BOB HOPE AIRPORT

14 CFR Part 150 Study
Noise Exposure Map Update

Prepared for the
Burbank-Glendale-Pasadena
Airport Authority
Burbank, California

BOB HOPE AIRPORT

14 CFR Part 150
Noise Compatibility Study

NOISE EXPOSURE MAPS UPDATE

Prepared For The

Burbank-Glendale-Pasadena Airport Authority
Burbank, California

By

Coffman Associates, Inc.

In Association With

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VICO Systems, LLC
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April 2013

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Burbank, California

14 CFR Part 150 Study Noise Exposure Map Update

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SPONSOR CERTIFICATION

SPONSOR'S CERTIFICATION

The Noise Exposure Maps (NEMs) for Bob Hope Airport, hereby submitted in accordance with Title 14 CFR Part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The Existing Condition NEM is based on data generated for a timeframe representing the year of submission. The assumptions and activity levels used to develop the Existing Condition NEM are based on calendar year data from 2011. The data represented in the 2012 contour is consistent with operations from the last 12 months. The noise contours representing the existing condition are identified as the 2012 Noise Exposure Map.

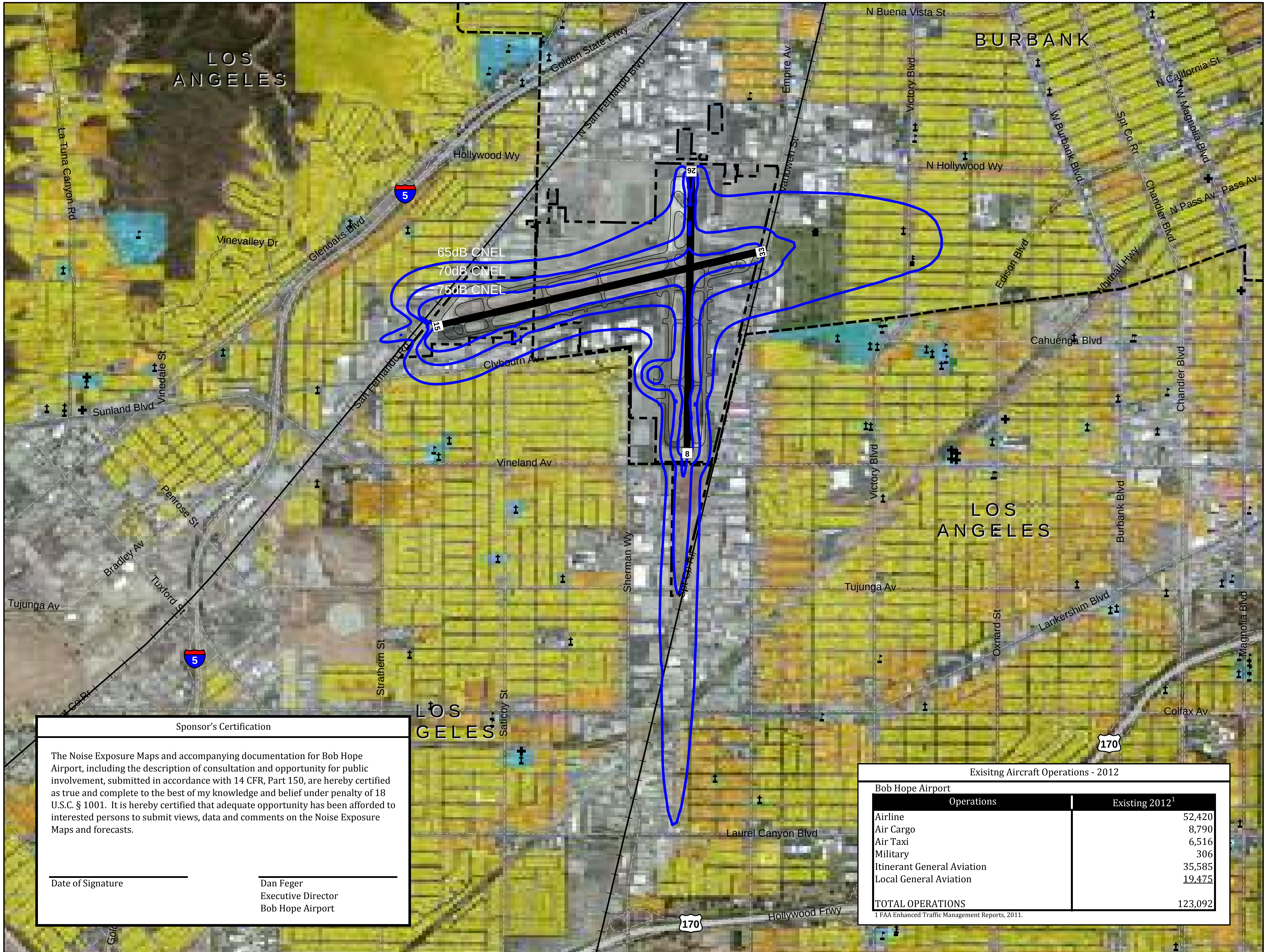
The assumptions and activity levels used to develop the Future Condition NEM are based on reasonable forecasts and other planning assumptions. The Future Condition NEM is based on data generated for a timeframe five years in the future from the year of submission. The noise contours representing the future condition are identified as the 2017 Noise Exposure Map.

The NEMs were prepared in consultation with officials of the state and public and planning agencies whose area, or any portion of whose area, of jurisdiction is within the CNEL contour depicted on the NEMs. The consultation also included Federal officials having local responsibility and regular aeronautical users of the airport. It is further certified that adequate opportunity has been afforded interested persons to submit their views, data, and comments concerning the correctness and adequacy of the NEMs and the supporting documentation and forecasts.

________________________ ____________________________

Date of Signature

Dan Feger
Executive Director
Bob Hope Airport



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport 2012 CNEL Contours

LEGEND

- Airport Boundary
- City Boundaries
- Noise Exposure Contours
- Schools
- Places of Worship
- Hospitals
- Historic Site
- Runway
- Runway Taxiway
- Railroad
- Centerline
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

N

2,000 0 2,000
Feet

Sponsor's Certification

The Noise Exposure Maps and accompanying documentation for Bob Hope Airport, including the description of consultation and opportunity for public involvement, submitted in accordance with 14 CFR, Part 150, are hereby certified as true and complete to the best of my knowledge and belief under penalty of 18 U.S.C. § 1001. It is hereby certified that adequate opportunity has been afforded to interested persons to submit views, data and comments on the Noise Exposure Maps and forecasts.

Date of Signature

Dan Feger
Executive Director
Bob Hope Airport

Exisitng Aircraft Operations - 2012

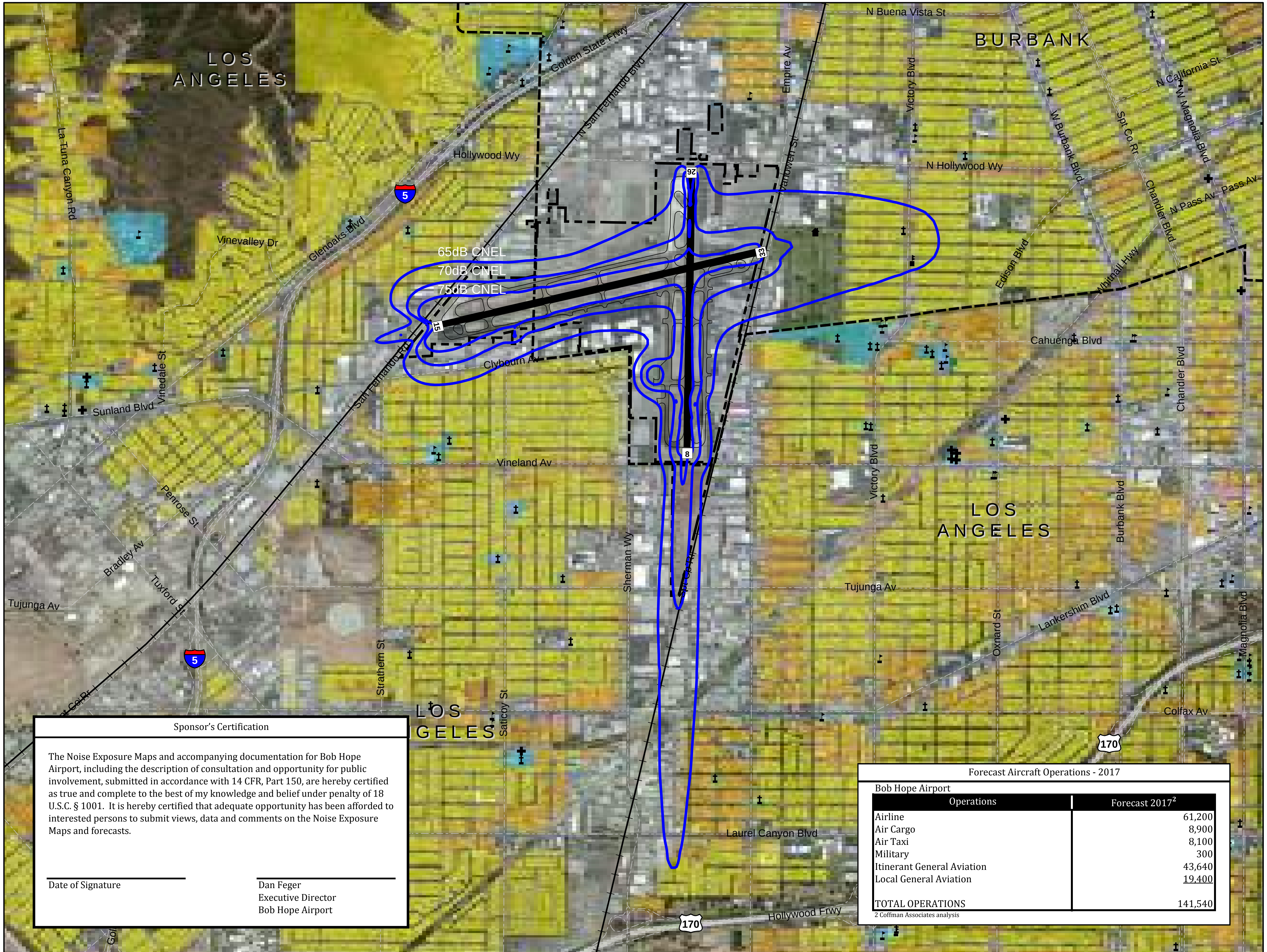
Bob Hope Airport

Operations	Existing 2012[1]
Airline	52,420
Air Cargo	8,790
Air Taxi	6,516
Military	306
Itinerant General Aviation	35,585
Local General Aviation	19,475
TOTAL OPERATIONS	123,092

1 FAA Enhanced Traffic Management Reports, 2011.

Exhibit 1
2012 Noise Exposure Contours

14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport 2017 CNEL Contours



Sponsor's Certification

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Date of Signature

Dan Feger
Executive Director
Bob Hope Airport

Forecast Aircraft Operations - 2017

Bob Hope Airport

Operations	Forecast 2017[2]
Airline	61,200
Air Cargo	8,900
Air Taxi	8,100
Military	300
Itinerant General Aviation	43,640
Local General Aviation	19,400
TOTAL OPERATIONS	141,540

2 Coffman Associates analysis

LEGEND

- Airport Boundary
- City Boundaries
- Noise Exposure Contours
- Schools
- Places of Worship
- Hospitals
- Historic Site
- Runway
- Runway Taxiway
- Railroad
- Centerline
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

N

2,000 0 2,000
Feet

Exhibit 2
2017 Noise Exposure Contours

Chapter One

INVENTORY

Chapter One

Inventory

INTRODUCTION

This document is the Noise Exposure Maps (NEM) Update prepared for Bob Hope Airport, which is owned and operated by the Burbank-Glendale-Pasadena Airport Authority (Authority). The NEM details the existing and projected noise conditions for Bob Hope Airport in accordance with Title 14 Code of Federal Regulations (CFR) Part 150 (14 CFR Part 150 or Part 150) regulations. The NEM includes four chapters:

- Chapter One, Inventory, presents an overview of the regulatory framework for airport noise and land use compatibility planning, including the roles of federal, state, and local government, a brief history of Bob Hope Airport and its noise abatement efforts to date, and a description of the airport facilities, airspace, existing land uses, and local land use policies and regulations.

- Chapter Two, Aviation Forecasts, examines the existing and potential demand for aviation activity at the airport.

- Chapter Three, Aviation Noise, explains the methodology used to develop aircraft noise contours and the key input assumptions used for noise modeling. This chapter also presents the existing and forecast aircraft noise exposure on the assumption of no additional noise abatement efforts. This provides baseline data for evaluating potential noise abatement strategies, if needed.

- Chapter Four, Noise Impacts, analyzes the impacts of the baseline aircraft noise on noise-sensitive land uses. This chapter quantifies the number of noise-sensitive land uses within the noise exposure contours developed in Chapter Three. The contours are overlain on the existing land use, general plan, and zoning maps presented in Chapter One.

Supplemental information is included in the following appendices:

- Appendix A, Study Advisory Committee, includes a listing of the Study Advisory Committee (SAC) members. This committee was convened to provide input during the preparation of the study.

- Appendix B, NCP Review, includes a review of the previous noise compatibility program completed in 2000 and amended in 2004.

- Appendix C, Noise Rules, includes a complete copy of the noise rules adopted and enforced by the Authority.

- Appendix D, Zoning Ordinance Summary, provides an overview of the City of Burbank and City of Los Angeles zoning ordinances that include development specifications.

- Appendix E, Resource Library, includes two sections to provide additional reference and background information: The Measurement and Analysis of Sound and a Glossary of Noise Compatibility Terms.

- Appendix F, FAA Coordination, contains coordination with FAA regarding aircraft modeling substitutions, helicopter profiles, and aviation forecasts.

- Appendix G, Flight Track Assignments, includes detailed flight track assignments for arrivals, departures, and touch and go's.

- Appendix H, 1998 Noise Monitor Assessment Study, includes a noise monitor study prepared as part of the previous Part 150 Noise Compatibility Study Update in 1998 to determine the extent of noise shielding effects from buildings and blast fences between the noise monitors and the end of Runway 15.

- Appendix I, Noise Exposure Maps Checklist, includes the Federal Aviation Administration (FAA's) Noise Exposure Maps Checklist to aid in the FAA's review of these materials.

Additionally, a supplemental document entitled, "Supporting Information on Project Coordination and Local Consultation" has been prepared. This document provides information on the public involvement process conducted during the preparation of the NEM Update.

INVENTORY

BOB HOPE AIRPORT BACKGROUND INFORMATION

Bob Hope Airport was originally opened as United Airport in May 1930. The airport was purchased by Lockheed Aircraft Company in 1940 and renamed Lockheed Air Terminal. In 1967, the name was changed again to Hollywood-Burbank Airport. The airport was privately owned and operated as a commercial service airport until 1978, when it was purchased by the Authority, a public agency, and renamed to Burbank-Glendale-Pasadena Airport. The name was changed again in 2003 to Bob Hope Airport.

Bob Hope Airport Locale

As depicted on **Exhibit 1A**, Bob Hope Airport is located in Los Angeles County, approximately 12 miles north of downtown Los Angeles, California. The airport is located in the western portion of the City of Burbank and is south of Interstate 5. The major streets which bound the airport property are Empire Avenue to the south, Vineland Avenue to the west, San Fernando Boulevard to the north, and Hollywood Way to the east.

Runways and Taxiways

Bob Hope Airport is served by two runways. The longer, primary Runway 15-33 is 6,885 feet long and 150 feet wide. The shorter, crosswind Runway 8-26 is 5,802 feet long and 150 feet wide. **Table 1A** presents additional information regarding the runways and associated lighting systems available at the airport. Each of the runways also has a parallel taxiway, and there are connecting taxiways to enable cross-field movement.

TABLE 1A
Runway Data
Bob Hope Airport

	EXISTING RUNWAYS			
	15	33	8	26
Length (feet)	6,885		5,802	
Width (feet)	150		150	
Surface Material	Asphalt, Grooved		Asphalt, Grooved	
Pavement Strength (lbs.)				
Single Wheel	30,000		30,000	
Double Wheel	180,000		180,000	
Double Tandem	300,000		300,000	
Approach Aids	VASI, REIL	PAPI, REIL	PAPI, MALSR	REIL
Displaced Threshold (feet)	909	350	None	None
Instrument Approach Procedures	None	None	ILS, RNAV (RNP) Y, RNAV (RNP) Z, RNAV (GPS) X, LOC, VOR	None
Fixed Wing Aircraft Traffic Pattern	Right	Left	Right	Left

MALSR Medium Intensity Approach Light System with Runway Alignment Indicator Lights
PAPI Precision Approach Path Indicator
VASI Visual Approach Slope Indicator Lights
REIL Runway End Identifier Lights
RNP Required Navigation Performance
ILS Instrument Landing System
GPS Global Positioning System
VOR Very High Frequency Omnidirectional Range
RNAV Area Navigation

Source: *Airport/Facility Directory*, U.S. Department of Transportation, December 2011

Airport Users and Operations

Users of Bob Hope Airport are generally classified in the following groups: air carriers, air taxi, general aviation, and cargo. As of February 2012, the following airlines provide regularly scheduled service at Bob Hope Airport: Alaska Airlines, Delta Connection, JetBlue, Southwest, United Express, and U.S. Airways. Air taxi operations include commuter passenger, commuter cargo, and for-hire general aviation operations. General aviation users include a variety of privately operated aircraft, many of which are stored, or based, at Bob Hope Airport. These aircraft range from small, propeller driven aircraft, to large business jets and also include helicopters. General aviation operations include those for recreation and business and also those conducted for public safety, such as the Burbank and Glendale Joint Air Support Unit. Cargo operations conducted at Bob Hope Airport include dedicated cargo services and some passenger airlines. Typical cargo activity at Bob Hope Airport includes freight and mail transport. UPS, FedEx, Ameriflight, and Airnet all provide cargo services at the airport. During calendar year 2011, 123,092 operations, defined as a takeoff or landing, occurred at Bob Hope Airport. In addition to general aviation activities, these operations transported 2,141,250 enplaned passengers and 51,038

11SP12-1B-1/26/12

Exhibit 1A
LOCATION MAP

tons of air cargo. Military operations also occur at Bob Hope Airport, however, these operations account for the smallest portion of operational traffic at the airport. Additional information regarding airport operations is presented in Chapter Two – Aviation Forecasts.

Airport Facilities

Facilities at an airport can be divided into two distinct categories: airside facilities and landside facilities. Airside facilities include those directly associated with aircraft operation, such as the runways and taxiways, lighting systems, and aircraft run-up areas. Landside facilities include those necessary to provide an interface between surface and air transportation, as well as support aircraft servicing, storage, maintenance, and operational safety. Landside facilities include the terminal, parking lots, ground transportation areas, and fixed base operators. Existing airport facilities are depicted on **Exhibit 1B**.

Airspace and Air Traffic Control

The *Federal Aviation Administration Act of 1958* established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including: air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. Bob Hope Airport has no direct control over airspace management or air traffic control for aircraft operating at the airport. These functions are handled by FAA and the local air traffic control tower staff. The Bob Hope Airport air traffic control tower is located northeast of the runway intersection, as indicated on **Exhibit 1B.** The operating conditions for aircraft at Bob Hope Airport are also influenced by operations from aircraft operating at other airports within the Los Angeles basin, prevailing wind conditions, and the Verdugo Mountains located east of the airport. **Exhibit 1C** depicts radar flight track data for arrivals and departures during a 24-hour period for seven public-use airports within the Los Angeles basin. Additional information regarding runway use and aircraft flight patterns is included in Chapter Three – Aviation Noise.

Airspace Structure

The FAA established a standardized airspace system to regulate the use of airspace for all airports within the United States. Within the FAA's system, airspace is broadly classified as either controlled or uncontrolled in the United States. The difference between controlled and uncontrolled airspace relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the United States. **Exhibit 1D** shows the airspace structure classifications and terminology established by the FAA. Airspace designated as Classes A, B, C, D, or E is considered controlled airspace. Aircraft operating within controlled airspace are subject to varying requirements for positive air traffic control. **Exhibit 1E** illustrates the airspace within the Los Angeles basin and includes operations for Bob Hope Airport and other surrounding airports.

- Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL).

- Class B airspace is controlled airspace surrounding high activity commercial service airports, such as Los Angeles International Airport.

- Class C airspace is controlled airspace surrounding medium activity commercial service and some military airports. Bob Hope Airport is within Class C airspace.

- Class D airspace is controlled airspace surrounding low activity commercial service or general aviation airports with an airport traffic control tower (ATCT), such as Santa Monica Airport.

- Class E airspace is controlled airspace surrounding an airport that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio contact with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

- Class G airspace is uncontrolled airspace that does not require communication with an air traffic control facility.

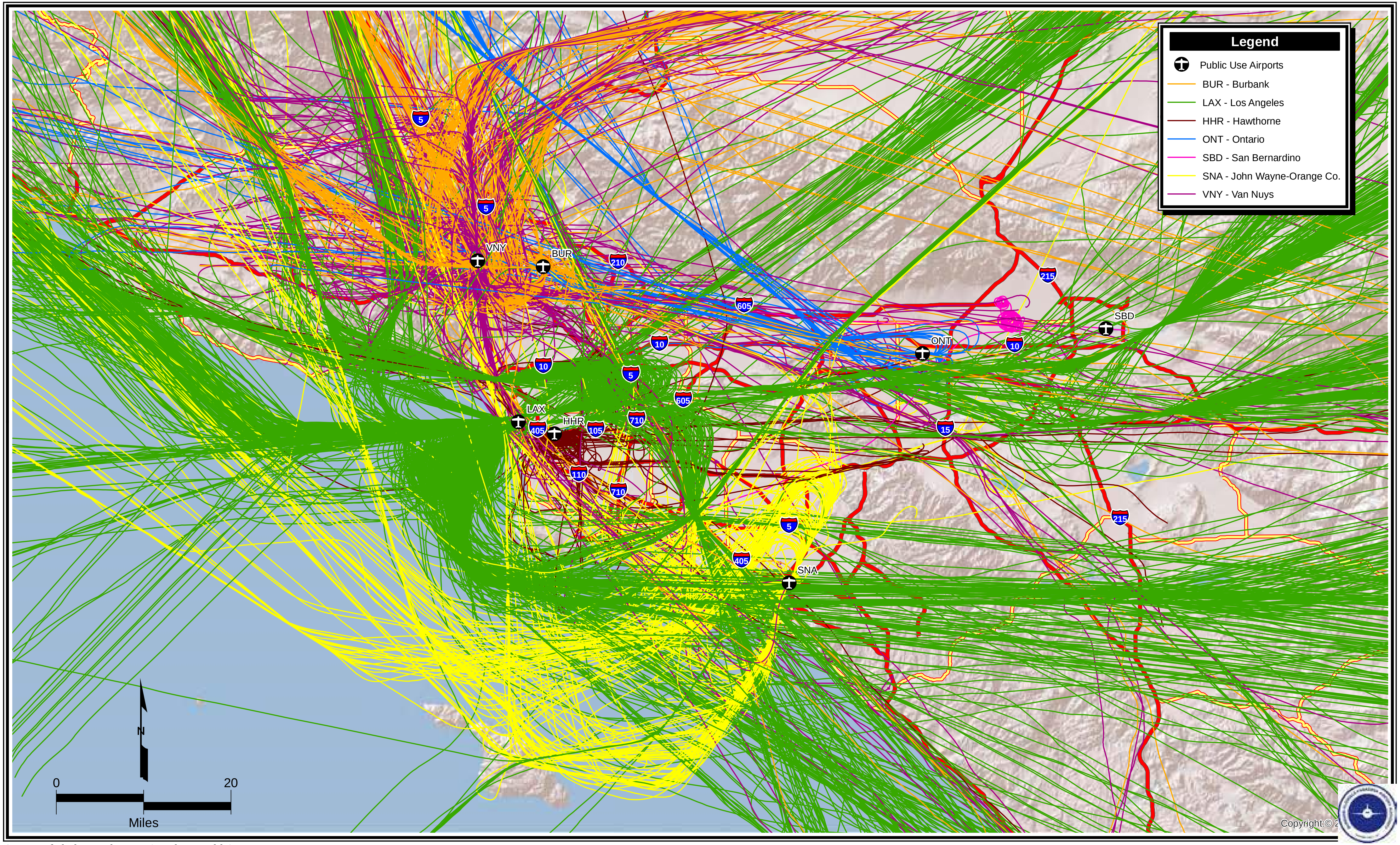
Enroute Navigational Aids

The FAA permits the use of various ground-based transmission facilities and receiving instruments on-board aircraft to facilitate accurate enroute air navigation. These systems are broadly classified as NAVAIDS and often provide navigation to more than one airport. Additionally, aircraft traversing an area may also use these systems. NAVAIDS within the Bob Hope Airport vicinity are described below.

Very High Frequency Omnidirectional Range (VOR) – This system provides course guidance to aircraft by means of a very high frequency (VHF) radio signal. VOR beacons are typically co-located with either distance measuring equipment (DME) or military tactical air navigation (TACAN) equipment. VOR facilities equipped with DME are defined as VOR-DME, while facilities equipped with TACAN are defined as VORTAC. The DME and TACAN systems emit signals enabling pilots of properly equipped aircraft to determine their line-of-sight distance from the facility. VORs define low-altitude (Victor) and high altitude airways (Jet Routes) through the area. Most aircraft enter the Bob Hope Airport area via one of these federal airways. Aircraft assigned to altitudes above 18,000 feet MSL use the Jet Route system. Other aircraft use the low altitude airways. Radials off

11SP12-1B-1/31/12

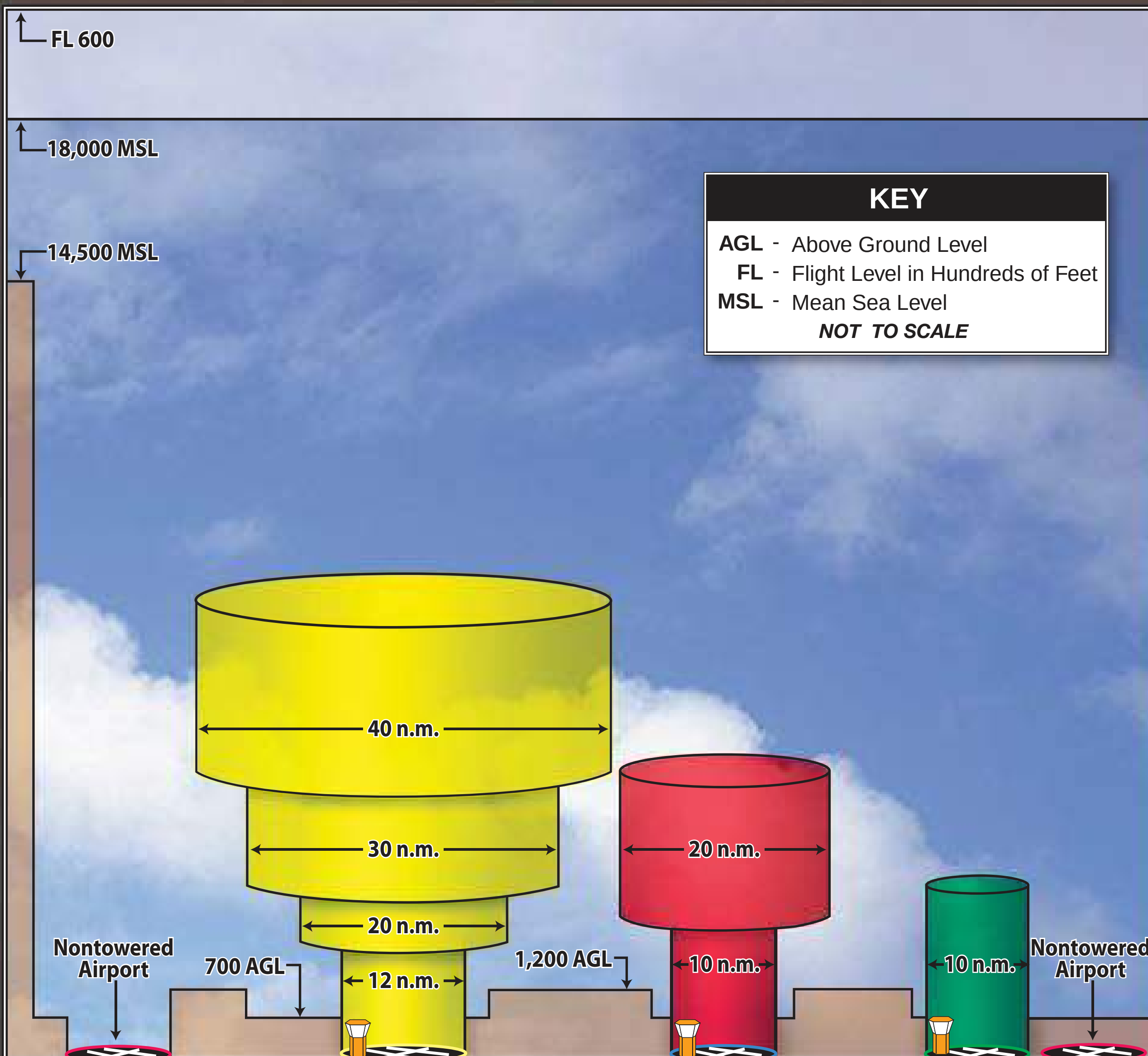
Exhibit 1B
AIRPORT FACILITIES



Source of Flight Tracks: Los Angeles World Airports,
Airport Noise and Operations Monitoring System (ANOMS)
Date: 9-30-2011

Los Angeles Basin Flight Tracks
EXHIBIT 1C

11SP12-1D-1/31/12

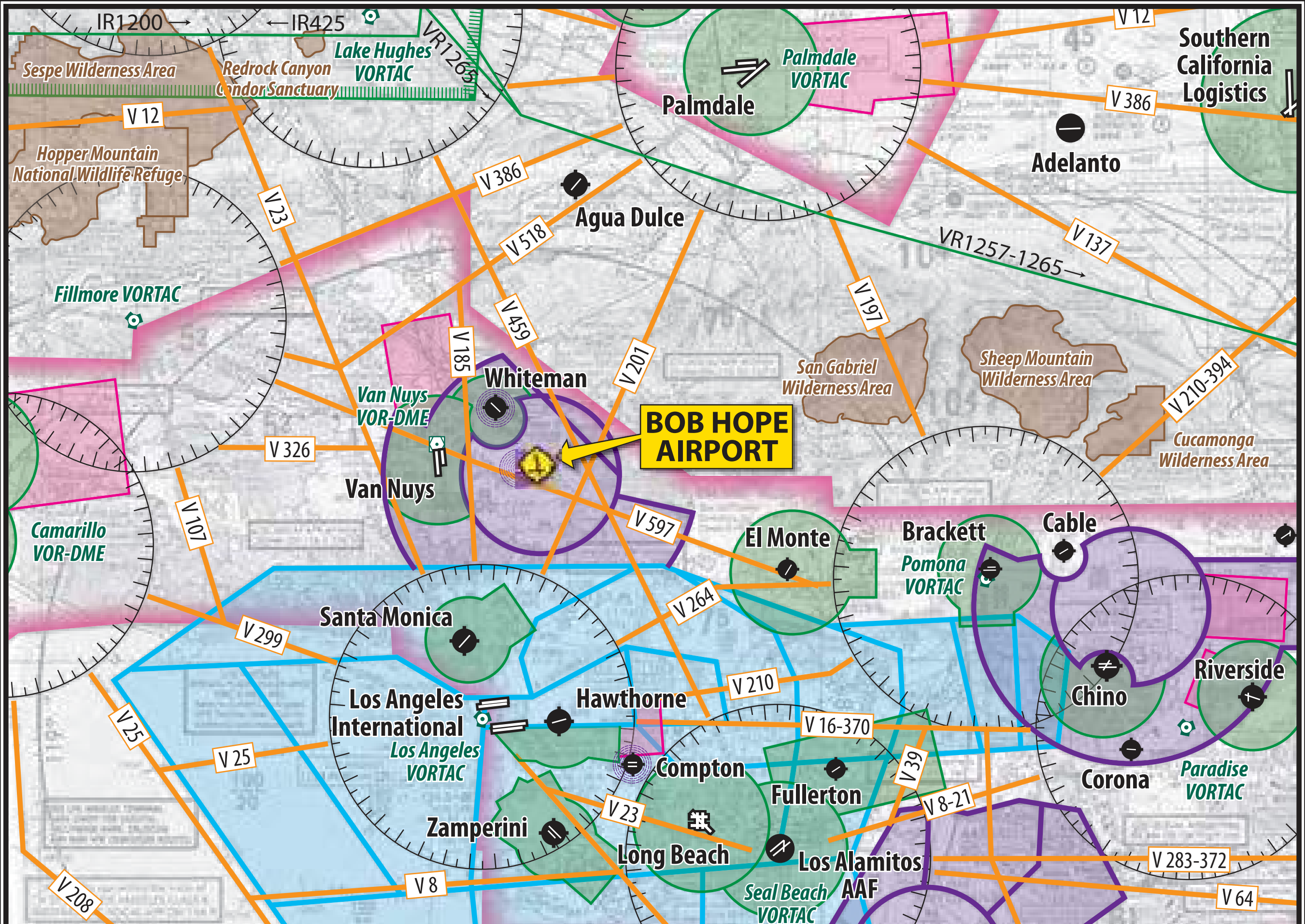


CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

Source: "Airspace Reclassification and Charting Changes for VFR Products," National Oceanic and Atmospheric Administration, National Ocean Service. Chart adapted by Coffman Associates from AOPA Pilot, January 1993.

Exhibit 1D
AIRSPACE CLASSIFICATION

11SP12-1E-1/26/12



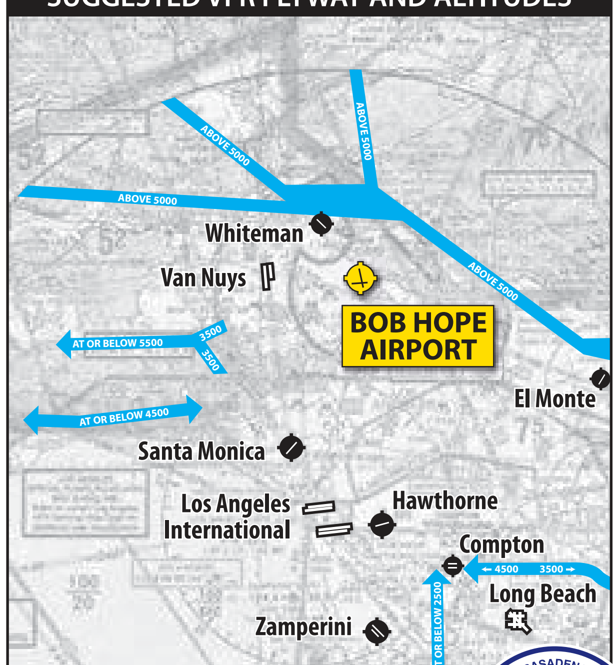
LEGEND

- Hard surfaced runways 1,500 ft. to 8069 ft. in length
- Airport with hard-surfaced runways1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- VORTAC
- VOR-DME
- Non-directional Radiobeacon (NDB)
- Compass Rose
- Class B Airspace
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E Airspace with floor 700 ft. above surface
- Victor Airways
- Military Training Route
- Prohibited, Restricted, and Warning Areas

NORTH

NOT TO SCALE

SUGGESTED VFR FLYWAY AND ALTITUDES



Source: Los Angeles Sectional Charts, US Department of Commerce, National Oceanic and Atmospheric Administration - 06/30/11

BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY
ORGANIZED JUNE 21, 1977

Exhibit 1E
AREA AIRSPACE

VORs define the centerline of these flight corridors. The Victor airways within the vicinity of Bob Hope Airport are identified on **Exhibit 1E**. As illustrated on the exhibit, there are no VOR transmitter beacons located at Bob Hope Airport. The Victor airways connecting to the Bob Hope Airport Class B airspace are generated by the Fillmore VORTAC located to the west, Van Nuys VOR-DME located to the west, Lake Hughes VORTAC located to the north, Palmdale VORTAC located to the north, Pomona VORTAC located to the east, Seal Beach VORTAC located to the southeast, and the Los Angeles VORTAC located to the south.

Global positioning system (GPS) – GPS is an additional navigational aid for pilots en route to the airport. GPS was initially developed by the United States Department of Defense for military navigation around the world and is now used in many civilian aircraft. GPS uses satellites placed in orbit around the globe to transmit electronic signals, which properly equipped aircraft use to determine altitude, speed, and navigational information.

Standard Flight Procedures

Flights to and from Bob Hope Airport are conducted using both instrument flight rules (IFR) and visual flight rules (VFR). Instrument flight rules are those that govern the procedures for conducting instrument supported flight. Visual flight rules govern the procedures for conducting flights under visual conditions (good weather). Most air carrier, military, and general aviation jet operations are conducted under IFR, regardless of weather conditions.

Instrument Approach Procedures

Instrument approaches are defined using electronic and visual navigational aids to assist pilots in landing when visibility is reduced below specified minimums. While these are especially helpful during poor weather conditions, they are often used by commercial pilots when visibility is good. Instrument approaches are classified as precision and non-precision. Both provide runway alignment and course guidance, while precision approaches also provide glide slope information for the descent to the runway.

Bob Hope Airport has one precision instrument approach which uses instrument landing system (ILS) technology. The ILS is available for Runway 8 and provides an approach path for exact alignment and descent of an aircraft on final approach to the runway. The system provides three functions:

- Guidance, provided vertically by a glide slope (GS) antenna and horizontally by a localizer (LOC);
- Range, furnished by marker beacons or DME; and
- Visual alignment, supplied by the approach light systems and runway edge lights.

Bob Hope Airport also has the following non-precision instrument approaches for Runway 8: area navigation (RNAV), VOR, and GPS. Pilots using the RNAV and VOR approaches receive signals from previously discussed VORTACs. For the GPS approaches, pilots use an aviation-specific GPS receiver to guide the approach to the airport.

Visual Approach Procedures

One visual approach procedure is published for Bob Hope Airport: the Four Stacks Runway 15 approach. The approach begins northwest of the airport near Mt. Oat, which is located east of the Fillmore VORTAC. The route proceeds east between the San Gabriel Mountains and the San Fernando Reservoir and then turns south for a final approach east of Whiteman Airport and the four exhaust stacks of an existing industrial plant. Weather minimums for this procedure are a 5,500-foot ceiling and five miles of visibility.

Visual Flight Rule Procedures

Under VFR conditions, the pilot is responsible for collision avoidance and will typically contact the tower when approximately 6–7 miles from the airport for sequencing into the traffic pattern.

Generally, VFR general aviation traffic stays clear of the more congested airspace and follows recommended VFR flyways in the area. **Exhibit 1E** illustrates the recommended VFR routes within the Bob Hope Airport vicinity airspace. Typically, VFR aircraft departing the airport are directed to intercept the nearest VFR route.

Standard Instrument Departure Procedures

For aircraft departing Bob Hope Airport, two Standard Instrument Departure procedures are available: ELMOO SIX and VAN NUYS NINE. The ELMOO SIX is generally used by aircraft traveling east, southeast, or south, and the VAN NUYS NINE is generally used by aircraft traveling southwest, west, northwest, north, or northeast, regardless of initial runway heading. **Table 1B** summarizes the procedures for the corresponding runway departures.

TABLE 1B
Standard Instrument Departures
Bob Hope Airport

Take-Off Runway	Description
ELMOO SIX	
Runway 8	Climbing right turn heading 120° intercept VNY R-095 to ELMOO thence via assigned route.
Runway 15	Climbing left turn heading 110° intercept VNY R-095 to ELMOO thence via assigned route.
Runway 26	Climbing left turn heading 110° intercept VNY R-095 to ELMOO thence via assigned route.
Runway 33	Climbing left turn heading 120° intercept VNY R-095 to ELMOO thence via assigned route.
VAN NUYS NINE	
Runway 8	Climbing right turn heading 210°, expect radar vector to VNY VOR/DME
Runway 15	Climbing right turn heading 210°, expect radar vector to VNY VOR/DME
Runway 26	Climbing right turn heading 290°, expect radar vector to VNY VOR/DME
Runway 33	Climbing left turn heading 270°, expect radar vector to VNY VOR/DME

Source: FAA Terminal Procedures Publication (*d* -TPP)/Airport Diagrams, September 2012

Governance of Bob Hope Airport

The Authority, which formed in 1978, is a legal public agency of government and is a separate entity from the sponsoring cities of Burbank, Glendale, and Pasadena. The Authority was formed as a Joint Powers Agency through a Joint Powers Agreement adopted by the three cities to acquire, operate, repair, maintain, and administer the airport and was statutorily created under California Government Code Section 6546.1. Under the Joint Powers Agreement, the Authority is governed by a nine-member Commission, with three Commissioners appointed by each participating city. For business conducted by the Commission, a majority vote is required except in limited cases related to incurring debt.

Specific limitations are placed on the Authority by Section 6546.1 of the California Government Code and Section 5012 of the California Administrative Code. Section 6546.1 states:

> *[Authority] shall not permit or authorize any activity in conjunction with the airport which results in an increase in the size of the noise impact area based on a community noise equivalent level of 70 decibels as established pursuant to Title 21, California Administrative Code, Chapter 2.5, Subchapter 6, and shall further comply with the future community noise equivalent levels prescribed by such title as it now exists or is hereafter amended.*

Section 5012 already existed when Section 6546.1 was enacted in 1976. At that time, Section 5012 set the community noise equivalent level at 70 decibels for existing airports through December 31, 1985 and at 65 decibels after that date. The current version of Section 5012 states: “The standard for the acceptable level of aircraft noise for persons living in the vicinity of airports is hereby established to be a community noise equivalent level of 65 decibels.”

Further, Section 6546.1 also provides:

> *The separate public entity shall implement the noise monitoring requirements set forth in Title 21, California Administrative Code, Chapter 2.5, Subchapter 6. In addition, the entity shall diligently pursue all reasonable avenues available to insure that the adverse effects of noise are being mitigated to the greatest extent reasonably possible. The separate public entity shall not authorize or permit the lengthening of runways defined herein as the paved portions of the runways presently on airport property, or the purchase of fee title to condemned real property zoned for residential use as of the effective date of this statute.*

In conformance with the provisions of Section 6456.1 described above, Authority operates a noise monitoring system and provides quarterly reports on the topic.

AIRPORT NOISE REGULATORY FRAMEWORK

Federal, state, and local governments each have specific responsibilities to reduce or limit aviation noise impacts. The following sections provide an overview of each level of government's responsibility in airport land use compatibility planning

Federal

The following sections provide an overview of the federal regulatory framework for aircraft noise as it relates to operations at Bob Hope Airport.

1973 Supreme Court Decision

In 1970, the City of Burbank adopted an ordinance to prohibit turbine jet departures from what is now Bob Hope Airport between 11:00 p.m. and 7:00 a.m. The ordinance was challenged and struck down by the U.S. Supreme Court in 1973 on the grounds that the ordinance conflicted with a runway preference order issued by the FAA Chief of the Airport Traffic Control Tower for Bob Hope Airport that was established to reduce community noise exposure to the lowest practicable minimum.[1] The findings affirm that the federal government, through the FAA, has authority to regulate the use of navigable airspace to insure the safety of aircraft and the efficient utilization of such airspace for the protection of persons and property on the ground. The case also affirmed that an entity which does not own or operate an airport may not impose use restrictions on an airport proprietor.

[1] City of Burbank v. Lockheed Air Terminal, Inc., , 411 U.S. 624 (1973)

Federal Aviation Administration

The FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States. However, the FAA does provide noise reduction support through the following efforts:

- Implementation and Enforcement of Aircraft Operational Procedures – Where and how aircraft are operated is under the complete jurisdiction of the FAA. This includes pilot responsibilities, compliance with Air Traffic Control instructions, flight restrictions, and monitoring careless and reckless operation of aircraft.

- Management of the Air Traffic Control System – The FAA is responsible for the control of navigable airspace and review of any proposed alterations in the flight procedures for noise abatement.

- Pilot Licensing – Individuals licensed as pilots are trained under strict guidelines concentrating on safe and courteous aircraft operating procedures.

- Certification of Aircraft – The FAA requires the reduction of aircraft noise through certification, modification of engines, or aircraft replacement as defined in accordance with the *Airport Noise and Capacity Act of 1990* (ANCA).

- Airport Noise Compatibility Planning – The FAA collaborates with airport sponsors to fund and evaluate Noise Exposure Map Updates in accordance with 14 CFR Part 150 regulations.

Aircraft Noise Reduction

FAA originally required the reduction of aircraft noise with the regulations adopted under 14 CFR Parts 36 and 91. Part 36 prohibits the escalation of noise levels from small, piston-driven aircraft, civil turbojet, and transport aircraft and also requires new aircraft types to be markedly quieter than earlier models by limiting the noise emissions allowed by newly certified aircraft. To achieve this reduction of aircraft noise, Part 36 has four stages of certification, each with a progressively more stringent noise threshold. These four stages, which represent increasingly quiet aircraft technology, are referred to as Stage 1, Stage 2, Stage 3 and Stage 4. The aircraft that generate the greatest amount of noise are typically referred to as Stage 1 aircraft. Aircraft certificated by FAA after December 1, 1969 were required to meet more stringent Stage 2 requirements. Similarly, aircraft certificated after November 5, 1975 were required to meet Stage 3 requirements. Aircraft certificated after January 1, 2006 are required to meet more stringent Stage 4 standards. These regulations apply only to civilian fixed wing aircraft and helicopters and do not address noise generated by military aircraft or other non-stage aircraft, including former military aircraft such as jet war birds and other World War II-era aircraft. Additionally, 14 CFR Part 91, Subpart I, known as the "Fleet Noise Rule," mandates a compliance schedule under which Stage 1 aircraft were to be retired or refitted with hush kits or quieter engines by January 1, 1988.

In 1987, the Authority successfully convinced the airlines to voluntarily only schedule the use of Stage 3 aircraft. Pursuant to the Congressional mandate outlined in ANCA, the FAA established amendments to Part 91 by setting December 31, 1999, as the date for discontinuing use of all Stage 2 aircraft exceeding 75,000 pounds. The Authority's voluntary elimination of Stage 2 aircraft occurred some 13 years before the mandatory phase-out established by ANCA.

The *FAA Modernization and Reform Act of 2012*, establishes December 31, 2015 as the phase-out date for Stage 2 aircraft weighing less than 75,000 pounds. Additional restrictions or phase-out dates have not been adopted for Stage 3 and Stage 4 aircraft. Although Stage 1 and Stage 2 aircraft weighing less than 75,000 pounds are still permitted to operate within the United States through 2015, the operating costs for these aircraft make it difficult for owners to economically justify their continued use. **Exhibit 1F** illustrates examples of aircraft weighing less than 75,000 pounds and greater than 75,000 pounds. As indicated on the exhibit, the cost per hour per passenger of the Stage 1 aircraft far exceeds the newer, quieter Stage 3 and Stage 4 aircraft. Noise from helicopters is also addressed within Part 36; however, they are only classified as Stage 1 and Stage 2. The Stage 2 certification date for helicopters is March 6, 1986. In contrast to fixed wing aircraft, the Part 36 noise requirements for helicopters have not been reduced in the same manner.

Additionally, ANCA directed FAA to set forth requirements for notice and approval of local restrictions on aircraft noise levels and airport access. These requirements are contained within 14 CFR Part 161.

14 CFR Part 161 – Notice and Approval of Airport Noise and Access Restrictions

14 CFR Part 161 establishes the procedure under which airport operators can seek the establishment of local noise and access restrictions that would limit operations of Stage 2 or 3 aircraft. Restrictions regulated under Part 161 include direct limits on maximum noise levels, nighttime curfews, caps on operations and/or passengers, and special fees intended to encourage changes in airports to lessen airport noise. The procedures for implementation of noise or access restrictions are different for Stage 2 versus Stage 3 aircraft.

In order to implement noise or access restrictions on Stage 2 aircraft, the airport operator must provide public notice of the proposal and provide at least a 45-day comment period. This includes notification of FAA and publication of the proposed restriction in the Federal Register. An analysis must be prepared describing the proposal, alternatives to the proposal, and the costs and benefits of each. The airport operator must also establish that these noise or access restrictions do not violate other provisions of federal law, and do not conflict with federal requirements imposed on airports as a condition of receiving federal funding.

Noise or access restrictions on Stage 3 aircraft can be implemented only after receiving FAA approval of a complex and thorough application process. In its application for FAA review and approval of the restriction, the airport operator must include an environmental

11SP12-1F-1/26/12

Stage 1 – All aircraft certificated prior to December 1, 1969

Aircraft: Boeing 707-020

Production: 1958-1974

Passengers: 140

Maximum Takeoff Weight: 222,000 lbs.

Phase Out Date: January 1, 1988

Stage 2 – Aircraft certificated between December 1, 1969, and November 5, 1975

Aircraft: Boeing 727-200

Production: 1963-1984

Passengers: 189

Maximum Takeoff Weight: 209,500 lbs.

Phase Out Date: January 1, 2000

Stage 3 – Aircraft certificated between November 5, 1975, and January 1, 2006

Aircraft: McDonnel Douglas MD-80

Production: 1979-1999

Passengers: 172

Maximum Takeoff Weight: 140,000 lbs.

Phase Out Date: None

Stage 4 – Aircraft certificated after January 1, 2006

Aircraft: Boeing 737-800

Production: 1996-Present[1]

Passengers: 175

Maximum Takeoff Weight: 174,200 lbs.

Phase Out Date: None

Source: www.boeing.com

[1] - Met Stage 4 standards prior to 2006

Burbank-Glendale-Pasadena Airport Authority

Exhibit 1F
AIRCRAFT OVER 75,000 POUNDS

11SP12-1F-1/26/12

Stage 1 – All aircraft certificated prior to December 1, 1969

Aircraft: Lear 23

Production: 1962-1966

Passengers: 6

Maximum Takeoff Weight: 12,500 lbs.

Variable Operating Cost Per Hour: $3,606*[1]

Operating Cost Per Hour/Passenger: $601

Stage 2 – Aircraft certificated between December 1, 1969, and November 5, 1975

Aircraft: Gulfstream II

Production: 1966-1981

Passengers: 19

Maximum Takeoff Weight: 62,000 lbs.

Variable Operating Cost Per Hour: $6,352*

Operating Cost Per Hour/Passenger: $334

Stage 3 – Aircraft certificated between November 5, 1975, and January 1, 2006

Aircraft: Citation 560 XL

Production: 1996-Present

Passengers: 10

Maximum Takeoff Weight: 20,000 lbs.

Variable Operating Cost Per Hour: $2,351*

Operating Cost Per Hour/Passenger: $235

Stage 4 – Aircraft certificated after January 1, 2006

Aircraft: Gulfstream 450

Production: 2004-Present[2]

Passengers: 19

Maximum Takeoff Weight: 73,900 lbs.

Variable Operating Cost Per Hour: $4,478*

Operating Cost Per Hour/Passenger: $236

Source: www.conklindd.com, www.gulfstream.com, FAA Advisory Circular 36-1H, Appendix 1

* - Variable costs include: fuel, maintenance, and crew expenses

[1] - Learjet 23 information not available. Costs shown are based on a Lear24, a successor to the Lear23.
[2] - Met Stage 4 standards prior to 2006

BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY
ORGANIZED JUNE 21, 1977

Exhibit 1F
AIRCRAFT UNDER 75,000 POUNDS

assessment of the proposal and a complete analysis addressing the FAA's six conditions of approval which include:

- The restriction is reasonable, non-arbitrary, and non-discriminatory;
- The restriction does not create an undue burden on interstate commerce;
- The proposed restriction maintains safe and efficient use of the navigable airspace;
- The proposed restriction does not conflict with any existing federal statute or regulation;
- The applicant has provided adequate opportunity for public comment on the proposed restriction; and
- The proposed restriction does not create an undue burden on the national aviation system.

Within 30 days of the receipt of the application, the FAA must determine whether the application is complete. After a complete application has been filed, the FAA publishes a notice of the proposal in the Federal Register. FAA must approve or disapprove the restriction within 180 days of receipt of the completed application.

14 CFR Part 150 – Airport Noise Compatibility Planning

A 14 CFR Part 150 study is a voluntary process by the airport proprietor which results in the preparation of two official documents for participating airports: a NEM document; and a Noise Compatibility Program (NCP) document. The NEM document is the baseline analysis for the noise conditions at the airport and includes existing and forecast noise exposure contours. The scope of the noise environment at the airport is defined as those areas within the noise exposure maps for the existing condition and at least a five-year forecast. These noise contours are overlain on local land use maps to identify areas of existing or potential non-compatible land uses.

14 CFR Part 150 outlines the methodology and noise metrics to be used in analyzing and describing airport noise. It also establishes guidelines to identify land uses which are incompatible with varying noise levels. Airport proprietors are required to update noise exposure contours when changes in the operations at the airport would create any new, substantial, non-compatible use. The most widely used measure to determine this change is an increase in the yearly day-night average sound level (DNL) of 1.5 decibels over non-compatible land uses. In California, the Community Noise Equivalent Level (CNEL) metric is used in place of DNL.

If the Noise Exposure Maps indicate non-compatible land uses are within 65 dB CNEL or greater noise exposure contours, these properties may be eligible for mitigation, such as acoustical treatment, which is partially funded through grants from the FAA's Airport Improvement Program (AIP). Upon completion of the NEM document and local adoption, it is submitted to the FAA for review. FAA review concludes with a determination as to whether the Noise Exposure Maps were prepared in a manner consistent with Part 150 regulations.

The NCP document provides an analysis of alternatives to reduce or eliminate airport noise impacts identified in the NEM and concludes with a plan to effectively mitigate noise impacts. FAA approval of the NCP makes the listed alternatives eligible to receive federal funding for implementation under the Airport Improvement Program.

State of California

The State of California has adopted the following laws and regulations to address airport noise.

Noise Insulation Standards

Title 24, Part 2, California Code of Regulations establishes standards for interior room noise attributable to outside noise sources for multi-family residential buildings. Once these buildings are sound-insulated to the proper performance standards, they are not considered "noise impacted." These minimum noise insulation performance standards require that the CNEL shall not exceed 45 dB in any habitable room, with all doors and windows closed.

California Noise Standards

The State of California provides noise standards, under California Code of Regulations, Title 21, Section 5000 et seq, which govern the operation of aircraft at all airports operating under a valid permit issued by the Department of Transportation. The noise standards state that the acceptable level of aircraft noise for persons living in the vicinity of airports is 65 dB CNEL. The extent of the 65 dB CNEL noise contour delineates the noise impact boundary for the airport. The area of land within the noise impact boundary that is composed of incompatible land uses is considered the noise impact area. Based on California law, no airport with a noise impact area shall be operated unless the proprietor has applied for or received a variance. As required by California Department of Transportation (CalTrans), airports with a noise impact area are required to prepare a Noise Impact Area Reduction Plan (NIARP) to decrease the size of the noise impact area. Additionally, airports with a noise impact area must establish a program for monitoring aircraft noise and produce quarterly noise reports to document the noise impact area.

Airport Land Acquisition

Acquisition of land by an airport is regulated by California Public Utilities Commission Section 21661.6 which states that prior to acquisition of land for the purpose of expanding or enlarging any existing publicly owned airport, the acquiring entity, in this case the Authority, shall submit a plan detailing the acquisition to the governing body of the jurisdiction in which the property is located. The governing body would conduct a public hearing on the plan and act to either approve or disapprove the proposal.

Zoning Ordinance

The State of California gives local jurisdictions, such as cities or counties, the authority to regulate the use of buildings, structures, and land through the adoption and administration of a zoning ordinance or code. It is important to note that the zoning authority granted to local jurisdictions does not apply to property owned and operated as part of the Airport.

General Plan

The State of California requires each local jurisdiction to develop a "*long range General Plan for the development of the city or county"* which *"shall consist of a statement of development policies and shall include diagrams and text setting forth objectives, principles, standards, and plan proposals."* Of the seven mandatory elements in the General Plan, two are especially important to the Part 150 study – land use and noise.

The land use element of a general plan designates the general distribution and intensity of land uses for future development within the community. This element serves as a framework for the plan and is intended to correlate all land use issues into a set of development policies. The land use element must include standards of population density and building intensity.

The noise element identifies and evaluates the noise situation in the community. The projected noise levels are calculated and mapped for airports and other major noise sources, such as highways. Projected noise levels are used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of residents to excessive noise.

Local Regulations

Control of land use in noise-impacted areas around airports is a key tool in limiting the number of land uses exposed to noise. The federal government has no direct legal authority to regulate land use; this responsibility rests exclusively with state and local governments. However, as outlined in FAA Order 5190.6B, *FAA Airport Compliance Manual,* the airport sponsor's role with regard to land use planning and implementation actions is "to reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce." Additionally, upon receipt of FAA grant funding, the airport sponsor agrees to take appropriate action, including the adoption of zoning laws, to the extent reasonable to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations in accordance with FAA Grant Assurance 21, Compatible Land Use. The Airport is located within portions of the City of Burbank and the City of Los Angeles. As the Authority does not have the power to adopt zoning laws, it must coordinate with these municipalities to comply with the FAA grant conditions.

Development Agreement

In March 2005, the Authority and the City of Burbank entered into a seven-year development agreement to coordinate development at the airport and the surrounding areas in an effort to enhance land use compatibility and to meet the development needs of the Airport. As part of the original agreement, the Authority agreed to not seek expansion of the existing airport terminal, add additional aircraft parking gates, or construct a new terminal. In exchange, the City of Burbank agreed to maintain existing City rules and regulations, including zoning and governing development at the airport. The agreement also provides for the creation of a joint land use planning committee, referred to as the Airport Land Use Working Group (ALUWG), with members representing the City of Burbank and the Authority. The agreement was set to expire in 2012. However, the Authority, at the recommendation of the ALUWG, submitted an application to extend the development agreement through 2015. The application was approved by the City of Burbank in September 2011, and includes revisions to the agreement to allow for a public outreach process to achieve consensus on the vision for the future of the airport and adjacent land. This process will examine a variety of issues, including exploring meaningful nighttime noise protection, consideration of public safety improvements to the Airport, land use related to Airport and Airport-adjacent areas, reduction of negative traffic impacts, the need and desire to replace the existing 81-year-old terminal building, and similar matters.

BOB HOPE AIRPORT NOISE EVALUATION AND NOISE ABATEMENT EFFORTS

The Authority has been evaluating aircraft noise impacts from Bob Hope Airport on the surrounding community for more than 30 years and has taken several actions to study or mitigate aircraft noise. **Table 1C** summarizes these efforts.

Part 150 and Part 161

Bob Hope Airport was among the first airports to participate in the Part 150 program and completed its first Noise Exposure Map document in April 1988, and its first Noise Compatibility Program was approved by FAA. One of the measures included in the NCP was a

Residential Acoustical Treatment Program (RATP) to provide mitigation improvements to homes and schools within the RATP program area. In January 2000, the updated Noise Exposure Maps were found to be in compliance with FAA regulations, and in November 2000 and August 2004, an update and amendment to the Airport's Noise Compatibility Program were approved by FAA.

TABLE 1C
Noise Analysis and Mitigation Efforts
Bob Hope Airport

September 1977	Authority adopts noise rules to reduce aircraft noise.
April 1988	First Noise Exposure Map document completed.
July 1989	First Noise Compatibility Program approved by FAA
February 1997	Residential Acoustical Treatment Program (RATP) begins. As of September 2011, 2,049 homes and four schools have been sound-insulated through the program.
January 2000	Updated Noise Exposure Map document in compliance with FAA regulations.
November 2000	Updated Noise Compatibility Program approved by FAA.
August 2004	Amended Noise Compatibility Program approved by FAA.
April 2006	Airport noise rules amended.
October 2009	Bob Hope Airport completed a Part 161 Study in pursuit of a mandatory curfew from 10 p.m. to 7 a.m.
November 2011	Initiated the current Noise Exposure Map Update process.

The Airport also prepared and submitted a Part 161 Study to establish a mandatory curfew, subject to certain exceptions, on operations at Bob Hope Airport from 10:00 p.m. through 6:59 a.m. The study was started in 2000 and completed in October 2009 at a cost of more than $7 million and submitted to FAA. It was the first Part 161 Study ever accepted as "complete" by the FAA, a landmark accomplishment that attests to the difficulty involved in this type of study. In November 2009, the FAA issued its finding that the study did not justify the imposition of the mandatory curfew.

Because of the amount of time taken to process the Part 161 application, and because it would have been inconsistent to update the airport's Noise Exposure Maps while pursuing an operating restriction, the Authority was not able to conduct a Part 150 study until the conclusion of the Part 161 process.

The RATP continues to be available for those residences within the program area, which includes not only residences within the 65 dB CNEL noise contour, but in some cases residences on the same block as those within the 65 dB CNEL noise contour. As of September 2011, 2,049 homes and four schools have been sound-insulated through the program. Additionally, in the FAA's decision on the Part 161 Study, the RATP is a "viable non-aircraft alternative measure that will address the noise problem of incompatible land uses located within the CNEL 65 dB noise contour." However, prior to providing additional funding for the RATP, the FAA has requested that the Noise Exposure Maps for Bob Hope Airport be updated to re-evaluate the eligibility of properties within the RATP program area.

Bob Hope Airport Noise Impact Area Reduction Plan

Additionally, in response to the previously discussed California noise regulations, Bob Hope Airport currently operates with a variance and has done so since 1978. The variance is valid for three years and requires a submittal to the CalTrans, Division of Aeronautics. Since 1978, the Authority has participated in six variance hearings with CalTrans. The variance application is subject to public comment during a public hearing. During the application for the most recent variance in 2005, the City of Burbank requested a public hearing. The hearing was held in August 2007. Following the hearing, the variance was approved with conditions in February 2008 and became effective in March 2008. Several of the conditions of approval came as a result of coordination with the City of Burbank. Under the conditions, the Authority agreed to provide quarterly reports on the status of the NIARP and the Part 161 Study which was active at the time of the hearing. The Authority has submitted a variance application to CalTrans, the approval of which is pending and no public hearing on the matter has been scheduled.

The Airport first prepared a NIARP in 1999, and the plan was updated in 2010 as a condition of the 2008 variance approval. The current NIARP includes six noise mitigation measures and three noise abatement measures. These reports are available on the Authority's website. With implementation of the NIARP, changes in the operational characteristics of the Airport, and improved aviation technology, the noise impact area has steadily decreased since 1978. **Table 1D** provides a summary of the noise impact area acreage for the Airport.

Additionally, in accordance with the noise standards, Bob Hope Airport maintains a permanent noise monitoring system, from which the 65 dB CNEL noise contour, used as the basis of the noise impact boundary, is developed. Information from the noise monitoring system is used to prepare quarterly noise reports in accordance with the noise standards. Based on the most recent quarterly report (Third Quarter 2011, dated November 2011), total area within the 65 dB CNEL noise contour is 759.7 acres, of which 19.74 acres are developed with incompatible land uses. A total of 136 residential parcels are located within the 19.74 acre area; however, despite the Authority's repeated attempts to provide sound insulation to the property owners, they have declined to participate in the program. The incompatible land use area does not include those schools which have been acoustically treated and those residences to which the Airport has acquired avigation easements. Regarding easements, the report states that the Authority has acquired avigation easements through its RATP for 1,994 parcels. Easements for another 111 parcels are in progress and anticipated over the next 12 months. The Authority has also acquired avigation easements under the Court of Appeals decision in Baker v. Burbank-Glendale-Pasadena Airport Authority, 220 Cal. App. 3d 1602 (1990), to 56 parcels of land.[2] For 48 of the 56 parcels, the Authority has acquired avigation easements both through Baker and through its ongoing sound insulation program. Those 48 parcels are included in the total number

[2] Baker v. Burbank-Glendale-Pasadena Airport Authority found that inverse condemnation may be used to acquire an avigation easement for properties within the 65 dB CNEL noise contour. This case relates to properties within the 65 dB CNEL noise contour on the date which the airport was purchased, June 30, 1978.

of sound insulation program avigation easements set forth above. The seven remaining Baker easement parcels total 0.89 acres.

TABLE 1D
Noise Impact Area – Acres of Incompatible Land Use
Bob Hope Airport

Year	Acres within 70 dB CNEL	Acres within 65 dB CNEL
1978	375	-
1979	384	-
1980	406	-
1981	210	-
1982	200	-
1983	196	-
1984	186	-
1985	159	-
1986	84	437
1987	81	433
1988	82	466
1989	44	385
1990	22	294
1991	19	313
1992	33	358
1993	27	351
1994	30	372
1995	38	406
1996	37	391
1997	27	364
1998	32	340
1999	26	327
2000	14	278
2001	8	265
2002	7	214
2003	10	134
2004	6	118
2005	5	89
2006	3	71
2007	3	61
2008	3	44
2009	0.5	20
2010	0.5	20

Source: http://www.bobhopeairport.com/noise/noise-issues/noise-monitoring.html
Note: Final 2011 acreages are not available at this time.

Bob Hope Airport Noise Rules

Airport proprietors have the authority to issue and enforce noise abatement procedures provided that they are in compliance with all applicable laws. The Authority initially adopted noise rules in 1978 as the result of a purchase agreement. Originally, there were 12 noise rules for the airport, one of which was repealed in 1986. The complete text of the rules is included in **Appendix C – Noise Rules**. The following points summarize the rules:

Rule 1 – All aircraft operating at Bob Hope Airport must comply with federal regulations related to noise.

Rule 2 – Each air carrier jet operator shall implement appropriate FAA-approved takeoff and arrival procedures consistent with the standards of Case 9A, as contained in the Final Environmental Impact Statement (EIS) approved by the FAA on September 12, 1977.

Rule 3 – All other jet operators shall use the National Business Aircraft Association's noise abatement procedures established in January 1978.

Rule 4 – Each air carrier that operates, for any reason, after 10:00 p.m. or before 7:00 a.m. shall pay the full amount of any costs charged to or incurred by the Authority for maintaining the crash rescue service on duty.

Rule 5 – *Repealed* February 24, 1986.

Rule 6 – Each aircraft operator and maintenance and repair facility shall adhere to the Authority Engine Test Run-Up Policy.

Rule 7 – Air carriers shall not begin or increase operations with noisier aircraft than what is currently in use without written permission from the Authority.

Rule 8 – Between the hours of 10:00 p.m. and 7:00 a.m., the following activities are prohibited: intersection takeoffs, maintenance run-ups, flight training operations, practice approaches, and touch-and-go landings.

Rule 9 – Between the hours of 10:00 p.m. and 7:00 a.m., takeoffs and landings of "noisy" aircraft are prohibited. Aircraft permitted to operate during this period are listed on the Bob Hope Airport website and listed in **Appendix C – Noise Rules**.

Rule 10 – Aircraft operating at Bob Hope Airport must comply with 14 CFR Part 36 standards regarding sideline noise.

Rule 11 - Subject to the provisions of Rule 7, air carriers seeking to inaugurate or reinstate operations must by conducted solely with aircraft which comply with Stage 3 noise level criteria outlined in 14 CFR Part 36.

Rule 12 – In the event one or more clauses, sections, or provisions of these Rules shall be held to be unlawful, invalid or unenforceable, the remainder of such Rule (or Rules) shall not be affected thereby.

LOCAL LAND USE PLANNING POLICIES AND REGULATIONS

It is important to note the distinction between the primary land use concepts (existing land use, existing zoning, and general plan land use) used in evaluating development within the airport environs. Existing land use refers to property improvements as they *exist today*. This information is typically gathered from the county assessor's records. Existing zoning identifies the type of land use *permitted on* a given piece of property in accordance with the responsible jurisdiction's ordinances and maps. In the case of Bob Hope Airport, the responsible jurisdictions exerting land use authority within the vicinity of the airport are the City of Burbank and the City of Los Angeles, the city limits of which are illustrated on **Exhibit 1G**. Zoning is the primary regulatory tool for controlling development within a community. A community's zoning ordinance defines the type, size, and density of land uses allowed in the zones illustrated on the zoning map. Examples of zones include Residential, Commercial, Industrial, and Agricultural. The general plan land use identifies the *projected or future* land use according to the locally adopted general plans. The general plan guides future development within the community planning area and provides the basis for zoning designations. In some cases, the land use allowed in the zoning ordinance or depicted in the general plan may differ from the existing land use. It is important to note that the land use regulations discussed above pertain to property not owned and operated as part of the Airport.

Existing Land Use

An evaluation of the existing land uses surrounding the airport is necessary to understand the impacts that may result from noise exposure. **Exhibit 1H** illustrates the existing land uses within the study area based on information collected from the Los Angeles County Assessor's Office Local Tax Roll database dated December 2011. The study area is the property in the vicinity of the airport where detailed land use information has been obtained. The study area boundaries extend to the edge of **Exhibit 1H**. For comparative purposes, the total area for each land use category is presented in **Table 1E**. The areas are based on the parcels depicted on **Exhibit 1H**. As indicated in the table, the study area covers 54.7 square miles, and single family residential land uses comprise more than 70 percent of the area depicted on the map. The second largest category includes commercial, industrial, transportation, and utilities totaling 20 percent of the area. Manufactured homes, multi-family residential, parks, and open space range from less than one percent to nearly five percent of the area. The final category, noise-sensitive institutions, includes land uses such as amphitheatres, hospitals, places of worship and schools, which are generally regarded as noncompatible within areas of increased noise exposure. These land uses comprise less than one percent of the total area.

TABLE 1E
Existing Land Use Summary
Bob Hope Airport

Land Use Classification	Area (Square Miles)	Percentage
Manufactured Homes	0.0	0.1%
Single Family Residential	38.4	70.2%
Multi-Family Residential	2.6	4.8%
Mixed Use with Residential	0.1	0.1%
Parks, Open Space, Undeveloped	2.2	4.1%
Commercial, Industrial, Transportation, and Utilities	11.0	20.1%
Noise Sensitive Institution	0.4	0.7%
Total	**54.7**	**100.0%**

Source: Los Angeles County Assessor's Office Local Tax Roll database dated December 2011, Coffman Associates analysis

As indicated on **Exhibit 1H**, a majority of the land uses immediately adjacent to the airport are classified as commercial, industrial, transportation, and utilities with the exception of those located northwest of the airport along Sherman Way and Clybourn Avenue, which include single family residential and multi-family residential land uses.

Historic Resources

A records search was conducted for known archaeological sites and historic properties near the airport. One site located south of the airport has been placed on the National Register of Historic Places. The site is described as the Portal of the Folded Wings Shrine to Aviation and Museum and is located within the Valhalla Memorial Park cemetery located immediately south of the airport between Empire Avenue and Victory Boulevard. The location of the Shrine is near the extended centerline of Runway 15-33.

Zoning

While land use plans, such as the community general plan, are intended to establish polices and goals to guide future development and land use, municipalities control land use through zoning ordinances and development codes.

The cities of Burbank and Los Angeles have jurisdiction over land uses within the vicinity of Bob Hope Airport and have adopted zoning ordinances which establish a variety of zones to control land use within all areas within their respective jurisdictions. However, as previously discussed, under the development agreement between the City of Burbank and the Authority, the zoning designations for the airport will remain unchanged for the duration of the agreement. The jurisdictional boundaries are delineated on **Exhibit 1J**.

A complete list of all zoning districts for each jurisdiction, including noise-sensitive land uses allowed in those districts, can be found in **Appendix D – Zoning Ordinance Summary**. For the purposes of this project, the zoning districts have been generalized to pro-

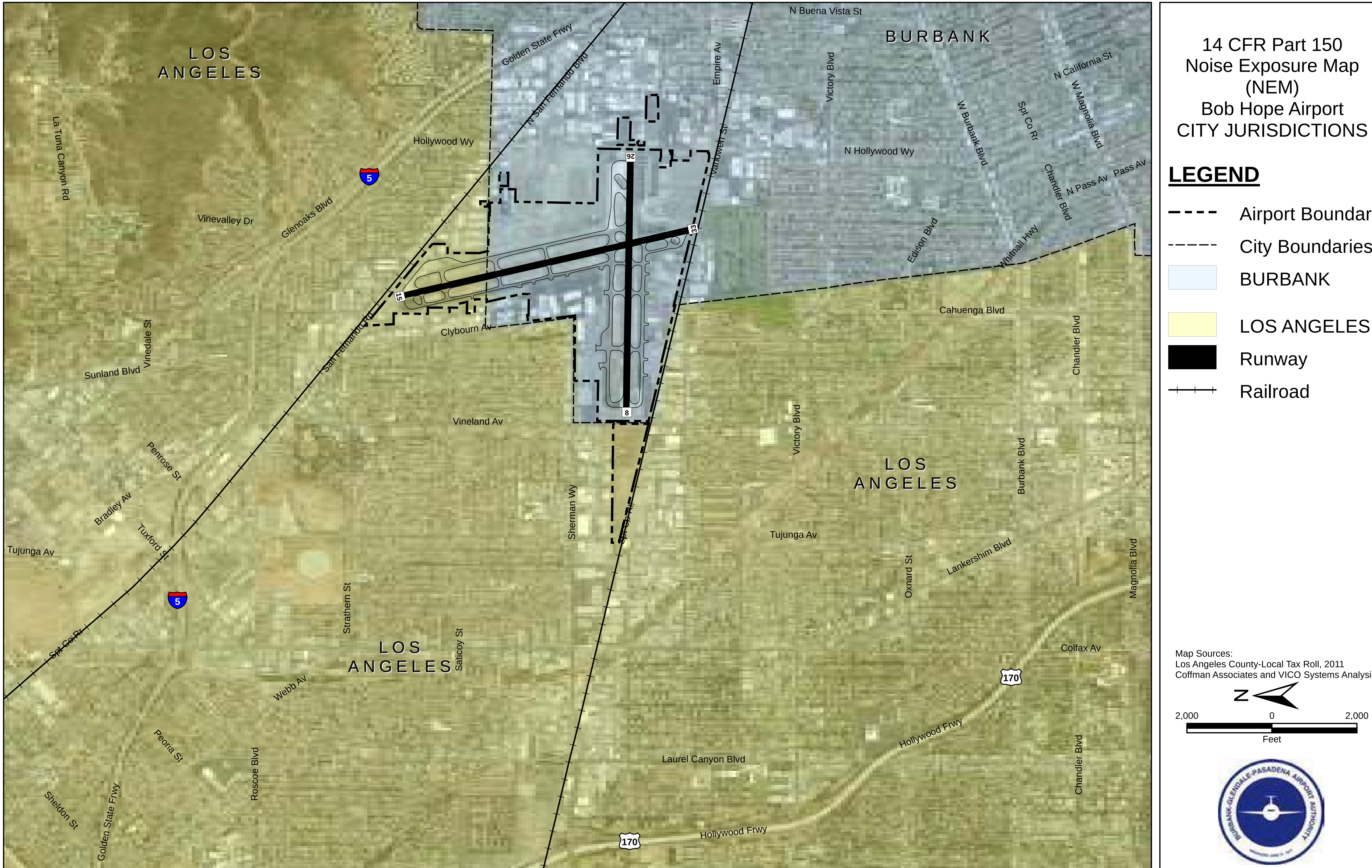
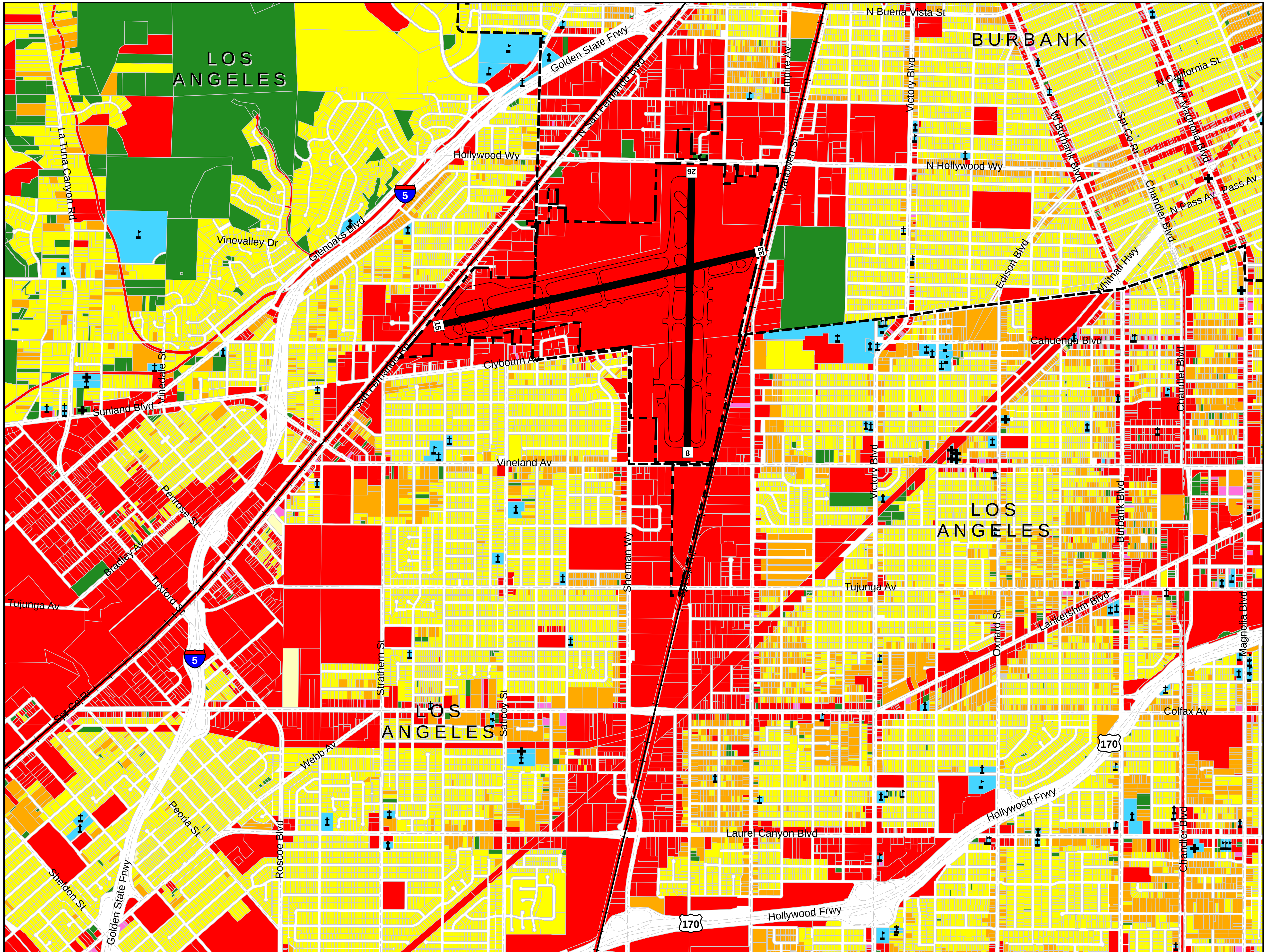


Exhibit 1G
JURISDICTIONAL BOUNDARIES



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport EXISTING LAND USE

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Runway
- Railroad
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Parks/Open Space/Undeveloped
- Comm, Indus, Trans, and Utilities
- Noise Sensitive Parcels
- Right of Way

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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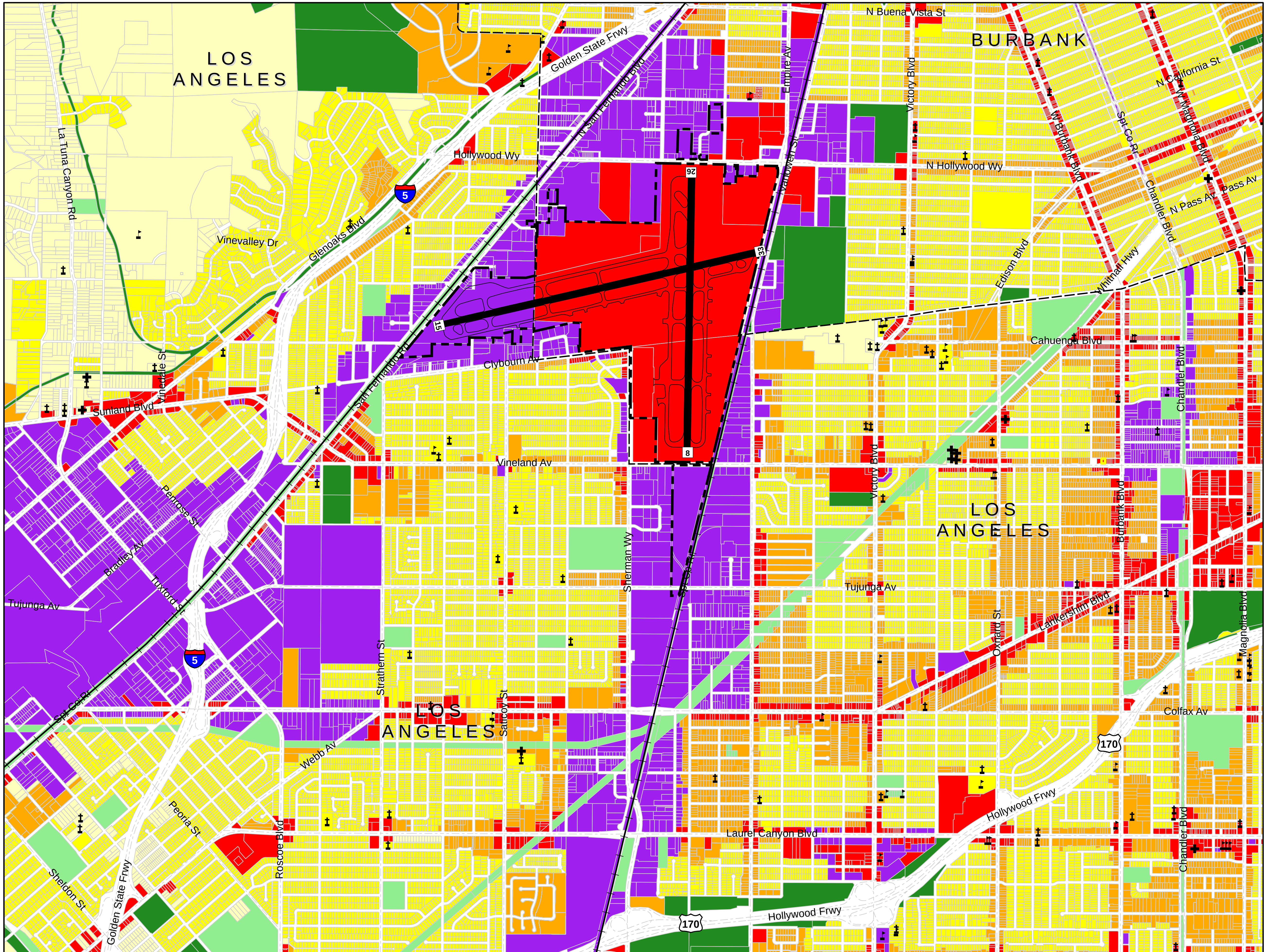
Feet

Exhibit 1H
EXISTING LAND USE



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport EXISTING ZONING

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Runway
- Railroad
- Centerline
- Agricultural
- Single Family Residential
- Multiple-Family Residential
- Public Facilities
- Open Space
- Commercial
- Industrial, Transportation
- Right of Way

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

N

2,000 0 2,000
Feet

Exhibit 1J
EXISTING ZONING

vide a uniform display of the zoning districts from the communities affected by Bob Hope Airport air traffic. **Table 1F** presents the generalized zoning districts used to illustrate the zones on **Exhibit 1J**.

TABLE 1F
Classification of Zoning Districts

Generalized Zoning Category	City of Burbank	City of Los Angeles
Agricultural	None	A, RA
Single Family Residential	MDR-4, R-1-H, R-1	RE, RS, R1, RU, RZ, RW1
Multi-Family Residential	MDR-5, MDR-3, R-5, R-3, R-4, R-2	R2, RD, RMP, RW2, R3, RAS3, R4, RAS4, R5
Public Facilities	None	PF
Open Space	CEM, OS	OS
Commercial	AD, BCC-3, BCC-2, BCCM, BCC-1, C-3, C-2, C-4, CR, GO, MPC-1, MPC-3, MPC-2, MDC-4, MDC-3, MDC-2, NB, PD, RBP, RC	CR, C1, C1.5 C2, C4, C5, CW, ADP, LASED, WC
Industrial, Transportation	AP, M-2, M-1, MDM-1, RR	CM, MR, CCS, M1, M2, LAX, M3, SL, P, PB

Note: Descriptions of each zoning designation can be found in Appendix D.

Residential Categories

Residential zoning classifications establish the number and type of dwelling units that can be constructed on a piece of land. Density, or number of dwelling units per unit of land, typically one acre, is important in airport noise and land use compatibility planning. Increased density can increase the population in an area. If that area is exposed to high levels of airport noise, a greater impact can result. Limiting the density near an airport can help to improve compatibility and limit the number of impacts on surrounding land uses. Two residential categories are used in the table: single family residential and multi-family residential. As indicated by the classification name, each zone limits the number of residences allowed on a parcel.

Non-residential Categories

Non-residential land use classifications, such as commercial and industrial, are typically considered to be compatible with airport operations because of their inherent noise characteristics. The commercial/office and industrial categories include areas zoned for manufacturing, business parks, and retail services.

Subdivision Regulations

Subdivision regulations apply in cases where a parcel of land is proposed to be divided into lots or tracts. They are established to ensure the proper arrangement of streets, adequate and convenient public spaces, efficient movement of traffic, adequate and properly located utilities, access for firefighting apparatus, and the orderly and efficient layout and use of land. Subdivision regulations can be used to specify requirements for airport-compatible land development by requiring developers to plat and develop land so as to minimize noise impacts or reduce the noise sensitivity of new development. The regulations can also be used to protect the airport proprietor from litigation for noise impacts at a later date. The most common requirement is the dedication of a noise or avigation easement to the airport proprietor by the land developer as a condition of development approval. Easements typically authorize overflights of property, with noise levels attendant to such operations. They can also require developers to incorporate noise insulation during construction or be used to provide disclosure information about the airport's operations to the property owner. The existing subdivision regulations for the jurisdictions adjacent to the airport do not have provisions to address airport noise.

Municipal Codes

Municipal codes can be used to specify the current building standards adopted to regulate the construction of buildings and ensure that they are constructed to safe standards. Building standards may be used to require sound insulation in new residential, office, and institutional buildings when warranted by existing or potential high aircraft noise levels. In Title 9, Building Regulations, of the Burbank Municipal Code, the City of Burbank has adopted sound transmission standards "to protect persons within hotels, motels, dormitories, apartment houses and dwellings, including detached single family dwellings, from the effects of excessive noise." These regulations specify sound insulation standards for new construction within the 60-65, 65-70, 70-75, and 75-80 dB day-night level (LDN) contour ranges.[3] The Burbank Municipal Code also includes a height limit zone. The zone requires filing a Form 7460 with the FAA to determine if the proposed structure would be an obstruction to navigation for aircraft operating at Bob Hope Airport.

The City of Los Angeles has amended the Los Angeles Municipal Code to specific sound attenuation properties within residential properties as follows:

> ***91.1207.11.3. Airport Noise Sources.*** *Residential structures and all other structures identified in Section 91.1207.1 located where the annual Ldn or CNEL (as defined in Title 21, Division 2.5, Chapter 6, Section 5001, California Code of Regulations) exceeds 60 dB, shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level.*
>
> *EXCEPTION: New single family detached dwellings and all nonresidential noise-sensitive structures located outside the noise impact boundary of 65 dB CNEL are exempt from Section 91.1207.*
>
> *Alterations or additions to all noise-sensitive structures, within the 65 dB and greater CNEL shall comply with Section 91.1207. If the addition or alteration cost exceeds 75% of the replacement cost of the existing structure, then the entire structure must comply with Section 91.1207.*

[3] Day-night Level, expressed as LDN or DNL is a noise metric similar to CNEL, which is most commonly used in the State of California. Consult the Resource Library included in **Appendix E** for more information.

For public-use airports or heliports, the Ldn or CNEL shall be determined from the Aircraft Noise Impact Area Map prepared by the Airport Authority. For military bases, the Ldn shall be determined from the facility Air Installation Compatible Use Zone (AICUZ) plan. For all other airports or heliports, or public-use airports or heliports for which a land use plan has not been developed, the Ldn or CNEL shall be determined from the noise element of the general plan of the local jurisdiction.

When aircraft noise is not the only significant source, noise levels from all sources shall be added to determine the composite site noise level.

General Plans

As previously discussed, the State of California requires all local governments to adopt a comprehensive long-term general plan establishing framework policies for future development of the city or county. A community's general plan includes recommended guidance, as opposed to a precise blueprint, for locating future development. During the preparation of a plan, existing land uses are evaluated and, based on the evaluation, future land uses and facilities are determined.

The document consists of two major components: a land use map and text supporting the development plans. By illustrating the preferred land use patterns, a general plan can be used by community decision-makers, staff, developers, investors, and residents to assist in evaluating future development opportunities. Following the planning process, the document must be adopted by the community's governing body; in many cases, this is the City Council.

General plans typically include the policies that outline how development will occur in the future and a map that identifies where development will occur. The future land use designations from the City of Burbank's proposed but not-yet-adopted *Burbank2035 General Plan*, and the Sun Valley, North Hollywood-Valley Village, La Tuna Canyon and Sunland Tujunga Community Plans from the *Los Angeles General Plan* are identified on **Exhibit 1K**.

The following sections provide excerpts from the previously discussed planning documents that offer land use planning guidance for the areas surrounding the airport.

Burbank 2035 General Plan for the City of Burbank

The City of Burbank is presently updating its general plan. The following components of the plan relate to airport land use compatibility and the future plans for the area surrounding Bob Hope Airport.

The Land Use Element of the Burbank2035 plan provides guidance for future development within the City of Burbank. The area surrounding Bob Hope Airport is located within the Golden State Commercial/Industrial area, which is described as follows:

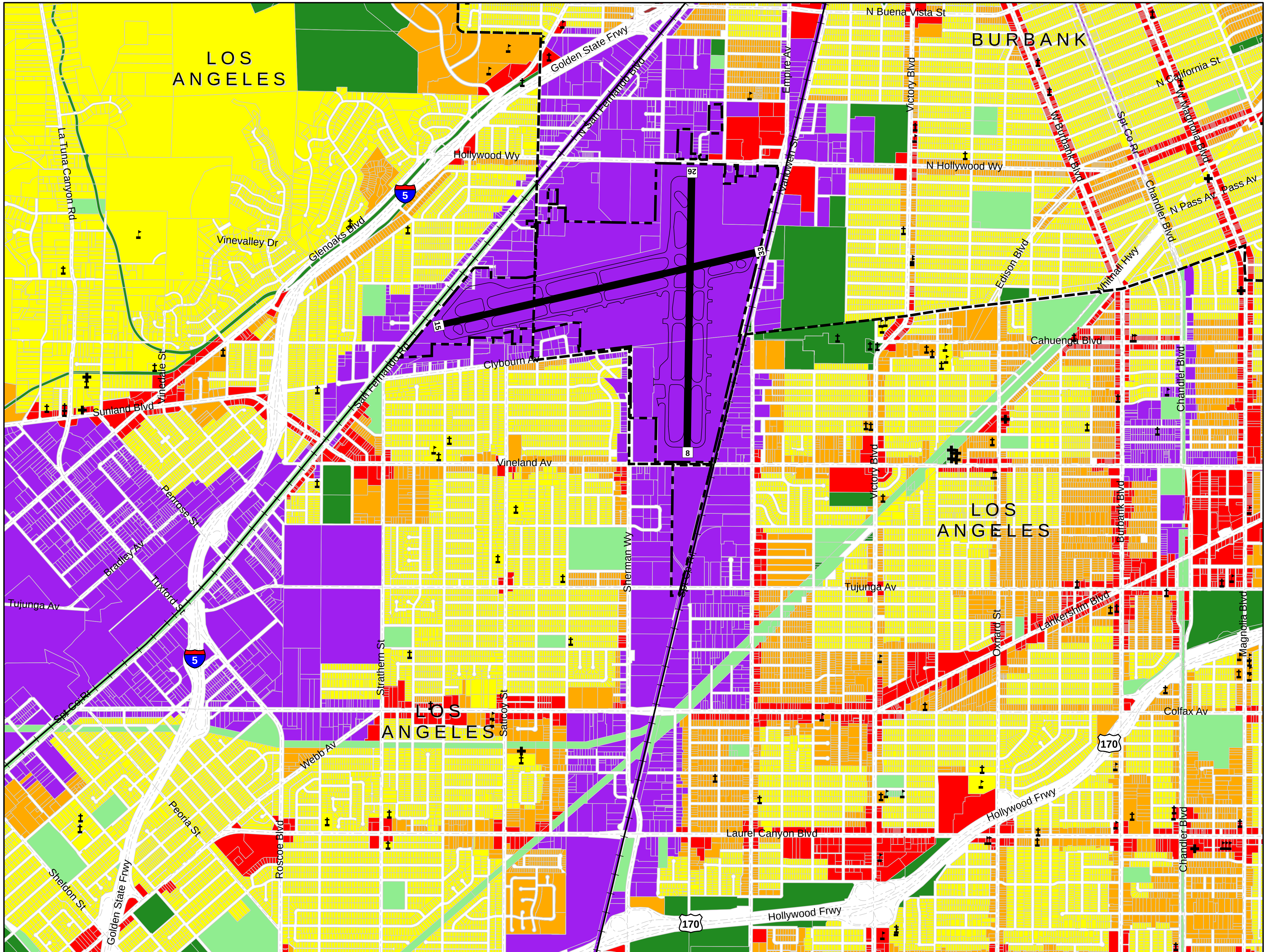
> *The Golden State Commercial/Industrial area, located to the south and east of the Bob Hope Airport, has traditionally served as the City's industrial hub. However, in more recent years, this area has been developed with a variety of commercial uses complementary to the airport and media-related businesses. New development in this area will be subject to an floor area ratio (FAR) of 1.25. The City seeks to introduce additional commercial uses that serve the airport, protect remaining industrial spaces, and introduce the possibility of niche residential (e.g., lofts, live-work spaces) that are compatible with the industrial character of the area. The City anticipates developing a specific plan for this area in the future.*

The plan specifies the following goals and policies for this area:

> ***Goal 12:*** *Golden State Commercial/Industrial Land Use*
> *The Golden State Commercial/Industrial corridor continues to support a diverse range of employment opportunities, playing a key role in the City's economy.*
>
> > ***Policy 12.1:*** *Direct heavy industrial uses and other uses with potential adverse effects to locate in appropriate areas away from residential areas and other sensitive uses.*
> >
> > ***Policy 12.2:*** *Maintain a balance between light and heavy industrial uses to ensure that adequate land remains available for heavy industrial uses, while accommodating expanding and emerging light industrial businesses.*
> >
> > ***Policy 12.3:*** *Ensure that commercial and other non-industrial uses, only when they do not interfere with the ability of the area, support industrial uses.*
> >
> > ***Policy 12.4:*** *Integrate transit, walking, biking, and other alternative transit modes into existing development where feasible.*
> >
> > ***Policy 12.5:*** *Future projects with housing shall be subject to a discretionary review process to ensure that the project supports economic diversity, encourages community arts and culture, and/or provides for affordable housing.*

Bob Hope Airport and the parcels owned by the Authority are within the Airport district, which is described as follows. Note: The plan does not specify goals or policies for this area.

The Airport land use designation encompasses the Bob Hope Airport and adjacent parcels owned by the Burbank-Glendale-Pasadena Airport Authority (Airport Authority). It is intended to accommodate uses directly related to the airport and aircraft operation including landing fields; passenger and freight facilities; and facilities for fabricating, testing, and servicing aircraft.



14 CFR Part 150
Noise Exposure Map
(NEM)
Bob Hope Airport
GENERAL PLAN
LAND USE

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Runway
- Railroad
- Centerline
- Single Family Residential
- Multi-Family Residential
- Public Facilities
- Flood Control
- Open Space
- Commercial
- Industrial, Transportation
- Right of Way

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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Exhibit 1K
GENERAL PLAN LAND USE

The Burbank City Council approved a development agreement between the City and the Airport Authority in 2005. In 2011, the Agreement was extended until 2015. Among other provisions, the agreement prohibits the airport from expanding the existing passenger terminal or building a new terminal while the agreement is in place.

The City and the Airport Authority have committed through the development agreement to engage in a joint public outreach process for the purpose of determining a vision for the future of the Airport. It is likely that the vision will result in some land use plan for the future of the Airport and adjacent properties. If such a plan includes a new air passenger terminal, it must be approved by Burbank voters under Measure B. General plan goals and policies for the Airport land use designation will be derived from the plan that is ultimately adopted and approved by the voters if required.

Table LU-2, 2035 General Plan Development Capacity, indicates that there is no capacity for additional dwelling units within the Golden State or Airport areas.

Chapter 5 – Noise

The Noise Element of the Burbank2035 plan provides the following guidance regarding noise within the City of Burbank.

> ***Goal 5 – Aircraft Noise:*** *Burbank achieves compatibility between airport-generated noise and adjacent land uses and reduces aircraft noise effects on residential areas and noise-sensitive land uses.*
>
> > ***Policy 5.1****: Prohibit incompatible land uses within the airport noise impact area.*
> >
> > ***Policy 5.2:*** *Work with regional, state, and federal agencies, including officials at Bob Hope Airport, to implement noise reduction measures and to monitor and reduce noise associated with aircraft.*
> >
> > ***Policy 5.3:*** *Coordinate with the Federal Aviation Administration and CalTrans Division of Aeronautics regarding the siting and operation of heliports and helistops to minimize excessive helicopter noise.*

Noise Plan

> ***Identification of Noise Problem Areas:*** *Beneath the landing pattern for aircraft approaching Bob Hope Airport, some residents find the aircraft noise disturbing. Aircraft noise is considered an intermittent, recurring noise problem. Noise from helicopters operated by private parties, the police, and emergency medical services, and for news and traffic monitoring also contributes to Burbank's general noise environment.*

> ***Air Traffic Noise:*** *To lessen the effects of air traffic noise associated with Bob Hope Airport, the City will participate in regional efforts to require airlines to use quieter aircraft. Also, the City will continue to register noise complaints with the airport's Noise Abatement Office to ensure that airport officials are made aware of noise problems.*

Los Angeles General Plan

The Los Angeles General Plan includes specific land use guidance discussions for 35 community areas, which comprise the Land Use Element of the General Plan. Two of the community areas, North Hollywood-Valley Village and Sun Valley-La Tuna Canyon, are located immediately west and north of Bob Hope Airport.

North Hollywood-Valley Village Community Plan

The *North Hollywood-Valley Village Community Plan* provides the following regarding Bob Hope Airport within Chapter Three – Land Use Policies and Programs:

> *This plan supports the continued effort to reduce noise emanating from airport operations at the Burbank-Glendale-Pasadena Airport. The City of Los Angeles shall continue to assure compliance with all provisions and standards now included in the Department of Aeronautics Noise Standards Regulations, as adopted November 10, 1970, Title 21, Subchapter 6, of the California Administrative Code of Regulations, in accordance with Division 9, Part 1, Chapter 4, Article 3 of the California Public Utilities Code. Repeal or amendment of these regulations by the State shall not affect this section of the Plan.*

Burbank-Glendale-Pasadena Airport flight patterns should be restricted from residential areas to the maximum extent possible.

Sun Valley-La Tuna Canyon Community Plan

The *Sun Valley-La Tuna Canyon Community Plan* identifies the following issues for long range planning in this area:

- *Need for adequate buffering of residential neighborhoods near the Burbank-Glendale-Pasadena Airport.*
- *Need to minimize impact and growth of Burbank-Glendale-Pasadena Airport on the surrounding Sun Valley and North Hollywood communities.*

To address these needs, the plan includes the following goals, objectives, policies, and programs:

Goal 6: *Public schools that provide a quality education for all the city's children, including those with special needs, and adequate school facilities to serve every neighborhood in the city.*

Objective 6-1: *Work constructively with Los Angeles Unified School District to promote the siting and construction of adequate school facilities phased with growth.*

Policy 6-1.2: *Proximity to noise sources should be avoided whenever possible.*

Program: *Participate in a sound insulation program for noise-affected schools as funded by the Burbank-Glendale-Pasadena Airport Authority.*

Goal 14: *Work with the Burbank-Glendale-Pasadena Airport Authority and the FAA to mitigate airport-related noise, traffic, pollution, and other negative environmental impacts.*

Objective 14-1: *Reduce impact of airport-related uses upon noise-sensitive land uses.*

Policy 14-1.1: *Airport-related land uses shall be designed as to reduce impact on adjacent land uses.*

Program: *Any airport-related project under the jurisdiction of the City of Los Angeles shall require Plan Approval from the City Planning Commission.*

Policy 14-1.2: *Incompatible land uses within a noise exposure contour of 65 db CNEL and above shall be made compatible.*

Program: *Where feasible, phase out incompatible land uses through amendments to the plan, zone changes, and redevelopment.*

Program: *Participate in a sound insulation program for noise-affected residences and schools as funded by the Burbank-Glendale-Pasadena Airport Authority.*

Program: *Implement F.A.R. Part 150 Noise Compatibility Study mitigation measures.*

The Los Angeles General Plan Noise Element, which pertains to the entire City of Los Angeles, includes the following goal, objective, policy and programs to address airport noise:

Goal: *A city where noise does not reduce the quality of urban life.*

Objective 1 (Airports and Harbor): *Reduce airport and harbor related noise impacts.*

Policy 1.1: *Incompatibility of airports declared by Los Angeles County to be "noise problem airports" (LAX, Van Nuys, and Burbank) and land uses shall be reduced to achieve zero incompatible uses within a CNEL of 65 dB airport noise exposure area, as required by the California Department of Transportation pursuant to the California Code of Regulations Title 21, Section 5000, et seq., or any amendment thereto. (P1 through P4)*

P1: *Continue to develop and implement noise compatibility ordinances and programs that are designed to abate airport-related noise impacts on existing uses, to phase out incompatible uses and to guide the establishment of new uses within a CNEL of 65 dB noise exposure area of the Los Angeles International and Van Nuys Airports and within those portions of the city that lie within a CNEL of 65 noise exposure area of the Bob Hope Airport.*

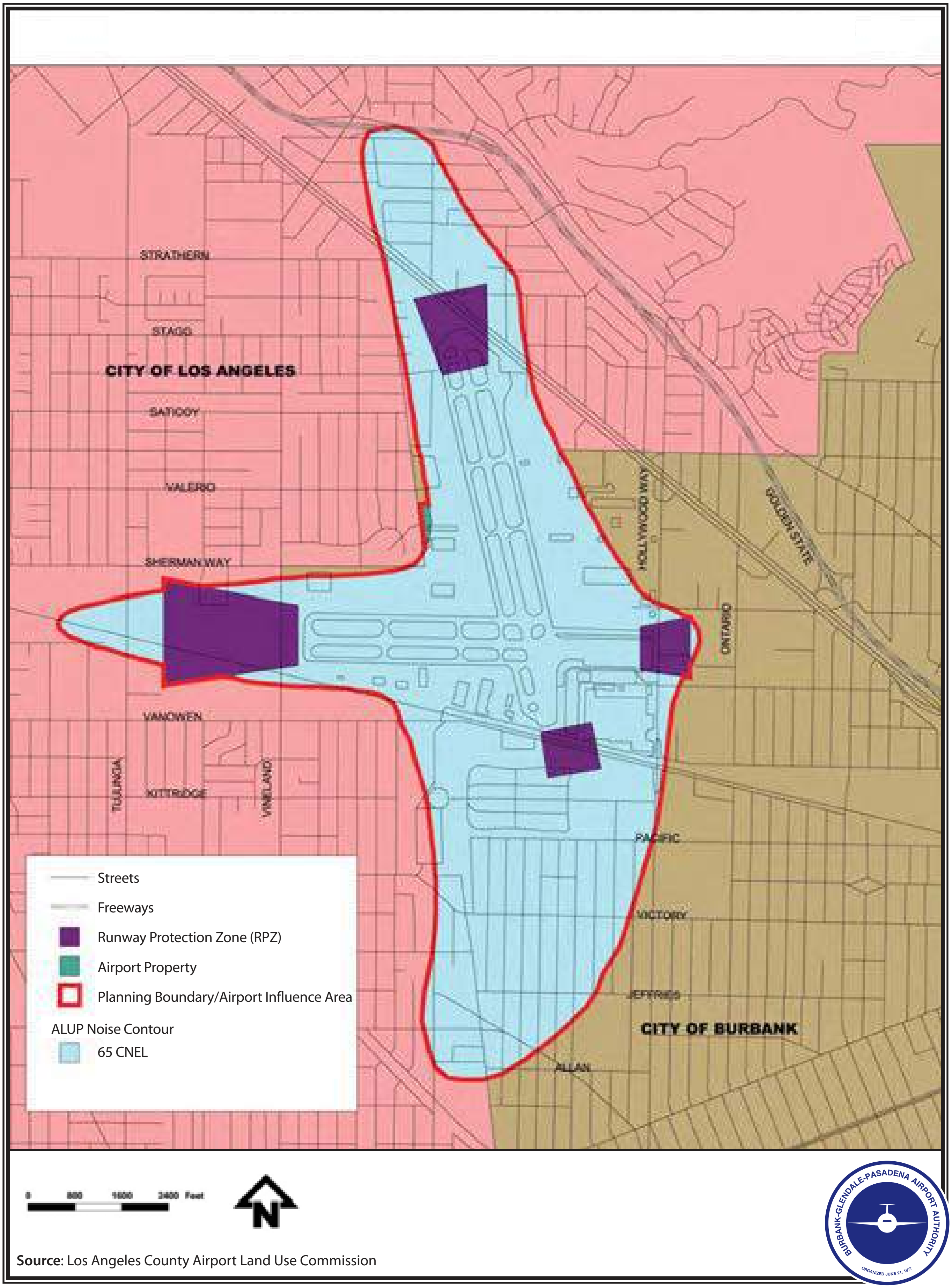
P2: *Noise abatement, mitigation, and compatibility measures shall be incorporated into the city's general plan airport and harbor elements, including, where feasible, sound-proofing of impacted sensitive uses, buffering, land use reconfiguration, modification of associated circulation and transportation systems, modification of operational procedures, conversion or phasing out of uses that are incompatible with airport or harbor uses, and/or other measures designed to reduce airport and harbor related noise impacts on adjacent communities.*

P3: *Continue to incorporate airport and harbor noise compatibility measures into the city's general plan community plan elements for communities that are significantly impacted by airport and harbor related noise, including, where feasible, conversion or phasing out of land uses that are incompatible with airport and harbor uses, reclassification of zones, modification of associated circulation systems and/or other measures designed to reduce airport and harbor related noise impacts on adjacent communities.*

P4: *Continue to encourage operators of the Bob Hope, Santa Monica, and Whiteman Airports to continue implementing and improving noise management measures so as to maintain a CNEL of 65 dB contour within the airport and surrounding compatible use boundaries and so as to maintain or reduce any impacts on noise-sensitive uses located within the City of Los Angeles to a CNEL of 65 dB or lower noise level.*

Airport Specific Plans

The Los Angeles County Airport Land Use Commission amended its Airport Land Use Plan in December 2004. The plan provides land use compatibility guidance for 14 airports within the county. A planning area boundary for Bob Hope Airport, shown on **Exhibit 1L**, is established to determine the extent of the requirements set forth in the plan. The planning



Source: Los Angeles County Airport Land Use Commission

Exhibit 1L
AIRPORT INFLUENCE AREA

area boundary for Bob Hope Airport is based on the airport's 65 dB CNEL noise contour boundary and the airport's runway protection zones.

The plan includes the following policies related to airport noise:

> ***N-1:*** *Use the Community Noise Equivalent Level (CNEL) method for measuring noise impacts near airports in determining suitability for various types of land uses.*
>
> ***N-2:*** *Require sound insulation to ensure a maximum interior 45 dB CNEL in new residential, educational, and health-related uses in areas subject to exterior noise levels of 65 CNEL or greater.*
>
> ***N-3:*** *Utilize the Table Listing Land Use Compatibility for Airport Noise Environments in evaluating projects within the planning boundaries.*
>
> ***N-4:*** *Encourage local agencies to adopt procedures to ensure that prospective property owners in aircraft noise exposure areas above a current or anticipated 60 dB CNEL are informed of these noise levels and of any land use restrictions associated with high noise exposure.*

SUMMARY

The information presented in this chapter provides a foundation upon which the remaining elements of the planning process will be constructed. Information on current airport facilities and utilization serve as a basis for the development of the aircraft noise analyses during the next phase of the study. The inventory of the airport environs will allow the assessment of airport noise impacts.

Chapter Two

AVIATION FORECASTS

Chapter Two

Aviation Forecasts

An important factor in airport planning involves a definition of demand that may reasonably be expected to occur over a defined period of time. For the purposes of Part 150 planning, this involves existing condition and out to a period of five years. For medium hub, primary commercial service airports, such as Bob Hope Airport (BUR), forecasts of passengers, cargo, based aircraft, and operations (takeoffs and landings) serve as a basis for planning.

The Federal Aviation Administration (FAA) has a responsibility to review aviation forecasts that are submitted to the agency in conjunction with airport planning, including master plans, CFR Part 150 Studies, and environmental studies. The FAA reviews such forecasts with the objective of including them in its *Terminal Area Forecasts* (TAF) and the *National Plan of Integrated Airport Systems* (NPIAS). In addition, aviation activity forecasts are an important input to the benefit-cost analyses associated with airport development, and FAA reviews these analyses when federal funding requests are submitted.

As stated in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), dated December 4, 2004, forecasts should:

- Be realistic
- Be based on the latest available data
- Reflect current conditions at the airport
- Be supported by information in the study
- Provide adequate justification for the airport planning and development

The forecast process consists of a series of basic steps that can vary depending upon the issues to be addressed and the level of effort required to develop the forecast. The steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and evaluation and documentation of the results.

The following forecast analysis for Bob Hope Airport was produced following these basic guidelines. Other forecasts dating back to the Part 161 Study were examined and compared against current and historic activity. The historical aviation activity was then examined along with other factors and trends that could affect demand. The intent is to provide an updated set of aviation demand projections for Bob Hope Airport that can be incorporated into the Part 150 noise exposure evaluations.

This forecast effort was completed in the first quarter of 2012, using historic airline passenger and airport operations activity up to and including 2011 as its base year. This chapter reflects the conditions at that time, as well as utilizes socioeconomic and aviation industry forecasts in effect at that time.

PASSENGER SERVICE FORECASTS

To properly evaluate airport needs and impacts related to present and future passenger airline activity, two basic elements must be forecast: annual enplaned (boarded) passengers and annual aircraft operations. Annual enplaned passengers are the most basic indicator of demand for commercial service activity. From a forecast of annual enplanements, aircraft operations can be projected based upon behavioral factors characteristic of Bob Hope Airport passengers or the airline industry as a whole.

The following analysis begins with a discussion of national trends and outlooks for the economy and what it means for the airline industry. Local and regional socioeconomic trends are then discussed. Each factors into the subsequent forecast analyses for enplanements and operations.

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The current edition when this forecast was prepared was *FAA Aerospace Forecasts - Fiscal Years 2012-2032*, published in March 2012. The FAA forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses were applied to the outlook for aviation growth in international markets.

Economic Outlook

The aviation industry in the United States has experienced an event-filled decade. Since the turn of the century, the industry has faced impacts of the events of September 11, 2001, scares from pandemics such as SARS, the bankruptcy of five network air carriers, all-time high fuel prices, and a serious economic downturn with global ramifications. The National Bureau of Economic Research has determined that the worst economic recession in the post-World War II era began in December 2007. Eight of the world's top 10 economies were in recession by January 2009.

As the recession began, unemployment in the United States was at 5.0 percent. While it grew through 2008, unemployment intensified in 2009 until peaking at 10.1 percent in October, although the recession officially ended in June of that year. As of the end of 2011, unemployment stood at 8.6 percent of the labor force.

While recessions during the post-war era have averaged 10 months in duration, this one lasted 19 months. Continued levels of high debt, a weak housing market, and tight credit, are expected to keep the recovery modest by most standards. The resolution of those factors will determine the future path of the recovery.

The nation's gross domestic product (GDP) is the primary measure of overall economic growth. The FAA forecasts were based upon a 3.1 percent annual average growth in GDP from federal fiscal year (FY) 2012 through FY 2016. For the long term, the FAA forecasts are based upon real GDP growth slowing to 2.5 percent annually. For the record, the GDP growth rate in FY 2011 was 2.0 percent, indicating that the economy was still in a slow recovery phase.

Economic growth on the global scale is expected to be higher with Asia/Pacific and Latin America leading the way. The global GDP was projected to grow at an average of 3.3 percent over the 20-year forecast period.

The following subsection examines the FAA's forecasts for commercial air service. Later, in their appropriate sections, the FAA forecasts for air cargo and general aviation will be discussed.

Commercial Aviation Industry Forecast

Although the recession has been officially over for more than three years, carriers continue to deal with economic uncertainties with business travel budgets still strained and unemployment still above eight percent. Capacity reductions in recent years helped to counter fuel costs and reduce demand. Load factors and trip lengths have increased while available seats per aircraft mile (capacity) decreased. The reduction in capacity did allow the carriers to raise air fares when demand began to return. This has allowed the industry to post net profits the past two years.

While capacity began to increase slightly in 2011, the FAA projects that it will decline slightly in 2012. The domestic available seat-miles (ASM) are projected to increase at an average annual rate of 2.7 percent through the forecast period. Revenue passenger miles (RPM) are projected to increase at a slightly higher rate (2.8 percent). Domestic system-wide load factors increase to an all-time high of 82.5 percent in 2011, and are projected to grow to 84.8 percent by 2032. Domestic enplanements are projected to grow at an annual average rate of 2.4 percent through 2032.

The cost of air fare to the passenger is related to revenue per passenger mile (yield) for the airlines. The nominal yield on domestic flights is projected by the FAA to increase on average 1.2 percent annually. The real (inflation-adjusted) yield is forecast by the FAA to continue to decrease at 0.8 percent annually.

While aircraft size has been increasing for both mainline and regional carriers, the continued decreasing ratio of capacity flown by the mainline carriers relative to the regional carriers has resulted in a relatively flat overall average size of around 122.6 seats. The overall domestic seats per aircraft are projected by FAA to rise at 0.1 percent annually through 2032.

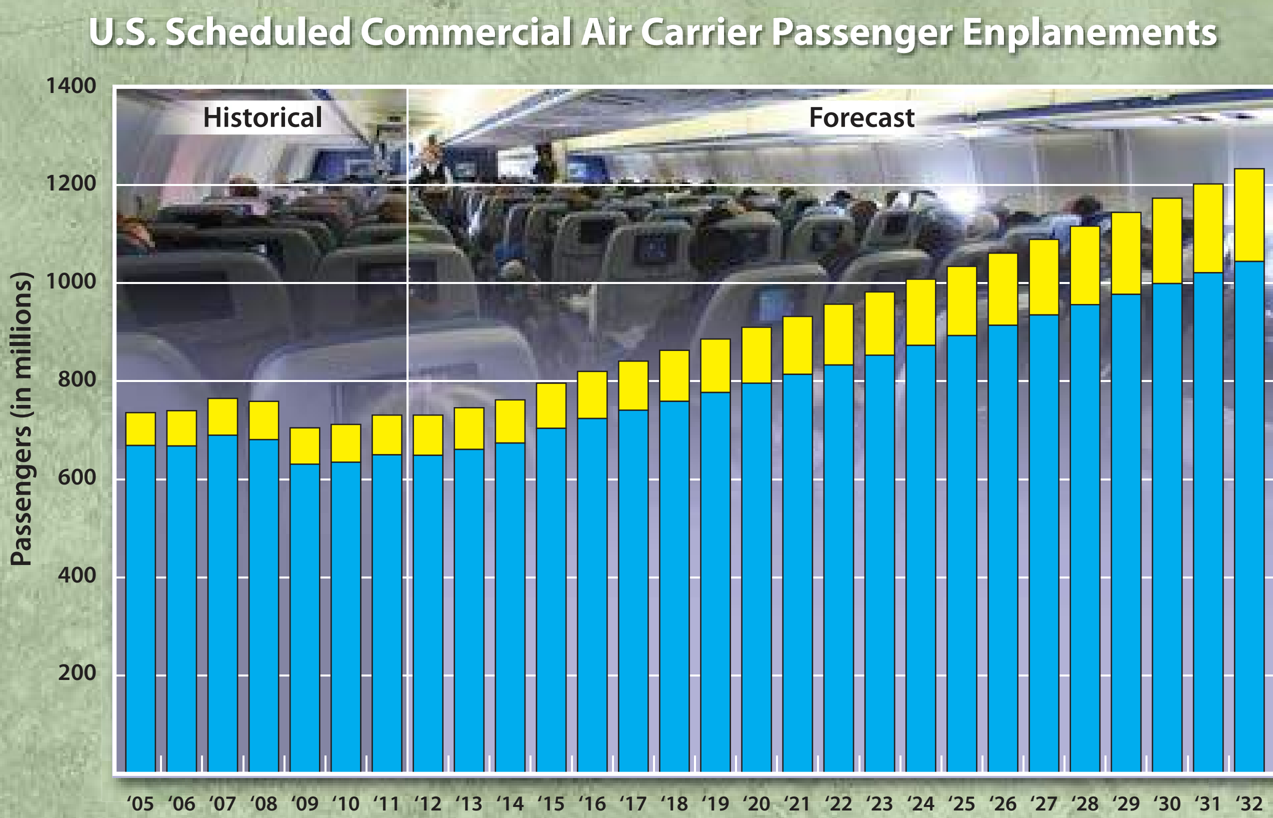
In response to globalization, international passenger traffic between the U.S. and the rest of the world is projected to grow at a faster rate than domestic passengers. The FAA forecasts an average annual rate of 4.3 percent over the forecast period. **Exhibit 2A** depicts the history and projected growth in U.S. passenger enplanements.

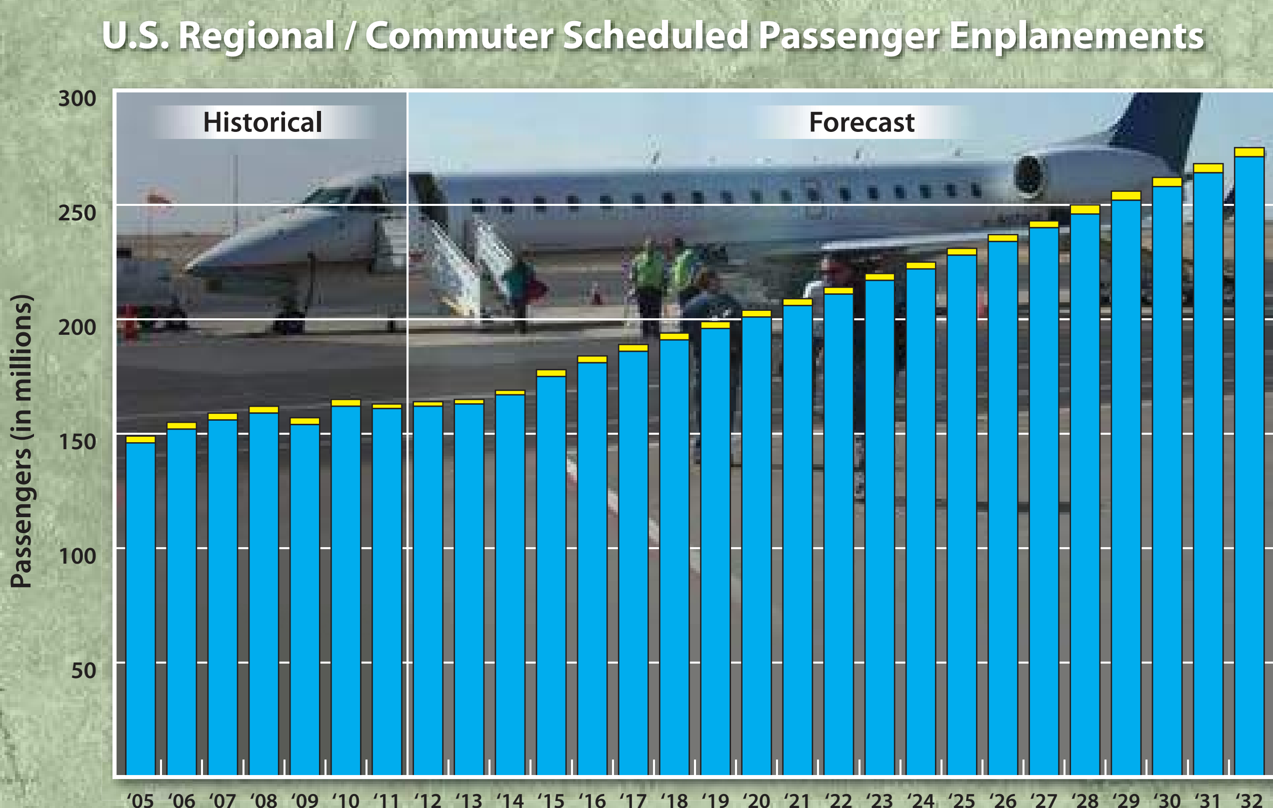
REGIONAL FACTORS AND TRENDS

Airport Service Area

Bob Hope Airport is one of five commercial service airports serving the Los Angeles metropolitan area as shown on **Exhibit 2B**. The primary metropolitan statistical area (MSA) is comprised of Los Angeles and Orange Counties. Each of these airports is classified in the NPIAS as a small hub or larger. This means they each enplane at least 0.25 percent of the total enplaned passengers in the United States. Los Angeles International Airport (LAX), with 31.0 million enplanements in 2011, is the busiest in the region. It is classified as a large hub airport as it enplanes at least one percent of U.S. enplanements. Bob Hope Airport (2.1 million), John Wayne Airport (4.3 million), and Ontario International Airport (2.3 million) are all classified as medium hub airports (enplaning between 0.50 and 1.0 percent of U.S. enplanements). Long Beach Airport (1.5 million) is the only metropolitan area airport classified as a small hub.

As a major international airport, LAX handles 75 percent of the region's passenger traffic. John Wayne Airport in Orange County and Long Beach in southern Los Angeles County primarily serve the southern portions of the region. While Ontario International is located in western San Bernardino County, it serves a portion of the eastern Los Angeles metropolitan statistical area. While Bob Hope Airport's primary service blends with that of LAX and Ontario, the airport draws primarily from Los Angeles County as well as Ventura County to





Domestic International

Source: FAA Aerospace Forecasts, Fiscal Years 2012-2032

Exhibit 2A
U.S. COMMERCIAL AIR CARRIER AND
REGIONAL/COMMUTER FORECASTS

Exhibit 2B
LOS ANGELES METROPOLITAN AREA
COMMERCIAL SERVICE AIRPORTS

the west. Palmdale Regional Airport in northern Los Angeles County and Oxnard Airport in Ventura County have hosted commercial service by regional airlines in the past, but at the time this forecast was prepared, both airports were without airline service.

Socioeconomic Trends

Local and regional forecasts developed for key socioeconomic variables provide an indication of the potential for supporting growth in aviation activity. Three local variables that are typically useful in evaluating the service area and its potential for air traffic growth are population, employment, and personal income. The U.S. Bureau of Economic Analysis is a source for these and other socioeconomic variables with annual estimates down to local jurisdictional levels. The California Department of Finance is another source for economic data within the state. **Table 2A** presents a history of population, labor force employment, and inflation-adjusted total personal income for the Los Angeles MSA, Los Angeles County, and the combination of Los Angeles and Ventura Counties.

TABLE 2A
Historic Socioeconomic Variables (1990-2010)
Bob Hope Airport

	1990	1995	2000	2005	2010	AARG 1990-2010
Population						
Los Angeles MSA	11,297,143	11,692,693	12,392,704	12,726,428	12,849,383	0.646%
Los Angeles County	8,878,157	9,089,015	9,538,191	9,786,373	9,830,420	0.511%
LA-Ventura Counties	9,548,274	9,792,501	10,294,697	10,580,570	10,656,126	0.550%
Labor Force Employment						
Los Angeles MSA	5,565,900	5,193,000	5,854,000	6,045,000	5,692,000	0.112%
Los Angeles County	4,259,700	3,938,600	4,424,900	4,516,000	4,262,300	0.003%
LA-Ventura Counties	4,605,300	4,289,700	4,799,800	4,912,800	4,724,400	0.128%
Total Personal Income (millions $2005)						
Los Angeles MSA	348,872.4	352,353.3	439,395.0	496,595.3	514,337.2	1,960%
Los Angeles County	265,191.7	262,541.3	317,436.8	357,186.4	375,178.0	1.750%
LA-Ventura Counties	285,763.2	285,482.9	346,336.2	390,337.6	409,982.3	1.821%

AARG: Average Annual Growth Rate
Sources: Population and Personal Income – U.S. Bureau of Economic Analysis
Employment – California Employment Development Department

Population forecasts are regularly prepared by a number of sources. At the regional level, the Southern California Association of Governments (SCAG) has recently prepared population and employment forecasts for each member county as part of the *2012 Regional Transportation Plan* (RTP) and accompanying Environmental Impact Report (EIR). The State of California Department of Finance will be updating its forecasts in 2012, so its current forecasts were considered outdated for use in this analysis. Thus, the SCAG forecasts are considered here and are depicted in **Table 2B**.

The SCAG forecasts were developed for the RTP's planning horizon of 2035. Projections for the interim years (2017, 2022, and 2030) correlating with those to be forecast for the Part 150 were interpolated based upon the annual average growth rate.

Woods and Poole Economics annually update forecasts of economic indicators for its *Complete Economic and Demographic Data Source (CEDDS)*. The most recent forecasts were prepared in 2011 based upon the 2010 Census Data. Since SCAG did not forecast total personal income, the Woods and Poole forecasts were utilized for that indicator, and are included in **Table 2B** as well.

TABLE 2B
Socioeconomic Forecasts
Bob Hope Airport

	2010	2017	2022	2030	2035	AARG 2010-2013
Population Forecasts						
Los Angeles MSA	12,849,383	13,360,011	13,737,123	14,362,768	14,768,200	0.558%
Los Angeles County	9,830,420	10,234,225	10,532,773	11,028,671	11,350,400	0.577%
LA-Ventura Counties	10,656,126	11,095,194	11,485,908	11,959,166	12,309,100	0.578%
Labor Force Employment Forecasts						
Los Angeles MSA	5,692,000	5,934,300	6,113,600	6,411,800	6,605,600	0.597%
Los Angeles County	4,262,300	4,413,300	4,524,400	4,708,100	4,826,600	0.324%
LA-Ventura Counties	4,724,400	4,805,600	4,922,500	5,115,400	5,239,800	0.415%
Total Personal Income Forecast (millions $2005)						
Los Angeles MSA	514,337.2	595,069.2	669,980.5	811,768.8	917,788.2	2.308%
Los Angeles County	375,178.0	425,745.3	470,356.1	553,500.7	614,190.1	1.963%
LA-Ventura Counties	409,982.3	467,444.8	518,504.9	613,877.5	683,804.2	2.039%

AARG: Average Annual Growth Rate
Sources: Population and Employment – Regional Transportation Plan 2012, Draft PEIR – Southern California Association of Governments, Dec. 2011
Total Personal Income – Complete Economic and Demographic Data Sources 2012; Woods and Poole, 2011

Between 1990 and 2010, the annual average growth rate (AAGR) of population in the Los Angeles MSA was 0.646 percent. The SCAG forecasts a slower growth rate of 0.558 through 2030. The AARG for population in Los Angeles County alone over the previous 20 years was 0.511 percent. SCAG projects a higher rate of 0.577 percent over the next 20 years.

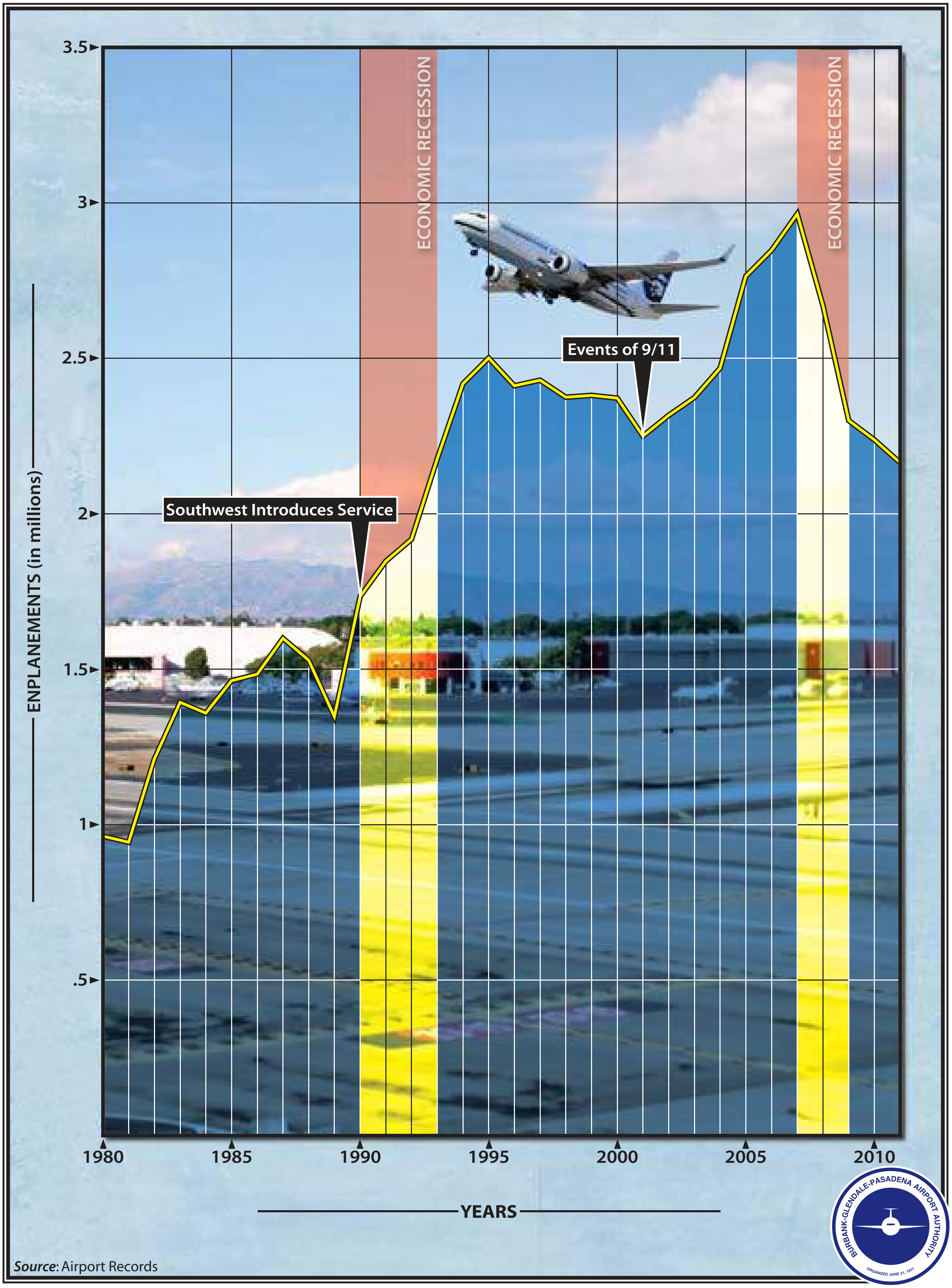
The labor force employment has been very slow over the past 20 years, averaging just 0.112 percent annually in the Los Angeles MSA, and 0.003 percent in Los Angeles County. In fact, employment in 2010 has declined from the levels at the turn of the century. SCAG forecasts employment to grow slowly in the future. The MSA employment was forecast at 0.597 percent annually, while Los Angeles County is projected at 0.324 percent.

Total personal income adjusted for inflation to 2005 dollars has averaged 1.96 percent annually in the MSA over the last 20 years. Woods and Poole project that the growth rate will average 2.31 percent annually through 2030. In Los Angeles County, the AARG has been lower at 1.76 percent and is projected to average 1.96 percent through 2030.

BOB HOPE AIRPORT AIR SERVICE HISTORY

Historical passenger enplanements at Bob Hope Airport from 1980 through 2011 are presented on **Exhibit 2C**. The same information, with annual percentage rate changes, is also presented in **Table 2C**. This period is significant in that it documents the enplanement

11SP12-2C-1/30/12



Source: Airport Records

Exhibit 2C
ENPLANEMENT HISTORY

growth at the airport since the United States airline industry was deregulated at the end of the 1970s. Bob Hope Airport began to experience the benefits of deregulation by 1982 when passengers grew nearly 29 percent. This was followed by another year of double-digit growth in 1983. The next four years, the airport averaged 3.5 percent annual growth until a two-year decline in 1988-89.

TABLE 2C
Passenger Enplanements and Total Aircraft Operations History
Bob Hope Airport

Year	BUR Passenger Enplanement[1]	Annual % Change	BUR Total Aircraft Operations[2]	Annual % Change
1980	959,000	NA	209,349	
1981	939,466	-2.0%	193,165	-7.7%
1982	1,207,730	28.6%	174,497	-9.7%
1983	1,389,379	15.0%	207,762	19.1%
1984	1,357,702	-2.3%	246,329	18.6%
1985	1,459,000	7.5%	246,830	0.2%
1986	1,480,006	1.4%	233,421	-5.4%
1987	1,595,346	7.8%	240,668	3.1%
1988	1,524,987	-4.4%	219,843	-8.7%
1989	1,343,370	-11.9%	248,158	12.9%
1990	1,729,713	28.8%	238,952	-3.7%
1991	1,843,247	6.6%	224,033	-6.2%
1992	1,913,912	3.8%	209,938	-6.3%
1993	2,172,791	13.5%	207,325	-1.2%
1994	2,414,219	11.1%	189,308	-8.7%
1995	2,496,967	3.4%	184,534	-2.5%
1996	2,407,516	-3.6%	185,403	0.5%
1997	2,425,504	0.7%	179,650	-3.1%
1998	2,370,785	-2.3%	181,675	1.1%
1999	2,376,645	0.2%	175,278	-3.5%
2000	2,367,835	-0.4%	160,730	-8.3%
2001	2,248,654	-5.0%	159,705	-0.6%
2002	2,312,611	2.8%	161,612	1.2%
2003	2,369,729	2.5%	178,079	10.2%
2004	2,464,441	4.0%	180,416	1.3%
2005	2,759,984	12.0%	173,100	-4.1%
2006	2,843,281	3.0%	195,761	13.1%
2007	2,960,294	4.1%	170,171	-13.1%
2008	2,664,875	-10.0%	120,838	-29.0%
2009	2,295,858	-13.8%	109,259	-9.6%
2010	2,233,590	-2.7%	111,556	2.1%
2011	2,159,394	-3.3%	123,092	10.3%

Sources: [1] Airport Records
[2] FAA Air Traffic Activity Data System (ATADS) FAA

The discount carrier Southwest Airlines introduced service at Bob Hope Airport in 1990, resulting in a 29 percent jump in passengers in the first year. Despite the Gulf War and an economic recession, the ensuing five years averaged 7.4 percent annual increases in traffic. The initial effect of Southwest on the market appeared to mature in 1995 as traffic began to flatten out and decline slightly for the remainder of the decade. During this time, many of the legacy carriers were experiencing financial difficulties and retreated to smaller, tighter systems.

Traffic continued to decline into 2001, when the events of 9/11, coupled with a national recession, had an effect. Over the seven year period, traffic experienced a net decline of 10 percent.

Bob Hope Airport began to recover in 2002 as the first of six consecutive years of passenger traffic increases. The 2007 enplanement total of 2.96 million set the all-time high for the airport. During that period, the number of mainline airlines serving the airport grew from five to eight, including two more discount carriers in Jet Blue and SkyBus. At the same time, however, Delta and United Airlines began to replace their service with their regional airline partners. The "Great Recession" that began in December of that year had a great impact on traffic. 2008 and 2009 each experienced double-digit percentage losses. While the decline slowed in 2010, enplanements were lower than in 2001. The decline did not end in 2011 as traffic fell to its lowest level since 1992.

Table 2D presents annual enplanements by airline for 2000, 2005, and 2011. In 2000, Bob Hope Airport was served strictly by mainline carriers. By 2011, regional carriers had captured 11.9 percent of the market.

TABLE 2D
Annual Passengers by Airline
Bob Hope Airport

	2000		2005		2011	
	Passengers	%	Passengers	%	Passengers	%
Alaska Airlines	*362,700*	*7.6%*	*322,696*	*5.9%*	*331,778*	*7.7%*
Horizon Air (Alaska)	--	--	*125,118*	*2.3%*	*50,388*	*1.2%*
Subtotal Alaska Group	362,700	*7.6%*	447,814	*8.1%*	382,166	*8.9%*
Aloha Airlines	--	--	13,607	*0.2%*	--	--
American Airlines	111,216	*2.3%*	326,692	*5.9%*	316,492	*7.4%*
America West/US Airways	294,560	*6.2%*	240,463	*4.4%*	73,599	*1.7%*
Mesa/US Airways	--	--	140,027	*2.5%*	142,089	*3.3%*
Subtotal US Airways Group	294,560	*6.2%*	380,490	*6.9%*	215,688	*5.0%*
Delta Airlines	--	--	89,887	*1.6%*	--	--
Sky West (Delta Connection)	--	--	98,488	*1.8%*	85,127	*2.0%*
Subtotal Delta Group	--	--	188,375	*3.4%*	85,127	*2.0%*
Jet Blue Airlines	--	--	227,713	*4.1%*	280,380	*6.5%*
Southwest Airlines	3,244,789	*68.3%*	3,522,950	*63.9%*	2,789,264	*64.8%*
United Airlines	734,389	*15.5%*	170,419	*3.1%*	--	--
Sky West (United Express)	--	--	234,559	*4.3%*	232,451	*5.4%*
Subtotal United Group	734,389	*15.5%*	404,978	*7.3%*	232,451	*5.4%*
Other Airlines	1,088	*0.0%*	--	--	--	--
Total Passengers (Enplaned and Deplaned)	4,748,742	*100.0%*	5,512,619	*100.0%*	4,301,568	*100.0%*

Source: Airport Records

Southwest Airlines has maintained the largest market share throughout the period although declining from 68.6 in 2000 to 64.8 percent in 2011. United Airlines was the only other airline to have at least a 10 percent market share during the period with 15.5 percent in 2000. By 2011, the mainline carrier had left the market leaving its regional carrier (United Express) which carried 5.4 percent in 2010. Second to Southwest in 2010 was

Alaska Airlines, who combined with its regional partner Horizon Air, to carry 8.9 percent. Third was American Airlines at 7.4 percent. American discontinued service at Bob Hope Airport in February 2012.

Table 2E examines the top 20 passenger destinations from Bob Hope Airport over the past decade. The top five destinations have remained the same over the years; all five are western destinations. The San Francisco Bay area has remained the top destination, although its market share has declined from 38.6 percent to 28.7 percent. There are currently 27 daily non-stops to the Bay area airports in San Francisco, Oakland, and San Jose. Las Vegas is second at 12.4 percent and has 12 daily non-stops. New York City has grown to become the sixth highest destination and currently has two daily non-stops.

TABLE 2E
Top 20 Destination Markets
Bob Hope Airport

2000			2005			2010		
Rank	**Destination**	**Pct.**	**Rank**	**Destination**	**Pct.**	**Rank**	**Destination**	**Pct.**
1	San Francisco Bay	38.6%	1	San Francisco Bay	28.4%	1	San Francisco Bay	28.7%
2	Las Vegas	13.8%	2	Las Vegas	14.0%	2	Las Vegas	12.4%
3	Sacramento	12.7%	3	Sacramento	10.8%	3	Sacramento	10.5%
4	Phoenix	9.3%	4	Phoenix	9.6%	4	Phoenix	8.2%
5	Seattle	5.6%	5	Seattle	6.0%	5	Seattle	5.6%
6	Portland	3.4%	6	New York City	4.4%	6	New York City	5.2%
7	Reno	1.5%	7	Portland	3.3%	7	Portland	3.0%
8	Dallas/Ft. Worth	1.1%	8	Dallas/Ft. Worth	3.0%	8	Dallas/Ft. Worth	3.0%
9	Denver	1.0%	9	Reno	1.3%	9	Salt Lake City	1.4%
10	Salt Lake City	0.9%	10	Denver	1.1%	10	Denver	1.3%
11	Albuquerque	0.8%	11	Salt Lake City	0.9%	11	Houston	1.2%
12	Houston	0.7%	12	Albuquerque	0.8%	12	Chicago	1.1%
13	Baltimore/D.C.	0.6%	13	Baltimore/D.C.	0.8%	13	Reno	1.0%
14	Spokane	0.6%	14	Atlantic	0.7%	14	Spokane	0.8%
15	Chicago	0.5%	15	Spokane	0.6%	15	Baltimore/D.C.	0.7%
16	San Antonio	0.4%	16	Chicago	0.6%	16	Albuquerque	0.7%
17	Austin	0.4%	17	Houston	0.5%	17	Austin	0.6%
18	New York City	0.3%	18	San Antonio	0.5%	18	Minneapolis	0.6%
19	Oklahoma City	0.3%	19	Austin	0.5%	19	Philadelphia	0.6%
20	Atlanta	0.2%	20	Oklahoma City	0.4%	20	Boise	0.5%
	Other	7.3%		Other	11.8%		Other	12.9%
Total		100.0%	Total		100.0%	Total		100.0%

Source: U.S. Department of Transportation, Origin-Destination Survey, online database

Table 2F compares the current (2011) non-stop destinations from Bob Hope Airport to those in October 2006 as reported in the F.A.R. Part 161 study. In 2006, there were 115 departures to 12 destination cities. In 2011, there were 76 departures to 10 cities.

The declines have generally been proportional across the groups of trip distances shown on the table, with the exception of daily flights over 1,500 miles in length, which have dropped from six to two. **Exhibit 2D** compares the non-stop flight destinations from Bob Hope Airport to its top 20 destinations. In 2010, the airport had non-stops to 15 of its top 20 destinations.

With American Airlines discontinuing service, the Bob Hope Airport will be left without non-stop service to the Dallas-Ft. Worth metroplex, its eighth largest market. Even though Southwest Airlines is headquartered at Love Field in Dallas, historically, non-stop flights to and from Dallas Love Field have been limited to airports in Texas and the four adjoining states by the Wright Amendment in 1979.

TABLE 2F
Non-Stop Service 2006 and 2011
Bob Hope Airport

	2006	2011
Less than 500 miles		
Las Vegas	15	12
Phoenix	14	12
Sacramento	9	8
San Francisco Bay	32	27
Subtotal	70	59
From 500 to 1,000 miles		
Denver	4	3
Portland	4	3
Seattle	4	3
Salt Lake City	3	3
Subtotal	15	12
From 1,000 to 1,500 miles		
Dallas-Ft. Worth	4	3
Subtotal	4	3
From 1,500 to 2,000 miles		
None		
Subtotal	0	0
Over 2,000 miles		
Orlando, FL	1	0
New York City	4	2
Subtotal	5	2
TOTAL NON-STOPS	**94**	**76**

Source: Airport records

In 1997, non-stop service was added to three states just beyond the four adjoining states. The 1997 bill also calls for the complete phase-out of the Wright Amendment in 2014, when all restrictions from Love Field will be dropped. While this will allow for potential non-stop flights to the east and west coast, the total number of gates available will still be restricted. On October 13, 2006, a federal bill became law allowing non-stop and connecting service to airports outside the "Wright Zone."

While Bob Hope Airport might expect to see the revival of non-stop service to Dallas as a result, major increases in total enplanements are not likely as the Dallas-Ft. Worth market captured just three percent of the airport's origin-destination passengers.

11SP12-2D-1/30/12

Non-Stop Service Cities (2011)	
1.	Las Vegas (LAS)
2.	Phoenix (PHX)
3.	Sacramento (SMF)
4.	San Francisco (SFO / SJC / OAK)
5.	Denver (DEN)
6.	Portland (PDX)
7.	Seattle (SEA)
8.	Salt Lake City (SLC)
9.	Dallas-Ft. Worth (DFW)
10.	New York City (JFK)

Top 20 Destinations (2010)			
1.	San Francisco Bay (SFO / SJC / OAK)	11.	Houston (HOU)
2.	Las Vegas (LAS)	12.	Chicago (ORD / MDW)
3.	Sacramento (SMF)	13.	Reno (RNO)
4.	Phoenix (PHX)	14.	Spokane (GEG)
5.	Seattle (SEA)	15.	Baltimore / D.C. (BWI / DCA)
6.	New York City (JFK / LGA / NEW)	16.	Albuquerque (ABQ
7.	Portland (PDX)	17.	Austin (AUS)
8.	Dallas / Ft. Worth (DFW / DAL)	18.	Minneapolis (MSP)
9.	Salt Lake City (SLC)	19.	Philadelphia (PHL)
10.	Denver (DEN)	20.	Boise (BOI)

LEGEND

- Bob Hope Airport
- Non-Stop Service City
- Top 20 Destination

Source: Non-stops - Airport Resources; Top Destinations - USDOT, Origin Destination Survey, online database

Exhibit 2D
TOP TWENTY O-D MARKETS /
NON-STOP SERVICE DESTINATIONS

PASSENGER FORECASTS

As discussed in this chapter's introduction, the first steps involved in updating the airport's forecasts include reviewing previous forecasts in comparison to actual activity to determine what changes, if any, may be necessary. After that comes consideration of the effects of any potential new factors that could affect the forecasts, such as changes in the socioeconomic climate or the potential effects of service changes.

Previous Passenger Forecasts

Three sets of previous forecasts were reviewed and are outlined in **Table 2G**. These include projections from the *Bob Hope Airport FAR Part 161 Study* that were prepared in 2006, the SCAG draft *Regional Transportation Plan - 2012* (RTP) that were prepared in 2011, and the FAA *Terminal Area Forecasts* (TAF), issued in January 2012.

TABLE 2G
Previous Enplaned Passenger Forecasts
Bob Hope Airport

	2010	2015	2017	2022	2030	2035
Actual	2,233,590					
Part 161 Study (2006)	3,208,000	3,635,000				
2011 TAF (January 2012)	2,253,691	2,309,439	2,404,147	2,584,735	2,903,839	
SCAG RTP-2012 (December 2011)						4,700,000
Updated Projection using Part 161 Methodology	2,233,590		2,618,000	2,934,000	3,520,000	

Sources: Supplemental Technical Report 1, Part 161 Study, Jacobs Consultancy, Feb. 2009
Aviation and Airport Ground Access, Regional Transportation Plan (RTP) 2012-2035, Draft December 2011, Southern California Association of Governments (SCAG)
2011 FAA Terminal Area Forecasts (TAF), FAA, January 2012

The projections for the Part 161 Study were prepared in 2006 while passenger traffic was in the midst of the strong growth period. While the forecast was only through 2015, it is evident from the table that traffic has been well below the projected rate of growth. The forecast was based primarily upon Bob Hope Airport's share of the five Los Angeles Region major airport's domestic passenger originations. The study projected the region's domestic originations to grow at an average annual rate of 2.8 percent, which was the rate projected for total personal income in the Los Angeles MSA. Bob Hope Airport was projected to maintain a constant market share of the region's originations, so its rate of growth was effectively projected at 2.8 percent through 2015. With the recent slowdown in growth from the recession, the updated total personal income projections, as shown in **Table 2B**, indicate a slower average annual growth rate of 2.3 percent through 2030.

SCAG's draft RTP includes projections for year 2035 only. The forecast of 4.7 million annual enplanements reflects the capacity of the Bob Hope Airport airline terminal as estimated by SCAG. This would represent an annual average growth rate of 3.0 percent over the 25-year period from 2010 to 2035. The Airport Authority has indicated to SCAG in its comments on the draft RTP forecasts that the Authority does not believe the airline terminal can process that many passengers, and that the growth rate is not reflective of the relatively consistent historical growth rate the airport has experienced over the long term.

The 2011 TAF is the most recently prepared forecast as it is updated every year by the FAA. This forecast anticipates a very slow recovery of passenger traffic in the short term and an annual average growth rate through 2030 of just 1.3 percent. With the disparity in these two recent forecasts, the following sections further examine the potential growth for passenger traffic at Bob Hope Airport.

Enplanement Forecast Update Analysis

Several analytical techniques were examined for applicability to projecting passenger enplanements at Bob Hope Airport. These included time-series extrapolation, regression analyses, and market share analysis.

First, however, the methodology used in the preparation of the forecast for the Part 161 Study was revisited. As mentioned above, that methodology related growth in domestic passenger originations at the region's five major airports to projected growth in total personal income in the Los Angeles MSA. Bob Hope Airport's passengers, which are heavily domestic originations, were then forecast at a constant share of the region's forecast. With the recent recession, the projected average annual growth rate for inflation-adjusted total personal income in the Los Angeles MSA has been lowered from 2.8 percent to 2.3 percent. The enplanement projection for Bob Hope Airport included at the bottom of **Table 2G** is based upon that updated and lower growth rate. This projection, along with the TAF and RTP forecasts, will be compared to projections that resulted from the techniques used below. It should be noted that this projection does not show a recovery to 2007 enplanement levels until after 2022.

A market share analysis provides a first look at potential growth based upon the share of the U.S. passenger enplanement market that Bob Hope Airport captures. **Table 2H** compares Bob Hope Airport's share of the U.S. domestic enplanement market since 1980. As can be seen in the table, the airport's share of the market has fluctuated over the years from a low of 0.303 percent in 1989 to a high of 0.472 in 1994. The low occurred the year before Southwest Airlines began service at the airport, and the high came five years later as the initial "bounce" typically seen with discount airline service matured.

Over the next several years, traffic at the airport flattened out with a net slow decline, and by 2001, the market share was down to 0.359. As traffic began to grow again in 2002, so did the market share, reaching 0.429 percent when enplanements set their all-time high in 2007. With the recent recession, the airport again began to lose market share, and by the end of 2011, the market share was back at the same basic level it was 31 years earlier in 1980.

A constant market share projection is depicted in the following table based upon the FAA forecast of U.S. domestic enplanements. In line with the FAA domestic enplanement forecast, the constant share projection shows a small rebound over the next few years, then a slower average annual rate of 2.2 percent after 2017.

TABLE 2H
Enplanement History
Bob Hope Airport

Year	Enplanements[1]	Millions U.S. Domestic Enplanements	Percent
1980	959,000	287.9	0.333%
1981	939,466	274.7	0.342%
1982	1,207,730	286.0	0.422%
1983	1,389,379	308.1	0.451%
1984	1,357,702	333.8	0.407%
1985	1,459,000	369.9	0.394%
1986	1,480,006	404.7	0.366%
1987	1,595,346	441.2	0.362%
1988	1,524,987	441.2	0.346%
1989	1,343,370	443.6	0.303%
1990	1,729,713	456.6	0.379%
1991	1,843,247	445.9	0.413%
1992	1,913,912	464.7	0.412%
1993	2,172,791	470.4	0.462%
1994	2,414,219	511.3	0.472%
1995	2,496,967	531.1	0.470%
1996	2,407,516	558.1	0.431%
1997	2,425,504	579.1	0.419%
1998	2,370,785	592.1	0.400%
1999	2,376,645	613.3	0.388%
2000	2,367,835	641.2	0.369%
2001	2,248,654	626.8	0.359%
2002	2,312,611	574.5	0.403%
2003	2,369,729	587.8	0.403%
2004	2,464,441	628.5	0.392%
2005	2,759,984	669.5	0.412%
2006	2,843,281	668.4	0.425%
2007	2,960,294	690.1	0.429%
2008	2,664,875	680.7	0.391%
2009	2,295,858	630.8	0.364%
2010	2,233,590	635.3	0.352%
2011	2,151,250	641.1	0.336%
FORECAST[2]			
2017	2,491,000	741.4	0.336%
2022	2,798,000	832.6	0.336%
2030	3,356,000	998.8	0.336%

Sources: [1]. Airport Records; Historic U.S. Domestic Enplanements – Bureau of Transportation Statistics (BTS), online database; [2]. FAA Aerospace Forecast Fiscal Years 2012-2032, March 2012, U.S. DOT, FAA Aviation Policy and Plans

A time-series analysis was conducted next to evaluate the growth of passengers over three different time periods. These included periods beginning with 1980 (post-deregulation), 1990 (beginning of Southwest service), and 2000 (9-11 era). As is evident from **Table 2J**, the longest period provided the best correlation by far (0.743).

The correlation coefficient (Pearson's "r") measures the association between changes in the dependent variable (enplanements) and the independent variable(s) (calendar years). In social sciences, an r-value greater than 0.90 generally indicates good predictive reliability. A value below 0.90 may still be used with the understanding that the predictive reliability is lower. The statistical fit of the time-series analysis for the 1980-2011 period, while not considered a strong correlation, provides a basic trend line projection for enplanements that is presented for comparison in **Table 2K**.

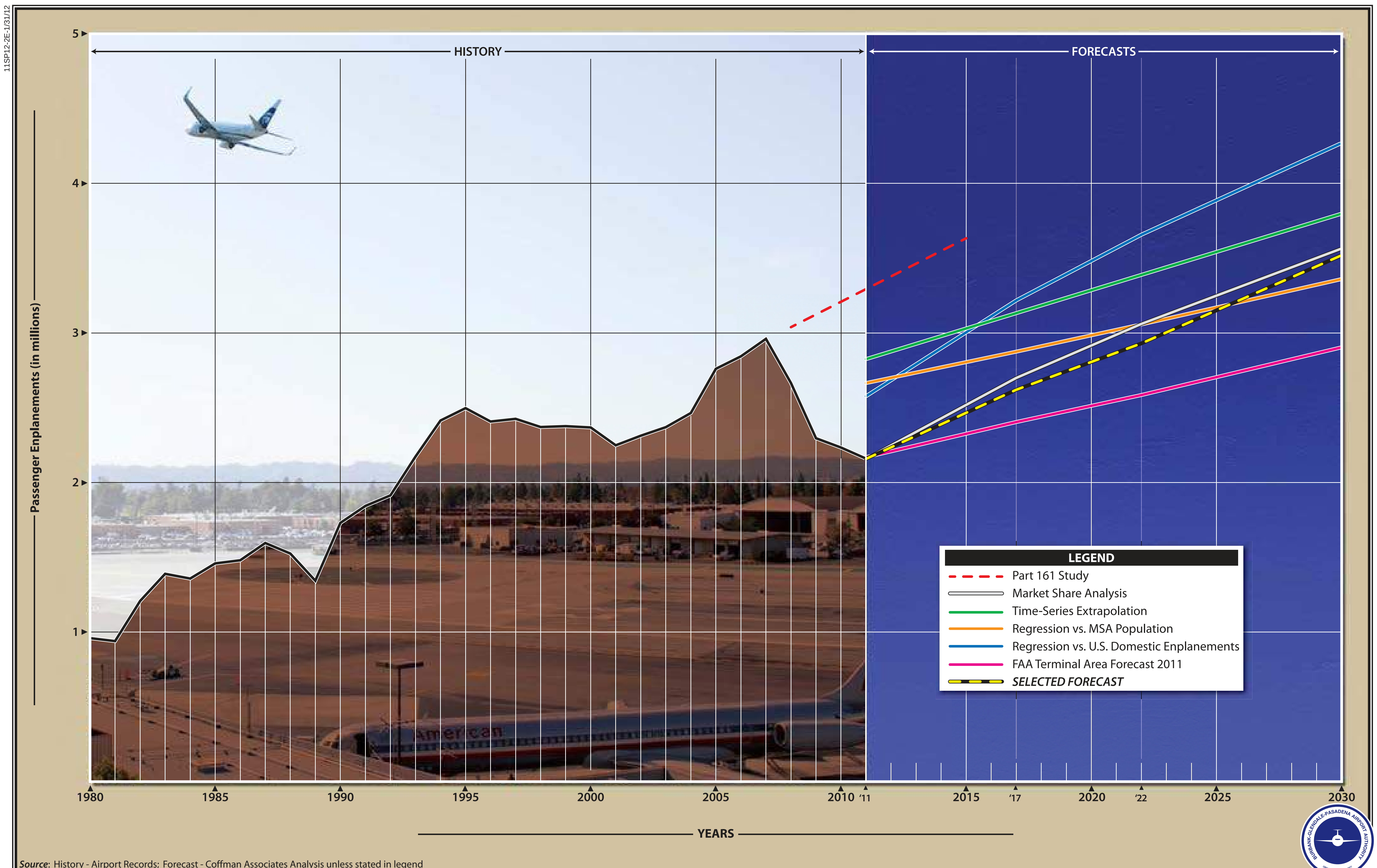
TABLE 2J
Correlation Analysis
Bob Hope Airport Enplanements

	r-value
Time Series Correlation	
Enplanements 1980-2011	0.86
Enplanements 1990-2011	0.55
Enplanements 2001-2011	0.04
Single Variable Correlations	
vs. Population	
Los Angeles MSA (1980-2010)	0.92
Los Angeles County (1980-2010)	0.91
LA-Ventura Counties (1980-2010)	0.91
vs. Employment	
Los Angeles MSA (2000-2010)	0.90
Los Angeles County (2000-2010)	0.81
LA-Ventura Counties (2000-2010)	0.87
vs. Total Personal Income (millions 2005$)	
Los Angeles MSA (1980-2010)	0.86
Los Angeles County (1980-2010)	0.85
LA-Ventura Counties (1980-2010)	0.83
vs. U.S. Domestic Enplanements	
(1980-2010)	0.94
vs. U.S. Domestic Available Seat-Miles	
(1980-2010)	0.93
Multiple Variable Correlation	
vs. Domestic Enplanements + MSA Population (1980-2010)	0.94

Source: Coffman Associates 14 CFR Part 150 Forecast analysis, March 2012

Next, several regression analyses were run to examine the correlation between enplanements and the independent variables. The local and regional independent variables depicted on **Tables 2A** and **2B** were considered in addition to U.S. domestic enplanements and domestic available seat-miles. As with the time-series analysis, each variable was tested over the three periods extending back over the last three decades. A summary of the best correlation with each single variable is included in **Table 2J**. The MSA population 1980-2010 offered the best single independent local variable, with an r-value of 0.92. U.S. domestic enplanements 1980-2010 had the highest correlation overall at 0.94. These two highest variables were utilized for a multiple regression test. The regression combining regional employment with U.S. domestic enplanements resulted in a correlation of 0.94. The resulting projections from the highest single and multiple variables are presented for comparison in **Table 2K**.

The range in the projections is graphically depicted on **Exhibit 2E.** At the upper end are the single and multiple variable regressions involving U.S. domestic enplanements. The projection resulting from the regression analysis with the Los Angeles MSA population is at the lower end of the analytical projections. The time-series and the constant market share projections are generally within this range, although the market share in the short term is the lowest.



DRAFT FINAL

Exhibit 2E
PASSENGER ENPLANEMENT FORECASTS

TABLE 2K
Passenger Enplanement Projections
Bob Hope Airport

	2017	2022	2030
U.S. Domestic Enplanement Forecast (millions)	741.4	832.6	998.8
Bob Hope Airport Enplanement Projections			
Market Share Analysis	2,491,000	2,798,000	3,356,000
Share of U.S. Market (%)	*0.336%*	*0.336%*	*0.336%*
Time-Series Extrapolation	3,132,000	3,388,000	3,797,000
Share of U.S. Market (%)	*0.422%*	*0.407%*	*0.380%*
Regression vs. MSA Population	2,875,000	3,057,000	3,359,000
Share of U.S. Market (%)	*0.388%*	*0.367%*	*0.336%*
Regression vs. U.S. Domestic Enplanements	3,184,000	3,754,000	4,261,000
Share of U.S. Market (%)	*0.429%*	*0.451%*	*0.427%*
Regression vs. Dom. Enpl. & MSA Pop.	2,967,000	3,332,000	3,997,000
Share of U.S. Market (%)	*0.434%*	*0.439%*	*0.428%*
FAA Terminal Area Forecast 2011	2,404,147	2,584,735	2,903,839
Share of U.S Market (%)	*0.324%*	*0.310%*	*0.291%*
Selected Forecast	**2,620,000**	**2,930,000**	**3,520,000**
Share of U.S. Market (%)	***0.353%***	***0.352%***	***0.352%***

Source: Coffman Associates CFR Part 150 Forecast analysis, March 2012

The FAA's 2011 *Terminal Area Forecast* (TAF) for Bob Hope Airport is also presented for comparison on the table, as well as on **Exhibit 2E**. The TAF projections are lower than the market share and statistical projections.

Table 2K also compares the market share of each projection to the FAA forecast of U.S. domestic enplanements. The market share of the statistical forecasts are generally high over the short term, indicating that this level of growth would require a significant capture of additional market share, which is not likely. The FAA TAF projects a slight decline in market share over the next ten years, then regaining a small amount over the long term.

Given the recent declines in passenger traffic due to the recession, combined with continued uncertainty in fuel prices and their effect on the airlines, it is difficult to be optimistic regarding a major rebound in traffic growth. Through the end of 2011, twelve-month enplanement averages have declined in all but two months since April of 2008. Enplanements in 2011 were at their lowest point in 19 years. American Airlines' decision to discontinue service in February of 2012 is a reminder that the airline industry restructuring continues as the nation slowly recovers from the recession.

Upon review, the forecast selected was the current projection of using the forecast methodology from the Part 161 Study. The growth rate follows that of updated forecasts for total personal income for the Los Angeles MSA or an annual average rate of 2.3 percent from the 2010 enplanement level. It also closely resembles the average market share of U.S. domestic enplanements over the last three years. The selected forecast is presented at the bottom of **Table 2K**.

AIRLINE OPERATIONS

The commercial service fleet mix is needed to project airline operations for the airport. A projection of the fleet mix for Bob Hope Airport has been developed by reviewing the equipment used by the carriers serving the airport.

The airlines have been undergoing a dramatic adjustment in their fleet mix composition. As older aircraft are retired, some routes have been transferred to regional airlines and adjustments made to domestic routes. Higher fuel prices led to a reduction in domestic capacity as airlines attempted to generate a profit. A slowing U.S. economy also impacted their ability to quickly return to profitable operations. To gauge the type of transition that is occurring within the airline fleet recently, information has been examined for each of the airlines serving Bob Hope Airport.

Many of the aircraft that airlines have used to service Bob Hope Airport in recent years are no longer in production. These include the B717, B737 series 300/400/500, B757, and MD-80. In fact, according to airport landing records, these aircraft comprised 42 percent of the airline operations in 2007, but only totaled 7.7 percent in 2011. Consequently, the airport can expect to see more of the new generation B737 series 700/800/900 and the A319/A320 in the narrow-body categories of 105 seats and up. With rising fuel costs, the original 50-seat regional jets have been found to be less cost-effective than the newer stretched versions of 66 seats and up.

The long term outlook for the fleet mix at Bob Hope Airport is dependent on traffic growth and additional technological advancements. Current trends and fleet orders have provided input into the projection of annual departures and operations by the scheduled carriers.

Table 2L presents an annual percentage breakdown of the major airline fleet mix by seating capacity for Bob Hope Airport since 2007. Aircraft within the 125-139 seat range have remained dominant at the airport during this period. This range includes the B737-300 and 700 aircraft, which are the principal aircraft used by Southwest Airlines. Southwest Airlines does have the B737-800 on order. While this higher seating capacity aircraft is too long to park at some of the gates at Bob Hope Airport, there are five gates that can accommodate it. The average seats per departure have declined from 123.4 in 2007 to 120.5 in 2011, reflecting the shift by some of the other mainline carriers at the airport to utilize their regional airline partners. In the short term, the ratio could decline slightly before leveling out, but can be expected to increase slightly as passenger traffic begins to increase again and higher seating capacity narrow-body aircraft and regional jets transition into the fleet.

The boarding load factor (BLF) is defined as the ratio of passengers boarding aircraft compared to the seating capacity of the aircraft. The BLF percentage at Bob Hope Airport has remained in the upper 60s over the past five years. This can be expected to increase in the future to follow along with the rise projected for U.S. domestic airline load factors.

TABLE 2L
Existing Airline Fleet Mix by Seat Capacity
Bob Hope Airport

Fleet Mix Seating Capacity	Actual 2007	2008	2009	2010	2011
> 190	0.0%	0.0%	0.0%	0.0%	0.0%
170-189	0.1%	0.0%	0.0%	0.0%	0.0%
155-169	1.1%	2.6%	1.9%	1.5%	1.6%
140-154	13.0%	11.2%	9.9%	9.7%	9.4%
125-139	63.3%	65.7%	66.8%	65.3%	64.3%
115-124	5.3%	2.1%	0.1%	2.3%	1.7%
95-109	0.0%	0.0%	0.0%	0.0%	0.0%
80-94	0.9%	2.3%	4.4%	2.2%	3.8%
60-79	5.4%	6.1%	5.0%	6.7%	5.8%
40-59	7.7%	4.7%	7.4%	12.3%	13.4%
< 39	3.1%	5.3%	4.3%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Average Seats per Departure	123.4	123.2	121.5	121.5	120.5
Boarding Load Factor	69.7%	67.0%	65.7%	67.6%	68.1%
Enplanements per Departure	86.1	82.5	79.9	82.1	82.5
Annual Enplanements	2,960,294	2,664,875	2,295,858	2,233,590	2,141,250
Annual Departures	34,398	32,308	28,748	27,205	26,210
Annual Operations	68,796	64,616	57,496	54,410	52,420

Source: Existing Fleet Mix, Enplanements, and Departures - Airport Records;
Calculations - Coffman Associates 14 CFR Part 150 analysis, March 2012

Table 2M presents the resulting fleet mix and operations forecast for Bob Hope Airport. The table also serves as a summary of both forecast airline enplanements and operations at the airport. Even with the projected growth, it should be noted that airline operations are not forecast to return to 2007 levels until sometime after 2022, and will be flown primarily by the quieter, new generation aircraft.

TABLE 2M
Airline Fleet Mix and Operations Forecast
Bob Hope Airport

Fleet Mix by Seating Capacity	Forecast 2011	2017	2022	2030
< 190	0.0%	0.0%	0.0%	0.0%
170-189	0.0%	0.0%	0.0%	2.0%
155-169	1.6%	2.0%	4.0%	7.0%
140-154	9.4%	7.0%	7.0%	6.0%
125-139	64.3%	64.0%	62.0%	60.0%
115-124	1.7%	3.0%	4.0%	3.0%
95-109	0.0%	0.0%	1.0%	3.0%
80-94	3.8%	6.0%	8.0%	10.0%
60-79	5.8%	9.0%	10.0%	9.0%
40-59	13.4%	9.0%	4.0%	0.0%
< 39	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%
Average Seats per Departure	120.5	120.7	123.4	127.5
Board Load Factor	68.1%	71.0%	73.0%	76.0%
Enplanements per Departure	82.5	85.7	90.1	96.9
Annual Enplanements	2,151,250	2,620,000	2,930,000	3,520,000
Annual Departures	26,210	30,600	32,500	36,300
Annual Operations	52,420	61,200	65,000	72,600

Source: Coffman Associates 14 CFR Part 150 Forecast analysis, March 2012

AIR CARGO

Air freight includes the combined activities of the scheduled passenger airlines carrying freight on scheduled flights and the dedicated all-cargo carriers. Air mail may also be carried by both the scheduled passenger airlines and all-cargo carriers. Freight and mail together make up air cargo activity at an airport. This section describes the national aviation trends in the air cargo airline industry, historical activity at Bob Hope Airport, and future projections of air cargo activity.

NATIONAL AIR CARGO TRENDS

Air cargo activity has historically had a high correlation to gross domestic product (GDP). Other factors that affect air cargo growth are real yields, improved productivity, and globalization. Ongoing trends that are and will continue to improve the air cargo market include the opportunities from open skies agreements, decreasing costs from global airline alliances, and increasing business volumes from e-commerce. At the same time, trends that could limit air cargo growth include increased use of mail substitutes (for example, e-mail) and increased airline costs due to environmental and security restrictions.

Before 2001, air cargo was the fastest growing sector of the aviation industry. From 1994 through 2000, total tons and revenue ton-miles (RTMs) grew at annual average rates of 8.0 and 8.6 percent, respectively. An economic slowdown in the U.S., combined with the collapse in the high-tech industry and a slowing of imports, resulted in declines of 5.0 percent in tons and 3.9 percent in RTMs in 2002. Domestic air cargo RTMs did grow in 2003 and 2004, peaking at 16.3 million RTMs in 2004. By 2009, however, domestic RTMs had declined to 11.9 million RTMs.

The FAA notes there are several structural changes that are occurring within the air cargo industry. Among them are the following:

- **Security regulations** – On August 3, 2007, *Recommendations of the 9/11 Commission Act of 2007* was signed into law. Section 1602 of this Act states that air cargo placed on passenger aircraft will receive the same level of screening as passenger-checked baggage. Legislation called for the establishment of a system by 2010 that required 100 percent inspection of cargo transported by passenger aircraft.

- **Market maturation** – The express market in the United States has matured after dramatic growth over the last two decades. This is the majority of domestic air cargo activity.

- **Modal shift** – Improved service and economics from the use of alternative modes of cargo transported by the integrated cargo carriers such as Federal Express (FedEx) and United Parcel Service (UPS) has matured.

- **Increases in air fuel surcharges** – With the volatility in the price of oil, fuel surcharges have become more common in the industry.

- **Increased USPS use of all-cargo carriers** – This initially resulted from the U.S. Postal Service's (USPS) need to improve control over delivery. The trend has continued due to security regulations.

- **Increased use of mail substitutes** – Substitutes such as e-mail affect mail volume. The residual fear of mail because of terrorism has also been a factor.

The FAA forecast for RTMs was based on some specific assumptions exclusive to the air cargo industry. First, security restrictions will remain in place. Second, most of the shift from air to ground transportation has occurred.

The largest growth will continue to be in international cargo, which is projected to grow at an annual average rate of 5.7 percent through 2032. Domestic cargo RTMs are expected to decrease by 2.7 percent in 2012, then grow at an annual rate of 1.8 percent for the next twenty years. Total RTMs were projected to grow at an average rate of 4.9 percent through 2032. **Exhibit 2F** depicts the FAA forecasts for air cargo.

Between 2000 and 2011, the all-cargo carrier percentage of U.S. domestic RTMs grew from 70.0 percent to 87.6 percent. By 2032, this share was projected to increase to 89.7 percent based upon increases in wide-body capacity for all-cargo carriers and security considerations.

The all-cargo large jet aircraft fleet was expected to grow from 879 in 2011 to 1,345 by 2032. Narrow-body aircraft were projected to increase by only six aircraft per year through 2032 as older 757s and 737s are converted to cargo service. The wide-body fleet was projected to increase by 16 aircraft yearly.

AIR CARGO FORECAST

Table 2N depicts air cargo activity at Bob Hope Airport since 2000. The total tons of air cargo grew from 36,248 tons in 2001 to 53,822 tons in 2007. With the recession, cargo tonnage declined to 42,909 in 2008, but has increased each of the past three years, exceeding the 50,000 ton level again in 2011. Cargo boarded at the airport has averaged 58 percent of the total cargo tonnage handled since 2000.

Air mail started the decade comprising 10 percent of the cargo handled at the airport. At that time, it was handled by the passenger airlines. That dropped off dramatically in 2001 when air mail on the passenger airlines was essentially shutdown after the events of 9-11 until March of 2002. When it returned, air mail was still handled by the passenger airlines at Bob Hope Airport, but remained at lower levels. By mid-decade, air mail declined to become almost non-existent. An all-cargo carrier, UPS took over the contract to fly air mail for the U.S. Postal Service late in 2008. Since that time, air mail at Bob Hope Airport has returned to represent approximately four percent of the cargo handled at the airport.

TABLE 2N
Air Cargo Tonnage 2000-2011
Bob Hope Airport

By Cargo Type

	Air Mail (tons)			Air Freight (tons)			Total
Year	Deplaned	Enplaned	Total	Deplaned	Enplaned	Total	Cargo (tons)
2000	256	3,939	4,195	14,279	22,757	37,036	41,231
2001	48	1,832	1,880	13,036	21,332	34,368	36,248
2002	7	728	736	17,905	25,184	43,090	43,825
2003	9	1,589	1,598	19,775	27,859	47,634	49,232
2004	1	1,182	1,182	20,628	29,005	49,633	50,816
2005	1	355	355	22,765	30,102	52,867	53,223
2006	1	75	75	27,162	30,415	57,577	57,652
2007	0	87	87	25,037	28,698	53,735	53,822
2008	--	9	9	17,668	25,232	42,900	42,909
2009	2,103	100	2,203	20,706	23,687	44,392	46,595
2010	1,487	176	1,664	21,816	26,268	48,084	49,747
2011	1,620	302	922	364	752	49,116	51,038

By Carrier Type

	Passenger Airlines		All-Cargo Airlines				Total
Year	Tons	%	Mainline Tons	%	Regional Tons	%	Cargo (tons)
2000	7,126	17.3%	25,075	60.8%	9,031	21.9%	41,231
2001	3,899	10.8%	23,766	65.6%	8,584	23.7%	36,248
2002	3,357	7.7%	32,246	73.6%	8,223	18.8%	43,825
2003	5,128	10.4%	36,550	74.2%	7,556	15.3%	49,232
2004	4,157	8.2%	38,706	76.2%	7,953	15.7%	50,816
2005	3,886	7.3%	41,379	77.7%	7,959	15.0%	53,223
2006	2,515	4.4%	47,808	82.9%	7,330	12.7%	57,652
2007	1,795	3.3%	45,760	85.0%	6,267	11.6%	53,822
2008	1,517	3.5%	36,282	84.6%	5,111	11.9%	42,909
2009	1,120	2.4%	41,502	89.1%	3,974	8.5%	46,595
2010	1,636	3.3%	44,024	88.5%	4,088	8.2%	49,747
2011	1,275	2.5%	46,204	90.5%	3,562	7.0%	51,038

Source: Airport Records

Cargo is handled by passenger airlines (belly freight) and by all-cargo airlines. The all-cargo airlines can be sub-divided into the major carriers who use larger commercial jet aircraft and the regional carriers who use smaller jet, turboprop, and piston aircraft. The major all-cargo carriers at Bob Hope Airport are comprised of UPS and FedEx. The regional carriers currently include AirNet and Ameriflight.

The lower half of **Table 2N** presents the split of air cargo handled by each carrier type. In 2000, the passenger airlines accounted for 17.3 percent of the cargo handled at the airport. That percentage dropped dramatically over the decade and now represents just 2.5 percent.

The regional all-cargo carriers have also experienced a decline from nearly 21.9 percent in 2001 to 7.0 percent in 2011. This decline was due in large part to a significant decline in bank check-hauling business.

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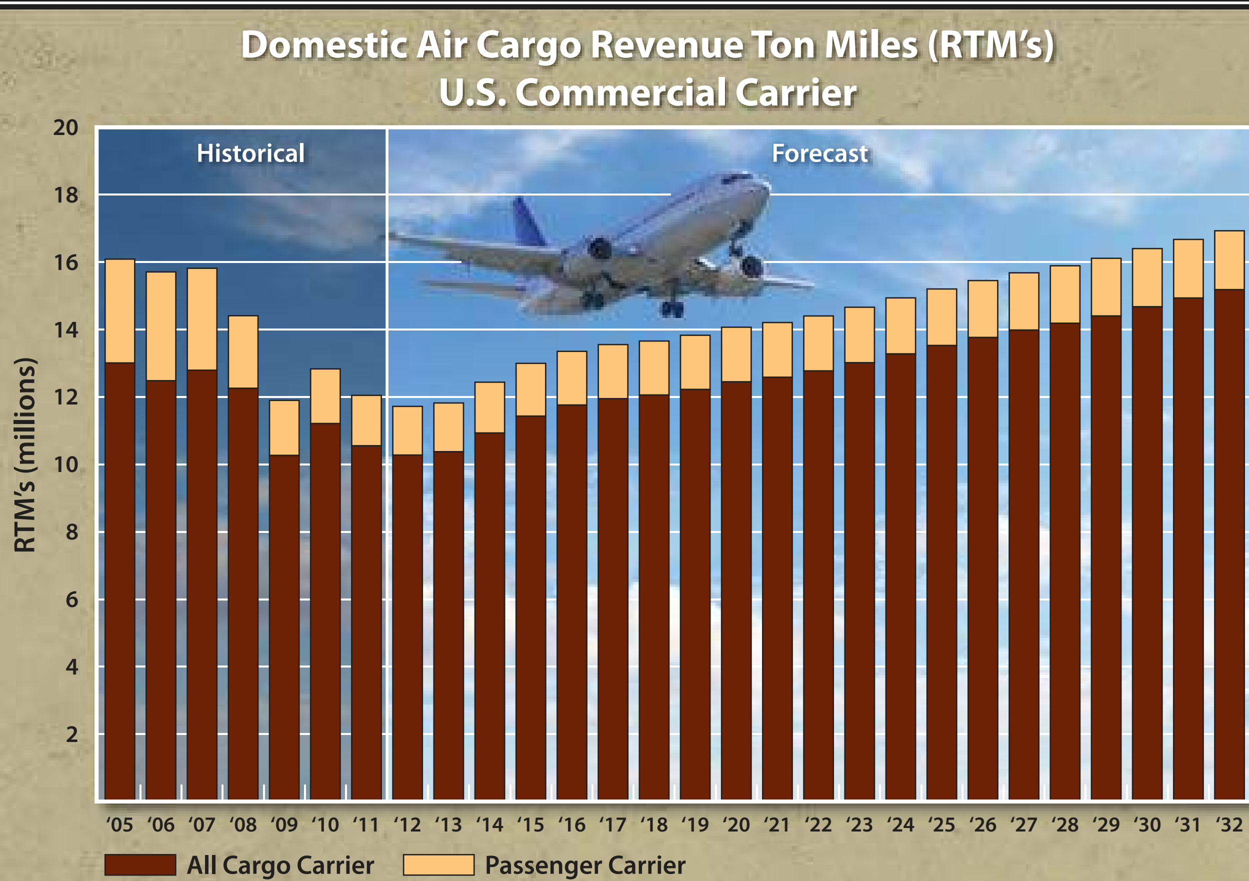
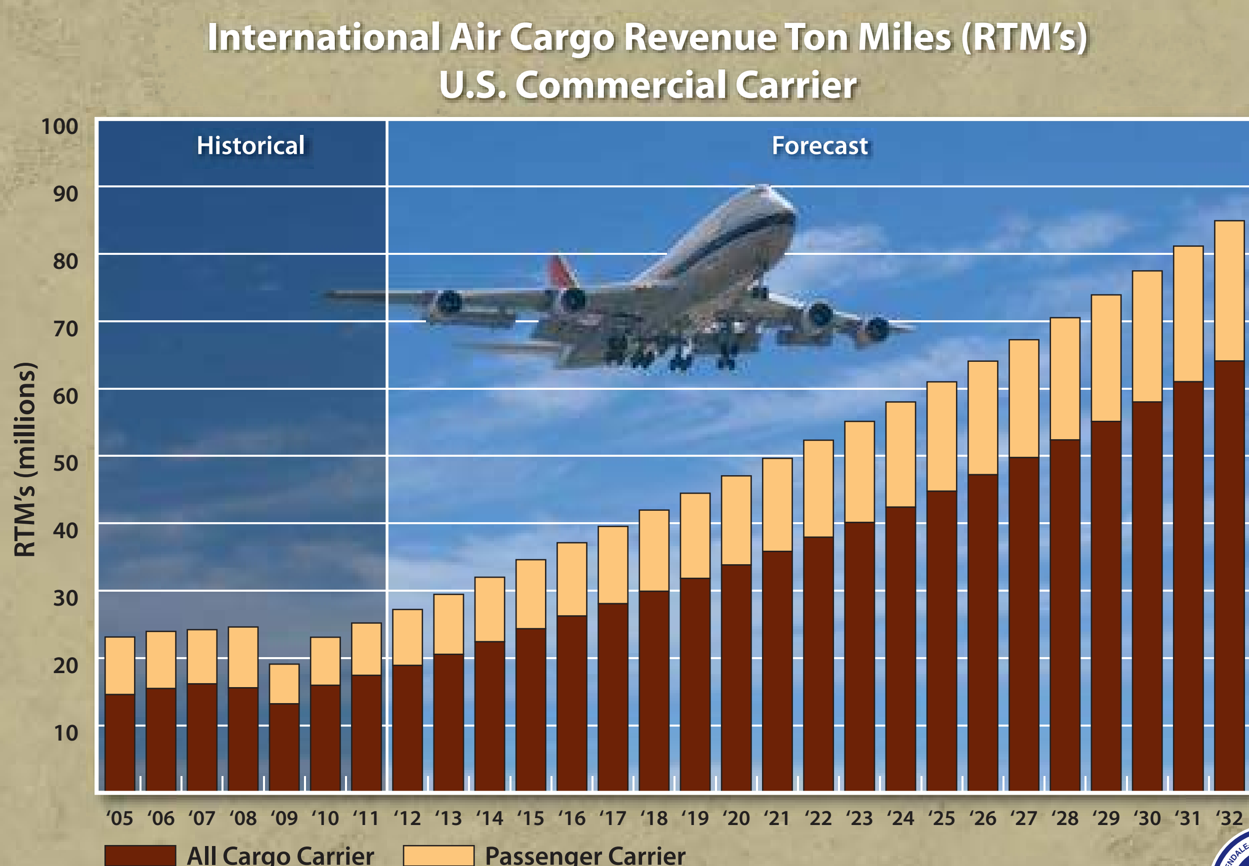




Source: FAA Aerospace Forecasts, Fiscal Years 2012-2032

Exhibit 2F
U.S. AIR CARGO FORECASTS

Table 2P also compares total cargo handled at Bob Hope Airport as a percentage of domestic freight/express RTMs since 2000. Over this 11-year period, the ratio for the airport has generally been on the rise, increasing from 0.028 percent to 0.042.

TABLE 2P
Cargo and Leading Indicators
Bob Hope Airport

Year	BUR Total Cargo (tons)	U.S. Domestic Revenue Ton-Miles (million RTMs)[1]	BUR Market %	Los Angeles MSA Gross Regional Product Millions 2005$[2]
2000	41,231	14,698.7	0.028%	537,113.5
2001	36,248	13,937.9	0.026%	549,375.5
2002	43,825	12,967.4	0.034%	568,500.3
2003	49,232	14,972.4	0.033%	587,392.0
2004	50,816	16,340.9	0.031%	612,242.8
2005	53,223	16,089.6	0.033%	637,229.4
2006	57,652	15,710.5	0.037%	661,150.7
2007	53,822	15,818.0	0.034%	663,080.3
2008	42,909	14,410.5	0.030%	655,123.0
2009	46,595	11,900.0	0.039%	629,057.2
2010	44,908	12,823.1	0.035%	620,997.2
2011	51,038	12,048.4	0.042%	625,429.7
Forecast				
2017	56,700	13,555.3	0.042%	716,576.1
2022	60,200	14,403.9	0.042%	802,199.6
2030	68,600	16,403.4	0.042%	954,205.0

Source:
[1] FAA Aerospace Forecast 2012-2032, March 2012
[2] CEDDS – 2012, Woods and Poole
Airport cargo projection is constant percentage share of U.S. domestic RTMs

The FAA TAF does not include a forecast of cargo volume; however, the SCAG RTP-2012 and the Part 161 Study projections do. The Part 161 Study focused on all-cargo carrier volumes. In 2005, the all-cargo carriers were handling 93 percent of the cargo at the airport. The Part 161 Study projected an annual average growth rate of 3.7 percent through 2015. The forecast was said to be "consistent with regional economic growth and continued demand originating from the local area." The all-cargo volumes were projected to grow from 49,309 tons in 2005 to 59,200 tons in 2008 and 71,100 in 2015.

The RTP-2012 forecast three scenarios for air cargo at Bob Hope Airport for the year 2035, ranging between a high growth scenario of 130,000 tons and a low growth scenario of 80,000 tons. The baseline scenario forecast was for 108,000 tons of freight and mail by 2035. The report noted that while there could be potential for some shifts in cargo demand from LAX to other area airports, Bob Hope Airport would not attract any of this demand due to "significant night noise constraints or curfews that would make them unattractive to air cargo operations."

Recognizing that cargo growth at the airport will likely continue to be driven strictly by originating demand in the area, statistical correlations with local and national socioeconomic variables were examined for applicability to air cargo projections. Because of how the cargo market has evolved and changed, these correlation analyses focused on the 11-

year period since 2000. The correlation analyses still yielded low coefficients (r-values) less than 0.90. Therefore, only the time-series projection and the variable with the highest correlation were considered.

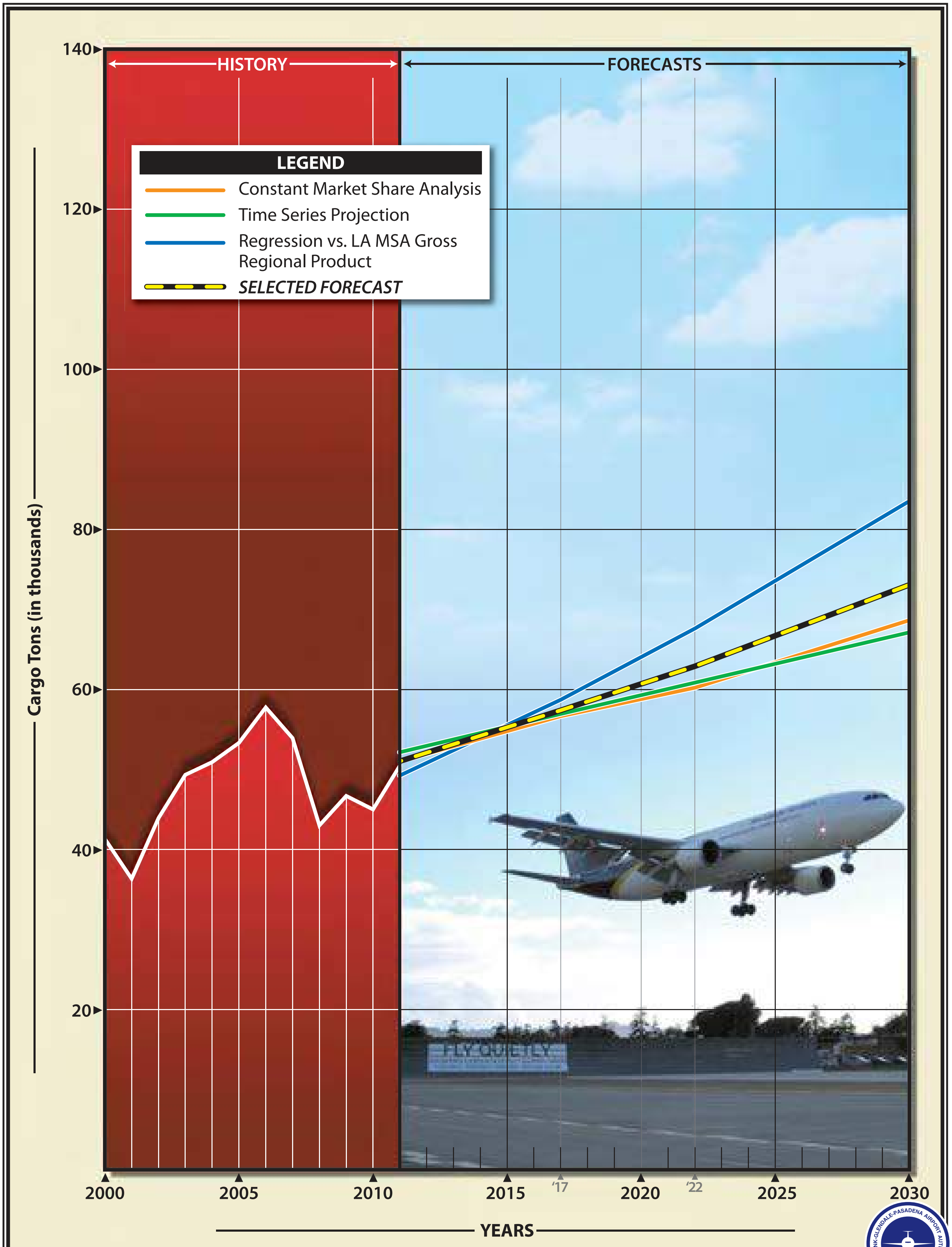
The time-series correlation yielded an r-value of just 0.46. The resulting projection is presented for comparison in **Table 2Q** and on **Exhibit 2G**. A regression with U.S. domestic RTMs yielded an r-value of 0.50. Regressions were also run with the same local variables considered with passenger enplanements, but none provided an r-value over 0.65. FAA indicates that nationally, cargo demand is driven by GDP, so an additional regression with gross regional product (GRP) was also tested. The best correlation was found with the GRP for the Los Angeles MSA, which provided an r-value of 0.74. The history as well as the Woods and Poole projection for GRP is included on **Table 2P**. GRP is projected to grow at a 2.2 percent annual average rate through 2030. Applying the Woods and Poole forecast for GRP, the resulting projection for cargo volume is presented in **Table 2Q** and on **Exhibit 2G** for comparison.

TABLE 2Q
Air Cargo Tons Projections
Bob Hope Airport

	2011	**2017**	**2022**	**2030**	**AARG 2011-2030**
U.S. Domestic Revenue Ton-Miles (millions)	12,048.4	13,555.3	14,408.9	16,403.4	1.6%
Bob Hope Airport Cargo Tons Projections					
Constant Market Share Analysis	51,038	56,700	60,200	68,600	1.6%
Ratio to U.S. Market	0.042%	0.042%	0.042%	0.042%	
Time Series Projection	52,266	56,900	60,900	67,100	1.5%
Ratio to U.S. Market	0.043%	0.042%	0.042%	0.041%	
Regression vs. LA MSA Gross Regional Product	49,251	58,718	67,611	83,399	2.2%
Ratio to U.S. Market	0.041%	0.043%	0.047%	0.051%	
Selected Forecast	**51,038**	**57,400**	**62,900**	**73,000**	**1.9%**
Ratio to U.S. Market	0.042%	0.042%	0.044%	0.045%	

Source: Coffman Associates 14 CFR Part 150 Forecast analysis, March 2012

The time-series and market share projections are very similar. Both are below the low range projection of the RTP-2012. As described earlier, the air cargo market has matured in the United States. Therefore, growth will be closely tied to economic activity, and the ability to significantly grow outside of economic levels will be limited. For the purposes of this study, a projection that considers the industry growth, historic growth at Bob Hope Airport, and the gross regional product for the area was selected. This forecast is an average of the market share, time-series, and the GRP regression projections. Over the long term, the annual average rate of growth would be 1.9 percent compared to 1.6 percent for U.S. domestic cargo and 2.2 percent of the Los Angeles GRP. The selected planning forecast for total air cargo tons at Bob Hope Airport is included in **Table 2Q** and **Exhibit 2G**.



Source: History - Airport Records; Forecast - Coffman Associates Analysis

Exhibit 2G
AIR CARGO FORECASTS

ALL-CARGO OPERATIONS

As indicated earlier, Bob Hope Airport is currently served by two major all-cargo carriers (UPS and FedEx) and two regional carriers (AirNet and Ameriflight). The major carriers have been utilizing commercial jet aircraft including the Boeing 757, the Airbus 300, and the Airbus 310. The commuter carriers have historically used a variety of smaller business jets, commuter turboprops, as well as single and twin-engine piston aircraft.

A combination of higher load factors and larger aircraft can be expected to absorb some of the projected growth in air cargo at the airport. Thus, air cargo operations are projected to increase, but not as fast as the cargo tonnage.

As shown on **Table 2R**, all-cargo operations declined from 14,376 in 2007 to 8,790 in 2011. During this period, while the tons of cargo handled decreased, the pounds of cargo carried per operation increased for both the major and regional cargo carriers. FedEx and UPS transitioned from operating a mix of the B757, A310, and A300 to almost exclusively operating the larger capacity A300.

TABLE 2R
All-Cargo Airline Operations
Bob Hope Airport

Major All-Cargo Airlines	Actual			Forecast		
Payload Capacity (lbs)	2007	2009	2011	2017	2022	2030
>120,000 (B767)	0.0%	0.0%	0.0%	5.0%	15.0%	37.0%
100,000-120,000 (A300)	26.8%	75.7%	97.4%	93.0%	83.0%	61.0%
80,000-100,000 (A310)	18.7%	3.3%	1.8%	2.0%	2.0%	2.0%
60,000-80,000 (B757)	54.5%	21.1%	0.8%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Capacity (lbs)	83,523	97,843	105,100	106,655	109,285	115,071
Load Factor	49.4%	47.6%	49.8%	51.0%	52.0%	53.0%
Lbs/Operation	41,225	46,527	52,385	54,394	56,828	60,988
Major Cargo Tons	45,760	41,502	46,204	52,200	57,600	67,300
Annual Operations	2,220	1,784	1,764	1,900	2,000	2,200
Regional All-Cargo Airlines	**Actual**			**Forecast**		
Aircraft Type	**2007**	**2009**	**2011**	**2017**	**2022**	**2030**
Business Jet	14.0%	8.3%	8.3%	10.0%	15.0%	20.0%
Turboprop	63.8%	75.3%	59.6%	65.0%	75.0%	80.0%
Multi-Piston	22.2%	16.4%	32.1%	25.0%	15.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Capacity (lbs)	2,970	3,113	2,770	2,920	3,125	3,440
Load Factor	34.7%	33.1%	36.6%	37.0%	37.0%	38.0%
Lbs/Operation	1,031	1,030	1,014	1,080	1,156	1,307
Regional Cargo Tons	6,267	3,974	3,562	3,800	4,000	4,400
Annual Operations	12,156	7,714	7,026	7,000	6,900	6,700
Total All-Cargo Operations	**14,376**	**9,498**	**8,790**	**8,900**	**8,900**	**8,900**

Sources: Actual Mix, Tons, and Operations – Airport Records; Forecasts and Calculations - Coffman Associates CFR Part 150 Forecast analysis, Mar. 2012

Table 2R also presents the operations forecasts for the all-cargo carriers, taking into account the aircraft type and size as well as load factors. Slightly higher load factors, as well as an evolving mix of higher capacity aircraft, will result in aircraft carrying more cargo per operation. As a result, the growth in all-cargo operations will remain relatively flat through the forecast period.

GENERAL AVIATION FORECASTS

The following forecast analysis examines each of the general aviation demand categories at Bob Hope Airport through 2030. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at the airport.

The remainder of this section presents the forecasts for general aviation demand, which includes the following:

- Based Aircraft
- Based Aircraft Fleet Mix
- Local and Itinerant Operations

The local airport service area is defined by the proximity of other airports and the facilities and services they are able to provide to owners/operators of general aviation aircraft. General aviation service areas can be limited by nearby airports which provide suitable airfield capabilities, as well as aircraft tie-down, fuel, maintenance, and hangar services.

Los Angeles County is served by 15 public-use airports, all providing general aviation services. Bob Hope Airport provides general aviation services, in addition to the commercial airline and air cargo activity already discussed. The four closest public airports to Bob Hope Airport are all classified as general aviation reliever airports, and as such, define and share its general aviation service area. Van Nuys Airport, located to the west, is one of the busiest general aviation airports in the country. Its 8,001-foot runway length makes it capable of accommodating a full range of general aviation aircraft. Santa Monica Airport to the southwest also serves a range of general aviation aircraft, but is somewhat more limited by its 4,973-foot runway length and 60,000 pound pavement strength. El Monte Airport to the southeast and Whiteman Airport to the northwest serve primarily small general aviation aircraft due to runway lengths around 4,000 feet and 12,500 pound pavement strengths. Information pertaining to each airport was obtained from FAA 5010 reports and air traffic control tower counts. **Table 2S** identifies the major characteristics of each airport.

TABLE 2S
Public-Use Airports Closest to Bob Hope Airport
Bob Hope Airport

Airport Name	Distance (nm)	NPIAS[1] Role	Longest Runway	Based Aircraft	2011 GA Operations[2]	Instrument Approaches
Bob Hope	-	Med. Hub	6,885’	96	55,060	Y
Van Nuys	7.5 W	Reliever	8,001’	680	287,056	Y
Santa Monica	12.0 SSW	Reliever	4,973’	303	103,813	Y
El Monte	17.5 SW	Reliever	3,995	335	75,932	Y
Whiteman	4.4 NW	Reliever	4,120	491	79,987	Y

Source: FAA 5010 Reports.
[1]National Plan of Integrated Airport Systems.
[2]FAA Tower Reports

It is evident from the table that all four airports accommodate significantly more based aircraft, as well as more general aviation operations, than Bob Hope Airport. This is in line with the purpose of general aviation reliever airports in the NPIAS to "provide general aviation pilots with attractive alternatives to hub airports such as Bob Hope Airport."

NATIONAL GA TRENDS

Following more than a decade of decline, the general aviation industry was revitalized with the passage of the *General Aviation Revitalization Act* in 1994, which limits the liability on general aviation aircraft to 18 years from the date of manufacture. This legislation sparked an interest to renew the manufacture of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry. The high cost of product liability insurance had been a major factor in the decision by many U.S. aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

In the seven years prior to the events of September 11, 2001, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. The economic climate and aviation industry had been recovering until early 2008, when it became clear that an economic downturn was underway. High oil prices and an economic recession caused general aviation activity at FAA air traffic facilities to fall sharply in 2008, declining by 5.6 percent. The extended downturn in the economy dampened the near-term prospects for the general aviation industry. As the U.S. and world economy recovers, general aviation demand is anticipated to rebound and grow.

In 2011, there were an estimated 222,520 active general aviation aircraft in the United States. **Exhibit 2H** depicts the FAA forecast for active general aviation aircraft. The FAA projects an average annual increase of 0.6 percent through 2032, resulting in 253,205 active aircraft. Active piston-powered aircraft (including rotorcraft) are expected to decline from 159,007 in 2011, to 155,395 by 2032 for a net average annual decrease of 0.1 percent. Single engine fixed-wing piston aircraft are projected to decrease at 0.1 percent annually, and multi-engine fixed-wing piston aircraft are projected to decrease by 0.5 percent per year. This is due, in part, to declining numbers of multi-engine piston aircraft and the expectation that the new, light sport aircraft and the relatively inexpensive very light jets (VLJ) will dilute or weaken the replacement market for piston aircraft.

New models of business jets are also stimulating interest for the high-end market. The FAA expects the business segment to expand at a faster rate than personal/sport flying. Safety and security concerns combined with increased processing time at commercial terminals make business/corporate flying an attractive alternative. Turbine-powered aircraft (turboprop and jet) are expected to grow at an average annual rate of 2.9 percent through 2032. Even more significantly, the jet portion of this fleet is expected to grow at an average annual growth rate of 4.0 percent. The total number of jets in the general aviation fleet is projected to grow from 11,760 in 2011, to 26,935 by 2032.

With the advent of the relatively inexpensive twin-engine VLJ, many questions have arisen as to the future impact they may have. The lower acquisition and operating costs of the VLJs were believed to have the potential to revolutionize the business jet market, particularly by being able to sustain a true on-demand air-taxi service. While initial forecasts called for over 400 aircraft to be delivered per year, events such as the recession along with the bankruptcy of VLJ manufacturer, Eclipse, and the Florida air-taxi start-up, DayJet, have led the FAA to temper more recent forecasts. The recent introduction of the Embraer's Phenom 100 to the market has helped boost the turbine market. Despite that, the impacts of the recession have led to dampened expectations.

In 2005, a new category called "light sport" aircraft was created that was not previously included in FAA registry counts. At the end of 2010, a total of 6,528 aircraft were estimated to be in this category. Down from earlier forecasts, the FAA estimates this fleet will increase by approximately 4.0 percent per year until 2013, then slow to about 2.0 percent per year. By 2032, a total of 10,195 light sport aircraft are projected to be in the fleet.

Aircraft utilization rates are projected to increase through the forecast period. The number of general aviation hours flown is projected to increase at 1.7 percent annually. Similar to active aircraft projections, there is projected disparity between piston and turbine aircraft hours flown. Hours flown in turbine aircraft are expected to increase at 3.6 percent annually, compared to just 0.03 percent for piston-powered aircraft. Jet aircraft hours flown are projected to increase at 5.3 percent annually over the next 20 years. The increasing size of the business jet fleet, resulting in longer flights along with improved utilization rates account for much of this increase. At the other end of the spectrum, the light sport aircraft fleet is anticipated to experience a 3.5 percent average annual growth rate in hours flown through 2032, primarily reflecting the anticipated growth in the light sport fleet.

The total general aviation pilot population is projected to increase by 35,000 in the next 20 years reaching 510,295 in 2032. This represents an average annual growth rate of 0.3 percent. The student pilot population is forecast to decline at an annual rate of 0.1 percent, from 118,657 in 2011 to 116,720 in 2032. The growth rate for the private pilot category is forecast at 0.1 percent, while the commercial pilot growth rate is projected at 0.4 percent

REGIONAL GA TRENDS

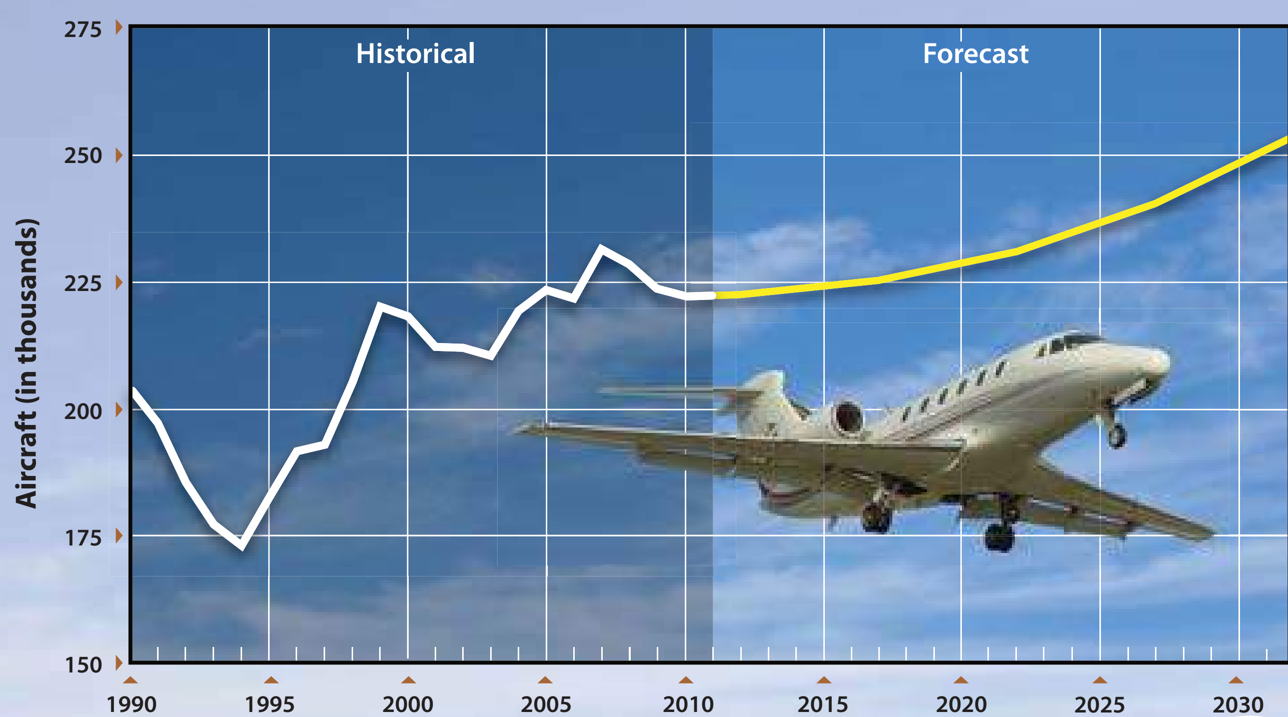
As part of its Regional Transportation Plan – 2012, SCAG recently developed a forecast for general aviation in its six-county region. The trends and forecasts were not broken down to individual airports like they were for commercial service; however, the RTP did provide information at the county level. Over the past decade, active pilots in the SCAG declined from 26,010 to 24,691. Based aircraft at the airports in the region declined from 10,687 in 2001 to 10,272 in 2010. Based jet aircraft, however, grew from 329 to 776 and helicopters grew from 216 to 314, so the losses were experienced in piston-powered aircraft. The RTP indicates that factors that will continue to affect general aviation in the future include:

- Price and availability of fuel, especially Avgas
- Trends in learning to fly in the general public

11SP12-2H-3/14/12

U.S. Active General Aviation Aircraft

	2012	2017	2022	2027	2032
FIXED WING					
Piston					
Single Engine	137,600	133,650	132,010	132,660	135,340
Multi-Engine	15,735	15,425	15,010	14,680	14,350
Turbine					
Turboprop	9,505	9,870	10,300	10,860	11,445
Turbojet	12,050	14,470	17,620	21,760	26,935
ROTORCRAFT					
Piston	3,780	4,250	4,680	5,180	5,705
Turbine	6,940	8,180	9,465	10,965	12,550
EXPERIMENTAL					
	24,480	26,165	27,825	29,480	31,140
SPORT AIRCRAFT					
	6,930	7,845	8,630	9,410	10,195
OTHER					
	5,670	5,635	5,605	5,575	5,545
TOTAL	**222,690**	**225,490**	**231,145**	**240,570**	**253,205**



Source: FAA Aerospace Forecasts, Fiscal Years 2012-2032.

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Exhibit 2H
U.S. ACTIVE GENERAL AVIATION
AIRCRAFT FORECASTS

- Demand for professional pilots
- Long term prospects for economic growth
- Persistent opposition of neighborhoods to airports
- Airspace utilization in the Los Angeles area

A series of projections were examined, many of which indicated continued downward trends for general aviation. The selected RTP forecast for Los Angeles County, however, projects based aircraft to grow from 4,296 in 2010 to 4,717 by 2035, for an annual average growth rate of 0.37 percent. As with the national FAA forecasts, stronger growth is expected in jet aircraft, which were projected to grow from 418 in 2010 to 570 in 2035. At 0.8 percent annually, however, this is significantly lower than the 4.2 percent rate projected nationally.

BASED AIRCRAFT

The number of based aircraft is one of the most basic indicators of general aviation demand. **Table 2T** presents based aircraft levels at the airport over the past 18 years. It is evident that the basing levels have generally declined over that period of time from 254 based aircraft in 1993 to 96 with the most recent airport count. Most of that decline has occurred in the small piston-powered aircraft category. Part of it relates to a general decline in the number of these aircraft in the U.S. fleet. Others have simply chosen to move to other area airports.

TABLE 2T
Based Aircraft Forecast
Bob Hope Airport

Year	Based Aircraft [1]	U.S. Active Aircraft [2]	Market Share %
1993	254	177,120	0.143%
1997	157	192,414	0.082%
2001	164	211,446	0.078%
2005	116	224,352	0.052%
2009	91	223,920	0.041%
2011	96	224,475	0.043%
Constant Market Share [3]			
2017	103	225,490	0.046%
2022	106	231,145	0.046%
2030	113	247,720	0.046%
FAA-TAF [4]			
2017	93	225,490	0.041%
2022	96	231,145	0.042%
2030	96	247,720	0.039%

Sources: [1]. Airport Records
[2]. FAA Aerospace Forecast Fiscal Years 2012-2032, March 2012
[3] Coffman Associates 14 CFR Part 150 Forecast analysis, March 2012
[4]. 2011 FAA Terminal Area Forecast, January 2012

The loss of based aircraft provides very low r-values when correlated to various industry and local socioeconomic variables. Therefore, the analysis turns to examining the potential for growth in the future.

Since 1993, the Bob Hope Airport based aircraft market share of active aircraft in the United States has declined from 0.143 percent to 0.043 percent. This is presented on **Table 2T**. In 2001, the airport was home to 3.5 percent of the 4,656 aircraft based in Los Angeles County. By 2010, the airport's share was down to 2.2 percent of the county's 4,296 based aircraft. In the last two years, it appears that the steady decline of based aircraft has, at least temporarily, stopped with based aircraft up from 91 to 96.

The attrition of smaller aircraft can be expected to continue as costs and capacity constraints further lead to the smaller aircraft owners considering other options. Aircraft used for business purposes, such as helicopters and turbine-powered fixed wing aircraft, can be expected to continue to be the areas of growth for based aircraft at Bob Hope Airport.

If the airport were to maintain its market share of based aircraft in the county, it would grow to 105 based aircraft by 2035 with the SCAG forecasts, a difference of nine aircraft. Maintaining its current share of 12 percent of the based jets in the county, the jets at the airport would grow from 50 to 68.

As of late summer 2012, a helicopter operator is in the process of relocating its entire operations to Bob Hope Airport. The helicopter operator will be moving six helicopters to Bob Hope Airport. These six additional helicopters were added to the 2017, 2022, and 2030 based aircraft projections developed below.

Table 2T presents another projection of based aircraft at the airport maintaining its current share of active aircraft in the United States, plus the six additional helicopters. Under this scenario, based aircraft would grow to 113 aircraft in 2030, a level still below that of 2005. **Table 2T** also depicts the recent based aircraft projections from the FAA TAF. The TAF was based upon 91 based aircraft in 2009-10 and projected 96 based aircraft by 2022, then maintaining that level through 2030. As can be seen from the table, this would result in a slight decline in market share based at the airport.

After accounting for the one-time increase in helicopters, the constant market share projection would result in an average annual growth rate of 0.1 percent. This is slightly higher than the SCAG RTP projects for the growth of based aircraft in Los Angeles County.

Table 2U presents the forecast based aircraft by mix. Single engine and multi-engine piston aircraft are projected to decline at a rate faster than the national average. Helicopters will experience an initial increase from the new operator and a lesser amount of growth in the future. Similarly, turboprop aircraft will see some growth as well. The largest growth, however, is expected in the corporate jet sector, which is projected to increase by nearly 40 percent by 2030. This would represent a 1.8 percent average annual increase. This is similar to the projected growth by SCAG, but less than the 4.4 percent growth rate of jets in the nation's active general aviation fleet.

TABLE 2U
Based Aircraft Mix Forecast
Bob Hope Airport

Year	Total	Single Engine	Multi-Engine	Turboprop	Jet	Helicopter
2005	116	40	15	7	49	5
2011	96	27	3	12	50	4
Forecast						
2017	103	23	2	12	56	10
2022	106	19	1	13	62	11
2030	113	15	1	15	70	12

Source: Coffman Associates CFR Part 150 Forecast analysis, March 2012

GENERAL AVIATION OPERATIONS

General aviation operations are classified by the airport traffic control tower (ATCT) as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use.

Table 2V and **Exhibit 2J** present the historical general aviation operations at Bob Hope Airport, as reported by the ATCT, since 1990. Itinerant general aviation operations declined throughout the 1990s. With the events of 9/11, there came a renewed interest in corporate flying, and general aviation itinerant traffic increased at the airport. In 2006, the airport recorded its highest general aviation itinerant operations since 1993. For the first six months of 2007, traffic kept pace with the previous year, but over the next three months traffic declined slightly, beginning to reflect changes in the economy. In October of 2007, itinerant operations dropped dramatically, to less than one-third of the same month in 2006. The same pattern continued throughout 2008 with the recession fully underway. Itinerant traffic reached a low point in 2009, and then began to recover slightly in 2010. In 2011, itinerant operations grew by over 40 percent to 35,585.

Local operations at Bob Hope Airport have fluctuated with the amount of training that is done at the airport. Over the last 22 years, local operations have remained less than 10,000 all but seven years. These years have primarily reflected when there was an increase in training operations at the airport. Recently, helicopter training on the airport has generated the higher levels. Forecasts of general aviation operations will be examined individually as itinerant and local operations.

TABLE 2V
Historical General Aviation Operations
Bob Hope Airport

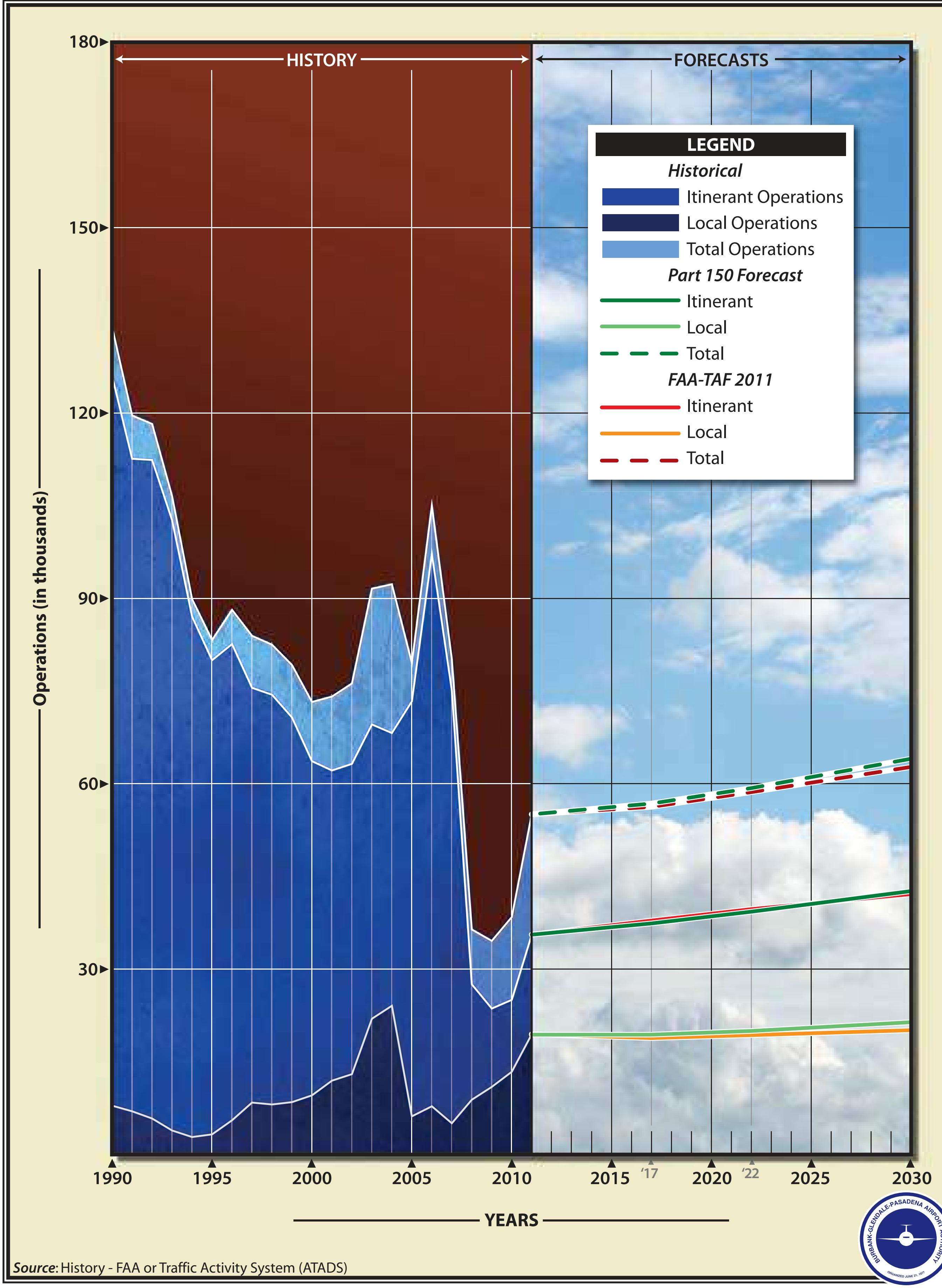
Year	Itinerant Operations	Local Operations	Total Operations
1990	125,943	7,909	133,852
1991	112,592	6,997	119,589
1992	112,398	5,829	118,227
1993	102,641	3,892	106,533
1994	87,050	2,834	89,884
1995	79,993	3,266	83,259
1996	82,603	5,546	88,149
1997	75,529	8,410	83,939
1998	74,406	8,102	82,508
1999	70,732	8,483	79,215
2000	63,657	9,581	73,238
2001	62,153	11,958	74,111
2002	63,223	13,009	76,232
2003	69,597	21,974	91,571
2004	68,207	24,076	92,283
2005	73,344	6,186	79,530
2006	97,197	7,812	105,009
2007	75,101	5,060	80,161
2008	27,544	8,872	36,416
2009	23,628	10,948	34,576
2010	25,032	13,395	38,427
2011	35,585	19,475	55,060

Source: Air Traffic Activity Data System (ATADS), FAA online database

Itinerant Operations

The first forecast method used to project itinerant general aviation operations examined the airport's itinerant operations in relation to the total general aviation itinerant operations at towered airports in the U.S. As shown in **Table 2W**, the airport's market share as a percentage of general aviation itinerant operations at towered airports across the country declined during the 1990s, and increased during 2001 until the recession. After reaching a low of 0.152 percent in 2009, this year the share was back up to 0.245 percent. The previously mentioned helicopter operator moving to Bob Hope Airport is anticipated to generate 6,240 annual operations. Applying additional helicopter operations to the 2011 itinerant operations would yield a market share of 0,288 percent. Applying this percentage to the forecast years as a constant market share projection yields 44,116 itinerant general aviation operations at the airport by 2030.

Table 2W also depicts the itinerant operations as a ratio to based aircraft. As evidenced in the table, this ratio has also varied in the past. Applying additional helicopter operations and the 371 itinerant operations per based aircraft of 2011 (this equates to 410 operations per based aircraft) to the forecast years yields 46,330 local operations in 2030.



Source: History - FAA or Traffic Activity System (ATADS)

Exhibit 2J
GENERAL AVIATION OPERATIONS

The FAA TAF projections for based aircraft and itinerant operations are also included for comparison. The TAF operations forecast results in an increasing market share over the planning period, as well as an increasing ratio of operations per based aircraft.

Since itinerant operations have been increasing each of the last two years, and with the economy recovering, it would seem to indicate that both the market share and ratio of operations per based aircraft would continue to show some improvement. As a result, the TAF plus the additional helicopter operations were determined to be a valid forecast of itinerant general aviation operations. A rounded version of the TAF was chosen as the Part 150 forecast of itinerant general aviation operations and is also presented on **Exhibit 2J.**

TABLE 2W
General Aviation Itinerant Operations Forecast
Bob Hope Airport

Year	BUR Itinerant Operations[1]	US ATCT GA Itinerant[2] (millions)	BUR Market Share %	BUR Based AC[3]	Itinerant Ops Per AC
1993	102,641	21.14	0.486%	254	404
1997	75,529	21.70	0.348%	157	481
2001	62,153	21.43	0.290%	164	379
2005	73,344	19.30	0.380%	116	632
2009	23,628	15.57	0.152%	91	260
2011	35,585	14.53	0.245%	96	371
Constant Market Share Projection[4]					
2017	41,826	14.52	0.288%	103	406
2022	42,675	14.81	0.288%	106	403
2030	44,116	15.31	0.288%	113	390
Operations Per Based Aircraft Projection[4]					
2017	42,230	14.52	0.291%	103	410
2022	43,460	14.81	0.293%	106	410
2030	46,330	15.31	0.303%	113	410
FAA-TAF Projection[5]					
2017	37,415	14.52	0.258%	93	402
2022	39,323	14.81	0.265%	96	410
2030	42,581	15.31	0.278%	96	444
Part 150 Forecast[4]					
2017	43,640	14.52	0.301%	103	424
2022	45,540	14.81	0.307%	106	430
2030	48,840	15.31	0.319%	113	432

Sources: [1] Air Traffic Activity Data System (ATADS) online database
[2] FAA Aerospace Forecast Fiscal Years 2012-2032, March 2012
[3] Airport Records
[4] Coffman Associates CFR Part 150 Forecast analysis, March 2012
[5] 2011 FAA Terminal Area Forecast, January 2012

Local Operations

The same methodology that was utilized to forecast itinerant general aviation operations was used to forecast local operations. As presented in **Table 2X**, the airport's market share as a percentage of general aviation local operations at towered airports across the country has fluctuated, but is currently at a high of 0.170 percent. While the airport appears to have a base of local operations in the range of 5,000 to 8,000 annually, there have been periods of activity extending as high 24,000 in one year. The airport is currently in one of those periods, with local operations just below 20,000.

TABLE 2X
General Aviation Local Operations Forecast
Bob Hope Airport

Year	BUR Local Operations[1]	US ATCT GA Local[2] (millions)	BUR Market Share %	BUR Based AC[3]	Local Ops Per AC
1993	3,892	15.46	0.025%	254	15
1997	8,410	15.16	0.055%	157	54
2001	11,958	16.19	0.074%	164	73
2005	6,186	16.19	0.038%	116	53
2009	10,948	12.45	0.088%	91	120
2011	19,475	11.44	0.170%	96	203
Constant Market Share Projection[4]					
2017	19,425	11.43	0.170%	103	189
2022	19,908	11.71	0.170%	106	188
2030	20,730	12.19	0.170%	113	183
Operations Per Based Aircraft Projection[4]					
2017	19,633	11.43	0.172%	103	203
2022	20,246	11.71	0.173%	106	203
2030	21,583	12.19	0.177%	113	203
FAA-TAF Projection[5]					
2017	18,851	11.43	0.165%	93	203
2022	19,327	11.71	0.165%	96	201
2030	20,115	12.19	0.165%	96	210
Part 150 Forecast[4]					
2017	19,400	11.43	0.170%	103	188
2022	20,000	11.71	0.171%	106	189
2030	21,400	12.19	0.175%	113	189

Sources: [1] Air Traffic Activity Data System (ATADS) online database
[2] FAA Aerospace Forecast Fiscal Years 2012-203, March 2012
[3] Airport Records
[4] Coffman Associates CFR Part 150 Forecast analysis, March 2012
[5] 2011 FAA Terminal Area Forecast, January 2012

While this training activity may come and go as it has in the past, for the purposes of the Part 150 study, this level of activity should be accounted for. The first projection in the table maintains the current market share of local general aviation operations at towered airports in the U.S. This would yield 20,730 local general aviation operations at the airport by 2030.

Table 2X also depicts the local operations as a ratio to based aircraft. Similar to the market share, this ratio has varied over the past decade, but is currently at a peak of 203. While the additional helicopters mentioned earlier will increase based aircraft and itinerant operations, they will not increase local operations. Adjusting this ratio for the additional based aircraft would yield 191 operations per based aircraft, and 21,583 local operations by 2030.

The FAA TAF is also included in the table for comparison and consideration. While the TAF projections indicate a constant market share it is below the 2011 market share of 0.170 percent. The three forecasts vary by less than five percent over the 20-year period. For the purposes of the Part 150 Study, a forecast that remains within the range of the other three projections was selected and presented at the bottom of the table. This projection results in slightly growing market share, and an operations per based aircraft ratio that remains around 189. The forecast is also depicted on **Exhibit 2J.**

OTHER AIR TAXI

The air taxi operations as reported by the ATCT include commuter passenger, commuter cargo, as well as for-hire general aviation operations. Some operations by aircraft operating under fractional ownership programs are also counted as air taxi operations. Since the airline and air cargo operations have been forecast, this section reviews the growth potential for the "other air taxi" operations.

Historical air taxi operations for the airport were obtained from tower reports and are presented in **Table 2Y**. Since 2008, air taxi operations have declined only slightly. This has occurred in spite of the larger declines experienced by the commercial and general aviation activity at the airport during the recession.

TABLE 2Y
Other Air Taxi Operations Forecasts
Bob Hope Airport

Year	BUR Air Taxi Operations[1]	U.S. ATCT Air Taxi (thousands)[2]	BUR Market Share %
2007	6,428	11,667.3	0.055%
2008	7,879	11,032.1	0.071%
2009	7,442	9,515.6	0.078%
2010	7,590	9,436.6	0.080%
2011	7,334	9,198.9	0.080%
Forecast[3]			
2017	8,100	10,087.1	0.080%
2022	8,700	10,883.1	0.080%
2030	9,900	12,338.0	0.080%

Sources: [1] Derived by Coffman Associates from Airport Records of landings
[2] FAA Aerospace Forecast Fiscal Years 2012-2032, March 2012
[3] Coffman Associates CFR Part 150 Forecast analysis, March 2012

The table examines the airport's air taxi operations as a share of the air taxi and commuter operations at U.S. towered airports since 2007. Over the last three years, the market share has been relatively consistent, near 0.08 percent. The FAA forecast the towered airport air taxi/commuter operations to grow at an average annual rate of 1.5 percent through 2032. The forecast presented in **Table 2Y** maintains the same market share through the forecast period, thus following a similar growth rate. This would result in 9, 900 air taxi operations by 2030.

MILITARY

Military activity accounts for the smallest portion of the operational traffic at Bob Hope Airport. Historical military operations were obtained from tower reports and are presented in **Table 2Z**. Since 2000, annual military operations have ranged between a high of 602 in 2005, and a low of 237 in 2010. Over that time period, military operations averaged 350 annually. More recently, operations have been lower, averaging just 261 in the last four years. With Department of Defense facing budget reductions, levels like the last four years appear more probable. **Table 2Z** projects an average of 300 military operations annually through the forecast period.

TABLE 2Z
Military Operations
Bob Hope Airport

Year	Itinerant	Local	Total
2000	368	0	368
2001	368	0	368
2002	353	0	353
2003	303	0	303
2004	309	13	322
2005	530	72	602
2006	455	0	455
2007	402	8	410
2008	226	31	257
2009	177	70	247
2010	210	27	237
2011	306	0	306
Forecast			
2017	250	50	300
2022	250	50	300
2030	250	50	300

Sources: History – Air Traffic Activity Data System (ATADS) online database
Forecast - Coffman Associates CFR Part 150 Forecast analysis, Mar. 2011

SUMMARY

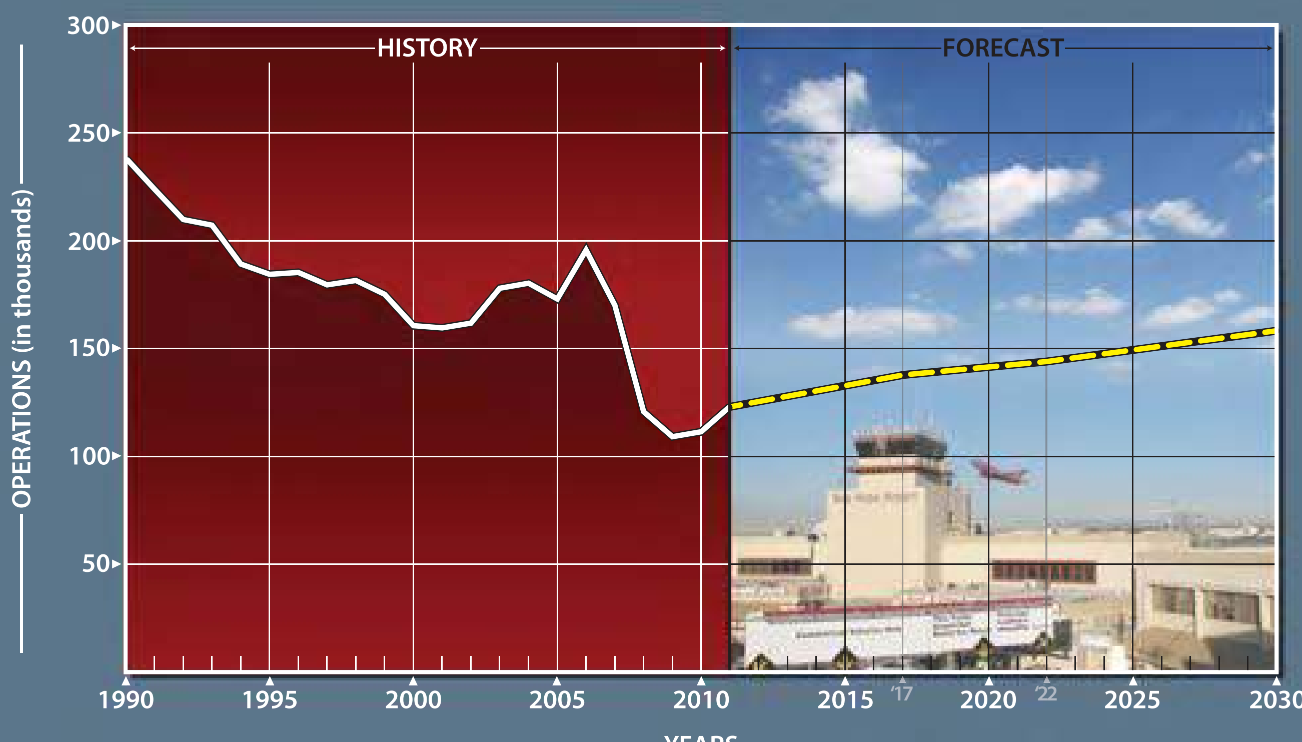
This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2K** is a summary of the aviation forecasts prepared in this chapter. Actual activity is included for 2011, which was the base year for these forecasts. Calendar year 2011 activity is also used to develop the baseline 2012 noise exposure contours in the next chapter.

Every sector of air traffic activity at the airport was significantly affected by the recent economic recession. While air cargo and general aviation have recoveries underway, 2011 was the fourth consecutive year decline in passenger airline traffic. The decline has slowed, and traffic is expected to begin responding to improved economic conditions.

Still, the recovery is not expected to be robust. The projected average annual growth rate of 2.6 percent is well below that of previous forecasts. The forecasts' combination of increasing load factors and a growing fleet mix capacity will result in more passengers carried on each commercial aircraft serving Bob Hope Airport. As a result, airline operations are forecast to grow at an even slower rate (1.8 percent annually).

Air cargo activity started its recovery sooner than the other two sectors. Air cargo tonnage has experienced growth in each of the last four years. This activity is expected to grow at

	2012[1]	FORECAST 2017	2022	2030
ANNUAL OPERATIONS				
General Aviation				
Itinerant	35,585	43,640	45,540	48,840
Local	19,475	19,400	20,000	21,400
Total General Aviation	55,060	63,040	65,540	70,240
Airline	52,420	61,200	65,000	72,600
Air Cargo	8,790	8,900	8,900	8,900
Other Air Taxi	6,516	8,100	8,700	9,900
Military	306	300	300	300
Total Annual Operations	**123,092**	**141,540**	**148,440**	**161,940**
AIRLINE ENPLANEMENTS	**2,151,250**	**2,620,000**	**2,930,000**	**3,520,000**
AIR CARGO (tons)	**51,038**	**57,400**	**62,900**	**73,000**
BASED AIRCRAFT				
Single-Engine Piston	27	23	19	15
Multi-Engine Piston	3	2	1	1
Turboprop	12	12	13	15
Jet	50	56	62	70
Helicopter	4	10	11	12
Total Based Aircraft	**96**	**103**	**106**	**113**



[1] - Based on the calendar year 2011

Source: History - FAA Air Traffic Activity System (ATADS); Forecast - Coffman Associates Analysis

Exhibit 2K
FORECAST SUMMARY

an annual average rate of 1.9 percent through the forecast period. This is slightly above the average growth expected nationally. As with the passenger airlines, all-cargo airline operations will grow at a lower rate, with load factors and increasing payload capacities absorbing some of the cargo increases.

Based aircraft at Bob Hope Airport have generally been declining for the past two decades. While this is expected to begin to change due to the economy and the relocation of the helicopter operator to Bob Hope Airport, the average annual growth rate will be just 0.1 percent. Basing of small general aviation aircraft is expected to continue to decline as these aircraft either are retired, or choose to base at general aviation airports. Business class, turbine-powered based aircraft will be the area of growth. Based business jets are projected to grow at a 1.8 percent average annual rate.

After being hit hard by the recession, where general aviation operations declined by nearly 75 percent in just two years, the sector has seen growth in the last two years. As with based aircraft, general aviation operations can expect its activity to continue to grow in turbine-powered business class aircraft operations. However, the projected average annual growth rate of 0.8 percent will still leave general aviation operations well below the pre-recession levels, again reflecting a transition in the mix of general aviation aircraft using Bob Hope Airport.

Other air taxi operations can be expected to continue to grow at a 1.5 percent average annual rate, reflective of national growth rates and the use of charter and fractional ownership aircraft. Military activity is expected to continue to be a small factor at Bob Hope Airport, averaging less than one daily flight.

FAA approved these aviation forecasts on September 24, 2012 (see Appendix F). The next step will be the preparation of detailed operational summaries for purposes of noise modeling. These will be developed and provided in the following chapter.

Chapter Three

AVIATION NOISE

Chapter Three

Aviation Noise

Part 150 guidelines mandate that the prevailing 65, 70, and 75 dB CNEL noise conditions be analyzed using a computer simulation model. The Federal Aviation Administration (FAA) has approved the use of the Integrated Noise Model (INM) for analysis in noise compatibility studies. The most recent version of the INM, 7.0c, was used to calculate noise exposure contours for this study. INM Version 7.0c is designed to predict the aircraft noise condition at a given geographic location and accounts for variables such as airfield elevation and temperature.[1]

The purpose of the noise model is to produce noise exposure contours that are overlain on a map of the airport and vicinity to graphically represent aircraft noise conditions. With the application of land use, zoning, and general plan maps, the noise exposure contours may be used to identify areas that currently are, or have the potential to be, exposed to aircraft noise.

To achieve an accurate representation of an airport's noise conditions, the INM uses a combination of industry-standard information and user-supplied inputs specific to the airport.[2] The software provides noise characteristics, standard flight profiles and manufacturer-

[1] The noise analysis presented in this chapter relies on analytical methods and uses technical terms which are further discussed in The Measurement and Analysis of Sound section of the Resource Library included in Appendix E.

[2] The INM also accepts user-provided input for aircraft profiles and aircraft characteristics, although the FAA reserves the right to accept or deny the use of such data depending on its statistical validity.

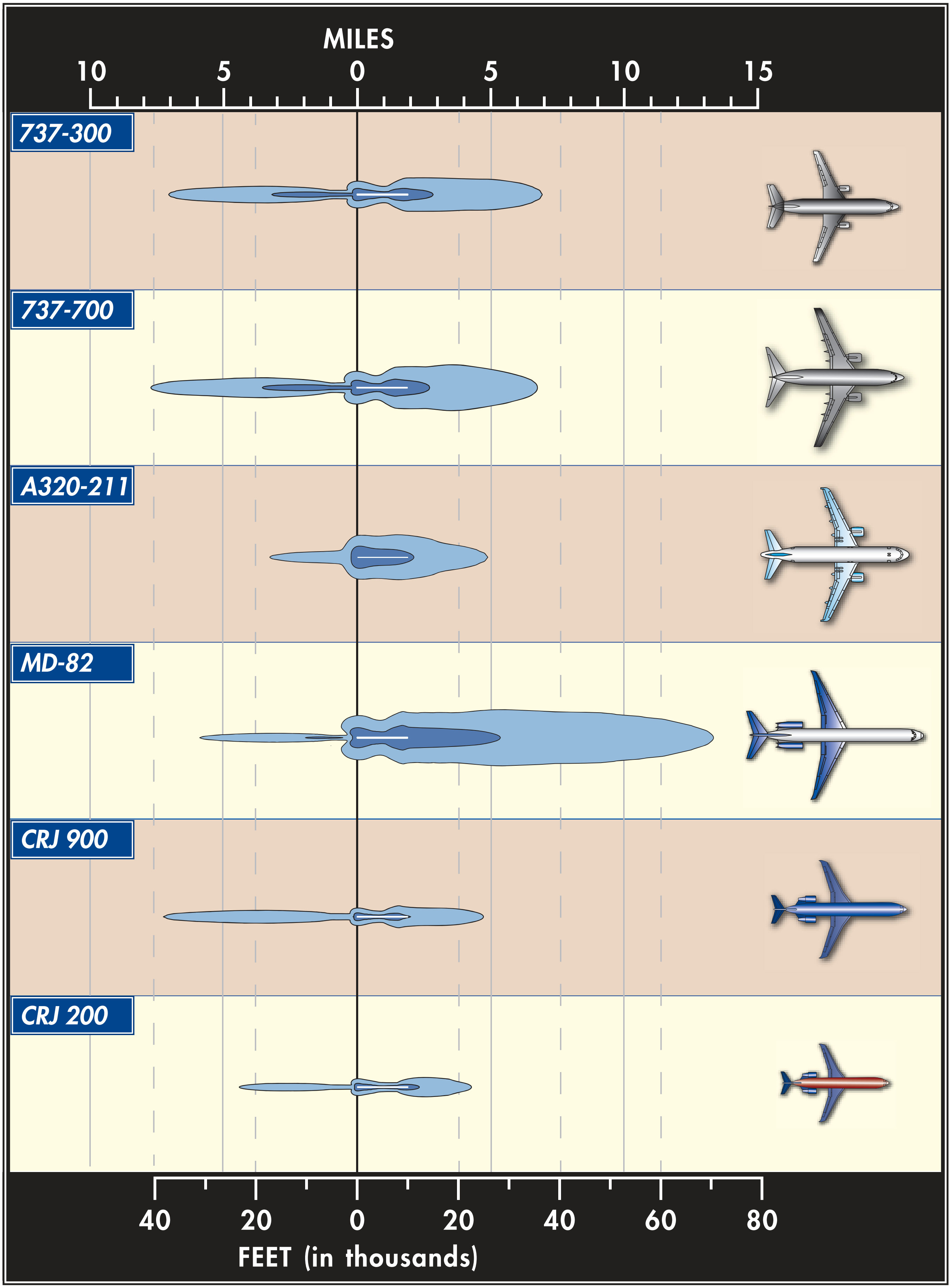
supplied flight procedures for aircraft within the U.S. civil and military fleets, including those which commonly operate at Bob Hope Airport. As each aircraft has different design and operating characteristics (e.g., the number and type of engines, weight, and thrust levels), each aircraft emits different noise levels. The most common way to spatially represent the noise levels emitted by an aircraft is a noise exposure contour, also known as a noise footprint, as illustrated in **Exhibit 3A**. In these examples, the footprints represent the noise pattern generated by one departure and one arrival of a specific aircraft type which commonly operates at Bob Hope Airport.

Airport specific information, including runway configuration, flight paths, aircraft fleet mix, runway use distribution, elevation, average temperature, and quantities of daytime and nighttime operations are also used as modeling inputs. **Exhibit 3B** depicts the various INM factors for developing noise exposure contours. Specific modeling assumptions for Bob Hope Airport are discussed in the following sections.

Using the previously discussed INM-provided and user inputs, the INM calculates average 24-hour aircraft sound exposure within a grid covering the airport and surrounding areas. The grid values, represented with the community noise equivalent level (CNEL) metric, at each intersection point on the grid, represent a noise level for that geographic location. To create the noise contours, lines linking equal values, similar to those on a topographic map, are drawn to connect points of the same CNEL value. In the same way that a topographic contour represents the same elevation, the noise contour identifies equal noise exposure. The resulting contours can then be overlain on a map of the airport and surrounding area to identify areas of noise exposure. For more information regarding the CNEL noise metric, consult the Resource Library included in **Appendix E**.

NOISE SCENARIOS

The aircraft noise modeling process was used to prepare the noise contours for the official Bob Hope Airport Noise Exposure Maps (NEMs). The NEMs were prepared for two study periods: existing condition (2012) and at least a five-year forecast (2017), in accordance with Title 14, Code of Federal Regulations (CFR), Part 150 (14 CFR Part 150 or Part 150). Operations totals used in the modeling are presented in **Table 3A**. As indicated in the table, the 2012 operations are based on FAA Enhanced Traffic Management Reports, Calendar Year 2011. The 2017 operations are based on the forecasts discussed in Chapter Two – Aviation Forecasts.



11SP12-1A-1/26/12

Exhibit 3A
AIRCRAFT NOISE FOOTPRINTS

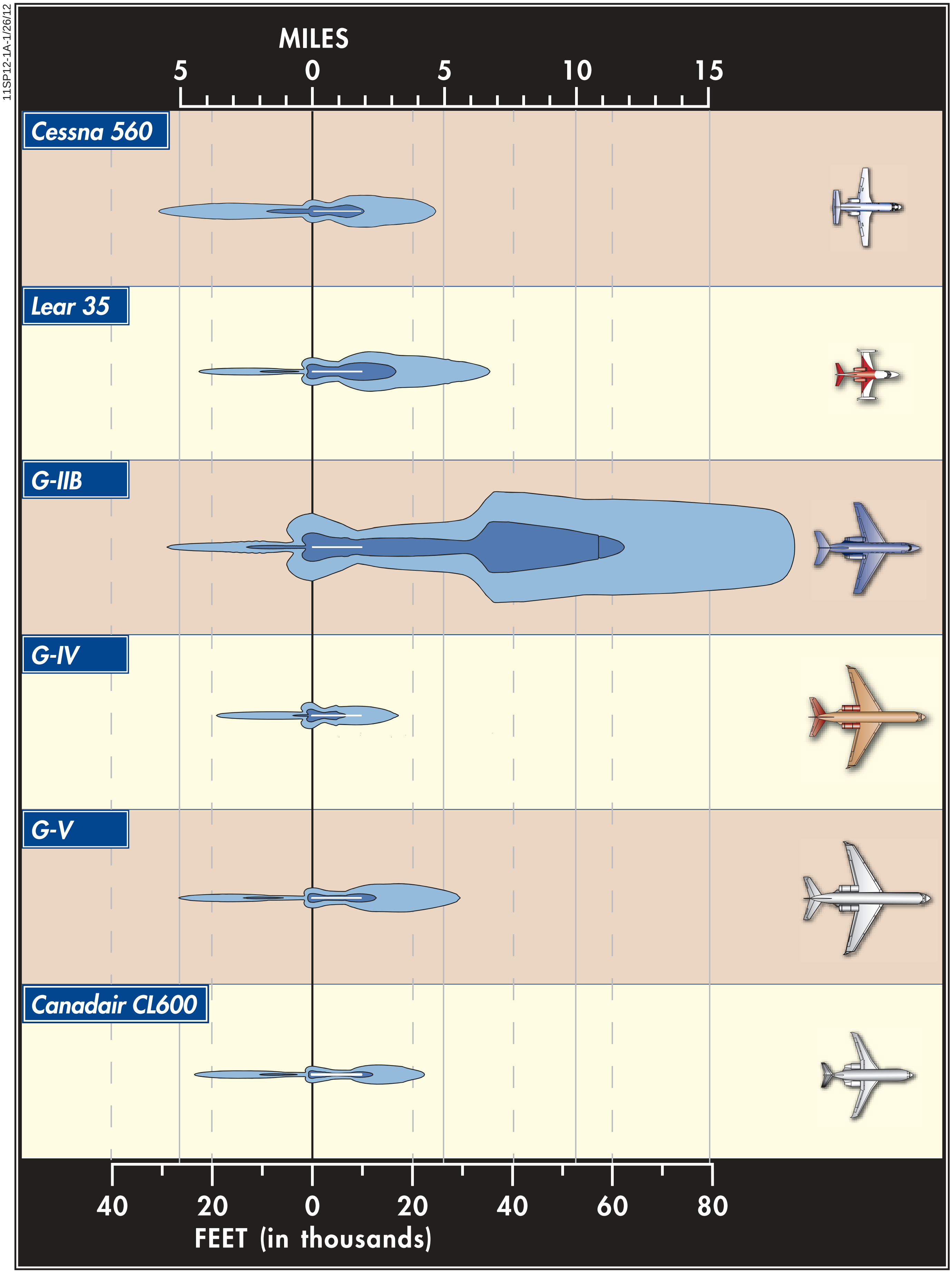


Exhibit 3A (continued)
AIRCRAFT NOISE FOOTPRINTS

11SP12-3A-06/26/12

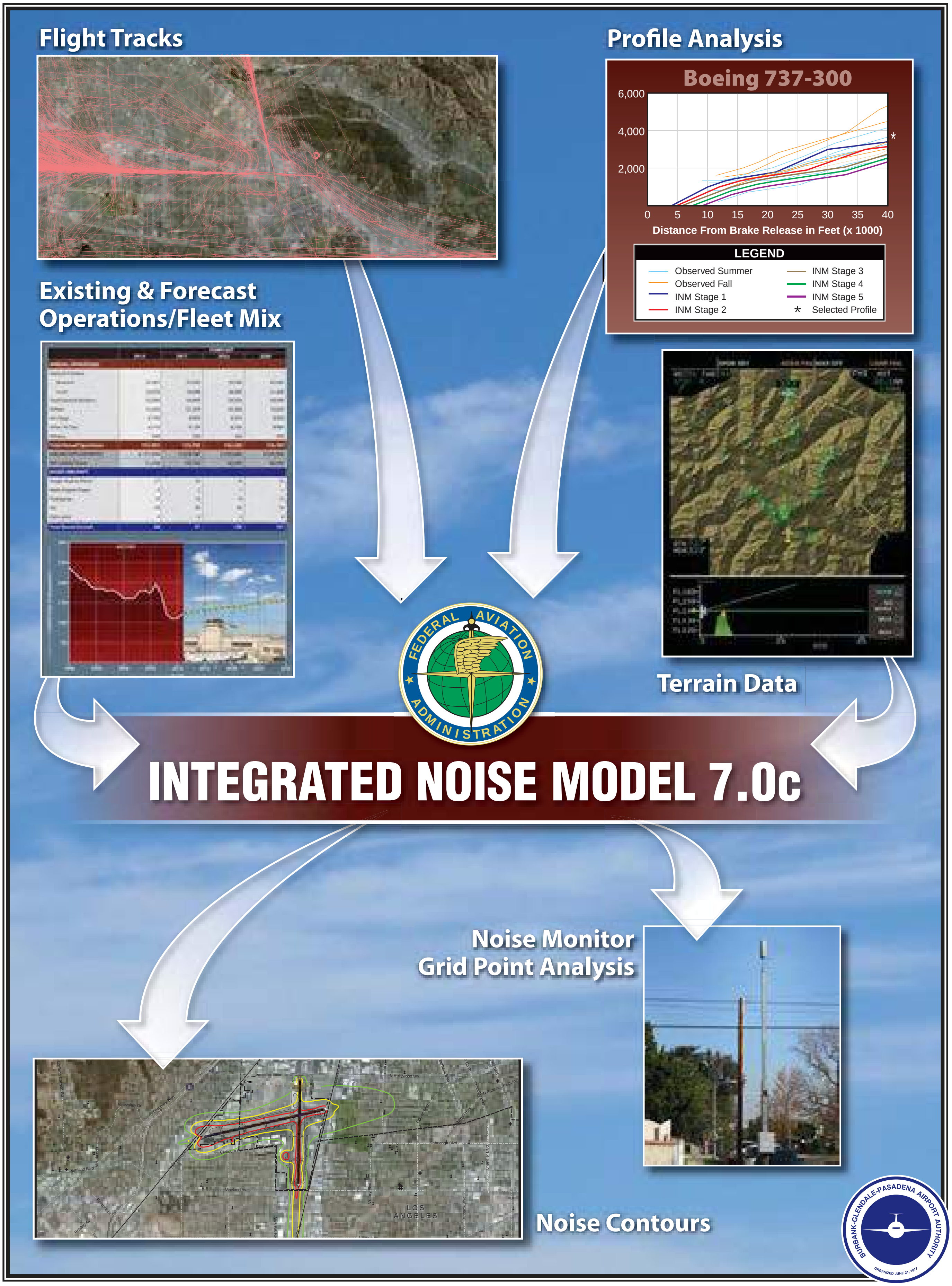


Exhibit 3B
INM PROCESS

TABLE 3A
Operations Summary
Bob Hope Airport

Operations	Existing 2012[1]	Forecast 2017[2]
Airline	52,420	61,200
Air Cargo	8,790	8,900
Air Taxi	6,516	8,100
Military	306	300
Itinerant General Aviation	35,585	43,640
Local General Aviation	19,475	19,400
TOTAL OPERATIONS	123,092	141,540

1 FAA Enhanced Traffic Management Reports, 2011.

2 Coffman Associates analysis

AIRCRAFT NOISE MODELING ASSUMPTIONS

AIRPORT INFORMATION

As previously discussed, airport-specific information is needed to model noise exposure conditions. **Table 3B** summarizes modeling assumptions for runways, temperature, and airport elevation. As discussed in Chapter One, Bob Hope Airport has two runways, Runway 8-26 and 15-33, which are modeled for the 2012 and 2017 conditions.

TABLE 3B
INM Input Assumptions
Bob Hope Airport

INM Input	Model Value
Runway 8-26	5,802 feet x 150 feet
Runway 15-33	6,885 feet x 150 feet
Runway Displaced Thresholds	Runway 15- 909 feet Runway 33- 350 feet
Average Annual Temperature[1]	66.2°F
Airport Elevation	778 feet

Notes:
[1] National Oceanic and Atmospheric Administration, Comparative Climate Data for the United States through 2011. Values represent the annual normal daily mean temperature for the Los Angeles County, CA reporting station.
http://www1.ncdc.noaa.gov/pub/data/ccd-data/CCD-2011.pdf

An average annual temperature of 66.2°F and average relative humidity were assumed based on information available from the National Oceanic and Atmospheric Administration's Los Angeles County, California reporting station. Additionally, the airport reference point elevation of 778 feet was input to indicate the altitude at which the operations originate. The INM uses this information to correct the standard aircraft arrival and departure profiles based on local atmospheric conditions which affect aircraft performance.

AIRCRAFT FLEET MIX AND DATABASE SELECTION

Based on the annual operations levels presented in **Table 3A**, a detailed fleet mix, or summary of the types of aircraft operating at Bob Hope Airport, was prepared. The fleet mix presents the total number of operations by aircraft type for the existing condition and five-year forecast. For each aircraft, an INM designator was selected to provide representative noise exposure during the modeling process. For those aircraft not specifically identified in the INM, the FAA provides a list of appropriate substitute aircraft. The types of aircraft operating at the airport were identified using the FAA's Enhanced Traffic Management System Counts (ETMSC) and instrument flight rule database. **Table 3C** summarizes the operational fleet mix assumptions.

The INM includes aircraft noise data for most of the air carrier aircraft operating at Bob Hope Airport. **Table 3C** indicates the INM profile identifier used for modeling each aircraft. As indicated in the table, several different air carrier aircraft operate at the airport including the Airbus A319, A320, Boeing 737 (300/400/500/700/800/900 series), Canadair Regional Jet 200/700/900, and the McDonnell Douglas MD-80. Each of these aircraft is modeled with their corresponding INM identifier. The INM designator DHC830 was used to represent the DeHavilland Dash 8-Q400 based upon consultation with the FAA (see **Appendix F**).

Freight versions of several of the air carrier aircraft are also operated at Bob Hope Airport. Among these are the Airbus A300/A310 and Boeing 757/767. Smaller turboprop aircraft also provide cargo service at the airport. These include the Beech 1900, King Air 200, 99, Baron 58, Embraer EMB 120 Brasilia, Lear 35, Piper Navajo, and Fairchild Swearingen Metroliner. All of the cargo aircraft were modeled with their respective INM profiles.

Business jet operations are based on FAA ETMSC reports and instrument flight rule (IFR) database, grouped according to noise stage classification and size of the aircraft. Accordingly, older Stage 2 aircraft, such as the Lear 25, Falcon 20, and Gulfstream II/III, were modeled using the LEAR25, FAL20, and GIIB designators, respectively. As discussed in Chapter One, Stage II aircraft weighing less than 75,000 lbs. will no longer be permitted to operate in the United States after December 31, 2015. Therefore, these aircraft were not included in the 2017 noise contour calculations.

The remaining business jets meet Stage 3 standards and examples of these aircraft which operate at Bob Hope Airport include: Astra 1125 (IA1125), Cessna Citation I (CNA500), Cessna Mustang (CNA510), Cessna Citation III (CIT3), Cessna Citation II (CNA55B), Cessna Excel/Ultra/Encore (CNA560XL), Cessna Sovereign (CNA680), Cessna Citation X (CNA750), Mitsubishi MU-300 Diamond (MU3001), Lear 31/35/36/45/55 (LEAR35), Bombardier Challenger 600 (CL600), Embraer ERJ 135/140/Legacy (EMB145), Gulfstream IV (GIV), and Gulfstream V (GV). The GV INM designator is also the FAA-approved substitution for the Bombardier BD-700 Global Express aircraft.

One business jet that frequents the airport but is not included in the INM with an approved substitute is the Phenom 100. The FAA was consulted and the approved INM designator for this jet is the CNA510 (see **Appendix F**).

TABLE 3C
Daily Operational Aircraft Fleet Mix
Bob Hope Airport

		2012				2017			
	INM Designator	Day Ops	Evening Ops	Night Ops	Total	Day Ops	Evening Ops	Night Ops	Total
Air Carrier									
737-800	737800	1.3860	0.9592	0.0000	2.3452	1.9819	1.3716	0.0000	3.3534
A-320	A320-211	3.6857	1.9920	0.5689	6.2466	5.6248	1.40813	0.7041	7.7370
MD-80	MD82	6.4712	0.7123	0.0000	7.1836	4.0000	0.0000	0.0000	4.0000
737-300	737300	3.4849	0.1425	0.1425	3.7669	3.0392	0.1242	0.1242	3.2877
737-700	737700	63.5446	24.9321	0.1425	88.6192	74.5892	29.2655	0.1672	104.0219
737-500	737500	0.1479	0.0000	0.0000	0.1479	1.6438	0.0000	0.0000	1.6438
A319	A319-131	2.3014	0.0000	0.0000	2.3014	3.3863	0.0000	0.0000	3.3863
CRJ-900	CRJ9-ER	3.6243	1.6712	0.0963	5.3918	6.7624	3.1183	0.1796	10.0603
Dash 8-Q400	DCH830	1.0137	0.0000	0.0000	1.0137	0.0000	0.0000	0.0000	0.0000
CRJ-700	CRJ701	6.3123	0.5699	0.4274	7.3096	13.0316	1.1765	0.8823	15.0904
CRJ-200	CL601	13.2993	5.7035	0.2849	19.2877	10.4052	4.4623	0.2229	15.0904
Subtotal		105.2714	36.6826	1.6624	143.6164	124.4644	40.9265	2.2803	167.6712
Air Cargo									
767-400	767400	0.0000	0.0000	0.0000	0.0000	0.1315	0.0658	0.0658	0.2630
A-300	A300-622R	1.7413	1.7562	1.2477	4.7452	1.7775	1.7927	1.2737	4.8438
757-200	757PW	0.0438	0.0438	0.0000	0.0877	0.0493	0.0493	0.0000	0.0986
B-1900	1900D	1.5288	0.1425	0.1425	1.8137	1.1780	0.1377	0.1377	1.7534
Lear 35	LEAR35	1.7644	0.0000	0.0000	1.7644	1.9178	0.0000	0.0000	1.9178
SA227	SA227	1.7412	0.1425	3.8807	5.7644	1.7379	0.1422	3.8733	5.7534
King Air 200	BEC200	1.2438	0.2849	0.0000	1.5288	1.2037	0.2757	0.0000	1.4795
Beech 99	BEC99	1.7260	0.0000	1.8521	3.5781	1.6784	0.0000	1.8010	3.4795
PA-31	PA31	2.7397	0.5699	0.7123	4.0219	2.7435	0.5706	0.7133	4.0274
Beech Baron 58	BEC58	0.7781	0.0000	0.0000	0.7781	0.7671	0.0000	0.0000	0.7671
Subtotal		13.3072	2.9397	7.8353	24.0822	13.4847	3.0340	7.8648	24.3836
Air Taxi and General Aviation – Itinerant									
Cessna Citation I	CNA500	0.4979	0.0580	0.0551	0.6110	0.5267	0.0613	0.0585	0.6466
Cessna Citation III	CIT3	0.4255	0.0495	0.0471	0.5222	0.4489	0.0523	0.0499	0.5510
MU-300 Diamond	MU3001	1.4123	0.1644	0.1564	1.7331	1.4899	0.1735	0.1655	1.8288
Cessna Citation II	CNA55B	1.4576	0.1697	0.1614	1.7886	1.5376	0.1790	0.1708	1.8874
Cessna Excel/Ultra	CNA560XL	3.5766	0.4163	0.3961	4.3890	3.7720	0.4391	0.4190	4.6301
Cessna Citation X	CNA750	1.7292	0.2013	0.1915	2.1219	1.8241	0.2124	0.2026	2.2391
Cessna Mustang	CNA510	0.8374	0.0975	0.0927	1.0276	0.8834	0.1028	0.0981	1.0844
Cessna Sovereign	CNA680	0.8691	0.1012	0.0963	1.0665	0.9168	0.1067	0.1019	1.1254
Canadair Challenger	CL600	3.9472	0.4595	0.4371	4.8438	4.1639	0.4848	0.4626	5.1113
Lear 30/40/50 series	LEAR35	4.3817	0.5101	0.4853	5.3771	4.6224	0.5381	0.5135	5.6740
Lear 20 series	LEAR25	0.0724	0.0084	0.0080	0.0889	0.0000	0.0000	0.0000	0.0000
Falcon 20	FAL20	0.0724	0.0084	0.0080	0.0889	0.0000	0.0000	0.0000	0.0000
Gulfstream, II/III	GIIB	0.4436	0.0516	0.0491	0.5444	0.0000	0.0000	0.0000	0.0000
Gulfstream iv	GIV	3.5488	0.4131	0.3930	4.3550	3.7437	0.4359	0.4159	4.5955
Gulfstream V	GV	2.7522	0.3204	0.3048	3.3773	2.9033	0.3380	0.3225	3.5638
Astra 1125	IA1125	1.3127	0.1528	0.1454	1.6109	1.3848	0.1612	0.1538	1.6999
Falcon 50	F10062	0.2309	0.0269	0.0256	0.2833	0.2435	0.0284	0.0271	0.2989
737-700	737700	0.3169	0.0369	0.0351	0.3888	0.3343	0.0389	0.0371	0.4103
EMB-145	EMB145	0.2263	0.0263	0.0251	0.2777	0.2388	0.0278	0.0265	0.2931
757-200	757PW	0.1946	0.0227	0.0216	0.2389	0.2053	0.0239	0.0228	0.2520
Single Eng. Piston Fix	GASEPF	19.0499	2.2175	2.1097	23.3772	20.2481	2.3573	2.2494	24.8548
Single Eng. Piston Var	GASEPV	19.0499	2.2175	2.1097	23.3772	20.2481	2.3573	2.2494	24.8548
Multi-Eng. Piston	BEC58P	4.5983	0.5353	0.5092	5.6428	3.6157	0.4210	0.4017	4.4384
Single Turbo Prop	CNA208	5.2551	0.6117	0.5820	6.4489	5.7852	0.6735	0.6427	7.1014
Twin Turbo Prop	CNA441	8.5369	0.9941	0.9457	10.4794	10.1241	1.1787	1.1247	12.4274
Twin Turbo Prop	DHC6	3.2845	0.3823	0.3637	4.0305	5.0620	0.5893	0.5623	6.2137
Helicopter	R44	1.9707	0.2294	0.2182	2.4183	2.3859	0.2778	0.2651	2.9288
Helicopter	H500D	1.9707	0.2294	0.2182	2.4183	2.3859	0.2778	0.2651	2.9288
Helicopter	SA350D	1.9707	0.2294	0.2182	2.4183	16.6352	1.6696	1.8104	20.1151
Subtotal		93.9946	10.9415	10.4098	115.3459	115.7296	13.2064	12.8189	141.7548

TABLE 3C (Continued)
Daily Operational Aircraft Fleet Mix
Bob Hope Airport

		2012				2017			
	INM Designator	Day Ops	Evening Ops	Night Ops	Total	Day Ops	Evening Ops	Night Ops	Total
General Aviation – Local									
Single Eng. Piston Fix	GASEPF	9.6590	1.0123	0.0000	10.6712	9.6219	1.0082	0.0000	10.6301
Single Eng. Piston Var	GASEPV	9.6590	1.0123	0.0000	10.6712	9.6219	1.0082	0.0000	10.6301
Multi-Eng. Piston	BEC58P	4.8295	0.5061	0.0000	5.3356	4.8110	0.5041	0.0000	5.3151
Helicopter	R22	24.1474	2.5306	0.0000	26.6781	24.0548	2.5205	0.0000	26.5753
Subtotal		48.2949	5.0613	0.0000	53.3562	48.1097	5.0410	0.0000	53.1507
Military									
Fighter	F16A	0.1147	0.0041	0.0127	0.1315	0.1195	0.0043	0.0132	0.1370
Helicopter	S70	0.6165	0.0220	0.0683	0.7068	0.5974	0.0213	0.0662	0.6849
Subtotal		0.7312	0.0261	0.0811	0.8384	0.7169	0.0256	0.0795	0.8219

Coffman Associates analysis

Note: *Totals may not sum correctly due to rounding.*

As indicated in the table, single engine piston itinerant general aviation operations are divided into two categories based on the propeller type: variable-pitch and fixed-pitch. The FAA aircraft substitution list indicates that the general aviation single engine variable-pitch propeller model, the GASEPV, represents a number of single engine general aviation aircraft. Among others, these include the Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, and Cessna Caravan. The general aviation single engine fixed-pitch propeller model, the GASEPF, also represents several single engine general aviation aircraft. These include the Cessna 150 and 172, Piper Archer, and the Piper Tomahawk. The FAA's substitution list included with the INM documentation identifies the BEC58P, the Beech Baron, as a substitute for light twin-engine aircraft such as Beech 50, Beech 55, Piper PA-23, PA-30, PA-34, Cessna 304, Cessna 310, and Cessna 401, among others.

Itinerant general aviation turboprop operations were modeled using a small and large multi-engine turboprop such as the Beech King Air 100, modeled as CNA441, and the Beech 1900, which is modeled with the 1900D designator.

Additionally, helicopters were modeled using the Robinson R-22 (R22), Robinson R-44 (R44), Hughes 500 (H500D), and Aerospatiale AS-350D (SA350D). Military operations were split between the F16A fighter jet and S70 Black Hawk helicopter.

TIME OF DAY CONSIDERATONS

The CNEL noise metric, which is required for Part 150 studies in the State of California, weights operations more heavily occurring during the evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.). In calculating aircraft noise exposure, the INM increases the noise levels for evening operations by 4.77 dB and nighttime operations by 10 dB. **Table 3C** provides detailed information for each aircraft type regarding the time of day for arrivals and departures.

The passenger airline and air cargo time-of-day operations were derived from consolidated flight schedules and the FAA's instrument flight rule database. Hourly operations information from the FAA's Traffic Flow Management System for calendar year 2011 was used to develop time-of-day estimates for air taxi, general aviation, and military operations categories.

RUNWAY USE

Continuous runway use records are not maintained by the airport. Runway use, however, is generally influenced by the prevailing wind direction and available approach procedures. Based on communication with airport and airport traffic control tower (ATCT) staff, and a review of radar flight track data and historical airport noise assessment documents (such as the Part 161 Study), runway use estimates were developed. No runway use changes were assumed for the five-year forecast noise condition. **Table 3D** summarizes the runway use percentages for the existing and future conditions.

TABLE 3D
Annual Average Runway Use Percentages
Bob Hope Airport

Runway	Air Carrier/ Air Cargo*	Turboprop Business Jet	General Aviation	Military
2012 and 2017 Departures				
8	0.00%	0.50%	30.25%	0.00%
26	0.50%	1.50%	4.75%	1.50%
15	96.00%	94.00%	53.50%	95.00%
33	3.50%	4.00%	11.50%	3.50%
2012 and 2017 Arrivals				
8	86.00%	75.00%	56.00%	85.00%
26	0.00%	4.00%	8.00%	0.00%
15	10.00%	18.00%	32.00%	10.00%
33	4.00%	3.00%	4.00%	5.00%

* Based on communication with airport and ATCT staff, and a review of radar flight track data and historical airport noise assessment documents.

FLIGHT TRACKS

Flight patterns can be categorized into the following types: arrivals, departures, local, or touch-and-go. Arrivals and departures correspond to itinerant traffic traveling to or from the airport, while local operations represent those operations conducted within the local traffic pattern. The touch-and-go nomenclature refers to an aircraft landing briefly on the runway and then resuming flight. Pilots use this technique to practice landing or other procedures. These paths are included in the model to indicate where each aircraft type operates. The INM arrival, departure, and local flight tracks for this study are based on radar flight track data obtained from Bob Hope Airport, August 7 through August 21, 2011. **Exhibit 3C** depicts the radar flight track data sample for a five-day period.

Exhibits 3D and **3E** illustrate the existing and predicted future arrival and departure flight tracks, based on radar flight track data, for fixed wing aircraft. INM allows for flight tracks to be dispersed accounting for variances in flight paths due to wind conditions and/or pilot technique. The bold lines on the exhibits represent the consolidated central path of the flight track, while the thin lines represent the sub tracks dispersed from the consolidated central path.

Existing condition flight tracks for local activity and helicopters are illustrated on **Exhibit 3F**. The local activity and helicopter flight tracks were also dispersed, as indicated with the bold and thin lines on the exhibit. As indicated on the exhibits, the fixed wing and helicopter activity occurs on the west side of Runway 15-33.

The 2012 and 2017 noise exposure contours are based on the existing flight paths at Bob Hope Airport. No additional noise abatement procedures have been assumed in the development of the contours.

Flight Track Assignments

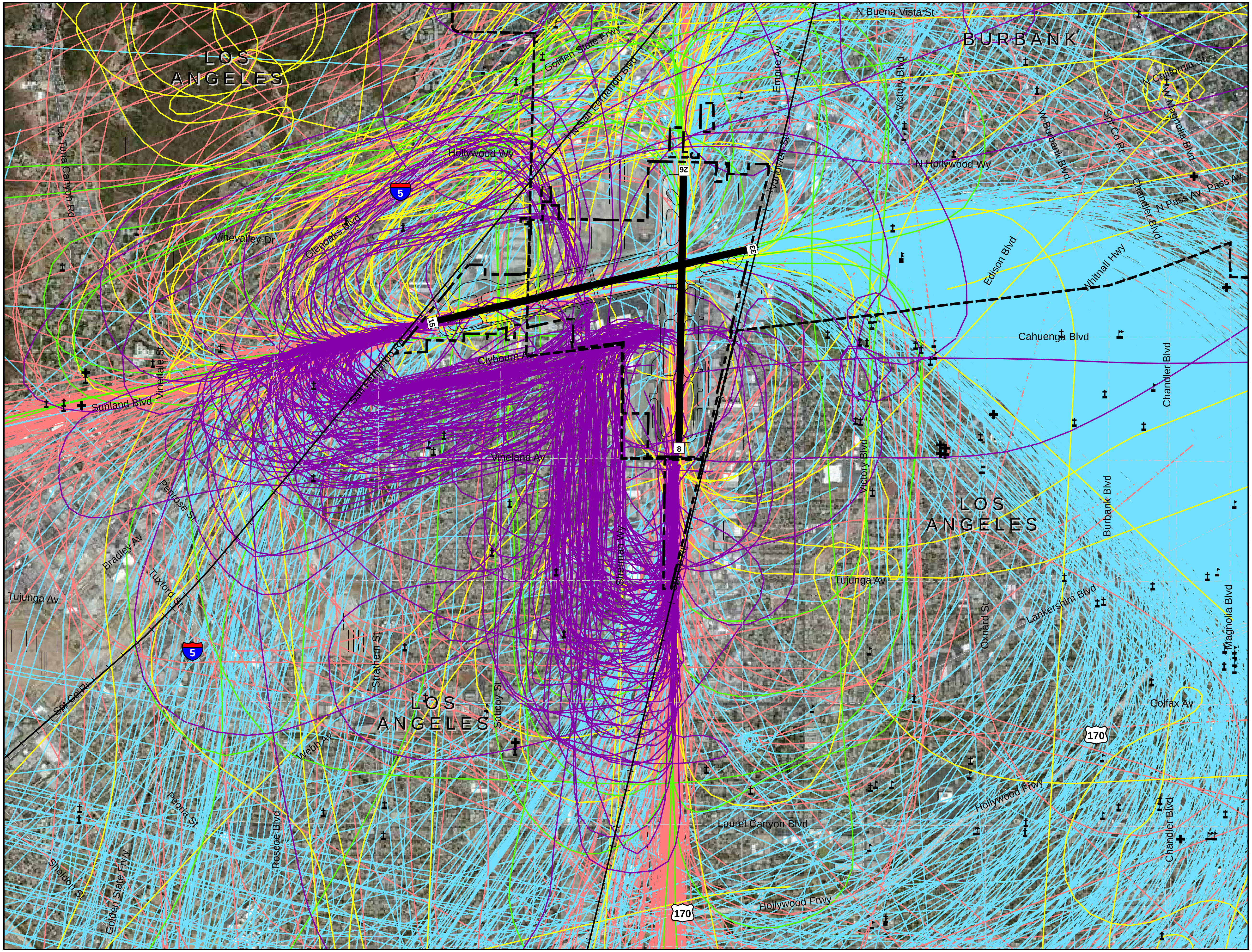
The previously discussed operational conditions and runway utilization are used to assign aircraft activity to each of the tracks. Ultimately, this information determines the geographic distribution of the noise generated by operations at the airport. Based on an evaluation of aircraft operating characteristics, runway utilization, and flight track data, percentages were assigned to each consolidated flight track. The total number of operations for each aircraft is distributed among the available flight tracks to represent the operating conditions at the airport. Tables presenting the operational assignments by aircraft type and flight track can be found in **Appendix G**.

STAGE LENGTH

Stage length for departing aircraft indicates the distance to be traveled during the flight. Increased stage lengths require additional fuel and result in a heavier takeoff weight for the aircraft. The INM provides options for various profile stage lengths up to 4,000 miles for some of the commercial service aircraft. As a general rule, longer stage flights climb at a slower rate than short stage flights. The slower climb results in additional noise exposure on the ground. A review of the commercial and cargo flight destinations was used to determine stage lengths for modeling purposes. **Exhibit 3G** illustrates the primary non-stop service destinations for air carrier and cargo aircraft departing Bob Hope Airport. As indicated in the exhibit, many of the destinations are within 500 miles. The longest stage length from Bob Hope Airport is John F. Kennedy International Airport in New York City, New York at over 2,400 miles.

FLIGHT PROFILES

One of the variables which affects single event noise levels at a given measurement location is the actual flight profile of the aircraft as it passes over the measurement site. In the INM, a flight profile is comprised of three parameters: thrust, speed, and altitude. The thrust value bears a direct linear relationship to the expected noise level, and the INM contains tables of noise levels as a function of thrust values for each aircraft type. The speed of the aircraft affects the sound exposure level by affecting the duration of the noise event (i.e., the



14 CFR Part 150
Noise Exposure Map
(NEM)
Bob Hope Airport
RADAR FLIGHT TRACKS

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway

Flight Tracks

Helicopter
- Arrivals
- Departures
- Training

Fixed Wing Aircraft
- Arrivals
- Departures
- Training

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis
(Bob Hope Airport ANOMS System) and radar
data dates (August 7-21, 2011)

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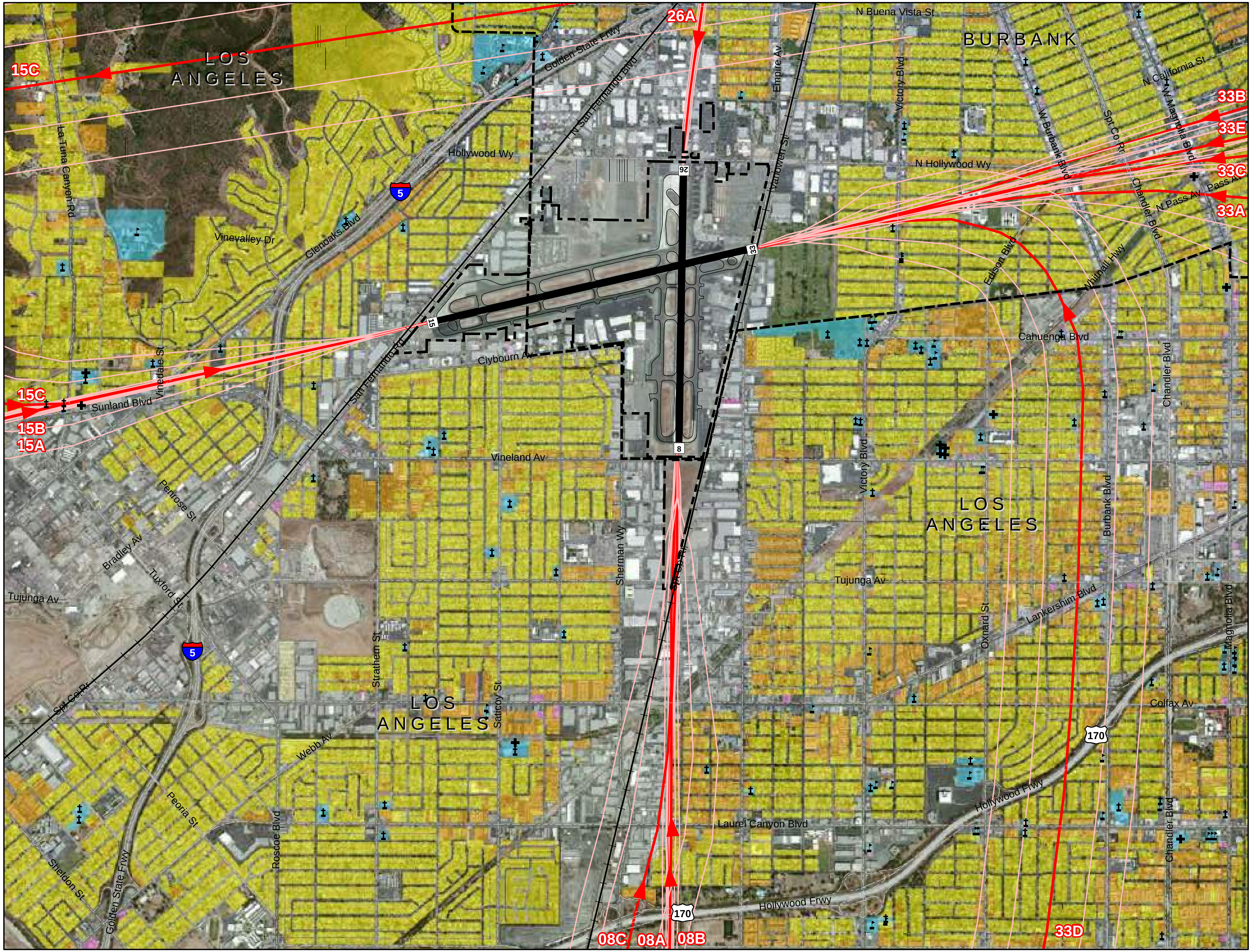
BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY

Exhibit 3C
Radar Flight Track Data



14 CFR Part 150
Noise Exposure Map (NEM)
Bob Hope Airport
Integrated Noise Model (INM)
FLIGHT TRACKS
Arrivals

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels
- Right of Way

Flight Tracks

- Consolidated Arrival Tracks
- Consolidated Arrival Sub Tracks

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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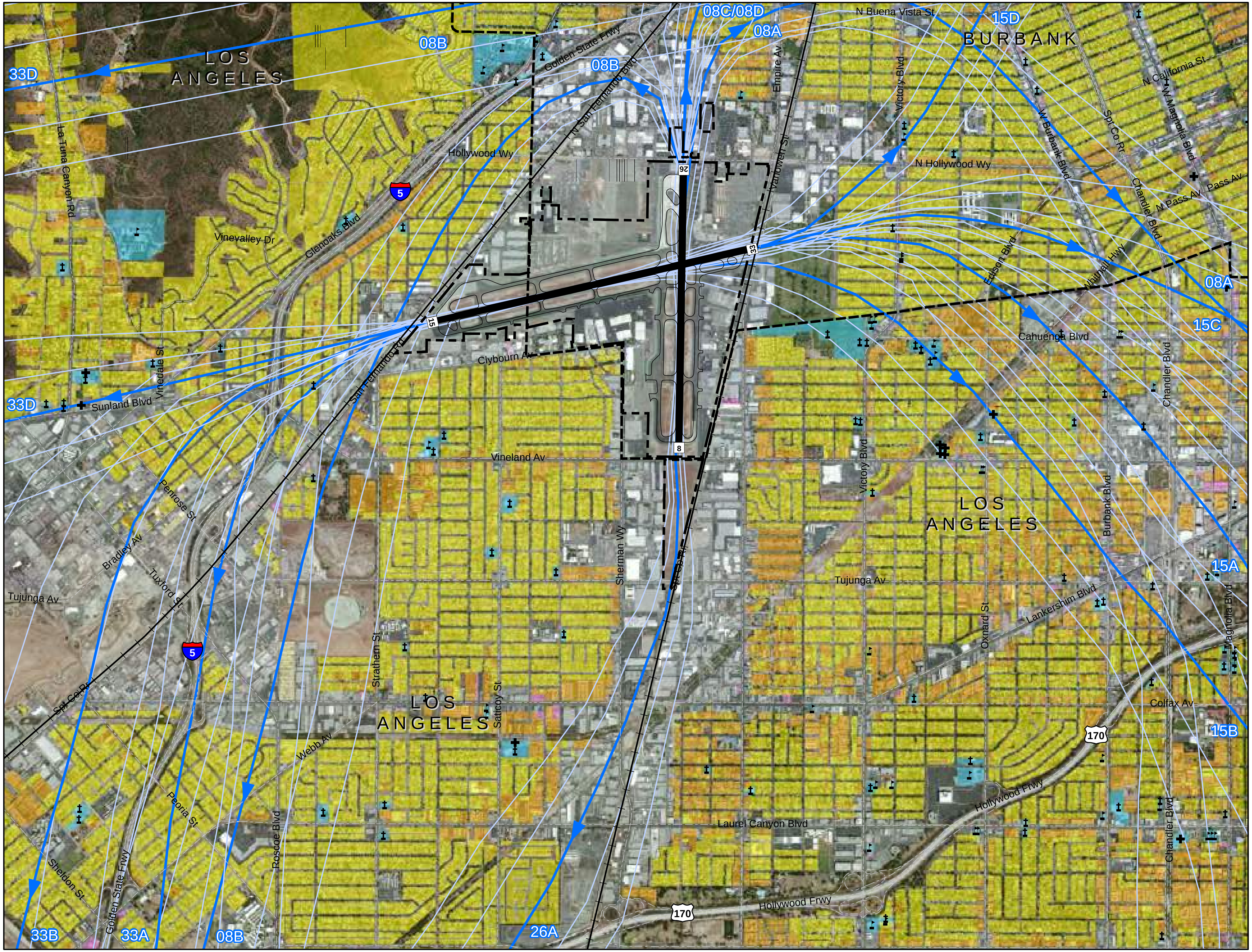
Exhibit 3D
Existing and Future Arrival Flight Tracks



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport Integrated Noise Model (INM) FLIGHT TRACKS Departures

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels
- Right of Way

Flight Tracks

- Consolidated Departure Track
- Consolidated Departure Sub Track

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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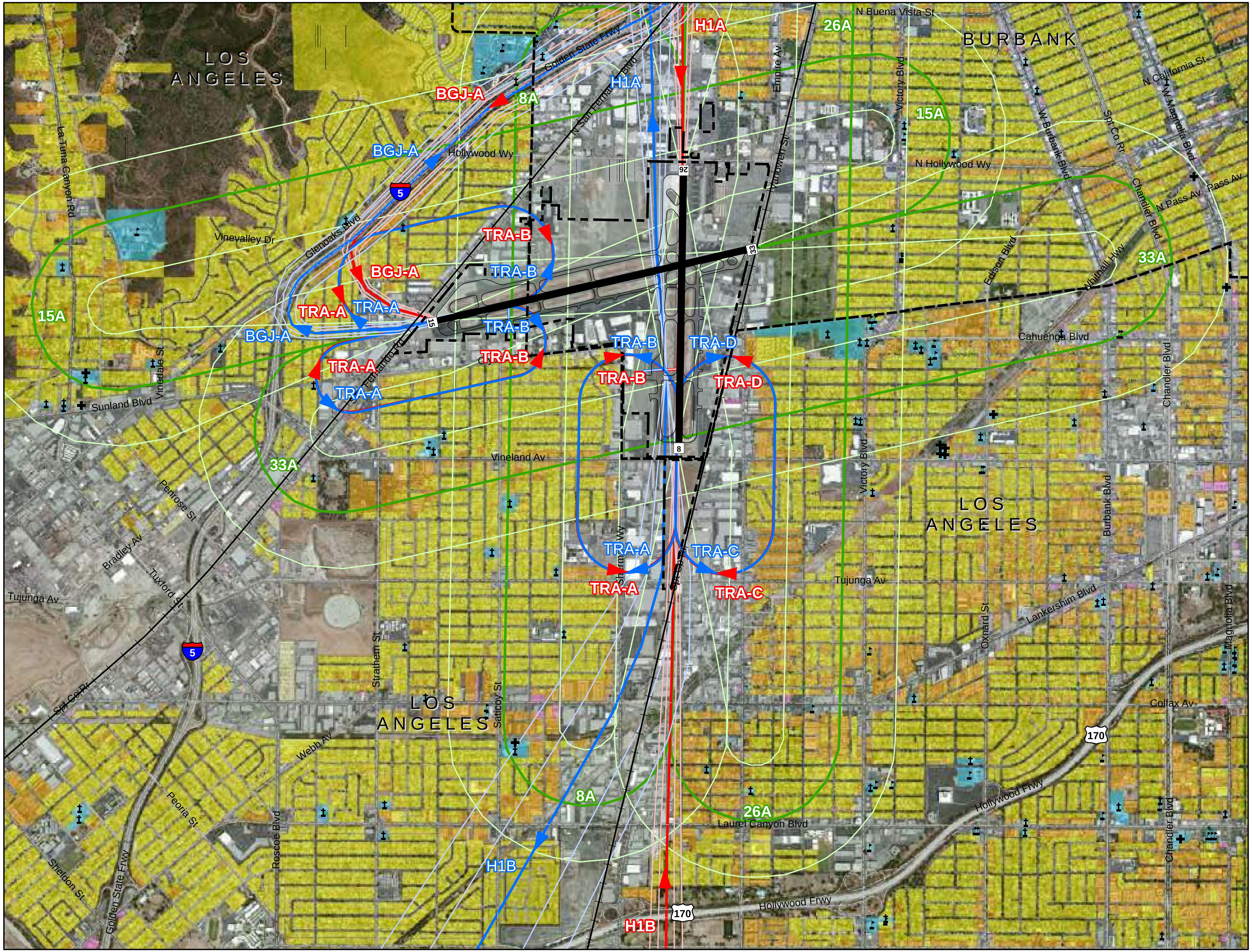
Exhibit 3E
Existing and Future Departure Tracks



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport Integrated Noise Model (INM) FLIGHT TRACKS Local and Helicopter

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels
- Right of Way

Flight Tracks

- Consolidated Departure Track
- Consolidated Departure Sub Track
- Consolidated Arrival Tracks
- Consolidated Arrival Sub Tracks
- Consolidated Touch and Go Tracks
- Consolidated Touch and Go SubTracks

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY

Exhibit 3F
Existing and Future Helicopter and Training Flight Tracks

11SP12-3J-6/26/12

Air Carrier Non-Stop Service Cities
1. Las Vegas (LAS)
2. Phoenix (PHX)
3. Sacramento (SMF)
4. San Francisco (SFO)
5. San Jose (SJC)
6. Oakland (OAK)
7. Denver (DEN)
8. Portland (PDX)
9. Seattle (SEA)
10. Salt Lake City (SLC)
11. Midwest Hub*
12. New York City (JFK)

Air Cargo Non-Stop Service Cities
1. Memphis (MEM)
2. Des Moines (DSM)
3. Louisville (SDF)
4. Indianapolis (IND)

LEGEND

- Bob Hope Airport (BUR)
- Stage 1 (0 - 500 nm)
- Stage 2 (501 - 1,000 nm)
- Stage 3 (1,001 - 1,500 nm)
- Stage 4 (1,501 - 2,000 nm)
- Stage 5 (2,001 - 2,500 nm)

nm - Nautical Miles

Source: Non-stops - Airport Resources; Top Destinations - USDOT, Origin Destination Survey, online database

* 2011 American Airline service to Dallas. Service ended February 2012.

BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY
ORGANIZED JUNE 21, 1977

Exhibit 3G
NON-STOP SERVICE DESTINATIONS

slower the aircraft, the longer the noise event and the higher the SEL value). The INM applies a standard correction for speed differences using a logarithmic function. Altitude also affects the predicted noise levels. An aircraft that is closer to an observer is generally louder than an aircraft which is farther away. The INM tables of noise levels and thrust values are also tied to specific distances from which the INM interpolates the noise level at the observer, again using a logarithmic function.

There is no data currently available which reports the thrust values used by an aircraft at a given location. The INM estimates the thrust settings from standard flight procedures reported by the aircraft manufacturers. Actual thrust settings may vary significantly as a result of specific local conditions during a flight, such as load, weather, and aircraft-specific flight procedures.

Standard profiles were used for all aircraft except the R-22 helicopter training operations. Through coordination with the ATCT, it was determined that INM standard arrival and departure profiles for the R-22 could be amended to represent helicopter training operations. Coordination was undertaken with the FAA for approval of amended R-22 INM profiles as documented in **Appendix F**.

To verify standard INM profiles, the Bob Hope Airport flight track monitoring system was used to collect altitude information for a set of flights by specific aircraft types. This process was used at Bob Hope Airport for samples of departures on all runways on August 7–21, 2011, by B-737 series, CRJ-700, and A-320 series aircraft. Comparisons of the observed takeoff profiles to the takeoff profiles calculated by the INM for representative aircraft types are shown in **Exhibit 3H**. This data indicates that, for the most noise-significant aircraft operating at Bob Hope Airport, the takeoff profiles calculated by the INM are reasonably representative of actual conditions, assuming that the appropriate INM aircraft type is selected.

INM OUTPUT

In accordance with 14 CFR Part 150, CNEL contours were calculated using the INM at the 65, 70, and 75 dB levels for the 2012 and 2017 conditions. The extent and shape of the noise contours is influenced by the previously discussed modeling assumptions. For comparative purposes, the contour area for each range and timeframe is presented in **Table 3E**. Additionally, **Table 3F** presents the total acres for each contour that extends off airport property.

TABLE 3E
Comparative Areas of Noise Exposure
Bob Hope Airport

	Area (Acres)	
	2012	2017
65–70 CNEL	799.7	833.6
70–75 CNEL	312.6	320.2
75+ CNEL	130.2	131.2

Source: Coffman Associates analysis
Note: Table includes areas within the contour located both on and off airport property.

TABLE 3F
Contour Area Extending Off Existing Airport Property
Bob Hope Airport

	Area (Acres)	
	2012	**2017**
65–70 CNEL	319.7	344.6
70–75 CNEL	33.4	34.2
75+ CNEL	6.9	7.1
Total	360.0	385.9

Source: Coffman Associates and VICO Systems analysis

The following sections present the noise contours for the 2012 and 2017 scenarios. As illustrated in the exhibits, the area of noise exposure is generally greatest at the ends of runways, which reflects the typical flight procedures at all airports. Additionally, depending on airport operating characteristics, sideline noise, represented by the portion of the contour running parallel to each runway, may also extend off airport property.

2012 NOISE EXPOSURE CONTOURS

As indicated in **Exhibit 3J** and **Table 3F**, the 65, 70, and 75 CNEL noise contours extend off airport property. Typically, departure spool-up noise is the loudest component of aircraft operations; therefore, as shown on the exhibit, the contours are wider from east to west at the northern end of Runway 15-33, resulting from a majority (over 90%) of aircraft departing to the south. At the southern end, the contour elongates, which is indicative of departure noise as an aircraft gains altitude after leaving the ground. There is also a long narrow extension of the noise exposure contours to the west. This long narrow extension of the contours is caused by a majority (over 80%) of the arrivals landing on Runway 8 from the west. Two bumps in the noise exposure contours located north of Runway 8-26 and west of Runway 15-33 are caused by helicopter operations. News and military helicopters operate from the ramp area north of Runway 8-26. The joint Glendale/Burbank Air Support Unit operates helicopters from a series of helipads west of Runway 15-33.

As measured along the extended runway centerline, the 75 CNEL noise contour extends off airport property approximately 300 feet across San Fernando Boulevard to the north. The 70 and 65 CNEL noise contours extend off airport property approximately 600 and 1,000 feet, respectively, in this same area north of the airport. At the southern end, the 75 CNEL noise contour extends approximately 20 feet off airport property over the railroad right-of-way, while the 70 and 65 CNEL noise contours reach 700 and 3,800 feet off airport property, respectively. To the west, the 75 CNEL noise contour remains on airport property, while the 70 and 65 CNEL noise contours reach approximately 40 and 4,800 feet off airport property, respectively. The noise exposure contours remain on airport property to the east of the airport. Each of these distances is measured along the extended runway centerline.

As indicated in **Table 3F**, the total area of the 2012 noise contours located off airport property is 360 acres. A discussion of the land uses within this area can be found in Chapter 4.

11SP12-3J-6/26/12

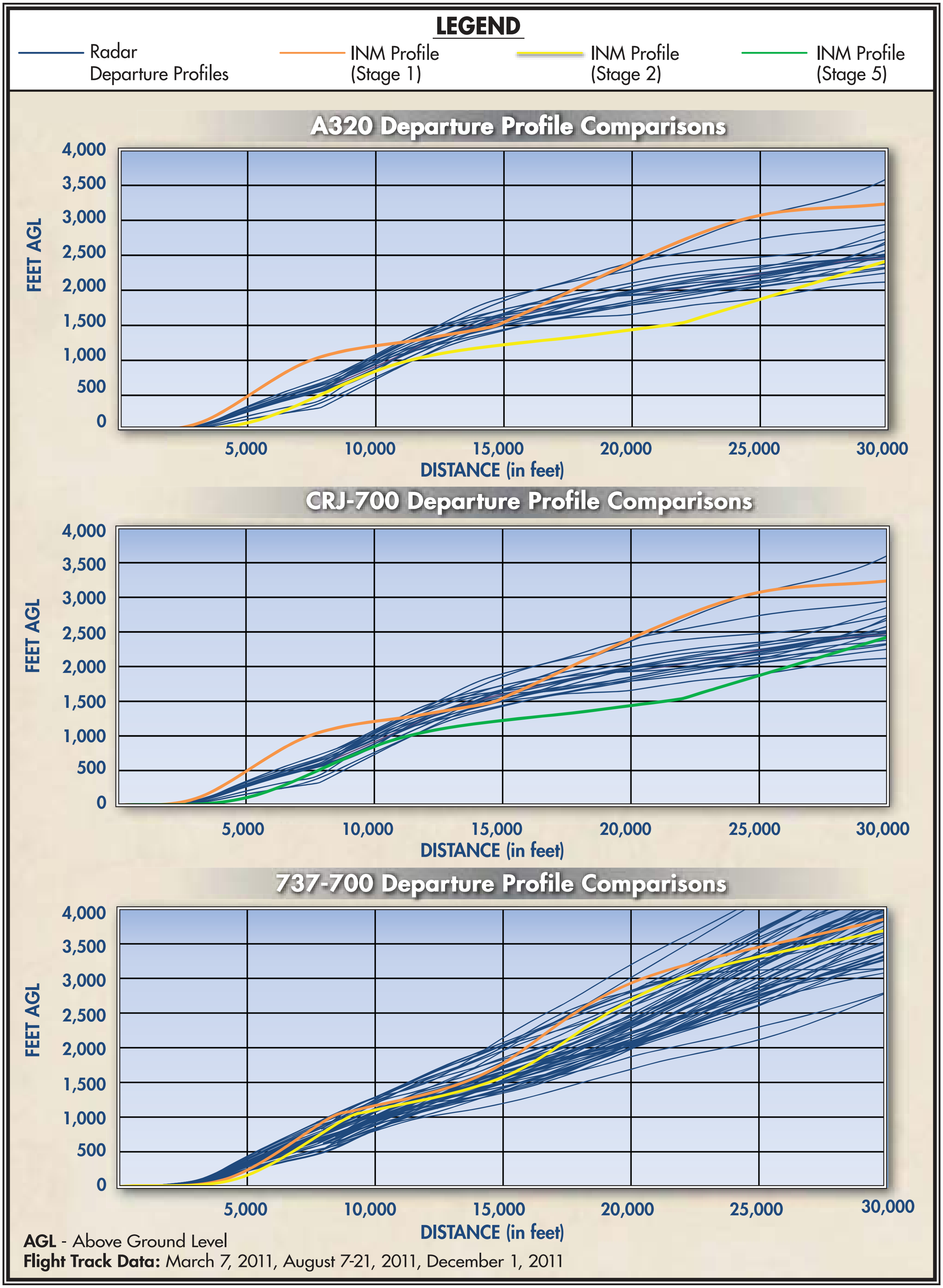
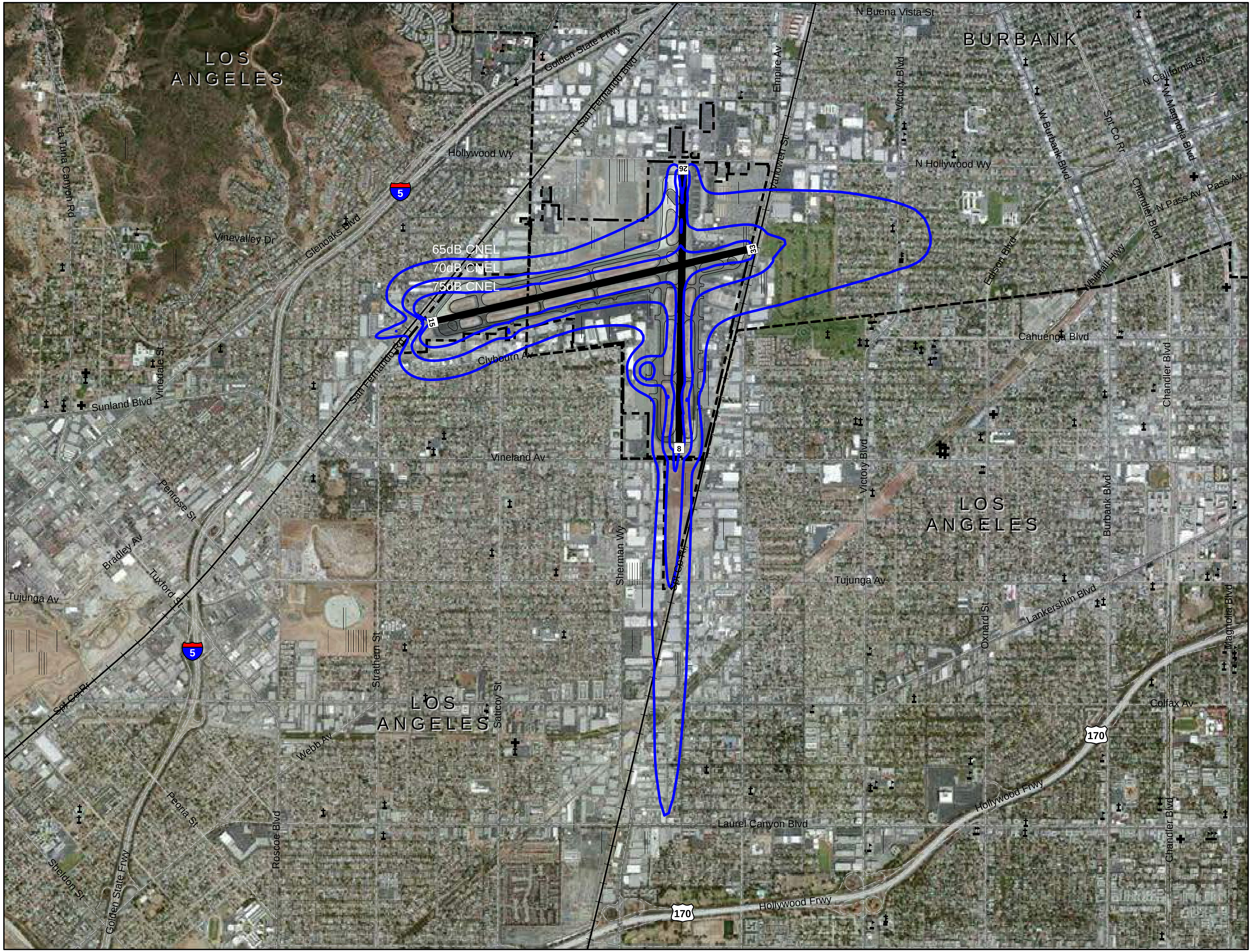


Exhibit 3H
AIRCRAFT DEPARTURE PROFILE COMPARISON



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport 2012 CNEL Contours

LEGEND

- City Boundaries
- Airport Boundary
- Noise Exposure Contours
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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Feet

BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY

Exhibit 3J
2012 Noise Exposure Contours

2017 NOISE EXPOSURE CONTOURS

The 2017 noise exposure contours are depicted in **Exhibit 3K**. The shape of the contours is similar to the 2012 scenario. The notable difference between the contours is the slight reduction in the size of the contours to the south. This is the result of older generation MD-80 aircraft operated by American Airlines which stopped service to Bob Hope Airport in February 2012 and the legislated phase-out of louder Stage 2 aircraft less than 75,000 pounds in weight. As discussed in Chapter 1, per Congressional mandate, Stage 2 aircraft weighing less than 75,000 pounds will no longer be allowed to be operated within the United States after December 31, 2015. The primary benefit of the removal of the older generation MD-80 and Stage 2 aircraft weighing less than 75,000 pounds will be on departure noise due to the older technology engines. Therefore, the noise exposure contours shrink slightly to the south where most of the higher engine thrust departures occur. The approach noise benefit of not having these older generation aircraft in the future is less because engine thrust levels are not as high when aircraft land. Therefore, the noise contours to the west where most of the approaches occur is slightly larger due to the forecasted increase in operations.

As measured along the runway centerline, the 75 CNEL noise contour extends off airport property approximately 350 feet across San Fernando Boulevard to the north. The 70 and 65 CNEL noise contours extend off airport property approximately 650 and 1,050 feet, respectively, in this same area north of the airport. At the southern end, the 75 CNEL noise contour extends approximately 15 feet off airport property over the railroad right-of-way, while the 70 and 65 CNEL noise contours reach 650 and 3,700 feet off airport property, respectively. To the west, the 75 CNEL noise contour remains on airport property, while the 70 and 65 CNEL noise contours reach approximately 500 and 5,600 feet off airport property, respectively. The noise exposure contours remain on airport property to the east of the airport.

As indicated in **Table 3F**, the total area of the 2017 noise contours located off airport property is 383.3 acres. A discussion of the land uses within this area can be found in Chapter 4.

COMPARATIVE NOISE MEASUREMENT ANALYSIS

A comparison of the measured versus the computer-predicted cumulative CNEL noise values for each permanent measurement site has been developed. The following sections describe the permanent noise monitoring equipment, location, and annual average CNEL levels for each site for 2011.

Noise Monitoring Equipment and Location

The current permanent noise monitor system, which is operated in conformance with 14CFR Part 150, Appendix A, Section A150.5, consists of 17 noise monitoring stations manufactured by Tracor. Each monitoring station is connected to a central site by telephone lines. The noise monitor data from the central site is processed by the computer and separated into two categories: aircraft noise and community noise. Each event attributed to an aircraft is saved in a noise event file. Computations are made of hourly aircraft noise levels, CNEL, and other parameters. **Table 3G** represents the 2011 CNEL values derived from the noise monitoring stations at Bob Hope Airport.

TABLE 3G
2011 Permanent Noise Monitor CNEL Values
Bob Hope Airport

Monitor Site	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	2011 Annual Average
1	62.7	62.5	62.6	61.6	62.3
2	60.3	60.3	60.2	59.8	60.2
3	61.3	61.2	61.4	60.7	61.1
4	59.8	58.4	57.6	58.8	58.7
5	60.6	58.2	56.0	59.2	58.8
6	58.0	57.2	55.8	56.4	56.9
7	58.7	59.5	59.5	58.1	59.0
9	61.6	62.0	62.4	61.3	61.8
10	55.0	53.6	53.0	54.3	54.0
11	54.6	53.8	53.9	53.2	53.9
12	54.6	52.9	51.8	52.7	53.1
13	60.4	60.4	60.0	59.8	60.2
14	57.7	57.3	57.0	57.2	57.3
15	61.2	61.4	61.3	61.0	61.2
16	63.4	63.9	64.2	63.5	63.8
17	61.0	61.1	61.1	60.7	61.0
18	62.7	62.7	62.8	61.9	62.5

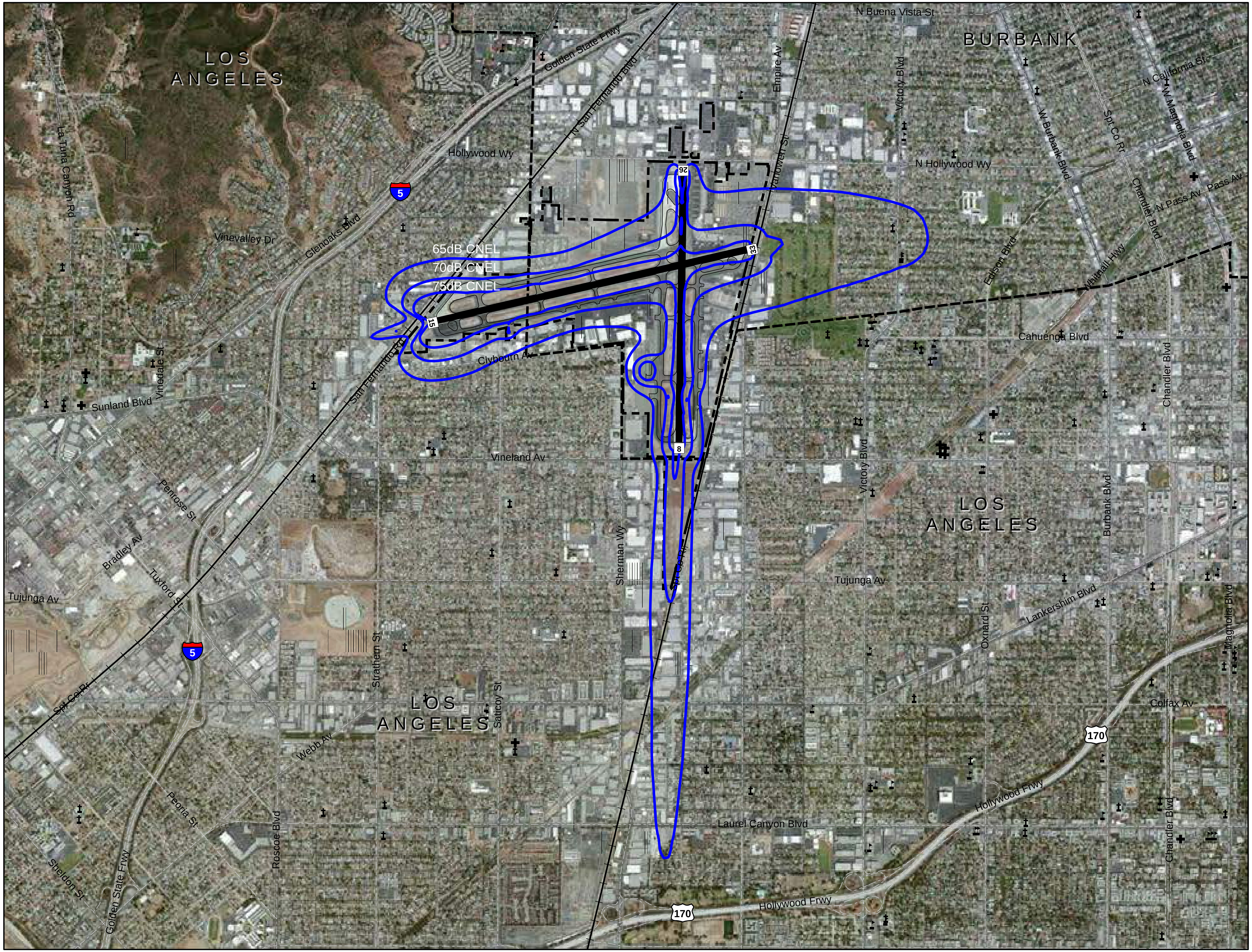
Source: *Quarterly Noise Monitoring At Bob Hope Airport, Fourth Quarter 2011*

Exhibit 3L depicts the location of the 17 noise monitoring stations (noise monitoring Site 8 was moved closer to runway centerline in February 1997 and renamed Site 18).

During calendar year 2012, the Airport Authority will be installing a new noise monitoring system manufactured by Bruel and Kjaer and adding three monitoring stations, increasing the number of noise monitors from 17 to 20 by in-filling areas closer to the airport due to the reduced size of the noise contour. As part of the system changes, Monitor 17 will be decommissioned and the following sites will be added: Monitor 19 (Jeffries Avenue and Valley Street), Monitor #20 (Pacific Avenue and Kenwood Street), Monitor #21 (Pass Avenue and Monterey Avenue) and Monitor #22 (Wheatland Avenue and Lanark Street), Monitors 19, 20, and 21 are located south of the airport and Monitor #22 is located north of the airport. Features of the new system include:

- 2D and 3D viewing of flight tracks, noise levels, complaints areas, streets and geographic information at the click of a button.
- Point and click access to information about flight tracks, streets, and other layers, zoom in, zoom out, rotate, point of closest approach analysis, etc.
- Interactive maps and graphs.
- Automatic viewing of correlations between noise events, complaints, and the aircraft that is determined to have caused the noise.

14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport 2017 CNEL Contours



LEGEND

- City Boundaries
- Airport Boundary
- Noise Exposure Contours
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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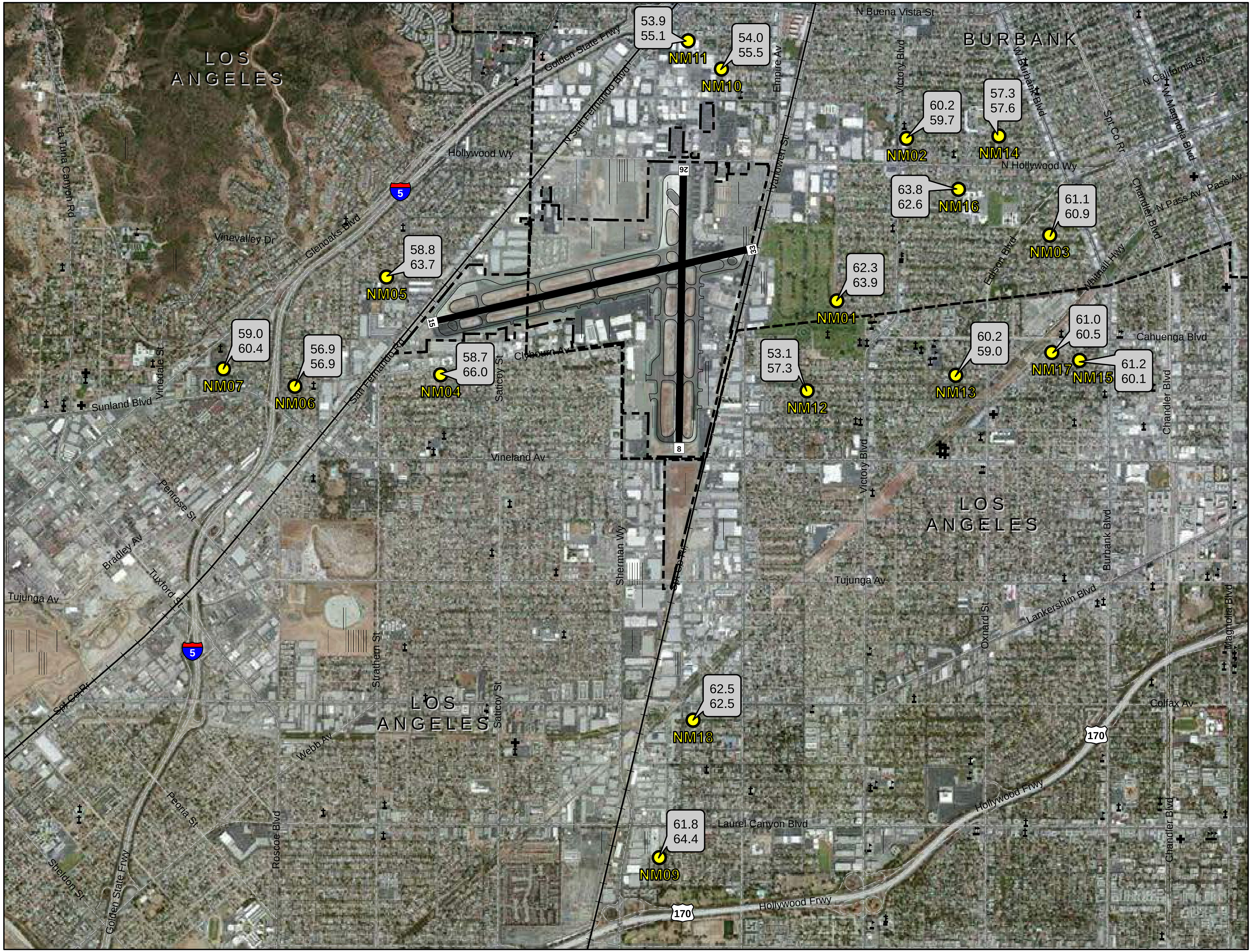
Exhibit 3K
2017 Noise Exposure Contours



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport

Noise Montoring Locations

LEGEND

- City Boundaries
- Airport Boundary
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway
- Noise Monitoring Locations
- 61.8 Measured CNEL[1]
- 62.1 INM-Predicted - 2012 Scenario

Notes: [1] - Measured CNEL is based on Quarterly Noise Monitoring At Bob Hope Airport, Fourth Quarter 2011

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

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Feet

Exhibit 3L
Noise Measurement vs. Predicted CNEL Values

- Editing of correlated noise events, tracks, and complaints.
- Animated replay of flight tracks and Noise Events in 2D or 3D.
- A customizable view and workspace in the Map Browser; user can rotate, pan, or zoom display.
- Touch-and-go detection, ATC Voice and Weather Integration.
- Bruel & Kjaer 3639A state-of-the-art External Fixed Monitors with 80 hours battery backup.
- Able to replay wave files of noise events to verify noise event and flight track correlations.
- Bruel & Kjaer's WebTrak community website product provides flight track display and essential aircraft information overlaid on maps through a standard internet browser. With no special installation, Webtrak requires only a connection to the internet to view near-live and historic flight tracks at playback speeds from 1X to 10X.

CNEL Comparison

This analysis provides a direct comparison of the measured and predicted values for each noise measurement site. A difference of two to three CNEL is generally not considered a significant deviation between measured and calculated noise, particularly at levels above 65 CNEL. Additional deviation is expected at levels below 65 CNEL due to the general proximity to the airport. The measured and predicted 2012 noise exposure contours for the annual average condition are presented for each aircraft noise measurement site on **Exhibit 3L** and **Table 3H**. A positive number in the difference column represents a modeled value which is greater than the measured value, while a negative number in the column indicates a modeled value which is less than the measured value.

TABLE 3H
Noise Measurement vs. Predicted CNEL Values
Bob Hope Airport

Monitor Site	Predicted 2012[1]	Measured[2]	Difference
1	63.9	62.3	+1.6
2	59.7	60.2	-0.5
3	60.9	61.1	-0.2
4	66.0	58.7	+7.3
5	63.7	58.8	+4.9
6	56.9	56.9	0.0
7	60.4	59.0	+1.4
9	64.4	61.8	+2.6
10	55.5	54.0	+1.5
11	55.1	53.9	+1.2
12	57.3	53.1	+4.2
13	59.0	60.2	-1.2
14	57.6	57.3	+0.3
15	60.1	61.2	-1.1
16	62.6	63.8	-1.2
17	60.5	61.0	-0.5
18	62.5	62.5	0.0

Source: Coffman Associates analysis
[1] 2012 noise exposure contours based upon calender year 2011 operations.
[2] *Quarterly Noise Monitoring At Bob Hope Airport, Fourth Quarter 2011*

All 17 noise monitor sites measured less than 65 CNEL. When compared to the INM predicted CNEL noise levels, 14 of the noise measurement sites had a deviation of less than two CNEL. The three sites that had greater deviations (Sites 4, 5, 9, and 12) all measured less than 65 CNEL where additional deviations can be expected. Site 9 measured 61.8 and Site 12 measured 53 CNEL on average for 2011. Deviations of 2.6 CNEL for Site 9 and 4.2 CNEL for Site 12 are acceptable this far outside the 65 CNEL.

A major contributor of noise to sites 4 and 5 is the air carrier departure engine spool-up when taking off from Runway 15. A special noise monitor study was prepared as part of the previous Part 150 Noise Compatibility Study Update in 1998 to determine the extent of noise shielding effects from buildings and blast fences between the noise monitors and the end of Runway 15 (See **Appendix H**). This study found that structures located between Site 4 and the end of Runway 15 attenuated noise by three to five decibels. The blast fence located between Site 5 and Runway 15 was found to attenuate noise by one to two decibels. The INM is not capable of accounting for the shielding attenuation caused by man-made structures. Therefore, the INM will tend to overpredict noise by 3–5 CNEL at Site 4 and 1–2 CNEL at Site 5. When accounting for the shielding of structures between Sites 4 and 5, the INM predicted values are within the accepted tolerances of the INM.

SUMMARY

The information presented in this chapter defines the noise patterns for current and future activity at Bob Hope Airport. These contours do not include additional noise abatement measures not currently in use at the airport. It does not make an attempt to evaluate or otherwise include activity over which the airport has no control, such as other aircraft transiting the area and not stopping at the airport.

It should be stressed that the CNEL noise contour lines drawn on the maps do not represent absolute boundaries of acceptability in personal response to noise, nor do they represent the actual noise conditions on any specific day, but rather the conditions of an average day derived from annual information.

The noise exposure contours developed in this chapter will be used in the following chapter to identify the areas impacted by airport noise.

Chapter Four

NOISE IMPACTS

Chapter Four

Noise Impacts

The Federal Aviation Administration (FAA) established the Part 150 program in the 1980s to provide guidance for the completion of airport noise compatibility studies. To standardize the assessment of airport land use compatibility, the FAA has established guidelines, codified within 14 CFR Part 150, that identify suitable land uses for development near airport facilities. The Part 150 compatibility guidelines, summarized in **Exhibit 4A**, are based on previous studies and recommendations by federal agencies. It should be noted that although the FAA provides the Part 150 land use compatibility guidelines, land use planning is a local decision made by the governing body with jurisdiction over a specific property.

However, upon receipt of FAA grant funding, the airport sponsor agrees to take appropriate action, including the adoption of zoning laws, to the extent reasonable to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations in accordance with FAA Grant Assurance 21, Compatible Land Use[1]. As discussed in Chapter One, Bob Hope Airport is owned and operated by the Burbank-Glendale-Pasadena Airport Authority and is located within portions of the City of Burbank and the City of Los Angeles. As the Authority does not have the power to adopt zoning laws off airport property, it must encourage these municipalities to perform proper land use planning to comply with the FAA grant conditions.

[1] http://www.faa.gov/airports/aip/grant_assurances/media/airport_sponsor_assurances_2012.pdf

14 CFR PART 150 GUIDELINES

The FAA uses Table 1 of 14 CFR Part 150 and an airport's corresponding noise contours as the basis for identifying areas within which noise compatibility projects, such as sound insulation or property acquisition, may be eligible for federal funding. Following the completion of a Part 150 study, projects that may qualify are recommended by the airport sponsor for funding from the noise set-aside portion of the FAA's Airport Improvement Program (AIP). In general, noise compatibility projects must be within the 65 CNEL noise contour to be eligible for federal funding. According to the FAA's AIP Handbook, "Noise compatibility projects are usually located in areas where aircraft noise exposure is significant, as measured in DNL [Community Noise Equivalent Level (CNEL) in California] of 65 decibels (dB) or greater." However, projects may also be approved and may be eligible in areas exposed to noise of less than 65 CNEL, which is considered to have a moderate effect, if the following criteria are met:

- The airport operator must adopt a designation of non-compatibility different from federal guidelines;
- The Noise Exposure Maps (NEM) and Noise Compatibility Program (NCP) must identify areas as being non-compatible; and
- Measures proposed for mitigation within the area must meet Part 150 criteria.[2]

However, while mitigation efforts outside the 65 CNEL noise contour may be eligible for federal funding, they receive a lower priority for funding than those projects within the 65 CNEL noise contour.

The FAA guidelines summarized in **Exhibit 4A** indicate that all land uses are acceptable in areas below 65 CNEL. At the 65 CNEL threshold, residential land uses without acoustic treatment and transient lodging, such as hotels, without acoustic treatment and mobile homes are all incompatible in areas of noise exposure above 65 CNEL. The exhibit notes that homes of standard construction and hotels may be considered compatible where local communities have determined these uses are permissible; however, acoustic treatment of these structures is recommended to meet noise level reduction thresholds when comparing the outdoor noise level to the indoor noise level. Schools and other public-use facilities are also generally considered to be incompatible with noise exposure above 65 CNEL. As with residential development, communities can make a policy decision that these uses are acceptable with appropriate sound attenuation measures. Hospitals and nursing homes, places of worship, auditoriums, and concert halls are structures generally considered compatible if measures to achieve noise level reduction are incorporated into the design and construction of structures. Outdoor music shells and amphitheatres are not compatible and should be prohibited within the 65 CNEL noise contour. Additionally, agricultural uses and livestock farming are generally considered compatible with the exception of related residential components of these uses, which should incorporate sound attenuation measures.

[2] See FAA Order 5100.38C, Airport Improvement Program Handbook, Chapter 8, paragraph 810.b

11SP12-4A-7/6/12

Land Use	Yearly Day-Night Average Sound Level (DNL) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 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, riding stables, and water recreation	Y	Y	25	30	N	N

The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable 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.

See other side for notes and key to table.

Exhibit 4A
LAND USE COMPATIBILITY GUIDELINES

11SP12-4A-7/6/12

KEY

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, 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 Noise Level Reduction (NLR) of at least 25 dB and 30 dB, respectively, should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an 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 the 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 the 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 the normal noise level is low.

5 Land use compatible provided special sound reinforcement systems are installed.

6 Residential buildings require an NLR of 25.

7 Residential buildings require an NLR of 30.

8 Residential buildings not permitted.

Source: ***14 CFR Part 150***, Appendix A, Table 1.

Within the 70–75 CNEL noise contour range, residences, transient lodging, and schools have the same sound attenuation recommendations as within the 65–70 CNEL range. Additionally, as the noise levels increase, the following land uses identified in the table are recommended to have sound attenuation: governmental services, transportation, parking, offices, wholesale and retail, utilities, communication, manufacturing, photographic and optical, golf courses, riding stables, and water recreation. In addition to those identified within the 65–70 CNEL contour range, the FAA discourages the following land uses within the 70–75 CNEL contour range: nature exhibits and zoos. Beyond the 75 CNEL contour, the land use recommendations are increasingly more stringent as the noise levels increase.

In addition to the land uses outlined in Table 1 of 14 CFR Part 150, historic properties must also be considered within a Part 150 study. In general, historic properties are not any more sensitive to noise than other properties of similar uses; however, federal regulations require that noise effects on these uses be considered when evaluating the effects of an action, such as a noise abatement or land use management procedure.

The strictest of these requirements is the U.S. Department of Transportation (DOT) Act of 1966. Section 4(f) of the DOT Act provides that the U.S. Secretary of Transportation shall not approve any program, such as a Part 150 Noise Compatibility Program, or project which requires the use of any historic site of national, state, or local significance unless there is no feasible and prudent alternative to the use of such land. The FAA is required to consider the direct physical taking of eligible property such as acquisition and demolition of historic structures and the indirect use of, or adverse impact to, eligible properties such as noise exposure within the 65 CNEL noise contour. When evaluating the effects of the noise abatement and land use management alternatives later in this report, it will be necessary to also identify whether the proposed action conflicts with or is incompatible with the normal activity or aesthetic value of any historic property not already significantly affected by noise. The FAA's review and acceptance of an airport's NEM contours are not evaluated under Section 4(f).

LAND USE GUIDELINES AT BOB HOPE AIRPORT

For the purposes of the Part 150 Noise Compatibility Study at Bob Hope Airport, the FAA's land use compatibility guidelines established in 14 CFR Part 150 will be used to make determinations about land use compatibility in the airport area.

AIRPORT NOISE LAND USE IMPACTS

To evaluate the impact of noise within the vicinity of Bob Hope Airport, the 2012 and 2017 contours discussed in Chapter Three, Aviation Noise, will be compared to the existing land use patterns, and areas of incompatibility will be identified based on the previously discussed Part 150 land use compatibility recommendations. Additionally, consideration will be given to the Bob Hope Airport Residential Acoustical Treatment Program (RATP). The RATP, which began in February 1997, provides sound mitigation improvements to homes and schools within the RATP program area which is based on noise exposure contours prepared during the airport's previous Part 150 Noise Compatibility Studies. As of December 2011, 2,121 dwelling units and four schools have been sound-insulated through the program.

LAND USES AND POPULATION EXPOSED TO 2012 NOISE

The 2012 condition noise exposure contours are depicted in **Exhibit 4B**. As indicated in the exhibit, portions of the noise contours extend off airport property. Based on land use mapping for the area, the noise exposure contours encompass areas of incompatible land uses based on digital mapping files available from Los Angeles County and presented in Exhibit 1H. For portions of the noise contour encompassing non-compatible residential land uses, the number of dwelling units within the noise contours was determined by comparing the extent of the noise contours to the existing land uses. **Table 4A** summarizes the number of dwelling units within the 2012 noise exposure contours. As indicated in the table, a total of 533 parcels with residential land uses are located within the 65–70 CNEL contour range. This includes 494 single-family detached residences and 37 multi-family parcels with 225 units. Within the 70–75 CNEL contour range, there are three single family dwellings. Additionally, there are two parcels with schools located within the 65–70 CNEL contour band. There are no noise-sensitive land uses in areas of greater than 75 dB CNEL exposure. Additionally, there is one historic property within the 65 CNEL noise contour.

As previously discussed, Bob Hope Airport established the RATP to provide sound insulation for non-compatible land uses. The program area, depicted in **Exhibit 4C**, was created as a result of previous Part 150 noise compatibility planning efforts. As indicated in **Exhibit 4C** and summarized in **Table 4A**, many of the non-compatible land uses within the 2012 noise exposure contours received treatment through the RATP. As indicated in the table, within the 65–70 CNEL contour range, 390 of the 494 single-family dwelling units and 99 of the 225 multi-family residential dwelling units have been treated.[3] Additionally, both of the schools have been treated. As indicated in **Table 4A**, there are a total of 122 parcels and 230 residential dwelling units within the 65–70 CNEL contour range, and three single family dwelling units within the 70–75 CNEL contour range that have not received treatment. As illustrated in **Exhibit 4C**, several parcels within the program boundary may still be potential candidates for treatment, while others will not be treated. In these cases, the property owners have declined participation in the program or have not responded to the Airport's repeated efforts to make contact regarding the program. As indicated in **Table 4A**, there are a total of 72 single family parcels for which the owner is not interested or has not responded to offers for RATP participation. Additionally, it should be noted that multi-family residential properties are not eligible under the airport's current Noise Compatibility Program.

[3] An initial phase of multi-family dwellings was completed by the Authority, however FAA, determined that multi-family dwellings are not part of the Airport's current Noise Compatibility Plan.

Exhibit 4B
2012 Noise Exposure Contours with Land Use

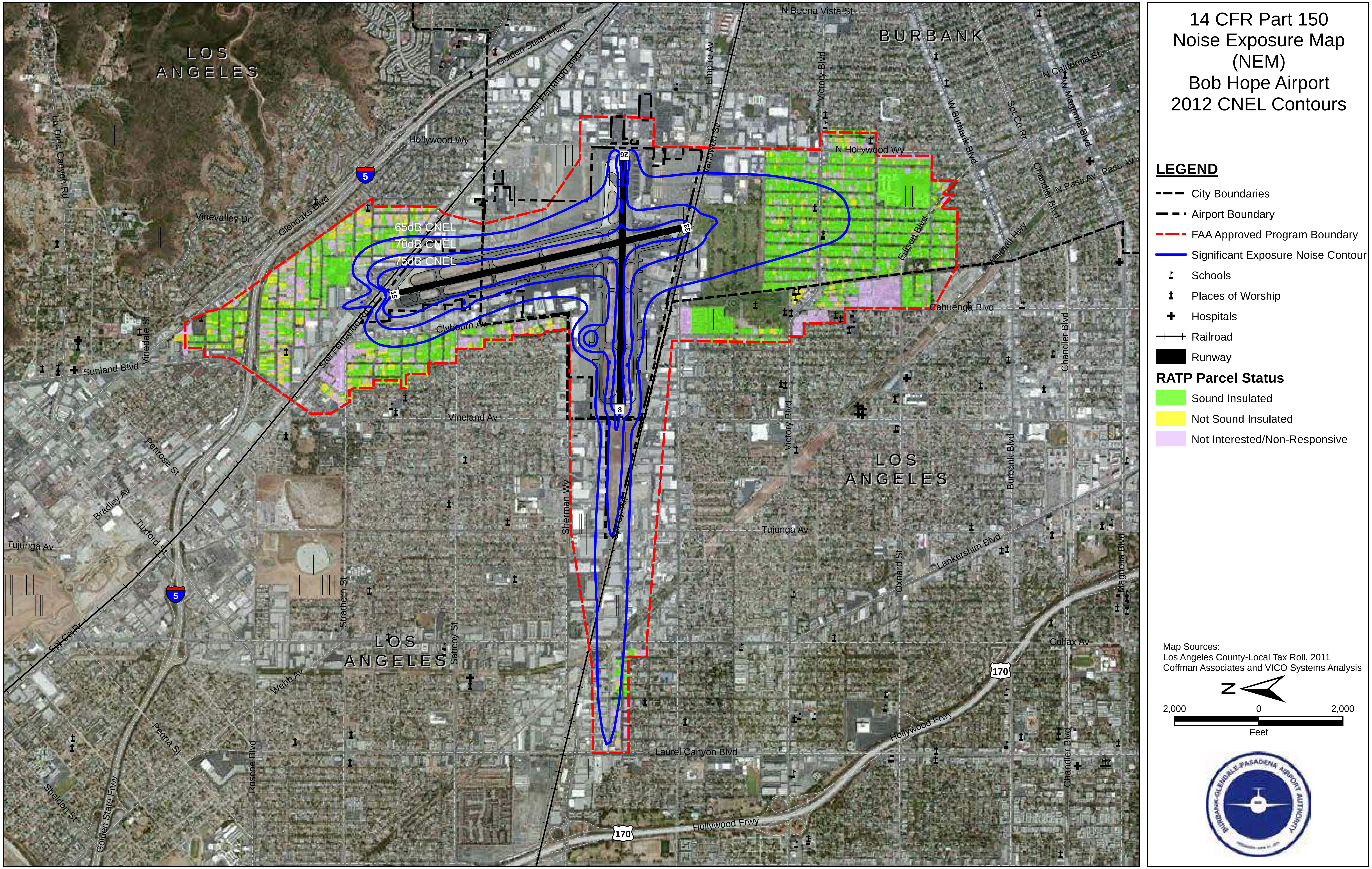

Exhibit 4C
2012 Noise Exposure Contours with RATP Status

TABLE 4A
Noise-Sensitive Land Uses Exposed to 2012 Aircraft Noise Above 65 CNEL
Bob Hope Airport

	65–70 CNEL		70–75 CNEL		75+ CNEL	
	Parcels	D.U.	Parcels	D.U.	Parcels	D.U.
Noise Sensitive Land Uses						
Single-Family Residential	494	494	3	3	0	0
Multi-Family Residential	37	225	0	0	0	0
Noise-Sensitive Institutions	2	0	0	0	0	0
Noise Sensitive Land Uses Total	533	719	3	3	0	0
Acoustical Treatment Completed						
Single-Family Residential	390	390	0	0	0	0
Multi-Family Residential	19	99	0	0	0	0
Noise-Sensitive Institutions	2	0	0	0	0	0
Acoustical Treatment Completed Total	411	489	0	0	0	0
Untreated						
Single-Family Residential	32	32	1	1	0	0
Multi-Family Residential[1]	4	20	0	0	0	0
Noise-Sensitive Institutions	0	0	0	0	0	0
Not Interested/Non-Responsive – Single-Family	72	72	2	2	0	0
Not Interested/Non-Responsive–Multi-Family	14	106	0	0	0	0
Untreated Total	122	230	3	3	0	0

D.U. – Dwelling Units

[1] – Multi-Family Residential units are not eligible for RATP participation as they are not identified for mitigation as part of the Airport's Noise Compatibility Program.

Source: Coffman Associates and VICO Systems analysis

Based on the number of dwelling units within the noise contours described above, a population estimate has been developed. The estimated population within the contours was calculated by multiplying the number of dwelling units within the noise contour by an average household population of 2.97.[4] As shown in **Table 4B**, it is estimated that a total of 2,135 people currently reside within the 65–70 CNEL contour range, and 9 people reside within the 70-75 CNEL contour range. There are no residents within the 75 CNEL contour range. Of the 2,135 residents within the 65–70 CNEL contour range, it is estimated that 1,452 live in residences that have been acoustically treated through the RATP.

[4] Persons per household information is based on U.S. Census Bureau, American Community Survey, 5-Year Estimates, 2006–2010 for Los Angeles County which is reported as 2.97 persons per household. http://quickfacts.census.gov/qfd/states/06/06037.html, accessed June 2012.

TABLE 4B
Estimated Population Exposed to 2012 Aircraft Noise Above 65 CNEL
Bob Hope Airport

	65-70 CNEL	70-75 CNEL	75+ CNEL
Estimated Population			
Single-Family Residential	1,467	9	0
Multi-Family Residential	668	0	0
Total	2,135	9	0
Estimated Population within RATP Dwelling Units			
Single-Family Residential	1,158	0	0
Multi-Family Residential	294	0	0
Total[1]	1,452	0	0
Estimated Population within Untreated Dwelling Units			
Single-Family Residential	95	3	0
Multi-Family Residential	59	0	0
Not Interested/Non-Responsive – Single-Family	214	6	0
Not Interested/Non-Responsive – Multi-Family	315	0	0
Total	683	9	0

Source: Coffman Associates and VICO Systems analysis

Estimated population is calculated by multiplying the number of dwelling units for residential land uses by the number of persons per household. Persons per household information is based on U.S. Census Bureau, American Community Survey, 5-Year Estimates, 2006–2010 for Los Angeles County, CA which is reported as 2.97 persons per household. http://quickfacts.census.gov/qfd/states/06/06037.html, accessed June 2012.

LAND USES AND POPULATION EXPOSED TO 2017 NOISE

The 2017 condition noise exposure contours are depicted in **Exhibit 4D**. As indicated in the exhibit, portions of the noise contours extend off airport property. The methodology described for evaluating land uses within the 2012 noise exposure contours was also used for the 2017 noise contours. **Table 4C** summarizes the number of dwelling units within the 2017 noise exposure contours. As indicated in the table, a total of 550 parcels with residential land uses are located within the 65–70 CNEL contour range. This includes 495 single-family detached residences and 53 multi-family parcels with 326 units. Within the 70–75 CNEL contour range, there are three single-family dwellings. Additionally, there are two parcels with schools located within the 65–70 CNEL contour band. There are no noise-sensitive land uses in areas of greater than 75 dB CNEL exposure. Additionally, there is one historic property within the 65 CNEL noise contour.

Table 4C also summarizes the number of dwelling units that have received sound insulation through the airport's RATP. As indicated in the table, within the 65–70 CNEL contour range, 379 of the 495 single-family dwelling units and 158 of the 326 multi-family residential dwelling units have been treated.[5] The remaining dwelling units, some of which are located outside the RATP area, have not been treated. Of the 143 untreated parcels, 131

[5] An initial phase of multi-family dwellings was completed by the Authority; however, FAA subsequently determined that multi-family dwellings are not part of the Airport's current Noise Compatibility Plan.

Exhibit 4D
2017 Noise Exposure Contours with Land Use

are located within the existing RATP boundary, shown in **Exhibit 4E**, and the remaining 12 are located outside the RATP boundary. As indicated in **Table 4C**, there are a total of 93 parcels for which the owner is not interested or has not responded to offers for RATP participation.

TABLE 4C
Noise-Sensitive Land Uses Exposed to 2017 Aircraft Noise Above 65 CNEL
Bob Hope Airport

	65–70 CNEL		70–75 CNEL		75+ CNEL	
	Parcels	D.U.	Parcels	D.U.	Parcels	D.U.
Noise Sensitive Land Uses						
Single-Family Residential	495	495	3	3	0	0
Multi-Family Residential	53	326	0	0	0	0
Noise-Sensitive Institutions	2	0	0	0	0	0
Total	550	821	3	3	0	0
Acoustical Treatment Completed						
Single-Family Residential	379	379	0	0	0	0
Multi-Family Residential	26	158	0	0	0	0
Noise-Sensitive Institutions	2	0	0	0	0	0
Total	407	537	0	0	0	0
Untreated D.U. Within RATP Area that Fall within the Noise Contours						
Single-Family Residential	33	33	1	1	0	0
Multi-Family Residential[1]	5	30	0	0	0	0
Noise-Sensitive Institutions	0	0	0	0	0	0
Not Interested/Non-Responsive – Single-Family	75	75	2	2	0	0
Not Interested/Non-Responsive–Multi–Family	18	123	0	0	0	0
Total	131	261	3	3	0	0
Untreated D.U. Outside RATP Area that Fall within the Noise Contours						
Single-Family Residential	8	8	0	0	0	0
Multi-Family Residential[1]	4	15	0	0	0	0
Noise-Sensitive Institutions	0	0	0	0	0	0
Total	12	23	0	0	0	0

D.U. – Dwelling Units

[1] – Multi-Family Residential units are not eligible for RATP participation as they are not identified for mitigation as part of the Airport's Noise Compatibility Program.

Source: Coffman Associates and VICO Systems analysis

For multi-family dwelling units, a total of 30 multi-family dwelling units within the 65–70 CNEL contour band are also located within the RATP area, while the remaining 15 are located outside the program area. However, it should be noted that multi-family residential properties are not eligible under the airport's current Noise Compatibility Program.

Three single-family dwelling units are within the 70–75 CNEL contour range and within the RATP area that have not received treatment. As illustrated in **Exhibit 4E**, of the untreated parcels within the RATP area, several parcels may still be potential candidates for treatment, while others will not be treated. In these cases, the property owners have declined participation in the program or have not responded to the Airport's repeated efforts to make contact regarding the program. Both of the schools within the 2017 65–70 CNEL contour band have been treated.

Table 4D presents the estimated population within the 2017 noise exposure contours based on the previously described methodology. As indicated in the table, it is estimated that a total of 2,439 people reside within the 65–70 CNEL contour range, and 9 people reside within the 70–75 CNEL contour range. No residents are expected within the 75 CNEL contour range. Of the 2,370 residents within the 65–70 CNEL contour range, it is estimated that 1,470 live in residences that have been acoustically treated through the RATP. Of the remaining residents, 775 will live within the RATP area on parcels not identified as Not Interested/Non-Responsive in **Table 4C**. The remaining 69 will reside outside the RATP area.

TABLE 4D
Estimated Population Exposed to 2017 Aircraft Noise Above 65 CNEL
Bob Hope Airport

	65–70 CNEL	70–75 CNEL	75+ CNEL
Estimated Population			
Single-Family Residential	1,470	9	0
Multi-Family Residential	969	0	0
Total Population	2,439	9	0
Estimated Population within RATP Dwelling Units			
Single-Family Residential	1,126	0	0
Multi-Family Residential	469	0	0
Total	1,595	0	0
Estimated Population within Untreated Dwelling Units within RATP Area			
Single-Family Residential	98	3	0
Multi-Family Residential	89	0	0
Not Interested/Non-Responsive – Single-Family	223	6	
Not Interested/Non-Responsive – Multi-Family	365	0	
Total[1]	775	9	0
Estimated Population within Untreated Dwelling Units outside RATP Area			
Single-Family Residential	24	0	0
Multi-Family Residential	45	0	0
Total	69	0	0

Source: Coffman Associates and VICO Systems analysis

Estimated population is calculated by multiplying the number of dwelling units for residential land uses by the number of persons per household. Persons per household information is based on U.S. Census Bureau, American Community Survey, 5-Year Estimates, 2006–2010 for Los Angeles County, CA which is reported as 2.97 persons per household. http://quickfacts.census.gov/qfd/states/06/06037.html, accessed June 2012.

GROWTH RISK ANALYSIS

For the 2017 scenario, consideration is given to the potential for noise-sensitive land uses to be developed on the land encompassed by the noise exposure contours. This is done by evaluating the locally adopted zoning (Exhibit 1J) and general plan (Exhibit 1K) designa-

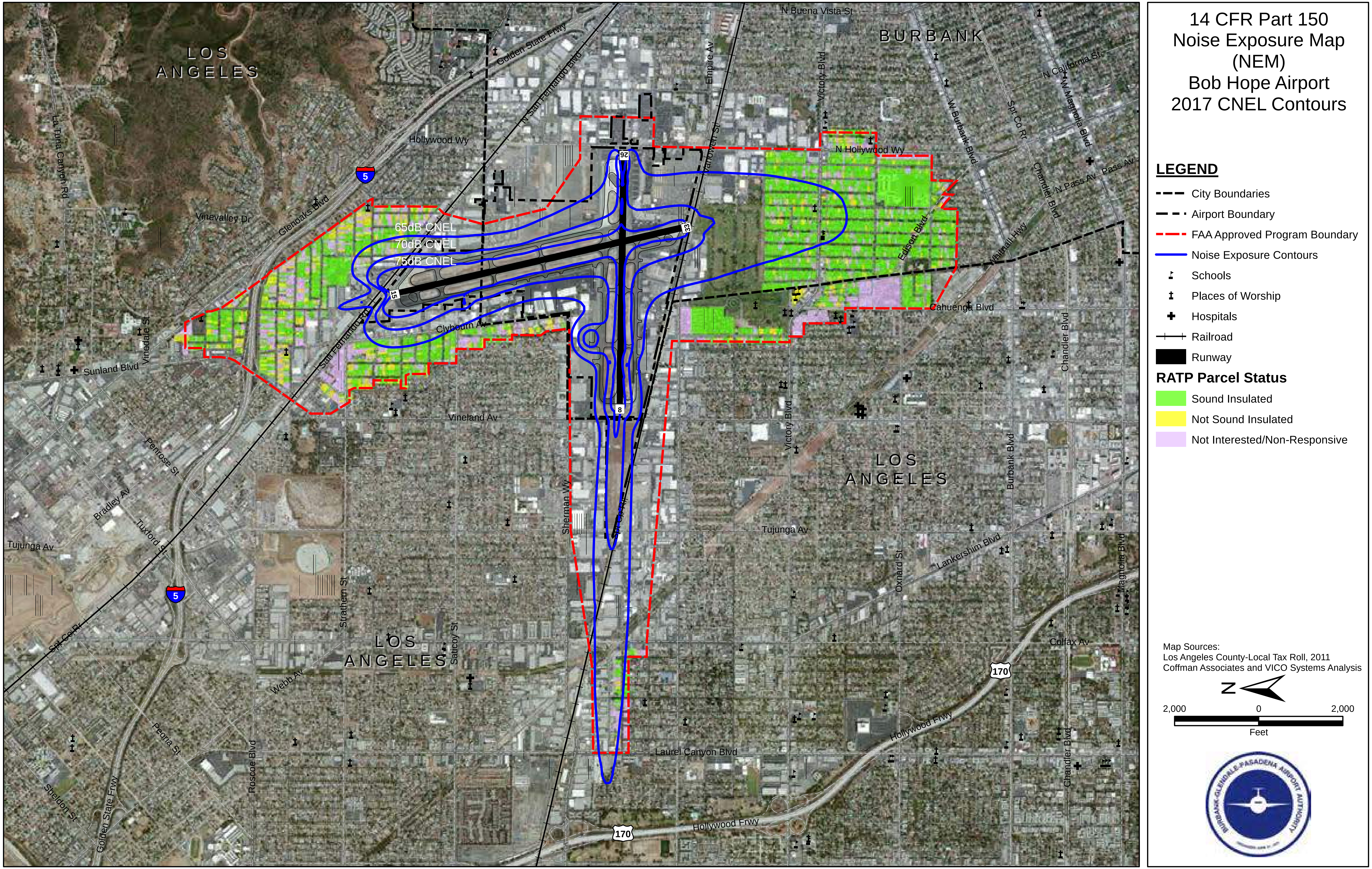

Exhibit 4E
2017 Noise Exposure Contours with RATP Status

tions for parcels encompassed by the noise contours to determine if noise-sensitive land uses could be developed on these areas given the current zoning or future land use plan designations, which typically specify the preferred density, or number of dwelling units per acre, for each classification. As discussed in Chapter One, the general plan land use designation identifies the *projected or future* land use for a property according to the locally adopted general plans. This document guides future development within the community planning area and provides the basis for zoning designations. The zoning ordinance identifies the type of land use *permitted on* a given piece of property and should be consistent with the general plan. However, in many communities, the zoning and future land use designations are not the same; therefore, an evaluation of each is necessary for the growth risk analysis.

The following example describes the method for calculating the growth risk of an area:

> *If a 10-acre area encompassed by the 65 CNEL noise contour is zoned for single family residential development and the single-family residential zoning allows for development of one single-family residence per acre, the growth risk analysis would indicate the potential for 10 residences to be built within the 65 CNEL noise contour given the current zoning.*

Similar calculations can be made based on the general plan land uses to determine if noise-sensitive land uses are planned for areas forecast to be exposed to aircraft noise. This information can be used to guide land use planning decision efforts to maximize airport/land use compatibility.

The screening criteria for this analysis assume that on-airport property will not be developed with noise-sensitive land uses in accordance with the sponsor's FAA grant assurances. Therefore, a query was conducted of the digital mapping files for those off-airport properties, classified as vacant or undeveloped, that are zoned or planned for non-compatible land uses located within the 2017 noise contours. Based on these requirements, there are no areas of potential growth risk within the 2017 noise contours.

SUMMARY

Table 4E summarizes the noise impacts for the 2012 and 2017 noise scenarios based on the present land use development patterns. As indicated in the table for the 2012 scenario, there are 533 parcels within the 65–70 CNEL noise contours and three parcels within the 70–75 CNEL noise contour. The estimated population residing within these contours is 2,135 for the 65-70 CNEL contour range and nine within the 70–75 CNEL contour range. For the 2017 scenario, 578 parcels are within the 65–70 CNEL noise contour range, which equates to an estimated population of 2,439 individuals. There are three parcels within the 2017 70–75 CNEL noise contours, which equates to an estimated population of nine people.

TABLE 4E
Noise-Sensitive Land Use Impact Summary
Bob Hope Airport

	65–70 CNEL	70–75 CNEL	75+ CNEL
Noise-Sensitive Land Uses (Parcels)			
2012	533	3	0
2017	550	3	0
Population			
2012	2,135	9	0
2017	2,439	9	0

Source: Coffman Associates analysis

Appendix A

STUDY ADVISORY COMMITTEE

Appendix A
STUDY ADVISORY COMMITTEE

Bob Hope Airport

This appendix lists the members of the Study Advisory Committee (SAC) convened to provide input during the preparation of the study. The list of invited officials and organizations shows a broad range of interests – local agencies, Federal Aviation Administration, business groups, neighborhood organizations, airport users, airlines, and pilot organizations. Each of the committee members was selected based upon his or her area of expertise and ability to make a positive contribution to the study.

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Appendix B

NCP REVIEW

Appendix B
NCP REVIEW

The current Noise Compatibility Plan (NCP) for Bob Hope Airport was approved by the Federal Aviation Administration (FAA) in November 2000. An amendment to the current program added one land use measure and was approved in August 2004. The purpose of the previous Part 150 study was to evaluate noise impacts within the area surrounding Bob Hope Airport. The study included Noise Exposure Maps (NEMs) dated 1998 and 2003, and an NCP which outlines strategies to improve compatibility between the airport and the surrounding areas. The NCP, as amended, includes 12 noise abatement measures, four noise mitigation measures, seven land use management measures, and six program management measures.

This appendix includes a comparison of the 1998 and 2012 aircraft operations and noise exposure contours, and a summary and status of the measures included in the 1998 Noise Compatibility Program.

AIRCRAFT OPERATIONS AND NOISE EXPOSURE CONTOUR COMPARISON

As indicated in **Table B1**, based on information from FAA's Air Traffic Activity Data System (ATADS) and the 1998 Noise Exposure Maps, the number of annual operations at Bob Hope Airport has fluctuated since the preparation of the 1998 noise exposure contours. The operations assumption for the 1998 noise exposure contours was 184,500, while the 2012 contours are based on 123,092 operations. During the years between the two Part 150 studies, operations ranged between a high of 195,761 in 2006 and a low of 109,259 in 2009.

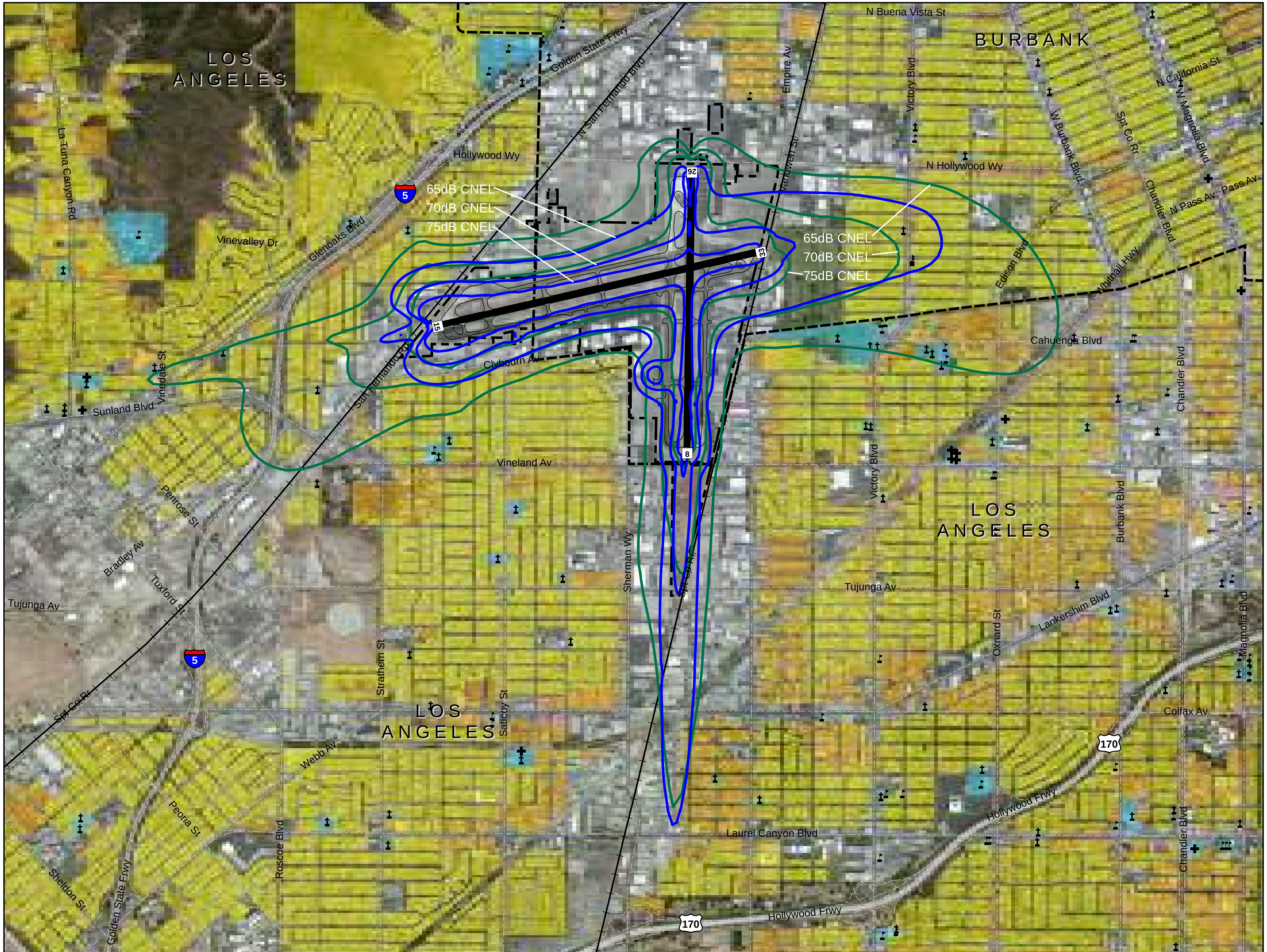
TABLE B1
Annual Operations Since 1996
Bob Hope Airport

Year	Total Operations
1998[1]	184,500
1999	175,278
2000	160,730
2001	159,705
2002	161,912
2003	178,079
2004	180,416
2005	173,100
2006	195,761
2007	170,171
2008	120,838
2009	109,259
2010	111,556
2011[2]	123,092

Source: FAA Air Traffic Activity Data System (ATADS), Bob Hope Airport tower counts, 1999-2011.
Notes: [1] – Operations from 1998 Noise Exposure Maps. Based upon actual operations from May 1996 through April 1997. Used as a projection of 1998 operations for noise modeling.
[2] – Calendar year 2011 operations from the Airport Traffic Control Tower were used as a projection of 2012 operations for noise modeling.

A graphic comparison of the 1998 Noise Exposure Map and the 2012 Noise Exposure Map is presented in **Exhibit B1.** Additionally, **Table B2** provides an acreage comparison of the 1998 and 2012 Noise Exposure Maps. As indicated in the exhibit and table, the 2012 noise contours are generally the same shape and cover a smaller area. In addition to the previously discussed change in operations, the difference in the contour shape and size can be attributed to changes in the types of aircraft operating at the airport. Assumptions for the 1998 contours include operations by higher levels of Stage 2 business jet aircraft including the Gulfstream II and III. In comparison, the 2012 fleet mix includes a significantly smaller number of Stage 2 business jet operations which have become increasingly more expensive to operate and continue to be replaced by quieter Stage 3 and Stage 4 aircraft.

Since the preparation of the 1998 contours, advancements in the Integrated Noise Model (INM) software, such as improved sideline noise modeling, has resulted in a more accurate representation of the noise conditions. The 1998 noise exposure contours were prepared with Version 5.2. The 2012 noise exposure contours were developed with INM Version 7.0c.



14 CFR Part 150 Noise Exposure Map (NEM) Bob Hope Airport 2012 and 1998 CNEL Contours

LEGEND

- City Boundaries
- Airport Boundary
- 2012 CNEL Noise Contour
- 1998 CNEL Noise Contour
- Schools
- Places of Worship
- Hospitals
- Railroad
- Runway
- Manufactured Homes
- Single Family Residential
- Multi-Family Residential
- Mixed Use with Residential
- Noise Sensitive Parcels

Map Sources:
Los Angeles County-Local Tax Roll, 2011
Coffman Associates and VICO Systems Analysis

N

2,000 0 2,000
Feet

Exhibit B1
2012 and 1998 Contour Comparison

TABLE B2
Comparative Areas Of Noise Exposure
Bob Hope Airport

	Area (Acres)	
	1998	2012
65-70	984.3	799.7
70-75	357.8	312.6
75+	341.8	130.2

Source: Coffman Associates analysis, 1998 Bob Hope Airport Noise Exposure Maps

NCP RECOMMENDATION STATUS

The current Noise Compatibility Program, as amended, contains 29 measures to reduce the impact of aircraft noise on the surrounding airport environment and was submitted to the FAA for review. Following is a summary of each measure, the FAA's response, and the status of the measure from the Record of Approvals dated November 27, 2000 and August 4, 2004.[1]

Noise Abatement Elements

1. Continue requiring all transport category and turbojet aircraft to comply with Federal aircraft noise regulations.

Description: This measure recommended the continuation of an existing noise abatement rule. The rule states: "All subsonic transport category airplanes and all subsonic turbojet powered airplanes regardless of category operating at the Bob Hope Airport shall be in compliance with all Federal Air Regulations respecting noise, as the same may be amended from time to time." The applicable Federal aircraft noise rules are in 14 CFR Parts 36 and 91. This measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: This measure continues to be a part of the Airport's noise rules. These rules are published on the Airport's website.

2. Continue requiring compliance with the Airport's Engine Test Run Up Policy.

Description: This measure recommended the continuation of an existing noise abatement rule. The rule states: "Each aircraft operator and maintenance and repair facility shall adhere to the Authority Engine Test Run Up Policy as contained in the Airport Operations Manual, as the same may be amended from time to time." Among these policies is a prohibi-

[1] http://www.faa.gov/airports/environmental/airport_noise/part_150/states/media/roa_california_112700.pdf and http://www.faa.gov/airports/environmental/airport_noise/part_150/states/media/roa_california_080404.pdf , accessed July 2012.

tion on maintenance engine run-ups between 10:00 p.m. and 7:00 a.m., unless delay of the run-up would cause an aircraft to arrive or depart after 10:00 p.m. in the succeeding 24-hour period. In addition, specific run-up locations are designated at the run-up pad on the north edge of Taxiway D and in front of the Ameriflight hangar. The element of this measure related to the prohibition on maintenance engine run-ups between 10:00 p.m. and 7:00 a.m. was previously disapproved by the FAA pending the submittal of additional information. The element of this measure related to the designation of specific run-up locations was previously approved by the FAA.

FAA Action: Approved.

Status: The Airport's engine run-up policies continue to be a part of the noise rules. These rules are published on the Airport's website.

3. Continue promoting use of AC 91-53A Noise Abatement Departure Procedures by air carrier jets.

Description: This measure recommended that the Airport continue promoting the use of noise abatement departure procedures in Advisory Circular 91-53A by airlines operating jet aircraft over 75,000 pounds, certificated gross takeoff weight.

FAA Action: Approved as a voluntary measure only.

Status: The use of AC 91-53A Noise Abatement Departure Procedures by air carrier jets has been superseded each airline's standard flight procedures for their specific aircraft. This measure was dropped from Noise Impact Area Reduction Plan (NIARP).

4. Continue promoting use of NBAA noise abatement procedures, or equivalent manufacturer procedures, by general aviation jet aircraft.

Description: This measure recommended that the Airport continue to actively encourage jet operators to use the National Business Aviation Association (NBAA) Approach and Landing Procedure and Standard Noise Abatement Departure Procedures, or equivalent quiet flying procedures developed by aircraft manufacturer. This measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved as a voluntary measure only.

Status: NBAA noise abatement procedures continue to be a part of the Airport's noise rules. These rules are published on the Airport's website.

5. Continue working with the FAA Airport Traffic Control Tower to maintain the typical traffic pattern altitude of 1,800 feet MSL.

Description: This measure recommended that the Airport continue to work with the FAA Airport Traffic Control Tower to maintain the typical traffic pattern altitude of 1,800 feet above mean sea level (MSL). This altitude corresponds to a typical traffic pattern altitude of 1,000 feet above ground level. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved as a voluntary measure only.

Status: The published traffic pattern altitude is 1,800 MSL, which is consistent with FAA guidelines. No recommendation or requests have been made to alter this altitude which would necessitate coordination with FAA Airport Traffic Control tower staff on this issue.

6. Continue the placement of new buildings on the airport north of Runway 8-26 to shield nearby neighborhood from noise on the runway.

Description: This measure recommended new hangars and other aviation-related buildings constructed in the area north of Runway 8-26 and west of Runway 15-33 be positioned to attenuate some of the noise of aircraft on the ground, shielding nearby residential neighborhoods.

FAA Action: Approval.

Status: Four large hangar building have been constructed north and west of Runways 8-26 and 15-33 near the intersection Sherman Way and Clybourn Avenue since the start of the previous Part 150 Study in 1997. All four hangars are generally positioned parallel to the runways to better shield nearby residential neighborhoods from noise.

7. Designate Runway 26 as nighttime preferential departure runway.

Description: This measure recommended that Runway 26 be designated the preferential departure runway, weather and traffic permitting, after 10:00 p.m. and before 7:00 a.m. The primary effect of this policy would be to reduce noise exposure over the areas south of the airport exposed to noise from takeoffs on Runway 15. While aircraft noise would increase over areas west of the airport, most of the increase at levels above 65 CNEL would be confined to the commercial/industrial corridor along Sherman Way and the Southern Pacific Railroad tracks. This measure is proposed as an official, informal runway use program.

FAA Action: Approved as a voluntary measure only.

Status: A noise abatement departure turn and nighttime preferential runway use program have not been implemented for Runway 26.

8. Establish noise abatement departure turn for jet takeoffs on Runway 26.

Description: This measure recommended a right turn to a heading of 275 degrees, beginning approximately 1,000 feet off the west end of Runway 26. Aircraft would continue to climb on this heading for at least three miles before turning to assigned headings. The intent is to confine departures to the Southern Pacific Railroad corridor extending west-northwest from the runway. By confining departing aircraft to this corridor, overflights of nearby residential neighborhoods could be reduced. It was also recommended that this turn apply only to jet aircraft. This measure is recommended for implementation simultaneously with the nighttime preferential runway use program recommended in Measure 7 above.

FAA Action: No action required at this time.

Status: A noise abatement departure turn and nighttime preferential runway use program have not been implemented for Runway 26.

9. Build extension of Taxiway D to promote nighttime general aviation departures on Runway 26.

Description: This measure recommended the extension of Taxiway D to promote nighttime general aviation departures on Runway 26. General aviation departures on Runway 26 are limited due to a lack of taxiway access. This measure also supports the proposed preferential use of Runway 26 (Measure 7 above) by improving general aviation aircraft access to Runway 26.

FAA Action: Approved.

Status: Taxiway D has been extended to the end of Runway 26. General aviation departures from Runway 26 have increased from 3.6 percent in 1998 to 4.75 percent in 2012.

10. Build engine maintenance run-up enclosure.

Description: This measure recommended the construction of an engine run-up enclosure to attenuate noise from maintenance run-ups. This measure further recommended the establishment of policies governing the use of the run-up enclosure. Suggested policies included the requirement that all maintenance run-ups done at more than idle power be required to use the facility. With the required use of the run-up enclosure, this measure also considered the removal of existing nighttime maintenance run-up restrictions (Measure 2) if it could be demonstrated that no adverse noise impacts will be caused in residential areas as a result of such action.

FAA Action: Approved.

Status: An engine maintenance run-up enclosure has not been constructed at Bob Hope Airport.

11. Phase-out operations by all Stage 2 jets.

Description: This measure recommended the phase-out of operations by Stage 2 aircraft with certificated gross takeoff weights under 75,000 pounds at Bob Hope Airport. The NCP recognized that the proposed phase-out could be adopted only after the completion of a 14 CFR Part 161 Study.

FAA Action: Disapproved pending submission of additional information and compliance with Part 161.

Status: The Airport prepared a Part 161 Study to establish a mandatory curfew, subject to certain exceptions, on operations at Bob Hope Airport from 10:00 p.m. through 6:59 a.m. The study was started in 2000 and completed in October 2009 at a cost of more than $7 million and submitted to FAA. It was the first Part 161 Study ever accepted as "complete" by the FAA, a landmark accomplishment that attests to the difficulty involved in this type of study. In November 2009, the FAA issued its finding that the study did not justify the imposition of the mandatory curfew.

12. Establish a mandatory curfew on departures by all Stage 2 aircraft between 10:00 p.m. and 7:00 a.m., departures by all aircraft over 75,000 pounds between 10:30 p.m. and 6:30 a.m., and arrivals by all aircraft over 75,000 pounds between 11:00 p.m. and 6:00 a.m.

Description: This measure recommended a mandatory curfew, as outlined above, be established subject to the requirements of 14 CFR Part 161. The NCP recognized that the proposed curfew could be adopted only after the completion of a Part 161 Study and, in reference to restrictions on Stage 3 aircraft operations, after the FAA's explicit approval of the Part 161 study and the proposed restriction.

FAA Action: Disapproved pending submission of additional information and compliance with Part 161.

Status: The Airport prepared a Part 161 Study to establish a mandatory curfew, subject to certain exceptions, on operations at Bob Hope Airport from 10:00 p.m. through 6:59 a.m. The study was started in 2000 and completed in October 2009 at a cost of more than $7 million and submitted to FAA. It was the first Part 161 Study ever accepted as "complete" by the FAA, a landmark accomplishment that attests to the difficulty involved in this type of study. In November 2009, the FAA issued its finding that the study did not justify the imposition of the mandatory curfew.

Noise Mitigation Elements

1. Continue existing acoustical treatment program for single-family homes.

Description: This measure recommended the Airport continue the acoustical treatment program for all single-family homes within the 65 CNEL noise contour based on projected noise for the year 2000 developed in the 1988 Noise Compatibility Study. This measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: The Airport's Residential Acoustical Treatment Program (RATP) began in February 1997. As of December 2011, 2,121 dwelling units and four schools have been sound-insulated through the program.

2. Expand residential acoustical treatment program to include homes within 65 CNEL contour based on 2003 NEM.

Description: This measure recommended that the eligibility area for the residential acoustical treatment program be expanded to include homes within the 65 CNEL noise contour based on the 2003 NEM which are not eligible under the existing acoustical treatment program.

FAA Action: Approved.

Status: The residential acoustical treatment program area boundary was expanded in February 2001 to include homes within the 65 CNEL noise contour based on the 2003 NEM to include homes which were previously not eligible under the initial treatment program.

3. Establish acoustical treatment program for schools and preschools not previously treated within the 65 CNEL contour based on 2003 NEM.

Description: This measure recommended the acoustical treatment of two schools and two preschools within the 65 CNEL contour based on the 2003 NEM. The schools include the Roscoe Elementary School, the Dubnoff Center and School, and two preschools on Victory Boulevard. A similar measure was previously approved by the FAA as an element of the 1988 NCP. The subject schools were not included in the original acoustical treatment program.

FAA Action: Approved.

Status: As of December 2011, the RATP status for Roscoe Elementary School is, "Not Contacted," the Dubnoff Center and School status is, "Future Interest Possible," and the two preschools on Victory Boulevard are "Completed."

4. Offer purchase assurance as an option for homeowners in the acoustical treatment eligibility area.

Description: This measure recommended offering homeowners in the acoustical treatment eligibility area the option of a purchase assurance if they were more interested in moving out of the neighborhood rather than staying in an acoustically-treated home. If the airport takes title to the home, it will acoustically treat it and resell it. If the home is in need of substantial repairs, the airport may demolish it and offer the lot for sale for construction of a new home, sale to an abutting property owner, or for development of an airport-compatible use. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved in part. Construction of a new home within the 65 CNEL or resale for a non-compatible use was not considered consistent by the FAA for the purposes of Part 150. This portion of the measure was disapproved.

Status: The Authority has not pursued a purchase assurance program for homeowners within the RATP area.

Land Use Management Elements

1. Use Baseline 2010 noise contours as basis for noise compatibility planning (Burbank and Los Angeles).

Description: This measure recommended that the cities of Burbank and Los Angeles amend their general plans to show the updated noise contours for Burbank-Glendale-Pasadena Airport and that the 2010 noise contours be used as a basis for noise compatibility planning.

FAA Action: Approved.

Status: The *Burbank 2035 General Plan* noise element includes noise contours from the *Los Angeles County Airport Land Use* Plan, which was amended in December 2004. The contours, which are undated, are depicted on Exhibit 1L of this report, and are different in shape and extent than the 2010 Baseline Contours included as Exhibit 4F of the Airport's 1998 Noise Exposure Maps report. The Noise Element of the *City of Los Angeles General Plan*, February 1999, includes contours dated 1996 from the Bob Hope Airport 1996 *Quarterly Noise Monitoring Report* and 2010 from the *Environmental Impact Statement for Land Acquisition and Replacement Terminal Project*, August 1995. These contours also differ in shape and extent from the 2010 Baseline Contours depicted in the Airport's 1998 Noise Exposure Maps report.

2. Establish noise compatibility guidelines for the review of development projects within the 65 CNEL contour (Burbank, Los Angeles).

Description: This measure recommended that the cities of Burbank and Los Angeles adopt special project review criteria for use in reviewing general plan amendments, planned development, rezoning, special use, conditional use, and variance applications to ensure compatible land use.

FAA Action: Approved.

Status: The City of Burbank and the City of Los Angeles have not adopted specific project review criteria for use in reviewing general plan amendments, planned development, rezoning, special use, conditional use, and variance applications to ensure compatible land use. However, these actions, which affect land within the airport influence area depicted on Exhibit 1L of this report, are reviewed by the Los Angeles County ALUC for a consistency determination with the Los Angeles County ALUCP.

3. Amend Sun Valley-La Tuna Canyon Community Plan to establish infill development standards for noise compatibility (Los Angeles).

Description: This measure recommended that the City of Los Angeles establish policies requiring sound insulation and recording of fair disclosure agreements and covenants for new noise-sensitive development within the 65 CNEL noise contour. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: The policies within the Sun Valley-La Tuna Canyon Community Plan promote participation in the Airport's RATP and also encourages the phase-out of incompatible land uses through amendments to the plan, zone changes, and redevelopment. This does not include policies requiring sound insulation and recording of fair disclosure agreements and covenants for new noise-sensitive development within the 65 CNEL noise contour.

4. Amend North Hollywood-Valley Village Community Plan to establish land use policies promoting airport noise compatibility (Los Angeles).

Description: This measure recommended that the City of Los Angeles enact policies encouraging incompatible land uses be made compatible, either through sound insulation or land use conversion, as appropriate. This measure also recommended that the City of Los Angeles enact policies requiring sound insulation and recording of fair disclosure agreements and covenants for new noise-sensitive development within the 65 CNEL noise contour. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: As discussed in Chapter One, the North Hollywood-Valley Village Community Plan "*supports the continued effort to reduce noise emanating from airport operations at the Burbank-Glendale-Pasadena Airport"* and also states that the City of Los Angeles shall ensure compliance with the State of California's noise insulation standards. The plan also recommends that Bob Hope Airport flight patterns should be restricted from residential areas to the maximum extent possible. There are no specific policies within the plan regarding disclosure agreements or covenants for new noise-sensitive development within the 65 CNEL noise contour.

5. Establish airport noise overlay zoning to implement infill development policies of local General Plans (Burbank, Los Angeles).

Description: This measure recommends the cities of Burbank and Los Angeles establish airport noise overlay zoning policies. The recommended overlay zoning standards require any new noise-sensitive development within the 65 CNEL contour to be treated with sound insulation to achieve noise level reductions of 25 or 30 decibels, depending on the noise contour within which the new development lies. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: Neither the City of Burbank nor the City of Los Angeles has adopted overlay zoning to implement infill development policies of their respective General Plans.

6. Amend building codes to establish sound insulation construction standards to implement requirements of state law and infill development policies (Burbank, Los Angeles).

Description: This measure recommended the cities of Burbank and Los Angeles consider amending their building codes to establish construction standards to achieve noise level reduction of 25 decibels within the 65 to 70 CNEL contour range and 30 decibels within the 70 and 75 CNEL contours for any new noise-sensitive infill development. A similar measure was previously approved by the FAA as an element of the 1988 NCP.

FAA Action: Approved.

Status: As discussed in Chapter One, Title 9, Building Regulations of the Burbank Municipal Code, includes sound transmission standards "to protect persons within hotels, motels, dormitories, apartment houses and dwellings, including detached single family dwellings, from the effects of excessive noise." These regulations specify sound insulation standards for new construction within the 60-65, 65-70, 70-75, and 75-80 dB day-night level (LDN) contour ranges. Additionally, the City of Los Angeles has adopted an ordinance which states that all residential structures and all other structures identified in Section 91.1207.1 located where the annual Ldn or CNEL (as defined in Title 21, Division 2.5, Chapter 6, Section 5001, California Code of Regulations) exceeds 60 dB, shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level. The ordinance provides an exception for new single family detached dwellings and all non-residential noise-sensitive structures located outside the noise impact boundary of 65 dB CNEL.

7. Provision for retention of property located in the northeast quadrant of the Airport within the 2003 65 CNEL noise exposure contour.

Description: The primary reason for retaining property impacted by high noise levels is to remove or prevent the development of noise-sensitive land uses on the subject property. The Airport does not have land use planning authority off airport property. Therefore, a potential exists for noise-sensitive development to occur on the subject property under the current zoning by the City of Burbank. This measure would ensure future land use compatibility within the 65 CNEL noise contour for Bob Hope Airport.

FAA Action: Approved.

Status: The property located in the northeast quadrant of Bob Hope Airport within 2003 65 CNEL noise exposure contour has been retained.

Program Management Elements

1. Continue noise abatement information program.

Description: This measure recommends that the Airport Authority continue use of the noise monitoring and flight track system to investigate violations of the nighttime weight restriction of Stage 2 business jet aircraft, aircraft noise complaints, and provide general information to the public and airport users upon request. This measure also recommends that the Airport Authority maintain the noise complaint phone number to log aircraft noise complaints and better respond to area residents.

FAA Action: Approved.

Status: The Airport continues to maintain a 24-hour noise complaint telephone number for residents to log complaints. This information is summarized in quarterly noise complaint reports. Additionally, the Airport provides a website with information about the Airport's noise abatement programs and an airport flight tracking interface. The flight tracking interface allows users to track current flights and also provides access to historical flight track information.

2. Monitor implementation of updated Noise Compatibility Program.

Description: This measure recommends that the Airport Authority monitor implementation and compliance with the Noise Abatement Element of the Noise Compatibility Plan through periodic communications with the FAA Airport Traffic Control Tower, airport users, and planning officials of the cities of Burbank and Los Angeles. This measure also recommends that the Airport Authority develop informational and promotional materials explaining the noise abatement program to pilots.

FAA Action: Approved.

Status: The Airport Authority maintains informal communication with the FAA Airport Traffic Control Tower, airport users, and City of Los Angeles' planning officials. Coordination is undertaken on an as-needed basis to address specific concerns or operational changes. The Airport Authority maintains more formal communication with the City of Burbank through a joint land use planning committee, referred to as the Airport Land Use Working Group (ALUWG) with members representing the City of Burbank and the Airport

Authority. The Airport Authority also produces noise abatement program materials for pilots which are available online and in printed brochures.

3. Update Noise Exposure Maps and Noise Compatibility Program.

Description: This measure recommends that the Airport Authority review the Noise Exposure Maps and the Noise Compatibility Program, and consider revisions and refinements as necessary.

FAA Action: Approved.

Status: The 1998 Noise Exposure Map document is currently being updated.

4. Expand noise monitoring system.

Description: This measure recommends that the Airport Authority expand the existing noise monitoring system by installing up to three additional permanent noise monitors.

FAA Action: Approved.

Status: Noise monitoring system is in the process of being upgraded. The new monitoring system is anticipated to be active in 2012.

5. Enhance Airport Authority's geographic information system.

Description: This measure recommends that the Airport Authority expand its geographic information system (GIS) to include all areas within the updated noise exposure contours. The GIS provides a detailed tool for managing the progress of the acoustical treatment program, tracking new development, and computation of an accurate noise impact area with population counts.

FAA Action: Approved.

Status: GIS coverage has been expanded and is used to monitor the status of the acoustical treatment program.

6. Maintain log of nighttime runway use and operations by aircraft type.

Description: This measure recommends that the Airport Authority standardize its nighttime operations log recording the date, time, aircraft identification number, aircraft type, operations type, runway used, and weather information for each operation.

FAA Action: Approved.

Status: The Airport's flight track monitoring system includes an operations log to provide descriptive information for operations on a 24-hour basis.

Appendix C

NOISE RULES

Appendix C
NOISE RULES

This appendix includes the Noise Rules adopted for Bob Hope Airport as amended on April 1, 2006.

To further compliance with the state noise regulations and all other applicable laws and agreements, the Airport Authority requires (to the extent that such requirements shall not conflict with pilot's judgment of safety in flight) that:

Rule 1 – All subsonic transport category airplanes and all subsonic turbojet-powered airplanes regardless of category operating at the Burbank Airport shall be in compliance with all Federal Air Regulations respecting noise, as the same may be amended from time to time.

Rule 2 – Each air carrier jet operator shall implement appropriate FAA approved takeoff and arrival procedures consistent with the standards of Case 9A as contained in the Final Environmental Impact Statement approved by FAA on September 12, 1977.

Rule 3 – All other jet operators shall use the National Business Aircraft Association's noise abatement procedures established January 1978.

Rule 4 – Each air carrier that operates, for any reason, after 10:00 p.m. or before 7:00 a.m. shall pay the full amount of any costs charged to or incurred by the Authority for maintaining the crash rescue service on duty.

Rule 5 – *Repealed* February 24, 1986.

Rule 6 – Each aircraft operator and maintenance and repair facility shall adhere to the Authority Engine Test Run Up Policy as contained in the Airport Operations Manual, as the same may be amended from time to time.

Rule 7 –

1. No air carrier shall: (1) inaugurate any operations; (2) implement any increase in operations or weighted operations; (3) substitute aircraft types producing higher noise levels for aircraft already in service (except on a temporary basis because of emergency maintenance, weather, payload, or other unanticipated conditions beyond the carrier's control); or (4) substitute aircraft which do not comply with the Stage 3 requirements of FAR Part 36 for aircraft which meet those requirements (except on a temporary basis because of emergency maintenance, weather, payload, or other unanticipated conditions beyond the carrier's control) without having first obtained the written approval of the Commission, which approval shall not be granted except upon a determination by the Commission that such proposed operations or increase will not result in or contribute to an increase in the noise impact area of the Airport from all aircraft operations based on the annual CNEL of 70 for the period ending June 30, 1978.
2. As used herein, the term "operations" shall mean takeoffs and landings other than emergency procedures or takeoffs or landings resulting from the use of the Airport as weather alternate. The term "weighted operations" shall mean operations weighted on the basis of time of occurrence as provided in Section 5006 of the California Noise Standards, 21 Cal. Admin. Code Section 5000 et. seq. As used herein, noise levels are defined as sound exposure levels measured at, or calculated for, Airport noise monitor system positions.
3. Any air carrier desiring to: (1) inaugurate any operations; (2) implement any increase in operations or weighted operations; (3) substitute aircraft types producing higher noise levels for aircraft types already in service (except on a temporary basis because of emergency maintenance, weather, payload, or other unanticipated conditions beyond the carrier's control); or (4) substitute aircraft which do not comply with the Stage 3 requirements of F.A.R. Part 36 for aircraft which meet those requirements (except on a temporary basis because of emergency maintenance, weather, payload, or other unanticipated conditions beyond the carrier's control) pursuant to Part (A) hereof shall, not less than 30 days prior to the proposed effective date of such service apply in writing for permission to the Airport Operations Committee. Such application shall include information as to the nature of the proposed operations or increase, and the projected effect thereof on the Airport's June 30, 1978, noise impact area and other material which the applicant air carrier wishes to bring to the attention of the Operations Committee. Upon review of the application and such other information as it deems appropriate, the Operations Committee shall recommend to the Commission that it grant or deny the permission requested, or any portion thereof. The Commission shall consider the recommendation of the Operations Committee, together with any other

additional information which the applicant air carrier desires to present to it, and act thereon at its next regularly scheduled meeting.

4. The Commission may approve an application, in whole or in part, for a period not to exceed one year from the commencement of such approved operations or weighted operations. Any air carrier desiring to continue such operations or weighted operations beyond said period shall have the burden of demonstrating to the Commission prior to the expiration thereof that such increase did not result in or contribute to an increase in the Airport's June 30, 1978, noise impact area.
5. Any air carrier violating the provision of this Rule may, in the discretion of the Commission and in addition to any other remedies, including injunctive remedies available, be subject to civil penalties in the amount of One Thousand Dollars ($1,000) for each operation which has not been approved by the Commission pursuant to the provisions of this Rule.

Rule 8 –

A - Between the hours of 10:00 p.m. and 7:00 a.m.:

1. No intersection takeoffs shall be permitted;
2. No maintenance engine run-ups shall be permitted, unless a delay of such maintenance engine run-up would cause an aircraft to arrive and/or depart after 10:00 p.m. in the succeeding 24-hour period;
3. No flight training operations, including practice instrument approaches and touch-and-go operations, shall be permitted.

B - Any pilot in command or maintenance facility violating the provisions of these Rules may, in the discretion of the Commission, and in addition to other remedies (including injunctive remedies) available, be subject to civil penalties for each violation of this Rule as follows:

1. For the first violation, One Thousand Three Hundred Thirty-five Dollars ($1,335);
2. For subsequent violations, One Thousand Nine Hundred Forty-one Dollars ($1,941).

Rule 9 –

A - Except as provided in Parts (B) and (C) hereof, no aircraft may land at or take off from the Burbank-Glendale-Pasadena Airport between the hours of 10:00 p.m. and 7:00 a.m.

B - The following aircraft shall be permitted to land at and take off from the Burbank-Glendale-Pasadena Airport between the hours of 10:00 p.m. and 7:00 a.m.:

1. Public aircraft, military aircraft, aircraft owned or operated by the armed forces of the United States, and aircraft operated in support of military operations.
2. Aircraft operated by commercial air carriers whose schedules comply with Rule 7 of these Rules and Regulations.
3. Aircraft, other than those listed in FAA Advisory Circular 36-1B or 36-2A, whose total rated maximum brake or shaft horsepower is 200 or less.
4. Propeller-driven aircraft whose certificated takeoff weights are 12,500 pounds or less and whose measured or estimated flyover noise levels, as contained in FAA Advisory Circular 36-1B or 36-2A (as said Advisory Circulars may be revised, supplemented, or replaced from time to time), are equal to or less than 85.6 dBA.

5. Aircraft whose estimated sideline noise levels, as set forth in FAA Advisory Circular 36-3 (or in any revision, supplement, or replacement thereof listing sideline noise levels), are equal to or less than:

   a - for aircraft whose noise levels have been determined at a sideline distance of 450 meters, 82.2 dBA;

   b - for aircraft whose noise levels have been determined at a sideline distance of 0.25 nautical miles, 82 dBA;

   c - for four-engine aircraft whose noise levels have been determined at a sideline distance of 0.35 nautical miles, 79.1 dBA.

6. Aircraft whose maximum noise levels, under normal operating conditions and procedures, have been determined by the Airport Authority, upon a showing by the aircraft manufacturer or operator, are equal to or less than either:

   a - when measured or estimated at a sideline distance of 450 meters, 0.25 nautical miles, or 0.35 nautical miles pursuant to F.A.R. Part 36 Appendix C, 82.2 dBA, 82 dBA, or 79.1 dBA, as applicable, respectively, or

   b - when measured or estimated at a flyover altitude of 1,000 feet pursuant to F.A.R. Part 36 Appendix F, 85.6 dBA.

   c - Aircraft other than those specified in Paragraph (B) shall be permitted to land at or take off from the Burbank-Glendale-Pasadena Airport between the hours of 10:00 p.m. and 7:00 a.m. only under the following circumstances:

   1. in the event such landing and/or takeoff results from the existence of a declared emergency;
   2. in the event such landing and/or takeoff results from the use of the airport as a weather alternate;
   3. in the event such landing and/or takeoff results from a weather, mechanical, or air traffic control delay; provided, however, that this exception shall not authorize any landing or takeoff between the hours of 11:00 p.m. and 7:00 a.m.

   d - Upon the request of the Airport Authority, the aircraft operator or pilot in command shall document or demonstrate the precise emergency conditions resulting in a landing and/or takeoff between the hours of 10:00 p.m. and 7:00 a.m. or the precise weather, mechanical, or air traffic control conditions resulting in a landing and/or takeoff between the hours of 10:00 p.m. and 11:00 p.m.

   e - Any aircraft operator or pilot in command violating the provisions of this Rule may, in the discretion of the Commission, and in addition to any other remedies (including injunctive remedies) available, be subject to civil penalties in the amount of Three Thousand Eight Hundred Eighty-three Dollars ($3,883) for each unauthorized landing and each unauthorized takeoff.

Jet Aircraft Approved For Operation 24 Hours A Day

Manufacturer	Model (s)
British Aerospace	BAe 125-700 and 800 Hawker Jet with Garrett TFE 731 engines*
Canadair Ltd.	Challenger Series Global Express
Cessna	Citation Series
Dassault	Falcon Series, all except F-20 with other than Garrett TFE731 engines
Learjet	30 Series 40 Series 50 Series 60 Series
Gulfstream**	G4 G5
Israel Aircraft Industries	1124 Westwind 1125 Astra
Lockheed	Jetstar 731 Jetstar II 1329-25
Beechcraft	Model 400 Beechjet Diamond I, II
Sabreliner	NA 265-65 Series NA 265-75 Series NA 265-with Garrett TFE 731 Engines

* This aircraft has had several designations: DH125; BH125. Early models with RR Viper engines do not comply.

** Special provisions for other Gulfstream Models: G2, G2B, and G3. The G2B and G3 may be operated provided manufacturer's "Quiet Flying Procedures" are utilized and the gross weight of 55,500 pounds is not exceeded. Model G2 with "Hush Kit" or conical nozzles. May be operated provided manufacturer's "Quiet Flying Procedures" are utilized and the gross weight of 47,000 pounds is not exceeded.

Rule 10 –

A - Except as provided in Parts (B) and (C) hereof, no aircraft operating pursuant to an Operating Certificate issued by the Federal Aviation Administration may land at or take off from the Burbank-Glendale-Pasadena Airport.

B - The following aircraft operated pursuant to an Operating Certificate issued by the Federal Aviation Administration shall, subject to all other applicable Rules and Regulations, be permitted to land at and take off from the Burbank-Glendale-Pasadena Airport:

1. Transport category large airplanes and turbojet powered airplanes certificated under F.A.R. Part 36 or ICAO Annex 16 whose certificated sideline noise levels are equal to or less than:

a - for aircraft whose certificated noise levels have been determined at a sideline distance of 0.25 nautical miles, 105.0 effective perceived noise decibels;

b - for aircraft whose certificated noise levels have been determined at a sideline distance of 450 meters, 105.1 effective perceived noise decibels;

c - for four-engine aircraft whose certificated noise levels have been determined at a sideline distance of 0.35 nautical miles, 103.5 effective perceived noise decibels.

2. Aircraft whose average sound exposure levels (SEL) on takeoff from Runway 15, under normal operating conditions and procedures, as measured at Airport Monitoring Stations 1, 2, and 3, are equal to or less than 104.5 dB, determined as follows:

a - for aircraft types regularly operating at the Airport during the year ending June 30, 1981, the average level shall be determined from the energy average of the SEL values measured at Monitoring Stations 1, 2, and 3 during April, May, and June, 1981;

b - for aircraft types not regularly operating at the Airport during the year ending June 30, 1981, the aircraft operator shall submit estimates of the energy average SEL values expected at Monitoring Stations 1, 2, and 3, accompanied by noise level and takeoff performance calculations sufficient to show the basis for obtaining the estimates. Where the average combined noise level estimates fall within the range of 101.5 to 104.5 dB, the Airport shall have the option of allowing the aircraft to operate at the Airport for a demonstration period of 90 days. The noise levels measured at Stations 1, 2, and 3 during this 90-day demonstration period shall be the basis for determining whether or not the aircraft meets the noise limits under this Part. The permission granted under this Part (B) (3) (b) shall continue only for so long as the approved aircraft continues to be operated at an average combined noise level at or below 104.5 dB as set forth above.

c - Aircraft operated pursuant to an Operating Certificate issued by the Federal Aviation Administration, whose noise levels exceed the limits specified in Part (B) shall be permitted to land at and take off from the Burbank-Glendale-Pasadena Airport only under the following circumstances:

1. in the event such landing and takeoff results from the existence of a declared emergency;
2. in the event such landing and takeoff results from use of the Airport as a weather alternative; or
3. in the event such landing and takeoff occurs in connection with FAA certificated maintenance, repair, and modification.

d - Upon request of the Airport Authority, the aircraft operator or pilot in command shall document or demonstrate the precise emergency conditions or FAA certificated maintenance, repair, or modification resulting in the landing and takeoff of an aircraft whose noise levels exceed those set forth in Part (B) above.

e - Any aircraft operator or pilot in command violating the provisions of this Rule may, in the discretion of the Commission, and in addition to any other remedies (including injunctive remedies) available, be subject to civil penalties in the amount of One Thousand Dollars ($1,000) for each unauthorized landing and takeoff.

Rule 11 –

Subject to the provisions of Rule 7 of these Rules and Regulations:

A - No air carrier shall inaugurate or reinstitute scheduled turbojet operations at the Burbank-Glendale-Pasadena Airport ("the Airport"), except as provided in Part C below, unless all turbojet operations of that carrier are to be conducted solely with aircraft which comply with the noise level criteria of F.A.R. Part 36 Stage 3 (Section C36.5 (a) (3) of Appendix C), as the same may be revised, supplemented, or replaced from time to time ("Stage 3 aircraft").

B - Each air carrier that has continuously provided scheduled passenger service at the Airport using non-Stage 3 aircraft since March 1, 1982, shall:

1. Utilize only Stage 3 aircraft in increases in its scheduled turbojet operations above the number of such operations in effect on June 30, 1982;
2. Conduct at least twenty-five percent (25%) of its scheduled turbojet operations with Stage 3 aircraft until March 31, 1986;
3. From April 1, 1986, to March 31, 1987, conduct at least fifty percent (50%) of its scheduled turbojet operations with Stage 3 aircraft.

C - Air carriers seeking to inaugurate or reinstitute scheduled passenger operations at the Airport between the effective date of this Rule and March 31, 1987, will be permitted to make use of non-Stage 3 aircraft to the extent such aircraft may be used during that period by air carriers that have continuously utilized such aircraft at the Airport in scheduled passenger service since March 1, 1982, if the air carrier seeking to inaugurate or reinstitute scheduled passenger service demonstrates that the non-Stage 3 aircraft sought to be utilized will produce, at the average gross weight reasonably expected in operations at the Airport, an energy average Sound Exposure Level ("SEL") no greater than 98 decibels at Airport Monitoring Stations 1, 2, and 3 for departures on Runway 15 and no greater than 93 decibels at Station 9 for arrivals on Runway 7.

D - After March 31, 1987, each air carrier providing scheduled passenger service at the Airport shall conduct one hundred percent (100%) of its scheduled turbojet operations with Stage 3 aircraft.

E- Air carriers may substitute higher noise level aircraft in operations required to be flown with lower noise level aircraft only if the required lower noise level aircraft is removed from service on a temporary basis for unanticipated conditions beyond the carrier's control, but only for so long as is necessary to correct such unanticipated conditions.

F - Each scheduled air carrier shall demonstrate, in writing, its intention and ability to fulfill the requirements of the Rule not less than 30 days prior to the commencement (including reinstitution) of scheduled passenger service or any proposed increase in operations at the Airport. Each such air carrier shall also, upon request of the Authority, provide written documentation of the reasons for and duration of any substitution of aircraft pursuant to Part E hereof.

G - Each scheduled air carrier violating the provisions of this Rule may, in the discretion of the Commission, and in addition to the other remedies (including injunctive remedies) available, be subject to civil penalties in the amount of Ten Thousand Dollars ($10,000) for each day on which operations are conducted in violation of the provisions of this Rule.

Rule 12 – In the event one or more clauses, sections, or provisions of these Rules shall be held to be unlawful, invalid, or unenforceable, the remainder of such Rule (or Rules) shall not be affected thereby.

Enforcement

The following procedures shall govern the enforcement of the Noise Abatement Rules.

1 - Alleged violations of the Noise Abatement Rules shall be investigated by the Environmental Operations Manager or such other airport staff member as the Executive Director may designate.

2 - In each instance of a potential violation identified by the Environmental Operations Manager, the Environmental Operations Manager shall notify the owner or operator of the aircraft in question. In the case of potential violations of Rules 8 or 9, or in any other instance in which a violation, if confirmed, would result in the imposition of a monetary fine or operational restriction, such notice shall be in writing and shall be delivered by certified mail or other form of registered delivery. Such written notice shall specify the nature of the alleged violation, the time, date and location of its occurrence, the rule allegedly violated, and shall include a copy or description of these enforcement procedures.

3 - The owner or operator shall have fifteen (15) business days from the date of such notice to: pay the proposed fine; contest in writing the finding of a violation; or request in writing an informal conference with the Director, Environmental and Safety Programs ("Director"). The Director shall, based upon information received in writing or through an informal conference, determine whether a violation has occurred and shall promptly give written notice of such determination to the owner or operator.

4 - The owner or operator shall have ten (10) business days from the date of such notice of determination to appeal the determination of the Director to the Authority's Operations Committee. Such appeal shall be in writing, submitted to the Environmental Operations Manager, and shall set forth all information the owner or operator believes necessary to support such appeal. The Operations Committee shall have the discretion to request further information from the owner or operator, either in writing or in person, and may affirm, overrule or modify the determination of the Director. The Operations Committee shall give written notice of its decision to the owner or operator.

5 - The owner or operator may, within ten (10) business days of the date of the notice of decision of the Operations Committee, appeal that decision to the full Airport Authority

Commission, by submitting a notice of appeal, together with such written information as it deems appropriate, to the Environmental Operations Manager. The Commission may request further information from the owner or operator, either in writing or in person, and may affirm, overrule, or modify the decision of the Operations Committee. The Commission shall give written notice of its decision to the owner or operator.

Appendix D

ZONING ORDINANCE SUMMARY

Appendix D
ZONING ORDINANCE SUMMARY

Bob Hope Airport

This appendix includes a summary of the City of Burbank and City of Los Angeles Zoning Ordinances. For the purposes of this project, the zoning districts have been generalized to provide a uniform display of the zoning districts from the communities affected by Bob Hope Airport air traffic. **Table D1** presents the generalized zoning districts for this project.

TABLE D1
Classification of Zoning Districts

Generalized Zoning Category	City of Burbank	City of Los Angeles
Agricultural	None	A, RA
Single Family Residential	MDR-4, R-1-H, R-1	RE, RS, R1, RU, RZ, RW1
Multi-Family Residential	MDR-5, MDR-3, R-5, R-3, R-4, R-2	R2, RD, RMP, RW2, R3, RAS3, R4, RAS4, R5
Public Facilities	None	PF
Open Space	CEM, OS	OS
Commercial	AD, BCC-3, BCC-2, BCCM, BCC-1, C-3, C-2, C-4, CR, GO, MPC-1, MPC-3, MPC-2, MDC-4, MDC-3, MDC-2, NB, PD, RBP, RC	CR, C1, C1.5 C2, C4, C5, CW, ADP, LASED, WC
Industrial, Transportation	AP, M-2, M-1, MDM-1, RR	CM, MR, CCS, M1, M2, LAX, M3, SL, P, PB

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The City of Burbank has adopted the following zoning districts for parcels within the project detailed study area. Permitted uses within each of these districts are outlined in the attached City of Burbank Zoning Use List.

AD - Auto Dealership
AP - Airport
BCC-1 - Burbank Center Commercial Retail Professional
BCC-2 - Burbank Center Commercial Limited Business
BCC-3 - Burbank Center Commercial General Business
BCCM - Burbank Center Commercial Manufacturing
C-2 - Commercial Limited Business
C-3 - Commercial General Business
C-4 - Commercial Unlimited Business
CEM - Cemetery
CR - Commercial-Recreational
GO - General Office
M-1 - Manufacturing Limited Industries
M-2 - Manufacturing General Industries
MDC-2 - Media District Limited Commercial
MDC-3 - Media District General Business
MDC-4 - Media District Commercial/Media Production
MDM-1 - Media District Industrial
MDR-3 - Media District Residential Multiple Low Density
MDR-4 - Media District Residential Medium Density
MDR-5 - Media District Residential Multiple High Density
MPC-1 - Magnolia Park Commercial Retail-Professional
MPC-2 - Magnolia Park Limited Business
MPC-3 - Magnolia Park General Business
NB - Neighborhood Business
OS - Open Space
PD - Planned Development
R-1 - Residential Single Family
R-1-H - Residential Single Family Horse Keeping
R-2 - Residential Two-Family
R-3 - Residential Multiple Low Density
R-4 - Residential Multiple Medium Density
R-5 - Residential Multiple High Density
RBP - Rancho Business Park
RC - Rancho Commercial
RR - Railroad

The City of Los Angeles has adopted the following zoning districts within the project detailed study area. Permitted uses within each of these districts are outlined in the attached City of Los Angeles Generalized Summary of Zoning Regulations.

A - Suburban Agriculture
ADP - Commercial
C1 - Commercial
C1.5 - Commercial
C2 - Commercial
C4 - Commercial
C5 - Commercial
CCS - Manufacturing
CM - Manufacturing
CR - Commercial
CW - Commercial
LASED - Commercial
LAX - Manufacturing
M1 - Manufacturing
M2 - Manufacturing
M3 - Manufacturing
MR - Manufacturing
OS - Open Space
P - Parking
PB - Parking
PF - Public Facilities
R1 - Single Family Residential
R2 - Multiple Family Residential
R3 - Multiple Family Residential
R4 - Multiple Family Residential
R5 - Multiple Family Residential
RA - Suburban Agriculture
RAS3 - Multiple Family Residential
RAS4 - Multiple Family Residential
RD - Multiple Family Residential
RE - Single Family Residential
RMP - Multiple Family Residential
RS - Single Family Residential
RU - Single Family Residential
RW1 - Single Family Residential
RW2 - Multiple Family Residential
RZ - Single Family Residential
SL - Manufacturing
WC - Commercial

CITY OF BURBANK ZONING ORDINANCE SUMMARY

Last Revised by Ordinance No. 3817, Effective 10-14-11

P = permitted
(blank) =prohibited
[PRH] = prohibited if residentially adjacent as defined in 10-1-203

CUP = Conditional Use Permit required
[CUP] = CUP required if residentially adjacent as defined in 10-1-203

AUP = Administrative Use Permit required
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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
RESIDENTIAL AND LODGING																									
Convalescent home	CUP	CUP	CUP	CUP			CUP	CUP	CUP		CUP					CUP	CUP	CUP		CUP	CUP		CUP	CUP	
Emergency Shelter				CUP	P													CUP							
Hotel - including incidental commercial uses	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP	CUP	P [CUP]	P [CUP]						P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP		CUP	CUP	
Motel	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP	CUP	P [CUP]	P [CUP]						P [CUP]	P [CUP]	P [CUP]	P [CUP]		CUP	CUP		CUP	CUP	
Residential above commercial use	CUP	CUP	CUP				CUP	CUP	CUP						CUP	CUP	CUP		CUP	CUP	CUP				
Residential only (pursuant to the Burbank Center Plan)																	P								
Sober Living Facility	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]										P [CUP]	P [CUP]	P [CUP]	P [CUP]							
PUBLIC AND SEMI-PUBLIC FACILITIES																									
Cemetery and related uses, structures, buildings, including on-site business signs[1]																									
Fire station	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]				CUP		P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP		CUP	CUP	
Library - municipal	P	P	P				P	P	P			P	CUP		P	P	P	P	P	P	P				
Park & recreational facility -municipal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Police Station - private or municipal, including dispatch/administration	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]		P [CUP]	P [CUP]	P [CUP]		CUP	CUP		CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP				
Post office	P	P	P	P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		CUP	CUP	
Public facility																						CUP			
Public utility facility	P	P	P	P	P		P	P	P				CUP		P	P	P	P	P	P	P			CUP	
Temporary Aid Center	CUP	CUP	CUP	CUP	P		CUP	CUP	CUP							CUP	CUP	CUP		CUP	CUP				
Wildlife preserve and sanctuaries																						P			
RECREATION, EDUCATION, AND ASSEMBLY																									
Amusement enterprise							CUP	P [CUP]	P [CUP]						CUP	CUP	CUP	P [CUP]							
Amusement enterprise - in c.e.b.	CUP	P	P	CUP	CUP							CUP	P						CUP	P	P				
Arcade - pursuant to 10-1-1115	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]										P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP		CUP	CUP	
Archery range				CUP	P [CUP]			CUP	CUP									P [CUP]		CUP	CUP		CUP	CUP	
Archery range - in c.e.b.		CUP	CUP										P												
Art gallery	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Auditorium, labor union meeting hall, lodge hall	P [CUP]	P [CUP]	P [CUP]				P [CUP]	P [CUP]	P [CUP]			P [CUP]	P [CUP]		P [CUP]	P [CUP]	P [CUP]	P [CUP]		CUP	CUP				

[1] PERMITTED IN CEMETERY ZONE ONLY

P = permitted
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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Automobile maneuvering event - auto & cycle racing				P [CUP]	P [CUP]																		CUP	CUP	
Batting cages		CUP	CUP										CUP					CUP							
Billiard parlor	CUP	CUP	CUP	CUP	CUP		CUP	CUP	CUP			CUP	CUP		CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	
Bowling alley		CUP	CUP	P	P			CUP	CUP				P				CUP	CUP					CUP	CUP	
Boxing arena - in c.e.b.		CUP	CUP										CUP				CUP	CUP							
Carnival or circus		CUP	CUP	P [CUP]	P [CUP]								CUP				CUP	CUP					CUP	CUP	
Church	P	P	P				CUP	P	P	P	P	P			P	P	P	P	P	P	P				
Club - nonprofit	P	P	P				P	P	P			P	P	P		P	P	P	CUP	P	P				
Dance hall - in c.e.b.	P [CUP]	P [CUP]	P [CUP]				CUP	CUP	CUP			CUP	P [CUP]		CUP	CUP	CUP	CUP	CUP	CUP	CUP				
Equestrian show													CUP												
Golf course/driving range				P	P								CUP					P				P	CUP	CUP	
Golf course - miniature	CUP	P	P										P				CUP	P							
Gymnasium - c.e.b.	P	P	P	P	P		P	P	P		CUP	P	P		CUP	P	P	P					CUP	CUP	
Handball courts	CUP	CUP	CUP	P	P		CUP	CUP	CUP			P	P					P		CUP	CUP	CUP	CUP	CUP	
Library	P	P	P				P	P	P				CUP		P	P	P	P	P	P	P				
Museum	P	P	P				P	P	P			P	P		P	P	P	P	P	P	P				
Nightclub, pursuant to 10-1-1116	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	CUP		CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	
Personal or Physical Arts Studios	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	CUP	P	P		CUP	CUP	
Racquetball courts	CUP	CUP	CUP	P	P		CUP	CUP	CUP			P	P					P		CUP	CUP	CUP	CUP	CUP	
Recreation related commercial																						CUP			
Riding academy													CUP												
Schools - public or private	P [AUP]	P [AUP]	P [AUP]				P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	AUP	AUP	AUP				
School - public or private (existing before Jan. 1, 1991)						P																			
Shooting gallery/range		CUP	CUP	CUP	CUP												CUP	CUP					CUP	CUP	
Shooting gallery/range - c.e.b.													CUP												
Skating rink - ice or roller				CUP	CUP		CUP	CUP	CUP														CUP	CUP	
Skating rink - ice or roller - in c.e.b.	CUP	P	P										P					P		CUP	CUP				
Sports Arena/athletic field				CUP	CUP								CUP										CUP	CUP	
Swimming pool - commercial	CUP	P	P				CUP	CUP	CUP				P			CUP	P	P		CUP	CUP				
Tennis court													CUP							CUP	CUP	P			
Theater - drive-in			CUP	CUP	P [CUP]																		CUP	CUP	
Theater - not drive-in	P	P	P				CUP	P	P			P	P		P	P	P	P	CUP	CUP	CUP				
Theater, outdoor							CUP	CUP	CUP				CUP		CUP	CUP	CUP	CUP				CUP			

RETAIL SALES AND DINING

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[PRH] = prohibited if residentially adjacent as defined in 10-1-203

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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Adult business - pursuant to Section 10-1-1120 and Title 3, Chapter 3, Article 9					P [PRH][2]													P [PRH][2]					P[3] [PRH][2]		
Alcoholic beverages - Sale and consumption on or off premises pursuant to Section 10-1-1116	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	
Antique shop	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Appliance store	P	P	P				P	P	P						P	P	P	P	P	P	P				
Appliance store - limited to 15,000 sq. ft.												P													
Art shop	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Awning shop	CUP	P	P							P		P		P		CUP	CUP	P		CUP	CUP				
Bakery	P	P	P				P	P	P	P		P	P	P	P	P	P	P	P	P	P				
Bakery - wholesale		CUP	P [CUP]	P [CUP]	P [CUP]																		CUP	CUP	
Beauty supply store	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Bicycle and mini-bike sales/incidental repair	P	P	P				P	P	P	P		P	P	P	P	P	P	P	P	P	P				
Boat dealer	CUP	P	P	P	P											CUP	CUP	P			CUP		CUP	CUP	
Book store	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Building material sales				P [CUP]	P [CUP]													CUP					CUP	CUP	
Building material sales - in c.e.b.			CUP															CUP							
Burglar alarm sales or service (not incl. automobile alarm systems)	CUP	P	P							P	P	P		P		CUP		P		CUP	CUP				
Butcher shop - no slaughtering	P	P	P				P	P	P	P		P		P		P	P		P	P	P				
Camera shop - incidental film developing	P	P	P				P	P	P	P		P	P	P	P	P	P	P	P	P	P				
Clothing store	P	P	P				P	P	P	P		P	P	P	P	P	P	P	P	P	P				
Cocktail lounge/bar pursuant to 10-1-1116	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	CUP		CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	
Department store	P	P	P				P	P	P			CUP			P	P	P	P	P	P	P				
Drapery shop	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Drugstore	P	P	P				P	P	P			P		P	P	P	P	P	P	P	P				
Feed store		CUP	P							P		P	P	P				P			CUP				
Fish market - wholesale		CUP	P [CUP]	P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Florist shop	P	P	P				P	P	P	P	P	P		P	P	P	P	P	P	P	P				
Food specialty store	P	P	P				P	P	P	P[4]	P[4]	P[4]	P[4]	P[4]	P	P	P	P	P	P	P				
Hardware store	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Home Center			CUP	CUP	CUP													CUP		CUP	CUP				
Ice machine	P	P	P				CUP	P	P								P	P		P	P				
Market, convenience	P	P	P				P	P	P							P	P	P	CUP	P	P				
Market, neighborhood	P	P	P				P	P	P			CUP				P	P	P	CUP	P	P				
Market, super	P	P	P				P	P	P							P	P	P	CUP	P	P				

[2] PURSUANT TO SECTION 10-1-1120
[3] PROHIBITED IN PUBLIC AIRPORT FACILITY
[4] NOT TO EXCEED 8,000 SQUARE FEET

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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Newsstand	P [CUP]	P [CUP]	P [CUP]				P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]					CUP	CUP	CUP				
Newsstand in c.e.b.	P	P	P				P	P	P	P	P	P	P	P					P	P	P				
Nursery - plant		CUP	P	P	P					CUP				CUP				P		CUP	CUP		CUP	CUP	
Pet shop - including grooming	CUP	P	P				P	P	P	P		P		P		CUP	P	P	CUP	P	P				
Pet shop - sales only	P																		P	P	P				
Pawn shop		CUP	CUP					CUP	CUP									CUP			CUP				
Picture frame store	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Playlot, outdoor - in conjunction with eating establishment	CUP	CUP	CUP	CUP	CUP								CUP		CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	
Restaurant, Full Service	P	P	P	P	P	P	P	P	P		P[5]	P	P	P	P	P	P	P	AUP	AUP	AUP		CUP	CUP	
Restaurant, Fast Service	P	P	P	P	P	P	P	P	P		P[5]	P	P	P	P	P	P	P	AUP	AUP	AUP		CUP	CUP	
Restaurant, Downtown pursuant to Section 10-1-1407.1															AUP	AUP									
Restaurant / Drinking Establishment (Section 10-1-1116)	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP[5]	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP	CUP		CUP	CUP	
Restaurant with incidental alcohol (Section 10-1-1116)	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]		P[5] [CUP][5]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP		CUP	CUP	
Restaurant with drive-through (Section 10-1-1608)	CUP	CUP	CUP	CUP	CUP		CUP	CUP	CUP											CUP	CUP		CUP	CUP	
Retail store/sales	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Secondhand store	CUP	P	P				CUP	P	P							CUP	P	P	P	P	P				
Shopping center	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		CUP		
Thrift Store		P	P														P	P			CUP				
Wholesale business	CUP	P	P	P	P											CUP	P	P		CUP	CUP		CUP	CUP	
Wholesale business - no warehousing											P	P		P											
Wholesale business - incidental to retail sales	P	P	P				P	P	P	P		P		P	CUP	P	P	P	CUP	P	P				
PROFESSIONAL OFFICES AND SERVICES																									
Animal grooming	CUP	P	P				P	P	P	P		P		P		CUP	P	P	CUP	P	P				
Animal hospital		CUP	CUP	P [CUP]	P [CUP]									CUP				CUP		CUP	CUP		CUP	CUP	
Animal hospital - overnight care, no boarding		P [CUP]	P [CUP]							CUP						CUP	CUP	P [CUP]							
Appliance repair - incidental sales	P	P	P				P	P	P	P				P		P	P	P	P	P	P				
Auction - in c.e.b.	P	P	P												CUP	CUP	CUP	P		CUP	CUP				
Automated teller machine (Freestanding)	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	CUP	CUP	CUP		CUP	CUP	
Bail bond broker	P [PRH]	P [PRH]	P [PRH]	P [PRH]	P [PRH]										P [PRH]	P [PRH]	P [PRH]	P [PRH]			CUP		CUP [PRH]	CUP [PRH]	
Bank	P	P	P	P	P		P	P	P			P			P	P	P	P	P	P	P		CUP	CUP	
Barber shop	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				

[5] AUP REQUIRED IF WITHIN 150 FEET OF RESIDENTIALLY ZONED PROPERTY AND LESS THAN 3.3 PARKING SPACES PER 1,000 SQUARE FEET OF ADJUSTED GROSS FLOOR AREA

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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Beauty salon	P	P	P				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Blacksmith shop				P [CUP]	P [CUP]																		CUP	CUP	
Blacksmith - horse shoeing only														P											
Blueprinting	CUP	P	P	P	P		CUP	P	P		P			P		CUP	P	P		CUP	CUP		CUP	CUP	
Bookbinding	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]		CUP	CUP	CUP			P [CUP]		P [CUP]		CUP	P [CUP]	P [CUP]		CUP	CUP		CUP	CUP	
Catering services	CUP	P	P					CUP	P			P		P		CUP	P	P		CUP	CUP				
Child day care facility	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P [AUP]	P	P [AUP]	P [AUP]	P [AUP]	AUP	AUP	AUP		CUP	CUP	
Computer service center	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Dressmaking shop	P	P	P				P	P	P	P		P		P	P	P	P	P	P	P	P				
Dry cleaning agency - no on-site dry cleaning	P									P	P		P			P	P	P	P	P	P				
Dry cleaners	CUP	P [CUP]	P [CUP]				P [CUP]	P [CUP]	P [CUP]			P [CUP]					P [CUP]	P [CUP]		CUP	CUP				
Dry cleaning plant		CUP	CUP	P [CUP]	P [CUP]			CUP	CUP					CUP			CUP	CUP					CUP	CUP	
Electric or electronic equipment or appliances repair - incidental sales	P	P	P				P	P	P	P		P		P	CUP	P	P	P	P	P	P				
Employment agency	P	P	P	P	P		P	P	P		P	P			P	P	P	P	P	P	P		CUP	CUP	
Engraver	CUP	P	P				CUP	P	P	P		P		P		CUP	P	P		CUP	CUP				
Equipment rental - light, no trucks - in c.e.b.	CUP	P [CUP]	P [CUP]											P [CUP]			CUP			CUP	CUP				
Fix-it shop	CUP	P	P				CUP	P	P	P		P		P		CUP	P	P	CUP	P	P				
Fortune telling	P	P	P												P	P	P	P	P	P	P				
Frozen food locker rental	CUP	P [CUP]	P [CUP]														CUP	P [CUP]			CUP				
Funeral home	CUP	P	P											P		CUP	P	P		CUP	CUP				
Heating, ventilation and air conditioning equipment sales or service	CUP	P	P											P		CUP	P	P							
Janitorial service	CUP	P	P				CUP	P	P	P	P	P		P		CUP	P	P		CUP	CUP				
Kennel - including housing for caretakers on premises				CUP	P [CUP]																		CUP	CUP	
Laboratory - experimental or research		CUP	P [CUP]	P [CUP]	P [CUP]			CUP	CUP									P [CUP]					CUP	CUP	
Laboratory - film		P [CUP]	P [CUP]	P [CUP]	P [CUP]			CUP	P [CUP]									P [CUP]		CUP	CUP		CUP	CUP	
Laboratory - testing, physical or chemical		CUP	P [CUP]	P [CUP]	P [CUP]			CUP	P [CUP]									P [CUP]					CUP	CUP	
Laundromat	P	P	P				CUP	CUP	CUP			P		P		P	P	P		CUP	P				
Laundry		CUP	CUP	P [CUP]	P [CUP]			CUP	CUP					CUP			CUP	CUP			CUP		CUP	CUP	
Laundry agency -no washing	P	P	P				P	P	P	P	P	P		P		P	P	P	P	P	P				
Massage parlor	CUP	CUP	CUP	CUP	CUP											CUP	CUP	CUP					CUP	CUP	
Messenger service	P [CUP]	P [CUP]	P [CUP]				P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]		P [CUP]	P [CUP]	P [CUP]	P [CUP]	P [CUP]		P	P				

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LAND USE	**C-2**	**C-3**	**C-4**	**M-1**	**M-2**	**MDM-1**	**MDC-2**	**MDC-3**	**MDC-4**	**NB**	**GO**	**RC**	**C-R**	**RBP**	**BCC-1**	**BCC-2**	**BCC-3**	**BCCM**	**MPC-1**	**MPC-2**	**MPC-3**	**OS**	**AP**	**RR**	**AD**
Offices - business, professional, or medical	P	P	P	P	P		P	P	P	P	P	P	P	P	P[6]	P	P	P	P	P	P		CUP	CUP	
Parcel delivery service	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]		CUP	CUP	CUP					P [CUP]		CUP	P [CUP]	P [CUP]		CUP	CUP				
Payroll check cashing service	P	P	P				P	P	P						P	P	P	P	P	P	P				
Pest Control		CUP	CUP	P [CUP]	P [CUP]													CUP			CUP		CUP	CUP	
Photocopy service, with incidental printing	P	P	P				P	P	P	P	P	P		P	P	P	P	P	P	P	P				
Photographer	P	P	P				P	P	P	P	P	P		P	P	P	P	P	P	P	P				
Plumbing Service	CUP	P	P				CUP	P	P	P	P	P		P		CUP	P	P		P	P				
Print shop				P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Print shop except newspaper printing	CUP	P	P				CUP	CUP	CUP	P		P		P		CUP	P	P	CUP	P	P				
Refrigeration installation & service - incidental sales	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]									P [CUP]		CUP	P [CUP]	P [CUP]			CUP		CUP	CUP	
Sexual encounter establishment																									
Shoe repair shop	P	P	P				P	P	P	P		P	CUP		CUP	P	P	P	P	P	P				
Shoe shine shop	P	P	P				CUP	CUP	CUP	P	P	P	P	P	P	P	P	P	P	P	P				
Sign painting shop - in c.e.b.	CUP	P	P				CUP	CUP	CUP					P		CUP	P	P		CUP	CUP				
Stable, commercial - including housing for caretakers on premises				CUP									CUP										CUP		
Taxidermist	CUP	P	P														P	P			CUP				
Ticket agency - incidental use only													P												
Upholstery shop	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]					P [CUP]				P [CUP]		CUP	P [CUP]	P [CUP]		CUP	CUP		CUP	CUP	
Wedding Chapel	P	P	P				P	P	P						CUP	P	P	P	CUP	CUP	CUP				
Welding service - c.e.b.		CUP	P											CUP											
MEDIA SERVICES																									
Editing - film or sound (see also Sound mixing (film/TV) - no seating area - same use restrictions)	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]		P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]			P [AUP][7] [CUP][8]		P [AUP][7] [CUP][8]	CUP	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	P [AUP][7] [CUP][8]	CUP	CUP	CUP				
Film duplication - audio or video	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP				
Film storage/vault - audio or video	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP				
Foley stage (see also Sound effects - same use restrictions)	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP				

6 PERMITTED ON UPPER FLOORS ONLY IF ALONG SAN FERNANDO BLVD FRONTAGE
7 AUP REQUIRED IF WITHIN 150 FEET OF RESIDENTIALLY ZONED PROPERTY AND LESS THAN 3.3 PARKING SPACES PER 1,000 SQUARE FEET OF ADJUSTED GROSS FLOOR AREA
8 CUP REQUIRED IF A "PLACE OF ASSEMBLY" AS DEFINED IN SECTION 10-1-203 IS INCLUDED
9 AUP REQUIRED IF WITHIN 150 FEET OF RESIDENTIALLY ZONED PROPERTY AND LESS THAN 3.3 PARKING SPACES PER 1,000 SQUARE FEET OF ADJUSTED GROSS FLOOR AREA
10 CUP REQUIRED IF A "PLACE OF ASSEMBLY" AS DEFINED IN SECTION 10-1-203 IS INCLUDED

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LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Motion picture studio				CUP	CUP	P [AUP][9] [CUP][10]																	CUP	CUP	
Motion picture studio - no outdoor sets	CUP	P	P				CUP	P	P			CUP		CUP		CUP	P				CUP				
Sound effects (see also Foley stage - same use restrictions)	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP				
Sound mixing (film/TV) - no seating area (see also Editing - film or sound - same use restrictions)	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP				
Sound stage	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]		CUP [PRH]	CUP [PRH]	CUP [PRH]									CUP [PRH]							
Studio - art and graphic arts	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]				P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]				
Studio - broadcasting or recording	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]			P [AUP][9] [CUP][10]		P [AUP][9] [CUP][10]	CUP	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	P [AUP][9] [CUP][10]	CUP	CUP	CUP		CUP	CUP	
Studio - rehearsal - no recording equipment	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]		CUP [PRH]	CUP [PRH]	CUP [PRH]									CUP [PRH]							
MEDICAL AND CARE																									
Ambulance service	CUP	P [CUP]	P [CUP]				CUP	P [CUP]	P [CUP]							CUP	CUP	P [CUP]		CUP	CUP				
Clinic - dental	P	P	P	P	P		P	P	P						CUP	P	P	P	CUP	P	P		CUP	CUP	
Clinic - medical	P	P	P	P	P		P	P	P						CUP	P	P	P	CUP	P	P		CUP	CUP	
Health facilities for inpatients & outpatients-psychiatric care treatment	CUP	CUP	CUP	CUP		CUP	CUP	CUP	CUP							CUP	CUP	CUP			CUP		CUP	CUP	
Hospital (in existence before Jan. 1, 1991)						P																			
Hospital - except animal; with incidental interior commercial uses	CUP	CUP	CUP	CUP		CUP	CUP	CUP	CUP							CUP	CUP	CUP		CUP	CUP		CUP	CUP	
Laboratory - dental or medical	P	P	P	P	P	CUP	P	P	P					P		P	P	P	CUP	P	P		CUP	CUP	
Laboratory - X-ray, treatment, or clinic	P	P	P	P	P		P	P			P			P		P	P	P		CUP	CUP		CUP	CUP	
INDUSTRIAL AND MANUFACTURING																									
Aircraft fabrication, testing, servicing																							P		
Aircraft factory - incl. missile or related manufacturing					P [CUP]																		CUP	CUP	
Animal Processing					P [CUP]																		CUP	CUP	
Custom Manufacturing			CUP	P [CUP]	P [CUP]									CUP				CUP					CUP	CUP	
Electronic home detention program/facility (in accordance with Section 10-1-810)					CUP																		CUP	CUP	

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Hazardous waste facility - eligible off or on site				CUP	CUP													CUP					CUP	CUP	
Heavy equipment rental				P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Heavy Industrial Manufacturing					P [CUP]																		CUP	CUP	
Junkyard					CUP																		CUP	CUP	
Light Industrial Manufacturing			CUP	P [CUP]	P [CUP]													CUP					CUP	CUP	
Moving van & storage yard			P [CUP]	P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Newspaper printing		CUP	P [CUP]	P [CUP]	P [CUP]			CUP	CUP									P [CUP]			CUP		CUP	CUP	
Paint spray booth	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]												CUP	P [CUP]			CUP		CUP	CUP	
Storage facility (public)				P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Warehousing & Storage				P [CUP]	P [CUP]													P					CUP	CUP	
TRANSPORTATION AND COMMUNICATION																									
Advertising signs & structures - Billboards																									
Aircraft landing fields, for aircraft, helicopters, runways, control towers, etc.																							P		
Air passenger facilities																							P		
Bus terminal	P [CUP]	P [CUP]	P [CUP]													CUP	CUP	P [CUP]							
Freight terminal or yard					P [CUP]																		CUP	CUP	
Helistop	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]						CUP [PRH]	CUP [PRH]	CUP [PRH]	CUP [PRH]						CUP [PRH]	
Wireless Telecommunications Facilities pursuant to 10-1-1118	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]	[11]
Railroad uses including freight yards, depot, control towers																								P	
Trucking yard or terminal				P [CUP]	P [CUP]																		CUP	CUP	
VEHICLE RELATED																									
Automobile body or fender repair - in c.e.b.		CUP [PRH]	CUP [PRH]	P [PRH]	P [PRH]													CUP [PRH]					CUP [PRH]	CUP [PRH]	
Automobile dealer - new and used	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]											CUP	CUP	P [CUP]		CUP	CUP		CUP	CUP	

[11] Refer to section 10-1-1118

P = permitted
(blank) =prohibited
[PRH] = prohibited if residentially adjacent as defined in 10-1-203

CUP = Conditional Use Permit required
[CUP] = CUP required if residentially adjacent as defined in 10-1-203

AUP = Administrative Use Permit required
[AUP] = AUP required if residentially adjacent as defined in 10-1-203

LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Automobile dealer - new car sales only (used car sales, automobile repair, retail, & restaurants serving dealership only - incidental thereto)																									P
Automobile detailing		CUP	P [CUP]	P [CUP]	P [CUP]													P [CUP]					CUP	CUP	
Automobile detailing - in c.e.b.	CUP	P															CUP			CUP	CUP				
Automobile painting - in c.e.b.	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]												CUP	P [CUP]			CUP		CUP	CUP	
Automobile parts and accessories - in c.e.b. (incl. audio/alarm systems installation)	CUP	P [CUP]	P [CUP]													P [CUP]	P [CUP]	P [CUP]		CUP	CUP				
Automobile rental	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]		CUP	CUP	P [CUP]								CUP	P [CUP]		CUP	CUP		CUP	CUP	
Automobile repair garage - in c.e.b.	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]											CUP	CUP	P [CUP]		CUP	CUP		CUP	CUP	
Automobile storage yard			CUP [PRH]	P [PRH]	P [PRH]													CUP [PRH]					CUP [PRH]	CUP [PRH]	
Automobile top shop/upholstery - in c.e.b.	CUP	P [CUP]	P [CUP]														CUP	P [CUP]		CUP	CUP				
Automobile towing	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]													P [CUP]			CUP		CUP	CUP	
Automobile wrecking yard					CUP [PRH]																		CUP [PRH]	CUP [PRH]	
Automobile service station	CUP	CUP	CUP	P [CUP]	P [CUP]		CUP	CUP	CUP	CUP						CUP	CUP	P [CUP]		CUP	CUP		CUP	CUP	
Car wash		CUP	CUP	P [CUP]	P [CUP]			CUP	CUP									CUP		CUP	CUP		CUP	CUP	
Drive-through establishments[12]																									
Mobile home dealer - new and used		CUP	CUP	P [CUP]	P [CUP]													P [CUP]			CUP		CUP	CUP	
Moped or motor scooter dealer - including service, repair & testing in c.e.b.		CUP	CUP																						
Motorcycle dealer - including repair or testing	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]													P [CUP]		CUP	CUP				
Off-street parking lot or structure	P	P	P	P	P		CUP	CUP	CUP						P	P	P		CUP	P	P		CUP	CUP	
Recreational vehicle dealer - new and used		CUP	CUP	P [CUP]	P [CUP]													P [CUP]		CUP	CUP		CUP	CUP	
Trailer sales	CUP	P [CUP]	P [CUP]	P [CUP]	P [CUP]												CUP	P [CUP]		CUP	CUP				
Truck dealer - new		CUP	P [CUP]	P [CUP]	P [CUP]													P [CUP]		CUP	CUP		CUP	CUP	
Truck dealer - used			CUP	P [CUP]	P [CUP]													CUP					CUP	CUP	
Truck rental - except tractor and trailer		CUP	CUP														CUP	CUP							

[12] REFER TO SECTIONS 10-1-1608 AND 10-1-1609

P = permitted
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CUP = Conditional Use Permit required
[CUP] = CUP required if residentially adjacent as defined in 10-1-203

AUP = Administrative Use Permit required
[AUP] = AUP required if residentially adjacent as defined in 10-1-203

LAND USE	C-2	C-3	C-4	M-1	M-2	MDM-1	MDC-2	MDC-3	MDC-4	NB	GO	RC	C-R	RBP	BCC-1	BCC-2	BCC-3	BCCM	MPC-1	MPC-2	MPC-3	OS	AP	RR	AD
Truck rental - including tractor and trailer				P [CUP]	P [CUP]																		CUP	CUP	

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CITY OF LOS ANGELES ZONING ORDINANCE SUMMARY

GENERALIZED SUMMARY OF ZONING REGULATIONS
CITY OF LOS ANGELES

Zone	Use	Maximum Height		Required yards			Minimum Area		Min. Lot Width	Parking Req'd.
		Stories	Feet	Front	Side	Rear	Per Lot	Per Dwelling Unit		
Agricultural										
A1	**Agricultural** One-Family Dwellings, Parks, Playgrounds, Community Centers, Golf Courses, Truck Gardening, Extensive Agricultural Uses, Home Occupations	Unlimited (8)	45 or(6),(8)	20% lot depth; 25 ft. max. or (6)	10% lot width; 25 ft. max. or (6)	25% lot depth; 25 ft.max.	5 acres	2.5 acres	300 ft.	2 spaces per dwelling unit (6)
A2	**Agricultural** A1 uses						2 acres	1 acre	150 ft.	
RA	**Suburban** Limited Agricultural Uses, One-Family Dwellings, Home Occupations,		45 or (6),(7),(8)	20% lot depth; 25 ft. max., but not less than prevailing (6)	10 ft. or 10% lot width < 70 ft. + 1 ft. for 3 stories or more (6),(7)		17,500 sq. ft. (1)	17,500 sq. ft. (1)	70 ft. (1)	2 covered spaces per dwelling unit (6)
Residential Estate										
RE40	**Residential Estate** One-Family Dwellings, Parks, Playgrounds, Community Centers, Truck Gardening, Accessory Living Quarters, Home Occupations	Unlimited (8)	45 or(6),(8)	20% lot depth; 25 ft. max., but not less than prevailing (6)	10 ft. min., + 1 ft. each story over 2nd (6)	25% lot depth; 25 ft. max.	40,000 sq. ft. (1)	40,000 sq. ft. (1)	80 ft. (1)	2 covered spaces per dwelling unit (6)
RE20			45 or(6),(7),(8)		10 ft. min., + 1 ft. each story over 2nd (6),(7)		20,000 sq. ft. (1)	20,000 sq. ft. (1)	80 ft. (1)	
RE15					10% lot width; 10 ft. max; 5 ft. min. + 1 ft. each story over 2nd (6),(7)		15,000 sq. ft. (1)	15,000 sq. ft. (1)	80 ft. (1)	
RE11					10% lot width < 50 ft.; 5 ft.; 3 ft. min. + 1 ft. each story over 2nd (6),(7)		11,000 sq. ft. (1)	11,000 sq. ft. (1)	70 ft. (1)	
RE9							9,000 sq. ft. (1)	9,000 sq. ft. (1)	65 ft. (1)	
RS	**Suburban** One-Family Dwellings, Parks, Playgrounds, Community Centers, Truck Gardening, Home Occupations					20 ft. min.	7,500 sq. ft.	7,500 sq. ft.	60 ft.	
One-Family Residential										
R1	**One-Family Dwelling** RS Uses, Home Occupations	Unlimited (8)	45 or(6),(7),(8)	20% lot depth; 20 ft. max., but not less than prevailing (6)	10% lot width < 50 ft.; 5 ft.; 3 ft. min. + 1 ft. each story over 2nd (6),(7)	15 ft. min.	5,000 sq. ft.	5,000 sq. ft.	50 ft.	2 covered spaces per dwelling unit (6)
RU			30	10 ft.	3 ft. (9)	10 ft.	3,500 sq. ft.	n/a	35 ft.	2 covered spaces per dwelling unit
RZ2.5	**Residential Zero Side Yard** Dwellings across not more than 5 lots (2), Parks, Playgrounds, Home Occupations		45 or(8)	10 ft. min.	zero (3); 3 ft. + 1 ft. for each story over 2nd	zero (3) or 15 ft.	2,500 sq. ft.		30 ft. w/ driveway, 25 ft. w/o driveway; 20 ft.–flag, curved or cul-de-sac	
RZ3							3,000 sq. ft.			
RZ4							4,000 sq. ft.			
RW1	**One-Family Residential Waterways** One-Family Dwellings, Home Occupations (10)		30		10% lot width; 3 ft. min.	15 ft. min	2,300 sq. ft.		28 ft.	

Zone	Use	Maximum Height		Required yards			Minimum Area		Min. Lot Width	Parking Req'd.
		Stories	Feet	Front	Side	Rear	Per Lot	Per D.U.		
Multiple Residential										
R2	**Two Family Dwellings** R1 Uses. Home Occupations	Unlimited (8)	45 or (6),(7),(8)	20% lot depth; 20 ft. max., but not less than prevailing	10% lot width < 50 ft.; 5 ft.; 3 ft. min.; + 1 ft. for each story over 2nd	15 ft.	5,000 sq. ft.	2,500 sq. ft.	50 ft.	2 spaces, one covered
RD1.5	**Restricted Density Multiple Dwelling** One-Family Dwellings, Two-Family Dwellings, Apartment Houses, Multiple Dwellings, Home Occupations		45 or (6),(7),(8)	15 ft.	10% lot width < 50 ft.; 5 ft.; 3 ft. min.; + 1 ft. for each story over 2nd, not to exceed 16 ft. (6)	15 ft.	5,000 sq. ft.	1,500 sq. ft.		1 space per unit < 3 habitable rooms; 1.5 spaces per unit = 3 habitable rooms; 2 spaces per unit > 3 habitable rooms; uncovered (6) 1 space each guest room (first 30)
RD2								2,000 sq. ft.		
RD3					10% lot width, 10 ft. max.; 5 ft. min., (6)		6,000 sq. ft.	3,000 sq. ft.	60 ft.	
RD4							8,000 sq. ft.	4,000 sq. ft.		
RD5				20 ft.	10 ft. min. (6)	25 ft.	10,000 sq. ft.	5,000 sq. ft.	70 ft.	
RD6							12,000 sq. ft.	6,000 sq. ft.		
RMP	**Mobile Home Park** Home Occupations		45 or (8)	20% lot depth 25 ft. max.	10 ft.	25% lot depth 25 ft. max.	20,000 sq. ft.	20,000 sq. ft.	80 ft.	2 covered spaces per dwelling unit
RW2	**Two Family Residential Waterways** One-Family Dwellings, Two-Family Dwellings, Home Occupations			10 ft. min.	10% lot width < 50 ft.; 3 ft. min.; + 1 ft. for each story over 2nd	15. ft.	2,300 sq. ft.	1,150 sq. ft.	28 ft.	
R3	**Multiple Dwelling** R2 Uses, Apt. Houses, Multiple Dwellings, Child Care (20 max.)			15 ft; 10 ft. for key lots	10% lot width < 50 ft., 3 ft. min.; 5 ft.; + 1 ft. for each story over 2nd, not to exceed 16 ft.	15 ft.	5,000 sq. ft.	800 sq. ft.; 500 sq. ft. per guest room	50 ft.	same as RD zones
RAS3	**Residential/ Accessory** R3 Uses, Limited ground floor commercial			5 ft., or average of adjoining buildings	0 ft. for ground floor commerc. 5 ft. for residential	15 ft. adjacent to RD or more restrictive zone; otherwise 5 ft.		800 sq. ft.; 200 sq. ft. per guest room		
R4	**Multiple Dwelling** R3 Uses, Churches, Schools, Child Care, Homeless Shelter	Unlimited (8)		15 ft; 10 ft. for key lots	10% lot width < 50 ft.; 5 ft.; 3 ft. min.; + 1 ft. for each story over 2nd, not to exceed 16 ft.	15 ft. + 1 ft. for each story over 3rd; 20 ft. max.		400 sq. ft.; 200 sq. ft. per guest room		

Multiple Residential continued ⇓

Multiple Residential continued ⇑

RAS4	**Residential/ Accessory** R4 Uses, Limited ground floor commercial	Unlimited (8)	5 ft., or average of adjoining buildings	0 ft. for ground floor commerc. 5 ft. for residential	15 ft. adjacent to RD or more restrictive zone; otherwise 5 ft.	5,000 sq. ft.	400 sq. ft.; 200 sq. ft. per guest room	50 ft.	same as RD zones
R5	**Multiple Dwelling** R4 uses, Clubs, Lodges, Hospitals, Sanitariums, Hotels		15 ft; 10 ft. for key lots	10% lot width < 50 ft.; 3 ft. min.; 5 ft.; + 1 ft. for each story over 2nd, not to exceed 16 ft.	15 ft. + 1 ft. for each story over 3rd; 20 ft. max.		200 sq. ft.		

Loading space is required for the RAS3, R4, RAS4, and R5 zones in accordance with Section 12.21 C 6 of the Zoning Code.

Open Space is required for 6 or more residential units in accordance with Section 12.21 G of the Zoning Code.

Passageway of 10 feet is required from the street to one entrance of each dwelling unit or guest room in every residential building, except for the RW, RU, and RZ zones, in accordance with Section 12.21 C2 of the Zoning Code.

Zone	**Use**	**Maximum Height**		**Required yards**			**Minimum Area Per Lot/ Unit**	**Min. Lot Width**
		Stories	**Feet**	**Front**	**Side**	**Rear**		
Commercial (see loading and parking, next page)								
CR	**Limited Commercial** Banks, Clubs, Hotels, Churches, Schools, Business and Professional Colleges, Child Care, Parking Areas, R4 Uses	6 (8)	75 ft. (8)	10 ft. min.	10% lot width < 50 ft.; 10 ft.; 5 ft. min., for corner lots, lots adj. to A or R zone, or for residential uses	15 ft. min + 1 ft. for each story over 3rd	same as R4 for resid. uses; otherwise none	50 ft. for resid. uses; otherwise none
C1	**Limited Commercial** Local Retail Stores < 100,000 sq. ft., Offices or Businesses, Hotels, Hospitals and/orClinics, Parking Areas, CR Uses Except forCurches, Schools, Museums, R3 Uses	Unlimited (8)			same as R3 for corner lots, lots adjacent to A or R zone, or residential uses	15 ft. + 1 ft. for each story over 3rd; 20 ft. max for resid. uses or abutting A or R zone	same as R3 zone for residential uses; otherwise none	
C1.5	**Limited Commercial** C1 Uses–Retail, Theaters, Hotels,Broadcasting Studios, Parking Buildings, Parks and Playgrounds, R4 Uses						same as R4 zone for residential uses; otherwise none	
C2	**Commercial** C1.5 Uses; Retail w/Limited Manuf., Service Stations and Garages, Retail Contr. Business, Churches, Schools, Auto Sales, R4 Uses			none	none for commercial uses; same as R4 zone for residential uses at lowest residential story		same as R4 for resid. uses; otherwise none	same as R4 for residential uses; otherwise none
C4	**Commercial** C2 Uses with Llimitations, R4 Uses							
C5	**Commercial** C2 Uses, Limited Floor Area for Manuf. of CM Zone Type, R4 Uses							
CM	**Commercial Manufacturing** Wholesale, Storage, Clinics, Limited Manuf., Limited C2 Uses, R3 Uses	Unlimited (8)		none	none for commercial uses; same as R4 for residential uses		same as R3 for residential uses; otherwise none	

Loading Space: Hospitals, hotels, institutions, and every building were lot abuts an alley. Minimum loading space is 400 sq. ft.; additional space for buildings > 50,000 sq. ft. of floor area. None for apartment buildings < 30 units, in accordance with Section 12.21 C 6 of the Zoning Code.

Parking. See separate parking handout.

Zone	Use	Maximum Height		Required yards			Minimum Area Per Lot/ Unit	Min. Lot Width
		Stories	Feet	Front	Side	Rear		
Manufacturing								
MR1	**Restricted Industrial** CM Uses, Limited Commercial andManufacturing, Clinics, Media Products, Limited Machine Shops, Animal Hospitals and Kennels	unlimited (8)		5 ft. for lots <100 ft. deep; 15 ft. for lots >100 ft. deep	none for industrial or commercial uses;same as R4 zone for residential uses (5)	none for industrial or commercial uses; same as R4 zone for residential uses (5)	none for industrial or commercial uses; same as R4 zone for residential uses; (5)	
M1	**Limited Industrial** MR1 Uses, LimitedIndustrial and Manufacturing Uses, no R Zone Uses, no Hospitals, Schools, Churches, any Enclosed C2 Use, Wireless Telecommuni-cations, Household Storage			none				
MR2	**Restricted Light Industrial** MR1 Uses, Additional Industrial Uses, Mortuaries, Animal Keeping			5 ft. for lots <100 ft. deep; 15 ft. for lots >100 ft. deep			none for industrial or commercial uses; same as R5 zone for residential uses; (5)	
M2	**Light Industrial** M1 and MR2 uses, Additional Industrial Uses, Storage Yards, Animal Keeping, Enclosed Composting, no R Zone Uses			none	same as R5 zone for residential uses (5)			
M3	**Heavy Industrial** M2 Uses, any Industrial l Uses, Nuisance Type Uses 500 ft. from any Other Zone, no R Zone Uses				none		none	

Loading Space: Institutions, and every building where lot abuts an alley. Minimum loading space is 400 sq. ft.; additional space for buildings > 50,000 sq. ft. of floor area. None for apartment buildings < 30 units, in accordance with Section 12.21 C 6 of the Zoning Code.

Parking. See separate parking handout.

Zone	Use	Maximum Height		Required yards			Minimum Area Per Lot/ Unit	Min. LotWidth
		Stories	Feet	Front	Side	Rear		
Parking								
P	**Automobile Parking–Surface and Underground** Surface Parking; Land in a P Zone may also be Classified in A or R Zone	unlimited (8)		10 ft. in combination with an A or R Zone**;** otherwise none	none		none, unless also in an A or R Zone	
PB	**Parking Building** P Zone Uses, Automobile Parking Within aBuilding			0 ft., 5 ft., or 10 ft., depending on zoning frontage and zoning across the street	5 ft. + 1 ft. each story above 2nd if abutting or across street and frontage in A or R Zone	5 ft. + 1 ft. each story above 2nd if abutting A or R Zone	none	

Zone	Use	Maximum Height		Required yards			Minimum Area Per Lot/ Unit	Min. Lot Width
		Stories	Feet	Front	Side	Rear		
Open Space/ Public Facilities/Submerged Lands								
OS	**Open Space** Parks and Recreation Facilities, Nature Reserves, Closed Sanitary Landfill Sites, Public Water Supply Reservoirs, Water Conservation Areas	none		none			none	
PF	**Public Facilities** Agricultural Uses, Parking Under Freeways, Fire and Police Stations, Government Buildings, Public Libraries, Post Offices, Public Health Facilities, Public Elementary and Secondary Schools							
SL	**Submerged Lands** Navigation, Shipping, Fishing, Recreation							

(1) "H" Hillside areas may alter these requirements in the RA-H or RE-H zones. Subdivisions may be approved with smaller lots, provided larger lots are also included. Section 17.05 H 1 of the Zoning Code.
(2) Section 12.08.3 B 1 of the Zoning Code.
(3) Section 12.08.3 C 2 and 3 of the Zoning Code.
(4) Section 12.09.5 C of the Zoning Code. For 2 or more lots the interior side yards may be eliminated, but 4 ft. is required on each side of the grouped lots.
(5) Section 12.17.5 B 9 (a). Dwelling considered as accessory to industrial use only (watchman or caretaker including family.)
(6) Height, yard and parking requirements for single family dwellings may be governed by the Hillside Ordinance, Section 12.21 A 17 of the Zoning Code.
(7) Side yard requirements for single family dwellings not in Hillside Areas or Coastal Zone may be governed by the "Big House" Ordinance, ord. 169,775, which has been codified in the yard requirements sections for the relevant zones.

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(8) Height District (Section 12.21.1 of the Zoning Code) [see below for (9), (10)]:

Height Districts

Zone	1 ‡	1L ‡	1VL ‡	1XL ‡	2	3	4
A1§, A2§, RE40§, RZ, RMP, RW2, RD, R3, RAS3	45' 3:1 FAR		45' 3 stories † 3:1 FAR	30' 2 stories † 3:1 FAR	6 stories for RD,RAS3 and R3†; otherwise 6:1 FAR	6 stories for RD,RAS3 and R3†; otherwise 10:1 FAR	6 stories for RD,RAS3 and R3†; otherwise 13:1 FAR
RE11 §, RE15 §, RE20 §, RA § *	36' 3:1 FAR		36' 3 stories † 3:1 FAR		6:1 FAR	10:1 FAR	13:1 FAR
R1§, R2, RS §, RE9 § *	33' 3:1 FAR		33' 3 stories † 3:1 FAR				
PB	none 2 stories	75' 2 stories	45' 2 stories	30' 2 stories	none 6 stories	none 10 stories	none 13 stories
R4, RAS4, R5	none 3:1 FAR	75' 6 stories † 3:1 FAR	45' 3 stories † 3:1 FAR	30' 2 stories † 3:1 FAR	none 6:1 FAR	none 10:1 FAR	none 13:1 FAR
C, M	1.5:1 FAR	75' 6 stories † 1.5:1 FAR	45' 3 stories † 1.5:1 FAR	30' 2 stories † 1.5:1 FAR	75' for CR; otherwise none 6:1 FAR	75' for CR; otherwise none 10:1 FAR	75' for CR; otherwise none 13:1 FAR
PB	2 stories	2 stories	2 stories	2 stories	6 stories	10 stories	13 stories

FAR–Floor Area Ratio
* Prevailing Height in accordance with the 3rd unnumbered paragraph of Section 12.21.1 of the Zoning Code may apply.
† Buildings used entirely for residential (and ground floor commercial in RAS zones) are only limited as to height, not stories.
‡ Floor area in height district 1 in other than C and M zones is limited to 3:1 FAR.
§ Height limited to 36' or 45' in Hillside Areas in accordance with Section 12.21 A 17 of the Zoning Code.

For **CRA** height districts, see Section 12.21.3 of the Zoning Code. For **EZ** height districts, see Section 12.21.4 for the Zoning Code. For **CSA** height districts, see Section 12.21.5 of the Zoning Code. For Century City North (**CCN**) and Century City South (**CCS**) height districts, see Section 12.21.2 of the Zoning Code and the Specific Plans.

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(9) The side yard on one side of the lot may be reduced to zero provided that the remaining side yard is increased to 6 ft., in accordance with Section 12.08.1 C 2 of the Zoning Code.
(10) Specific requirements for open space, rear yards, and projections into front yards are in Section 12.08.5 C of the Zoning Code.

Transitional Height: Portions of buildings in C or M zones within certain distances of RW1 or more restrictive zones shall not exceed the following height limits, in accordance with Section 12.21.1 A 10 of the Zoning Code:

Distance (ft)	**Height** (ft)
0–49	25
50–99	33
100–199	61

Zone Prefixes (Section 12.32 of the Zoning Code)

(T), [T], T	Tentative Zone Classification	City Council requirements for public improvements as a result of a zone change–see Council File
(Q), [Q], Q	Qualified Classification	Restrictions on property as a result of a zone change, to ensure compatibility with surrounding property
D	Development Limitation	Restricts heights, floor area ratio, percent of lot coverage, building setbacks

Supplemental Use Districts–to regulate uses which cannot adequately be provided for in the Zoning Code (Section 13.00 of the Zoning Code)

CA	Commercial and Artcraft
CDO	Community Design Overlay
FH	Fence Height
G	Surface Mining
K	Equinekeeping
MU	Mixed Use
O	Oil Drilling
POD	Pedestrian Oriented District
RPD	Residential Planned Development
S	Animal Slaughtering
SN	Sign

Other Zoning Designations

ADP	Alameda District Specific Plan
CCS	Century City South Studio Zone
CSA	Centers Study Area
CW	Central City West Specific Plan
GM	Glencoe/Maxella Specific Plan
HPOZ	Historic Preservation Overlay Zone
LASED	LA Sports & Entertainment S.P.
OX	Oxford Triangle Specific Plan
PKM	Park Mile Specific Plan
PV	Playa Vista Specific Plan
WC	Warner Center Specific Plan

THIS SUMMARY IS ONLY A GUIDE. DEFINITIVE INFORMATION SHOULD BE OBTAINED FROM THE ZONING CODE ITSELF AND FROM CONSULTATION WITH THE DEPARTMENT OF BUILDING AND SAFETY.

Appendix E

RESOURCE LIBRARY

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RESOURCE LIBRARY

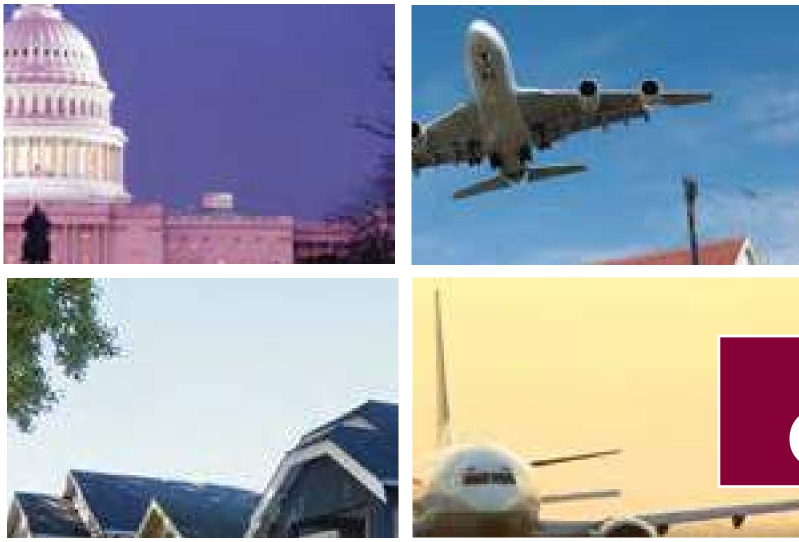

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Table of Contents

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RESOURCE LIBRARY

The Measurement and Analysis of Sound

Sound is energy — energy that conveys information to the listener. Although measuring this energy is a straight- forward technical exercise, describing sound energy in ways that are meaningful to people is complex. This TIP explains some of the basic principles of sound measurement and analysis.

NOISE - UNWANTED SOUND

Noise is often defined as unwanted sound. For example, rock-and-roll on the stereo of the resident of apartment 3A is music to her ears, but it is intolerable racket to the next door neighbor in 3B. One might think that the louder the sound, the more likely it is to be considered noise. This is not necessarily true. In our example, the resident of apartment 3A is surely exposed to higher sound levels than her neighbor in 3B, yet she considers the sound as pleasant while the neighbor considers it "noise." While it is possible to measure the sound level objectively, characterizing it as "noise" is a subjective judgement.

The characterization of a sound as "noise" depends on many factors, including the information content of the sound, the familiarity of the sound, a person's control over the sound, and a person's activity at the time the sound is heard.

MEASUREMENT OF SOUND

A person's ability to hear a sound depends on its character as compared with all other sounds in the environment. Three characteristics of sound to which people respond are subject to objective measurement: magnitude or loudness; the frequency spectrum; and the time variation of the sound.

LOUDNESS

The unit used to measure the magnitude of sound is the decibel. Decibels are used to measure loudness in the same way that "inches" and "degrees" are used to measure length and temperature. Unlike the linear length and temperature scales, the decibel scale is logarithmic. By definition, a sound which has ten times the mean square sound pressure of the reference sound is 10 decibels (dB) greater than the reference sound. A sound which has 100 times (10 × 10 or 102) the mean square sound pressure of the reference sound is 20 dB greater (10 × 2).

The logarithmic scale is convenient because the mean square sound pressures of normal interest extend over a range of 11 trillion to one.

This huge number (a "1" followed by 14 zeros or 1014) is much more conveniently represented on the logarithmic scale as 140 dB (10 x 14).

The use of the logarithmic decibel scale requires different arithmetic than we use with linear scales. For example, if two equally loud but independent noise sources operate simultaneously, the measured mean square sound pressure from both sources will be twice as great as either source operating alone. When expressed on the decibel scale, however, the sound pressure level from the combined sources is only 3 dB higher than the level produced by either source alone. Furthermore, if we have two sounds of different magnitude from independent sources, then the level of the sum will never be more than 3 dB above the level produced by the greater source alone.

This equation describes the mathematics of sound level summation:

$$S_t=10 \log \sum \ 10^{S_i/10}$$

where S_t is the total sound level, in decibels, and S_i is the sound level of the individual sources.

A simpler process of summation is also available and often used where a level of accuracy of less than one decibel is not required. **Table 1** lists additive factors applicable to the difference between the sound levels of two sources.

The noise values to be added should be arrayed from lowest to highest. The additive factor derived from the difference between the lowest and next highest noise level should be added to the higher level. An example is shown to the right.

TABLE 1

ADDITIVE FACTORS FOR SUMMATION OF TWO SOUND TYPES

DIFFERENCE IN SOUND LEVEL (DB)	ADD TO LARGER LEVEL (DB)	DIFFERENCE IN SOUND LEVEL (DB)	ADD TO LARGER LEVEL (DB)
0	3.0	8	0.6
1	2.5	9	0.5
2	2.1	10	0.4
3	1.8	12	0.3
4	1.5	14	0.2
5	1.2	16	0.1
6	1.0	> 16	0
7	0.8		

SOURCE: HUD 1985, p. 51.

Logarithmic math also produces interesting results when averaging sound levels. As the following example shows, the loudest sound levels are the dominant influence in the averaging process. In the example, two sound levels of equal duration are averaged. One is 100 dB; the other 50 dB. The result is not 75 as it would be with linear math but 97 dB. This is because 100 dB contains 100,000 times the sound energy as 50 dB.

Another interesting attribute of sound is the human perception of loudness. Scientists researching human hearing have determined that most people perceive a 10 dB increase in sound energy over a given frequency range as, roughly, a doubling of the loudness. Recalling the logarithmic nature of the decibel scale, this means that most people perceive a ten-fold increase in sound energy as a two-fold increase in loudness (Kryter 1984, p. 188). Furthermore, when comparing sounds over the same frequency range, most people cannot distinguish between sounds varying by less than two or three decibels.

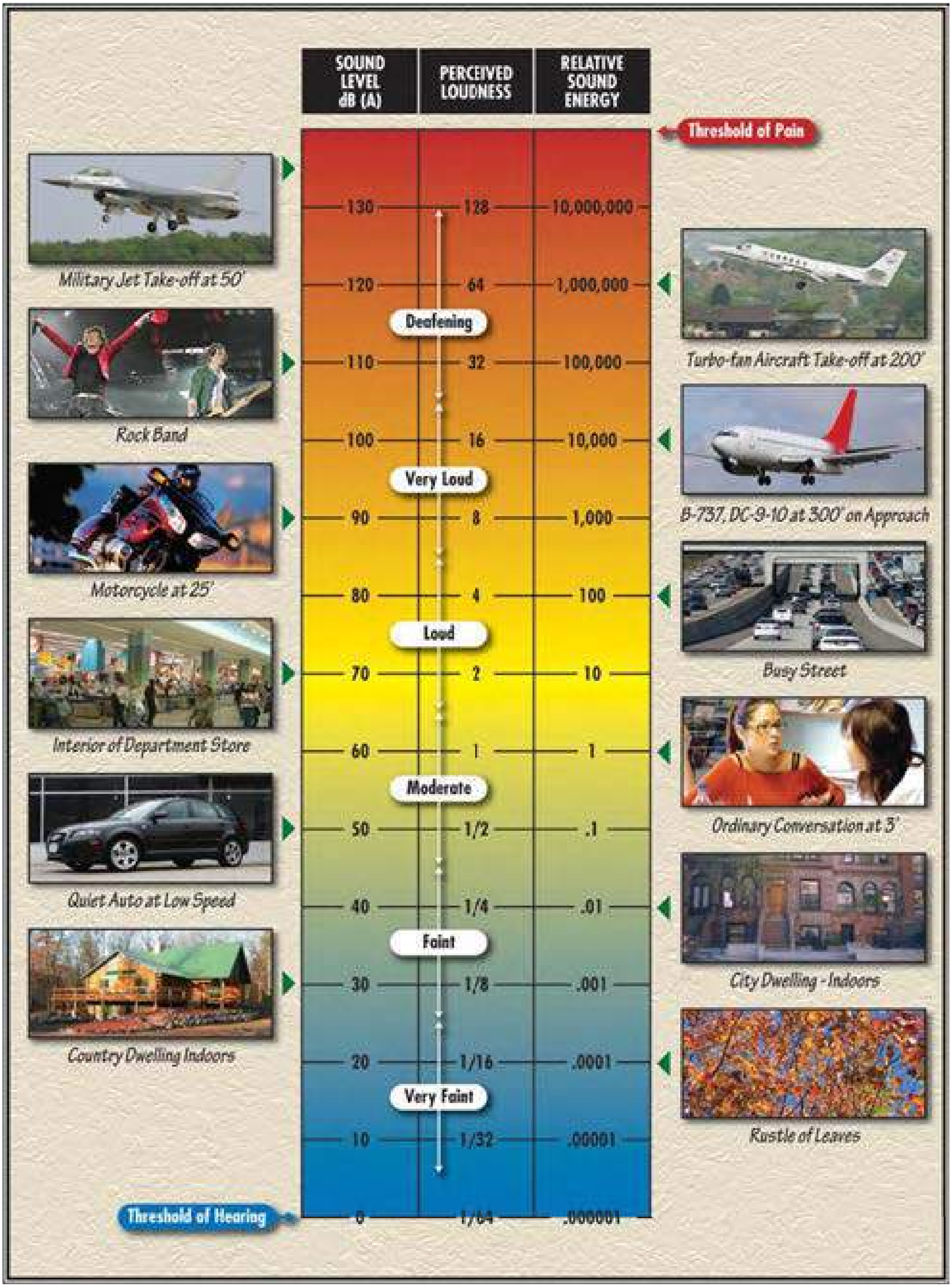
Exhibit A presents examples of various noise sources at different noise levels, comparing the decibel scale with the relative sound energy and the human perception of loudness. In the exhibit, 60 dB is taken as the reference or "normal" sound level. A sound of 70 dB, involving ten times the sound energy, is perceived as twice as loud. A sound of 80 dB contains 100 times the sound energy

EXAMPLE OF SOUND LEVEL SUMMATION

59.0 dB
60.0 dB } **Add 2.5 to 60 = 62.5**
66.5 dB } **Add 1.5 to 66.5 = 68**

59 dB+ 60 dB = 66.5 dB = 68 dB

EXHIBIT A


SOUND LEVEL dB (A)
PERCEIVED LOUDNESS
RELATIVE SOUND ENERGY
Threshold of Pain
130 128 10,000,000
120 64 1,000,000
Deafening
110 32 100,000
100 16 10,000
Very Loud
90 8 1,000
80 4 100
Loud
70 2 10
60 1 1
Moderate
50 1/2 .1
40 1/4 .01
Faint
30 1/8 .001
20 1/16 .0001
Very Faint
10 1/32 .00001
0 1/64 .000001
Threshold of Hearing
Military Jet Take-off at 50'
Rock Band
Motorcycle at 25'
Interior of Department Store
Quiet Auto at Low Speed
Country Dwelling Indoors
Turbo-fan Aircraft Take-off at 200'
B-737, DC-9-10 at 300' on Approach
Busy Street
Ordinary Conversation at 3'
City Dwelling - Indoors
Rustle of Leaves

and is perceived as four times as loud as 60 dB. Similarly, a sound of 50 dB contains ten times less sound energy than 60 dB and is perceived as half as loud.

FREQUENCY WEIGHTING

Two sounds with the same sound pressure level may "sound" quite different (e.g., a rumble versus a hiss) because of differing distributions of sound energy in the audible frequency range. The distribution of sound energy as a function of frequency is known as the "frequency spectrum." The spectrum is important to the measurement of sound because the human ear is more sensitive to sounds at some frequencies than others. People hear best in the frequency range of 1,000 to 5,000 cycles per second (Hertz) than at very much lower or higher frequencies. If the magnitude of a sound is to be measured so that it is proportional to its perception by a human, it is necessary to weight more heavily that part of the sound energy spectrum humans hear most easily.

Over the years, many different sound measurement scales have been developed, including the A-weighted scale (and also the B, C, D, and E-weighted scales). A-weighting, developed in the 1930s, is the most commonly used scale for approximating the frequency spectrum to which humans are sensitive. Because of its universality, it was adopted by the U.S. Environmental Protection Agency and other government agencies for the description of sound in the environment.

The zero value on the A-weighted scale is the reference pressure of 20 micro-newtons per square meter (or micro-pascals). This value approximates the smallest sound pressure that can be detected by a human. The average sound level of a whisper at a distance of 1 meter is 40 dB; the sound level of a normal voice at 1 meter is 57 dB; a shout at 1 meter is 85 dB; and the threshold of pain is 130 dB.

TIME VARIATION OF SOUND LEVEL

Generally, the magnitude of sound in the environment varies randomly over time. Of course, there are many exceptions. For example, the sound of a waterfall is steady with time, as is the sound of a room air conditioner or the sound inside a car or airplane cruising at a constant speed. But, in most places, the loudness of outdoor sound is constantly changing because it is influenced by sounds from many sources.

While the continuous variation of sound levels can be measured, recorded, and presented, comparisons of sounds at different times or at different places is very difficult without some way of reducing the time variation. One way of doing this is to calculate the value of a steady-state sound which contains the same amount of sound energy as the time-varying sound under consideration. This value is known as the Equivalent Sound Level (L_{eq}). An important advantage of the L_{eq} metric is that it correlates well with the effects of noise on humans. On the basis of research, scientists have formulated the "equal energy rule." It is the total sound energy perceived by a human that accounts for the effects of the sound on the person. In other words, a very loud noise lasting a short time will have the same effect as a quieter noise lasting a longer time if the total energy of both sound events (the L_{eq} value) is the same.

KEY DESCRIPTORS OF SOUND

Four descriptors or metrics are useful for quantifying sound. All are based on the logarithmic decibel (dB) scale and incorporate A-weighting to account for the frequency response of the ear.

Sound Level

The sound level (L) in decibels is the quantity read on an ordinary sound level meter. It fluctuates with time following the fluctuations in magnitude of the sound. Its maximum value (L_{max}) is one of the descriptors often used to characterize the sound of an airplane overflight. However, L_{max} only gives the maximum magnitude of a sound — it does not convey any information about the duration of the sound. Clearly, if two sounds have the same maximum sound level, the sound which lasts longer will cause more interference with human activity.

Sound Exposure Level

Both loudness and duration are included in the Sound Exposure Level (SEL), which adds up all sound occurring in a stated time period or during a specific event, integrating the total sound over a one-second duration. The SEL is the quantity that best describes the total noise from an aircraft overflight. Based on numerous sound measurements, the SEL from a typical aircraft overflight is usually four to seven decibels higher than the L_{max} for the event.

Exhibit B shows graphs of two different sound events. In the top half of the graph, we see that the two events have the same L_{max}, but the second event lasts longer than the first. It is clear from the graph that the area under the noise curve is greater for the second event than the first. This means that the second event contains more total sound energy than the first, even though the peak levels for each event are the same. In the bottom half of the graph, the SELs for each event are compared. The SELs are computed by mathematically compressing the total sound energy into a one-second period. The SEL for the second event is greater than the SEL for the first. Again, this simply means that the total sound energy for the second event is greater than for the first.

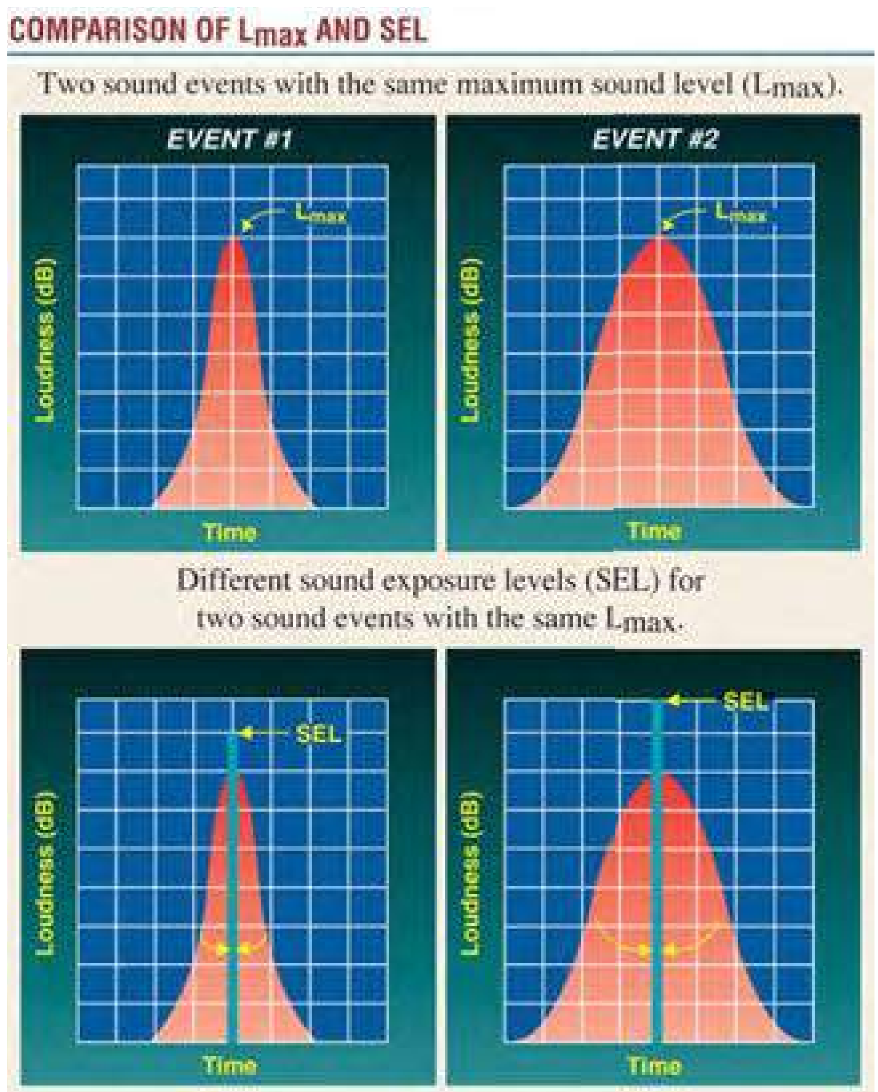
Equivalent Sound Level

The L_{eq} is simply the logarithm of the average value of the sound exposure during a stated time period. It is typically used for durations of one hour, eight hours, or 24 hours. In airport noise compatibility studies, use of the L_{eq} term applies to 24-hour periods unless otherwise noted. It is often used to describe sounds with respect to their potential for interfering with human activity.

Cumulative Noise Metrics

L_{eq} can be weighted to account for increased annoyance attributed to noise during the evening and nighttime when ambient noise levels are lower. Two weighted noise metrics commonly used for airports are the day-night sound level (DNL) and the community noise equivalent level (CNEL) which is used in the State of California. Both metrics are calculated using similar methodology, DNL is calculated by

EXHIBIT B



summing the sound exposure during daytime hours plus 10 times the sound exposure occurring during nighttime hours (2200-0700). The sum is averaged by dividing by the number of seconds during a 24 day. CNEL includes an additional evening penalty of 4.77 dB for sound events occurring between 1900 and 2200.

Exhibit C shows how the sound occurring during a 24-hour period is weighted and averaged by the DNL or CNEL metrics. In the examples, the sound occurring during the period, including aircraft noise and background sound, yields a DNL or CNEL value of 71. As a practical matter, this is a reasonably close estimate of the aircraft noise alone because, in this example, the background noise is low enough to contribute only a little to the overall DNL or CNEL value during the period of observation.

Where the basic element of sound measurement is L_{eq}, DNL is calculated from:

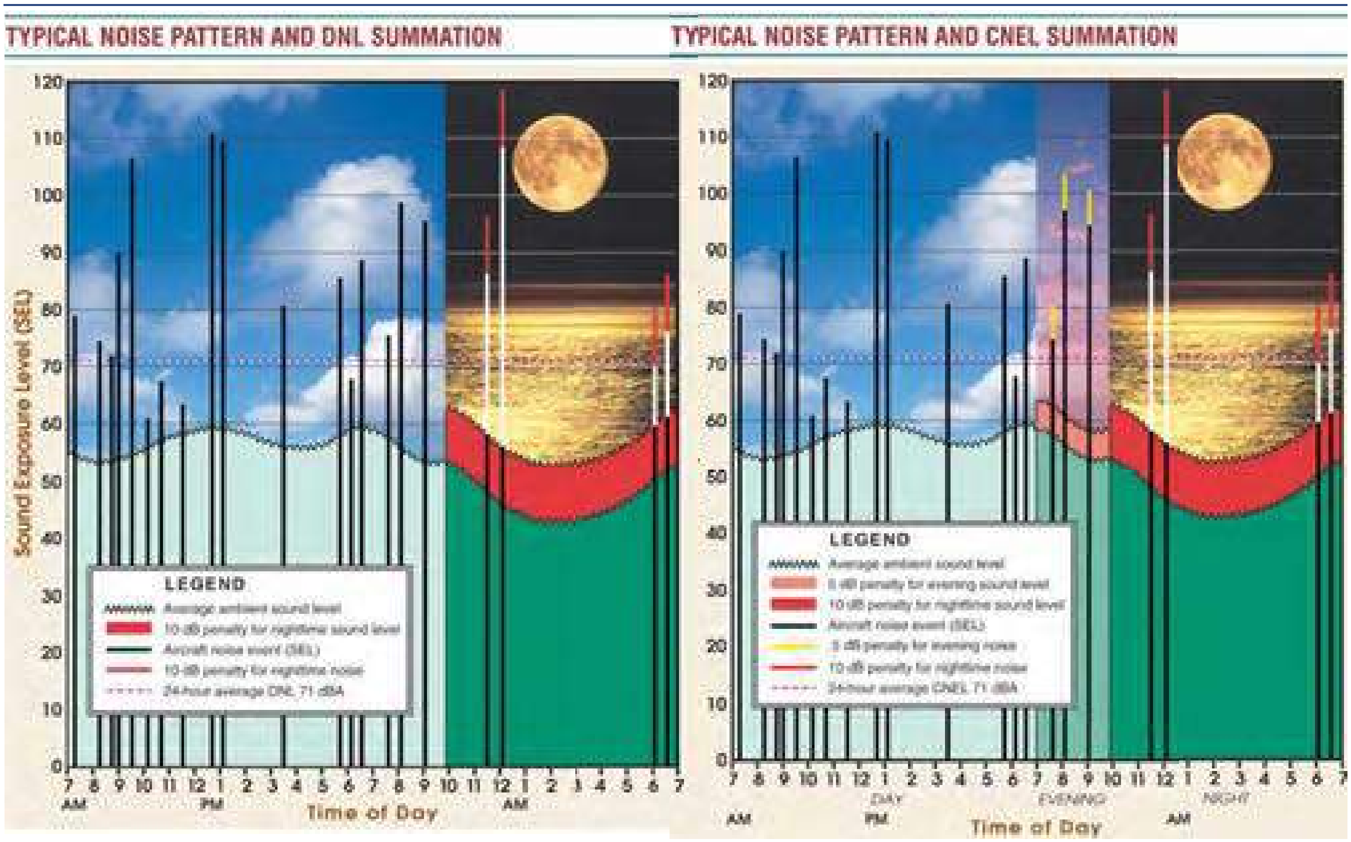
$$L_{dn} - 10_{log}\ 1/24 \left(\sum_{d=1}^{15} 10^{[Leq(d)]/10} + \sum_{n=1}^{9} 10^{[Leq(n)+10]/10} \right)$$

where DNL is represented mathematically as L_{dn}, and $L_{eq}(d)$ and $L_{eq}(n)$ are the daytime and nighttime hour values combined. This expression is convenient where L_{eq} values for only a few hours are available and the values for the remainder of the day can be predicted from a knowledge of day/night variation in levels. The hourly L_{eq} values are summed for the 15 hours from 0700 to 2200 and added to the sum of hourly L_{eq} figures for the 9 nighttime hours with a 10 dB penalty added to the nighttime L_{eq}s.

Use of the cumulative metric to describe aircraft noise is required for all airport noise studies developed under the regulations of 14 CFR Part 150. In addition, DNL and CNEL is preferred by all federal agencies as the appropriate single measure of cumulative sound exposure. These agencies include the FAA, the Federal Highway Administration, Environmental Protection Agency, Department of Defense, and Department of Housing and Urban Development.

One might think of these metrics as a summary description of the "noise climate" of an area. DNL and CNEL accumulate the noise energy from passing aircraft in the same way that

EXHIBIT C



Another way of computing DNL is described in this equation:

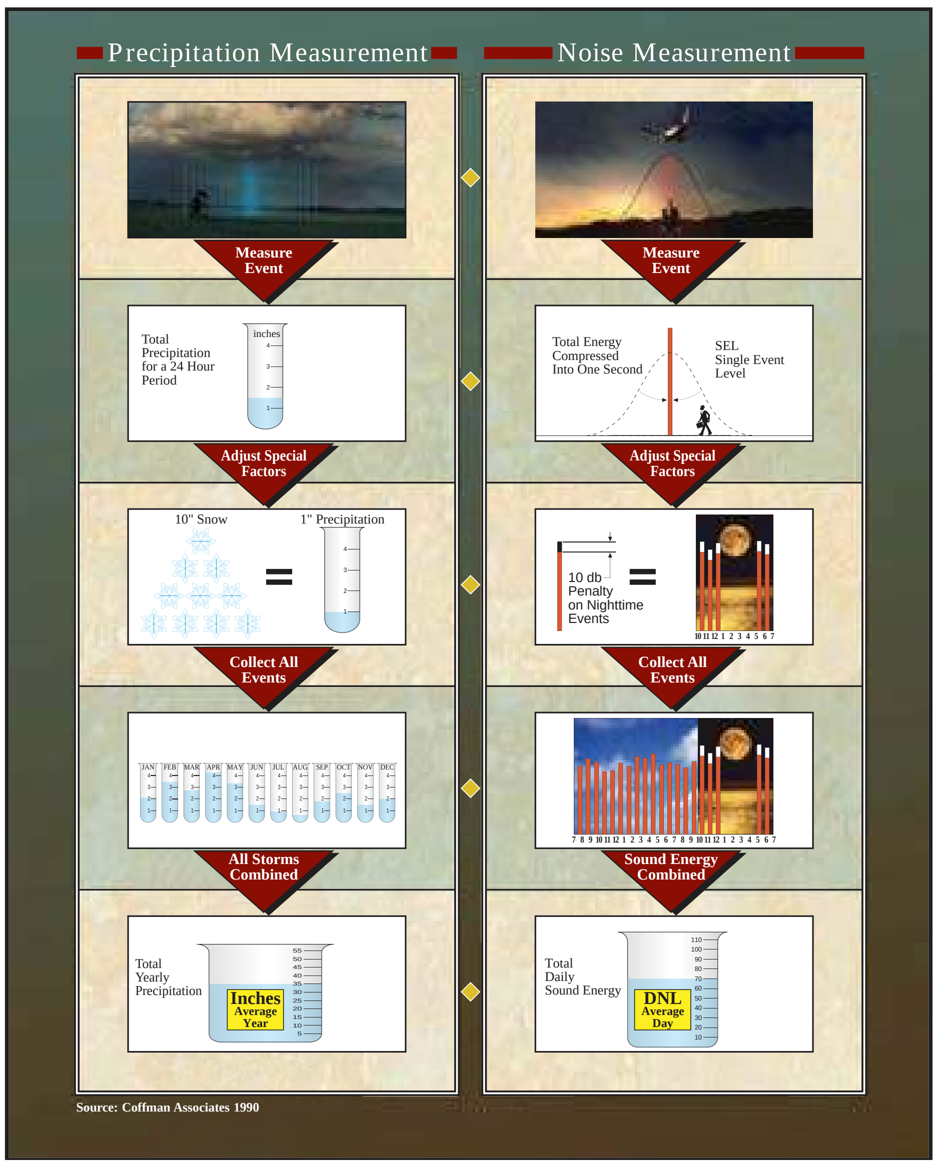
$$L_{dn} = 10\log \frac{1}{86400}\left(\int_{day} 10^{LA/10_{dt}} + \int_{night} 10^{LA+10_{dt}}\right)$$

where LA is the time-varying, A-weighted sound level, measured with equipment meeting the requirements for sound level meters (as specified in a standard such as ANSI SI.4-1971), and dt is the duration of time in seconds. The averaging constant of 86,400 is the number of seconds in a day. The integrals are taken over the daytime (0700 - 2200) and the nighttime (2200 - 0700) periods, respectively. If the sound level is sampled at a rate of once per second rather than measured continuously, the equation still applies if the samples replace LA and the integrals are changed to summations.

a precipitation gauge accumulates rain from passing storms. This analogy is presented in **Exhibit D**. Rain usually starts as a light sprinkle, building in intensity as the squall line passes over, then diminishing as the squall moves on. At the end of a 24-hour period, a rain gauge indicates the total rainfall received for that day, although the rain fell only during brief, sometimes intense, showers. Over a year, total precipitation is summarized in inches. When snow falls, it is converted to its equivalent measure as water. Although the total volume of precipitation during the year may be billions or trillions of gallons of water, its volume is expressed in inches because it provides for easier summation and description. We have learned how to use total annual precipitation to describe the climate of an area and make predictions about the environment.

Aircraft noise is similar to precipitation. The noise level from a single overflight begins quietly and builds in intensity as the aircraft draws closer. The sound of the aircraft is loudest as it passes over the receiver, diminishing as it passes. The total noise occurring during the event is accumulated and described as a SEL. Over a 24-hour period, the SELs can be summed, adding a special 10-decibel factor for nighttime noise, yielding a DNL value and an additional 4.77 dB for CNEL evening events. The DNL or CNEL developed over a long period of time, for example one year, defines the noise environment of the area, allowing us to make predictions about the average response of people living in areas exposed to various DNL or CNEL levels.

EXHIBIT D



HELPFUL RULES-OF-THUMB

Despite the complex mathematics involved in noise analysis, several simple rules-of-thumb can help in understanding the noise evaluation process.

- When sound events are averaged, the loud events dominate the calculation.

- A 10 decibel change in noise is equal to a tenfold change in sound energy. For example, the noise from ten aircraft is ten decibels louder than the noise from one aircraft of the same type, operated in the same way.

- Most people perceive an increase of 10 decibels as a relative doubling of the sound level.

- The DNL metric assumes one nighttime operation (between 10:00 p.m. and 7:00 a.m.) is equal in impact to ten daytime operations by the same aircraft.

- A doubling of aircraft operations results in a three decibel noise increase if done by the same aircraft operated in the same way.

- The CNEL metric assumes one evening operation (7:00 p.m. to 10:00 p.m.) is equal in impact to 4.77 daytime operations by the same aircraft and one nighttime operation (10:00 p.m. to 7:00 a.m.) is equal in impact to ten daytime operations by the same aircraft

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Glossary of Noise Compatibility Terms

A-WEIGHTED SOUND LEVEL - A sound pressure level, often noted as dBA, which has been frequency filtered or weighted to quantitatively reduce the effect of the low frequency noise. It was designed to approximate the response of the human ear to sound.

AMBIENT NOISE - The totality of noise in a given place and time — usually a composite of sounds from varying sources at varying distance; no particular sound is dominant.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on the final approach for landing.

ATTENUATION - Acoustical phenomenon whereby a reduction in sound energy is experienced between the noise source and receiver. This energy loss can be attributed to atmospheric conditions, terrain, vegetation, and man-made and natural features.

AZIMUTH - Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

BASE LEG - A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

CFR - Code of Federal Regulation (i.e.14 CFR Part 150)

CNEL - The 24-hour average sound level, in A-weighted decibels, obtained after the addition of 4.77 decibels to sound levels between 7 p.m. and 10 p.m. and 10 decibels to sound levels between 10 p.m. and 7 a.m., as averaged over a span of one year. In California, it is the required metric for determining the cumulative exposure of individuals to aircraft noise. Also see "L_{eq}" and "DNL".

COMMUNITY NOISE EQUIVALENT LEVEL -See CNEL

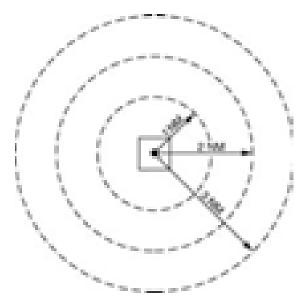
CROSSWIND LEG - A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

DAY-NIGHT AVERAGE SOUND LEVEL - See DNL.

DECIBEL (dB) - The physical unit commonly used to describe noise levels. The decibel represents a relative measure or ratio to a reference power. This reference value is a sound pressure of 20 micropascals which can be referred to as 1 decibel or the weakest sound that can be heard by a person with very good hearing in an extremely quiet room.

DISPLACED THRESHOLD - A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME) - Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL - The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise. Also see "L_{eq}."

DOWNWIND LEG - A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

DURATION - Length of time, in seconds, a noise event such as an aircraft flyover is experienced. (May refer to the length of time a noise event exceeds a specified dB threshold level.)

EASEMENT - The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

EQUIVALENT SOUND LEVEL - See $L_{eq.}$

FINAL APPROACH - A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FIXED BASE OPERATOR (FBO) - A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair and maintenance.

GLIDE SLOPE (GS) - Provides vertical guidance for aircraft during approach and landing. The glide slope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS, or
2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM - See "GPS."

GPS - GLOBAL POSITIONING SYSTEM - A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude. The accuracy of the system can be further refined by using a ground receiver at a known location to calculate the error in the satellite range data. This is known as Differential GPS (DGPS).

GROUND EFFECT - The attenuation attributed to absorption or reflection of noise by man-made or natural features on the ground surface.

HOURLY NOISE LEVEL (HNL) - A noise summation metric which considers primarily those single events which exceed a specified threshold or duration during one hour.

INSTRUMENT APPROACH - A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR) -Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

INSTRUMENT LANDING SYSTEM (ILS) - A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

LAAS - Local Area Augmentation System, ground-based antennas whose precisely known locations are used to correct the satellite signals and provide greater positional accuracy as well as integrity of service to aircraft in the air. Represents the next generation of airspace management and aircraft guidance through the National Airspace System using GPS technologies.

L_{dn} - (See DNL). L_{dn} used in place of DNL in mathematical equations only.

L_{eq} - Equivalent Sound Level. The steady A-weighted sound level over any specified period (not necessarily 24 hours) that has the same acoustic energy as the fluctuating noise during that period (with no consideration of a nighttime weighting.) It is a measure of cumulative acoustical energy. Because the time interval may vary, it should be specified by a subscript (such as L_{eq} 8) for an 8-hour exposure to workplace noise) or be clearly understood.

LOCALIZER - The component of an ILS which provides course guidance to the runway.

L_{max} - Maximum Sound Level, the maximum sound level (dB) during a particular noise event.

LOUDNESS - The attribute of auditory sensation in terms of which sounds may be ordered on a scale extending form soft to loud.

MISSED APPROACH COURSE (MAC) - The flight route to be followed if, after an instrument approach, a landing is not effected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact, or
2. When directed by air traffic control to pull up or to go around again.

NOISE CONTOUR - A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONDIRECTIONAL BEACON (NDB) -A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determined his bearing to and from the radio beacon and home on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NONPRECISION APPROACH - A standard instrument approach procedure providing runway alignment but no glide slope or descent information.

PRECISION APPROACH - A standard instrument approach procedure providing runway alignment and glide slope or descent information.

PRECISION APPROACH PATH INDICATOR (PAPI) - A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PROFILE - The physical position of the aircraft during landings or takeoffs in terms of altitude in feet above the runway and distance from the runway end.

PROPAGATION - Sound propagation refers to the spreading or radiating of sound energy from the noise source. Propagation characteristics of sound normally involve a reduction in sound energy with an increased distance from source. Sound propagation is affected by atmospheric conditions, terrain, and man-made and natural objects.

RESIDUAL NOISE - is ambient noise without specific noise. The residual noise is the noise remaining at a point under certain conditions when the noise from the specific source is suppressed.

RUNWAY END IDENTIFIER LIGHTS (REIL) - Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY USE PROGRAM - A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier. Turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices as outlined in Order 1050.11. Safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

RUNWAY USE PROGRAM (FORMAL) - An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between FAA - Flight Standards, FAA - Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in Part 150. Section 91.87.

RUNWAY USE PROGRAM (INFORMAL) - An approved noise abatement program which does not require a Letter of Understanding and participation in the program is voluntary for aircraft operators/pilots.

SEL - Sound Exposure Level. SEL expressed in dB, is a measure of the effect of duration and magnitude for a single-event measured in A-weighted sound level above a specified threshold which is at least 10 dB below the maximum value. In typical aircraft noise model calculations, SEL is used in computing aircraft acoustical contribution to the Equivalent Sound Level (L_{eq}), the Day-Night Sound Level (DNL), and the Community Noise Equivalent Level (CNEL).

SINGLE EVENT - An occurrence of audible noise usually above a specified minimum noise level caused by an intrusive source such as an aircraft overflight, passing train, or ship's horn.

SLANT-RANGE DISTANCE - The straight line distance between an aircraft and a point on the ground.

SOUND EXPOSURE LEVEL - See SEL.

SOUND LEVEL METER - An instrument, which is used for the measurement of sound level, with standard frequency weighting and standard exponentially weighted time averaging.

SPL - Sound Pressure Level, measure of the sound pressure of a given noise source relative to a standard reference value (typically the quietest sound that a young person with good hearing can detect).

TACTICAL AIR NAVIGATION (TACAN) -An ultra-high frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

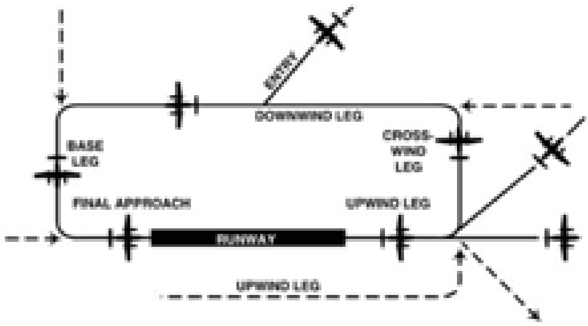
TERMINAL RADAR SERVICE AREA (TRSA) - Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Service provided in a TRSA is called Stage III Service.

THRESHOLD - Decibel level below which single event information is not printed out on the noise monitoring equipment tapes. The noise levels below the threshold are, however, considered in the accumulation of hourly and daily noise levels.

TIME ABOVE (TA) - The 24-hour TA noise metric provides the duration in minutes for which aircraft-related noise exceeds specified A-weighted sound levels. It is expressed in minutes per 24-hour period.

TOUCHDOWN ZONE LIGHTING (TDZ) -Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



UNICOM - A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG - A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION (VOR) - A ground-based electric navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION/TACTICAL AIR NAVIGATION (VORTAC) - A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

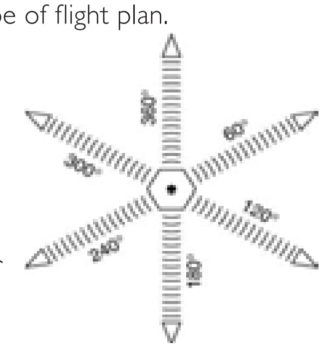
VICTOR AIRWAY - A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH - An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI) - An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating an directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR) - Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VOR - See "Very High Frequency Omnidirectional Range Station."



VORTAC - See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

WAAS - Wide Area Augmentation System, ground-based antennas whose precisely known locations are used to correct the satellite signals and provide greater positional accuracy as well as integrity of service to aircraft in the air. Given the current difficulties with WAAS, LAAS now has higher priority for implementation at U.S. airports.

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL - See DNL.

Appendix F

INTEGRATED NOISE MODEL COORDINATION

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

Office of Environment and Energy

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

June 26, 2012

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

Dear Mr. Globa,

The Office of Environment and Energy (AEE) has reviewed the proposed non-standard Integrated Noise Model (INM) aircraft substitutions for the Bob Hope Airport (BUR) 14 CFR Part 150 Noise Exposure Map Update.

Coffman Associates has proposed substitutions for four aircraft types that currently do not have standard substitutions in the INM 7.0c aircraft database. The proposed substitutions and the corresponding AEE recommendations are summarized in the table below.

Aircraft	Proposed Substitution	AEE Recommendation
Swearingen SJ-30	CNA525C	Concur
Embraer Phenom 100	CNA510	Concur
Embraer Phenom 300	CNA560E	Concur
Dash 8-Q400	DHC830	Concur

AEE concurs with the proposed aircraft substitutions. Please understand that this approval is limited to this particular Part 150 update for BUR. Any additional projects or non-standard INM input at BUR or any other site will require separate approval.

Sincerely,

Rebecca Cointin, Acting Manager
AEE/Noise Division

cc: Jim Byers, APP-400
Peter Ciesla

U.S. Department
of Transportation
Federal Aviation Administration

Office of Environment and Energy

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

Date: July 10, 2012

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

Dear Mr. Globa,

The Office of Environment and Energy (AEE) has reviewed the request for guidance on helicopter noise modeling prepared by Coffman Associates dated June 13, 2012 for the Bob Hope Airport (BUR) 14 CFR Part 150 Noise Compatibility Study Update.

Bob Hope Airport has regular helicopter training located to the west of Runway 15 with helicopters touching down on the runway. Because the Integrated Noise Model (INM) version 7.0c does not support helicopter touch-and-go operations, short approach and departure tracks were created to fit the established touch-and-go training pattern for the R-22 helicopter. Helicopter training operation assumptions were confirmed by the BUR Airport Control Tower manager.

AEE has reviewed the request and approves the use of the user-defined helicopter profiles. Please understand that this approval is limited to this particular project for BUR. Any additional projects or non-standard INM input at BUR will require separate approval.

Sincerely,

Rebecca Cointin, Acting Manager
AEE/Noise Division
cc: Jim Byers, APP-400

August 23, 2012

Mr. David Cushing
Federal Aviation Administration
Los Angeles Airports District Office, LAX-600
15000 Aviation Blvd.
Lawndale, CA 90261

Via Federal Express

Re: Bob Hope Airport Forecast Submittal

Dear Mr. Cushing:

The Burbank-Glendale-Pasadena Airport Authority (Airport Authority) is writing to request review and approval of the aviation forecasts prepared as part of the ongoing 14 CFR Part 150 Noise Exposure Map Update for Bob Hope Airport. Enclosed please find one copy of Chapter Two – Aviation Forecasts for your review. The Airport Authority's Legal, Government & Environmental Affairs Committee reviewed and concurred with these forecasts during their recent meeting on August 20, 2012.

In your review of the attached Aviation Forecast Worksheets, you will find that the differences between the FAA *Terminal Area Forecasts* (TAF) and the "Part 150 Forecast" are within reason. The five-year projected enplanement forecast is within 9.0 percent of the TAF, while the ten-year enplanement forecast is within 13.4 percent. Commercial operations are within 5.6 percent of the TAF at five years and within 5.7 percent at 10 years. The five-year forecast for total operations is within 8.4 percent of the TAF and the ten-year forecast is within 8.3 percent. These differences are well within the ten percent and 15 percent allowance for the five and ten-year planning horizons, respectively.

Thank you in advance for taking time to review these forecasts, and we look forward to hearing back from you on this matter in the near future. Please feel free to contact me if you have any questions.

Sincerely,

Dan Feger
Executive Director

Enclosures: Chapter Two – Aviation Forecasts
FAA TAF for Bob Hope Airport (Published January 2012)
Template for Comparing Airport Planning and FAA TAF Forecasts
Template for Summarizing and Documenting Airport Planning Forecasts

2627 Hollywood Way • Burbank, California 91505 • (818) 840-8840 • Fax: (818) 848-1173

Summary of Documentation for Airport Planning Forecast

AIRPORT NAME/LOCATION ID: Bob Hope Airport /BUR
Date: 8/8/2012

Forecast Levels and Growth Rates

Base year: 2011

	2011	2017	2022	2032	Average Annual Compound Growth Rates 2017	2022	2032
Passenger Enplanements							
Air Carrier	2,151,520	2,620,000	2,930,000	3,520,000	3.3%	1.9%	3.1%
Commuter	0	0	0	0	NA	NA	NA
TOTAL	2,151,520	2,620,000	2,930,000	3,520,000	3.3%	1.9%	3.3%
Operations							
Itinerant							
Air carrier air cargo	47,184	57,592	64,400	74,800	3.4%	1.9%	2.5%
Commuter air taxi	20,542	20,608	18,200	16,600	0.1%	1.3%	-1.0%
Total Commercial Operations	67,726	78,200	82,600	91,400	2.4%	1.8%	1.4%
General aviation	35,585	43,640	45,540	48,840	3.5%	2.3%	1.9%
Military	306	250	250	250	-1.7%	-1.3%	-1.0%
Local							
General aviation	19,475	19,400	20,000	21,400	-0.1%	0.2%	0.4%
Military	0	50	50	50	NA	NA	NA
TOTAL OPERATIONS	123,092	141,540	148,440	161,940	2.4%	1.7%	1.3%
Instrument Operations	80,369	97,672	102,712	112,392	3.5%	2.3%	1.6%
Design Hour Operations	41	47	49	54	2.4%	1.7%	1.3%
Cargo/mail (enplaned+deplaned tons)	51,038	56,700	60,200	68,600	2.1%	1.3%	2.6%
Based Aircraft							
Single Engine (Nonjet)	27	23	19	15	-2.6%	-3.1%	-2.3%
Multi Engine (Nonjet)	3	2	1	1	-6.5%	-9.5%	-5.1%
Jet Engine (includes turbo prop)	62	68	75	85	1.6%	1.7%	1.5%
Helicopter	4	10	11	12	16.5%	9.6%	5.4%
Other	0	0	0	0	NA	NA	NA
TOTAL	96	103	106	113	1.2%	0.9%	0.8%

Operational Factors	2011	2017	2022	2032
Average aircraft size (seats)				
Air carrier	120.5	120.7	123.4	127.5
Commuter	0.0	0.0	0.0	0.0
Average enplaning load factor				
Air carrier	68.1%	71.0%	73.0%	76.0%
Commuter	0.0%	0.0%	0.0%	0.0%
GA operations per based aircraft	574	612	618	622

Note: Show base plus one year if forecast was done. If planning effort did not include all forecast years shown interpolate years as needed, using average annual compound growth rates.

Comparison of Airport Planning and FAA TAF Forecasts

AIRPORT NAME/LOCATION ID: **Bob Hope Airport/BUR**
Date: **8/8/2012**

	Year	Airport Forecast	FAA TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2011	2,151,250	2,170,507	-0.9%
Base yr. + 5yrs.	2017	2,620,000	2,404,147	9.0%
Base yr. + 10yrs.	2022	2,930,000	2,584,735	13.4%
Base yr. + 20yrs.	2032	3,520,000	2,903,839	21.2%
Commercial Operations				
Base yr.	2011	67,726	68,127	-0.6%
Base yr. + 5yrs.	2017	78,200	74,034	5.6%
Base yr. + 10yrs.	2022	82,600	78,177	5.7%
Base yr. + 20yrs.	2032	91,400	85,320	7.1%
Total Operations				
Base yr.	2011	123,092	118,824	3.6%
Base yr. + 5yrs.	2017	141,540	130,584	8.4%
Base yr. + 10yrs.	2022	148,440	137,111	8.3%
Base yr. + 20yrs.	2032	161,940	148,300	9.2%
Based Aircraft				
Base yr.	2011	96	91	5.5%
Base yr. + 5yrs.	2017	103	93	10.8%
Base yr. + 10yrs.	2022	106	96	10.4%
Base yr. + 20yrs.	2032	113	96	17.7%

NOTE: TAF data is on a U.S. Government fiscal year basis.

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued January 2012

BUR

AIRCRAFT OPERATIONS

	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft

REGION:AWP **STATE:**CA **LOCID:**BUR

CITY:BURBANK **AIRPORT:**BOB HOPE

Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
1990	1,699,823	25,892	1,725,715	37,777	37,195	94,907	1,492	171,371	6,492	0	6,492	177,863	0	327
1991	1,807,586	46,053	1,853,639	58,993	49,245	114,041	953	223,232	6,160	100	6,260	229,492	0	327
1992	1,863,896	36,606	1,900,502	51,297	39,474	116,319	604	207,694	6,618	49	6,667	214,361	0	327
1993	2,000,888	62,548	2,063,436	50,862	47,766	103,677	531	202,836	4,497	127	4,624	207,460	0	327
1994	2,328,317	43,686	2,372,003	56,923	41,640	92,219	592	191,374	2,884	6	2,890	194,264	0	254
1995	2,417,140	54,094	2,471,234	62,812	39,068	78,736	359	180,975	3,380	11	3,391	184,366	0	232
1996	2,408,882	56,061	2,464,943	59,823	37,212	83,255	257	180,547	4,285	11	4,296	184,843	0	211
1997	2,322,700	39,420	2,362,120	58,887	37,731	78,391	391	175,400	8,488	64	8,552	183,952	0	211
1998	2,340,150	11,788	2,351,938	61,647	34,071	74,358	677	170,753	8,103	0	8,103	178,856	0	211
1999	2,372,796	13,339	2,386,135	63,838	34,931	71,749	472	170,990	7,926	0	7,926	178,916	0	165
2000	2,371,364	0	2,371,364	58,366	29,944	64,870	352	153,532	9,335	0	9,335	162,867	0	165
2001	2,322,698	0	2,322,698	56,965	28,379	62,588	357	148,289	11,543	0	11,543	159,832	0	155
2002	2,224,982	20,697	2,245,679	55,857	29,601	62,393	424	148,275	12,413	0	12,413	160,688	0	129
2003	2,297,167	62,546	2,359,713	58,376	27,471	68,614	245	154,706	20,967	0	20,967	175,673	0	127
2004	2,265,172	148,121	2,413,293	58,005	26,993	58,498	318	143,814	23,319	0	23,319	167,133	0	118
2005	2,385,594	278,851	2,664,445	51,985	43,107	68,666	376	164,134	10,523	84	10,607	174,741	0	116
2006	2,533,529	304,343	2,837,872	55,613	33,892	94,673	580	184,758	6,725	0	6,725	191,483	0	108
2007	2,655,670	275,147	2,930,817	58,970	30,997	93,485	478	183,930	6,015	0	6,015	189,945	0	108
2008	2,511,176	273,057	2,784,233	60,347	26,955	28,225	216	115,743	7,008	38	7,046	122,789	0	113
2009	2,027,447	285,223	2,312,670	54,374	21,371	23,533	171	99,449	11,948	69	12,017	111,466	0	91
2010	1,986,884	266,807	2,253,691	51,332	22,130	25,169	227	98,858	12,928	29	12,957	111,815	0	91
2011*	1,893,108	277,399	2,170,507	46,818	21,309	33,385	284	101,796	17,028	0	17,028	118,824	0	91
2012*	1,915,673	304,974	2,220,647	47,951	21,608	35,597	284	105,440	18,389	0	18,389	123,829	0	91
2013*	1,937,828	310,907	2,248,735	48,317	21,859	35,953	284	106,413	18,480	0	18,480	124,893	0	91
2014*	1,951,232	314,524	2,265,756	48,462	21,943	36,313	284	107,002	18,571	0	18,571	125,573	0	92
2015*	1,985,598	323,841	2,309,439	49,124	22,419	36,677	284	108,504	18,664	0	18,664	127,168	0	93
2016*	2,032,839	336,802	2,369,641	50,098	23,136	37,044	284	110,562	18,757	0	18,757	129,319	0	93
2017*	2,059,824	344,323	2,404,147	50,565	23,469	37,415	284	111,733	18,851	0	18,851	130,584	0	93
2018*	2,087,167	352,011	2,439,178	51,036	23,807	37,789	284	112,916	18,945	0	18,945	131,861	0	94
2019*	2,114,873	359,872	2,474,745	51,512	24,151	38,167	284	114,114	19,039	0	19,039	133,153	0	94

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued January 2012

BUR

AIRCRAFT OPERATIONS

	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
2020*	2,142,946	367,908	2,510,854	51,992	24,499	38,548	284	115,323	19,135	0	19,135	134,458	0	94
2021*	2,171,391	376,123	2,547,514	52,477	24,852	38,933	284	116,546	19,231	0	19,231	135,777	0	95
2022*	2,200,214	384,521	2,584,735	52,966	25,211	39,323	284	117,784	19,327	0	19,327	137,111	0	96
2023*	2,229,421	393,107	2,622,528	53,460	25,575	39,717	284	119,036	19,424	0	19,424	138,460	0	96
2024*	2,259,014	401,885	2,660,899	53,958	25,944	40,114	284	120,300	19,521	0	19,521	139,821	0	96
2025*	2,289,000	410,859	2,699,859	54,461	26,318	40,515	284	121,578	19,619	0	19,619	141,197	0	96
2026*	2,319,385	420,034	2,739,419	54,969	26,698	40,920	284	122,871	19,717	0	19,717	142,588	0	96
2027*	2,350,174	429,414	2,779,588	55,482	27,084	41,329	284	124,179	19,815	0	19,815	143,994	0	96
2028*	2,381,371	439,002	2,820,373	55,999	27,474	41,742	284	125,499	19,915	0	19,915	145,414	0	96
2029*	2,412,982	448,805	2,861,787	56,521	27,870	42,160	284	126,835	20,015	0	20,015	146,850	0	96
2030*	2,445,012	458,827	2,903,839	57,048	28,272	42,581	284	128,185	20,115	0	20,115	148,300	0	96
2031*	2,477,468	469,072	2,946,540	57,581	28,680	43,007	284	129,552	20,216	0	20,216	149,768	0	96
2032*	2,510,354	479,546	2,989,900	58,119	29,093	43,438	284	130,934	20,317	0	20,317	151,251	0	96
2033*	2,543,677	490,255	3,033,932	58,662	29,513	43,872	284	132,331	20,419	0	20,419	152,750	0	96
2034*	2,577,442	501,203	3,078,645	59,210	29,939	44,311	284	133,744	20,521	0	20,521	154,265	0	96
2035*	2,611,656	512,395	3,124,051	59,762	30,372	44,753	284	135,171	20,623	0	20,623	155,794	0	96
2036*	2,646,324	523,837	3,170,161	60,319	30,810	45,201	284	136,614	20,726	0	20,726	157,340	0	96
2037*	2,681,452	535,534	3,216,986	60,882	31,255	45,653	284	138,074	20,829	0	20,829	158,903	0	96
2038*	2,717,047	547,492	3,264,539	61,450	31,706	46,110	284	139,550	20,933	0	20,933	160,483	0	96
2039*	2,753,114	559,717	3,312,831	62,023	32,163	46,571	284	141,041	21,037	0	21,037	162,078	0	96
2040*	2,789,660	572,215	3,361,875	62,601	32,627	47,036	284	142,548	21,141	0	21,141	163,689	0	96

U.S Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Los Angeles Airports District Office

P.O Box 92007
Los Angeles, CA 90009

September 24, 2012

Mr. Dan Feger
Executive Director
Burbank-Glendale-Pasadena Airport Authority
2627 Hollywood Way
Burbank, CA 91505

Dear Mr. Feger:

Bob Hope Airport
14 CFR Part 150 Noise Exposure Map Update Aviation Forecasts

The Federal Aviation Administration (FAA) has reviewed the Chapter Two Aviation Forecasts for the Bob Hope Airport (BUR) 14 CFR Part 150 Noise Exposure Map Update. The forecasts were received on August 27, 2012.

The forecasts establish an accurate baseline and present reasonable projections for future aviation activity levels. The forecasts are within 10% percent at five years, and within 15% at ten years. Under these circumstances, the locally developed forecasts for BUR, are considered to be consistent with the FAA Terminal Area Forecast (TAF).

Therefore, FAA hereby approves the subject BUR aviation forecasts for use in preparing your 14 CFR Part 150 Noise Compatibility Study.

If you have any questions concerning this matter, I can be reached at (310) 725-3644.

Sincerely,

David F. Cushing
Manager, Los Angeles Airports District Office

Appendix G

AIRCRAFT OPERATION ASSIGNMENTS

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2012 Daytime Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.08	0.08		0.04	0.00	0.00	0.02	0.01		0.34	0.34													0.91
737300	0.16			0.00	0.03	0.03				0.83	0.55													1.60
737500	0.01			0.00	0.00	0.00				0.04	0.03													0.07
737700	2.88			0.00	0.58	0.58				14.84	9.89													28.76
737800	0.05			0.00	0.01	0.01				0.24	0.16													0.46
757PW	0.02			0.00	0.00	0.00				0.08	0.06													0.16
767400	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A300-622R	0.12			0.00	0.02	0.02				0.64	0.42													1.23
A319-131	0.12			0.00	0.02	0.02				0.59	0.40													1.15
A320-211	0.16			0.00	0.03	0.03				0.80	0.54													1.56
BEC58	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.15	0.15													0.39
BEC58P	0.51	0.11	0.11	0.18	0.05	0.01	0.01	0.02	0.00	0.00	0.89	0.38												2.26
BEC99	0.19	0.19		0.08	0.00	0.00	0.05	0.01		0.78	0.78													2.08
CIT3	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.08	0.08													0.21
CL600	0.19			0.00	0.04	0.04				1.00	0.67													1.94
CL601	0.52			0.00	0.10	0.10				2.70	1.80													5.23
CNA208	0.58	0.12	0.12	0.21	0.05	0.01	0.01	0.02	0.00	0.00	1.01	0.43												2.59
CNA441	0.94	0.20	0.20	0.34	0.08	0.02	0.02	0.03	0.01	0.00	1.65	0.71												4.20
CNA500	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.09	0.09													0.25
CNA510	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.15	0.15													0.41
CNA55B	0.06	0.06		0.03	0.00	0.00	0.02	0.00		0.27	0.27													0.72
CNA560XL	0.16	0.16		0.07	0.00	0.00	0.04	0.01		0.66	0.66													1.76
CNA680	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.16	0.16													0.43
CNA750	0.09			0.00	0.02	0.02				0.44	0.29													0.85
CRJ701	0.27			0.00	0.05	0.05				1.37	0.91													2.66
CRJ9-ER	0.17			0.00	0.03	0.03				0.88	0.58													1.70
DHC6	0.36	0.08	0.08	0.13	0.03	0.01	0.01	0.01	0.00	0.00	0.63	0.27												1.62
DHC830	0.05			0.00	0.01	0.01				0.26	0.17													0.51
EMB145	0.01			0.00	0.00	0.00				0.06	0.04													0.11
F10062	0.01			0.00	0.00	0.00				0.06	0.04													0.11
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.04
GASEPF	2.10	0.45	0.45	0.75	0.19	0.05	0.05	0.08	0.02	0.00	3.68	1.58												9.38
GASEPV	2.10	0.45	0.45	0.75	0.19	0.05	0.05	0.08	0.02	0.00	3.68	1.58												9.38
GIIB	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.08	0.08													0.22
GIV	0.17			0.00	0.03	0.03				0.90	0.60													1.75
GV	0.14			0.00	0.03	0.03				0.70	0.47													1.35
H500D													0.97											0.97
IA1125	0.06	0.06		0.03	0.00	0.00	0.02	0.00		0.24	0.24													0.65
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.04
LEAR35	0.32	0.32		0.14	0.00	0.00	0.09	0.02		1.34	1.34													3.57
MD82	0.29			0.00	0.06	0.06				1.49	0.99													2.88
MU3001	0.06	0.06		0.03	0.00	0.00	0.02	0.00		0.26	0.26													0.70
PA31	0.13	0.13		0.06	0.00	0.00	0.03	0.01		0.54	0.54													1.44
R22																0.13	0.13	3.11	3.11	0.06	0.06	3.17	3.17	12.94
R44														0.49	0.49									0.97
S70														0.15	0.15									0.31
SA227	0.16	0.16		0.07	0.00	0.00	0.04	0.01		0.65	0.65													1.74
SA350D														0.49	0.49									0.97
Total	13.40	2.81	1.41	2.98	1.67	1.23	0.53	0.33	0.05	33.74	35.97	4.94	0.97	1.12	1.12	0.13	0.13	3.11	3.11	0.06	0.06	3.17	3.17	115.21

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Evening Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
737300	0.01			0.00	0.00	0.00				0.07	0.05													0.14
737500	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737700	1.57			0.00	0.31	0.31				8.12	5.41													15.74
737800	0.07			0.00	0.01	0.01				0.37	0.25													0.71
757PW	0.00			0.00	0.00	0.00				0.00	0.00													0.00
767400	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A300-622R	0.06			0.00	0.01	0.01				0.29	0.20													0.57
A319-131	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A320-211	0.13			0.00	0.03	0.03				0.66	0.44													1.28
BEC58	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
BEC58P	0.07	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.05												0.30
BEC99	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.18	0.18													0.48
CIT3	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CL600	0.03			0.00	0.01	0.01				0.13	0.09													0.26
CL601	0.41			0.00	0.08	0.08				2.13	1.42													4.13
CNA208	0.08	0.02	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.06												0.34
CNA441	0.13	0.03	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.22	0.09												0.56
CNA500	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CNA510	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.05
CNA55B	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.04	0.04													0.10
CNA560XL	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.09	0.09													0.23
CNA680	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.06
CNA750	0.01			0.00	0.00	0.00				0.06	0.04													0.11
CRJ701	0.06			0.00	0.01	0.01				0.29	0.20													0.57
CRJ9-ER	0.10			0.00	0.02	0.02				0.51	0.34													1.00
DHC6	0.05	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.04												0.22
DHC830	0.00			0.00	0.00	0.00				0.00	0.00													0.00
EMB145	0.00			0.00	0.00	0.00				0.01	0.01													0.01
F10062	0.00			0.00	0.00	0.00				0.01	0.01													0.02
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GASEPF	0.28	0.06	0.06	0.10	0.02	0.01	0.01	0.01	0.00	0.00	0.49	0.21												1.25
GASEPV	0.28	0.06	0.06	0.10	0.02	0.01	0.01	0.01	0.00	0.00	0.49	0.21												1.25
GIIB	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
GIV	0.02			0.00	0.00	0.00				0.12	0.08													0.23
GV	0.02			0.00	0.00	0.00				0.09	0.06													0.18
H500D													0.13											0.13
IA1125	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.09
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
LEAR35	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
MD82	0.07			0.00	0.01	0.01				0.37	0.25													0.71
MU3001	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.09
PA31	0.05	0.05		0.02	0.00	0.00	0.01	0.00		0.21	0.21													0.57
R22																0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	0.27
R44														0.06	0.06									0.13
S70														0.01	0.01									0.02
SA227	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
SA350D														0.06	0.06									0.13
Total	3.60	0.35	0.19	0.38	0.59	0.53	0.06	0.04	0.01	13.91	11.03	0.66	0.13	0.14	0.14	0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	32.02

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Nighttime Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
737300	0.01			0.00	0.00	0.00				0.07	0.05													0.14
737500	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737700	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737800	0.00			0.00	0.00	0.00				0.00	0.00													0.00
757PW	0.00			0.00	0.00	0.00				0.00	0.00													0.00
767400	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A300-622R	0.06			0.00	0.01	0.01				0.29	0.20													0.57
A319-131	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A320-211	0.03			0.00	0.01	0.01				0.15	0.10													0.28
BEC58	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
BEC58P	0.06	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.10	0.04												0.26
BEC99	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
CIT3	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.02
CL600	0.02			0.00	0.00	0.00				0.11	0.08													0.22
CL601	0.03			0.00	0.01	0.01				0.15	0.10													0.28
CNA208	0.07	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.05												0.29
CNA441	0.11	0.02	0.02	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.19	0.08												0.48
CNA500	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CNA510	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.05
CNA55B	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.08
CNA560XL	0.02	0.02		0.01	0.00	0.00	0.00	0.00		0.07	0.07													0.20
CNA680	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.05
CNA750	0.01			0.00	0.00	0.00				0.05	0.03													0.10
CRJ701	0.04			0.00	0.01	0.01				0.22	0.15													0.43
CRJ9-ER	0.00			0.00	0.00	0.00				0.00	0.00													0.00
DHC6	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.03												0.18
DHC830	0.00			0.00	0.00	0.00				0.00	0.00													0.00
EMB145	0.00			0.00	0.00	0.00				0.01	0.00													0.01
F10062	0.00			0.00	0.00	0.00				0.01	0.00													0.01
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GASEPF	0.24	0.05	0.05	0.09	0.02	0.01	0.01	0.01	0.00	0.00	0.42	0.18												1.06
GASEPV	0.24	0.05	0.05	0.09	0.02	0.01	0.01	0.01	0.00	0.00	0.42	0.18												1.06
GIIB	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.02
GIV	0.02			0.00	0.00	0.00				0.10	0.07													0.20
GV	0.02			0.00	0.00	0.00				0.08	0.05													0.15
H500D													0.11											0.11
IA1125	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.07
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
LEAR35	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
MD82	0.00			0.00	0.00	0.00				0.00	0.00													0.00
MU3001	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.08
PA31	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
R22																0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	0.13
R44														0.06	0.06									0.11
S70														0.01	0.01									0.03
SA227	0.10	0.10		0.05	0.00	0.00	0.03	0.01		0.43	0.43													1.14
SA350D														0.06	0.06									0.11
Total	1.15	0.32	0.16	0.34	0.11	0.07	0.06	0.04	0.01	1.90	2.79	0.56	0.11	0.12	0.12	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	7.99

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Daytime Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.23	0.12	0.23		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.62
737300	1.09		0.72		0.01	0.02	0.05																	1.88
737500	0.04		0.03		0.00	0.00	0.00																	0.07
737700	20.19		13.46		0.18	0.37	0.86																	35.06
737800	0.53		0.36		0.00	0.01	0.02																	0.93
757PW	0.00		0.00		0.00	0.00	0.00																	0.00
767400	0.00		0.00		0.00	0.00	0.00																	0.00
A300-622R	0.29		0.20		0.00	0.01	0.01																	0.51
A319-131	0.66		0.44		0.01	0.01	0.03																	1.15
A320-211	1.23		0.82		0.01	0.02	0.05																	2.13
BEC58	0.15	0.07	0.15		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.39
BEC58P	0.00	0.00	0.31	0.94	0.11	0.00	0.16	0.11	0.14	0.11	0.11	0.35												2.33
BEC99	0.50	0.25	0.50		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.33
CIT3	0.08	0.04	0.08		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.22
CL600	1.15		0.77		0.01	0.02	0.05																	2.00
CL601	4.65		3.10		0.04	0.08	0.20																	8.07
CNA208	0.00	0.00	0.36	1.07	0.13	0.00	0.18	0.12	0.16	0.12	0.12	0.40												2.67
CNA441	0.00	0.00	0.58	1.74	0.21	0.00	0.30	0.20	0.26	0.20	0.20	0.66												4.33
CNA500	0.09	0.05	0.09		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.25
CNA510	0.16	0.08	0.16		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.42
CNA55B	0.28	0.14	0.28		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.74
CNA560XL	0.68	0.34	0.68		0.03	0.00	0.07		0.00	0.00	0.00	0.01												1.81
CNA680	0.17	0.08	0.17		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.44
CNA750	0.51		0.34		0.00	0.01	0.02																	0.88
CRJ701	2.11		1.40		0.02	0.04	0.09																	3.65
CRJ9-ER	1.11		0.74		0.01	0.02	0.05																	1.93
DHC6	0.00	0.00	0.22	0.67	0.08	0.00	0.11	0.08	0.10	0.08	0.08	0.25												1.67
DHC830	0.29		0.19		0.00	0.01	0.01																	0.51
EMB145	0.07		0.04		0.00	0.00	0.00																	0.11
F10062	0.07		0.04		0.00	0.00	0.00																	0.12
FAL20	0.01	0.01	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.04
GASEPF	0.00	0.00	1.29	3.88	0.46	0.00	0.67	0.44	0.58	0.44	0.44	1.46												9.67
GASEPV	0.00	0.00	1.29	3.88	0.46	0.00	0.67	0.44	0.58	0.44	0.44	1.46												9.67
GIIB	0.08	0.04	0.08		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.23
GIV	1.04		0.69		0.01	0.02	0.04																	1.80
GV	0.80		0.54		0.01	0.01	0.03																	1.40
H500D													1.00											1.00
IA1125	0.25	0.13	0.25		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.67
LEAR25	0.01	0.01	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.04
LEAR35	1.11	0.56	1.11		0.04	0.00	0.12		0.00	0.00	0.00	0.01												2.95
MD82	2.07		1.38		0.02	0.04	0.09																	3.59
MU3001	0.27	0.13	0.27		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.72
PA31	0.49	0.24	0.49		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.30
R22																0.13	0.13	3.11	3.11	0.06	0.06	3.17	3.17	12.94
R44														0.50	0.50									1.00
S70														0.15	0.15									0.31
SA227	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
SA350D														0.50	0.50									1.00
Total	42.47	2.29	33.90	12.17	1.95	0.69	4.19	1.40	1.84	1.38	1.38	4.65	1.00	1.15	1.15	0.13	0.13	3.11	3.11	0.06	0.06	3.17	3.17	124.54

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Evening Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
737300	0.00		0.00		0.00	0.00	0.00																	0.00
737500	0.00		0.00		0.00	0.00	0.00																	0.00
737700	5.36		3.57		0.05	0.10	0.23																	9.30
737800	0.14		0.09		0.00	0.00	0.01																	0.25
757PW	0.09		0.06		0.00	0.00	0.00																	0.16
767400	0.00		0.00		0.00	0.00	0.00																	0.00
A300-622R	0.68		0.46		0.01	0.01	0.03																	1.19
A319-131	0.00		0.00		0.00	0.00	0.00																	0.00
A320-211	0.41		0.27		0.00	0.01	0.02																	0.71
BEC58	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
BEC58P	0.00	0.00	0.03	0.09	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.04												0.23
BEC99	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
CIT3	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
CL600	0.12		0.08		0.00	0.00	0.00																	0.20
CL601	0.91		0.60		0.01	0.02	0.04																	1.57
CNA208	0.00	0.00	0.04	0.11	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.27
CNA441	0.00	0.00	0.06	0.17	0.02	0.00	0.03	0.02	0.03	0.02	0.02	0.07												0.43
CNA500	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.03
CNA510	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.04
CNA55B	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.07
CNA560XL	0.07	0.03	0.07		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.18
CNA680	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.04
CNA750	0.05		0.03		0.00	0.00	0.00																	0.09
CRJ701	0.00		0.00		0.00	0.00	0.00																	0.00
CRJ9-ER	0.39		0.26		0.00	0.01	0.02																	0.67
DHC6	0.00	0.00	0.02	0.07	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.03												0.17
DHC830	0.00		0.00		0.00	0.00	0.00																	0.00
EMB145	0.01		0.00		0.00	0.00	0.00																	0.01
F10062	0.01		0.00		0.00	0.00	0.00																	0.01
FAL20	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GASEPF	0.00	0.00	0.13	0.39	0.05	0.00	0.07	0.04	0.06	0.04	0.04	0.15												0.97
GASEPV	0.00	0.00	0.13	0.39	0.05	0.00	0.07	0.04	0.06	0.04	0.04	0.15												0.97
GIIB	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
GIV	0.10		0.07		0.00	0.00	0.00																	0.18
GV	0.08		0.05		0.00	0.00	0.00																	0.14
H500D													0.10											0.10
IA1125	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.07
LEAR25	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
LEAR35	0.11	0.06	0.11		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.30
MD82	0.00		0.00		0.00	0.00	0.00																	0.00
MU3001	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.07
PA31	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
R22																0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	0.27
R44														0.05	0.05									0.10
S70														0.00	0.00									0.00
SA227	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
SA350D														0.05	0.05									0.10
Total	8.77	0.21	6.40	1.22	0.23	0.15	0.61	0.14	0.18	0.14	0.14	0.47	0.10	0.10	0.10	0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	19.24

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2012 Nighttime Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
737300	0.00		0.00		0.00	0.00	0.00																	0.00
737500	0.00		0.00		0.00	0.00	0.00																	0.00
737700	0.08		0.05		0.00	0.00	0.00																	0.14
737800	0.00		0.00		0.00	0.00	0.00																	0.00
757PW	0.00		0.00		0.00	0.00	0.00																	0.00
767400	0.00		0.00		0.00	0.00	0.00																	0.00
A300-622R	0.39		0.26		0.00	0.01	0.02																	0.68
A319-131	0.00		0.00		0.00	0.00	0.00																	0.00
A320-211	0.16		0.11		0.00	0.00	0.01																	0.28
BEC58	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
BEC58P	0.00	0.00	0.03	0.10	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.25
BEC99	0.46	0.23	0.46		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.22
CIT3	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
CL600	0.13		0.08		0.00	0.00	0.01																	0.22
CL601	0.00		0.00		0.00	0.00	0.00																	0.00
CNA208	0.00	0.00	0.04	0.12	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.29
CNA441	0.00	0.00	0.06	0.19	0.02	0.00	0.03	0.02	0.03	0.02	0.02	0.07												0.47
CNA500	0.01	0.01	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.03
CNA510	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA55B	0.03	0.02	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
CNA560XL	0.07	0.04	0.07		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.20
CNA680	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA750	0.06		0.04		0.00	0.00	0.00																	0.10
CRJ701	0.00		0.00		0.00	0.00	0.00																	0.00
CRJ9-ER	0.06		0.04		0.00	0.00	0.00																	0.10
DHC6	0.00	0.00	0.02	0.07	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.03												0.18
DHC830	0.00		0.00		0.00	0.00	0.00																	0.00
EMB145	0.01		0.00		0.00	0.00	0.00																	0.01
F10062	0.01		0.00		0.00	0.00	0.00																	0.01
FAL20	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GASEPF	0.00	0.00	0.14	0.42	0.05	0.00	0.07	0.05	0.06	0.05	0.05	0.16												1.05
GASEPV	0.00	0.00	0.14	0.42	0.05	0.00	0.07	0.05	0.06	0.05	0.05	0.16												1.05
GIIB	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
GIV	0.11		0.08		0.00	0.00	0.00																	0.20
GV	0.09		0.06		0.00	0.00	0.00																	0.15
H500D													0.11											0.11
IA1125	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.07
LEAR25	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
LEAR35	0.12	0.06	0.12		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.32
MD82	0.00		0.00		0.00	0.00	0.00																	0.00
MU3001	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
PA31	0.27	0.13	0.27		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.71
R22																0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	0.13
R44														0.05	0.05									0.11
S70														0.02	0.02									0.04
SA227	1.03	0.52	1.03		0.04	0.00	0.11		0.00	0.00	0.00	0.01												2.74
SA350D														0.05	0.05									0.11
Total	3.25	1.08	3.33	1.32	0.25	0.02	0.50	0.15	0.20	0.15	0.15	0.53	0.11	0.13	0.13	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	11.43

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Daytime Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	1.31	0.12	0.28	0.74	2.45
GASEPF	2.62	0.23	0.56	1.48	4.89
GASEPV	2.62	0.23	0.56	1.48	4.89
Total	6.54	0.58	1.41	3.70	12.23

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Evening Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	0.12	0.01	0.03	0.07	0.22
GASEPF	0.24	0.02	0.05	0.13	0.44
GASEPV	0.24	0.02	0.05	0.13	0.44
Total	0.59	0.05	0.13	0.33	1.11

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2012 Nighttime Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	0.00	0.00	0.00	0.00	0.00
GASEPF	0.00	0.00	0.00	0.00	0.00
GASEPV	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Daytime Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.08	0.08		0.04	0.00	0.00	0.02	0.01		0.33	0.33													0.88
737300	0.14			0.00	0.03	0.03				0.72	0.48													1.40
737500	0.08			0.00	0.02	0.02				0.42	0.28													0.82
737700	3.37			0.00	0.67	0.67				17.41	11.61													33.75
737800	0.07			0.00	0.01	0.01				0.34	0.23													0.66
757PW	0.02			0.00	0.00	0.00				0.09	0.06													0.18
767400	0.01			0.00	0.00	0.00				0.07	0.05													0.13
A300-622R	0.13			0.00	0.03	0.03				0.65	0.43													1.26
A319-131	0.17			0.00	0.03	0.03				0.87	0.58													1.69
A320-211	0.19			0.00	0.04	0.04				0.99	0.66													1.93
BEC58	0.03	0.03		0.02	0.00	0.00	0.01	0.00		0.14	0.14													0.38
BEC58P	0.40	0.09	0.09	0.14	0.04	0.01	0.01	0.01	0.00	0.00	0.70	0.30												1.78
BEC99	0.18	0.18		0.08	0.00	0.00	0.05	0.01		0.76	0.76													2.02
CIT3	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.08	0.08													0.22
CL600	0.21			0.00	0.04	0.04				1.06	0.71													2.05
CL601	0.41			0.00	0.08	0.08				2.11	1.41													4.09
CNA208	0.64	0.14	0.14	0.23	0.06	0.01	0.01	0.02	0.00	0.00	1.12	0.48												2.85
CNA441	1.12	0.24	0.24	0.40	0.10	0.03	0.03	0.04	0.01	0.00	1.95	0.84												4.99
CNA500	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.10	0.10													0.26
CNA510	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.16	0.16													0.44
CNA55B	0.07	0.07		0.03	0.00	0.00	0.02	0.00		0.28	0.28													0.76
CNA560XL	0.17	0.17		0.07	0.00	0.00	0.04	0.01		0.70	0.70													1.86
CNA680	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.17	0.17													0.45
CNA750	0.09			0.00	0.02	0.02				0.46	0.31													0.90
CRJ701	0.55			0.00	0.11	0.11				2.83	1.89													5.49
CRJ9-ER	0.32			0.00	0.06	0.06				1.64	1.09													3.17
DHC6	0.56	0.12	0.12	0.20	0.05	0.01	0.01	0.02	0.00	0.00	0.98	0.42												2.49
DHC830	0.00			0.00	0.00	0.00				0.00	0.00													0.00
EMB145	0.01			0.00	0.00	0.00				0.06	0.04													0.12
F10062	0.01			0.00	0.00	0.00				0.06	0.04													0.12
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GASEPF	2.23	0.48	0.48	0.80	0.20	0.05	0.05	0.08	0.02	0.00	3.91	1.68												9.97
GASEPV	2.23	0.48	0.48	0.80	0.20	0.05	0.05	0.08	0.02	0.00	3.91	1.68												9.97
GIIB	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GIV	0.18			0.00	0.04	0.04				0.95	0.63													1.84
GV	0.14			0.00	0.03	0.03				0.74	0.49													1.43
H500D													1.17											1.17
IA1125	0.06	0.06		0.03	0.00	0.00	0.02	0.00		0.26	0.26													0.68
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
LEAR35	0.34	0.34		0.15	0.00	0.00	0.09	0.02		1.42	1.42													3.80
MD82	0.16			0.00	0.03	0.03				0.83	0.55													1.60
MU3001	0.07	0.07		0.03	0.00	0.00	0.02	0.00		0.28	0.28													0.73
PA31	0.13	0.13		0.06	0.00	0.00	0.03	0.01		0.54	0.54													1.44
R22																0.13	0.13	3.09	3.09	0.06	0.06	3.16	3.16	12.89
R44														0.59	0.59									1.17
S70														0.15	0.15									0.30
SA227	0.16	0.16		0.07	0.00	0.00	0.04	0.01		0.65	0.65													1.74
SA350D														0.61	0.61									1.21
Total	14.85	2.95	1.54	3.19	1.89	1.42	0.54	0.35	0.05	38.18	39.97	5.38	1.17	1.34	1.34	0.13	0.13	3.09	3.09	0.06	0.06	3.16	3.16	127.07

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Evening Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
737300	0.01			0.00	0.00	0.00				0.06	0.04													0.12
737500	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737700	1.85			0.00	0.37	0.37				9.53	6.35													18.47
737800	0.10			0.00	0.02	0.02				0.53	0.35													1.02
757PW	0.00			0.00	0.00	0.00				0.00	0.00													0.00
767400	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A300-622R	0.06			0.00	0.01	0.01				0.30	0.20													0.58
A319-131	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A320-211	0.16			0.00	0.03	0.03				0.82	0.55													1.59
BEC58	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
BEC58P	0.05	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.04												0.24
BEC99	0.04	0.04		0.02	0.00	0.00	0.01	0.00		0.17	0.17													0.46
CIT3	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CL600	0.03			0.00	0.01	0.01				0.14	0.09													0.27
CL601	0.32			0.00	0.06	0.06				1.67	1.11													3.23
CNA208	0.08	0.02	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.15	0.06												0.38
CNA441	0.15	0.03	0.03	0.05	0.01	0.00	0.00	0.01	0.00	0.00	0.26	0.11												0.66
CNA500	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CNA510	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.06
CNA55B	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.04	0.04													0.10
CNA560XL	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.09	0.09													0.25
CNA680	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.06
CNA750	0.01			0.00	0.00	0.00				0.06	0.04													0.12
CRJ701	0.12			0.00	0.02	0.02				0.61	0.40													1.18
CRJ9-ER	0.19			0.00	0.04	0.04				0.96	0.64													1.86
DHC6	0.07	0.02	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.06												0.33
DHC830	0.00			0.00	0.00	0.00				0.00	0.00													0.00
EMB145	0.00			0.00	0.00	0.00				0.01	0.01													0.02
F10062	0.00			0.00	0.00	0.00				0.01	0.01													0.02
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GASEPF	0.30	0.06	0.06	0.11	0.03	0.01	0.01	0.01	0.00	0.00	0.52	0.22												1.33
GASEPV	0.30	0.06	0.06	0.11	0.03	0.01	0.01	0.01	0.00	0.00	0.52	0.22												1.33
GIIB	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GIV	0.02			0.00	0.00	0.00				0.13	0.08													0.25
GV	0.02			0.00	0.00	0.00				0.10	0.07													0.19
H500D													0.16											0.16
IA1125	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.09
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
LEAR35	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
MD82	0.04			0.00	0.01	0.01				0.20	0.14													0.40
MU3001	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.04	0.04													0.10
PA31	0.05	0.05		0.02	0.00	0.00	0.01	0.00		0.21	0.21													0.57
R22																0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	0.27
R44														0.08	0.08									0.16
S70														0.01	0.01									0.02
SA227	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
SA350D														0.08	0.08									0.16
Total	4.04	0.36	0.20	0.41	0.67	0.61	0.06	0.04	0.01	15.78	12.41	0.72	0.16	0.17	0.17	0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	36.07

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Nighttime Arrival Track Assignments

ACFT_ID	15A	15B	15C	26A	33A	33B	33C	33D	33E	8A	8B	8C	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
737300	0.01			0.00	0.00	0.00				0.06	0.04													0.12
737500	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737700	0.00			0.00	0.00	0.00				0.00	0.00													0.00
737800	0.00			0.00	0.00	0.00				0.00	0.00													0.00
757PW	0.00			0.00	0.00	0.00				0.00	0.00													0.00
767400	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A300-622R	0.06			0.00	0.01	0.01				0.30	0.20													0.58
A319-131	0.00			0.00	0.00	0.00				0.00	0.00													0.00
A320-211	0.04			0.00	0.01	0.01				0.18	0.12													0.35
BEC58	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
BEC58P	0.05	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.03												0.20
BEC99	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
CIT3	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CL600	0.02			0.00	0.00	0.00				0.12	0.08													0.23
CL601	0.02			0.00	0.00	0.00				0.12	0.08													0.22
CNA208	0.07	0.02	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.05												0.32
CNA441	0.13	0.03	0.03	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.22	0.09												0.57
CNA500	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.01	0.01													0.03
CNA510	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.05
CNA55B	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.09
CNA560XL	0.02	0.02		0.01	0.00	0.00	0.01	0.00		0.08	0.08													0.21
CNA680	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.02	0.02													0.05
CNA750	0.01			0.00	0.00	0.00				0.05	0.04													0.10
CRJ701	0.09			0.00	0.02	0.02				0.46	0.30													0.88
CRJ9-ER	0.00			0.00	0.00	0.00				0.00	0.00													0.00
DHC6	0.06	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.11	0.05												0.28
DHC830	0.00			0.00	0.00	0.00				0.00	0.00													0.00
EMB145	0.00			0.00	0.00	0.00				0.01	0.00													0.01
F10062	0.00			0.00	0.00	0.00				0.01	0.00													0.01
FAL20	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GASEPF	0.25	0.05	0.05	0.09	0.02	0.01	0.01	0.01	0.00	0.00	0.44	0.19												1.13
GASEPV	0.25	0.05	0.05	0.09	0.02	0.01	0.01	0.01	0.00	0.00	0.44	0.19												1.13
GIIB	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
GIV	0.02			0.00	0.00	0.00				0.11	0.07													0.21
GV	0.02			0.00	0.00	0.00				0.08	0.06													0.16
H500D													0.13											0.13
IA1125	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.08
LEAR25	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
LEAR35	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
MD82	0.00			0.00	0.00	0.00				0.00	0.00													0.00
MU3001	0.01	0.01		0.00	0.00	0.00	0.00	0.00		0.03	0.03													0.08
PA31	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00													0.00
R22																0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	0.13
R44														0.07	0.07									0.13
S70														0.01	0.01									0.03
SA227	0.10	0.10		0.05	0.00	0.00	0.03	0.01		0.43	0.43													1.14
SA350D														0.07	0.07									0.14
Total	1.26	0.33	0.17	0.36	0.13	0.08	0.06	0.04	0.01	2.15	3.08	0.61	0.13	0.15	0.15	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	8.84

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Daytime Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.23	0.11	0.23		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.60
737300	0.95		0.63		0.01	0.02	0.04																	1.64
737500	0.47		0.32		0.00	0.01	0.02																	0.82
737700	23.69		15.79		0.21	0.43	1.01																	41.13
737800	0.76		0.51		0.01	0.01	0.03																	1.32
757PW	0.00		0.00		0.00	0.00	0.00																	0.00
767400	0.00		0.00		0.00	0.00	0.00																	0.00
A300-622R	0.53		0.36		0.00	0.01	0.02																	0.93
A319-131	0.98		0.65		0.01	0.02	0.04																	1.69
A320-211	1.76		1.17		0.02	0.03	0.07																	3.05
BEC58	0.14	0.07	0.14		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.38
BEC58P	0.00	0.00	0.25	0.74	0.09	0.00	0.13	0.08	0.11	0.08	0.08	0.28												1.84
BEC99	0.49	0.24	0.49		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.29
CIT3	0.09	0.04	0.09		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.23
CL600	1.22		0.81		0.01	0.02	0.05																	2.11
CL601	3.64		2.43		0.03	0.07	0.15																	6.32
CNA208	0.00	0.00	0.39	1.18	0.14	0.00	0.20	0.14	0.18	0.13	0.13	0.44												2.94
CNA441	0.00	0.00	0.69	2.06	0.24	0.00	0.35	0.24	0.31	0.23	0.23	0.78												5.14
CNA500	0.10	0.05	0.10		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.27
CNA510	0.17	0.08	0.17		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.45
CNA55B	0.29	0.15	0.29		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.78
CNA560XL	0.72	0.36	0.72		0.03	0.00	0.08		0.00	0.00	0.00	0.01												1.91
CNA680	0.17	0.09	0.17		0.01	0.00	0.02		0.00	0.00	0.00	0.00												0.47
CNA750	0.53		0.36		0.00	0.01	0.02																	0.93
CRJ701	4.35		2.90		0.04	0.08	0.18																	7.55
CRJ9-ER	2.07		1.38		0.02	0.04	0.09																	3.59
DHC6	0.00	0.00	0.34	1.03	0.12	0.00	0.18	0.12	0.16	0.12	0.12	0.39												2.57
DHC830	0.00		0.00		0.00	0.00	0.00																	0.00
EMB145	0.07		0.05		0.00	0.00	0.00																	0.12
F10062	0.07		0.05		0.00	0.00	0.00																	0.12
FAL20	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GASEPF	0.00	0.00	1.37	4.12	0.49	0.00	0.71	0.47	0.62	0.47	0.47	1.55												10.28
GASEPV	0.00	0.00	1.37	4.12	0.49	0.00	0.71	0.47	0.62	0.47	0.47	1.55												10.28
GIIB	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GIV	1.09		0.73		0.01	0.02	0.05																	1.90
GV	0.85		0.57		0.01	0.02	0.04																	1.47
H500D													1.21											1.21
IA1125	0.26	0.13	0.26		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.70
LEAR25	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
LEAR35	1.18	0.59	1.18		0.05	0.00	0.13		0.00	0.00	0.00	0.02												3.14
MD82	1.15		0.77		0.01	0.02	0.05																	2.00
MU3001	0.28	0.14	0.28		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.76
PA31	0.49	0.24	0.49		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.30
R22																0.13	0.13	3.09	3.09	0.06	0.06	3.16	3.16	12.89
R44														0.61	0.61									1.21
S70														0.15	0.15									0.30
SA227	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
SA350D														0.62	0.62									1.25
Total	48.80	2.31	38.49	13.26	2.14	0.81	4.65	1.52	2.00	1.50	1.50	5.06	1.21	1.38	1.38	0.13	0.13	3.09	3.09	0.06	0.06	3.16	3.16	138.88

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Evening Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
737300	0.00		0.00		0.00	0.00	0.00																	0.00
737500	0.00		0.00		0.00	0.00	0.00																	0.00
737700	6.29		4.19		0.05	0.11	0.27																	10.92
737800	0.20		0.14		0.00	0.00	0.01																	0.35
757PW	0.10		0.07		0.00	0.00	0.00																	0.18
767400	0.04		0.03		0.00	0.00	0.00																	0.07
A300-622R	0.55		0.37		0.00	0.01	0.02																	0.95
A319-131	0.00		0.00		0.00	0.00	0.00																	0.00
A320-211	0.32		0.21		0.00	0.01	0.01																	0.56
BEC58	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
BEC58P	0.00	0.00	0.02	0.07	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.03												0.18
BEC99	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
CIT3	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
CL600	0.12		0.08		0.00	0.00	0.01																	0.21
CL601	0.71		0.47		0.01	0.01	0.03																	1.23
CNA208	0.00	0.00	0.04	0.12	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.29
CNA441	0.00	0.00	0.07	0.21	0.02	0.00	0.04	0.02	0.03	0.02	0.02	0.08												0.52
CNA500	0.01	0.01	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.03
CNA510	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA55B	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
CNA560XL	0.07	0.04	0.07		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.19
CNA680	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA750	0.05		0.04		0.00	0.00	0.00																	0.09
CRJ701	0.00		0.00		0.00	0.00	0.00																	0.00
CRJ9-ER	0.72		0.48		0.01	0.01	0.03																	1.26
DHC6	0.00	0.00	0.03	0.10	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.26
DHC830	0.00		0.00		0.00	0.00	0.00																	0.00
EMB145	0.01		0.00		0.00	0.00	0.00																	0.01
F10062	0.01		0.00		0.00	0.00	0.00																	0.01
FAL20	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GASEPF	0.00	0.00	0.14	0.41	0.05	0.00	0.07	0.05	0.06	0.05	0.05	0.16												1.03
GASEPV	0.00	0.00	0.14	0.41	0.05	0.00	0.07	0.05	0.06	0.05	0.05	0.16												1.03
GIIB	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GIV	0.11		0.07		0.00	0.00	0.00																	0.19
GV	0.09		0.06		0.00	0.00	0.00																	0.15
H500D													0.12											0.12
IA1125	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.07
LEAR25	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
LEAR35	0.12	0.06	0.12		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.32
MD82	0.00		0.00		0.00	0.00	0.00																	0.00
MU3001	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
PA31	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
R22																0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	0.27
R44														0.06	0.06									0.12
S70														0.00	0.00									0.00
SA227	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
SA350D														0.06	0.06									0.13
Total	9.75	0.22	7.09	1.33	0.26	0.17	0.67	0.15	0.20	0.15	0.15	0.51	0.12	0.13	0.13	0.00	0.00	0.06	0.06	0.00	0.00	0.07	0.07	21.28

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update

2017 Nighttime Departure Track Assignments

ACFT_ID	15A	15B	15C	15D	26A	33A	33B	33D	8A	8B	8C	8D	BGJASA	H1A	H1B	TRAIN2A	TRAIN2B	TRAIN3A	TRAIN3B	TRAIN3C	TRAIN3D	TRAININGA	TRAININGB	Total
1900D	0.05	0.03	0.05		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.14
737300	0.00		0.00		0.00	0.00	0.00																	0.00
737500	0.00		0.00		0.00	0.00	0.00																	0.00
737700	0.10		0.06		0.00	0.00	0.00																	0.17
737800	0.00		0.00		0.00	0.00	0.00																	0.00
757PW	0.00		0.00		0.00	0.00	0.00																	0.00
767400	0.04		0.03		0.00	0.00	0.00																	0.07
A300-622R	0.31		0.21		0.00	0.01	0.01																	0.54
A319-131	0.00		0.00		0.00	0.00	0.00																	0.00
A320-211	0.15		0.10		0.00	0.00	0.01																	0.26
BEC58	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
BEC58P	0.00	0.00	0.03	0.08	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.03												0.20
BEC99	0.45	0.22	0.45		0.02	0.00	0.05		0.00	0.00	0.00	0.01												1.18
CIT3	0.01	0.00	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.02
CL600	0.13		0.09		0.00	0.00	0.01																	0.23
CL601	0.00		0.00		0.00	0.00	0.00																	0.00
CNA208	0.00	0.00	0.04	0.13	0.02	0.00	0.02	0.01	0.02	0.01	0.01	0.05												0.32
CNA441	0.00	0.00	0.07	0.22	0.03	0.00	0.04	0.03	0.03	0.03	0.03	0.08												0.56
CNA500	0.01	0.01	0.01		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.03
CNA510	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA55B	0.03	0.02	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
CNA560XL	0.08	0.04	0.08		0.00	0.00	0.01		0.00	0.00	0.00	0.00												0.21
CNA680	0.02	0.01	0.02		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.05
CNA750	0.06		0.04		0.00	0.00	0.00																	0.10
CRJ701	0.00		0.00		0.00	0.00	0.00																	0.00
CRJ9-ER	0.10		0.07		0.00	0.00	0.00																	0.18
DHC6	0.00	0.00	0.04	0.11	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.04												0.28
DHC830	0.00		0.00		0.00	0.00	0.00																	0.00
EMB145	0.01		0.01		0.00	0.00	0.00																	0.01
F10062	0.01		0.01		0.00	0.00	0.00																	0.01
FAL20	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GASEPF	0.00	0.00	0.15	0.45	0.05	0.00	0.08	0.05	0.07	0.05	0.05	0.17												1.12
GASEPV	0.00	0.00	0.15	0.45	0.05	0.00	0.08	0.05	0.07	0.05	0.05	0.17												1.12
GIIB	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
GIV	0.12		0.08		0.00	0.00	0.01																	0.21
GV	0.09		0.06		0.00	0.00	0.00																	0.16
H500D													0.13											0.13
IA1125	0.03	0.01	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
LEAR25	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.00
LEAR35	0.13	0.06	0.13		0.01	0.00	0.01		0.00	0.00	0.00	0.00												0.34
MD82	0.00		0.00		0.00	0.00	0.00																	0.00
MU3001	0.03	0.02	0.03		0.00	0.00	0.00		0.00	0.00	0.00	0.00												0.08
PA31	0.27	0.13	0.27		0.01	0.00	0.03		0.00	0.00	0.00	0.00												0.71
R22																0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	0.13
R44														0.07	0.07									0.13
S70														0.02	0.02									0.04
SA227	1.03	0.51	1.03		0.04	0.00	0.11		0.00	0.00	0.00	0.01												2.74
SA350D														0.07	0.07									0.14
Total	3.27	1.08	3.37	1.44	0.27	0.02	0.52	0.17	0.22	0.16	0.16	0.57	0.13	0.15	0.15	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.03	11.82

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2017 Daytime Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	1.30	0.12	0.28	0.74	2.44
GASEPF	2.61	0.23	0.56	1.47	4.87
GASEPV	2.61	0.23	0.56	1.47	4.87
Total	6.52	0.58	1.40	3.69	12.18

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2017 Evening Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	0.12	0.01	0.03	0.07	0.22
GASEPF	0.24	0.02	0.05	0.13	0.44
GASEPV	0.24	0.02	0.05	0.13	0.44
Total	0.59	0.05	0.13	0.33	1.10

Bob Hope Airport — 14 CFR Part 150 Noise Exposure Map Update
2017 Nighttime Touch-and-Go Track Assignments

ACFT_ID	15A	26A	33A	8A	Total
BEC58P	0.00	0.00	0.00	0.00	0.00
GASEPF	0.00	0.00	0.00	0.00	0.00
GASEPV	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00

Appendix H

1998 NOISE MONITOR ASSESSMENT STUDY

ACOUSTICAL ANALYSIS ASSOCIATES, INCORPORATED

January 18, 1998

Mr. Mark Johnson, AICP
COFFMAN ASSOCIATES
237 N.W. Blue Parkway
Lee's Summit, Missouri 64063

Subject: Aircraft Noise Level Measurements Near the North End of Runway 15 at Burbank-Glendale-Pasadena Airport (AAAI Project 88-017)

Dear Mr. Johnson:

At the request of Coffman Associates and Burbank-Glendale-Pasadena Airport Authority, Acoustical Analysis Associates, Inc. (AAAI) has conducted noise level measurements of aircraft activities in areas near the north end of Runway 15 at Burbank Airport (where aircraft departures to the south begin). The purpose of these noise level measurements was to determine the noise attenuation effects resulting from existing building structures located between the runway end and the airport's permanent noise monitoring Sites 4 and 5. AAAI also conducted inspections at Sites 10 and 12 to determine whether other environmental sources of noise contribute to noise levels measured at these sites by the monitoring system.

Following is a description of the applied methodology and the findings our study.

Noise Monitoring Locations

In order to determine the monitoring locations where the effects of building structures on measured aircraft noise levels at Sites 4 and 5 could best be assessed, AAAI inspected the areas in the vicinity of Runway 15 near Sites 4 and 5. Based on our observations, we determined that for a site to be an appropriate noise monitoring location it should meet two criteria: (1) it should be located somewhere along a direct line from the runway end to the permanent noise monitor, and (2) it should have a clear view of aircraft departing to the south on Runway 15. The noise

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monitoring sites selected for the study are described below and shown on Figure 1 as Sites 4A and 5A.

Site 4A: This site was located on the rooftop of the W&F Manufacturing building at 10635 Keswick Street. The building is approximately 30-40 feet tall and lies along the west side of Runway 15 in a north-south direction. The measurement microphone was placed near the center of the roof area (at a distance of 500-600 feet from the runway). The microphone was raised about 10 feet above the roof elevation, on a tripod and boom, for an unobstructed view of departing aircraft.

Site 5A: This site was about 50 feet east of the centerline of the Southern Pacific Railroad line between the end of Runway 15 and Site 5. The distance from this site to the departure brake release on Runway 15 is about 450-500 feet. The microphone at this location was placed on a tripod and boom about 10 feet above ground level.

Equipment

Noise monitoring equipment at both Sites 4A and 5A consisted of Larson Davis Laboratories (LDL) Model 870 integrating sound level meters equipped with Bruel & Kjaer (B&K) Type 4176 1/2" microphones. The instrumentation complies with the specifications of the American National Standards Institute (ANSI) and the International Electrotechnical Commission (IEC) for Type 1 (Precision) sound level meters. The measurement systems were calibrated in the field prior to and following use with a LDL CA-250 acoustical calibrator to ensure the accuracy of the measurements. Additionally, the LDL-870's clocks were synchronized with the time on the airport noise monitoring system.

Noise Measurement Program

Noise measurements at Site 4A were conducted continuously starting on the afternoon of December 2, 1997 and ending on the morning of December 5, 1997. During the continuous noise monitoring session, the LDL-870 was programmed to discriminate between aircraft and other noise sources through the use of sound level and event duration thresholds. The sound level and event duration thresholds were set so that individual aircraft events were stored as single events within the monitor memory. Typical settings were 75 dB and 5 seconds, meaning that the sound level during a noise event had to exceed 75 dB for at least 5 seconds in order to be stored as an aircraft event. At the conclusion of the monitoring period, the aircraft noise events stored by this monitor were matched with those measured at Site 4. Also, during the measurement period, observations of some aircraft events were conducted for later comparison to noise levels measured at Site 4.

Noise monitoring at Site 5A consisted of detailed single event monitoring where a trained observer was stationed at the site for a period of time during the afternoon of December 3, 1997 to record information for each noise event regarding the nature of the flight and type of aircraft. The single noise events obtained at this site were later compared to those measured at Site 5.

Noise Measurement Results

As described in the previous section, aircraft noise level measurements at Sites 4A and 5A were obtained using noise level meters which were time synchronized with the Airport's noise monitoring system. Aircraft single events measured at Sites 4 and 5 during the monitoring period were identified from data obtained from the Airport's noise monitoring system and matched with the measurements at Sites 4A and 5A. Appendix A-1 and A-2 summarize the measured aircraft noise levels at all four sites.

Determination of Shielding Effects

In order to evaluate the noise shielding effect of existing building structures around Runway 15 at Sites 4 and 5, we used a two-step process as follows:

(1) To determine the level of noise attenuation due to distances between Sites 4 and 4A and Sites 5 and 5A, the sites and the runway configuration and applicable aircraft types were entered into the Integrated Noise Model (INM). The Model was then applied to compute SEL's for different aircraft types at all four sites. The calculated distance attenuation between Site 4 and 4A was the difference in predicted levels at those sites. The same applies to Sites 5 and 5A.

(2) To find building shielding effects, the differences in measured SEL's at the two corresponding sites (Sites 4 and 4A, or Sites 5 and 5A) were calculated. Then, the calculated distance attenuation was subtracted from the values of those differences. This result represents the noise attenuation value due to structures. Finally, for each sampled aircraft type, the shielding values were averaged.

The results of shielding noise attenuation calculations at Site 4 are shown in Table I. From this table it is apparent that comparisons of measured and modeled data for jet aircraft departures consistently showed shielding noise attenuation values of 3-5 dB. For the Boeing 737 aircraft which comprise the majority of jet aircraft departures, the shielding values were about 4-5 dB.

TABLE I
SUMMARIZED CALCULATION OF NOISE SHIELDING VALUES @ SITE 4

AIRCRAFT	Number Sampled	Operation (Dep/Arr)	(A) Difference Between Measured Levels at Sites 4 and 4A		(B) Calculated Distance Attenuation	(A-B) Noise Attenuation Due to Structures
			Lmax	SEL		
A300	3	D	13.5	13.2	10.0	3.2
B737	8	D	14.6	14.8	10.1	4.7
B73B	23	D	15.3	13.9	9.8	4.1
B73J	6	D	14.3	12.2	9.8	2.4
B73S	70	D	15.4	14.4	9.8	4.6
B757	1	D	16.1	18.7	9.3	9.4
Gulfstream	10	D	14.2	13.5	10.2	3.3
MD80	16	D	13.9	13.9	9.8	4.1

Notes:
1. Distance attenuation was calculated using INM by inputting the individual aircraft type into the model and computing SEL values at Sites 4 and 4A.
2. Lmax values have been listed to demonstrate consistency of differences in values across different metrics.

Source: Acoustical Analysis Associates, Inc.

At Sites 5 and 5A, a total of 13 Boeing 737 and one MD-80 departures on Runway 15 were measured. Comparison of differences in measured noise levels to those predicted by the INM indicated that there in fact is minimal shielding effects, if any, from intervening building structures between these two sites. There is presently a blast fence along the east a nd north sides of the Runway 15 end. We expect that this fence may have some noise attenuation effect at Site 5. Maximum noise attenuation at Site 5 due the fence may be about 1-2 dB for aircraft departures.

Our observations at Site 10 indicate that Thornton Avenue (near the site) is heavily utilized by vehicular traffic during daytime hours and that aircraft noise events are primarily to the west of the site and not very prominent. At this site, it is safe to assume that noise generated by vehicular traffic is a significant contributor to overall noise exposure at this site.

At Site 12, we did not detect any identifiable structural shielding or the presence of other sources which could impact the levels of aircraft noise events measured at this site.

Please call me at (818) 713-1160 if you have any questions or would like additional information.

Sincerely,
Acoustical Analysis Associates, Inc.

Farshad Farhang

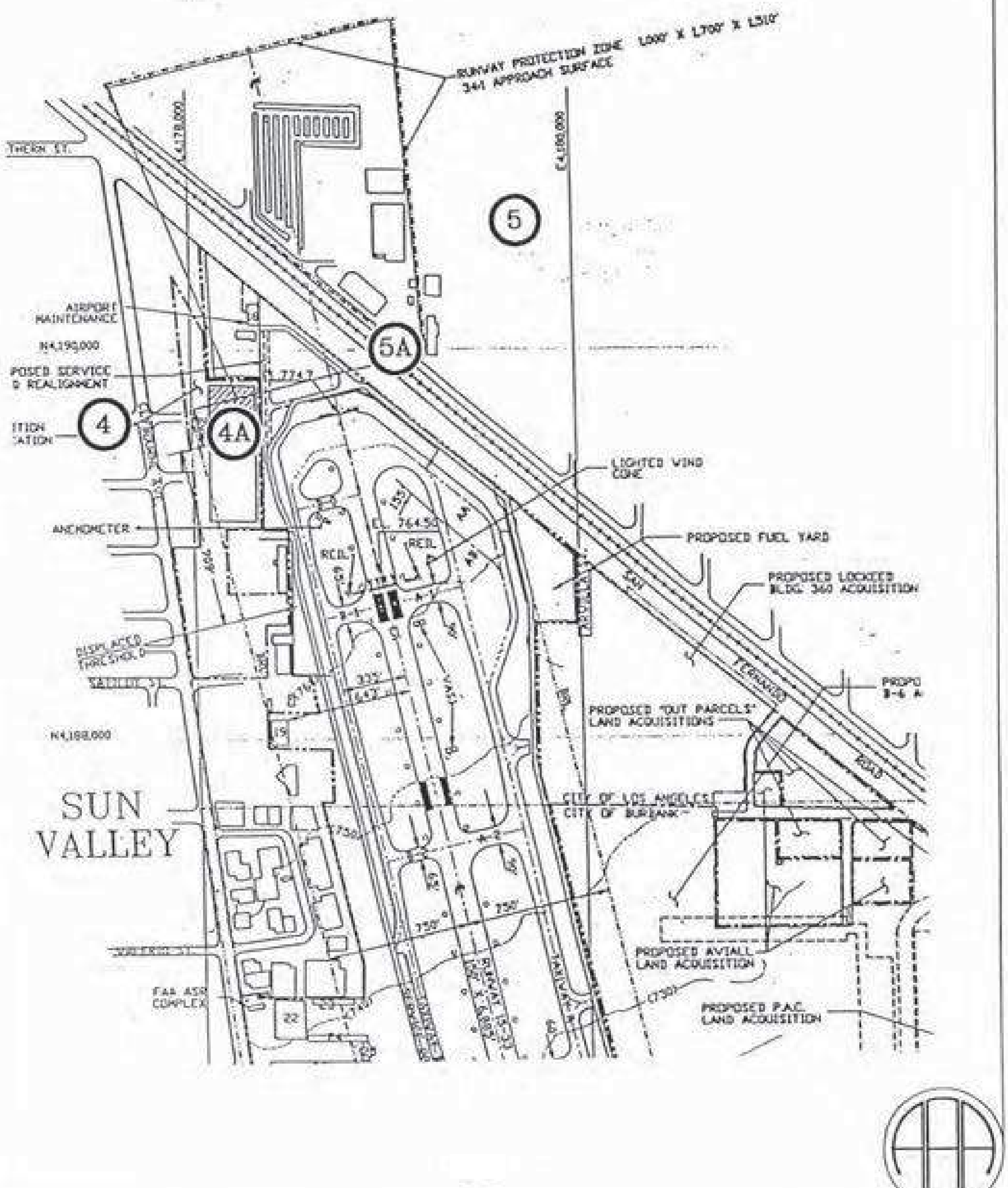
Farshad Farhang
Senior Consultant

FF:yw/88017-97

cc: Victor Globa, BGPAA

FIGURE 1

NOISE MONITORING LOCATIONS



APPENDIX A-1

SUMMARY OF MEASURED NOISE LEVELS (dBA)
@ SITES 4 AND 4A
DECEMBER 2-5 1997

Time	AC	AL/FLT #	SITE 4A		SITE 4		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
Observed Aircraft Events								
2:27 PM	MD83	ASA583	107.9	99.8	91.7	84.7	D	16.2
2:36 PM	B73B	UAL2128	99.4	91.3	78.3	71.4	D	21.1
2:56 PM	B73S	SWA1705	96.6	88.8	79.4	73.1	D	17.2
3:54 PM	B73S	AWE	98.1	89.6	83.5	76.4	D	14.6
1:48 PM	B73B	UAL2130	100.1	92.5	86.1	79.3	D	14
1:55 PM	B73S	SWA577	100.3	92.5	85.7	79.3	D	14.6
2:05 PM	WW24	GA	100.3	93.4	86.2	78.8	D	14.1
2:13 PM	B73S	SWA	98.8	90.8	81.9	73.7	D	16.9
2:17 PM	G3	N600ES	115.5	106.7	101.9	93.0	D	13.6
2:32 PM	MD80	ASA583	110.0	101.4	96.9	89.7	D	13.1
2:34 PM	B73B	UAL2410	97.9	87.9	82.4	79.7	D	15.5
2:50 PM	B73B	UAL1626	101.1	92.1	87.1	81.4	D	14
2:53 PM	B73B	UAL2155	88.9	79.1	79.6	72.0	A	9.3
2:57 PM	B73S	AWE	91.3	82.1	84.3	77.8	A	7
3:02 PM	B73S	SWA1705	101.4	94.1	87.9	79.6	D	13.5
3:10 PM	B73J	SWA610	99.9	90.8	85.0	78.0	D	14.9
3:15 PM	B73S	SWA506	101.5	93.4	86.8	79.2	D	14.7
3:23 PM	B73B	UAL2128	99.5	91.9	83.4	73.7	D	16.1
3:30 PM	B73S	AWE	100.8	92.5	81.9	74.8	D	18.9
3:59 PM	B73S	SWA1330	95.5	86.1	86.5	81.9	D	9
4:33 PM	B73S	SWA1455	96.6	88.4	81.4	75.0	D	15.2
Matched Aircraft Events								
7:26 PM	A300	FDX1216	101.4	91.1	88.3	79.5	D	13.1
7:31 PM	A300	FDX1216	100.7	90.9	88.3	77.9	D	12.4
7:25 PM	A300	FDX1216	107.5	99.2	92.5	84.1	D	15.0
6:44 PM	B737	SWA1219	89.6	82.4	81.1	73.6	A	8.5
6:06 PM	B737	SWA1219	95.3	83	88.9	78.5	A	6.4
7:16 AM	B737	SWA850	113.2	103.8	103.0	92.5	D	10.2
9:56 AM	B737	SWA1212	111.1	101.9	93.3	83.9	D	17.8
10:11 AM	B737	SWA853	110.3	100	90.3	78.5	D	20
7:08 AM	B737	SWA850	112.8	102.3	100.3	91.3	D	12.5
5:57 PM	B737	SWA770	114.6	105.4	103.0	94.2	D	11.6
9:55 AM	B737	SWA1212	110.2	100.7	91.9	82.8	D	18.3
8:07 AM	B737	SWA1534	113.7	104.9	104.0	97.1	D	9.7
7:12 PM	B737	SWA1219	110.6	101.4	93.6	81.7	D	17

Time	AC	AL/FLT #	SITE 4A		SITE 4		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
8:17 AM	B73B	UAL2730	98.4	90.6	78.9	73.1	D	19.5
7:56 AM	B73B	UAL2730	99.5	91.5	88.7	79.4	D	10.8
10:46 AM	B73B	UAL2126	100.6	92.2	87.0	78.2	D	13.6
10:38 AM	B73B	UAL2340	96.9	88.7	81.8	75.2	D	15.1
10:15 AM	B73B	UAL2340	99.6	94.5	92.5	85.6	D	7.1
9:14 PM	B73B	UAL2137	87.2	79.3	78.7	72.3	A	8.5
8:12 PM	B73B	UAL2138	97.5	86.5	81.2	71.1	D	16.3
9:59 AM	B73B	UAL2129	89.7	81.2	82.0	74.7	A	7.7
8:59 AM	B73B	UAL286	101.0	92	81.4	72.0	D	19.6
1:10 PM	B73B	UAL2145	87.5	81.3	77.9	72.7	A	9.6
12:57 PM	B73B	UAL2130	100.7	93.8	81.3	75.1	D	19.4
11:29 AM	B73B	UAL2599	100.1	92.5	86.2	79.2	D	13.9
4:13 PM	B73B	UAL2402	101.2	93	86.0	78.4	D	15.2
6:45 AM	B73B	UAL2670	100.6	91.8	89.5	82.6	D	11.1
7:10 AM	B73B	UAL2124	100.7	93.3	87.2	82.3	D	13.5
5:03 PM	B73B	UAL2406	98.4	90.3	81.9	74.2	D	16.5
7:05 AM	B73B	UAL2124	99.7	89.8	84.9	74.9	D	14.8
6:44 AM	B73B	UAL2670	99.9	91.8	87.4	83.2	D	12.5
2:46 PM	B73B	UAL2128	97.1	88.6	75.4	72.5	D	21.7
2:48 PM	B73B	UAL1626	98.5	90.6	77.0	72.5	D	21.5
6:41 AM	B73B	UAL2670	98.4	88.8	88.8	80.4	D	9.6
11:03 PM	B73B	UAL2139	89.3	80.9	77.1	71.5	A	12.2
6:50 PM	B73J	SWA1219	98.9	88.6	86.0	77.3	D	12.9
1:06 PM	B73J	SWA1862	95.6	85	77.8	72.9	D	17.8
1:23 PM	B73J	SWA1862	99.7	91.2	85.3	78.5	D	14.4
4:09 PM	B73J	SWA1706	99.8	91.3	85.7	77.7	D	14.1
3:46 PM	B73J	SWA1706	86.4	80.2	79.2	73.2	A	7.2
7:47 AM	B73J	SWA1010	100.9	93.4	89.0	82.5	D	11.9
3:57 PM	B73S	SWA1455	89.6	83.6	78.8	72.0	A	10.8
3:58 PM	B73S	SWA1330	100.8	93.1	86.7	77.4	D	14.1
7:02 PM	B73S	SWA914	104.0	95.8	89.5	82.5	D	14.5
7:09 PM	B73S	SWA914	99.3	93.4	92.8	86.7	D	7.5
4:24 PM	B73S	SWA1455	100.3	91.6	84.8	77.3	D	15.5
7:11 AM	B73S	SWA1725	99.8	91.9	87.3	84.4	D	12.5
4:28 PM	B73S	SWA1092	98.8	91.5	83.1	75.4	D	15.7
7:12 AM	B73S	SWA850	99.8	91.2	83.4	79.5	D	16.4
7:11 AM	B73S	SWA1561	104.6	95.1	91.8	82.5	D	12.8
9:18 PM	B73S	AWE947	100.3	90.9	84.1	75.9	D	16.2
7:23 AM	B73S	SWA783	92.3	81.4	84.8	76.0	D	7.5
3:15 PM	B73S	AWE402	101.2	93.1	86.3	78.1	D	14.9
3:20 PM	B73S	SWA1705	99.6	91.4	82.4	72.7	D	17.2
3:22 PM	B73S	SWA506	100.8	92.6	83.9	75.4	D	16.9

Time	AC	AL/FLT #	SITE 4A		SITE 4		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
9:20 PM	B73S	AWE947	100.6	91.8	82.9	75.0	D	17.7
7:17 AM	B73S	AWE202	99.1	90.3	77.9	72.9	D	21.2
3:12 PM	B73S	SWA610	99.5	91	84.0	75.0	D	15.5
9:38 PM	B73S	SWA1099	101.0	92.2	84.1	74.6	D	16.9
9:58 PM	B73S	SWA592	86.9	79.8	77.2	72.1	A	9.7
6:04 PM	B73S	AWE275	100.7	91.8	81.3	72.9	D	19.4
5:55 PM	B73S	SWA622	102.2	95	88.3	80.2	D	13.9
5:42 PM	B73S	SWA1682	100.9	92.4	77.3	71.1	D	23.6
5:42 PM	B73S	SWA1682	102.6	94.7	89.1	81.6	D	13.5
5:48 PM	B73S	SWA1014	100.9	92.1	82.8	74.8	D	18.1
6:38 PM	B73S	SWA607	100.1	92.3	79.5	73.0	D	20.6
6:20 PM	B73S	SWA622	103.6	95.4	89.8	78.8	D	13.8
6:38 PM	B73S	SWA607	102.1	92	86.3	78.4	D	15.8
6:15 PM	B73S	SWA1014	103.5	94.4	87.2	80.6	D	16.3
6:09 PM	B73S	AWE275	102.8	94.1	90.1	83.3	D	12.7
6:10 PM	B73S	AWE275	99.9	91.7	80.4	73.0	D	19.5
6:41 PM	B73S	SWA607	101.6	93.4	84.4	75.0	D	17.2
4:59 PM	B73S	SWA576	98.9	90.5	76.9	73.2	D	22
7:07 AM	B73S	SWA1725	99.9	90.8	88.4	82.2	D	11.5
5:09 PM	B73S	AWE480	89.2	81.9	78.6	71.5	A	10.6
6:56 PM	B73S	SWA914	101.4	93.3	83.5	75.5	D	17.9
4:56 PM	B73S	SWA576	99.2	90.5	80.5	71.6	D	18.7
5:31 PM	B73S	SWA1192	101.5	93.1	89.1	83.7	D	12.4
5:31 PM	B73S	AWE480	86.8	80.8	74.7	71.3	A	12.1
5:14 PM	B73S	SWA494	89.2	82.6	79.6	73.9	A	9.6
9:35 PM	B73S	SWA1099	101.6	93.3	88.7	79.5	D	12.9
5:20 PM	B73S	SWA576	91.0	83.6	78.2	73.0	A	12.8
7:25 AM	B73S	AWE202	99.7	89.2	78.3	71.3	D	21.4
12:07 PM	B73S	AWE489	88.0	81.2	76.7	72.8	A	10.3
12:07 PM	B73S	SWA493	102.5	95	90.4	87.4	D	12.1
8:45 PM	B73S	SWA579	101.0	93	89.3	80.4	D	11.7
11:34 AM	B73S	SWA1737	95.8	86.4	78.3	73.9	D	17.5
8:13 PM	B73S	SWA769	101.3	93.6	84.3	74.8	D	17
12:21 PM	B73S	SWA574	99.0	89.3	85.0	76.3	D	14
8:31 AM	B73S	SWA1217	98.6	90.5	83.3	77.9	D	15.3
1:02 PM	B73S	SWA1105	99.4	90.9	83.7	76.2	D	15.7
1:03 PM	B73S	SWA1105	98.2	91.2	84.0	75.2	D	14.2
12:26 PM	B73S	SWA493	100.2	91.9	84.6	78.9	D	15.6
12:27 PM	B73S	SWA574	99.7	91.8	85.7	79.9	D	14
12:54 PM	B73S	AWE545	103.4	96.9	89.0	81.7	D	14.4
8:54 PM	B73S	SWA289	86.6	80.8	78.4	72.2	A	8.2
9:00 PM	B73S	SWA1389	98.3	92	92.3	86.4	D	5

Time	AC	AL/FLT #	SITE 4A		SITE 4		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
10:20 AM	B73S	AWE540	101.0	93.8	82.2	73.0	D	18.8
11:07 AM	B73S	SWA1737	87.7	81.2	81.3	74.3	A	6.4
10:36 AM	B73S	SWA1451	85.5	78.7	77.5	71.4	A	8
10:29 AM	B73S	SWA570	96.8	88.1	86.3	75.8	D	10.5
11:10 AM	B73S	SWA1488	101.6	94.6	89.0	82.8	D	12.6
11:16 AM	B73S	SWA310	89.5	81.7	76.5	72.4	D	13
11:11 AM	B73S	SWA885	99.2	89.7	85.3	78.2	D	13.9
11:13 AM	B73S	SWA922	101.7	92.5	89.5	82.8	D	12.2
7:58 AM	B73S	SWA1534	100.3	92.4	79.7	72.4	D	20.6
7:55 AM	B73S	SWA448	96.7	88.6	85.4	81.2	D	11.3
1:42 PM	B73S	SWA441	101.0	93.4	84.6	77.2	D	16.4
7:59 AM	B73S	SWA448	97.1	86.6	85.5	75.8	D	11.6
7:27 AM	B73S	SWA1534	89.4	82	79.4	74.1	A	10
7:26 AM	B73S	SWA783	100.9	92.6	89.6	81.3	D	11.3
7:23 PM	B73S	SWA575	99.3	89.9	79.4	73.3	D	19.9
7:24 PM	B73S	SWA575	97.0	86.6	84.8	76.4	D	12.2
1:40 PM	B73S	SWA441	102.0	95.4	86.6	81.2	D	15.4
1:39 PM	B73S	SWA1736	100.1	92.2	86.3	77.9	D	13.8
1:08 PM	B73S	AWE545	101.8	93.7	87.8	80.0	D	14
7:38 PM	B757	UPS907	103.2	94.4	87.1	75.7	D	16.1
6:58 AM	BE20	NASA7	87.0	78.5	79.5	71.3	D	7.5
12:48 PM	BE99	AMF1944	98.3	91.5	86.1	81.2	D	12.2
5:26 AM	BE99	AMF1902	85.5	80.7	78.9	73.5	D	6.6
1:30 PM	C560	EJA315	105.9	97.4	91.6	82.5	D	14.3
8:24 AM	C560	N561B	98.4	88.7	81.8	74.6	D	16.6
9:03 PM	C650	N444CW	101.2	92.3	88.7	79.6	A	12.5
6:06 PM	CL60	N550CW	95.9	86.7	88.8	79.4	D	7.1
7:15 AM	E120	SKW321	99.2	88.6	80.1	73.6	A	19.1
4:56 PM	E120	SKW328	102.4	92.9	89.1	81.9	D	13.3
8:11 PM	FA50	N200RT	103.7	95	92.9	83.4	D	10.8
1:38 PM	G2	N222NB	115.9	108	103.3	98.4	D	12.6
9:27 PM	GULF	N555KC	115.2	105.7	106.3	95.1	D	8.9
3:56 PM	GULF	N222NB	115.6	107.7	101.5	93.1	D	14.1
10:01 AM	GULF	N777UE	100.2	92.3	79.1	72.3	D	21.1
11:18 AM	GULF	N495QS	97.0	90	80.8	73.6	D	16.2
1:14 PM	GULF	N464QS	101.7	93.6	88.6	81.4	D	13.1
2:20 PM	GULF	N579TG	114.0	104.7	97.9	91.3	D	16.1
6:03 PM	GULF	N626TC	120.6	111.9	108.5	100.5	D	12.1
3:08 PM	JSTA	SDU321	92.0	84	82.5	72.1	D	9.5
6:58 PM	LJ35	N136JP	98.2	89.3	84.6	75.2	D	13.6
4:57 PM	LR35	N38PS	96.3	86.9	80.3	72.7	D	16
12:24 PM	LR55	N55HK	101.6	91.1	87.9	82.2	D	13.7

Time	AC	AL/FLT #	SITE 4A		SITE 4		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
7:01 AM	MD80	ASA507	108.8	99.9	100.3	91.8	D	8.5
11:43 AM	MD80	AAL478	110.7	102.6	99.1	92.5	D	11.6
6:59 AM	MD80	ASA507	107.7	98.9	92.3	83.8	D	15.4
11:37 AM	MD80	AAL478	107.9	98.9	89.9	82.2	D	18
10:25 AM	MD80	ASA535	107.0	98.3	88.3	77.7	D	18.7
7:24 AM	MD80	AAL1664	107.7	98.8	94.9	88.0	D	12.8
8:31 PM	MD80	ASA547	108.1	99.8	98.7	89.7	D	9.4
7:01 AM	MD80	ASA507	108.9	100.9	97.3	88.7	D	11.6
6:17 PM	MD80	ASA137	109.9	101	91.7	81.8	D	18.2
6:14 PM	MD80	ASA137	108.9	101	92.3	81.8	D	16.6
6:23 PM	MD80	ASA137	110.8	102	99.6	91.6	D	11.2
2:09 PM	MD80	ASA583	105.4	97.9	89.9	80.8	D	15.5
7:22 AM	MD80/ B73S	AAL1664 UAL	110.5	101.9	99.4	91.9	D	11.1
8:38 PM	MD83	ASA547	107.5	99.2	93.0	82.6	D	14.5
8:21 PM	P31	GA	102.2	93.7	88.2	79.3	D	14
7:14 AM	PA31	AMF106	90.4	83.7	87.0	81.0	D	3.4
3:32 PM	PA31	N710JP	95.7	88.4	80.3	74.0	D	15.4
6:41 AM	PA32	AMF132	86.5	80.1	80.5	71.7	D	6
9:29 PM	SW3	AMF412	96.0	85.5	85.2	78.0	A	11.2
10:02 PM	SW3	AMF412	92.2	87.9	85.3	80.5	D	6.9
11:38 AM	WW24	N60AV	101.9	94.1	85.4	78.6	D	16.5
6:13 PM	WW24	N911CU	100.6	90.5	83.5	73.3	D	17.1
11:17 AM	WW24	N3AV	100.4	92.3	84.9	79.2	D	15.5

APPENDIX A-2

SUMMARY OF MEASURED NOISE LEVELS (dBA)
SITES 5 AND 5A
DECEMBER 3, 1997

Time	AC	AL/FLT	Site 5A		Site 5		Arrival/ Departure	Δ (SEL)
			SEL	Lmax	SEL	Lmax		
02:33 PM	MD80	ASA583	104.5	95.9	92.9	83.0	D	11.6
02:50 PM	B73S	SWA/---	94.6	78.1	82.1	76.8	A	12.5
02:51 PM	B73B	UAL1626	96.9	88	83.4	74.6	D	13.5
02:57 PM	B73S	AWE/---	92.3	85.3	84.3	76.2	A	8.0
03:02 PM	B73S	SWA1705	96.4	87.3	84.4	76.5	D	12.0
03:11 PM	B73J	SWA610	95.4	86.2	78.6	73.2	D	16.8
03:16 PM	B73S	SWA506	97.3	89.2	87.4	81.6	D	9.9
03:24 PM	B73B	UAL2128	95.2	85.3	83.8	76.7	D	11.4
03:30 PM	B73S	AWE/---	102.8	94.2	88.9	82.7	D	13.9
04:00 PM	B73S	SWA1330	96.0	86.9	83.7	75.4	D	12.3
04:07 PM	B73J	SWA1706	95.6	88.0	82.7	75.7	D	12.9
04:25 PM	B73S	SWA	95.3	86.9	84.3	75.7	D	11.0
04:30 PM	B73S	SWA1092	99.3	87.9	86.4	76.9	D	12.9
04:34 PM	B73S	SWA1455	97.0	88.3	86.4	81.1	D	10.6

Appendix I

NOISE EXPOSURE MAPS CHECKLIST

14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST: PART I

AIRPORT NAME: ***Bob Hope Airport*** ***REVIEWER:*** ________________________

DOCUMENT DATE: ***October 2012*** ***DATE RECEIVED:*** _________________

Program Requirement	Yes/No/NA	Page No. Other Reference
I. **SUBMITTING AND IDENTIFYING THE NEM:** A. Submission is properly identified: 1. 14 C.F.R. Part 150 NEM? 2. NEM and NCP together? 3. Revision to NEMs FAA previously determined to be in compliance with Part 150?	 Yes No Yes	 Cover
B. Airport and Airport Operator's name are identified?	Yes	Cover, cover page, pg. 1-1
C. NCP is transmitted by airport operator's dated cover letter, describing it as a Part 150 submittal and requesting appropriate FAA determination?	Yes	Attached
II. **CONSULTATION: [150.21(b), A150.105(a)]** A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	 Yes	 Appendix A, Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
B. Identification of consulted parties: 1. Are the consulted parties identified?	 Yes	 Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
2. Do they include all those required by 150.21(b) and A150.105(a)?	Yes	Appendix A, Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"
3. Agencies in 2., above, correspond to those indicated on the NEM?	Yes	Appendix A
C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b)?	Yes	Pg. i
D. Does the document indicate whether written comments were received during consultation and, if there were comments, that they are on file with the FAA regional airports division manager?	Yes	Supplemental volume titled "Supporting Information on Project Coordination and Local Consultation"

14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST: PART I

AIRPORT NAME: ***Bob Hope Airport*** ***REVIEWER:*** ______________________

DOCUMENT DATE: ***October 2012*** ***DATE RECEIVED:*** ________________

	Yes/No/NA	Page No. Other Reference
III. **GENERAL REQUIREMENTS: [150.21]** A. Are there two maps, each clearly labeled on the face with year (existing condition year and one that is at least 5 years into the future)?	Yes	Exhibit 1, Exhibit 2
B. Map currency: 1. Does the year on the face of the existing condition map graphic match the year on the airport operator's NEM submittal letter?	Yes	Cover letter, Exhibit 1
2. Is the forecast year map based on reasonable forecasts and other planning assumptions and is it for at least the fifth calendar year after the year of submission?	Yes	Cover Letter, Exhibit 2
3. If the answer to 1 & 2 above is no, the airport operator must verify in writing that data in the documentation are representative of existing condition and at least 5 years' forecast conditions as of the date of submission?	NA	
C. **If the NEM and NCP are submitted together:** 1. Has the airport operator indicated whether the forecast year map is based on either forecast conditions without the program or forecast conditions if the program is implemented?	NA	
2. If the forecast year map is based on program implementation: a. Are the specific program measures that are reflected on the map identified?	NA	
b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?	NA	
3. If the forecast year NEM does not model program implementation, the airport operator must either submit a revised forecast NEM showing program implementation conditions [B150.3(b), 150.35(f)] or the sponsor must demonstrate the adopted forecast year NEM with approved NCP measures would not change by plus/minus 1.5 DNL? (150.21(d))	NA	

14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST: PART I

AIRPORT NAME: ***Bob Hope Airport*** ***REVIEWER:*** ______________________

DOCUMENT DATE: ***October 2012*** ***DATE RECEIVED:*** ________________

	Yes/No/NA	**Page No. Other Reference**
IV. **MAP SCALE, GRAPHICS, AND DATA REQUIREMENTS: [A150.101, A150.103, A150.105, 150.21(a)]** A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps? *(Note (1) if the submittal uses separate graphics to depict flight tracks and/or noise monitoring sites, these must be of the same scale, because they are part of the documentation required for NEMs.)* *(Note (2) supplemental graphics that are not required by the regulation do not need to be at the 1" to 2,000' scale)*	Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 3J, 3K, 3L, 4B, 4C, 4D, 4E
B. Is the quality of the graphics such that required information is clear and readable? (*Refer to C. through G., below, for specific graphic depictions that must be clear and readable*)	Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 3J, 3K, 3L, 4B, 4C, 4D, 4E
C. Depiction of the airport and its environs: 1. Is the following graphically depicted to scale on both the existing condition and forecast year maps? a. Airport boundaries b. Runway configurations with runway end numbers	 Yes Yes	 Exhibits: 1, 2, 3C, 3D, 3E, 3F, 3J, 3K, 3L, 4B, 4C, 4D, 4E
2. Does the depiction of the off-airport data include? a. A land use base map depicting streets and other identifiable geographic features	 Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 4B, 4D
b. The area within the DNL[1] 65 dB (or beyond, at local discretion)	Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 4B, 4D
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB (or beyond, at local discretion)	Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 3J, 3K, 3L, 4B, 4C, 4D, 4E
D. 1. Continuous contours for at least the DNL 65, 70, and 75 dB?	Yes	Exhibits: 1, 2, 3C, 3D, 3E, 3F, 3J, 3K, 3L, 4B, 4C, 4D, 4E
2. Has the local land use jurisdiction(s) adopted a lower local standard and if so, has the sponsor depicted this on the NEMs?	No	
3. Based on current airport and operational data for the existing condition year NEM, and forecast data representative of the selected year for the forecast NEM?	Yes	Chapter 2, Pg. 3-2 – 3-3
E. Flight tracks for the existing condition and forecast year timeframes (these may be on supplemental graphics which must use the same land use base map and scale as the existing condition and forecast year NEM), which are numbered to correspond to accompanying narrative	Yes	Pg. 3-7 – 3-8, Exhibits: 3D, 3E, 3F
F. Locations of any noise monitoring sites (these may be on supplemental graphics which must use the same land use base map and scale as the official NEMs)	Yes	Exhibit 3L
G. Noncompatible land use identification: 1. Are noncompatible land uses within at least the DNL 65 noise contour depicted on the map graphics?	 Yes	Pg 4-4 – 4-8, Exhibits: 1, 2, 4B, 4D
2. Are noise sensitive public buildings and historic properties identified? *(Note: If none are within the depicted NEM noise contours, this should be stated in the accompanying narrative text.)*	Yes	Pg. 4-4, 4-6, Exhibits: 1, 2, 4B, 4D

14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST: PART I

AIRPORT NAME: ***Bob Hope Airport*** ***REVIEWER:*** ______________________

DOCUMENT DATE: ***October 2012*** ***DATE RECEIVED:*** ________________

	Yes/No/NA	Page No. Other Reference
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?	Yes	Exhibits: 1, 2, 3D, 3E, 3F, 4B, 4D
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?	NA	
V. **NARRATIVE SUPPORT OF MAP DATA: [150.21(a), A150.1, A150.101, A150.103]** A. Technical Data: 1. Are the technical data, including data sources on which the NEMs are based adequately described in the narrative?	Yes	Chapter 3
2. Are the underlying technical data and planning assumptions reasonable?	Yes	Chapter 3
B. Calculation of Noise Contours: 1. Is the methodology indicated? a. Is it FAA-approved?	Yes	Pg. 3-1
b. Was the same model used for both maps? (*Note: The same model also must be used for NCP submittals associated with NEM determinations already issued by FAA where the NCP is submitted later, unless the airport sponsor submits a combined NEM/NCP submittal as a replacement, in which case the model used must be the most recent version at the time the update was started.*)	Yes	Pg. 3-1
c. Has AEE approval been obtained for use of a model other than those which have previous blanket FAA approval?	NA	
2. Correct use of noise models: a. Does the documentation indicate, or is there evidence, the airport operator (or its consultant) has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another that was not included on the FAA's pre-approved list of aircraft substitutions?	Yes	Pg. 3-4
b. If so, does this have written approval from AEE, and is that written approval included in the submitted document?	Yes	Appendix F
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?	Yes	Pg. 3-11. The Airport has a permanent noise monitoring system. INM predictions were compared to actual measurements for calendar year 2012.

14 CFR PART 150
NOISE EXPOSURE MAP CHECKLIST: PART I

AIRPORT NAME: ***Bob Hope Airport*** ***REVIEWER:*** ____________________

DOCUMENT DATE: ***October 2012*** ***DATE RECEIVED:*** ________________

	Yes/No/NA	Page No. Other Reference
4. For noise contours below DNL 65 dB, does the supporting documentation include an explanation of local reasons? (*Note: A narrative explanation, including evidence the local jurisdiction(s) have adopted a noise level less than DNL 65 dB as sensitive for the local community(ies), and including a table or other depiction of the differences from the Federal table, is highly desirable but not specifically required by the rule. However, if the airport sponsor submits NCP measures within the locally significant noise contour, an explanation must be included if it wants the FAA to consider the measure(s) for approval for purposes of eligibility for Federal aid.*)	NA	
C. Noncompatible Land Use Information: 1. Does the narrative (or map graphics) give estimates of the number of people residing in each of the contours (DNL 65, 70, and 75 at a minimum) for both the existing condition and forecast year maps?	Yes	Pg. 4-3 – 4-8
2. Does the documentation indicate whether the airport operator used Table 1 of Part 150? a. If a variation to Table 1 was used: (1) does the narrative clearly indicate which adjustments were made and the local reasons for doing so?	Yes	Pg. 4-3
(2) does the narrative include the airport operator's complete substitution for Table 1?	NA	
3. Does the narrative include information on self-generated or ambient noise where compatible or noncompatible land use identifications consider non-airport and non-aircraft noise sources?	No	
4. Where normally noncompatible land uses are not depicted as such on the NEMs, does the narrative satisfactorily explain why, with reference to the specific geographic areas?	NA	
5. Does the narrative describe how forecast aircraft operations, forecast airport layout changes, and forecast land use changes will affect land use compatibility in the future?	Yes	Pg. 4-8 – 4-9
VI. **MAP CERTIFICATIONS: [150.21(b), 150.21(e)]** A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?	Yes	Pg. i
B: Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete under penalty of 18 U.S.C. §1001?	Yes	Pg. i

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