

## Chapter 2

## SETTING AND CONSTRAINTS FOR NOISE ABATEMENT

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## Chapter 2

### SETTING AND CONSTRAINTS FOR NOISE ABATEMENT

Airport noise has been an issue at Bob Hope Airport since the 1970s, before the Burbank-Glendale-Pasadena Airport Authority was formed. In the 30 years since the creation of the Airport Authority and its acquisition of the Airport, airport noise abatement and mitigation have been among its highest priorities. The problem of nighttime noise at the Airport began to reach serious levels in the late 1960s as commercial jet service became established at what was then called the Lockheed Air Terminal. The City of Burbank attempted to impose a curfew on nighttime jet departures between 11:00 p.m. and 7:00 a.m. See City of Burbank Ordinance No 2216 (March 31, 1970). That ordinance was subsequently struck down by the Supreme Court in *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624 (1973). Importantly, the Court did not hold or imply that the City's goal of eliminating nighttime noise did not meet a legitimate need of the City. See *id.* at 642-43 (noting that the City had a legitimate goal in seeking to reduce nighttime noise; Rehnquist, J., dissenting).

In the late 1970s, the Lockheed Corporation, then owner and operator of the Airport, announced it would sell or close the Airport. In order to protect this important community asset, the cities of Burbank, Glendale and Pasadena formed the joint powers authority that became the Burbank-Glendale-Pasadena Airport Authority to own and operate the Airport. Even in the context of preserving the Airport, however, community concerns regarding noise were of paramount concern. The organic statute authorizing the creation of the Authority includes prohibitions on the lengthening of runways and mandates that the size of the then-existing noise impact area not increase (California Government Code § 6546.1). Additional provisions designed to limit increases in noise were included in the original Joint Powers Agreement between the three cities and in the Authority's noise rules. Eventually, the Authority adopted a voluntary curfew on air carrier operations in an effort to address community concerns regarding nighttime aircraft noise.

The problem of nighttime noise and the need for a curfew remained, however, an important topic of public discussion and debate, with frequent calls by citizens for the Authority to establish a mandatory curfew and frequent objections to proposed operations that would occur during nighttime hours. In addition, citizens frequently filed complaints with the Authority regarding nighttime operations. Air carrier operations that did not comply with the voluntary curfew, as well as nighttime operations by other operators, continued to contribute to the noise problem in the Airport environs.

The specific need for a curfew resurfaced as a major issue in the mid-1990s in connection the Authority's proposal to build a replacement passenger terminal. The

view of the City and its residents was summarized in City of Burbank Resolution No. 24,578 (Sept. 19, 1995):

The Airport Authority should aggressively pursue an FAA Part 161 process to establish a *mandatory* curfew on all flights into and from the Airport between 10 p.m. and 7:00 a.m. The current voluntary curfew is being routinely, and increasingly, ignored and has not proven to be a viable mechanism.

Acknowledging that the FAA 161 process is time-consuming and fraught with potential obstacles, the Airport Authority should also pursue any and all other means to gain respect for the current 10 p.m. to 7 a.m. curfew. It is the explicit intention of the Burbank City Council not to support the commencement of construction of a new terminal unless and until a satisfactory mandatory curfew is established. (emphasis in original)

The lack of a mandatory curfew was a major motivating factor in the extensive and costly litigation between the City and Authority. Between 1995 and 2000, the City and Authority were involved, directly and indirectly, in approximately 13 lawsuits in state and Federal courts and before administrative agencies. Several of the lawsuits involved appeals. These lawsuits covered a wide range of environmental, land use, noise and allocation of powers issues. Obviously, all of this litigation was enormously expensive and distracting. Throughout this period, the City reiterated its position that a curfew was a necessary, although not sufficient, condition for resolution of these various issues. The City also enlisted the support of members of Congress, FAA officials and others to encourage the Airport Authority to seek a mandatory curfew.

A particular focal point of the City's efforts to obtain a curfew was the contested hearing process regarding the Authority's applications to renew its Noise Variance pursuant to the California Airport Noise Regulations. Under those regulations, the Authority has a legal duty to reduce and ultimately eliminate the "noise impact area," which is defined as homes, schools, churches and similar land uses exposed to noise levels of CNEL 65 dB or more. Until the noise impact area is eliminated, the Authority must seek a noise variance from Caltrans as a way to ensure that adequate steps are being taken to eliminate the noise impact area.

In three successive administrative hearings, the City argued that steps beyond the Authority's existing noise rules, voluntary curfew and acoustic treatment program were necessary to resolve the noise impact problem. In all three variances, the focus of the City's efforts was to require the Authority to start or complete a Part 161 Study in order to obtain a curfew. As Caltrans concluded in the 2002 Variance, "[the Authority] has also undertaken a Part 161 Study [for a curfew], a process that may hold the best hope of developing new noise abatement measures." *In the Matter of Statement of Issues by the Burbank-Glendale-Pasadena-Airport Authority*, Decision at 16 (Cal. Dep't Trans. Nov. 20, 2002). See also, *In the Matter of the Noise Variance Application of Burbank-Glendale-Pasadena Airport Authority*, Decision (Cal. Dep't Trans. Feb. 23, 2008).

In late 1999, following the 1998 Variance decision and as the City and Airport Authority began implementing a series of agreements to resolve many of the land use

and other issues relating to the Airport, the Authority retained a consultant and began to prepare the study required by Part 161 for a mandatory curfew. Of course, by itself, preparing a study does not solve a long-standing and continuing noise problem. Accordingly, citizens and the City continued to call attention to the nighttime noise problem and attempted to expedite completion of the Part 161 Study.

For example, in October 2001, 58 percent of the voters in a special City election approved an initiative measure known as Measure A. Among other provisions, Measure A would have prohibited the City from approving virtually any aspect of any new Airport use unless and until the Authority had implemented a mandatory curfew on all operations between 10:00 p.m. and 7:00 a.m. It is significant that Measure A was approved by a large majority of voters despite the blunt warnings of the Burbank City Attorney and others that Measure A was illegal. In fact, Measure A was ultimately struck down by the courts. Nevertheless, this kind of direct public demand for a curfew underscores the depth of the problem of nighttime noise and the need for action to address it.

Similarly, in 2002, the City convened a public committee, called the Plan Evaluation and Review Committee (PERC), to take a comprehensive look at a number of issues relating to the Airport. PERC consisted of 16 individuals drawn from a broad cross-section of Burbank, including long-time citizen activists, residents who lived near the Airport and citizens with only limited prior political involvement from all parts of the City. PERC heard extensive testimony from Burbank and Los Angeles residents, City officials and representatives, Authority officials and representatives and other stakeholders. After many weeks of fact gathering and deliberation, PERC issued a report distilling its findings.

With respect to nighttime noise, PERC concluded that:

While many have focused on a demand for curfews or noise budgets or other remedies, PERC's analysis found that the fundamental building blocks of the complaints could be identified as three elements: noise; pollution; and traffic...

Limiting daytime disturbances from noise, and eliminating nighttime noise disturbances, should be primary goals of City policy...

*And the most annoying of all is the aircraft take-offs and landings that happen at night when there is no background noise to offset the growl of aircraft jet engines.\**

The PERC Report went on to detail the extent and nature of the noise problem, consistently noting that nighttime noise presented a unique problem. *E.g., id.* at 28-29. Accordingly, PERC recommended that the Authority obtain FAA approval of a curfew. PERC described a curfew as "the most desirable, effective and achievable restriction" (*id.* at 7). PERC defined "desirable" as meaning "wanted by a significant portion of Burbank citizens" (*id.* at 7 n.1).

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\*Plan Evaluation and Review Committee Report at 27 (Oct. 1, 2002), emphasis added.

In addition to the relatively unfiltered views of Burbank residents regarding the need for a curfew expressed in the PERC process and through Measure A, the public's need for a curfew continued to be reflected in the public positions of the City, as well as elected officials. As discussed above, the adequacy of the Authority's efforts to complete the Part 161 Application was the focus of the City's arguments in the 2002 and 2008 noise variance hearings. Similarly, members of Congress representing the area expressed their support for a curfew, also reflecting the strongly expressed desires of their constituents in Burbank and Los Angeles. See, *e.g.*, Letter from the Honorable Adam Schiff, Brad Sherman, Howard Berman, and Henry Waxman to the Honorable Marion Blakey, Administrator, FAA (Dec. 4, 2002).

## **2.1 NOISE ABATEMENT AT BOB HOPE AIRPORT**

The Airport Authority has established a number of noise abatement rules, policies and programs since its creation in 1978.

### **2.1.1 Airport Noise Rules**

The Airport Authority has 11 noise rules that were established prior to the Airport Noise and Capacity Act of 1990. Rules 7, 9, 10, and 11 are all relevant, to some degree, to the restrictive alternatives submitted for consideration within this application.\* The following is a simplified summary of the implications of each rule:

- Rule 7 requires Airport Commission approval for the inauguration of operations, increase in operations, or substitution of louder aircraft for existing operations by air carriers. The Commission can grant approval only if shown that the additional operations will not increase the annual 70 CNEL contour from what it was on June 30, 1978.
- Rule 9 establishes nighttime noise limits based on Part 36 certificated levels.
  - The rule permits nighttime operations by small aircraft (under 12,500 pounds) with total rated maximum shaft horsepower of 200 or less or with certificated overflight noise levels of 85.6 dBA or less.
  - The rule also permits aircraft with certificated sideline noise levels below designated levels expressed in dBA.
- Rule 10 sets maximum noise levels for transport category large aircraft and turbojet aircraft operating under an FAA-issued operating certificate based on certificated sideline noise levels published in FAA Advisory Circular 36-1H.
- Rule 11 requires that all air carriers operating at the airport use Stage 3 aircraft.

The Authority has used Rule 7, which requires carriers desiring to inaugurate service or increase operations to apply for Authority permission before starting or

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\*The full text of the noise abatement rules is in Appendix A of this document.

increasing service, to promote a voluntary curfew on air carrier operations. It consistently encourages passenger carriers filing for Rule 7 approval to avoid scheduling nighttime flights – after 10:00 p.m. and before 7:00 a.m.

### 2.1.2 Noise Compatibility Studies

In 1981, the Authority authorized the preparation of a comprehensive noise abatement plan. The plan, which was published in 1984, analyzed the aircraft noise situation and evaluated alternative noise abatement and land use management measures to improve compatibility between the Airport and the surrounding community. Soon after, the Authority took the next step to participate in the FAA's new Part 150 Noise Compatibility Program, which offered the major inducement of Federal funding assistance for implementation of FAA-approved noise abatement and mitigation measures.

The Airport completed its first Part 150 Study in 1989. The Airport completed an update to its Part 150 Study in 1999, and the FAA issued a Record of Approval (ROA) November 27, 2000\* on the Noise Compatibility Plan (NCP) formulated in the Part 150 Study. The ROA was amended August 4, 2004\*\* with the addition of one further land use planning measure.

The updated NCP recommended 29 measures to prevent the introduction of additional incompatible land uses and to reduce the effect of the noise generated at the airport. These recommendations included twelve noise abatement measures, four noise mitigation measures, seven land use measures, and six program management measures.

Figure 2-1 depicts noise contours developed for the Airport over the years and their evolution since 1982. Note that the size of the CNEL 65 contour has been shrinking throughout the period. The 2005 contour is substantially smaller than those in the previous years. For example, the contour no longer extends beyond Interstate 5 to the north. Although there is less land area within the 2005 contours than in the past, 1,080 acres remain within the 65 CNEL contour.\*\*\*

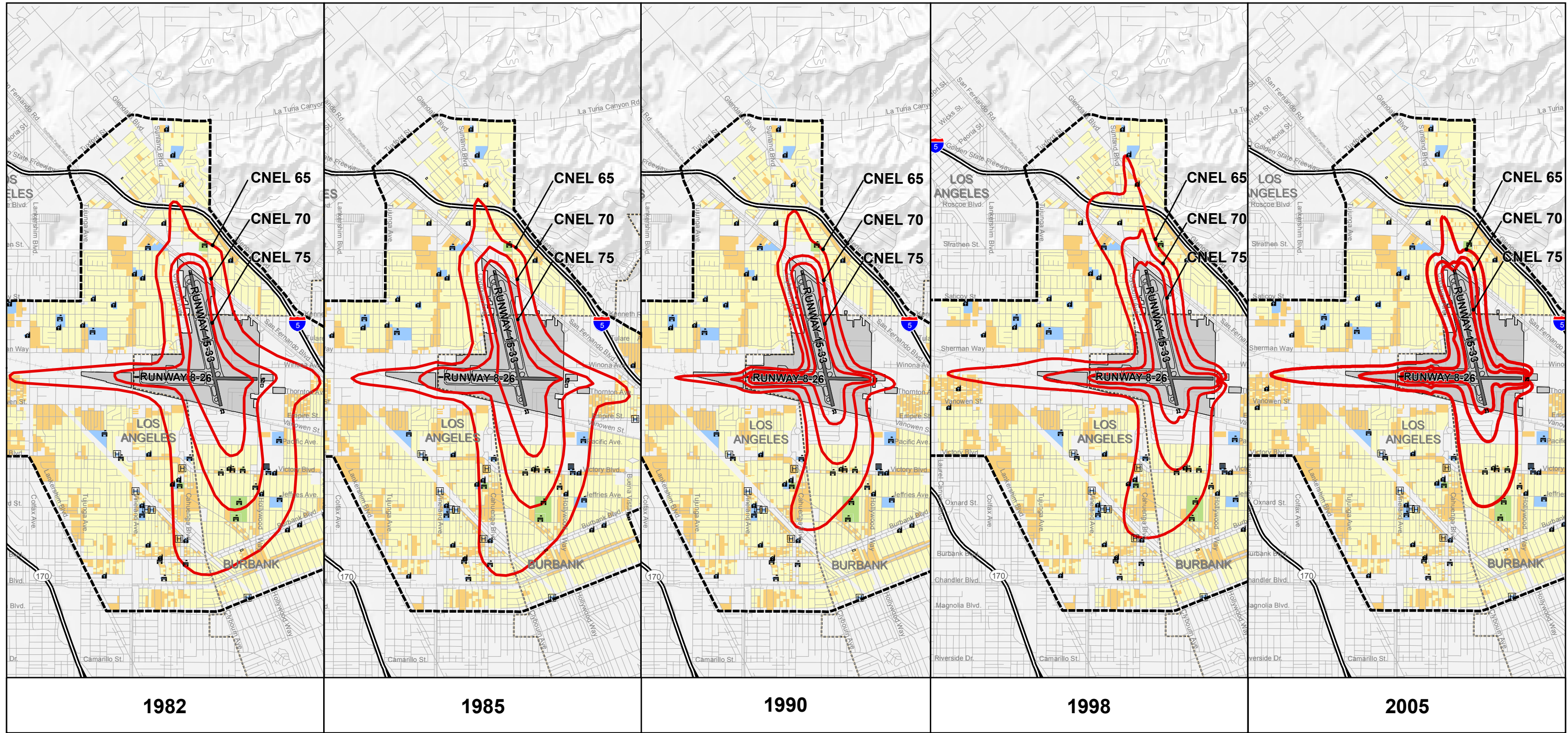
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\*[http://www.faa.gov/airports\\_airtraffic/airports/environmental/airport\\_noise/part\\_150/states/media/roa\\_california\\_112700.pdf](http://www.faa.gov/airports_airtraffic/airports/environmental/airport_noise/part_150/states/media/roa_california_112700.pdf)

\*\*[http://www.faa.gov/airports\\_airtraffic/airports/environmental/airport\\_noise/part\\_150/states/media/roa\\_california\\_080404.pdf](http://www.faa.gov/airports_airtraffic/airports/environmental/airport_noise/part_150/states/media/roa_california_080404.pdf)

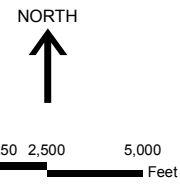
\*\*\*See Appendix B, Aircraft Noise Analysis, Table B-26 on page B-74.





**LEGEND**

- CNEL Contour
- Detailed Land Use Study Area
- Airport Boundary
- Municipal Boundary
- Freeways
- Roads
- Single-Family Residential
- Multi-Family Residential
- Noise-Sensitive Institutions
- Sound-Insulated School
- Ⓜ Schools, Preschools
- Ⓜ Places of Worship
- Ⓜ Hospital
- Ⓜ Library

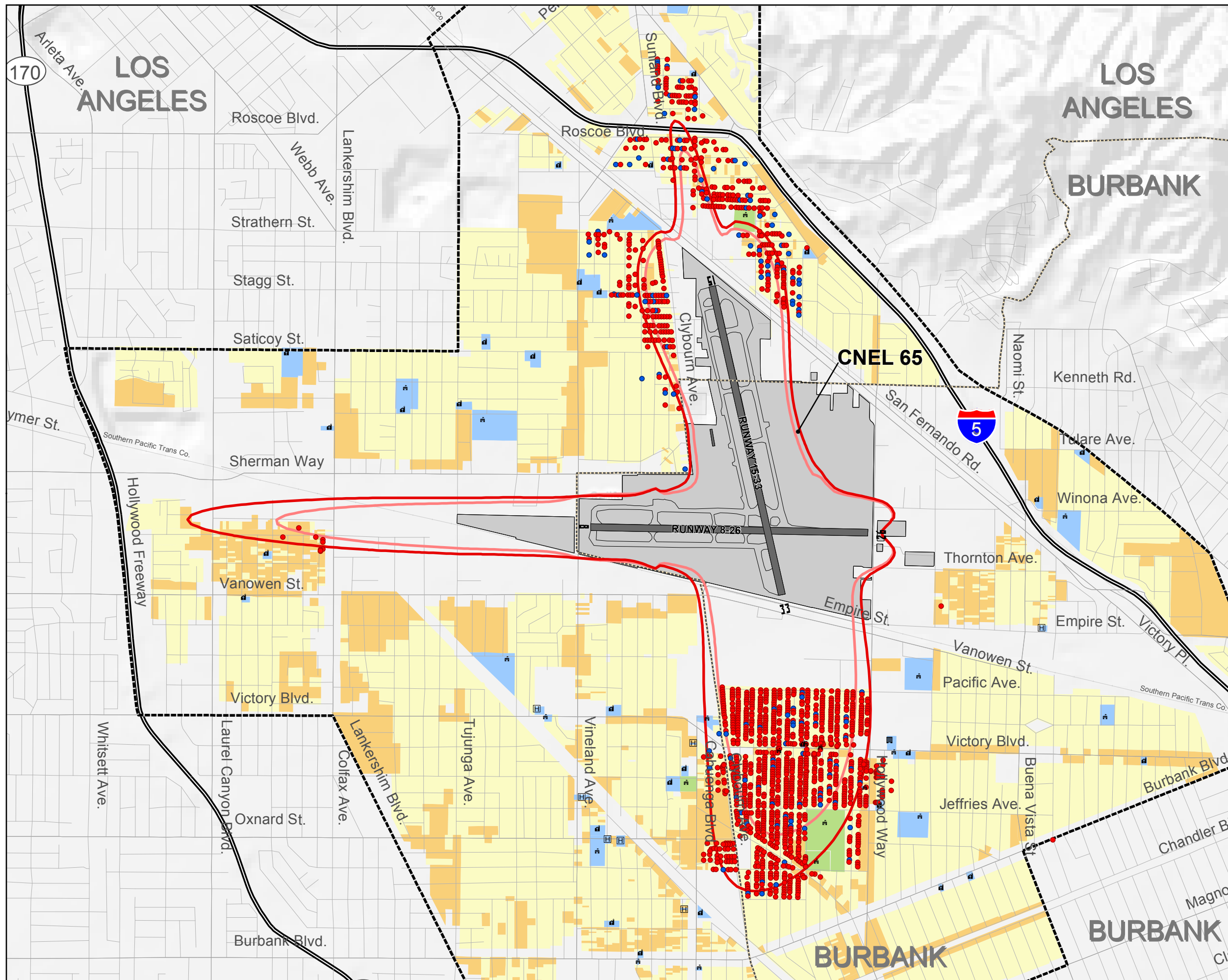


Sources:  
 1982 - CH2M HILL, Noise Abatement Plan, 1983  
 1985 - KMPG Peat Marwick, FAR Part 150 Noise Compatibility Program, Vol. 1: Noise Exposure Maps, 1987.  
 1990 - KMPG Peat Marwick, Final EIS, Land Acquisition and Replacement Terminal Project, Vol. 1: Documentation, 1995.  
 1998 - Coffman Associates, Burbank-Glendale-Pasadena Airport FAR Part 150 Noise Compatibility Study, Noise Exposure Maps.  
 2005 - Jacobs Consultancy, 2007

Figure 2-1  
**HISTORICAL CHANGES  
 IN NOISE EXPOSURE AT BOB HOPE AIRPORT**  
 FAR Part 161 Study for Bob Hope Airport  
 January 2009







- LEGEND**
- Acoustical Treatment Status**
- Dropped From Program\*
  - Treated
  - 2005 Baseline CNEL 65 Contour
  - 2015 Baseline CNEL 65 Contour
  - - - Primary Study Area
  - - - Municipal Boundary
  - ▭ Airport Boundary
  - ▭ Single Family Residential
  - ▭ Multi Family Residential
  - ▭ Noise-Sensitive Institutions
  - ▭ Sound-Insulated School
  - ▭ Schools, Preschools
  - ▭ Places of Worship
  - ▭ Library
  - ▭ Hospital
  - ▬ Freeways
  - ▬ Roads

\*NOTE:  
Reasons for dropping properties from program include code compliance issues and homeowner preferences.

Sources:  
Noise Analysis by Jacobs Consultancy, 2007.  
Acoustical treatment data from Burbank-Glendale-Pasadena Airport Authority records, through June 2007.

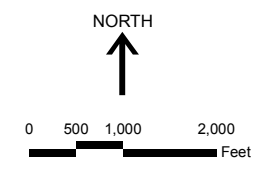


Figure 2-2  
**STATUS OF ACOUSTICAL TREATMENT PROGRAM**  
FAR Part 161 Study for Bob Hope Airport  
January 2009





Among the most important noise compatibility actions undertaken by the Airport Authority are the residential and school acoustical treatment programs. The 1989 Noise Compatibility Plan (NCP) identified 2,300 homes as eligible for the residential program. The 1999 NCP update added another 800 homes to the ultimate eligibility area.\* Figure 2-2 shows the location of the 1,446 dwelling units that had been or were being treated as of June 2007. It also shows the location of the 118 dwellings that were dropped from the program because of the wishes of the homeowners or because of substantial code violations in the dwelling.

## 2.2 AIRPORT SETTING

Bob Hope Airport is located in Burbank, California along the city's northwestern border and adjacent to the Los Angeles communities of Sun Valley and North Hollywood. Relative to its role as a medium hub,\*\* the Airport is a relatively small airport in terms of land area (approximately 555 acres.)

The physical size and operation of the Airport is constrained in four ways: (1) conditions imposed by state law authorizing the establishment of the Airport Authority and by the Joint Powers Agreement; (2) urban development; (3) terrain; and (4) the regional airspace structure. The four constraints limit the Authority's ability to expand its land envelope to provide a noise buffer and limit the ability of air traffic control to direct aircraft arriving and departing the Airport over noise-compatible land.

The Airport is one of six air carrier airports serving the Los Angeles Region. The others are Los Angeles International, Long Beach, LA/Ontario International, John Wayne-Orange County, and Oxnard. Although Bob Hope Airport ranks fourth among these airports in terms of passenger enplanements, it serves an important role for short-haul and shuttle service in the western U.S. The Airport serves approximately 10% of the Los Angeles region's total domestic enplaned passengers.

Figure 2-3 shows the Airport's location relative to the municipal boundaries and major roadways. As shown, the Airport is located primarily within the City of Burbank with Runway 15-33 extending into Los Angeles to the north; Van Nuys Airport is also shown directly to the west of Bob Hope Airport.

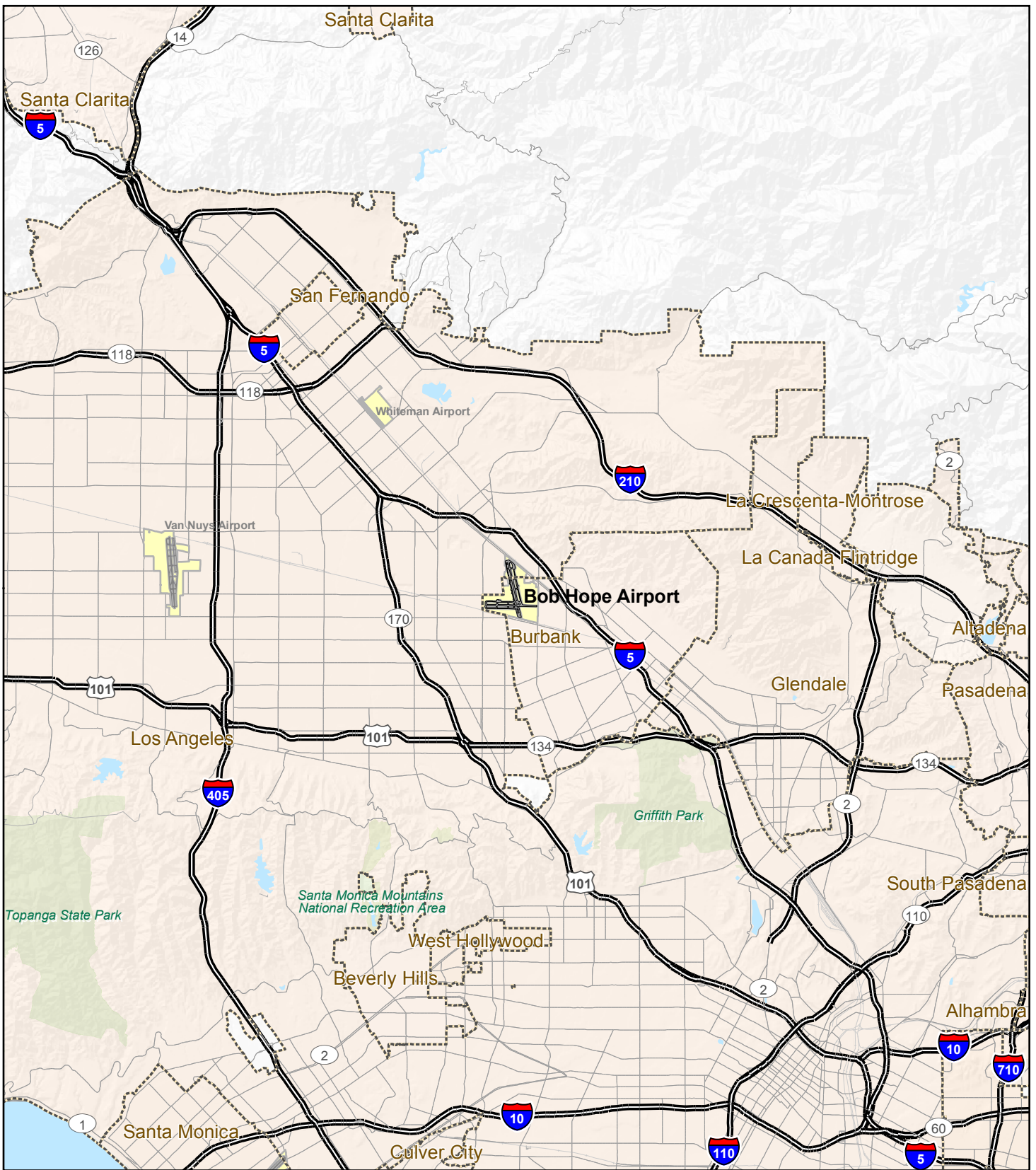
Figure 2-4 shows a closer view of the Airport using aerial imagery. The airfield has two runways: Runway 15-33 at 6,886 feet in length and Runway 8-26 at 5,801 feet. Runway 15 is the primary departure runway due to the prevailing winds from the southwest through the west; Runway 8 is the primary arrival runway as it is the only runway equipped with an instrument landing system (ILS).\*\*\*

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




\*Coffman Associates, 1999. Burbank-Glendale-Pasadena Airport, F.A.R. Part 150 Noise Compatibility Study, Noise Compatibility Program, November 1999, p. 7-27.

\*\*Medium hub as defined by FAA – between 0.25% and 1% of nationwide annual passenger boardings.

\*\*\*[http://www.avn.faa.gov/index.asp?xml=naco/online/d\\_tpp](http://www.avn.faa.gov/index.asp?xml=naco/online/d_tpp)



**LEGEND**

-  Municipal Boundary
-  Urban Area
-  Park or Recreation Area
-  Freeways
-  Roads

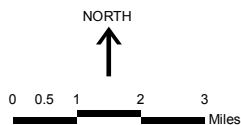
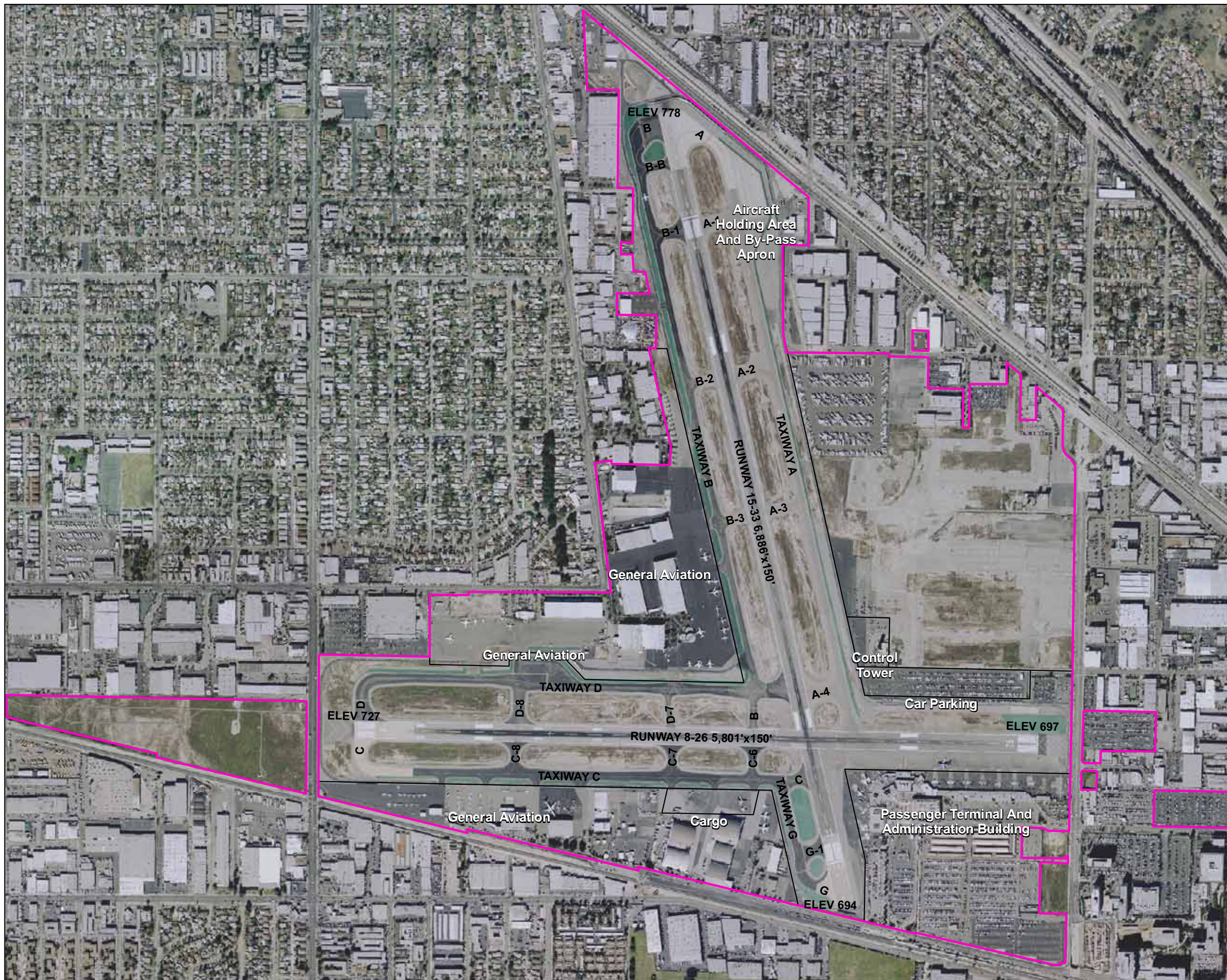


Figure 2-3  
**AIRPORT LOCATION**  
 FAR Part 161 Study for Bob Hope Airport  
 January 2009





**LEGEND**

— Airport Property

December 2004 Aerial Imagery Courtesy of USGS

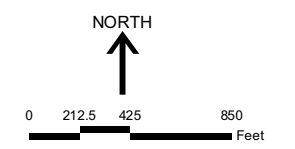


Figure 2-4  
**BOB HOPE AIRPORT**  
 FAR Part 161 Study for Bob Hope Airport  
 January 2009





### **2.3 AIRPORT HISTORY**

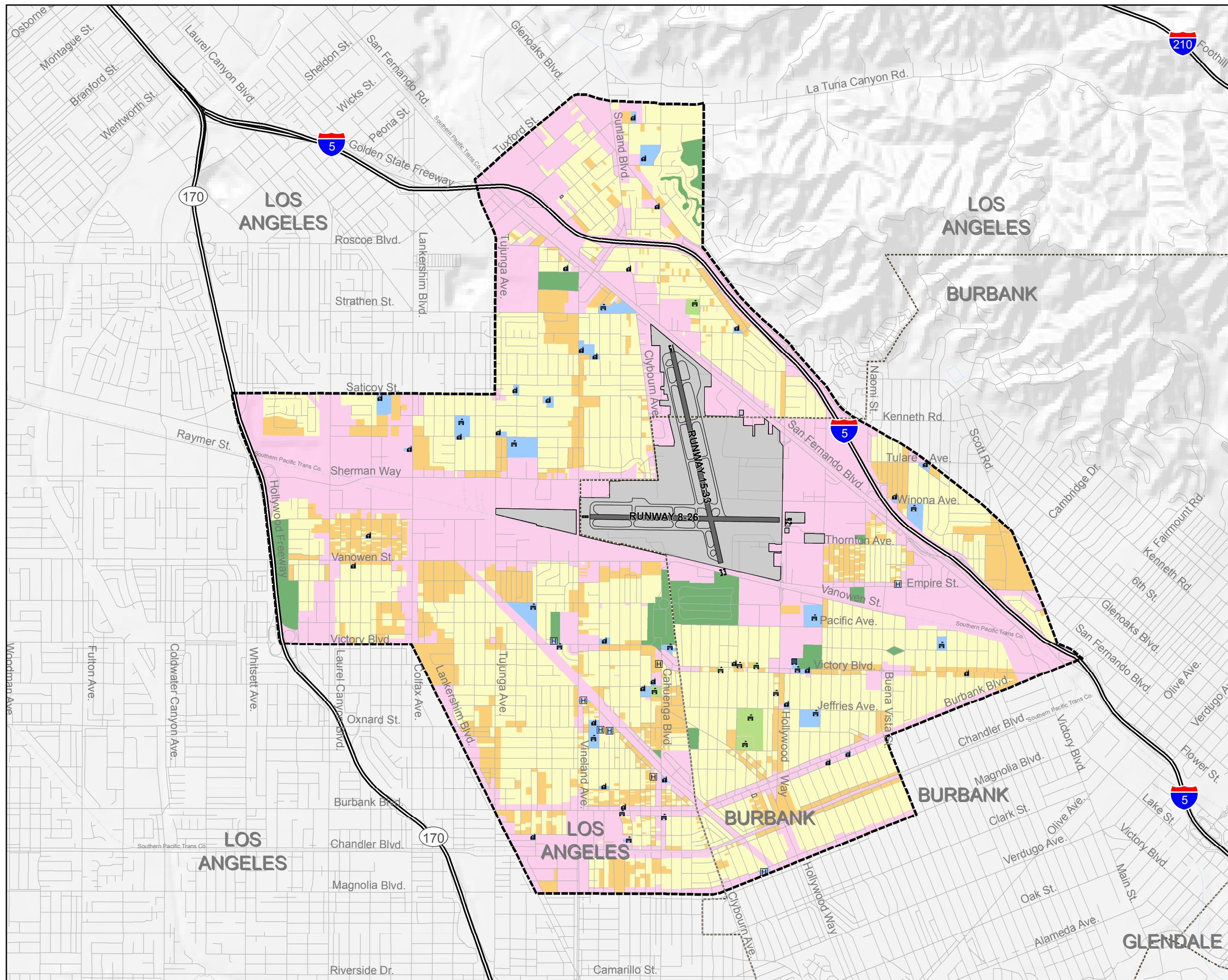
The Airport opened on Memorial Day weekend in 1930. At that time, it was known as United Airport, a private venture of United Aircraft and Transportation Corporation, the forerunner of United Airlines. In the mid-1930's the Airport's name was changed to Union Air Terminal, and the Airport served between 59,000 and 98,000 annual passengers. In 1940, the Airport was sold to Lockheed Aircraft Company, which continued to operate it for the next 38 years, under the name Lockheed Air Terminal.

Burbank remained the principal point of access for air travel in the greater Los Angeles area until the end of World War II. When Los Angeles Municipal Airport (now LAX) opened in 1946, most of the major airlines moved to the new airport. Lockheed Air Terminal continued to be used by regional carriers. In 1967, Lockheed Air Terminal was renamed the Hollywood-Burbank Airport. The era of private ownership ended in 1978 when the Authority purchased the Airport from Lockheed, changing the Airport's name to Burbank-Glendale-Pasadena Airport. In the ensuing decade, several airlines returned to the Airport with service to various cities. The Airport was renamed Bob Hope Airport in November 2003.

### **2.4 LAND USE IN AIRPORT VICINITY**

Since the opening of the Airport in 1930, the development of land surrounding the airport property continually evolved to the dense urban area it is today. Figure 2-5 shows the existing land use within the study area. This study area is the same as the study area used in the most recent Part 150 Noise Compatibility Program (the 1999 NCP). (The FAA issued its Record of Approval (ROA) of the 1999 NCP in 2000, and issued a ROA for an NCP amendment in 2004.) All land uses, with the exceptions of airport land (shown in gray), commercial-industrial land (pink), and parks and open space (green), are considered "noise-sensitive" with respect to noise exposure. Most of the area was developed during the 1930s, 1940s and 1950s. Today, it is almost fully developed; little vacant land remains.





**LEGEND**

- Detailed Land Use Study Area
- Airport Boundary
- Municipal Boundary
- Single-Family Residential
- Multi-Family Residential
- Commercial, Industrial, Transportation, and Utilities
- Parks and Open Space
- Noise-Sensitive Institutions
- Sound-Insulated School
- Schools, Preschools
- Places of Worship
- Library
- Hospital
- Freeways
- Roads

Sources:  
 BGPAA Geographic Information System, 2007;  
 Field checking by Jacobs Consultancy, July 2007

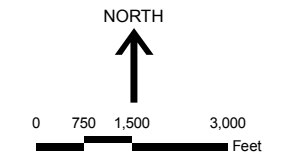


Figure 2-5  
**GENERALIZED EXISTING LAND USE**  
 FAR Part 161 Study for Bob Hope Airport  
 January 2009



The study area lies within the corporate limits of the cities of Burbank and Los Angeles. Since the area is almost fully developed, the regulations come into play only with redevelopment projects or major renovations of existing buildings. As for the City of Los Angeles' land use policies, two community plans, parts of the City's General Plan, include airport-related policies with respect to Bob Hope Airport: the North Hollywood-Valley Village Community Plan (North Hollywood Plan)\* and the Sun Valley-La Tuna Canyon Community Plan (Sun Valley Plan).\*\* The North Hollywood Plan states that, "[Bob Hope Airport] flight patterns should be restricted from residential areas to the maximum extent possible." In addition the North Hollywood Plan also supports continued efforts to reduce noise emanating from airport operations at the Airport.\*\*\*

The Sun Valley Plan goes further and identifies the following needs: (1) to provide adequate buffering of residential neighborhoods near the Airport, (2) to minimize impact and growth of the Airport on the surrounding Sun Valley and North Hollywood communities. In addition, the Sun Valley Plan advocates the development of future industrial land uses adjacent to the Airport which would be compatible with the Airport. Finally, the Sun Valley Plan articulates a goal to work with the Authority and FAA to mitigate airport-related noise, traffic, pollution and other negative environmental impacts.\*\*\*\*

Figure 2-6 depicts height-limit zones within which builders are required to file plans with the FAA if proposed construction exceeds the indicated heights. (See City of Burbank FAA Filing Requirement Map, adopted by Ordinance 3663, February 1, 2005.)

Burbank also has a sound attenuation ordinance, which requires new structures (including hotels, apartments, multi- and single-family residences) to be sound-insulated to achieve an interior CNEL level of 45 dB from exterior sources. An acoustical analysis report, showing that the prescribed interior noise level requirements can be met, must be filed with the building permit. As an alternative, the builder can use a set of specified sound transmission control assemblies and be presumed to have met the interior noise level requirement. The requirements apply within the 60 CNEL contour (associated with noise from roads, railroads, and the Airport). (See City of Burbank Ordinance 3662, effective March 15, 2005.)

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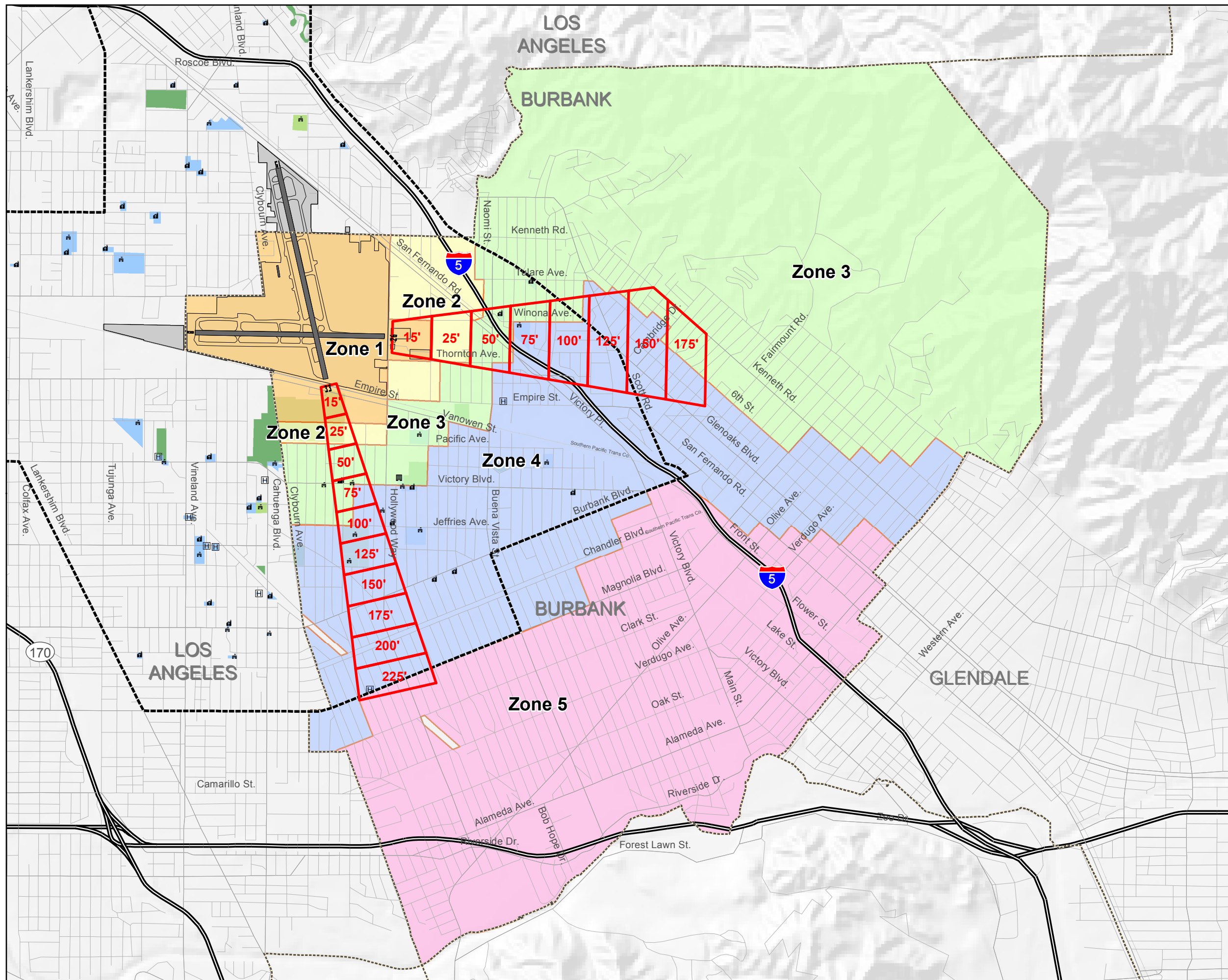
\*North Hollywood-Valley Village Community Plan, A Part of the General Plans, City of Los Angeles, May 14, 1996. [www.lacity.org/pln](http://www.lacity.org/pln).

\*\*Sun Valley-La Tuna Canyon Community Plan, A Part of the General Plans, City of Los Angeles, August 13, 1999. [www.lacity.org/pln](http://www.lacity.org/pln).

\*\*\*North Hollywood-Valley Village Plan Community Plan, page III-7.

\*\*\*\*Sun Valley-La Tuna Community Plan. Page III-26.





**LEGEND**

**FAA Notice Requirements:**

- Zone 1 - All new structures and additions to existing structures
- Zone 2 - All new structures and additions that increase height
- Zone 3 - All new structures over 35 feet
- Zone 4 - All new structures over 70 feet
- Zone 5 - All new structures over 200 feet
- Approach Surfaces with Height Limit of Structures

- Primary Study Area
- Municipal Boundary
- Airport Boundary
- Parks and Open Space
- Noise-Sensitive Institutions
- Sound-Insulated School
- Schools, Preschools
- Places of Worship
- Library
- Hospital
- Freeways
- Roads

**Note:**  
 The number in each segment of the Airport Approach Area identifies the height limit of structures and objects of natural growth in feet as measured from the elevation of the end of runway.

**Source:**  
 City of Burbank FAA Filing Requirement Map, adopted by Ordinance No. 3663 on February 1, 2005.

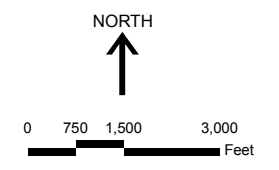


Figure 2-6  
**AIRPORT-RELATED HEIGHT ZONING**  
 -- CITY OF BURBANK  
 FAR Part 161 Study for Bob Hope Airport  
 January 2009



## 2.5 CALIFORNIA LAW AND ITS EFFECT ON BOB HOPE AIRPORT

California State Law requires proprietors of airports with a defined “noise problem” to develop programs to reduce and ultimately eliminate the noise problem.\* A “noise problem” airport is defined as an airport with incompatible land uses within the 65 CNEL contour.\*\* The incompatible area within the contours is called “the noise impact area.” Proprietors of airports with noise problems are permitted to operate the airport only if they obtain a variance from the California Department of Transportation (the department). According to the law, “[i]n granting variances, the department shall be guided by the underlying policy that the proprietor of each existing airport having a noise impact area be required to develop and implement programs to reduce the noise impact area of the airport to an acceptable degree in an orderly manner over a reasonable period of time.”

### 2.5.1 2008 Variance Order

The Authority has been operating under a variance issued in 2002. The Authority applied for a new variance near the end of 2005, when the variance was due to expire. The City of Burbank intervened and requested a hearing on the variance, and the discovery process lasted over a year. The hearing was held in August 2007. Renewal of the variance was ordered on February 28, 2008 and became effective on March 29, 2008.\*\*\* The variance was approved subject to the following conditions.

1. The variance shall be effective for a period of three years.
2. Airport Authority shall comply with all laws and regulations of the United States, the State of California, and the political subdivisions of the State governing noise abatement and mitigation.
3. Airport Authority shall continue to implement its NIARP [Noise Impact Area Reduction Plan].
4. However, within six months of the effective date of this Decision, Airport Authority shall assess the continuing viability of the NIARP and submit an updated NIARP to the Department [of Transportation] for its approval. The new NIARP shall be accompanied by: (1) an analysis of the continuing effectiveness of existing measures; (2) an analysis of whether new measures

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\*Title 21, Subchapter 6, Noise Standards, Division of Aeronautics, Register 90, No. 10---3-10-90.

\*\*The Community Noise Equivalent Level (CNEL) metric is a time-weighted, cumulative noise descriptor, the use of which is required by law in California. CNEL describes the cumulative noise level for an average 24-hour noise period in an area, after including extra weights for evening and nighttime noise. An extra weight of 4.8 decibels is applied to evening activity (from 7 p.m. until 10:00 p.m.) and a weight of 10 decibels is applied to nighttime activity (from 10 p.m. until 7:00 a.m.). Given the logarithmic nature of the decibel scale, these weights are equivalent to a threefold increase in evening operations and a tenfold increase in nighttime operations.

\*\*\*Department of Transportation, State of California, Case Number L2006060064 In the Matter of the Noise Variance Application pf Burbank-Glendale-Pasadena Airport Authority Decision, February 28, 2008.



are warranted; and, (3) if no new measures are adopted or planned, an analysis of the reason(s) for the lack of new measures and the likelihood of new measures being adopted during the variance period.

5. Within 30 days of the effective date of this Decision, Airport Authority shall file with the Department a new schedule for the completion of the Part 161 Study...
6. In addition to the information regularly submitted in the quarterly reports... Airport Authority shall include progress reports regarding the status of the Part 161 Study...
7. In addition to the information regularly contained in the quarterly reports, Airport Authority shall report on the progress of its acoustical insulation program...
8. Airport Authority shall post on its website the reports described in paragraph numbers 6 and 7.
9. Airport Authority shall serve on Burbank and Intervenor, and shall post on its website, a copy of the documents required to be filed with the Department pursuant to paragraph numbers 4 and 5...
10. The Department may direct a hearing regarding the adequacy of the new NIARP and/or the progress of the Part 161 Study to meet Airport Authority's obligations under State law, including compliance with the terms and conditions of the variance...
11. Upon application for a subsequent variance, Airport Authority shall submit as part of the application a summary of its efforts during the variance period to comply with the foregoing conditions.
12. The foregoing conditions should not be interpreted as requiring Airport Authority to undertake actions beyond the authority of the Department to direct.
13. In the event Airport Authority fails to comply with the terms and conditions of the variance, such conduct shall constitute grounds for termination or for further conditioning of the variance.

Chapter 3

PROPOSED RESTRICTION AND ALTERNATIVES

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## Chapter 3

### PROPOSED RESTRICTION AND ALTERNATIVES

This chapter describes the Airport Authority's proposed nighttime noise restriction and two less restrictive alternatives.

#### 3.1 PROPOSED RESTRICTION—FULL CURFEW

The Authority seeks FAA approval of a curfew prohibiting all takeoffs and landings from 10:00 p.m. through 6:59 a.m., subject to the exceptions noted below. This alternative would most fully achieve the Airport Authority's noise reduction goal, stated in Chapter 2 – *“to eliminate or significantly reduce nighttime flight noise at [Bob Hope] Airport now and in the future.”\**

The specific wording of the proposed restriction is as follows:

**Curfew on Nighttime Operations:** No takeoffs or landings shall be permitted at Bob Hope Airport from 10:00 p.m. through 6:59 p.m., subject to the following exceptions.

**Effective Date:** The curfew shall become effective 60 days after approval by the Airport Authority.

**Exceptions:** Aircraft engaged in the following activities shall be permitted to land and take off from the Airport between the hours of 10:00 p.m. and 6:59 a.m.:

1. Law enforcement and fire fighting, disaster relief operations, operations by aircraft owned or operated by the armed forces of the United States, and civilian aircraft operated in support of military operations.
2. Medical flight aircraft engaged in active emergency operations for the transportation of patients or human organs.
3. Aircraft operating with declared in-flight emergencies for which Bob Hope Airport is identified as the appropriate landing facility.
4. Aircraft delayed in landing or takeoff by weather conditions, mechanical problems, or air traffic control; provided however, that this exception shall not authorize any landing or takeoff between 11:00 p.m. and 6:59 a.m.

Upon the request of the Airport Authority, the aircraft operator or pilot in command shall document or demonstrate the precise emergency or delay necessitating an aircraft arrival or departure operation at the Airport between the hours of 10:00 p.m. and 6:59 a.m. (in the case of exceptions 3 and 4, only).

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\*Announced by the Airport Authority on July 24, 2000.

**Enforcement:** Violators shall be penalized by the following fines and sanctions, based on the number of violations in a consecutive 12-month period, as follows:

1st Violation – fine equal to the fine for violation of Airport Noise Rule 9 (\$3,671 as of April 2007)

2nd Violation – 200% of the fine for the first violation (\$7,342)

3rd Violation – 300% of the fine for the first violation (\$11,013)

4th Violation – 400% of the fine for the first violation (\$14,684) and action to ban access or terminate the violator’s lease for a period of 12 months

Fines shall be adjusted annually for inflation in accordance with Airport Authority policy.

## **3.2 ALTERNATIVES TO THE PROPOSED RESTRICTION**

The Authority evaluated two alternatives to the proposed restriction as discussed below.

### **3.2.1 Curfew on Departures**

No takeoffs would be permitted at the Airport between 10:00 p.m. and 6:59 a.m., Pacific time. Exceptions and enforcement would be the same as described for the proposed restriction described in Section 3.1, above, provided that all previously adopted Noise Rule restrictions on arrivals between 10:00 p.m. and 6:59 a.m. would remain in effect.

Recognizing that takeoffs tend to be louder than arrivals in most locations around the Airport, this alternative would achieve part of the Airport Authority’s noise reduction goal.

### **3.2.2 Curfew on Aircraft with Aggregate Certificated Noise Levels Above 253 EPNdB (Noise-Based Curfew)**

This alternative would prohibit all takeoffs and landings between 10:00 p.m. and 6:59 a.m. by aircraft with aggregate FAR Part 36 certificated noise levels above an effective perceived noise level of 253 decibels (253 EPNdB) or the equivalent. This alternative would be subject to the same exceptions and enforcement provisions as the proposed restriction.

The objective of this alternative would be to prevent nighttime operations by relatively loud aircraft, while permitting operations quieter aircraft. This alternative is structured to prevent nighttime operations by aircraft with noise levels as loud as the quietest jet aircraft in commercial service. The maximum permitted noise level of 253 EPNdB is just below the quietest regional jet currently certificated for operation in the U.S. The objective of the noise-based curfew is to ensure that the restrictive noise level is set low enough to prevent a substantial future increase in nighttime scheduled operations by aircraft known cause noise problems in the local area. (Commercial



operations would not be prohibited, per se, as carriers could provide service with aircraft complying with the 253 EPNdB restriction. Among currently certificated aircraft, this would include several types of medium, twin-engine turboprops.)

Thus, this alternative would achieve part of the Airport Authority's noise reduction goal by significantly reducing nighttime flight noise.

The noise metric used by the FAA to certify jet and transport category propeller aircraft for compliance with FAR Part 36 noise requirements is EPNdB, or Effective Perceived Noise Level. The noise levels produced by these aircraft are tested at three measurement points, representing approach, takeoff, and sideline noise. Before an aircraft model can be certificated for operation in the United States, the manufacturer must provide the results of noise evaluations to the FAA. The official, certificated noise levels are published in FAA Advisory Circular (AC) 36-1H, *Noise Levels for U.S. Certificated and Foreign Aircraft*, Appendices 1, 2, and 6. The 253 EPNdB criterion is based on the arithmetical sum of the certificated noise levels at the three FAR Part 36 measurement points.

For lighter propeller aircraft, FAR Part 36 measurement tests are taken at only a single measurement point. Those certificated noise levels are reported in AC 36-1H, Appendices 7, 8, and 9.

The FAA has published another advisory circular that presents aircraft noise levels. FAA AC 36-3H, *Estimated Airplane Noise Levels in A-Weighted Decibels*, presents estimated noise levels for many aircraft listed in AC 36-1H, in addition to many other aircraft types, at two measurement points.

Under this curfew alternative, compliance of any aircraft with the noise-based curfew would be determined using the following criteria:

1. For aircraft with certificated noise levels reported in AC 36-1H, Appendices 1, 2, and 6 – the arithmetical sum of the three noise levels must be less than 253 EPNdB;
2. For aircraft with certificated noise levels reported in AC 36-1H, Appendices 7 and 9, the noise level must be less than 81.1 CdbA (corrected measurement level in A-weighted decibels);
3. For aircraft with certificated noise levels reported in AC 36-1H, Appendix 8, the noise level must be less than 91.8 dBA; and
4. For aircraft with noise levels not reported in AC 36-1H, but with estimated decibel levels reported in AC 36-3H, the arithmetical sum of the two noise levels must be less than 145.6 dBA.

For aircraft with noise levels reported at only a single point or at two points (in AC 36-3H), a series of regression analyses were undertaken to derive estimates of the single-

point or two-point noise levels that would be approximately equivalent to 253 EPNdB. The analysis was possible because AC 36-3H, which presents estimated A-weighted decibel levels (dBA) for certificated aircraft, includes many of the same aircraft types with actual certificated noise levels reported in all appendices of AC 36-1H.

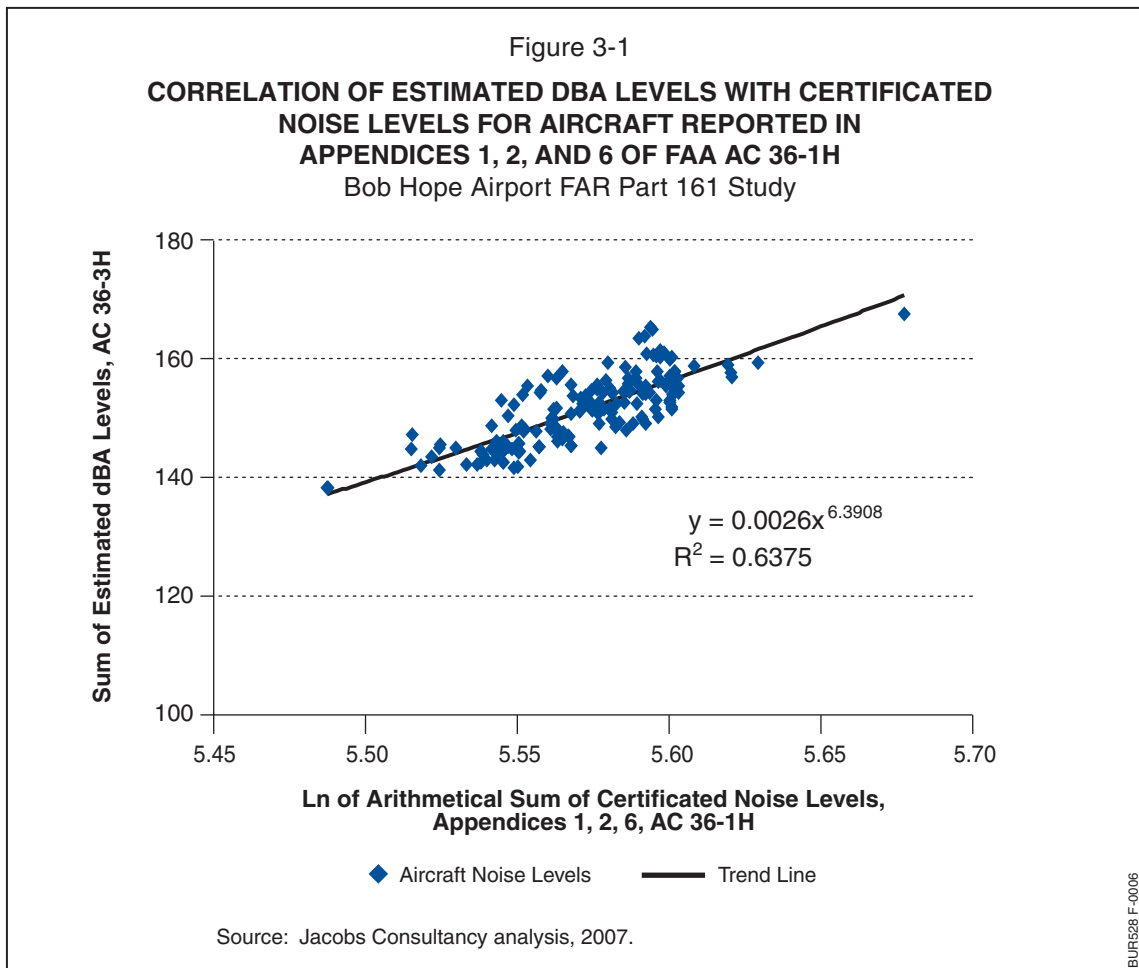
The regression analyses were conducted in three steps:

1. For aircraft reported in AC 36-1H, Appendices 1, 2 and 6: Regressions were run correlating the sum of EPNdB levels with the sum of estimated dBA levels from AC 36-3H. The best fitting regression yielded the following equation:

$$y = 0.0026x^{6.3908} \quad \text{[Equation 1]}$$

where “y” is the sum of dBA levels and “x” is the natural logarithm of the sum of EPNdB levels for the same aircraft.

Solving the equation for “y,” where x = the natural logarithm of 253, yields a dBA of 145.6. Therefore, 253 EPNdB is equivalent to 145.64 dBA (estimated), subject to the tolerances of the regression equation. Figure 3-1, below, presents the graph of the data and the regression line.

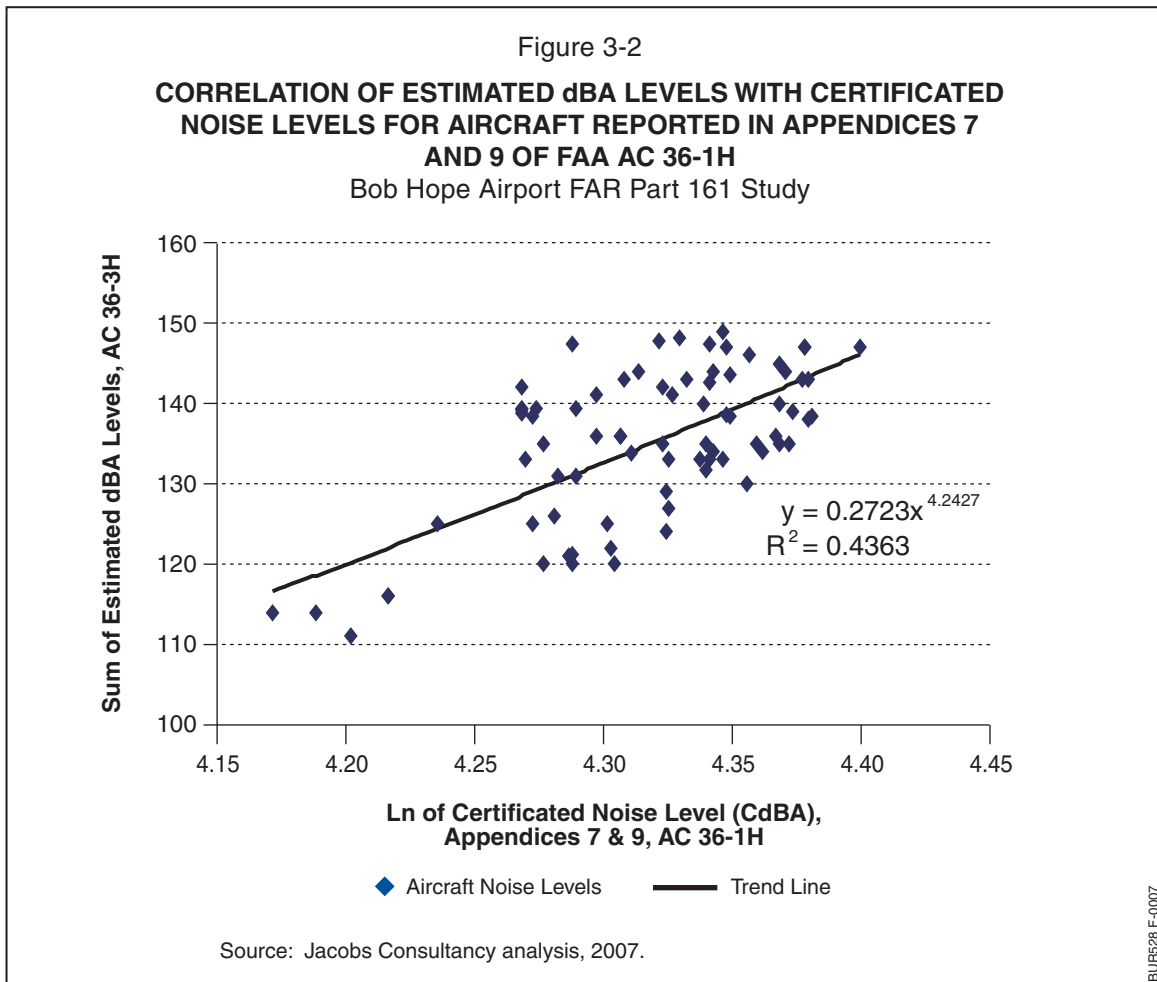


- For aircraft reported in AC 36-1H, Appendices 7 and 9: Regressions were run correlating the reported CdBA levels with the sum of the estimated dBA levels from AC 36-3H. The best fitting regression yielded the following equation:

$$y = 0.2723x^{4.2427} \quad \text{[Equation 2]}$$

where “y” is the sum of estimated dBA levels reported in AC 36-3H and “x” is the natural logarithm of the CdBA level for the same aircraft.

Solving the equation for “x,” where “y” = 145.64, yields an “x” equal to 4.396, the natural logarithm of 81.1. This means that a noise level of 81.1 CdBA, as reported in Appendices 7 and 9 of AC 36-1H, is equivalent to a sum of estimated dBA levels of 145.6. This, in turn, is equivalent to a sum of EPNdB levels of 253, per Equation 1. Figure 3-2, below, presents the graph of the data and the regression line.



- For aircraft types reported in AC 36-1H, Appendix 8: Regressions were run correlating the reported noise levels in dBA with the sum of estimated noise levels from AC 36-3H. The best-fitting regression produced the following equation:

$$y = 1.2059x + 34.937 \quad \text{[Equation 3]}$$

where “y” is the sum of estimated dBA levels reported in AC 36-3H and “x” is the certificated dBA level for the same aircraft, reported in Appendix 8 of AC 36-1H.

Solving the equation for “x,” where “y” = 145.64, yields an “x” equal to 91.8 dBA. This means that a noise level of 91.8 dBA, as reported in Appendix 8 of AC 36-1H, is equivalent to a sum of estimated dBA levels of 145.6. This, in turn, is equivalent to a sum of EPNdB levels of 253, per Equation 1. Figure 3-3, below, presents the graph of the data and the regression line.

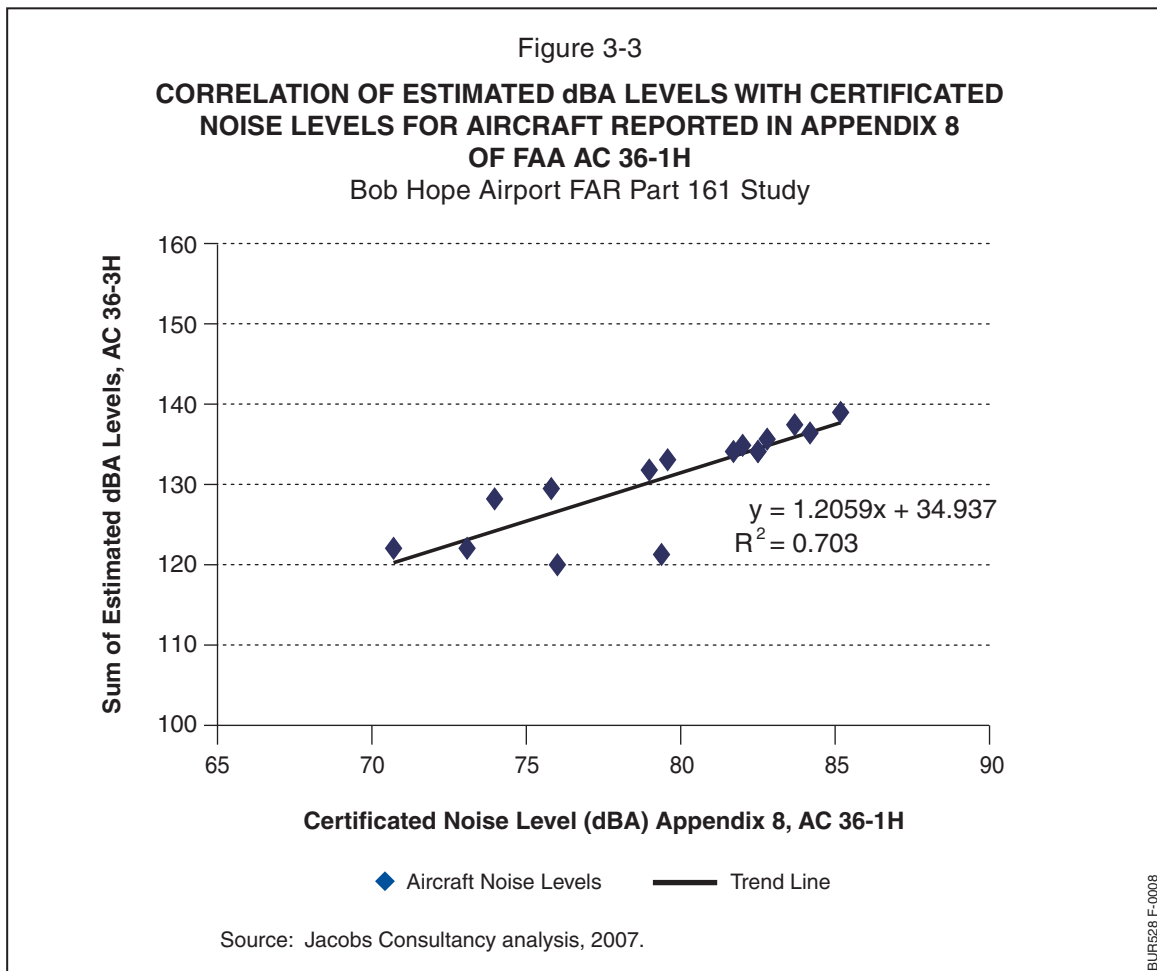




Table 3-1 lists aircraft types that would either comply or not comply with the noise-based curfew. This list is representative only and is not meant to be comprehensive.

Table 3-1  
**EFFECT OF NOISE-BASED CURFEW ON SELECTED AIRCRAFT TYPES**  
 Bob Hope Airport FAR Part 161 Study

Selected Aircraft Meeting 253 EPNdB Limit*			Selected Aircraft Not Meeting 253 EPNdB Limit		
MFR	AIRPLANE	ENGINE	MFR	AIRPLANE	ENGINE
<b>Jets</b>			<b>Jets</b>		
CESSNA	CITATION BRAVO (550)	PW530A	AIRBUS	A319-131	V2522A5
CESSNA	CITATION ENCORE (560)	PW535A	AIRBUS	A-320-111	CFM56-5A1
CESSNA	CITATION EXCEL (560XL)	PW545	BOEING	B-717-200	BR700-715A1-30
CESSNA	CITATION I	JT15D-1A	BOEING	B-737 series	All types
CESSNA	CITATION II (550)	JT15D-4	BOEING	B-757 series	All types
CESSNA	CITATION JET (525)	FJ44-1A	BOMBARDIER	BD-700-1A10 (Global Express)	BR700-710-A2-20
LEARJET	LEARJET 45	TFE731-20R-1B	BOMBARDIER	CL-600-2C10 (CRJ700)	CF34-8C1
LEARJET	LEARJET 60	PW305A	CESSNA	CITATION V (560)	JT15D-5A
<b>Propeller Aircraft</b>			<b>Propeller Aircraft</b>		
BAE SYSTEMS (JETSTREAM)	JETSTREAM 31	TPE331-10U-501H	AEROSPATIALE	ATR72-200	PW124/HS 14SF11
BEECH	1900/1900C	PT6A-65B	BAE SYSTEMS	JETSTREAM 4100	TPE331-14-801H/802H
BOMBARDIER	DHC-6	PT6A-27	BEECH	C99 AIRLINER	PT6A-34
CESSNA	CARAVAN I	PT6A-114	BEECH	SUPER KINGAIR 200	PT6A-41
EMBRAER	EMB-120 BRASILIA	PW115	BOMBARDIER	DHC-7	PT6A-50
FAIRCHILD DORNIER	DORNIER 228	TPE-331-5-252D	BOMBARDIER	DHC-8 102	PW120
SAAB	2000	AE2100A	PIPER	PA-42 CHEYENNE	PT6A-41
SAAB	SF340A (Dowty props)	GE CT7-5A2	SAAB	SF340B (HS14RF-19 props)	GE CT7-9B
*All "very light jets" and virtually all light twin and single-engine aircraft (under 10,000 pounds) meet the limit. Source: Jacobs Consultancy analysis of FAA AC 36-1H, <i>Noise Levels for U.S. Certificated and Foreign Aircraft</i> and FAA AC36-3H, <i>Estimated Airplane Noise Levels in A-Weighted Decibels</i> .					