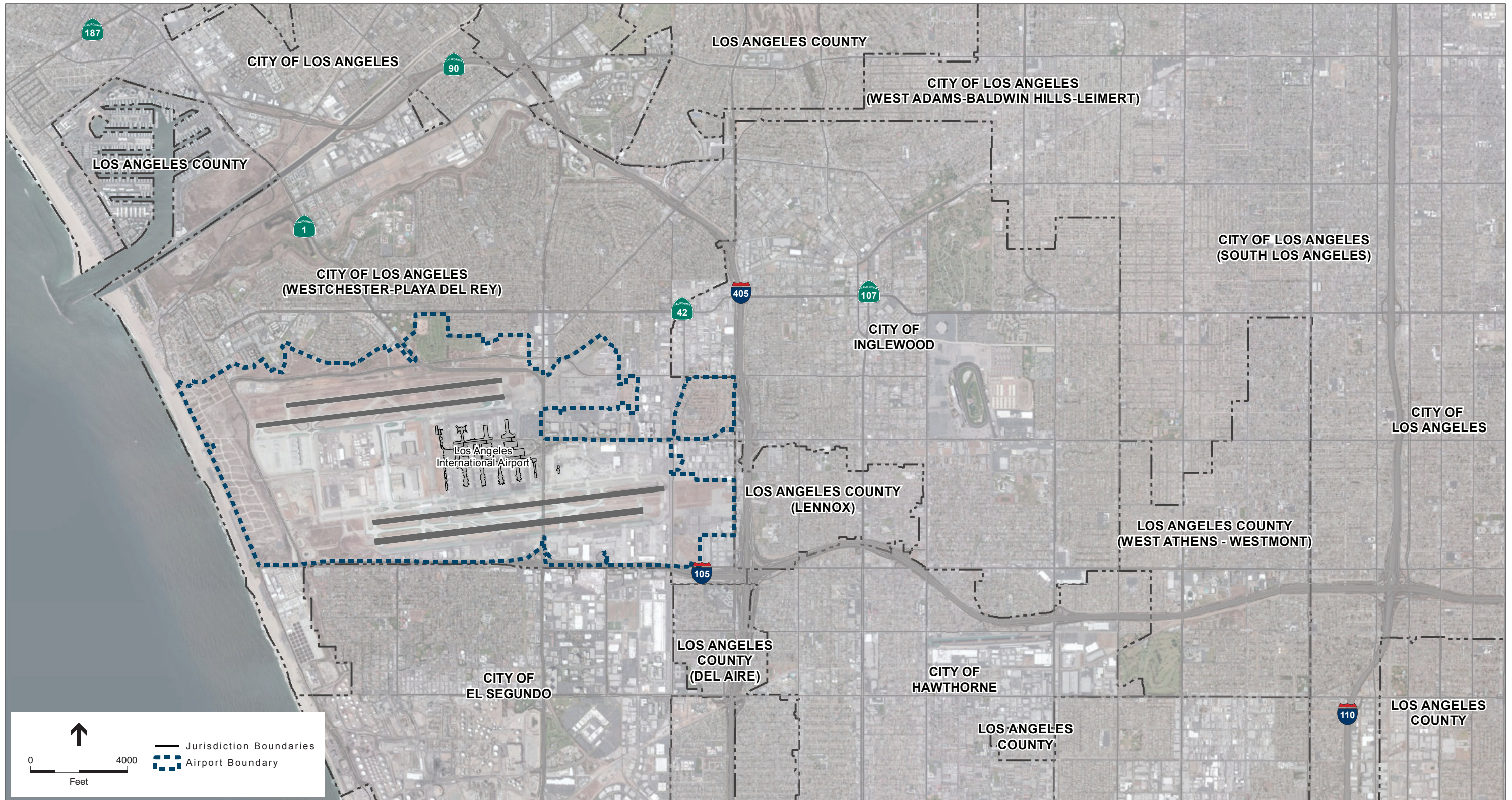
Del Aire

Table B-1 identifies planned land use designations within the Del Aire community, per the *Draft County General Plan* (see **Exhibit B-2**).

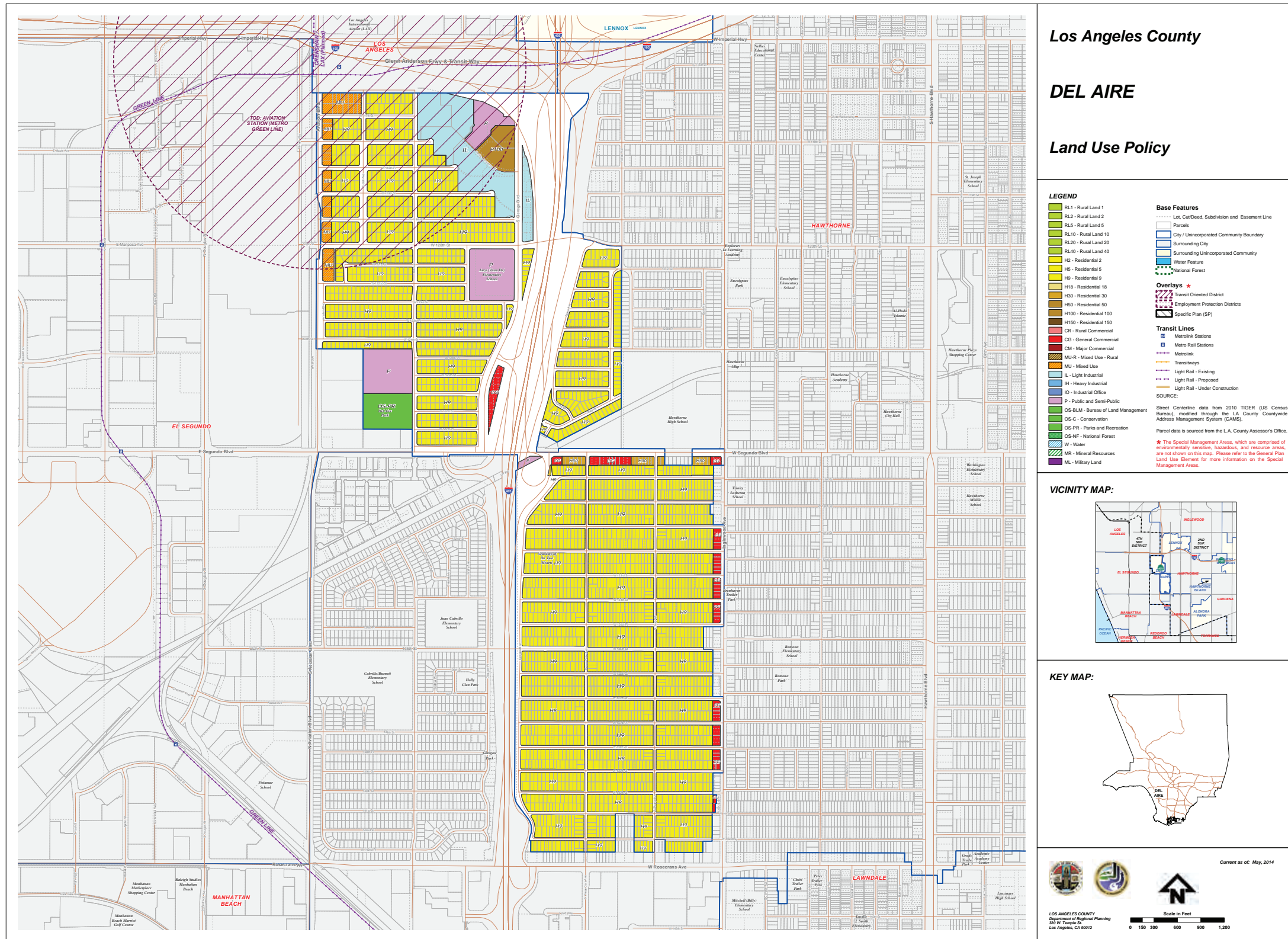
**TABLE B-1
LOS ANGELES COUNTY – DEL AIRE LAND USE DESIGNATIONS**

Land Use Designation	Density/Intensity	Description
Residential 2	0 – 2 du/net ac	Single family residences.
Residential 5	0 – 5 du/net ac	Single family residences.
Residential 9	0 – 9 du/net ac	Single family residences.
Residential 30	0 – 30 du/net ac	Single family residences, two family residences, multi-family residences.
Residential 100	50 – 100 du/net ac	Multi-family residences.
Commercial General	Residential: 0 – 50 du/net ac Nonresidential: Max FAR 1.0 Mixed Use: 0 – 50 du/net ac Max FAR 1.0	Local-serving commercial uses, including retail, restaurants, and personal and professional services; single family and multi-family residences; and residential and commercial mixed uses.
Light Industrial	Max FAR 1.0	Light industrial uses, including light manufacturing, assembly, warehousing and distribution.
Mixed Use	Residential: 0-150 du/net ac Non-Residential: Max FAR 3.0 Mixed Use: 0-150 du/net ac and FAR 3.0	Pedestrian-friendly and community-serving commercial uses that encourage walking, bicycling, and transit use; residential and commercial mixed uses; and multi-family residences.
Parks and Recreation	N/A	Open space recreational uses, such as regional and local parks, trails, athletic fields, community gardens, and golf courses.
Public and Semi-Public	Non-Residential: Maximum FAR 3.0	Public and semi-public facilities and community-serving uses, including public buildings and campuses, schools, hospitals, cemeteries, and fairgrounds; airports and other major transportation facilities. Other major public facilities, including planned facilities that may be public-serving but generally not publicly accessible, such as landfills, solid and liquid waste disposal sites, multiple use stormwater treatment facilities, and major utilities. In the event that the public or semi-public use of mapped facilities is terminated, alternative uses that are compatible with the surrounding development, in keeping with community character, are permitted.

SOURCES: Los Angeles County, *Draft Los Angeles County General Plan*, 2014; Land Use Policy Map (Figure A.5), 2014.



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SOURCE: Los Angeles County, 2014

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit B-2

Los Angeles County Planned Land Use Designations – Del Aire

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Lennox

Table B-2 identifies planned land use designations within the Lennox community, per the *Vision Lennox Plan* (see **Exhibit B-3**).

TABLE B-2
LOS ANGELES COUNTY – LENNOX LAND USE DESIGNATIONS

Planned Land Use	Density/Intensity	Description
Low Density Residential	1 to 6 du/acre	Single family residential uses
Low/Medium Density Residential	6-12 du/acre	Single family residential uses
Major Commercial	N/A	N/A
Major Industrial	N/A	N/A
Open Space	N/A	N/A
Public and Semi Public Facilities	N/A	N/A

SOURCE: Los Angeles County, *Vision Lennox Plan*, 2010.

West Athens-Westmont

Table B-3 identifies planned land use designations within the West Athens-Westmont community, per the *West Athens/Westmont Community Plan* (see **Exhibit B-4**).

TABLE B-3
LOS ANGELES COUNTY – WEST ATHENS-WESTMONT LAND USE DESIGNATIONS

Planned Land Use	Density/Intensity	Description
RD 2.3	0 – 8 du/net ac	Single family residential uses
RD 3.1	0 – 17 du/net ac	Two family residential uses
RD 3.2	0 – 30 du/net ac	Multi-family residential with medium density bonus
SCD	0 – 50 du/net ac	Senior citizen housing with density bonus
C.1	N/A	Regional commercial
C.2	N/A	Community commercial
C.3	N/A	Neighborhood commercial
C.4	N/A	Commercial manufacturing
CR	N/A	Commercial recreation
PL.1	N/A	Public/Quasi-Public
OS.1	N/A	Recreation/Open Space
CR	N/A	Commercial recreation

SOURCE: Los Angeles County, *West Athens-Westmont Community Plan*, 1990.

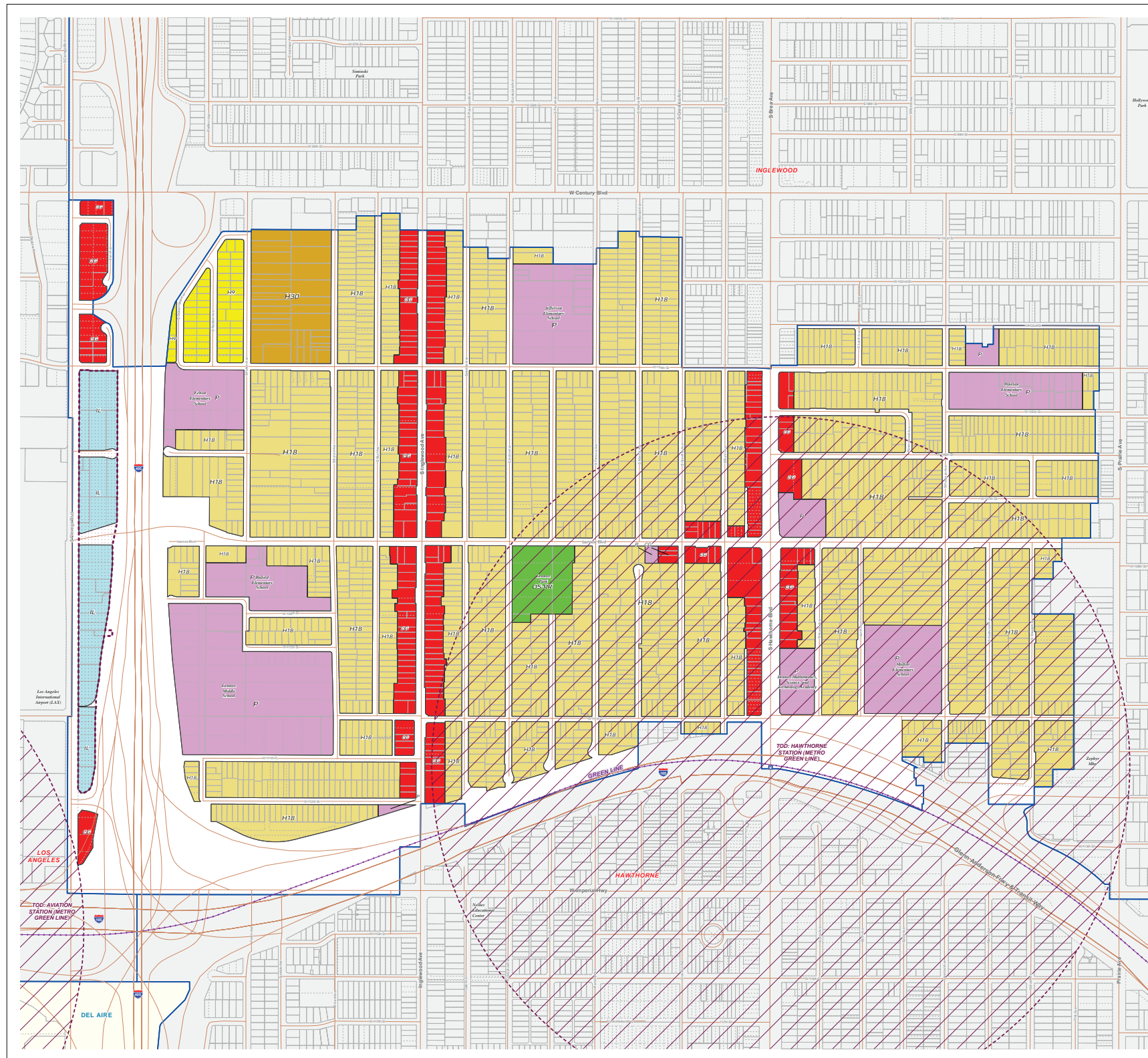
B.2.4 Zoning

Regulations for land use development within Los Angeles County are set forth in Title 22 of the County’s Zoning Ordinance. **Table B-4** provides information regarding the County’s standard zoning classifications for areas within the Del Aire, Lennox, and West Athens-Westmont communities.

**TABLE B-4
LOS ANGELES COUNTY ZONING CLASSIFICATIONS**

Zoning Classifications	Allowable Uses
Residential	
Zone R-1: Single Family Residence	Single family residences.
Zone R-2: Two Family Residence	Two family residences (or duplex), single family residences.
Zone R-3: Limited Multiple Residence	Apartment houses, uses permitted in Zone R-1 and R-2.
Combining Zones	
Zone CRS: Commercial – Residential	Uses permitted in basic zone and with Director's approval, any residential use, separate or in combination with a permitted commercial use.
Commercial	
Zone C-2: Neighborhood Business	Community and financial services, parks and play grounds, business/professional offices, rentals, outdoor advertising, and tailor shops.
Zone C-M: Commercial Manufacturing	Community and financial services, parks and play grounds, business/professional offices, rentals, outdoor advertising, tailor shops, commercial services, retail sales of new goods and genuine antiques, and limited manufacture and assembly.
Zone C-R: Commercial Recreation	Amusement parks, campgrounds, tennis courts, golf courses, and limited agriculture.
Manufacturing	
Zone C-M: Commercial Manufacturing	Community and financial services, parks and play grounds, business/professional offices, rentals, outdoor advertising, tailor shops, commercial services, retail sales of new goods and genuine antiques, and limited manufacture and assembly.

SOURCE: Los Angeles County Zoning Ordinance (Title 22), 2014.



Los Angeles County

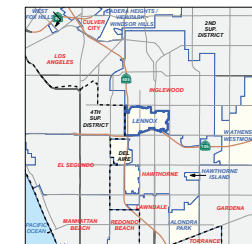
LENNOX

Land Use Policy

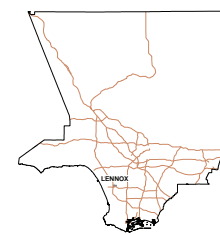
LEGEND

- RL1 - Rural Land 1
 - RL2 - Rural Land 2
 - RL5 - Rural Land 5
 - RL10 - Rural Land 10
 - RL20 - Rural Land 20
 - RL40 - Rural Land 40
 - H2 - Residential 2
 - H5 - Residential 5
 - H9 - Residential 9
 - H18 - Residential 18
 - H50 - Residential 50
 - H100 - Residential 100
 - H150 - Residential 150
 - CR - Rural Commercial
 - CG - General Commercial
 - CM - Major Commercial
 - MU-R - Mixed Use - Rural
 - LI - Light Industrial
 - HI - Heavy Industrial
 - IO - Industrial Office
 - P - Public and Semi-Public
 - OS-BLM - Bureau of Land Management
 - OS-C - Conservation
 - OS-PR - Parks and Recreation
 - OS-NF - National Forest
 - W - Water
 - MR - Mineral Resources
 - ML - Military Land
- Base Features**
- Lot, Cui/Deed, Subdivision and Easement Line
 - Parcels
 - City/Unincorporated Community Boundary
 - Surrounding City
 - Surrounding Unincorporated Community
 - Water Feature
 - National Forest
- Overlays**
- Transit Oriented District
 - Employment Protection Districts
 - Specific Plan (SP)
- Transit Lines**
- Metro Stations
 - Metro Rail Stations
 - Metrolink
 - Transways
 - Light Rail - Existing
 - Light Rail - Proposed
 - Light Rail - Under Construction
- SOURCE:**
 Street Centerline data from 2010 TIGER (US Census Bureau), modified through the L.A. County Countywide Address Management System (CAMS).
 Parcel data is sourced from the L.A. County Assessor's Office.
 * The Special Management Areas, which are comprised of environmentally sensitive, hazardous, and resource areas, are not shown on this map. Please refer to the General Plan Land Use Element for more information on the Special Management Areas.

VICINITY MAP:



KEY MAP:

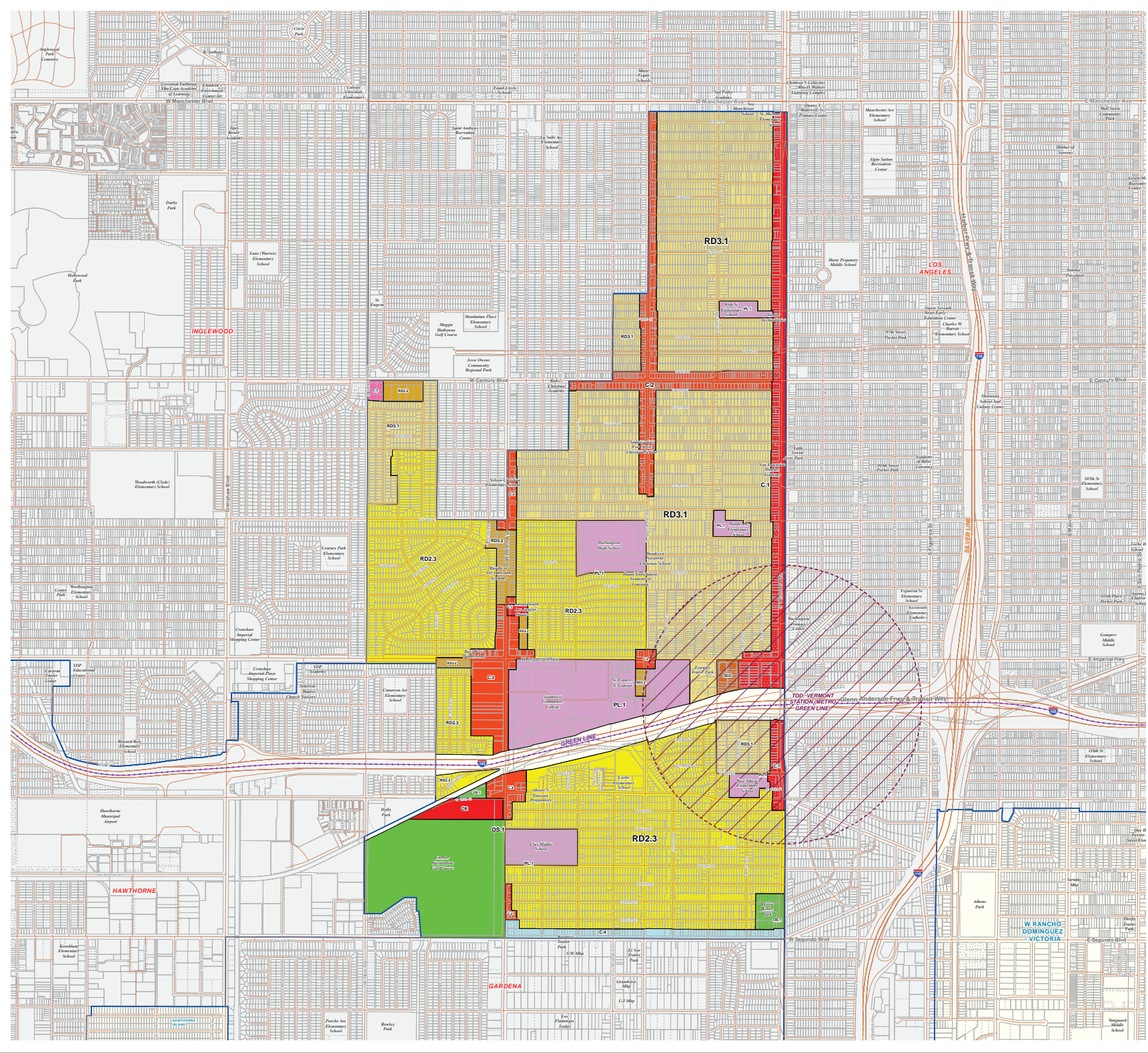


Current as of: May, 2014

LOS ANGELES COUNTY
 Department of Regional Planning
 201 W. Temple St. 90012
 Los Angeles, CA 90012

Scale in Feet
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Los Angeles County
WEST ATHENS -
WESTMONT
Community Plan
 Adopted by Board of Supervisors - 3/15/90
 As Amended Through - 6/3/03 (LP 02-286)

LEGEND

<ul style="list-style-type: none"> RD 2.3 - Single Family Residence RD 3.1 - Two Family Residence RD 3.2 - Medium Density Bonus SCD - Senior Citizen Density Bonus C-1 - Regional Commercial C-2 - Community Commercial C-3 - Neighborhood Commercial C-4 - Commercial Manufacturing CR - Commercial Recreation PL-1 - Public/Quasi-Public Use OS-1 - Recreation / Open Space 	<p>Transit Lines</p> <ul style="list-style-type: none"> Metrolink Transitways Light Rail - Existing Light Rail - Proposed Light Rail - Under Construction
--	---

Base Features

- Lot, Out/Deed, Subdivision and Easement Line
- Parcels
- City / Unincorporated Community Boundary
- Surrounding City
- Surrounding Unincorporated Community
- National Forest

Overlays *

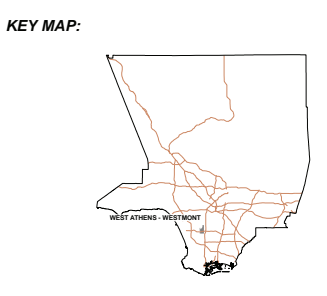
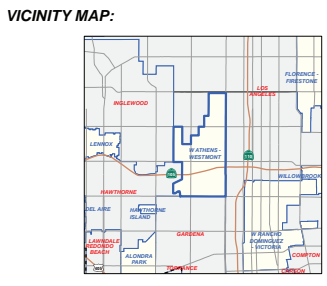
- Transit Oriented District
- Employment Protection Districts
- Specific Plan (SP)

SOURCE:

Street Centerline data from 2010 TIGER (US Census Bureau), modified through the LA County Countywide Address Management System (CAAMS).

Parcel data is sourced from the L.A. County Assessor's Office.

* The Special Management Areas, which are comprised of environmentally sensitive, hazardous, and resource areas, are not shown on this map. Please refer to the General Plan Land Use Element for more information on the Special Management Areas.



Current as of: May, 2014

LOS ANGELES COUNTY
 Department of Regional Planning
 201 W. Temple St. 90012
 Los Angeles, CA 90012

Scale in Feet
 0 250 500 1,000 1,500 2,000

SOURCE: Los Angeles County, 2014

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B.3 City of Los Angeles

At 468.7 square miles and a population of 3,884,307, the City of Los Angeles is the largest city within the greater Los Angeles area (U.S. Census Bureau, 2014b). LAX is located within the borders of the City of Los Angeles, and is located in close proximity to the following City of Los Angeles planning areas: South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey.

B.3.1 Existing Land Uses

The communities of South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey can all be characterized as consisting predominately of residential uses. The community of South Los Angeles, which is located east of LAX and bound by Van Ness Avenue to the west, W. 120th Street, to the south, Broadway to the east, and W. Pico Boulevard to the north, consists predominately of residential uses, with commercial, industrial, and public uses located along major transportation corridors. The West Adams-Baldwin Hills-Leimert community is located east of LAX and is generally bound by Pico and Venice Boulevards to the north, the City of Inglewood to the south, Arlington and Van Ness Avenues to the east, and Culver City to the west. Existing land uses in the southern portions of the West Adams-Baldwin Hills-Leimert community planning area closest to LAX consist predominately of residential uses, with some commercial and public uses as well. Lastly, the Westchester-Playa del Rey community is located north of LAX, and is bound by Centinela Avenue, La Brea Avenue, unincorporated County of Los Angeles, the City of Inglewood, the City of El Segundo, Dockweiler State Beach, Ballona Creek, Bay Street and Jefferson Boulevard. Westchester-Playa del Rey is generally characterized by existing residential uses in the central portions of its planning area, with commercial and industrial uses framing the northern and southern portions of the community, and open space associated with Dockweiler State Beach to the west.

B.3.2 Planned Land Uses

The City of Los Angeles developed the Los Angeles Citywide General Plan Framework Element that defines the City's long-range growth and development policy and establishes City-wide standards, goals, policies, and objectives for Community Plans. The Framework Element does not convey or affect entitlements for any property; final determinations regarding specific land use designations are determined by the Community Plans. Development within the communities identified in the previous section is guided by the *South Los Angeles Community Plan*, the *West Adams-Baldwin Hills-Leimert Community Plan*, and the *Westchester-Playa Del Rey Community Plan*, respectively.

Table B-5 identifies planned land use designations within the communities identified above, per the City's Framework Element. **Exhibits B-5, B-6, and B-7** identify land use designations within the South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa Del Rey communities, respectively.

**TABLE B-5
CITY OF LOS ANGELES LAND USE DESIGNATIONS**

Planned Land Use	Density/Intensity	Description
Residential – Minimum Density	0.4-1 units per net acre	Single-family Residential
Residential – Low Density	4-12 units per net acre	Single-family Residential
Residential – Low Medium I	10-17 units per net acre	Multi-family Residential
Residential – Low Medium II	18-29 units per net acre	Multi-family Residential
Residential - Medium	30-55 units per net acre	Multi-family Residential
Residential – High Medium	56-109 units per net acre	Multi-family Residential
Commercial – Neighborhood	Maximum FAR 1.5:1	Retail commercial, small professional offices, personal services, food stores, eating and drinking establishments, telecommunications centers, small cultural facilities (generally, 5,000 square feet or less), and similar uses.
Commercial – General (F)	N/A	Uses as permitted by existing zoning.
Commercial – Community	FAR range 1.5:1 to 3.0:1	Same as Neighborhood District, including entertainment, larger cultural facilities (museums, libraries, etc.), commercial overnight accommodations, small offices, bus or rail center (at station or intersection), and small parks and other community-oriented activity facilities.
Commercial – Regional	FAR range 1.5:1 to 6.0:1	Corporate and professional offices, retail commercial (including malls), offices, personal services, eating and drinking establishments, telecommunications centers, entertainment, major cultural facilities (libraries, museums, etc.), commercial overnight accommodations, and similar uses.
Industrial –Commercial Manufacturing	N/A	Industrial
Industrial – Limited Industrial	N/A	Industrial
Open Space	N/A	Park/Open Space
Public Facilities	N/A	Public

SOURCE: City of Los Angeles, *General Plan Framework Element* (Table 3-1), 2001.

B.3.3 Zoning

Regulations for land use development within the City of Los Angeles are set forth in Article 2 of the City’s Municipal Code. **Table B-6** provides information regarding the City’s standard zoning classifications for areas within the South Los Angeles, West Adams-Baldwin Hills-Leimert, and the Westchester-Playa Del Rey communities.

LAND USE

RESIDENTIAL ¹	CORRESPONDING ZONES ¹⁰	MULTIPLE FAMILY ¹¹	CORRESPONDING ZONES ¹⁰
LOW DENSITY	LOW DENSITY	LOW MEDIUM DENSITY	LOW MEDIUM DENSITY
LOW	RD, RL, RD, RD, RD	LOW MEDIUM DENSITY	RD, RD, RD, RD, RD, RD
		MEDIUM DENSITY	RD, RD, RD, RD, RD, RD
		HIGH MEDIUM DENSITY	RD, RD, RD, RD, RD, RD

COMMERCIAL ⁴	INDUSTRIAL ⁴
NEIGHBORHOOD	COMMERCIAL MANUFACTURING
GENERAL	LIMITED
COMMUNITY	LIGHT

CIRCULATION	SERVICE SYSTEMS ⁵
Freeway	Elementary School
Divided Major Street/Expressway	Junior High School
Major Street/Highway II	Senior High School
Major Highway I	Special School Facility
Secondary Highway	Private Elementary School
Collector Street	Private Senior High School
Local Street	
Railroad R/W	

ADMINISTRATIVE BOUNDARY	RECREATIONAL SITES
City Boundary	Neighborhood
Community Boundary	Community
	Regional
	Golf Course - Public
	Other Facilities
	Community Library
	Regional Library
	Fire Station
	Power Generating Station
	Power Distribution Station
	Pumping Plant
	Health Center
	Maintenance Yard
	Cultural & Historical Site
	Special Facility
	Area Library
	Cemetery

SPECIAL BOUNDARY
Opportunity Area
Signature Street Consideration

NOTES:

1. Proposed

FOOTNOTES

- Height District No. 1
- Quasi acreage includes abutting streets.
- Bound symbols denote the general location of a potential facility. The symbol does not designate any specific private property for acquisition.
- Height District No. 10L
- Height District No. 11
- These designations include associated parking.
- Minimum Density Residential uses may be permitted on privately owned Open Space.
- Local streets and freeways are shown for reference only.
- The Metropolitan Transportation Agency (MTA) has adopted a transit plan which proposes general corridor locations. Precise route alignments and station locations will be adopted after detailed corridor studies and full public hearings.
- The Public Facilities (PF) planning land use designation is provided to the ownership and use of the property by a governmental agency. The designation of the PF Zone is a corresponding zone is based on the same premise. The Plan also includes that when a board or governing body of a governmental agency officially determines that a property is to be used for a public purpose, and no other public agency has indicated an intent to acquire, and the City is notified that the agency intends to offer the property for sale to a private purchaser, then the property may be rezoned to the corresponding public facility zone within 300 feet of the property boundary and shall be considered consistent with the adopted Plan.
- Churches and accessory uses within the same ownership, including an on-site date of approval of the plan amendments for the zoning consistency program is subject to the following regulations:
 - These churches located on a major or secondary highway shall be subject to the regulations regarding churches and their accessory uses provided for in Section 12.11 of the LAMC.
 - These churches located on a local or collector street shall be subject to the same regulations except that:
 - A building may be expanded to a maximum of 25% of the gross floor area, existing at the time of the Plan Amendment by right.
 - Any expansion of more than 25% of the gross floor area shall be subject to a Plan Amendment as provided for in Section 12.24C of the LAMC.
- Existing public bus parks are consistent with the Plan. Future public bus parks shall be consistent with the Plan when developed in the RMB Zone.
- Each Plan category permits all indicated corresponding zones as well as those zones indicated in the Los Angeles Municipal Code (LAMC) as permitted by such zones within the same district. Specific Plan categories, specific conditions and/or limitations of project approval, Plan Footnotes or other Plan map or text variations.
- Zones established in the LAMC subsequent to the adoption of the Plan shall not be deemed as corresponding to any particular Plan category unless the Plan is amended to so indicate.
- It is the intent of the Plan that the entitlements granted shall be one of the same designations within the corresponding zones shown on the Plan, unless accompanied by a concurrent Plan Amendment.
- Notwithstanding Paragraph No. 1, 100% commercial projects located on Community Commercial-designated properties on Figueroa Street and the western side of Flower Street shall be limited to the existing Height District 1 and 2.5:1 FAR. However, moderate to medium density commercial developments may be designated Height District 20, provided that the City requires the corresponding zones shown on the Plan to be consistent with the Plan. The maximum FAR of 4.5:1 may be granted for moderate density projects that do not exceed 25% of the dwelling units developed in the increments from 1 to 4.5:1 FAR for affordable housing, or 25% for projects approved by the CRA prior to Council adoption of the Figueroa Street Corridor General Plan Amendment, per Council File No. 12-025. The affordable housing requirements will be satisfied by units that are affordable to households that earn less than 100% of the California Health and Safety Code Commercial uses in such moderate projects shall comply with less than 0.5 FAR and no more than 0.5 FAR. 100% residential development shall not be permitted.
- Height District 20 with a maximum FAR of 3.5:1.
- No permits shall be issued for new or additions to existing existing multi-family residential units as provided by LAMC Sections 16.03 B.1, including those portions of land within Council Districts 15, and the portion of Council District 18 north of the Interstate 10 Freeway. Refer to 21-2412 for exemptions, regulations, and review criteria.
- Bikeways are shown on the Citywide Bikeways System map contained in the City's Bicycle Plan, and the Transportation Element of the General Plan, which was adopted by the City Council on August 6, 1999.

Notes:

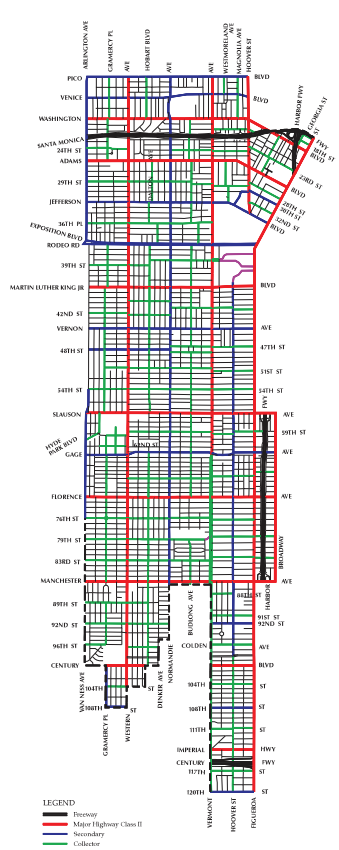
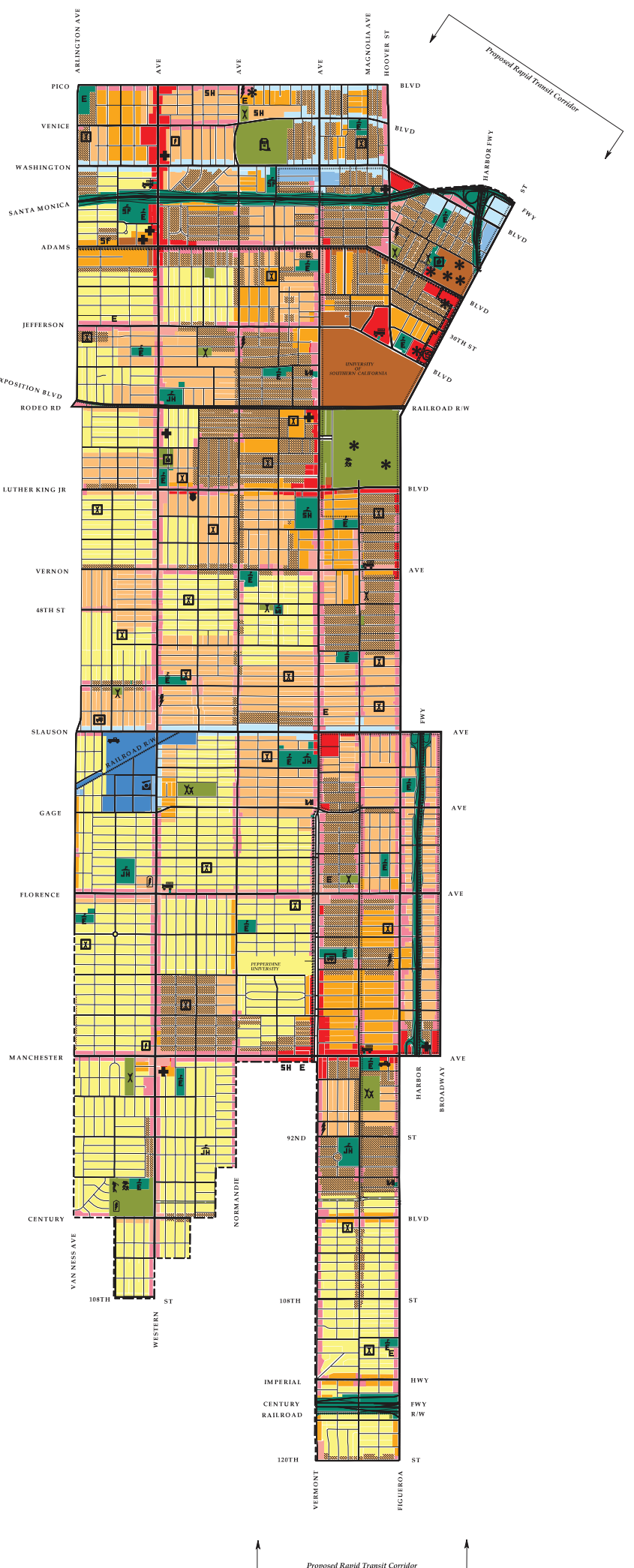
A. The text of the Community Plan can be accessed on the City of Los Angeles' Web Page (www.cityoflosangeles.org/PLAN).

B. Other Special Area Maps may not be included in this document.

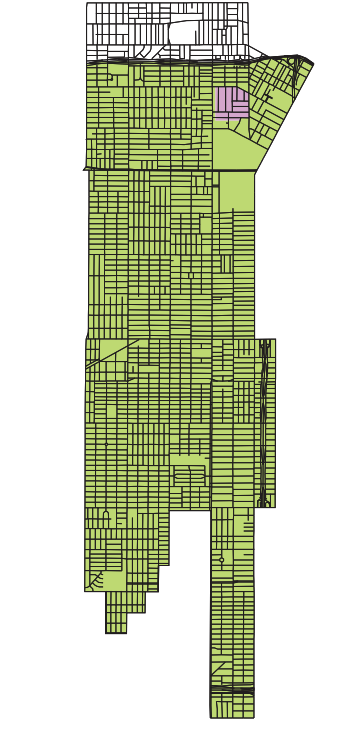
C. Parcel level information (plan designation and zoning) can be found on the City of Los Angeles' SIMAS Map Automation Web Site.

D. Generalized Circulation is for reference only. For detailed information, see the "Street and Highway Designations" maps prepared and maintained by Public Works/Bureau of Engineering.

Disclaimer: The City of Los Angeles is neither responsible nor liable for any inaccuracies, errors or omissions with respect to the material contained on this map. This map and all materials contained on it are distributed and transmitted "as is" without warranty of any kind, either express or implied, including without limitation, warranty of title or implied warranty of merchantability or fitness for a particular purpose. The City of Los Angeles is not responsible for any special, indirect, incidental, or consequential damages that may arise from the use of, or the inability to use, the map and/or the materials contained on the map as provided by the City of Los Angeles, or a third party.



GENERALIZED CIRCULATION
(See Note 7)



SPECIFIC PLAN AREA

FOR DETAILS REFER TO:

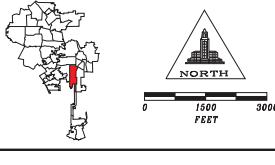
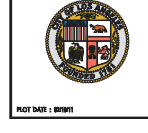
- Conditional Use Approval for State St Alteration - Ord No 17645
- North University Park Specific Plan Ord No 15976
- And South Central Specific - Ord No 16228

GENERAL PLAN LAND USE MAP (as of December 08 2010)

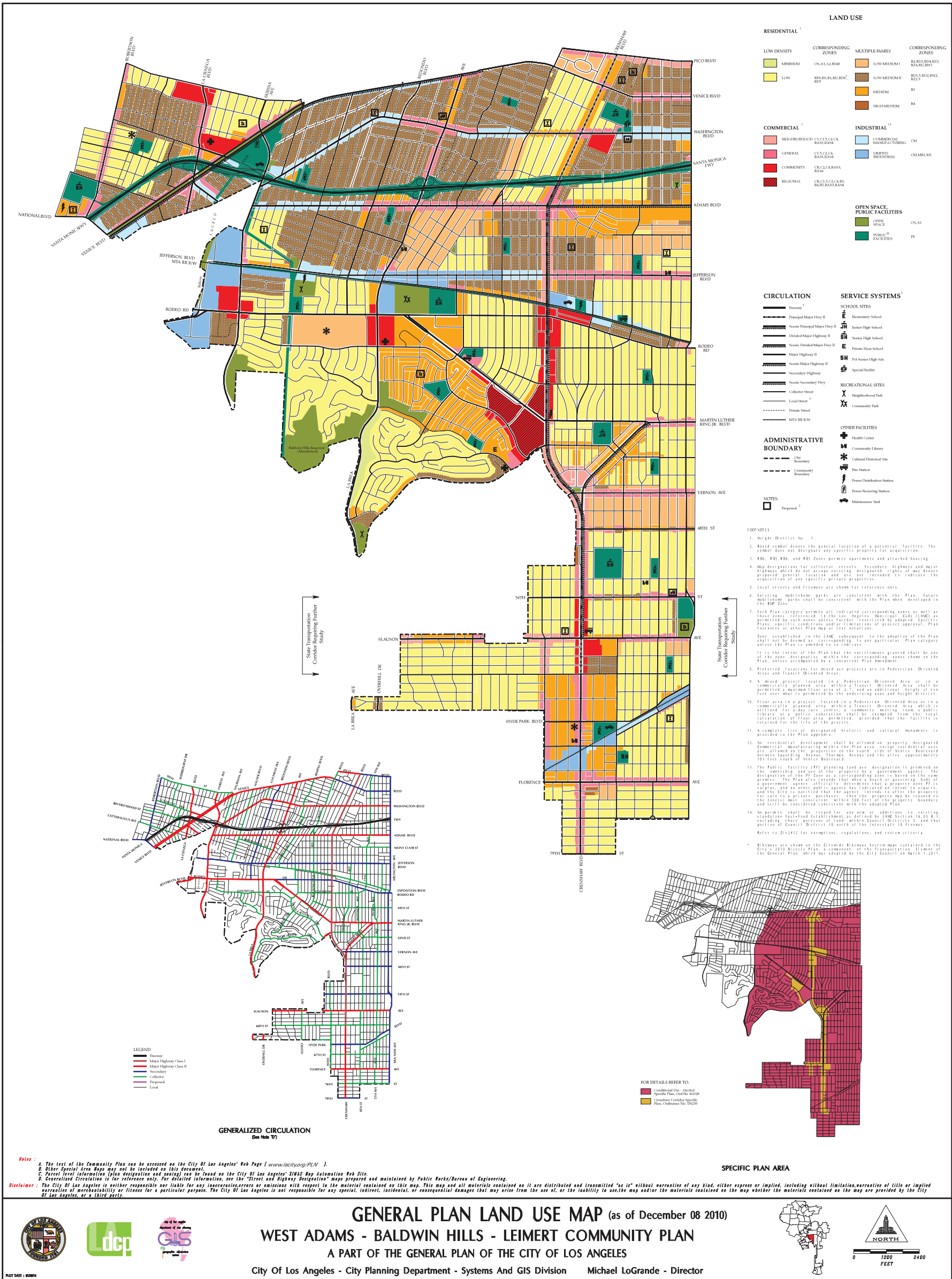
SOUTH LOS ANGELES COMMUNITY PLAN

A PART OF THE GENERAL PLAN OF THE CITY OF LOS ANGELES

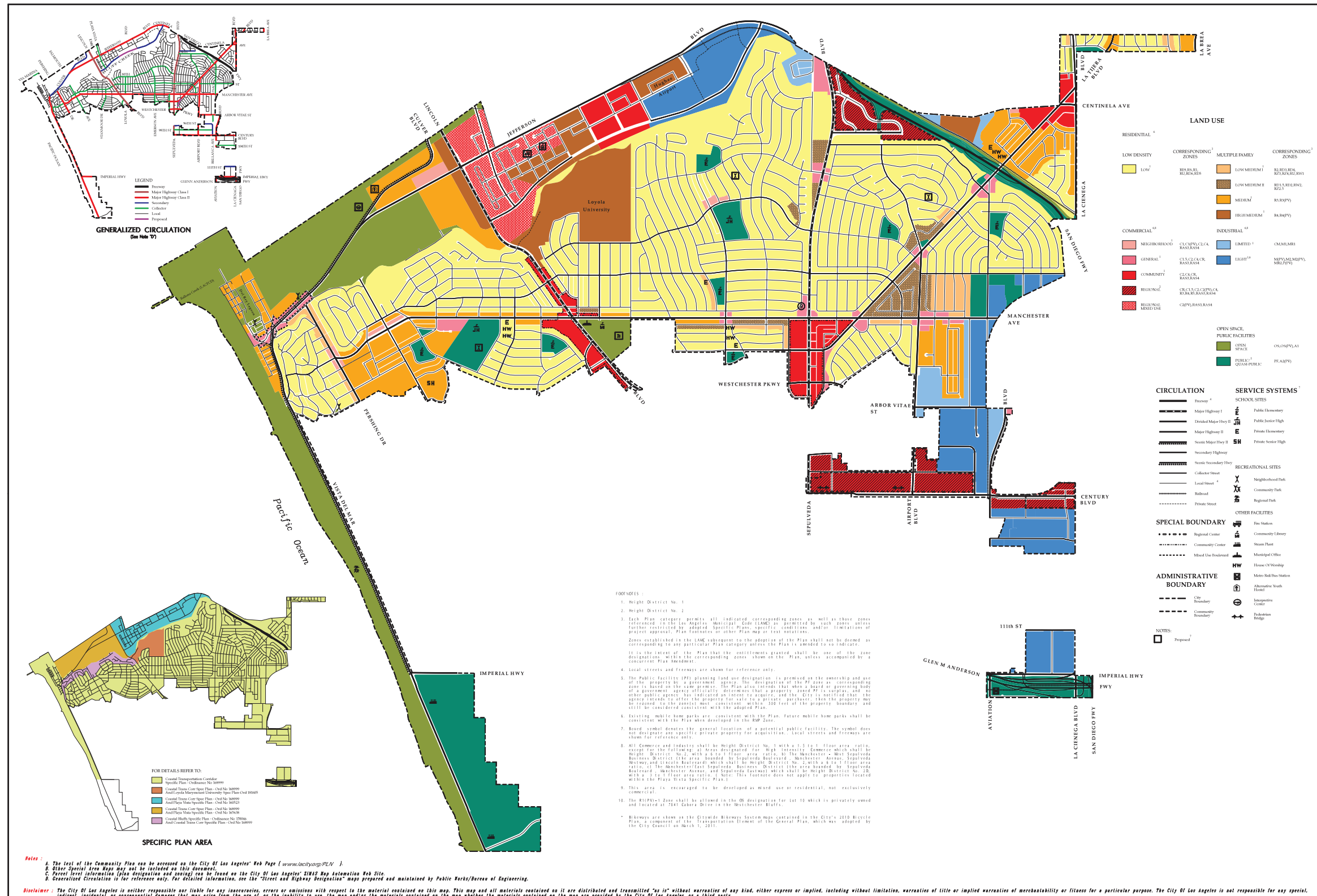
City Of Los Angeles - City Planning Department - Systems And GIS Division Con Howe - Director



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**TABLE B-6
CITY OF LOS ANGELES ZONING CLASSIFICATIONS**

Zoning Classifications	Allowable Uses
Residential	
R1: One Family Zone	One-family dwelling, parks, playgrounds or community centers, owned and operated by a governmental agency.
R2: Two-Family Zone	Any use permitted in the "R1" One-family Zone and two-family dwelling or two single-family dwellings.
R3: Multiple Dwelling Zone	Any use permitted in the "R2" Two-family Zone, group dwellings, multiple dwellings, apartment houses, boarding houses, rooming houses or light housekeeping rooms, and child care facilities for not more than 20 children.
R4: Multiple Dwelling Zone	Any use permitted in the "R3" Multiple Dwelling Zone; churches (except rescue mission or temporary revival) or philanthropic institutions, with yards; child care facilities or nursery schools; hotels, motels and apartment hotels under any of the following conditions subject to the requirements indicated; fraternity or sorority houses and dormitories; schools, elementary and high, or educational institutions, with yards; and museums or libraries (non-profit) with yards.
R5: Multiple Dwelling Zone	Any use permitted in the "R4" Multiple Dwelling Zone; hotels, motels and apartment hotels; retirement hotels; clubs or lodges (private non-profit), chartered as such by the State, with yards; and hospitals or sanitariums (except animal hospitals), with yards.
Commercial	
CR: Limited Commercial Zone	Banks, or financial institution; business college, professional or scientific school or college (classroom or lecture instruction only); not including a music school, trade school, nor any school specializing in manual training, shop work or in the repair or maintenance of machinery or mechanical equipment; club or lodge (nonprofit); hotels (including motels), apartment hotels, transient occupancy residential structures or hostels; museum or library (non-profit); office, general business or professional, including that of a real estate or stock broker, or an insurance or building and loan company; pharmacy; counseling and referral facilities; child care facilities or nursery schools; church (except rescue mission or temporary revival); park, playground, or community center, owned and operated by a governmental agency; public parking area; any single family dwelling, two-family dwelling or apartment house use permitted in the R4 Multiple Dwelling; and schools, elementary or high, or educational institution.
C1: Limited Commercial Zone	Any use permitted in the CR Limited Commercial Zone but not including a church, educational institution, museum or school (elementary or high), provided that all the regulations of said CR zone are complied with except as provided in this section. Any residential use permitted in the R3 Multiple Residential Zone provided that all the regulations of said R3 zone are complied with except as provided in this section.
C1.5: Limited Commercial Zone	Any use permitted in the C1 Limited Commercial Zone, provided that all regulations and limitations of said C1 zone are complied with except as provided in this section. Any single-family dwelling, two-family dwelling or apartment house use permitted in the R4 Multiple Dwelling Zone provided that all regulations of said R4 zone are complied with except as provided in this section.
C2: Commercial Zone	Any use permitted in the C1.5 Limited Commercial Zone b or in the C1 Limited Commercial Zone.
C4: Commercial Zone	Any use permitted in the C2 Zone, provided that all regulations and limitations of said C2 Commercial Zone are complied with.
Manufacturing	
CM: Commercial Manufacturing Zone	Any use permitted in the C2 Zone, provided that these uses are conducted in full compliance with all of the regulations of the zone, except that these uses may be conducted as wholesale businesses without limitation on the floor area used for storage. Provided further that residential uses shall be permitted but shall be limited to shelters for the homeless, joint living and work quarters, and those uses permitted in the R3 Multiple Residential Zone, which R3 uses shall be in compliance with all the regulations of the R3 Zone, except that front yard setbacks are not required.
MR1: Restricted Industrial Zone	Any use permitted in the CM Zone provided that all regulations of said zone are complied with, and any use permitted in the C2 Commercial Zone, provided that these uses are conducted in accordance with all building enclosure and fence enclosure limitations of said C2 zone

TABLE B-6
CITY OF LOS ANGELES ZONING CLASSIFICATIONS

Zoning Classifications	Allowable Uses
M1: Limited Industrial Zone	Any use permitted in the MR1 Zone, provided that all regulations of the zone are complied with, except that front yard setbacks are not required, and any commercial use permitted in the C2 Zone except sanitariums and hospitals, provided that these uses are conducted in accordance with all building enclosure and fence enclosure limitations of the C2 Zone.
MR2: Restricted Light Industrial Zone	Any use permitted in the MR1 Zone provided that all regulations of said zone are complied with.
M2: Light Industrial Zone	Any use permitted in the M1 or MR2 Zone, whether conducted within or without a building or enclosed area.
M3: Heavy Industrial Zone	Any use permitted in the "M2" zone.

SOURCE: City of Los Angeles Municipal Code (Article 2), 2014.

B.4 City of Inglewood

The City of Inglewood is part of the greater Los Angeles Metropolitan area and is located east and northeast of LAX. The City of Inglewood is approximately 9.07 square miles and, has a population of 111,542 (U.S. Census Bureau, 2014c).

B.4.1 Existing Land Uses

City of Inglewood existing land uses closest to LAX include office uses west of Interstate 405 and north of W. Arbor Vitae Street. East of Interstate 405, existing land uses within the City of Inglewood consist largely of residential uses, with commercial, industrial, and public uses making up the balance of existing uses within the City.

B.4.2 Planned Land Uses

Land use development within the City is guided by the City of Inglewood *General Plan Land Use Element*. City land use designations established in the General Plan are identified in **Table B-7** and depicted on **Exhibit B-8**.

B.4.3 Zoning

Regulations for land use development within the City of Inglewood are set forth in Chapter 12 of the City's Municipal Code. **Table B-8** provides information regarding the City's standard zoning classifications.

**TABLE B-7
CITY OF INGLEWOOD LAND USE DESIGNATIONS**

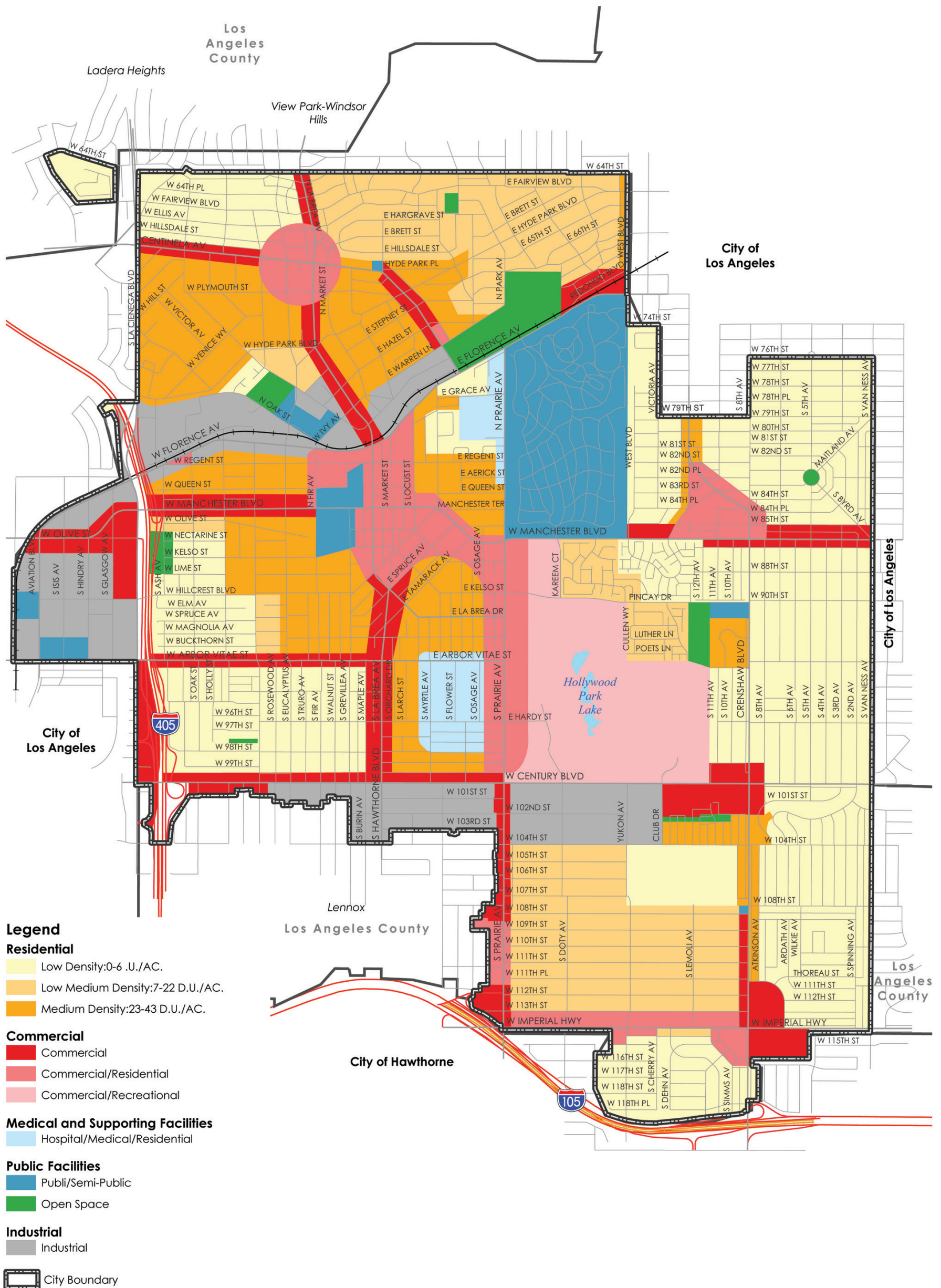
Planned Land Use	Density/Intensity	Description
Residential – Low Density	0–6 dwelling units per acre	This land use category has been applied to all single-family development, and is generally located in the eastern, southern, southwestern, and northwestern portions of the City. The density standards for this class provide for from one to six units to the acre.
Residential – Low Medium Density	7 to 22 dwelling units per acre	This land use category has been applied to two main areas; the northeastern and southeastern portions of the City and represent major locations suitable for infill housing and conversion to townhouse complexes and garden apartments. These areas are presently developed primarily as single-family but they are well located with respect to convenience and access to the regional transportation network and serve as buffers or transition areas between more intensive development and areas of less intensive use. This category has a relatively flexible density standard of from seven to twenty-two dwelling units to the acre.
Residential – Medium Density	23 to 43 dwelling units per acre	This land use category has been applied to primarily those areas surrounding the downtown business district and Civic Center. Several of these areas are still developed with single-family densities but are generally in states of transition to more intense development. The locations provide ideal access to the regional freeway network and close-in convenience to the major shopping facilities of the downtown business district. The standards provide for relative large multiple dwelling complexes at a density of 23 to 43 dwellings to the acre.
Commercial – Commercial	N/A	This land use category basically represents all forms of commercial enterprise. This may include retail and service uses; corporate, medical, and other offices; restaurants; hotels and motels; and other commercial uses. Commercial areas are designated along the City's major arterials, including the north-south arterials of La Cienega Boulevard, La Brea Avenue, Prairie Avenue, and Crenshaw Boulevard; and the east-west arterials of Centinela Avenue, Manchester Boulevard, Arbor-Vitae Street, Century Boulevard, and Imperial Highway.
Commercial – Commercial/Residential	N/A	This land use category represents areas allowed for mixed commercial and residential. These areas are primarily concentrated around the Central Business District and Civic Center in the west-central portion of the City, in portions along Prairie Avenue and Imperial Highway, and in nodes at and around the intersections of Centinela Avenue and La Brea Avenue, and Manchester and Crenshaw Boulevards.
Commercial – Commercial/Recreational	N/A	This land use category is the area where both commercial and private recreation and similar uses would be allowed. This includes the area currently developed as the Hollywood Park Race Track & Casino and The Forum.
Medical, etc. – Hospital/Medical/Residential	N/A	This land use category is an outgrowth of a specialized land use situation. Inglewood has two regional medical centers which are a dominating influence on the surrounding land pattern. Both Daniel Freeman and Centinela Hospital have grown to the point where they have attracted adjacent satellite uses such as medical offices, convalescent and nursing homes, pharmacies and similar uses.
Public Facilities – Public/Semi-public	N/A	This land use category has been applied to those areas used for civic purposes, including City Hall, the library, and the police station, and also includes other public institutions such as Inglewood High School and the Inglewood Park Cemetery. These areas are found primarily concentrated in the Civic Center area in the west-central portion of the City, and scattered as well in various locations throughout the City.
Public Facilities – Open Space	N/A	This land use category distinguishes those lands and uses which are of such a nature that they should be reserved for open space and/or recreational activities. The largest concentration of open space in the City is Edward Vincent Jr. Park. Smaller areas include all of the other municipal parks throughout the City.
Industrial -- Industrial	N/A	This land use category has been applied to those areas that encompass both light and heavy industrial uses. The Element indicates that the distinction between light industrial or heavy industrial is not crucial in that virtually all new development would be located within industrial park areas and subject to review by the City. The City's industrial areas take into account three factors involved in their location: infrastructure (transportation facilities and utilities), compatibility of use, and proximity to an adequate labor force. Industrial areas are designated primarily in the area west of the San Diego (I-405) Freeway, and in large portions along Florence Avenue and Century Boulevard.

SOURCE: City of Inglewood, *General Plan Update Technical Background Report*, 2006.

**TABLE B-8
CITY OF INGLEWOOD ZONING CLASSIFICATIONS**

Zoning Classifications	Allowable Uses
Residential	
R-1: One Family Zone	One-family dwellings; senior citizen accessory units; accessory private garage; detached one-story accessory buildings not used for garage purposes and not exceeding a total of four hundred square feet of floor area; group home or community care facility; private greenhouses and horticultural collections, vegetable gardens and orchards when not located in the front setback; transitional uses.
R-2: Limited Multiple-Family Zone	Any use permitted in the R-1 One-Family Zone; one or more one-family dwellings per lot; multiple dwellings; churches or other facilities for regularly scheduled religious or metaphysic meetings; group home or community care facility not exceeding six residents and not located within three hundred feet of any other group home or comparable facility; required parking space; and transitional uses.
R-3: Multiple-Family Zone	Any use permitted in the R-1 One-Family Zone or the R-2 Limited Multiple-Family Zone; multiple-unit dwellings; boarding or lodging houses if developed in conformance with the requirements for multiple-unit dwellings; churches or other facilities for regularly scheduled religious or metaphysics meetings; day care facilities or nursery schools; group home, community care facility or half-way houses not exceeding six residents and not located within three hundred feet of any other group home or comparable facility; convalescent home (exceeding six residents) if the facility was constructed prior to July 1, 1987; and required parking space.
R-4: Multiple-Family Zone	Any use permitted in the R-1 One Family Zone or the R-2 Limited Multiple Family Zone; multiple unit dwellings; boarding or lodging houses if developed in conformance with the requirements for multiple unit dwellings; churches or other facilities for regularly scheduled religious or metaphysics meetings; nursery schools for the enrollment of children six years of age or younger; group home, community care facility or half-way house not exceeding six residents and not located within three hundred feet of any other group home or comparable facility; convalescent home (exceeding six residents) if the facility was constructed prior to July 1, 1987; and required parking space.
Commercial	
C-1: Limited Commercial Zone	Retail sales of merchandise; financial and insurance institutions; professional and medical offices and pharmacies; restaurants, cafeterias, doughnut shops, bakeries; bars, nightclubs, supper clubs, dance halls, and the like; service shop for watches, keys, shoes, small household appliances, dry cleaning, tailoring, printing; hotels or motels; studios and gymnasiums; new car dealership with ancillary automobile servicing; day care facilities or nursery schools (no age limitation); public and quasi-public uses; parking lots; small group counseling/tutoring facilities; and wireless telecommunication facilities.
C-2: General Commercial Zone	Any use permitted in the C-1 Zone except ambulance dispatch facilities and residential uses.
C-2A: Airport Commercial Zone	Any use permitted in the C-2 Zone; hotels or motels, with a minimum of fifty guestrooms per facility; automobile rental and leasing (including limousines) and nonambulatory transportation uses.
C-3: Heavy Commercial Zone	Any use permitted in the C-2 zone except convalescent or retirement homes, group homes, congregate housing, orphanages, half-way houses, fraternities or sororities.
C-S Commercial Service Zone	Any use permitted in the C-2 zone except convalescent or retirement homes, group homes, orphanages, half-way houses, fraternities or sororities.
Manufacturing	
M-1: Light Manufacturing Zone	Any use permitted in the C-2A, C-3 or C-S zones, except convalescent or retirement homes, group homes, congregate housing, half-way houses, fraternities or sororities.
M-2: Heavy Manufacturing Zone	Any use permitted in the M-1 Zone; acetylene gas manufacture or storage; alcohol manufacture; ammonia, bleaching powder, or chlorine manufacture; asphalt manufacture or refining; blast furnace or coke oven; boiler works; cotton gin or oil mill; freight classification yard; iron, steel foundry; oil cloth or linoleum manufacture; ore reduction; pant, oil shellac, turpentine, or varnish manufacture; paper and pulp manufacture; petroleum products, or wholesale storage of petroleum; and other similar types of uses.
Open Space	
O-S: Open Space Zone	No building or land shall be used and no building shall be erected or structurally altered hereafter except for the following permitted uses: privately owned or public open recreation areas, parks, schools, malls or plazas, playgrounds, freeways, parkways, transportation and public transit rights-of-way, and such buildings and structures as are accessory thereto provided; agricultural and horticultural uses and such buildings and structures as are accessory thereto; bicycle routes, hiking trails, and other pedestrian ways; drainage channels, water courses, spreading grounds and settling basins; and public parking as is accessory to permitted uses.

SOURCE: City of Inglewood Municipal Code (Chapter 12), 2014.



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B.5 City of El Segundo

The City of El Segundo is located south of LAX, and is bound by Aviation Boulevard to the east, Rosecrans Avenue to the south, the Pacific Ocean to the west, and LAX to the north. The City is approximately 5.46 square miles and has an approximate population of 16,924 (U.S. Census Bureau, 2014d).

B.5.1 Existing Land Uses

The City of El Segundo is characterized by existing residential uses in the northwestern portions of its planning area. The northeastern and eastern portions of El Segundo are made up predominately of office and commercial uses, and the central and southern portions of the City are made up of residential, industrial, and manufacturing uses.

B.5.2 Planned Land Uses

Development within the City of El Segundo is guided by the *El Segundo General Plan*, as well as a series of specific plans, including the *Smoky Hollow Specific Plan* and the *Downtown Specific Plan*. **Table B-9** summarizes the land use designations set forth by the El Segundo General Plan (see **Exhibit B-9**).

B.5.3 Zoning

Regulations for land use development within the City of El Segundo are set forth in Title 15 of the City's Municipal Code. **Table B-10** provides information regarding the City's standard zoning classifications.

**TABLE B-9
CITY OF EL SEGUNDO LAND USE DESIGNATIONS**

Planned Land Use	Density/Intensity	Description
Residential Single-family	8 du/ac	Permits one single-family home on one legal lot at a maximum density of eight dwelling units per acre. The minimum lot size for new lots is 5,000 square feet.
Residential Two-family	12 du/ac	Permits two residences on one legal lot, either attached or detached, at a maximum density of 12 dwelling units per acre. The minimum lot size for new lots is 7,000 square feet.
Residential Multi-family	27 du/ac	Permits multiple dwelling units in either a condominium or apartment configuration. A condominium or apartment is a structure or group of structures containing three or more dwelling units, as defined by the Zoning Code. The maximum permitted density for multi-family residential is 27 dwelling units per acre on properties equal to or less than 15,000 square feet and 18 du/ac on properties greater than 15,000 square feet.
Planned Residential Development	29 du/ac (single family) 36 du/ac (multi-family)	Permits a mixture of residential uses on the former Imperial School site with a maximum of 29 single-family detached dwelling units and 36 multi-family dwelling units. This designation is intended to encourage design flexibility and provide transitional densities and uses that are compatible with surrounding land uses. This designation is not intended to be used elsewhere within the City.
Neighborhood Commercial	Residential: 10 du/ac Nonresidential: Max FAR 0.5	Permits neighborhood-serving retail, neighborhood-serving office, and limited residential on a single floor above the commercial ground floor. This designation is intended to provide integrated neighborhood-serving commercial areas adjacent to the residential neighborhoods.
Downtown Commercial	Residential: 10 du/ac Nonresidential: Max FAR 1.0	Permits community serving retail, community serving office, and residential on the floor above street level only if commercial is on the street level. This designation is intended to provide an integrated community serving commercial area downtown.
General Commercial	Max FAR 1.0	Permits all retail uses, including hotel uses, and major medical facilities. Office uses are not permitted except for those providing personal services not exceeding 5,000 square feet such as travel and insurance agents.
Corporate Office	Max FAR 0.8	Permits a mixture of office and food-serving uses in single-tenant or multi-tenant buildings with limited retail uses permitted in the lobby area. Research and development uses are permitted east of Sepulveda Boulevard.
Commercial Center	Residential: 10 du/ac Nonresidential: Max FAR 1.0	Permits community serving retail, community serving office, and residential on the floor above street level only if commercial is on the street level. This designation is intended to provide an integrated community serving commercial area downtown.
Smoky Hollow	Max FAR 0.6	Permits primarily light industrial uses including light manufacturing, research and development, warehousing, and office uses. Other compatible uses and additional FAR may be permitted for individual projects by the approval of a Specific Plan.
Urban Mixed-use North	Max FAR 1.3	Permits a mixture of office, research and development, retail, and hotel uses. Light industrial uses conducted within a fully enclosed building shall be permitted if approved with a discretionary application.
Urban Mixed-use South	Max FAR 1.3	Permits a mixture of office, research and development, retail, and hotel uses. Light industrial uses conducted within a fully enclosed building and adult-oriented businesses shall be permitted if approved with a discretionary application.
Parking	N/A	Permits areas for parking automobiles, motorcycles, and bicycles in surface or structured parking. Specific properties have been designated as parking to insure that adequate long-term parking space will be available.
Light Industrial	Max FAR 0.6	Permits light manufacturing, warehousing, research and development, and office. Light manufacturing is defined as the assembly, packaging, fabrication, and processing of materials into finished products, rather than the conversion or extraction of raw materials. The light industrial activity shall be conducted primarily within structures; outside storage areas and assembly activity should be limited. Other compatible uses and additional FAR may be permitted for individual projects by the approval of a Specific Plan with supplemental environmental analysis.
Heavy Industrial	Max FAR 0.6	Permits heavy manufacturing uses such as construction yards, factories, generating stations, extraction of raw materials, and refining. All uses must conform to the policies of the Hazardous Materials Element.

TABLE B-9 (Continued)
CITY OF EL SEGUNDO LAND USE DESIGNATIONS

Planned Land Use	Density/Intensity	Description
Public Facility	N/A	Permits publicly owned facilities such as schools, maintenance yards, utilities, the Civic Center, and the Library.
Federal Government	N/A	Permits a U.S. Government facility that is consistent with surrounding uses.
Open Space	N/A	Permits passive or active use of areas preserved as useable or visual open space both publicly- and privately-owned. These areas include the El Segundo Blue Butterfly preserve, utility easements, and the existing flood control sumps.
Parks	N/A	Permits passive or active use of areas developed as parks, for community and recreational uses. Designated park areas are publicly-owned.

SOURCE: City of El Segundo, *General Plan Land Use Element*, 1992.

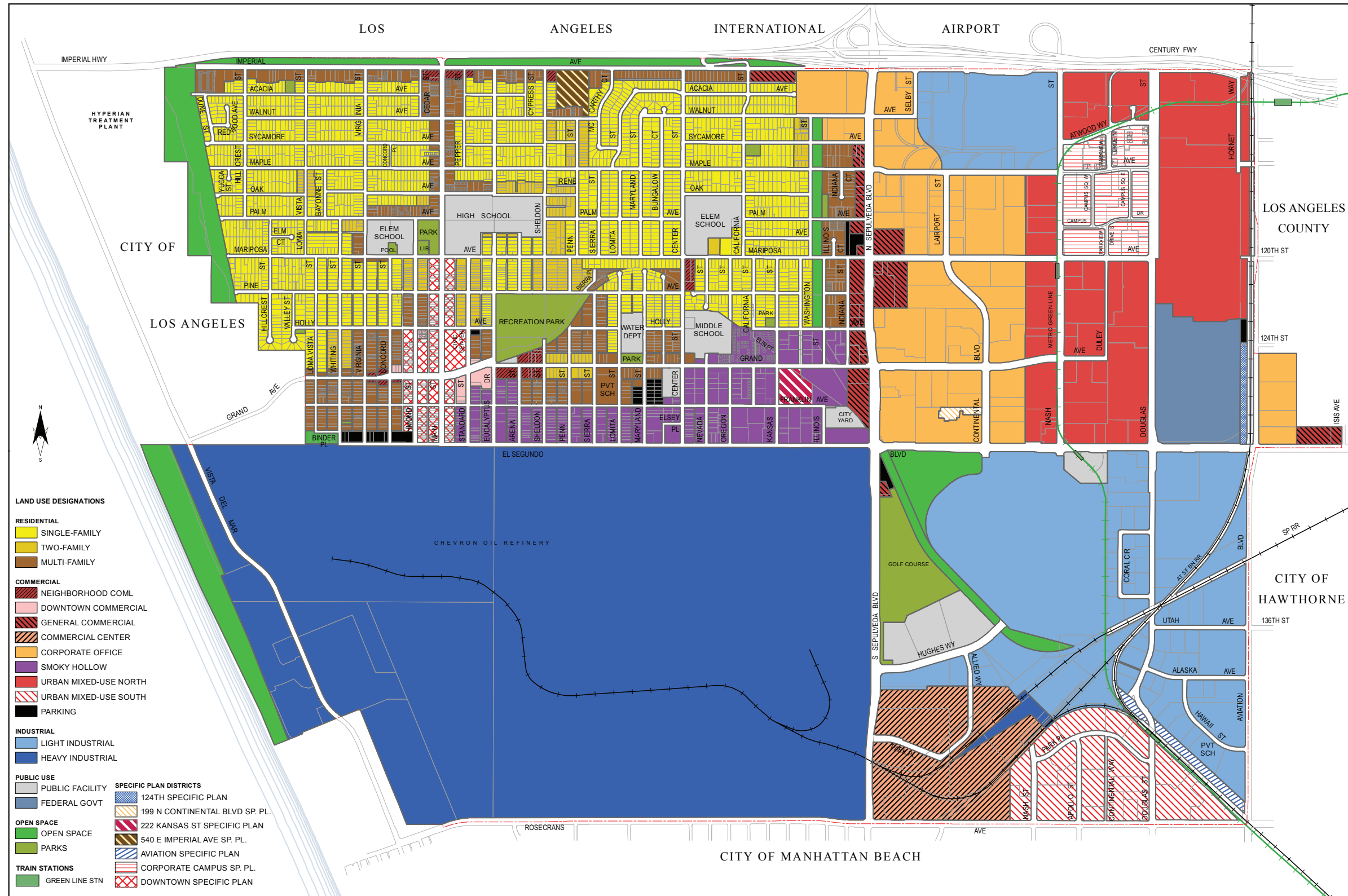
TABLE B-10
CITY OF EL SEGUNDO ZONING CLASSIFICATIONS

Zoning Classifications	Allowable Uses
Residential	
R-1: Single-Family Residential Zone	Single-family dwellings; parks, playgrounds, recreational areas (publicly owned and operated) but excluding ballparks, bleachers, swimming pools or other types of facilities where racing or contests are conducted or public amusement devices are for hire; the keeping of animals and pets; a state authorized, certified or licensed family care home, foster family home, or group home serving six (6) or fewer children; a state authorized, certified or licensed residential facility, residential care facility, residential care facility for the elderly, intermediate care facility, developmentally disabled habilitative or nursing, or congregate living health facility, serving six (6) or fewer persons; home occupations; small family daycare homes; and large family daycare homes.
R-2: Two-Family Residential Zone	Any use permitted in the R-1 zone; a two-family dwelling, duplex, or two (2) one-family dwellings; and a three-family or a four-family dwelling.
R-3: Multi-Family Residential Zone	Any use permitted in the R-2 zone; condominiums and stock cooperatives converted from multiple-family dwellings; daycare centers; large family daycare homes; lodging houses; and multiple-family dwellings.
Commercial	
C-RS: Downtown Commercial Zone	Billiard-pool rooms and bowling alleys; financial institutions; general offices; government buildings (including offices, police and fire stations, parking and related buildings); medical-dental offices; restaurants, delicatessens, and cafes (excluding dancing and entertainment); retail uses providing sales (excluding off site alcohol sales) and services; schools; and other similar uses.
C-2: Neighborhood Commercial Zone	General and medical-dental offices; neighborhood services, including, but not limited to, beauty/barber shops and markets; neighborhood serving commercial uses, including, but not limited to, retail sales (excluding off site alcohol sales); public uses, including, but not limited to, fire and police stations, post offices and libraries; recreational facilities (public and private); restaurants and cafes; and other similar uses.
C-3: General Commercial Zone	General offices not exceeding five thousand (5,000) square feet; hotels and motels; medical-dental offices and facilities; public uses, including, but not limited to, fire and police stations, post offices and libraries; recreational facilities (public and commercial); restaurants and cafes; retail uses (excluding off site alcohol sales); and other similar uses.
CO: Corporate Commercial Zone	General offices; medical-dental offices; public uses, including, but not limited to, fire and police stations, post offices and libraries; recreational facilities (public and private); research and development uses, located east of Sepulveda Boulevard only; restaurants and cafes; and other similar uses.
MU-N: Urban Mixed Use North Zone	Business service establishments such as electronic computer facilities and addressing services; general offices of commercial, financial or industrial establishments; engineering, industrial design, consultation and other offices; financial institutions; hotels and motels; medical-dental offices or facilities; motion picture/television production facilities (excluding outdoor facilities); restaurants and cafes; retail (excluding off site alcohol sales) and wholesale sales and service; scientific research and experimental development laboratories; and other similar uses.

TABLE B-10 (Continued)
CITY OF EL SEGUNDO ZONING CLASSIFICATIONS

Zoning Classifications	Allowable Uses
Commercial (cont.)	
MU-S: Urban Mixed Use South Zone	Business service establishments such as electronic computer facilities and addressing services; engineering, industrial design, consultation and other offices; financial institutions; general offices of commercial, financial or industrial establishments; hotels and motels; massage establishments; medical-dental offices or facilities; motion picture/television production facilities (excluding outdoor facilities); restaurants and cafes; retail (excluding off site alcohol sales) and wholesale sales and service; scientific research and experimental development laboratories; and other similar uses.
C-4: Commercial Center Zone	Banks, savings and loans and/or credit unions; dance and music instruction studios; day spas; farmers' market; fitness centers (indoors only); general offices; health and/or skin care services; indoor sale of automobiles, motorcycles, and motor scooters along with the sale of accessories and parts as an accessory use; medical and dental offices; pet supplies and services, including veterinary services; restaurants and cafes; retail sales uses (excluding off site alcohol sales); and other similar uses.
Industrial	
M-1: Light Manufacturing Zone	Fiberglass products; general offices and establishments for research, professional and technical services; general storage, warehousing and ministorage; high and medium bay labs; light manufacturing uses and related offices; manufacturing and assembly of electrical appliances, electronic instruments and devices, radios and phonographs, including the manufacturing of small tools and parts such as coils, condensers, transformers, crystal holders, etc.; manufacturing of cleaning agents, waxes and finishes; manufacturing of cutlery, hardware, and hand tools and kitchen utensils; manufacturing, processing and packaging of pharmaceuticals, drugs, toiletries and cosmetics, except soap; public facilities, including, but not limited to, fire and police facilities, post offices, and libraries; public utilities, including, but not limited to, power substations and telephone exchanges; recreation facilities (public and private); restaurants and cafes; and other similar uses.
M-2: Heavy Industrial Zone	Construction yards; extraction of raw materials and refining; factories; generating stations; heavy manufacturing uses; and other similar uses.
SB: Small Business Zone	Art studios (production space only); general and/or multimedia related offices; general offices in conjunction with any other permitted use; light industrial uses; manufacturing; public facilities and utilities; research and development; restaurants and cafes without drive-through facilities; warehousing and distribution; and other similar uses.
MM: Medium Manufacturing Zone	Art studios (production space only); general and/or multimedia related offices; general offices in conjunction with any other permitted use; light assembly and processing; light industrial; manufacturing; mixed use projects including commercial, office and light industrial uses; parking structures and parking lots; public facilities, public utilities; research and development; restaurants and cafes without drive-through facilities; retail sales for wholesale outlets; warehousing and distribution; and other similar uses.
Open Space	
O-S: Open Space Zone	Public outdoor recreation, including, but not limited to, ball parks and bleachers, swimming pools, parks and other areas of active or passive recreational usage; trails and other suitable corridors including off-road bicycle paths; the preservation and conservation of natural resources, including, but not limited to, areas required for the preservation of plant and animal life and areas required to provide visual relief from intense urban development and growth; the managed production of resources, including, but not limited to, agricultural lands and mineral deposits; the regulation of areas for public health and safety, including, but not limited to, areas which require special management or regulation because of hazardous or special conditions; and other similar uses.
Public Facilities	
P-F: Public Facilities Zone	Municipal, county, state or federal governmental buildings such as city hall, library, court facilities or fire stations; public or quasi-public educational facilities such as schools and administrative offices; flood control facilities, including, but not limited to, spreading grounds, settling basins and drainage facilities; public parking lots or structures; public utilities; public recreational facilities; and other similar uses.

SOURCE: City of El Segundo Municipal Code (Title 15), 2014.



SOURCE: City of El Segundo, 2012

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit B-9
City of El Segundo Planned Land Use Designations

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B.6 City of Hawthorne

The City of Hawthorne is located southeast of LAX and is generally bound by Marine Avenue to the south, Crenshaw Boulevard and unincorporated County to the east, the Imperial Highway and City of Los Angeles to the north, and Aviation Boulevard and the City of El Segundo to the west. The City is approximately 6.08 square miles and has an estimated population of 86,199 (U.S. Census Bureau, 2014d).

B.6.1 Existing Land Uses

Existing land uses closest to LAX in the northwestern portions of the City of Hawthorne’s planning area predominately consist of residential uses. Existing uses towards the central portions of Hawthorne are also predominately residential, with commercial uses clustered along major streets and transportation corridors. Towards the eastern side of the City, uses are predominately commercial and light industrial. Hawthorne Municipal Airport is also located in the northeastern portion of the City.

B.6.2 Planned Land Uses

Land use development within the City of Hawthorne is guided by the City of Hawthorne General Plan.¹ **Table B-11** summarizes the planned land use designations, as identified in the City’s General Plan Land Use Element (see **Exhibit B-10**).

TABLE B-11
CITY OF HAWTHORNE LAND USE DESIGNATIONS

Planned Land Use	Density/Intensity	Description
Low Density Residential	1 – 8 du/ac	This particular land use designation is characterized by single-family detached units and is found throughout the City.
Medium Density Residential	8.1 – 17 du/ac	This land use designation, in addition to single-family detached uses, allows for two-family dwelling units.
High Density Residential	17.1 – 40 du/ac	This land use designation, in addition to single-family detached uses and two-family dwelling units, also allows for multi-family dwelling units.
Freeway Commercial/Mixed Use	Max FAR 3.5	This land use designation allows for a mix of general retail and residential uses.
Local Commercial	Max FAR 1.5	Allows for retail and other commercial services.
General Commercial	Max FAR 2.5	Allows for retail and other commercial services.
Industrial	Max FAR 0.75	The Industrial land use designation generally involves smaller scale development than the General Industrial designation.
General Industrial	Max FAR 1.75	The General Industrial designation includes large-scale developments or industrial parks whose activities include heavy manufacturing, compounding, processing or fabrication.
Open Space/Parks	FAR 0.1 – 0.3	Allows for outdoor park and recreation uses.
Public Facilities	FAR 0.3 – 0.75	This designation can apply to all zoning districts and allows for a variety of public uses, including schools, the Hawthorne Municipal Airport, and City offices.

SOURCE: City of Hawthorne, *General Plan Land Use Element*, 1990.

¹ The City of Hawthorne is also currently going through the process of preparing a specific plan for Downtown Hawthorne.

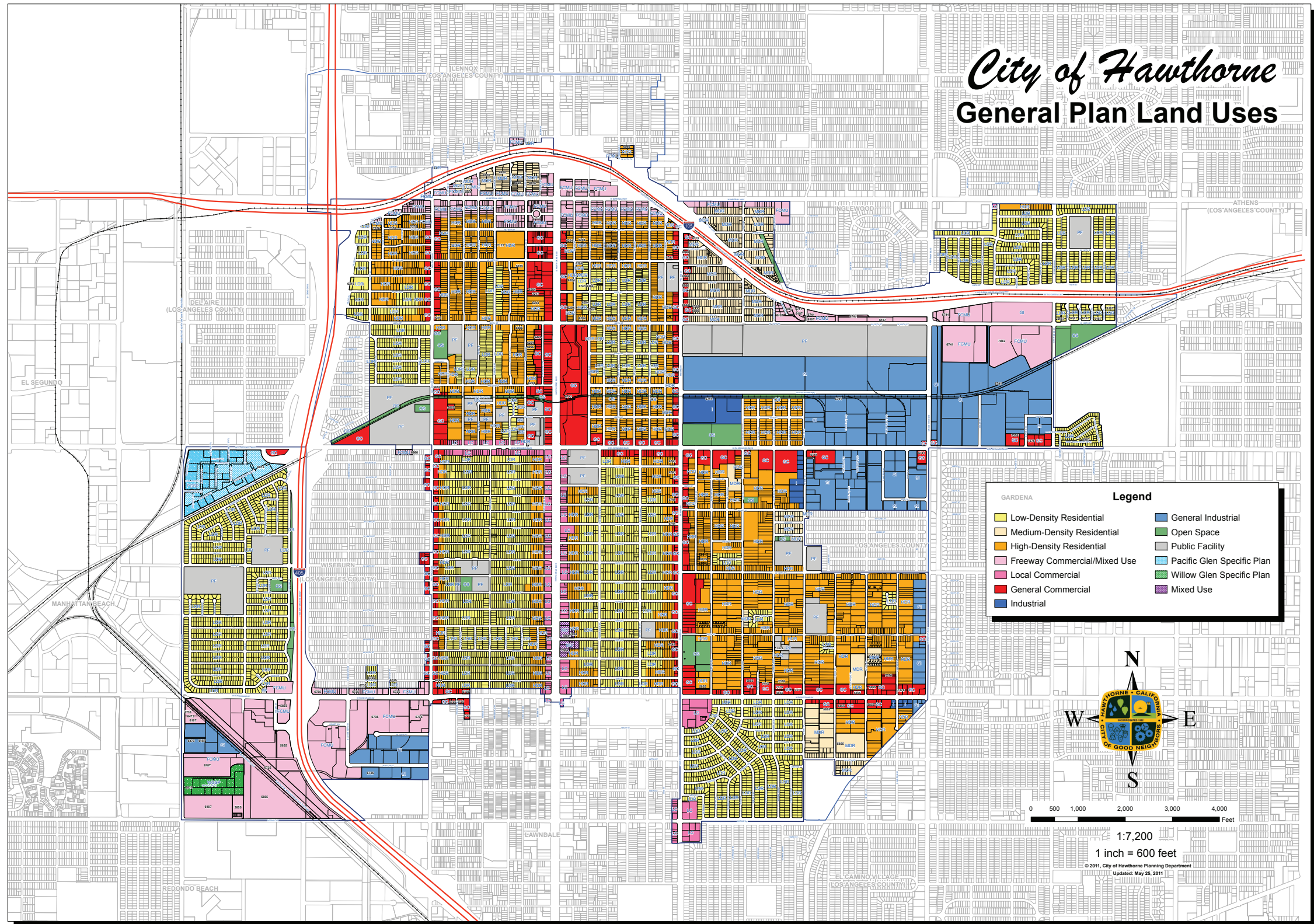
B.6.3 Zoning

Regulations for land use development within the City of Hawthorne are set forth in Title 17 of the City’s Municipal Code. **Table B-12** provides information regarding the City’s standard zoning classifications.

**TABLE B-12
CITY OF HAWTHORNE ZONING CLASSIFICATIONS**

Zoning Classifications	Allowable Uses
Residential	
R-1: Low-Density Residential District	Single-family detached dwelling units; accessory dwelling units; mobile homes; places of worship; substations; residential care facility (6 or fewer persons); home occupation; libraries; parks and recreational areas; schools, elementary, junior and high; and small and large family day care homes.
R-2: Medium Density Residential District	Same as R-1 district plus two-family dwelling units.
R-3: High Density Residential District	Same as R-2 district plus multi-family dwelling units.
R-4: Maximum Density Residential District	Same as R-3 district plus fire stations, fraternity and sorority housing, hospitals, private clubs and fraternal societies, rest homes, and sanitariums, convalescent homes, and nursing homes.
Commercial	
C-1: Freeway Commercial Mixed Use	Car washes, auto sales, rentals, and repair; bakeries; banks; child care centers; dry cleaning services; department stores; drugstores; food markets, grocers; health clubs; hotels and motels; movie theaters; medical and dental offices; professional and general offices; parking garages; restaurants; schools, elementary, junior, and high; and single-family detached dwelling units.
C-2: Local Commercial District	Ambulance services; auto sales; bakeries; banks; bars; bicycle shops; boat sales; bowling alleys; business and professional offices; dry cleaning services; art studios; department stores; drugstores; employment agencies; engineering consultants; food markets and grocers; health clubs; hospitals (emergency only); hotels and motels; laboratories; medical-dental buildings and clinics; mortuaries; movie theaters; parking garages; passenger terminals; printing establishments; restaurants; schools, elementary, junior, high; stationary stores; and telegraph offices.
C-3: General Commercial District	Ambulance services; auto sales and repair; aviaries; bakeries; banks; bars; bicycle shops; boat sales; bowling alleys; business and professional offices; dry cleaning services; art studios; department stores; drugstores; employment agencies; engineering consultants; food markets and grocers; health clubs; hospitals (emergency only); hotels and motels; laboratories; medical-dental buildings and clinics; mortuaries; movie theaters; parking garages; passenger terminals; printing establishments; restaurants; schools, elementary, junior, high; stationary stores; telegraph offices; trade schools; and other unclassified uses.
Industrial	
M-P: Industrial Park District	Ambulance service; auto repair; bakeries; banks; battery manufacturing; beauty shops and salons; blueprinting; boat building; bookbinding; bottling plants; cabinet shops; carpet and rug cleaning; ceramic products; check cashing; places of worship; dry cleaning; cosmetics manufacturing; creameries and dairy products; substations; electric generating plants; neon sign manufacturing; electrical appliance assembly; electroplating; fire stations; food product processing and packaging; foundries (aluminum only); furniture repair; garment manufacture; gas distribution; government; hospital (emergency only); house trailer sales; ice storage; jewelry manufacturing; laboratories; lampshade manufacturing; lapidary shops; laundries; machine shops; equipment rentals; muffler sales and installation; pawn shops; pharmaceuticals manufacturing; pumping plants; plastics fabrication; plumbing shops; prefab manufacturing; printing; radio and television repair; research and electronic industries; restaurants; rubber fabrication; saw and filing shops; secondhand stores; sheet metal shops; show manufacturing; textile manufacturing; upholstering; vacuum metallization; and wholesale business and storage.
M-1: Limited Industrial District	Any use permitted in the C-3 zone; provided that, unless specified below, a conditional use permit shall be required if such a permit is required for the same use in the C-3 zone, plus other uses identified in Section 17.32.020 of the City’s Municipal Code.
M-2: Heavy Industrial District	Any use permitted in the C-3 zone and any use permitted in the M-1 zone, plus other uses identified in Section 17.34.020 of the City’s Municipal Code.

SOURCE: City of Hawthorne Municipal Code (Title 17), 2014.



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B.7 Land Use Plans Adopted for Los Angeles International Airport

Several documents guide development within the boundaries of LAX, including the LAX Master Plan, the LAX Specific Plan, and the Los Angeles Airport/El Segundo Dunes Specific Plan. The following discussions briefly describe these documents.

B.7.1 LAX Master Plan

The LAX Master Plan sets forth a comprehensive development program for LAX properties. In general, projects identified in the LAX Master Plan are intended to improve Airport safety, add new security measures, improve ground transportation, and provide job opportunities. The LAX Master Plan outlines improvement programs to modernize the Airport, including runway and taxiway system modernization, redevelopment of terminal areas, airport access improvements, and passenger safety, security, and convenience enhancements (LAWA, 2004).

B.7.2 LAX Specific Plan

The LAX Specific Plan achieves the goals and objectives of the LAX Plan through zoning and development standards, and contains specific provisions for LAX's Detailed Study Area (DSA). The LAX Specific Plan also establishes the procedures for processing future specific projects and activities anticipated under the LAX Master Plan. The currently adopted LAX Specific Plan zoning for the DSA are LAX-A Zone Airport Airside and LAX-L Zone Airport Landside. The purpose of the LAX-A Zone is to allow for the safe and efficient operation of airport airfield activities. The LAX-L Zone is in place to allow for the safe and efficient operation of airport facilities, with the primary function of providing access to the airport and processing passengers (City of Los Angeles, 2013).

B.7.3 LAX Plan

The LAX Plan is one of 35 Community Plans that are part of the Land Use Element of the City of Los Angeles General Plan. The LAX Plan is intended to promote an arrangement of airport uses that encourages and contributes to the modernization of the Airport in an orderly and flexible manner within the context of the City and region. It provides goals, objectives, policies, and programs that establish a framework for the development of facilities that promote the movement and processing of passengers and cargo within a safe and secure environment. The LAX Plan is intended to allow the Airport to respond to emerging new technologies, economic trends and functional needs (City of Los Angeles, 2004).

B.7.4 Los Angeles Airport/El Segundo Dunes Specific Plan

This Specific Plan applies to the portion of the LAX Plan area that is bound by Napoleon and Waterview Streets on the north, by Imperial Highway on the south, by Pershing Drive on the east, and by Vista del Mar on the west. This area includes the former residential development known

as Surfridge. This Specific Plan was created to restore and preserve the natural ecology of the El Segundo Dunes and native dune-dependent species, such as the endangered El Segundo Blue Butterfly. The Specific Plan also provides for active recreation in the form of a public golf course and related facilities, consistent with the preservation of the El Segundo Dunes ecology. In addition, passive recreation is allowed under this Specific Plan in the form of paths, a visitor center, and viewing areas. To date, these recreational uses have not been developed (City of Los Angeles, 1992).

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APPENDIX C

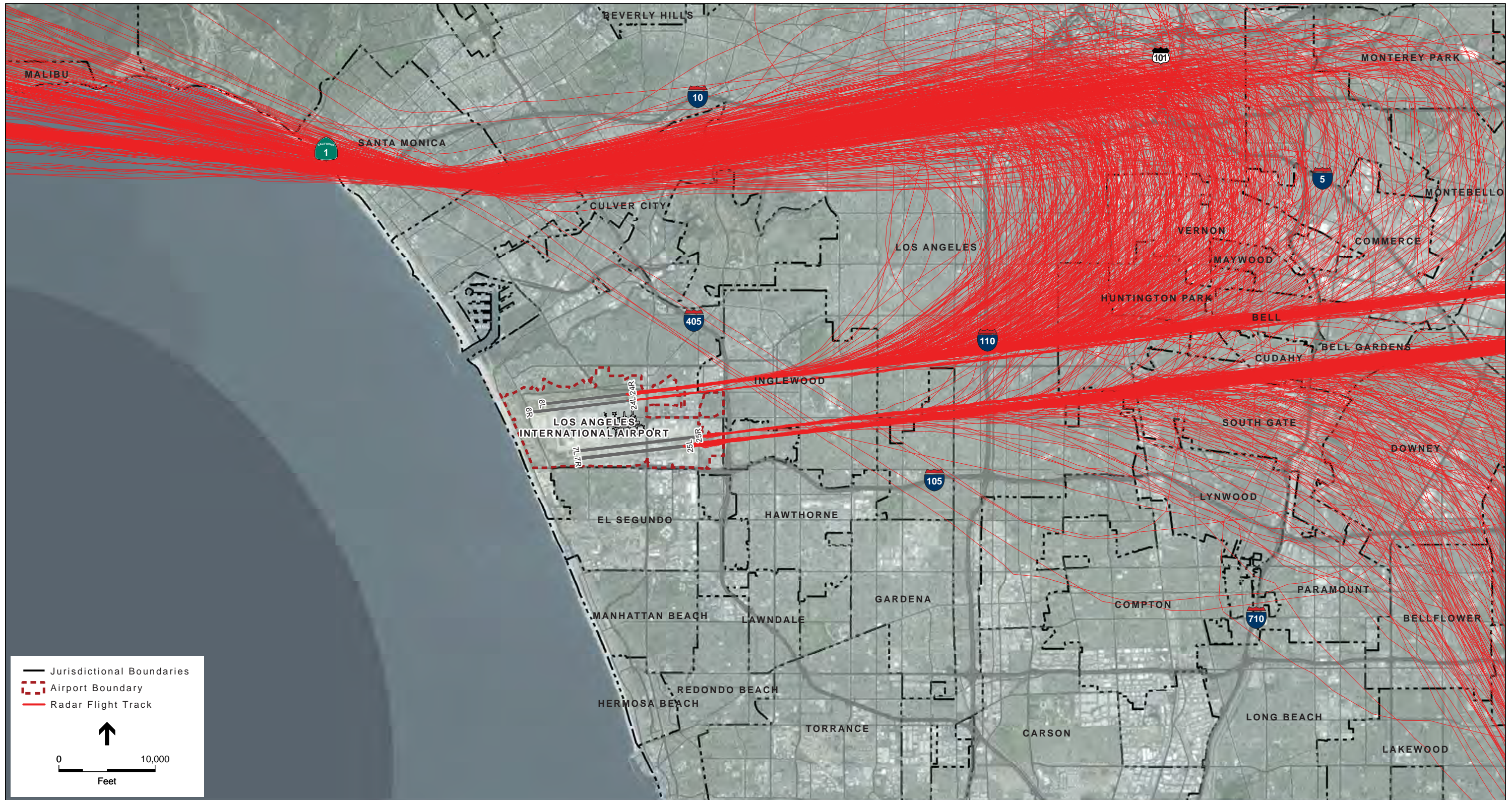
Radar Flight Tracks for Los Angeles International Airport

C.1 Radar Flight Track Exhibits

Exhibits included in this Appendix present radar flight track data from LAWA's Airport Noise and Operations Management System (ANOMS) superimposed on an aerial photograph depicting the Airport and its environs. The aircraft flight tracks depicted on the exhibits are based on actual arrival and departure operations that occurred during calendar year 2013.

- **Exhibit C-1** presents a sample of arrival flight tracks from the east.
- **Exhibit C-2** presents a sample of arrival flight tracks from the west.
- **Exhibit C-3** presents a sample of departure flight tracks to the east.
- **Exhibit C-4** presents a sample of departure flight tracks to the west.

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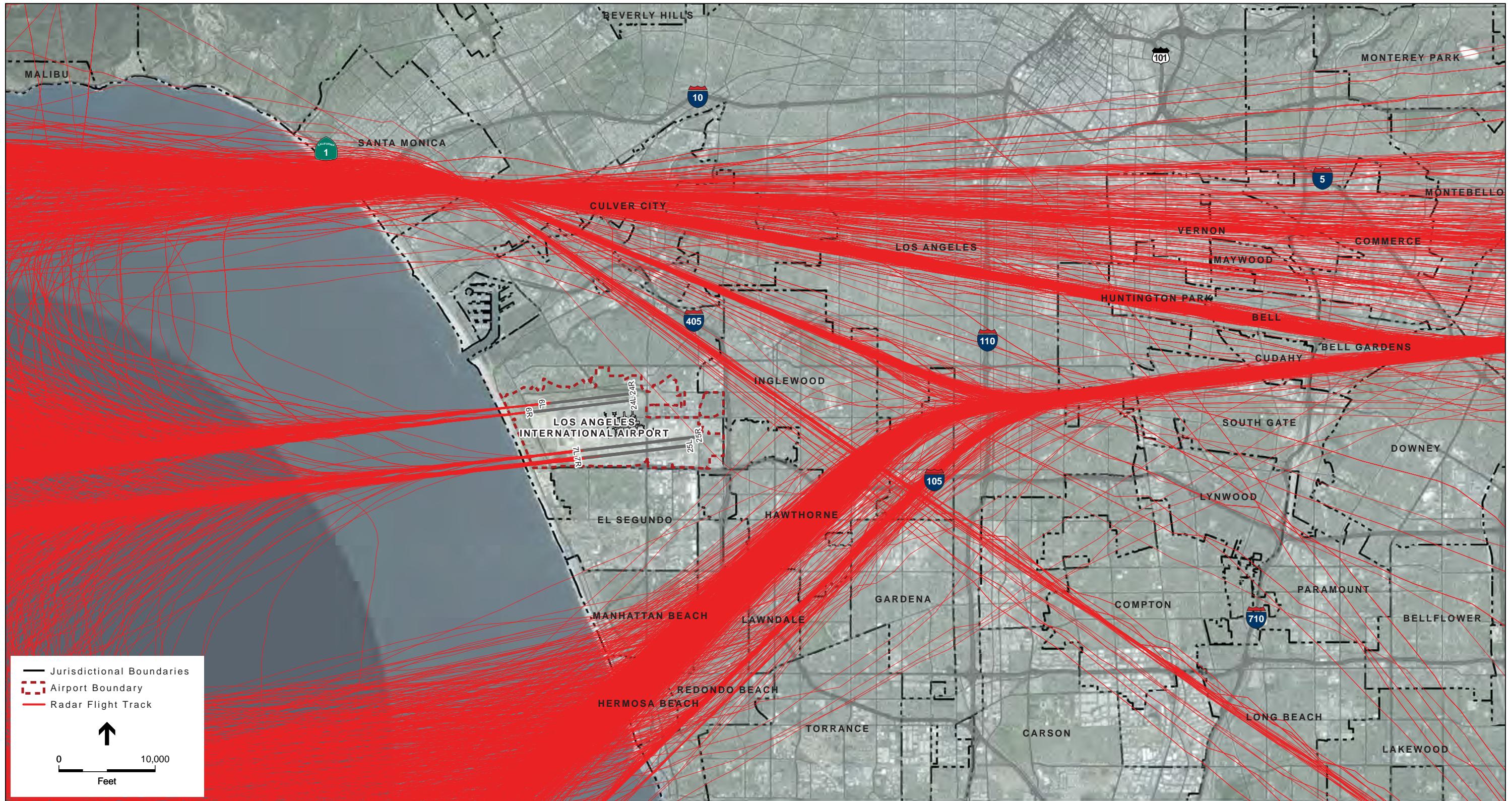


SOURCES: LAWA Airport Noise and Operations Management System data, 2013; LA Co. DRP, 2014; City of LA DCP, 2013; ESA Airports, 2014; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit C-1
Radar Flight Tracks – Arrivals from the East

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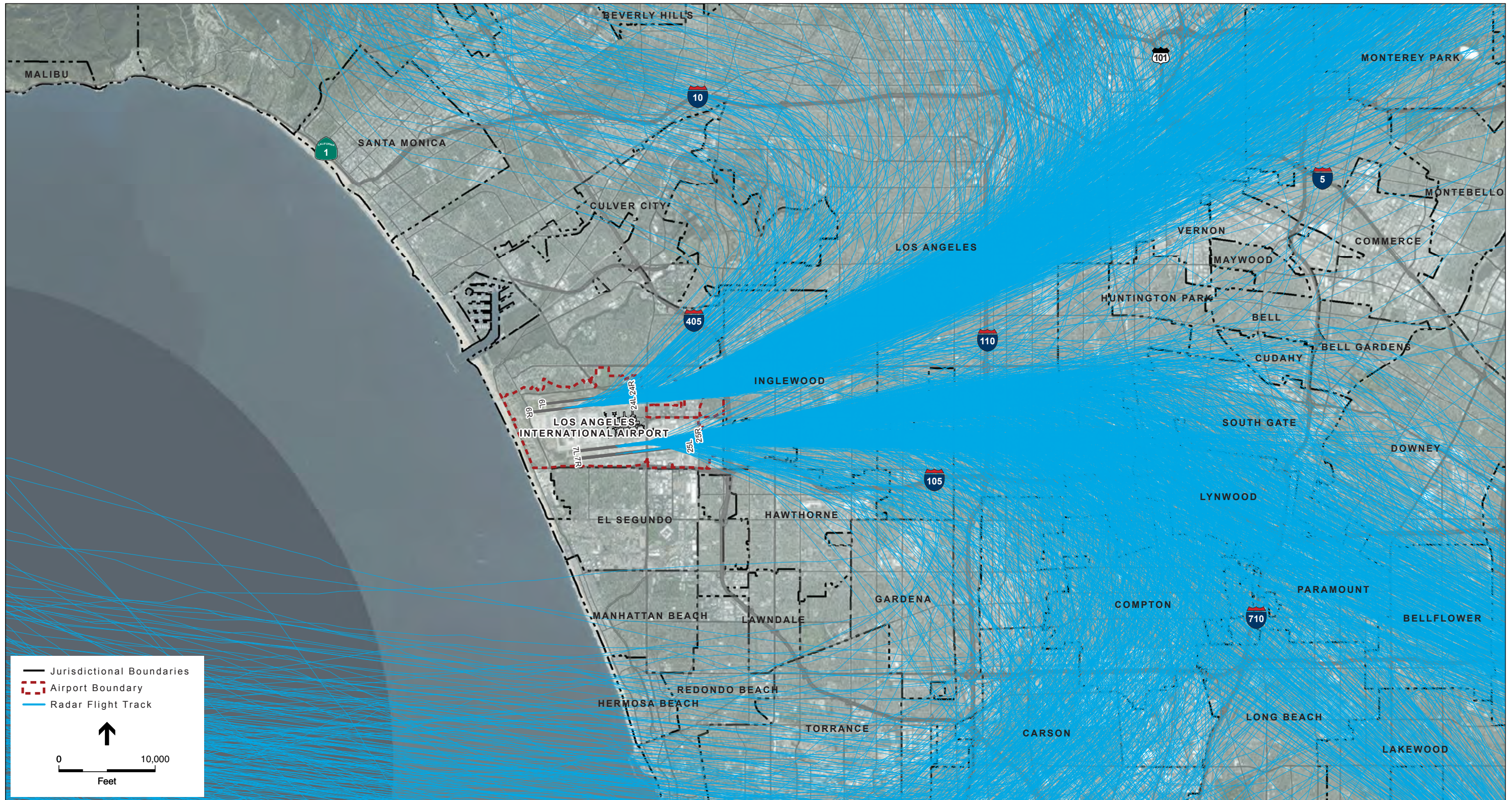


SOURCES: LAWA Airport Noise and Operations Management System data, 2013; LA Co. DRP, 2014; City of LA DCP, 2013; ESA Airports, 2014; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit C-2
Radar Flight Tracks – Arrivals from the West

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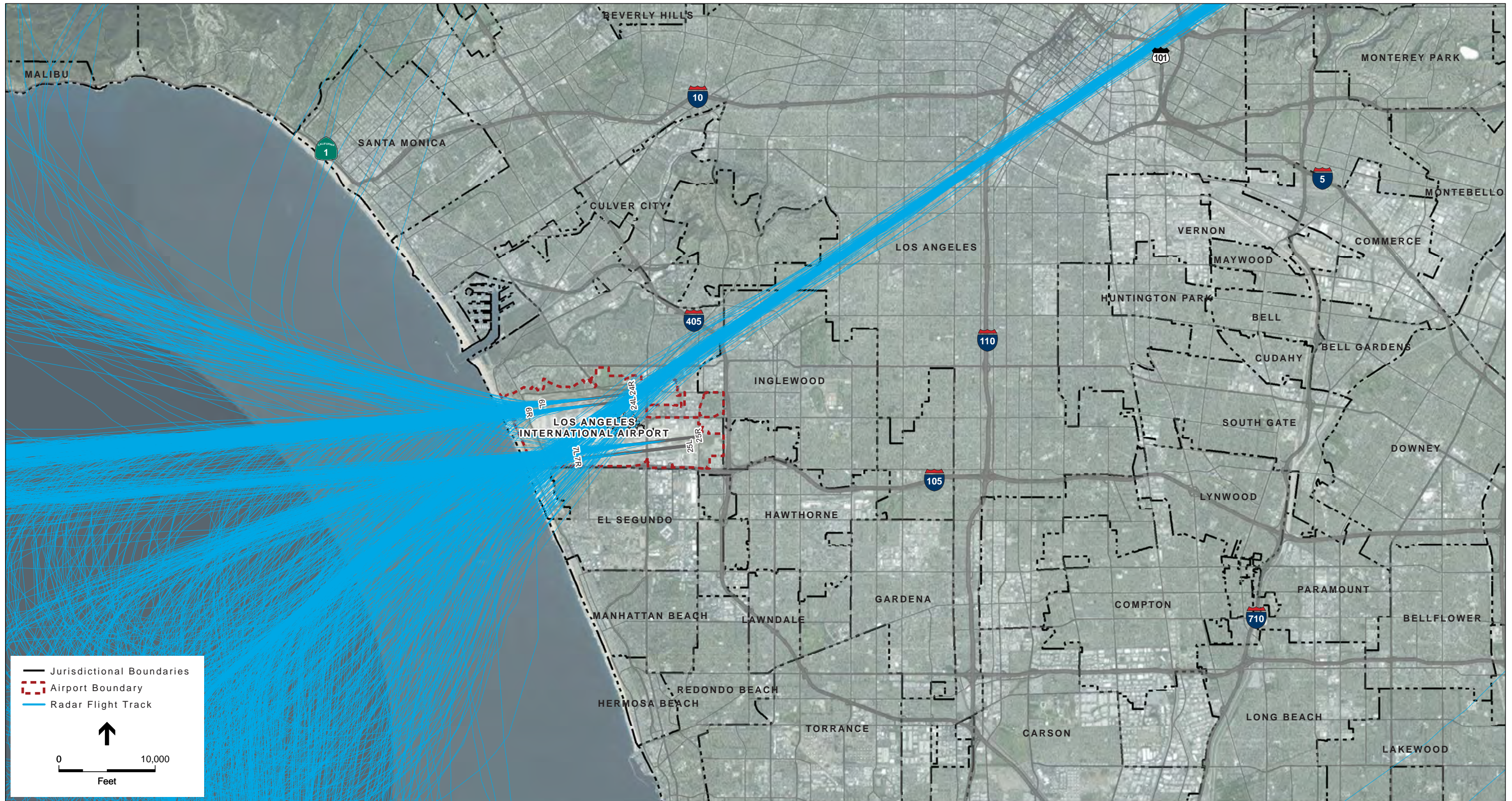
SOURCES: LAWA Airport Noise and Operations Management System data, 2013; LA Co. DRP, 2014; City of LA DCP, 2013; ESA Airports, 2014; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012

Los Angeles International Airport 14 CFR Part 150 Study . 130072.03

Exhibit C-3

Radar Flight Tracks – Departures to the East

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SOURCES: LAWA Airport Noise and Operations Management System data, 2013; LA Co. DRP, 2014; City of LA DCP, 2013; ESA Airports, 2014; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012

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Exhibit C-4

Radar Flight Tracks – Departures to the West

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APPENDIX D

Annual Average Day Aircraft Operations: 2015 and 2020

D.1 Annual Average Day Aircraft Operations – 2015

Table D-1 presents annual average day (AAD) aircraft operations by INM aircraft type, type of operation, time of day, and departure stage length for existing (2015) conditions. These data were input into the INM and used to develop the 2015 noise exposure contours depicted on Exhibit 5-1 in Chapter 5.

D.2 Annual Average Day Aircraft Operations – 2020

Table D-2 presents AAD aircraft operations by INM aircraft type, type of operation, time of day, and departure stage length for future (2020) conditions. These data were input into the INM and used to develop the 2020 noise exposure contours depicted on Exhibit 5-2 in Chapter 5.

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**TABLE D-1
2015 ANNUAL AVERAGE DAY (AAD) AIRCRAFT OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Departures by Stage Length and Time of Day																														Total Daily Operations	
	Arrivals			Stage 1			Stage 2			Stage 3			Stage 4			Stage 5			Stage 6			Stage 7			Stage 8			Stage 9				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night		
1900D	8.32	0.09	0.21	7.81	0.15	0.60	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.24
727EM2	0.17	0.01	0.03	0.07	0.00	0.02	0.08	0.01	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	
737300	19.34	4.24	1.75	12.12	2.34	1.38	3.74	0.72	0.43	2.46	0.47	0.28	1.07	0.21	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.67	
737400	5.76	0.97	0.38	0.03	0.01	0.00	3.68	0.85	0.17	1.82	0.42	0.09	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.23	
737500	0.05	0.01	0.00	0.04	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14		
737700	60.75	15.05	8.94	32.99	6.78	5.53	7.92	1.63	1.33	8.22	1.69	1.38	12.54	2.58	2.10	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	169.48	
737800	80.11	25.03	17.36	13.36	2.02	4.20	11.95	1.81	3.76	15.12	2.29	4.76	37.64	5.70	11.84	5.49	0.83	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	245.00		
747200	0.03	0.16	0.57	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.01	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.53		
747400	10.95	3.89	4.66	0.76	0.18	0.88	0.09	0.02	0.10	0.11	0.03	0.12	0.78	0.19	0.91	0.11	0.03	0.12	0.01	0.00	0.01	1.48	0.35	1.71	2.35	0.56	2.72	2.46	0.59	2.85	39.01	
7478	1.49	1.06	0.97	0.50	0.05	0.69	0.04	0.00	0.06	0.08	0.01	0.11	0.22	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.11	0.48	0.05	0.66	0.03	0.00	0.04	7.05	
757300	6.68	4.23	3.37	0.58	0.00	0.12	1.09	0.01	0.22	1.01	0.01	0.21	5.09	0.04	1.04	4.02	0.03	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.55		
757PW	28.46	11.72	11.99	1.97	0.09	0.78	4.45	0.19	1.76	2.82	0.12	1.11	23.23	1.02	9.16	3.81	0.17	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.34		
757RR	8.07	7.07	7.00	0.22	0.00	0.06	0.20	0.00	0.05	5.21	0.12	1.36	5.75	0.13	1.50	5.87	0.13	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.28		
767300	12.38	6.25	4.43	0.04	0.01	0.02	0.25	0.06	0.12	2.27	0.51	1.15	8.02	1.80	4.06	1.14	0.26	0.58	0.94	0.21	0.48	0.66	0.15	0.33	0.00	0.00	0.00	0.00	0.00	46.13		
767400	0.13	0.05	0.03	0.01	0.00	0.00	0.02	0.00	0.00	0.07	0.00	0.02	0.05	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44		
767CF6	5.78	1.86	2.54	0.52	0.07	0.15	0.14	0.02	0.04	0.21	0.03	0.06	6.24	0.82	1.79	0.07	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.37		
777200	10.59	0.73	1.18	0.03	0.00	0.01	0.00	0.00	0.00	0.38	0.06	0.13	1.37	0.21	0.46	0.10	0.02	0.03	0.29	0.04	0.10	2.85	0.44	0.96	2.67	0.41	0.90	0.69	0.11	0.23	25.02	
777300	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03		
7773ER	18.07	2.94	2.25	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.48	0.09	0.47	0.02	0.00	0.02	0.00	0.00	0.00	2.14	0.42	2.08	2.61	0.51	2.54	5.46	1.07	5.32	46.52	
7878R	1.32	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.02	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.01	0.03	0.36	0.01	0.05	0.33	0.01	0.05	0.00	0.00	3.22		
A300-622R	0.61	0.13	1.72	0.31	0.04	0.96	0.00	0.00	0.01	0.02	0.00	0.06	0.25	0.04	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.93		
A300B4-203	0.02	0.37	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.98	0.01	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11		
A310-304	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12		
A319-131	23.56	7.35	5.36	9.19	1.30	2.84	3.26	0.46	1.01	5.03	0.71	1.55	7.20	1.02	2.22	0.33	0.05	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.53		
A320-211	26.17	9.80	6.03	6.78	0.88	1.50	4.63	0.60	1.02	1.35	0.17	0.30	16.81	2.18	3.71	1.53	0.20	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.99		
A320-232	18.10	7.25	6.25	3.23	0.30	1.31	1.62	0.15	0.66	2.46	0.23	0.99	11.77	1.11	4.77	2.01	0.19	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.20		
A321-232	9.17	3.93	2.02	2.39	0.12	1.60	0.00	0.00	0.00	0.01	0.00	0.00	6.40	0.31	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.24		
A330-301	1.21	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.01	0.04	0.09	0.00	0.00	0.00	0.00	2.69			
A330-343	2.02	0.05	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	2.19	0.11	0.14	0.00	0.00	0.00	0.94	0.05	0.06	0.00	0.00	0.00	0.00	7.08			
A340-211	3.43	0.21	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.41	0.25	1.20	0.62	0.38	0.00	0.00	0.00	0.00	7.34			
A340-642	2.77	0.76	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.54	0.67	0.00	0.00	0.00	0.00	0.00	7.09			
A380-841	2.65	0.67	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.04	0.85	0.74	0.10	2.14	0.00	0.00	8.33			
A380-861	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.01	0.24	0.00	4.58			
BEC58P	0.20	0.04	0.03	0.17	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53			
C17	0.03	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07			
C5A	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03			
CIT3	0.09	0.03	0.02	0.11	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26			
CL600	2.95	0.53	0.34	3.10	0.33	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.63			
CL601	48.46	12.00	6.39	50.20	10.90	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133.69			
CNA172	0.04	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08			

TABLE D-1 (Continued)
2015 ANNUAL AVERAGE DAY (AAD) AIRCRAFT OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT

INM Aircraft Type	Departures by Stage Length and Time of Day																													Total Daily Operations	
	Arrivals			Stage 1			Stage 2			Stage 3			Stage 4			Stage 5			Stage 6			Stage 7			Stage 8			Stage 9			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening		Night
CNA182	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
CNA206	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
CNA208	0.38	0.09	0.06	0.12	0.03	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
CNA20T	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
CNA441	0.66	0.14	0.09	0.62	0.12	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77
CNA500	0.29	0.04	0.03	0.28	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71
CNA510	0.55	0.12	0.08	0.59	0.09	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49
CNA525C	0.54	0.09	0.08	0.55	0.07	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43
CNA55B	0.43	0.04	0.06	0.46	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04
CNA560E	0.19	0.04	0.01	0.21	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
CNA560XL	1.01	0.12	0.09	1.02	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45
CNA680	0.50	0.09	0.05	0.50	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26
CNA750	1.49	0.28	0.20	1.64	0.14	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.94
CRJ9-ER	55.91	17.43	6.08	31.27	8.37	4.20	13.56	3.63	1.82	11.80	3.16	1.58	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	158.83
CVR580	0.00	0.25	0.36	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23
DC1010	1.39	0.13	2.12	0.10	0.18	0.38	0.00	0.00	0.00	0.08	0.14	0.30	0.38	0.66	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.29
DC9Q9	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
DHC6	0.04	0.02	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
DHC830	6.79	1.90	0.02	5.92	2.35	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.44
DO328	0.02	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
ECLIPSE500	0.03	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
EMB120	33.92	7.75	6.24	34.16	7.78	5.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.81
EMB145	1.38	0.04	0.04	0.21	0.00	0.00	1.11	0.02	0.02	0.02	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.92
EMB14L	0.00	0.18	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
EMB170	3.97	0.82	0.04	3.47	0.52	0.20	0.03	0.00	0.00	0.51	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.67
EMB190	3.47	1.56	0.61	0.00	0.00	0.00	0.16	0.02	0.01	4.73	0.54	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.27
F10062	0.89	0.12	0.12	0.74	0.06	0.04	0.06	0.00	0.00	0.19	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25
FAL20	0.05	0.02	0.02	0.05	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
GASEPV	0.08	0.01	0.02	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
GII	0.08	0.03	0.01	0.07	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
GIIB	0.35	0.08	0.10	0.40	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
GIV	2.57	0.59	0.32	2.66	0.44	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.97
GV	2.51	0.49	0.41	2.64	0.36	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.81
IA1125	0.23	0.03	0.03	0.24	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
LEAR25	0.04	0.01	0.01	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
LEAR35	2.41	0.45	0.42	2.56	0.32	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.54
MD11GE	1.81	0.28	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	1.44	0.77	1.30	0.30	0.16	0.27	0.00	0.00	0.00	0.09	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.00	9.03
MD11PW	0.74	0.09	0.86	0.05	0.05	0.08	0.00	0.00	0.00	0.01	0.01	0.02	0.41	0.35	0.57	0.04	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.38
MD81	0.02	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
MD82	1.69	0.92	0.07	0.26	0.00	0.05	0.14	0.00	0.03	0.96	0.02	0.18	0.86	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.37

**TABLE D-1 (Continued)
2015 ANNUAL AVERAGE DAY (AAD) AIRCRAFT OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Departures by Stage Length and Time of Day																														Total Daily Operations		
	Arrivals			Stage 1			Stage 2			Stage 3			Stage 4			Stage 5			Stage 6			Stage 7			Stage 8			Stage 9					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
MD83	3.47	1.31	0.28	0.28	0.01	0.03	0.98	0.04	0.10	1.69	0.07	0.17	1.48	0.06	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.14
MD9025	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
MU3001	0.96	0.11	0.10	0.94	0.12	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.34
PA28	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
PA31	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
PA42	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
SA365N	2.38	0.95	0.00	3.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	
SD330	0.18	0.05	0.03	0.20	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	
Total	555.82	165.44	121.09	242.19	47.42	43.55	59.28	10.26	12.75	69.19	10.94	17.41	149.88	19.35	53.71	27.13	2.23	8.78	2.23	0.68	0.87	12.45	3.72	7.39	11.21	1.67	9.24	8.64	1.77	8.43	1,684.70		

NOTE: Values may not sum to totals shown due to rounding.
SOURCE: ESA Airports, October 2014.

**TABLE D-2 (Continued)
2020 ANNUAL AVERAGE DAY (AAD) AIRCRAFT OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT**

INM Aircraft Type	Departures by Stage Length and Time of Day																													Total Daily Operations		
	Arrivals			Stage 1			Stage 2			Stage 3			Stage 4			Stage 5			Stage 6			Stage 7			Stage 8			Stage 9				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening		Night	
CNA560E	0.20	0.04	0.01	0.22	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
CNA560XL	1.08	0.13	0.10	1.09	0.12	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
CNA680	0.53	0.09	0.05	0.53	0.06	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34	
CNA750	1.59	0.30	0.22	1.74	0.15	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.20	
CRJ9-ER	64.67	20.16	7.03	36.17	9.68	4.86	15.68	4.20	2.10	13.65	3.65	1.83	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	183.73	
DHC6	0.04	0.02	0.01	0.02	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	
DHC830	8.42	2.36	0.03	7.34	2.91	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.62	
DO328	0.02	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	
ECLIPSE500	0.03	0.01	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	
EMB120	37.20	8.50	6.84	37.47	8.54	6.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.10	
EMB145	1.51	0.05	0.04	0.23	0.00	0.00	1.22	0.02	0.02	0.02	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.21	
EMB14L	0.00	0.20	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	
EMB170	4.60	0.95	0.05	4.02	0.60	0.23	0.03	0.00	0.00	0.59	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.19	
EMB190	4.01	1.80	0.71	0.00	0.00	0.00	0.18	0.02	0.01	5.47	0.62	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.04	
F10062	0.95	0.13	0.12	0.79	0.06	0.04	0.07	0.01	0.00	0.21	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.40	
FAL20	0.06	0.02	0.02	0.06	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	
GASEPV	0.09	0.01	0.02	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	
GIV	2.83	0.65	0.36	2.94	0.48	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.68	
GV	3.09	0.60	0.50	3.26	0.45	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.39	
IA1125	0.24	0.03	0.03	0.25	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	
LEAR35	2.61	0.48	0.45	2.78	0.34	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.10	
MD9025	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
MU3001	1.02	0.12	0.11	1.00	0.13	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49	
PA28	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	
PA31	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
PA42	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
SA365N	2.40	0.96	0.00	3.04	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.71	
SD330	0.20	0.06	0.03	0.22	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	
Total	643.55	189.94	132.62	273.37	53.73	47.97	62.65	10.78	14.68	77.12	12.32	18.96	178.56	21.97	59.74	31.88	2.46	9.35	3.04	0.87	1.19	16.87	4.62	9.43	18.79	2.24	12.41	9.95	1.99	9.17	1,932.20	

NOTE: Values may not sum to totals shown due to rounding.

SOURCE: ESA Airports, October 2014.

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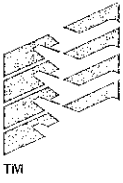
APPENDIX E

Correspondence and Consultation

E.1 Correspondence and Consultation

This appendix contains copies of correspondence between the Federal Aviation Administration (FAA) and Los Angeles World Airports (LAWA). The following letters and e-mails are provided in this appendix:

- May 1, 2014 letter to Victor Globa (FAA Environmental Protection Specialist) from Scott Tatro (LAWA) regarding recommended INM aircraft substitutions for use in the Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Update.
- May 22, 2014 letter to Victor Globa from Rebecca Cointin (Federal Aviation Administration, AEE/Noise Division) approving the use of the INM aircraft substitutions proposed by LAWA.
- E-mail from Victor Globa to Kathryn Pantoja (LAWA) transmitting the letter prepared by Rebecca Cointin.
- September 4, 2014 letter from Scott Tatro to Victor Globa requesting FAA's review and approval of a forecast memorandum prepared by ESA Airports.
- October 9, 2014 letter from Jaime Duran (FAA Lead Airport Planner) to Scott Tatro approving the use of the current FAA Terminal Area Forecast (TAF) for the purpose of developing updated noise exposure maps for Los Angeles International Airport.
- May 14, 1985 letter from H.C. McClure (FAA) to Clifton A. Moore (LAWA) transmitting the April 13, 1985 Record of Approval for the Los Angeles International Airport 14 CFR Part 150 Noise Compatibility Program.



Los Angeles
World Airports

May 1, 2014

Mr. Victor Globa
Environmental Protection Specialist
Federal Aviation Administration
Western-Pacific Region
15000 Aviation Boulevard
Lawndale, CA 90261

LAX
LA/Ontario
Van Nuys
City of Los Angeles

Re: **LAX 14 CFR Part 150 NEM Update – Request for INM 7.0d Aircraft Type Substitutions**

Dear Victor:

Eric Garcetti
Mayor
Board of Airport
Commissioners
Sean O. Burton
President
Valeria C. Velasco
Vice President
Gabriel L. Eshaghian
Jackie Goldberg
Beatrice C. Hsu
Matthew M. Johnson
Dr. Cynthia A. Telles
Gina Marie Lindsey
Executive Director

Los Angeles World Airports (LAWA) is preparing a FAR Part 150 Noise Exposure Map (NEM) Update for Los Angeles International Airport (LAX) and has obtained the services of ESA Airports, as a subcontractor to Alta Environmental, to do so. Please see the enclosed technical memorandum from ESA Airports recommending INM 7.0d substitutes for use in the LAX FAR Part 150 NEM Update Study.

LAWA requests that the FAA approve these recommended substitutes or provide FAA recommended substitutes for each of the aircraft types. If you have any questions, please contact me or Kathryn Pantoja at 424-646-6501.

Sincerely,

Scott Tatro
Airport Environmental Manager I

ST:KRP:sts

Enclosure

cc: Kathryn Pantoja



technical memorandum

date April 30, 2014

to Kathryn Pantoja, Los Angeles World Airports, Environmental Affairs Officer

from Steve Alverson, ESA Airports, National Director

subject Request for INM 7.0d Aircraft Type Substitutions

reference Los Angeles International Airport 14 CFR Part 150 NEM Update Study

ESA Airports is assisting Los Angeles World Airports (LAWA) with the preparation of a FAR Part 150 Noise Exposure Map (NEM) Update for Los Angeles International Airport (LAX). The LAX NEM Update is being prepared with the latest release of the Integrated Noise Model (INM), Version 7.0d. Total aircraft operations for CY 2014 are 614,917¹ and projected to be 690,736² operations in FY 2019. Upon evaluating the fleet mix, several commercial and general aviation aircraft were identified that do not have a direct INM type or pre-approved Federal Aviation Administration (FAA) substitution defined in the model. Substitutions for most of these aircraft have previously been approved by the Office of Environment and Energy in prior FAR Part 150 studies as shown in Table 1 on the next page. However, there are an additional 19 aircraft which do not have a pre-approved substitution in the INM for which we are proposing aircraft substitutes.

The following is a description of the aircraft listed in Table 1 as well as a suitable substitution based on research of engine and performance characteristics for the FAA's review and approval.

1. Boeing 77L and 77W

The Boeing 77L and 77W (B77L) (B77W) are versions of the Boeing 777 aircraft. In researching the (L) and the (W) to determine a suitable INM aircraft substitution to use for the LAX NEM Update; we found that the B77L is the Boeing 777-200LR, and that the B77W is the 777-300ER. Upon evaluation of the INM 7.0d INM Aircraft and INM 7.0d INM Aircraft Substitutions lists, the 7773ER is the suitable substitute aircraft for the Boeing 777-200LR. The 7773ER is also the suitable substitute aircraft for the Boeing 777-300ER.

We propose to model the Boeing 77L and the Boeing 77W (Boeing 777-200LR and 777-300ER) with the INM type 7773ER.

¹ <http://aspm.faa.gov/opsnet/sys/Airport.asp>

² <http://aspm.faa.gov/apowtaf/>

**Table 1
Aircraft Types and Recommended INM Substitutions**

Group	Aircraft Code	Aircraft Model	Previously Approved Substitution	Recommended Substitution
Jet	B77L	Boeing 777-200LR	None	7773ER
Jet	B77W	Boeing 777-300ER	None	7773ER
Jet	A333	Airbus 330-200/ CF6-80E1A2	None	A330-301
Jet	A333	Airbus 330-200/Rolls Royce Trent	None	A330-343
Jet	A333	Airbus 330-300/ PW4168	None	A330-301
Jet	A343	Airbus 340-300	None	A340-211
Jet	A345	Airbus 340-500	None	A340-642
Jet	A320neo	Airbus 320neo	None	A320-232
Jet	A350	Airbus 350	None	A330-343
Jet	737Max	Boeing 737Max	None	737700
Jet	DA7X	Dassault Falcon 700X	None	F10062
Jet	GLF6	Gulfstream 650	None	GV
Jet	G280	Gulfstream 280	None	CL601
Jet	LJ40	LearJet 40	None	LEAR35
Jet	C25A/B	Cessna Citation Jets (CJ 1 and 2)	None	CNA525
Jet	E50P	Embraer Phenom 100	None	CNA510
Jet	E55P	Embraer Phenom 300	None	CNA560E
Turboprop	DH8D	Bombardier Q400	None	DHC830
Turboprop	P46T	Piper Malibu Meridian	None	CNA208
Prop	BE35/36	Beechcraft Bonanza	GASEPV	GASEPV
Prop	COL3/4	Cessna Corvallis	GASEPV	GASEPV
Prop	LNC3/4	Lancair Columbia 400	GASEPV	GASEPV
Prop	LEG2	Lancair Legacy	GASEPV	GASEPV
Prop	SR20	Cirrus SR-20	GASEPV	GASEPV

2. Airbus 330-200 Aircraft, and Airbus 330 Aircraft Equipped with Pratt & Whitney Engines

The Airbus 330 (A330) is an aircraft that is commonly operated at LAX. Upon review of the INM 7.0d Aircraft Database and Substitutions lists, there are two INM models of the aircraft to be utilized, the A330-301 that is equipped with the General Electric CF6 engines, and the A330-343 that is equipped with the Rolls-Royce Trent engines. However, in reviewing the air carriers utilizing the A330 at LAX, we found that some of the operators utilize the Airbus 330-200 series aircraft, as well as A330 aircraft that are equipped with Pratt & Whitney (PW) 4100 engines.

In finding a suitable substitute for the Airbus 330-200 series aircraft, engine data for each of the air carriers operating the A330 at LAX were identified. We recommend that the engine used by each air carrier be the recommended substitute as explained below.

In finding a suitable aircraft for Airbus 330 aircraft utilizing PW engines, research was conducted to find the engine that most closely represents the PW engine from a thrust and noise stand point. The PW 4100 series engine has a takeoff thrust between 64,000-68,000 lbs. The A330-301 has a takeoff thrust of approximately 65,000 lbs. The Rolls-Royce Trent engine utilized on the Airbus 330 is capable of 75,000 lbs of takeoff thrust. The noise characteristics are also similar between the PW engine and the CFM engine as shown in Table 2 below.³

**Table 2
FAA Noise Certification Data**

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Airbus	A330-301	507,000	419,000	CF6-80E1A2	65,800	94.2	97.2	98.7
Airbus	A330	507,000	419,000	PW4168	68,000	94.3	98.3	98.0

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose to model the Airbus 330-200 with the INM type A330-301 and A330-343 based on engine type (i.e., Hawaiian Airlines operates the Airbus 330-200 with the Rolls-Royce Trent engines, and therefore will be modeled as the A330-343 INM aircraft that has the noise data for the Rolls-Royce Trent engines).

We propose to model Airbus 330 aircraft utilizing PW engines with the INM type A330-301 that utilize the General Electric CF6 engines as they are more comparable in performance and noise output.

3. Airbus 340-300 and Airbus A340-500

The Airbus 340-300 (A343) and the Airbus 340-500 (A345) series aircraft are versions of the Airbus 340 (A340) aircraft that is commonly operated at LAX. Upon review of the INM 7.0d Aircraft Database and Aircraft Substitutions lists, there are two INM models of the aircraft to be utilized, the Airbus 340-211 with General Electric CFM engines, and the Airbus 340-642 with Rolls-Royce Trent engines. In finding a suitable substitute for the A343 and A345 series aircraft, engine data for each of the air carriers operating the A340 at LAX was researched and identified. We found that the air carriers that operated the A343 aircraft utilized the same engine that is utilized by the INM aircraft A340-211 (i.e., the General Electric CFM Engines), and the air carriers that operated the A345 aircraft utilized the same engine that is utilized on the INM aircraft A340-642 (i.e., the Rolls-Royce Trent Engines).⁴

We propose to model the A343 and A345 with the INM type A340-211 and A340-642, respectively, since their engine types match up with aircraft type modeled in the INM.

³ http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/

⁴ <http://www.airfleets.net/home/>

4. Airbus 320 New Engine Option

The Airbus 320 New Engine Option (A320neo) is the newest version of the Airbus 320 family and provides a maximum benefit to air carriers with two new jet engine choices, the CFM International’s LEAP-X, and the PW 1100G PurePower engines. Both engines advertise meeting ICAO’s Chapter 14 noise standards; however, there is little information available to determine the best suitable substitute INM aircraft for the A320neo.⁵ Therefore, we propose conservatively substituting the A320neo with the Airbus 320-232 with IAE V2500 engines as shown in the certification table below.

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Airbus	A320-232	171,960	145,510	IAE V2500	26,500	84.9	91.3	94.4
Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/ , Appendix 1								

We propose to model the A320neo with the INM type A320-232, or request FAA recommend a suitable substitute aircraft.

5. Airbus 350

The Airbus 350 (A350) is Airbus’ latest wide-body aircraft (with seating for 250 to 400 passengers) for medium and long-haul routes. The aircraft will feature two Rolls-Royce Trent Engines producing up to 84,000 lbs of thrust at an aircraft MTOW of approximately 593,000 lbs meeting the latest noise standards.⁶ Although there is little information available regarding the noise characteristics of the Airbus 350, we find the aircraft to be most similar to INM aircraft A330-343 with Rolls-Royce Trent 772B engines with a MTOW of 513,677 lbs.

We propose to model the A350 with the INM type A330-343, or request FAA recommend a suitable substitute aircraft.

6. Boeing 737Max

Boeing 737Max (737Max) is the newest version of the Boeing 737 aircraft and provides a maximum benefit to air carriers in efficiency and fuel savings. This aircraft is very similar in shape and design with current Boeing 737 aircraft, but will offer the CFM International’s LEAP-X engine that advertises meeting ICAO’s Chapter 14 noise standards.⁷ However, like the Airbus 320neo and Airbus 350, there is very little noise data available to determine the best suitable INM aircraft substitute for the 737Max. Therefore, we propose conservatively substituting the 737Max with the 737700 with CFM-56 engines as shown in the certification table below.

⁵ www.airbus.com

⁶ <http://www.a350wb.com/#x-tra/technical-specifications>

⁷ <http://www.newairplane.com/737max/>

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Boeing	737700	154,500	129,200	CFM-56	26,300	84.6	94.7	95.9

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose to model the 737MAX with the INM type 737700, or request FAA recommend a suitable substitute aircraft.

7. Dassault Falcon 700X

The Falcon 700X is a three-engine aircraft that is comparable to the Falcon 50 or Falcon 900 in airframe characteristics. However, the Falcon 50 and Falcon 900 utilize Honeywell engines (TFE731), while the Falcon 700X utilizes three Pratt & Whitney (PW) 307A engines that are capable of higher thrust output due to the aircraft's heavier weight. Through researching the noise data shown in the table below, we found that the noise data for the Falcon 700X most closely resembled the Falcon 900 that is modeled in the INM as the F10062 aircraft.³

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Falcon	900	45,500	42,000	TFE731	4,750	81.9	89.5	91.7
Falcon	700X	69,000	62,400	PW307A	6,400	83.7	90.3	92.6

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose that since the Falcon 900 is substituted in the INM 7.0d as a F10062, that the Falcon 700X also be substituted as the F10062.

8. Gulfstream 650

The Gulfstream 650 (G-VI) jet is the latest version of Gulfstream Aircraft's G-III, IV, and V aircraft. All of these aircraft have similar design, but the latest version (G-VI) has greater range, payload, and overall performance capabilities. The G-VI's performance data includes a Maximum Takeoff Weight (MTOW) of 99,600 lbs, a Maximum Landing Weight (MLW) of 83,500 lbs, and features two Rolls-Royce BR725 engines rated at 16,900 lbs of takeoff thrust each.⁸ Through research, we found that there is no noise level certification data published on the FAA's noise certification website for the G-VI; however, we find that this aircraft most closely represents the G-V aircraft which is shown in the table below.

⁸ <http://www.gulfstream.com/products/g650/>

FAA Noise Certification Data

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Gulfstream	V	90,500	75,300	BR700	14,700	80.3	89.1	90.8

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose to model the Gulfstream 650 with the INM type GV aircraft.

9. Gulfstream 280

The Gulfstream 280 (G280) is the newest aircraft produced by Gulfstream. The G280 features a MTOW of 39,600 lbs and a MLW of 32,700 lbs, and is powered by two Honeywell HTF7250G engines rated at 7,600 lbs of takeoff thrust each.⁹ Through research, it was found that there is no noise level certification data published on the FAA's noise certification website for the G280; however, we found that this aircraft most closely matches the CL601 aircraft that is shown in the table below.

FAA Noise Certification Data

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Bombardier	CL601	42,100	36,000	CF34-1A	8,650	79.4	84.9	89.4

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose to model the Gulfstream 280 with the INM type CL601 aircraft.

10. LearJet 40

The LearJet 40 is a continuation of the LearJet 31A and LearJet 35 aircraft featuring better performance with a MTOW of 20,350 lbs, a MLW of 19,200, and is powered by two Honeywell TFE 731 engines rated at 3,500 lbs of takeoff thrust.¹⁰ There is no noise level certification data published on the FAA's noise certification website for the LearJet 40, but we found that the LearJet 40 most closely matches the noise and performance characteristics of the LEAR45 as shown below that is modeled as a LEAR35 in the INM.

FAA Noise Certification Data

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Bombardier	LEAR35	20,500	19,500	TFE731	3,500	74.4	85.2	93.4

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

⁹ <http://www.gulfstream.com/products/g280/>

¹⁰ <http://jetadvisors.com/learjet-40/>

We propose that since the LearJet 45 is substituted in the INM 7.0d as a LEAR35, that the LearJet 40 also be substituted as the LEAR35.

11. Cessna Citation Jets 1 and 2 (CJ1 and CJ2)

The Cessna Citation Jets (CJ1 and CJ2) are part of the Citation Jet family that features Citation Jets 1 through 4. The Citation Jet 4 (CJ4) is listed in the INM as the CNA525 and is just a slightly larger version of the CJ1 and CJ2. The CJ1 and CJ2 feature the same engines as the CNA525, the Williams FJ44 engines. The engines have just been de-rated on the CJ1 and CJ2 due to the lighter weights of the aircraft then the CJ4. Therefore, we feel the CNA525 would be a conservative substitution for the CJ1 and CJ2.

We propose to model the Cessna Citation Jets 1 and 2 with the INM type CNA525 aircraft.

12. Embraer Phenom 100

The Phenom 100 is a relatively new entry-level jet that belongs to the very-light jet category of aircraft. The Phenom 100 has a MTOW of 10,472 pounds, a MLW of 9,766 pounds, and is powered by two Pratt & Whitney Canada PW617F-E turboprop engines rated at 1,695 pounds of thrust.¹¹ The engine and weights are similar to the Cessna Citation Mustang (CNA510) that has a MTOW of 8,645 pounds, a MLW of 8,000 pounds, and is powered by two Pratt and Whitney Canada PW615F turboprop engines rated at 1,460 pounds of thrust.¹² Neither aircraft has noise level certification data published on the FAA’s noise certification website.

We propose to model the Embraer Phenom 100 (E50P) with the INM type CNA510 aircraft.

13. Embraer Phenom 300

The Phenom 300 is a new light business jet that recently entered the corporate jet market. The Phenom 300 has a MTOW of 17,968 pounds, a MLW of 16,865 pounds, and is powered by two Pratt and Whitney Canada PW535E engines rated at 3,360 pounds of thrust.⁸ The engine and weights are similar to the Cessna Citation Encore (CNA560E) that has a MTOW of 16,630 pounds, a MLW of 15,200 pounds, and is powered by two Pratt and Whitney Canada PW535A engines rated at 2,900 pounds of thrust.³ Noise data from the FAA noise certification database is listed below.

FAA Noise Certification Data

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Thrust (lbs)	Takeoff	Side-Line	Approach
Cessna	560 Encore	16,630	15,200	PW535A	2,900	70.30	89.90	90.50

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 1

We propose to model the Embraer Phenom 300 (E55P) with the INM type CNA560E aircraft.

14. Bombardier Q400 (DH8D)

¹¹ www.embraerexecutivejets.com

¹² www.cessna.com

The Bombardier Q400 is operated by Horizon Airlines at LAX. The aircraft is an extended version of the Bombardier Dash-8-300 aircraft, and can carry up to 80 passengers. The Q400 is quieter than the Dash-8-300 aircraft integrating noise reduction technologies that make it 15 dB quieter than ICAO Stage 4 noise standards.¹³ Comparisons between the Dash-8-300 and the Q400 are shown in the table below. Therefore, we recommend to model conservatively using the Dash-8-300 as a substitute for the Q400 since it is a louder aircraft according to the FAA Noise Certification Data.

FAA Noise Certification Data

Aircraft Data						Noise (EPNdB)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	Horse Power	Takeoff	Slide-Line	Approach
Bombardier	Dash-8-300	41,000	40,000	PW123	2,142	84.3	87.4	98.9
Bombardier	Q400	61,700	60,500	PWC150A	5,070	77.1	84.1	94.9

Source: https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/, Appendix 6

We propose to model the Bombardier Q400 (DH8D) with the INM type DHC830 aircraft.

15. Piper Malibu Meridian

The Piper Malibu Meridian (P46T) is a single engine turboprop aircraft. Upon evaluating a previously approved substitute for the Malibu Meridian, it was noted that the SD330, a 22,900 pound twin-engine turboprop, has been a previously approved aircraft substitute. We noted with the release of INM 7.0d the Socata TBM 700, a very similar aircraft to the Malibu Meridian, identified the CNA208 as an approved substitute. The Malibu Meridian has a MTOW of 5,134 pounds, a MLW of 4,850 pounds, and is powered by the Pratt & Whitney PT6A-42A rated at 500 Shaft Horse Power (SHP).¹⁴ The Socata TBM 700 aircraft has a MTOW of 6,579 pounds, a MLW of 6,250 pounds, and is powered by the Pratt & Whitney PT6A-64 engine rated at 700 SHP.¹⁵

FAA Noise Certification Data

Aircraft Data						Noise (dBA)		
Manufacturer	Aircraft Model	MTOW (lbs)	MLW (lbs)	Engine Type	SHP	dBA*	TO#	APP#
Cessna	208 Caravan	8,000	7,800	PT6A-114	600 @ 1900 RPM	79	64.9	73

*U.S. Certified Propeller Driven Small Airplanes (14 CFR Part 36, Appendix G)
 #Noise Level Data AC36-3H (April 5, 2012)

We propose that since the TBM 700 is substituted in INM 7.0d as a CNA208, that the Piper Malibu Meridian also be substituted as the CNA208.

¹³ <http://www.bombardier.com/en/aerospace/commercial-aircraft.html>
¹⁴ <http://www.flyingmag.com/pilot-reports/turboprops/living-piper-meridian?page=0,4>
¹⁵ <http://www.tbm850.com/Pilot-s-Information-Manual>

We are requesting that LAWA forward this technical memorandum to Victor Globa – Environmental Specialist in FAA’s Western Pacific Region, so that the FAA can approve these recommended INM 7.0d substitutes, or provide FAA recommended substitutes for each of the aircraft types for use in the LAX FAR Part 150 NEM Update Study.

We appreciate your assistance in this matter.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

Date: May 22, 2014

Victor Globa
Environmental Protection Specialist
Federal Aviation Administration
15000 Aviation Boulevard
Lawndale, CA 90261

Dear Mr. Globa,

The Office of Environment and Energy (AEE) received the letter addressed to you from Scott Tatro of Los Angeles World Airports (LAWA) dated May 1, 2014 requesting approval of modeling 24 aircraft types that do not have Integrated Noise Model (INM) standard substitutions. This request is to evaluate noise in support of the Los Angeles International Airport (LAX) Part 150 Noise Exposure Map (NEM) Update.

ESA Airports is assisting LAWA with the preparation of the Part 150 NEM update for LAX using the latest version of INM, Version 7.0d. ESA identified 24 aircraft types that do not have INM standard substitutions. The list of those aircraft is displayed in the table below along with AEE's recommendations.

Aircraft	ESA Proposed Substitution	AEE Recommendation
Boeing 777-200LR	7773ER	Concur
Boeing 777-300ER	7773ER	Concur
Airbus 330-200/CF6-80E1A2	A330-301	Concur
Airbus 330-200/Rolls Royce Trent	A330-343	Concur
Airbus 330-300/PW4168	A330-301	Concur
Airbus 340-300	A340-211	Concur
Airbus 340-500	A340-642	Concur
Airbus 320neo	A320-232	Concur
Airbus 350	A330-343	7773ER
Boeing 737 Max	737700	Concur
Dassault Falcon 700X	F10062	Concur
Gulfstream 650	GV	Concur
Gulfstream 280	CL601	Concur
Learjet 40	LEAR35	Concur
Cessna Citation Jets (CJ 1 and 2)	CNA525	Concur
Embraer Phenom 100	CNA510	Concur

Embraer Phenom 300	CNA560E	Concur
Bombardier Q400	DHC830	Concur
Piper Malibu Meridian	CNA208	Concur
Beechcraft Bonanza	GASEPV	CNA206
Cessna Corvalis	GASEPV	Concur
Lancair Columbia 400	GASEPV	Concur
Lancair Legacy	GASEPV	Concur
Cirrus SR-20	GASEPV	Concur

AEE concurs with all but two of the proposed substitutions. The A350 has several variations and the most conservative substitution for all A350 models would be the Boeing 7773ER. Therefore, AEE recommends the INM type 7773ER as a substitute for the A350. Also, the Beechcraft Bonanza is normally substituted by the INM type CNA206 and AEE continues to recommend the CNA206 as a substitute for the Bonanza. AEE approves the substitutions proposed by ESA with these two exceptions.

Please understand that this approval is limited to this particular project for LAX. Any additional projects or non-standard INM input at LAX will require separate approval.

Sincerely,



Rebecca Cointin, Manager
AEE/Noise Division

cc: Jim Byers, APP-400

From: Victor.Globa@faa.gov [mailto:Victor.Globa@faa.gov]

Sent: Thursday, May 22, 2014 1:04 PM

To: PANTOJA, KATHRYN R.

Cc: TATRO, SCOTT

Subject: LAX Part 150 NEM Update - Request for INM 7.0d Aircraft Type Substitutions

Hi Kathryn – Attached is copy of the response I received from the Office of Environment and Energy (AEE) regarding LAWA's May 1, 2014, request to approve the modeling of 24 aircraft type that do not have INM standard substitutions. AEE approved 22 of 24 substitutions requested. However for the Airbus 350, AEE recommends the 7773ER instead of A330-343; and, for the Beechcraft Bonanza, AEE recommends the CNA206 instead of GASEPV.

If you have any additional questions feel free to e-mail me or give a call.

Victor

Victor Globa
Environmental Protection Specialist
Federal Aviation Administration
15000 Aviation Boulevard
Lawndale, CA 90261
310-725-3637
victor.globa@faa.gov

*Los Angeles
World Airports*

September 4, 2014

Mr. Victor Globa
Environmental Protection Specialist
Federal Aviation Administration
Western-Pacific Region
Los Angeles Airports District Office, LAX-600.3
P.O. Box 92007
Los Angeles, CA 90009-2007

LAX

LA/Ontario

Van Nuys

City of Los Angeles

Eric Garcetti
Mayor

Board of Airport
Commissioners

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Vice President

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Jackie Goldberg
Beatrice C. Hsu
Matthew M. Johnson
Dr. Cynthia A. Tello

Gina Marie Lindsey
Executive Director

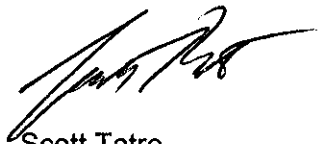
Re: Review and Approval of Los Angeles International Airport Part 150
Noise Exposure Map Update Forecast

Dear Mr. Globa:

Los Angeles World Airports requests the Federal Aviation Administration's review and approval of the 2015 and 2020 operations forecasts for the Los Angeles International Airport Part 150 Noise Exposure Map Update. The attached technical memorandum describes the forecast methodology and comparison results in detail.

If you have any comments or questions related to this request, please feel free to contact me at (424) 646-6499. Thank you for your assistance.

Sincerely,



Scott Tatro
Airport Environmental Manager I

ST:kp

Enclosure: Technical memorandum

cc: Kathryn Pantoja

technical memorandum

date September 2, 2014

to Kathryn Pantoja – Los Angeles World Airports
Environmental Affairs Officer

from Michael Arnold
Manager of Airport Planning

subject Los Angeles International Airport
Recommended Forecast for Use in Preparing the LAX FAR Part 150 Noise Exposure Map Update

ESA Airports is currently updating the Noise Exposure Maps for Los Angeles International Airport (LAX). This update includes evaluation of existing operational conditions as well as those anticipated in 2020. The purpose of this technical memorandum is to review the current Federal Aviation Administration (FAA) Terminal Area Forecast (TAF) for LAX to determine if adjustments are necessary based on recent activity trends. This memorandum also includes a comparison of the LAX TAF to operations projections that have been included in environmental documentation prepared for recent LAX capital improvement projects.

FAA Terminal Area Forecasts

The TAF is an unconstrained forecast of future demand for an airport or air traffic facility that is used by the FAA to project future staffing and facility needs. Forecasts developed independently by airport sponsors are reviewed to determine if they are within 10 percent of the TAF in the five-year period or 15 percent of the TAF in the ten-year period. If the forecasts fall within these ranges, they are considered consistent with the TAF. If not, additional justification is required from the airport sponsor before the forecast can be used for project justification or funding. The TAF is re-indexed each year based on activity that occurred during the previous federal fiscal year (October 1st through September 30th). While the TAF includes a projection of air carrier and commuter passengers, aircraft operations are of primary interest for the purposes of noise modeling. The current TAF was issued by the FAA in February 2014. LAX's portion of the TAF is outlined in **Table 1**.

TABLE 1
FAA TERMINAL AREA FORECAST - OPERATIONS
LOS ANGELES INTERNATIONAL AIRPORT

Year (Federal Fiscal)	Air Carrier	Air Taxi	General Aviation	Military	Total
2009	436,149	89,916	15,813	2,736	544,614
2010	452,918	95,187	20,039	2,829	570,973
2011	468,763	106,471	18,549	2,411	596,194
2012	481,325	106,722	18,165	2,634	608,846
2013	491,693	93,768	18,333	2,554	606,348
2014*	501,170	95,000	18,430	2,544	617,144
2015	513,784	96,263	18,592	2,534	631,173
2016	526,526	97,541	18,755	2,524	645,346
2017	539,793	99,113	18,919	2,514	660,339
2018	553,469	100,423	19,085	2,504	675,481
2019	567,541	101,449	19,252	2,494	690,736
2020	581,708	101,641	19,421	2,484	705,254

SOURCE: FAA February 2014 TAF
*estimated

The current TAF projects an increase in air carrier activity of 90,000 operations between 2013 and 2020 at LAX and a total increase of nearly 100,000 operations during the same period to just over 705,000 total operations at LAX by 2020.

Review of Recent Airport Activity

A review of recent activity was conducted to determine if the current LAX TAF was consistent with recent airport trends and continues to be representative of the dynamic airport environment. **Table 2** outlines activity levels at LAX for the 12-month period ending April 2014.

TABLE 2
OPERATIONAL ACTIVITY FOR 12-MONTH PERIOD ENDING APRIL 2014
LOS ANGELES INTERNATIONAL AIRPORT

Period	Air Carrier	Air Taxi	General Aviation	Military	Total
12 months ending April 2014	513,624	91,445	18,227	2,325	625,621

SOURCE: FAA Air Traffic Activity System (ATADS)

Comparing the activity for the 12-month period ending in April to the most recent TAF (Table 1), ESA Airports determined that total aircraft activity is tracking nearly 8,500 operations or 1.4 percent ahead of the FAA's 2014

projection. Air carrier activity is tracking about 2.5 percent ahead of projections, while air taxi activity is tracking about 4 percent below projections. GA and military operations are relatively consistent with the FAA's LAX TAF projections. These variances are well within the FAA's 10 percent guidance for determining forecast consistency within the five-year timeframe and would be expected to have a negligible impact on contour size and shape.

Comparison to Recent Activity Forecasts

In reviewing the TAF, we noted that there were two recent studies that included activity projections for LAX. These include the:

- Specific Plan Amendment Study (SPAS) Operational Analysis - prepared Ricondo and Associates, July 2012; and the
- Runway 7L/25R Runway Safety Area (RSA) Environmental Assessment (EA), Appendix B, Noise Technical Report - prepared by Ricondo and Associates, August 2013.

The SPAS Operational Analysis focused on 2009 and 2025 design-day passenger activity levels. An operations forecast was not part of the SPAS analysis. The SPAS forecasts developed design-day flight schedules (DDFS), which were based on peak-month, average-day flight schedules (PMAD). Because annual operations statistics were not developed as part of the SPAS forecast, activity levels could not be directly compared. For the purposes of comparing to the adjusted TAF, the 2020 operations levels were estimated based on a prorated growth assumption and the 2009 operations relationships to the 2009 DDFS. The SPAS analysis projected an increase in the design-day flight schedule from 1,563 operations to 2,053 operations by 2025. It also cites a FY 2009 total activity level of 561,989 total annual operations. However, page 14 of the SPAS analysis indicates that August's peak month operations of 48,448 represent 8.9 percent of the total annual activity. This relationship holds true for the 544,833 operations experienced in 2009 calendar year, but not the 561,889 operations referenced earlier in the report. Therefore, the comparison to the TAF was based on PMAD relationship consistent with the lower activity level. Assuming a similar relationship between the 2,053 PMAD operations estimated for 2025 results in 715,712 total operations without adjustments for fleet or load factor. This can be prorated to approximately 657,226 operations in 2020.

The 2013 Runway 7L/25R RSA EA used 593,593 as its baseline 2011 operational level for the purposes of developing noise contours. It used the March 2012 FAA TAF operational projections of 637,903 and 705,281 for 2015 and 2020, respectively.

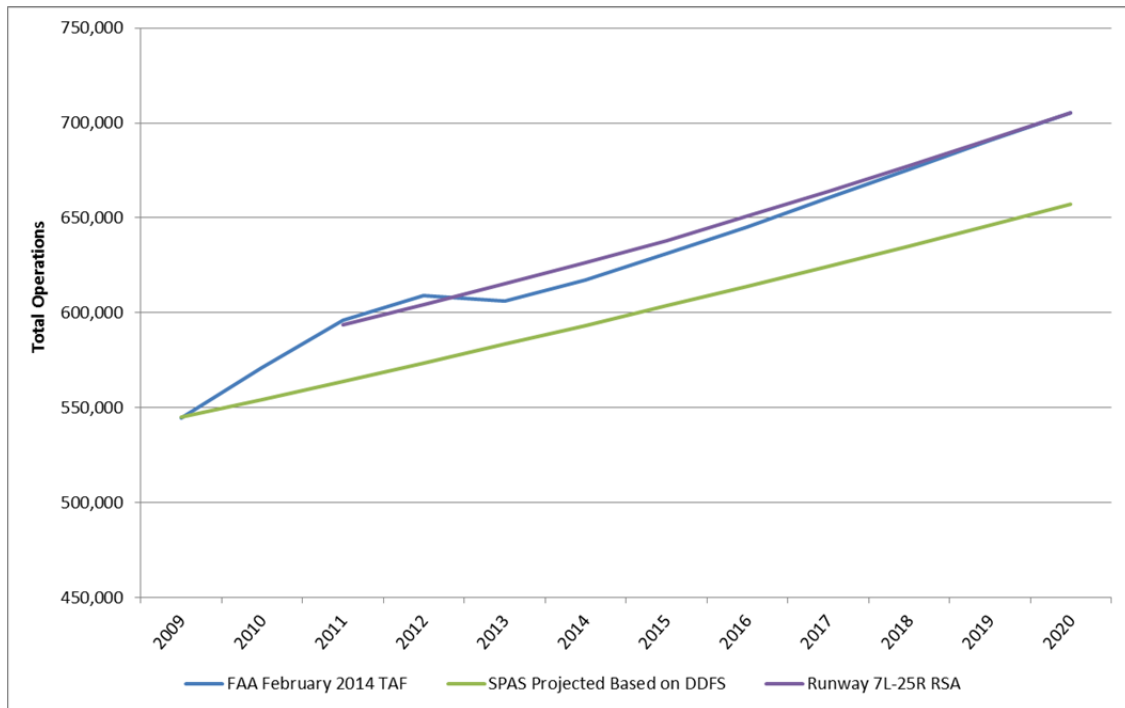
Table 4 compares the current FAA TAF and the Adjusted TAF to the SPAS and Runway 7L-25R projections. **Figure 1** presents this information graphically.

TABLE 4
FORECAST COMPARISON
LOS ANGELES INTERNATIONAL AIRPORT

Year (Federal Fiscal)	FAA February 2014 TAF	SPAS Projected Based on DDFS	Runway 7L-25R RSA
2009	544,614	544,833	
2010	570,973	554,202	
2011	596,194	563,732	593,593
2012	608,846	573,426	604,373
2013	606,348	583,287	615,349
2014*	617,144	593,317	626,525
2015	631,173	603,520	637,903
2016	645,346	613,898	650,843
2017	660,339	624,454	664,045
2018	675,481	635,193	677,515
2019	690,736	646,115	691,259
2020	705,254	657,226	705,281

SOURCE: FAA February 2014 TAF, FAA ATADS,
 SPAS Operational Analysis
 Runway 7L/25R Runway Safety Area (RSA) Environmental Assessment
 ESA Airports

**FIGURE 1
LAX OPERATIONS FORECAST COMPARISON**



Conclusions and Recommendations

Review of the existing LAX TAF, the forecasts used for recent capital projects, and the most recent 12 months of LAX operational information results in the following conclusions:

- The LAX TAF is within 1.4 percent of the most recent 12 months of activity at the airport and therefore falls well within FAA TAF consistency guidelines of 10 percent in the 5 year period and 15 percent in the ten-year period.
- The 2020 projected activity level in the LAX TAF is virtually identical to the 2020 forecast activity level used for the 2013 Runway 7L-25R RSA Environmental Assessment and is generally consistent with the activity projected in the SPAS.

Based on these conclusions, ESA Airports recommends that the current TAF be used for the purposes of developing the updated FAR Part 150 Noise Exposure Maps for LAX.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Los Angeles Airports District Office

P.O. Box 92007
Los Angeles, CA 90009-2007

October 9, 2014

Mr. Scott Tatro
Airport Environmental Manager
Los Angeles World Airports
Environmental Services Division
1 World Way, P.O. Box 92216
Los Angeles, CA 90009

Los Angeles International Airport (LAX)
Airport Part 150 Noise Exposure Map Update Forecast Approval

Dear Mr. Tatro:

The Federal Aviation Administration (FAA) has completed the review of the Technical Memorandum dated September 4, 2014. The report recommends the use of the current FAA Terminal Area Forecast (TAF) for the purpose of the developing the updated FAR Part 150 Noise Exposure Maps at LAX. We approve the use of the TAF forecasts for your proposed Part 150 Study.

The Technical Memorandum compared the activity for the 12-month period ending in April 2014, to the most recent TAF and found that operations were 1.4 percent ahead of the FAA's projection. In addition, the Specific Plan Amendment Study Operational Analysis and the Runway 7L/25R Runway Safety Environmental Assessment, Appendix B, Noise Technical Report forecasts were both within 10 percent of the TAF in the 5-year forecast period, which is our standard for determining TAF consistency at the 5-year point.

If you have any questions in regards to this forecast approval, please call me at 310-725-3630.

Sincerely,

Jaime Durán
Lead Airport Planner



US Department
of Transportation

Federal Aviation
Administration
MAY 14 1985

Western-Pacific Region

P.O. Box 92007
Worldway Postal Center
Los Angeles, CA 90009

Mr. Clifton A. Moore
General Manager
Los Angeles Department of Airports
One World Way, Fourth Floor
Los Angeles, California 90009

Dear Mr. Moore:

The Federal Aviation Administration (FAA) has evaluated the noise compatibility program for Los Angeles International Airport (LAX) contained in the Noise Control and Land Use Compatibility (ANCLUC) Study and related documents submitted to this office under the provisions of Section 104(a) of the Aviation Safety and Noise Abatement Act of 1979 (the Act). The recommended noise compatibility program proposed by the Department of Airports for LAX is identified by action element number on Pages 13 through 27 of the ANCLUC Study, Phase Three Report, Volume I. I am pleased to inform you that the Administrator has approved 28 of the 40 proposed action elements in the noise compatibility program, in full or in part. The specific FAA action for each noise compatibility program element is set forth in the enclosed Record of Approval. The effective date of this approval is April 13, 1985.

Three action elements, A.5, C.1b and C.9 have been disapproved pending submission of additional information to FAA. These elements have been disapproved because they were not described in sufficient detail to allow an informed analysis by the FAA under Section 104(b) of the Act. These disapprovals do not reflect FAA opposition to the noise mitigation objectives of the proposals nor of the concepts on which they are based. Rather, the Act contemplates FAA action to either approve or disapprove a noise compatibility program within the statutory 180-day period allowed for FAA review. These actions may be reconsidered by the FAA if developed in greater detail and submitted to the FAA under Part 150.

Action elements F.5, G.1c, and the second portion of G.1f have been disapproved for the following reasons. Element F.5 involves regulating the establishment and operation of new helicopter landing facilities in communities north and south of LAX. This action element is inappropriate for FAA's approval with respect to the LAX Part 150 program because it does not involve LAX itself nor is there evidence that it would reduce noncompatible uses within the area of LAX's noise impact. Further, Section 150.3 states that FAR Part 150 is not applicable to airports used exclusively by helicopters. Element G.1c is disapproved since it involves the implementation of a passenger facility charge which is currently prohibited by Federal law. The next element disapproved, G.1f, would establish a commitment by FAA with respect to the funding of elements in the

LAX noise compatibility program. This would be contrary to Section 150.5(b) which clearly indicates that FAA's Part 150 approval action is neither a commitment to financially support the implementation of a program nor a determination that measures in the program are eligible for grant-in-aid funding from FAA.

Two action elements, B.1 and C.8, relate to the use of flight procedures for noise mitigation which have been determined to require further FAA evaluation. The Act provides that such measures are not subject to the 180-day review period applicable to all other proposed actions. No action is required by you at this time on these elements. There is no action required on four other action elements (C.4, C.5, G.1a, and the first portion of G.1f) because they are not program recommendations. Elements C.4 and C.5 simply provide information that two alternative measures were not recommended as part of the program in accordance with Section 150.23(e)(2). Element G.1a and the first portion of G.1f provide information on local funding arrangements in accordance with Section 150.23(e)(8). All the approval and disapproval actions are more fully explained in the enclosed Record of Approval.

In addition to completing FAA's responsibility for issuing a Part 150 determination within the statutory 180-day review period, FAA's determination on the LAX Part 150 program fulfills the condition of a 1980 environmental impact statement (EIS). On June 3, 1983, a revision to the condition was approved by FAA, after concurrence by the Office of the Secretary of Transportation. The approval stated that:

"The proposed revision will allow Federal assistance to be provided for reconstruction of Runway 25L/7R at LAX as described in the EIS by altering the timing of the approval of a noise mitigation package and by requiring that package to be submitted and approved under FAR Part 150, rather than as an addendum or supplement to the 1980 EIS. A grant for Federal assistance shall include a provision that the City of Los Angeles complete in a timely manner the Noise Control/Land Use Compatibility Study now underway, and submit it as a Noise Compatibility Program for FAA approval pursuant to the provisions of FAR Part 150 and the Aviation Safety and Noise Abatement Act of 1979 as early as possible. Approval of the Part 150 program will fulfill the intent of the condition in the concurrence memorandum of December 11, 1980."

Each airport noise compatibility program developed in accordance with FAR Part 150 is a local program, not a federal program. The FAA does not substitute its judgement for that of the airport proprietor with respect to which measures should be recommended for action. The FAA's approval or disapproval of FAR Part 150 program recommendations is measured according to the standards expressed in Part 150 and the Aviation Safety and Noise Abatement Act of 1979, and is limited to the following determinations:

The noise compatibility program was developed in accordance with the provisions and procedures of FAR Part 150;

Program measures are reasonably consistent with achieving the goals of reducing existing noncompatible land uses around the airport and preventing the introduction of additional noncompatible land uses;

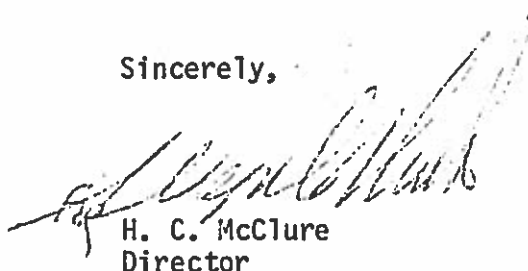
Program measures would not create an undue burden on interstate or foreign commerce, unjustly discriminate against types or classes of aeronautical uses, violate the terms of airport grant agreements, or intrude into areas preempted by the Federal Government; and

Program measures relating to the use of flight procedures can be implemented within the period covered by the program without derogating safety, adversely affecting the efficient use and management of the Navigable Airspace and Air Traffic Control Systems, or adversely affecting other powers and responsibilities of the Administrator prescribed by law.

Specific limitations with respect to FAA's approval of an airport noise compatibility program are delineated in FAR Part 150, Section 150.5. Approval is not a determination concerning the acceptability of land uses under federal, state, or local law. Approval does not by itself constitute an FAA implementing action. A request for federal action or approval to implement specific noise compatibility measures may be required, and an FAA decision on the request may require an environmental assessment of the proposed action. Approval does not constitute a commitment by the FAA to financially assist in the implementation of the program nor a determination that all measures covered by the program are eligible for grant-in-aid funding from the FAA under the Airport and Airway Improvement Act of 1982. Where federal funding is sought, requests for project grants must be submitted to the FAA Western-Pacific Region, Airports Division.

The FAA will publish a notice in the Federal Register announcing approval of the LAX noise compatibility program. You are not required to give local official notice, although you may do so if you wish. Thank you for your continuing support and active interest in airport noise abatement and noise compatibility planning.

Sincerely,



H. C. McClure
Director

Enclosure

RECORD OF APPROVAL
LOS ANGELES INTERNATIONAL AIRPORT
NOISE COMPATIBILITY PROGRAM

ON AIRPORT ELEMENTS

Action
Element

(Note: Many of the initial descriptions of the action elements which follow are abridged to permit a more concise Record of Approval. The full wording of each element, together with references for greater detail, is given in exhibit D, pages 13-27, which for purposes of FAA action are considered the program recommendations.)

A. Airport Noise Monitoring, Management, and Coordination

- A.1 Emphasize noise abatement and enforcement activities as a priority function under the responsibility of the Deputy General Manager in Charge of Operations.

Approved. This is a local administrative action within the authority of the Department of Airports (DOA). Implementation is aimed at increasing the effectiveness and accountability of this function.

- A.2a Develop computer-based noise performance/management system in the short-range (1984-86) implementation phase.

Approved. This action would develop a system with the capability to monitor progress in noise reduction as well as identify problem areas that would benefit from additional mitigation or corrective actions.

- A.2b Install computer-based noise performance/management system to monitor implementation of the Noise Compatibility Program (NCP) elements and to refine NCP elements as appropriate based on the ongoing monitoring and noise modeling program.

Approved. This element would operationalize and refine the system developed in A.2a.

- A.3 Develop an ongoing airport/community compatibility forum in the short-range (1984-86) implementation phase and continuing through the medium and long-range phases.

Approved. This is the mechanism by which progress will be evaluated and revisions to the NCP developed. Representatives on the forum will be local elected officials, aviation industry representatives, airport officials and the FAA.

- A.4 Actively pursue amendment of California Airport Noise Standards during the short-range (1984-86) implementation phase to augment the definition of compatible land use.

Approved. The city has indicated that this action is to request the State of California to revise existing regulations covering state airport noise standards and definitions of compatible land uses. The concept implied here is that a consolidated effort under the aegis of an approved NCP would be more effective in achieving the revisions sought. This is a matter of local discretion; no Federal action or authorization is necessary. This approval does not endorse the amendment. Approval simply acknowledges that the proposed amendment would contribute to the reduction of noncompatible uses.

- A.5 The General Manager, with the help and cooperation of the Federal Aviation Administration (FAA), [will] develop a report showing how and to what extent ARTS III A data may be used in a program for identifying early turns and drifts in the short range. (Short range 1984-86)

Disapproved pending submission to FAA under Part 150 of program details sufficient to permit an informed analysis under section 104(b) of the Aviation Safety and Noise Abatement Act of 1979. The actual release of ARTS III A data by FAA for noise abatement and monitoring purposes is not contemplated at this time. The degree to which FAA could make certain data available for study purposes would depend upon submission of a more specific proposal from the city. Not enough information is furnished at this time.

B. Flight Procedures Changes: (Items excluded from 180-day requirement)

- B.1 Request that the FAA extend the Over Ocean Operation procedures in the following increments:

- 1 hour increase, 11 p.m. to 6:30 a.m. from 12 p.m. to 6:30 a.m., if compatible with the needs of air traffic control in the short range.
- Additional 1-1/2 hour increase, 10 p.m. to 7 a.m. from 11 p.m. to 6:30 a.m. (total increase of 2.5 hours), if the air traffic system safety tolerance is not affected. This action would occur in the medium range.

No Action Required at this Time. This relates to flight procedures for the purpose of section 104(b) of the Aviation Safety and Noise Abatement Act of 1979 and will receive further FAA review before approval or disapproval. Existing noise abatement procedures at LAX include "over ocean operations" from 12 midnight until 6:30 a.m. Weather and other factors permitting, departures take off to the west and arrivals land from the west. Landing periods alternate with takeoff periods, and each is separated by periods of no activity.

It is estimated that expansion of over ocean procedures would remove approximately 1500 dwelling units from within the 65 CNEL (Ldn) contour. Additional relief would be realized through the reduction of overflights in areas east of the airport during these hours.

Operational capacity is restricted during over ocean operations and pilots groups (i.e., ALPA; see exhibit D, attachment D-1) have objected to use of the procedure without what they consider to be adequate safeguards. Comments from air traffic control experts indicate opposition to expanding the hours of over ocean operation because of expected increases in air traffic delay and in controller coordination activity.

These are critical concerns leading the FAA to the determination that this issue requires further study.

C. Airport Noise Limits, Use Restrictions, Technological Advances

C.1a Maintain existing policy pertaining to SST access prohibition.

Approved. There is no ordinance or other airport rule in place to implement or enforce this policy with explicit reference to SST's. Board of Airport Commissioners Resolution No. 5456 (Oct. 22, 1969) stated that no commercial aircraft would be permitted to use LAX if it generated more noise than a Boeing 707-320-C. Resolution No. 8661 (Oct. 30, 1974) expresses Board's desire that FAR Part 36 noise certification standards be established for SST aircraft. Resolution No. 9022 (Apr. 28, 1975) expresses opposition to use of LAX by SST aircraft unless they meet FAR Part 36 requirements. A noise regulation in Los Angeles City Ordinance No. 152,455 (May 31, 1979), was adopted pursuant to Board Resolution No. 11650 (May 7, 1979).

This noise regulation establishes noise limits and a phased compliance schedule essentially consistent with FAR's 36 and 91. Aircraft operators may, until January 1, 1985, use the airport if their aircraft will not exceed established noise limits on approach or departure. No aircraft type or model is named in the regulation, but the effect is to bar access to the noisiest aircraft, including the SST.

Since adoption of this ordinance, only one operator has inquired about SST access to LAX. This was in conjunction with a proposed flight from New York to Los Angeles, Honolulu, Los Angeles, and Washington, D.C., to be completed in less than 24 hours. The local regulation was not challenged, however, because the proponent withdrew his proposal when FAA denied his petition for a waiver from the ban on supersonic flight over the continental United States as stated in 14 CFR 91.55 (Federal Register, October 27, 1983). See exhibit D, attachment D-3.

- C.1b Maintain the LAX Noise Regulation modified FAR Part 36 compliance schedule.

Disapproved pending submission to FAA under Part 150 of program details sufficient to permit an informed analysis under section 104(b) of the Aviation Safety and Noise Abatement Act of 1979. This regulation does not permit operations at LAX by certain two-engine turbojet aircraft which have received an FAA exemption under FAR Part 91.307 to provide service to small communities. This exemption was specifically established by section 304 of that ASNA Act. One criteria for the grant of that exemption is that the need for air service justifies the short term (until January 1, 1988) use of Stage I aircraft.

Table IV-3 of the Phase Two Report (exhibit C, page 4-17) shows that in July 1982 there were 528 flights by two-engine turbojet aircraft which may qualify for the small community exemption. This represents 3.9 percent of the monthly total of 13,497 air carrier flights. No analysis is presented which shows the effect of removing these aircraft, so there is no evidence that barring the aircraft will reduce existing noncompatible uses or prevent additional noncompatible uses. Further, there is insufficient analysis on which to base FAA favorable determinations with respect to undue burden on interstate or foreign commerce or unjust discrimination.

- C.1c The Los Angeles Board of Airport Commissioners will transmit to the FAA its proposed position on FAR Part 36, Stage III aircraft.

Approved. The FAA will consider the merits of the concept to retire or retrofit Stage II aircraft under a Federal regulatory schedule. A notice of petition for rulemaking to that effect was published in the Federal Register on April 4, 1984. (See exhibit D, attachment D-4.) Approval of this element within the context of this NCP does not constitute a commitment by the FAA to establish such a regulation. That action can only be taken after completion of the process for publishing a new regulation, including the opportunity to comment by interested parties.

- C.2 Continue to pursue a policy of accelerating the requirement for installation of fixed ground power and air conditioning units at all aircraft parking locations for fuel conservation and reduced ground noise emissions.

Approved. Such a policy is within the purview of local airport management. No Federal action or authorization is necessary.

- C.3 Maintain voluntary preferential runway utilization system with inboard Runways 25R-7L and 24L-6R and Taxiways K and U being preferred during noise sensitive nighttime (10 p.m. to 7 a.m.) hours.

Approved. This procedure is currently used, traffic and other conditions permitting. No mandatory use of this procedure is contemplated.

- C.4 Evaluation of strategies to limit nighttime (10 p.m. to 7 a.m.) operations is contrary to existing legislation and the Board of Airport Commissioners is not able to consider a policy that would place an absolute restriction on operations.

No Action Required. This is not a recommendation. This is information on why the city did not include an alternative measure as a recommendation in the program, in accordance with Part 150.23(e)(2).

However, FAA does not agree with the city's suggestion that airline deregulation legislation has preempted the authority of airport proprietors to consider strategies for controlling the noise impacts of night aircraft operations.

- C.5 The Los Angeles Board of Commissioners cannot at this time make a finding that the Imperial terminal will not be needed in the future.

No Action Required. This is not a program recommendation made by the city. This is the city's determination to temporarily reject a steering committee recommendation.

The Los Angeles Board of Commissioners will adopt a policy for the Imperial Terminal that would allow continued use without the operation of aircraft engines at the terminal area.

Approved. This is a change in operating policy in the vicinity of the Imperial Terminal which was adopted by the Board of Airport Commissioners on June 13, 1984 to provide some of the relief sought. This policy requires that all turbojet aircraft and turboprop aircraft over 65,000 lbs be towed between taxiway F and the Imperial Terminal when arriving or departing. It also prohibits jet engine runs and runups and limits the use of aircraft auxiliary power units on that terminal ramp. The Board's resolution adopting this policy includes no enforcement measures, but operators have complied voluntarily without significant complaints.

- C.6 Increase pilot awareness of Standard Instrument Departure (SID) requirement of not turning prior to the coastline upon departure from Runway 25 L&R and 24 L&R unless so instructed by air traffic control; increase pilot understanding of the adverse noise impacts resulting from premature turns and drifts over adjacent residential neighborhoods (short term); continuous monitoring and enforcement. (Element A.5, acquisition of ARTS IIIA data, would augment current enforcement capabilities.)

Approved. The SID procedure requires aircraft departing to the west to continue on runway heading and not turn to an easterly heading until a shoreline crossing of 8000' is assured. The major thrust of this measure is pilot education for the purpose of closer adherence to the published departure procedures. Current practice is that ATC notifies the airport noise abatement office of aircraft which are observed to

turn east (prematurely) with respect to the SID procedure. Airport staff then notifies the aircraft operator, or chief pilot in case of air carriers, of the infraction. Enforcement measures are not punitive, rather they rely on "jawboning" techniques to elicit compliance. In the past, the effectiveness of this measure has been criticized because the letter of notification has not been timely. More recently, tower personnel have notified user's officials (e.g. chief pilots) at the same time the airport staff is notified. Although not in letter form, the timeliness of this notice has proven to be very effective. Previous items A2.a and A2.b when implemented will improve the efficiency of the notification system and reduce the workload of ATC.

- C.7 Maintain and enforce existing regulation of nighttime engine maintenance runups. Review current regulation to develop strengthened program of enforcement for adoption.

Existing regulations regarding nighttime engine maintenance runups were assessed and found adequate if properly enforced. Sufficient manpower and monitoring sites now exist to enforce this regulation.

Approved. The city has determined that adequate regulations and hardware exists to enforce the current airport regulation of no runups between 11 p.m. and 7 a.m. The city advised that this measure is within the management authority of the Department of Airports and enforcement will be handled the same as other violations of lease agreements which require adherence to airport operating rules.

- C.8 Adopt a helicopter noise abatement policy establishing FAA approved approach and departure routes, minimum approach and departure altitudes and other measures as are necessary to mitigate potential noise impacts associated with scheduled helicopter operations.

The Los Angeles Board of Airport Commissioners adopted Resolution No. 13942 on October 5, 1983. This policy establishes to the extent of the Board's authority, provisions governing the operation of scheduled helicopters arriving and departing LAX.

No Action Required at this Time. This relates to flight procedures for the purpose of section 104(b) of the Aviation Safety and Noise Abatement Act of 1979 and will receive further FAA review before approval or disapproval. This measure as written, would have the FAA establish operational controls on helicopters in flight that have not received adequate review. Cooperation with local residents, operators, and airport officials has long been practiced by field and Regional Office air traffic personnel. FAA will continue to work with all parties concerned to realize the maximum benefits attainable while balancing the needs of those parties.

- C.9 The Department of Airports [will] continue to pursue the development of a capacity control regulation.

The capacity control regulation is needed to manage the growth of operations as the 40 MAP limitation is approached. This regulation would either control operations directly or indirectly through associated environmental impacts. This type of regulatory approach would benefit the entire noise compatibility area.

Disapproved pending submission to FAA under Part 150 of a specific capacity control regulation proposal in sufficient detail to permit an informed analysis under section 104(b) of the Aviation Safety and Noise Abatement Act of 1979.

D. Capital Improvements Projects

- D.1 Prepare a detailed evaluation of the noise reduction benefits produced by a 2000-foot westerly extension of the Runways 25/7 L&R together with a 2600-foot take-off threshold relocation for a total landing threshold displacement of 4600 feet (short range). Reverse thrust noise impact will be emphasized. Engineering feasibility and environmental assessment studies will also be included during the short range (1984-86) implementation phase.

Approved. This measure would produce a definitive study of the costs and benefits associated with a westerly extension of the south runways combined with landing threshold changes at the east ends. Noise exposure analysis indicates that this measure could have significant beneficial results, but reverse thrust noise impact as well as the cost, in both dollars and airfield efficiency, have not been fully addressed.

OFF-AIRPORT ACTIONS

E. Residential Acoustical Insulation

- E.1a Undertake initial acoustical insulation program using representative housing sample in terms of both construction type and predominant noise exposure within the projected 1987 CNEL contour set, in the short range implementation phase and monitor effectiveness.

Mitigation of sideline and takeoff noise impacts in the communities of El Segundo and Westchester is a key objective of the initial FAR Part 150 Noise Compatibility Program for LAX. Because these communities are comprised of sound, high quality residential neighborhoods, land use conversion is not considered a viable option. Instead, it is recommended that an acoustical insulation program be implemented, with first priority funding directed into those neighborhoods most heavily noise impacted (70 CNEL+). Fully implemented, this program will encompass over 4,200 dwelling units, and achieve a 16 percent reduction in the total number of incompatible residential units within the projected airport noise impact area.

Approved. This is the first phase of an acoustical treatment program for noise-impacted communities. Twenty dwelling units will be treated under this project to formulate better estimates of costs and to develop project management techniques applicable to future projects.

- E.1b Expand voluntary residential acoustical insulation program to Los Angeles City and El Segundo Neighborhoods exposed to CNEL levels of 70 dBA or greater during the remainder of the short range (1984-86) implementation phase.

Approved. This measure is a companion to Item E.1a, above.

- E.1c Expand voluntary residential acoustical insulation program to neighborhoods within the projected target CNEL levels of 65 dBA in the cities of Los Angeles, El Segundo, Inglewood, and unincorporated Los Angeles County areas of Del Aire and Lennox during the remainder of the medium range (1986-90) implementation phase and the long range (1990+) as necessary.

An expanded acoustical insulation program in sound residential neighborhoods located within the 65 to 70 CNEL contour is recommended as the only off airport noise mitigation alternative. This program will involve both voluntary insulation of existing units, and mandatory insulation of proposed new residential units as a condition of development. Since nearly 13,000 dwelling units fall within this noise impact area, the recommended program will necessarily involve a long term, phased implementation effort.

Approved. This is a further expansion of the two areas immediately above.

F. Actions and Projects to Reduce Incompatible Land Use

- F.1 Redevelopment by the city of Inglewood in the Century and La Cienega Redevelopment Districts to airport compatible land uses. Action to commence in the short range and continue until completed. The recommended program is intended to support and accelerate efforts by the city of Inglewood to recycle portions of the La Cienega and Century Redevelopment Districts to airport compatible land uses. Once implemented, nearly 2540 dwelling units will be removed from the projected airport noise impact area.

Approved. This project, although large in scope, falls within the concept of those voluntary measures described in FAA Advisory Circular 150/5020-1, sections 3 and 4. The city of Inglewood has advised that it intends to initiate redevelopment in certain noncompatible high noise areas that have good potential for the introduction of compatible uses. The first steps in this project have been accomplished, and the city is now ready to implement the first acquisition and clearance measures. It should be emphasized that any relocation resulting from use of Federal funds will require the city to satisfy the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646). This measure, if fully implemented, could remove approximately 2,540 dwelling units from noncompatible use. The city has determined that it has the authority to initiate these actions, although some steps

would involve state and/or Federal concurrence, particularly when outside funds are used. Approval of this concept within this NCP should not be construed as a commitment to future Federal funding under the AIP or successor legislation. (See FAA comment under item G.1f, below.) Local, state, and other Federal agencies may assist with such projects according to their authority and funding capability provided that the sponsoring jurisdiction develops satisfactory plans proposals, and funding necessary for the local matching share.

- F.2 Rezoning actions by the city of Inglewood in specific areas to foster development of airport compatible uses and to preclude the development of noise sensitive land uses within the established noise impact area. This action would occur in the short range.

Approved. The city of Inglewood has advised that it proposes to rezone existing neighborhoods to encourage current or subsequent land owners to convert properties to compatible uses. If fully implemented, 440 dwelling units could be removed from noise exposure in excess of 65 CNEL. The city has advised that it has the necessary authority to implement this action.

- F.3a Development and adoption of a Revitalization Strategy and Implementation Program by Los Angeles County for the unincorporated Los Angeles County Lennox area to encourage development of airport compatible land uses (short range).

Approved. This measure is similar to that described under item F.1, above, except that the target area is under jurisdiction of Los Angeles County. FAA comments under items F.1 and G.1f are also applicable to this item. This project has the potential to benefit residents in approximately 3,900 dwelling units exposed to more than 65 CNEL (Ldn).

- F.3b Amendment of the Countywide General Plan to reflect the Lennox Revitalization Strategy and initiate implementation programs (medium range and long range).

Approved. Los Angeles County intends to revise the county plan in accordance with the results of Item F.3, above, and to implement certain actions within the plan. This measure can be initiated under existing county authority although state and/or Federal concurrence may be required for certain steps.

- F.3c Initiation of rezoning actions by the County of Los Angeles as necessary, to support the Lennox Revitalization Strategy and Implementation Program.

Approved. The city has identified that the proposed zoning changes are within the authority of Los Angeles County. They require no Federal action or concurrence.

- F.4a Preparation and adoption by the city of Los Angeles of amendments to the Westchester/Playa del Rey District Plan to foster development of airport compatible uses in areas adjacent to the north runway threshold. (Short range 1984-86)

Approved. The city has advised that the proposed plan revisions are within the authority of the city of Los Angeles. They require no Federal action or concurrence.

- F.4b Rezoning actions by the city of Los Angeles to support the District Plan amendments in fostering airport compatible uses in areas adjacent to the north runway thresholds during the medium range (1986-90) implementation phase.

Approved. The proposed zoning changes are to be consistent with the plan changes adopted as a result of item F.4a, above. The city has advised that it has the necessary authority to initiate such changes, and no Federal action or concurrence is required.

- F.5 Develop and adopt local plans and ordinances as necessary to regulate the establishment and operation of new helicopter landing facilities within the cities of Los Angeles, El Segundo, Inglewood, and Los Angeles County, in the short range with ongoing monitoring and implementation.

Disapproved for purposes of the Los Angeles International Airport Part 150 Program. This proposal involves the establishment and operation of new helicopter landing facilities in communities north and south of LAX. It does not involve LAX itself nor is there evidence that it would reduce noncompatible uses within the area of LAX's noise impact. Further, FAR Part 150 is not applicable to airports used exclusively by helicopters (reference 150.3). Therefore, this recommendation is inappropriate for FAA's Part 150 review. However, outside the Part 150 context, the FAA is willing to cooperate with and advise communities with respect to mitigating noise impacts in heliport siting and operation.

- F.6 Adoption of a comprehensive Airport Land Use Compatibility Plan for LAX and environs reflecting the provisions of the FAR Part 150 action program by Los Angeles County Regional Planning Commission acting as the Airport Land Use Commission as mandated by Assembly Bill No. 2920 and codified as Chapter 1041 (short range 1984-86).

Approved. Los Angeles County is designated by state law as the agency responsible for developing airport land use compatibility plans for the areas surrounding each airport in the county. This item emphasizes that responsibility and establishes the NCP as the basis for much of the plan. No Federal action or concurrence, beyond the approval or disapproval of this NCP, is required to implement this action.

- F.7 Evaluate and construct sound attenuation barriers in appropriate locations adjacent to residential areas within the city of El Segundo. The evaluation would occur in the short range with construction to occur during the remainder of that phase and into the medium range.

Approved. This measure would evaluate the feasibility and the expected benefits of a noise barrier to protect certain portions of El Segundo south of LAX. The barrier would be constructed if the evaluation resulted in a positive recommendation.

G. Noise Compatibility Program Implementation and Funding

- G.1a The Airport Commission will provide the local share of the grant application for initial implementation funds for specific noise compatibility program elements as indicated, if the local jurisdictions will agree to reimburse the Department of Airports, at the time more permanent local share provisions are arranged.

No Action Required. This is not a recommendation. This is factual information on local funding arrangements in accordance with Part 150.23(e) (8).

- G.1b Evaluate legality and feasibility of amending Federal law to allow the airport proprietor to implement a passenger facility charge which as a condition must have FAA and Congressional approval during the short range (1984-86) implementation phase to provide for the local share of noise compatibility program implementation funding.

Approved. Current legislation precludes the establishment by local airport authorities of certain charges on air passengers. This NCP item expresses the intent of the Board of Airport Commissioners to study and evaluate ways in which such charges can be levied. The proposal recognizes that new Federal legislation would be required to establish such authority at a local level. This approval does not endorse this legislative proposal. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

G.1c Implement passenger facility charge during the short range (1984-86).

Disapproved. The suggested facility charge is that to be studied under item G.1b, above. Inasmuch as no proposal is currently under study, and Federal law prohibits certain charges of this type, this recommendation cannot be approved at this time. This does not foreclose the possibility of future approval under the proper circumstances.

G.1d Evaluate legality and feasibility of additional NCP implementation funding sources including the following to provide the local share of noise compatibility program funding:

- Amendment of AIP Program through Federal legislation to provide 100 percent financing for approved noise compatibility program elements.
- Conversion of a portion of the 8 percent ticket tax to a levy permitting its applicability as a debt service fund enabling the issuance of special bonds for the specific purpose of implementing an approved element of the noise compatibility program.
- Application of "In-Kind Services" by local authorities.
- Provision of the local share should be by the local agency having jurisdiction.

Approved. As in item G.1b, above, this measure recommends local study to develop alternatives for reducing the financial burden on local communities for NCP projects. Approval of this study item does not constitute approval of any specific funding concept. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

G.1e The Department of Airports negotiate a contract with its Financial Consultant to provide an additional review of the possibilities existing for other alternative financing methods that might be used to accomplish the off-airport redevelopment and insulation actions included in the noise compatibility program.

Approved. This measure recommends further study of local initiatives which could be used to generate revenue for the local matching funds in AIP grants. Approval simply acknowledges that additional funding sources to carry out a noise program would contribute to the reduction of noncompatible uses.

G.1f The Airport Commissioners affirm that in making the FAR Part 150 grant application for initial implementation funds for specific noise compatibility program elements as indicated, they do not intend to make further commitments to the program until the first phases under the initial grant have been completed and feasibility agreed upon.

Further, appropriate funding mechanisms must be in place or properly authorized, in order that all concerned may understand how any future elements of the program may be adequately financed.

No Action Required. This is not a recommendation. This is factual information on local funding arrangements in accordance with Part 150.23(e) (8).

It must be further understood that the Federal Aviation Administration agrees to and supports all elements of the Noise Compatibility Program as being an appropriate element of a Part 150 Program and eligible for the full support of that agency.

Disapproved. This item would establish an unacceptable condition in requiring FAA to agree to the eligibility of and support for all elements of the NCP. FAA approval of program elements within the context of this NCP can only be interpreted as a determination that the approved items if implemented would reduce existing noncompatible uses and prevent additional noncompatible uses, will not impose undue burden on interstate or foreign commerce, and are not unjustly or unreasonably discriminatory. FAR 150.5(b) states that approval of an NCP "neither represents a commitment by the FAA to support or financially assist in the implementation of the program, nor does it determine that all measures covered by the program are eligible for grant-in-aid funding from the FAA."

B. Noise Compatibility Program

Determinations of acceptability in this section are primarily based on reference to the Phase III, Volume I Report. Additional detail may be found in Volumes II and III of Phase III, as well as in the earlier reports in Phases I and II. As used herein, the term "accepted" means accepted for FAA review under Part 150. Approval and disapproval of specific program items are discussed in the record of approval.

Note

1. Noise Exposure Map. Accepted. The Los Angeles International Airport (LAX) noise exposure map has been developed and submitted for FAA review. The map was accepted on October 16, 1984.
2. Conformance with FAR Part 150, Appendix B. Accepted. The city has demonstrated that the issues and alternatives addressed in section B150.5 and B150.7 were considered during program formulation and feasible measures were incorporated as NCP elements. Refer to Noise Control and Land Use Compatibility Study, Phase III, Volume II.
3. Description of Consultation. Accepted. During Phase III of the study (NCP development), all Steering Committee meetings were announced publicly and time was provided for comments or questions by the public. Refer to page 7 of the Phase III, Volume I Report.
4. Adequate Opportunity for Interested Persons to Submit Views, Data, and Comments. Accepted. The city has demonstrated that broad public involvement was encouraged through publicized workshop sessions, which briefed all interested parties on the purpose, workscope, and progress made in plan/program formulation. In addition to these public forums, meetings of the Steering Committee and the Board of Airport Commissioners were open to receive public input on the plan and program. The composition of the technical committees, with representatives of local units of government, provided ample opportunity for those jurisdictions to shape program recommendations throughout the study. This is more fully discussed in the Phase III, Volume I Report, and in the Phase II Report.
5. Consultation with local Agencies and Citizens. Accepted. As indicated in items 3 and 4, above, the city has advised that local agencies and citizen groups were given ample opportunity to participate in the formulation of issues and the recommended mitigation actions.
6. Consultation with Air Carriers, FBO's, and Others. Accepted. Air Carriers were represented by the Air Transport Association (ATA) and pilots by the Airline Pilots Association. Other airport users were periodically apprised of the study's progress through newsletters and meetings with airport management. See Phase III, Volume I, page 7.

7. Consultation with FAA and Other Federal Agencies. Accepted. Lines of communication were established by the city with the FAA, both in the Regional Airports Division and the LAX Tower. The Civil Aeronautics Board participated in Steering Committee meetings until the local office was closed. The recommended program does not affect other Federal agencies insofar as their responsibilities are concerned.
8. Summary of Consultation Comments and Operator's Responses. Accepted. Comments received during the study helped shape the study and, therefore, do not remain as comments requiring explicit responses by the city. The summary of comments and responses are presented in the Phase III, Volume I Report. An additional comment was received from ALPA after publication of the reports. The primary objection raised was the way in which a certain noise mitigation procedure is implemented at LAX, and the concern that this procedure would be expanded without due regard for safety. The joint technical committee discussed this with the ALPA representative and it was agreed that FAA approval and implementation would not occur at this time. See exhibit D, attachment D-1; Phase III, Volume II; and item B.1 of the Record of Approval.
9. Discussion of Options Recommended and Rejected by the City (section 150.23(d)(2)). Accepted. These alternatives are discussed in the context of operational scenarios and issues developed through workshops with the community. (Refer to Phase III, Volumes I and II, and Phase II Reports.) Certain alternatives listed in section B150.7(b)(2), were not seriously considered by the city because they are inappropriate or unreasonable with respect to LAX (e.g., curfews, capacity limits based on noisiness of aircraft types, and noise based landing fees).
10. Recommended NCP. Accepted. The submittal by the city includes a compilation of action items which make up its recommended noise compatibility program. The program actions are more fully described in the Phase III report. These actions fall under the categories of on-airport and off-airport actions, and are further subdivided under the headings of airport noise monitoring, management, and coordination; flight procedures changes; noise limits, use restrictions, and technological advances; capital improvements; residential acoustical insulation; reduction of incompatible land use; and NCP implementation and funding.
11. Relative and Overall Effectiveness of NCP Options. Accepted. The effects of the operational scenario studies are described in the Phase III, Volume II Report, Section II, and are summarized in Table IV-2 (page 2-16). Subsequent to the publication of this report, additional scenarios were suggested for study. These are discussed in the Phase III, Volume I Report, and a summary comparison is presented in figure 2, page 12, of that report.
12. Anticipated Noise Reduction Based on Implementation of Recommendations. Accepted. The anticipated noise reduction benefits are outlined and summarized in Volume I of the Phase III Report (page 12). The net result of the proposed actions, should they all be implemented, is reduction of the area within the 65 Ldn (CNEL) contour by 0.53 square miles (339 acres). (This does not include

the potential effect of extending the southern runway pair and displacing landing thresholds on Runways 25R and 25L.) Land use and acoustical insulation actions, combined with the reduced 65 Ldn contour are expected to reduce the number of noncompatible dwellings in noncompatible areas by 3,495 units. See exhibit A, page 5, and exhibit D, pages 43-45.

13. Critical Government Actions and NCP Funding. Accepted. Actions required by local, state, and Federal agencies are noted, where appropriate, in conjunction with each recommended action. In most cases, the local jurisdictions have the statutory authority to implement noise compatibility actions of interest to them. The NCP also recommends actions to be taken by the State of California and the Federal Government. These initiatives, if adopted, would contribute to improved compatibility around LAX, but the NCP is not dependent on them. Initial program funding from the Aviation Trust Fund through the Airport Improvement Program is anticipated by the city. Long term funding mechanisms are the subject of one of the NCP items to be studied by the Airport/Community Forum. See the Record of Approval, below.
14. Persons/Entities Responsible for NCP Implementation. Accepted. Responsibilities for implementing actions in the NCP are clearly assigned by the NCP and supporting documentation. Airport operational actions generally require the cooperation of two or more entities (e.g., airport and air carriers, pilots and FAA). Responsibility for zoning, land use, and participation in or management of acoustical insulation programs has been described by the city for jurisdictions surrounding the airport. See exhibit D, pages 28-35.
15. Options Available to Airport Operator. Accepted. The NCP specifies those actions which can or will be implemented by the Department of Airports.
16. Options Available to Local Jurisdictions/Agencies. Accepted. The NCP specifies those actions which the city advises can or will be implemented by units of local government.
17. Options Requiring FAA Review and Concurrence. Accepted. The NCP specifies those actions which would involve FAA concurrence or cooperation. These actions, whether operational, technical or administrative, are discretionary with FAA.
18. Effect of Recommended Actions on the Airport Layout Plan, Airport Master Plan, and System Plan. Accepted. The NCP is consistent with the ALP. In addition, the city has advised that it is consistent with the regional planning work of the Southern California Association of Governments and the State of California, and with other plans covering the study area.
19. Time Period Covered by the NCP. Accepted. The recommended NCP includes actions to be implemented immediately and through the years beyond 1990.

20. **Implementation Schedule. Accepted.** The NCP places each action item into short range (through 1986), medium range (1986-1990), or long range (beyond 1990) time periods. These were established by perceived city priorities and in some cases, the need for certain phasing or prerequisite steps. Items A.2a, A.2b, A.3, D.1, E.1a, E.1b, F.1, F.3a, and F.7, are the subject of a grant application at this time. See pages 13-27 of exhibit D.

21. **Periodic NCP Update. Accepted.** The heart of this requirement is satisfied by the establishment of the Airport/Community Forum, comprised of officials representing adjacent jurisdictions and other interested parties. The city has determined that this Forum will monitor progress of NCP implementation, evaluate effectiveness of implemented measures, and propose revisions to the NCP when appropriate. The Forum was formally established by the ANCLUC Steering Committee on August 17, 1984. See exhibit D, attachment D-2.

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APPENDIX F

Public Involvement and Outreach

F.1 Public Workshops – Round 1

The following sections contain meeting notices, handouts, and presentation boards associated with the May 12, 2014 and May 13, 2014 Public Workshops conducted for the Los Angeles International Airport FAR Part 150 Noise Exposure Map Update. Information regarding the May 2014 public workshops excluding the newspaper notices described below has been uploaded to the website established for the Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Update:

<http://www.lawa.org/LAXPart150.aspx?id=8526>

F.1.1 Meeting Notices and Advertisements

The May 2014 public workshops were advertised in the Los Angeles Times and The Argonaut. Those advertisements and proof of publication statements received from those newspapers are included in this Appendix. Members of the LAX/Community Noise Roundtable and other interested stakeholders received an e-mail notice regarding the May 2014 public workshops on May 2, 2014. The stakeholders included elected officials, community groups, aircraft operators, city planning agencies, and the media. LAWA issued a press release about the public workshops on May 6, 2014. The e-mail notice and press release are also included in this Appendix.

F.1.2 Handouts and Sign-in Sheet

Copies of the meeting handouts (English and Spanish versions) that were developed for the May 2014 public workshops are included in this Appendix. Also included in this Appendix are the completed meeting sign-in sheets for the May 2014 public workshops.

F.1.3 Presentation Boards

Presentation boards from the May 2014 public workshops are presented after the meeting sign-in sheets.

F.2 Public Workshops - Round 2

A second round of public workshops for the Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Update was held on May 11, 2015 and May 12, 2015.

F.2.1 Meeting Notices and Advertisements

The May 2015 public workshops were advertised in the Los Angeles Times and The Daily Breeze. Those advertisements and proof of publication statements received from those newspapers are included in this Appendix. Members of the LAX/Community Noise Roundtable and other interested stakeholders received an e-mail notice regarding the May 2015 public workshops on May 2, 2014. The stakeholders included elected officials, community groups, aircraft operators, city planning agencies, and the media.

F.2.2 Handouts and Sign-in Sheet

The meeting handouts (English and Spanish versions) that were developed for the May 2015 public workshops are included in this Appendix. Also included in this Appendix are the completed meeting sign-in sheets for the May 2015 public workshops.

F.2.3 Presentation Boards

Presentation boards from the May 2015 public workshops are presented after the meeting sign-in sheets.

F.3 Public Review - Draft Noise Exposure Map Report

The Draft Noise Exposure Map Report was uploaded to the project website on May 9, 2015 and was available for public review at five public libraries in the vicinity of LAX. LAWA accepted comments regarding the Draft Noise Exposure Map Report between May 9, 2015 and June 9, 2015. The notice regarding the availability of the Draft Noise Exposure Map Report for public review appears on the project website and is included in this Appendix.

F.4 LAX/Community Noise Roundtable Briefings

The LAX/Community Noise Roundtable membership includes local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA, the airlines, and LAWA Management. LAX/Community Noise Roundtable briefings occurred on March 12, 2014; May 14, 2014; and May 13, 2015. MS PowerPoint slides developed for the LAX/Community Roundtable briefings are provided in this Appendix.

F.5 FAA ATCT Personnel Briefings

A briefing meeting was held with the FAA's LAX ATCT Support Manager (Rolan Morel) on March 11, 2015. MS PowerPoint slides developed for the FAA ATCT briefing are provided in this Appendix.

F.6 Agencies and Individuals Consulted during the Noise Exposure Map Update

More than 1,800 individuals were contacted during the development of the LAX Noise Exposure Maps and were invited to participate in public workshops and to provide comments regarding the May 2015 Draft Noise Exposure Map Report. The majority of these individuals, over 1,700, were contacted using an email only distribution list originally created by LAWA as the LAX Master Plan Stakeholders Distribution list. This list has since been amended through the years and used to notify stakeholders for various LAWA projects requiring public outreach. A subset of the agencies and individuals that were consulted during the update of the LAX Noise Exposure Maps and that were invited to submit comments regarding the Draft Noise Exposure Map Report are listed at the end of this Appendix.

Proof of Publication

Los Angeles Times

STATE OF CALIFORNIA
County of Los Angeles

I am a citizen of the United States, and a resident of the county aforesaid; I am over the age of eighteen years; and I am not a party to or interested in the notice published. I am the chief legal advertising clerk of the publisher of the LOS ANGELES TIME a newspaper of general circulation, printed and published daily in the City of Los Angeles, County of Los Angeles. The LOS ANGELES TIMES has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of May 21, 1952, Case No. 598,599. The notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

May 1,

all in the year 2014

I certify (or declare) under penalty of perjury that the foregoing is true and correct

Dated at Los Angeles, California, this

1st day of May 2014



Signature

2615483

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San Francisco, Oakland, San Jose, Santa Rosa, and Sacramento.
Special Services Available in Phoenix

NOTICE OF PUBLIC INFORMATION WORKSHOPS TO INTRODUCE THE LOS ANGELES INTERNATIONAL AIRPORT FEDERAL AVIATION REGULATION (FAR) PART 150 NOISE EXPOSURE MAP UPDATE STUDY

Los Angeles World Airports (LAWA) will be hosting two (2) public information workshops in May 2014 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. The workshops will include guided displays that will present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, and methods used to quantify aircraft noise exposure. A second round of public information workshops will be conducted early next year to provide information regarding the primary products of the FAR Part 150 Noise Exposure Map Update Study -- the 2015 and 2020 Noise Exposure Maps. Information presented at each workshop listed below will be the same. Residents need only attend one workshop to learn about the study and offer input. Each workshop will be held in an "open house" format from 6 p.m. to 8 p.m. on the dates listed below. No formal presentation will be given in order to provide the public with the maximum opportunity for one-on-one interaction and sharing of information and concerns. You may attend the workshop at any time during the two-hour open house.

Monday, May 12, 2014
- **Jessie Owens**
Community Regional Park Gymnasium
9651 S. Western Avenue
Los Angeles, CA 90047

Tuesday, May 13, 2014 - **Flight Path Learning Center & Museum**
6661 West Imperial Highway
Los Angeles, CA 90045

For more information, please visit the project website at: <http://www.lawa.org/welcomelAX.aspx>.

Anyone needing special accommodations under the Americans with Disabilities Act of 1990 should contact Larry Rolon, LAWA ADA Coordinator, at (424) 646-5005 at least 72 hours prior to the meeting. Anyone with questions about the project should contact Ms. Kathryn Pantoja at (424) 646-6501.

Asistencia en español será disponible en las reuniones.

5/1/14



PROOF OF PUBLICATION
(2015.5 C.C.P.)

Proof of Publication of

STATE OF CALIFORNIA
County of Los Angeles

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Argonaut, a newspaper of general circulation, printed and published weekly in the County of Los Angeles, State of California, under the date of March 7, 1973, modified October 5, 1976, Case Number C47170; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

All in the year 2014

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at 15th Day of April, 2014

California, Los Angeles

Signature:

Tiyana Dennis

NOTICE OF PUBLIC INFORMATION WORKSHOPS TO INTRODUCE THE LOS ANGELES INTERNATIONAL AIRPORT FEDERAL AVIATION REGULATION (FAR) PART 150 NOISE EXPOSURE MAP UPDATE STUDY

Los Angeles World Airports (LAWA) will be hosting two (2) public information workshops in May 2014 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. The workshops will include guided displays that will present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, and methods used to quantify aircraft noise exposure. A second round of public information workshops will be conducted early next year to provide information regarding the primary products of the FAR Part 150 Noise Exposure Map Update Study - the 2015 and 2020 Noise Exposure Maps.

Information presented at each workshop listed below will be the same. Residents need only attend one workshop to learn about the study and offer input. Each workshop will be held in an "open house" format from **6 p.m. to 8 p.m.** on the dates listed below. **No formal presentation will be given** in order to provide the public with the maximum opportunity for one-on-one interaction and sharing of information and concerns. You may attend the workshop at any time during the two-hour open house.

- **Monday, May 12, 2014 - Jessie Owens Community Regional Park Gymnasium**
9651 S. Western Avenue
Los Angeles, CA 90047
- **Tuesday, May 13, 2014 - Flight Path Learning Center & Museum**
6661 West Imperial Highway
Los Angeles, CA 90045

For more information, please visit the project website at: <http://www.lawa.org/welcomeLAX.aspx>.

Anyone needing special accommodations under the Americans with Disabilities Act of 1990 should contact Larry Rolon, LAWA ADA Coordinator, at (424) 646-5005 at least 72 hours prior to the meeting. Anyone with questions about the project should contact Ms. Kathryn Pantoja at (424) 646-6501.

Asistencia en español estará disponible en las reuniones.

5/1/14
CNS-2615489#
THE ARGONAUT



Located at 5355 McConnell Ave.,
Los Angeles, CA 90066
(310) 822-1629 x 103



From: CHAN, DAVID [mailto:DCHAN@lawa.org]
Sent: Friday, May 02, 2014 1:05 PM
Subject: Public Workshops for LAX Part 150 Noise Exposure Map Update

NOTICE OF PUBLIC INFORMATION WORKSHOPS
To Introduce the Los Angeles International Airport Federal Aviation Regulation
(FAR) Part 150 Noise Exposure Map Update Study

Los Angeles World Airports (LAWA) will be hosting two (2) public information workshops in May 2014 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. The workshops will include guided displays that will present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, and methods used to quantify aircraft noise exposure. A second round of public information workshops will be conducted early next year to provide information regarding the primary products of the FAR Part 150 Noise Exposure Map Update Study – the 2015 and 2020 Noise Exposure Maps.

Information presented at each workshop listed below will be the same. Residents need only attend one workshop to learn about the study and offer input. Each workshop will be held in an **“open house”** format from **6 p.m. to 8 p.m.** on the dates listed below. No formal presentation will be given in order to provide the public with the maximum opportunity for one-on-one interaction and sharing of information and concerns. You may attend the workshop at any time during the two-hour open house.

- **Monday, May 12, 2014 – Jessie Owens Community Regional Park Gymnasium**
9651 S. Western Avenue
Los Angeles, CA 90047
- **Tuesday, May 13, 2014 – Flight Path Learning Center & Museum**
6661 West Imperial Highway
Los Angeles, CA 90045

For more information, please visit the project website at: <http://www.lawa.org/LAXPart150.aspx>

Anyone needing special accommodations under the Americans with Disabilities Act of 1990 should contact Larry Rolon, LAWA ADA Coordinator, at (424) 646-5005 at least 72 hours prior to the meeting. Anyone with questions about the project should contact Ms. Kathryn Pantoja at (424) 646-6501.

CONTACT: Marshall Lowe
(424) 646-5260

**PUBLIC WORKSHOPS SET TO PROVIDE INFORMATION
ON NOISE EXPOSURE MAP UPDATE STUDY AT LOS ANGELES INTERNATIONAL AIRPORT**

(Los Angeles, California – May 6, 2014) Los Angeles World Airports (LAWA) is hosting public information workshops on May 12 and 13, 2014 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study process for Los Angeles International Airport (LAX).

The two workshops will be held from 6 to 8 p.m. at the following locations:

- Monday, May 12, 2014 – Jesse Owens Community Regional Park Gymnasium, 9651 S. Western Avenue, Los Angeles, CA 90047
- Tuesday, May 13, 2014 – Flight Path Museum and Learning Center, 6661 West Imperial Highway, Los Angeles, CA 90045

Updating the Noise Exposure Maps for LAX is a key step in local jurisdictions being able to apply for federal funding for sound insulation treatment of homes that are within LAX's noise impact area, airport officials said.

"These public workshops will introduce the community to the FAR Part 150 study process as well as allow residents to ask questions of our staff and members of the consultant team," said Scott Tatro, LAWA environmental services manager. "Public input is a critical component of the process."

The workshops will include guided displays that present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, and methods used to determine aircraft noise exposure.

Information presented at each workshop will be the same. Residents need only attend one workshop to learn about the study and offer input.

-more-

Public Workshops ... Page 2 of 2

Each workshop will be held using an “open house” format. No formal presentation will be given in order to provide the public with the maximum opportunity for one-on-one interaction and sharing of information and concerns. Visitors may attend a workshop at any time during the two-hour open house.

For more information, please visit the project website at: <http://www.lawa.org/LAXPart150.aspx>. Anyone with questions about the project should contact Kathryn Pantoja, LAWA environmental affairs officer, at (424) 646-6501.

A second round of public information workshops will be conducted early next year to provide information regarding the primary products of the FAR Part 150 Noise Exposure Map Update Study – the 2015 and 2020 Noise Exposure Maps.

As a covered entity under Title II of the Americans with Disabilities Act (ADA), the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services, and activities. Alternative formats in large print, braille, audio, and other forms (if possible) will be provided upon request.

Anyone needing special accommodations under ADA guidelines should contact Larry Rolon, LAWA ADA Coordinator, at (424) 646-5005 at least 72 hours prior to the meeting.

#####

LAX FAR Part 150 Noise Exposure Map Update

What is a FAR Part 150 Study?

Federal Aviation Regulations (FAR) Part 150, Airport Noise Compatibility Planning, was issued by the Federal Aviation Administration (FAA) as a final rule in January 1985. FAR Part 150 sets forth the methodology and procedures to be followed when preparing aircraft noise exposure maps and developing airport /airport environs land use compatibility programs.

FAR Part 150 studies typically consist of two primary components: (1) the Noise Exposure Map (NEM) report which contains detailed information regarding existing and 5-year future airport/aircraft noise exposure patterns, and (2) the Noise Compatibility Program (NCP) which includes descriptions and an evaluation of noise abatement and noise mitigation options/programs applicable to an airport.

Has LAWA prepared a FAR Part 150 Study for Los Angeles International Airport (LAX)?

Los Angeles World Airports (LAWA) has a long history of implementing noise abatement and mitigation measures at LAX dating back to the late 1950s. In 1981, the Los Angeles City Department of Airports in conjunction with the Los Angeles County Department of Regional Planning and the cities of El Segundo, Hawthorne, and Inglewood undertook an Airport Noise and Land Use Compatibility (ANCLUC) Study to quantify LAX's aircraft noise exposure and to identify measures to mitigate aircraft noise impacts on the noise sensitive land uses surrounding LAX. The ANCLUC study process was the predecessor to the FAR Part 150 process. The LAX ANCLUC process was completed in June 1984. The LAX Noise Exposure Map (NEM) included in the ANCLUC and submitted under FAR Part 150 was accepted by the FAA on October 16, 1984. On April 13, 1985, the FAA issued a record of approval approving 28 of the recommended measures in the LAX NCP.

Why is LAWA updating the FAR Part 150 NEMs for LAX?

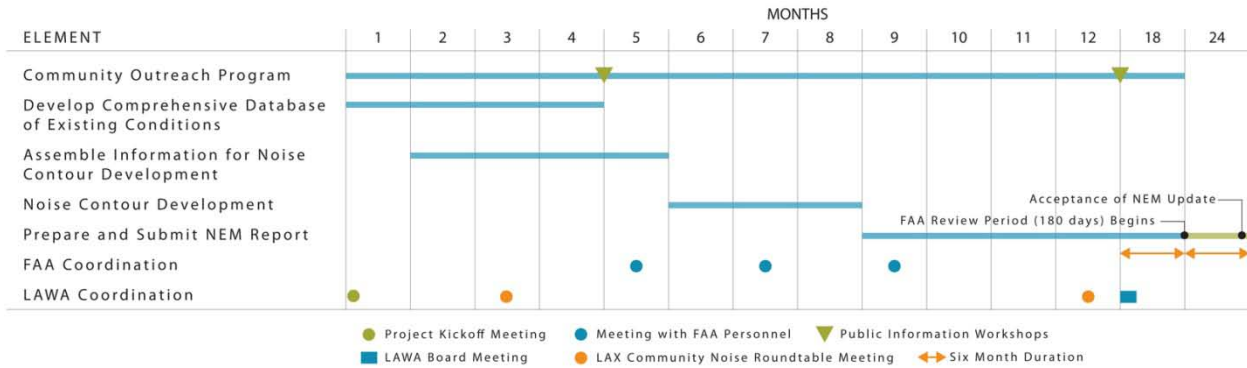
LAWA's goal for this project is to obtain the FAA's acceptance of the new 2015 and 2020 NEMs to ensure that ongoing noise mitigation programs managed by the Cities of Inglewood and El Segundo, and the County of Los Angeles can continue to receive FAA grant funding.

What will LAWA produce during the LAX FAR Part 150 NEM Update?

The LAX FAR Part 150 NEM Update must be prepared in accordance with guidance provided in the FAR Part 150 regulations and the FAR Part 150 NEM Checklist developed by the FAA. As part of the LAX FAR Part 150 NEM Update, LAWA and its consultants will quantify existing (2014/2015) and future (2020) aircraft noise exposure levels in the vicinity of LAX. LAWA will also develop supporting documentation explaining the process used to calculate existing and future aircraft noise levels. The LAX NEM Report update will provide LAWA and the FAA with a new set of NEMs which can be used to identify future noise mitigation needs. During the LAX NEM Report Update, LAWA will not develop or recommend noise abatement or noise mitigation measures, determine the boundaries for future sound insulation programs at LAX, or identify properties that are eligible for sound insulation.

When will the LAX FAR Part 150 NEM Update be completed?

The schedule for the LAX FAR Part 150 NEM Update is presented below. LAWA anticipates the updated NEMs will be approved by the FAA by December 2015.



Where can I get more information?

General information, project reports and public workshop materials, including presentation boards, will be uploaded to the project website at <http://www.lawa.org/LAXPart150.aspx>, as they become available.

How can I get involved?

FAR Part 150 encourages the participation of citizens and public agencies. LAWA will be convening two rounds of public information workshops during the preparation of the updated LAX FAR Part 150 NEM Report. Two public information workshops will be held in May 2014 to introduce the LAX FAR Part 150 NEM Update study. We anticipate that additional public information workshops will be convened in early 2015 to present key study findings.

LAWA is interested in hearing from you if aircraft noise is a concern. Your comments regarding the LAX FAR Part 150 NEM Update can be submitted at the public workshops or by (1) email to laxpart150nemupdate@lawa.org or (2) mailing them to LAWA:

FAR Part 150 NEM Update
 Attn: Kathryn Pantoja, Environmental Affairs Officer
 LAWA Environmental Services Division - Noise Management
 P.O. Box 92216
 Los Angeles, CA 90009-2216

LAX FAR Parte 150 Ruido Exposición de actualización de mapas

¿Qué es un Estudio de FAR Parte 150?

Regulaciones Federales de Aviación (FAR) Parte 150, Aeropuerto de Ruido Planificación de compatibilidad, fue emitida por la Administración de Aviación Federal (FAA) como norma definitiva en Enero de 1985. FAR Parte 150 expone la metodología y los procedimientos que deben seguirse en la preparación de los mapas de exposición al ruido de aviones y el desarrollo de aeropuertos / aeropuertos alrededores programas de compatibilidad de uso del suelo.

FAR Parte 150 estudios típicamente consisten de dos componentes principales: (1) el ruido Mapa de Exposición informe (NEM), que contiene información detallada sobre existente y 5 años futuros patrones de exposición al ruido aeropuerto / avión, y, (2) el Programa de Compatibilidad de Ruido (NCP), que incluye descripciones y una evaluación de la reducción del ruido y el ruido de mitigación opciones / programas aplicables a un aeropuerto.

¿LAWA ha preparado el Estudio FAR Parte 150 del Aeropuerto Internacional de Los Ángeles (LAX)?

Los Ángeles World Airports (LAWA) tiene una larga historia de la aplicación de la reducción del ruido y de las medidas de mitigación en LAX que data a los finales de 1950. En 1981, el Departamento de Aeropuertos en conjunto con el Departamento de Planificación Regional del Condado de Los Ángeles y las ciudades de El Segundo, Hawthorne, y la Ciudad de Inglewood Los Ángeles llevó a cabo un estudio de Ruido en Los Aeropuertos y Uso de la Tierra de Compatibilidad (ANCLUC) para cuantificar la exposición al ruido de aviones de LAX e identificar medidas para mitigar el impacto del ruido de aeronaves en tierra sensible ruido utiliza LAX alrededores. El proceso de estudio ANCLUC fue el predecesor del proceso de FAR Parte 150. El proceso de LAX ANCLUC se completó en Junio de 1984. El mapa de ruido exposición de LAX (NEM) incluido en el ANCLUC y presentado bajo Parte 150 fue aceptado por la FAA el 16 de Octubre de 1984. El 13 de Abril de 1985, la FAA emitió un registro de aprobación aprobar 28 de las medidas recomendadas en el LAX NCP.

¿Por qué es la actualización de LAWA las FAR Parte 150 NEM de LAX?

El objetivo de LAWA para este proyecto es obtener la aceptación de la FAA sobre la nueva 2015 y 2020 NEMs para asegurar que los programas de mitigación de ruido administrados por las ciudades de Inglewood y El Segundo, y el Condado de Los Ángeles pueden continúen recibiendo financiación de la FAA.

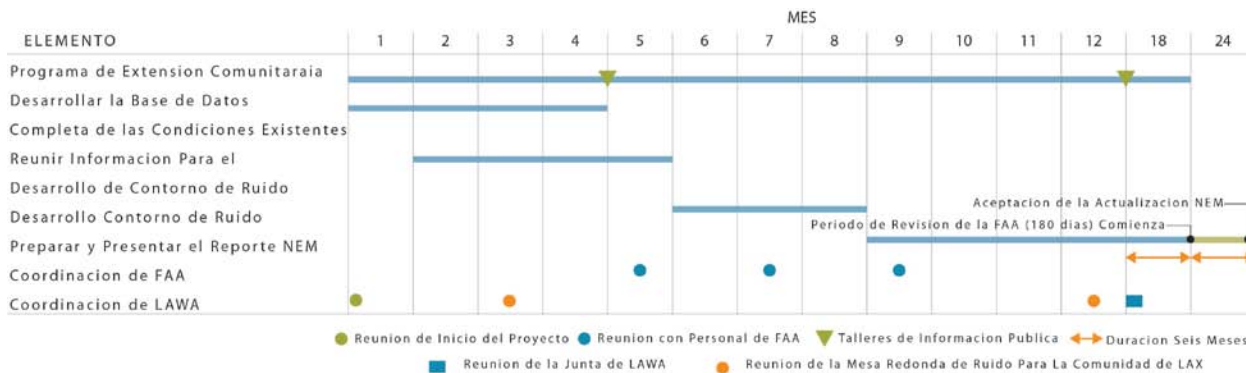
¿Qué va a producir LAWA durante la actualización de NEM LAX FAR Parte 150?

La actualización de NEM LAX FAR Parte 150 debe prepararse de acuerdo con la orientación proporcionada en las FAR Parte 150 reglamentos y la lista de verificación NEM FAR Parte 150 desarrollado por la FAA. Como parte de la actualización de NEM LAX FAR Parte 150, LAWA y sus consultores cuantificar existente (2014/2015) y los niveles de exposición al ruido futuro (2020) las aeronaves en las proximidades de LAX. LAWA también desarrollará la documentación de apoyo para explicar el proceso que se utiliza para calcular los niveles de ruido de las aeronaves existentes y futuras. La actualización de NEM reporte de LAX proporcionará a LAWA y la FAA con un nuevo conjunto de NEMs que se puede utilizar para identificar las necesidades futuras de mitigación del ruido. Durante el NEM LAX Informe de Actualización, LAWA no desarrollar o recomendar

la reducción del ruido o de las medidas de mitigación de ruido, determinar los límites de los programas de aislamiento acústico futuras en LAX, o la identificación de propiedades que son elegibles para el aislamiento acústico.

¿Cuándo se complete la actualización NEM LAX FAR Parte 150?

El horario para la NEM actualización LAX FAR Parte 150 se presenta abajo. LAWA anticipa los NEM actualizados serán aprobados por la FAA antes de Diciembre de 2015.



¿Dónde puedo obtener más información?

Información general, informes de proyectos y materiales para talleres públicos, incluyendo paneles de presentación, se subirán a la página web del proyecto <http://www.lawa.org/LAXPart150.aspx>, a medida que estén disponibles.

¿Cómo puedo participar?

FAR Parte 150 fomenta la participación de los ciudadanos y los organismos públicos. LAWA convocará dos rondas de talleres de información pública durante la preparación del LAX FAR Parte 150 NEM Informe actualizado. Dos talleres de información pública se celebrarán en Mayo de 2014 para presentar el estudio NEM actualización LAX FAR Parte 150. Anticipamos que los talleres de información pública se convocarán a principios de 2015 para presentar las principales conclusiones del estudio.

LAWA está interesado en saber de usted si el ruido de los aviones es una preocupación. Sus observaciones sobre la actualización NEM LAX FAR Parte 150 pueden ser presentadas en los talleres públicos o por (1) correo electrónico a laxpart150nemupdate@lawa.org o (2) correo a LAWA:

FAR Parte 150 NEM actualización
 Attn: Kathryn Pantoja, Environmental Affairs Officer
 LAWA Environmental Services Division - Noise Management
 P.O. Box 92216
 Los Angeles, CA 90009-2216



FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop
 May 12, 2014 (6:00 p.m. - 8:00 p.m.)
 Jessie Owens Community Regional Park Gymnasium

Sign-In Sheet

Name/Organization	Address	Phone or Email
Hazel Ferron	10602 Haas Ne. LA, CA 90047	h.ferroni@yaleco.com
Sonia Frenkel-Pitts - Comm	7815 Cimarron St, Neighborhood Watch LA 90047	sffr23@aol.com
Linda Munnay	1313 W. 84th Place LA 90044	323-758-2817
Bernard + Sandra Washburn	1325 W. 84th Place, LA. 90044	44-2215 323 758-0351
Colonia Wilson	1301 W 84th Pl LA 90044	323-777-2611
Jack Wilson	1301 W 84th Pl LA 90044	323-777-2611
Onas Pulido	1 World Way, LAY, LA, CA 90046	424-646-7114
Joseph McCall	1625 W. 105th St	(303) 767-6966
Allison Jackson	8822 Cimarron St	(309) 4844@aol.com
Anna L'Attina W	4316 W Hillside St, Inglewood 90304	310 629 2176
Paul Thurnau	844 W. 94th St, LA. CA 90044	323 777-6189
Clint Simmons		CSIMMONSPE@GMAIL.COM
Walter Green	9131 J. Wilson Place LA 90047	10green100@aol.com



FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop
 May 12, 2014 (6:00 p.m. – 8:00 p.m.)
 Jessie Owens Community Regional Park Gymnasium

Sign-In Sheet

Name/Organization	Address	Phone or Email
Esther May	10619 4th Ave, Inglewood 90303	(323) 757-2008
Idoriph Edwards	9127 So. Wilton Pl. CA 90047	323-754-5763
Hamilton Cloud	10124 S. Broadway, L.A. 90003	323-757-8900
Lindoo J. NARE	9140 S. Wilton Place, L.A. 90047	323-451-3085
Joyce Alexander	10608 S. 4th Ave, Inglewood 90303	(323) 777-0870
Wiley WILLIAMS	8837 Rutledge St. LA 90047	323-778-1313
Violetta Price	9157 S. Wilton Pl, 90047	310.654.8013
Michael Flowers	1023 W. 124th St. L.A. 90044	323-755-9966
Linda Sanders	1300 W 84th LA 90044	323-710-3137
Jiliana Matlock	1335 W. 84th Pl L.A. 90044	323-893-3521
Mayra Mancilla	1315 W. 85th St. L.A. 90044	714-588-9282
Faye Skupwith	9150 South Wilton Pl LA 90047	(323) 757-3835
Michael W. Jones	9112 S. Wilton Pl LA CA 90047-3574	323 754 - 8191
Christine Wood	3016 W. 82 Pl. Inglewood CA 90305	(323) 216-2469
Charles Ashley	9156 Cimarron St	(323) 412-3979
Georgiana Street	7301 World Way West LA 90045	424 646-7754
DEBORAH JONES	8817 Ruthelen ca, 90047	323-7510447



FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop
 May 13, 2014 (6:00 p.m. - 8:00 p.m.)
 Flight Path Learning Center and Museum

Sign-In Sheet

Name/Organization	Address	Phone or Email
LACDC / Mercy Cavazos	700 W MAIN ST, ALHAMBRA 91801	626-586-1798
Carroll David	1334 W 84 th PL, Los Angeles CA 90044	323-497-1557
Vigora Gloria	1500 Arroyo Blvd, Lawndale, CA	310-725-3637
Jeff Sabley	105 AKAMEZOS AAF	562-795-1351
Dianne Cape	8219 Brady Ave Westchester CA 90045	310 641-2505
SUZANNE THOMAS	350 Main St El Segundo	310-524-2302
FRANK GARVER	7811 W. 81 ST ST Playa del Rey	310-800-3810
JACQUELINE HAMILTON	P.O. Box 90892 L.A. CA 90009	US LEGEE AIRWAYS, INC. <small>HTTP://WWW.ACFAI.ORG</small> 313/777-9909 213/706-2558
SON RICHMEAS	10410 S. 7 th AVE Inglewood	
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X



FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop
 May 13, 2014 (6:00 p.m. – 8:00 p.m.)
 Flight Path Learning Center and Museum

Sign-In Sheet

Name/Organization	Address	Phone or Email
Marina Peternin	2817 Clearwater St. LA 90039	M. Peternin - peterninm@gmail.com
Care Jacobsen	708 Bryson Dr E.S.	C. Jacobsen - cjacobson@att.net
Petra Schneider	3332 Deluna Drive RPU 90275	Petra Schneider - petraschneider@netz.com
Michelle Hicks	8923-7th Ave, Inglewood CA 90305	Michelle Hicks 1830@AOL.com



Welcome!

Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update

Public Information Workshop #1

May 2014



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Project Overview

- Los Angeles World Airports (LAWA) has initiated an update of the Federal Aviation Regulations (FAR) Part 150 Noise Exposure Map (NEM) report for LAX
- The Alta Environmental Team has been selected by LAWA to prepare the LAX Part 150 NEM report
- The goal is to submit updated noise exposure maps for LAX to the Federal Aviation Administration (FAA) in 2015
- LAWA is updating the LAX NEMs to ensure continued eligibility for sound insulation program funding



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Project Overview

- LAWA developed noise exposure maps for LAX in 1981 as part of an Airport Noise and Land Use Compatibility (ANCLUC) Study
- The FAA typically uses the airport's future year noise exposure map to determine eligibility for federal funding of noise mitigation programs (e.g., sound insulation)
- The FAA is currently relying on the 2015 LAX Master Plan Alternative D Community Noise Equivalent Level (CNEL) contours for funding current LAX sound insulation programs



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Project Overview

- The NEM report must be prepared in accordance with the guidance provided in FAR Part 150
- FAR Part 150 includes detailed guidance and a checklist of the items that must be included in the FAR Part 150 NEM report
- For example, the NEM report must include aircraft noise exposure contours for the year of submission and a future year (typically five years in the future)
 - The Alta Environmental Team will produce NEMs for 2015 and 2020



**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

Project Overview

- This LAX NEM report update is not an airport master plan update, FAR Part 161 Study, FAR Part 150 Noise Compatibility Program Update, and is not related to other ongoing studies
- The project team will develop an aircraft operations and fleet mix forecast for FAA’s review and approval
- The project team will consider completed and ongoing planning and environmental studies to ensure noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2020
- The 2020 NEM must be based on “reasonably foreseeable” assumptions regarding future operations at LAX



**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

The LAX NEM Report Update Will:

- Quantify existing and future aircraft noise exposure levels in the vicinity of LAX
- Provide the FAA and LAWA with a new set of NEMs to assess future noise mitigation needs

During The LAX NEM Report Update LAWA Will Not:

- Develop or recommend noise abatement or noise mitigation measures designed to minimize aircraft noise impacts
- Determine the sound insulation program boundaries
- Identify properties that are eligible for sound insulation



**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

Who Can Regulate Airport Noise?

- **Federal Aviation Administration**
 - Controls aircraft while in flight
 - Responsible for controlling noise at its source (i.e., aircraft engines)
 - Certifies aircraft and pilots
- **Airport Proprietors/LAWA**
 - Limited authority to adopt local restrictions
 - Responsible for capital improvement projects and infrastructure
- **Local Governments and States**
 - Promote compatible land use through zoning
 - Require real estate disclosure
 - Mandate sound-insulating building materials



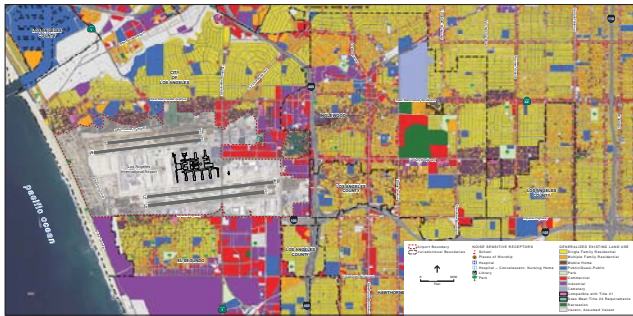
**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

Existing Facilities



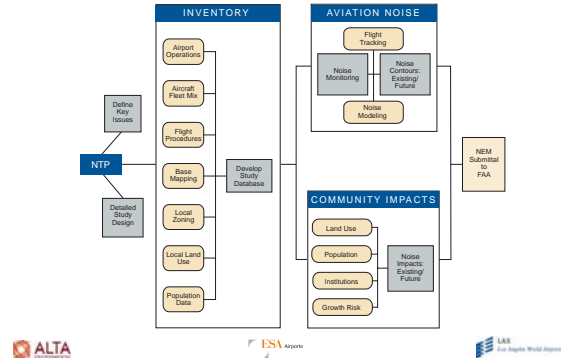
**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

Existing Land Uses in the Study Area



**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

FAR Part 150 NEM Update Process



**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

FAR Part 150 Terminology

Noise Exposure Contours

A noise exposure contour identifies areas of equal noise exposure around an airport. Noise exposure contours are similar to contours on topographic maps which show areas of equal elevation.

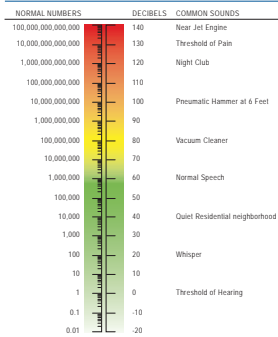
Noise Exposure Maps or NEMs

A noise exposure map is a map showing noise exposure contour lines (or footprints) which identify areas of specific noise levels around an airport. NEMs also include a graphic depiction of geographical features and land uses that surround an airport.

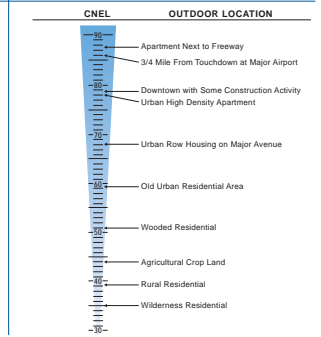


**Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update**

The Decibel Scale

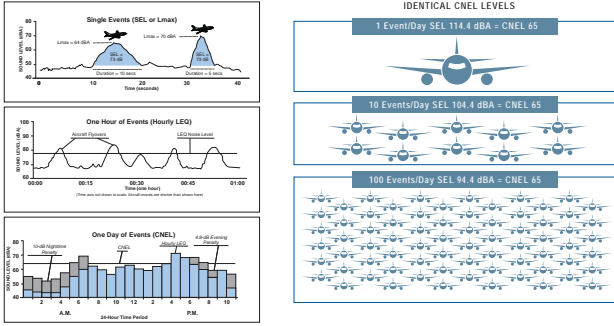


Sample CNEL Values



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Aircraft Noise Levels



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

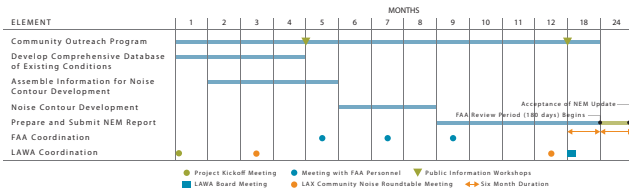
Day-Night Average Sound Level (DNL) and Community Noise Equivalent Level (CNEL)

DNL	CNEL	Description
✓	✓	24-hour time-weighted energy average noise level measured in dBA
✓	✓	Captures the noise exposure for individual aircraft noise events during the course of a 24-hour day
✓	✓	Noise occurring between 7 p.m. to 10 p.m. is penalized by approximately 4.8 dB - Penalty was selected to account for the sensitivity to aircraft noise and activity interference during the evening hours
✓	✓	Noise occurring between 10 p.m. to 7 a.m. is penalized by 10 dB - Penalty was selected to account for the higher sensitivity to aircraft noise and lower background noise levels during nighttime hours
✓	✓	Specified in Title 21 of the California Airport Noise Regulations and required for use in the development of aircraft noise exposure contours
✓	✓	Specified in 14 CFR Part 150 and required for use in the development of aircraft noise exposure contours (FAA permits the use of CNEL for noise studies in California)
✓	✓	Demonstrates a strong relationship between increased aircraft noise and increased human annoyance



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Project Schedule



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I am a resident of Los Angeles County, over the age of eighteen years and not a party to any or interested in the matter noticed.

The notice, of which the annexed is a printed copy appeared in the:

L.A. TIMES

On the following dates:

April 23, 2015

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Los Angeles, California, this

23rd day of April 2015

Signature

2740777

"The only Public Notice which is justifiable from the standpoint of true economy and the public interest, is that which reaches those who are affected by it"

**NOTICE OF PUBLIC INFORMATION WORKSHOPS
To Present the Draft Federal Aviation Regulation
(FAR) Part 150 Noise Exposure Map Update Report
for Los Angeles International Airport**

Los Angeles World Airports (LAWA) will be hosting two (2) public information workshops in May 2015 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. The workshops will include guided displays that will present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, current and forecast aircraft traffic conditions, and methods used to quantify aircraft noise exposure. Existing and future noise contour maps for Los Angeles International Airport will also be presented at the workshops.

Information presented at each workshop listed below will be the same. Residents need only attend one workshop to learn about the study and offer input. Each workshop will be held in an "open house" format from 6 p.m. to 8 p.m. on the dates listed below. No formal presentation will be given in order to provide the public with the maximum opportunity for one-on-one interaction and sharing of information and concerns. You may attend the workshop at any time during the two-hour open house.

- Monday, May 11, 2015 - Flight Path Learning Center and Museum
8661 West Imperial Highway
Los Angeles, CA 90045
- Tuesday, May 12, 2015 - Jesse Owens Community Regional Park Gymnasium
9651 S. Western Avenue
Los Angeles, CA 90047

For more information, please visit the project website at: <http://www.lawa.org/LAXPart150.aspx>

Anyone needing special accommodations under the Americans with Disabilities Act of 1990 should contact Larry Rolon, LAWA ADA Coordinator, at (424) 646-5005 at least 72 hours prior to the meeting. Anyone with questions about the project should contact Ms. Kathryn Pantoja at (424) 646-6501.

Asistencia en español estará disponible en las reuniones.

4/23/15



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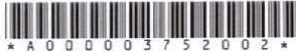
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County of Los Angeles**

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of THE DAILY BREEZE, a newspaper of general circulation, printed and published in the City of Torrance*, County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of County of Los Angeles, State of California, under the date of June 10, 1974, Case Number SWC7146. The notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

4/23/2015

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Dated at Torrance, California
On this 24th day of April, 2015.

Signature

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NOTICE OF PUBLIC INFORMATION WORKSHOPS
To Present the Draft Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Report for Los Angeles International Airport

Los Angeles World Airports (LAWA) will be hosting two (2) public information workshops in May 2015 to provide information regarding the Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. The workshops will include guided displays that will present information regarding the FAR Part 150 Noise Exposure Map Update study process, the project schedule, noise metrics, current and forecast aircraft traffic conditions, and methods used to quantify aircraft noise exposure. Existing and future noise contour maps for Los Angeles International Airport will also be presented at the workshops.

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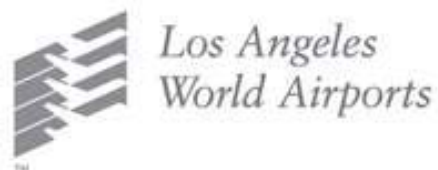
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Asistencia en español estará disponible en las reuniones.

4/23/15
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THE DAILY BREEZE



From: CHAN, DAVID <DCHAN@lawa.org>
Sent: Tuesday, April 28, 2015 7:13 AM
Subject: Public Workshops for LAX Part 150 Noise Exposure Map Update



NOTICE OF PUBLIC INFORMATION WORKSHOPS

To Present the Draft Federal Aviation Regulation (FAR) Part 150 Noise Exposure Map Report Update for Los Angeles International Airport

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For more information, please visit the project website: <http://www.lawa.org/LAXPart150.aspx?id=8526>

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Asistencia en español estará disponible en las reuniones.

LAX FAR Part 150 Noise Exposure Map Update

What is a FAR Part 150 Study?

Federal Aviation Regulations (FAR) Part 150, Airport Noise Compatibility Planning, was issued by the Federal Aviation Administration (FAA) as a final rule in January 1985. FAR Part 150 sets forth the methodology and procedures to be followed when preparing aircraft noise exposure maps and developing airport /airport environs land use compatibility programs.

FAR Part 150 studies typically consist of two primary components: (1) the Noise Exposure Map (NEM) report which contains detailed information regarding existing and 5-year future airport/aircraft noise exposure patterns, and (2) the Noise Compatibility Program (NCP) which includes descriptions and an evaluation of noise abatement and noise mitigation options/programs applicable to an airport.

Has LAWA prepared a FAR Part 150 Study for Los Angeles International Airport (LAX)?

Los Angeles World Airports (LAWA) has a long history of implementing noise abatement and mitigation measures at LAX dating back to the late 1950s. In 1981, the Los Angeles City Department of Airports in conjunction with the Los Angeles County Department of Regional Planning and the cities of El Segundo, Hawthorne, and Inglewood undertook an Airport Noise and Land Use Compatibility (ANCLUC) Study to quantify LAX's aircraft noise exposure and to identify measures to mitigate aircraft noise impacts on the noise sensitive land uses surrounding LAX. The ANCLUC study process was the predecessor to the FAR Part 150 process. The LAX ANCLUC process was completed in June 1984. The LAX Noise Exposure Map (NEM) included in the ANCLUC and submitted under FAR Part 150 was accepted by the FAA on October 16, 1984. On April 13, 1985, the FAA issued a record of approval approving 28 of the recommended measures in the LAX NCP.

Why is LAWA updating the FAR Part 150 NEMs for LAX?

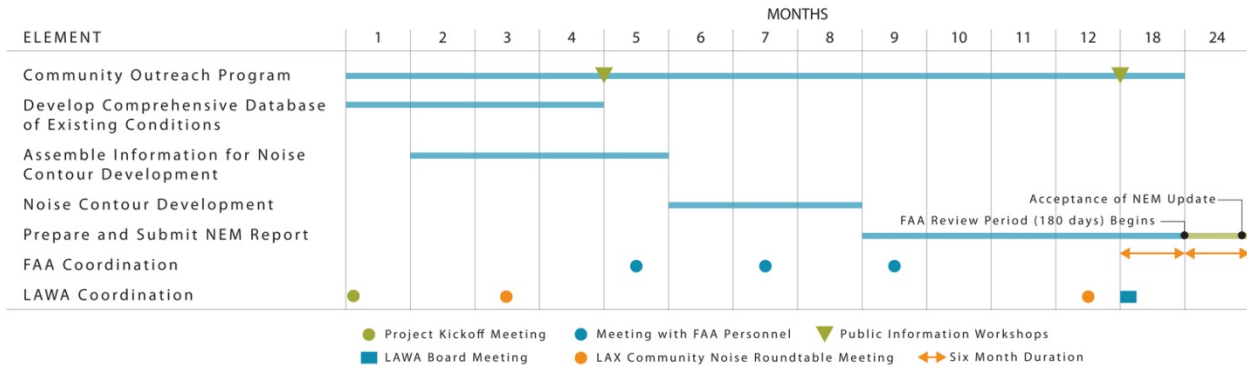
LAWA's goal for this project is to obtain the FAA's acceptance of the new 2015 and 2020 NEMs to ensure that ongoing noise mitigation programs managed by the Cities of Inglewood and El Segundo, and the County of Los Angeles can continue to receive FAA grant funding.

What will LAWA produce during the LAX FAR Part 150 NEM Update?

The LAX FAR Part 150 NEM Update must be prepared in accordance with guidance provided in the FAR Part 150 regulations and the FAR Part 150 NEM Checklist developed by the FAA. As part of the LAX FAR Part 150 NEM Update, LAWA and its consultants have calculated existing (2015) and future (2020) aircraft noise exposure levels in the vicinity of LAX. LAWA will also develop supporting documentation explaining the process used to calculate existing and future aircraft noise levels. The LAX NEM Report update will provide LAWA and the FAA with a new set of NEMs which can be used to identify future noise mitigation needs. During the LAX NEM Report Update, LAWA will not develop or recommend noise abatement or noise mitigation measures, determine the boundaries for future sound insulation programs at LAX, or identify properties that are eligible for sound insulation.

When will the LAX FAR Part 150 NEM Update be completed?

The schedule for the LAX FAR Part 150 NEM Update is presented below. LAWA anticipates the updated NEMs will be submitted to the FAA in July 2015.



Where can I get more information?

The Draft Noise Exposure Map Report has been uploaded to the project website at <http://www.lawa.org/LAXPart150.aspx>. Other materials including presentation boards from this workshop will be uploaded to the project website later this month.

How can I get involved?

FAR Part 150 encourages the participation of citizens and public agencies. LAWA convened two public information workshops in May 2014 to introduce the LAX FAR Part 150 NEM Update study. A second round of public information workshops are being conducted in May 2015 to present key findings from the study.

LAWA is interested in hearing from you if aircraft noise is a concern. Your comments regarding the LAX FAR Part 150 NEM Update can be submitted at the public workshops or by (1) email to laxpart150nemupdate@lawa.org or (2) mailing them to LAWA:

FAR Part 150 NEM Update
 Attn: Kathryn Pantoja, Environmental Affairs Officer
 LAWA Environmental and Land Use Planning Division - Noise Management
 P.O. Box 92216
 Los Angeles, CA 90009-2216

Los Angeles International Airport (LAX) Actualización del Mapa de exposición al ruido (Noise Exposure Map, NEM) en virtud de la FAR Parte 150

¿Qué es un Estudio de FAR Parte 150?

La Parte 150 de Las Regulaciones Federales de Aviación (FAR), Planificación de la Compatibilidad de Ruido del Aeropuerto, fue emitida por la Administración de Aviación Federal (FAA) como norma definitiva en enero de 1985. La FAR Parte 150 expone la metodología y los procedimientos que deben seguirse en la preparación de los mapas de exposición al ruido de aviones y en el desarrollo de programas de compatibilidad para el uso del suelo de los aeropuertos y alrededor.

Estudios de las FAR Parte 150 usualmente consisten en dos componentes principales: (1) el Informe del Mapa de Exposición al ruido (NEM), que contiene información detallada sobre patrones de exposición al ruido del aeropuerto y de los aviones existentes y a 5 años en el futuro, y (2) el Programa de Compatibilidad de Ruido (NCP), que incluye descripciones y una evaluación de la reducción del ruido y de las opciones/programas de mitigación del ruido aplicables a un aeropuerto.

¿LAWA ha preparado un Estudio FAR Parte 150 del Aeropuerto Internacional de Los Ángeles (LAX)?

Los Angeles World Airports (LAWA) tiene una larga historia de medidas de reducción y de mitigación de ruido en LAX, que data de finales de 1950. En 1981, el Departamento de Aeropuertos de Los Ángeles en conjunto con el Departamento de Planificación Regional del Condado de Los Ángeles y las ciudades de El Segundo, Hawthorne, y Inglewood llevó a cabo un Estudio de Ruido del Aeropuerto y de Compatibilidad del Uso del Suelo (ANCLUC). Este estudio cuantificó la exposición al ruido de aviones de LAX e identificó medidas para mitigar el impacto del ruido de aeronaves en tierras sensibles al ruido alrededor de LAX. El proceso del estudio ANCLUC fue el predecesor del proceso de FAR Parte 150. El proceso ANCLUC de LAX se completó en junio de 1984. El mapa de exposición al ruido (NEM) de LAX, incluido en el ANCLUC y presentado bajo la Parte 150, fue aceptado por la FAA el 16 de octubre de 1984. El 13 de abril de 1985, la FAA emitió un registro de aprobación aprobando 28 de las medidas recomendadas en el NCP de LAX.

¿Por qué LAWA está actualizando los NEMs de la FAR Parte 150 de LAX?

El objetivo de LAWA para este proyecto es obtener la aceptación de la FAA sobre los nuevos NEMs de 2015 y 2020 para asegurar que los programas de mitigación de ruido administrados por las ciudades de Inglewood y El Segundo, y por el Condado de Los Ángeles sigan siendo elegibles para recibir fondos de la FAA.

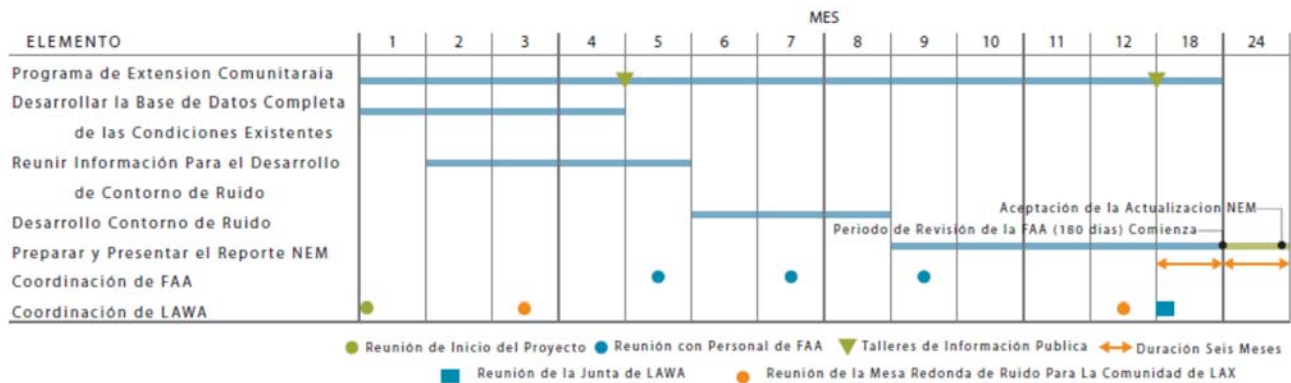
¿Qué va a producir LAWA durante la actualización de los NEMs de LAX de la FAR Parte 150?

La actualización de los NEMs de LAX FAR Parte 150 debe prepararse de acuerdo con las directrices proporcionadas en las regulaciones FAR Parte 150 y la lista de verificación NEM FAR Parte 150 desarrollado por la FAA. En el contexto de la actualización de NEM de LAX FAR Parte 150, LAWA y sus consultores cuantificaron los niveles de exposición al ruido de las aeronaves existentes (2015) y del futuro (2020) en las

proximidades de LAX. LAWA también desarrollará la documentación de apoyo para explicar el proceso que se utiliza para calcular los niveles de ruido de las aeronaves existentes y futuras. La actualización del informe NEM de LAX proporcionará a LAWA y a la FAA con un nuevo conjunto de NEMs que se puede utilizar para identificar las necesidades futuras de mitigación del ruido. Durante la Actualización de los NEMs de LAX, LAWA no va a desarrollar ni recomendar ninguna medida de reducción del ruido o de mitigación de ruido, no determinará los límites de los programas de aislamiento acústico futuras en LAX, y no identificará propiedades que sean elegibles para el aislamiento acústico.

¿Cuándo se finalizará la actualización de los NEMs de LAX de la FAR Parte 150?

El horario para la actualización de los NEMs de LAX de la FAR Parte 150 se presenta abajo. LAWA anticipa que los NEMs actualizados serán presentados a la FAA en julio del 2015.



¿Dónde puedo obtener más información?

El plan preliminar de **Actualización del Mapa de exposición al ruido (NEM)** se puede encontrar en la página web del proyecto, <http://www.lawa.org/LAXPart150.aspx>. Otros materiales, incluidos los paneles de presentación de este taller, se subirán a la página web del proyecto más tarde en el mes.

¿Cómo puedo participar?

La FAR Parte 150 fomenta la participación de los ciudadanos y las agencias públicas. LAWA convocó dos rondas de talleres de información pública durante mayo 2014 para introducir la Actualización de los NEMs de LAX. Dos talleres de información pública se llevarán a cabo en mayo de 2015 para presentar los resultados más importantes del estudio.

LAWA está interesado en saber de usted si el ruido de los aviones es una preocupación. Sus observaciones sobre la actualización de los NEMs de LAX de FAR Parte 150 pueden ser presentadas en los talleres públicos o por (1) correo electrónico a laxpart150nemupdate@lawa.org o (2) por correo a LAWA:

FAR Parte 150 NEM actualización
 Attn: Kathryn Pantoja, Environmental Affairs Officer
 LAWA Environmental and Land Use Planning Division - Noise Management
 P.O. Box 92216
 Los Angeles, CA 90009-2216

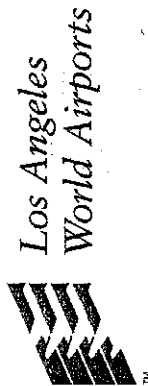


FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop #2
 May 11, 2015 (6:00 p.m. - 8:00 p.m.)
 Flight Path Learning Center and Museum

Sign-In Sheet

Name/Organization	Address	Phone or Email
Steve Diverson ESA	2600 Capitola Avenue, Suite 200 Seaside, CA 95166	sdverson@esaassoc.com
Adrian Jones - ESA	550 Kearny St. San Francisco, CA 94108	ajones@esaassoc.com
DAVID SCHAACK-ASTA	377 LONG BEACH BLVD LONG BEACH, CA 90807	DAVID.SCHAACK@METALINDUSTRIUM.COM
Rose Cote	LAWA	rcote@lawa.org
Carol Jackson	Gr 560000	
John Keho	3845 Grayburn, Los Angeles 90008	jkehok@yahoo.com
ESOSSITA	POB 44307 Los Angeles, CALIF 90049	
KATHRYN PANTOSA	LAWA	KPANTOSA@LAWA.ORG
Joanne Choi	LAWA	jchoi@lawa.org
David Yehosh	-	dyehosh@lawa.org
Steve Tar	LAWA	sttar@lawa.org
Geoffrey Streeter	LAWA	gstrecter@lawa.org



FAR Part 150 Noise Exposure Map Update Study
 Los Angeles International Airport

Public Information Workshop #2
 May 12, 2015 (6:00 p.m. - 8:00 p.m.)
 Jesse Owens Community Regional Park Gymnasium

Sign-In Sheet

Name/Organization	Address	Phone or Email
Sonia Flynn 8041 Street Neighborhood Watch President	8815 Cmarckey St LA 90047	sfk23@aol.com 323 750 0992
Desmond Woolfolk	1278 E Coast P.O. Box 2035 Wilmington CA 90718	desmondwoolfolk1@gmail.com
Allison Jackson		f8141@aol.com
Bette Griffith	3500 W. Marchester Blvd 90303	Bgriff719@cityofingleno.org
Steve Hueson/FSA	2600 Capitol Avenue suite 200 Sacramento, CA 95816	salveson@esaassoc.com
David Scott	3777 Long Beach Blvd LBCA 90807	DAVIDSCOTT@LAWA.ORG
Darrell Summerville	10046 LaSalle Ave L.A. Ca 90047	Dsvilk@ymail.com
GERALD BUTLER	1150 W. 99th St LA CA 90044	geraldbutler16@gmail.com
KATHRYN PANDOJA	LAWA	KPANTOJA@LAWA.ORG
Joanne Choi	LAWA	jchoi@lawa.org
DAN YEUNH	LAWA	DYEUNH@LAWA.ORG
Steve Park	LAWA	steh@lawa.org
Georgiana Street	LAWA	gstreet@lawa.org



Welcome!

Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update
Public Information Workshop #2

May 11, 2015



Welcome!

Los Angeles International Airport
FAR Part 150 Noise Exposure Map Report Update
Public Information Workshop #2

May 12, 2015



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Noise Modeling Assumptions

- Existing (2015) Conditions Noise Exposure Map
 - Based on 2013 annual operations – 614,917
 - Aircraft fleet mix based on Airport Noise and Operations Management System (ANOMS) data for Calendar Year (CY) 2013
 - Runway use based on ANOMS data for CY 2013
 - Time of day based on ANOMS data for CY 2013
 - Flight tracks and flight track usage based on ANOMS data for CY 2013



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Noise Modeling Assumptions

- Future (2020) Conditions Noise Exposure Map
 - 705,254 annual operations in 2020
 - Aircraft fleet mix updated based on information contained in approved LAX environmental studies
 - Runway Use, time of day, and flight tracks assumed to be similar to 2015
 - Considered impact of runway safety area improvements for Runways 7L-25R and 6R-24L



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

2020 Time of Day

**AIRCRAFT OPERATIONS BY TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.38%	25.70%	24.92%	100.00%	73.91%	2.36%	23.74%	100.00%
Large Wide-Body Aircraft	75.55%	11.46%	12.99%	100.00%	54.66%	11.98%	33.36%	100.00%
Non-Jet Aircraft	75.12%	15.06%	9.81%	100.00%	72.93%	15.82%	11.25%	100.00%
New Large Aircraft	72.23%	13.31%	14.46%	100.00%	52.09%	2.54%	45.37%	100.00%
Small Jet Aircraft	72.01%	19.45%	8.54%	100.00%	74.70%	16.28%	9.03%	100.00%
Small Narrow-Body Aircraft	65.95%	20.38%	13.67%	100.00%	69.83%	10.93%	19.24%	100.00%
Small Wide-Body Aircraft	54.56%	24.69%	20.75%	100.00%	61.33%	11.89%	26.77%	100.00%
All Aircraft¹	66.60%	19.63%	13.78%	100.00%	69.51%	11.49%	19.00%	100.00%

NOTES:
Day (7 a.m. to 7 p.m.); Evening (7 p.m. to 10 p.m.); Night (10 p.m. to 7 a.m.)
Values may not sum to 100% due to rounding.
¹ Does not include helicopter operations
SOURCE: ESA Airports, October 2014.



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

2015 Runway Use

**RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.47%	0.23%	3.55%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.73%	0.46%	0.24%	0.22%
07L	0.01%	0.01%	6.55%	0.55%	0.28%	0.51%
07R	0.54%	0.28%	4.30%	0.01%	0.02%	0.17%
24L	1.58%	2.39%	1.27%	43.20%	40.02%	25.87%
24R	45.91%	46.64%	30.97%	1.49%	0.47%	1.33%
25L	49.44%	47.12%	35.62%	3.23%	5.05%	10.82%
25R	2.04%	3.33%	2.01%	51.04%	53.91%	61.08%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
Day (7 a.m. to 7 p.m.); Evening (7 p.m. to 10 p.m.); Night (10 p.m. to 7 a.m.)
Values may not sum to 100% due to rounding.
Does not include helicopter operations
SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

2020 Runway Use

**RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT**

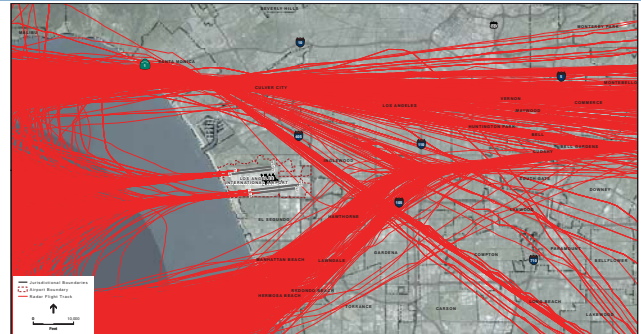
Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.48%	0.23%	3.38%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.00%	0.45%	0.26%	0.24%
07L	0.01%	0.01%	4.90%	0.55%	0.28%	0.50%
07R	0.53%	0.28%	3.17%	0.01%	0.01%	0.17%
24L	1.58%	2.39%	1.43%	44.22%	42.15%	28.55%
24R	46.53%	47.21%	34.12%	1.50%	0.49%	1.43%
25L	48.82%	46.52%	36.09%	2.90%	3.45%	9.60%
25R	2.04%	3.36%	1.92%	50.35%	53.35%	59.51%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
Day (7 a.m. to 7 p.m.); Evening (7 p.m. to 10 p.m.); Night (10 p.m. to 7 a.m.)
Values may not sum to 100% due to rounding.
Does not include helicopter operations
SOURCE: ESA Airports, October 2014.



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

Arrival Flight Tracks – Runways 6 and 7



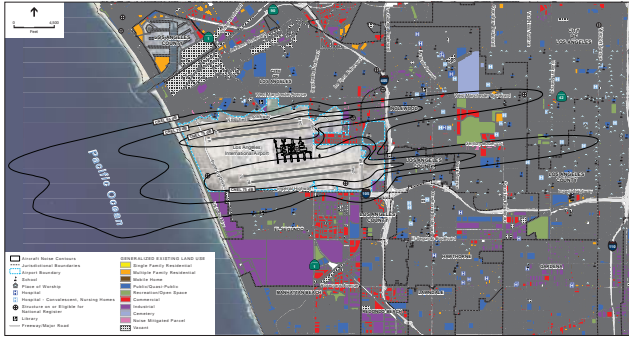
Los Angeles International Airport 11/27/14 10:58 AM 2012-2013
SOURCE: LAX Airports and Operations Management System, 2013, LAX, 2014, City of LAX, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100

Runway Flight Tracks – Arrivals from the West
Exhibit C-2



Los Angeles International Airport FAR Part 150 Noise Exposure Map Report Update

2020 Noise Exposure Map



Los Angeles International Airport FAR Part 150 Noise Exposure Map - 2020 Noise Exposure Map - Los Angeles International Airport Exhibit 5-2





Draft Noise Exposure Map Report Available for Public Review

Los Angeles World Airports (LAWA) has completed a Draft Noise Exposure Map Report for Los Angeles International Airport. The Draft Noise Exposure Map Report has been uploaded to the project website at <http://www.lawa.org/LAXPart150.aspx>. Printed copies of the Draft Noise Exposure Map Report are available for public review at the following locations:

Library	Address
Westchester – Loyola Village Branch Library	7114 W. Manchester Ave., Los Angeles, CA
El Segundo Public Library	111 W. Mariposa Ave., El Segundo, CA
Inglewood Main Library	101 W. Manchester Blvd., Inglewood, CA
Lennox Library	4359 Lennox Blvd., Lennox, CA
Mark Twain Library	9621 S. Figueroa St., Los Angeles, CA

LAWA is interested in hearing from you if aircraft noise is a concern. Your comments regarding the Draft Noise Exposure Map Report can be submitted on the comment forms available at this public workshop or by (1) email to laxpart150nemupdate@lawa.org or (2) mailing them to LAWA:

FAR Part 150 NEM Update
 Attn: Kathryn Pantoja, Environmental Affairs Officer
 LAWA Environmental and Land Use Planning Division - Noise Management
 P.O. Box 92216
 Los Angeles, CA 90009-2216

Comments regarding the Draft Noise Exposure Map Report will be accepted until June 9, 2015.



LAX
Los Angeles
World Airports

**Capital Planning, Programming and Engineering Group
Environmental and Land Use Planning Division
Noise Management**

Receipt of Delivery

**PROJECT: Title 14 Code of Federal Regulations Part 150
Noise Exposure Map Update Study for Los Angeles International Airport**

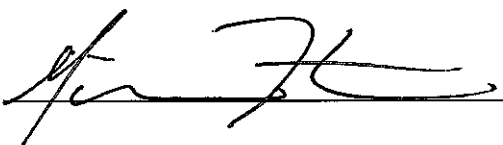
DOCUMENTS ATTACHED:

- **Draft Noise Exposure Map Update for Los Angeles International Airport**
- **Appendix I, Draft Noise Exposure Map Update for Los Angeles International Airport**

DELIVER TO:

Westchester-Loyola Village Branch Library
Attention: Branch Manager/Librarian
7114 W. Manchester Ave.
Los Angeles, CA 90045

Documents delivered on: 5/12/15

Received by:  Miriam Touchkin



LAX

*Los Angeles
World Airports*

**Capital Planning, Programming and Engineering Group
Environmental and Land Use Planning Division
Noise Management**

Receipt of Delivery

**PROJECT: Title 14 Code of Federal Regulations Part 150
Noise Exposure Map Update Study for Los Angeles International Airport**

DOCUMENTS ATTACHED:

- **Draft Noise Exposure Map Update for Los Angeles International Airport**
- **Appendix I, Draft Noise Exposure Map Update for Los Angeles International Airport**

DELIVER TO:

El Segundo Public Library
Attention: Julie Todd
111 W. Mariposa Ave
El Segundo, CA 90245

Documents delivered on: 5/12/15

Received by: Julie Todd



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Los Angeles
World Airports

**Capital Planning, Programming and Engineering Group
Environmental and Land Use Planning Division
Noise Management**

Receipt of Delivery

**PROJECT: Title 14 Code of Federal Regulations Part 150
Noise Exposure Map Update Study for Los Angeles International Airport**

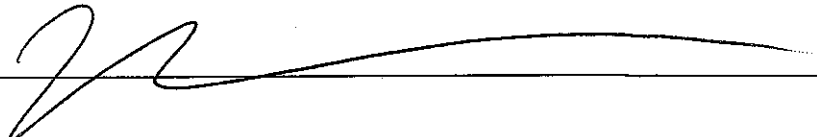
DOCUMENTS ATTACHED:

- **Draft Noise Exposure Map Update for Los Angeles International Airport**
- **Appendix I, Draft Noise Exposure Map Update for Los Angeles International Airport**

DELIVER TO:

Inglewood Main Library
Attention: Joe Rane
101 W. Manchester Blvd.
Inglewood, CA 90301

Documents delivered on: 12 MAY 2005

Received by: 



LAX
Los Angeles
World Airports

**Capital Planning, Programming and Engineering Group
Environmental and Land Use Planning Division
Noise Management**

Receipt of Delivery

**PROJECT: Title 14 Code of Federal Regulations Part 150
Noise Exposure Map Update Study for Los Angeles International Airport**

DOCUMENTS ATTACHED:

- **Draft Noise Exposure Map Update for Los Angeles International Airport**
- **Appendix I, Draft Noise Exposure Map Update for Los Angeles International Airport**

DELIVER TO:

Lennox Library
Attention: Branch Manager/Librarian
4359 Lennox Blvd.
Lennox, CA 90304

Documents delivered on: 5/12/15

Received by: Norma Cuevas Norma Cuevas



LAX

*Los Angeles
World Airports*

**Capital Planning, Programming and Engineering Group
Environmental and Land Use Planning Division
Noise Management**

Receipt of Delivery

**PROJECT: Title 14 Code of Federal Regulations Part 150
Noise Exposure Map Update Study for Los Angeles International Airport**

DOCUMENTS ATTACHED:

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- **Appendix I, Draft Noise Exposure Map Update for Los Angeles International Airport**

DELIVER TO:

Mark Twain Library
Attention: Branch Manager/Librarian
9621 S Figueroa St.
Los Angeles, CA 90003

Documents delivered on: 5/12/15

Received by: SKR

SENZLE RIOS
323 755-4088



LAX Community Noise Roundtable

LAX Part 150 Noise Exposure Map Update Project Briefing #1

March 12, 2014



LAX Part 150 Noise Exposure Map Update

Overview

- LAWA has initiated an update of the Federal Aviation Regulations (FAR) Part 150 Noise Exposure Map (NEM) for LAX
- Late in 2013 the Alta Environmental Team was selected by LAWA to prepare the LAX Part 150 NEM Update. Alta Environmental is a local, small business enterprise
- ESA Airports is serving as a subconsultant to Alta on the NEM Update preparation work including the aircraft noise modeling
- The goal is to submit updated NEMs for LAX to the FAA in 2015
- FAA requires LAWA to update the LAX NEMs to ensure continued sound insulation funding eligibility



LAX Part 150 Noise Exposure Map Update

Specifics

- LAWA developed NEMs for LAX in 1981 as part of an Airport Noise and Land Use Compatibility (ANCLUC) Study
- The FAA typically uses the airport's future year NEM to determine eligibility for federal funding of noise mitigation programs (e.g., sound insulation)
- The FAA is currently relying on the LAX Master Plan Alternative D contours for funding current LAX sound insulation programs
- The Alt. D contours represent the aircraft noise exposure in terms of the Community Noise Equivalent Level (CNEL) for calendar year 2015 forecast aircraft operations at LAX



LAX Part 150 Noise Exposure Map Update

Requirements

- The LAX NEM Update must be prepared in accordance with the guidance provided in FAR Part 150
- FAR Part 150 includes detailed guidance and a checklist of the items that must be included in the FAR Part 150 NEM Update
- For example, the LAX NEM Update must include aircraft noise exposure contours for the year of submission and a future year (typically five years in the future)
 - The Alta Team will produce LAX NEMs for 2015 and 2020





LAX Part 150 Noise Exposure Map Update

Requirements (cont.)

- The noise contours must be depicted using DNL or CNEL and must be representative of the annual average day
- FAR Part 150 deems noise sensitive land uses exposed to noise levels above 65 DNL or CNEL to be incompatible with noise from aircraft operations
- Once submitted, FAA reviews the NEM report and either accepts or rejects the NEMs



LAX Part 150 Noise Exposure Map Update

This is a Stand Alone Effort

- This LAX NEM Update is not an airport master plan update, FAR Part 161 Study, nor a FAR Part 150 Noise Compatibility Program Update, and is not related to other ongoing studies
- The project team will develop an aircraft operations and fleet mix forecast for FAA's review and approval
- The project team will consider completed and ongoing planning and environmental studies to ensure noise modeling assumptions (e.g., airfield layout, runway use, aircraft fleet mix, flight tracks, etc.) are reflective of existing conditions and anticipated conditions in 2020
- The 2020 NEM must be based on "reasonably foreseeable" assumptions regarding future operations at LAX



LAX Part 150 Noise Exposure Map Update

The LAX NEM Update Will:

- Quantify existing and future aircraft noise exposure levels in the vicinity of LAX
- Provide the FAA and LAWA with a new set of NEMs to assess future noise mitigation needs



LAX Part 150 Noise Exposure Map Update

During The LAX NEM Update LAWA Will Not:

- Develop or recommend noise abatement or noise mitigation measures designed to minimize aircraft noise impacts
- Determine the sound insulation program boundaries
- Identify properties that are eligible for sound insulation





LAX Part 150 Noise Exposure Map Update

Details

- The Alta team kicked off the FAR Part 150 NEM Update with a project team meeting at LAWA's offices on February 18, 2014
- Reviewed the scope of work and project schedule
- Identified key contacts at LAWA for key data needs
- Agreed to brief the LAX Community Noise Roundtable tonight
- Kathryn Pantoja is LAWA's Project Manager
- Steve Alverson is the Alta Environmental Team's Project Manager



LAX Part 150 Noise Exposure Map Update

Study Elements

- Project Team Coordination
- Community Outreach Program
- Develop a Comprehensive Database of Current Conditions
- Assemble Information Required For Noise Contour Development
- Noise Contour Development
- Prepare and Submit NEM Report
- FAA Coordination
- LAWA Coordination
 - Includes two Roundtable briefings



LAX Part 150 Noise Exposure Map Update

Study Schedule



LAX Part 150 Noise Exposure Map Update

Key Dates in 2014

- 1/31/14 – Notice to Proceed
- 3/12/14 – Roundtable Briefing
- 2/3/14 – 5/23/14 – Develop Database of Current Conditions
- 3/17/14 – 7/25/14 – Assemble Information for Noise Contour Development
- 5/13/14, 5/15/14, and 5/16/14 – Community Workshops (Tentative)
- 7/21/14 – 9/26/14 – Noise Contour Development





LAX Part 150 Noise Exposure Map Update



LAX Part 150 Noise Exposure Map Update

Key Dates in 2015

- 9/29/14 – 12/18/15 – Prepare and Submit NEM Update
- 3/10/15 – LAWA Board Meeting (*Tentative*)
- 3/11/15 – Roundtable Briefing (*Tentative*)
- 3/10/15, 3/12/15, and 3/13/15 – Community Workshops (*Tentative*)
- 6/15/15 - Submit LAX NEM Update to FAA
- 12/18/15 – FAA Acceptance of the LAX NEM Update

Questions?





LAX Community Noise Roundtable

LAX Part 150 Noise Exposure Map Update Project Briefing #2

May 14, 2014



LAX Part 150 Noise Exposure Map Update

Brief Overview

- In February 2014, LAWA initiated an update of the Federal Aviation Regulations (FAR) Part 150 Noise Exposure Map (NEM) for LAX
- FAA requires LAWA to update the LAX NEMs to ensure continued sound insulation funding eligibility
- The goal is to submit updated NEMs for LAX to the FAA in 2015



LAX Part 150 Noise Exposure Map Update

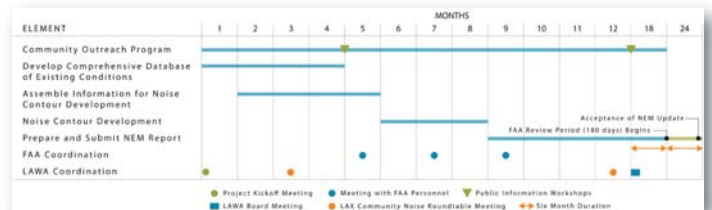
Study Elements

- Project Team Coordination
- Community Outreach Program
- Develop a Comprehensive Database of Current Conditions
- Assemble Information Required For Noise Contour Development
- Noise Contour Development
- Prepare and Submit NEM Report
- FAA Coordination
- LAWA Coordination
 - Includes two Roundtable briefings



LAX Part 150 Noise Exposure Map Update

Study Schedule





LAX Part 150 Noise Exposure Map Update

Key Dates in 2014

- ✓ 1/31/14 – Notice to Proceed
- ✓ 3/12/14 – Initial Roundtable Briefing
- ✓ 2/3/14 – 5/23/14 – Develop Database of Current Conditions
- 3/17/14 – 7/25/14 – Assemble Information for Noise Contour Development
- ✓ 5/12/14 and 5/13/14 – Community Workshops
- ✓ 5/14/14 – Roundtable Update
- 7/21/14 – 9/26/14 – Noise Contour Development



LAX Part 150 Noise Exposure Map Update

Key Dates in 2015

- 9/29/14 – 12/18/15 – Prepare and Submit NEM Update
- 3/10/15 – LAWA Board Meeting (*Tentative*)
- 3/11/15 – Roundtable Briefing (*Tentative*)
- March 2015 – Two Community Workshops (*Tentative*)
- 6/15/15 - Submit LAX NEM Update to FAA
- 12/18/15 – FAA Acceptance of the LAX NEM Update



LAX Part 150 Noise Exposure Map Update

Key Accomplishments to Date

- Collected all of the required aircraft operations, flight track, runway use, time of day, and fleet mix information
- Collected and reviewed all of the key background documents
- Prepared and delivered draft working papers to LAWA
- Submitted a technical memorandum to LAWA identifying potential INM substitutes for forwarding to FAA
- Conducted two public workshops
- Provided two Roundtable briefings



LAX Part 150 Noise Exposure Map Update

What's Next

- Finalize the aviation activity forecasts; submit to FAA for approval
- Receive FAA approval of the INM aircraft type substitutes
- Receive FAA approval of the aviation activity forecasts
- Finalize the noise model inputs and conduct preliminary noise model runs
- Initiate preparation of the draft Noise Exposure Map documentation



LAX Part 150 Noise Exposure Map Update

Questions?





LAX Community Noise Roundtable

LAX 14 CFR Part 150 Noise Exposure Map Update

Project Briefing #3

May 13, 2015



LAX Part 150 Noise Exposure Map Update

Project Overview

- Los Angeles World Airports (LAWA) initiated an update of the Title 14 Code of Federal Regulations (CFR) Part 150 Noise Exposure Map (NEM) report for LAX in February 2014
- The goal is to submit updated noise exposure maps for LAX to the Federal Aviation Administration (FAA) in 2015
- LAWA is updating the LAX NEMs to ensure continued eligibility for sound insulation program funding



LAX Part 150 Noise Exposure Map Update

Project Overview

- LAWA developed noise exposure maps for LAX in 1981 as part of an Airport Noise and Land Use Compatibility (ANCLUC) Study
- The FAA typically uses the airport's future year noise exposure map to determine eligibility for federal funding of noise mitigation programs (e.g., sound insulation)
- The FAA is currently relying on the LAX Master Plan Alternative D noise contours for funding current LAX sound insulation programs. The Alternative D contours represent the aircraft noise exposure in terms of the Community Noise Equivalent Level (CNEL) for calendar year 2015 aircraft operations at LAX



LAX Part 150 Noise Exposure Map Update

Project Overview

- The LAX NEM report must be prepared in accordance with the guidance provided in 14 CFR Part 150
- 14 CFR Part 150 includes detailed guidance and a checklist of the items that must be included in the FAR Part 150 NEM Report
- For example, the NEM Report must include aircraft noise exposure contours for the year of submission and a future year (typically five years in the future)
 - The Alta Environmental Team has produced NEMs for 2015 and 2020



2020 Aircraft Fleet Mix Assumptions

- 747200s will be replaced by 747400s
- 747400s will have fewer operations with increased operations by the A380-841 and A380-861 to compensate
- 737300s, 737400s, and 737500s would be replaced by 737700s and 737800s
- MD11s would be replaced 777200s and A320s

2020 Aircraft Fleet Mix Assumptions (cont.)

- MD80s and MD90s would be replaced by A320s
- 727s would be replaced by 757s
- A310s and A300s would be replaced by 767s
- DC9s would be replaced by 757s

2015 Time of Day

TABLE 4-4
AIRCRAFT OPERATIONS BY TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.45%	25.66%	24.90%	100.00%	73.93%	2.36%	23.71%	100.00%
Large Wide-Body Aircraft	67.99%	11.99%	20.01%	100.00%	48.64%	13.53%	37.82%	100.00%
Non-Jet Aircraft	74.40%	15.19%	10.41%	100.00%	72.35%	15.49%	12.16%	100.00%
New Large Aircraft	64.44%	17.34%	18.22%	100.00%	45.02%	3.04%	51.94%	100.00%
Small Jet Aircraft	72.04%	19.37%	8.59%	100.00%	74.75%	16.21%	9.04%	100.00%
Small Narrow-Body Aircraft	66.62%	20.36%	13.01%	100.00%	70.58%	10.89%	18.53%	100.00%
Small Wide-Body Aircraft	50.50%	23.12%	26.38%	100.00%	56.80%	10.77%	32.43%	100.00%
All Aircraft ¹	65.96%	19.61%	14.43%	100.00%	69.03%	11.65%	19.32%	100.00%

NOTES:
Values may not sum to 100% due to rounding.
¹ Does not include helicopter operations.
SOURCE: ESA Airports, October 2014, based on LAX ANOMS data for calendar year 2013.

2020 Time of Day

TABLE 4-5
AIRCRAFT OPERATIONS BY TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.38%	25.70%	24.92%	100.00%	73.91%	2.36%	23.74%	100.00%
Large Wide-Body Aircraft	75.55%	11.46%	12.99%	100.00%	54.66%	11.98%	33.36%	100.00%
Non-Jet Aircraft	75.12%	15.06%	9.81%	100.00%	72.93%	15.82%	11.25%	100.00%
New Large Aircraft	72.23%	13.31%	14.46%	100.00%	52.09%	2.54%	45.37%	100.00%
Small Jet Aircraft	72.01%	19.45%	8.54%	100.00%	74.70%	16.28%	9.03%	100.00%
Small Narrow-Body Aircraft	65.95%	20.38%	13.67%	100.00%	69.83%	10.93%	19.24%	100.00%
Small Wide-Body Aircraft	54.56%	24.69%	20.75%	100.00%	61.33%	11.89%	26.77%	100.00%
All Aircraft ¹	66.60%	19.63%	13.78%	100.00%	69.51%	11.49%	19.00%	100.00%

NOTES:
Values may not sum to 100% due to rounding.
¹ Does not include helicopter operations.
SOURCE: ESA Airports, October 2014.

2015 Runway Use

TABLE 4-11
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.47%	0.23%	3.55%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.73%	0.48%	0.24%	0.22%
07L	0.01%	0.01%	8.55%	0.55%	0.28%	0.51%
07R	0.54%	0.28%	4.30%	0.01%	0.02%	0.17%
24L	1.58%	2.39%	1.27%	43.20%	40.02%	25.87%
24R	45.91%	46.64%	30.97%	1.49%	0.47%	1.33%
25L	49.44%	47.12%	35.82%	3.23%	5.05%	10.82%
25R	2.04%	3.33%	2.01%	51.04%	53.91%	61.08%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
Values may not sum to 100% due to rounding.
Does not include helicopter operations.
SOURCE: ESA Airports, October 2014, based on LAXANOMS data for calendar year 2013.

2020 Runway Use

TABLE 4-12
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

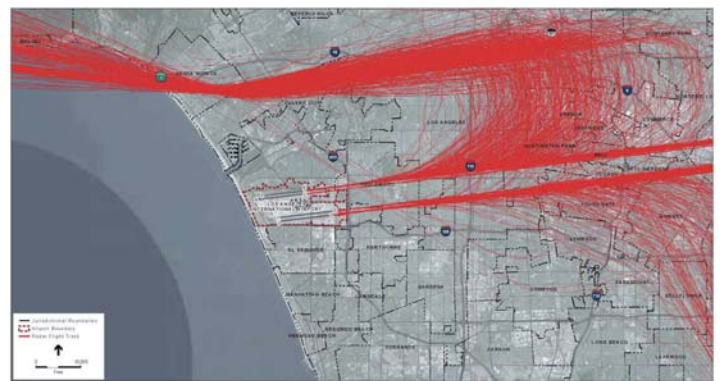
Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.48%	0.23%	3.38%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.00%	0.45%	0.28%	0.24%
07L	0.01%	0.01%	4.90%	0.55%	0.28%	0.50%
07R	0.53%	0.28%	3.17%	0.01%	0.01%	0.17%
24L	1.58%	2.39%	1.43%	44.22%	42.15%	28.55%
24R	46.53%	47.21%	34.12%	1.50%	0.49%	1.43%
25L	48.82%	46.52%	36.09%	2.90%	3.45%	9.60%
25R	2.04%	3.36%	1.92%	50.35%	53.35%	59.51%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
Values may not sum to 100% due to rounding.
Does not include helicopter operations.
SOURCE: ESA Airports, October 2014.

Runway Use Assumptions

- Runway use by INM aircraft type remains the same from 2015 to 2020
- Runway use tables show runway use by aircraft category (e.g., small-narrow body, large narrow-body)
- Changes in the mix of aircraft by category are responsible for the small changes in the 2020 runway use values
- Generally, changes in runway use are less than 5 percent

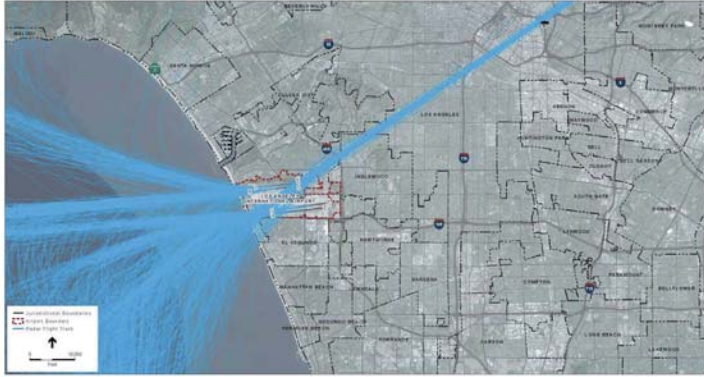
Radar Flight Tracks – Runways 24 and 25 Arrivals



Los Angeles International Airport (LAX) Radar Flight Tracks - Arrivals from the East
Los Angeles International Airport (LAX) Radar Flight Tracks - Arrivals from the East
 Exhibit C-1
 Radar Flight Tracks - Arrivals from the East

ESA Airports **LAX Part 150 Noise Exposure Map Update**

Radar Flight Tracks – Runways 24 and 25 Departures



Los Angeles International Airport 18 CFR Part 150 Study, 2020-18
 Exhibit C-4
 Radar Flight Tracks – Departures to the West

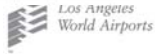


ESA Airports **LAX Part 150 Noise Exposure Map Update**

Modeled Flight Tracks – Runway 24R Departures and Arrivals

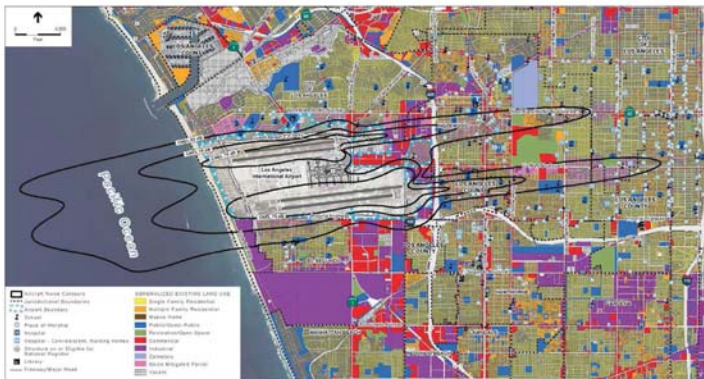


Los Angeles International Airport 18 CFR Part 150 Study, 2020-18
 Exhibit 4-3a
 Modeled Arrival and Departure Flight Tracks – Runway 24R



ESA Airports **LAX Part 150 Noise Exposure Map Update**

2015 Noise Exposure Map – Existing Conditions

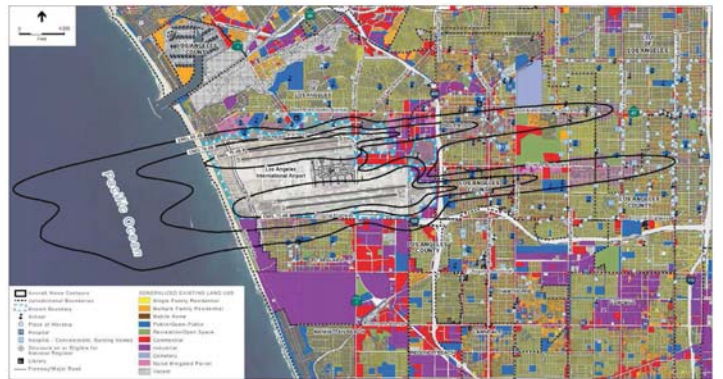


Los Angeles International Airport 18 CFR Part 150 Study, 2020-18
 Exhibit S-1
 2015 Noise Exposure Map (Existing Conditions) - Los Angeles International Airport



ESA Airports **LAX Part 150 Noise Exposure Map Update**

2020 Noise Exposure Map – Future Conditions



Los Angeles International Airport 18 CFR Part 150 Study, 2020-18
 Exhibit S-2
 2020 Noise Exposure Map (Future Conditions) - Los Angeles International Airport



TABLE 5-2
EFFECTS OF NOISE EXPOSURE IN THE AIRPORT ENVIRONS – 2015 AND 2020

Noise Level	Area (acres)	Households	Population	Place of Worship	School	Hospital	Historic Structure
2015							
CNEL 65-70	6,581.1	9,323	29,585	32	19	2	1
CNEL 70-75	3,017.5	2,047	7,968	1	5	0	3
CNEL 75+	1,792.5	46	250	0	0	0	1
Total	11,391.0	11,416	37,803	33	24	2	5
2020							
CNEL 65-70	6,876.4	10,399	32,507	42	21	3	1
CNEL 70-75	3,229.9	2,575	10,068	1	5	0	3
CNEL 75+	1,929.4	71	384	0	0	0	1
Total	12,035.6	13,045	42,959	43	26	3	5

NOTES:
The households and population counts presented above do not include noise mitigated properties.
CNEL = Community Noise Equivalent Level
Values may not sum to totals shown due to rounding.
SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

TABLE 5-3
LAND USE EVALUATION – 2015 AND 2020 NOISE EXPOSURE MAPS
LOS ANGELES INTERNATIONAL AIRPORT

Land Use	Area Exposed to Aircraft Noise in 2015 (acres)				Area Exposed to Aircraft Noise in 2020 (acres)			
	CNEL 65-70	CNEL 70-75	CNEL 75+	Total	CNEL 65-70	CNEL 70-75	CNEL 75+	Total
Single family residential	303.9	69.8	2.0	375.7	370.4	84.4	2.4	457.2
Multiple family residential	349.7	68.2	2.0	419.9	383.0	82.5	4.0	469.5
Mobile Home	0.9	0.0	0.0	0.9	0.9	0.0	0.0	0.9
Public/Quasi-Public	145.9	24.5	0.0	170.3	165.1	31.1	0.0	196.1
Recreation/Open Space	79.9	38.1	4.7	122.8	87.5	41.8	2.0	131.3
Commercial	330.5	67.6	5.1	403.2	350.5	97.3	10.6	458.4
Industrial	217.5	123.5	12.2	353.2	218.3	132.0	21.7	371.9
Cemetery	22.2	0.0	0.0	22.2	33.4	0.0	0.0	33.4
Noise Mitigated Parcel	566.8	118.5	1.6	686.9	630.0	150.2	4.1	784.2
Airport	504.4	1,375.4	1,737.8	3,617.5	400.0	1,380.5	1,851.8	3,632.4
Water/Beach	3,338.8	918.3	5.6	4,262.8	3,429.6	973.5	6.4	4,409.5
Vacant	56.3	21.1	0.3	77.6	60.1	23.4	0.3	83.8
Transportation/Other	664.4	192.4	21.2	878.0	747.6	233.3	26.1	1,007.1
Total	6,581.1	3,017.5	1,792.5	11,391.0	6,876.4	3,229.9	1,929.4	12,035.6

NOTES:
CNEL = Community Noise Equivalent Level
Values may not sum to totals shown due to rounding.
SOURCES: Los Angeles World Airports, 2014; ESA Airports, 2014; PCR Services Corporation, 2012.

Key Accomplishments to Date

- Prepared a Preliminary Draft LAX NEM Report
 - Incorporated LAWA’s edits and comments
 - Incorporated FAA’s edits and comments
- Published the Draft LAX NEM Report
 - An electronic copy is on the LAX 14 CFR Part 150 NEM Update Website
 - Printed copies are at five area libraries
- Conducted a total of four public workshops
- Provided three formal Roundtable briefings

What’s Next

- The 30-day public comment period ends on June 9, 2015
- Incorporate FAA and LAWA’s edits/comments into the Final LAX NEM Report
- LAWA submits the Final LAX NEM Report to FAA for FAA’s review and acceptance in July 2015
- FAA accepts the LAX NEMs



Additional Resources:

- Electronic copies of the LAX NEM Report are available at:
<http://www.lawa.org/LAXPart150.aspx>
- Hardcopies of the Draft LAX NEM Reports are available at the following libraries:
 - Loyola Village Branch Library, Westchester
 - El Segundo Public Library, El Segundo
 - Inglewood Main Library, Inglewood
 - Lennox Library, Lennox
 - Mark Twain Library, Los Angeles
- FAA's 14 CFR Part 150 Website:
http://www.faa.gov/airports/environmental/airport_noise/

Questions?





Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report
Update

LAX ATCT Staff Briefing
March 11, 2015



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

Project Overview

- Los Angeles World Airports (LAWA) has initiated an update of the Federal Aviation Regulations (FAR) Part 150 Noise Exposure Map (NEM) report for LAX
- The Alta Environmental Team was selected by LAWA to prepare the LAX Part 150 NEM report. Alta Environmental is a local, small business enterprise
- The goal is to submit updated noise exposure maps for LAX to the Federal Aviation Administration (FAA) in 2015
- LAWA is updating the LAX NEMs to ensure continued eligibility for sound insulation program funding



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

Project Overview

- LAWA developed noise exposure maps for LAX in 1981 as part of an Airport Noise and Land Use Compatibility (ANCLUC) Study
- The FAA typically uses the airport's future year noise exposure map to determine eligibility for federal funding of noise mitigation programs (e.g., sound insulation)
- The FAA is currently relying on the LAX Master Plan Alternative D noise contours for funding current LAX sound insulation programs. The Alternative D contours represent the aircraft noise exposure in terms of the Community Noise Equivalent Level (CNEL) for calendar year 2015 aircraft operations at LAX



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

Noise Modeling Assumptions

- Existing (2015) Conditions NEM
 - Based on 2013 annual operations – 614,917
 - Aircraft fleet mix based on ANOMS data for Calendar Year (CY) 2013
 - Runway use based on ANOMS data for CY 2013
 - Time of day based on ANOMS data for CY 2013
 - Flight tracks and flight track usage based on ANOMS data for CY 2013



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

2020 Time of Day

TABLE 4-5
AIRCRAFT OPERATIONS BY TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Aircraft Category	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Large Narrow-Body Aircraft	49.38%	25.70%	24.82%	100.00%	73.97%	2.36%	23.74%	100.00%
Large Wide-Body Aircraft	15.30%	11.48%	12.39%	100.00%	54.88%	11.38%	33.38%	100.00%
Non-Jet Aircraft	75.12%	15.88%	9.81%	100.00%	72.83%	11.25%	100.00%	
New Large Aircraft	72.23%	13.31%	14.48%	100.00%	52.98%	3.54%	40.31%	100.00%
Small Jet Aircraft	72.01%	18.43%	8.54%	100.00%	74.70%	18.28%	8.02%	100.00%
Small Narrow-Body Aircraft	65.95%	20.38%	13.67%	100.00%	69.83%	10.33%	19.24%	100.00%
Small Wide-Body Aircraft	54.56%	24.69%	20.75%	100.00%	41.32%	11.88%	24.77%	100.00%
All Aircraft ¹	66.88%	18.82%	13.78%	100.00%	68.81%	11.49%	13.88%	100.00%

NOTES:
¹Values may not sum to 100% due to rounding.
 Does not include helicopter operations.
 SOURCE: ESA Reports, October 2014.

Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

2015 Runway Use

TABLE 6-11
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - EXISTING (2015) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.47%	0.23%	3.55%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	13.72%	0.48%	0.24%	0.22%
07L	0.01%	0.01%	6.50%	0.02%	0.28%	0.31%
07R	0.54%	0.25%	4.30%	0.03%	0.02%	0.17%
24L	1.68%	2.38%	1.27%	43.20%	40.02%	25.87%
24R	45.97%	48.64%	30.87%	1.48%	0.47%	1.22%
25L	43.44%	47.12%	35.62%	3.22%	0.00%	10.82%
25R	2.04%	3.23%	2.01%	0.04%	0.01%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
 Values may not sum to 100% due to rounding.
 Does not include helicopter operations.
 SOURCE: ESA Reports, October 2014, based on LAX AISCMS data for calendar year 2015.



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

2020 Runway Use

TABLE 6-12
RUNWAY USE BY OPERATION TYPE AND TIME OF DAY - FUTURE (2020) CONDITIONS
LOS ANGELES INTERNATIONAL AIRPORT

Runway	Arrival			Departure		
	Day	Evening	Night	Day	Evening	Night
06L	0.48%	0.23%	3.56%	0.02%	0.01%	0.01%
06R	0.01%	0.00%	15.00%	0.49%	0.24%	0.22%
07L	0.01%	0.01%	4.90%	0.02%	0.28%	0.30%
07R	0.55%	0.26%	3.17%	0.03%	0.02%	0.17%
24L	1.58%	2.38%	1.43%	44.22%	42.10%	25.53%
24R	46.53%	47.21%	34.12%	1.50%	0.49%	1.43%
25L	43.82%	46.82%	36.00%	2.89%	0.45%	9.80%
25R	2.04%	3.24%	1.92%	0.03%	0.01%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NOTES:
 Values may not sum to 100% due to rounding.
 Does not include helicopter operations.
 SOURCE: ESA Reports, October 2014.

Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update

Published Arrival and Departure Procedures

TABLE 3-9
STANDARD TERMINAL ARRIVAL ROUTES, LOS ANGELES INTERNATIONAL AIRPORT

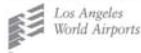
Procedure Name	Procedure Type	Arrival Direction
DEEPT THREE	Conventional	East/Northeast
DOANE FOUR	Conventional	East/Northeast
KIMBY THREE	Conventional	North/Northeast
LEIDA FOUR	Conventional	North/Northeast
WOODWARD THREE	Conventional	North/Northeast
OCEAN TWO	Conventional	South/Southwest/Southwest
OLIVE ONE	Conventional	South/Southwest/Southwest
REDEYE TWO	Conventional	East/Northeast
REDEYE THREE	Conventional	East/Northeast
BAK TWO	Conventional	North/Northeast
SAFETY ONE	Conventional	East/Northeast
WABAY TWO	Conventional	East/Northeast
WINDY ONE	Conventional	South/Southwest/Southwest
WILFA TWO	Conventional	South/Southwest/Southwest
WUBA THREE	Visual	South/Southwest/Southwest
WUBA ONE	Visual	Southwest
WUBA TWO	Visual	North/Northeast
WYLLI WYLLI - New Navigation		
WYLLI WYLLI - New Navigation		

TABLE 3-4
DEPARTURE PROCEDURES, LOS ANGELES INTERNATIONAL AIRPORT

Procedure Name	Procedure Type	Departure Direction
OSCAR ONE	Conventional	South/East
OSCAR TWO	Conventional	South/East
OSCAR THREE	Conventional	South/East
OSCAR FOUR	Conventional	South/East
WABAY ONE	Conventional	South/East
WABAY TWO	Conventional	South/East
WABAY THREE	Conventional	South/East
WABAY FOUR	Conventional	South/East
WABAY FIVE	Conventional	South/East
WABAY SIX	Conventional	South/East
WABAY SEVEN	Conventional	South/East
WABAY EIGHT	Conventional	South/East
WABAY NINE	Conventional	South/East
WABAY TEN	Conventional	South/East
WABAY ELEVEN	Conventional	South/East
WABAY TWELVE	Conventional	South/East
WABAY THIRTEEN	Conventional	South/East
WABAY FOURTEEN	Conventional	South/East
WABAY FIFTEEN	Conventional	South/East
WABAY SIXTEEN	Conventional	South/East
WABAY SEVENTEEN	Conventional	South/East
WABAY EIGHTEEN	Conventional	South/East
WABAY NINETEEN	Conventional	South/East
WABAY TWENTY	Conventional	South/East
WABAY TWENTY ONE	Conventional	South/East
WABAY TWENTY TWO	Conventional	South/East
WABAY TWENTY THREE	Conventional	South/East
WABAY TWENTY FOUR	Conventional	South/East
WABAY TWENTY FIVE	Conventional	South/East
WABAY TWENTY SIX	Conventional	South/East
WABAY TWENTY SEVEN	Conventional	South/East
WABAY TWENTY EIGHT	Conventional	South/East
WABAY TWENTY NINE	Conventional	South/East
WABAY THIRTY	Conventional	South/East
WABAY THIRTY ONE	Conventional	South/East
WABAY THIRTY TWO	Conventional	South/East
WABAY THIRTY THREE	Conventional	South/East
WABAY THIRTY FOUR	Conventional	South/East
WABAY THIRTY FIVE	Conventional	South/East
WABAY THIRTY SIX	Conventional	South/East
WABAY THIRTY SEVEN	Conventional	South/East
WABAY THIRTY EIGHT	Conventional	South/East
WABAY THIRTY NINE	Conventional	South/East
WABAY FORTY	Conventional	South/East
WABAY FORTY ONE	Conventional	South/East
WABAY FORTY TWO	Conventional	South/East
WABAY FORTY THREE	Conventional	South/East
WABAY FORTY FOUR	Conventional	South/East
WABAY FORTY FIVE	Conventional	South/East
WABAY FORTY SIX	Conventional	South/East
WABAY FORTY SEVEN	Conventional	South/East
WABAY FORTY EIGHT	Conventional	South/East
WABAY FORTY NINE	Conventional	South/East
WABAY FIFTY	Conventional	South/East
WABAY FIFTY ONE	Conventional	South/East
WABAY FIFTY TWO	Conventional	South/East
WABAY FIFTY THREE	Conventional	South/East
WABAY FIFTY FOUR	Conventional	South/East
WABAY FIFTY FIVE	Conventional	South/East
WABAY FIFTY SIX	Conventional	South/East
WABAY FIFTY SEVEN	Conventional	South/East
WABAY FIFTY EIGHT	Conventional	South/East
WABAY FIFTY NINE	Conventional	South/East
WABAY SIXTY	Conventional	South/East
WABAY SIXTY ONE	Conventional	South/East
WABAY SIXTY TWO	Conventional	South/East
WABAY SIXTY THREE	Conventional	South/East
WABAY SIXTY FOUR	Conventional	South/East
WABAY SIXTY FIVE	Conventional	South/East
WABAY SIXTY SIX	Conventional	South/East
WABAY SIXTY SEVEN	Conventional	South/East
WABAY SIXTY EIGHT	Conventional	South/East
WABAY SIXTY NINE	Conventional	South/East
WABAY SEVENTY	Conventional	South/East
WABAY SEVENTY ONE	Conventional	South/East
WABAY SEVENTY TWO	Conventional	South/East
WABAY SEVENTY THREE	Conventional	South/East
WABAY SEVENTY FOUR	Conventional	South/East
WABAY SEVENTY FIVE	Conventional	South/East
WABAY SEVENTY SIX	Conventional	South/East
WABAY SEVENTY SEVEN	Conventional	South/East
WABAY SEVENTY EIGHT	Conventional	South/East
WABAY SEVENTY NINE	Conventional	South/East
WABAY EIGHTY	Conventional	South/East
WABAY EIGHTY ONE	Conventional	South/East
WABAY EIGHTY TWO	Conventional	South/East
WABAY EIGHTY THREE	Conventional	South/East
WABAY EIGHTY FOUR	Conventional	South/East
WABAY EIGHTY FIVE	Conventional	South/East
WABAY EIGHTY SIX	Conventional	South/East
WABAY EIGHTY SEVEN	Conventional	South/East
WABAY EIGHTY EIGHT	Conventional	South/East
WABAY EIGHTY NINE	Conventional	South/East
WABAY NINETY	Conventional	South/East
WABAY NINETY ONE	Conventional	South/East
WABAY NINETY TWO	Conventional	South/East
WABAY NINETY THREE	Conventional	South/East
WABAY NINETY FOUR	Conventional	South/East
WABAY NINETY FIVE	Conventional	South/East
WABAY NINETY SIX	Conventional	South/East
WABAY NINETY SEVEN	Conventional	South/East
WABAY NINETY EIGHT	Conventional	South/East
WABAY NINETY NINE	Conventional	South/East
WABAY HUNDRED	Conventional	South/East



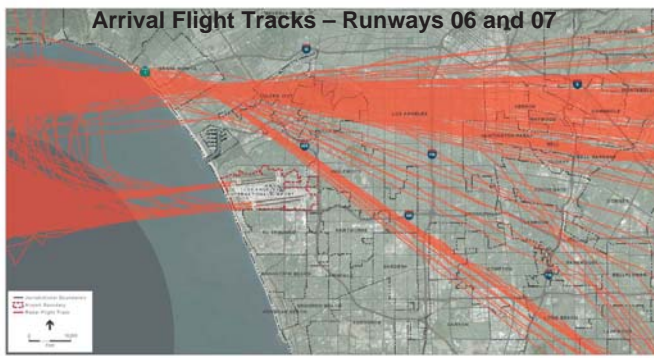
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



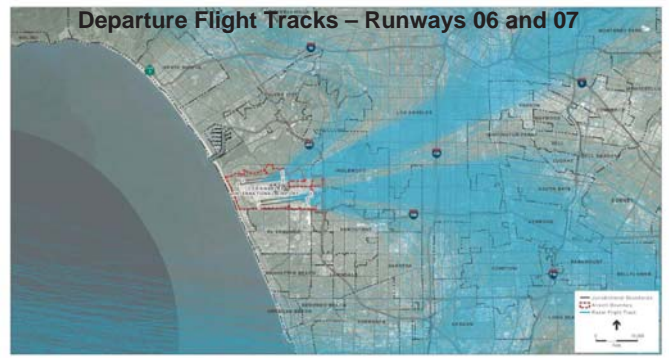
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



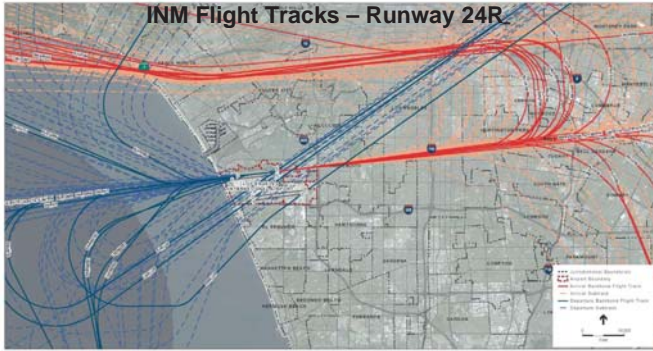
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



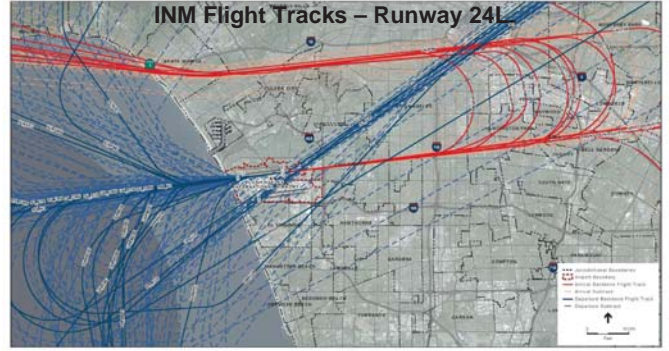
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 24R
Exhibit 6-28



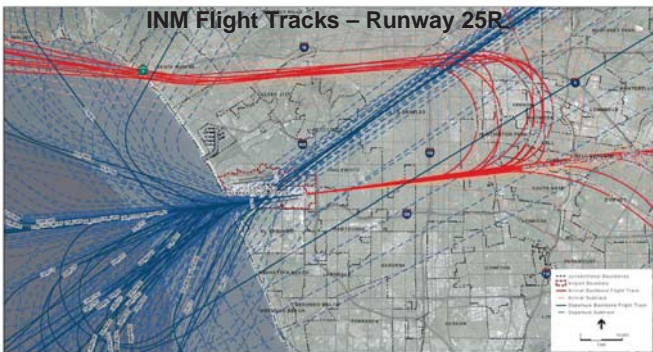
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 24L
Exhibit 6-44



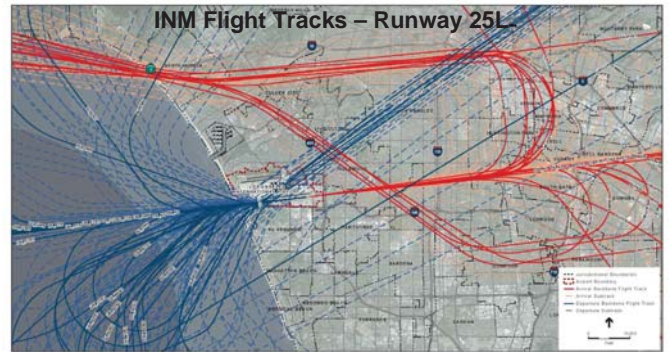
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 25R
Exhibit 6-54



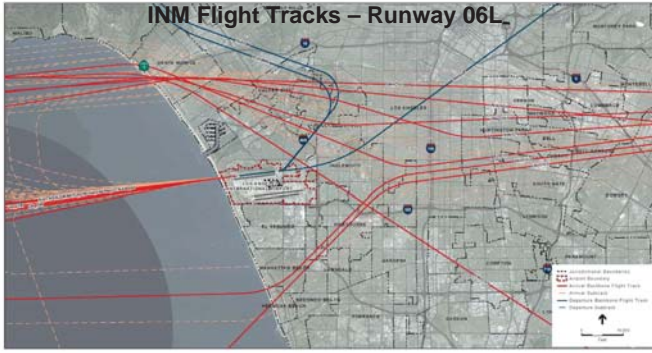
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 25L
Exhibit 6-54



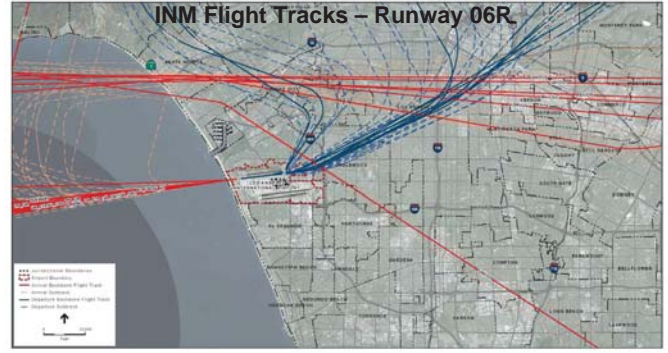
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 06L
Exhibit 4-74



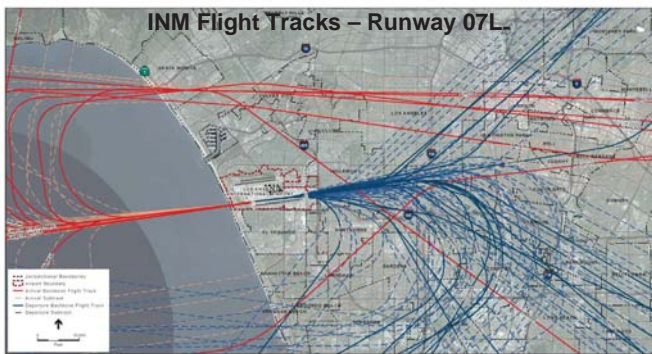
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 06R
Exhibit 4-84



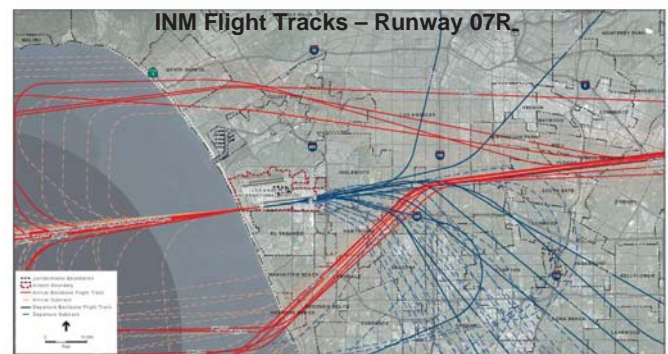
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



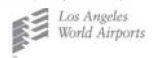
Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 07L
Exhibit 4-84



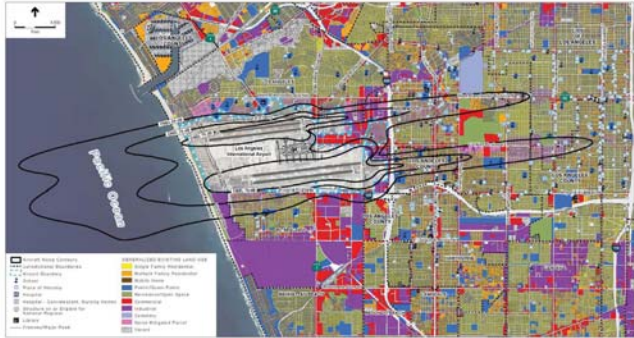
Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update



Los Angeles International Airport 14 CFR Part 150 Noise Exposure Map Report Update
INM Arrival and Departure Flight Tracks - Runway 07R
Exhibit 4-104



**Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update**



2015 Noise Exposure Map - Los Angeles International Airport **Exhibit 8-1**



**Los Angeles International Airport
14 CFR Part 150 Noise Exposure Map Report Update**



2020 Noise Exposure Map - Los Angeles International Airport **Exhibit 8-2**



From: PANTOJA, KATHRYN R. <KPantoja@lawa.org>
Sent: Thursday, August 06, 2015 10:49 AM
To: Dean Edwards; Carmen Sainz
Subject: LAX Noise Exposure Map Update

Hello,

I wanted to ensure that you are aware of the update LAWA is conducting for the 14 CFR Part 150 LAX Noise Exposure Map (NEM). We are trying to finalize the document for submittal to the Federal Aviation Administration in August 2015 and would like to make sure that you had an opportunity to review and provide any input if desired. We have been working primarily with the LACO CDC staff (Residential Sound Insulation Program (RSIP) – Ray Gomez) obtaining updated noise mitigation information for inclusion in this update to the Part 150 NEM 65 dB noise contour, which determines the eligible area for possible federal funding under the Airport Improvement Program for the CDC RSIP. This update was brought up in our discussion back in March 2015 when we had a teleconference call along with CDC staff to discuss which LAX noise contour map should be referenced in the Noise Insulation Program in Title 22 of Los Angeles County Code.

The draft LAX Part 150 NEM Update document and information may be viewed on the LAWA website at the following links:

<http://www.lawa.aero/LAXPart150.aspx?id=9625> (document)
<http://www.lawa.aero/LAXPart150.aspx> (LAX Part 150 web page)

We will be finalizing the document hopefully by August 21, 2015. Please let me know if you have any problems accessing the linked information.

Kind regards,

Kathryn Pantoja
Environmental Affairs Officer
Los Angeles World Airports
Environmental and Land Use Planning Division
Noise Management
424-646-6501 PHONE
424-646-9260 FAX

The contents of this message are confidential and privileged and the dissemination or copying of this information is prohibited by anyone who is not the intended recipient. Thank you.

From: PANTOJA, KATHRYN R. <KPantoja@lawa.org>
Sent: Thursday, August 06, 2015 2:47 PM
To: cejackson@cityofinglewood.org
Subject: LAX Part 150 Noise Exposure Map Update

Dear Mr. Jackson,

I was referred by Bettye Griffith, Manager of the Inglewood RSI Program, who LAWA works with on a regular basis. We are in the final stages of updating the 14 CFR Part 150 Noise Exposure Map (NEM) for LAX to ensure continued eligibility for noise mitigation funds from the Federal Aviation Administration (FAA) under their AIP grants. We have obtained updated information from the Inglewood RSI Program regarding mitigated parcels, land use, etc., and incorporated this data into the LAX NEM update for submittal to the FAA. I would like to ensure that the City of Inglewood Planning Department is aware of this project so that you can share any feedback or input on this project if you so desire.

Our current project schedule has a target submittal date to the FAA of August 2015 to ensure that all noise impacted communities remain eligible to receive AIP grant funds from the FAA after this year – the current approved map is the Master Plan Alt D 65 dB contour for 2015. The draft LAX Part 150 NEM Update is available for review on our website as follows:

<http://www.lawa.aero/LAXPart150.aspx> (information web page)

<http://www.lawa.aero/LAXPart150.aspx?id=9625> (document)

The draft 2020 NEM update contour is generally larger than the current NEM contour so this will be beneficial for all surrounding noise impacted communities. Please let me know if you have any problems accessing the website links above. We hope to have the final document ready for submittal to the FAA by August 21, 2015. Thank you for your time and attention.

Best regards,

Kathryn Pantoja

Environmental Affairs Officer

Los Angeles World Airports

Environmental and Land Use Planning Division

Noise Management

424-646-6501 PHONE

424-646-9260 FAX

The contents of this message are confidential and privileged and the dissemination or copying of this information is prohibited by anyone who is not the intended recipient. Thank you.

**List of Individuals and Organizations Contacted
14 CFR Part 150 Noise Exposure Map Update
Los Angeles International Airport**

Full Name

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Mr. Guilhem Perrichet
David Morgan
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Andre Anderson
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Stephen Tucker
Jaden Kushner
James A. Elan
Rob Amsler
Lynae Craig
Richard Ide
Thayne Klingler
Captain Jim Kaiser
Ronald Thomas
Mr. Brian Lander
Ed Cook
Richard Carpenter
Teak Biondo
Ralph Myers
Chris Agnini
Lew Allen
Melvin Wagoner
Eric Sanchez
Kellee Valentine
Gordon Isachsen
Herbst Axel
Walter Calzadilla
Captain Geoff Marinko
Captain Neil Phillips
Mr. Charlie Pai
Captain George Weng
Captain Guo-Hsiung Fann
Robert Chin
James Li
Duan Phillip
XU/CANHUI
Mr. Zhang Tao
Stelios D. Rapis
Cliff Holt
Todd Naugle
Enrique Medina Brand
Jorge Campbell
J. J. Sloan
Richard Hopkins
Flight Ops Atlanta
Gary Cabriaes
Tony Roberts
Ryan Pike
Garcia, Joel
Jim Koutsopanagos
Noam Doron
Captain Edo Sharon
Alex Chang
Bernie Lin
Linda Gann
Richard Y. Yeh
Coty Mao
Chip Carter

Agency

ABX Air (ABX)
ABX Air (ABX)
Aero Jet Services
AEROFLOT RUSSIAN AIRLINES
AeroLogic
Aeromexico (AMX)
AeroMexico Connect
AeroUnion (TNO)
Air France (AFR)
Air New Zealand Limited
Air Tahiti Nui
Air Transport Inc/ATI Jets (CYO)
Air Transport International
AirNet Systems, Inc
AirSprint Canada (ASP)
AirSprint US, Inc. (HAB)
AirTran Airways (TRS)
Alaska Airlines (ASA)
All Nippon Airways (ANA)
Allegiant Air (AAV)
American Airlines (AAL)
American Airlines (AAL)
Ameriflight, LLC (AMF)
Amerijet International
Amerijet International
Ameristart Jet Charter, Inc. (AJI)
Asiana Airlines
Atlas Air Cargo/Polar Air Cargo
Atlas Air, Inc (GTI)
Avcenter Inc
Aviation Advisor Inc. (LKF)
Aviation Consultants, Inc.
Avjet Corporation
Cargolux Airlines Int'l S.A.
Cargolux Italia (ICV)
Cathay Pacific Airways (CPA)
Cathay Pacific Airways (CPA)
China Airlines (CAL)
China Airlines (CAL)
China Airlines (CAL)
China Airlines (CAL)
China Airlines (CAL)
China Cargo Airlines
China Eastern Airlines
China Southern Airlines
China Southern Airlines
Chrysler Aviation, Inc.
Clay Lacy
Compass Airlines (CPZ)
Contact Integrated Services
Copa Airlines
Corporate Flight International, Inc. (VHT)
D&D Aviation
Delta Airlines (DAL)
Delta Airlines (DAL)
Delta Private Jets
DesertJet, LLC (DJR)
Disney
Eagle Aircraft
EL AL Airlines (ELY)
El Al Israel Airlines (ELY)
EVA Air (EVA)
EVA Air (EVA)
EVA Air (EVA)
EVA Air (EVA)
EVA Airways CORP.
Evergreen International Airlines, Inc.

**List of Individuals and Organizations Contacted
14 CFR Part 150 Noise Exposure Map Update
Los Angeles International Airport**

Full Name

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 Bill Bilger
 Nick Erb
 John Maloney
 Ken Wilson
 JP Thibodeau
 Captain Steve Woodfine
 Ron Rhoads
 Captain Brent Rollins
 JD Hood
 Lamar Haugaard
 Michael Cary
 Sandra Miracle
 Masakazu Douglas
 Bill Thomas
 Mike Kopp
 Edward Clark
 James Daulton
 Greg Marcussen
 Frank Westbrook
 Timothy Slater
 Peter Sanderlin
 Bradley K Clark
 Ms. Linda Perdue
 Kevin Kong
 TaeHa Park
 Carlos Olmedo
 Jacqueline Lefort
 Tim Miller
 Fokko Doyen
 Stefan Lau
 John Jorgensen
 Enrique Garcia
 Reggie Hopwood
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 Ms. Yuko Toyama
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 Chad Seedorf
 James Wayne
 Stephen Ricard
 Bob Zeng
 James Straley
 Harve Camelin
 Jason Martinelli
 Adrian M. Ingles
 Rex Aldanese
 Phil Dacy
 Tim Lomakin
 John Burrue
 Bart Wooldridge
 Taesik Kim
 Tom Mason
 Max Rosenberg
 Gary Helmeid
 Jason Middleton
 Ron Turner
 Michael Wang

Agency

F & L Aviation
 FedEx (FDX)
 FlexJet (LXJ)
 Flight Options (OPT)
 Flightexec
 Florida West International Airways (RF)
 FLTPlan, LLC
 Frontier Airlines (FFT)
 Gama Aviation Ltd
 Gowan Company, LLC
 Great Lakes Airlines (GLA)
 Horizon Air (QXE)
 Horizon Air (QXE)
 IFL Group, Inc. (TSU)
 IFL Group, Inc. (TSU)
 Japan Airlines (JAL)
 Jet Aviation Holdings
 Jet Linx Aviation LLC (JTL)
 Jet Northwest LLC
 JetBlue Airways (JBU)
 JetSelect Aviation (OHC)
 JetSuite Air (RSP)
 KaiserAir, Inc.
 Kalitta Air
 Kalitta Charters (KFS)
 Key Lime Air, Inc. (LYM)
 Korean Air (KAL)
 Korean Air (KAL)
 LACSA Airlines (LRC)
 Lan Chile & Lan Peru Airlines
 Lockheed Martin Corp
 Lufthansa Cargo
 LUFTHANSA GERMAN AIRLINES
 Mach 1 Charter
 Mas Air Cargo (MAA)
 McNeely Charter Service Inc.
 Mesa Air Group
 MGM Resorts International
 Miami Air International
 MIDWEST AVIATION (DZR)
 Monty Aviation, LLC
 Mountain Aviation (FTH)
 Netjets (EJA)
 Netjets (EJA)
 Nippon Cargo Airlines (NCA)
 Nippon Cargo Airlines (NCA)
 Northern Illinois Flight Center DBA:N-Jet
 Northrop Grumman
 Northrop Grumman Aviation Division
 Omni Air International
 Omni Air International
 Pak West Airlines
 Pegasus Elite Aviation (PEG)
 Philippine Airlines
 Philippine Airlines
 Priester Aviation, LLC.
 Regency Air
 Reno Flying Service
 Republic Airlines
 Samsung Techwin C., Ltd
 Sands Aviation
 Santa Barbara Aviation
 SC Aviation
 Scott Aviation, dba Siver Air (SIS)
 Simon Aviation
 Singapore Air

**List of Individuals and Organizations Contacted
14 CFR Part 150 Noise Exposure Map Update
Los Angeles International Airport**

Full Name

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Perry Clausen
Rich Dancaster
Richard Scord
Jeff Curl
Peku Karu
Todd LaSalle
Chuck Bertrand
Alan W. Jones
Carlos Olmedo
Richard Sedgwick
Mr.Suravudhi Kosoltrakul
Scott Henely
Jay Arcemont
Philippe Raux
Captain Glen McGeary
Captain John Buyer
Captain Lawrence Ellis
Karl Blackmun
Richard Peck
Dave Surridge
Matt Sears
Kirk Demers
Captain Brian Sheehy
Ramez Reno
Brydon Knibbs
Thomas E. Jordan
Pete Hudes
Jim Potter
Christopher Watts
Christy Hutchison
Captain Wang Xi
June Lehrman
Stephen Murray
John Nachbar (City Manager)
Todd Tipton
Carl Jacobson (Mayor Pro Tem)
James O'Neill
Dick Croxall
Mike Cassidy
Michael DiVirgilio
Jim Withrow
David Esparza
Brian Bergman (Mayor)
Sam Andreano
Gary Sugano
Bernard Parks (City Council Member)
Christine Dixon
Cesar Ruiz
Berny Motto
Mike Bonin (City Council Member)
Jessica Duboff
Wayne Powell
Chris Arriola
Cesar Vega
Paul Talbot
Rey Alfonso
Vickie Banando
Amy Ho
Blake LaMar
Petra Schneider

Agency

Singapore Air Cargo
Sky King Aviation
Skywest Airlines (SKW)
SkyWest Airlines (SKW)
Solairus/Sunset Aviation (TWY)
Southern Air Inc.
Southwest Airlines (SWA)
Spirit Airlines (NKS)
Spring Mountain Enterprises
Starbase Aviation (SBE)
Starjet Inc
Sun Country Airlines (SCX)
Sunwest Aviation Ltd.
SunWest Aviation, Inc.
TACA Airlines
Target Corp
Thai Airways International LTD.
Travel Management Company (TMC)
TWC Aviation
Unijet SA
United Airlines (UAL)
United Airlines (UAL)
United Airlines (UAL)
United Parcel Service (UPS)
Universal Jet Aviation
US Airways
USA Jet Airlines
Virgin Australia (VOZ)
Virign America (VRD)
Volaris Airlines (VOI)
Volo Aviation LLC
West Air, Inc.
West Coast Charters
Western Air Charter dba Jet Edge International (EDG)
Worldwide Jet Charter
XOJET INC (XOJ)
Yangtze River Express Cargo
City of Culver City
City of Culver City
City of Culver City
City of Culver City
City of El Segundo
City of El Segundo
City of El Segundo
City of Hermosa Beach
City of Hermosa Beach
City of Inglewood
City of Inglewood
City of La Habra Heights
City of La Habra Heights
City of Lomita
City of Los Angeles (Council District 8)
City of Los Angeles (Council District 8)
City of Los Angeles (Council District 8)
City of Los Angeles (Council District 8)
City of Los Angeles (Council District 11)
City of Los Angeles (Council District 11)
City of Manhattan Beach
City of Monterey Park
City of Monterey Park
City of Monterey Park
City of Monterey Park
City of Monterey Park
City of Monterey Park
City of Palos Verdes Estates
City of Ranchos Palos Verdes

List of Individuals and Organizations Contacted
14 CFR Part 150 Noise Exposure Map Update
Los Angeles International Airport

Full Name

Osa Wolff
Carmen Sainz
Dean Edwards
Christopher Jackson
Ray Gomez
Bettye Griffith
Evelyn Quintanilla (Chief of Airport Planning)

Agency

Shute, Mihaly & Weinberger LLP
Los Angeles County Department of Regional Planning
Los Angeles County Department of Regional Planning
City of Inglewood Economic and Community Development Department
County of Los Angeles, Residential Sound Insulation Program
City of Inglewood Residential Sound Insulation Program
Los Angeles World Airports

APPENDIX G

Public Comments and Responses

G.1 Introduction

Comments submitted by local agencies and the general public during the 14 CFR Part 150 Noise Exposure Map Update are provided on the following pages. Responses to the public and agency comments are provided after each of the individual comments.

G.1.1 Public Workshops Round 1

Twelve (12) comment forms were submitted at or soon after the May 12, 2014 Public Workshop. **Two (2)** comment forms were submitted at or soon after the May 13, 2014 Public Workshop. The comment forms appear at the back of this appendix. Responses to the issues raised in each comment form are provided in **Table G-1**.

G.1.2 Public Workshop Round 2

Public workshops for the 14 CFR Part 150 Noise Exposure Map Update were also conducted on May 11, 2015 and May 12, 2015. No comments were submitted at either workshop.

G.1.3 Comments Submitted Through the Project Website

Information regarding the 14 CFR Part 150 Noise Exposure Map Update for Los Angeles International Airport was uploaded to a publicly accessible website maintained by LAWA (<http://www.lawa.org/LAXPart150.aspx>). The Draft Noise Exposure Map Report was uploaded to the website on May 9, 2015. Public comments regarding Draft Noise Exposure Map Report were accepted until June 9, 2015 and could be submitted via e-mail through a link on the website. No comments were submitted through the project website.

G.1.4 Other Comments

The City of El Segundo submitted a comment letter on June 9, 2015. The comment letter appears at the back of this Appendix. Responses to issues raised in the comment letter are provided in **Table G-2**.

**TABLE G-1
PUBLIC COMMENTS AND RESPONSES - MAY 2014 PUBLIC WORKSHOPS**

Comment	Commenter	Comment/Question	Response
A-1	Mercy Cavazos	Requesting a copy of slides of presentation.	Slide presentation was provided to the commenter.
B-1	Carroll David	The noise exposure update program is a welcome idea or renewed idea. Not only speak to the environmental friendly but also shows the concerns of the human aspect to society.	Comment noted.
B-2	Carroll David	I am hopeful that this program will provide assistance to the many who are affected by noise disturbance.	The purpose of the LAX NEM Update is to define the existing and future aircraft noise exposure in the environs of LAX. Decisions regarding noise mitigation eligibility and funding will be made under a separate process.
C-1	Idorlph Edwards	Please inform me if the noise zone changes. I get more than my share of airplane noise from where I live.	Commenter added to the LAWA's interested party's mailing list.
D-1	Hazel Ferron	What are the requirements to be eligible for the program?	See response to comment B-2.
D-2	Hazel Ferron	Who determines who gets these windows?	See response to comment B-2.
D-3	Hazel Ferron	Who monitors the noise and where is the boundary?	LAWA monitors aircraft noise using 39 noise monitors located throughout the communities surrounding LAX. However, in accordance with 14 CFR Part 150, the boundary for any future noise mitigation program will be based on modeled aircraft noise levels. The LAX NEM Update is the first step in that process.
D-4	Hazel Ferron	Airplane flies directly over my house.	Comment noted.
E-1	Sonia French-Pitts	On behalf of the residence on 8801-8855 Cimarron Street, we would appreciate any new noise assessment done to our neighborhood.	Comment noted.
E-2	Sonia French-Pitts	We have spoken to our Council Rep. Parks, attended the roundtable for years and to date no one has addressed our complaints. The noise and the emissions have been endless. We have supplied videos of the planes that show the name of the airlines, which is how low the planes fly over our homes.	The update of the LAX NEM will identify the current and future aircraft noise exposure in the LAX environs.
E-3	Sonia French-Pitts	If any further information is needed please feel free to contact me.	Commenter added to the LAWA's interested party's mailing list.
F-1	Mayra Manchilla	I live around Manchester and Normandie. The Friday evening of the La Brea earthquake had many planes that flew over the neighborhood land enough to block noise and shake the house. When the earthquake swayed the houses I thought a plane had flown by. Realistically, if LAX continues to be a busy terminal, I'm afraid there's nothing windows can fix or a new house foundation can provide.	Comment noted.
G-1	Liliana Matlock	Please keep me up to date with future plans	Commenter added to the LAWA's interested party's mailing list for this 14 CFR Part 150 NEM Update.

TABLE G-1 (Continued)
PUBLIC COMMENTS AND RESPONSES - MAY 2014 PUBLIC WORKSHOPS

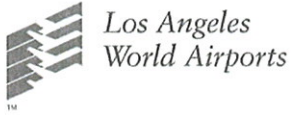
Comment	Commenter	Comment/Question	Response
H-1	Esther May	I look forward to community update info as the study continues to confirm need for expanse of sound insulation.	Commenter added to the LAWA's interested party's mailing list for this 14 CFR Part 150 NEM Update.
I-1	Linda Murray	I have a problem with the airplane coming so close to the house that my windows shake and TV mess up constantly. Sometimes you can also see the numbers on the airplane which cause the whole house to shake and cannot hear the person on the telephone and also drop calls.	Comment noted.
J-1	Clint Simmons	What Street or roadway will be used for the north limits for FAR Part 150 noise exposure?	The CNEL 65 decibel aircraft noise contour will serve as the boundary for NEM Update in accordance with Table 1 of 14 CFR Part 150.
J-2	Clint Simmons	My concern is the downwind leg for VFR landings at LAX.	The downwind leg for VFR landings was included in the inputs for the LAX NEM update.
J-3	Clint Simmons	Will the public have an opportunity to present their concerns before the final report is adopted?	Yes, a second set of public workshops was held after the release of the Draft LAX NEM report. Advanced notice of the public workshops was provided.
K-1	Linda J. Ware	What are some of the requirements?	The commenter may be referring to sound insulation which is not a part of the LAX NEM Update. Any future sound insulation program will be based on the updated LAX NEM. Details regarding the residential sound insulation program can be obtained at www.LAWA.org .
K-2	Linda J. Ware	Does it matter whether you own your home or not?	Only property owners are eligible for program participation, and decide whether to accept the treatments.
K-3	Linda J. Ware	How long will it take?	The LAX NEM Update will be submitted to the FAA for review and acceptance in mid-2015.
K-4	Linda J. Ware	Is there anything that we need to be doing?	Continue to stay informed about the LAX NEM Update by visiting the project website.
L-1	Bernard and Sandra Washington	Can the neighbors request an independent assessment of the noise level in support of the FAA data?	Neighbors may request an independent assessment of aircraft noise levels, however, the LAX NEM Update is being prepared in compliance with 14 CFR Part 150, which is the federal standard for assessing aircraft noise exposure and determines the mitigation funding eligibility area.
L-2	Bernard and Sandra Washington	Based on the 84th Place Block Clubs experiences and tracking of the noise disturbance, we are requesting a re-evaluation of the boundaries that qualify households for sound proofing.	The LAX NEM Update will establish the 2015 and 2020 CNEL 65 decibel noise contour boundary. Any future sound insulation program will be based on the updated LAX NEM. Details regarding the residential sound insulation program can be obtained at www.LAWA.org .

**TABLE G-1 (Continued)
PUBLIC COMMENTS AND RESPONSES - MAY 2014 PUBLIC WORKSHOPS**

Comment	Commenter	Comment/Question	Response
L-3	Bernard and Sandra Washington	It is our belief that the continuous vibration (24 hours/7 days) is causing damage to house and causing frustration due to the on-going adjustment of TV and radios.	Comment noted.
L-4	Bernard and Sandra Washington	We have collected data over the last 30 days of recorded noise, pictures and have called into noise hotline and reported airplane numbers on the belly of plane.	Comment noted.
M-1	Gloria and Jack Wilson	My concern is that the airplanes are flying very low and they fly directly over our house. They are so low that we are able to read what's on the belly of the plane.	Comment noted.
M-2	Gloria and Jack Wilson	The planes are loud, vibrating the house shaking the windows. I would like to know how the decibels are measured and how often and how come the flight pattern has been changed since flights are coming every 5 minutes. I'm sure the current flight pattern is outdated in this day and age.	Under 14 CFR Part 150, aircraft noise is calculated using the Community Noise Equivalent Level (CNEL) which is a 24-hour average of noise with additional weighting for evening and nighttime events. The flight patterns used to develop the CNEL contours were based on actual radar flight tracks for LAX arrivals and departures.
N-1	Christine Wood	Please add me to your mailing list.	Commenter added to the LAWA's interested party's mailing list.

**TABLE G-2
RESPONSES TO ISSUES RAISED IN THE JUNE 9, 2015 LETTER FROM THE CITY OF EL SEGUNDO**

Comment	Response
O-1	Thank you for your comments. LAWA anticipates that the FAA will accept the updated Noise Exposure Map Report by the end of 2015.
O-2	The author of this comment is correct that the Community Noise Equivalent Level (CNEL) 65 decibel (dB) noise contour shown on the 2020 Noise Exposure Map (NEM) is generally larger than the "Alternative D" CNEL 65 dB contour and that it envelops a higher number of homes within the City of El Segundo.
O-3	14 CFR Part 150 Section 150.21 specifies that the future NEM (in this case the 2020 NEM) must be based on reasonable assumptions regarding the type and frequency of aircraft operations, airport layout, flight patterns, and runway use for a forecast period that is at least five years in the future. The 2020 NEM included in the Draft Noise Exposure Map Report for Los Angeles International Airport is based on reasonable assumptions regarding future operations and flight patterns at LAX. Since the shift of aircraft operations from the north complex to the south complex will be a temporary condition (i.e., during the construction of the RSA improvements in 2016), FAA would not consider it reasonable to use the temporary runway use data included in the environmental documents for the Runway 6R-24L Runway Safety Area (RSA) Improvement Project to develop the 2020 NEM. As discussed on page 3-10 of the NEM, runway threshold shifts associated with the Runway 7L-25R and 6R-24L RSA improvements are reflected in the 2020 NEM.
O-4	The 2014 Terminal Area Forecast (TAF) for LAX is an unconstrained forecast of future demand and was developed by the FAA without considering the capacity of LAX. Nonetheless, in the 2014 TAF, the FAA predicted there will be approximately 77.1 Million Annual Passengers (MAP) in 2020 to correspond with the operations forecast used in the NEM update. The FAA's forecast is simply a forecast of demand and does not reflect any analysis of the passenger handling capacity of the Airport or a commitment by Los Angeles World Airports.



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

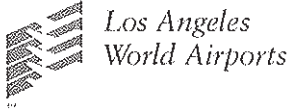
A-1

Requesting a copy of slides of presentation.
mercy.cavazos@Lacdc.org

Thank you.

Name/Address:

B



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 13, 2014

Comment Form

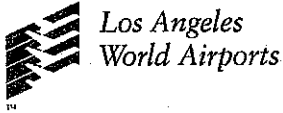
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- B-1** [The NOISE EXPOSURE update program is a welcome
1) idea OR renewed idea NOT only speak to the environmental
but friendly but also shows the concerns of the
human aspect to society.]
- B-2** ② [I am hopeful that this program will provide
assistance to the many who are in need of
affected by noise disturbance.]

Name/Address:

Carroll David
1334 W 84th Pl
Los Angeles, CA 90044

C



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

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C-1

Please inform me if the noise zone change. I get more than my share of airplane noise from where i live.

Name/Address:

Idorlph Edwards
9127 So. Wilton Pl.
Los Angeles, CA 90047



Mr. Idorlph Edwards
9127 S Wilton Pl.
Los Angeles, CA 90047

D



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

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D-1 What are the requirements to be eligible for the program?

D-2 Who determine who gets these window

D-3 Who monitor the noise and where is the boundary

D-4 Air plane flies directly over my house

Name/Address:

Hazel Ferron
10602 Haas Ave.
LA, CA 90047



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

E-1

On behalf of the residence on 8801-8855 Cimarron Street we would appreciate any new noise assessment done to our neighborhood. We have spoken to our Council Rep. Parks, attended the roundtable for years and to date no one has addressed our complaints. The noise and the emissions have been endless. We have supplied videos of the planes that show the name of the airlines, which is how low the planes fly over our homes.

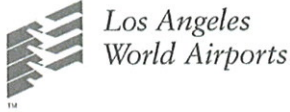
E-2

E-3

If any further information is needed please feel free to contact me.

Sonia French - Cimarron Street Neighborhood
(818) 750-0992 Watch President
8815 Cimarron St.
Los Angeles CA 90047
sfpr23@aol.com

Name/Address: Sonia F. French - Pitts
8815 Cimarron St
LA 90047
(818) 750 0992



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

F-1

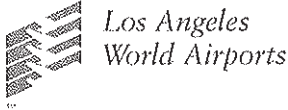
I live around Manchester + Normandie. The Friday evening of the ha Brea earthquake had many planes that flew over the neighborhood loud enough to block noise and shake the house. When the earthquake swayed the house, I thought a plane had flown by.

Realistically, if LAX continues to be a busy terminal, I'm afraid there's nothing windows can fix or a new house foundation can provide.

Thank you.

Name/Address:

Mayra Mancilla
1315 W. 85th St.
Los Angeles, CA. 90044



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

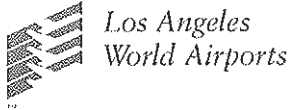
Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

G-1

Please keep me up to date with future plans:

LILIANA MATLOCK
1335 W. 84th Pl.
L.A Ca. 90044

Name/Address:



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

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Key question regarding sound insulation for
homes in the area designated as "end of block" was
answered. I look forward to community update
info as the study continues to confirm need for
expansion of sound insulation

H-1

Name/Address:

Esther May 106194th Ave. Inglewood 90303



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

I-1

I have a problem with the airplane coming so close to the house that my windows shake and TV, mess up constantly. Sometimes you can also see the number on the airplane which causes the windows also shake in the house ~~house~~. the whole house to shake and cannot hear the person on the telephone and also drop calls.

Name/Address:

Ainda Murray
1313 W. 84th Place
Los Angeles, Calif, 90044



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

J-1 [WHAT STREET OR ROADWAY WILL BE USED FOR THE NORTH LIMITS OF FOR FAR PART 150 NOISE EXPOSURE?]

J-2 [MY CONCERN IS THE DOWNWIND LEG FOR VFR LANDINGS AT LAX.]

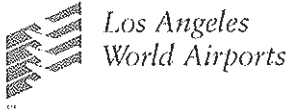
J-3 [WILL THE PUBLIC HAVE AN OPPORTUNITY TO PRESENT THEIR CONCERNS BEFORE THE FINAL REPORT IS ADOPTED?]

Empty lined area for additional comments.

Name/Address:

CLINT SIMMONS
3416 REDONDO BL
LA. 90016

E-MAIL
CLINTSIMMONSPE1@GMAIL.COM



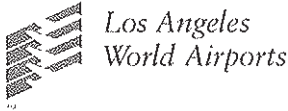
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K-1 [What are some of the requirements? Does it matter whether you own your home or not? How long will it take? Is there anything that we need to be doing?]

K-2
K-3
K-4

Name/Address:

Linda J WARE
9140 S Wilton Pl.
Los Angeles, CA 90047-3516



Please use the space below to provide your questions and comments regarding the FAR Part 150 Noise Exposure Map Update Study for Los Angeles International Airport. Your comments and/or questions will be reviewed and considered during the Update. Your participation in the process is appreciated. If you wish to receive future project updates please provide your contact information below.

L-1 [Question: Can the neighbors request an independent assessment of the noise level in support of the FAA DATA?]

L-2 [Comment:] Based on the 84th Place Blockclub's experiences & tracking of the noise disturbance, we are requesting a re-evaluation of the boundaries that qualify households for sound proofing.

L-3 [Comment:] It is our belief that the continuous vibration (24 hrs / 7 days) is causing damage to house & causing a frustration due to the on-going adjustment of TVs & radios.

L-4 [COMMENT:] We have collect data over the last 30 days of recorded noise, pictures and have called in to Noise Hotline & reported Airplane numbers on the Belly of plane.

Note: Tim a retired employee of Boeing & famular wife airplanes.

Name/Address:
Bernard Washington 1325 W. 84th Place
Sandra Los Angeles, CA 90044-2215

M



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

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M-1

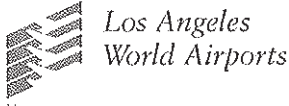
My concern is that the airplanes are flying very low & they fly directly over our house. They are so low that we are able to read what's on the belly of the plane. The planes are loud vibrating the house shaking the windows. I would like to know how the decibels are measured & how often & how

M-2

come the flight pattern has not been changed since flights are coming every five minutes. I'm sure the current flight pattern is outdated in this day & age.

Name/Address:

GLORIA & JACK WILSON
1301 W. 84TH Place
LOS ANGELES, CA 90044



FAR Part 150 Noise Exposure Map Update
Los Angeles International Airport
Public Information Workshop
May 12, 2014

Comment Form

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N-1

Please add me to your mailing list.

Christine Wood
3016 W. 82 Place
Inglewood, CA 90305
(323) 216-2469
cnwood@ca.rr.com

Name/Address:



City of El Segundo

Office of the City Manager

June 9, 2015

Elected Officials:

Suzanne Fuentes,
Mayor
Carl Jacobson,
Mayor Pro Tem
Dave Atkinson,
Council Member
Marie Fellhauer,
Council Member
Michael Dugan,
Council Member
Tracy Weaver,
City Clerk
Crista Binder,
City Treasurer

Appointed Officials:

Greg Carpenter,
City Manager
Mark D. Hensley,
City Attorney

Department Directors:

Misty Cheng,
(Interim) Finance
Kevin Smith,
Fire Chief
Martha Dijkstra,
Human Resources
Debra Brighton,
Library Services
Sam Lee,
Planning and
Building Safety
Mitch Taverna,
Police Chief
Stephanie Katsouieas,
Public Works
Meredith Pettit,
Recreation & Parks

www.elsegundobusiness.com

Kathryn Pantoja
Environmental Affairs Officer
Environmental Services Division – Noise Management
Los Angeles World Airports
P.O. Box 92216
Los Angeles, CA 90009-2216

Re: LAX Noise Exposure Maps

Dear Ms. Pantoja:

On behalf of the City of El Segundo, thank you for the opportunity to review the draft Noise Exposure Map (“NEM”) Update documents. Participating in the NEM Update process is critical to El Segundo because the final NEM will likely be the main driver of eligibility for funding under El Segundo’s Residential Sound Insulation (“RSI”) program. El Segundo expects to be actively involved in the update process until the FAA’s ultimate approval of the NEM.

O-1

After reviewing the draft NEM Update documents, El Segundo perceives that the 2020 NEM 65 dB contour would generally be larger, and encompass more homes in El Segundo, than the “Alternative D” 65 dB contour, which the FAA has made the boundary for noise mitigation funding in El Segundo after 2015. El Segundo is encouraged that its preliminary analysis shows that the 2020 NEM would include approximately 470 El Segundo residences within the 65 dB contour that otherwise would fall outside of the Alternative D 65 dB contour.

O-2

We nonetheless have concerns about the NEM Update. Foremost, LAVA must ensure that the NEM Update accounts for all reasonably foreseeable airport operations as required by Part 150 (see 14 C.F.R. § 150.21), including temporary shifts in operations that will result in corresponding temporary expansions of the 65 dB noise contour in El Segundo. The environmental documents for the Runway 6R/24L Safety Area Improvements Project (“RSA North Project”), for instance, indicate that the noise contour in El Segundo will temporarily expand in the first half of 2016 due to shifting of flight operations to the south airfield runways. See Environmental Assessment for Runway 6R/24L

O-3

June 9, 2015
Page 2
Ms. Pantoja

Safety Area Improvements Project Exhibit 4-3. The 2020 NEM 65 db contour does not currently include many of the 75 homes identified by LAWA staff as impacted by the RSA North Project. El Segundo requests additional explanation regarding how temporary noise impacts such as those from the RSA North Project, and other noise impacts that are likely to recur due to periodic facility closures for maintenance, are reflected in the NEM Update.

O-3
cont.

Second, El Segundo is eager to better understand how LAWA's use of the 2014 Terminal Area Forecast ("TAF") for the purpose of preparing the 2020 NEM relates to LAX's maximum operational capacity of 78.9 million annual passengers ("MAP"), as envisioned by the 2004 LAX Master Plan ("Master Plan"). LAWA appears, based on data in the NEM Update, to be committing itself to maintain 2020 passenger numbers well below 78.9 MAP. The NEM Update should nevertheless provide a clear MAP "equivalent" for the 2020 operations forecast, and explain how the MAP equivalent would compare with the 78.9 MAP cap in the Master Plan.

O-4

Please provide additional clarity with regard to the issues above and ensure that the NEM Update complies with Part 150 by accounting for all reasonably foreseeable operations that cause any noise impact above state thresholds, regardless of duration. El Segundo looks forward to assisting LAWA in these efforts.

Respectfully,



Greg Carpenter,
City Manager, City of El Segundo

CC: City of El Segundo Mayor and City Council

APPENDIX H

Los Angeles International Airport Airspace Overview

H.1 Introduction

This technical appendix describes visual flight rules transition routes, standard terminal arrivals, and departure procedures associated with Los Angeles International Airport.

H.2 Visual Flight Rules Transition Routes

The LAX Class B airspace includes VFR transition routes that general aviation aircraft use to avoid heavily congested IFR routes within the airspace. The names of these transition routes include the Coliseum Route, Hollywood Park Route, Mini Route, Shoreline Route, and the Los Angeles Special Flight Rules Area.

The Coliseum Route takes VFR aircraft northwest to southeast and vice-versa from Van Nuys to Miles Square Park at altitudes between 8,500 and 9,500 feet MSL east of LAX over the L.A. Coliseum. This route may not be available when LAX is in its east flow operation.

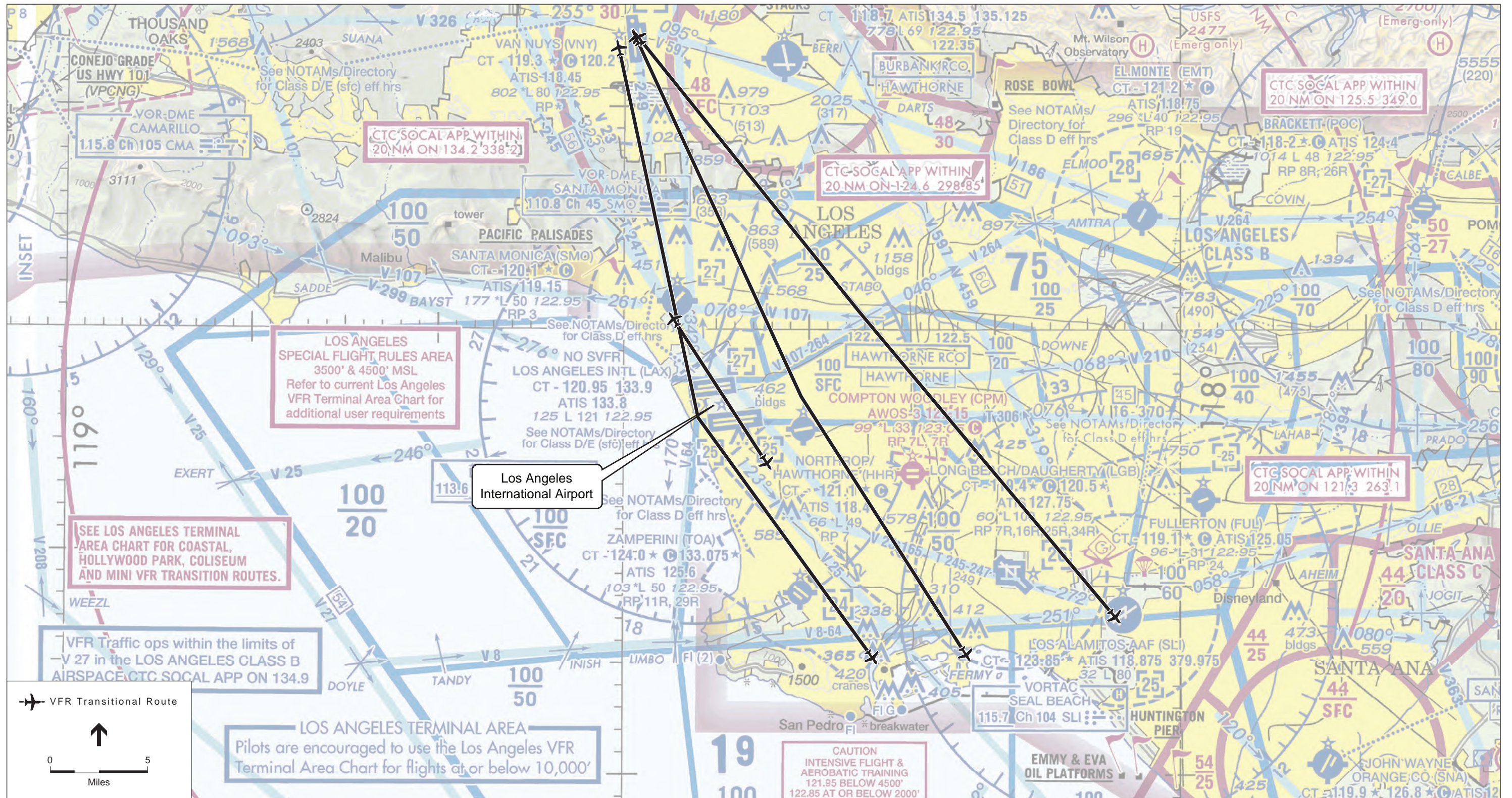
The Hollywood Park Route takes aircraft northwest to southeast and vice-versa from Van Nuys to the Queen Mary at altitudes between 7,000 and 10,000 feet MSL just east of LAX. This route may not be available when LAX is in east flow operation.

The Mini Route takes aircraft northwest to southeast and vice-versa from Santa Monica to the Hawthorne and Interstate 405 Freeway over LAX. ATC clearance from the LAX ATCT is required for this route.

The Shoreline Route takes aircraft northwest to southeast and vice-versa from Van Nuys to the Vincent Thomas Bridge at altitudes between 5,500 and 6,500 feet MSL just west of LAX over the VOR.

The Los Angeles Special Flight Rules Area is a route that takes aircraft from Santa Monica over LAX and south along the Interstate 405 Freeway and vice-versa. The maximum speed in this area for aircraft is 140 knots indicated airspeed (KIAS). Aircraft navigating southeasterly shall be in level flight at 3,500 feet MSL. Aircraft navigating northwesterly shall be in level flight at 4,500 feet MSL. In this area, communication with ATC is not required, however, there is an air-to-air frequency where aircraft communicate with each other their location, altitude, and direction of flight. The VFR transition routes are depicted on **Exhibit H-1**.

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SOURCE: Federal Aviation Administration, 2013; ESA Airports 2014
 NOTE: Not for Navigational Use

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02

Exhibit H-1
 Visual Flight Rules Transitional Routes

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H.3 Standard Terminal Arrivals and Departure Procedures

The Los Angeles airspace is structured so that arriving aircraft can be safely and efficiently transitioned from the en route environment to the approach control environment and from the approach control environment to the airfield proper; these structures are known as Standard Terminal Arrivals (STARs). Likewise, the airspace is structured so that departing aircraft can transition from airfield to the terminal environment and ultimately to the en route environment; these structures are known as Departure Procedures (DPs). As discussed previously, aircraft flying in and out of LAX follow these precise routes depending on the operational flow of the Airport. STARs and DPs are a combination of lateral, vertical, and speed commands along a set of fixes (intersections) or waypoints that are typically pre-programmed into the aircraft's flight management system (FMS), and executed upon ATC clearance. As the FAA continues to revamp the national airspace system and its procedures within, as part of NextGen and the Metroplex system, newer RNAV (GPS) arrival and departure procedures are being created to provide benefits to both ATC and pilots by reducing communications, reducing flight time and distance, lowering fuel burn due to more efficient flight profiles, and increasing predictability.

When flying a STAR or DP, the pilot will follow waypoints or fixes that are either ground based or RNAV (GPS) based depending on aircraft capability. In conventional procedures, fixes are defined by the location of a navigational aid (e.g. VORTACs and VORs) or determined by reference to these navigational aids such as DME intersections. The advantage of the RNAV STARs and DPs are that waypoints are defined by longitude and latitude, and allow aircraft to fly a more direct course from point to point instead of from navigational aid to navigational aid. STARs and DPs may serve more than one airport in an area, and a single airport may have multiple STARs and DPs such as LAX. Each of the published lateral navigation procedures are referenced in the following sections. Standard Terminal Arrival Routes to LAX are depicted on **Exhibit H-2**. Departure Procedures at LAX are depicted on **Exhibit H-3**.

H.3.1 Standard Terminal Arrivals

A STAR is an ATC IFR arrival route established to simplify aircraft clearance delivery and assist in the aircraft's transition between the en route and approach portions of the flight. The San Diego TRACON and LAX ATC use 17 STARs to route aircraft into the Los Angeles area. Currently there are three RNAV (GPS) arrival procedures and 14 conventional arrival procedures as shown in **Table H-1**. The names of the RNAV (GPS) arrival procedures are the BUFIE THREE, KEACH ONE, and the SYMON ONE arrivals. The names of the conventional arrival procedures include the BASET THREE, DOWNE FOUR, KIMMO THREE, LEENA FOUR, MOORPARK THREE, OCEAN TWO, OLDEE ONE, REDEYE TWO, REEDR THREE, RIIVR TWO, SADDE SIX, SEAVU TWO, SHIVE ONE, and the VISTA TWO arrivals.

**TABLE H-1
STANDARD TERMINAL ARRIVAL ROUTES, LOS ANGELES INTERNATIONAL AIRPORT**

Procedure Name	Procedure Type	Arrival Direction
BASET THREE	Conventional	East/Northeast
DOWNE FOUR	Conventional	East/Northeast
KIMMO THREE	Conventional	North/Northwest
LEENA FOUR	Conventional	North/Northwest
MOORPARK THREE	Conventional	North/Northwest
OCEAN TWO	Conventional	South/Southwest/Southeast
OLDEE ONE	Conventional	South/Southwest/Southeast
REDEYE TWO	Conventional	East/Northeast
REEDR THREE	Conventional	East/Northeast
RIIVR TWO	Conventional	East/Northeast
SADDE SIX	Conventional	North/Northwest
SEAVU TWO	Conventional	East/Northeast
SHIVE ONE	Conventional	South/Southwest/Southeast
VISTA TWO	Conventional	South/Southwest/Southeast
BUFIE THREE	RNAV	South/Southwest/Southeast
KEACH ONE	RNAV	North/Northwest
SYMON ONE	RNAV	North/Northwest

NOTE: RNAV = Area Navigation
SOURCE: AirNav.com, August 2014.

North/Northwest

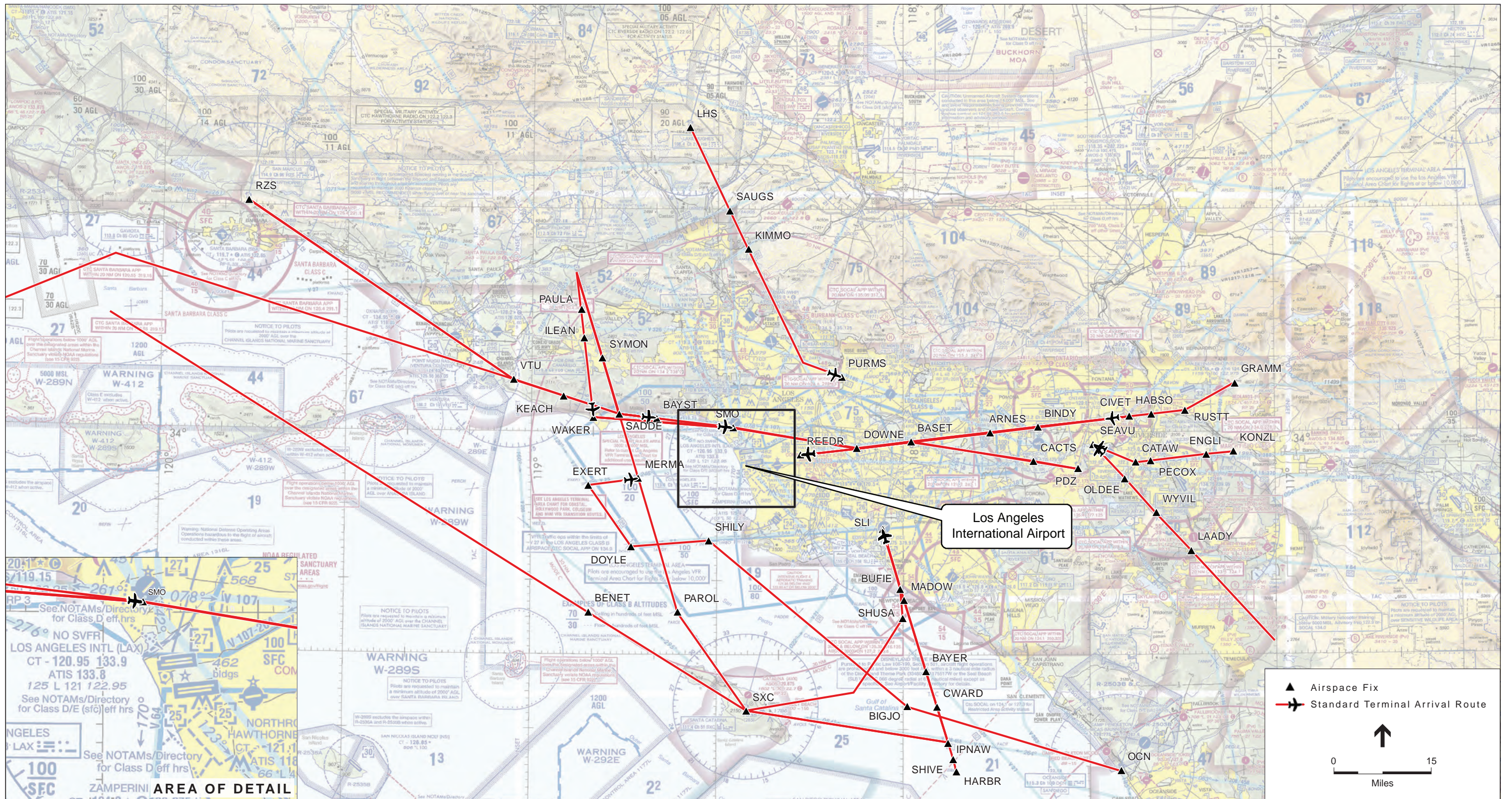
Aircraft entering the LAX airspace from the north/northwest are generally assigned the KEACH ONE RNAV arrival, the KIMMO THREE arrival, the LEENA FOUR arrival, the MOORPARK THREE arrival, the SADDE SIX arrival, or the SYMON ONE RNAV arrival.

KEACH ONE RNAV – Aircraft are routed from the west/northwest to the Ventura VOR located approximately 33 nm northwest of LAX, and then to the Santa Monica VOR located 5 nm north of LAX. From this point, aircraft are radar vectored to the final approach phase. This arrival is for turbojet aircraft only.

KIMMO THREE – Aircraft are routed from the north to the KIMMO fix, located approximately 28 nm north of LAX, south to the PURMS fix located approximately 16 nm northeast of LAX. From this point, aircraft are radar vectored to the final approach phase. This arrival is for non-turbojet aircraft only.

LEENA FOUR – This arrival is unconventional in that it routes aircraft from the northwest and southwest to the Santa Catalina VOR located on Santa Catalina Island south of the Airport, then west to the IPNAW intersection located 47 nm southeast of LAX, and then to the Seal Beach VOR located 20 nm southeast of the Airport. From this point, aircraft are radar vectored to the final approach phase.

MOORPARK THREE – Aircraft are routed from the north and northwest to the Fillmore VOR located 33 nm northwest of LAX, and then to the WAKER intersection located 22 nm northwest of LAX. From this point, aircraft are radar vectored to the final approach phase.

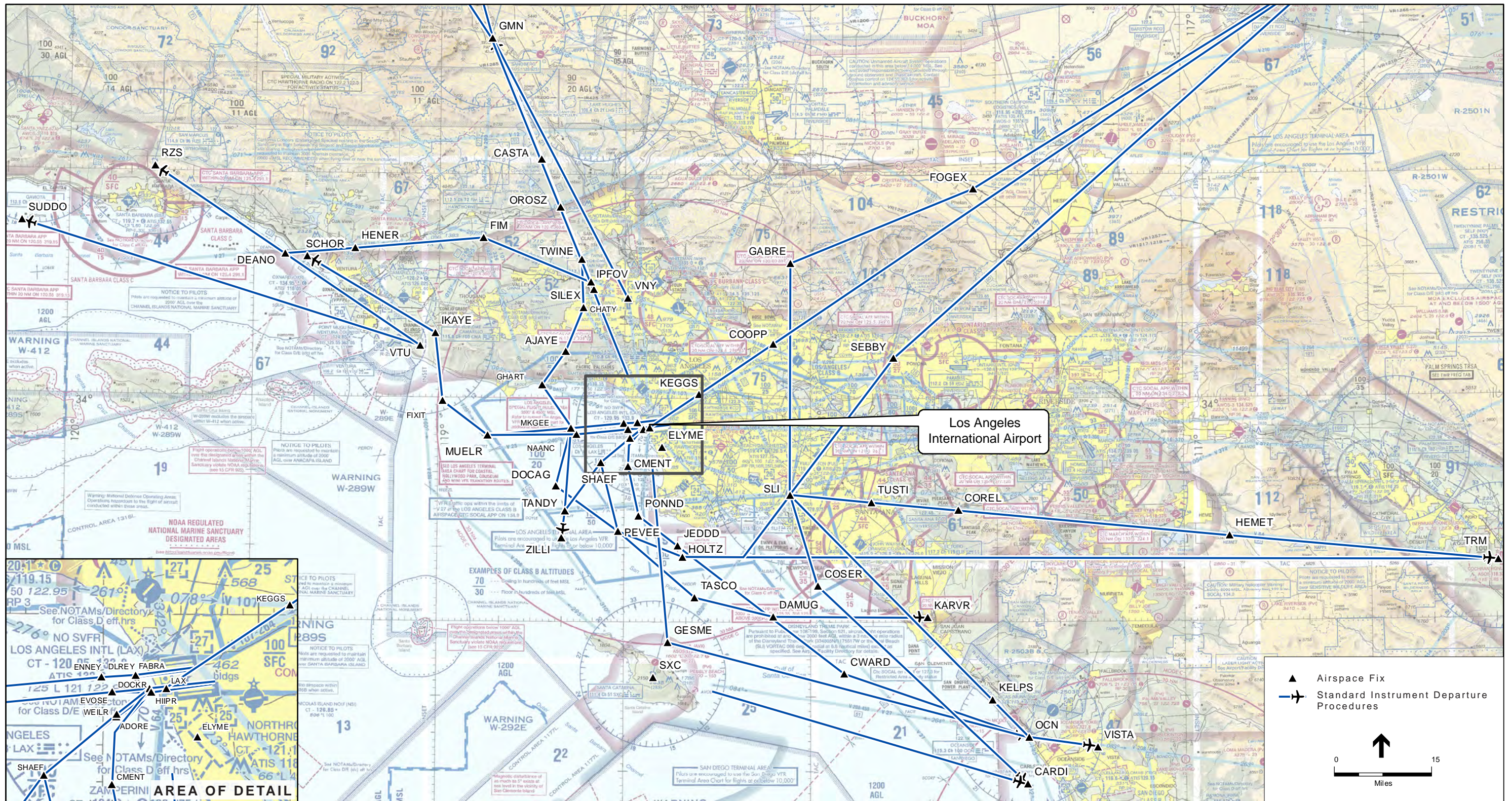


SOURCE: Federal Aviation Administration, 2013; ESA Airports, 2014
 NOTE: Not for Navigational Use

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02

Exhibit H-2
 LAX Standard Terminal Arrival Routes

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SOURCE: Federal Aviation Administration, 2013; ESA Airports, 2014
 NOTE: Not for Navigational Use

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02

Exhibit H-3
 LAX Departure Procedures

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SADDE SIX – Aircraft are routed to the SADDE intersection located 18 nm northwest of LAX, and then to the Santa Monica VOR. From this point, aircraft are radar vectored to the final approach phase.

SYMON ONE RNAV – Aircraft are routed from the north to the Fillmore VOR located 33 nm northwest of LAX and then to the SADDE waypoint located 18 nm northwest of LAX. From this point, aircraft direct to the Santa Monica VOR where they are radar vectored to the final approach phase. This arrival is for turbojet aircraft only.

East/Northeast

Aircraft entering the LAX airspace from the east/northeast are generally assigned the BASET THREE arrival, the DOWNE FOUR arrival, the REDEYE TWO arrival, the REEDR THREE arrival, the RIIVR TWO arrival, or the SEAVU TWO arrival.

BASET THREE – Aircraft are routed from the east to the BASET intersection located 22 nm east of the Airport, and then are routed west to the REEDR intersection located 8 nm east of LAX where aircraft are then radar vectored to the final approach phase.

DOWNE FOUR – Aircraft are routed from the east to the CIVET intersection located 52 nm east of the Airport, and then routed west to the WAKER intersection located 22 nm northwest of LAX. From this point, aircraft are radar vectored to the final approach phase. This arrival is utilized for noise abatement between 12:00 a.m. and 6:30 a.m. local time.

REDEYE TWO – Like the BASET and DOWNE arrivals, aircraft are routed from the east to the BASET intersection, then to the DOWNE intersection, and then to the northwest to the WAKER intersection. From this point, aircraft are radar vectored to the final approach phase. This arrival is utilized for noise abatement between 12:00 a.m. and 6:30 a.m. local time.

REEDR THREE – Aircraft are routed from the east to the CIVET intersection, and then to the REEDR intersection located 8 nm east of the LAX VOR. Aircraft then fly a 220° heading and are radar vectored to the final approach phase.

RIIVR TWO – Aircraft are routed from the northeast to the GRAMM intersection located 66 nm east of LAX. From GRAMM, aircraft are routed to the RUSTT intersection located 59 nm east of LAX, and then to the RIIVR intersection located 49 nm east of LAX. From this point, aircraft are radar vectored to the final approach phase.

SEAVU TWO – Aircraft are routed from the Twentynine Palms VOR located 132 nm east of the airport to the SEAVU intersection 46 nm east of the Airport. From this point, aircraft are radar vectored to the final approach phase.

South/Southwest/Southeast

Aircraft entering the LAX airspace from the south/southwest/southeast are generally assigned the BUFIE THREE RNAV arrival, the OCEAN TWO arrival, the OLDEE ONE arrival, the SHIVE ONE arrival, or the VISTA TWO arrival.

BUFIE THREE RNAV – Aircraft are routed from the Santa Catalina VOR to the FITOW waypoint located approximately 34 nm south of LAX, and then north to the Seal Beach VOR located 20 nm southeast of LAX. From this point aircraft fly a 330° heading and are radar vectored to the final approach phase. This arrival is for turbojet aircraft only.

OCEAN TWO – Aircraft are routed from the Julian VOR located approximately 103 nm southeast of LAX to the northwest to the MERMA intersection located 14 nm west of the LAX VOR. From this point, aircraft are radar vectored to the final approach phase.

OLDEE ONE – Aircraft are routed from the Julian VOR to the SEAVU intersection located 46 nm east of the Airport. From this point, aircraft are radar vectored to the final approach phase.

SHIVE ONE – Aircraft are routed from the HARBR intersection located 50 nm southeast of the Airport to the Seal Beach VOR. From this point, aircraft are radar vectored to the final approach phase.

VISTA TWO – Aircraft are routed from the Julian VOR to the SHIVE intersection located 49 nm southeast of LAX. From there aircraft make a north turn toward the Seal Beach VOR where they are radar vectored to the final approach phase.

H.3.2 Departure Procedures

Aircraft departing LAX are often assigned a specific DP before departure as shown in **Table H-2**. A DP is a published IFR procedure that provides a standard route from the runway to the appropriate en route structure. In some cases, a DP may have an associated transition, which is a published procedure that connects the end of the DP to one of several en route structures. DPs are designed to separate departing aircraft from arriving aircraft, provide for efficient interception of an outbound course, avoid noise-sensitive areas near an airport, simplify the issuance of departure clearances, and reduce radio communication.

Similar to the published standard terminal arrival procedures (i.e., STARs), departure procedures at LAX include a mix of RNAV and conventional procedures. Currently there are eight RNAV departures, and 12 conventional departures for a total of 20. The names of the RNAV departures are: CASTA FOUR, FIXIT TWO, HOLTZ NINE, JEDDD ONE, KARVR THREE, MUEL R ONE, OSHNN FOUR, and the ZILLI ONE departures. The names of the conventional DPs include: CATALINA FIVE, CHATY TWO, GABRE EIGHT, GORMAN FOUR, IMPER ONE, LAXX SEVEN, LOOP SEVEN, PERCH NINE, SAN DIEGO SIX, SEAL BEACH FIVE, SEBBY EIGHT, and the VENTURA FIVE departures.

**TABLE H-2
DEPARTURE PROCEDURES, LOS ANGELES INTERNATIONAL AIRPORT**

Procedure Name	Procedure Type	Departure Direction
CATLINA FIVE	Conventional	South/East
CHATY TWO	Conventional	North/West
GABRE EIGHT	Conventional	North/West
GORMAN FOUR	Conventional	North/West
IMPER ONE	Conventional	South/East
LAXX SEVEN	Conventional	South/East
LOOP SEVEN	Conventional	North/West
PERCH NINE	Conventional	North/West
SAN DIEGO SIX	Conventional	South/East
SEAL BEACH FIVE	Conventional	South/East
SEBBY EIGHT	Conventional	North/West
VENTURA FIVE	Conventional	North/West
CASTA FOUR	RNAV	North/West
FIXIT TWO	RNAV	North/West
HOLTZ NINE	RNAV	South/East
JEDDD ONE	RNAV	South/East
KARVR THREE	RNAV	South/East
MUELR ONE	RNAV	North/West
OSHNN FOUR	RNAV	North/West
ZILLI ONE	RNAV	South/East

NOTE: RNAV = Area Navigation.
SOURCE: AirNav.com, August 2014.

North/West

Aircraft departing LAX airspace to the north and west are generally assigned the CASTA FOUR RNAV departure, the FIXIT TWO RNAV departure, the CHATY TWO departure, the GABRE EIGHT departure, the GORMAN FOUR departure, the LOOP SEVEN departure, MUELR ONE RNAV departure, the OSHNN FOUR RNAV departure, the PERCH NINE departure, the SEBBY EIGHT departure, or the VENTURE FIVE departure.

CASTA FOUR RNAV – This departure is for turbojet aircraft only, and used when aircraft depart LAX on westerly headings and are routed north/northwest to the CASTA waypoint located 38 nm north of LAX, and then as filed.

FIXIT TWO RNAV – This departure is for turbojet aircraft only, and used when aircraft depart LAX on westerly headings and are routed west to the FIXIT waypoint located 28 nm west of LAX, and then as filed.

CHATY TWO – This is a radar vector departure for non-turbojet aircraft departing LAX on easterly headings, 040° when departing the northern runways, and 070° heading when departing

on the south runways. The aircraft are then radar vectored to the LAX 323° radial to the CHATY intersection located 20 nm north of LAX. Aircraft are then routed as filed.

GABRE EIGHT – This is a radar vector departure for aircraft departing LAX to the east on an assigned heading of 070°. Aircraft departing from the north runways fly the 070° heading to the LAX VOR three DME and turn to a 055° heading. Departures are then radar vectored onto the 345° radial off of the Seal Beach VOR to GABRE intersection, and then as filed.

GORMAN FOUR – This is a radar vector departure for aircraft departing LAX both to the east and the west for this departure, depending on the runways in use, on a heading of 070° to the east, or 250° to the west. Aircraft departing from the north runways to the east fly to the LAX VOR three DME and turn to a 055° heading. Aircraft are then radar vectored to radials off of the LAX VOR or the Santa Monica VOR to the Gorman VOR located 56 nm north of LAX, and then as filed.

LOOP SEVEN – This is a radar vector departure for aircraft departing LAX westerly on a 250° heading remaining within 15 nm of the LAX VOR. Aircraft departing from the south runways fly west on the 250° heading to the Santa Monica VOR 160° radial, and then fly a 235° heading. Aircraft are then radar vectored back to the LAX VOR, and continue northeast to the Daggett VOR located 110 nm from the LAX VOR, and then as filed.

MUELR ONE RNAV – This departure is for turbojet aircraft only for aircraft departing LAX on a westerly heading and are routed west to the MUELR waypoint located 22 nm west of LAX, and then northwest as filed.

OSHNN FOUR RNAV – This departure is for aircraft departing LAX to the west and that are unable to fly the LOOP SEVEN DP. Aircraft are routed south to the OSHNN waypoint located 22 nm south of LAX. Aircraft then fly north to the Daggett VOR and then as filed. This departure is typically used for aircraft departing LAX between 9:00 p.m. and 7:00 a.m. local time.

PERCH NINE – This is a radar vector departure for aircraft departing LAX both to the east and the west for this departure, depending on runways in use, on a heading of 070° to the east or 250° to the west. They are then radar vectored to the DINTY or FICKY intersections located 211 nm and 208 nm respectively, and then as filed.

SEBBY EIGHT – This is a radar vector departure for aircraft unable to fly the LOOP SEVEN DP. Aircraft depart LAX to the west on a 250° heading and then radar vectored to the 022° radial off of the Seal Beach VOR to the SEBBY intersection located 34 nm northeast of LAX, and then to the Daggett VOR as filed. This departure is typically used for aircraft departing LAX and are unable to fly the LOOP SEVEN DP between 9:00 p.m. and 7:00 a.m. local time.

VENTURA FIVE – This is a radar vector departure for aircraft departing LAX both to the east and the west for this departure, depending on runways in use, on a heading of 070° to the east or 250° to the west. Aircraft are then radar vectored to the Ventura VOR located 34 nm northwest of

LAX and then as filed out to the DINTY intersection. This departure is typically used for aircraft departing LAX between 9:00 p.m. and 7:00 a.m. local time.

South/East

Aircraft departing LAX airspace to the south and east are generally assigned the CATALINA FIVE departure, the HOLTZ NINE RNAV departure, the IMPER ONE departure, the JEDDD ONE RNAV departure, the KARVR THREE RNAV departure, the LAXX SEVEN departure, SAN DIEGO SIX departure, the SEAL BEACH FIVE departure, or the ZILLI ONE RNAV departure.

CATALINA FIVE – This is a radar vector departure for aircraft departing LAX to the east on a 070° heading. Aircraft are radar vectored south to the Santa Catalina VOR located 34 nm south of LAX, and then as filed.

HOLTZ NINE RNAV – Aircraft depart LAX to the west and are routed south to the HOLTZ waypoint located 18 nm south of the Airport, and then east as filed.

IMPER ONE – Aircraft depart LAX both to the east and the west for this departure, depending on runways in use, on a heading of 070° to the east or 250° to the west. Aircraft are then radar vectored to the Seal Beach VOR for easterly departures, or to the 160° radial off of the LAX VOR, and then fly the departure southeast to the Imperial VOR located 160 nm southeast of LAX, and then as filed.

JEDDD ONE RNAV – This departure is for turboprop aircraft only departing LAX Runways 25L and 25R to the west. Aircraft are routed south to the JEDDD waypoint located 19 nm south of LAX, and then fly southeast as filed.

KARVR THREE RNAV – Aircraft depart LAX to the west and are routed south to the KARVR waypoint located 45 nm southeast of LAX, and then fly south, and then southeast as filed.

LAXX SEVEN – This is a radar vector departure for turbojet aircraft only departing LAX both to the east and the west for this departure, depending on runways in use, on heading of 070° to the east, and 250° to the west respectively. Aircraft are then radar vectored to the Seal Beach VOR and then east, or southeast as filed.

SAN DIEGO SIX – This is a radar vector departure for non-turbojet aircraft unable to fly the LAXX SIX DP only. Aircraft depart LAX both to the east and the west for this departure, depending on runways in use, on a heading of 070° to the east or 250° to the west. They are then radar vectored to the Seal Beach VOR for easterly departures, and the Santa Catalina 091° radial for westerly departures to the CARDI intersection located 69 nm southeast of LAX, and then southeast as filed.

SEAL BEACH FIVE – This is a radar vector departure for turbojet aircraft unable to fly the LAXX SIX DP only. Aircraft depart LAX both to the east and the west for this departure,

depending on runways in use, on a heading of 070° to the east or 250° to the west. They are then radar vectored to the Seal Beach VOR, and then as filed.

ZILLI ONE RNAV – Aircraft depart LAX to the west for this procedure and are routed to the ZILLI waypoint located approximately 22 nm southwest of LAX, and then southwest as filed.