Airport Noise Monitoring Data Review and Station Placement Recommendations

ACRP Staff Comments

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TRB Aviation Committees Comments

ENVIRONMENTAL IMPACTS OF AVIATION COMMITTEE: Not supported. The committee had concerns about this problem statement, as it states that research is needed by the FAA to catalog noise monitoring system locations in order to support the further development of FAA's AEDT. The committee felt that this was not a legitimate research topic for ACRP, as FAA funds AEDT development in furtherance of FAA OEE's responsibilities under statute and international agreements. It is a rather large budget, and ACRP funds should not be utilized for this research.

Association Committee Comments

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Review Panel Comments

Not recommended. There are often discrepancies between noise monitoring output and modeled output; this is an ongoing issue. The information gathered during a study such as this could help explain, and perhaps remove, discrepancies between measured and modeled values. Nevertheless, the review panel is wary about "validating" AEDT—the implications and follow on activities resulting from finding potentially significant issues are numerous. FAA is not looking to validate AEDT at this time. Regarding guidance for the placement of monitors, that is very site specific and worked out with the contractor, the airport, and landowners.

AOC Disposition

There was no discussion. No funds were allocated.
Problem Statement Title

Airport Noise Monitoring Data Review and Station Placement Recommendations

Background

FAA’s Aviation Environmental Design Tool\textsuperscript{1} (AEDT) is frequently used to model the noise due to aircraft operating in the vicinity of airports. With the FAA’s introduction of Performance-based Navigation (PBN) Procedures as part of the Next Generation Air Transportation System (NextGen), there is an increased reliance on AEDT to model noise from these PBN procedures to understand their impact on the surrounding community. In order to ensure that any software model is accurate, there is a strong need to verify and validate model performance against high quality measurement data.

The vast majority of airports in the United States have noise monitoring instrumentation operating in the vicinity of the airport. An aircraft noise and operations monitoring system typically consists of an integrated set of instruments (including software) that automatically collects sound level data from one or more permanently located or portable sound monitoring units often including supplemental data on flight operations, which may include numbers and types of aircraft flight operations and graphic depictions of the flight tracks flown by these operations\textsuperscript{2}. Most aircraft noise and operations monitoring systems include several “permanent” noise monitors, which are installed in specific locations around the airport and are continuously collecting aircraft noise and operational data. The location of these noise monitors are often associated with noise sensitive receivers (such as directly underneath a busy departure flight path).

There is an on-going need for gold-standard airport noise data for FAA noise model development and validation. However, actual airport noise monitoring data is often difficult to get access to, does not always include the needed information and settings, and/or may not include monitoring locations that meet the needs of the tool/method/algorithm development effort. An assessment of the aircraft noise and operations monitoring systems and data currently being collected at major U.S. airports would identify which currently deployed monitoring systems and data could be used for the validation of AEDT and other FAA noise modeling tools. That review could also result in the recommendation of additional
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data to be collected and/or additional monitoring systems to be deployed, in order to develop a comprehensive validation data set. Such an analysis would improve the quality and quantity of the data needed to validate AEDT and other FAA noise modeling tools, which should be of interest to the airports, FAA and AEDT users who are interested in verifying and improving the accuracy of AEDT.

REFERENCES


Objective

The objective of this research is to catalogue the airport noise monitoring systems at the major US airports, and identify the parameters and data sets beneficial to FAA AEDT development, verification and validation (and other FAA noise and operations modeling tools). A secondary objective of this project would be to recommend updates to measurement settings, data collection, data storage and data sharing practices, so the FAA can have access to a wide range of thorough and consistent data for tools development and validation. A third objective of this project would be to recommend additional airport noise monitoring stations at airports that would more directly benefit FAA tool development and validation.

Proposed Tasks

The proposed tasks are to (1) review and catalogue the airport noise monitoring systems at the major US airports, to identify the parameters and data sets beneficial to FAA AEDT development, verification and validation, and (2) provide a comprehensive report on this research, including specific recommendations for additional airport noise monitoring stations at the US airports reviewed for this project, as well as additional data collection parameters and settings to be updated on the current monitoring systems, already deployed.

Estimated Funding

The project is expected to cost $200k.

Estimated Research Duration

The project is expected to take 12 months to complete.
Related Research

The AEDT development team conducts an ongoing software verification and validation effort. We feel that this ACRP Problem Statement is a logical addition to that effort. AEDT development could also leverage data from this effort, including additional data if the recommendations are implemented in the future, for future development efforts and updates to AEDT. Furthermore, many future ACRP efforts may be able to leverage the results of this effort (e.g., ACRP 02-52 and other ACRPS could always benefit from additional data).

Process Used to Develop the Problem Statement

This problem was developed by a member of the AEDT development team, who has been involved in several FAA tool development and validation efforts. During those previous efforts, data needs (such as those mentioned in this problem statement) have been identified. This problem statement was developed through consultation with other members of the AEDT development team and FAA staff.

Person Submitting Problem Statement and Date

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