

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



DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

CHAPTER E
LAND USE ANALYSIS

Land Use Analysis

Introduction

This section of the FAR Part 150 Noise Compatibility Study for Detroit Metropolitan Wayne County Airport summarizes the compatibility of various land uses with the existing (2004) and future (2011) base case noise exposure contours.

One of the first steps in evaluating land use compatibility is to identify the existing and future noise exposure impacts associated with the operation of Detroit Metropolitan Wayne County Airport. As the Part 150 Study begins to examine alternative noise abatement or land use compatibility actions, a direct comparison will be made with the information presented in this chapter to gauge the success of alternatives.

Methodology

The land use and population analysis for both the existing and future “base case” noise contours were derived from a variety of sources. The existing land use maps provided in the **Inventory** Chapter were used to determine the number of acres of different land use types. The noise contours were overlaid on these maps and a Geographical Information System (GIS) computer program was used to determine the number of acres of each land use type. Housing units and population numbers were determined from the 2000 Census (and most recent updates) using the same GIS program. The information was determined using the census block level data for each contour. In addition, specific parcel level maps provided by the Airport indicated the number of residential structures that have been sound attenuated.

Existing Land Use Analysis/Existing Noise Contours, 2004

This section discusses the land use types found within the existing noise exposure contours generated by aircraft at Detroit Metropolitan Wayne County Airport. The existing noise exposure is represented by three (3) contour bands, the 65 DNL, 70 DNL, and 75 DNL contours. A Part 150 Noise Compatibility Study uses the 65 DNL contour as the threshold contour for land use analysis, based on the FAA’s land use compatibility guidelines. The

FAR Part 150 Land Use Guidelines are presented in the **Noise Methodology** Chapter, **Figure C10**.

The 65 DNL and greater contour¹ is the largest contour, containing approximately 9,475 acres. There are approximately 630 residential units representing approximately 1,400 people within the contour, contained on 420 acres of residential development. Of these, all but approximately 30 housing units or about 70 people are within the existing sound attenuation program boundaries. Table E1 summarizes the distribution of land uses within the noise contours. The greatest quantity of land within the 65 DNL and greater contour consists of open/agricultural lands and transportation/utilities uses (4,070 acres and 3,910 acres, respectively, for a total of 84% of the total area). There are no schools that have not been sound attenuated or churches within the 65 DNL noise contour. There are no historical sites listed on the National Register of Historic Places within the 65 DNL and greater contour.

Table E1 also shows the composition of each band of contour to enable a comparison of land uses relative to the FAA's land use compatibility guidelines. **Table E1** summarizes the land uses within each contour that occurred in 2004.

Existing Land Use Incompatibilities

The FAA, through FAR Part 150, has developed generalized guidelines for land use compatibility for land use planning purposes, as presented in the **Noise Methodology** Chapter, **Figure C10**. Within FAR Part 150, these land use compatibility guidelines are to be used unless the local communities have adopted local guidelines; in the case of the communities near Detroit Metropolitan Wayne County Airport, no aircraft noise specific land use guidelines have been adopted. Therefore, for purposes of this study, the FAA guidelines are used.

Based on FAA guidelines, residential land uses within the 65 DNL or greater noise contours are not compatible with the aircraft noise exposure unless the residence has sound attenuation features that reduce interior noise to requisite levels. Without such attenuation, the property would be considered incompatible with the noise exposure. All of the homes within the existing 65 DNL and greater noise contours have been attenuated or have been offered sound attenuation.

As noted earlier, no other noise non-insulated sensitive facilities were located within the 65 DNL or greater noise exposure contour for the existing base case.

¹ The impact analysis presented in this chapter notes the impacts between the 65 DNL and 70 DNL noise contour (referred to as 65-70 DNL), impacts between the 70 DNL and 75 DNL noise contour (70-75 DNL), those within the 75 DNL and greater noise contour. The total impact within the 65 DNL noise Contour includes these incremental contours.

Table E1

EXISTING LAND USE WITHIN EXISTING NOISE CONTOURS, 2004*Detroit Wayne County Metropolitan Airport FAR Part 150 Noise Compatibility Study Update*

Land Use	65-70 DNL Contour	70-75 DNL Contour	75 DNL Contour	65 DNL and Greater	
				Land Use	% of Total
People	1,360	40	0	1,400	
Housing Units*	610	20	0	630	
Churches	0	0	0	0	
Schools	0	0	0	0	
Land Use (acres)					
Residential	410 Ac	10 Ac	0 Ac	420 Ac	4.4%
Transportation/Utilities	970 Ac	1,540 Ac	1,400 Ac	3,910Ac	41.3%
Commercial	300 Ac	180 Ac	0 Ac	480 Ac	5.0%
Industrial	445 Ac	55 Ac	0 Ac	500 Ac	5.3%
Water	55 Ac	30 Ac	0 Ac	85 Ac	0.9%
Institutional	10 Ac	0 Ac	0 Ac	10 Ac	0.1%
Open/Agriculture	2,780 Ac	1,110 Ac	180 Ac	4,070 Ac	43.0%
Total Acres	4,970 Ac	2,925 Ac	1,580 Ac	9,475 Ac	100%

SOURCE: Aerial Photography and Land Use Base Map, SEMCOG.
2000 Census Data, BDC Analysis.

The 65 and greater figures are cumulative. The contours contain the area within all smaller contours. Population and housing units rounded to nearest five. Percentages may not add due to rounding.

* All homes within the 65 – 75 contour band have been sound attenuated, or offered sound attenuation, which are considered compatible for purposes of this Study.

Existing Land Use Analysis/Future (Base Case, 2011) Noise Contours

A review was conducted of the existing land uses that could be affected five years into the future. **The Existing and Future Baseline Noise Conditions** Chapter, page D.52, discusses the noise exposure contour prepared for the year 2011. This “base case” assumes that no operational or facility modifications would occur at the Airport, and is reflective of the forecast operations and aircraft types explained previously in the **Forecast** Chapter. This is the noise exposure contour map that all future alternative scenarios will be measured against to quantify land use effects as compared with what would occur if no mitigation measures were implemented.

The future base case noise contours are slightly smaller than the existing noise contours as a result of continued noise reductions associated with the increase in quieter aircraft that are forecast to be operating in the future. The future contour is expected to decrease the impact from 9,470 acres within the 65 DNL noise contour to 8,700 acres in 2011 – an 8.1% reduction.

The 65 DNL and greater noise contour is expected to contain approximately 8,700 acres. Approximately 540 residential units with about 1,030 residents/people would be within the 65 DNL and greater noise contour, contained on approximately 330 acres of residential land. Similar to the existing conditions, the largest categories of land use that would be affected in 2011 consist of transportation/utilities and open space/agriculture land uses (3,850 acres and 3,550 acres, respectively – or about 85% of the total area within the 65 DNL and greater noise contour). Table E2 lists the various existing land uses that are expected to be within the 2001 base case noise contour.

Future Base Case (2011) Land Use Incompatibilities

As noted in Table E2, residential homes are the only noise sensitive land uses that are located in the 65 DNL and greater noise contour that have not been previously sound attenuated. The majority of homes within the 2011 base case contour have been sound attenuated and are considered compatible. The noise contour to be used to identify eligibility boundaries will be determined after an evaluation of operational and facility alternatives. All of the homes within the 65 DNL and greater noise contours have been attenuated or offered sound attenuation, and considered compatible for purposes of this Study.

Table E2

EXISTING LAND USE WITHIN FUTURE BASE CASE NOISE CONTOURS, 2011*Detroit Wayne County Metropolitan Airport FAR Part 150 Noise Compatibility Study Update*

Land Use	65-70 DNL Contour	70-75 DNL Contour	75 DNL Contour	65 DNL and Greater	
				Land Use	% of Total
People	990	40	0	1,030	
Housing Units*	520	20	0	540	
Churches	0	0	0	0	
Schools	0	0	0	0	
Land Use (acres)					
Residential	320 Ac	10 Ac	0 Ac	330 Ac	3.8%
Transportation/Utilities	980 Ac	1,510 Ac	1,360 Ac	3,850 Ac	44.3%
Commercial	310 Ac	150 Ac	0 Ac	460 Ac	5.3%
Industrial	380 Ac	50 Ac	0 Ac	430 Ac	4.9%
Water	40 Ac	30 Ac	0 Ac	70 Ac	0.8%
Institutional	10 Ac	0 Ac	0 Ac	10 Ac	0.1%
Open/Agriculture	2,430 Ac	940 Ac	180 Ac	3,550 Ac	40.8%
Total Acres	4,470 Ac	2,690 Ac	1,540 Ac	8,700 Ac	100%

SOURCE: Aerial Photography and Land Use Base Map, SEMCOG.
2000 Census Data, BDC Analysis.

The 65 and greater figures are cumulative. The contours contain the area within all smaller contours. Population and housing units rounded to nearest five. Percentages may not add due to rounding.

* All homes within the 65 – 70 contour band have been sound attenuated or offered sound attenuation, which are considered compatible for purposes of this Study.

Contours Larger Than 65 DNL and Supplemental Metrics

The 60 DNL contour, as well as the supplemental metrics are included as supplemental information in the following chapters for the sole purposes of identifying areas that may receive increased or decreases sound levels. The 60 DNL contours are generally less accurate than the higher intensity contours, but when comparing one noise abatement option to another, show the locations that could experience an increase or decrease in noise exposure.