Chapter 3 – Aviation Activity Forecasts

Introduction

This chapter provides updated forecasts of aviation activity for Lexington Airport (9S9) for the twenty-year master plan horizon (2014-2034). The overall goal is to prepare forecasts that accurately reflect current conditions, relevant historic trends, and provide reasonable projections of future activity, which can be translated into specific airport facility needs anticipated during the next twenty years and beyond. The forecasts presented in this chapter are consistent with Lexington Airport's current and historic role as a community general aviation airport.

Unless specifically noted, the forecasts of activity are unconstrained and assume that Morrow County will be able to make the facility improvements necessary to accommodate anticipated demand. Through the evaluation of airport development alternatives later in the master plan, Morrow County will consider if any unconstrained demand will not or cannot be reasonably met.

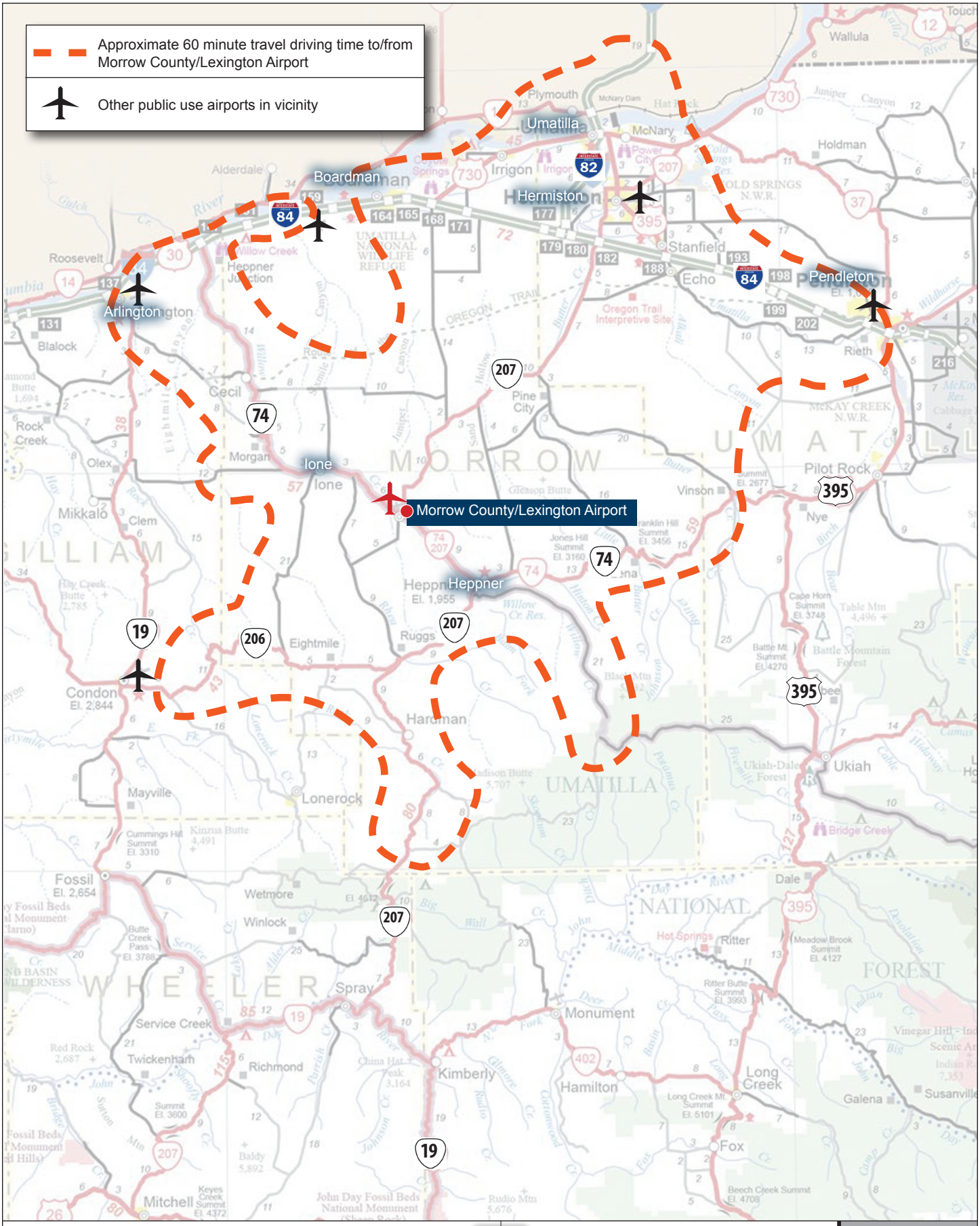
The FAA-defined airport master plan forecasting process for general aviation airports is designed to address elements critical to airport planning by focusing on two key activity segments: based aircraft and aircraft operations (takeoffs and landings). Detailed breakdowns of these are also provided including aircraft fleet mix, activity peaking, distribution of local and itinerant operations, and the determination of the critical aircraft, also referred to as the design aircraft.

The design aircraft represents the most demanding aircraft type or family of aircraft that uses an airport on a regular basis (a minimum of 500 annual takeoffs & landings). The existing and future design aircraft are used to define the (existing and future) airport reference codes (ARC) to be used in airfield planning. FAA airport design standards are organized into several different ARC groupings, each reflecting the physical requirements of that aircraft type. The activity forecasts also provide consistency in evaluating future demand-based facility requirements such as runway and taxiway capacity and capacity for aircraft parking and hangar storage.

Airport Service Area

The airport service area refers to the geographic area surrounding an airport that generates most "local" activity. The population, economic characteristics and number of competing airports within an airport's service area are important factors in defining locally-generated demand for aviation facilities and services. With numerous airports nearby, service areas often overlap, creating competition between airports for items such as hangar space, fuel, and aviation services. These items are sensitive to cost, convenience and the quality of facilities or services. Demand generated by transient users can also be influenced by competition from nearby airports and can usually be measured in terms of cost, convenience or capabilities. In rural areas, these demand characteristics are often affected by fewer facility choices and significantly longer travel times.

A 30- or 60-minute surface travel time is used to approximate the boundaries of a service area for a typical general aviation airport. Central and southern Morrow County is sparsely populated and there are no other public use airports within a 30-minute drive time, and only two public use airports within a 60-minute drive time of Lexington Airport. **Figure 3-1** illustrates the approximate boundary of a 60-minute drive from Lexington Airport, which encompasses large areas of Morrow County and portions of adjacent counties in Oregon and south-central Washington. Hermiston Municipal Airport is located near the outer edge of Lexington's airport service area, and its service area extends south and creates an overlap of service coverage for northern Morrow County. However, it is important to note that Lexington Airport is the closest general aviation airport for numerous small communities in central and southern Morrow County and is the only airport in Morrow County to provide day and night, all weather access for emergency fixed-wing medical evacuation (MEDEVAC) service or emergency response.



MORROW COUNTY - LEXINGTON AIRPORT | AIRPORT MASTER PLAN

AIRPORT SERVICE AREA | **FIG. 3-1**

CENTURY WEST ENGINEERING CORPORATION

Table 3-1 lists the public use airports within a 40 nautical mile (flight) radius of Lexington. It is noted that several of the public use airports listed do not provide competitive facilities and services, although those that do, have master plans that provide for future facility expansion. Competing airports located beyond a 60-minute travel time typically have less impact on local airport activity due to the redundancy provided by closer facilities. In contrast, the service area for a commercial airport often extends beyond two hours due the relatively small number of airports with scheduled airline service. The region's primary commercial air service options include two airports within 90 minutes of Lexington: Eastern Oregon Regional Airport (Pendleton) and Tri Cities Airport (Pasco).

TABLE 3-1: PUBLIC USE AIRPORTS IN VICINITY OF LEXINGTON AIRPORT *(WITHIN 40 NAUTICAL MILES)*

AIRPORT	LOCATION	RUNWAY DIMENSION (FEET)	SURFACE	LIGHTED RUNWAY?	INSTRUMENT APPROACH?	ON-SITE WEATHER?	FUEL AVAILABLE?
Boardman Airport	22 NM N	4,200 x 100	Asphalt	Yes	No	No	No
Hermiston Municipal	29 NM NE	4,500 x 75	Asphalt	Yes	Yes	Yes	Yes
Condon State	24 NM SW	3,500 x 60	Asphalt	Yes	No	No	No
Arlington Municipal	26 NM NW	5,000 x 50	Dirt	No	No	No	No
Eastern Oregon Regional (Pendleton)	39 NM ENE	6,301 x 150 (primary runway)	Asphalt	Yes	Yes	Yes	Yes

Socioeconomic Trends and Forecasts

AIRPORT SERVICE AREA ECONOMY

Historically, downturns in general aviation activity often occur during periods of weak economic conditions and growth typically coincides with favorable economic conditions. It is evident that recent economic recession and the slow recovery that followed, has constrained general aviation activity locally, statewide, and throughout the national airport system. However, as indicated in the FAA's national long-term aviation forecasts, the overall strength of the U.S. economy is expected to sustain economic growth over the long-term, which will translate into modest to moderate growth in aviation activity.

In March 2014, Morrow County's unemployment rate was 7.2 percent, down from 8.4 percent in March 2013. During this period, Oregon's unemployment rate also declined (from 8 percent to 6.9 percent). In the recent recession, unemployment in Morrow County began at less than 6 percent, peaked at 9.9 percent (February

2010), then fluctuated downward to current levels. Despite periodic fluctuations in the economy, nonfarm employment in Morrow County has grown from 3,210 in 2001 to 3,720 in 2013. In 2013, the distribution of nonfarm employment was 77 percent private and 23 percent government. The leading employment sectors in 2013 were manufacturing; government; and trade, transport and utilities. The distribution of nonfarm employment in Morrow County appears to be consistent with population distribution between the north and south parts of the county. With an economy that heavily relies on agriculture, Morrow County experiences some relatively consistent seasonal employment trends in related industries.

The 2012-2022 Employment Projections by Industry and Occupation prepared by the Oregon Department of Employment projects modest growth in employment for the local two-county region (Morrow and Umatilla) over the next ten years. Total payroll is projected to increase from 35,130 in 2012 to 38,400 in 2022, an increase of 9 percent (average annual growth of 0.89 percent). The largest gains (by percentage) are expected in Construction (+28%); Nursing and Residential Care Facilities (+23%); Private Educational & Health Services (+19%); and Leisure & Hospitality (+18%). Declining employment levels are projected for Federal Government (-17%) and Professional and Business Services (-12%).

Morrow County is a strong agricultural producer with 401 farms and approximately 1.1 million acres in farm use.[1] Winter Wheat, Spring Wheat, Corn (for grain), and Cattle are among the leading commodities. In 2012, the market value of all agricultural products sold in Morrow County was over $586 million. Agriculture is the leading generator of aviation activity at Lexington Airport, which supports one locally-based aerial applicator and occasional transient spray operators.

POPULATION

In broad terms, the population within an airport's service area affects the type and scale of aviation facilities and services that can be supported. Although a large number of airport-specific factors can affect activities at an airport, changes in population often reflect other broader economic conditions which may also affect airport activity.

Historic Population

Certified estimates of population for Oregon counties and incorporated cities are developed annually by the Portland State University (PSU) Population Research Center. The annual PSU estimates, coupled with the U.S. Census, conducted every ten years, provide an indication of local area population trends over an extended period.[2]

[1] 2012 USDA Census of Agriculture

[2] Portland State University Population Research Center, July 1, 2013 estimate; 1990, 2000, 2010 U.S. Census.

As noted earlier, the airport service area for Lexington Airport extends beyond Lexington and includes large portions of Morrow County. A significant factor in Morrow County population is the geographic distribution between northern and the central-southern parts of the county.

Population growth for Morrow County has been moderate over the last twenty years, typically at rates slightly lower than Oregon's statewide population, although the county has occasionally outpaced statewide growth. The majority of the growth has been experienced in northern Morrow County (Boardman, Irrigon, etc.), while the population of central and southern Morrow County (Lexington, Ione, Heppner, etc.) has fluctuated within a small range.

When combined, the incorporated areas of Lexington, Heppner, and Ione accounted for 16 percent of Morrow County's 2013 population, down from 18 percent in 2000 and 26 percent in 1990. In 1970, the three communities accounted for 45 percent of Morrow County's population. Although the population distribution trends within the county are evident, due largely to significant growth in the northern part of the county, the local area population has remained relatively stable and is currently within about a 5½ percent of its recent peak levels. For Lexington, the Census data indicate that the population range over the last 70+ years has fluctuated between 223 (1940) and 307 (1980), with an average (mean) population of 253 over the last eight decennial censuses. The most recent PSU population estimate for Lexington was 255 in 2013.

While a flat or slightly declining population base may not typically generate significant growth in aviation activity, a relatively stable population base is capable of sustaining aviation activity, particularly in rural areas with a limited number of airports. Other factors such as the availability of fuel or hangar space, or the presence of a commercial operation, such as an aerial applicator, will often have a more direct impact on airport activity than minor upward or downward shifts in population.

Recent historic population data and average growth rates for Morrow County, local area communities, and Oregon are summarized in **Table 3-2**.

TABLE 3-2: HISTORIC POPULATION

YEAR	MORROW COUNTY	CITY OF LEXINGTON *(incorporated area only)*	LEXINGTON-HEPPNER-IONE COMBINED POPULATION *(incorporated areas only)*	LEXINGTON-HEPPNER-IONE COMBINED SHARE (%) OF MORROW COUNTY POPULATION	OREGON
1990	7,625	286	1,953	25.6%	2,860,375
2000	10,955	263	1,979	18.1%	3,421,399
2010	11,173	238	1,858	16.6%	3,831,074
2013	**11,425**	**255**	**1,875**	**16.4%**	**3,919,020**
Average Annual Rates (AAR) of Growth	Morrow County	City of Lexington	Combined Area		Oregon
1990-2000	3.70%	-0.84%	-0.13%		1.81%
2000-2010	0.20%	-1.00%	-0.63%		1.14%
2000-2013	0.32%	-0.24%	-0.41%		1.05%
2010-2013	0.75%	2.33%	0.30%		0.76%

Source: U.S. Census data; Portland State University certified annual estimates.

POPULATION FORECASTS

Oregon Office of Economic Analysis (OEA)

Long-term population forecasts prepared by the Oregon Office of Economic Analysis (OEA) are periodically generated to support local and statewide planning. The most recent OEA long-term forecasts were released in March 2013, which project modest sustained growth for Morrow County through 2050. Morrow County population is projected to increase from 11,300 in 2012 to 16,098 in 2050. The projection reflects a net increase of 4,798 over the 38-year forecast period, with an average annual growth rate of 0.94 percent.

It is reasonable to assume that recent historic trends will continue and the majority of the forecast population growth will occur in northern Morrow County, with modest population growth occurring in the local communities and the unincorporated central and southern Morrow County. Based on this assumption, future population within the airport service area is not expected to be a significant factor in forecasting future activity at Lexington Airport.

National General Aviation Activity Trends

The first fifteen years of the 21st Century was a tumultuous time for General Aviation (GA). The industry was battered by poor economic conditions and steadily rising fuel prices that slowed growth and negatively affected elements such as aircraft manufacturing, on-demand air travel, aircraft ownership, and aircraft utilization levels. Ongoing concerns over the potential replacement and future availability of

100LL aviation gasoline (AVGAS) have also created uncertainty within general aviation. On a national level, most measures of GA activity declined sharply through the "great recession" and have only recently started to show modest signs of improvement.

The FAA's long-term forecasts predict that the U.S. active GA aircraft fleet will grow modestly at an average annual rate of 0.4 percent between 2014 and 2035.[3] The active GA fleet is expected to increase by approximately 15,400 aircraft over the next twenty years (+8 percent). The FAA forecasts reflect net growth that will be realized through a combination of new aircraft production and fleet attrition.

Data maintained by the FAA show significant system-wide declines of several key general aviation activity indicators between 2001 and 2014 (piston hours flown -34%; active piston aircraft -16%; active GA pilots -7%). AVGAS consumption levels dropped every year between 2001 and 2014, ending 30 percent below 2001 levels.

It is noted that within the overall forecast growth, several segments are projected to decline in actual numbers including single engine piston aircraft (-12%) and multi-engine piston aircraft (-8%). These declines reflect attrition of an aging fleet, which is not being fully offset by new aircraft production. Encouraging areas within the GA fleet are found in turboprops (particularly single engine) (+37%), experimental aircraft (+35%), sport aircraft (+144%), and business jets (+77%) growth through 2035. In addition to stronger production activity, these aircraft segments are experiencing lower levels of fleet attrition.

Aircraft manufacturing has shown positive gains in recent years after an extended period of weak sales. Worldwide GA aircraft deliveries in 2014 totaled 2,454 units, an increase of 4.3 percent over the previous year, but about 11 percent below recent peak of shipments in 2008.[4] The adaption of both turbine and diesel engines for small general aviation aircraft by several established manufacturers is positive indication that evolving engine technology may be a significant factor in the long-term future of general aviation. In addition, the resurgence of unleaded automobile gasoline powered small aircraft engines may provide a reliable power source for a growing Light Sport Aircraft (LSA) and experimental aircraft fleet.

Although the FAA maintains a moderately favorable long-term outlook, many activity segments associated with piston engine aircraft and AVGAS consumption are not projected to return to "pre-recession" levels until the 2025 to 2035 timeframe. Although some segments of general aviation are expected to grow at moderately high rates, most measures of the general aviation industry suggest modest, sustained growth in the range of 1 to 2 percent annually is expected over the next 20 years. The FAA's annual growth assumptions for individual general aviation activity segments are summarized in **Table 3-3.**

[3] FAA Aerospace Forecast Fiscal Years 2015-2035

[4] General Aviation Manufacturers Association (GAMA), 2014 Delivery Report

TABLE 3-3: FAA LONG RANGE FORECAST ASSUMPTIONS (U.S. GENERAL AVIATION)

ACTIVITY COMPONENT	FORECAST ANNUAL AVERAGE GROWTH RATE (2014-2035)
Components with Annual Growth Forecast < 0%	
Single Engine Piston Aircraft in U.S. Fleet	-0.6%
Multi-Engine Piston Aircraft in U.S. Fleet	-0.4%
Hours Flown - GA Fleet (Piston AC)	-0.5%
Student Pilots (Indicator of flight training activity)	-0.3%
AVGAS (Gallons consumed - GA only)	-0.1%
Private Pilots	-0.3%
Components with Annual Growth Forecast < 1%	
Commercial Pilots / Airline Transport Pilots	0.4% / 0.5%
Instrument Rated Pilots	0.2%
Active Pilots (All Ratings, excluding Airline Transport)	0.1%
GA Operations at Towered Airports (all AC types)	0.9%
Active GA Fleet (# of Aircraft)	0.4%
Components with Annual Growth Forecast 1%-2%	
Experimental Aircraft in U.S. Fleet	1.4%
Turboprop Aircraft in U.S. Fleet	1.5%
Components with Annual Growth Forecast >2%	
Piston Helicopters in U.S. Fleet	2.1%
Sport Pilots	5.2%
Turbine Helicopters in U.S. Fleet	2.8%
Light Sport Aircraft in U.S. Fleet	4.3%
Turbojet Aircraft in U.S. Fleet	2.8%
Hours Flown - GA Fleet (Turbine AC)	2.9%
Hours Flown – Experimental AC	2.4%
Hours Flown – Light Sport AC	5.1%
Jet Fuel (Gallons consumed – GA only)	2.5%
Source: FAA Long Range Aerospace Forecasts (FY 2015-2035)	

Overview of Recent Local Events

AIRPORT FUEL SALES

A review of aviation fuel sale volumes at Lexington Airport was conducted to help evaluate the impact of activity trends on airport operations. The 2001 Airport Layout Plan report indicated that aviation gasoline (AVGAS) deliveries at the airport in 1998 totaled approximately 5,500 gallons. The airport had approximately 10 based aircraft in 1998, of which 9 were piston engine aircraft. A review of recent fuel delivery data (April 2012 to March 2013) shows a significant increase in volume (10,871 gallons), although the number of piston engine based aircraft at the airport is the same (9). Several factors could account for the increase, including higher aircraft utilization (more flight hours) for locally based aircraft, increased activity and/or fuel purchases by transient aircraft, and favorable fuel pricing within the airport service area. Other factors could include improvements to runway and airfield, the addition of instrument approach capabilities, on-site weather observation and amenities that make the airport more attractive to transient pilots flying through the area.

As an input into forecasting future aviation activity, the volume of fuel deliveries in relation to the based aircraft population is consistent with FAA-recommended "typical" activity ratios for small general aviation airports with normal activity. Many small rural airports have a significantly lower fuel volume to based aircraft ratios, which often justifies a lower activity ratio. For Lexington Airport, the fueling activity appears to negate the impact of flat or marginally declining local area population as a predominate driver of aviation activity, and is consistent with the nature of a large rural airport service area.

HANGAR CONSTRUCTION

One new 7-unit hangar has been constructed at the airport since the 2001 Airport Layout Plan was completed. The hangar currently accommodates a total of 8 aircraft. Airport management indicates that they have three individuals on a waiting list for hangar space (aircraft located at nearby airports).

All locally based aircraft at Lexington Airport are hangared (including 2 aircraft in an off-airport hangar). This suggests a strong relationship exists between the availability of hangar space and the ability to attract tenants at Lexington Airport. The market depth required to justify building additional hangar capacity should be evaluated periodically by airport management in order to verify and confirm demand (hangar deposits, etc.) based on current prices (development cost, etc.).

As an input into forecasting future aviation activity, the existing demand for hangar space suggests that some growth in based aircraft is reasonable to assume within the 20-year planning period, either as the result of airport- or privately-constructed hangars.

Historic Aviation Activity

Lexington Airport currently has 10 based aircraft, including 8 single-engine piston, 1 multi-engine piston, and 1 single-engine turboprop (aerial applicator). Although there have been some changes in the individual aircraft located at the airport, the overall based aircraft total is unchanged between 2000 and 2014. Lexington Airport has traditionally accommodated single- and multi-engine based aircraft, including a turbine aerial applicator aircraft.

For Lexington Airport, aircraft operational data (takeoffs and landings, touch and go landings, etc.) are limited to estimates. As a non-towered airport, no record of activity is regularly maintained. However, a review of estimates contained in state aviation system plans, previous airport master plans, historic on-site activity counts, and FAA Terminal Area Forecast (TAF) data provides a general indication of activity at the airport over time. Based aircraft counts are updated periodically either as part of a master plan or by airport management for other purposes.

AIRPORT TRAFFIC COUNTS

Beginning in the 1980s, aircraft operations (takeoffs and landings) counts at non-towered airports were conducted on a semi-regular basis by the Oregon Department of Aviation (ODA) through its "RENS" automated activity counting program. The RENS program methodology relied on four brief sample periods over a 12-month period to account for seasonal variation in activity. Recorders were placed next to runways to capture distinct engine sounds for takeoffs that could be identified by aircraft type. The acoustical events were tallied and the sample data was statistically extrapolated to provide a 12-month estimate of activity. The program was phased out in 2003, but provided two annual operations estimates for Lexington in 1986 and 1992. **Table 3-4** summarizes the RENS counts for Lexington Airport during the period, which ranged from a low of 2,527 to a high of 4,432. The operations levels are comparable to current estimates of activity described later in the chapter.

The based aircraft-operations ratios associated with the historic RENS counts are generally consistent with activity ratios currently defined by FAA for estimating activity at small non-towered general aviation airports. However, the ratios do not appear to adequately capture current commercial (aerial applicator) activity at Lexington. Therefore, for long-term forecasting purposes, future aircraft operations ratios that reflect both commercial and non-commercial activity should be developed.

TABLE 3-4: SUMMARY OF ODA RENS ACTIVITY COUNTS - LEXINGTON AIRPORT

YEAR	AIRCRAFT OPERATIONS[1]	BASED AIRCRAFT[2]	RATIO: OPERATIONS PER BASED AIRCRAFT
1986	4,432	15	296
1992	2,527	10	252
2-Year Mean	***3,480***	***12.5***	***274***

1. ODA "RENS" Airport Activity Counting Program
2. FAA Terminal Area Forecast, Master Plan or Airport Management Estimates

FAA TERMINAL AREA FORECAST (TAF) DATA

The Federal Aviation Administration (FAA) Terminal Area Forecast (TAF) is maintained for airports that are included in the National Plan of Integrated Airport System (NPIAS). **Table 3-5** summarizes recent historic based aircraft and aircraft operations estimates for Lexington Airport contained in the TAF. The TAF is periodically updated and adjusted as more specific airport activity data are available. When reviewing FAA TAF data, it is important to note that when there is no change from year to year it often indicates a lack of data, rather than no change in activity. A large change in data in a single year may follow updated reporting that captures changes that occurred over several years. Small changes in year-to-year activity that extend through the forecast typically reflect an assumed fixed growth rate.

TABLE 3-5: FAA TAF DATA – LEXINGTON AIRPORT

YEAR	AIRCRAFT OPERATIONS[1]	BASED AIRCRAFT[1]	RATIO: OPERATIONS PER BASED AIRCRAFT
2000	2,632	10	263
2001	2,671	10	267
2002	2,710	9	301
2003	2,750	9	306
2004	2,789	9	310
2005	2,829	9	314
2006	2,865	9	318
2007	2,903	11	264
2008	4,432	9	492
2009	4,432	9	492
2010	4,432	9	492
2011	4,432	9	492
2012	4,432	9	492

1. FAA Terminal Area Historic (Estimated) Activity

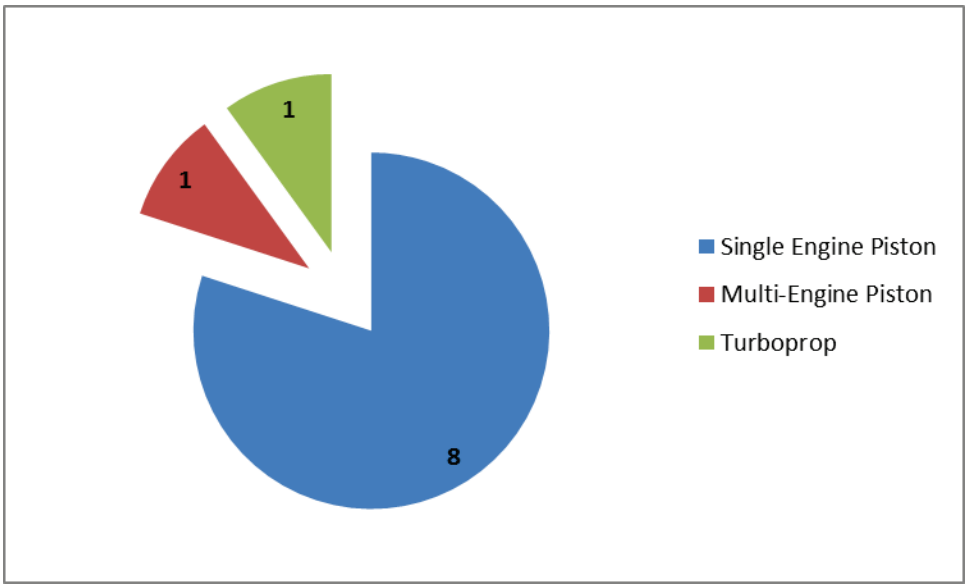
The TAF operations level (4,432) listed for 1990 through 1999 is identical to the RENS activity count conducted in 1986, which indicates that the TAF was adjusted to reflect the on-site activity county and maintained without change for several years. Since no RENS counts have been conducted at the airport during the last twenty years, the TAF operations estimates have not been "adjusted" recently to reflect updated activity data. However, an adjustment to the TAF operations estimate was made in 2000, which reflected the state aviation system plan forecasts prepared in 1997. TAF operations gradually increased until 2008, then were unchanged through 2012. The TAF estimate for 2013 (4,489 operations) reflects a ratio of 449 operations per based aircraft.

CURRENT ESTIMATE OF ACTIVITY

Based Aircraft

A count coordinated with airport management in April 2014 identified 10 aircraft based at Lexington Airport, including 8 single-engine piston, 1 multi-engine piston, and 1 single-engine turboprop. Although there have been changes in individual aircraft, the overall number of based aircraft has not increased since the previous airport plan was completed in 2001. **Figure 3-2** depicts the current distribution of based aircraft by type.

FIGURE 3-2: LEXINGTON AIPRORT - BASED AIRCRAFT SUMMARY (APRIL 2014)



The aircraft that currently generates the highest activity volume at Lexington Airport is a locally-based single-engine turboprop (aerial applicator). The airplane has a maximum takeoff weight of 16,000 pounds and a wingspan of 59.2 feet, and is included in Airplane Design Group II (ADG II). All of the other based aircraft at the airport weigh 12,500 pounds or less and are included in Airplane Design Group I (ADG I).

A description of aircraft classifications and the existing/future design aircraft is provided later in the chapter.

Aircraft Operations

FAA GUIDANCE FOR ESTIMATING AIR TRAFFIC AT NON-TOWERED AIRPORTS

The FAA provides planning guidance for estimating activity at general aviation airports without control towers, including the use of activity ratios to project aircraft operations from the number of based aircraft at the airport. In the absence of actual aircraft operations counts, the ratios of activity are generally adequate for airport planning purposes. The FAA developed "typical" operations ratios for general aviation airports based on their observations at airports throughout the United States. The recommended ratios are 250 operations per based aircraft for small airports with low activity; 350 operations per based aircraft for airports with moderate local and itinerant activity; and 450 operations per based aircraft for high activity airports in urban areas. The ratios are intended to reflect operations from both locally-based and transient aircraft. However, the presence of unique activities such as a large flight school or other commercial operations can increase traffic volumes based on significantly higher aircraft utilization levels (annual flight hours per aircraft, etc.). Conversely, the absence of aviation fuel or a fixed base operator (FBO) can contribute to lower activity levels.

As noted earlier in the chapter, a review of recent fuel deliveries at the airport identified a significant increase in AVGAS consumption relative to the number of based aircraft, compared to the levels in the late 1990s described in the 2001 Airport Layout Plan report. Increased fuel consumption translates into increased aircraft flight activity—whether from locally based aircraft, transient aircraft, or a combination of both.

Considering the airport's historic aircraft utilization levels, recent fuel data, relevant national trends, and the FAA's current guidance on estimating aircraft activity at non-towered airports, it appears that an average aircraft utilization level of 250 operations per based aircraft (piston) would be reasonable for estimating the current level of locally-based and transient non-commercial activity at the airport (9 based aircraft x 250 = 2,250 operations).

The aerial applicator at Lexington Airport indicates that they average approximately 1,000 takeoffs annually, which translates into 2,000 annual operations. When combined with 2,250 annual operations generated by other aircraft, **current (2013) activity at Lexington Airport is estimated at 4,250 annual aircraft operations** and an activity ratio of 425 operations per based aircraft. The aerial applicator activity is heavily seasonal and coincides with various growing cycles. A detailed distribution of current traffic is provided in the preferred forecast of operations later in the chapter.

Aviation Activity Forecasting

EXISTING FORECASTS

Existing aviation activity forecasts are available for comparison with current activity, recent historic trends, and the updated forecast scenarios prepared for the master plan. The existing forecasts have not been modified to reflect the recent events and therefore some may be obsolete (in actual numbers). However, the long-term growth rates reflected in the existing forecasts are typically within the range found at many general aviation airports and provide a useful basis of comparison. The existing forecasts and their respective average annual growth rates are summarized below and later in **Table 3-6**.

2001 Airport Layout Plan (2001-2021)

The 2001 Airport Layout Plan Report relied on aviation activity forecasts developed in the Oregon Aviation System Plan (1997 Forecast Update). Based aircraft at Lexington Airport were projected to increase from 10 to 13 between 1994 and 2014, which reflected an average annual growth rate of **1.32 percent**. Annual aircraft operations were projected to increase from 2,500 to 3,130 during the same period, reflecting an average annual growth rate of **1.13 percent**. The OASP forecast base year (1994) operations estimate was based on the 1992 ODA RENS activity count, the most recent available at the time.

The forecasts have reached the end of their projected timeline and provide an opportunity to assess the accuracy of the growth assumptions. The current total of 10 based aircraft results in no net increase from 1994 levels and is 3 aircraft below the 2014 OASP forecast. The current operations estimate of 4,250 noted earlier is 36 percent above the OASP forecast for 2014, but relatively close to the FAA TAF projection for 2014 that was available at the time.

FAA Terminal Area Forecast (TAF)

The FAA's 2013 TAF forecast update projects based aircraft at Lexington Airport to increase from 9 to 11 (+22%) between 2012 and 2040, which represents average annual growth of **0.72 percent**. The 2013 TAF forecast for based aircraft (9) is one less than the current based aircraft count. Aircraft operations are projected to increase from 4,432 to 6,331 between 2012 and 2040, which represents average annual growth of **1.28 percent**. The TAF operations forecast for 2013 (4,489) is approximately 5 percent above the current master plan estimate of 4,250 operations noted earlier in the chapter. The TAF operations forecasts reflect steadily increasing ratios of operations (492 to 575) to based aircraft through 2040. Although the steadily increasing activity ratios appear optimistic, the average annual growth rates are reasonable and provide valid projections for comparison with other forecasts.

On a regional level, the 2013-2040 Terminal Area Forecast projects the number of based aircraft (general aviation) in the Northwest-Mountain Region to increase at an annual average rate of 0.96 percent through

2040. All itinerant operations (commercial, GA, military) in the region are projected to increase at an annual average rate of 1.1 percent through 2040.

2007 Oregon Aviation Plan

The 2007 Oregon Aviation Plan (OAP) contains based aircraft forecasts for Oregon's public use airports for the 2005-2025 timeframe. For Lexington Airport, the OAP forecasts used the 2005 FAA TAF based aircraft and annual operations estimates as the base for its forecast. Based aircraft were projected to increase from 9 to 12 (+33%) between 2005 and 2025, which represents average annual growth of **1.45 percent**. The airport's 2014 based aircraft count (10) matches both the 2010 and 2015 OAP projections. The based aircraft forecast is tracking with actual activity. Annual aircraft operations were projected to increase from 2,829 to 3,633 during the same period, reflecting an average annual growth rate of **1.26 percent**. Although the annual growth rates used are reasonable, the OAP baseline and forecast operations levels do not appear to reflect the volume of commercial (aerial applicator) activity at Lexington Airport, and appear to be running about 25 percent below current levels.

Updated Forecasts

BASED AIRCRAFT

Updated projections of based aircraft at Lexington Airport have been prepared based on a review of recent socioeconomic data, existing aviation activity forecasts and current conditions. The updated forecasts are summarized in **Table 3-6**. Note that the previously prepared forecasts (OAP, TAF, etc.) summarized in **Table 3-6** are not adjusted to reflect the 2014 based aircraft count (10).

LOCAL MARKET GROWTH SCENARIO (1.32% ANNUAL GROWTH)

Airport management indicates that they have a waiting list for hangar space that has a small number of individuals with aircraft located at other airports within Lexington's airport service area. As noted earlier, demand for hangar space appears to be a relatively reliable indicator of growth potential for based aircraft. 100 percent of Lexington's current based aircraft fleet is stored in hangars; no based aircraft are currently parked on the aircraft apron.

The commitment of the individuals on the hangar waiting list to relocate their aircraft to Lexington has not been determined through a formal agreement or by placing a deposit for a future hangar space. It is assumed that these aircraft would be candidates for any vacancies in the airport's existing multi-unit hangar or for new construction, if available. However, it is unknown whether the individuals currently on the waiting list would be willing to pay higher rent for a new hangar, if required by higher construction cost. It is also unknown if these prospective tenants are interested in constructing their own hangar space on leased ground.

While considering these factors, it is reasonable to assume that some portion of the current expressed demand (assume 3 individuals) or other similar future demand could be realized at Lexington Airport in the current planning period. This projection assumes that an increase in based aircraft equal to 2/3 of the current hangar waiting list will be occur by 2024, followed by nominal growth of less than 1 percent (0.80%) annually through 2034. This projection assumes that at least 2 new hangar units are constructed (private or County) at the airport by 2024. Based aircraft increase from 10 in 2014 to 13 in 2034, which reflects an average annual growth rate of **1.32 percent.**

MAINTAIN MARKET SHARE (OREGON) (1.32% ANNUAL GROWTH)

Lexington Airport accounted for approximately 0.185 percent of Oregon's general aviation fleet in 2005[5] (Oregon Aviation Plan Forecast Update – 2007). Based on the current (2014) based aircraft count, Lexington now accounts for approximately 0.182 percent of the projected statewide total. This projection assumes that Lexington's share of Oregon's general aviation aircraft fleet will be maintained at 0.182 percent over the next twenty years. A net increase of 2.5 based aircraft at Lexington Airport over the next 20 years is required to hit this market share level in 2034.

The 2007 Oregon Aviation Plan (OAP) forecast projects the number of general aviation aircraft in Oregon will increase from 4,875 in 2005 to 6,225 in 2025. The OAP projection was extrapolated to 2034 (6,881) to match the master plan forecast horizon using the average annual growth forecast between 2015 and 2025. In this projection, based aircraft at Lexington Airport increase from 10 in 2014 to 13 (rounded up from 12.5) in 2034, which reflects an average annual growth rate of **1.32 percent.**

FAA 2013-2040 TAF REGIONAL GROWTH (0.96% ANNUAL GROWTH)

This projection utilizes the average annual growth rate used by FAA in the current Terminal Area Forecast (TAF) to forecast based aircraft in the Northwest-Mountain Region. The average annual rate of growth (0.96%) is applied to Lexington's base year total of 10 based aircraft and maintained through the entire planning period. In this projection, based aircraft at Lexington Airport increase from 10 in 2014 to 12 in 2034, which reflects an average annual growth rate of **0.96 percent.**

[5] Oregon Aviation Plan Forecast Update – 2007

TABLE 3-6: SUMMARY OF BASED AIRCRAFT FORECASTS (LEXINGTON AIRPORT)

EXISTING FORECASTS	2010	2015	2020	2025	2030
Oregon Aviation Plan (1.44% AAR 2005-2025)	10	10	11[1]	12	--
FAA Terminal Area Forecast (0.72% AAR 2012-2040)	9	9	10	11	11
UPDATED BASED AIRCRAFT FORECASTS	**2014**	**2019**	**2024**	**2029**	**2034**
Local Market Growth Scenario (1.32% AAR 2014-2034) ***Preferred Forecast***	10	11	12	13	13
FAA NW Regional TAF Growth Rate (0.96% AAR 2013-2034)	10	11	11	12	12
Oregon Market Share - Maintain Current Share % (1.32% AAR 2014-2034)	10	11	11	12[2]	13[2]

1. Interpolated. 2. Extrapolated.

The Local Market Share projection is recommended as the preferred based aircraft forecast for use in the airport master plan. The projected growth recognizes the potential to accommodate existing demand for hangar space, but is tempered somewhat in the long-term to reflect the airport's historic growth trends.

It is important to note that each increment of growth (one aircraft) represents a larger net increase at an airport with a smaller user base. For example, one additional based aircraft at Lexington represents a 10 percent increase over current levels (10 based aircraft) while the same increase at Hermiston Municipal (38 based aircraft) would represent a 2.6 percent increase. This illustrates the potential impact of new hangar construction or events that can attract multiple new aircraft over relatively short periods of time and skew average growth rates.

AIRCRAFT OPERATIONS

For forecasting purposes, the "typical" activity range defined by FAA for small general aviation airports (ratio of 250 operations per based aircraft) provides a reasonable indication of baseline non-commercial activity that could increase through an increase in based aircraft. This component of activity combined with established commercial activity appears to provide a reasonable measure of future activity at Lexington Airport.

An updated aircraft operations forecast has been developed for comparison with existing forecasts by applying the current ratio of 425 operations per based aircraft, which reflects both the commercial and

non-commercial activity, to the preferred based aircraft forecast noted above. Several factors suggest that this approach is appropriate for Lexington Airport:

- The local aerial applicator estimates their flight activity averages 2,000 operations per year, generated by one aircraft. The operator indicates that the current level of flight activity is expected to remain the same in the foreseeable future and they have no plans to expand their operations at this time.

- The operations generated by transient aerial applicators at the airport occur on an occasional basis and can be captured in the overall based aircraft to operations ratio (noted below).

- The "typical" activity ratio defined by FAA for small general aviation airports (250 operations per based aircraft) provides a reasonable projection of activity (excluding the locally based aerial applicator) at Lexington Airport, currently and through the current planning period. This appears to capture the local and transient non-commercial flight activity at the airport, transient commercial activity (other aerial applicators, medevac flights, etc.), law enforcement and other government agencies, and military.

The use of activity ratios to project future aircraft operations provides a reasonable forecasting method for Lexington Airport. Existing state aviation system planning or FAA forecasts rely on a more complex array of forecast inputs and model assumptions, yet have produced similar results for Lexington Airport. The application of other forecast models for aircraft operations that are built on population growth or external factors such as national or regional growth rates does not appear relevant for Lexington Airport. It appears that current airport operations levels are well established and can be sustained or marginally increased during the current planning period based on modest growth in based aircraft, the airport's functional role and the nature of the airport service area.

The following formula is recommended to forecast future aircraft operations at Lexington Airport:

$$(x * y) + z = Annual\ Operations$$

$$x = Non\ Commercial\ Based\ Aircraft$$

$$y = 250\ (GA\ Operations\ Ratio)$$

$$z = 2000\ (Local\ Commercial\ Aircraft\ Operations)$$

Using the recommended based aircraft forecast noted in **Table 3-6**, aircraft operations are projected to gradually increase from 4,250 in 2014 to 5,000 in 2034, which reflects an average annual growth rate of **0.82 percent.** The aircraft operations forecasts are summarized in **Table 3-7**.

TABLE 3-7: SUMMARY OF AIRCRAFT OPERATIONS FORECASTS (LEXINGTON AIRPORT)

EXISTING FORECASTS	2010	2015	2020	2025	2030
Oregon Aviation Plan (1.26% AAR 2005-2025)	3,082	3,266	3,450[1]	3,633	--
FAA Terminal Area Forecast (1.28% AAR 2012-2040)	4,432	4,604	4,908	5,234	5,578
UPDATED BASED AIRCRAFT FORECASTS	**2014**	**2019**	**2024**	**2029**	**2034**
Fixed Operations : Based Aircraft Ratio (0.82% AAR 2014-2034)	4,250	4,500	4,750	5,000	5,000

1. Interpolated.

Local and Itinerant Operations

The current FAA 5010-1 Airport Record Form for Lexington Airport estimates the air traffic distribution to be 77 percent local and 23 percent itinerant. The FAA TAF and the 2001 Airport Layout Plan forecasts reflect similar traffic distributions for forecast operations. Local operations are conducted in the vicinity of an airport and include flights that begin and end at the airport. These include local area aerial applicator flights, flight training, touch and go landings, flightseeing, and other flights that do not involve a landing at another airport. Itinerant operations include flights between airports, including cross country flights. While a 77%/23% split between local and itinerant operations at Lexington Airport appears to be on the high side, it is adequate for forecasting purposes. Local and itinerant data for each forecast year are summarized in **Table 3-12**, at the end of the chapter.

Design Aircraft

The FAA groups aircraft into five categories (A-E) based upon their approach speeds. Aircraft Approach Categories A and B include small propeller aircraft, many small or medium business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots (nautical miles per hour). Categories C, D, and E consist of the remaining business jets as well as larger jet and propeller aircraft generally associated with commercial and military use with approach speeds of 121 knots or more. The FAA also establishes six airplane design groups (I-VI), based on the wingspan and tail height of the aircraft. The categories range from Airplane Design Group (ADG) I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft.

A list of typical general aviation and business aviation aircraft and their respective design categories is presented in **Table 3-8. Figure 3-3** illustrates representative aircraft in various design groups.

The selection of design standards for airfield facilities is based upon the characteristics of the aircraft that are expected to use the airport. The **design aircraft** is defined as the most demanding aircraft type operating at the airport with a minimum of 500 annual itinerant operations, as described by the Federal Aviation Administration (FAA):

> ***"Substantial Use Threshold.*** *Federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. Under unusual circumstances, adjustments may be made to the 500 total annual itinerant operations threshold after considering the circumstances of a particular airport. Two examples are airports with demonstrated seasonal traffic variations, or airports situated in isolated or remote areas that have special needs."*

The unique operational needs of Lexington Airport include providing the only all-weather fixed wing medevac access within a large, sparsely populated geographic area. This condition speaks to the example noted above regarding "isolated or remote areas that have special needs." The medevac activity is typically provided by single-engine and multi-engine turboprop aircraft included in Airplane Design Group II (ADG II). Although this activity is well below the "substantial use" level required for the design aircraft, maintaining the medevac capabilities serves a critical public need. Providing this level of capability at Lexington Airport is also reflected in the "desired performance standards" defined in current state aviation system planning. As noted earlier, Lexington Airport also generates a significant volume (approximately 2,000 annual operations) of ADG II operations by a locally-based aerial applicator. The overall operations levels exceed the "substantial use" threshold defined by FAA, although much of the activity consists of local operations performed within 50 miles of the airport. However, there is no significant distinction between these operations and typical itinerant operations in terms of airport facility needs. These factors create sufficient justification to consider local and itinerant ADG II operations when identifying the design aircraft. It is also noted that all existing runway and taxiway facilities at the airport have been rehabilitated or reconstructed within the last five years based on ADG II standards.

TABLE 3-8: GENERAL AVIATION AIRCRAFT & DESIGN CATEGORIES

AIRCRAFT	AIRCRAFT APPROACH CATEGORY	AIRPLANE DESIGN GROUP	MAXIMUM GROSS TAKEOFF WEIGHT (LBS)
Cessna 182 (Skylane)	A	I	3,100
Cirrus Design SR22	A	I	3,400
Cessna 206 (Stationair)	A	I	3,614
Beechcraft Bonanza A36	A	I	3,650
Socata/Aerospatiale TBM 700	A	I	6,579
Beechcraft Baron 58	B	I	5,500
Cessna 340	B	I	5,990
Beechcraft Duke (B60)	B	I	6,775
Cessna Citation CJ1+	B	I	10,700
Beech King Air B200	B	I	11,800
Piper Malibu (PA-46)	A	II	4,340
Cessna Caravan 675	A	II	8,000
Pilatus PC-12	A	II	10,450
Cessna Citation II	B	II	13,300
Beech King Air 350	B	II	15,000
Cessna Citation Bravo	B	II	15,000
Air Tractor 802 (Lexington Design Aircraft*)	**B**	**II**	**16,000**
Bombardier Learjet 55	C	I	21,500
Beechcraft Hawker 800XP	C	II	28,000
Gulfstream III	C	II	69,700
Learjet 35A/36A	D	I	18,300
Gulfstream G450	D	II	73,900

Source: AC 150/5300-13, as amended; aircraft manufacturer data. * The Air Tractor is the design aircraft for use in determining physical dimensions, other than runway length, and for pavement strength. Runway length requirements based on typical multi-engine aircraft as represented by 95 percent of small airplane fleet.

The combination of airplane design group and aircraft approach speed for the design aircraft creates the Airport Reference Code (ARC), which is used to define applicable airfield design standards. Aircraft with a maximum gross takeoff weight greater than 12,500 pounds are classified as "large aircraft" by the FAA; aircraft 12,500 pounds and less are classified as "small aircraft."

CURRENT AND FUTURE DESIGN AIRCRAFT

Based on existing and forecast activity levels, the appropriate design aircraft for Runway 8/26 is a single-engine turboprop (Air Tractor 802) aerial applicator based at the airport. The Air Tractor 802 is included in Aircraft Approach Category B and Airplane Design Group II (Airport Reference Code: B-II). The Air Tractor 802 represents the largest physical aircraft in terms of wingspan and weight, but its runway length requirements are nominal compared to a typical light twin-engine aircraft such as a Beechcraft Baron. For the purposes of defining runway length requirements, the needs of a typical light twin engine aircraft (ARC B-I) would generally be adequate to accommodate most users. A detailed discussion of design aircraft considerations will be provided in the Facility Requirements chapter.

A-I

12,500 lbs. or less (small)

Beech Baron 55
Beech Bonanza
Cessna 182
Piper Archer
Piper Seneca

B-I

12,500 lbs. or less (small)

Beech Baron 58
Beech King Air 100
Cessna 402
Cessna 421
Piper Navajo
Piper Cheyenne
Cessna Citation I

A-II, B-II

12,500 lbs. or less (small)

Air Tractor 802
Super King Air 200
Cessna 441
DHC Twin Otter
Cessna Caravan
King Air C90

B-II

Greater than 12,500 lbs.

Super King Air 300, 350
Beech 1900
Jetstream 31
Falcon 20, 50
Falcon 200, 900
Citation II, Bravo XLS+
Citation CJ3

A-III, B-III

Greater than 12,500 lbs.

DHC Dash 7
DHC Dash 8
Q-300, Q-400
DC-3
Convair 580
Fairchild F-27
ATR 72
ATP

C-I, D-I

Lear 25, 35, 55, 60
Israeli Westwind
HS 125-700

C-II, D-II

Gulfstream II, III, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar
Citation X
Citation Sovereign
Hawker 800 XP

C-III, D-III

Boeing Business Jet
B 727-200
B 737-300 Series
MD-80, DC-9
Fokker 70, 100
A319, A320
Gulfstream V
Global Express

C-IV, D-IV

B-757
B-767
DC - 8-70
DC - 10
MD - 11
L 1011

D-V

B - 747 Series
B - 777

AIRPORT REFERENCE CODES (ARC) | **FIG. 3-3**

Operational Peaks

It is estimated that peak month activity at Lexington Airport occurs during the summer (typically July or August) and accounts for approximately 15 percent of annual aircraft operations. This level of peaking is consistent with the mix of airport traffic and is expected to remain relatively unchanged during the planning period. Peak day operations are defined by the average day in the peak month (design day). Operational peaks for each of the forecast years are summarized in **Table 3-9**.

TABLE 3-9: PEAK OPERATIONS FORECAST

ACTIVITY	2014	2019	2024	2029	2034
Annual Operations	**4,250**	**4,500**	**4,750**	**5,000**	**5,000**
Peak Month Operations (15%)	638	675	713	750	750
Design Day (average day in peak month)	21	23	24	25	25
Design Hour Operations (assumed 30% of design day)	6	7	7	8	8

Instrument Flight Activity

Based on current traffic estimates, instrument operations currently appear to account for about 1 to 2 percent of overall airport operations. This percentage is expected to remain relatively steady through the planning period.

Aircraft Fleet Mix

BASED AIRCRAFT

The airport's current mix of based aircraft is predominantly single-engine piston (80 percent), followed by multi-engine piston (10%), and turboprop (10%). The current distribution of the based aircraft fleet is expected to remain relatively unchanged during the twenty-year planning period. Some changes in the small airplane fleet, such as the increased presence of light sport aircraft (LSA) or experimental aircraft, are anticipated but these aircraft have similar facility needs as traditional single-engine aircraft. The forecast based aircraft fleet mix is summarized in **Table 3-10**.

TABLE 3-10: FORECAST BASED AIRCRAFT FLEET MIX

ACTIVITY	2014	2019	2024	2029	2034
Single-Engine Piston *(including Light Sport Aircraft)*	8 (90%)	9 (82%)	10 (83%)	11 (85%)	11 (85%)
Multi-Engine Piston	1 (10%)	1 (9%)	1 (8%)	1 (8%)	1 (8%)
Turboprop	1 (10%)	1 (9%)	1 (8%)	1 (8%)	1 (8%)
Business Jet/VLJ	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Other (Ultralights, etc.)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Helicopter	0 (0%)	0 (0%)	0 (2%)	0 (0%)	0 (0%)
Total Based Aircraft (100%)	**10**	**11**	**12**	**13**	**13**

Note: Percentages may not sum due to independent rounding

AIRCRAFT OPERATIONS

The current aircraft operations fleet mix is estimated to closely follow the airport's based aircraft composition, with aerial applicator turboprops accounting for nearly half of current operations. Some growth in transient multi-engine, turboprop, jet and helicopter operations is anticipated based on current aircraft manufacturing trends and activity within the airport service area. The forecast aircraft operations fleet mix is summarized in **Table 3-11**.

TABLE 3-11: FORECAST AIRCRAFT OPERATIONS FLEET MIX

AIRCRAFT TYPE	2014	2019	2024	2029	2034
Single Engine Piston	1,870 (44%)	2,040 (45%)	2,220 (47%)	2,410 (48%)	2,360 (47%)
Multi Engine Piston	200 (5%)	220 (5%)	240 (5%)	260 (5%)	280 (6%)
Single Engine Turboprop	2,100 (49%)	2,140 (48%)	2,160 (46%)	2,180 (44%)	2,200 (44%)
Multi-Engine Turboprop	20 (<.5%)	30 (<1%)	40 (<1%)	40 (<1%)	40 (<1%)
Jet	10 (<.5%)	10 (<.5%)	20 (<.5%)	30 (<1%)	30 (<1%)
Helicopter	50 (1%)	60 (1%)	70 (2%)	80 (2%)	90 (2%)
Total Operations (100%)	**4,250**	**4,500**	**4,750**	**5,000**	**5,000**

Note: Percentages may not sum due to independent rounding

Forecast Summary

The recommended based aircraft forecast for Lexington Airport is the **Local Market Growth Scenario** projection, which reflects anticipated demand for hangar space among users in the airport service area. The recommended forecast reflects an average annual growth rate of **1.32 percent**. This projection assumes that existing demand for hangar space will be absorbed in the first ten years of the planning period, followed by slower growth through the remainder of the planning period.

The recommended forecast for aircraft operations is based on an activity ratio of 250 annual operations per based aircraft combined with 2,000 annual operations generated by the local aerial applicator. The recommended forecast reflects an average annual growth rate of **0.82 percent**. The majority of activity at Lexington Airport is general aviation, with a small amount of air taxi and military activity. The preferred forecasts are summarized in **Table 3-12.**

TABLE 3-12: FORECAST SUMMARY

ACTIVITY	2014	2019	2024	2029	2034
Based Aircraft	10	11	12	13	13
Itinerant Operations					
General Aviation	948	1,005	1,062	1,120	1,120
Air Taxi	20	20	20	20	20
Military	10	10	10	10	10
Total Itinerant Operations	978	1,035	1,092	1,150	1,150
Local Operations (all GA)	3,272	3,465	3,658	3,850	3,850
Total Local & Itinerant Operations	**4,250**	**4,500**	**4,750**	**5,000**	**5,000**
Operations by ARC/Type					
A-I (Single Engine Piston)	1,870	2,040	2,220	2,410	2,360
A/B-I (Multi-Engine Piston)	200	220	240	260	280
B-I/B-II (Jet)	10	10	20	30	30
A/B-I (Turboprop)	20	20	30	30	30
A/B-II (Turboprop)	2,100	2,150	2,170	2,190	2,210
Helicopter (ARC: N/A)	50	60	70	80	90

As with any long-term facility demand forecast, it is recommended that long-term development reserves be protected to accommodate demand that may exceed current projections. For planning purposes, a reserve capable of accommodating a doubling of the 20-year preferred forecast demand should be adequate to accommodate unforeseen facility needs during the current planning period. However, should demand significantly deviate from the airport's recent historical trend, updated forecasts should be prepared to ensure that adequate facility planning is maintained.