SFO COMMUNITY ROUNDTABLE

Meeting Announcement

Technical Working Group

Tuesday, September 22, 2021
12:00 p.m. – 1:30 p.m.

BY VIDEO CONFERENCE ONLY
Please click the link below to join the webinar:
https://smcgov.zoom.us/j/98244235352
Or Dial-in:
US: +1(669)900-6833 Webinar ID: 982 4423 5352

Note: To arrange an accommodation under the Americans with Disabilities Act to participate in this public meeting, please call (650) 363-4220 at least 2 days before the meeting date.

******Please see instructions for written and spoken comments at the end of this agenda.

AGENDA

Call to Order

Public Comment on Items NOT on the Agenda

AGENDA ITEMS

1. **Roundtable Annual Work Plan (2021-2022)**
   a. Aircraft Procedures: FAA NIITE/HUSSH Update
   b. Address Airport Operation Noise: Ground-Based Augmentation System Update
   c. Analyze Noise Monitor Methodology: Noise Monitoring Threshold Evaluation, Noise Threshold Level Waiver

Attachments:
-Beth White NIITE/HUSSH Summary – June 1, 2021 pg. 3
-SFO Review of Remote Monitoring Terminal Thresholds – Phase 2 pg. 4

2. **Future Topics** (Discussion)
   a. Roundtable Annual Work Plan (2021-2022)
      i. Goal 4: Airline Award Program: Provide Feedback and Recommended Revisions.
      ii. Goal 5: Analyze Noise Monitor Methodology: SFO Airport Directors Report update.
      iii. Vertical Mobility Procedure

3. **Information Only**
   a. Expansion of NAC

Attachments:

Other Attachments:

<u>Instructions for Public Comment during Videoconference Meeting</u>**

During videoconference of the Legislative subcommittee meeting, members of the public may address the Roundtable as follows:

Written Comments:
Written public comments may be emailed in advance of the meeting. Please read the following instructions carefully:

1. Your written comment should be emailed to amontescardenas@smcgov.org.
2. Your email should include the specific agenda item on which you are commenting.
3. Members of the public are limited to one comment per agenda item.
4. The length of the emailed comment should be commensurate with two minutes customarily allowed for verbal comments, which is approximately 250-300 words.
5. If your emailed comment is received by 12:00 pm on the day before the meeting, it will be provided to the Roundtable and made publicly available on the agenda website under the specific item to which comment pertains. The Roundtable will make every effort to read emails received after that time but cannot guarantee such emails will be read during the meeting, although such emails will still be included in the administrative record.

Spoken Comments:
Spoken public comments will be accepted during the meeting through Zoom. Please read the following instructions carefully:

1. The September 22, 2021 Legislative meeting may be accessed through Zoom online at. https://smcgov.zoom.us/j/98244235352. The meeting ID: 982 4423 5352. The meeting may also be accessed via telephone by dialing in +1-669-900-6833, entering meeting ID: 982 4423 5352, then press #.
2. You may download the Zoom client or connect to the meeting using the internet browser. If you are using your browser, make sure you are using current, up-to-date browser: Chrome 30+, Firefox 27+, Microsoft Edge 12+, Safari 7+. Certain functionality may be disabled in older browsers including Internet Explorer.
3. You will be asked to enter an email address and name. We request that you identify yourself by name as this will be visible online and will be used to notify you that it is your turn to speak.
4. When the Roundtable Chairperson calls for the item on which you wish you speak click on “raise-hand” icon. You will then be called on and unmuted to speak.
5. When called, please limit your remarks to the time limit allotted.

Thanks Michele,

I apologize for not understanding the protocol of what will be presented and who will present it – but wanted to offer a thought to make sure we give this context and help keep it moving forward.

First – would it be helpful to frame up the actual Select Committee request? Confirm that it was to create an over water flight path thereby reducing overflights of the peninsula. Then detail the key points we have addressed to meet that intent:

- The FAA can accommodate that operation from 1am to 5 am.
- The FAA will follow the NITTE and then fly to the GOBBS waypoint before turning toward the fixes that are filed for their destination.
- The FAA will achieve this through automation, controller training and a letter of agreement between the facilities.
- This is not a new procedure so it will not need to go through that IFP Gateway process
- The FAA believes it will take approximately 6 months to put this automation and training in place.

Then – perhaps as an attachment – have the answer to the questions that were addressed at the TWG - specifically the concern that we would be crossing the shoreline at or above 13,000' and that we would not be creating any new overflight – those fixes exist and are flown today.

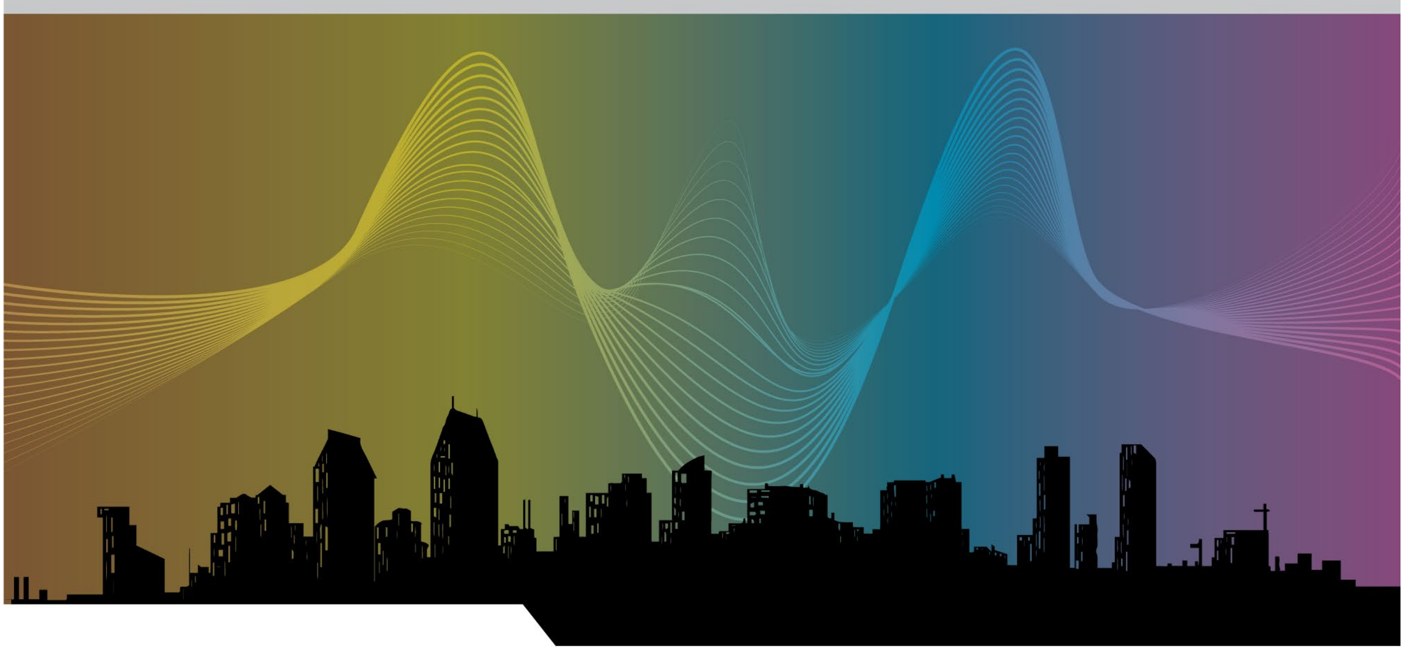
Again, my apologies if I am bungling over a procedure or framework that you need to follow – just wanted to offer to provide some structure around the request and questions. I know it has been a long journey and sometimes resetting the context is helpful to help us move to the next step.

Thanks!

Beth

(Received June 1, 2021)

June 21, 2021



Review of Remote Monitoring Terminal Thresholds-Phase 2

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1. Background

BridgeNet International was contracted by the San Francisco International Airport's (SFO) Noise Office to review aircraft noise event thresholds and noise monitoring settings at seven (7) Remote Noise Monitoring Terminals (NMTs). This review is the second of two phases that analyzed aircraft noise events, including conducting an analysis of measured noise levels and recommending noise thresholds and durations that should be used in the future. The first phase analyzed five (5) NMTs, 12, 15, 18, 19 and potential applications of a new threshold to NMT 8. This report reviews Sites 1, 4, 5, 6, 14, 16, and17 which are all located along the GAP departure corridor.

In the fall of 2019, SFO installed a new noise system, the Envirosuite (EVS) Airport Noise and Operations Monitoring System (ANOMS), to replace the airport's existing ANOMS that was installed in 2006. The system underwent various hardware and software upgrades, but the basic noise event detection process per Title 21 has remained essentially the same. The software upgrade did not include changes to how noise events are calculated and correlated to aircraft. Historically, SFO operated with a variance to its state operating certificate due to the airport's status as a "noise problem airport" because there were incompatible land uses[1] within the 65 CNEL. In 2002, the airport no longer needed to operate with a variance because it no longer had incompatible land uses within the 65 CNEL noise contour, which meant that all sensitive land uses within the 65 CNEL were either sound insulated or had granted an avigation easement to the airport. While the airport has operated without a variance for 18 years, it still abides by the standards in Title 21 for a noise problem airport, including the requirement in Section 5033 of Title 21 requiring noise monitoring systems to be submitted and approved by the state as part of an airport's Noise Monitoring Plan.

Per Section 5001 of Title 21, the thresholds of the NMTs should be 10 dB below the appropriate CNEL value; for the purposes of this analysis, the appropriate CNEL value is 65 CNEL as described in Section 5012 of Title 21. Should an airport need a waiver to the 10 dB value, per Section 5070 of Title 21, an airport can apply for a waiver that demonstrates an airport will still maintain the required accuracy of 1.5 CNEL using a different threshold value. Since 2011, SFO has operated with a waiver for noise thresholds at certain NMTs. This analysis will review these noise threshold values to determine their continued applicability at NMTs 1, 4, 5, 6, 14, 16, and 17. For this analysis, the only NMT currently within the 65 CNEL is Site 1; historically prior to Covid-19 NMT Sites 4, 5 and 6 were exposed to 65 CNEL or greater. This report will describe the background, or ambient noise levels, and aircraft noise levels at each of the monitors and the supporting analysis for continuing to use a threshold different than 55 dB and identify an optimum threshold specific to the conditions at each of the above locations.

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[1] As defined in Section 5014 of Title 21: https://govt.westlaw.com/calregs/Document/ICD7B5DE0D45011DEB97CF67CD0B99467?originationContext=document&transitionType=StatuteNavigator&needToInjectTeNMT=False&viewType=FullText&contextData=%28sc.Default%29

Given the airport operational changes associated with Covid-19, this is also an opportune time to evaluate the current NMT threshold settings to reflect a post Covid-19 environment. This global pandemic accelerated the retirement of older aircraft that are not as efficient as newer aircraft in use or about to be introduced into service. The majority of the remaining existing aircraft fleet and the newest generation of aircraft entering service on average generate lower peak noise levels that the pre Covid-19 time frame. This shift is most pronounced with the long haul, widebody aircraft that dominate noise along the GAP route, historically referred to as "the Gap." This means that the peak sound generated by these aircraft is lower, and they will not dominate the overall GAP noise as much as they have in the past.

The CNEL noise levels at the noise monitoring sites along the GAP route were very much dominated by large aircraft such as the Boeing 747-400 and Boeing 777; and, these aircraft often make up a large percentage of nighttime operations. With the current thresholds, many of the smaller, quieter aircraft generated peak noise levels below these thresholds; thus, they were not always captured as a noise event. These aircraft more commonly operate in the daytime. Because these aircraft contributed little to the overall CNEL, this was not an issue in measuring a valid CNEL to meet the requirements of the Title 21 process. Being able to capture the noise from the new generation, quieter aircraft is becoming more important as the fleet become quieter. Thus, this report will review potential threshold changes to better capture lower peak noise levels from aircraft that is expected to be more common in the future.

2. Definition of Terms

Characteristics of Sound

Sound can be described technically in terms of amplitude (loudness), frequency (pitch), or duration (time). Frequency (or pitch) is measured in hertz (Hz). The standard unit of measurement for the loudness of sound is the decibel (dB). Decibels are based on a logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers (in a manner similar to the Richter scale used to measure earthquakes).

Human hearing is not equally sensitive to sound at all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to measure loudness in a way that reflects how the human ear actually perceives sound. Community noise levels are measured in terms of this A-weighted decibel scale (or dBA), which is widely used in industrial and environmental noise-management contexts.

Propagation of Noise

Outdoor sound levels decrease as a result of several factors, including increased distance from the sound source, atmospheric absorption (characteristics in the atmosphere that absorb sound), and ground attenuation (characteristics on the ground that absorb sound). If sound radiates from a source in a homogeneous and undisturbed manner, the sound travels in spherical waves. As the sound wave travels away from the source, the sound energy is spread over a greater area dispersing the power of the sound wave.

Atmospheric temperature and humidity also influence the sound levels received by the observer. How much sound is absorbed by the atmosphere depends on the frequency of the sound as well as the humidity and air temperature. For example, when the air is cold and humid, and therefore denser, atmospheric absorption is lowest and sound travels farther. Higher frequencies are more readily absorbed than the lower frequencies. The fluctuations in sound levels created by atmospheric conditions increase with distance and become particularly important at distances greater than 1,000 feet. Over large distances, lower frequency sounds become dominant as the higher frequencies are attenuated. Noise propagation is one of the reasons that aircraft noise will be higher one day than other days even when the same aircraft are flying the same path and altitude.

Noise Metrics

The description, analysis, and reporting of noise levels around communities is made difficult by the complexity of human response to noise and the variety of metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community impact.

Noise metrics can be divided into two categories: single event and cumulative. Single event metrics describe the noise levels from an individual event such as an aircraft flyover. Cumulative metrics average the total noise over a specific time period, typically from one to 24 hours. This study presents single event measurement results.

- **Maximum Noise Level,** or Lmax, is the maximum or peak sound level during an aircraft noise event. The metric accounts only for the peak intensity of the sound and not for the duration of the event. As an aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Typical single event noise levels range from over 90 dBA close to the airport to the low 50s dBA at more distant locations.
- **Single Event Noise Exposure Level (SEL)** - The duration of a noise event, or an aircraft flyover, is an important factor in assessing annoyance and is measured most typically as SEL. The effective duration of a sound starts when a sound rises above the background sound level and ends when it drops back below the background level. An SEL is calculated by summing the dB level at each second during a noise event and compressing that noise into one second. It is the level the noise would be if it all occurred in one second. The SEL value is the integration of all the acoustic energy contained within the event. This metric takes into account the maximum noise level of the event and the duration of the event. For aircraft flyovers, the SEL value is numerically about 10 dBA higher than the maximum noise level.
- **Community Noise Equivalent Level (CNEL)** is an average noise over twenty-four hours; it applies a weighting factor that penalizes noise events occurring during the evening and

night hours (when humans are typically more sensitive to noise and sleep disturbance is a concern). More specifically, noises occurring during the evening (from 7 PM to 10 PM) are penalized by 5 dB, while noises occurring during the night (10 PM to 7 AM) are penalized by 10 dBA. CNEL noise levels near airports range from 70 CNEL directly next to an airport to less than 45 CNEL at more distant locations.

CNEL is influenced most by the loudest aircraft operating at an airport, which at SFO is typically a wide-body passenger or cargo jet traveling long distances (such as to Europe or Asia). At SFO the aircraft that most influence the CNEL contour are the Boeing 777, other large jets like the Boeing 787, and historically the Boeing 747 which recently stopped being used for passenger service but is still used by cargo carriers. The CNEL contours are influenced to a lesser extent by operations conducted by smaller aircraft; these aircraft influence the contour due to the larger number of operations (for example, narrow-body jets on domestic routes). The CNEL noise levels at locations along the peninsula (i.e. departure procedures along The Gap) are especially dominated by the larger jet aircraft in that many of these operations also occur during the evening and night penalty period of 5 dB and 10 dB, respectively.

Note that measuring CNEL at levels below 55 CNEL becomes less precise because the noise from aircraft events can be close to existing ambient noise, and it is not always technically possible to separate the two. CNEL differs from the Lmax values which are numerically higher than CNEL values because the CNEL represents an average that includes both peak sounds (like the Lmax) and lower values when aircraft noise is not present.

3. Purpose

The purpose of this Phase 2 NMT analysis is to support SFO's acceptance of the new ANOMS that was installed in the fall of 2019; in particular, the accuracy of identifying and correlating measured noise to flights at SFO. This system was submitted for review and acceptance to the State of California in 2020. The goal of this analysis is to determine the most effective and accurate thresholds and NMT settings to be used to identify the noise levels due to aircraft flights while in compliance with Title 21 standards at additional monitoring sites beyond the 65 CNEL.

Additionally, this analysis supports Section 5032 of Title 21 that validates the noise impact boundary, which reviews locations of the NMTs relative to the outer-most points of the 65 CNEL contour. Per Section 5032, "The locations shall be selected to facilitate locating the maximum extent (closure points) of the noise impact boundary when the contour extremities encompass incompatible land uses."

4. Methodology

4.1 Remote Monitoring Terminal Locations

The seven NMTs chosen are shown in **Figure 1;** at the time of this report, all sites except NMT 1 are located outside of the 65 CNEL; these locations were chosen for their positions relative to departure noise. It should be noted that these sites primarily measure departure noise from Runway 28L/R. **Table 1** shows the existing noise thresholds at these NMTs; these values were approved by the State of California in December 2011 and is not inclusive of all the NMTs with threshold waivers[2].

Table 1 – Current NMT Threshold Values

NMT	City	Location	Latitude	Longitude	NMT Threshold, dBA
1	San Bruno	Gap departure along centerline	37.632328	-122.408416	65
4	South San Francisco	Gap departure along centerline	37.64092	-122.42652	64
5	San Bruno	Gap departure left of centerline	37.62816	-122.413408	64
6	South San Francisco	Gap departure along centerline	37.649267	-122.435134	64
14	South San Francisco	Gap departure right of centerline	37.6526	-122.42902	64
16	South San Francisco	Gap departure right of centerline	37.64646	-122.46408	63
17	South San Francisco	Gap departure along centerline	37.661712	-122.45188	63

Source: San Francisco International Airport Noise Office, 2021

This analysis will correlate noise events to a nearby flight using Title 21 guidelines to determine an appropriate threshold for the seven NMTs in Table 1. This analysis, as guided by Section 5032 of Title 21, will determine the delta of measured and modeled noise to be within 1.5 dB annual CNEL. While NMTs should ideally be located in areas with ambient noise levels less than 55 dB (i.e. away from noisy sources such as freeways, railroad tracks, etc) many of the NMTs at SFO are in urban areas with ambient levels higher than 55 dB. This analysis will determine suggested thresholds based upon the type of operations a site is exposed to, the level of noise from aircraft events and the background noise environment.

[2] In December 2011 the State of California approved a threshold waiver for the following NMTs: 1,4,5,6,12,14,15,16,17,18, and 19.

4.2. Evaluation Criteria

The following evaluation criteria was used to identify the optimum threshold settings.

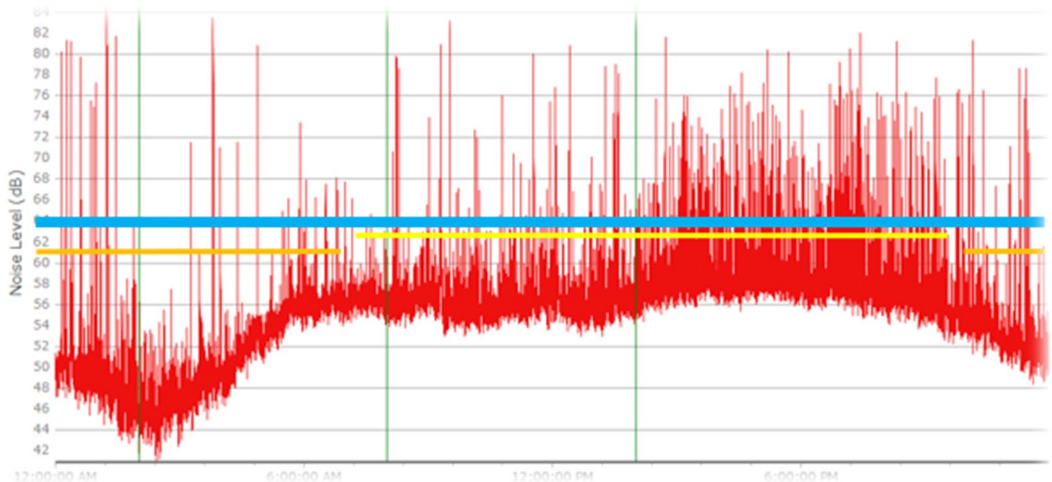
1. Threshold Calculation at Various Alternative Levels. EVS calculated the CNEL noise levels based upon various alternatives thresholds. The goal of the evaluation is to measure aircraft noise within 0.5 CNEL of the theoretical level; this measurement does not include significant events that are incorrectly associated with an aircraft overflight. The total number of long duration events (120 seconds) should be minimal.
2. Background Noise Level. The background, or ambient noise levels, limits how low the threshold can be lowered. If the threshold is lowered to near the background noise level, then continuous noise events occur, and it is not possible to generate a noise event that can be accurately associated with a flight. Because the background levels vary throughout the day and year, there is no one set value. The optimum threshold should be greater than the higher range of ambient conditions a site experiences throughout the year.
3. Single Event Noise Levels. The single event noise levels are expected to lessen in the post Covid-19 environment. This analysis is to evaluate the ability of the system to not only capture the noise from the louder operations, but also from the noise generated by smaller, quieter aircraft operations.

4.3. Evaluation Data

The evaluation of each site is presented in the Appendix, **Figures A-2** through **A-8, Parts A-C** for each NMT. There are five parts as described below. This section presents an example figure for each of the five parts; the Appendix contains this specific information for each of the NMTs.

1. Time History Noise Graphic. This example table (**Table 2**) shows a typical 24-hour time history of the measured 1-second noise levels. The red lines are all the noise levels including background and peak levels. In addition, it also includes peak events that are usually aircraft events. The time history on the bottom of the graphics shows that background noise is typically quieter at night. The blue line represents the current NMT threshold; the yellow and orange lines show the recommended day and nighttime thresholds, respectively. The recommended thresholds are also presented tabularly in the top of Part A of the figures. Generally, the threshold should be close to, but above, the background and be 10 dBA or greater below the peaks of the events. Note that this is one day for example purposes and that there is variability in the day-to-day noise levels. The threshold must account for the fact that the ambient noise varies and should be set at a level that can detect events during periods of higher background noise, not just the lower background periods.

Table 2 – Time History Noise Graphic Example



Source: BridgeNet International, 2021

2. EVS Threshold Calculations. Shown below in **Table 3**, EVS has a process to test the consequence of lowering or raising the threshold to determine its change to the measured aircraft CNEL; this is shown on the top of Part B in the appendix figures. The threshold calculations used in this report are based on a two-week period in December 2019. The different threshold values are shown in gold with the current setting in yellow. For each threshold level, the calculations determined:

    a. Total number of events that were generated including those not correlated to an aircraft.

    b. Number of events of 120 seconds or greater in duration. Too many events over 120 seconds is an indication that the threshold setting is too close the background noise.

    c. The number of events correlated to an aircraft, or correlated events. This could include valid correlations as well as incorrect correlations where an aircraft happens to fly over at the same time a non-aircraft event is generated. A threshold too low tends to increase the probability that an incorrect correlation has occurred.

    d. CNEL is the measured CNEL based upon the correlated events calculated at that threshold. If there is little change measured when the threshold is lowered (less than 0.5 CNEL), this means that the majority of the aircraft noise at the site has already been measured.

    e. The Model CNEL is a guide for the noise level at a site, not an absolute level. This is the CNEL level EVS predicts using an internal noise predictor. It is based upon all aircraft that flew near a site and is independent of a noise event being measured. It is not intended be an accurate representation of the actual total aircraft noise if all events were measured but is used by EVS in evaluating if a measured noise event is consistent with an expected value.

f. Uncorrelated dB is the level that would increase if the uncorrelated events were added to the CNEL value. It is optimum when this delta is small and does not increase when the threshold is lowered. It does not determine if the correlated events are valid or not.

Table 3 – Threshold Calculations

Monitor	Metric	58	59	60	61	62	63	64	65	66
4	Number of events	4776	3810	3070	2580	2237	2079	1947	1821	1718
4	Duration 120 sec	188	65	23	10	9	6	5	5	3
4	Correlated events	2592	2367	2176	2007	1870	1791	1721	1654	1601
4	CNEL	67.8	67.8	67.8	67.7	67.7	67.7	67.7	67.7	67.6
4	Model CNEL	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	
4	Uncorrelated dB	0.21	0.21	0.21	0.21	0.22	0.23	0.24	0.26	0.28

Source: EVS, 2021

3. Ambient Noise Levels. On the middle right of Part B of the site figures, the ambient noise level assessment is shown; an example is show below in **Table 4**. For a near three-year period (2019, 2020 and January through May 2021) the hourly ambient noise levels as determined by ANOMS were evaluated. The data below shows the average L50 and L90 for: all hours of the day, the daytime (7am to 10pm), and the nighttime (10pm to 7am) hourly periods. The L50 represents the average, or mean noise level, during that hour. The L90 represents the residual noise level, or the level for which 90% of the noise in that hour exceeds the level. While both metrics are often used to define the background or ambient level, the L50 will be used as the ambient noise level.

   In addition to the average values, the standard deviation was also determined. This is important in that the ambient noise levels vary throughout the day and year. The threshold should be higher than the highest ambient noise periods, otherwise the noise events will not be accurately calculated during those higher background noise periods. For the purposes of this study, the high ambient is defined as 2 standard deviations over the average value. This means that 97.5 percent of the time, the hourly ambient level will be at or below that value.

   The hourly noise level for the past three years was also determined in order to identify the change that may have occurred as a result of Covid-19. The data shows the ambient was highest in 2019, lower in 2020 and starting to return to 2019 levels in 2021. For this study the average of all three years was used.

Table 4 – Ambient Noise Level Example

Site	Period	Statistics	L50	L90	L99
4	All Hours	Average	49.4	48.9	48.1
4	Day Only	Average	51.3	50.8	50.0
4	Night Only	Average	46.9	46.4	45.5
4	All Hours	Std Dev	4.2	4.2	4.3
4	Day Only	Std Dev	2.6	2.6	2.6
4	Night Only	Std Dev	4.6	4.6	4.7
4	All Hours	2x Std Dev	57.7	57.3	56.7
4	Day Only	2x Std Dev	56.4	56.0	55.3
4	Night Only	2x Std Dev	56.0	55.6	54.9
			2019	2020	2021
4	All Hours	Average L50	50.7	48.6	48.9
4	All Hours	Average L90	50.2	48.1	48.4

Source: SFO ANOMS as reported by BridgeNet, 2021

4. Measured Single Event Noise Levels. The ideal goal of setting the threshold is for it to be at least 10 dBA below the peak noise levels of aircraft events. The measured noise events for each of the sites was determined from the period of January 1st, 2019 through June 7th, 2021 for departures on Runways 28L/R which is the dominate operational mode affecting these sites. An example is shown in **Table 5** below. The data displayed on the top table shows the total number of measured events, the average Lmax, the average SEL and energy average SEL of the events for each category of jet aircraft. The long-haul aircraft category is the dominate category of aircraft, which includes wide-body aircraft typically traveling to Asia or Europe. As shown in the example below, the average Lmax is 82 dBA, so with a threshold of 65 dBA, most of these flights should result in a measurable noise event. Lowering the threshold further would have little change in measuring these events.

   In identifying the optimum threshold, it should capture not only the dominate aircraft events by heavy, large aircraft but also the newer generation quieter aircraft that are becoming more prominent. As an example, regional jets generate a lower noise level; the sample below shows an average peak noise level of 73 Lmax for this category of aircraft. The different types of regional jets are shown in the middle figure with the quieter regional jet, the CRJ2, that generates an average noise level of 70 Lmax. New generation jets like the Airbus A220 (BCS1) generate similar noise levels. Ideally, the threshold would be at least 10 dBA below the level of this aircraft, but this will not always be possible given that these aircraft are much quieter than the current dominate aircraft. The bottom part of the figure shows the total number of flights, the number of flights that cause a noise event, and the percent measured with the current threshold. The current thresholds do a good job measuring the dominate aircraft source but less so with the quieter aircraft.

Table 5 – Measured Single Event Noise Levels Example

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	24,841	82.4	91.7	93.2	
Wide	13,513	79.4	88.6	89.7	
Narrow	20,226	77.9	87.5	88.4	
Regional	6,036	73.0	82.3	83.7	
Business	9,748	72.2	80.8	82.5	
Total	**74,364**	**78.5**	**87.8**	**90.4**	**90.4**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
CRJ9	Regional	55	75.6	85.0	85.7	
E75L	Regional	4,073	74.3	83.9	84.7	
CRJ7	Regional	265	71.6	81.0	81.7	
BCS3	Regional	2	71.2	80.0	80.1	
BCS1	Regional	64	70.2	79.2	79.8	
CRJ2	Regional	1,577	69.9	78.6	79.4	
Total		**6,036**	**73.0**	**82.3**	**83.7**	**83.7**

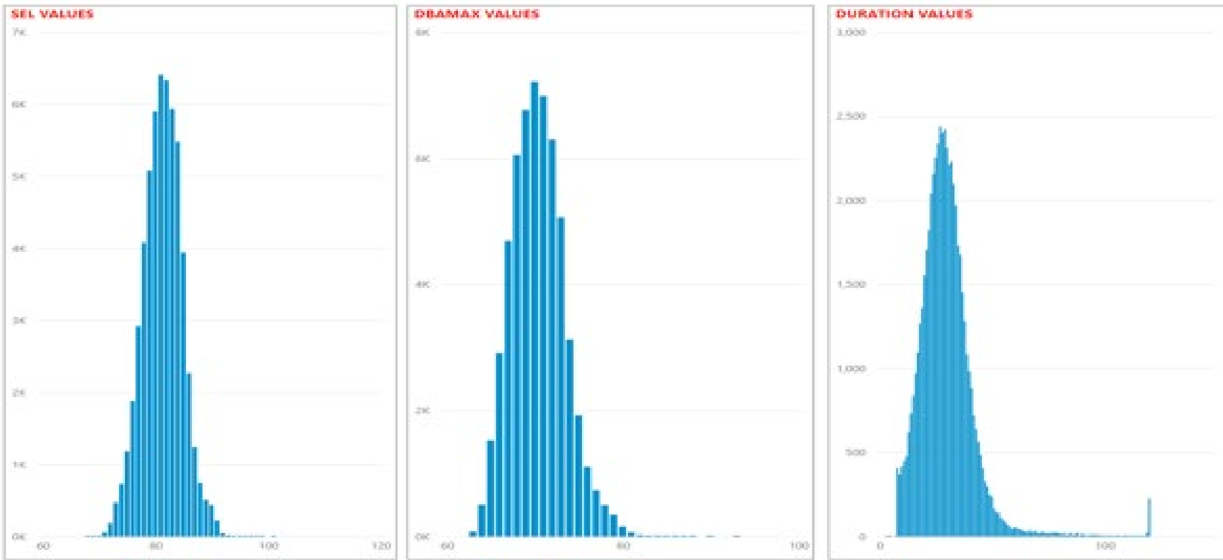
Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
4	Long Haul	24,463	24,841	100%
4	Regional Jets	7,254	6,936	96%
4	CRJ2 (Quiet RJ)	2,158	1,577	73%

Source: BridgeNet International, 2021

5. Noise Event Distribution. Part C of the figures in the Appendix shows the distribution of the measured noise events at each site for the period of January 1st, 2019 and June 7th, 2021, as shown in **Table 6** example. This data shows the measured SEL, Maximum Noise Level (dBA MAX) and Duration in seconds. This data shows events from departures on Runways 28L/R, which are the dominate source at these sites and for all correlated events.

   A number of different parameters can be determined from these graphs to help determine the optimum threshold setting. This includes if the threshold setting is cutting off events, long duration events and the optimum setting for other measurement parameters.

Table 6 – Noise Event Distribution Example



Source: BridgeNet International, 2021

5. NMT Sites

This section describes the physical attributes of each NMT, a brief history of the threshold level and the recommendation for a daytime and nighttime threshold level. Additional data for each NMT is show in **Appendix A**.

5.1 NMT Site 1

NMT Site 1 is west of the airport under the Gap departure flight path, located less than a mile from the end of Runway 10R. It is located near the intersection of 4th Ave and Walnut Ave. The dominant, non-aircraft noise source is from the nearby freeways; the L50 is 59 dBA with a two times standard deviation of 66 dBA. The site is located inside of the most recent 65 CNEL noise contour (1Q21); the default threshold for this NMT is 55 dBA, however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 65 dBA. The recommendation is the leave the threshold at 65 dBA. Data for this site is presented in the Appendix in **Figure A-2 (Part A, B, C).**

The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 89 dBA and are fully captured with the current settings. The quieter regional jets are reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 73 dBA which are captured under the current settings. The threshold cannot be lowered more because there starts to become a larger and larger number of 120 second events that limit the ability of the system to accurately measure noise events during those time periods.

Given the high background noise at this site, it could not be lowered to 55 dBA or other lower levels and still accurately measure the aircraft CNEL noise levels.

Given it is not recommended to change the threshold, the site would report the same CNEL level and still measure within the 1.5 CNEL Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). The threshold setting for this site is recommended to remain the same because of the high background noise that exists at this location makes lowering the threshold not feasible.

5.2 NMT Site 4

NMT Site 4 is west of the airport under the Gap departure flight path, located approximately 1.8 miles from the end of Runway 10R. Data for this site is presented in the Appendix in **Figure A-3 (Part A, B, C)**. It is southwest of El Camino Real, near the intersection of Pinehurst Way and Brentwood Drive. Historically the site is within the 65 CNEL noise contour, but is currently outside of the most recent (1Q21) quarterly contour. The default threshold for this NMT is 55 dBA, however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 64 dBA.

The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 82 dBA and are fully captured with the current settings. The quieter regional jets that will be reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 70 dBA. Lower the threshold will capture a greater number of these aircraft.

While the background noise at this site is relatively low, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions the site is exposed to. The primary non-aircraft noise source is from residential land uses, including vehicle traffic and the average ambient noise level L50 is 49 dBA with a two times standard deviation of 58 dBA.

Based upon a review of the evaluation data in Section 4.3, the recommended optimum settings are: 62 dBA for daytime and 60 dBA for nighttime. Based on EVS estimates the site would report the same CNEL level and still measures within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Optimally, lowering the threshold will improve the sites ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft, but the quieter aircraft that are going to be more common in the future.

5.3 NMT Site 5

This NMT is located in San Bruno, west of San Mateo Avenue near the intersection of Easton Avenue and Kains Avenue. Data for this site is presented in the Appendix in **Figure A-4 (Part A, B, C)**. Surrounding land uses include residential on all sides. The primary non-aircraft noise source is from residential land uses, including vehicle traffic and the average ambient noise level L50 is 52 dBA with a two times standard deviation of 61 dBA. Historically, the site is within the 65 CNEL noise contour but is currently outside of the recent (1Q21) quarterly contour. The default threshold for this NMT is 55 dBA, however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 64 dBA.

The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 81 dBA and are fully captured with the current settings. The quieter regional jets reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 69 dBA. Lowering the threshold will capture a greater number of these aircraft. The recommended threshold is only lowered slightly because the site has a higher ambient noise where lowering the threshold too much there becomes a larger number of 120 second events that limit the ability of the system to accurately measure noise events during those time periods.

Based upon a review of the evaluation data in Section 4.3, the recommended optimum setting is to lower the threshold to 63 dBA for daytime and 61 dBA for nighttime. Given the background noise, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions the site is exposed to.

Based on EVS estimates, the site may potentially report approximately 0.1 to 0.5 dBA higher, but still measures within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Lowering the threshold will improve the sites ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft but the quieter aircraft that are going to be more common in the future.

5.4 NMT Site 6

This NMT is located in South San Francisco on Hill Ave, between Southwood Drive and Fairway Drive. Data for this site is presented in the Appendix in **Figure A-5 (Part A, B, C)**. The site is surrounded by residential land uses and the Baden High School athletic field to the south. The primary non-aircraft noise source is from residential land uses, including vehicle traffic; the L50 is 47 dBA with a two times standard deviation of 56 dBA. Historically, the site is within the 65 CNEL noise contour, but is currently outside of the most recent (1Q21) quarterly contour. The default threshold for this NMT is 55 CNEL; however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 64 dBA.

The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 78 dBA and are fully captured with the current settings. The quieter regional jets reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 68 dBA. Lowering the threshold will capture a greater number of these quieter aircraft. The recommended threshold is a balance of a lower threshold to capture more quieter events while still minimizing the number of community noise events that would then be incorrectly correlated to an aircraft that happened to be nearby the site at the time of the community event.

Based upon a review of the evaluation data in Section 4.3, the recommended optimum setting is to lower the threshold to 62 dBA for daytime and 60 dBA for nighttime. While the background noise at this site is relatively low, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions the site is exposed to. Given the anticipated noise levels of GAP aircraft that over, the 60 dBA is appropriate; using a lower threshold could potentially result in more false events. This is shown in the EVS data where the number of correlated events exceeds the number of GAP flights duration that time period.

Based on EVS estimates, the site may potentially report approximately 0.1 dBA higher, but still measures within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Lowering the threshold will improve the sites ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft but the quieter aircraft that are going to be more common in the future.

5.5 NMT Site 14

This NMT is located in South San Francisco in a parking lot for Orange Memorial Park between W. Orange Avenue and 2nd Street. Data for this site is presented in the Appendix in **Figure A-6 (Part A, B, C)**. The site is surrounded by parkland to the north and residential land uses on all other sides. The primary non-aircraft noise source is from residential land uses, including vehicle traffic and the average ambient noise level L50 is 48 dBA with a two times standard deviation of 58 dBA. The site is historically and currently located outside of the 65 CNEL noise contour, located to the north edge of the contour; the default threshold for this NMT is 55 CNEL; however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 64 dBA.

The NMT is located on the north of the extended runway centerline for Runway 28R. The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 78 dBA and are fully captured with the current settings. The quieter regional jets reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 68 dBA. Lowering the threshold will capture a greater number of these quieter aircraft. The recommend threshold is a balance of a lower threshold to capture more quieter events while still minimize the number of community noise events that would then be in correctly correlated to an aircraft that happened to be nearby the site at the time of the community event.

Based upon a review of the evaluation data in Section 4.3, the recommended optimum setting is to lower the threshold to 62 dBA for daytime and 60 dBA for nighttime. While the background noise at this site is relatively low, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions at the site.

Based on EVS estimates, the site may potentially report approximately 0.2 to 0.4 dBA higher, but still measures within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Lowering the threshold will improve the sites ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft but the quieter aircraft that are going to be more common in the future.

5.6 NMT Site 16

This NMT is located in South San Francisco on the roof of St. Augustine Catholic Church complex. Data for this site is presented in the Appendix in **Figure A-7 (Parts A, B, C)**. The site is surrounded by residential land uses and a church. The primary non-aircraft noise source is from residential land uses, including vehicle traffic and the average ambient noise level L50 is 46 dBA with a two times standard deviation of 56 dBA. The site is historically and currently located outside of the 65 CNEL noise contour located to the south edge of the contour; the default threshold for this NMT is 55 CNEL; however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 63 dBA.

The NMT is located on the south side of the extended runway centerline for Runway 28L. The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the Gap. These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 73 dBA and are fully captured with the current settings. The quieter regional jets reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 67 dBA. Lowering the threshold will capture a greater number of these quieter aircraft. The recommend threshold is a balance of a lower threshold to capture more quieter events while still minimizing the number of community noise events that would then be incorrectly correlated to an aircraft that happened to be nearby the site at the time of the community event,

Based upon a review of the evaluation data in Section 4.3, the recommended optimum setting is to lower the threshold to 62 dBA for daytime and 60 dBA for nighttime. While the background noise at this site is relatively low, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions the site is exposed to.

Based on EVS estimates, the site may potentially report approximately 0.2 to 0.4 dBA higher, but still measure within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Lowering the threshold will improve the site's ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft but the quieter aircraft that are going to be more common in the future.

5.7 NMT Site 17

This NMT is located in South San Francisco on the grounds of Grace Covenant Church at the intersection of Del Monte Ave and El Rancho Dr. Data for this site is presented in the Appendix in **Figure A-8 (Part A, B, C)**. The site is surrounded by Alta Loma Middle School to the northeast and residential land uses on all other sides. The primary non-aircraft noise source is from the church and residential activities, including vehicle traffic and the average ambient noise level L50 is 48 dBA with a two times standard deviation of 58 dBA. The site is historically and currently located outside of the 65 CNEL noise contour located to the north edge of the contour; the default threshold for this NMT is 55 CNEL; however, the threshold waiver was approved by Caltrans in 2011 for it to be raised to 63 dBA.

The NMT is located to the north of the extended runway centerline for Runway 28R. The dominate aircraft noise is from long haul aircraft departing on Runways 28L/R flying through the GAP.

These aircraft are typically the largest and loudest that operate at SFO, often at night, flying to destinations in Asia and Europe. They generate an average Lmax of 72 dBA and are fully captured with the current settings. The quieter regional jets reflective of a number of the new generation aircraft operating at the airport in the future generate an average Lmax of 69 dBA. Lowering the threshold will capture a greater number of these quieter aircraft. The recommended threshold is a balance of a lower threshold to capture more quieter events while still minimize the number of community noise events that would then be in correctly correlated to an aircraft that happened to be nearby the site at the time of the community event.

Based upon a review of the evaluation data in Section 4.3, the recommended optimum setting is to lower the threshold to 62 dBA for daytime and 60 dBA for nighttime. While the background noise at this site is relatively low, the threshold could not be lowered down to 55 dBA and still accurately measure the aircraft CNEL noise levels under the range of acoustic conditions the site is exposed to.

Based on EVS estimates, the site may potentially report approximately 0.2 to 0.5 dBA higher, but still measures within the 1.5 dBA Title 21 measurement accuracy of the estimated aircraft noise CNEL (The 1.5 CNEL accuracy tested is based on the difference between the EVS measured CNEL at the recommended threshold and the EVS measured CNEL at the lowest threshold). Lowering the threshold will improve the site's ability to correctly measure and correlate aircraft noise events generated by aircraft that are not the dominant noise aircraft but the quieter aircraft that are going to be more common in the future.

5.8 Global Settings

There are a number of additional setting other than the threshold that were reviewed for potential changes, which would be applied to all the NMTs. These settings and any recommendations are described below.

Minimum Duration: At each of the NMTs, the settings include a "minimum duration" which is the time, in seconds, an event must last before it is recorded in the NMT as an event. This current time is 6 to 8 seconds, which is typical of noise monitoring system settings and it is recommended to keep the current settings. Aircraft noise events are typically longer duration than community events because the noise source (aircraft) is further away and takes longer to rise and drop off. Lowering this setting generally results in the generation of more short duration community events that can be incorrectly associated with an aircraft.

Maximum Duration: The maximum duration setting is the maximum time, in seconds, an event can last before it is stopped, and an event is created. Currently that time is 120 seconds at all the NMTs; it is recommended to reduce that time duration to 60 seconds because the vast majority of aircraft events are 20 to 40 seconds in duration. The long duration events occur when the ambient noise exceeds the threshold and a continuous event is generated.

End Duration: The end duration setting is the minimum time between events when the event drops below the threshold and then rises back up. If it is 5 seconds or less, those events are merged as the system assumes it is the same aircraft. If it is greater than 5 seconds, they are considered separate events. It is recommended to keep this setting the same. As aircraft fly past the monitor, these noise events can drop off with variability in the duration and time. This setting allows for the full noise of the event to be captured.

6. Summary and Recommendations

Based on the analysis presented in Section 5, **Table 7** shows the recommended NMT thresholds and event detection for NMTs 1, 4, 5, 6, 14, 16, and 17. All NMTs studied in this report are recommended to continue to be used for Title 21 threshold correlation of aircraft noise that meet the requirements of Title 21, Section 5070 (i.e., measure aircraft noise within an accuracy of 1.5 CNEL. The recommended thresholds in this report are predicted to result in some small changes to the measured CNEL and will more accurately correlate aircraft events to the associated noise of lower noise level events. These recommendations will ensure the NMTs are capturing more of the quieter aircraft events; the NMTs will continue to capture the louder events, which contribute more greatly to the shape and size of the noise contours. The maximum noise level from the events is trending downward; an example of this is shown in **Figure A-9** for Site 1, representing the Lmax at that NMT. Lowering the threshold will help capture more of these quieter events both now and in the future.

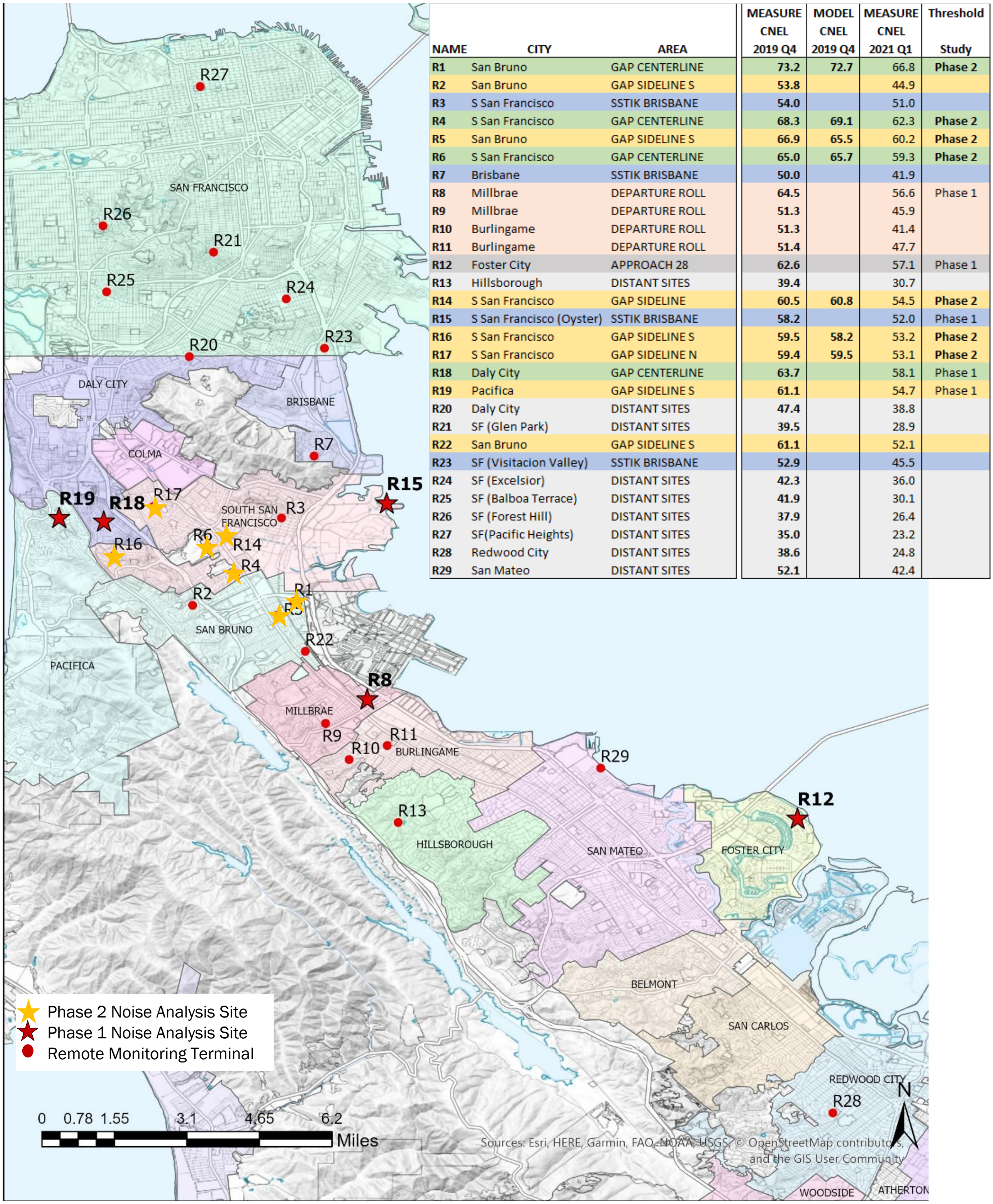
Table 7 – Recommended NMT Thresholds and Duration

NMT	City	Location	Current NMT Threshold, CNEL	Recommended NMT Threshold, CNEL DAY	Recommended NMT Threshold, CNEL NIGHT	Recommended NMT Maximum Duration, Seconds
1	San Bruno	Gap departure along centerline	65	65	65	60
4	South San Francisco	Gap departure along centerline	64	62	60	60
5	San Bruno	Gap departure left of centerline	64	63	61	60
6	South San Francisco	Gap departure along centerline	64	62	60	60
14	South San Francisco	Gap departure right of centerline	64	62	60	60
16	South San Francisco	Gap departure right of centerline	63	62	60	60
17	South San Francisco	Gap departure along centerline	63	62	60	60

Source: BridgeNet International, 2021

APPENDIX
Report Figures

Figure A-1
Noise Monitor Terminals Site Map



NAME	CITY	AREA	MEASURE CNEL 2019 Q4	MODEL CNEL 2019 Q4	MEASURE CNEL 2021 Q1	Threshold Study
R1	San Bruno	GAP CENTERLINE	73.2	72.7	66.8	Phase 2
R2	San Bruno	GAP SIDELINE S	53.8		44.9	
R3	S San Francisco	SSTIK BRISBANE	54.0		51.0	
R4	S San Francisco	GAP CENTERLINE	68.3	69.1	62.3	Phase 2
R5	San Bruno	GAP SIDELINE S	66.9	65.5	60.2	Phase 2
R6	S San Francisco	GAP CENTERLINE	65.0	65.7	59.3	Phase 2
R7	Brisbane	SSTIK BRISBANE	50.0		41.9	
R8	Millbrae	DEPARTURE ROLL	64.5		56.6	Phase 1
R9	Millbrae	DEPARTURE ROLL	51.3		45.9	
R10	Burlingame	DEPARTURE ROLL	51.3		41.4	
R11	Burlingame	DEPARTURE ROLL	51.4		47.7	
R12	Foster City	APPROACH 28	62.6		57.1	Phase 1
R13	Hillsborough	DISTANT SITES	39.4		30.7	
R14	S San Francisco	GAP SIDELINE	60.5	60.8	54.5	Phase 2
R15	S San Francisco (Oyster)	SSTIK BRISBANE	58.2		52.0	Phase 1
R16	S San Francisco	GAP SIDELINE S	59.5	58.2	53.2	Phase 2
R17	S San Francisco	GAP SIDELINE N	59.4	59.5	53.1	Phase 2
R18	Daly City	GAP CENTERLINE	63.7		58.1	Phase 1
R19	Pacifica	GAP SIDELINE S	61.1		54.7	Phase 1
R20	Daly City	DISTANT SITES	47.4		38.8	
R21	SF (Glen Park)	DISTANT SITES	39.5		28.9	
R22	San Bruno	GAP SIDELINE S	61.1		52.1	
R23	SF (Visitacion Valley)	SSTIK BRISBANE	52.9		45.5	
R24	SF (Excelsior)	DISTANT SITES	42.3		36.0	
R25	SF (Balboa Terrace)	DISTANT SITES	41.9		30.1	
R26	SF (Forest Hill)	DISTANT SITES	37.9		26.4	
R27	SF(Pacific Heights)	DISTANT SITES	35.0		23.2	
R28	Redwood City	DISTANT SITES	38.6		24.8	
R29	San Mateo	DISTANT SITES	52.1		42.4	

Source: BridgeNet International 2021

Figure A-2 Part A
Sample Time History Plot (Site 1 - San Bruno)
(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds		
Current		65
Proposed Day		65
Proposed Night		65

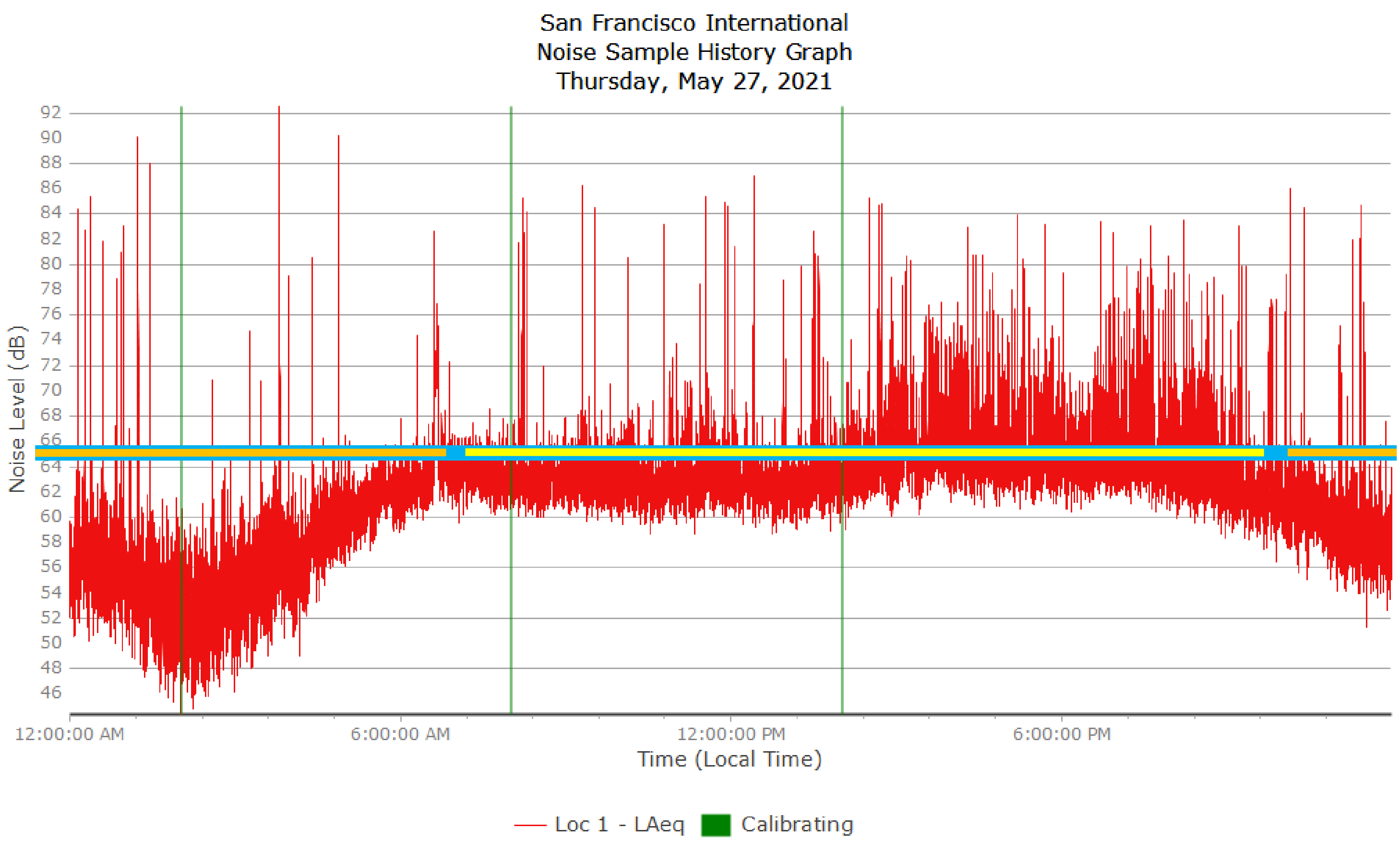


Figure A-2 Part B
Supporting Measured Analytical Data (Site 1 - San Bruno)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	59	60	61	62	63	64	65	66	67
1	Number of events	10231	10201	10180	10037	9724	7985	5388	3568	2640
1	Duration 120 sec	8331	7647	6567	5030	3116	1547	732	343	112
1	Correlated events	7122	7066	7097	6952	6548	5176	3552	2557	2076
1	CNEL	73.7	73.6	73.6	73.5	73.4	73.2	73	72.9	72.8
1	Uncorrelated dB	0.83	0.8	0.77	0.75	0.74	0.77	0.79	0.86	0.89

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	24,854	89.3	96.6	97.9	
Wide	14,027	85.4	92.8	94.1	
Narrow	22,079	82.3	90.9	92.1	
Business	11,999	77.3	85.9	87.2	
Regional	7,179	76.1	85.6	87.1	
Total	**80,138**	**83.7**	**91.8**	**94.6**	**94.6**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
CRJ9	Regional	64	78.5	87.8	88.8	
E75L	Regional	4,820	77.4	86.9	88.0	
CRJ7	Regional	365	75.3	85.0	86.0	
BCS1	Regional	97	73.3	82.9	83.7	
CRJ2	Regional	1,821	73.0	82.6	83.5	
BCS3	Regional	12	71.7	82.3	83.3	
Total		**7,179**	**76.1**	**85.6**	**87.1**	**87.1**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
1	Long Haul	24,464	24,854	100%
1	Regional Jets	9,049	7,179	79%
1	CRJ2 (Quiet RJ)	2,801	1,821	65%

Ambient Noise Levels

Jan 1st, 2019 – May 31st, 2021

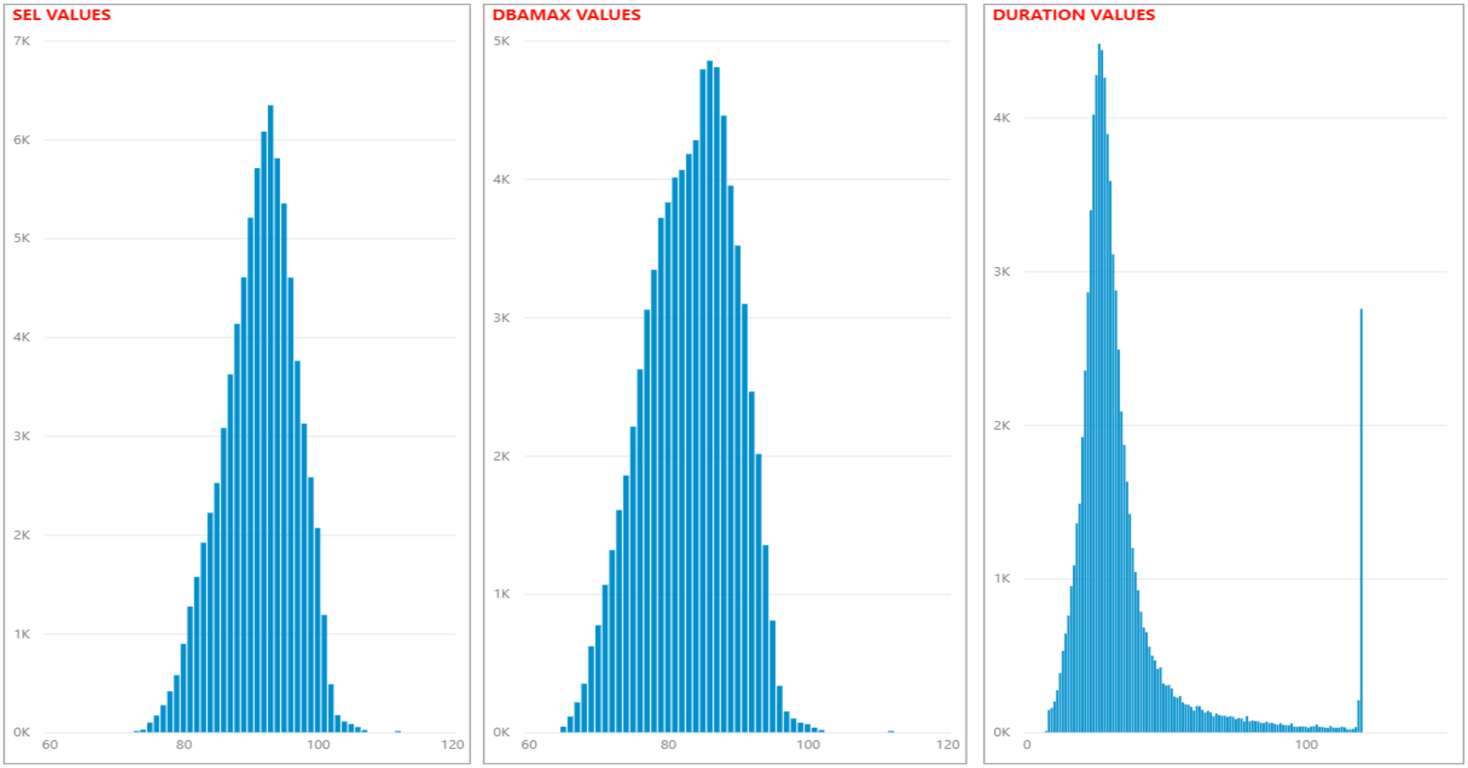
Site	Period	Statistics	L50	L90	L99
1	All Hours	Average	58.7	58.2	57.3
1	Day Only	Average	60.5	60.1	59.4
1	Night Only	Average	56.2	55.6	54.4
1	All Hours	Std Dev	4.0	4.2	4.5
1	Day Only	Std Dev	2.1	2.2	2.3
1	Night Only	Std Dev	4.6	4.8	5.2
1	All Hours	2x Std Dev	66.7	66.6	66.3
1	Day Only	2x Std Dev	64.8	64.4	63.9
1	Night Only	2x Std Dev	65.5	65.2	64.8
			2019	**2020**	**2021**
1	All Hours	Average L50	59.9	57.9	58.4
1	All Hours	Average L90	59.4	57.4	57.8

Source: BridgeNet International 2021

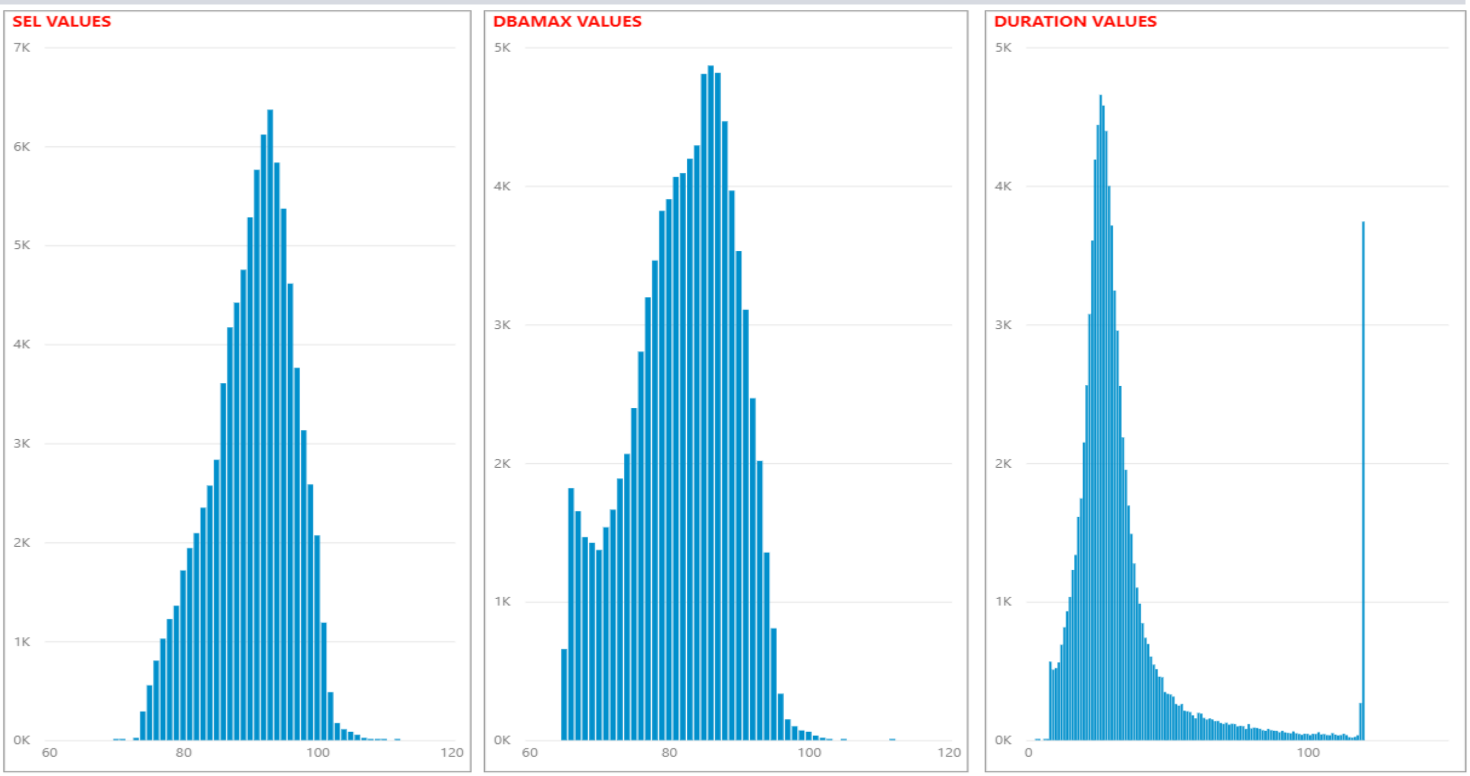
Figure A-2 Part C
Supporting Measured Analytical Data (Site 1 – San Bruno)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*



Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*



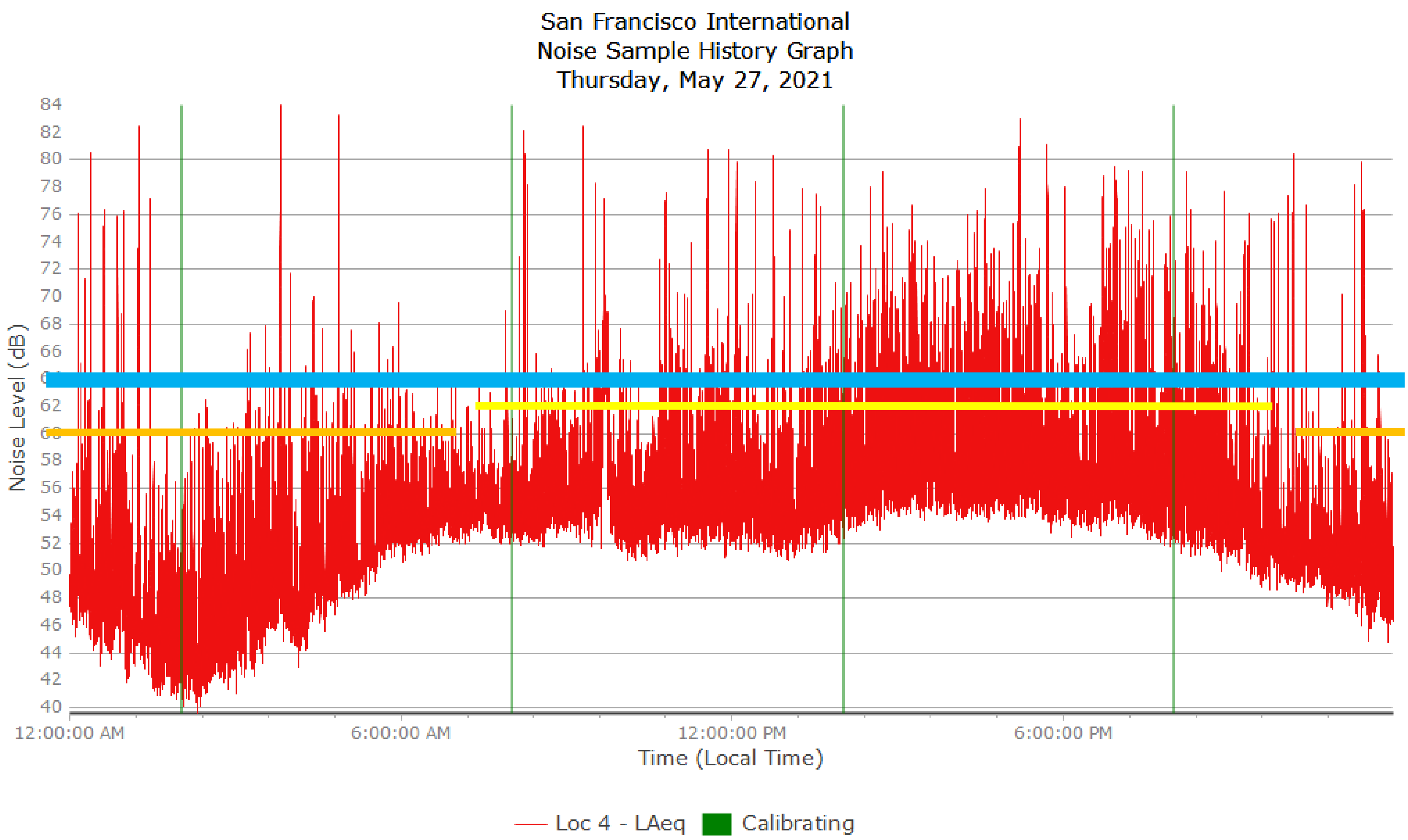
Source: BridgeNet International 2021

Figure A-3 Part A

Sample Time History Plot (Site 4 – So. San Francisco)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds		
Current		64
Proposed Day		62
Proposed Night		60



Source: BridgeNet International 2021

Figure A-3 Part B

Supporting Measured Analytical Data (Site 4 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	58	59	60	61	62	63	64	65	66
4	Number of events	4776	3810	3070	2580	2237	2079	1947	1821	1718
4	Duration 120 sec	188	65	23	10	9	6	5	5	3
4	Correlated events	2592	2367	2176	2007	1870	1791	1721	1654	1601
4	CNEL	67.8	67.8	67.8	67.7	67.7	67.7	67.7	67.7	67.6
4	Uncorrelated dB	0.21	0.21	0.21	0.21	0.22	0.23	0.24	0.26	0.28

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	24,841	82.4	91.7	93.2	
Wide	13,513	79.4	88.6	89.7	
Narrow	20,226	77.9	87.5	88.4	
Regional	6,036	73.0	82.3	83.7	
Business	9,748	72.2	80.8	82.5	
Total	**74,364**	**78.5**	**87.8**	**90.4**	**90.4**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
CRJ9	Regional	55	75.6	85.0	85.7	
E75L	Regional	4,073	74.3	83.9	84.7	
CRJ7	Regional	265	71.6	81.0	81.7	
BCS3	Regional	2	71.2	80.0	80.1	
BCS1	Regional	64	70.2	79.2	79.8	
CRJ2	Regional	1,577	69.9	78.6	79.4	
Total		**6,036**	**73.0**	**82.3**	**83.7**	**83.7**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
4	Long Haul	24,463	24,841	100%
4	Regional Jets	7,254	6,936	96%
4	CRJ2 (Quiet RJ)	2,158	1,577	73%

Ambient Noise Levels

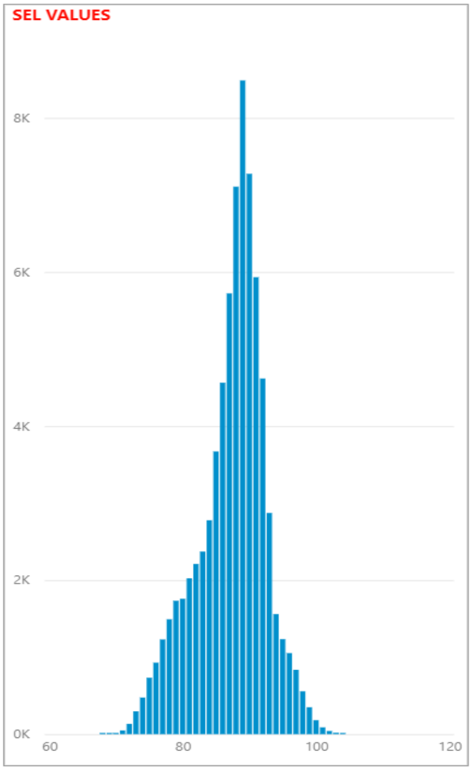
Jan 1st, 2019 – May 31st, 2021

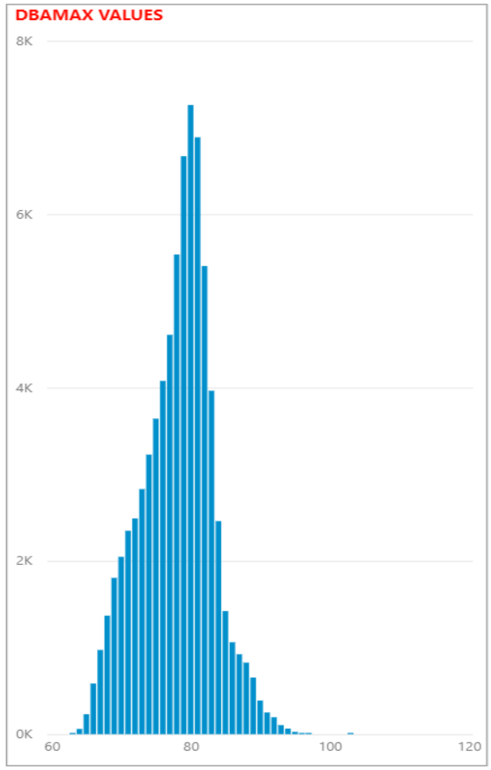
Site	Period	Statistics	L50	L90	L99
4	All Hours	Average	49.4	48.9	48.1
4	Day Only	Average	51.3	50.8	50.0
4	Night Only	Average	46.9	46.4	45.5
4	All Hours	Std Dev	4.2	4.2	4.3
4	Day Only	Std Dev	2.6	2.6	2.6
4	Night Only	Std Dev	4.6	4.6	4.7
4	All Hours	2x Std Dev	57.7	57.3	56.7
4	Day Only	2x Std Dev	56.4	56.0	55.3
4	Night Only	2x Std Dev	56.0	55.6	54.9
			2019	2020	2021
4	All Hours	Average L50	50.7	48.6	48.9
4	All Hours	Average L90	50.2	48.1	48.4

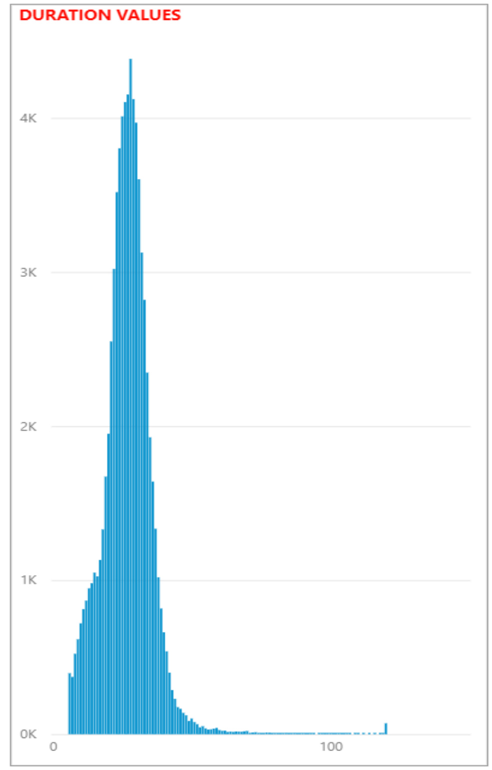
Figure A-3 Part C
Supporting Measured Analytical Data (Site 4 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

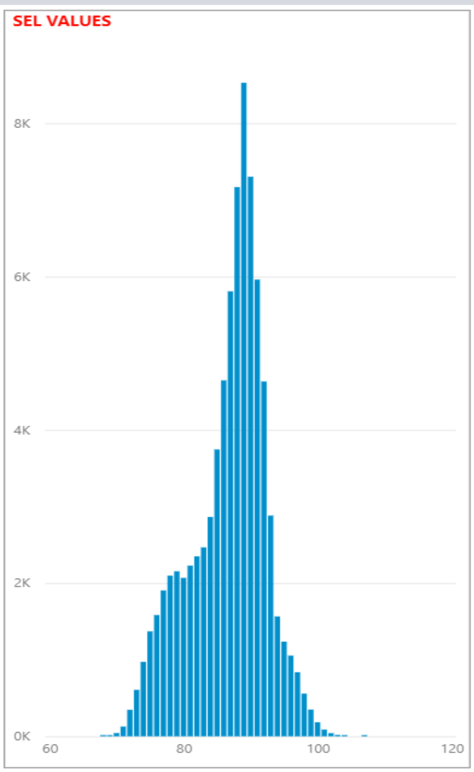
Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*

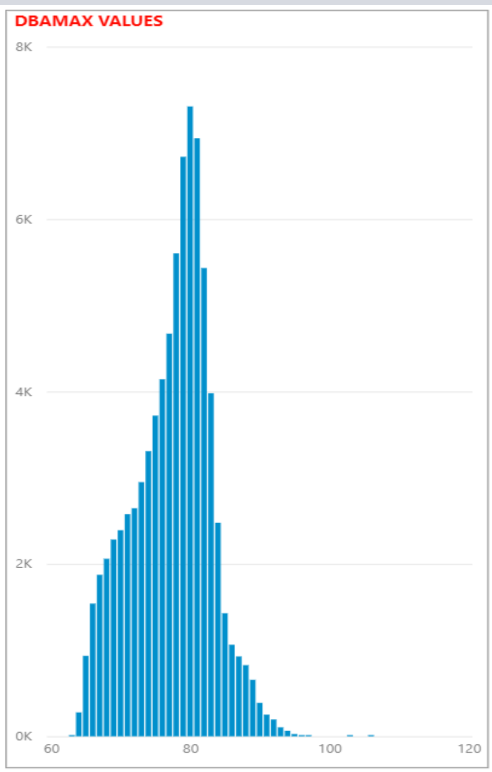


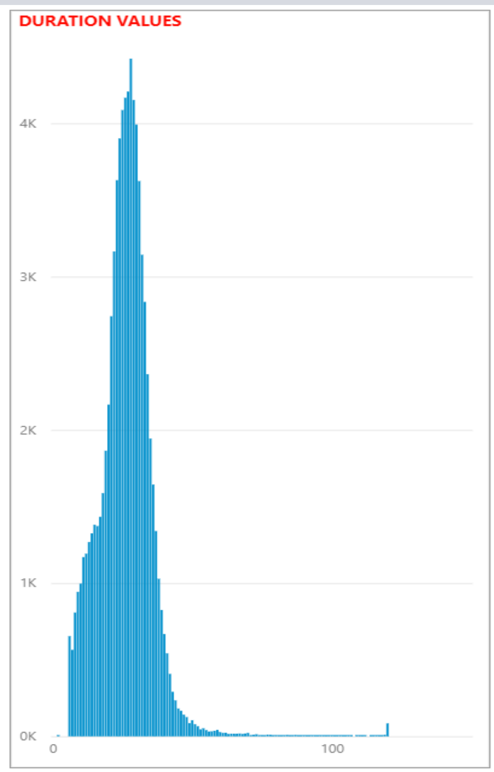




Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*







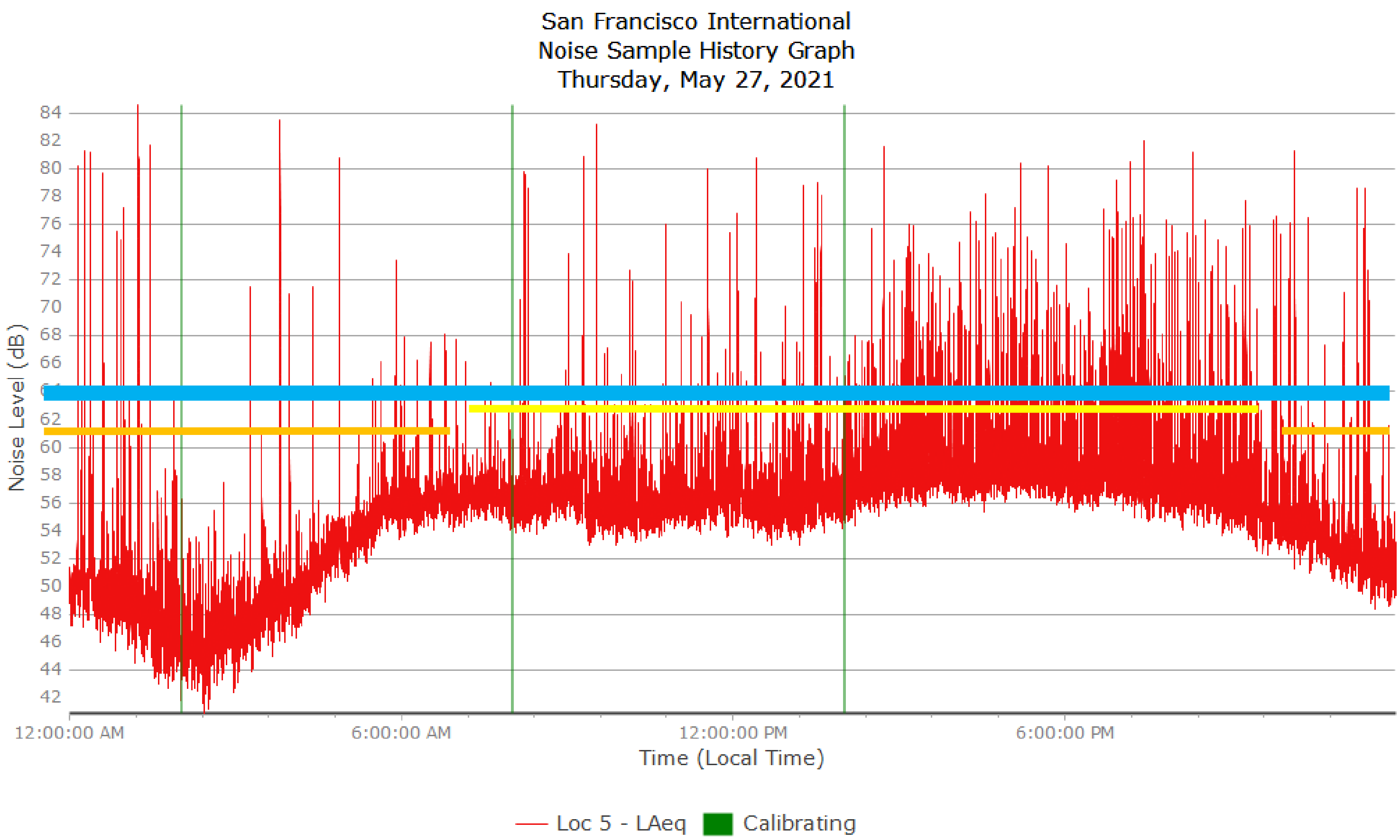
Source: BridgeNet International 2021

Figure A-4 Part A

Sample Time History Plot (Site 5 - San Bruno)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds	
Current	64
Proposed Day	63
Proposed Night	61



Source: BridgeNet International 2021

Figure A-4 Part B
Supporting Measured Analytical Data (Site 5 – San Bruno)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	58	59	60	61	62	63	64	65	66
5	Number of events	8243	7081	5945	4887	4018	3322	2721	2205	1782
5	Duration 120 sec	2388	1642	1065	693	431	225	75	18	3
5	Correlated events	5063	4521	3899	3319	2841	2418	2052	1763	1543
5	CNEL	67.8	67.7	67.5	67.4	67.2	67	66.9	66.8	66.7
5	Uncorrelated dB	1.24	1.28	1.41	1.54	1.67	1.81	1.92	2	2.12

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	24,915	81.2	90.5	91.5	
Wide	14,073	76.9	86.4	87.7	
Narrow	24,259	76.2	85.7	86.7	
Regional	5,661	73.2	82.4	83.6	
Business	8,104	70.5	79.0	80.3	
Total	**77,012**	**77.1**	**86.4**	**88.7**	**88.7**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
E75L	Regional	4,258	74.5	83.9	84.5	
BCS3	Regional	3	71.7	80.5	80.6	
CRJ7	Regional	285	71.6	80.5	81.3	
CRJ9	Regional	106	71.2	80.2	81.3	
BCS1	Regional	71	70.4	79.0	79.4	
CRJ2	Regional	938	68.5	76.9	77.9	
Total		**5,661**	**73.2**	**82.4**	**83.6**	**83.6**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
5	Long Haul	24,464	24,915	100%
5	Regional Jets	9,005	5,661	63%
5	CRJ2 (Quiet RJ)	2,788	938	34%

Ambient Noise Levels

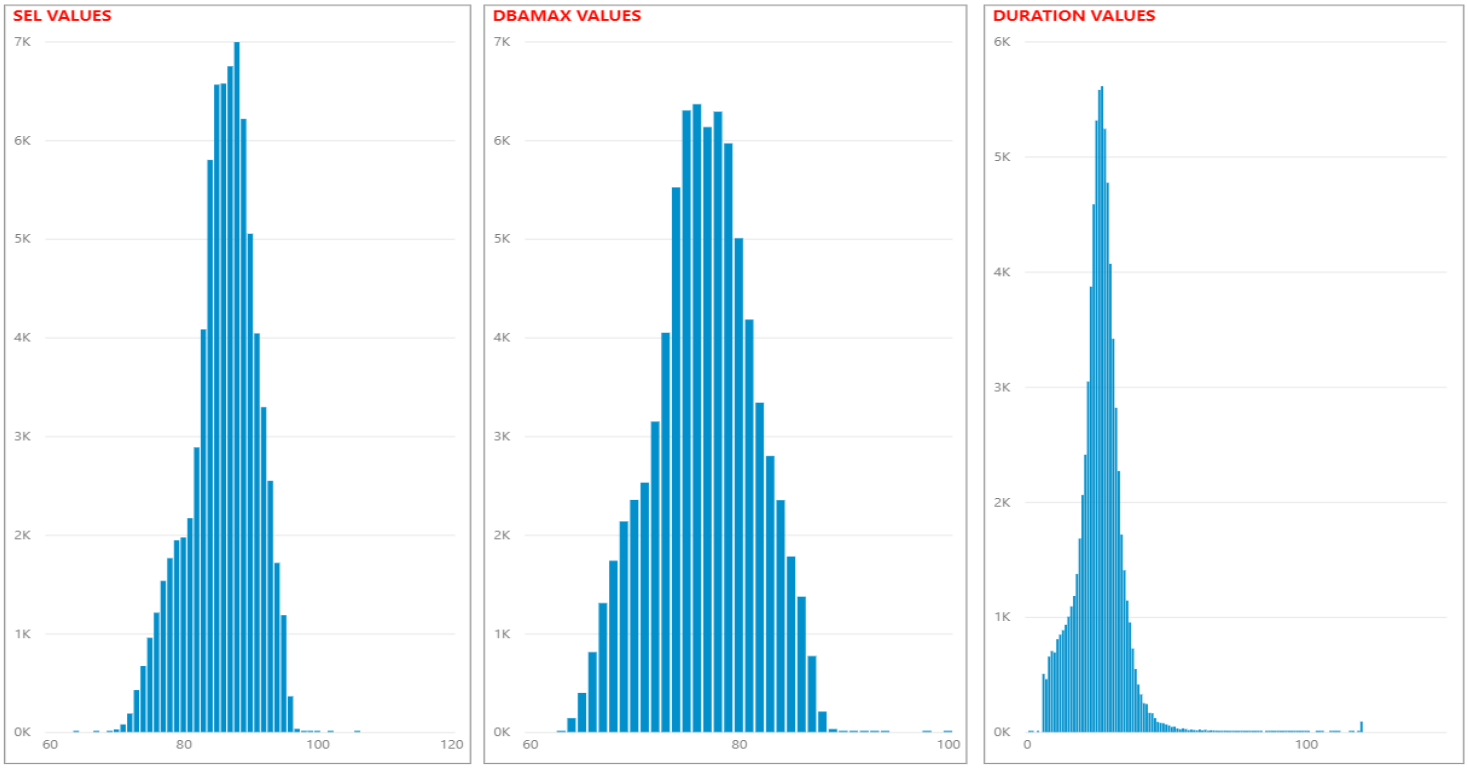
Jan 1st, 2019 – May 31st, 2021

Site	Period	Statistics	L50	L90	L99
5	All Hours	Average	51.8	51.4	50.6
5	Day Only	Average	53.2	52.8	52.1
5	Night Only	Average	49.8	49.3	48.4
5	All Hours	Std Dev	4.3	4.4	4.5
5	Day Only	Std Dev	2.8	2.9	2.9
5	Night Only	Std Dev	5.2	5.3	5.3
5	All Hours	2x Std Dev	60.5	60.2	59.6
5	Day Only	2x Std Dev	58.9	58.5	58.0
5	Night Only	2x Std Dev	60.3	59.9	59.1
			2019	**2020**	**2021**
5	All Hours	Average L50	53.0	51.0	51.4
5	All Hours	Average L90	52.5	50.5	51.0

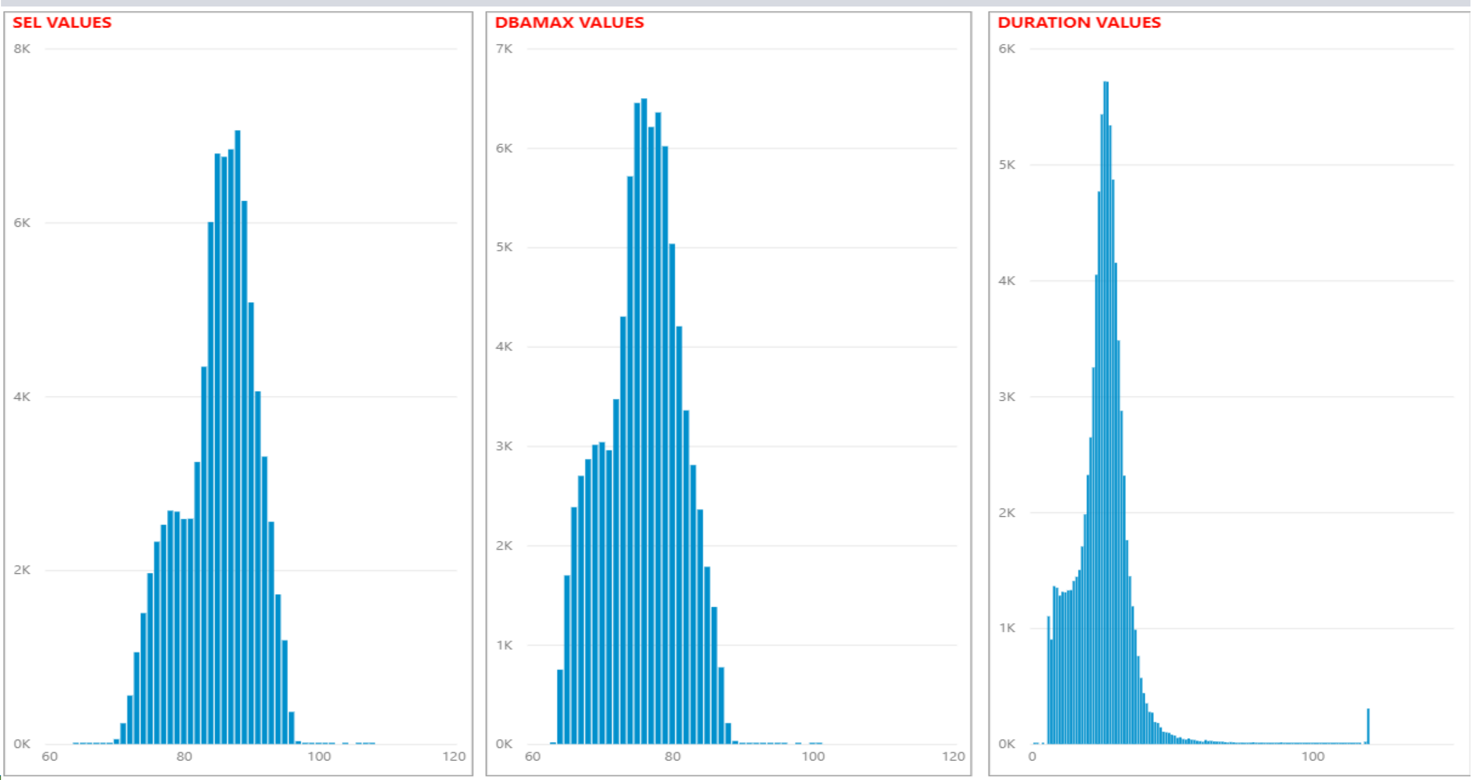
Figure A-4 Part C
Supporting Measured Analytical Data (Site 5 – San Bruno)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*



Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*



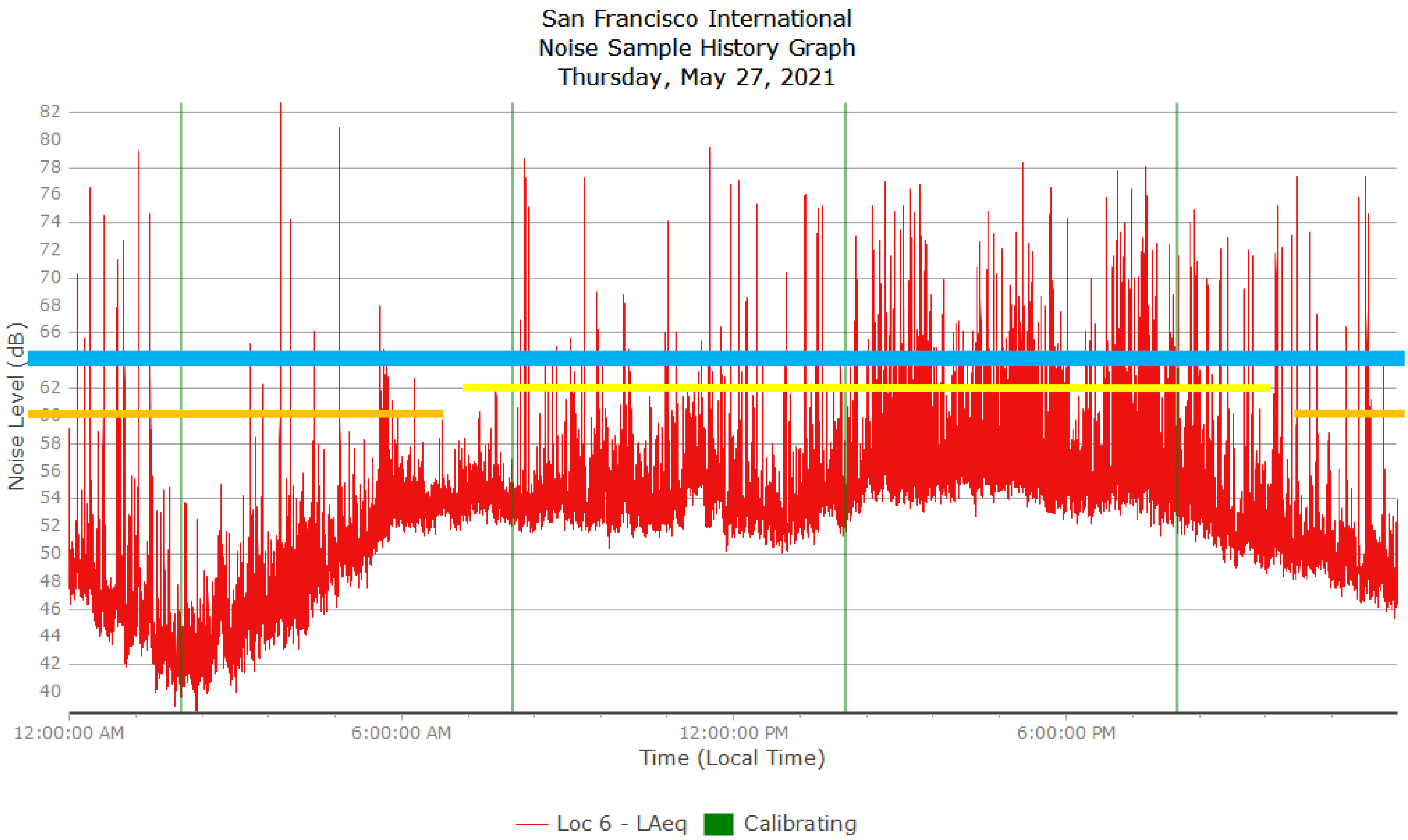
Source: BridgeNet International 2021

Figure A-5 Part A

Sample Time History Plot (Site 6 – So. San Francisco)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds		
Current	(blue)	64
Proposed Day	(yellow)	62
Proposed Night	(orange)	60



Source: BridgeNet International 2021

Figure A-5 Part B
Supporting Measured Analytical Data (Site 6 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	58	59	60	61	62	63	64	65	66
6	Number of events	3045	2746	2446	2216	2032	1883	1738	1611	1517
6	Duration 120 sec	19	8	3	1	0	0	0	0	0
6	Correlated events	2348	2209	2059	1930	1825	1736	1639	1555	1486
6	CNEL	65	64.9	64.9	64.9	64.9	64.8	64.8	64.8	64.7
6	Uncorrelated dB	0.18	0.19	0.21	0.22	0.24	0.26	0.29	0.34	0.38

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	24,483	78.7	88.8	90.1	
Wide	13,022	75.7	85.6	86.6	
Narrow	18,922	75.7	85.7	86.4	
Regional	4,679	71.9	81.0	82.4	
Business	6,724	70.5	79.2	80.8	
Total	**67,830**	**76.0**	**85.8**	**87.8**	**87.8**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
E75L	Regional	3,657	72.8	82.2	83.1	
CRJ9	Regional	48	72.5	81.8	82.5	
CRJ7	Regional	172	69.1	77.8	78.3	
BCS3	Regional	1	68.2	77.4	77.4	
BCS1	Regional	37	68.5	76.7	77.2	
CRJ2	Regional	764	67.9	76.2	77.1	
Total		**4,679**	**71.9**	**81.0**	**82.4**	**82.4**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
6	Long Haul	24,436	24,483	100%
6	Regional Jets	6,215	4,679	75%
6	CRJ2 (Quiet RJ)	1,833	764	42%

Ambient Noise Levels

Jan 1st, 2019 – May 31st, 2021

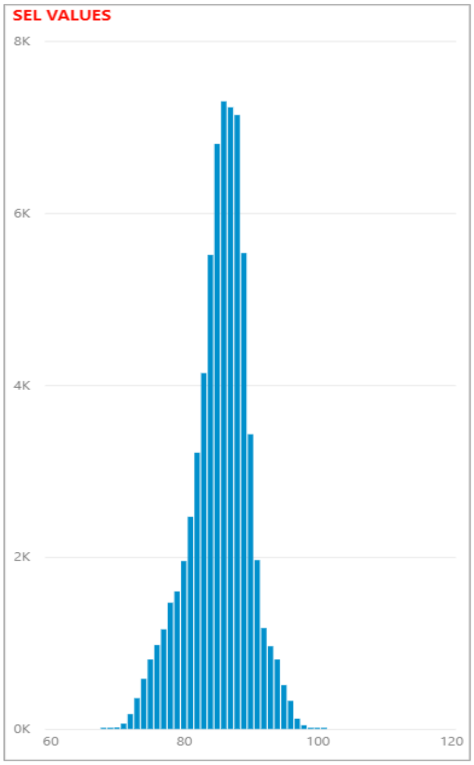
Site	Period	Statistics	L50	L90	L99
6	All Hours	Average	46.7	46.2	45.5
6	Day Only	Average	48.7	48.2	47.5
6	Night Only	Average	43.9	43.4	42.6
6	All Hours	Std Dev	4.5	4.6	4.7
6	Day Only	Std Dev	3.5	3.6	3.6
6	Night Only	Std Dev	4.4	4.4	4.5
6	All Hours	2x Std Dev	55.8	55.4	54.9
6	Day Only	2x Std Dev	55.7	55.3	54.8
6	Night Only	2x Std Dev	52.7	52.3	51.6
			2019	2020	2021
6	All Hours	Average L50	47.6	46.0	46.7
6	All Hours	Average L90	47.2	45.5	46.2

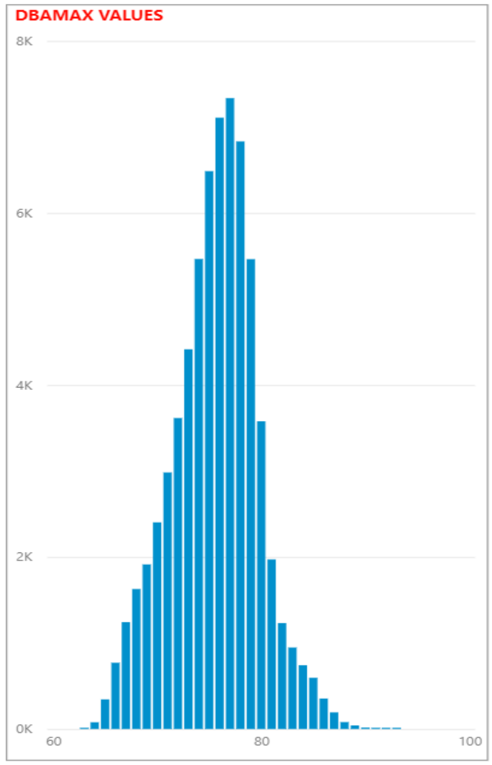
Source: BridgeNet International 2021

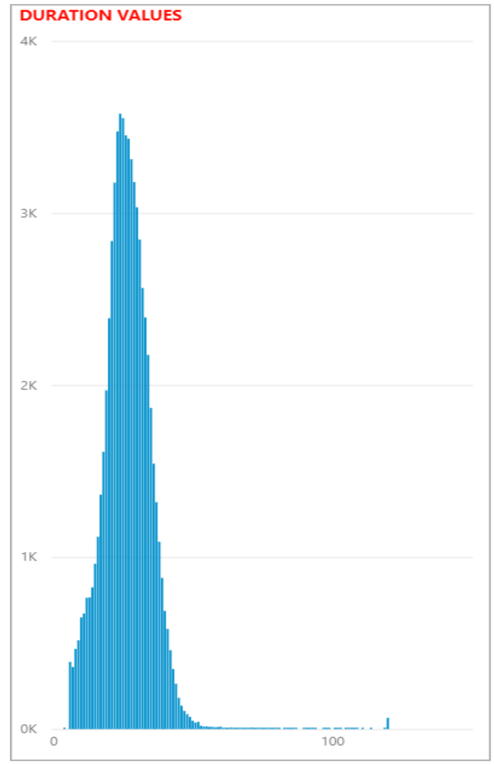
Figure A-5 Part C
Supporting Measured Analytical Data (Site 6 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

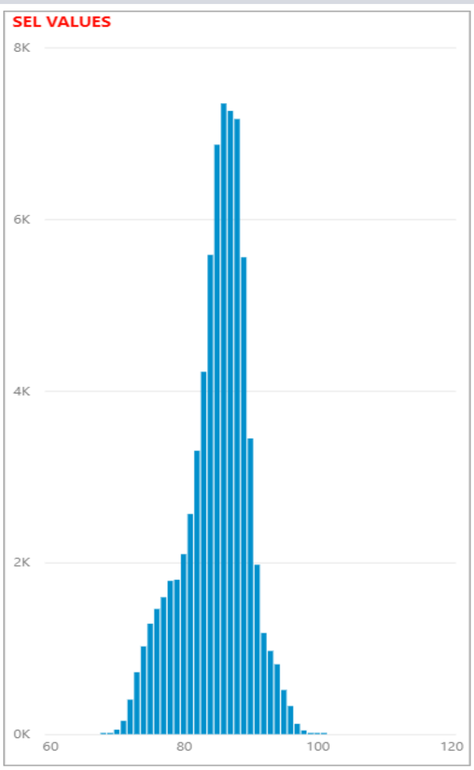
Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*

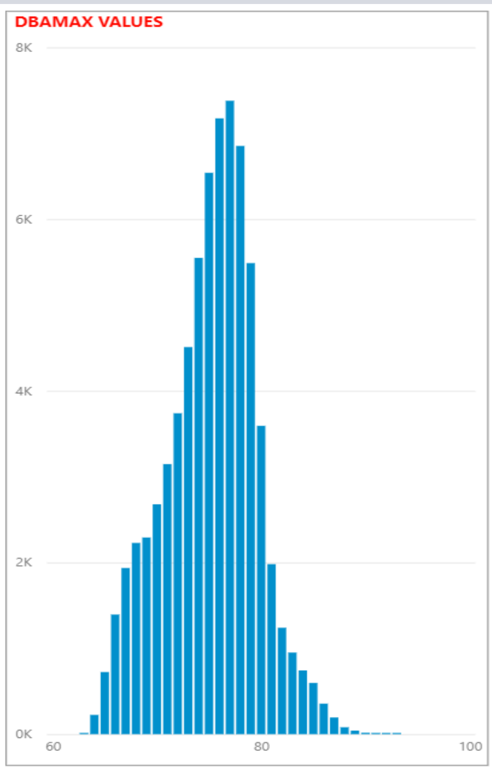


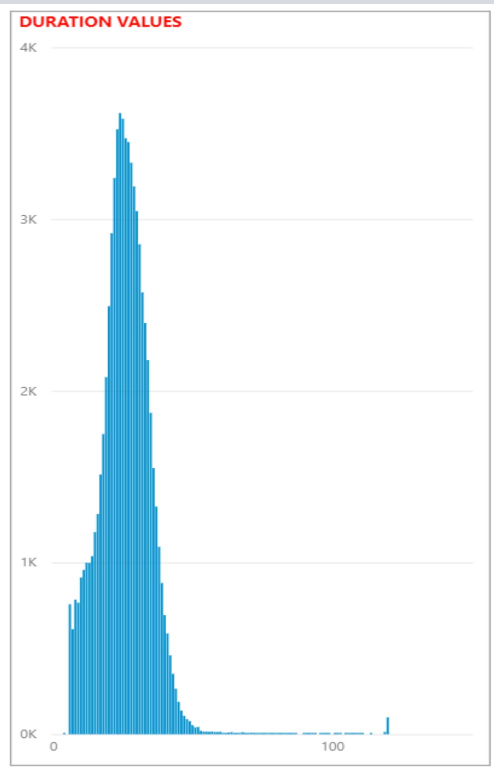




Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*







Source: BridgeNet International 2021

Figure A-6 Part A

Sample Time History Plot (Site 14 - So. San Francisco)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

Thresholds		
Current		64
Proposed Day		62
Proposed Night		60

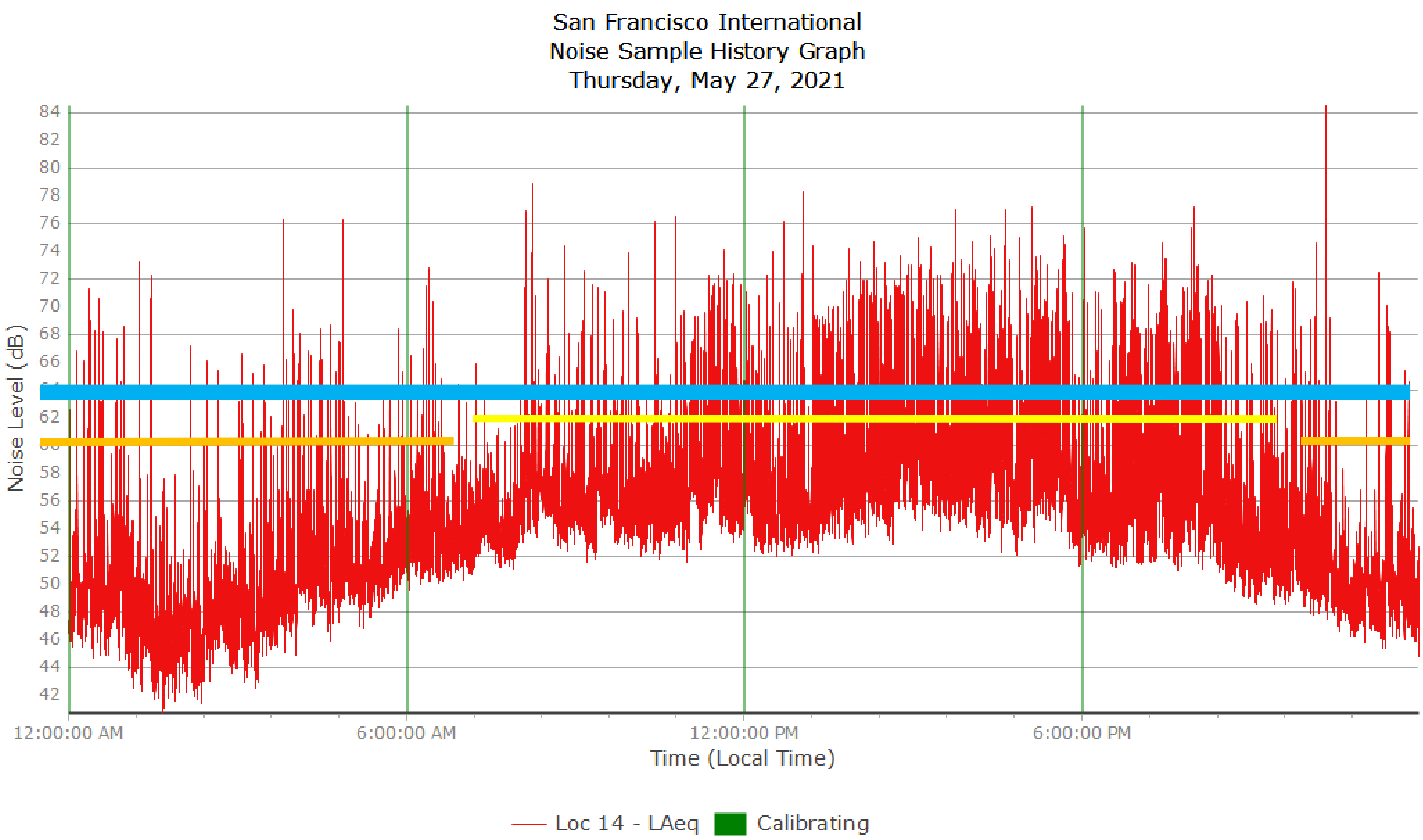


Figure A-6 Part B
Supporting Measured Analytical Data (Site 14 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	58	59	60	61	62	63	64	65	66
14	Number of events	5056	4260	3506	2943	2492	2148	1848	1644	1490
14	Duration 120 sec	35	9	5	1	1	0	0	0	0
14	Correlated events	2583	2366	2145	1942	1765	1619	1488	1377	1281
14	CNEL	60.7	60.6	60.5	60.4	60.3	60.2	60.1	59.9	59.7
14	Uncorrelated dB	0.42	0.45	0.5	0.58	0.66	0.74	0.81	0.9	0.97

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	23,798	73.6	84.6	85.7	
Narrow	18,304	71.4	81.8	82.7	
Wide	12,076	70.8	80.9	82.1	
Regional	3,313	69.7	79.1	80.2	
Business	3,573	69.3	77.9	79.9	
Total	**61,064**	**71.9**	**82.3**	**83.9**	**83.9**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
E75L	Regional	2,968	69.8	79.4	80.3	
CRJ9	Regional	33	68.4	77.2	78.3	
CRJ7	Regional	66	68.5	77.0	78.7	
CRJ2	Regional	235	69.1	76.8	79.5	
BCS1	Regional	11	67.6	76.1	81.8	
Total		**3,313**	**69.7**	**79.1**	**80.2**	**80.2**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
14	Long Haul	24,458	23,798	97%
14	Regional Jets	6,628	3,313	50%
14	CRJ2 (Quiet RJ)	1,955	235	12%

Ambient Noise Levels

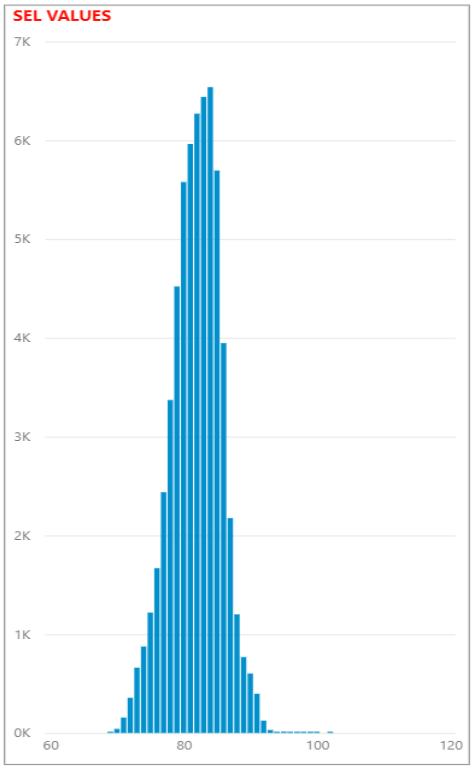
Jan 1st, 2019 – May 31st, 2021

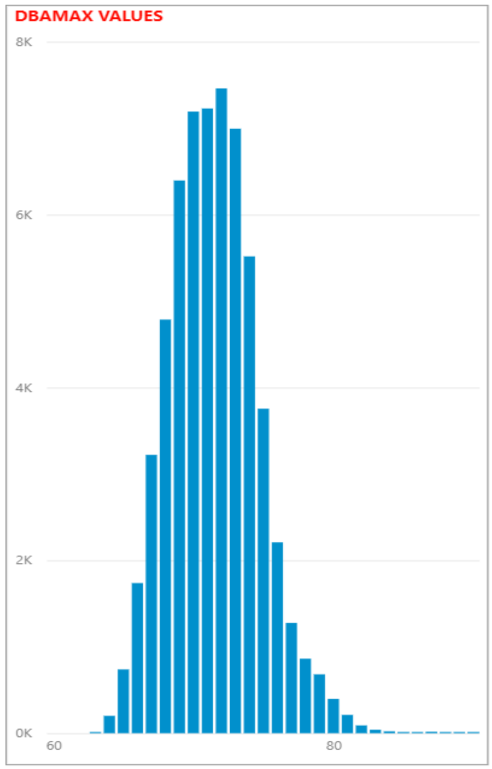
Site	Period	Statistics	L50	L90	L99
14	All Hours	Average	48.4	47.8	47.0
14	Day Only	Average	50.6	50.0	49.2
14	Night Only	Average	45.3	44.7	43.9
14	All Hours	Std Dev	4.6	4.6	4.6
14	Day Only	Std Dev	3.2	3.2	3.2
14	Night Only	Std Dev	4.5	4.5	4.5
14	All Hours	2x Std Dev	57.6	57.0	56.2
14	Day Only	2x Std Dev	56.9	56.4	55.5
14	Night Only	2x Std Dev	54.3	53.8	53.0
			2019	**2020**	**2021**
14	All Hours	Average L50	49.5	47.6	48.0
14	All Hours	Average L90	48.9	47.1	47.4

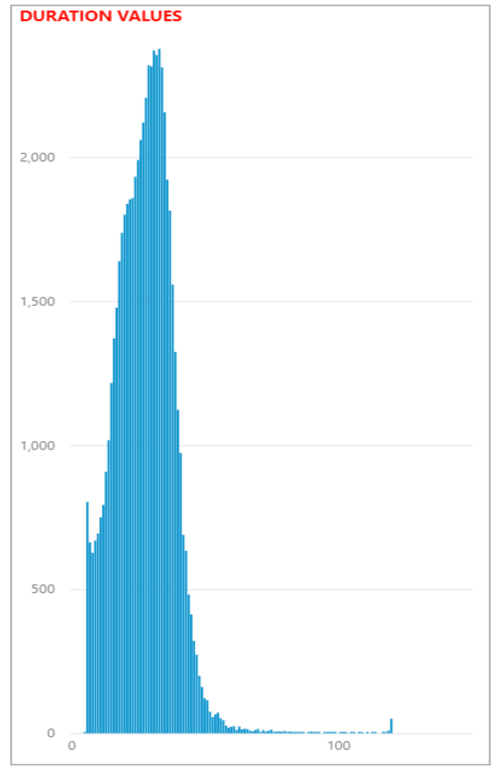
Figure A-6 Part C
Supporting Measured Analytical Data (Site 14 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

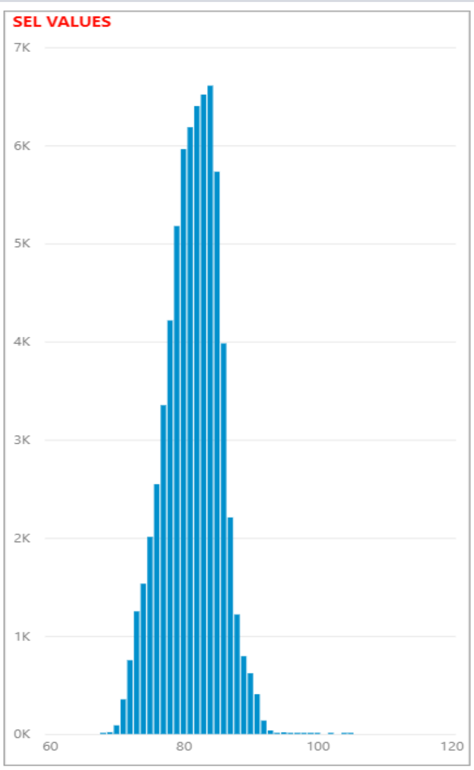
Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*

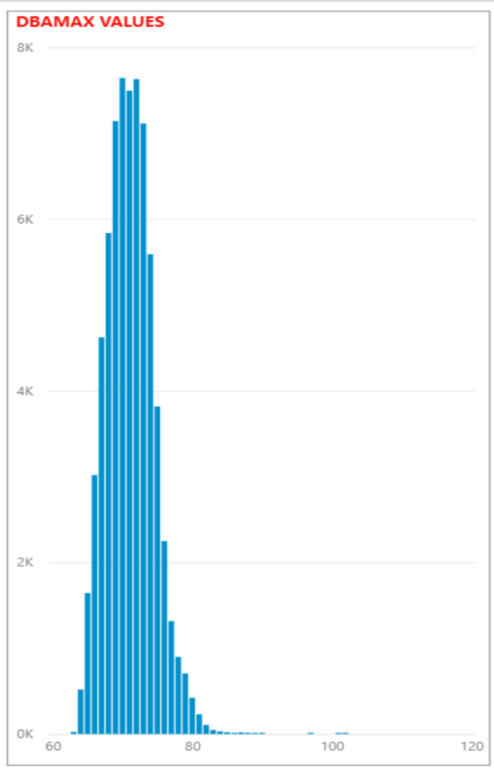


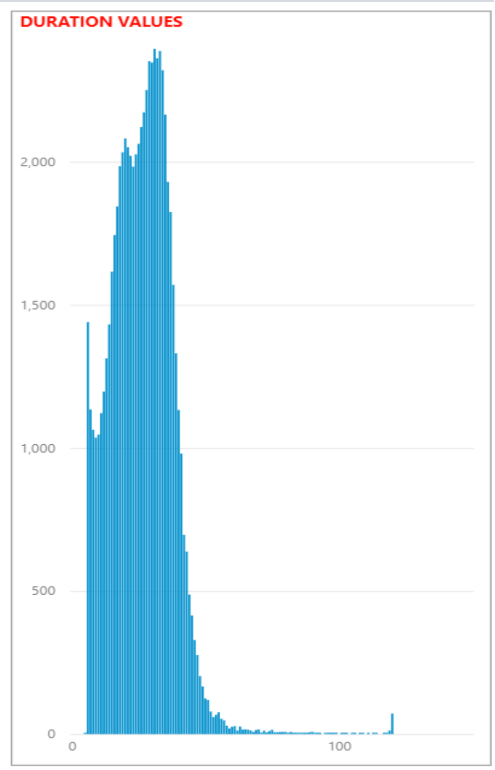




Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*





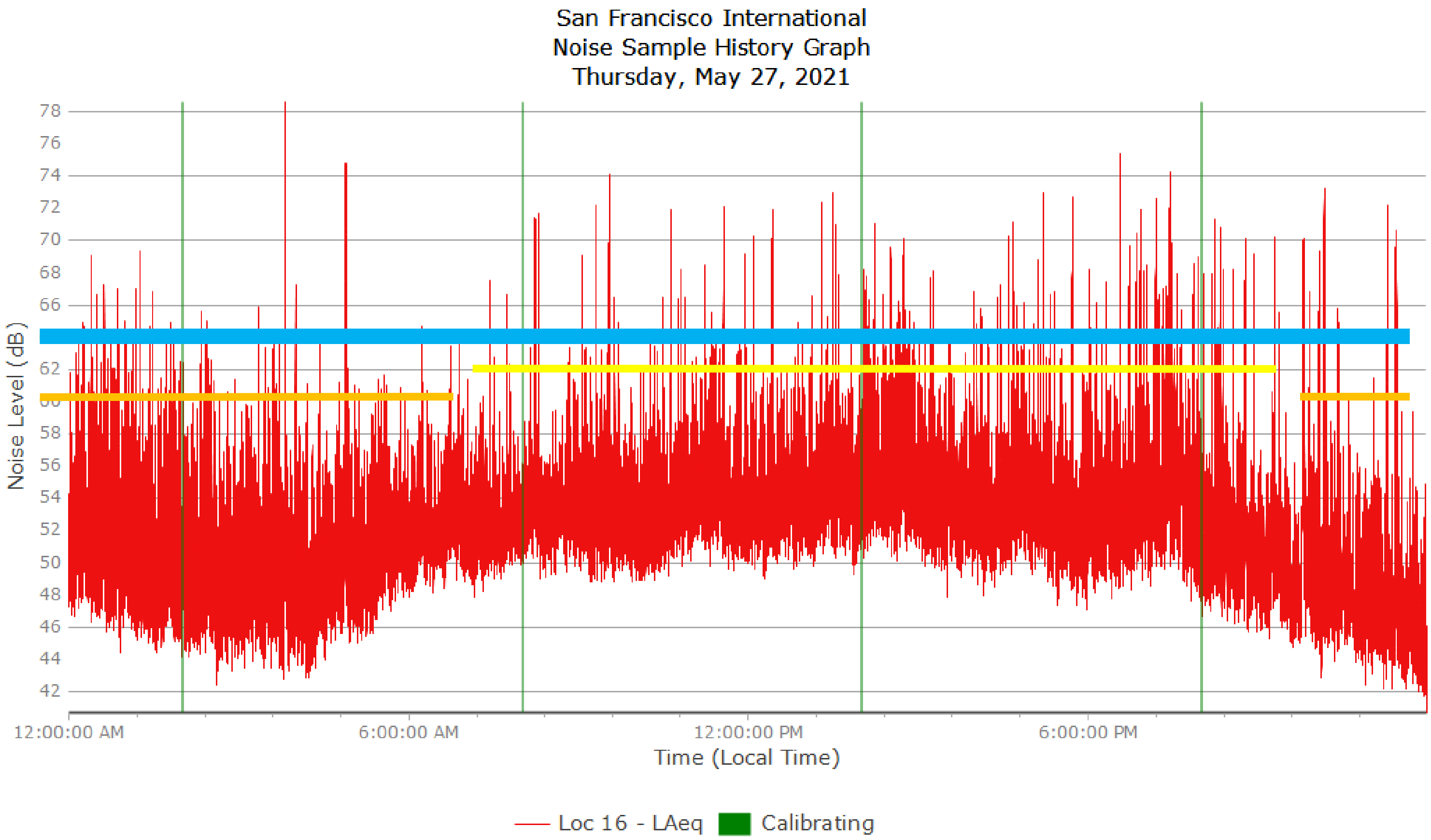


Source: BridgeNet International 2021

Figure A-7 Part A
Sample Time History Plot (Site 16 - So. San Francisco)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds		
Current	(blue)	63
Proposed Day	(yellow)	62
Proposed Night	(orange)	60



Source: BridgeNet International 2021

Figure A-7 Part B
Supporting Measured Analytical Data (Site 16 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	58	59	60	61	62	63	64	65	66
16	Number of events	3529	3013	2575	2219	1881	1642	1464	1342	1247
16	Duration 120 sec	67	43	21	12	2	2	2	2	2
16	Correlated events	2441	2213	1984	1781	1591	1452	1337	1249	1180
16	CNEL	59.6	59.5	59.4	59.3	59.2	59.1	59	58.9	58.7
16	Uncorrelated dB	0.29	0.33	0.39	0.46	0.55	0.62	0.71	0.79	0.88

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	23,809	73.2	83.9	84.7	
Wide	11,896	70.5	80.8	81.8	
Narrow	17,487	70.8	81.0	81.8	
Regional	2,684	69.1	78.7	79.4	
Business	1,983	68.4	77.3	79.0	
Total	**57,859**	**71.6**	**81.9**	**83.1**	**83.1**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
E75L	Regional	2,569	69.2	78.8	79.5	
CRJ9	Regional	23	66.2	75.6	76.0	
CRJ2	Regional	68	67.1	75.6	79.8	
CRJ7	Regional	22	66.6	75.3	78.0	
BCS1	Regional	2	65.3	74.7	74.7	
Total		**2,684**	**69.1**	**78.7**	**79.4**	**79.4**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
16	Long Haul	24,283	23,809	98%
16	Regional Jets	6,089	2,684	44%
16	CRJ2 (Quiet RJ)	1,800	68	4%

Ambient Noise Levels

Jan 1st, 2019 – May 31st, 2021

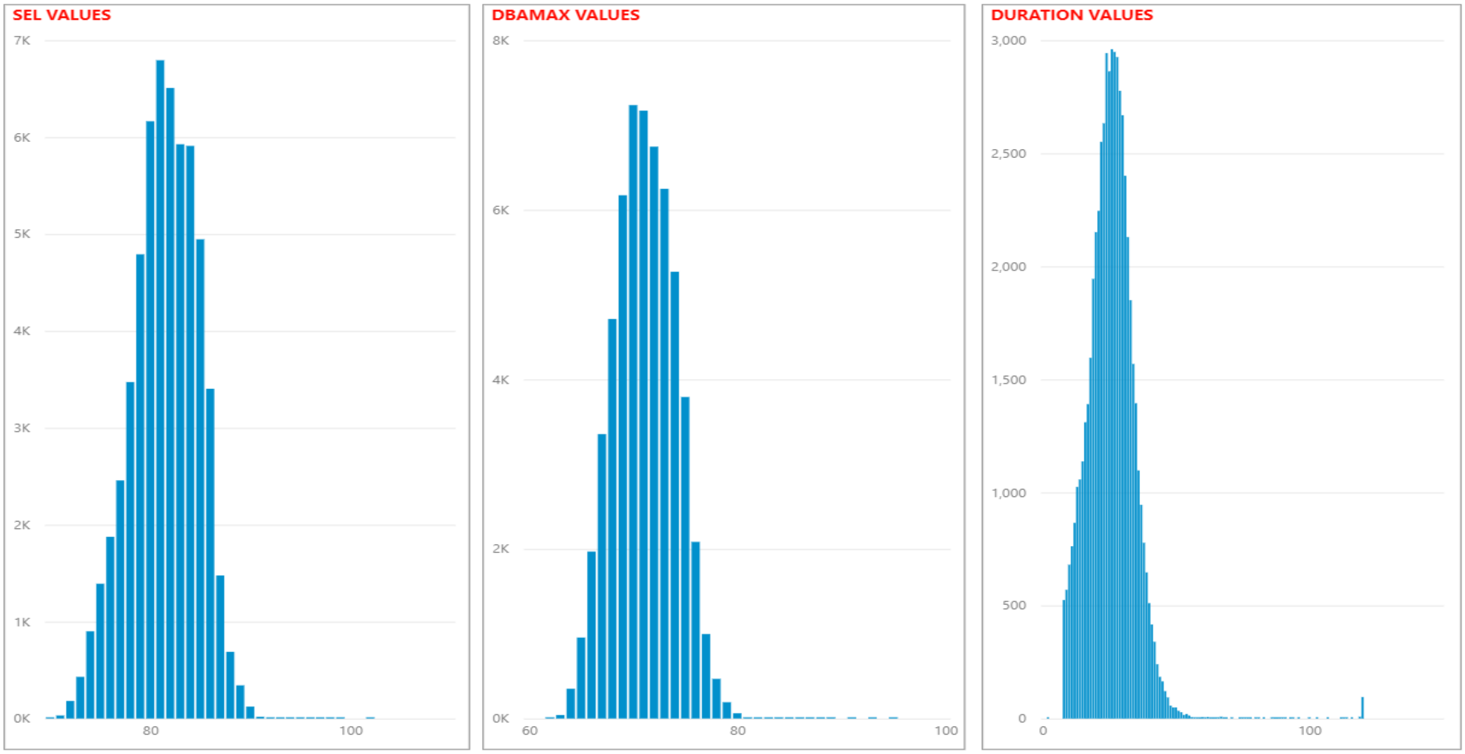
Site	Period	Statistics	L50	L90	L99
16	All Hours	Average	45.8	45.2	44.1
16	Day Only	Average	48.3	47.6	46.6
16	Night Only	Average	42.3	41.7	40.6
16	All Hours	Std Dev	4.9	4.9	5.0
16	Day Only	Std Dev	3.1	3.1	3.3
16	Night Only	Std Dev	4.9	4.9	4.9
16	All Hours	2x Std Dev	55.6	55.0	54.1
16	Day Only	2x Std Dev	54.4	53.9	53.2
16	Night Only	2x Std Dev	52.1	51.4	50.4
			2019	2020	2021
16	All Hours	Average L50	47.0	44.9	45.5
16	All Hours	Average L90	46.4	44.2	44.9

Source: BridgeNet International 2021

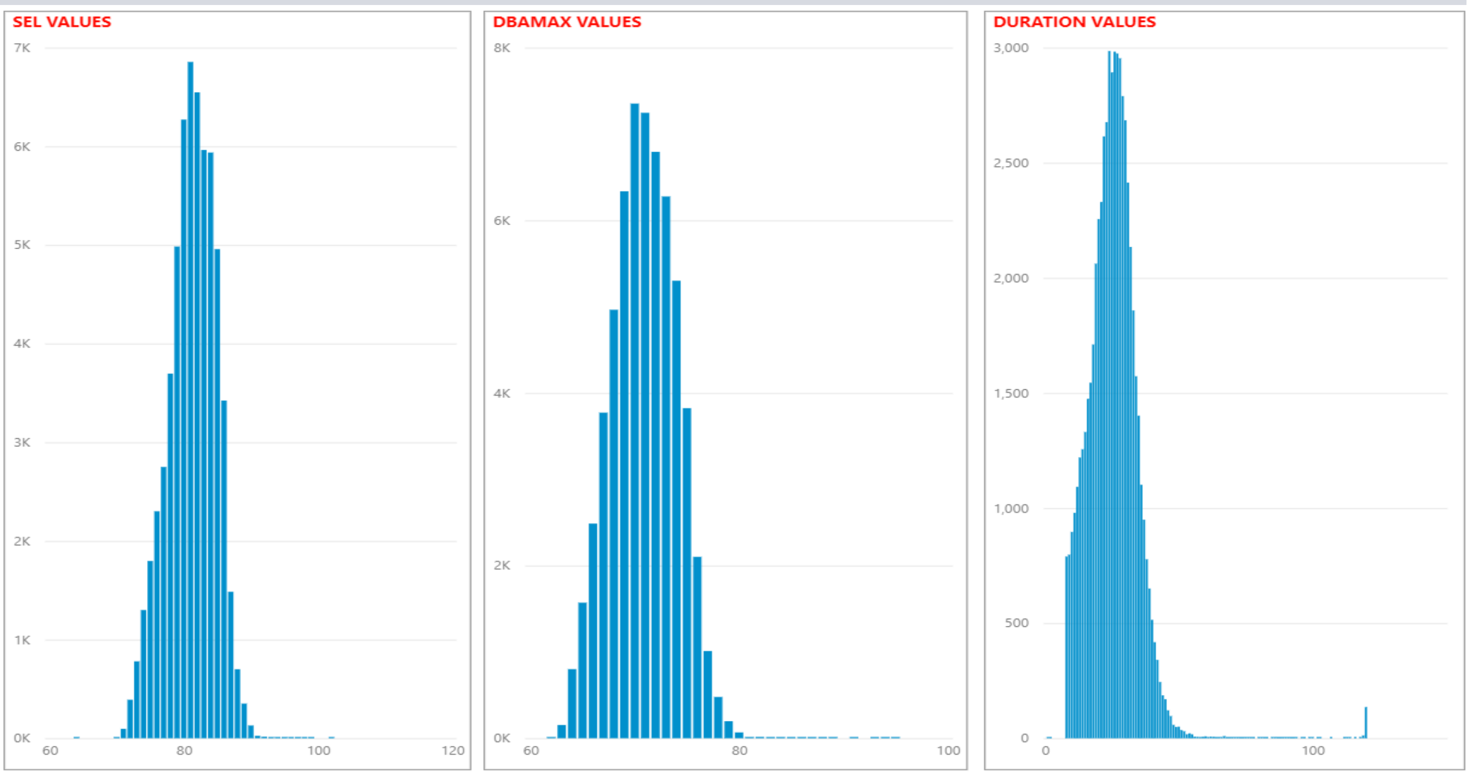
Figure A-7 Part C
Supporting Measured Analytical Data (Site 16 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*



Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*



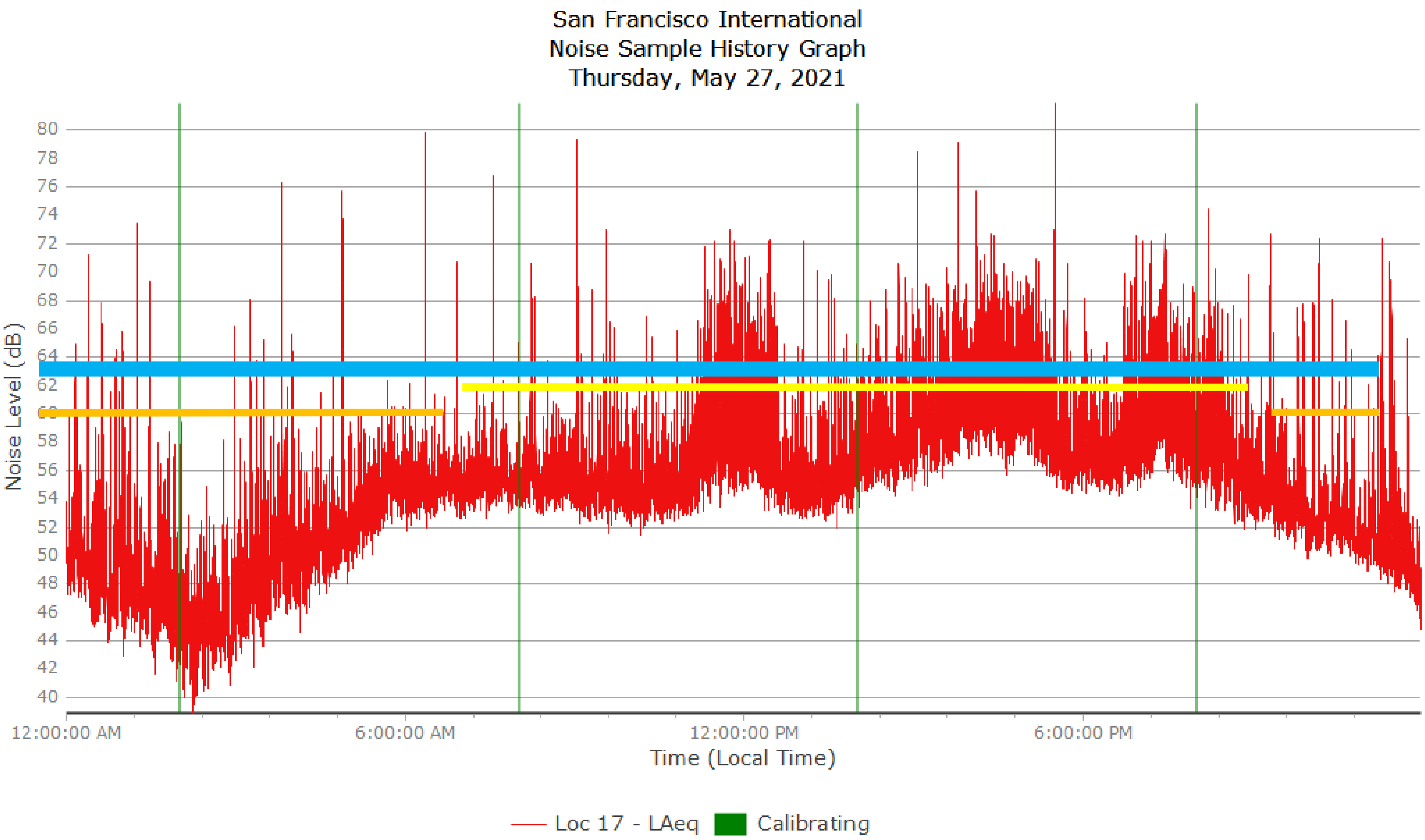
Source: BridgeNet International 2021

Figure A-8 Part A

Sample Time History Plot (Site 17 - So. San Francisco)

(24-hour plot of 1 measured one-second noise data – May 27, 2021)

Thresholds		
Current		63
Proposed Day		62
Proposed Night		60



Source: BridgeNet International 2021

Figure A-8 Part B
Supporting Measured Analytical Data (Site 17 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

EVS Threshold Calculations

Dec 16th – Dec 29th, 2019

Monitor	Metric	57	58	59	60	61	62	63	64	65
17	Number of events	3937	3389	2982	2651	2379	2123	1893	1674	1500
17	Duration 120 sec	156	111	78	53	31	19	14	5	2
17	Correlated events	2727	2543	2338	2129	1931	1740	1565	1405	1280
17	CNEL	59.7	59.6	59.5	59.4	59.2	59.1	58.9	58.7	58.5
17	Uncorrelated dB	0.33	0.36	0.41	0.48	0.56	0.66	0.76	0.89	1.03

Measured Single Event Noise Levels

Departures 28L/28R Jan 1st, 2019 – Jun 7th, 2021

Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	SEL (E Avg)
Long Haul	22,921	72.3	83.6	84.7	
Narrow	16,949	70.3	81.2	82.0	
Wide	10,847	69.7	80.5	81.7	
Regional	2,886	68.9	79.1	80.8	
Business	2,475	68.8	78.2	80.1	
Total	**56,078**	**70.9**	**81.8**	**83.2**	**83.2**

ACTYPE	Group	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
E75L	Regional	2,528	68.9	79.2	80.7	
CRJ2	Regional	277	69.6	78.7	81.8	
CRJ7	Regional	44	67.6	77.2	79.7	
CRJ9	Regional	27	67.4	77.0	77.6	
BCS1	Regional	10	67.8	75.9	77.1	
Total		**2,886**	**68.9**	**79.1**	**80.8**	**80.8**

Site	Aircraft Category	Flights 8000' Radius	Measured Flights	Percent Measured
17	Long Haul	24,289	22,921	94%
17	Regional Jets	6,091	2,886	47%
17	CRJ2 (Quiet RJ)	1,799	277	15%

Ambient Noise Levels

Jan 1st, 2019 – May 31st, 2021

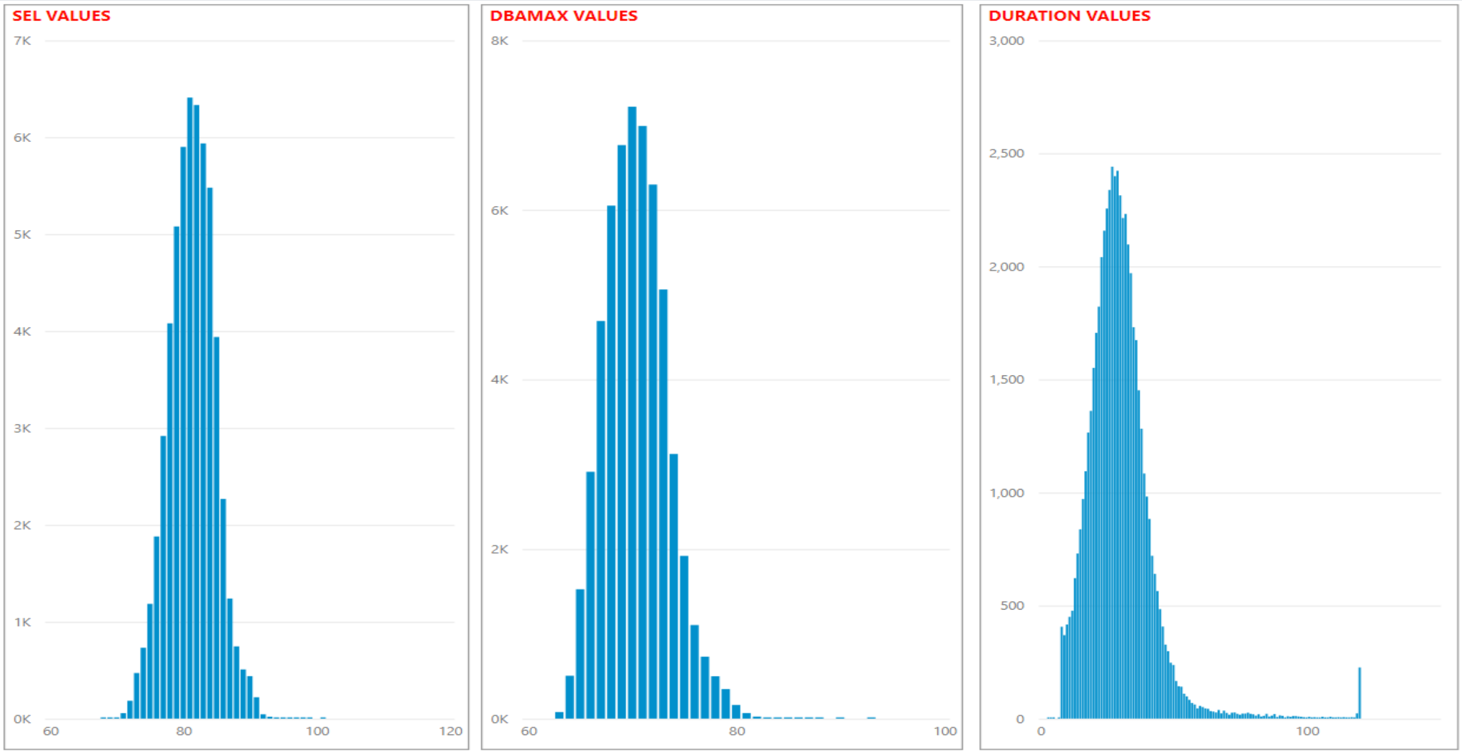
Site	Period	Statistics	L50	L90	L99
17	All Hours	Average	48.2	47.8	47.0
17	Day Only	Average	50.9	50.5	49.7
17	Night Only	Average	44.5	44.0	43.1
17	All Hours	Std Dev	4.9	4.9	4.9
17	Day Only	Std Dev	3.1	3.1	3.1
17	Night Only	Std Dev	4.4	4.4	4.4
17	All Hours	2x Std Dev	58.0	57.5	56.8
17	Day Only	2x Std Dev	57.1	56.6	55.9
17	Night Only	2x Std Dev	53.2	52.7	51.9
			2019	**2020**	**2021**
17	All Hours	Average L50	49.3	47.4	48.2
17	All Hours	Average L90	48.8	46.9	47.7

Source: BridgeNet International 2021

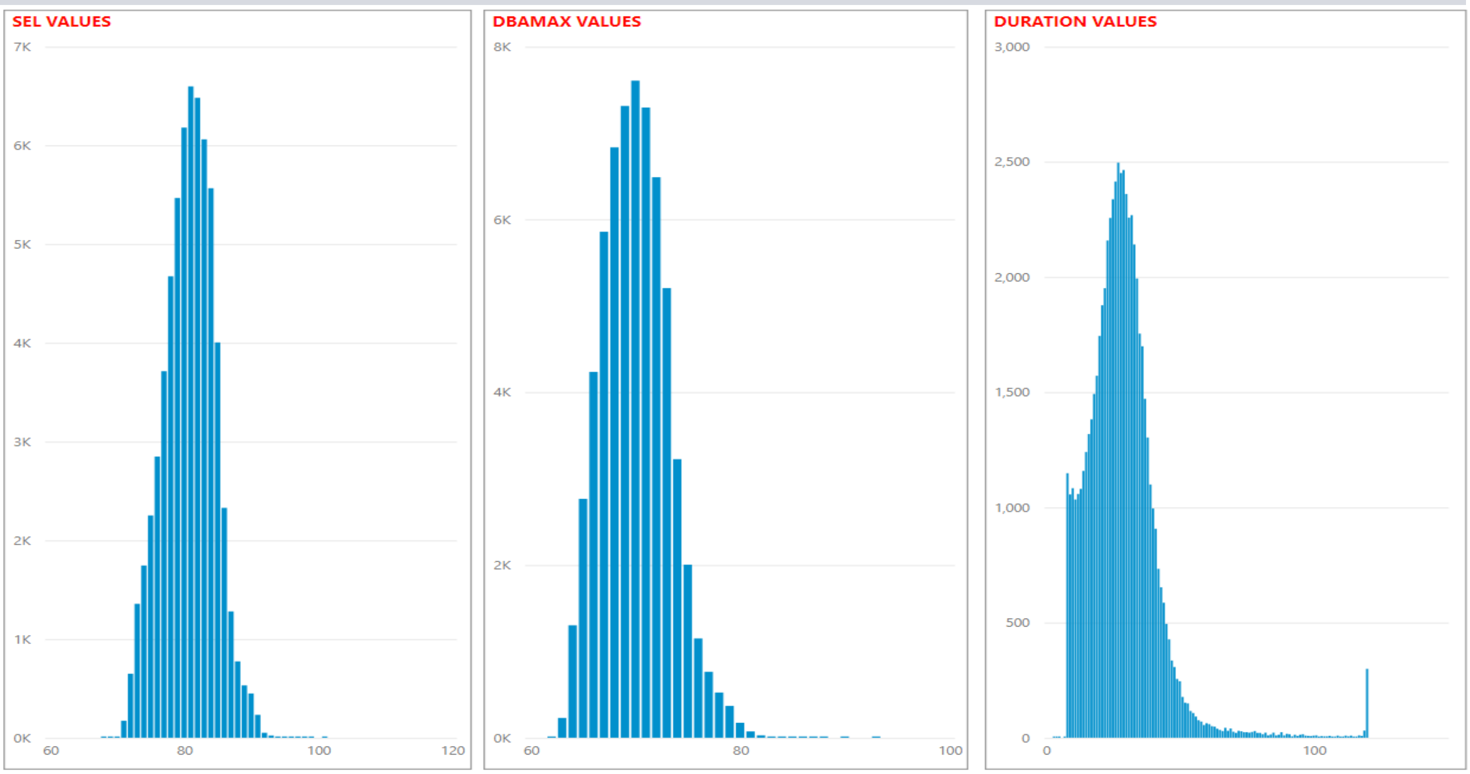
Figure A-8 Part C
Supporting Measured Analytical Data (Site 17 – So. San Francisco)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

Measured Single Event Noise Levels *Departures 28L/28R* *Jan 1st, 2019 – Jun 7th, 2021*



Measured Single Event Noise Levels *ALL OPERATIONS* *Jan 1st, 2019 – Jun 7th, 2021*



Source: BridgeNet International 2021

Figure A-9
Change in Measured Single Event Noise Levels over Time (Site 1)

SAN FRANCISCO INTERNATIONAL –NOISE MONITOR TERMINAL THRESHOLD ANALYSIS

MONTH	Total Evts	Lmax (Avg)	SEL (Avg)	SEL (E Avg)	Scale
January 2019	3,419	85.6	93.5	96.0	
February 2019	3,535	83.7	92.2	94.8	
March 2019	3,591	85.4	93.4	95.7	
April 2019	4,418	84.8	93.0	95.4	
May 2019	4,707	84.7	92.8	95.3	
June 2019	3,719	86.3	94.0	96.5	
July 2019	4,243	85.1	93.2	95.7	
August 2019	3,913	85.7	93.5	95.7	
September 2019	3,291	85.3	93.4	95.2	
October 2019	3,693	84.8	92.3	94.8	
November 2019	3,053	86.3	93.8	96.2	
December 2019	2,608	86.9	94.3	96.3	
January 2020	3,139	85.9	93.5	95.7	
February 2020	3,461	82.9	91.2	94.0	
March 2020	3,125	82.4	90.4	93.3	
April 2020	948	80.7	89.0	92.4	
May 2020	1,503	80.2	88.5	91.9	
June 2020	1,926	79.2	87.8	91.2	
July 2020	1,495	81.0	89.1	92.3	
August 2020	1,176	82.2	90.1	92.9	
September 2020	1,479	82.2	90.0	93.1	
October 2020	1,405	83.6	91.0	93.8	
November 2020	2,036	81.4	89.6	92.4	
December 2020	1,899	83.1	90.9	93.5	
January 2021	1,588	82.1	90.4	93.1	
February 2021	1,702	81.4	89.8	92.3	
March 2021	2,934	80.1	88.9	91.3	
April 2021	2,883	79.9	88.5	91.5	
May 2021	2,510	80.2	89.3	91.9	
June 2021	739	80.1	89.2	91.9	
Total	**80,138**	**83.7**	**91.8**	**94.6**	**94.6**

Source: BridgeNet International 2021

Charter of the NextGen Advisory Committee

U.S. Department of Transportation

1. **Committee's Official Designation.** NextGen Advisory Committee (NAC).

2. **Authority.** The Committee is established under the authority of the U.S. Department of Transportation (DOT), in accordance with the provisions of the Federal Advisory Committee Act (FACA), as amended, Pub. L. 92-463, 5 U.S.C. App. 2. The Secretary of Transportation has determined that the establishment of the Committee is in the public interest.

3. **Objective and Scope of Activities.** The objective of the NAC is to provide independent advice and recommendations to the Federal Aviation Administration (FAA) and to respond to specific taskings received directly from the FAA. The advice, recommendations, and taskings relate to concepts, requirements, operational capabilities, the associated use of technology, and related considerations to operations that affect the future of the Air Traffic Management System and the integration of new technologies. In addition, the NAC recommends consensus-driven advice for the FAA consideration relating to Air Traffic Management System modernization, which FAA may adopt.

4. **Description of Duties.** The objective of the NAC is to advise the FAA, using consensus-based meeting methodologies, on (1) investment priorities, (2) NextGen priorities and performance analyses reports, (3) trajectory-based operations deployment and planning consistent with the FAA's NextGen Vision, and (4) ad hoc taskings received directly from the FAA. The NAC will act solely in an advisory capacity and will not exercise program management responsibilities. Decisions directly affecting implementation of transportation policy will remain with the FAA Administrator and the Secretary of Transportation.

5. **Agency or Official to Whom the Committee Reports.** The NAC reports to the Secretary of the Department of Transportation (DOT) through the FAA Administrator.

6. **Support.** The FAA Office of NextGen will provide support as consistent with the FACA, including funding for the Committee and maintaining committee records.

7. **Estimated Annual Operating Costs and Staff Years.** The FAA's annual operating costs to support the NAC for the period and scope specified by the charter will not exceed $500,000 including the salary and benefits of 1.0 full-time equivalent (FTE).

8. Designated Federal Officer. The FAA Administrator, on behalf of the Secretary of Transportation, will appoint a full-time or permanent part-time Federal employee to serve as the NAC Designated Federal Officer (DFO) (or designee). The NAC DFO or designee will ensure that administrative support is provided for all activities. The Designated Federal Officer or designee will:

a. Call and attend all the committee and subcommittee meetings.

b. Formulate and approve all committee and subcommittee agendas.

c. Adjourn any meeting when doing so would be in the public interest.

d. Chair meeting when directed to do so by the official to whom the advisory committee reports.

9. Estimated Number and Frequency of Meetings. The committee will meet approximately 3 times per year to carry out its responsibilities.

10. Duration. Continuing.

11. Termination. The charter will terminate 2 years after its effective date unless renewed in accordance with FACA and other applicable requirements, or terminated at an earlier date. If the NAC is terminated, the FAA will provide as much notice as possible of such action to all participants.

12. Membership and Designation. The FAA will submit recommendations for membership to the Secretary of Transportation, who will appoint members to the NAC. All NAC members serve at the pleasure of the Secretary of Transportation.

a. The NAC will have no more than 30 members.

b. Members may serve as representatives, Special Government Employee (SGE) or as Regular Government Employees. Individuals will be appointed as representatives if they will represent a particular interest of employment, education, experience, or affiliation with a specific aviation-related organization. Representative and SGE members will serve without charge, and without government compensation.

c. Representatives must represent a particular interest of employment, education, experience, or affiliation with a specific aviation-related organization.

d. Federal employee members will serve as Regular Government Employees.

e. A member appointed solely for their expertise will serve as a SGE.

13. Subcommittees. The FAA Administrator has the authority to create and dissolve subcommittees, as needed. Subcommittees and their respective working groups will not work independently of the NAC. They must provide recommendations and advice to the NAC, not the FAA, for deliberation, discussion, and approval.

14. Recordkeeping.

a. The records of the committee and subcommittee will be handled in accordance with the General Records Schedule 6.2, or other approved agency records disposition schedules.

b. These records will be available for public inspection and copying, subject to the Freedom of Information Act, 5 U.S.C. § 552. The records, reports, transcripts, minutes, and other documents that are made available to or provided for or by the NAC are available for public inspection at www.faa.gov/regulations_policies.

15. Filing Date. This charter is effective June 15, 2020, the date on which it was filed with Congress. This Committee will remain in existence for 2 years after this date unless sooner terminate.

July 12, 2021

TO: Steve Dickson, FAA Administrator
Bradley Mims, FAA Deputy Administrator and NAC Designated Federal Officer
Russell Childs, NAC Chair, and President & CEO, SkyWest, Inc.
Brad Pierce, President, NOISE - Aurora City Council

CC: Members of the House Committee on Transportation and Infrastructure, Members of the Congressional Quiet Skies Caucus

Dear Mr. Dickson, Mr. Mims, Mr. Childs, and Mr. Pierce,

Our groups represent air travelers, families, organizations, communities and businesses negatively impacted by aviation noise and pollution nationwide (see list below of supporting organizations). We are following up regarding Mr. Pierce's suggestion at the June 21, 2021 meeting of the NextGen Advisory Committee (NAC) that two or three meetings be held with aviation industry stakeholders between now and the next NAC meeting in October to improve community engagement on aviation noise.

In the spirit of community engagement and to encourage a meaningful dialogue and useful outcomes, we urge the NAC and Mr. Pierce to include in their meetings enough representatives from communities to ensure the NAC hears from a broad range of perspectives. The meetings should incorporate representatives who are a mix of resident/community advocates and elected officials from communities that are directly impacted by aviation operations across the country, including but not limited to Metroplexes and single sites.

We welcome your reply to info@AviationImpactedCommunities.org.

Thank you for considering our request on behalf of aviation-impacted communities.

Signatories:

National Organizations

aiREFORM
Aviation-Impacted Communities Alliance (AICA)
Citizens for Quiet Skies
National Quiet Skies Coalition
NextGenRelief.Org
NextGenNoise.Org
Quiet American Skies-Quiet Community LLC
Sky Justice National Network

State/Local Organizations

Advocates for Viable Airport Solutions, CA
Airport Community Roundtable of Charlotte, NC

Airport Impact Relief, Incorporated (AIR, Inc.), MA
Bay Area Jet Noise, CA
BOS Fair Skies, MA
Bucks Residents for Responsible Airport Management (BRRAM), PA
Citizens Against Gillespie Expansion and Low Flying Aircraft (C.A.G.E.L.F.A), CA
Citizens Against Runway Expansion (C.A.R.E.), IL
Citizens for a Friendly Airport (C4FA), CA
Citizens for Quiet Skies-Arapahoe County, CO
Citizens for Quiet Skies-Gold Canyon, AZ
Concerned Residents Against Airport Pollution (C.R.A.A.P.), CA
Concerned Residents of Brisbane, CA
Concerned Residents of Palo Alto, CA
FAiR Chicago, IL
GrotonAyerBuzz of Ayer, MA
GRRift (Gilpin Residents Refuse Increased Flight Traffic), CO
HICoP (Hawaii Island Coalition Malama Pono), HI
Hull Neighbors for Quiet Skies, MA
Logan Aircraft Noise Working Group, MA
Lower Makefield Township Trenton-Mercer Airport Review Panel, PA
Montgomery County Quiet Skies Coalition, MD
Montgomery-Gibbs Environmental Coalition, CA
Mountain-News, Lake Arrowhead, CA
Oregon Aviation Watch, OR
Plane Sense 4LI, NY
Quiet Skies, AL
Quiet Skies Boulder County, CO
Quiet Skies Coalition, WA
Quiet Skies Lake Arrowhead, CA
Quiet Skies Maui, HI
Quiet Skies Northeast Miami-Dade County, FL
Quiet Skies Puget Sound, WA
Quiet Skies San Diego, CA
Quiet Skies Santa Monica Mountains, CA
San Francisco's Concerned Residents Experiencing Annoying Aircraft Maneuvers (S.C.R.E.A.A.M.), CA
Santa Clarita for Quiet Skies, CA
Save Our Skies East Bay (S.O.S.E.B.), CA
Save Our Skies LA, CA
SCANA (Scottsdale Coalition for Airplane Noise Abatement), AZ
Sherman Oaks & Encino for Quiet Skies, CA
Sierra Club, Hawai'i Island Group, HI
Sky Justice Miami, FL
Sky Posse Los Altos, CA

South Metro Airport Action Council, MN
Southern Maryland Fair Skies Coalition, MD
Springfield Civic Association, MD
STOP Jet Noise NOW! SFOAK North S.F. Bay Area, CA
Studio City for Quiet Skies, CA
The 02152 Initiative, MA
Trenton Threatened Skies, NJ
UproarLA, CA
Vashon Island Fair Skies, WA
West Adams for Quiet Skies, CA

Angela Montes

To: Emily Tranter
Subject: RE: NextGen Advisory Committee

Emily Tranter
Lead Lobbyist for Policy and Government Affairs
Primacy Strategy Group
Washington, D.C.
202-378-7147
emilyt@primacysg.com
www.primacysg.com

On Aug 24, 2021, at 2:56 PM, Brad Pierce <bmpierce2@comcast.net> wrote:

Dear Ms. Yaplee,

Thank you for email dated July 12, 2021.

At the request of the NAC Chairman, I am beginning a conversation in the NAC to explore ideas on how other NAC members and their respective organizations might support the FAA's existing community engagement. The focus is to develop a series of initiatives to bolster the existing community engagements efforts. As you likely know, the NAC is focused on the many technical aspects of NextGen implementation. The impetus for this conversation is to explore potential ideas within the NAC to see if there are options for NAC member organizations to enhance the existing structure. As you may know, I'm Chair of the Centennial Airport (Colorado) Community Noise Roundtable and have found this forum a helpful tool in addressing my local community and aviation interests, this is one area that I hope to explore with the NAC to see if there is a way to make these local community forums even more effective.

I appreciate your offer to help and as always, the NOISE organization, as the NAC community representative, welcomes collaborative efforts with community groups to share ideas. I would welcome the opportunity to hear your thoughts on this issue. Do you have time for a phone call, virtual meeting or maybe we can meet at a future date.

Sincerely,
Brad Pierce
President, N.O.I.S.E.
Member, NextGen Advisory Committee

Airport Noise Report

A weekly update on litigation, regulations, and technological developments

Volume 33, Number 29 **September 3, 2021**

eVTOL Aircraft

JOBY AND NASA COLLABORATE TO MEASURE NOISE FOOTPRINT OF ELECTRIC AIR TAXI

This week, Joby Aviation, Inc. became the first company to fly an all-electric vertical takeoff and landing (eVTOL) aircraft as part of NASA's Advanced Air Mobility (AAM) National Campaign.

The two-week test campaign, which ends on Sept. 10, will analyze the noise footprint of Joby's aircraft and builds on almost a decade of joint research by Joby and NASA into electric flight, the company said in a Sept. 1 announcement.

NASA's AAM National Campaign is designed to promote public confidence in emerging aviation markets, such as passenger air taxis, through flight testing in realistic scenarios and data analysis that will inform the development of regulatory standards for emerging aviation platforms.

As part of the two-week test campaign at Joby's Electric Flight Base near Big Sur, CA, NASA and Joby will join forces to study the acoustic signature of the all-electric Joby aircraft, which the company intends to operate as part of a commercial passenger service beginning in 2024.

"NASA is proud to continue our relationship with Joby by gathering highly

(Continued on p. 117)

Noise Policy Review

INTERAGENCY AGREEMENT TO GUIDE FAA NOISE POLICY REVIEW STILL NOT FINALIZED

The FAA has still not finalized an interagency agreement with the Federal Mediation and Conciliation Service (FMCS), which will guide a review of FAA's outdated aviation noise policy.

In a May 10 letter to the House Quiet Skies Caucus, FAA Administrator Steve Dickson said his agency was working closely with the FMCS to finalize the interagency agreement and looked forward to leveraging the FMCS commissioners' expertise and experience in mediation in formulating FAA's aviation noise policy review framework and stakeholder engagement process (33 ANR 62).

FAA had hoped to begin the policy review process this summer. In early July, ANR asked for an update on the status of the noise policy review and FAA said the interagency agreement with the FMCS had not yet been signed. On Sept. 2, FAA told ANR it had no update to its July 2 statement.

It is unclear what is holding up completion of the interagency agreement but Congress will soon find out.

In its report accompanying the FY 2022 appropriations bill for the Department of Transportation, which passed the House on July 29, the House Appropriations

(Continued on p. 119)

In This Issue…

Joby, from p. 116

valuable aircraft safety and noise data that will contribute towards an aviation future that includes Advanced Air Mobility (AAM) operations," said Davis Hackenberg, NASA AAM mission integration manager.

"Data from industry leaders like Joby is critical for NASA's research activities and future standardization of emerging aircraft configurations. Industry partnerships are imperative for the United States to become a leader in the development of a safe and sustainable AAM ecosystem."

NASA engineers will deploy their Mobile Acoustics Facility and more than 50 pressure ground-plate microphones in a grid array that allows for multi-directional measurement of the Joby aircraft's sound emissions. Using this data, NASA and Joby will generate noise hemispheres for the aircraft that capture the intensity and the character of the sound emitted in comparison to helicopters, drones, and other aircraft, the company explained.

It said these readings, in combination with the noise profile of urban communities, can be used to verify how proposed aircraft operations will blend into the existing background noise.

Joby has released several videos on its website (jobyaviation.com) showcasing the quiet nature of the company's aircraft during take-off, hover, and overhead flight and comparing the overflight noise of its electric aircraft with that of two small twin-engine piston-powered aircraft models and three types of helicopters.

"NASA has been a critical catalyst in the transition to electric aviation, and we're proud to have partnered with them on multiple groundbreaking projects since our first collaboration in 2012," said JoeBen Bevirt, founder and CEO of Joby. "It's incredibly exciting to be the first eVTOL company to fly as part of the AAM National Campaign, leading the way toward a more sustainable future."

"From day one, we prioritized building an aircraft that not only has an extremely low noise profile, but blends seamlessly into the natural environment. We have always believed that a minimal acoustic footprint is key to making aviation a convenient part of everyday movement without compromising quality of life, and we're excited to fly with NASA, our long-time partners in electric flight, to demonstrate the acoustic profile of our aircraft."

Joby said its participation in NASA's AAM National Campaign marks the next step in a long history of collaboration between the two parties. Over the last decade, Joby has worked with NASA on a range of aircraft projects that have explored electric propulsion, including a long-endurance eVTOL demonstrator called Lotus, the Leading Edge Asynchronous Propeller Technology (LEAPTech) project, and the design of the X-57 Maxwell experimental aircraft, which is now undergoing systems integration testing.

With a maximum range of 150 miles recently demonstrated during flight testing, and a top speed of 200 mph, Joby's eVTOL aircraft is designed to carry four passengers and a pilot with zero operating emissions. With more than 1,000 flight tests completed and full-scale prototypes in the air since 2017, Joby Aviation aims to certify its electric air taxi with the FAA in 2023.

The aircraft is powered by six propellers that tilt to enable vertical takeoff and efficient cruise flight. The number of blades, blade radius, tip speeds, and disk loading of the aircraft were all selected to minimize the acoustic footprint and improve the character of the noise produced. The propellers can also individually adjust their tilt, rotational speed, and blade pitch, helping to avoid the blade vortex interactions that cause the "wop wop" sound we associate with traditional helicopters.

Once testing is complete, a team of acoustic experts from NASA and Joby will work together to analyze the data before sharing their findings later in the year.

Joby recently listed on the New York Stock Exchange under the ticker symbol "JOBY" following its successful business combination with Reinvent Technology Partners. Proceeds raised in the transaction plus cash on the Company's balance sheet as of March 31 equal approximately $1.6 billion, which is expected to fund Joby through initial commercial operations.

Must Meet Part 36 Noise Standards

An FAA spokeswoman told ANR that Joby's eVTOL aircraft and larger electric aircraft must meet FAA's current aircraft noise certification standards found in Advisory Circular 36-4D. Asked what electric aircraft manufacturers are seeking noise certification, she replied, "We don't comment on ongoing certification projects."

But Katie Pribyl of Joby Public Relations, told ANR that Joby applied for certification of its eVTOL aircraft in 2018. The part 36 noise certification process is part of the type certification process.

"Joby's aircraft is exceedingly quiet and we have been working with the FAA's Office of Environment and Energy on the approach which will be used to show compliance with FAA part 36," she said.

On Aug. 27, FAA issued proposed noise certification standards that apply to only one model of unmanned aircraft (UA): the small Matternet Model M2 quadcopter package delivery drone, which has a maximum takeoff weight of 29 pounds, including a 4-pound payload, and operates at an altitude of 400 feet or lower (33 ANR 114).

The proposed noise standards for the Matternet set a sound exposure level limit of 78 dB at a level flyover altitude of 250 feet.

"At present, the FAA does not have a sufficient database of information about the noise generated by most [unmanned package delivery drone] models to establish generally applicable noise standards, due to their novelty and variety," FAA said, but explained that without its proposed rule, Matternet would be unable to certificate its aircraft until such time as the FAA was able to establish a rule of general applicability for UA noise certification.

Electric Aircraft

FLORIDA TECH IS FIRST U.S. UNIVERSITY TO OWN AND FLY AN ELECTRIC AIRCRAFT

[Florida Institute of Technology in Melbourne, FL, released the following news release on Aug. 20.]

As the focus on climate change and electric transportation increases, a first-in-the-nation acquisition for Florida Tech will allow for hands-on learning and important research on a new and timely aspect of aviation.

This month, the school became the only American university to own and fly an electric plane. The Velis Electro, a light aircraft from the Slovenian company Pipistrel, was introduced last year.

The first electric-powered airplane certified in Europe, it has a maximum speed of 181 km/h (113 mph, 98 knots), zero emissions, an engine with a noise level of 60 decibels (quieter than the single-engine Cessna 172 which is 85 decibels) and a body made of composite materials. The plane costs $190,000.

The two-seater has not been flown in the United States until now. It is awaiting U.S. certification, so Florida Tech is flying it under the "experimental" category.

Florida Tech alumnus and former associate dean Isaac Silver was the pilot for the inaugural flight. He flew for 22 minutes, using about a third of the aircraft's battery capacity and creating an operating cost of only $1.03.

The plane will give students the opportunity for experiential research with cutting edge technology, providing a research value added to their educational experience.

"While we can teach students flight test techniques using older aircraft, having them test an airplane with the latest technology prepares them for contemporary designs," said Brian Kish, Flight Test Engineering program chair and aerospace associate professor.

The next step is in getting to know the plane to log significant flight time. That's to the benefit of the university and another interested group: the Federal Aviation Administration, which is in the process of awarding Florida Tech an $85,000 contract to provide data from the first 50 flight hours of the Velis Electro.

Kish said the first thing the team will do in the early flights is to make sure they're getting the performance that the plane's manual says the vehicle should give. The team will test the different power settings during the plane's cruising period.

"There's different speeds, whether you use 20 kilowatts, up to 36 kilowatts for cruising, obviously the more power you should go a little faster," Kish said. "So, we're going to spot check all those cruise settings and see what airspeed we get and see how long the battery charge lasts."

The electric plane made it to the university through a research relationship between the university, Georgia Tech and the FAA. As part of the work, university researchers were made aware of electric plane, with Pipistrel's chief test pilot invited to a meeting to discuss the airplane. Pipistrel then offered the data on the plane, which led to Florida Tech inquiring about the plane to use for their own research. After internal discussions and a grant from the Buehler Perpetual Trust, the school put in the order last September. The plane arrived in Melbourne in July.

While there is still much data on electric-powered flight to be obtained, the possibilities have researchers at Florida Tech excited about developing a better understanding of these types of aircraft, including current things done well and what may need to be improved.

"We expect to see some drawbacks and limitations, but more importantly we expect to also see potential opportunities," Kish said. "As the first US customer, Florida Tech will report our research findings to Pipistrel and the FAA. This initial feedback is crucial in the engineering process to evolve the design as well as assist federal regulators on developing certification and training guidelines."

Research

SHAPE-MEMORY ALLOYS TO QUIET LANDINGS

[The Texas A&M College of Engineering issued the following news release on Aug. 30 about materials inserted as passive, seamless fillers within airplane wings that will automatically deploy during descent to reduce airframe noise.]

Texas A&M University researchers developed a computational study that validates using shape-memory alloys to reduce airplane noise during landing.

"When landing, aircraft engines are throttled way back, and so they're very quiet. Any other source of noise, like that from the wings, becomes quite noticeable to the people on the ground," says Dr. Darren Hartl, assistant professor in the Department of Aerospace Engineering. "We want to create structures that won't change anything about the flight characteristics of the plane and yet dramatically reduce the noise problem."

During takeoff, engines are the primary source of noise; when landing, airplane engines are mostly idling. The wings are reconfigured to slow the airplane and prepare for touchdown.

The front edge of the wing (the leading-edge slat) moves forward from the main structure, creating a gap where air rushes in, circulates violently, and produces noise. A filler that snaps out autonomously as the slat deploys would provide a smoother aerodynamic profile that reduces flow unsteadiness and resultant airframe noise.

Earlier work from Hartl's collaborators at NASA showed that fillers used as a membrane in an elongated S-shape within the slat-wing space could circumvent the air circulation and lessen the jarring sound. However, the research lacked a systematic analysis of candidate materials that can spring back after landing.

Hartl's researchers performed comprehensive simulations to investigate if a membrane made of a shape-memory alloy could assume the desired S-shaped geometry during descent and then recess into the front edge of the wing for landing. Their analysis considered geometry, elastic properties of the shape-memory alloy, and aerodynamic flow of air around the material during descent. As a comparison, researchers also modeled the motion of a membrane made of a carbon-fiber-reinforced polymer composite under the same airflow conditions.

Hartl's team had to perform calculations hundreds to thousands of times before the motion of the materials was simulated correctly, proving that the shape-memory alloy and the composite could change their shape to reduce air circulation and thereby reduce noise. However, they also found the composite had a narrower range of designs that would cancel noise.

Hartl and his team plan to validate the results of their simulations with experiments.

"We might be able to create smaller structures that can reduce noise and don't require the S-shape, which are actually quite large and potentially heavy," Hartl says.

This research is funded by the Engineering and Physical Sciences Research Council, the Royal Academy of Engineering [UK], and the NASA Langley Research Center. Read the research paper in the *Journal of Aircraft*: https://arc.aiaa.org/doi/full/10.2514/1.C036070

Noise Policy, from p. 116

Committee ordered the FAA to provide an update "on its aviation noise policy review process, participants, and time-table not less than 90 days after the date of enactment of this Act."

The DOT FY 2022 funding bill still must be approved by the Senate and that is likely to occur before fiscal year 2022 begins on Oct. 1.

So still unanswered are the following questions about FAA's noise policy update:

• Who will participate on the stakeholders' group FAA wants to form to help update its aviation noise policy?

• How long is the noise policy update process expected to take?

• Will the public have acces to the noise policy review process?

• Will FAA issue summaries or reports on the stakeholder meetings and the overall policy update effort?

• Will a point person be named to lead the noise policy update effort?

AIRPORT NOISE REPORT

Anne H. Kohut, Publisher

Published 44 times a year at 43978 Urbancrest Ct., Ashburn, Va. 20147; Phone: (703) 729-4867; FAX: (703) 729-4528.
e-mail: editor@airportnoisereport.com; Price $850.