



EXECUTIVE SUMMARY  
FAR PART 150 NOISE COMPATIBILITY STUDY

# INTRODUCTION

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The Milwaukee County General Mitchell International Airport (MKE) Federal Aviation Regulation (FAR) Part 150 Study is a five-year program. The baseline year for this update is 2004 with the future baseline being 2009. The purposes of an FAR Part 150 Program are: to assess the noise environment, to prepare forecasts of aviation operations, to identify land uses within the airport environs, and to explore ways to mitigate land use compatibility conflicts. The 2009 Part 150 Study is an update of a 1995 Study that resulted in, among other things, the initiation of the Airport's residential sound insulation program. The 2009 Study recommended continuation of that program along with several new noise abatement and mitigation programs.

FAR Part 150 requires the development of Noise Exposure Maps that depict the existing aircraft noise levels, expressed in terms of the Day-Night Noise Level (DNL) metric, and the five-year future noise levels in terms of DNL. The threshold DNL used for compatibility purposes is the 65 DNL noise contour. In addition to the Existing and Future Noise Exposure Maps, a Noise Compatibility Program (NCP) has also been prepared which represents the Recommendations contained in the Record of Approval. The NCP contains the Recommendations for noise mitigation and abatement that the sponsoring agency, Milwaukee County, is recommending for implementation.

The Federal Aviation Administration accepted the Noise Exposure Maps in December 2008 and approved the Noise Compatibility Program in June 2009 by issuing their Record of Approval. The Record of Approval contains those elements that would be eligible to receive federal funding to implement aircraft noise mitigation.



# SUMMARY

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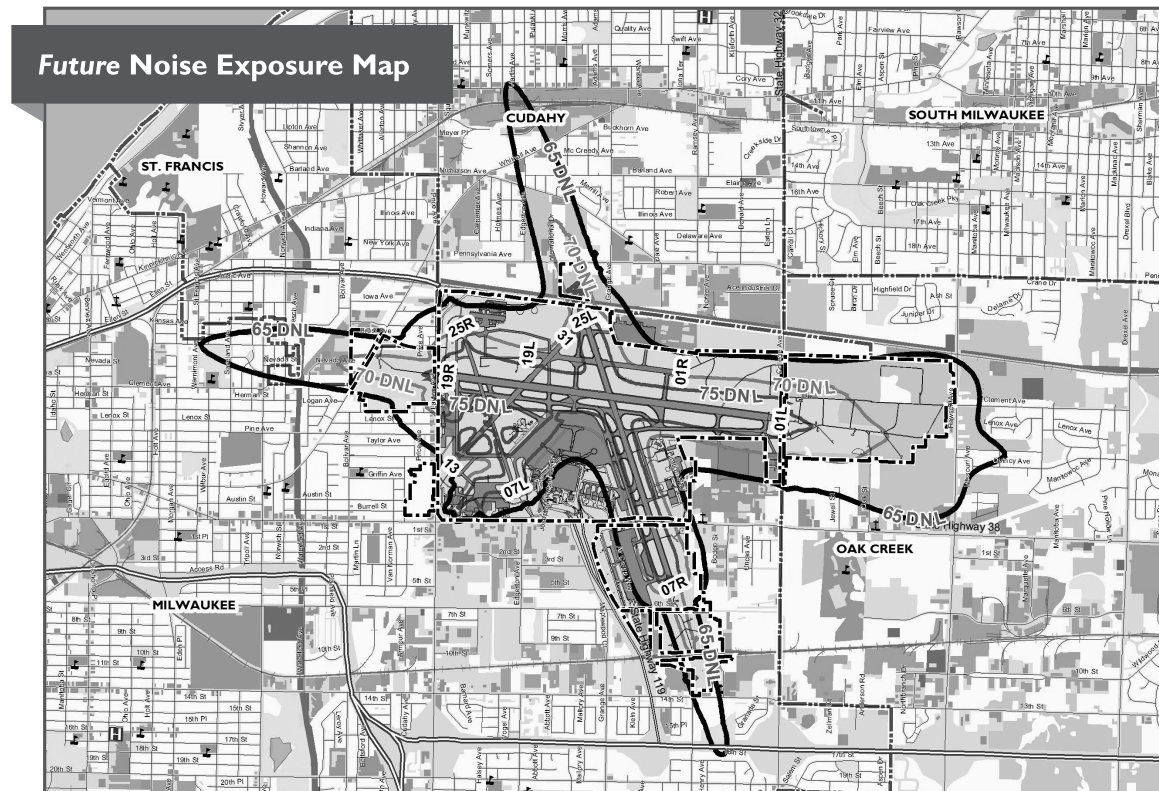
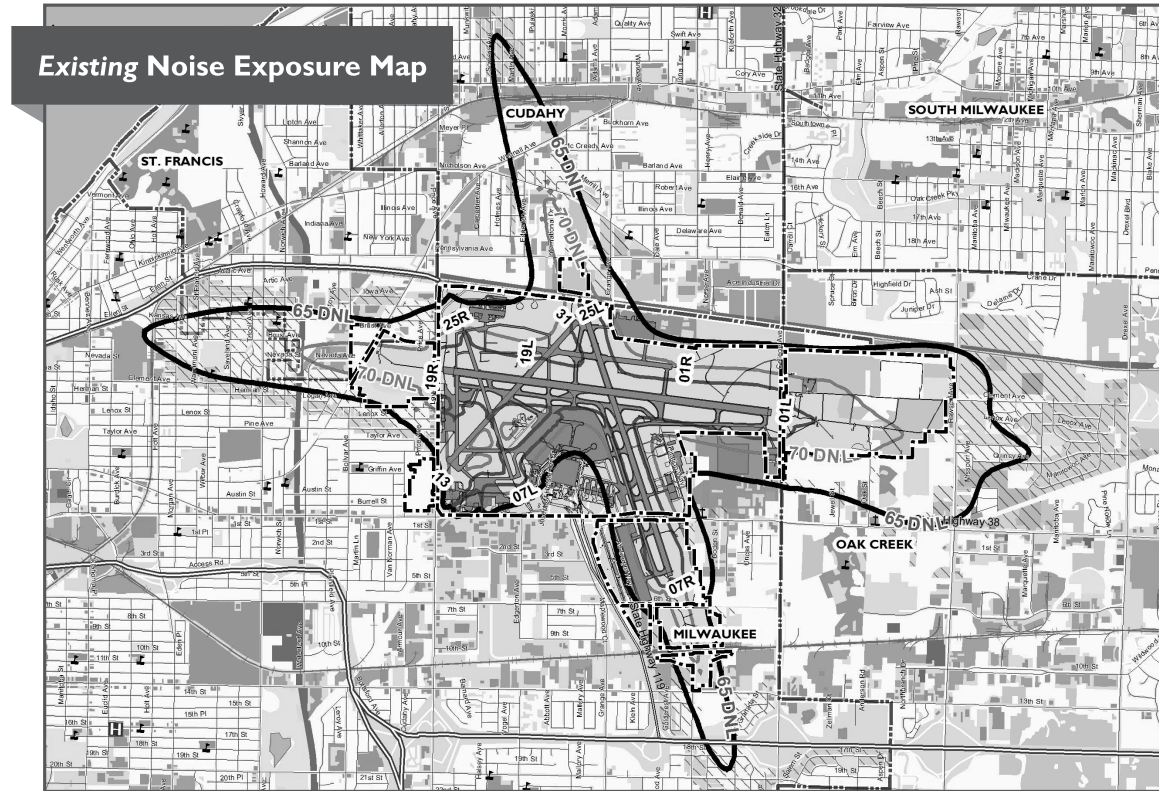
The contents of this Executive Summary include excerpts from the complete FAR 150 Noise Compatibility Study and Record of Approval for the General Mitchell International Airport. The complete study is available for review at the General Mitchell International Airport Administrative Offices in the airport terminal building or on the airport website at [www.mitchellairport.com](http://www.mitchellairport.com).

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# NOISE EXPOSURE MAPS

## NOISE EXPOSURE MAPS

The Existing Noise Exposure Map is presented below and represents the aircraft noise exposure, in terms of the Day-Night Noise Contour metric, resulting from actual operations that occurred in 2004. The Future Noise Exposure Map shown below represents a forecast number of aircraft operations that are predicted to occur in 2009.



## DAY-NIGHT NOISE LEVEL (DNL) NOISE CONTOURS

The DNL index measures the overall noise experienced during an entire (24-hour) day. DNL calculations account for the noise level of individual aircraft, the number of aircraft operations and a penalty for nighttime operations. In the DNL scale, noise occurring between the hours of 10 p.m. to 7 a.m. is penalized by 10 dB. In other words, operations occurring during these hours are assumed to be 10dB higher than they actually are. The FAA built this penalty into its computer model to account for the higher sensitivity to noise in the nighttime and the expected further decrease in background noise levels that typically occurs at night. DNL is specified by the FAA in Federal Aviation Regulation Part 150 to be used for community and airport noise assessment. In addition, it is used by other federal agencies including the Environmental Protection Agency (EPA), the Department of Defense (DOD) and the Department of Housing and Urban Development (HUD).

The DNL noise contours are generated using the FAA's Integrated Noise Model (INM) that was developed specifically to generate aircraft noise contours. The INM requires a variety of operational data to model the noise environment around an airport. These include total aircraft activity levels (operations), aircraft fleet mix (type of aircraft operating at an airport), time of day or night aircraft operate, which runways they use to arrive and depart, the "paths" aircraft fly when arriving or departing and any special noise abatement measures.

The DNL contours represent lines of equal noise energy around a runway complex on an average annual basis. The louder the noise contour, the higher the DNL designation and the closer the contour is to the runways and flight patterns. The quieter the noise contour, the lower the DNL designation and the farther the contour is from runways and flight patterns. The 75 DNL is smaller and louder than the 65 DNL contour.

## NOISE/LAND USE COMPATIBILITY STANDARDS AND GUIDELINES

Noise metrics help describe and predict community response to various noise exposure levels. The public reaction to different noise levels has been estimated based upon extensive research on human responses to exposure of different levels of aircraft noise. These guidelines are generally defined in terms of the DNL 24-hour averaging scale that is based upon the A-weighted decibel. Utilizing these metrics and surveys, agencies have developed guidelines for assessing the compatibility of various land uses with the noise environment.

The most common noise/land use compatibility guideline or criterion used is 65 dB DNL for residential land use with outdoor

activity areas. The FAA uses the 65 DNL noise contour to define land use compatibility as well as the area eligible to receive FAA funding for noise mitigation. Residential and other noise sensitive uses are non-compatible with the 65 DNL noise contour and higher. In addition, noise mitigation measures, such as residential sound insulation, are only eligible to receive FAA funding participation for structures within the 65 DNL noise contour or greater.

## NOISE COMPATIBILITY PROGRAM RECORD OF APPROVAL

The FAA issued its Record of Approval in June 2009, which listed the Part 150 Recommendations that were approved and thus eligible for FAA funding assistance. The following approved recommendations constitute the Noise Compatibility Program. The Recommendations generally consist of three different types; Operational Recommendations, Land Use Management Recommendations, and Program Management/Administrative Recommendations.

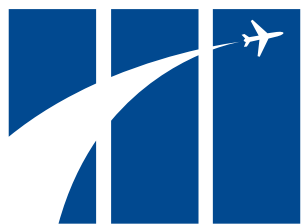
- **Operational Recommendations generally address where and how aircraft fly.**
- **Land Use Recommendations generally address either existing land use non-compatibility mitigation or future land use non-compatibility prevention.**
- **Program Management/Administrative Recommendations generally address those administrative measures that the Airport can implement.**

## OPERATIONAL RECOMMENDATIONS

Several Operational Recommendations were developed in an attempt to reduce the number of people affected by aircraft noise, taking into consideration air space, safety and efficiency. One Operational Recommendation was approved.

Approved Operational Recommendation. Develop Ground-based Noise Reduction Methods, including noise barriers, parking plans and an alternate, low-tech run-up enclosure. This Recommendation includes developing three noise barriers; the north end of the airport at the property line behind houses on East Armour Avenue across Layton Avenue, one on the Signature Ramp to break line of sight between the neighborhood located on the north side of Layton Avenue and the Airport, and a third at the Skyway Ramp connecting it to the hangar. In addition, parking plans for specific ramps and aircraft will be prepared. A "low-tech" noise enclosure for engine maintenance run-ups for the northeast hangar is also approved.

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## LAND USE MANAGEMENT RECOMMENDATIONS

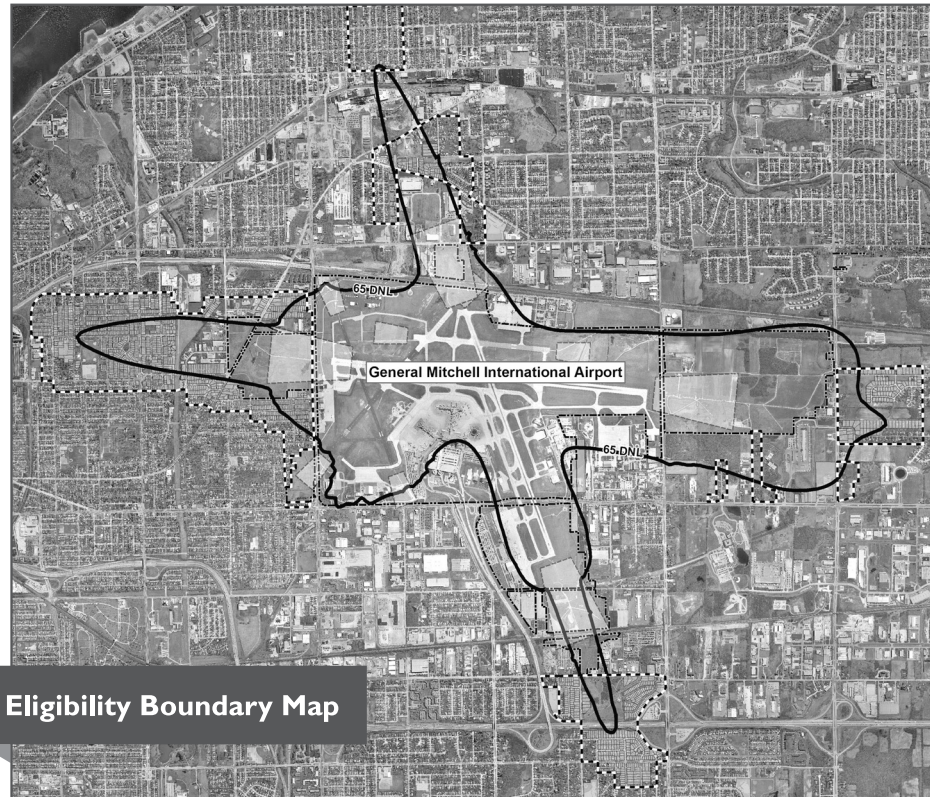
Land Use Management Recommendations were evaluated from two perspectives: mitigation of existing non-compatible land uses and prevention of new non-compatible land uses. The identification of non-compatibility is based on the 65 DNL noise contour. Four Land Use Management Recommendations were approved. The Eligibility Boundary Map shows those areas eligible to receive funding for the Land Use Recommendations.

*Land Use Management Recommendation 1.* Sound Insulate Noise Sensitive Uses, at or above the 65 DNL noise contour. This mainly addresses residential land uses within the eligibility boundary as shown on the following illustration. This may include items such as new acoustic windows, solid core doors, and heating and cooling systems to allow windows to be kept closed. In exchange for receiving sound insulation, a homeowner would grant a noise easement to the County and Airport to be attached to the property and “run with the land”.

*Land Use Management Recommendation 2.* Voluntary Acquisition of Non-compatible Land or Undeveloped Non-compatible Land Zoned for Residential Use. The recommendation would allow the Airport to purchase, on a voluntary basis, those non-compatible parcels identified zoned for residential development and those isolated residential parcels that are not part of a contiguous neighborhood.

*Land Use Management Recommendation 3.* Voluntary Acquisition of Noise Easements over Non-compatible Land Use. The recommendation calls for the purchase of a noise easement from homeowners within the 65 DNL noise contour or above. It would apply to homeowners who do not wish to have sound insulation.

*Land Use Management Recommendation 4.* Voluntary Sales Assistance for Non-compatible Land Use. The recommendation would offer Sales Assistance to home owners wishing to sell their homes but who are concerned that they are not able to do so or will not receive a fair offer due to proximity to the Airport.



## PROGRAM MANAGEMENT/ ADMINISTRATIVE RECOMMENDATIONS

Several Recommendations were developed that did not necessarily reduce the number of people affected by aircraft noise but were developed to better manage and evaluate the noise mitigation and abatement programs. Three Program Management/Administrative Recommendations were approved.

*Program Management/Administrative Recommendation 1,* Upgraded Aircraft Flight Track/Noise Monitoring System with Multilateration. This recommendation would install an upgraded Aircraft Flight Track/Noise Monitoring System with Multilateration to improve the ability to monitor flights, respond to the public in a timely manner and identify specific citizen concerns.

*Program Management/Administrative Recommendation 2,* Install Remote Cameras to Monitor Ground Activity, Engine Run-ups and Use of APU. The apron locations and run-up/parking plans presented in an earlier recommendation all occur at locations remote from Airport personnel offices, and there is no other method available to monitor compliance.

*Program Management/Administrative Recommendation 3,* Subsequent Part 150 Updates. This recommendation calls for the review and update of the Part 150 Study as needed to reflect changes in the noise environment. A Part 150 Study is a “snapshot” in time to look at the noise conditions generated by the current fleet mix and level of operations and the five-year forecasted levels.

**The goal of the Part 150 Study is to reduce the number of people exposed to significant aircraft noise levels. This must be accomplished within acceptable safety, economic and environmental parameters.**

**In addition, a “shifting” of noise from one neighborhood to another was not an acceptable solution.**

# GOALS OF THE STUDY