

# long beach airport

## COMMUNITY GUIDE TO AIRCRAFT NOISE



Although we may not often think about it, air transportation is very important in our daily lives. All of us, to some degree, rely on air transportation. Airplanes take us to our families or friends; they take us on vacations or on business trips. We rely on airplanes to send and receive goods and services, from the mail, to our online purchases, to the retail products in our stores. The aviation industry has created a significant number of employment opportunities, particularly in the Long Beach community, and this employment has an economic ripple effect. While the Airport is an essential business enterprise, it also causes some challenges. One of these challenges is aircraft noise.

This booklet has been developed by Long Beach Airport to provide factual information on the City of Long Beach Airport Noise Compatibility Ordinance (Long Beach Municipal Code Chapter 16.43), and Long Beach Airport's efforts to minimize aircraft noise over our nearby neighborhoods. Additionally, this booklet explains what the Airport has control over and what it does not have control over. It also provides answers to questions frequently asked on our noise complaint hotline.

The issue of managing noise is a challenge. Since 1923, the Airport has been a part of the community and as the community around the Airport has grown, the Airport has worked to diligently address the concerns of its neighbors.



The Long Beach Airport Noise Compatibility Ordinance (Ordinance), adopted in 1995, makes Long Beach one of the strictest noise-controlled airports in the United States, and provides a high degree of local control. The Airport's noise office staff does everything permissible under the Ordinance to minimize noise exposure in our communities.

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We evaluate airplane noise on a daily basis. Independent audits have found that the Airport noise office captures nearly 100% of all noise violators. Our Airport Noise and Operations Monitoring System (ANOMS) is state-of-the-art technology that collects noise data on every airplane arriving and departing the Airport. We actively work with owners and operators of private, commercial and military aircraft, and with the Long Beach Aviation Noise Abatement Committee (ANAC) on "fly-quiet" procedures to help minimize noise over residential areas.

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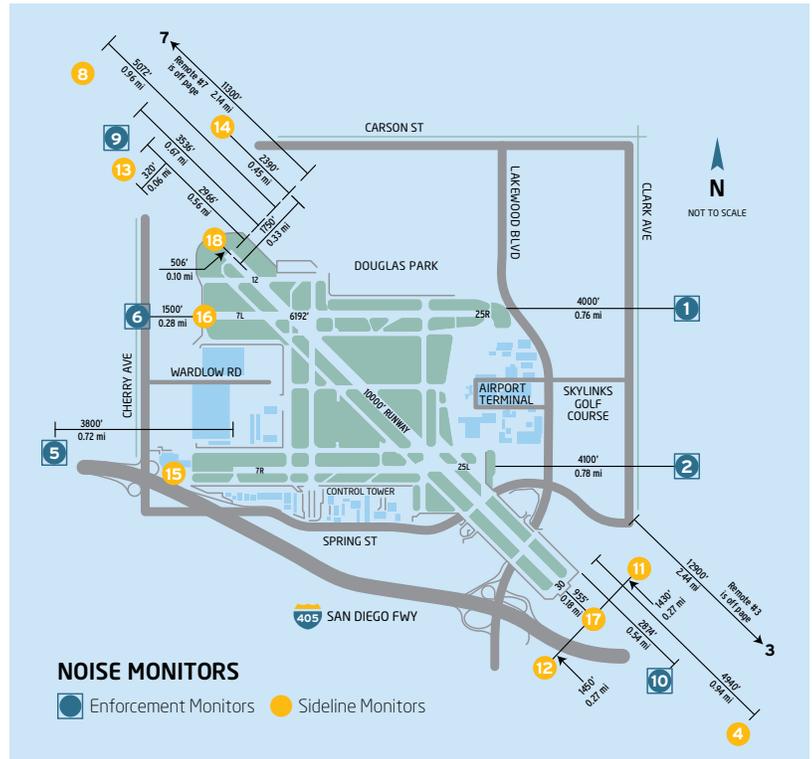
In 2005, we launched WebTrak, a community internet flight tracking system. WebTrak is available to anyone with a computer and internet access, and allows residents to track flight patterns and view noise levels in real, as well as historical, time. This system provides the community with access to consistent and timely flight track information delivered in an easily understandable format.

Our goal is to continue to find ways to reduce the community's exposure to aircraft noise, while the Airport continues its role as a part of the regional air transportation system that serves us all.



# WHAT IS THE AIRPORT NOISE COMPATIBILITY ORDINANCE LONG BEACH MUNICIPAL CODE (LBMC) 16.43?

The City began efforts to control aircraft-related noise through the adoption of a noise ordinance more than 30 years ago. These efforts to control airport noise were groundbreaking and continuously challenged in the courts by airlines and other user groups. It took more than 12 years and significant legal costs to strike a reasonable balance between air commerce and community noise exposure. The resulting Airport Noise Compatibility Ordinance, passed in 1995, gave Long Beach one of the strictest noise-controlled airports in the United States. In 1990, out of concern over the proliferation of local airport noise control regulations, Congress passed the Airport Noise and Capacity Act, giving noise control to the federal government and Federal Aviation Administration (FAA). However, the City was able to work with the federal government and the FAA to retain our Ordinance, as “grandfathered” under the legislation. This was a major victory for local control at Long Beach Airport.



The Ordinance addresses aircraft-related noise in our community, and provides local control of airport operational levels. The Ordinance ensures the noise levels will not rise above 1989/90 noise levels and complies with the State of California goal of having no homes impacted by a Community Noise Equivalent Level (CNEL) greater than 65 decibels (dBA), which is an FAA-recognized noise compatibility standard.

## Noise Limits

Runway	Monitoring #	7:00 a.m. - 10:00 p.m.	10:00 p.m. - 11:00 p.m. 6:00 a.m. - 7:00 a.m.	11:00 p.m. - 6:00 a.m.
		SENEL (dBA)	SENEL (dBA)	SENEL (dBA)
Runway	Departure/Arrival	Departure/Arrival	Departure/Arrival	Departure/Arrival
30	9/10	102.5/101.5	90/90	79/79
12	10/9	102.5/101.5	90/90	79/79
25R	6/1 9	2/88	N/A	N/A
25L	5/2	95/93	N/A	N/A
7R	2/5	95/92	N/A	N/A
7L	1/6	88/92	N/A	N/A

Time periods are enforced at the noise monitors, which are synchronized nightly to the atomic clock in Boulder, Colorado. SENEL (Single Event Noise Exposure Level) is a sound measurement in which the max decibel level and the duration are factored together logarithmically. N/A except in case of emergency or air traffic direction, all aircraft operations between the hours of 10 p.m. and 7 a.m. are limited to Runways 30 and 12.

# TEN KEY COMPONENTS OF THE AIRPORT NOISE COMPATIBILITY ORDINANCE

1. Long Beach Airport is operational 24 hours a day.
2. Air Carriers are allowed a minimum of 41 flights daily and Commuter Carriers are allowed a minimum of 25 flights daily.
3. The Airport established maximum Single Event Noise Exposure Levels (SENEL) for arrivals and departures. These levels vary by time of day and provide the greatest protection during the sensitive nighttime hours.
4. The Airport established a tiered noise Violation Process:

The owner/operator of any aircraft operated contrary to the provisions of the Ordinance shall be given a written notice that a violation has occurred.

The notice shall include a copy of the provision of the Ordinance that was violated, and state which action must be taken by the owner/operator to comply with the Ordinance in the future.

After two violation notices, a \$100 fine is assessed to the owner/operator.

Further violations will incur a \$300 fine for each operation not in compliance with the Ordinance.
5. Long Beach Airport established an Alternative Enforcement Procedure:

It is a misdemeanor for the owner/operator of any aircraft to exceed the established SENEL limit without a reasonable basis for believing that the aircraft employed would be able to comply with the applicable SENEL limit.

The owner/operator shall receive one warning letter stating that the next occurrence will be referred to the City Prosecutor. Further Alternative Enforcement infractions are referred to the City Prosecutor for action. Previous legal actions by the City Prosecutor resulted in fines being increased to \$3,000 - \$6,000.
6. Five Airport user groups were established and assigned an annual noise budget for allowable takeoff and landing noise. The five user groups are Air Carriers (major airlines), Commuter Carriers, Charter Operators, Industrial/Manufacturing Operators and General Aviation. The noise of military, public aircraft, law enforcement and emergency life flights is excluded in assessing compliance with annual noise budgets.
7. As an incentive for airlines to fly quietly, the Ordinance provides that additional flights can only be added if it is determined by the City that the cumulative noise level (in terms of CNEL) would remain below the annual noise budget standard with the added flight or flights included. A noise budget analysis is conducted annually.
8. In order to provide single-event noise tracking, real-time noise, and noise complaint responses, 18 noise monitors are strategically placed in and around the Airport. These monitors allow Airport staff to enforce noise violations with a nearly 100% violation identification rate. The monitors also provide data for enforcing the noise budgets and for producing the annual CNEL noise contours.
9. Long Beach Airport established limitations on hours of training and run-ups, including early curtailment on weekends and holidays, and the closure of all but one runway during late night hours. Runway 30 is normally always open, but during construction, maintenance, or an emergency, either Runway 25R or Runway 25L may be used.
10. The Airport maintains a pilot education program regarding noise issues. This program works to prevent and reduce noise impacts in the community.

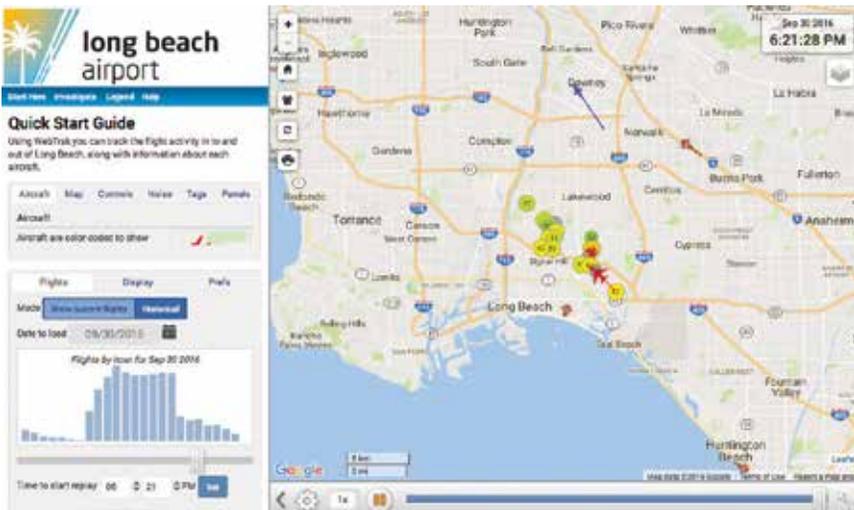
# AIRPORT NOISE AND OPERATIONS MONITORING SYSTEM (ANOMS)



Our ANOMS utilizes state-of-the-art technology to collect noise data on every airplane arriving and departing the Airport. There are 18 noise monitors in the ANOMS. These monitors provide single-event noise tracking for each operation at the Airport. There are six noise monitors that are used for noise violation enforcement. Long Beach Airport has three primary runways – Runway 30/12, which is primarily utilized for commercial traffic, and Runways 25L/7R and 25R/7L. Runway 25R/7L is our secondary air carrier runway. Noise is monitored and enforced 24 hours a day.

## WEBTRAK

WebTrak is a web-based flight tracking program used for self-inquiries, and is available through the Airport's website. Local residents are able to check aircraft types and their altitudes over a specific area, as well as see real-time noise levels and submit noise complaints. An acknowledgment is provided once the complaint has been submitted. Every complaint is logged into our ANOMS complaint database, where they are correlated by zip code and reported monthly to the Airport Advisory Commission (AAC), and quarterly to the ANAC.



## COMPLAINT PROCESS:

1. Complaint received from resident by phone, WebTrak or via e-mail
2. Investigation by noise office of the actual event, type of aircraft, and noise level are identified and entered into the ANOMS database if violation confirmed
3. Noise office looks for patterns in complaints:
  - Spikes within geographic areas
  - Multiple complaints for one event
  - Unusual aircraft activity

Every noise complaint is logged into our ANOMS complaint database.

# VIOLATION PROCESS

The Long Beach Airport Noise Compatibility Ordinance stipulates the following process for noise violations:

## Violation Enforcement Process

### 1st Violation

A written Notice of Violation and a copy of the Ordinance are sent to the owner/operator via certified mail.

### 2nd Violation

A second Notice of Violation and a copy of the Ordinance are sent via certified mail, and the owner/operator is requested to submit a written noise compliance program explaining what they will do differently to avoid future violations.

### 3rd Violation

Owner/operator is issued a written Notice of Violation sent via certified mail, and fined \$100. If the owner/operator has not had a violation in over 24 months, the violation is considered a 2nd violation, and no fine is incurred.

### Further Violations

Owner/operator is issued a written Notice of Violation sent via certified mail, and fined \$300. If the owner/operator has not had a violation in over 12 months, it is considered a 3rd violation. If the owner/operator has not had a violation in over 24 months, the violation is considered a 2nd violation.

Additionally, the Airport Noise Compatibility Ordinance provides an Alternative Enforcement Process for egregious noise violations. An egregious noise violation is any violation where the owner/operator does not have a reasonable basis for believing their aircraft could operate during that time period without exceeding the applicable noise limit.

## Alternative Enforcement Process for Egregious Violations

### 1st Violation

A written warning is sent to owner/operator advising that further egregious violations will be subject to referral to the City Prosecutor.

### 2nd Violation

The egregious violation is sent to the City Prosecutor for misdemeanor enforcement. The City Prosecutor sends a legal warning letter to the owner/operator stating that if owner/operator agrees in writing to not violate again, prosecution will be held in abeyance. If the owner/operator does not supply a written noise abatement plan, prosecution will go forward.

### 3rd Violation

The City Prosecutor will prosecute for the egregious violation and all previous egregious violations. As an example, in 2003, the City Prosecutor prosecuted two airlines for egregious violations. The prosecution resulted in a Consent Decree that increased their noise violation fines to \$3,000 for the first six violations in any calendar quarter, and then \$6,000 for every subsequent violation within the same quarter. The most recent egregious violation was prosecuted in 2015 and resulted in a fine of \$54,000.



# ROLES AND RESPONSIBILITIES RELATED TO NOISE AND LONG BEACH AIRPORT

## Federal Aviation Administration

The FAA is responsible for aircraft movement on the airfield and in the air. They designate travel routes, approach and departure flight paths, safety criteria governing airports and aircraft, and define acceptable noise levels for the manufacture of aircraft. The FAA, not Long Beach Airport, has direct control over the flight path of aircraft arriving and departing the Airport.

## City of Long Beach

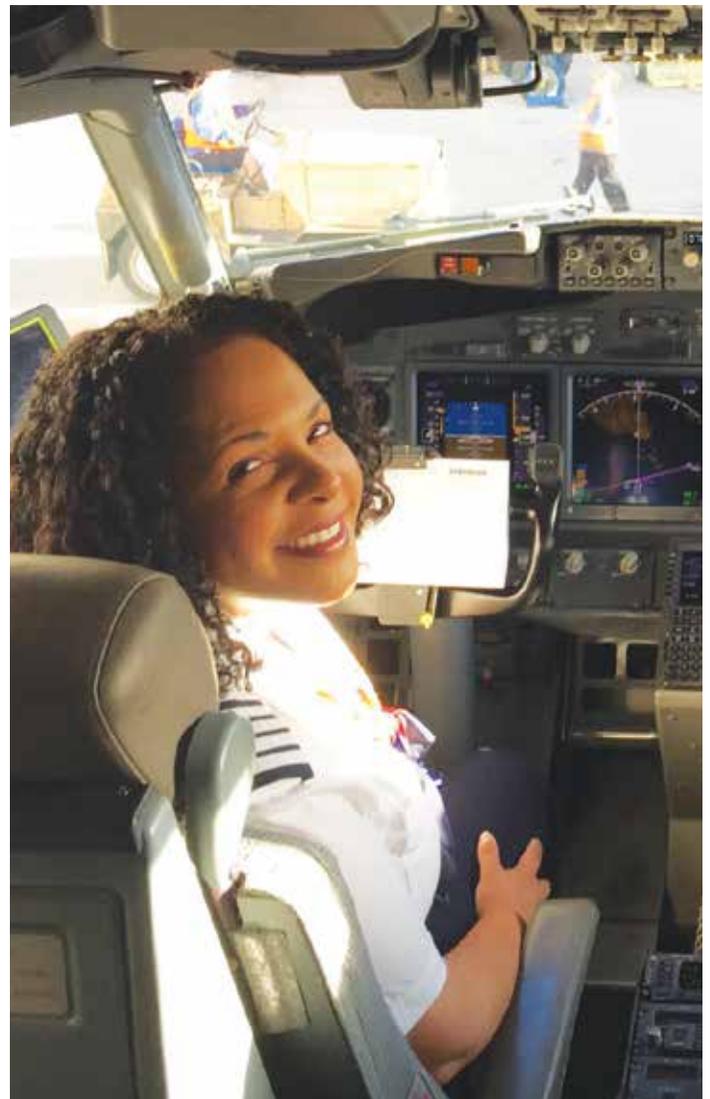
The City is the landlord of the Airport. It holds leases with airlines, concessionaires and airport-related businesses. Long Beach Airport staff monitor aircraft noise levels and regulate activities such as engine maintenance run-ups, training operations, and noise level violations. The City may request certain noise abatement flight paths to reduce local impacts, but the final decision and flight path assignments can only be made by the FAA, who also has the final determination of flight path violations.

## Airlines

The airlines own and operate the airplanes they use. They determine their own routes (with FAA approval), schedules and fares. Airport staff can be an advocate to the airlines when working with noise procedures, but ultimately, the airlines set their own operating standards, including fly-quiet departure procedures.

## Pilots

Pilots have the ultimate responsibility for operating aircraft. Although each airline has their own fly-quiet departure procedures, and the FAA assigns the flight path and altitude, pilots maintain the authority to make final judgments based on safety criteria. In general, it is up to the pilot to adhere to noise abatement flight paths during departure and arrival. The pilots in command of the aircraft who violate the Long Beach Airport Noise Ordinance are answerable to the City for any monetary fines incurred.





# FREQUENTLY ASKED QUESTIONS

## **What does the airport do to ease aircraft noise in the community?**

The Airport noise office does everything possible under limits set by the Ordinance and the FAA to maintain Long Beach Airport's status as one of the strictest noise-regulated airports in the country.

The Airport uses a multimillion-dollar system called ANOMS to monitor aircraft noise and operations to enforce the Ordinance.

The 18 noise monitors located throughout the community collect SENEL noise events and then automatically report any noise violations within 24 hours.

Written notices of noise violations are given to owner/operators. Violation notices follow a multi-step process that starts with a letter of violation to the owner/operator and progresses to monetary fines. Long Beach Airport's violation identification rate is nearly 100%.

The Airport Noise Abatement Committee (ANAC) is comprised of members representing airport tenants, airlines, the Airport Advisory Commission (AAC) representatives and City staff. The ANAC meets quarterly and focuses on mitigating Airport noise, and proactively deals with noise issues.

The Airport has an annual budget of over \$1 million devoted to monitoring, reporting and responding to aircraft noise and enforcing the Ordinance, educating pilots and responding to resident concerns.

## **What is WebTrak?**

In 2005, the Airport launched an internet-based tracking program called WebTrak, which is available to any person with a computer and internet access. WebTrak provides access to consistent and incontestable noise and radar information, traceable to the National Institute of Standards and Technology and delivered in an easily understandable format. WebTrak identifies each aircraft's altitude, origin, destination, estimated time of arrival, aircraft type and identification number/flight number. WebTrak can give residents almost instantaneous information about a noise event and can be used to conveniently submit noise complaints. WebTrak can be found at [lgb.org](http://lgb.org).

## **If a plane violates the Airport Noise Compatibility Ordinance, or exceeds a single event noise limit, how much are they fined?**

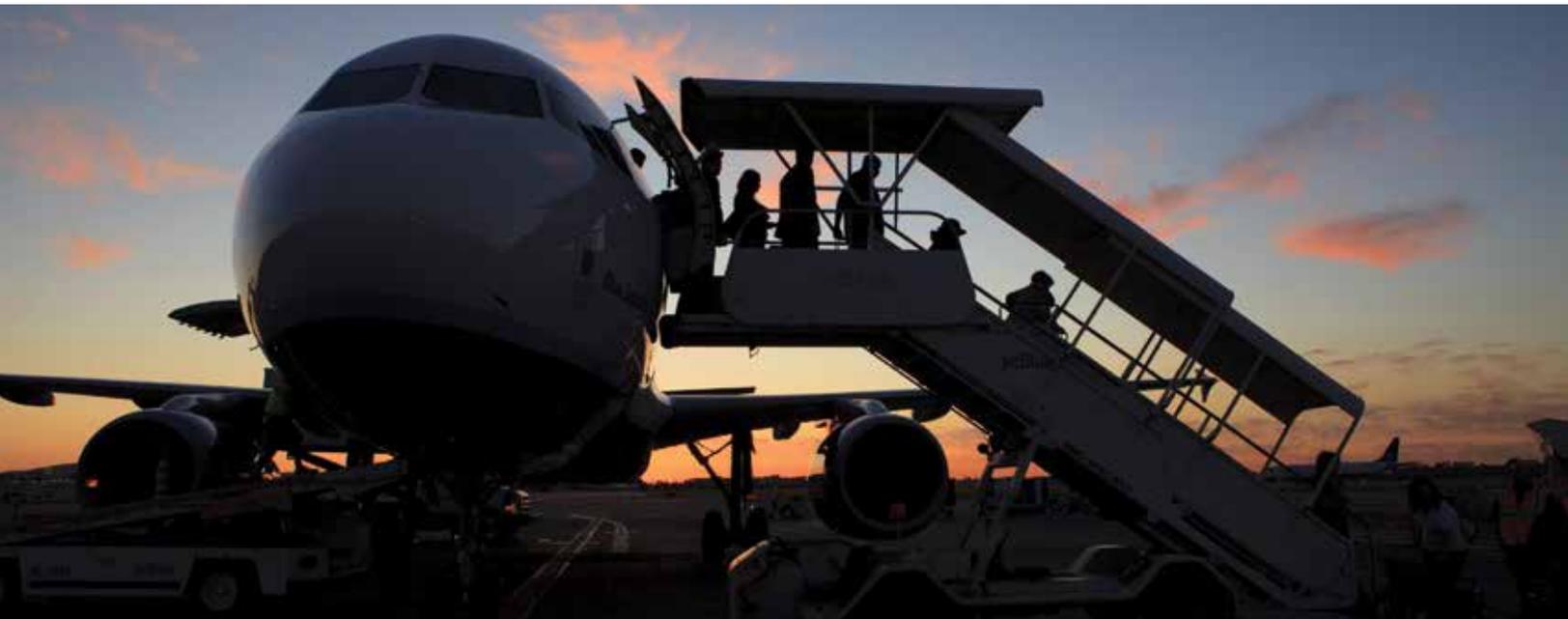
It's important to note that violations are based on the data collected from one of the enforcement noise monitors located around the Airport, and a daily printed report is generated automatically by ANOMS which identifies and notifies Airport staff of all violators.

The initial phases of the violation process are educational. The first time an owner/operator violates the Ordinance, they receive a warning letter. The letter includes an outline of what the infraction was and a copy of the Ordinance. The owner/operator is encouraged to contact the noise office for further counsel.

The second violation involves a notification letter of infraction and a request for a written noise abatement plan, which details how the owner/operator intends to operate without violating the Ordinance in the future.

The third violation is a monetary fine starting at \$100 for each incident and rising to \$300 per incident for the fourth violation and each violation thereafter. If it is determined that the owner/operator had no reasonable basis for believing that they could operate during a specific time period without exceeding the applicable noise limit, they will be subject to Alternative Enforcement.

Under the Alternative Enforcement clause, the Ordinance allows that if it is determined that the owner/operator had no reasonable basis for believing that the aircraft being utilized could operate during a specific time period without exceeding the applicable noise limit, they will be forwarded to the City Prosecutor and subject to the penalties applicable to a misdemeanor. Current fines assessed under the Alternative Enforcement clause range from \$3,000 to \$6,000 per violation or criminal prosecution.



## I thought the airport closed at 10 p.m. Why are planes still allowed to arrive and depart?

Long Beach Airport is open 24 hours a day. Within those 24 hours, the Airport has different levels of allowable noise (see Noise Limits Chart, page 3). Airline operations must be scheduled between 7 a.m. and 10 p.m., although an airline may land between 10 p.m. and 11 p.m. if weather, air traffic or mechanical issues cause a delay. Between 7 a.m. and 10 p.m., limits are the least restrictive on the main Runway 30/12 - 101.5 dBA SENEL for arrival, and 102.5 dBA SENEL for departures. In the early morning hours from 6 a.m. to 7 a.m., and the late evening hours from 10 p.m. to 11 p.m., the limit is 90.0 dBA SENEL. During the nighttime hours, from 11 p.m. to 6 a.m., the limits are the most restrictive - 79.0 dBA SENEL.

### Our understanding is that all late arrivals including those between 10 p.m. and 11 p.m., except as permitted under “Unanticipated Delays,” are a violation based on time. Is this correct?

No. In order for any flight, including a late arrival (between 10 p.m. and 11 p.m.) to be a violation, the aircraft must exceed the allowable SENEL.

### What happens if an airline lands after 10 p.m. without a good reason like weather, safety or maintenance issues and exceeds the SENEL?

The airline will receive a violation, and the violation may also be forwarded to the City Prosecutor.

#### What is a decibel (dBA)?

Decibel (dBA) refers to the sound pressure level. Examples of typical average decibel levels include:

Noise Source (distance in feet)	Noise Level (dBA)	Human Judgment of Noise Loudness (Relative to a Reference Loudness of *70 Decibels)
Military jet taking off w/afterburner (50 ft)	140	
Civil defense siren (100 ft)	130	
Commercial jet taking off (200 ft)	120	Threshold of pain - *32 times as loud
Pile driver (maximum level, 50 ft) Locomotive horn (100 ft)	110	*16 times as loud
Ambulance siren (10 ft) Pile driver (average level, 50 ft) Newspaper press (5 ft) Power lawn mower (3 ft)	100	Very loud - *8 times as loud
Motorcycle (25 ft) Propeller plane flyover (1,000 ft) Diesel truck @ 40 mph (50 ft) Departure over Bixby Knolls Commercial jet over Los Altos (600 ft) Locomotive (100 ft)	90	*4 times as loud
Bulldozer; grader; loader; concrete mixer; tie loader (50 ft)	85	*2 times as loud
Garbage disposal (3 ft) Locomotive rail cars @ 50 mph (100 ft)	80	Moderately loud
Passenger car @ 45 mph (25 ft) Vacuum cleaner (10 ft) Locomotive engine idling (100 ft)	*70	*70 decibels (reference loudness)
Normal conversation (5 ft) Air conditioning unit (100 ft)	60	*1/2 as loud
Light traffic (100 ft)	50	*1/4 as loud
Bird calls (distant)	40	Quiet - *1/8 as loud
	30	Very quiet
	20	
Soft whisper (5 ft)	10	Threshold of hearing
	0	

**We are under the impression that as part of the Airport Noise Compatibility Ordinance and legal agreements, that commercial flights after 10 p.m. and before 7 a.m. are a “violation” of the noise ordinance. Is this correct?**

Per the Ordinance, all violations are based upon allowable SENEL. There are four specific time periods identified in the Ordinance and an allowable noise limit is identified for each period. The allowable SENEL becomes progressively more restrictive after 10 p.m., with an allowable SENEL of 90 dBA from 10 p.m. to 11 p.m. The allowable SENEL is most restrictive from 11 p.m. to 6 a.m., at 79 dBA. Unless otherwise provided for in the Ordinance (e.g. unanticipated delays, military, governmental use), an aircraft that exceeds the allowable time-specific SENEL is considered to be in violation.

**Where can I obtain more information regarding flight activity and noise?**

Monthly Noise Reports are provided to the Airport Advisory Commission and posted on the Airport website (lgb.org).

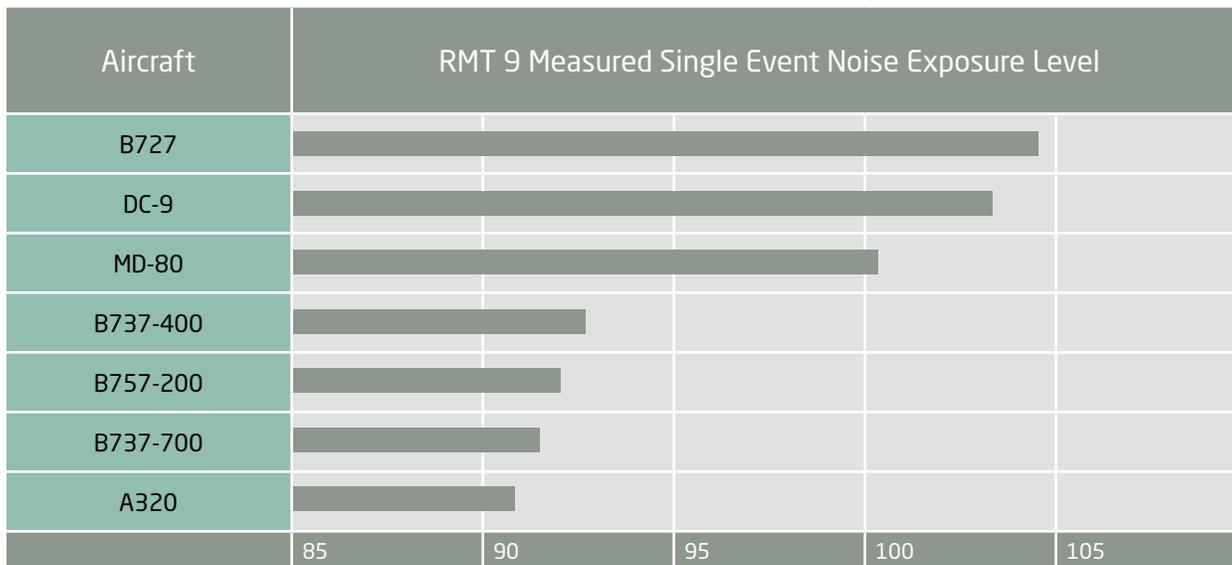
**Does the Airport Noise Compatibility Ordinance specifically restrict commercial flights between 10 p.m. and 7 a.m.?**

No, the Ordinance does not restrict commercial flights between 10 p.m. and 7 a.m. However, the Ordinance, Section E, #6 – Air Carrier Flights, does clearly state that all commercial operations shall be scheduled between the hours of 7 a.m. and 10 p.m.

Additionally, the Ordinance provides specific guidelines for addressing commercial aircraft operations from 10 p.m. to 7 a.m. The Ordinance also provides specific guidelines for addressing all commercial and general aviation aircraft that exceed the allowable noise levels.

**Aircraft Have Gotten Quieter**

The B727, DC-9 and MD-80 on the chart below, represent older technology aircraft. Newer technology aircraft are represented by the B737, B757 and A320 aircraft. Newer technology aircraft are significantly quieter than older technology aircraft.



*In order to achieve applicable noise budgets, users within the Air Carrier category will be encouraged to operate at the lowest average noise level consistent with safety. This encouragement will be provided by permitting increases in the number of allowed Air Carrier flights if the Air Carrier user group achieves compliance with the CNEL budget established pursuant to the Ordinance, as determined on an annual basis.*

## **Is it true that no more than 41 commercial flights can arrive and depart each day?**

Forty-one (41) daily commercial flights per day is the minimum number allowed under the Ordinance. However, flights can be added provided the additional flights will not cause the airlines to exceed their cumulative noise budget, which was established in 1989-90. Increases in the number of Air Carrier flights are allowed if the Air Carrier user group achieves compliance with the CNEL budget established pursuant to the Ordinance, as determined on an annual basis. This provision is designed to encourage the use of quieter aircraft at Long Beach Airport.

Based on analysis and review of noise data for October 1, 2014, through September 30, 2015, the Airport Director determined that the Airport was operating below the noise budgets for Air Carriers at the Airport and that nine (9) flights, beyond the forty-one (41) minimum Air Carrier flights, must be made available for allocation in order to maintain compliance with the City's Airport Noise Compatibility Ordinance. These supplemental allocations were awarded in March, 2016. Data for the most recent reporting period, October 1, 2015 through September 30, 2016, indicates that the Airport continues to be in compliance with the City's Airport Noise Compatibility Ordinance.

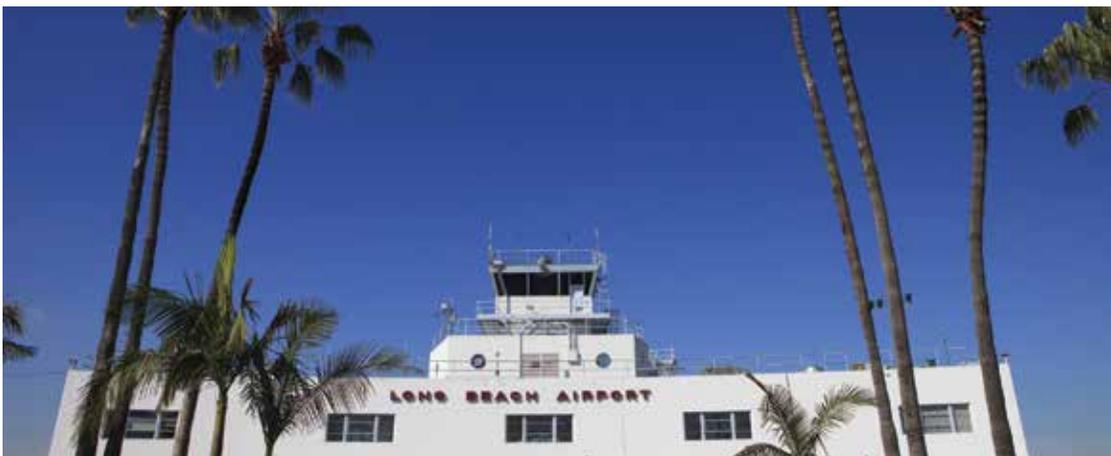
## **Why do some planes fly lower than others?**

Aircraft arriving at Long Beach Airport have an approach altitude assigned by Air Traffic Control several miles before landing. These assigned altitudes vary depending on other air traffic and weather conditions. As aircraft get closer to the Airport, pilots will either visually adjust their approach altitude or use instruments for guidance. Wind and weather, in addition to the aircraft type and weight, will also affect the speed and altitude of ascending or descending aircraft. The altitude of an aircraft close to an airport is generally determined by distance from the landing or takeoff runway. The closer the aircraft is to the runway, the lower the altitude. Large aircraft arrivals tend to descend at a fixed angle of three degrees, while the angle of ascent for departures is a function of aircraft type, aircraft weight, air temperature and wind speed and direction.

Generally speaking, if an aircraft is three miles from the arrival end of the runway, its altitude will be approximately 900 feet. Perception is also important. A larger aircraft will appear closer to the ground than a smaller one at the same altitude.

## **Who determines aircraft altitude and direction?**

The FAA is the only organization responsible for the movement of the aircraft both on the ground and in the air. All air traffic controllers work for the FAA as part of one national airspace system. The FAA is also responsible for disseminating air travel routes and procedures, including the standards for lateral and vertical separation between aircraft and determining hazards to flights, such as mountains or tall buildings. An airport may advocate for certain noise abatement flight tracks to reduce noise if less sensitive "corridors" exist, but these must be both approved and assigned by the FAA.



# GLOSSARY OF NOISE TERMS

## **Airport Advisory Commission (AAC):**

The AAC is comprised of nine Long Beach residents, appointed by the mayor. Their primary roles are to consult with and advise the City Council in formulating City policies regarding the development and operation of Long Beach Municipal Airport; and to study and analyze, for the purpose of evaluation and recommendation of policy, problems which have been referred to it by the City Council. The AAC does not have supervisory powers over the actions or duties of city employees, nor are they to be concerned with day-to-day airport operations.

## **Airport Noise Compatibility Ordinance LBMC 16.43 (Ordinance):**

The City began efforts to control noise through adoption of an ordinance more than 30 years ago. These efforts were groundbreaking and precedent-setting, and they were continuously challenged in the courts by the airlines and residents. It took more than a dozen years and substantial legal fees to strike a reasonable balance between air commerce and community noise exposure. The resulting Airport Noise Compatibility Ordinance (LBMC 16.43), passed in 1995, gave Long Beach one of the strictest noise-controlled airports in the United States.

The City's Airport Noise Compatibility Ordinance provides for a minimum of 41 commercial airline flights and 25 commuter flights at Long Beach Airport. The 41 commercial flight minimum cannot be exceeded unless the airlines, as a group, can operate significantly below the prescribed permissible "noise budget."

## **Airport Noise and Operations Monitoring System (ANOMS):**

ANOMS is Long Beach Airport's state-of-the-art system that collects noise data on every airplane arriving and departing the Airport. Our ANOMS utilizes 18 noise monitors to track single-event noise.

## **Aviation Noise Abatement Committee (ANAC):**

The Long Beach ANAC is comprised of airport tenants, airline representatives, Airport Advisory Commission representatives and City staff. ANAC meets quarterly and focuses on mitigating aircraft noise, and proactively deals with noise issues.

## **Community Noise Equivalent Level (CNEL):**

CNEL is a noise measurement system with particular emphasis on aircraft noise. CNEL is measured using ordinary decibel readings and is the measure of the average noise environment over a 24-hour period. CNEL is a single number calculated over a 24-hour period. CNEL depends not only on the loudness of the noise, but the time of day that the noise occurs. Noise events occurring during the evening (7 p.m. - 10 p.m.) are penalized by 10 dBA. The Long Beach Airport Noise Compatibility Ordinance is based on SENEL (see below) and CNEL.

## **Federal Aviation Administration (FAA):**

The FAA is responsible for aircraft movement on the airfield and in the air. It designates travel routes, approach and departure flight paths, safety criteria governing airports, and defines acceptable noise levels for the manufacture of aircraft.

## **Single Event Noise Equivalent Level (SENEL):**

SENEL is a measurement of noise in decibels that takes into account how loud a single noise event is and how long it lasts.



**long beach** airport

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