DETROIT METROPOLITAN WAYNE COUNTY AIRPORT
FAR PART 150 NOISE COMPATIBILITY STUDY UPDATE

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

CHAPTER B
FORECAST OF AVIATION ACTIVITY

Forecast of Aviation Activity

Introduction

This chapter summarizes past aviation activity at Detroit Metropolitan Wayne County Airport (DTW), and estimates future activity. This forecast of aviation activity serves as the basis for analyzing existing aircraft noise levels and identifying future noise levels associated with aircraft activity. Forecasts, like the prediction of next month's weather, are never exact; rather, the forecast indicates, based on past conditions, how activity may change in the future. In that manner, the forecast serves as a basis for evaluating how noise exposure may change in the future. The following section describes the basic methodology for developing the forecast of aircraft operations at DTW. This information served as the basis for the future fleet mix forecasts described in the following Noise Analysis chapter.

Background

In preparing a Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Plan, one of the key products is the preparation of the Noise Exposure Maps (NEM's). The Noise Exposure Maps identify the existing and future noise exposure (typically five years into the future from the date of submission of the NEM's), and are prepared using the Federal Aviation Administration's Integrated Noise Model (INM). To prepare a noise exposure contour map for a particular year, the INM requires information concerning the number of aircraft operations, the types of aircraft (fleet mix), and the time of day (day or night) that the activity occurs. This forecast chapter presents the method used to identify future aircraft operations, which along with the future aircraft fleet mix assumptions described in the Noise Analysis chapter serve as the basis for developing the noise exposure contour maps.

Aviation demand forecasting is often incorrectly perceived of as a science with all of the variables being predictable and known. However, as previously mentioned, precise forecasting for specific future years, particularly more than 10 years in the future, is very difficult. In addition, Aviation demand has been particularly difficult to forecast, due to the volatility of the industry beginning with deregulation in the late 1970's, through

airline consolidations of the 1980's, airline financial difficulties of the early 1990's, and again in the late 2001 through 2005 period when this text was being prepared.

Each year the Federal Aviation Administration (FAA) Office of Policy and Plans prepares and publishes a forecast of aviation activity at the nation's airports. This forecast, called the Terminal Area Forecast (TAF), is "prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information which can be used by state and local authorities, the aviation industry, and the general public."[1/]. The FAA's TAF prepared for fiscal year 2004 and published in January 2005, served as the basis for future aircraft operations projections. In assessing aviation traffic and demand, an aircraft operation is defined as either an aircraft arrival or departure from the Airport. A FAR Part 150 Noise Study is required to examine existing conditions and noise conditions five years into the future, therefore, for this study 2011 is used as the primary forecast year. A longer-range forecast of 2016 is also summarized in this paper for informational purposes.

Forecast Methodology

As previously mentioned, the FAA's Terminal Area Forecast was used as the basis for forecasting future aircraft operations. The TAF, as published includes operations projections for four (4) categories of aircraft operations; air carrier, air taxi/commuter, military and general aviation. What the TAF does not provide is operations by actual aircraft type or by time of operation (night or day); both integral needs of creating the noise exposure contour maps. Therefore, the first task undertaken was to determine the existing fleet mix and day/night operation profile for DTW. This profile was derived from air traffic control tower data from 2004.

Once the baseline fleet mix and day/night distributions were identified, these assumptions were applied to the future projections of operations from the TAF, resulting in a future forecast of operations, identified by aircraft type and time of operation. The final step in the process was to identify and implement assumptions regarding future changes to the fleet mix and distribution of day/night operations.

To assist in understanding how the aircraft fleet mix at DTW will likely change over time, the following were researched and considered:

- Airline fleet mix trends – Airline aircraft orders, aircraft phase out plans and trends in aircraft usage on routes to/from DTW were all researched and considered. This included meeting specifically with Northwest Airlines, DTWs hub airline.

1/ http://www.apo.data.faa.gov/faatafall.HTM

- Flight time trends – Future changes to arrival and departure banks at DTW were analyzed to understand potential changes to the overall distribution of flights throughout the day.

Finally, the process included applying various fleet mix assumptions to the future operations projections. The following section describes the forecast of operations and a summary of fleet mix and day/night distribution of flights. The specific fleet mix assumptions utilized in future years and the resulting INM inputs are described in detail in the Noise Analysis chapter.

Future Passenger Activity

After deregulation in 1978, Detroit Metropolitan Wayne County Airport passenger traffic declined slightly. Activity rebounded and grew until the late 1980's and then dipped again shortly until growing strongly again until 2001. This strong growth was primarily the result of the creation of a Northwest Airlines hub at DTW. The events of September 11, 2001 resulted in a large decline in activity at DTW, as was experienced throughout the country. It has taken several years to recover, with slow increases in passengers, as reflected in the following table. Since 2002, traffic levels have steadily rebounded and are projected to reach 2000 levels in 2006. **Table B1** depicts the FAA's 2005 forecast of total annual enplaned passengers at DTW.

Table B1
SUMMARY OF FAA's 2005 TAF ANNUAL PASSENGER FORECAST
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Year	Total Enplaned Passengers	Percent Growth
2000	17,520,806	---
2001	16,766,532	-4.5
2002	15,118,121	-10.9
2003	15,617,111	3.2
2004	16,666,705	6.3
2006	18,462,147	9.7
2011	22,496,596	17.9
2016	26,461,442	14.9

Source: *Detroit Metropolitan Airport, FAA 2005 TAF*

Future Aircraft Operations

According to the FAA's 2005 TAF, total operations at DTW are forecast to increase at an Average Annual Growth Rate (AAGR) of 3.4 percent from 2004 through 2016. **Table B2** depicts a summary of the FAA's forecast of total aircraft operations. As previously described, the 2011 and 2016 projections for operations were used for this analysis.

Table B2
SUMMARY OF TAF ANNUAL AIRCRAFT OPERATIONS FORECAST
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Year	Total Operations	Percent Growth Over 2000	Average Annual Daily Operations
2000	561,123	---	1,537
2001	540,966	-3.6	1,482
2002	490,663	-14.4	1,344
2003	491,075	-14.3	1,345
2004	514,358	-9.1	1,409
2006	445,848	13.4	1331
2007	472,425		1,295
2011	513,128		1,406
2016	566,895	0.98	1,559

Source: *Detroit Metropolitan Airport,* FAA 2007 Terminal Area Forecast

Table B3 depicts the baseline and forecast operations by general aircraft type that are projected to use Detroit Metropolitan Wayne County Airport (DTW). These aircraft types depicted in the table are derived from the actual baseline fleet mix from the 2004 air traffic control tower data and the future fleet mix assumptions that were applied to the 2011 and 2016 forecast years.

Table B3
SUMMARY OF OPERATIONS BY AIRCRAFT CATEGORY (Recent, Historic, and Forecast)
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Aircraft Category	2004 Baseline	2011	2016
Passenger Air Carrier and Air Cargo	**500,702**	**501,685**	**554,246**
Wide Body Jets	12,696	21,252	26,205
Narrow Body Jets	299,055	249,326	257,857
Regional Jets	133,383	185,878	223,584
Commuter Prop	55,568	45,229	46,600
General Aviation and Small Air Taxi	**21,912**	**11,290**	**12,496**
Corporate Jets	14,302	7,754	8,138
Single & Multi-Engine Prop	7,610	3,536	4,358
Military/Other	**27**	**153**	**153**
Total Operations	**522,641**[/1]	**513,128**	**566,895**

Source: Detroit Metropolitan Airport fleet mix data, FAA 2007 Terminal Area Forecast and fleet mix assumptions for future years
Notes:
1/ Total operations for the baseline is representative of actual aircraft operations as reported by the DTW ATCT and does not correspond exactly with the FAA TAF operations for 2004.

The following Noise Analysis chapter provides the breakdown of the baseline and future operations by aircraft type and by day or night. The fleet mix assumption and day/night assumption methodology, as well as the resulting fleet mix by actual aircraft type and time of day are descried in detail for the baseline fleet mix, the future fleet mix for the 2011 and 2016 forecast years and the day/night distribution.