



**Date:** November 17, 2016

**To:** Patrick H. West, City Manager *T.H.W.*

**From:** Jess L. Romo, Director, Long Beach Airport *JLR*

**For:** Mayor and Members of the City Council

**Subject:** **Long Beach Airport (LGB) Air Carrier Noise Budget and Flight Slot Allocations**

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Long Beach Municipal Code (LBMC) Chapter 16.43, *Long Beach Airport Noise Compatibility Ordinance*, requires the Airport to evaluate noise budgets for each user category to ensure compliance with the applicable budget limit for each user category and to ensure compliance with the overall goal of the City that incompatible property in the vicinity of the Airport not be exposed to noise above 65 Community Noise Equivalent Level (CNEL). On an annual basis, the Airport must determine the status of Air Carrier Noise Budget and whether Air Carrier flights should be added or removed.

Based on internal review and independent analysis conducted by Mestre Greve Associates, a Division of Landrum & Brown, the Airport operated below the Air Carrier Noise Budget for Noise Year October 1, 2015 through September 30, 2016 (NY '15-'16). As shown in Table 1, noise budget limits for the Air Carrier Category at RMT 9 and RMT 10 are 70.7 and 84.6, respectively. The actual budget utilized by Air Carriers was 44.9 at RMT 9 and 51.3 at RMT 10. These data indicate that 25.8 budget units are available at RMT 9 and 33.3 budget units are available at RMT 10 based on historical operations during the analysis period.

**Table 1: Air Carrier Noise Budget Performance  
(October 1, 2015 – September 30, 2016)**

<b>Location</b>	<b>Allowable Budget</b>	<b>Budget Used</b>	<b>Percent Used</b>	<b>Budget Remaining</b>	<b>Percent Remaining</b>
<b>RMT 9</b>	70.7	44.9	64%	25.8	36%
<b>RMT 10</b>	84.6	51.3	61%	33.3	39%

Compliance with the noise budgets ensures that incompatible property in the vicinity of the Airport is not exposed to noise levels above 65 CNEL. CNEL is a cumulative noise metric based on the loudness of noise events and the time of day noise events occur. CNEL incorporates weighting penalties to account for the increased intrusiveness of noise that occurs during the evening and nighttime periods. Evening is defined as the period from 7:00 p.m. to 9:59 p.m. Noise events

occurring during the evening period are weighted by approximately five decibels (dBA). Nighttime is defined as the period from 10:00 p.m. to 6:59 a.m. Noise events occurring during the nighttime period are weighted by ten dBA. Historically, approximately 75 percent of LGB Air Carrier operations occur during the daytime period, 24 percent occur during the evening period and approximately 1 percent occur during the nighttime period. The budget numbers are calculated based on the evening and nighttime weighting penalties and the loudness of each individual aircraft noise event as measured by the Airport's noise monitoring system.

The reason the budget numbers are below the permitted levels is due to the use of relatively quiet aircraft, as encouraged by the Ordinance, and the fact that the Airport operated below the permitted number of available daily air carrier flights. Currently, the Airport has allocated 50 Air Carrier flights. These flights include the 41 minimum Air Carrier flights and 9 Supplemental Air Carrier flights, as required by the Ordinance. The Air Carriers, as a group, operated an average of 28 flights per day at the beginning of the 12-month reporting period and operated an average of 38 flights per day at the end of the 12-month reporting period. Overall, the Air Carriers operated an average of 32.3 flights per day during the reporting period.

Long Beach City Council Resolution Number C-28465 requires that Air Carrier operators provide reasonably anticipated flight schedules 180 days in advance of service. Based on these submitted schedules, it is anticipated that the Air Carriers will continue to gradually increase their level of service in the near future, resulting in an increase in the number of flights per day and an associated increase in the noise budget used.

As indicated in Mestre Greve Associates' analysis, if all flights currently allocated were flown during the entire noise year, the budget used at RMT 9 would be 66 budget units and the budget used at RMT 10 would be 82 budget units. These budget projections are shown in Table 2.

**Table 2: Predicted Air Carrier Noise Budget Performance at Full Utilization (October 1, 2015 – September 30, 2016)**

Location	Allowable Budget	Budget Used	Percent Used	Budget Remaining	Percent Remaining
RMT 9	70.7	66	93%	4.7	7%
RMT 10	84.6	82	97%	2.6	3%

The data shown in Table 2 are consistent with last year's noise budget predictions, which indicated that 50 flight slots per day (41 minimum flight slots plus 9 supplemental flight slots) would achieve budget capacity with current aircraft types and hours of operation with an adequate margin of safety. Adding additional flights would add from 0.6 to 8 units per flight to the budget, depending on the type of aircraft and the time of day of the operation. Therefore, pursuant to Section

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16.43.060E of the City's Airport Noise Compatibility Ordinance, it is my recommendation that the current level of supplemental flight slots be maintained and no additional flights beyond the current level of 41 minimum Air Carrier flights and 9 Supplemental Air Carrier flights be allocated at this time.

The Long Beach Airport Noise Budget Analysis for Noise Year October 1, 2015 to September 30, 2016 is attached. If you have any questions or require additional information, please contact me at (562) 570-2605.

JR:RR:KM

ATTACHMENT

CC: CHARLES PARKIN, CITY ATTORNEY  
LAURA L. DOUD, CITY AUDITOR  
TOM MODICA, ASSISTANT CITY MANAGER  
ARTURO SANCHEZ, DEPUTY CITY MANAGER  
REBECCA JIMENEZ, ASSISTANT TO THE CITY MANAGER



November 8, 2016

Mr. Mike Mais  
Assistant City Attorney  
**Long Beach Airport**  
4100 Donald Douglas Drive  
Long Beach, CA 90808

**Subject: Long Beach Airport Noise Budget Analysis For Noise Year October 1, 2015 to September 30, 2016**

Dear Mike,

Mestre Greve Associates, a Division of Landrum & Brown, has completed the analysis of the Air Carrier Noise Budget for Noise Year October 1, 2015 through September 30, 2016 (NY '15-16).

As discussed in more detail below, the data show that although the air carriers operated below the allowed budget at RMT 9 and RMT 10 for the NY '15-16, we recommend that the Airport maintain the current level of allocated flight slots. We further recommend that the Airport not allocate any additional supplemental flight slots at this time. These recommendations are based on a number of factors including, but not limited to, the number of flight slots currently allocated, the noise budget actually used during the NY '15-16, and the projected noise budget that would have been used during the NY '15-16 if the supplemental flight slots allocated during the NY '15-16 had been flown for the entire Noise Year. Table 1 compares the allowed budget with the actual budget used:

**Table 1**  
**Noise Budget Status For Noise Year 2015/16**

<u>Location</u>	<u>Allowed Budget</u>	<u>Actual Budget Used</u>
RMT 9	70.7	44.9
RMT 10	84.6	51.3

The reason the budget numbers are below the permitted levels is due to the reduction in the number of noisier aircraft types and the fact that the airport operated below the permitted minimum number of daily air carrier flights. While the permitted minimum number of air carrier flights is 41, the airlines and cargo carriers actually averaged 32.3 flights per day (this is the annual average for the year, operations increased later in the budget year, but the annual average was still below 41).



Section 16.43.060E states that if the air carrier operations are below the allowable noise budget then additional flights “shall be awarded only to the extent the Airport Manager determines that initiation of service utilizing those flights will not lead the Air Carriers, as a group, to exceed the level established pursuant to section 16.43.050 C.”

Because the budget results were below the budget limit last budget year, the Airport allocated 9 supplemental flights above the minimum 41 flights. Those flights began mid-year so the budget actually used for this budget year represents only a partial year of increased allocations. If the additional allocated slots are accounted for as if they had operated all of the budget year, the budget numbers are considerably higher. Specifically, at RMT 9 the budget used would have been 66, roughly 5 units below the allowed budget and RMT 10 would have been about 82.3, roughly 2 units below the allowed budget. Adding additional flights would add from 0.6 to 8 units per flight to the budget depending the type of aircraft and the time of day of the operation. Therefore it is recommended that additional flight slots not be allocated at this time.

### **Noise Budget Methodology**

The noise budget status was computed from individual flight data collected from the Long Beach Airport’s permanent airport noise monitoring system (ANOMS). Individual data was provided for each of the air carrier flights arriving and departing from Long Beach Airport during the budget year. The following paragraphs describe the computation methodology.

An example of 5 flights recorded at RMT 9 are as follows:

<u>Max Date Time</u>	<u>Aircraft Type</u>	<u>Airline</u>	<u>A/D/O</u>	<u>Runway</u>	<u>RMT</u>	<u>SEL</u>
10/1/02 7:06	MD80	AAL	D	30	9	99.7
10/1/02 7:09	A320	JBU	D	30	9	89.8
10/1/02 7:11	A320	AWE	D	30	9	88.2
10/1/02 7:17	A320	JBU	D	30	9	94.7
10/1/02 8:02	A320	JBU	D	30	9	90

The first column lists the date and time of the flight. The time used for noise budget calculations is the time that the noise event was recorded at the monitoring site, not the scheduled flight time. Subsequent data includes the aircraft type, airline, departure/arrival/overflight, runway utilized, noise monitor measurement site, and the Sound Exposure Level (SEL), in decibels, as measured at the RMT (remote monitoring terminal).

It is interesting to note that 4 of the 5 aircraft in the above example are Airbus A-320’s and there is a substantial range in the measured noise level. There are many factors



that contribute to this range, but the most significant is aircraft weight. Aircraft weight is a function of the number of passengers and the distance to the destination. A flight of 2000 miles carries substantially more fuel than a flight of 250 miles. More importantly, these data show how much louder an MD80 is on departure than the Airbus A320.

### **Noise Budget Calculations and Analysis**

The conversion of the measured SEL at RMT 9 and RMT 10, is done according to the budget definitions and as prescribed in the City's Noise Compatibility Ordinance (LBMC 16.43).

The first step in analyzing the data is to convert the noise measurements made at RMT 9 and RMT 10 to the noise level at the nearest residences to Runway 12/30. For RMT 9 the noise level is increased by 1.1 dB and at RMT 10 the noise level is increased by 0.9 dB to account for the fact that the nearest homes are closer to the runway than the actual monitoring stations.

The next step is to convert the noise level at the nearest home to an equivalent number of daytime flights of the 'standard' aircraft that is built into the budget. This equivalent number of daytime flights is termed "budget units." The 'standard' aircraft noise level is the SEL that 100 daytime flights would have to have to produce a CNEL of 65 dB at the nearest residence.

The resulting numbers of equivalent budget units are then compared to the budget allocations of 70.7 budget units at RMT 9, and 84.6 at RMT 10. The budget allocations were based on the 1989/90 baseline actual noise level and industrial aircraft forecast as prescribed in the federal court approved and federal code-grandfathered Long Beach Airport Noise Compatibility Ordinance (LBMC 16.43).

If you have any questions please do not hesitate to call.

Yours very truly,

**Mestre Greve Associates Division of Landrum & Brown**

A handwritten signature in black ink, appearing to read 'Vincent Mestre', is written over a horizontal line.

Vincent Mestre, P.E.