San Francisco International
Airport/Community Roundtable

455 County Center, 2nd Floor
Redwood City, CA 94063
T (650) 363-1853
F (650) 363-4849
www.sforoundtable.org

SFO Roundtable
Ground-Based Noise Ad-Hoc Subcommittee
Approved Scope of Work

Approved by the Roundtable on December 6, 2018

Problem statement
Noise from ground-based operations at San Francisco International Airport (SFO) has a distinct adverse impact on the quality of life for communities adjacent to the airport. As such, ground-based noise (GBN) should be considered a separate and discrete problem from noise created by airborne aircraft, e.g., over-flight/in-flight noise.

There is a perception in the adjacent communities that GBN has increased in recent years, and that such escalation may be a result of factors other than those related to the FAA's implementation of NextGen aircraft procedures including the NorCal Metroplex.

Scope of Work
The SFO Airport/Community Noise Roundtable (SFO RT) GBN Ad-Hoc Subcommittee shall be focused exclusively on GBN noise concerns. GBN sources include, but are not limited to, the following:

- Aircraft application of power on takeoff (also known as "back-blast")
- Aircraft becoming airborne on takeoff (also known as "secondary back-blast")
- Aircraft application of reverse thrust after touch down/arrival
- Aircraft engine run-up/warm up procedures prior to departure
- Aircraft taxiing, queueing and waiting
- Aircraft use of Auxiliary Power Units (APU)
- Vehicular and other noise sources on the airfield

The Subcommittee will initially focus on the collection of data to adequately define the problem, after which it will explore possible solutions and/or mitigations.

Research/Collection of Data
Initial research shall be divided primarily into the following three buckets. *(Organization responsible for providing the information is indicated in parentheses.)*

1. Infrastructure: Conditions and Procedures

    a. Physical conditions at SFO and changes to physical conditions over past 5 years, including the following infrastructural features *(Information to be provided by SFO)*
        - Sound barriers/blast barriers/walls along western perimeter
        - Removal and or addition of structures and features at the south end of runways 1L/1R
        - Access road
        - New construction, including hotel and other structures
        - Fire station

- Aircraft taxiing path – Installation of Engineering Materials Arrestor System (EMAS): Is aircraft now farther away from barriers? If so, what impact does that have? Did EMAS installation result in any other changes in procedures?

b. Environmental conditions/Terrain (wind, mountains, etc) *(Information to be provided by SFO)*
   - Frequency of west flow conditions that put Runway 01L/R in use
   - Changes in climate/atmospheric conditions that exacerbate noise
   - Other?

c. Operational procedures (existing and prior) *(Information to be provided by SFO)*
   - Did taxiing path change?
   - What type/size/class of aircraft are being used? Do they produce different types of GBN, eg do they use less thrust?
   - Has the number of flights increased over time? And/or are existing flights more loaded with passengers? With heavier loads, does the noise increase?
   - Agreements between SFO and airlines regarding use of APUs
   - When are Noise Abatement Departure Procedures (NADP) used? Does the steeper climb have different GBN impact?

d. Impact of actions by actors others than SFO *(Information to be provided by SFO)*
   - Is there any airline behavior (eg APUs) that impacts ground-based noise?
   - Are there other actors (eg contractors for the hotel or terminal construction) that may have impact?

2. Metrics - Analyze current and historical noise monitor data for <u>the past 5 years</u> to obtain appropriately weighted noise data for ground-based events.

a. Existing data for GBN *(Information to be provided by SFO)*
   - What GBN data has SFO collected in past 5 years?
   - Is there data specific to Burlingame, Millbrae, and Hillsborough?
   - Is noise data correlated to a specific flight track? In cases where the data is not correlated to a specific flight track, is it maintained?
   - Noise level vs duration of noise
   - CalOSHA – does the state agency collect data on noise exposure for employees for worker safety?

b. Existing equipment used to collect such data *(Information to be provided by SFO)*
   - What equipment does SFO currently have in place, and what does it measure (relative to GBN or low-frequency noise)?
   - What new equipment is currently being procured (RFP in progress) and what *will* it measure?

c. Data and Studies on GBN from other airports/communities - what are the most relevant takeaways for SFO? *(Information to be provided by HMMH)*
   - HMMH 1998 study on Baltimore Washington Airport (BWI)
   - MSP 2000
   - FAA 2007 partner study
   - Wyle study on SFO (2001)
   - Any available studies on taxi noise?
   - Any available studies on use of APUs?

d. Equipment/measuring tools that may be needed in future *(Information to be provided by HMMH)*
   - Is there other technology out there that would help us better collect GBN data in the future?

- Where are the ideal locations to site monitors for purposes of measuring GBN?
- Are “accelerometers” necessary?

3. Mitigation Options

    a. What types of mitigation have been used elsewhere? *(Information to be provided by HMMH)*
    b. Mitigation at the home vs mitigation at the airport
        - Alternative designs for blast barrier
        - Analysis of how sound waves bounce off structures and how they may be retrofitted to disperse sound waves.
        - What changes in procedure might help mitigate noise?
        - Does home-based mitigation impact perception of noise?
    c. What further study is required to develop recommendations regarding mitigation?

Sub-Committee Schedule
The Subcommittee shall meet approximately every other month (on the alternating month with regular SFORT meetings), with a tentative schedule as follows:

- January 2019 Subcommittee meeting – SFO and HMMH to present findings from the research/collection of data listed above, particularly regarding infrastructure, procedures and existing metrics

- March 2019 Subcommittee meeting – Discussion and analysis of mitigation options. Discussion of whether further work is needed. Develop recommendation, if possible, to full SFORT regarding next steps.

- April 2019 full SFORT meeting – Present recommendation (if available) to full SFORT regarding next steps

- May 2019 Subcommittee meeting – if needed