

PAGE MUNICIPAL  
AIRPORT  
**MASTER PLAN  
UPDATE**  
2000-2020



**Land Use Analysis**

**8.1 INTRODUCTION**

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The purpose of this land use analysis is to document the anticipated impacts of airport improvements on the land within the airport boundary, on adjacent properties, and on the community as a whole.

**8.2 ON-AIRPORT LAND USE**

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The on-airport Land Use Plan for Page Municipal Airport adopts general FAA criteria for the use of airport property (FAA Advisory Circular 150/5070-6A, Airport Master Plans):

- Adherence to standards in support of safe aircraft operations.
- Non-interference with line of sight or other restrictions for navigation aids and weather equipment.
- Use of existing facilities, to the extent possible, depending on their location, condition, and obligations with respect to their use.
- Consideration of topography and available infrastructure that might affect development costs.
- Flexibility in accommodating changes in demand and expansion.
- Effective and safe ground circulation for aircraft and vehicles.

Sheet 7 of 10 in Chapter 6, Airport Plans, illustrates the Land Use Plan for Page Municipal Airport. The plan depicts both existing and future land uses. The categories of on-airport land use include:

- Airfield Operations Area
- Helicopter Operations Area
- Terminal Area, FBO, and Support Facilities
- Corporate and Private General Aviation (GA)
- Government
- Aviation Reserve
- Aviation Support

**8.2.1 Airfield Operations Area**

The highest priority use for airport land is present and future air operations. This category includes runways, taxiways, aprons, navigation aids, and their associated clearances. The boundary of the air operations land use is generally equivalent to the Building Restriction Line (BRL) which includes approximately 318 acres of the existing 547-acre airport. The BRL is defined by:

- A 500 foot-wide primary surface on Runway 15-33 and the 7:1 slope transitional surface to a height of 25 feet
- A 250 foot-wide primary surface on runway 7-25 and the 7:1 slope transitional surface to a height of 20 feet
- Taxiway and taxilane object free areas

- TVOR critical area (1,000-foot radius)
- Line-of-sight critical area (also referred to as the Runway Visibility Zone)

The trapezoidal runway protection zones (RPZs) at the end of each runway and out to the extents of the airport boundary off each runway end are also a part of the airfield operations area. These RPZs should not contain buildings. However, some ancillary land uses other than air operations are permitted within the RPZ, provided they do not attract wildlife, are outside the runway object free area, and do not interfere with navigational aids. Automobile parking is discouraged, but permitted. Fuel storage, residences, and places of public assembly should not be located in the RPZ. The RPZs at Page Municipal Airport are clear with the exception of parts of roadways and fences that cross Runway 33 end and both Runway 7 and 25 end RPZs.

### **8.2.2 Helicopter Operations Area**

The helicopter operations area boundary is generally defined by the proposed heliport, adjacent future helicopter parking spaces, and protected helicopter approach airspace. This land use is identified separately from the airfield operations since the parcel is not contiguous to the airfield and to distinguish between the rotorcraft and fixed wing future development needs. The helicopter operations area land use totals approximately 5 acres.

### **8.2.3 Terminal Area, FBO, and Support Facilities**

The terminal, FBO, and support facilities land use area is centrally located on the west side of the airport. This land use consists of approximately eight (8) acres and includes the existing new terminal building, FBO facilities (Classic, Sunrise), terminal area parking, and airport access.

### **8.2.4 Corporate and Private General Aviation (GA)**

For the purpose of the land use analysis, corporate and private GA includes all of the existing and proposed hangar development which does not belong to the FBO or government agencies, such as based aircraft hangars or future corporate hangars. Existing private GA hangars are located north of the terminal area and south of Runway 7 end. Future private GA hangar development and additional based aircraft tiedowns are planned in the same area, but closer to Parallel Taxiway A. Locating this development in a contiguous area simplifies future taxiway development, utility expansion, and overall management of facilities by separating various airport activities. Airport property identified for corporate and private GA land use total approximately 31 acres.

### **8.2.5 Government**

The Government Land Use designation is located south of the terminal area. This land use designation includes the National Park Service and apron used by the transient military operators. This land use designation extends to the southern boundary of the terminal area land use and northern boundary of the aviation support land use for a total of approximately four (4) acres.

### **8.2.6 Aviation Reserve**

Undeveloped land provides an airport with flexibility to meet unforeseen needs and with expansion capability beyond the 20-year planning period. There are three significant areas is designated for aviation reserve at Page Municipal Airport. The largest parcel, is located southeast of the runway intersection and extends south along the airfield operations area boundary. It is anticipated that this area will be consumed for contingency development beyond 2020 for terminal area, FBO, GA, and support facility needs if the airport is not relocated. The two remaining parcels are located in the northeast and northwest parts of the airport after the southeast parcel is consumed.

### **8.2.7 Aviation Support**

The aviation support land use designation includes additional support facilities not included in the terminal area. For Page, this includes the fuel farm and automated surface observation system (ASOS). This land use is located south of the government land use and includes approximately three (3) acres.

## **8.3 LAND ACQUISITION AND CONTROL**

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Page Municipal Airport has sufficient land for proposed airport development during the planning period and beyond. However, the airport has insufficient control of the entire RPZ off Runway 7 end. Per FAA guidelines, these areas should also be controlled in fee simple or avigation easement. The City is planning to displace the threshold on Runway 7 end to resolve this issue.

## **8.4 OFF-AIRPORT LAND USE**

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The major concerns for land use compatibility with airports are noise and airspace. In addition, activities near the airport should not emit smoke, produce glare, produce electromagnetic interference that could affect radio navigation and approach aids, nor attract wildlife, so that they do not interfere with aviation activity.

Off-airport land use planning seeks to maximize compatibility between airport activities and other land uses in the vicinity of the airport and minimize the impacts of aircraft activity on the surrounding community.

*According to FAA Order 7400.2C, "When airport design standards are combined with appropriate state and local zoning ordinances, the resultant effect will: assure the lowest possible operational altitudes for aircraft; protect the economic investment in the airport; and promote safety in the areas affected by the airport by assuring, through proper development, land use most beneficial to the community."*

Currently, Page Municipal Airport's western boundary is surrounded by residential development. The Glen Canyon National Recreation Area is to the north and undeveloped property lies to the east and south of the airport where the terrain drops off significantly. Additional discussion of off-airport land use is presented in this section to specifically address the following topics:

- Airspace
- Airport Influence Area
- Noise

#### **8.4.1 Airspace**

The airspace drawing in the Airport Layout Plan drawing set (see Chapter 6) indicates the sloped imaginary approach, departure, and transitional surfaces that define the airspace that should remain unobstructed by structures, vegetation, or terrain. Further, consideration of any future development plans adjacent to the airport should include the submittal of an FAA Form 7460-1, Notice of Proposed Construction, to allow the FAA the opportunity to review its potential adverse impact on the airspace surrounding the airport. A copy of FAA Form 7460-1 is included in the Appendix E.

#### **8.4.2 Airport Influence Area**

The Page Municipal Airport is located east of the City with residential areas adjacent to the airport. In order to provide continued protection of the airport's viability, the City of Page developed an Airport Influence Area (AIA) under House Bill 2491 (see Appendix F). The legislation gave airport owners the ability to designate an area around the airport, which is exposed to noise and overflights as determined by the airport owner or operator. Arizona Department of Transportation, Aeronautics Division, recommended that this area be based on the airport traffic patterns as defined in FAA guidance. Thus, the City of Page developed an AIA which takes into account both existing and ultimate aircraft operations at the airport. This AIA is shown in the Airport Plans, sheet 9. Solid lines represent the primary influence area boundary. As shown, primary Runway 15-33's Influence Area is larger than crosswind Runway 07-25's Influence Area, but small corner parts of Runway 07-25's Influence Area do extend beyond Runway 15-33's Influence Area. While the AIA does not extend over the core of the City of Page, it does extend over the northern areas of the community and the Glen Canyon National Recreation Area.

#### **8.4.3 Noise**

As described earlier, the primary cause of incompatibility between an airport and the surrounding community is aircraft noise. Noise-sensitive development often surrounds an airport before the problem is recognized. Noise is a major source of environmental pollution and represents a threat to the serenity and quality of life for those individuals exposed to it.

The degree of which people will suffer from the nuisance of aircraft noise varies depending on their activities at any given time. While people are less disturbed by noise when they are driving, working, or shopping, they are more disturbed when they are at home. Many residents living near airports already complain that aircraft noise is disturbing regardless of whether their home is inside what is considered an incompatible "noise contour" around an airport.

While FAA has published noise compatibility guidelines, they explicitly state that determination of noise compatibility and regulation of land use are purely local responsibilities. There are variations in human tolerance to aircraft noise. For example, it may be tolerated more by people living in a noisier urban environment than by people living in rural communities.

### Methodology

To define the effect of aircraft-generated noise on a community, an effective and appropriate measure of cumulative noise exposure is needed. The Federal Aviation Administration Integrated Noise Model (INM 5.1) was used to measure noise in this study. The Integrated Noise Model, over a 24-hour period, accounts for separate aircraft flying along flight tracks identified as straight-line or curved segments. These flight tracks are coupled with other data relating to noise, slant range, and engine thrust for each distinct aircraft type in the fleet mix to provide a cumulative measure of daily noise, with a penalty for nighttime aircraft activity (Day-Night Sound Level [DNL] metric). This methodology is consistent with existing measurement technologies. This methodology has been adopted by the FAA in response to the requirements of the Airport Safety and Noise Abatement Act of 1979 for a standardized noise system and is also recognized by the Environmental Protection Agency (EPA), and the Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure.

Noise is expressed as the Day-Night Average Sound Level, or DNL (formerly referred to as Ldn). DNL is the national standard accepted by the FAA for describing cumulative noise exposure and identifying noise/land use compatibility issues. DNL is the average noise level in decibels (dB) over a full 24-hour period with a 10-decibel (dB) penalty applied to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL contours do not represent actual noise conditions present on any specific day or absolute boundaries of acceptability in personal response to noise.

Application of the DNL measurement methodology produces a series of noise level contour lines (DNL contours) which depict noise levels. These are superimposed on a map of the airport and its environs. Contour lines are a summation of all the noise produced by aircraft operations for a year. The DNL levels for Page Municipal Airport use forecast information pertaining to daily aircraft operations, and actual runway utilization, flight track utilization, and aircraft flight track profiles. DNL mapping is primarily a planning tool. Noise exposure contours should be viewed as a means for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

### Integrated Noise Model (INM 5.1) Input Data

Noise modeling for the Page Municipal Airport used the following type of information as input.

- Existing (1998) and forecast operations (through 2020)
- Runway utilization by departure-arrival track usage
- Day/night operations split
- Touch-n-go (T&G) operations
- Flight tracks for arrivals, departures, and T&G's
- Airport Elevation
- Mean Maximum Temperature

Since Page does not have an air traffic control tower, some operational information used for the INM Model had to be estimated. Estimates were prepared using input from FAA records, the City, and airport users.

### Noise Modeling Output

For the purpose of this study, a set of four noise contours were modeled to include the 55, 60, 65, and 75 DNL. These contours were modeled for the base year (1999) and the end of the planning period (2020). The Off-Airport Land Use/Noise Maps, (see Chapter 6) illustrate the 1999 and 2020 noise contours, respectively. The existing off-airport land use served as the base sheet for the contours to provide a better gauge of the potential noise impacts. As shown, both the 75 and 65 DNL contours are contained on airport. The 60 and 55 DNL contours extend well outside the airport boundary for both the existing and 2020 conditions.

While FAA guidance states that all land uses are compatible with levels below 65 DNL, it is important to reiterate that this does not imply that the population beyond the 65 DNL contour will not experience noise. In fact, there are many airports receiving significant noise complaints and airport opposition from a population well outside the 65 DNL. Further, many of the residents located adjacent to these airports were not complaining until airport activity grew – typically synonymous with community growth. Thus, those land uses that are the most sensitive to noise should be carefully sited with long-term growth in mind. Such noise-sensitive land uses include residential areas, schools, hospitals, churches, and auditoriums.

## **8.5 RECOMMENDATIONS**

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This Plan recommends that the City of Page take steps towards protecting the future viability of the airport through additional land use controls and the adoption of an airport influence area (AIA). This will ensure the community's large investment is protected and the economic benefits from the facility extend long into the future.