

Forecast of Aviation Activity

Introduction

This chapter summarizes past aviation activity at Oakland County International Airport, 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 Oakland County International Airport. This information serves as the basis for the future fleet mix forecasts described in the following Noise Analysis chapter. The year 2010 is used for the existing conditions and the year 2021 is used for the future conditions for the Noise Exposure Maps (NEMs).

Background

The purpose of this Study is to update the Noise Exposure Maps for Oakland County International Airport, which identify the existing (2010) and future noise exposure that is typically five years into the future from the date of submission of the NEMs. In this case, due to the great decrease in operations, it was determined that for this NEM update, a five year contour would not be as descriptive as a 10 year contour. Aircraft operations at the Airport have steadily been decreasing over the past several years, from over 300,000 in 2000 to just over 120,000 in 2010. Official FAA forecasts indicate a continued decline until 2013, with a steady increase after that. It is important to indicate the potential effects of operations growth on surrounding land uses. Therefore, the future date analyzed here will be 2021. Both NEMs are prepared using the Federal Aviation Administration's Integrated Noise Model (INM). This Study utilized Version 7.0b of the INM to generate the maps. 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, again in the late 2001 through 2005 period after the 9/11 attacks, and the recent recession.

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 2010 and published in January 2011, served as the basis for future aircraft operations projections, along with actual nighttime operations data obtained from the Airport for 2010. 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 Study NEM update is required to examine existing conditions and noise conditions for a future year (in this case, ten years into the future). Since the operations are not forecast to increase over the 2010 operations in the short term (traditional five year horizon), a longer planning period was identified that would reflect what an increase in operations could reasonably be expected to influence. This is consistent with local land use planning efforts which are typically presented for at least a ten year planning horizon. Therefore, for this study, 2021 is used as the primary forecast year.

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 operations by actual aircraft type or by time of operation (night or day), both integral needs of creating the noise exposure contour maps. Discussions with the FAA indicated that the 2010 TAF for Oakland County International Airport does not include nighttime operations. Therefore, actual nighttime operations from 2010 airport counts were added into the existing 2010 TAF and were used to forecast 2021 nighttime operations.

^{1/} <http://www.apo.data.faa.gov/faatafall.HTM>

The nighttime data was added into the 2010 TAF numbers and then extrapolated out for each following year based on the yearly growth rate depicted by the TAF. Those extrapolated nighttime operations numbers were then added into each year to depict the total number of operations (day and night) existing and forecast for Oakland County International Airport.

The second task undertaken was to determine the existing fleet mix and day/night operation profile for Oakland County International Airport. This profile was derived from air traffic control tower data from 2010.

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.

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 Aircraft Operations

According to the FAA's 2010 TAF, total operations at Oakland County International Airport are forecast to decrease from 2010 to 2011, then increase slowly through the out-year of 2021. **Table B1** depicts a summary of the FAA's forecast of total aircraft operations broken down by year (TAF), the added 2010 nighttime operations based on airport counts and the total operations (TAF plus nighttime), the sum of which depicts the total operations used in the noise analysis.

Table B1

SUMMARY OF ANNUAL AIRCRAFT OPERATIONS FORECAST (TAF PLUS NIGHTTIME OPERATIONS)

Oakland County International Airport FAR Part 150 NEM Update

Year	2010 TAF	2010 Nighttime Operations	Total Operations Used for Modeling (TAF plus Nighttime Operations)
2010	126,779	2,766	129,545
2011	113,828	2,483	116,311
2012	115,629	2,522	118,151
2013	117,460	2,562	120,022
2014	119,321	2,603	121,924
2015	121,213	2,644	123,857
2016	123,137	2,686	125,823
2017	125,093	2,729	127,822
2018	127,081	2,772	129,853
2019	129,103	2,816	131,919
2020	131,159	2,861	134,020
2021	133,249	2,907	136,156

Source: *Oakland County International Airport*, FAA 2010 Terminal Area Forecast, Oakland County International Airport Nighttime Operations 2010, and Barnard Dunkelberg & Company. Bolded years depict years used for Noise Exposure Map modeling.

Table B2 shows the total operations outlined in **Table B1**, along with a calculated average annual daily operations for Oakland County International Airport.

Table B2

SUMMARY OF TOTAL ANNUAL AND AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS FORECAST

Oakland County International Airport FAR Part 150 NEM Update

Year	Total Operations*	Average Annual Daily Operations
2010	129,545	355
2011	116,311	319
2012	118,151	324
2013	120,022	329
2014	121,924	334
2015	123,857	340
2016	125,823	345
2017	127,822	350
2018	129,853	356
2019	131,919	362
2020	134,020	367
2021	136,156	373

Source: *Oakland County International Airport*, FAA 2010 Terminal Area Forecast, Oakland County International Airport Nighttime Operations 2010, and Barnard Dunkelberg & Company.

* TAF forecasts with additional nighttime operations

Table B3 depicts the baseline and forecast operations by general aircraft type that are projected to use Oakland County International Airport. These aircraft types depicted in the table are derived from the actual baseline fleet mix from the 2010 air traffic control tower data and the future fleet mix assumptions that were applied to the 2021 forecast.

Table B3

SUMMARY OF OPERATIONS BY AIRCRAFT CATEGORY, RECENT HISTORIC AND FORECAST*Oakland County International Airport FAR Part 150 NEM Update*

Aircraft Category	2010 Baseline	2021 Future
<i>Passenger Air Charter and Air Cargo</i>	<i>1,198</i>	<i>1,197</i>
Narrow Body Jets	926	925
Regional Jets	272	272
<i>Air Taxi</i>	<i>8,131</i>	<i>8,452</i>
Corporate Jets	4,275	4,444
Commuter Propeller	3,856	4,008
<i>General Aviation</i>	<i>119,849</i>	<i>126,140</i>
Corporate Jets	14,523	15,285
Single and Multi-engine Propeller	103,957	109,414
Helicopters	1,369	1,441
<i>Military/Other</i>	<i>367</i>	<i>367</i>
Jet	67	67
Propeller	300	300
Total Operations	129,545¹	136,156

Source: BridgeNet International, FAA 2010 Terminal Area Forecast and fleet mix assumptions for future years

Notes:

1/ Total operations for the baseline is representative of the FAA TAF operations for 2010 plus actual 2010 nighttime operations recorded from the Airport. The 2021 forecast represents the 2021 TAF plus nighttime operations extrapolated using the TAF growth rate out from actual 2010 nighttime operations recorded from the Airport.

The following 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 described in detail for the baseline fleet mix, the future fleet mix for the 2021 forecast year and the day/night distribution.