# CHAPTER TWO

# AVIATION DEMAND PROJECTIONS

Projecting aviation demand is a critical element in the overall master planning process. This process defines an airport's ability to accommodate aircraft and operations, thus determining the type, size, and timing of future airside and landside facility development. Projections of aviation demand through 2020 were prepared for based aircraft, aircraft operations, and the based and operational aircraft fleet mix for the Ohio State University Airport.

This forecast analysis includes methodologies that consider historical aviation trends at the Airport and throughout the nation. ~~National aviation trends are discussed in detail in Appendix A of this report.~~ Local historical data were collected from FAA Terminal Area Forecast (TAF) records, Airport records, and the 1990 Ohio State University Master Plan Update. In addition, demographic data for the Columbus Metropolitan Statistical Area (MSA) were used to track local trends and conditions that can impact general aviation demand levels. The Columbus MSA includes Delaware, Fairfield, Franklin, Licking, Madison, and Pickaway Counties. The base year for these forecasts is 1999. Projections of aviation activity for the Airport were prepared for the near-term (2005), mid-term (2010), and long-term (2015 and 2020) timeframes. These projections assume the Airport will be able to develop storage facilities to accommodate based aircraft and that future operational capacity will be capable of accommodating the projected number of operations.

This chapter discusses the findings and methodologies used to project based aircraft and operations for the Ohio State University Airport. Although these forecasts provide a meaningful guide to the future development of the Airport, it must be recognized that there are always short-term fluctuations in an airport's activity due to a variety of factors. The projections of aviation demand are documented in the following sections:

- Historic Aviation Activity
- Based Aircraft Projections
- Based Aircraft Fleet Mix Projections
- Aircraft Operations Projections
- Airport Peaking Characteristics
- Summary

## 2.1 HISTORIC AVIATION ACTIVITY

In order to project airport-specific activity, it is useful to develop an understanding of the overall demand for aviation services. Two useful and readily available indications of aviation demand are based aircraft and operations.

The number of based aircraft (aircraft stored at an airport on a regular basis) at the Ohio State University Airport has fluctuated greatly over the past 20 years. In 1980, the Airport reported 236 based aircraft. Based aircraft continually increased to 282 by 1990. In the early 1990s, the

Ohio National Guard closed its base of operations at the Airport. With this loss of military activity, the Airport's total based aircraft decreased. In addition, fluctuations in training activity associated with the University's Department of Aviation have caused the number of based aircraft to vary somewhat. In 2000, there are 206 based aircraft.

The number of operations at the Airport has steadily decreased since 1980, when the Airport accommodated 181,854 operations. An operation is defined as a takeoff or a landing. By 1990, operations fell to 140,757 and then to 134,337 operations in 1995. By 1999, the annual operational estimate was placed at 128,886. This number declined further in 2000 to 107,028. Numerous factors contributed to the decrease in operations over this time period. This decrease resulted not only from the loss of the Ohio National Guard, but also from the decrease in flight training at the Airport. It should be noted that general aviation activity declined nationwide during the late 1980s and early 1990s. The significant decline in activity in 2000 can be attributed to two factors, namely, the slowing of the economy during the last half of the year and the record cold temperatures experienced in the last quarter. Prior to these two events, Airport traffic was tracking slightly ahead of 1999. **Table 2-1** displays the historic aviation activity of the Airport.

**TABLE 2-1**

**HISTORIC AVIATION ACTIVITY**

| Year | Based Aircraft OSU Airport | Operations OSU Airport |
|---|---|---|
| 1980 | 236 | 181,854 |
| 1985 | 228 | 163,908 |
| 1990 | 282 | 140,757 |
| 1991 | 209 | 140,305 |
| 1992 | 206 | 124,823 |
| 1993 | 206 | 135,862 |
| 1994 | 209 | 131,999 |
| 1995 | 221 | 134,337 |
| 1996 | 213 | 108,504 |
| 1997 | 213 | 109,295 |
| 1998 | 213 | 126,391 |
| 1999 | 206 | 128,886 |
| 2000 | 206 | 107,028 |

Sources: FAA Census of Civil Aircraft
FAA Terminal Area Forecast (TAF)
Airport Management

## 2.2 BASED AIRCRAFT PROJECTIONS

In order to project the number of based aircraft for the planning period at the Ohio State University Airport, a methodology was utilized that correlates based aircraft to significant

socioeconomic variables. For this analysis, both population and employment in the Columbus MSA were analyzed. Historical socioeconomic data was obtained from the U.S. Bureau of the Census and the Ohio Bureau of Employment Services – Labor Market Information Division. Historic socioeconomic data is presented in **Table 2-2**.

**TABLE 2-2**

**COLUMBUS MSA'S SOCIOECONOMIC TRENDS**

| Year | Population | Employment |
|---|---|---|
| 1970 | 916,228 | 415,200 |
| 1980 | 1,093,316 | 523,400 |
| 1985 | 1,291,788 | 605,600 |
| 1990 | 1,345,400 | 700,500 |
| 1991 | 1,369,556 | 704,900 |
| 1992 | 1,388,580 | 713,800 |
| 1993 | 1,405,841 | 721,700 |
| 1994 | 1,420,081 | 740,400 |
| 1995 | 1,433,060 | 758,200 |
| 1996 | 1,441,053 | 766,700 |
| 1997 | 1,455,216 | 786,700 |
| 1998 | 1,473,064 | 793,700 |
| 1999 | 1,489,487 | 808,000 |
| 2000 | 1,507,500 | 861,000 |
| Average Annual Growth Rate (1970-2000) | 1.67% | 2.46% |
| Average Annual Growth Rate (1990-2000) | 1.14% | 2.08% |

Sources: U.S. Bureau of the Census
Ohio Bureau of Employment Services - Labor Market Information Division
Wilbur Smith Associates

It is well recognized that an area's population can influence the need for aviation services. In general, the more people there are residing in the area, the higher the aviation demand. In 1970, the Columbus MSA's population was 916,228. By 1980, the Columbus MSA's population increased to 1,093,316. In 1990, the Columbus MSA's population increased to 1,345,400; by 2000 the population reached 1,507,500. The average annual growth rate for this 30-year period is 1.67 percent. From 1990 to 2000, the average annual growth rate was 1.14 percent.

Like population, employment trends in an area can often be correlated with the number of based aircraft. Similar to population, employment in the Columbus MSA has been increasing steadily. The Columbus MSA's employment figures for 1970 and 1980 were 415,200 and 523,400, respectively. In 1990, employment was recorded at 700,500. Employment in the Columbus MSA has increased to an estimated 861,000 jobs in 2000, a 2.46 percent average annual growth rate over the past 30-year period. Over the last 10 years, the average annual growth rate for employment in the Columbus MSA has been 2.08 percent.

Over the last 10 years, there has been relatively no increase in the number of based aircraft stored at the Ohio State University Airport in spite of the regional growth in population and employment. The primary reason for the flat based aircraft growth during this period has been limited hangar space. The Airport has not built any significant new hangar facilities for a number of years. Airport management indicates there is currently a waiting list of 50 aircraft for two proposed T-hangar projects, expected within the next year. In addition, another 20 aircraft are on a waiting list for conventional hangar space, also expected within the next year. While this does not guarantee that all of these aircraft will move to the Airport, it does indicate a very strong unfulfilled demand for aircraft storage in the Columbus metropolitan area.

Since the historic data exhibits an increase both in population and employment for the area, based aircraft are anticipated to increase in a similar fashion if desired storage were available. If based aircraft would increase at the average annual rate that MSA employment has experienced over the last 10 years (2.08 percent), approximately 311 based aircraft could be anticipated by 2020. A similar trend using population's average annual growth rate for the last 10 years yields approximately 260 based aircraft by 2020. These based aircraft projections are derived from taking the current based aircraft at the Airport (206) and applying it to the average annual growth rate for employment and population over the past 10 years (2.08 percent and 1.14 percent, respectively). These percentages are extrapolated over the next 20-year planning period.

**Example - Based Aircraft Projection - Population**

$c \times (1+r)^n = f$

$206 \times (1+.0208)^{20} = 311$

where: c = current based aircraft
r = average annual growth rate
n = number of years
f = future based aircraft

The use of population and employment set general upper and lower limits for based aircraft. By combining the strong demand for additional aircraft storage with the robust growth of the Columbus MSA, it is projected that the Airport can anticipate approximately 300 based aircraft by 2020. While this represents nearly 100 additional aircraft, this number is comparable to reported based aircraft in the late 1980s. This number was selected for use in the remainder of the Master Plan Update because it had historically been the highest number of based aircraft at the Airport. Therefore, the Airport is capable of handling this capacity level. The projection for the increase of based aircraft at the Airport is also supported by the Airport's redevelopment plans. As a result of the high demand for basing aircraft at the Airport and the lack of space available, there are immediate plans for the construction of two T-hangars and one corporate

hangar. There is also a strong projected growth in the student/pilot training plan that will likely require additional aircraft.

The based aircraft forecast is depicted below:

| Year | Based Aircraft |
|---|---|
| 2000 | 206 |
| **Projected** | |
| 2005 | 235 |
| 2010 | 250 |
| 2015 | 275 |
| 2020 | 300 |

These projected based aircraft figures were derived from the anticipated expansion of aircraft storage at the Airport, in combination with the generally strong growth trend experienced in the Columbus MSA.

## 2.3 BASED AIRCRAFT FLEET MIX PROJECTIONS

An airport's based aircraft fleet mix is one indication of its operational role. The future based aircraft fleet mix for the Airport was projected using the current based aircraft fleet mix tempered with national trends. Currently, 77 percent (159 aircraft) of the aircraft fleet based at the Airport is comprised of single-engine aircraft. Approximately 12 percent (24 aircraft) of the based fleet is made up of multi-engine and turboprop aircraft. There are reportedly 18 jet aircraft and five helicopters based at the Ohio State University Airport. It is important to note that the number of based aircraft and fleet mix at the Airport fluctuates somewhat throughout the year.

The future based aircraft fleet mix for the Airport is presented in **Table 2-3**. The percentage of based aircraft by type is projected to change slightly over the planning period. ~~As discussed in Appendix A, t~~The FAA anticipates an overall increase in the number of aircraft in the national general aviation fleet. The number of active single-engine aircraft is expected to increase; however, their overall percentage of the fleet will decrease slightly. The FAA also asserts that the percentage of multi-engine and turboprop aircraft in the fleet will decrease slightly. The slight decrease in single- and multi-engine aircraft is expected to be countered by a slight increase in the jet fleet percentage. This growth trend illustrates a movement in the general aviation community toward higher performing, more demanding aircraft, a trend that will impact the types of activities occurring at general aviation airports and the types of facilities that may be required at those airports.

By the end of the planning period, it is projected that approximately 225 single-engine aircraft will be based at the Airport. The number of multi-engine and turboprop based aircraft is projected to increase to 33 aircraft by 2020. It is projected that jet aircraft will increase to 36 and helicopters will increase to six during this same timeframe.

**TABLE 2-3**

**BASED AIRCRAFT FLEET MIX PROJECTIONS**

| | Single Engine | | Multi Engine/ Turboprop | | Jet | | Helicopter | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Total |
| 1999 | 159 | 77% | 25 | 12% | 19 | 9% | 4 | 2% | 206 |
| 2005 | 181 | 77% | 26 | 11% | 24 | 10% | 5 | 2% | 235 |
| 2010 | 193 | 77% | 28 | 11% | 25 | 10% | 5 | 2% | 250 |
| 2015 | 209 | 76% | 30 | 11% | 30 | 11% | 6 | 2% | 275 |
| 2020[1/] | 225 | 75% | 33 | 11% | 36 | 12% | 6 | 2% | 300 |

1/ Example: 75% x 300 = 225
11% x 300 = 33
12% x 300 = 36
2% x 300 = 6

Source: Wilbur Smith Associates

## 2.4 AIRCRAFT OPERATIONS PROJECTIONS

Data on historical aircraft operations for the Ohio State University Airport were obtained from Airport Management and Terminal Area Forecast records. In order to project future operations for the Airport, a methodology was developed that compares the number of historical based aircraft to the historical number of operations. Possible trends in future operations per based aircraft (OPBA) were then developed based on the preferred based aircraft projection. The preferred operations projection was then used to develop projections for the following:

- Local and itinerant operations
- Operating fleet mix

The number of operations at the Ohio State University Airport has fluctuated greatly between 1990 and 2000. In 1990, there were 140,757 recorded annual operations. By 1995, the number of operations had declined to 134,337. In 1996, annual operations dropped slightly to 108,504 and then increased to 126,391 by 1998. In 1999, annual operations increased to 128,886. In 2000, though, this number dropped again to 107,028. Some of the drop in activity in the 1995-1996 time period can be attributed to a dramatic decline in University student flight training activity. The loss of several large corporate tenants during this time period also contributed to the decrease in operations. New tenants have since countered the corporate tenant loss, but the student traffic has yet to reach its numbers of the late 1980s and early 1990s. The operational increase between 1997 and 1999 denotes an increase in itinerant operations by both area businesses and by the emerging fractional ownership/air charter providers. Increased training due to the Ohio State University/Executive Jet Services, Inc. agreement should have an impact

on future operational numbers. As previously noted, Airport management attributes the sharp decline experienced in 2000 to an economic downturn, and more importantly to the inclement weather of the last quarter.

Two accepted methodologies were analyzed in the development of the general aviation operations forecast. These consist of an OPBA methodology and utilizing the FAA's anticipated trend in national operational activity.

### 2.4.1 OPBA Projection

Future operational activity for the Airport was projected using an operations per based aircraft (OPBA) methodology. OPBAs are obtained by dividing the total number of annual general aviation operations by the number of based aircraft. This methodology analyzes historical OPBA ratios, then projects future based ratios on historical trends. It should be noted that OPBAs include all operations at an airport, including transient flights and training. The OPBA ratio does not indicate that each based aircraft will actually conduct that number of operations. The OPBA is a methodology recognized by the FAA to relate total general aviation activity to a known variable, in this case, based aircraft.

**Table 2-4** presents the historical OPBA for the Airport. A review of the historical OPBA at the Airport indicates that the OPBA has fluctuated significantly. Over the past nine years, the OPBA has ranged from a high of 671 (1991) to a low of 499 (1990).

**TABLE 2-4**

**HISTORICAL OPBA**

| Year | Operations | Based Aircraft | OPBA [1/] |
|---|---|---|---|
| 1990 | 140,757 | 282 | 499 |
| 1991 | 140,305 | 209 | 671 |
| 1992 | 124,823 | 206 | 606 |
| 1993 | 135,862 | 206 | 660 |
| 1994 | 131,999 | 209 | 632 |
| 1995 | 134,337 | 221 | 608 |
| 1996 | 108,504 | 213 | 509 |
| 1997 | 109,295 | 213 | 513 |
| 1998 | 126,391 | 213 | 593 |
| 1999 | 128,886 | 206 | 626 |
| 2000 | 107,028 | 206 | 520 |

1/ The OPBA is found by taking the annual operations and dividing by the based aircraft.

Example: o / b = opba
140,757 / 282 = 499

where: o = annual operations
b = based aircraft
opba = operations per based aircraft

Sources: FAA Terminal Area Forecast
Wilbur Smith Associates

For this analysis, 1999 was selected as the base year due to the aforementioned anomolies associated with 2000 operations. Three possible OPBA scenarios were developed using the projection of based aircraft previously presented. These scenarios are summarized in **Table 2-5**.

**TABLE 2-5**

**OPERATIONS PROJECTIONS - OPBA**

| Year | Based Aircraft | Operations Declining OPBA | Declining OPBA | Operations Average OPBA | Average OPBA | Operations High OPBA | High OPBA |
|---|---|---|---|---|---|---|---|
| 1999 | 206 | 128,886 | 626 | 128,886 | 626 | 128,886 | 626 |
| 2000 | 206 | 107,028 | 520 | 107,028 | 520 | 107,028 | 520 |
| 2005 | 235 | 141,000 | 600 | 139,120 | 592 | 150,400 | 640 |
| 2010 | 250 | 143,750 | 575 | 148,000 | 592 | 162,500 | 650 |
| 2015 | 275 | 148,500 | 540 | 162,800 | 592 | 181,500 | 660 |
| 2020 | 300 | 149,700 | 499 | 177,600 | 592 | 201,300 | 671 |

Source: Wilbur Smith Associates

***Declining OPBA Scenario*** – This scenario shows the OPBA declining to the lowest historical OPBA (499) experienced since 1990. By the end of the planning period, the decreasing OPBA scenario produces an estimated 149,700 annual operations.

***Constant OPBA Scenario*** – This scenario holds the future OPBAs constant at the average level (OPBA of 592) from 1990 to 1999. When the average OPBA is applied to the projected number of based aircraft, the number of annual operations at the Airport is projected to reach 177,600 by the end of the planning period.

***High OPBA Scenario*** – This scenario assumes the OPBA will increase until it reaches the highest OPBA experienced over the last 10 years (1991 - OPBA of 671). This scenario projects the total number of operations to reach 201,300 by 2020.

### 2.4.2 National Growth Trend

The FAA prepares an aviation forecast that includes projections of the number of hours flown annually by general aviation aircraft. In 1999, the FAA estimated that all types of general aviation aircraft flew more than 29.7 million hours. By 2005, the number was estimated to increase to more than 34.3 million hours. By 2011, the number of hours flown by general aviation aircraft is expected to approach 38.8 million, representing a 2 percent annual average growth rate. **Table 2-6** presents a projection of operations for the Ohio State University Airport using the national rate of growth projected for hours flown by active general aviation aircraft. Using this method, approximately 199,400 operations are projected for 2020 using 1999 as a base year. Using 2000 operational data produces a 2020 estimate of 162,200 operations.

**TABLE 2-6**

**OPERATIONS PROJECTIONS - NATIONAL TREND**

| Year | Hours Flown | 1999 GA Operations | 2000 GA Operations |
|---|---|---|---|
| 1998 | 28,100,000 | 126,391 | 126,391 |
| 1999 | 29,757,000 | 128,886 | 128,886 |
| 2000 | 30,406,000 | | 107,028 |
| | | | |
| 2005 | 34,353,000 | 148,770 | 118,700 |
| 2010 | 38,118,000 | 165,060 | 131,800 |
| 2015 | 41,750,260 | 183,135 | 146,200 |
| 2020[1/] | 45,712,808 | 199,400 | 162,200 |

1/ Operations were extrapolated using a 2.1 percent average annual growth rate.
Example: $128,886 \times (1+.021)^{21} = 199,400$

Sources: FAA Aerospace Forecasts, Fiscal Years 2000-2011
FAA Terminal Area Forecast (TAF)
Wilbur Smith Associates

### 2.4.3 Preferred General Aviation Projection of Operations

Of the various scenarios, the average OPBA projection was selected for use as the preferred operational projection. The operational projection numbers for the planning period is comparable to the level of operational activity experienced at the Airport during the late 1970s and early 1980s. Therefore, it is evident that the Airport is capable of handling this level of activity.

This projected increase in operations for the planning period is supported by the Airport's plans to add aircraft storage and the planned increased activity in the University's Flight Education Division. A local business jet aviation company primarily recruits graduates of the Ohio State University for full-time professional positions and continues to fund scholarships to current students as well. It is proposed that, in the future, this company will aid in reconfiguring and expanding the aviation school's air fleet. Both of these factors are foreseen to contribute to the increase in operations at the Airport.

This moderate growth scenario is supported by comparable operational forecasts using the FAA's national projections for hours flown by general aviation aircraft. The Declining OPBA scenario and the trend analysis using 1999 data set the respective lower and upper operational limits for the planning period.

The preferred unconstrained Ohio State University Airport aircraft operations projection for the planning period is as follows:

| Year | Operations |
|---|---|
| **Historical** | |
| 1998 | 126,391 |
| 1999 | 128,886 |
| 2000 | 107,028 |
| **Projected** | |
| 2005 | 139,100 |
| 2010 | 148,000 |
| 2015 | 162,800 |
| 2020 | 177,600 |

It should be noted that the projected operational level is still below the levels experienced in the early 1980s.

### 2.4.4 General Aviation Local and Itinerant Operations

As defined by the FAA, local operations are performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport.
- Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of an airport.
- Are executing simulated instrument, non-precision, or visual approaches or low passes at an airport (touch-and-go operations).

Itinerant operations are all other operations.

The Airport's most recent data indicate that approximately 54 percent of the annual operations are a result of itinerant aircraft and 46 percent are a result of local aircraft. Conversations with Airport Management indicate that local operations have started to rise as a result of an increase in training activity. For projection purposes, the future percentage of local operations was expected to increase to 55 percent over the planning period. Estimates of local and itinerant operations are presented in **Table 2-7**.

**TABLE 2-7**

**OPERATIONS PROJECTIONS - LOCAL AND ITINERANT**

| Year | Local Operations | Local Percentage | Itinerant Operations | Itinerant Percentage | Total Operations |
|---|---|---|---|---|---|
| 1999 | 59,173 | 46% | 69,713 | 54% | 128,886 |
| 2005 | 66,768 | 48% | 72,332 | 52% | 139,100 |
| 2010 | 74,000 | 50% | 74,000 | 50% | 148,000 |
| 2015 | 86,284 | 53% | 76,516 | 47% | 162,800 |
| 2020 | 97,680 | 55% | 79,920 | 45% | 177,600 |

Sources: 1999 Airport Inventory Survey and Wilbur Smith Associates

### 2.4.5 Operational Fleet Mix

The existing and projected operating fleets at the Ohio State University Airport are depicted in **Table 2-8**. Percentages of the aircraft in the Airport's operating fleet mix were derived from the based aircraft fleet mix. Currently, approximately 81 percent of the Airport's operational fleet mix is comprised of single-engine aircraft. Multi-engine and turboprop aircraft operations are estimated to make up approximately 11 percent of the Airport's total operations. Jet activity accounts for approximately 8 percent of current operations and military activity accounts for less than 1 percent of the operating fleet.

Future fleet mixes were developed based on projected increases in the number of hours flown nationally by aircraft type, as well as on projected increases in the based aircraft fleet. The overall percentage of turboprop and jet activity is projected to increase slightly at the Airport, based on FAA assumptions that business aircraft will likely see more use in the future. Jet operations at the Airport are expected to increase from approximately 10,027 (approximately 8 percent of all operations) in 1999 to 19,536 (11 percent) by 2020. Multi-engine and turboprop operations are expected to decrease slightly from 14,371 (11 percent) in 1999 to 14,208 (8 percent) by the end of the planning period. Although the turboprop operational activity is expected to increase, it is offset by the decrease in multi-engine operational activity. Single-engine operations at the Ohio State University Airport are expected to increase from approximately 104,127 in 1999 to an estimated 143,625 by the end of the planning period. The overall percentage of single-engine aircraft activity will remain at 81 percent of the fleet as business aircraft percentages (turboprop and jet) increase.

**TABLE 2-8**

**OPERATIONAL FLEET MIX PROJECTIONS**

| Year | Single Engine | Percent | Multi Engine/ Turboprop | Percent | Jet | Percent | Total |
|---|---|---|---|---|---|---|---|
| 1999 | 104,127 | 81% | 14,371 | 11% | 10,027 | 8% | 128,886 |
| 2005 | 112,421 | 81% | 15,301 | 11% | 11,128 | 8% | 139,100 |
| 2010 | 119,658 | 81% | 15,392 | 10% | 12,654 | 9% | 148,000 |
| 2015 | 131,640 | 81% | 14,652 | 9% | 16,280 | 10% | 162,800 |
| 2020 | 143,625 | 81% | 14,208 | 8% | 19,536 | 11% | 177,600 |

Source: Wilbur Smith Associates

## 2.5 AIRPORT PEAKING CHARACTERISTICS

Because many facility needs are related to activity levels during peak demand periods, projections were developed for peak month, average day, and peak hour operations at the Airport. The peak operating month for the Ohio State University Airport typically occurs in October. In addition, peak passenger/pilot projections were prepared to aid in the facility planning process.

### 2.5.1 Peak Operational Demand

To develop peak hour operations, an hourly peaking factor was applied to the number of average daily operations. Peak month operations are estimated to represent approximately 12 percent of operations total. For projection purposes, it was assumed that this monthly peaking factor would remain constant throughout the planning period. Average daily operations were estimated by dividing the peak month by 31 days. To develop peak hour operations projections, an hourly peaking factor was applied to the number of average daily operations. Past studies have shown this factor to be approximately 12 percent for airports with activity levels comparable to those levels experienced by the Airport. A 12 percent hourly peaking factor accounts for brief periods of relatively high use, such as when several aircraft are in the pattern performing touch-and-go operations. Peak hour projections are depicted in **Table 2-9**.

**TABLE 2-9**

**PEAK HOUR OPERATIONS**

| Year | Annual Operations | Peak Month | Average Day | Peak Hour |
|---|---|---|---|---|
| 1999 | 128,886 | 15,466 | 499 | 60 |
| 2000 | 107,028 | 12,843 | 414 | 50 |
| | | | | |
| 2005 | 139,120 | 16,694 | 539 | 65 |
| 2010 | 148,000 | 17,760 | 573 | 69 |
| 2015 | 162,800 | 19,536 | 630 | 76 |
| 2020[1/] | 177,600 | 21,312 | 687 | 82 |

1/ The peak month operations are estimated to represent approximately 12 percent of total annual operations. Average daily operations are estimated by dividing the peak month operations by 31 days. The peak hour operations are estimated to represent approximately 12 percent of average daily operations.
Example: peak month = 177,600 x .12 = 21,312 operations
average day = 21,312 / 31 = 687 operations
peak hour = 687 x .12 = 82 operations

Source: Wilbur Smith Associates

As shown, peak month operations are expected to increase from 15,466 in 1999 to 21,312 in 2020. Average day operations should increase from 499 to 687 over this same time period. It should be noted that peak day operations can surpass this figure during very busy periods. Peak hour activity can be expected to increase from 60 to 82 operations by the end of the planning period. Again, these projections represent averages, rather than absolute peak numbers. Therefore, the hourly and daily peaks may be exceeded during exceptionally active periods.

### 2.5.2 Peak Passenger/Pilot Demand

General aviation pilots and passengers were projected on the average number of occupants per departure. Using 2.5 pilots and passengers per departure, which is recognized by the FAA as a standard estimate for planning purposes, general aviation pilot and passenger forecasts were developed. Effective use of this methodology requires that local general aviation operations be adjusted for training to keep from overstating the number of persons. For the purposes of this forecast, training operations are assumed to account for 90 percent of total local operations.

**Table 2-10** presents the number of pilots and passengers that are expected to be accommodated by general aviation facilities during the planning period. Annual passenger demand can be related to the peak hour by estimating the peak month (1/10 the annual estimate), and dividing this figure by 31 to estimate the peak day. The peak hour is estimated as 12 percent of the peak day. These demand levels are important in estimating the terminal and parking facilities that will be required.

**TABLE 2-10**

**GENERAL AVIATION PASSENGER DEMAND**

| Year | Itinerant Operations | Annual Departures | Annual GA Pilots/Passengers | Peak Hour Pilots/Passengers |
|---|---|---|---|---|
| 1999 | 69,713 | 34,857 | 87,141 | 34 |
| 2005 | 66,768 | 33,384 | 83,460 | 32 |
| 2010 | 74,000 | 37,000 | 92,500 | 36 |
| 2015 | 86,284 | 43,142 | 107,855 | 42 |
| 2020[1/] | 97,680 | 48,840 | 122,100 | 47 |

1/ An annual departure is defined as 50 percent of total itinerant operations. The FAA recognizes a standard estimate of 2.5 pilots and passengers per annual departure. Annual pilot and passenger demand is related to the peak hour by estimating the peak month, and dividing this figure by 31 to estimate the peak day. The peak hour is estimated as 12 percent of the peak day.
Example: annual departure = 97,680 / 2 = 48,840
annual ga pilots and passengers = 48,840 x 2.5 = 122,100

Source: Wilbur Smith Associates

## 2.6 SUMMARY

The aviation demand projections for the Airport are summarized in **Table 2-11** and are as follows:

- All forecasts developed as part of this study are based on historical Airport activity, area demographic trends, and FAA projections. These trends were tempered with specific knowledge of local conditions.
- All forecasts are considered unconstrained.
- Based aircraft are expected to increase from 206 to 300 during the planning period.
- Using operations per based aircraft (OPBA) and the projected number of based aircraft, the number of annual operations is expected to increase to 177,600 by the end of the planning period.
- The operating fleet mix is projected to see an increase in the percentage of jet and turboprop aircraft using the Airport. Single-engine aircraft will continue to comprise the majority of the Airport's operating fleet.
- The average number of peak hour operations is estimated to increase from 60 in 1999 to 82 by the end of the planning period. Peak hour general aviation passengers will increase from 34 to 47 by the end of the planning period.

**TABLE 2-11**

**FORECAST SUMMARY**

| | Annual Operations | | | Based Aircraft | | | | | Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Local | Itinerant | Total | Single | Multi | Jet | Helicopter | Total | Operations | Passengers/Pilots |
| 1999 | 59,173 | 69,713 | 128,886 | 158.62 | 25 | 19 | 4 | 206 | 60 | 34 |
| 2005 | 66,768 | 72,332 | 139,100 | 180.95 | 26 | 24 | 5 | 235 | 65 | 32 |
| 2010 | 74,000 | 74,000 | 148,000 | 192.5 | 28 | 25 | 5 | 250 | 69 | 36 |
| 2015 | 86,284 | 76,516 | 162,800 | 209 | 30 | 30 | 6 | 275 | 76 | 42 |
| 2020 | 97,680 | 79,920 | 177,600 | 225 | 33 | 36 | 6 | 300 | 82 | 47 |

Source: Wilbur Smith Associates