U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

RECORD OF APPROVAL

14 CFR PART 150

NOISE COMPATIBILITY PROGRAM

SAN FRANCISCO INTERNATIONAL AIRPORT

SAN MATEO COUNTY, CALIFORNIA

for Regional Counsel, AWP-7	4/1/2019 Date	X CONCUR	NONCONCUR
Director, Office of Airports, AWP-600	4/1/2019 Date	X APPROVED	DISAPPROVED

Record of Approval
San Francisco International Airport
Noise Compatibility Program

INTRODUCTION

The San Francisco International Airport (SFO) Noise Compatibility Program (NCP) describes the current and future noncompatible land uses based on the parameters as established in Title 14, Code of Federal Regulations (CFR), Part 150, *Airport Noise Compatibility Planning*. The 2018 NCP Update replaces various NCP measures approved by the Federal Aviation Administration (FAA) on September 7, 1983. The 2018 NCP Update recommends a total of 3 (three) measures to reduce the effect of noise generated at SFO. The recommendations include: 1 (one) noise abatement measure, 1 (one) noise mitigation measure, and 1 (one) program management measure. These recommended program measures are summarized in Chapter 4 in Sections 4.2, 4.3, and 4.4 on pages 4-1 through 4-8 of the NCP.

The FAA accepted the Noise Exposure Maps (NEMs) for SFO on January 29, 2016. The NEMs are based on operational data that is now over five years old. FAA received certification, in accordance with 14 CFR § 150.21, that the NEMs are representative of conditions at SFO for the existing and forecast timeframes as of the date of August 13, 2015. The FAA recommended that the City and County of San Francisco, Airport Commission (Airport Commission) review, revise, and update, as appropriate the future NEMs under 14 CFR §150.21 at the earliest opportunity. Two comment letters were received by the FAA during the NCP public review - comment period that occurred between October 18, 2018 and December 26, 2018. Comment letters were received from the Cities of Palo Alto, and Mountain View. The City of Mountain View's letter was submitted jointly with the City of Los Altos. The Cities of Palo Alto, Mountain View, and Los Altos (Cities) commented on the adequacy of the NEMs that FAA accepted in 2016 and how SFO's Part 150 Study did not address aircraft noise impacts to their communities. The Cities also provided comments on the FAA's Northern California Metroplex and how it is not considered in the 2018 SFO NCP Update. FAA responses to the comments received are provided in Appendix A to this Record of Approval (ROA).

FAA notes that Chapter 2 of the 2018 NCP Update provides the status of each of the measures included in the 1983 NCP FAA ROA. Table 2-1, identifies the initial action element identification; element description; the 1983 ROA FAA Decision; and implementation status of the approved measures. A copy of Table 2-1 is attached to this ROA as Appendix B. The 1983 ROA included a total of 29 measures: 4 Airport Noise Monitoring and Management Program; 9 Flight Procedure Changes; 7 Airport Noise Limits, Use Restrictions, and Economic Incentives; 1 Noise Insulation – Navigation Easement Program; 2 Neighborhood Enhancement Program; and 6 Preventative Land Use Planning measures. With the exception of Noise Insulation – Avigation Easement Program, the Airport Commission, is not seeking FAA re-approval of these measures.

The approvals listed herein include approval of actions that the Airport Commission recommends be taken by the FAA. It should be noted that these approvals indicate only that the actions would, if implemented, be consistent with the purposes of 14 CFR Part 150. The approvals do not constitute decisions to implement the proposed actions. The approvals do not constitute a commitment by the FAA to provide Federal financial assistance for these projects. Subsequent decisions concerning possible implementation of these actions may be subject to the applicable environmental and/or aeronautical requirements. FAA is providing its approvals on only those measures the Airport Commission has identified in the 2018 NCP Update for which they are seeking FAA approval. The ROA does not address existing measures, for which the Airport Commission does not seek FAA approval.

The recommendations below summarize, as closely as possible, the airport operator's recommendations in the noise compatibility program update and are cross-referenced to the

program. The statements contained within the summarized recommendations and before the indicated FAA approval, disapproval or other determination do not represent the opinions or decisions of the FAA.

NOISE ABATEMENT MEASURE

1. Noise Abatement Measure #1 - Install Permanent or Portable Aircraft Noise and Operations Monitoring Equipment.

Description: This measure recommends the replacement of existing equipment for continued monitoring of aircraft noise levels at the airport and in the airport environs using 29 remote monitoring stations, 5 on-airport noise monitors, and 4 portable noise monitors. The existing noise monitoring hardware (noise monitors and associated microphones) would be replaced over the next five years. The current system was installed in 2004 and would be replaced with new equipment capable of acoustic signal processing, data transfer, self and external calibration, two way communication, sound level display, poles and microphone access (permanent monitors), weatherproof security case, live community interface, wind sensors, and AC power (portable units). Staff in the SFO Aircraft Noise Abatement Office (ANAO) conduct noise data analysis and draft reports using the data collected from the monitors. Use of the aircraft noise monitoring system allows SFO staff to monitor aircraft noise and improve overall airport/community land use compatibility. The replacement of the old noise monitors and microphones will ensure that ANAO can continue to collect and share real-time aircraft noise data and associated analysis with stakeholder partners. (NCP Section 3.2.6.3, page 3-12, and Section 4.2, page 4-1)

FAA Action: Approved. This measure would enable ANAO to continue to monitor the effectiveness of the approved noise compatibility program. Replacement monitors would assist the ANAO to measure noise levels and more precisely identify the location of land uses that are not compatible with noise levels greater than Community Noise Equivalent Level (CNEL) 65 decibels (dB). Approval of this measure does not obligate the FAA to participate in funding the acquisition or installation of the replacement monitors and associated equipment. Note, for purpose of aviation safety, this approval does not extend to the use of monitoring equipment for enforcement purposes by in-situ measurement of any pre-set noise threshold. The FAA notes that the NCP update does not include any such thresholds.

NOISE MITIGATION MEASURE

1. Noise Mitigation Measure #1 – Acoustical Treatment Program

Description: This measure recommends continuation of the voluntary residential sound insulation program (RSIP) at SFO for eligible single-family and multi-family residential properties that are within the CNEL 65 dB and higher NEM contours for the forecast year of 2019 accepted by the FAA on January 29, 2016. Eligibility to participate in future phases of the RSIP would be limited to: (1) properties located within the CNEL 65 dB higher contours as depicted on the 2019 NEM; and (2) properties that were not insulated in previous phases of the RSIP because the owners at the time declined to participate or failed to respond to invitations to participate, and the properties were subsequently sold to new owners who want noise insulation improvements. All property owners participating in the voluntary program would be required to grant an aviation easement to the City and County of San Francisco by and through the San Francisco Airport Commission. (NCP Section 3.3.1.3, page 3-16 and Section 4.3, page 4-3)

FAA Action: Approved. This measure would continue to improve land use compatibility in the vicinity of SFO. The specific identification of structures recommended for inclusion in the

program and compliance with all applicable FAA noise insulation and funding guidelines will be required prior to approval of federal funding assistance. Update of the NEMs are also required prior to approval of federal funding assistance.

PROGRAM MANAGEMENT MEASURE

1. Review and Revision of the Noise Compatibility Program.

Description: This measure is intended to comply with 14 CFR Part 150 requirements for preparation of new noise exposure maps, as specified in Section 150.21(d), and revision of the NCP, as specified in Section 150.23(e)(9), in the event of changes in aircraft noise levels that result in any "...substantial, new noncompatible use" in an airport evirons. If future numbers of aircraft operations, aircraft operating procedures, aircraft types, runway uses, or approach or departure flight tracks differ significantly from those used in preparing the noise exposure maps, the Airport Commission will revise the Noise Exposure Maps and update the Noise Compatibility Program accordingly. The Airport Commission will consider the potential effects of all future planning decisions on the Noise Compatibility Program and will review and revise the Noise Exposure Maps and Noise Compatibility Program as appropriate. (NCP Section 4.4, page 4-7)

FAA Action: Approved.

END OF RECORD OF APPROVAL

Appendix A

San Francisco International Airport (SFO)

14 CFR Part 150 Update - Record of Approval

Federal Aviation Administration's Responses to Comment Letters Received

Comment Letter 1: City of Palo Alto

General Comments:

General Comment 1: Exclusion of Palo Alto from the Geographic Scope of the Noise Exposure Maps and thus consideration in the NCP.

General Response 1: The 2014 and 2019 San Francisco International Airport (SFO) Noise Exposure Maps (NEMs) were prepared in accordance with the requirements of 14 Code of Federal Regulations (CFR) Part 150 including the geographic extents of the NEMs. The NEM boundaries were established through the modeling of SFO airport operations to develop Community Noise Equivalent Level Contours (CNEL) pursuant to the requirements of § 150.21(a)(1)(b) and § A150.101. The Federal Aviation Administration (FAA) reviewed the NEMs, found them in compliance with the requirements of 14 CFR Part 150, and accepted the NEMs on January 29, 2016. The entirety of the CNEL 65 decibel (dB) contours are shown on the NEMs. Due to its distance from SFO, the City of Palo Alto remains entirely outside of the 2014 and 2019 CNEL 65 dB contours.

General Comment 2: The NEM and NCP fail to account for the NorCal Metroplex procedures.

General Response 2: FAA accepted the NEM with 2014 and 2019 SFO CNEL contours on January 29, 2016. FAA approved the SFO aviation activity forecasts for use in preparing the NEM on June 9, 2014. FAA approved SFO Integrated Noise Model (INM) stage length adjustments on July 9, 2014. These actions occurred prior to FAA's implementation of the *Northern California Optimization of the Airspace and Procedures in the Metroplex* (NorCal Metroplex or Metroplex) procedures. Additionally, the Metroplex project was focused on navigable airspace procedures in areas outside of the CNEL 65 dB noise contours of SFO airport operations.

General Comment 3: The Study does not address or meet the goals of NextGen as mandated by Congress. The "Purpose" section fails to discuss any effort to reduce noise, emissions, or other environmental impacts by the Metroplex and Air Traffic. This demonstrates that the Part 150 Study does not meet the goals of Congress.

General Response 3: FAA's NorCal Metroplex EA and FONSI/ROD, and SFO's 14 CFR Part 150 Update are independent actions and subject to separate requirements. The SFO 14 CFR Part 150 Study Update, both NEM and Noise Compatibility Program (NCP), were prepared in accordance with the requirements of 14 CFR Part 150, the implementing regulations for the Aviation Safety and Noise Abatement Act of 1979, 49 U.S.C. § 47501 *et. seq.* The regulations provide a systematic approach for assessing and evaluating noise from generated from a public use airport operations and the compatibility of land uses surrounding the airport. As required by § A 150.101, to determine the extent of the noise impact around an airport, airport proprietors developing noise exposure maps must develop continuous contours for yearly day-night average sound level (YDNL), CNEL in California, of 65, 70, and 75 dBs.

Conversely, the NorCal Metroplex was a specific project related to the Congressional mandate to update the National Airspace System (NAS) through Next Generation Air Transportation System (NextGen). The FAA prepared an Environmental Assessment (EA) pursuant to the National Environmental Policy Act, 42 U.S.C. Sec. 4321 et seq., for the proposed NorCal Metroplex. A Finding of No Significant Impact and Record of Decision (FONSI/ROD) for NorCal Metroplex was issued on August 7, 2014. The EA assessed potential noise impacts related to air traffic procedures into and out of the Northern California airspace.

General Comment 4: The Study fails to account for the drastic changes of the NorCal Metroplex that were deployed in 2015.

General Response 4: The Metroplex project involved the safe and efficient flow of air traffic within the Northern California airspace. Those air traffic procedures occurred in areas beyond the SFO CNEL 65 dB contour.

The purpose of a 14 CFR Part 150 Study is to identify airport noise exposure and land use compatibility in the immediate vicinity of an airport. The Metroplex project occurred outside the Part 150 study area. Those Metroplex project airspace procedures do not affect the SFO airport noise contours because the runway arrival and departure points below 3,000 feet above ground level have not changed.

General Comment 5: The Study is based on the old INM tool instead of the AEDT tool. The FAA has mandated the use of AEDT since March 2012.

General Response 5: The comment is not an accurate statement pertaining to the application of the Aviation Environmental Design Tool (AEDT) for a Noise Compatibility Planning Study under 14 CFR Part 150. FAA began use of the AEDT version 2a, for FAA air traffic airspace and procedure actions that are 3,000 feet ***above*** ground level effective March 21, 2012. Preparation of the NEMs by the airport sponsor correctly used the INM, as it was the model used for actions ***below*** 3,000 feet above ground level. Effective May 29, 2015, AEDT 2b replaced AEDT 2a, INM, and EDMS as the required tool for noise, fuel burn, and emissions modeling of FAA actions. Consistent with current FAA policy and practice, the use of AEDT 2b is not required for projects whose analysis began before the effective date of this policy. In the event AEDT 2b is updated after the environmental analysis process is underway, the updated version may, but need not, be used to provide additional disclosure concerning noise, fuel burn, and emissions. (See 80 FR 27853). As stated in General Response 1, the FAA determined the NEMs were compliant with the requirements of 14 CFR Part 150 and accepted the NEMs on January 29,

2016. Since participation in the 14 CFR Part 150 program is voluntary on the part of the airport operator, at such time that the City and County of San Francisco decides to update its SFO NEM, the FAA will ensure that the study is prepared consistent with the program requirements using the most current model available at that time.

General Comment 6: The Study is based on underestimated operations. See comparison table below. In 2017, SFO already exceeded the 2019 forecast by 7,643 operations.

General Response 6: No comparison table was provided. As stated in NEM Section 2.2, The 2014 Aviation Activity Forecast, on page 2-1, and NCP Section 1.2, Summary of Aviation Demand Forecasts, on page 1-2, the FAA approved the aviation activity forecasts used in the analysis on June 9, 2014. The 2019 forecast included 452,700 operations. A 7,643 increase in annual operations represents a 1.69 percent increase over the 2019 forecast level.

The FAA is neither increasing nor decreasing aircraft operations at SFO. Changes in aircraft operations (increases and decreases) at a particular airport result from fluctuations in passenger demand for air travel, and airline decisions. The 14 CFR Part 150 regulation is a voluntary program that encourages airport proprietors to monitor airport operations, land uses, and demographic changes in the surrounding areas, and to update NEMs as appropriate.

General Comment 7: The NCP should examine several years in the future – not just one.

General Response 7: The regulation at 14 CFR 150.21(a)(1) requires that NEMs be developed for one existing year and one future year, which is at least five years beyond the existing year. The NCP was prepared consistent with the 14 CFR Part 150 requirements.

Comments Regarding Mitigation Measures Identified in Chapter 3 of the Part 150 Study:

NCP Comment 1: Optimized Profile Descent (OPDs) are recommended for aircraft approaching the outer waypoint on the ILS (beyond the study area).

NCP Response 1: Comment noted. The San Francisco Airport Commission did not request FAA's approval for modified arrival procedures as part of the SFO NCP process.

NCP Comment 2: 3.2.4.3 Restrict the number or time of day for operations. This measure should be recommended.

NCP Response 2: Comment noted. Noise and time of day access restrictions must comply with 14 CFR Part 161, *Notice and Approval of Airport Noise and Access Restrictions*. SFO considered the use of number or time of day restrictions in NCP Section 3.2.4.3. The decision to include a specific measure for FAA approval is the responsibility of the airport proprietor. The San Francisco Airport Commission did not request FAA's approval to restrict the number or time of day for operations.

NCP Comment 3: 3.2.6.1 Implement noise abatement office for monitoring, reporting, and responding to aircraft noise. 3.2.6.2 Record or Track Noise Complaints. We recommend these measures include areas out to the 45 CNEL contour boundary.

NCP Response 3: Comment noted. See response to General Comment number 3. The San Francisco Airport Commission did not request FAA's approval for measures 3.2.6.1 and 3.2.6.2.

Comments Regarding Noise Exposure Maps (NEM) (Part 150, Subpart B):

NEM Comment 1: 2019 Noise Exposure Map (August 13, 2015) does not display CNEL noise exposure contours below CNEL 65 dB. The Part 150 Study uses an outdated metric: CNEL 65 and higher.

NEM Response 1: FAA disagrees with the commenter. The use of the YDNL metric, and CNEL in California, has been accepted by the Federal Government for decades. The use of the CNEL 65 dB as the threshold for determining incompatible land uses is correct because normal building construction with windows and doors closed affords a 20 dB noise level reduction to 45 dB (See Footnote 1 to Table 1, *Land Uses Normally Compatible with Various Noise Levels*, FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, Appendix 1, page 3, August 5, 1983). It is important to understand this level of sound may be detectable to people meaning they may be able to hear the sound, it won't be at a level for populations that consider that sound level to be "highly annoying." Section A150.101(d) and (e) indicates 65 dB CNEL is the level below which all land uses are considered compatible.

NEM Comment 2: The INM arrival and departure flight tracks for Runways 01L and 01R appear to have been cropped, built solely on instrument procedures.

NEM Response 2: The INM arrival and departure flight tracks were based on an entire year (2013) of actual radar flight track data from SFO's Airport Noise and Operations Management System (ANOMS). Figures 4-7a and 4-9a depict the full arrival and departure tracks for Runways 01L and 01R, respectively, over an aerial photograph at a scale of 1 inch equals 10,000 feet. The actual radar flight tracks used to develop all of the INM flight tracks are depicted in Appendix C. The radar flight tracks associated with Runways 01L and 01R arrivals are depicted in Exhibit C-3. The radar flight tracks associated with Runways 01L and 01R departures are depicted in Exhibit C-7.

NEM Comment 3: The INM arrival and departure maps have omitted all aircraft on radar vectors.

NEM Response 3: As stated in NEM Response 2, the INM arrival and departure flight tracks were based on an entire year (2013) of actual radar flight track data from SFO's ANOMS. To the extent that radar vectoring occurred within the 14 CFR Part 150 required 30,000-foot track length, they are reflected in the INM flight track exhibits. The 2014 and 2019 CNEL 65 dB contours fall entirely within the required track lengths.

NEM Comment 4: The INM arrival and departure maps have omitted all CNEL noise contours below 65 dB.

NEM Response 4: As previously stated 14 CFR Part 150 requires the preparation of CNEL 65, 70 and 75 dB contours in the NEM.

NEM Comment 5: The INM arrival and departure maps did not stratify, parse, or color code track data by altitude.

NEM Response 5: Stratifying, parsing, or color coding track data by altitude is not required by 14 CFR Part 150.

Comments Regarding the San Francisco International Airport 14 Code of Federal Regulations (CFR) Part 150 Study Update Noise Exposure Map Report:

NEM Report Comment 1: Airspace (3.6) Full disclosure, relative to the Class B airspace change was omitted from this update.

NEM Report Response 1: The Class B airspace change occurred after the development of the NEMs. However, the changes to the Class B airspace close to SFO would not affect the size and location of the 2014 and 2019 CNEL 65 dB contours.

NEM Report Comment 2: Air Traffic Control (3.7) The Part 150 documents fail to include any evaluation or mitigation for the arrival areas as they did for areas surrounding the departures.

NEM Report Response 2: NEM Section 3.7 Air Traffic Control provides a brief overview of the Airport Traffic Control Tower, Terminal Radar Approach Control and Air Route Traffic Control Center facilities and their roles to direct flight to and from the airport. This section is not intended to evaluate mitigation measures.

NEM Report Comment 3: Both the NEM and NCP fail to assess the combined impact of air traffic from and to multiple airports.

NEM Report Response 3: 14 CFR Part 150, Airport Noise Compatibility Planning is a voluntary process for airport operators that established a system for measuring noise at its airport and evaluating compatible land use with the levels of noise exposure from its airport operations. FAA approval of an NCP means it meets the requirements of Part 150 and that the FAA finds the program measures to be reasonably consistent with achieving the goals of reducing existing incompatible land use around the airport and preventing the introduction of additional incompatible land use. FAA approval of an element of an NCP makes identified noise program measures potentially eligible for Federal funding support through the Airport Improvement Program. FAA's approval of a NCP element is not a determination that the depicted land use is acceptable or unacceptable. The local authority that has land use jurisdiction for the area determines local land use policies.

NEM Report Comment 4: Standard Terminal Arrival (STARs) and Departure Procedures (DPs) (3.8). This section fails to address any procedure implemented by the NorCal Metroplex in the Bay Area during the forested period.

NEM Report Response 4: See General Responses 2 and 3.

NEM Report Comment 5: Instrument Procedures 3.8.2 Table 3-5, is an incomplete, non-current, listing of SFO Instrument Approach Procedures (IAPs).

NEM Report Response 5: IAPs are updated by the FAA on an ongoing basis. The list of IAPs was current at the time the document was prepared.

NEM Report Comment 6: Departures 3.8.3 Table 3-6, is an incomplete, non-current, listing of SFO Departure Procedures (DPs).

NEM Report Response 6: DPs are updated by the FAA on an ongoing basis. The list of DPs was current at the time the document was prepared.

Comment Letter 2: Cities of Mountain View and Los Altos

Comment 1: The 2019 Noise Exposure Map, August 13, 2015, does not display DNL noise exposure contours below 65 dBA.

Response 1: See General Response 3 and NEM Response 4.

Comment 2: The INM arrival and departure flight tracks for Runways 01L and 01R appear to have been cropped, built solely on instrument procedures.

Response 2: See NEM Response 2.

Comment 3: The INM arrival and departure maps have omitted all aircraft on radar vectors.

Response 3: NEM Response 3.

Comment 4: The INM arrival and departure maps have omitted all CNEL noise contours below 65 dB.

Response 4: See NEM Response 4.

Comment 5: The INM arrival and departure maps did not stratify, parse, or color code track data by altitude.

Response 5: See NEM Response 5.

Comment 6: The Study does not address or meet the goals of NextGen as mandated by Congress in VISION 100.

Response 6: See General Response 3.

Comment 7: The "Purpose" section fails to discuss any effort to reduce noise, emissions, or other environmental impacts by the Metroplex and Air Traffic. This demonstrates that the Part 150 Study does not meet the goals of Congress.

Response 7: See General Response 3.

Comment 8: The forecast is no longer considered a forecast period, but a validation of historical fact.

Response 8: See General Response 6.

Comment 9: The environmental ramifications of the NorCal Metroplex were entirely omitted from this document.

Response 9: See General Response 3.

Comment 10: Airspace (3.6) Full disclosure, relative to the Class B airspace change was omitted from this update.

Response 10: See NEM Report Response 1.

Comment 11: Air Traffic Control (3.7) The Part 150 documents fail to include any evaluation or mitigation for the arrival areas as they did for areas surrounding the departures.

Response 11: See NEM Report Response 2.

Comment 12: Standard Terminal Arrival (STARs) and Departure Procedures (DPs) (3.8). This section fails to address any procedure implemented by the NorCal Metroplex in the Bay Area during the forested period.

Response 12: See NEM Report Response 4.

Comment 13: Instrument Procedures 3.8.2 Table 3-5, is an incomplete, non-current, listing of SFO Instrument Procedures (IAPs).

Response 13: See NEM Report Comment 5.

Comment 14: Departures 3.8.3 Table 3-6, is an incomplete, non-current, listing of SFO Departure Procedures (DPs).

Response 14: See NEM Report Comment 6.

END OF RESPONSES TO COMMENTS

City of Palo Alto
Office of the Mayor and City Council

December 17, 2018

Ms. Camille Garibaldi
Environmental Protection Specialist, SFO – 613
Federal Aviation Administration
San Francisco Airports District Office
1000 Marina Boulevard, Suite 220
Brisbane, California 94005 – 1835

RE: San Francisco International Airport, Noise Compatibility Program - 14 CFR Part 150 Update July 2018

Dear Ms. Garibaldi,

This commentary is provided by the City of Palo Alto, located south-southeast of the San Francisco International Airport (SFO), under the flight paths for most of SFO's arrivals. The City appreciates this opportunity to provide input regarding the Part 150 Study Update. This letter addresses the SFO Noise Compatibility Program (NCP) that is currently before the FAA for review. Additionally, this letter comments on the Noise Exposure Maps produced by the City and County of San Francisco (San Francisco) and accepted by the FAA in January 2016. The Noise Exposure Maps are a critical component as the maps dictate the areas to be considered in the creation of the Noise Compatibility Program.

Overall, our overriding concern is the exclusion of Palo Alto from the geographic scope of the Noise Exposure Maps and thus the exclusion of Palo Alto from consideration in the Noise Compatibility Program Update. Palo Alto has become the recipients of SFO's additional noise, overflight, and other environmental impacts without consideration in the Part 150 Study (Consultation and Public Involvement, §1.6, Table 1-1, Page 1-7). General Comment 1

We also find that both the Noise Compatibility Program and the Noise Exposure Maps fail to take into consideration the Northern California Optimization of the Airspace and Procedures in the Metroplex (NorCal OAPM). The NorCal OAPM and the national Next Generation Air Transportation System initiative (NextGen) have resulted in more air traffic passing over Palo Alto en route to SFO. San Francisco's Part 150 Update purports to reflect changes since 2014 in Noise Exposure Maps and related data, yet the Update does not even address the NorCal OAPM. The Update is also incomplete because it fails to include Palo Alto and its neighbors as part of the Study. General Comment 2

In addition to these overarching comments, we provide specific comments focused on the Noise Compatibility Program Update as well as the Noise Exposure Maps.

Comments Regarding the "Purpose" Section of the of the 14 CFR Part 150 Update Noise Compatibility Program

The City of Palo Alto finds the following deficiencies in the Study:

- *The Study does not address or meet the goals of NextGen as mandated by Congress.* General Comment 3

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Congress mandated that NextGen, "take into consideration, to the greatest extent practicable, design of airport approach and departure flight tracks to reduce the exposure of noise and emissions pollution on affected residents" (per the "VISON 100-Century of Aviation Reauthorization Act of 2003"). Congress also issued a number of NextGen-related mandates in the FAA Reauthorization Act of 2018, Pub. L. 115-254, including sections 175, 176, 178, and 179. We believe that it would be appropriate for the NCP to address the applicability of these and other statutory mandates and, in particular, to explain how NextGen implementation imperatives could affect San Francisco's ability to implement proposed NCP measures. In addition, sections 187 and 188 of that statute mandate studies relevant to noise mitigation and analysis under Part 150. The NCP should incorporate the mandates from those statutory provisions as well.

This "Purpose" section fails to discuss any effort to reduce noise, emissions, or other environmental impacts produced by the Metroplex and Air Traffic. This demonstrates that the Part 150 Study does not meet the goals established by Congress.

- *The Study fails to account for the drastic changes of the NorCal Metroplex OAPM that were deployed starting in 2015*. These changes included a redesign of the Class B airspace and the introduction of OPD arrival procedures. In fact, the environmental ramifications of the Nor Cal Metroplex (OAPM) were entirely omitted from this document.

General Comment 4

- *The Study is based on the old INM noise modeling tool instead of the AEDT tool.*

  The FAA has mandated the use of AEDT since March 2012.The 2014 NEM was prepared after 2012 and was based on 2013 data. Since the initial AEDT release, the noise modeling capabilities have drastically improved (especially compared to the previous INM capabilities). It is unclear why San Francisco chose not to use the AEDT tool in preparation of the NEM nor the NCP. The NCP should analyze the differences, if any, that would result if the currently mandated model had appropriately been used.

General Comment 5

- *The Study is based on underestimated forecast of SFO operations.* See comparison table below. In 2017, SFO already exceeded the 2019 forecast by 7,643 operations.

  The forecast in the Purpose section covers a period of 2014 through 2019. This is no longer appropriately considered as a forecast period, but instead a validation of historical fact. The only forecast information is for next year and four days of 2018. The Part 150 update projects that SFO air traffic will continue to grow "at an average rate of 2.0 percent annually over the forecast period, increasing from an estimated 421,400 operations in 2013 to 625,620 operations in 2033" (see p. 1-5, table 1.2). It is unfair for the FAA to increase operations, knowing that this increased traffic will fly over Peninsula communities such as Palo Alto and increase noise in those communities, while excluding these communities from the Part 150 Update and associated abatement and mitigation measures.

General Comment 6

If the NCP is to be an effective noise mitigation and compatibility tool, it should examine several years in the future – not just one year. We recognize that the NEM was submitted in 2016 but the agency should require that the sponsor revalidate the 2016 maps and propose NCP measures for the five-year period beginning 2019 (or at the very least, 2018).

General Comment 7

Comments Regarding Mitigation Measures Identified in Chapter 3 of the Part 150 Study

- *3.2.4.2 Modify Arrival Profiles/Procedures - The study dismisses changes to arrival procedures because the limited 65 CNEL study area is within the ILS approaches where 3-degree approaches have been standardized.* NCP 1

  There is a discussion of an experimental continuous descent approach (CDA), now termed optimized profile descent (OPD). This concept has been around for more than twenty years, but is applied to descending aircraft entering the Metroplex and not to aircraft on the ILS approach, as all aircraft are in the study area.

  OPD approaches are recommended for aircraft approaching the outer waypoint on the ILS (beyond the study area of the report). This would provide significant noise relief to South Bay residents and should be a part of an organized and well-run Metroplex.

- *3.2.4.3 Restrict the number or time of day of aircraft operations - This recommendation is important and should be implemented.* NCP 2

  Currently, too many aircraft arrive within a short period of time in the afternoons and must be radar vectored over Palo Alto and other local communities awaiting a slot for final approach to SFO. This results from poor ATC planning by the FAA and should be incorporated with OPD approaches to minimize noise, save fuel, minimize arrival delays, and reduce air pollution.

- *3.2.6 Management Measures* NCP 3
  - *3.2.6.1 Implement noise abatement office for monitoring, reporting, and responding to aircraft noise*. We recommend this measure to include areas out to the 45 CNEL contour boundary.

  - *3.2.6.2 Record or Track Noise Complaints*. We recommend this measure to include areas out to the 45 CNEL contour boundary.

Comments Regarding Noise Exposure Maps (NEM) (Part 150, Subpart B)

- *2019 Noise Exposure Map (August 13, 2015) does not display ~~DNL~~ CNEL noise exposure contours below 65 dBA.* NEM 1

  In developing its noise exposure maps, the Part 150 Update utilizes an outdated metric: CNEL 65 dB and higher (see §1.5, exhs. 1.2, 1.3). This measure ignores low-frequency noise that nonetheless is palpable and fails to reflect the adverse effect on populations newly experiencing more frequent over-flights, at regular intervals, concentrated in narrow corridors. Section 188 of the FAA Reauthorization Act of 2018 directs the FAA to "evaluate alternative metrics to the current average day-night level standard, such as the use of actual noise sampling and other methods, to address community airplane noise concerns." San Francisco should provide leadership on this issue.

- *INM Arrival and Departure Flight Tracks for Runway's 01L / 01R appear to have been cropped, built solely on Instruments Procedures.* NEM 2

This oversight fails to fully disclose low altitude radar vectoring to final approaches, or early turns on departures, consistently directed by NorCal TRACON (FAA NCT). Full disclosure would have shown their environmental effect near surrounding cities such as Brisbane and South San Francisco, and the full Peninsula. This operational short-cut has been noted in two Congressional Subcommittee hearings (the Nor Cal Class B Study and, most recently, San Francisco Short-Term Noise Monitoring Report, October 31, 2018). These reports show the Oakland departures being turned across the Bay and co-mingled with the SFO departures down the middle of the Peninsula.

- *The INM Arrival and Departures Maps have omitted all aircraft on radar vectors.* NEM 3
- *The INM Arrival and Departure Maps have omitted all CNEL noise contours below 65 dB.* NEM 4
- *The INM Arrival and Departure Maps did not stratify, parse, or color code tracks data by altitudes.* NEM 5

Comments Regarding the San Francisco International Airport 14 Code of Federal Regulations (CFR) Part 150 Study Update Noise Exposure Map Report

- *Airspace (3.6)* Full disclosure, relative to the Class B Airspace change was omitted from this update. NEM Report 1
- *Air Traffic Control (3.7) The Part 150 documents fail to include any evaluation or mitigation for the arrival areas as they did for areas surrounding the departures.* NEM Report 2

  Nor Cal TRACON has promoted and amplified the use of navigable airspace over the City, and unbalanced usage as a "sort box" for the sequencing of arrival traffic to the RWYS 28 L/R at SFO below 5000 MSL. From the total arrival flow into SFO, following are the percentage of each:
  - BDEGA (25% SFO ARRIVALS)
  - SERFR (30% SFO ARRIVALS)
  - OCEANIC (5% SFO ARRIVALS)

  The BDEGA arrivals are split into two routes, east / west. Of the total volume, over 70% are issued to the west, vectoring them over the Peninsula and the city, descending below 4000 MSL, with consequent noise and environmental impacts.

  The SERFR flow from the south has also caused 55% of approaching aircraft to be vectored for over 35 miles for sequencing to the final approach course. This is due to track compaction, poor traffic management (Oakland ARTCC), and Class B Airspace. This causes excessive vectored flights over Palo Alto.

  OCEANIC arrivals impact the peninsula and City during "nighttime" hours from unnecessarily low approaches over populated areas.

  During southeast weather conditions to San Jose International Airport (SJC) and northwest flow into SFO, an additional noise and environmental impact is incurred (amplified) by low altitude vectoring of arrival aircraft to both airports.

Per the Ad Hoc Advisory Committee on South Flow Arrivals that met in early 2018, about 50% of the SJC south flow arrivals are vectored over Palo Alto.

Both the NEM and the NCP fail to assess the combined impact of aircraft traffic from and to multiple airports. Palo Alto experiences low altitude overflights from and to SFO, from and to OAK, and to SJC when in south flow mode (note also that SJC has a normal flow daily departure flight to Narita that flies over Palo Alto at about 4,000 ft without going through the SJC departure loop system). In addition, there are overflights from and to SQL and PAO. NEM Report 3

- *Standard Terminal Arrival (STAR's) and Departure Procedures (DPs) (3.8)* This section fails to address any procedure implemented by the Nor Cal Metroplex in the Bay area during the forecasted period. NEM Report 4

- *Instrument procedures 3.8.2* Table 3-5, is an incomplete, non-current, listing of SFO Instrument Approach Procedures (IAP's). NEM Report 5

- *Departures 3.8.3* Table 3-6, is an incomplete, non-current, listing of SFO Departure Procedures (DP's). NEM Report 6

Conclusion

The City of Palo Alto appreciates this opportunity to comment and looks forward to working with the FAA toward a legally supportable environmental review and successful implementation of an environmentally compliant and properly mitigated PART 150, Noise Compatibility Study for San Francisco International Airport (SFO).

Respectfully submitted,

Liz Kniss, Mayor
City of Palo Alto

cc:

Hon. Dianne Feinstein, U.S. Senate
Hon. Kamala D. Harris, U.S. Senate
Hon. Anna G. Eshoo, U.S. House of Representatives
Palo Alto City Council
James Keene, Palo Alto City Manager
Molly Stump, Palo Alto City Attorney

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December 21, 2018

Ms. Camille Garibaldi
Environmental Protection Specialist, SFO—613
Federal Aviation Administration
San Francisco Airports District Office
1000 Marina Boulevard, Suite 220
Brisbane, CA 94005-1835

SAN FRANCISCO INTERNATIONAL AIRPORT, NOISE COMPATIBILITY PLANNING (14 CFR PART 150)

Dear Ms. Garibaldi:

The cities of Mountain View and Los Altos (Cities) are submitting comments that address the SFO Noise Compatibility Study (14 CFR Part 150) that is currently before the FAA. Our cities have consistently heard from our residents that they have been significantly impacted by aircraft noise and emissions from arrival and departure procedures implemented by the Federal Aviation Administration's (FAA) Nor-Cal Metroplex, or OAPM Project, to and from San Francisco International Airport.

The Part 150 Study Update has been reviewed by our consultants. Please find enclosed with this letter specific comments focused on the Noise Compatibility Program Update.

Thank you for your consideration of our comments on this issue.

Sincerely,

Leonard M. Siegel, Mayor
City of Mountain View

Lynette Lee Eng, Mayor
City of Los Altos

Enclosure

~~LMS/CG/3/MGR~~
~~001-12-21-18L~~

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COMMENTS ON NOISE COMPATIBILITY PROGRAM UPDATE

San Francisco International Airport, Noise Compatibility Planning (14 CFR Part 150)

This commentary is prepared on behalf of the cities of Mountain View and Los Altos (collectively "Cities"), located south-southeast of the San Francisco International Airport (KSFO). Both have been materially affected by the changes in arrival and departure procedures implemented by the Federal Aviation Administration's (FAA) Nor-Cal Metroplex, or OAPM Project, and in part, directly in support of the KSFO.

These comments are necessitated by the current discomfort on the Cities from current and potential increases of noise and other environmental impacts. They are now being asked to become the recipients of the Airport's additional noise, overflight, and other environmental impacts without participation, or consideration, in the Part 150 Study (Consultation and Public Involvement, §1.6, Table 1-1, Page 1-7).

Noise Exposure Maps (NEM) (Part 150, Subpart B)

- 2019 Noise Exposure Map, August 13, 2015, does not display DNL noise exposure contours below 65 dBa. Comment 1

- INM Arrival and Departure Flight Tracks for Runways 01L/01R appear to have been cropped, built solely on Instruments Procedures. This oversight fails to fully disclose low-altitude RADAR vectoring to final approaches, or early turns on departures, consistently directed by NorCal TRACON (FAA NCT), as Standard Operating Procedures (SOPs). Full disclosure would have shown their environmental effect near surrounding cities such as Brisbane and South San Francisco, and the full Peninsula. This operational shortcut has been noted in two Congressional Subcommittee hearings (the Nor Cal Class B Study and, most recently, San Francisco Short-Term Noise Monitoring Report, October 31, 2018). These reports also display the additional impact of Oakland departures (CNDEL) of which 80 percent are being turned across the Bay to Brisbane, comingled with the San Francisco departures, and turned southbound down the middle of the Peninsula. Comment 2

- The INM Arrival and Departures Maps have omitted ALL aircraft on RADAR vectors. Comment 3

- The INM Arrival and Departure Maps have omitted ALL noise contours below 65 dBa. Comment 4

- The INM Arrival and Departure Maps did not stratify, parse, or color-code tracks data by altitudes. Comment 5

Purpose of the Current 14 CFR Part 150 Update

Congress mandated that NextGen, "take into consideration, to the greatest extent practicable, design of airport approach and departure flight tracks to reduce the exposure of noise and emissions pollution on affected residents" (per the "VISON 100-Century of Aviation Reauthorization Act of 2003"). Comment 6

This "Purpose" section fails to discuss any effort to reduce noise, emissions, or other environmental impacts produced by the Metroplex and Air Traffic. This demonstrates that the Part 150 Study does not meet the goals established by Congress. Comment 7

The Forecast planning intent in this Purpose section covers a period of 2014 through 2019. This is not a forecasted period, but a validation of historical fact. The only forecast information is for next year and remaining days of 2018. Comment 8

The environmental ramifications of the Nor Cal Metroplex (OAPM) were entirely omitted from this document. Comment 9

Airspace (3.6)

Comment 10

Full disclosure, relative to the Class B Airspace change was omitted from this update.

Air Traffic Control (3.7)

Comment 11

Nor Cal TRACON has promoted and amplified the use of navigable airspace over the Cities, and unbalanced usage, as a "sort box" for the sequencing of arrival traffic to the RWYS 28 L/R at San Francisco, below 5,000' MSL. From the total arrival flow into KSFO, following are the percentage of each:

- BDEGA (25 PERCENT SFO ARRIVALS)
- SERFR (30 PERCENT SFO ARRIVALS)
- OCEANIC (5 PERCENT SFO ARRIVALS)

The BDEGA arrivals are split into two routes, *east / west*. Of the total volume, 70 percent are issued the west, vectoring them over the Cities, descending below 4,000 MSL, with consistent noise and environmental impacts (CO_2 emission).

The SERFR flow from the south has also caused 55 percent of approaching aircraft to be vectored for over 35 miles for sequencing to the final approach course. This is due to track compaction, poor traffic management (Oakland ARTCC), and Class B Airspace. This causes excessive vectoring of flights over the Cities.

OCEANIC arrivals impact the peninsula and Cities during "nighttime" hours from unnecessarily low approaches over populated noise-sensitive areas.

During "South Flow" weather conditions, to San Jose Airport (RWYS 12L/R) and northwest flow into KSFO, an additional noise and environmental impact (CO_2 emission) is incurred (amplified) by low-altitude vectoring of arrival aircraft to both airports.

The Part 150 documents fail to include any evaluation or mitigation for the arrival areas as they did for areas surrounding the departures.

Standard Terminal Arrival (STARs) and Departure Procedures (DPs) (3.8) Comment 12

This section fails to address any procedure implemented by the Nor Cal Metroplex in the Bay Area during the forecasted period.

Instrument Procedures 3.8.2 Comment 13

Table 3-5 is an incomplete, noncurrent listing of SFO Instrument Approach Procedures (IAPs).

Departures 3.8.3

Comment 14

Table 3-6 is an incomplete, noncurrent listing of SFO DPs.

Mountain View and Los Altos appreciate this opportunity to comment, and look forward to working with the FAA toward a legally supportable environmental review and successful implementation of an environmentally compliant and properly mitigated PART 150, Noise Compatibility Study for the KSFO.

~~LMS/CG/3/MGR~~
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Appendix B

San Francisco International Airport (SFO) 14 CFR Part 150 Update

TABLE 2-1
SUMMARY OF THE STATUS OF 1983 NOISE COMPATIBILITY PROGRAM MEASURES

Count	Action Element	Action Element Title	1983 ROA FAA Decision	Current Status and Recommendation
ON-AIRPORT ACTIONS: A. AIRPORT NOISE MONITORING AND MANAGEMENT PROGRAM				
1	A.1	Establish noise abatement as a priority function within the Director's office including staff and resources to monitor mitigation plan and recommend corrective actions.	Approved	Implemented. FAA re-approval of this measure is not required.
2	A.2a	Develop noise performance monitoring system.	Approved	Implemented. Airport Commission is seeking FAA re-approval of this updated measure.
	A.2b	Install noise performance monitoring system and refine noise mitigation plan based on results.		
3	A.3a	Expand Airports Rules and Regulations to include Actions contained in the Noise Mitigation Plan.	Partially Approved	Implemented. FAA re-approval of this measure is not required.
4	A.4a	Develop a Community Information Program including a communications link with citizens.	Approved	Implemented. FAA re-approval of this measure is not required.
ON-AIRPORT ACTIONS: B. FLIGHT PROCEDURE CHANGES				
5	B.1a	Establish Runway 10 as the preferential Noise Abatement Departure Runway from 1 a.m. to 6 a.m.	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.
6	B.1b	Study the use of an Instrument Landing System (ILS) for Runway 19 arrivals, in cooperation with East Bay communities.	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.
7	B.1c	Use microwave landing system (MLS) for Runway 19 arrivals, if feasible.	Neither approved nor disapproved	FAA never approved this measure and the Airport Commission did not pursue this measure. No further action is required.
8	B.2a	Increase use of the Visual Shoreline Departure Procedure.	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.
9	B.3a	Study the feasibility of increasing the minimum crossing altitude over northern San Francisco Peninsula and Foster City.	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.
	B.3b	Continue the increased minimum crossing altitude over northern San Francisco Peninsula and Foster City, if feasible.		
10	B.4a	Continue to encourage use of the Quiet Bridge Approach (visual).	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.

TABLE 2-1 (CONTINUED)
SUMMARY OF THE STATUS OF 1983 NOISE COMPATIBILITY PROGRAM MEASURES

Count	Action Element	Action Element Title	1983 ROA FAA Decision	Current Status and Recommendation
11	B.4c	Use MLS curved precision approaches to avoid Foster City, if feasible.	Neither approved nor disapproved	FAA never approved this measure and the Airport Commission did not pursue this measure. No further action is required.
12	B.5a	Continue improved procedures for avoiding overflights of Foster City.	Approved	Implemented. FAA re-approval of this measure is not required. Modeled as baseline conditions during the development of the 2014 and 2019 NEMs.
13	B.6a	Continue to use noise abatement climb power reduction following FAA procedures.	Approved	Measure implemented. FAA re-approval of this measure is not required.
ON-AIRPORT ACTIONS: C. AIRPORT NOISE LIMITS, USE RESTRICTIONS, AND ECONOMIC INCENTIVES				
14	C.1a(1)	Continue a maximum noise limit of 102 dBA for aircraft using San Francisco International Airport.	Approved	Measure implemented. FAA re-approval of this measure is not required.
15	C.1a(2)	Develop procedures for enforcing a lower maximum noise limit for night hours.	Disapproved	Additional analysis under the Aviation Safety and Noise Abatement Act of 1979 necessary. Measure was never implemented. No action required.
	C.1b	Reduce maximum noise limit. Establish a lower maximum noise limit for nighttime hours.		
	C.1c	Further reduce maximum noise limit. Reduce maximum noise limit for nighttime hours.		
16	C.2a(1)	Continue to prohibit unnecessary nighttime engine runups.	Disapproved	Maintenance engine run ups limited to designated areas of the Airport. Fines not implemented. No action required.
17	C.2a(2)	Investigate use of noise suppressors for engine runups.	Approved	Measure was never implemented. No action required.
18	C.3a	Develop a Noise Allocation System Consisting with the Noise Allocation Established for the Airport in the Regional Transportation Plan.	Disapproved	Additional analysis under the Aviation Safety and Noise Abatement Act of 1979 necessary. Measure was never implemented. No action required.
	C.3b	Implement a noise allocation and banking system.		
19	C.4b	Prohibit all aircraft operations over residential areas adjacent to the airport during night hours (between 2:00 a.m. and 5:00 a.m.)	Disapproved	Measure was never implemented. No action required.
	C.4c	Prohibit all aircraft operations over residential areas adjacent to the airport during night hours (between midnight and 6:00 a.m.)		
20	C.5a	Develop economic incentives to encourage airlines to reduce noise.	Disapproved	Additional analysis under the Aviation Safety and Noise Abatement Act of 1979 necessary. Measure was incorporated into the SFO Rules and Regulations but was never implemented or enforced. No action required.
	C.5b	Implement Economic Incentives, if feasible.		
OFF-AIRPORT ACTIONS: D. NOISE INSULATION/AVIGATION EASEMENT PROGRAM				
21	D.1a	Develop and implement a voluntary noise insulation/avigation easement demonstration program for existing homes and schools within the 70-75 CNEL.	Approved	Program refined with updated FAA-approved NEMs. Airport Commission seeking FAA re-approval of this measure.
	D.1b	Expand program, if effective.		

TABLE 2-1 (CONTINUED)
SUMMARY OF THE STATUS OF 1983 NOISE COMPATIBILITY PROGRAM MEASURES

Count	Action Element	Action Element Title	1983 ROA FAA Decision	Current Status and Recommendation
OFF-AIRPORT ACTIONS: E. NEIGHBORHOOD ENHANCEMENT PROGRAM				
22	E.1a	Evaluate Airport/Community cooperation in improving Airport impacted neighborhoods as an alternative or supplement to the noise insulation/avigation easement Program.	Approved	Implemented. FAA re-approval of this measure is not required.
23	E.1b	Implement a neighborhood planning and enhancement program, if needed.	Disapproved	Measure was never implemented. No action required.
OFF-AIRPORT ACTIONS: F. PREVENTATIVE LAND USE PLANNING				
24	F.1a	Continue to prohibit new or redeveloped noise sensitive land uses within the 70-75 CNEL.	Approved	Implemented. FAA re-approval of this measure is not required.
25	F.2a	Require adequate sound insulation and avigation easements for all new or redeveloped noise sensitive land uses within the 65-70 CNEL.	Approved	Implemented. FAA re-approval of this measure is not required.
26	F.3a	Continue to require acoustical studies for noise sensitive land uses in areas exposed to 60 CNEL and above.	Approved	Implemented. FAA re-approval of this measure is not required.
27	F.4a	Prepare a final airport land use plan to include Joint Land Use Study findings and recommendations.	Approved	Implemented. FAA re-approval of this measure is not required.
28	F.5a	Update noise element of cities and county plans to include Joint Land Use Study findings and recommendations.	Approved	Implemented. FAA re-approval of this measure is not required.
29	F.6a	Encourage coordinated land use planning between environs communities, ALUC and the Airport concerning noise, shielding, building height, access, air quality and the West of Bayshore lands.	Approved	Implemented. FAA re-approval of this measure is not required.

NOTES:
ALUC = Airport Land Use Commission or Airport Land Use Committee
CNEL = Community Noise Equivalent Level
FAA = Federal Aviation Administration
MLS = Microwave Landing System
NEMs = Noise Exposure Maps
ROA = Record of Approval

SOURCE: Federal Aviation Administration, Record of Approval, San Francisco International Airport Noise Compatibility Program. September 7, 1983.