

HMMH

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November 2, 2015

Mr. Ron Reeves
Noise & Environmental Affairs Officer
Long Beach Airport
4100 E. Donald Douglas Dr.
Long Beach, California 90808

Subject: Long Beach Airport Air Carrier Noise Budget Contribution Audit

Reference: HMMH Project Number 307950

Dear Mr. Reeves:



Per your request, HMMH conducted an audit of the Long Beach Airport (LGB) Noise Budget for Budget Year 2015 (October 1, 2014 through September 30, 2015). The purpose of the audit was to verify the accuracy of the input data, calculation methods and results for the Air Carrier aircraft category. These aircraft are defined by the Airport Noise Compatibility Ordinance (Long Beach Municipal Code (LBMC) Chapter 16.43) as follows¹:

“Air Carrier” means a scheduled carrier, certificated under FAR Parts 121, 125, or 135, operating aircraft having a certificated maximum takeoff weight of seventy-five thousand pounds or more, transporting passengers or cargo.”

I understand LBMC 16.43 reflects consensus, derived through an extensive twelve year litigation history between the City of Long Beach and various Air Carriers operating out of the Long Beach Airport. The Airport Noise Compatibility Ordinance is grandfathered under the Airport Noise and Capacity Act of 1990 (ANCA) and for 20 years, the Ordinance has balanced the development of facilities and the growth of operational capacity with the legitimate environmental concerns of the surrounding communities.

It is the stated goal of the City, consistent with State of California requirements and federal guidelines, that incompatible property in the vicinity of the Airport not be exposed to noise levels above 65 dB² in terms of the Community Noise Equivalent Level (CNEL). To achieve this goal, LBMC Chapter 16.43 establishes noise budgets for five airport user categories. Initial noise budgets were determined based on actual monitored noise levels for the twelve month period ending October 31, 1990. These budgets are shown in **Table 1: Runway 12-30 Cumulative Noise Budgets**. I understand the noise budgets shown in **Table 1** have not been modified since inception of the Ordinance and there are currently no plans to modify these allocations.

Table 1: Runway 12-30 Cumulative Noise Budgets		
Aircraft User Category	RMT 9	RMT 10
Air Carrier	70.7	84.6
Commuter	0.4	3.6
Industrial	8.5	6.6
Charter	0.14	0.09
General Aviation	23.0	26.0
Total	102.74	120.89

Source: Airport Noise Compatibility Ordinance (Long Beach Municipal Code (LBMC) Chapter 16.43, Technical Appendix.

¹ Long Beach Municipal Code, 16.43.010 Definitions, Section A. Air Carrier.

² Note that all noise levels presented in this document are A-weighted unless otherwise specified.

According to the Airport Noise Compatibility Ordinance, the Airport Director is required to evaluate compliance with the budgets on an annual basis. Air Carriers are permitted to operate not less than forty-one (41) flights per day. 41 flights per day was the minimum number of flights specified when the Ordinance was originally adopted in 1995. The Ordinance defines a flight as one arrival and one departure by an aircraft. The Ordinance provides an incentive to the airlines to operate as quietly as possible. According to the Ordinance³:

"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 this Chapter, as determined on an annual basis."

"Additional flights above those permitted [by the Municipal Code] 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..."

The "level established" by the Ordinance is defined as the Noise Contribution Budget (presented in Table 1), which is enforced based on the measured Single Event Noise Exposure Level (SENEL) at remote monitoring terminals (RMT) 9 and 10 of the LGB aircraft noise monitoring system. Since the Ordinance allows for the increase in flights if they will not exceed the "level established", not increasing the number of flights, if permitted based on the measured noise levels, would result in the Airport being more restrictive and may jeopardize the grandfathered status of the Ordinance.



Measured SENEL values are used to determine the annual Noise Contribution Budget and CNEL at the nearest noise sensitive properties to the respective terminals. Since neither of the RMTs are located at the nearest noise sensitive properties, an offset or correction factor is applied to the noise levels measured at the RMTs to represent the noise levels at the nearest noise sensitive properties. For RMT 9 the SENEL is increased by 1.1 dB and at RMT 10 the SENEL is increased by 0.9 dB to account for the nearest residential properties being closer to LGB than the noise monitors⁴.

The intent of establishing the noise budget was to allow only the number of flights that would result in producing a CNEL of 65 dB at the nearest residence. CNEL is a cumulative 24-hour noise metric that includes all single event noise levels for an entire day and multiplies the measured level by a factor of 3 for noise events measured during evening hours (7 pm to 10 pm) and a factor of 10 during nighttime hours (10 pm to 7 am). Assuming 100 daytime flights, an SENEL of 94.4 dB for each of those flights will generate a CNEL of 65 dB. Since the number of total flights in the noise budget is slightly higher than 100 flights, using 94.4 dB SENEL for the flights allowed in the noise budget, we calculate that the baseline CNEL or the CNEL for which the Municipal Code budget permits at the nearest residences in proximity to RMTs 9 and 10 are 65.1 dB and 65.8 dB, respectively.

The total Noise Contribution Budget is 102.74 at RMT 9 and 120.89 at RMT 10. The air carrier Noise Contribution Budget⁵ is 70.7 (68.8% of 102.74) at RMT 9 and 84.6 (70% of 120.89) at RMT 10. Based on the CNEL budgets allowed at the noise sensitive properties nearest the monitoring locations, the air carrier Noise Contribution Budget equates to 63.5 dB (of the 65.1 dB budget) and 64.3 dB (out of the 65.8 dB budget) in terms of CNEL at RMT 9 and 10, respectively.

Using correlated aircraft noise event data from the LGB Airport Noise and Operations Monitoring System (ANOMS™), which included SENEL measured at RMT 9 and RMT 10 along with the flight operation (e.g., airline, aircraft type, destination/origin airport, and date and time of the noise event), HMMH assessed the existing air

³ Long Beach Municipal Code, 16.43.060 Compliance with noise budgets, Section E. Air Carrier Flights.

⁴ Long Beach Airport Terminal Improvements, Appendix F Technical Report: Noise Analysis, October 2005, Mestre Greve Associates.

⁵ Technical Appendix to Chapter 16.43 Airport Noise Compatibility Municipal Code, Noise Contribution Values for Proposed Long Beach City Ordinance.

carrier Noise Contribution Budget for the annual period of October 1, 2014 through September 30, 2015 as summarized in **Table 2: Calculated Air Carrier Noise Budget Contribution (2015)**.

Table 2: Calculated Air Carrier Noise Budget Contribution (2015)		
Category	RMT 9	RMT 10
Total Noise Contribution Budget ¹	102.74	120.89
Air Carrier Noise Contribution Budget ¹	70.7	84.6
Air Carrier Noise Contribution Budget ¹ (%)	68.8%	70.0%
Total CNEL Allowed at Nearest Noise Sensitive Property	65.1 dB	65.8 dB
Air Carrier CNEL Allowed at Nearest Noise Sensitive Property	63.5 dB	64.3 dB
Measured Air Carrier CNEL	61.3 dB	62.0 dB
Actual Air Carrier Noise Contribution for year ending September 30, 2015	42.2	50.7
Unused Air Carrier Noise Contribution Budget for year ending September 30, 2015	28.3	33.6
Unused Air Carrier Noise Contribution Budget for year ending September 30, 2015 (%)	40.0%	39.7%
<i>Note: (1) Technical Appendix to Chapter 16.43 Airport Noise Compatibility Municipal Code. Total is equal to the budgets from air carriers, commuters, industrial, charter and general aviation. Percent is air carrier budget divided by total budget.</i>		



Our analysis shows that for the most recent full year of operations ending September 30, 2015, the actual air carrier Noise Contribution levels are far below those allowed in the Noise Contribution Budget of the Municipal Code: 42.4 actual vs. 70.7 budgeted at noise sensitive properties close to RMT 9 and 50.7 actual vs 84.6 budgeted at noise sensitive properties close to RMT 10. The difference in actual vs. budget indicates that approximately 40% more flights could have occurred during the year ending September 30, 2015 and still have remained within the budget.

Sincerely yours,

Harris Miller Miller & Hanson Inc. d/b/a/ HMMH

Eugene M. Reindel
 Vice President and Principal Consultant

Note: Excel spreadsheet with Noise Contribution calculations provided separately