Los Angeles International Airport

Supplemental Analysis

June 2013

LAX
Los Angeles
World Airports
TM

Los Angeles International Airport

14 C.F.R. Part 161
Application for Approval
of a
Runway Use Restriction

Supplemental Analysis

June 2013

LAX
Los Angeles
World Airports
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1 World Way
Los Angeles, CA 90045

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1 INTRODUCTION

On January 28, 2013, the City of Los Angeles, proprietor of Los Angeles International Airport (LAX), which is operated by the Los Angeles World Airports (LAWA), submitted the Part 161 Application in support of a "Runway Use Restriction" at LAX to the Federal Aviation Administration (FAA) for its review. Consistent with Part 161, §161.313, the FAA conducted its initial determination of completeness within 30 days of the submittal. On March 1, the FAA provided LAWA with a preliminary notice that the Application was incomplete followed by a March 15 request for additional technical information. By letter dated March 28, LAWA advised the FAA that it intended to supplement its Application. Appendix A contains copies of the FAA's two letters and LAWA's response. During an April 19 teleconference, LAWA and the FAA discussed and further clarified the FAA's request for supplemental information. LAWA has prepared this Supplemental Analysis in response to FAA's requests.

At the outset, LAWA respectfully suggests that its original Part 161 Application was filed in accordance with the provisions of the FAA's regulations and is complete. LAWA acknowledges that the justification for the proposed nighttime runway use restriction at LAX is unique because it relies upon nighttime awakenings rather than on traditional CNEL contour analysis and land use compatibility criteria. This, however, does not render the Application incomplete under Part 161. Under Part 161, as long as an airport sponsor provides the required CNEL contour analysis, it is not barred from utilizing additional analyses in support of its application. 14 C.F.R. § 161.311(b) requires an "analysis as specified in § 161.305, as *appropriate to the proposed restriction.*" This invitation to tailor the analysis to the specific noise problem addressed by the restriction is reflected in § 161.305 itself, which prescribes required components of the analysis, but does not bar the inclusion of additional analyses, such as sleep awakenings, to support an application. For example, § 161.305(e)(2)(i)(A)(1)(ii) requires the applicant to provide an "analysis of estimated noise impacts" and "the estimated noise impact of aircraft operations with and without the proposed restriction." It then specifies a list of items that the analysis must include, but it does not preclude additional analyses that support the application.

LAWA met the minimum requirements of § 161.305(e)(2)(i)(A)(1)(ii)(A) by including an airport noise study area ("ANSA") overlaid with noise contours established under 14 C.F.R. Part 150, Appendix A. In providing this analysis, LAWA's Application also conformed to the minimum requirements of §§ 161.9 and 161.11 for analysis of exposures and land use compatibility using Appendix A of Part 150. In addition to meeting these minimum requirements, LAWA included its nighttime awakenings analysis in support of the restriction. LAWA's Application was, as a result, complete. Whether the FAA will accept LAWA's analysis of nighttime awakenings as an adequate justification for the proposed restriction, as LAWA believes the FAA should, is a separate and distinct issue.

LAWA's Application is not only complete, but it should be approved by the FAA. LAWA's original application provides a strong technical basis for approving the proposed restriction. To encourage prompt approval and eliminate any question of whether the application is complete, LAWA is providing the data requested by FAA relating the sleep awakening data points to CNEL contours and providing a new noise contour based on changes in sleep awakenings to supplement the traditional ANSA.

The information in this Supplemental Analysis is provided in two separate areas:

1. Analysis as specified in §161.311(b)

1.1 Noise Exposure Maps (NEMs) and Noise Contours

a. Noncompatible land uses based on sound insulation

b. Airport layout based on projects approved by the FAA

c. Geographic boundaries and names of jurisdictions

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e. Estimation of fuel burn costs incurred during off-loading, and costs to cargo carriers inability to meet guaranteed expedited time-definite service

2. Statement about partial approval required under §161.311(d)

The following sections provide an excerpt of the FAA response/comment on the areas outlined above and the LAWA response with additional information as appropriate.

2 ANALYSIS AS SPECIFIED IN §161.311(b)

A requirement of §161.311(b) is to provide "an analysis as specified in §161.305, as appropriate to the proposed restriction." The FAA requested additional information in four major areas requesting additional analyses.

1. Noise Exposure Maps and Noise Contours;
2. Airport Noise Study Area;
3. Noise Impact Analysis;
4. Cost-Benefit Analysis.

2.1 Noise Exposure Maps (NEMs) and Noise Contours

The FAA requested the following additional information or documentation for NEMs and noise contours:

- Identification of existing and future sound insulated homes as compatible on respective NEMs
- Inclusion of additional information on planned development in the current and forecast noise contours
- Representation on maps of geographic boundaries and names of jurisdictions that control land use within the airport noise study area

2.1.1 Noncompatible land uses based on sound insulation

FAA Comment: ***Los Angeles World Airports (LAWA) should clearly identify homes that are currently sound insulated and homes that will be sound insulated within the timeframe of the future condition NEM and assure that these sound insulated homes are not identified as noncompatible on the respective NEMs.***

Figure S-1 (new) provides those homes currently sound insulated and those homes currently in process to receive sound insulation through existing Airport Improvement Program grants in relation to the CNEL 65 dB contours for 2013 and 2018, with and without the proposed restriction. LAWA is unable to determine with any certainty additional homes that may be sound insulated by the end of 2018 due to unknown funding at this time.

Figure S-4 through Figure S-9 in Section 2.2.1 represent updates of Figure 14 though Figure 19 in the original Application and now include this new information on sound insulated homes among the residential land use of the original figures as requested. Note, however, that the original Application assumed that all residences, both within the ANSA and outside of it, were conservatively assumed to be sound insulated in all calculations of sleep awakenings, so that sound insulation was not relevant to the analyses.

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Figure S-1 Previously Sound Insulated Homes and Those Homes Identified for Future Sound Insulation in Relation to the Airport Noise Study Area for 2013 and 2018

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2.1.2 Airport layout based on projects approved by the FAA

FAA Comment: ***The FAA needs additional information to determine whether the 2013 and 2018 contours properly reflect existing conditions and planned development for future conditions. …LAWA has proposed a runway safety area project for Runway 7L/25R and is in the process of completing the LAX Master Plan Specific Plan Amendment Study. Projects planned for implementation by LAWA in 2013 and in 2018 should be appropriately reflected in the current and forecast noise contours.***

LAWA maintains that the CNEL contours in the Part 161 Application and subsequently in this Supplemental Analysis were developed in accordance with the provisions of 14 C.F.R. Part 150, and that there are no projects stemming from either the Draft Environmental Assessment (DEA) for the Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project or from the LAX Specific Plan Amendment Study (SPAS) that are currently approved for construction. Furthermore, even if the Preferred Alternative in the DEA for the RSA were to be approved in the near future, the noise analysis in the DEA shows that it has no material effect on the CNEL contours. Thus, LAWA assumes its construction would have no material effect on the results of the Part 161 analysis. And while LAWA has approved the SPAS, it has not initiated project-level CEQA analysis of any of its components or requested that the FAA initiate National Environmental Policy Act review that would be necessary before any SPAS projects can be approved.

2.1.3 Geographic boundaries and names of jurisdictions

FAA Comment: ***The maps submitted with the application do not clearly denote the geographic boundaries and names of each jurisdiction that controls land use within the airport noise study area.***

LAWA has updated the applicable graphics to show the various jurisdictions and boundaries, not only within the ANSA, but also in the broader area in which sleep awakenings and complaints of non-conforming flights occur, as well as where notices of the proposed restriction were published. Figure S-2 (new) provides the geographic boundaries and jurisdictions incorporated into the applicable graphics. All figures in Section 2.2.1 of this Supplemental Analysis include these geographic boundaries and jurisdictional names, which complement the CNEL contours in Figure 14 through Figure 19 of the original Application, and also complement the modeled aircraft flight track graphics in Figures H-2 through H-5 in Appendix H of the Application.

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Figure S-2 LAX Region with Local Jurisdictions and Boundaries

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2.2 Airport Noise Study Area (ANSA)

The FAA requested the following additional information or documentation on the ANSA:

- Definition of the Airport Noise Study Area to include the sleep awakenings reduced by the proposed restriction
- Display of the noise complaints in the study area relating to the non-conforming flights.

2.2.1 Definition of ANSA based on area used for sleep awakenings

FAA Comment: ***…the application is incomplete because the primary problem asserted by LAWA (Application at 57) falls outside the airport noise study area selected… If LAWA intends to retain its definition of the problem as nighttime sleep awakenings extending to geographic areas beyond the CNEL 65 dB, then LAWA must select a noise contour that encompasses those sleep awakenings as well as the CNEL 65 dB and higher noise contours. The description of the noise study area should include the basis for the boundaries selected for the study area. All the analysis required under 14 CFR § 161.305 must be applied to the airport noise study area.***

LAWA continues to retain nighttime sleep awakenings as the problem addressed by the proposed restriction. As indicated in Chapter 1 of this Supplemental Analysis, a map of the ANSA overlaid with CNEL noise contours pursuant to Part 150, Appendix A is a *minimum* requirement for a Part 161 application. Section A150.101 (a) of Appendix A to Part 150 states, "[t]o determine the extent of the noise impact around an airport, airport proprietors developing noise exposure maps in accordance with this part must develop L[dn] contours. Continuous contours must be developed for YDNL levels of 65, 70, and 75 (additional contours may be developed and depicted when appropriate) …." (Part 150 Section A150.101(a)). While LAWA understands that the FAA's position is that Appendix A of 14 C.F.R. Part 150 requires CNEL contours, Part 150 Section A150.101(a) does not specifically state that it must be a CNEL contour. Further, Part 161.5 provides that the "[a]irport noise study area means that area surrounding the airport within the noise contour selected by the applicant for study and must include the noise contours required to be developed for noise exposure maps specified in 14 CFR part 150." Again while this section requires certain minimum contours, it invites additional contours and does not specifically require that they be CNEL contours.

As explained in Sections 2.1 and 6.4 of the original Application, the Application included an ANSA based on the CNEL 65 dB contour of the two study years analyzed – 2013 (the year of implementation) and 2018 (five years following implementation). These contours meet the minimum requirements in Part 150, Appendix A and were identified in Figure 14 and Figure 15 in the original Application and are repeated here in Figure S-4 and Figure S-5 with additional jurisdictional boundaries and information on sound insulated residences.

FAA has requested that LAWA expand the ANSA with additional CNEL contours beyond the CNEL 65 dB contour that encompass all sleep awakenings. CNEL's are not germane to studying the effects of the non-conforming aircraft operations on sleep awakenings or the full benefits that could be realized with the proposed restriction. However, in response to FAA's request, LAWA has carefully defined an area beyond the traditionally recognized ANSA through the development of a contour that directly applies to changes in sleep awakenings called the Noise-Induced Awakenings Change (NIAC) contour.

Development of this new study area was accomplished by initially enclosing a large rectangular area that included the traditional ANSA (CNEL 65 dB contours) as well as the collection of non-conforming flight tracks that are the focus of the proposed restriction. Boundaries of the rectangle

were generally selected along geographic features or major highways surrounding LAX. The area was depicted by a dashed line in Figure 12 in the Application. Sleep awakenings at every population centroid within that rectangular area were then computed, first with the non-conforming flights occurring as now, and then again with the flights using westerly departure routes, as if complying with the proposed use restriction and conforming to other Over-Ocean Operations. Centroids experiencing differences in awakenings from one scenario to the other (both decreases as well as increases) were then plotted and are shown for 2013 and 2018 in side-by-side frames in Figure S-3. The NIAC contour shown in Figure S-3 then was developed to encompass the outermost boundary that includes the entire set of population centroids experiencing changed awakenings in 2013 or 2018, plus a 3,500-foot buffer at the limits. The NIAC contour is intended only to evaluate changes to sleep awakenings and not to determine compatible/noncompatible land uses, which is best accomplished using CNEL.

Figure S-3 Population Centroids Showing Change in Awakenings with Proposed Restriction

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Figure S-4 2013 Status Quo CNEL Contours

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Figure S-5 2018 Status Quo CNEL Contours

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Figure S-6 2013 CNEL Contours with Proposed Runway Use Restriction

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Figure S-7 2018 CNEL Contours with Proposed Runway Use Restriction

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Figure S-8 Comparison of 2013 Status Quo CNEL Contours and Proposed Restriction CNEL Contours Including Difference Contours

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Figure S-9 Comparison of 2018 Status Quo CNEL Contours and Proposed Restriction CNEL Contours Including Difference Contours

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Figure S-10 Modeled Arrival Flight Tracks for Fixed-Wing Aircraft

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Figure S-11 Modeled Departure Flight Tracks for Fixed-Wing Aircraft

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Figure S-12 Modeled Arrival and Departure Flight Tracks for Helicopters

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Figure S-13 Modeled Non-Conforming Over-Ocean East Departure Flight Tracks to be affected by the Proposed Restriction

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2.2.2 Relating noise complaints to ANSA

FAA Comment: ***Your application also relies on noise complaints to support the asserted noise problem of sleep awakenings. …but you do not provide any information about where the noise complaints are relative to the airport noise study area you identified. The application should include this information.***

Section 2.2.1 identified the ANSA as the CNEL 65 dB contours shown in Figure S-4 and Figure S-5 and introduced the NIAC contour used for determining the effect of non-conforming aircraft operations on sleep awakenings. The following figures show the supporting noise complaints in relation to the original ANSA and the new NIAC (Figure S-14) and in relation to the non-conforming flight tracks (Figure S-15).

Table S-1 summarizes the complaints against non-conforming flights into those that are in 5-dB CNEL increments within the original ANSA, and those that fall outside the original ANSA. The large majority of complaints that the proposed restriction is designed to address are outside the original ANSA, but within the NIAC contour shown earlier.

Table S-1 Summary of Noise Complaints for Non-Conforming Operations Related to CNEL
Source: LAWA, HMMH

CNEL (dB)	Noise Complaints by CNEL	
	2013	2018
< 65	531	530
65 - 70	10	10
70 - 75	0	1
>75	0	0
Total > 65	10	11
Total	541	541
Note: An additional 50 complaints were not included in above numbers due to lack of corresponding addresses for mapping purposes		

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Figure S-14 Complaints of Non-Conforming Operations Inside and Outside the ANSA

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Figure S-15 Complaints of Non-Conforming Operations and Non-Conforming Flight Tracks

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2.3 Technical Data Supporting Noise Impact Analysis

The FAA requested the following additional information or documentation on noise impact analysis:

- Inclusion of additional information related to non-conforming flights
- Display of noise information in CNEL and SEL at locations with and without the proposed restriction
- Listing of number of sleep awakenings by CNEL increment level

2.3.1 Supporting data regarding non-conforming flights

FAA Comment: ***Data regarding ground tracks and runway use percentage for non-conforming flights under the proposed restriction need to be included, as well as the assumed stage length (aircraft weight) of these flights under the proposed restriction.***

LAWA has provided identifiers for each of the non-conforming flight tracks as shown in Figure S-16. The following tables supplement Table H-2 through Table H-4 in Appendix H of the Application by specifically addressing data for the non-conforming flights. Table S-2 and Table S-3 provide the non-conforming flights for 2013 and 2018 by aircraft type, departure stage length, departure runway, flight track (as referenced in Figure S-16) and the number of "annual average day" (AAD) nighttime departures. Table S-4 and Table S-5 summarize the preceding tables by aircraft type, departure stage length, and AAD nighttime operations by runway. Table S-6 and Table S-7 provide historical operations and the development of the 2013 and 2018 runway distribution for the non-conforming operations. Note that departure stage length for the 777M aircraft designated as "M" is an FAA-approved User-defined profile detailed in Appendix H of the Application.

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Figure S-16 Non-Conforming Flight Tracks

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Table S-2 2013 Non-Conforming Nighttime Departures by Flight Track and Stage Length
Source: HMMH

2013				
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Track Name**	**Nighttime Departures**
747400	7	07R	NC01	0.00343
747400	7	07R	NC02	0.00343
747400	9	07L	NC03	0.00315
777M	M	07L	NC04	0.00320
747400	7	07L	NC05	0.00315
777200	7	07L	NC06	0.00320
777200	8	07L	NC07	0.00320
747400	8	07L	NC08	0.00315
747400	7	07R	NC09	0.00343
767300	4	07L	NC10	0.00274
777M	M	07R	NC11	0.00274
747400	8	07R	NC12	0.00343
747400	7	07R	NC13	0.00343
747400	7	07L	NC14	0.00315
747400	8	07L	NC15	0.00315
747400	8	07L	NC16	0.00315
777200	7	07L	NC17	0.00320
747400	9	07L	NC18	0.00315
747400	8	07L	NC19	0.00315
767CF6	3	07L	NC20	0.00274
747400	7	07L	NC21	0.00315
747400	9	07L	NC22	0.00315
747400	8	07L	NC23	0.00315
777200	7	07L	NC24	0.00320
777200	8	07L	NC25	0.00320
777M	M	07L	NC26	0.00320
747400	7	07L	NC27	0.00315
747400	7	07R	NC28	0.00343
747400	8	07L	NC29	0.00315
747400	8	07L	NC30	0.00315
747400	9	07L	NC31	0.00315
747400	8	07L	NC32	0.00315
777M	M	07L	NC33	0.00320
747400	8	07L	NC34	0.00315
777200	7	07L	NC35	0.00320

2013				
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Track Name**	**Nighttime Departures**
777M	M	07L	NC36	0.00320
777200	7	07L	NC37	0.00320
777M	M	07L	NC38	0.00320
747400	7	07L	NC39	0.00315
747400	7	07R	NC40	0.00343
747400	7	07R	NC41	0.00343
747400	8	07L	NC42	0.00315
747400	9	07L	NC43	0.00315
777200	7	07L	NC44	0.00320
777200	7	07L	NC45	0.00320
777200	7	07L	NC46	0.00320
747400	9	07L	NC47	0.00315
777200	7	07L	NC48	0.00320
747400	9	07L	NC49	0.00315
747400	8	07L	NC50	0.00315
747400	8	07L	NC51	0.00315
747400	9	07L	NC52	0.00315
777M	M	07L	NC53	0.00320
747400	7	07L	NC54	0.00315
747400	7	07L	NC55	0.00315
777200	7	07L	NC56	0.00320

Table S-3 2018 Non-Conforming Nighttime Departures by Flight Track and Stage Length
Source: HMMH

2018				
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Track Name**	**Nighttime Departures**
A340-642	7	07R	NC01	0.0027
747400	7	07R	NC02	0.0027
A380-841	8	07L	NC03	0.0018
777M	M	07L	NC04	0.0046
747400	8	07L	NC05	0.0019
777200	7	07L	NC06	0.0035
777200	7	07L	NC07	0.0035
747400	8	07L	NC08	0.0019

2018				
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Track Name**	**Nighttime Departures**
A340-642	7	07R	NC09	0.0027
767300	3	07L	NC10	0.0014
777M	M	07R	NC11	0.0082
747400	7	07R	NC12	0.0027
747400	7	07R	NC13	0.0027
747400	7	07L	NC14	0.0027
747400	8	07L	NC15	0.0019
747400	9	07L	NC16	0.0021
777200	7	07L	NC17	0.0035
A380-841	8	07L	NC18	0.0018
747400	9	07L	NC19	0.0021
767300	3	07L	NC20	0.0014
747400	7	07L	NC21	0.0027
A380-841	8	07L	NC22	0.0018
747400	9	07L	NC23	0.0021
777200	7	07L	NC24	0.0035
777200	7	07L	NC25	0.0035
777M	M	07L	NC26	0.0046
747400	8	07L	NC27	0.0019
A340-642	7	07R	NC28	0.0027
747400	9	07L	NC29	0.0021
747400	8	07L	NC30	0.0019
747400	9	07L	NC31	0.0021
747400	8	07L	NC32	0.0019
777M	M	07L	NC33	0.0046
747400	8	07L	NC34	0.0019
777200	7	07L	NC35	0.0046
777M	M	07L	NC36	0.0091
777200	8	07L	NC37	0.0041
777M	M	07L	NC38	0.0091
A340-642	7	07L	NC39	0.0027
747400	7	07R	NC40	0.0027
A340-642	7	07R	NC41	0.0027
747400	8	07L	NC42	0.0019
747400	9	07L	NC43	0.0021
777200	7	07L	NC44	0.0035
777200	7	07L	NC45	0.0035

2018				
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Track Name**	**Nighttime Departures**
777200	7	07L	NC46	0.0046
747400	9	07L	NC47	0.0021
777200	7	07L	NC48	0.0046
747400	9	07L	NC49	0.0021
747400	8	07L	NC50	0.0019
747400	8	07L	NC51	0.0019
747400	9	07L	NC52	0.0021
777M	M	07L	NC53	0.0091
747400	7	07L	NC54	0.0027
A340-642	7	07L	NC55	0.0027
777200	8	07L	NC56	0.0041

Table S-4 2013 Non-Conforming Nighttime Departures by Aircraft, Stage Length, and Runway
Source: HMMH

2013			
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Nighttime Departures**
747400	7	07R	0.0240
747400	9	07L	0.0252
777M	M	07L	0.0192
747400	7	07L	0.0220
777200	7	07L	0.0320
777200	8	07L	0.0064
747400	8	07L	0.0378
767300	4	07L	0.0027
777M	M	07R	0.0027
747400	8	07R	0.0034
767CF6	3	07L	0.0027

Table S-5 2018 Non-Conforming Nighttime Departures by Aircraft, Stage Length, and Runway
Source: HMMH

2018			
INM Aircraft Type	**Profile or Stage Length**	**Runway**	**Nighttime Departures**
A340-642	7	07R	0.011
747400	7	07R	0.011
A380-841	8	07L	0.005
777M	M	07L	0.041
747400	8	07L	0.019
777200	7	07L	0.038
767300	3	07L	0.003
777M	M	07R	0.008
747400	7	07L	0.008
747400	9	07L	0.019
777200	8	07L	0.008
A340-642	7	07L	0.005

Runway use percentages for non-conforming flights were provided in the Application in Section 6.4 describing the analysis of the non-conforming flights (See Tables 13 and 14, page 74). They are repeated below:

Table S-6 LAX Non-Conforming Flights June 2000-March 2011
Source: HMMH

Runway	Operations	Percent	Annual-Average Operations
6R	13	1.9%	1.2
7R	98	14.0%	9.0
7L	588	84.1%	54.3
TOTAL	**699**	**100.0%**	**64.5**

Table S-7 Modeled LAX Non-Conforming Operations Runway Distribution
Source: HMMH

Runway	April 2010-March 2011		2013 Annual Operations Runway Distribution	2018 Annual Operations Runway Distribution
	Operations	Percentage		
7R	9	16.1%	11	11
7L	47	83.9%	54	54
Total	**56**	**100.0%**	**65**	**65**

Note: The annual-average operations in the last two columns are rounded based on an annual average of 65 operations.

2.3.2 CNEL and SEL values at census grid points in ANSA

FAA Comment: ***The noise study area must display the noise information using CNEL as the primary metric and Single Event Level (SEL) as the supplemental metric at applicable locations with and without the proposed restriction. The application must include more detail of the sleep awakening calculations. Specifically, the calculation of the probability of awakening at least once, the CNEL level, the population, outdoor SEL values, and the outdoor to indoor sound reduction assumed should be provided in electronic format at each sleep awakening grid point (census centroid).***

Data files containing specific information for each Census 2010 census block point used for the sleep disturbance analysis are provided on a separate DVD, as requested. Included is a summary spreadsheet listing GEOID10, INM GRID_ID, total population and housing units for each census block as well as the percent awakened, population awakened and, for CNEL values greater than or equal to 65 dB, the CNEL level at each of these points. If the CNEL value is not listed for a given centroid, it has been computed to be less than 65 dB.

In addition to the cumulative values at each census grid point, detailed SEL grid point data at each modeled grid point in 0.1 dB intervals starting at 50 dB SEL are included in twelve (12) dbf files described in Table S-8. The INM GRID_ID can be used to compare the detailed SEL data to the cumulative results reported in the spread sheet.

An Interior Noise Level Reduction (NLR) of 27.5 dB was used for all sleep disturbance calculations; therefore only SEL levels above 77.5 dB were used for the final calculations. A complete description of the ANSI percent awakening methodology can be found in Appendix K of the Application.

Table S-8 SEL Data Files for ANSI Sleep Disturbance Calculations
Source: HMMH

Year	Case	SEL Data File Names		
		Awakenings Period 1 (22:00:00-00:59:59)	Awakenings Period 2 (01:00:00-03:59:59)	Awakenings Period 3 (04:00:00-06:59:59)
2013	Status Quo	SN1_2013SQ_sum.dbf	SN2_2013SQ_sum.dbf	SN3_2013SQ_sum.dbf
	Proposed Restriction	SN1_2013ALT_sum.dbf	SN2_2013ALT_sum.dbf	SN3_2013ALT_sum.dbf
2018	Status Quo	SN1_2018SQ_sum.dbf	SN2_2018SQ_sum.dbf	SN3_2018SQ_sum.dbf
	Proposed Restriction	SN1_2018ALT_sum.dbf	SN2_2018ALT_sum.dbf	SN3_2018ALT_sum.dbf

2.3.3 Table of awakenings in 5-dB increments of CNEL

FAA Comment: ***… the number of awakenings should be summed by CNEL level in increments of 5 dB and provided in a table that gives the number of awakenings calculated at CNEL 65 dB and above, between CNEL 65 dB and 60 dB, between CNEL 60 dB and 55 dB, and so on to the lowest value of CNEL where awakenings are calculated.***

Results of the sleep awakenings analysis were included in Table 15 of the original Application for year 2018. Sections 6.2.1 and 6.4.3 and Appendix K of the original Application discussed the methodology of using census block centroids to determine sleep awakenings. As a result of the work done for the previous comment, these data have now also been parsed into 5-dB CNEL increments within the ANSA for both 2013 and 2018 and consolidated for all additional CNEL values less than 65 dB. The results are shown in Table S-9 and Table S-10 for 2013 and 2018, respectively, and include the net benefits of implementing the proposed restriction. While residential parcels appear to be located within the CNEL 75 dB contours for 2013 and 2018, there were no identified census block centroids within the CNEL 75 dB contour, which results in no determination of sleep awakenings by population for the interval "greater than CNEL 75 dB."

Table S-9 Sleep Awakenings by CNEL for 2013
Source: HMMH

CNEL (SQ) (dB)	Sleep Awakenings by Population			Sleep Awakenings by Housing Units		
	Proposed Restriction	Status Quo	Change	Proposed Restriction	Status Quo	Change
< 65	56,890	57,351	-461	18,256	18,410	-154
65 to <70	15,879	15,913	-34	5,482	5,492	-10
70 to <75	7,136	7,148	-12	2,187	2,190	-3
Total ≥ 65	23,014	23,061	-46	7,669	7,682	-13
Total	79,905	80,412	-507	25,925	26,093	-167
Note: May not add or subtract exactly due to rounding; population and housing counts determined using census block centroids (See Appendix K for a description of the complete process)						

Table S-10 Sleep Awakenings by CNEL for 2018
Source: HMMH

CNEL (SQ) (dB)	Sleep Awakenings by Population			Sleep Awakenings by Housing Units		
	Proposed Restriction	Status Quo	Change	Proposed Restriction	Status Quo	Change
< 65	60,383	60,781	-398	19,190	19,323	-133
65 to <70	17,399	17,434	-35	6,241	6,252	-11
70 to <75	9,057	9,073	-15	2,667	2,670	-4
Total ≥ 65	26,457	26,507	-50	8,908	8,923	-15
Total	86,840	87,289	-449	28,098	28,245	-147
Note: May not add or subtract exactly due to rounding; population and housing counts determined using census block centroids (See Appendix K for a description of the complete process)						

2.4 Cost-Benefit Analysis

The FAA requested the following additional information or documentation on the cost-benefit analysis:

- Inclusion of the benefits of on-going and future residential sound insulation programs as related to sleep awakenings
- Discussion of offsetting costs with a more rigorous forecast
- Consideration of costs associated with disrupted aircraft operations
- Inclusion of the costs on passengers associated with schedule disruption
- Inclusion of fuel burn costs during offload and effect on carrier guarantees of delivery

2.4.1 Consideration of benefits of ongoing and future residential sound insulation program

FAA Comment: ***The analysis must also consider the benefits of the ongoing and future residential sound insulation program when analyzing sleep awakenings.***

The existing sound insulation program is limited to within the land use compatibility contour of CNEL 65 dB in which LAWA determined there is no change to the homes eligible for sound insulation with or without the proposed restriction. As noted in Section 6.2.1 of the Application, the sleep awakenings were predicated on a conservative assumption that all residents have their windows closed and have an existing 27.5 dB Noise Level Reduction (NLR). The ongoing and future residential sound insulation programs, which have been shown to remain unchanged with or without the proposed restriction, are provided in Section 2.1.1 of this Supplemental Analysis.

2.4.2 More rigorous approach to forecasting nonconforming departures

FAA Comment: ***If benefits are qualitative, a discussion is needed for each offsetting cost on operators, airports, passengers, and cargo. A more rigorous approach to forecasting nonconforming departures should be used including moving average; last observed year; historic***

average; and regression with independent variables (such as time, operations, pacific rim departures, and wind).

As explained in Chapter 7 and Appendix M of the Part 161 Application, the possibility of lost cargo and passenger revenue and compensation for passengers not able to travel as scheduled represent the major potential costs to airline operators. The proposed restriction is not expected to cause substantial flight delays because airlines have the ability to plan in advance for circumstances that currently lead to non-conforming operations, and will have a similar ability to plan for and minimize the impacts of the proposed restriction.

Four primary factors lead to most non-conforming operations: local wind conditions, local temperature, the amount of fuel required (a function of en route winds and aircraft weight), and payload (passenger and/or cargo).[1] All four factors are predictable several hours before departure, but the only factor that airlines can influence is payload.

If the proposed restriction is enacted and weather conditions indicate that a flight may need to be payload-restricted, airlines will adjust their cargo loading plans to ensure the high priority cargo is loaded first. They will then either load lower priority cargo so it can be quickly off-loaded or delay loading lower priority cargo until a final decision about maximum safe aircraft takeoff weight is made. If cargo is loaded and subsequently off-loaded, an airline may incur additional cargo handling costs depending on the terms of the contract with its cargo handler.[2] Any additional costs would be minimal if the airline self-handles its cargo. Because it will be planned in advance, any cargo handling needed to comply with the proposed restriction is not expected to delay takeoff.

If passenger airlines find that they cannot reduce total aircraft weight sufficiently by off-loading cargo and also need to restrict the number of passengers, they will ask for volunteers before aircraft boarding begins, minimizing delays associated with locating and off-loading the volunteers' baggage. Airlines are usually able to get volunteers to accept compensation in exchange for taking later flights, reducing the financial impact on airlines compared to involuntary denied boarding. Data compiled by the USDOT Bureau of Transportation Statistics show that for the first six months of 2012, volunteers accounted for 90.5% of all passengers denied boarding for domestic flights operated by U.S. airlines.[3] The airline revenue impact of $500 to $800 per delayed passenger presented in Appendix M of the Application reflects the view that airlines will be able to rely primarily on volunteers when they need to restrict the number of passengers.

No costs to the airport associated with the proposed restriction have been identified. Enacting the proposed restriction is expected to reduce the air traffic control tower workload.

Passengers affected by the proposed restriction will be compensated for costs they incur. Since most or all of the affected passengers are expected to volunteer to take later flights, this indicates that they value the compensation more highly than the delay and inconvenience they would experience by taking later flights. A few individuals may incur a net loss if occasionally there are not enough volunteers and some passengers are denied boarding involuntarily, but on the whole the total compensation that all affected passengers receive is expected to exceed the total value of the delay and inconvenience they experience.

[1] Pilots choosing to reduce taxi time cause a small percentage of non-conforming operations. Prohibiting these operations would have no cost impact on airlines since reducing taxi time and departing to the east leads to additional flight time.

[2] Five cents per kilogram represents a typical cargo handling cost.

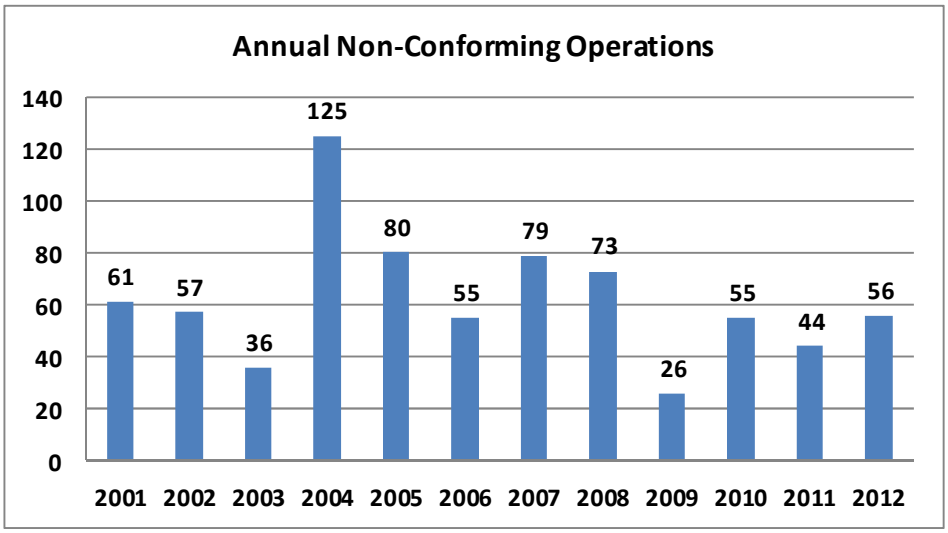
[3] Air Travel Consumer Report, USDOT, September 2102

All airlines forecast to be affected by the proposed restriction, both passenger and all-cargo, primarily carry general cargo, most of which moves on a space-available basis.[4] As a result, there is no need to compensate general cargo shippers for short-term delays. Delays are expected to be limited because most of the airlines forecast to be affected offer daily or double-daily service to the relevant destination markets, providing ample cargo capacity.

The forecast of non-conforming operations was developed using a rigorous approach that recognizes the difficulties and potential pitfalls of forecasting events that are extremely variable and that result from the interaction of several complex causes.

Figure S-17 shows annual non-conforming operations from 2001 (the first full year for which data are available) through 2012. The number ranges from a high of 125 in 2004 to a low of 26 in 2009.

Figure S-17 Non-Conforming Operations from Year 2001 through 2012
Source: LAWA

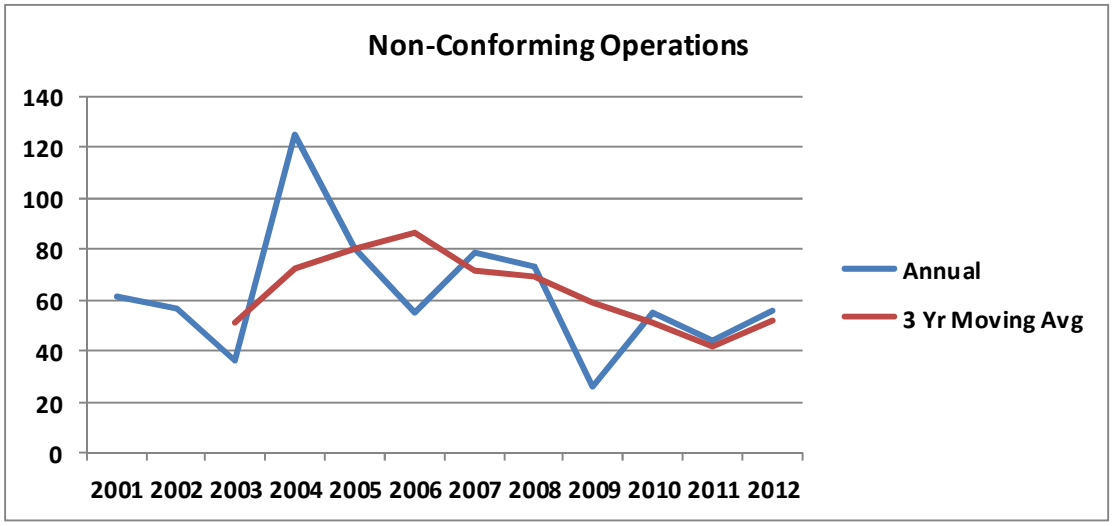


The forecast value of 65 per year is based on the average for the years 2001 to 2010, the data available when the forecast was prepared. Total non-conforming operations were below average in 2011 and 2012, while an unusually high number of 12 non-conforming departures were recorded in January 2013, possibly presaging an increase for the present year. The average for the 2001-2012 time periods is 62 per year, and the average for the series minus the high and low years of 2004 and 2009 is 60 per year.

Figure S-18 compares annual non-conforming operations to a three- year moving average of operations. Smoothing the highs and lows, the chart shows a gently downward trend through 2011 followed by an uptick in 2012.

[4] This is not true of express all-cargo carriers like FedEx, UPS and DHL, but no express carrier flights are forecast to be affected by the proposed restriction.

Figure S-18 Comparison of Annual Non-Conforming Operations to 3-Year Moving Average
Source: LAWA, SH&E



The option of using regression analysis to prepare a forecast was explored but found not suitable for several reasons. As the charts above show, the number of non-conforming operations shows very large year-to-year changes, with the absolute value of year-to-year changes averaging 56.7% from 2001 to 2010. None of the logical explanatory variables such as total air carrier departures, heavy aircraft departures, or departures to Asia and Australia/New Zealand has comparable year-to-year changes. Any association between these variables and non-conforming operations would produce a misleading forecast model because it would indicate that a small change in one or more of these classes of departures would cause a very large change in non-conforming operations. In econometric terms, this type of finding would show correlation but would not indicate causation, and would be unsuitable for forecasting.

Using wind conditions as an explanatory variable makes intuitive sense, since we know that pilots consider wind conditions carefully when making most requests to perform non-conforming departures. However, wind presents difficulties for regression analysis. Wind is usually reported with two descriptors: wind speed and direction. In fact, wind is often subject to gusting, and wind speed several hundred feet above the runway can differ substantially from speeds reported by the control tower. Pilots use professional judgment regarding wind, and all the factors they consider would not be included in reported wind data. Similarly, air traffic controllers use judgment deciding when to switch the airport from Over-Ocean Operations to Easterly Operations, and the wind data associated with non-conforming operations show that controllers will sometimes continue Over-Ocean Operations when reported tail wind gusts exceed ten knots.

More importantly, our inability to produce long-term forecasts of wind speed and direction makes it impossible to use wind for forecasting purposes. Meteorologists produce short-term forecasts of wind speed and direction that airlines routinely use for flight planning, but they are not able to produce long term wind forecasts that would enable us to use wind to help forecast non-conforming operations.

2.4.3 Estimation of costs of runway use restriction associated with altered operations, flight crew duty time, and reduction in operational efficiency

FAA Comment: ***…requires the consideration, as appropriate, of costs associated with altered or discontinued aircraft operations, including costs incurred due to flight crew time duty and rest requirements, the reduction in operational efficiencies aid evidence to support that there will not be a decrease in passenger and shipper consumer surplus due to the proposed noise restriction.***

Our analysis indicates that enacting the proposed restriction will not cause airlines to discontinue or re-schedule any operations, and that any delays caused by the proposed restriction will be minimal and not affect flight crew duty time or rest requirements. The estimate of potential cargo and passenger revenue impacts provides a measure of the potential impact on operational efficiencies, although as noted in Chapter 7 and Appendix M of the Application, these cost estimates represent an upper bound on potential costs and the actual costs incurred by the airlines are likely to be lower.

To the extent that passengers who volunteer to take later flights value the compensation they are offered more than the delay and inconvenience they experience, enacting the proposed restriction will actually increase aggregate consumer surplus, partially offsetting the cost impact to the airlines associated with the compensation they provide.

Any changes in shipper consumer surplus are likely to be minimal. As discussed previously, the passenger and all-cargo airlines forecast to be affected by the proposed restriction carry mainly general cargo that moves on a space-available basis. To the extent that shipper consumer surplus reflects their expectations, there will be little or no change in consumer surplus. For example, if shippers who now expect to receive goods in a two to three day window (including transit time, customs clearance, etc.) experience a 12 to 24 hour delay but still receive their goods within the expected window, there would be no change in their consumer surplus.

2.4.4 Estimation of costs of runway use restriction associated with potential affected passengers

FAA Comment: ***…because it does not estimate the costs of the proposed runway use restriction to the potential affected passengers. Costs should also include the cost of disruption and reschedule and the value of passenger time.***

The factors that currently cause airlines to request non-conforming departures are predictable. Because airlines can plan in advance their responses to these factors, the proposed restriction will cause minimal delays. For this reason, the only passengers affected measurably by the proposed restriction will be passengers who take later flights.

Data compiled by the USDOT show that in most instances airlines can get enough passengers to volunteer to take later flights by offering them compensation, and that occasions where involuntary denied boarding is required are infrequent.[5] The fact that passengers volunteer to accept compensation in exchange for delay and inconvenience is evidence that these passengers value the compensation more highly than the delay and inconvenience. Adding the cost of disruption and value of passenger time for passengers who volunteer to take later flights to the airline cost of providing compensation would represent double-counting of costs from a benefit-cost perspective.

[5] Ibid.

2.4.5 Estimation of fuel burn costs incurred during off-loading, and costs to cargo carriers inability to meet guaranteed expedited time-definite service

FAA Comment: ***…include the fuel burn costs incurred during off-loading passengers and/or cargo aid the costs from the inability of cargo carriers to deliver guaranteed expedited time-definite service. Information about differences between estimated costs to cargo and passenger flights might be relevant in assessing partial alternatives.***

Currently, most of the gates used by trans-Pacific passenger flights including 11 of 12 gates at Tom Bradley International Terminal and the 9 remote gates provide 400 megahertz (MHz) electric power and pre-conditioned air. When aircraft are handled at gates equipped with Point of Use (POU) electric power and air conditioning systems, passenger airlines are not expected to incur any Auxiliary Power Unit (APU) fuel burn costs as a result of the proposed restriction because POU systems eliminate the need to operate aircraft APUs.

The number of gates equipped with 400 MHz power and pre-conditioned air is expected to increase because the LAWA Sustainable Planning and Design Guidelines and the LAX Master Plan Stipulated Settlement Agreement call for requiring 400 MHz and pre-conditioned air units in bid documents for terminal and gate design and renovation projects, and for establishing lease provisions that require preconditioned air units at gates with 400 MHz power for new terminal leases.[6] As a result, an increasing share of LAX gates will be equipped with POU power and air conditioning, minimizing passenger airline APU fuel burn costs associated with the proposed restriction All-cargo aircraft parked at stands without POU systems may have to operate their APUs for an additional period of time to off-load cargo, although pre-flight planning is expected to keep any delays to a minimum.

ACRP Report 64 – *Handbook for Evaluating Emissions and Costs of APUs and Alternative Systems* (2012) provides the most recent estimates of APU fuel consumption, with typical wide body aircraft APUs consuming .052 kg/s and jumbo wide body APUs consuming .061 kg/s when operating in environmental control systems (ECS) condition.[7] This is equivalent to approximately 61 gallons per hour for wide body APUs and 72 gallons per hour for jumbo wide body APUs based on an average fuel density of 6.75 pounds per gallon. In contrast, the main engines of a 747-400 freighter consume an average of 3,480 gallons per hour in flight.

Fourteen all-cargo flights per year are forecast to be affected by the proposed restriction, eight using wide body aircraft (767-300F, 747-400F) and six using jumbo wide body aircraft (747-8F). If each of these flights is delayed by 15 minutes due to the proposed restriction, the total additional APU fuel burn would equal approximately 230 gallons per year. Using a fuel price of $3.06 per gallon (the price used in Appendix M of the Application to estimate the potential savings from reduced flying time), the cost of additional APU fuel for all-cargo aircraft would equal $704 per year.

Regarding expedited time-definite cargo service, there is no evidence that the proposed restriction will affect this service. Shippers who require guaranteed time-definite service rely on carriers like FedEx, UPS and DHL who specialize in this type of service. The airlines that would be affected by this restriction specialize in large, general freight shipments where time is less critical than price. A

[6] LAWA Sustainable Airport Planning, Design and Construction Guidelines for Implementation on All Airport Projects, Version 5.0 • February 2010, page 4-78

[7] ACRP Report 64 – *Handbook for Evaluating Emissions and Costs of APUs and Alternative Systems,* Table 6. This report includes estimates of APU fuel burn for three operating conditions: no load, environmental control systems, and main engine start.

restriction affecting their operations would have no appreciable impact on the guaranteed, time-definite segment of the cargo market.

A review of LAWA records of all non-conforming departures shows that time-definite specialists FedEx and DHL have each had only one non-conforming departure since 2005, while UPS has none. The FedEx comment to LAWA dated February 17, 2013 regarding the proposed restriction describes potential payload penalties if the restriction is adopted, but the FedEx estimates are based on the unrealistic assumption that airport temperatures will average 92 degrees Fahrenheit during Over-Ocean Operation hours. It is not clear that FedEx would face any payload penalties if its calculations were based on realistic assumptions.

3 REQUIREMENTS AS SPECIFIED IN §161.311(D)

FAA Comment: ***The application does not contain the statement required under section 161.311(d) about whether, in the event of disapproval, you request the FAA approve any portion that meets the statutory requirements for approval. The fact that this application is being submitted pursuant to a settlement agreement is not decisive. You must include such a statement to fulfill this requirement.***

A requirement of §161.311(d) is to include "a statement as to whether the airport requests, in the event of disapproval of the proposed restriction or any alternatives, that the FAA approve any portion of the restriction or any alternative that meets the statutory requirements for approval."

LAWA has reviewed the restriction with regard to this requirement and consequently states that it does not request FAA partial approval of any portion of the restriction that meets the statutory requirements. The full restriction as stated in the Application must be evaluated and approved in order to provide the stated noise benefits to the neighboring communities.

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APPENDIX A FAA AND LAWA CORRESPONDENCE ON COMPLETENESS

U.S. Department
of Transportation
Federal Aviation Administration

Office of Airport Planning
and Programming

800 Independence Ave., SW.
Washington, DC 20591

MAR 01 2013

Mr. Scott Tatro
Airport Environmental Manager
Los Angeles World Airports
P.O. Box 92216
Los Angeles, California 90009-2216

Dear Mr. Tatro:

The Federal Aviation Administration (FAA) has reviewed the application and supporting documentation that we received from you on January 30 on behalf of Los Angeles World Airports (LAWA). In the application, you seek the implementation of a Mandatory Nighttime Departure Restriction at Los Angeles International Airport (LAX).

We have conducted a completeness review of your application under the provisions of 14 Code of Federal Regulations (CFR) Part 161.313 and 161.311. The FAA has deemed the application to be incomplete as it relates to the following areas: Noise Exposure Maps (NEMs); Noise Study Area; Technical Data Supporting Noise Impact Analysis; and Cost/Benefit analysis.

We will send you a detailed listing of the deficiencies within ten working days. Once that has taken place we will be available to meet with you to answer any questions that you may have going forward.

Please advise the FAA, in writing, within 30 days of receipt of the detailed deficiency listing, whether LAWA intends to resubmit and/or supplement the application. Failure to notify us within the 30 days will be cause for denial of the application. Denial of the application would close the matter without prejudice to later application and does not constitute disapproval of the proposed restriction.

Sincerely,

Benito De Leon

Benito De Leon
Director, Office of Airport
Planning and Programming

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Airport Planning
and Programming

800 Independence Ave., SW.
Washington, DC 20591

MAR 15 2013

Mr. Scott Tatro
Airport Environmental Manager
Los Angeles World Airports
P.O.Box 92216
Los Angeles, California 90009-2216

Dear Mr. Tatro:

On January 30, the Federal Aviation Administration (FAA) received your application under 14 Code of Federal Regulations (CFR) Part 161 seeking a Stage 3 aircraft noise and access restriction at Los Angeles International Airport (LAX). In accordance with 14 CFR § 161.313(a), we determined that this application was incomplete. Notice of this decision was sent to you on March 1. This letter sets forth in more detail the type of information and analysis needed to process your application.

Please advise the FAA within thirty days of receipt of this letter whether Los Angeles World Airports (LAWA) intends to resubmit and/or supplement the application. Failure to so notify the FAA within the allotted time will be cause for denial of the application and closure of the matter without prejudice to later application and does not constitute disapproval of the proposed restriction. 14 CFR §161.313(c).

Under 14 CFR § 161.311, each applicant proposing a stage 3 restriction is required to submit the following information for each restriction and alternative restriction submitted, with a request that the FAA review and approve the proposed stage 3 noise or access restriction:

(a) A summary of evidence of the fulfillment of conditions for approval, as specified in § 161.305;
(b) An analysis as specified in § 161.305, as appropriate to the proposed restriction;
(c) A statement that the entity submitting the proposal is the party empowered to implement the restriction, or is submitting the proposal on behalf of such party; and
(d) A statement as to whether the airport requests, in the event of disapproval of the proposed restriction or any alternatives, that the FAA approve any portion of the restriction or any alternative that meets the statutory requirements for approval. An applicant requesting partial

approval of any proposal should indicate its priorities as to portions of the proposal to be approved.

The FAA has determined that your application is incomplete as it relates to § 161.311(b) and (d).

1. Analysis

Section 161.311(b) requires an applicant to submit an analysis as specified in § 161.305.

A. Noise Exposure Maps (NEMs) and Noise Contours

Part 161 requires noise contours to be developed in accordance with the specifications and methods prescribed under Appendix A of 14 CFR Part 150. Noise contours must be prepared for the current condition and for a period at least five years in the future. Title 14 CFR § 150.21 provides that the existing and future condition NEM must identify each noncompatible land use. Los Angeles World Airports (LAWA) should clearly identify homes that are currently sound insulated and homes that will be sound insulated within the timeframe of the future condition NEM and assure that these sound insulated homes are not identified as noncompatible on the respective NEMs.

Under Part 150, the existing condition NEM must accurately reflect the airport's current layout, and the forecast NEM must be based upon reasonable assumptions concerning the airport layout, including any planned development. In preparing the current condition and forecast noise contours, LAWA assumed that the airport layout plan included projects approved by the FAA in the 2005 Record of Decision as part of Alternative D. Part 161 Application Section 6.4, at page 70. The FAA needs additional information to determine whether the 2013 and 2018 contours properly reflect existing conditions and planned development for future conditions.

In addition, the FAA is aware that LAWA has proposed a runway safety area project for Runway 7L/25R and is in the process of completing the LAX Master Plan Specific Plan Amendment Study. Projects planned for implementation by LAWA in 2013 and in 2018 should be appropriately reflected in the current and forecast noise contours.

In addition, section 161.305(b) requires applicants to provide maps denoting the airport geographic boundary, and the geographic boundaries and names of each jurisdiction that controls land use within the airport noise study area. The maps submitted with the application do not clearly denote the geographic boundaries and names of each jurisdiction that controls land use within the airport noise study area.

B. Airport Noise Study Area

Title 14 C.F.R. § 161.5 defines the "airport noise study area" as "[t]hat area surrounding the airport within the noise contour selected by the applicant for study [that] must include the noise contours required to be developed for noise exposure maps specified in 14 CFR Part 150." In your application, you identify the Community Noise Equivalent Level (CNEL) 65 dB contour as the airport noise study area. You indicate that the CNEL 65 dB contour is the airport noise study area by definition because the FAA requires you to use the Master Plan Final Environmental Impact Statement Alternative D 2015 contours for AIP funding of noise mitigation. Application.

Section 6.4, at page 70. However, in the application LAWA defines the noise problem as follows:

"The proposed runway use restriction presented in this document addresses one very specific goal:

-To reduce the occurrence and frequency of nighttime awakenings for residents living near LAX by eliminating non-conforming easterly departures between midnight and 6:30 a.m. when the airport is in Over-Ocean Operations or Westerly Operations."

Part 161 Application, Section 1.3, page 3.

The noise problem described (i.e., sleep awakenings) has not been quantified within the noise study area you selected, and mostly falls outside the noise study area. To complete the application, LAWA must reconcile these inconsistencies. At this point, the application is incomplete because the primary problem asserted by LAWA (Application at 57) falls outside the airport noise study area selected by LAWA (Application at 70).

Based upon LAWA's definition of the problem, LAWA identifies a sleep disturbance study area[1] that extends beyond the CNEL 65 dB contour selected as the noise study area. There needs to be one noise study area which is clearly defined and encompasses the problem that a proposed restriction is intended to address. The Part 161 regulations allow an applicant to select a noise contour beyond the CNEL 65 dB contour. If LAWA intends to retain its definition of the problem as nighttime sleep awakenings extending to geographic areas beyond the CNEL 65 dB, then LAWA must select a noise contour that encompasses those sleep awakenings as well as the CNEL 65 dB and higher noise contours. If LAWA elects this option, then below CNEL 65 dB it is permissible to truncate the CNEL contour to exclude large areas that do not include individuals predicted to experience sleep disturbance. The description of the noise study area should include the basis for the boundaries selected for the study area. All the analysis required under 14 CFR § 161.305 must be applied to the airport noise study area.

Your application also relies on noise complaints to support the asserted noise problem of sleep awakenings. For example, your application states that the nonconforming flights "elicited 35 complaints from residents well outside the CNEL 65 dB contour." Application at 5. On page 32 you identify "28 specific noise complaints related to flights that would be addressed by this proposed restriction," but you do not provide any information about where the noise complaints are relative to the airport noise study area you identified. The application should include this information.

C. Technical Data Supporting Noise Impact Analysis

Part 161 requires noise exposure to be calculated in terms of yearly day-night average sound levels (DNL). FAA recognizes the Community Noise Exposure Level as an accepted

[1] At this stage of review, FAA has made no determination whether a problem defined solely or predominantly in terms of awakenings can constitute an essential element needed to provide substantial evidence in support of an airport noise and access restriction. For purposes of completeness, if LAWA intends to base its application largely or solely on such occurrences, then, at a minimum, it must define an area that encompasses them.

methodology. In addition, 161.305 (e)(2)(i)(A)(ii)(A) requires maps of the airport noise study area overlaid with noise contours.

Title 14 C.F.R. § 161.305 (e)(2)(i)(A)(ii)(C) requires the analysis of the estimated noise impact of aircraft operations with and without the proposed restriction to include technical data supporting the noise impact analysis, including the classes of aircraft, fleet mix, runway use percentage and day/night breakout of operations.

Data regarding ground tracks and runway use percentage for non-conforming flights under the proposed restriction need to be included, as well as the assumed stage length (aircraft weight) of these flights under the proposed restriction

The noise study area must display the noise information using CNEL as the primary metric and Single Event Level (SEL) as the supplemental metric at applicable locations with and without the proposed restriction. The application must include more detail of the sleep awakening calculations. Specifically, the calculation of the probability of awakening at least once, the CNEL level, the population, outdoor SEL values, and the outdoor to indoor sound reduction assumed should be provided in electronic format at each sleep awakening grid point (census centroid). In addition, the number of awakenings should be summed by CNEL level in increments of 5 dB and provided in a table that gives the number of awakenings calculated at CNEL 65 dB and above, between CNEL 65 dB and 60 dB, between CNEL 60 B and 55 dB, and so on to the lowest value of CNEL where awakenings are calculated.

D. Cost-Benefit Analysis

The application does not include evidence required under 14 CFR § 161.305(e)(2)(ii)(A)(1). Section 161.305(e)(2)(ii)(A)(1) requires evidence, based on a cost-benefit analysis, that the estimated potential benefits of the restriction have a reasonable chance to exceed the estimated potential cost of the adverse effects on interstate and foreign commerce[2]. The analysis must also consider the benefits of the ongoing and future residential sound insulation program when analyzing sleep awakenings. While benefits need not be quantified, a qualitative benefit basis is by nature subjective. If benefits are qualitative, a discussion is needed for each offsetting cost on operators, airports, passengers, and cargo. A more rigorous approach to forecasting nonconforming departures should be used including moving average; last observed year; historic average; and regression with independent variables (such as time, operations, pacific rim departures, and wind).

[2] The application seeks to restrict non-conforming easterly departures, of which the application estimates there are about 65 per year. The application does not seek to restrict conforming easterly departures, of which there were 484 in the sample year LAWA provided (1 April 2010 through 31 March 2011). Application at 4, 45 & C-84. At this stage of review, FAA has not determined how the existence of the conforming flights, which would not be restricted, impact the analysis required under § 161.305, particularly with regard to statutory conditions 1 and 2. However, to the extent the applicant desires to provide its own analysis on this matter it may do so upon resubmission.

Title 14 CFR § 161.305 (e)(2)(ii)(A)(1)(ii)(B) requires the consideration, as appropriate, of costs associated with altered or discontinued aircraft operations, including costs incurred due to flight crew time duty and rest requirements, the reduction in operational efficiencies and evidence to support that there will not be a decrease in passenger and shipper consumer surplus due to the proposed noise restriction.

This analysis is also incomplete because it does not estimate the costs of the proposed runway use restriction to the potential affected passengers. Costs should also include the cost of disruption and reschedule and the value of passenger time. Additionally, the application should include the fuel burn costs incurred during off-loading passengers and/or cargo and the costs from the inability of cargo carriers to deliver guaranteed expedited time-definite service. Information about differences between estimated costs to cargo and passenger flights might be relevant in assessing partial alternatives.

2. Statement About Partial Approval

The application does not contain the statement required under section 161.311(d) about whether, in the event of disapproval, you request the FAA approve any portion that meets the statutory requirements for approval. The fact that this application is being submitted pursuant to a settlement agreement is not decisive. You must include such a statement to fulfill this requirement.

Although the application also lacks the statement concerning implementation authority, the FAA takes administrative notice that LAWA is empowered to implement the proposed restriction. See, 14 C.F.R. §161.311(c).

Finally, FAA is available to meet with LAWA representatives to answer any questions or address any concerns regarding LAWA's application and the Part 161 process.

Sincerely,

Benito De Leon

Benito De Leon
Director, Office of Airport
Planning and Programming

Los Angeles
World Airports

March 28, 2013

Mr. Benito De Leon
Director, Office of Airport Planning and Development
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

RE: Los Angeles International Airport Part 161 Study Application

Dear Mr. De Leon:

Los Angeles World Airports (LAWA) received your March 15, 2013 letter detailing the deficiencies of the application we submitted to the Federal Aviation Administration (FAA) pursuant to 14 Code of Federal Regulations Part 161 for a runway use restriction at Los Angeles International Airport (LAX), which you deemed incomplete.

Your letter indicated that LAWA must advise the FAA within 30 days as to whether we intend to resubmit and/or supplement the application. By this letter, LAWA informs you of its intent to revise the Part 161 application, pursuant to the requirements stated in your March 15th letter, and resubmit the application for further review and consideration by FAA.

We will contact you within the next few days to request either a meeting or conference call regarding specific issues stated in your letter. If you have any questions please feel free to contact me at 424-646-6499 or at statro@lawa.org.

Sincerely,

Scott Tatro
Airport Environmental Manager I

ST:RH:grg

cc: M. Feldman, Deputy Executive Director
R. Tobias, Deputy City Attorney
Robert Miller, HMMH
Eugene Reindel, HMMH

LETTERSANDMEMOS:032813

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