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## Chapter Two: Demand Forecasts

### INTRODUCTION

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The demand forecast element of the master plan process is utilized as a method to determine the need for possible future capital development, as well as investment in the overall facility. Essential to this determination is the generation of forecasts and projected facility growth and increases in airport activity. Demand forecasts provide a means for determining the type, extent, size, location, timing, and financial feasibility of capital development. Consequently, demand forecasts influence virtually all remaining phases of the layout plan process.

Forecasting aviation activity requires more than an extrapolation of past trends and the application of statistical measures to relate the future aviation demand to the forecast projections of population, economic activity, socioeconomic data and the demand for general aviation services. Demand forecasting requires the application of professional judgment and experience, as well as an understanding of the market forces that will tend to promote or limit aviation activity. In the case of Monett Municipal, the market forces that directly relate to activity at the Airport are represented by 1) historic socioeconomic and demographic growth within the City of Monett and Barry County as well as within Lawrence and Newton counties and 2) the historic and projected growth rates of the general aviation sector of the air transportation system.

Forecasts of aviation demand have been prepared and are presented in this chapter to assist the City of Monett in the evaluation of the performance-based needs of HFJ during the next 20 years. The forecasts of local general aviation demand are organized in the following manner including 1) based aircraft and fleet mix, 2) annual operations, 3) local versus itinerant operational activity, 4) based turbine aircraft operations, 5) operational fleet mix, 6) air taxi operations, 7) annual instrument approach demand and 8) ultimate critical aircraft.

### DATA SOURCES

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The demand forecasting process initiates by obtaining recorded data pertinent to the operation and administration of the airport. When necessary, this information is supplemented with historical trends which evolve from a thorough examination of records, statistics, historic data and planning documents relative to the airport. For instance, data sources used to generate the demand forecasts for HFJ include the *FAA Aerospace Forecasts Fiscal Years 2008-2025*, *FAA Form 5010-1, Airport Master Record* data inspection forms, Barry, Lawrence and Newton County socioeconomic characteristics as provided by the U.S. Census Bureau, and the Missouri Economic Research and Information Center (MERIC), *FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, as well as the Missouri State Airport System Plan (MOSASP).

## CONDITIONS AND ASSUMPTIONS

Prior to projecting demand activity at HFJ, several conditions and assumptions that are considered to impact the basis or foundation of the demand projections are discussed in the following passages. These discussions involve a wide range of physical, operational, socioeconomic and industry-related topics and are not necessarily listed in any order of priority.

### *Barry, Lawrence and Newton County Socioeconomic Conditions*

General aviation operations and based aircraft are more directly tied to local economic conditions than any other segment of the aviation industry. Population trends also play a role in determining airport activity. Given this fact, the forecast of general aviation demand at HFJ will reflect historic socioeconomic trends for these three counties due to the airport environs and service area include portions of each county which, in turn, influences the tri-county area and vice versa.

In particular, since 1990, the combined tri-county population has increased approximately 1.5 percent annually resulting in a total population of nearly 133,300 residents in 2007-08 up from 102,200 residents in 1990. In addition to population, per capita income (PCI) and median household income (MHI) are widely used indicators for gauging the economic performance of local communities as well. The tri-county PCI levels have increased an impressive five percent annually (\$10,100,-\$24,300) from 1990-2007, while the county's MHI has increased approximately 3.1 percent annually (\$20,700-\$35,600) during the same period. Combined, the PCI and MHI for the tri-county region increased, on average, approximately 4.1 percent throughout the historic 17-year period.

Given this information, the total based aircraft projections are based on analyses which compared and correlated the tri-county area's PCI and MHI to based aircraft estimates. This sustained growth will contribute to the total based aircraft at the facility growing by nearly four percent annually throughout the 20-year planning period.

### *Airport Role and Expansion Potential*

HFJ is expected to remain a NPIAS general aviation facility throughout the planning period while at the same time remaining classified as a Regional Airport according to the MOSASP. Ultimately, HFJ is expected to accommodate 100 percent of the general aviation (GA) aircraft fleet weighing between 35,000 and 60,000 pounds at 60 percent useful load based on the airport's ultimate critical aircraft. This is as a result of JKHY potentially upgrading one of its four Cessna Citation Encores (560 Series) throughout the planning period to an ARC C-II aircraft that is capable of carrying additional passengers on longer stage lengths and possibly conducting international flight operations.

Additionally, Golden Aviation, Inc., given its recent success in securing multi-year government contracts to modernize military/government use twin-piston and jet trainers, is expected to markedly contribute to the total number of future turbo-prop and business jet use of the airport by Golden Aviation's parent company, Hawk's Group.

### Socioeconomic Conditions

*The total based aircraft projections are based on analyses which compared and correlated the tri-county area's PCI and MHI to based aircraft estimates. This sustained growth will contribute to the total based aircraft at the facility growing by nearly four percent annually throughout the 20-year planning period.*

### Future Airport Role

*HFJ is expected to accommodate 100 percent of the general aviation (GA) aircraft fleet weighing between 35,000 and 60,000 pounds at 60 percent useful load based on the airport's ultimate critical aircraft.*

***Based Aircraft and Operational Fleet Mix***

From 1990-2007, on average, the based aircraft fleet mix at HFJ consisted of single engine piston airplanes comprising approximately 66 percent of the fleet while twin-piston airplanes accounted for the 11 percent. Also, multi-engine turbine aircraft accounted for five percent of the based fleet while business jets accounted for an impressive 19 percent of the fleet mix at HFJ. This trend is expected to continue throughout the 20-year planning period. Additionally, the projected operational fleet mix for HFJ will also utilize this method for determining the overall operational activity of each airplane category conducting operations at the facility.

***Based Turbine Aircraft Operational Activity***

Based turbo-prop and business jets operational activity at HFJ is expected to increase in lock-step with the airport's projected operational growth rates of approximately four percent annually throughout the planning period. The operations originating from HFJ are largely transient/itinerant in nature and are being conducted in accordance with FAR Part 135, Part 91, and Part 91K regulations and being flown by JKHY, EFCO/Pella Windows, Golden Aviation and a privately owned Eclipse jet.

**Local Turbine Activity**

*Based turbo-prop and business jets operational activity at HFJ is expected to increase in lock-step with the airport's projected operational growth rates of approximately four percent annually throughout the planning period.*

**DEMAND FORECAST APPROACH**

The development of the demand forecasts for HFJ were generated by conducting a series of analytical, statistical, arithmetic, and judgmental processes. These analytical and statistical processes compare mathematical relationships to analyze historic data and define their relationship to the operational parameters (i.e. aircraft operations per based aircraft) at the airport. The following discussion offers explanations of three methodologies that were used as part of the process to generate demand forecasts for HFJ.

***Single/Multiple Regression Analysis***

The regression model projects the forecast of aviation demand parameters (dependent variable—i.e. based aircraft and annual operations) on the basis of one or more external factors or indicators (independent variable—i.e. PCI, MHI and population). Historic and forecast values for both are analyzed and compared to determine the degree of correlation between the independent and dependent variables, or a correlation coefficient. The correlation coefficient (Pearson 'r') measure the association between the two variables. If the 'r' value is equal to approximately 0.90 or greater, this indicates a high level of correlation and/or a favorable level of reliability. Whereas, an 'r' value of less than 0.90 indicates a lower level of predictive reliability and/or correlation. This relationship is then used to forecast the dependent variable based on the selected independent variable. County population, PCI and MHI were utilized as independent variables for HFJ operational and based aircraft projections.

***Linear Trend Line Analysis***

Among the simplest and most familiar forecasting techniques, linear trend analysis is one of the most frequently used models in the industry. Simply put,

historic data is projected into the future providing an estimate of the aviation demand throughout the planning period. The basic assumption of the linear trend line method is that historic levels of aviation activity will continue to exert a similar influence on future demand levels. As broad and presumptive as this method might be, it is often a reliable benchmark against which other forecasting models may be compared.

### *Time Series Analysis*

This method is one of the oldest and in some cases still the most used method of forecasting aviation demand. Time-series methodologies show the dependent variable (time) and is utilized quite frequently where both time and data are limited such as forecasting a single variable where historical data is obtained for that particular variable.

### *FAA Aerospace Forecast Growth Rates*

Although not a statistical or analytical forecast methodology, relying on FAA forecasts to project future based aircraft and operational demand as part of the master plan process is an important planning tool. FAA projected average annual growth of a particular fleet of aircraft (i.e. piston, turbine or jet) can be applied to the local forecasts to project future based aircraft at the facility. Likewise, by applying FAA projected aircraft utilization rates (i.e. flight hours) to the demand forecasts, a reasonable expectation of future annual operational activity (total operations) can be determined for based aircraft and transient users. Additionally, future aircraft utilization projections provided by the FAA can be a valuable tool in estimating the airport's ultimate annual operational fleet mix (i.e. annual operations by a particular aircraft category).

### *Smoothing*

This method of forecasting is a statistical technique applied to historic data, giving greater weight to latest trends and conditions at the airport and can be effective in generating short-term forecasts. For HFJ, smoothing was utilized primarily as a tool for checking short-term regressions and linear trend forecasts for purposes of projecting based aircraft at the airport during the short-term (Phase I) planning period.

### *Judgment and Professional Experience*

Following the completion of the demand forecast analysis by utilizing several statistical methodologies, judgment or professional experience is applied to the forecast projections. Intangible factors such as specific information regarding the airport, operating environment, industry trends or local area economic or socio-economic information generally are taken into account when formulating a judgmental or professional opinion in arriving at a preferred forecast.

## GENERAL AVIATION FORECASTS

As discussed in the airport inventory, the FAA recognizes three broad categories of aviation which include general aviation, certificated air carrier and military. General Aviation is defined as all aviation activity except that of air carrier and military aircraft operations.

The following sections of the demand forecasts will specifically concentrate on the activity generated by the airport's total based aircraft and fleet mix, including annual operations, local versus itinerant operational activity, air taxi and annual instrument approach (AIA) flight activity estimates.

## BASED AIRCRAFT FORECASTS

Table 2.1 illustrates the forecast of based aircraft for HFJ as a result of the methodologies employed, as highlighted above, to project based aircraft demand throughout the 20-year master planning period.

The single regression analysis, in comparing population, MHI and PCI to future based aircraft, netted an overall increase of 28 to 37 additional based aircraft over the 20-year planning period. This methodology yielded a correlation of the socioeconomic condition of the tri-county region to based aircraft ranging from 0.94 to 0.95 which indicated a high level of reliability.

Table 2.1  
Forecast of Based Aircraft Summary, 2009-2029

Forecast Methodology	Existing	2009	2014	2019	2024	2029
Single Regression Analysis (Based Aircraft*)						
vs. County Population** (Pearson 'r'= 0.95)	35	37	44	51	57	63
vs. County PCI** (Pearson 'r'= 0.95)	35	38	47	55	63	72
vs. County MHI** (Pearson 'r'= 0.94)	35	38	46	54	62	70
Multiple Regression Analysis (Based Aircraft*)						
<b>vs. County PCI &amp; MHI** (Pearson 'r'= 0.95)</b>	<b>35</b>	<b>38</b>	<b>47</b>	<b>55</b>	<b>67</b>	<b>72</b>
vs. County Population & PCI** (Pearson 'r'= 0.97)	35	38	46	54	62	70
vs. County Pop., PCI and MHI** (Pearson 'r'= n/a)	35	42	56	70	85	103
vs. County Population & MHI** (Pearson 'r'= 0.99)	35	38	46	54	62	70
Linear Trend Line Analysis	35	38	47	55	64	72
Time Series Analysis	35	50	45	54	65	78
FAA Growth Rate Analysis	35	36	38	41	46	51
MOSASP	35	27	29	-	32	-

Note: Each independent variable includes socioeconomic data from the tri-county region including Barry, Lawrence and Newton Counties.

Note: Bold text indicates the selected, or preferred, based aircraft forecasts for HFJ.

(\*) Dependent Variable

(\*\*) Independent Variable

Source: BWR.

The multiple regression analysis compared the socioeconomics of the tri-county region and yielded an additional 37 to 68 based aircraft during the planning period to total between 72 and 103 units in 2029. Comparing the tri-county PCI and MHI resulted in a high level of correlation, or 0.95, and netted 72 ultimate based aircraft at HFJ at the conclusion of the 20-year planning period. Accordingly, this methodology and corresponding projections were selected as the preferred based aircraft forecasts for the airport given the higher number of based aircraft as compared to the variables used for other multiple regression analyses which netted a higher level of correlation (population and MHI—0.99). It should be noted that comparing county population, PCI and MHI, although providing the highest number of ultimate based aircraft, was not selected as the preferred forecast because a reliable level of correlation could not be established.

The linear trend line and time series analyses yielded a growth of approximately 37 and 43 future based aircraft, respectively, totaling between 72 and 78 total airplanes. The linear trend/time series analyses were used primarily as comparison forecasts to validate the results of the multiple regression analysis for HFJ.

The FAA growth rates for the general aviation fleet, given the conservative and even declining trend in fleet size on a national scale, resulted in a mere 51 based airplanes at HFJ at the conclusion of the planning period.

Lastly, MOSASP projections were used as a comparison tool to the current master plan's projections. MOSASP's forecasts indicated a decrease in based airplanes to total 32 based aircraft in 2022. The FAA and MOSASP's forecasts were similar in that they both considered the state and national trends of fleet growth which usually are far more conservative estimates than what is predicted by the master plan. This is due to the master plan considering conditions, settings and economics of the local area and evaluating how these conditions influence based aircraft and operational growth, as well as potential airport expansion.

## PREFERRED BASED AIRCRAFT DEMAND AND FLEET MIX

In accordance with the principle that shows based general aviation aircraft are directly tied to local economic conditions, the projected total based aircraft for HFJ will coincide with historic and future Barry, Lawrence and Newton County PCI and MHI levels. The preferred total based aircraft figures are expected to increase at a rate of approximately four (3.7) percent annually and result in the addition of 37 aircraft to total 72 piston, turbine and jet powered aircraft based at the airport in 2029.

**Table 2.2** and **Exhibit 2.1** summarize the forecast of total based aircraft for HFJ. The single engine fleet is expected to increase from 25 existing units to 48 units totaling an additional 23 traditional single-engine and the new light sport aircraft (LSA) in 2028 while the multi-engine piston fleet is expected to increase by a mere three units over the planning period.

In 2029, the Airport is expected to host four single and/or multi-engine turbo-prop airplanes and 12 based business jets. This aggressive turbine aircraft growth will most likely result from the continued domestic and potential global expansion

### Preferred Aircraft Forecasts

*The single engine fleet is expected to increase from 25 existing units to 48 units totaling an additional 23 traditional single-engine and the new light sport aircraft (LSA) in 2028 while the multi-engine piston fleet is expected to increase by a mere three units over the planning period.*

*In 2029, the Airport is expected to host four single and/or multi-engine turbo-prop airplanes and 12 based business jets.*

of JKHY and the increased demand for air transport services by the company, as well as Golden Aviation’s corporate partners that comprise the Hawk’s Group corporate structure and the company’s vast military aircraft restoration and modernization effort at the facility requiring increased travel demands to and from the region via HFJ. Lastly, one to two of the future based jets are expected to be owned by private individuals and will most likely be very light jets (VLJ).

Table 2.2  
Preferred Total Based Aircraft and Fleet Mix Summary, 2009-2029

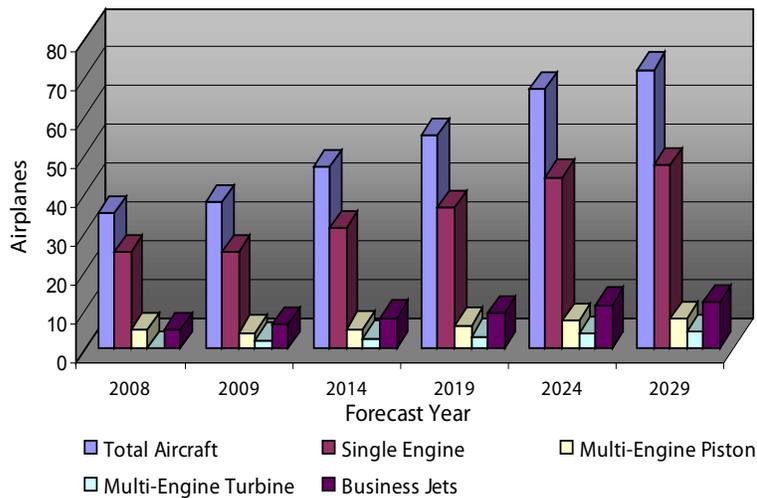
Year	Total Based Aircraft	Single Engine	Multi-Engine Piston	Multi-Engine Turbine Turbo-Prop	Business Jet
Existing	35	25	5	0	5
2009	38 (100%)	25 (66%)	4 (11%)	2 (6%)	6 (17%)
2014	47 (100%)	31 (66%)	5 (11%)	3 (6%)	8 (17%)
2019	55 (100%)	36 (66%)	6 (11%)	3 (6%)	9 (17%)
2024	67 (100%)	44 (66%)	7 (11%)	4 (6%)	11 (17%)
2029	72 (100%)	48 (66%)	8 (11%)	4 (6%)	12 (17%)

Note: Fleet mix percentages rounded to the nearest whole number.

Note: Refer to the *Conditions and Assumptions* section for fleet mix methodology and percentage of aircraft share of fleet.

Source: BWR.

Exhibit 2.1: Preferred Based Aircraft Projections (2009-2029)



**Table 2.2** also summarizes the forecast based aircraft fleet mix for HFJ through 2029. Fleet mix is the relative percentage of a particular category of the based aircraft population and is dependant on specific operational and physical characteristics.

**Future Operational Demand**

For purposes of forecasting annual operations, a median range of 535 OPBA was utilized. This high utilization rate of the based aircraft fleet can be attributed to the frequent and regular use of personal and corporate owned piston, turbine and jet aircraft for business purposes.

The total annual operations at HFJ area expected to increase at approximately four percent, totaling an additional 21,500 takeoffs and landings, throughout the planning period which coincides with the historic and current demographic and socioeconomic condition of the tri-county region.

**ANNUAL OPERATIONAL DEMAND**

Most generally, there is a direct relationship between based aircraft and annual operations. Because based aircraft and annual operations have historically followed similar trends and growth rates, this analysis will compare the two and draw conclusions as to the potential estimated activity at the facility. The relationship between the two, known as operations per based aircraft (OPBA), will be examined whereby the estimated increase in activity - total aircraft operations - will be calculated and established.

Between 1990-2007, HFJ’s based aircraft fleet has averaged approximately 590 OPBA. In 2007, the OPBA for the fleet was 480. For purposes of forecasting annual operations, a median range of 535 OPBA was utilized. This high utilization rate of the based aircraft fleet can be attributed to the frequent and regular use of personal and corporate owned piston, turbine and jet aircraft for business purposes. **Table 2.3** and **Exhibit 2.2** summarize the forecast of annual operations for HFJ throughout the 20-year planning period.

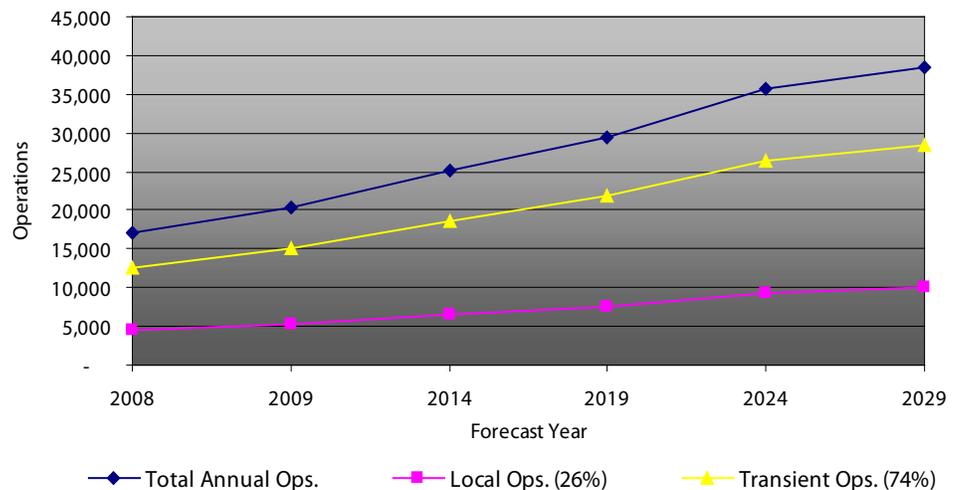
Table 2.3  
Annual Operational Summary, 2009-2029

Year	Projected Annual Operations	Local Operations	Itinerant/Transient Operations
Existing	<b>17,000</b>	4,500 (26%)	12,500 (74%)
2009	<b>20,300</b>	5,300 (26%)	15,000 (74%)
2014	<b>25,100</b>	6,500 (26%)	18,600 (74%)
2019	<b>29,400</b>	7,600 (26%)	21,800 (74%)
2024	<b>35,800</b>	9,300 (26%)	26,500 (74%)
2029	<b>38,500</b>	10,000 (26%)	28,500 (74%)

Note: Figures rounded to the nearest hundred for planning purposes.

Source: BWR.

Exhibit 2.2: Annual Operational Summary (2009-2029)



The total annual operations at HFJ area expected to increase at approximately four percent, totaling an additional 21,500 takeoffs and landings, throughout the planning period which coincides with the historic and current demographic and socioeconomic condition of the tri-county region.

**Local versus Itinerant Operations**

In 2007, the relationship between local versus itinerant operations for the airport was approximately 26 percent local and 74 percent itinerant in nature. The relationship of local versus itinerant operations is expected to be maintained throughout the planning period. Local operations are expected to increase at an average annual rate of four percent while itinerant operations are expected to increase at a similar rate. **Table 2.3** and **Exhibit 2.2** also summarizes the share of local versus itinerant operations expected to be conducted at HFJ.

**Air Taxi Operations**

**Table 2.4** summarizes the total projected Part 91, Part 91K, and/or Part 135 air taxi operations conducted at HFJ throughout the planning period. Air taxi operational activity at HFJ is expected to increase in lock-step with the airport’s projected operational growth rates of approximately four percent annually throughout the planning period.

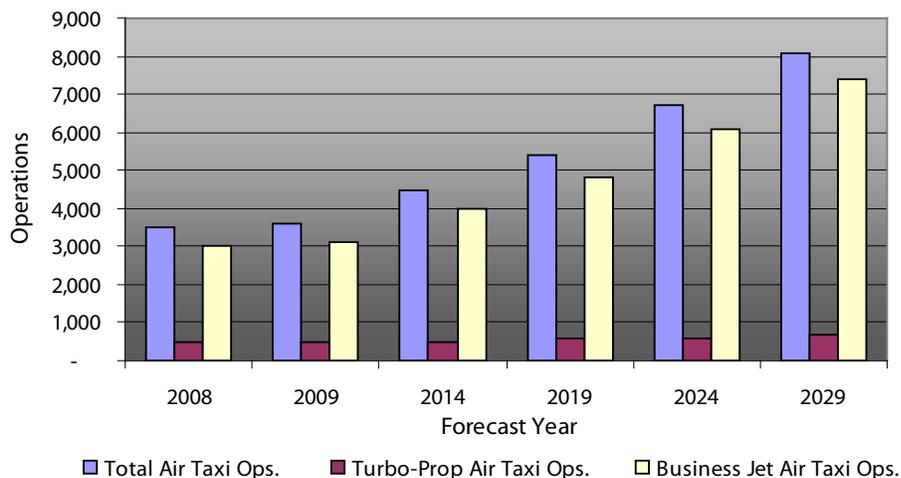
Table 2.4  
Air Taxi Operations, 2009-2029

Year	Projected Annual Air Taxi Operations	Turbo-Prop Air Taxi Operations	Business Jet Air Taxi Operations
Existing	<b>3,500</b>	500	3,000
2009	<b>3,600</b>	500	3,100
2014	<b>4,500</b>	500	4,000
2019	<b>5,400</b>	600	4,800
2024	<b>6,700</b>	600	6,100
2029	<b>8,100</b>	700	7,400

Note: Figures rounded to the nearest hundred for planning purposes.

Source: BWR Forecasts.

**Exhibit 2.3: Air Taxi Operational Summary (2009-2029)**



**Future Air Taxi Activity**

*Air taxi operational activity at HFJ is expected to increase in lock-step with the airport’s projected operational growth rates of approximately four percent annually throughout the planning period.*

*This projected growth can be attributed to the continued success of the fractional ownership market and increased reliance on point-to-point general aviation transportation rather than travel by commercial airlines coupled with current and anticipated corporate and business aviation located at HFJ, as well as ever increasing demand for air transportation within the tri-county area.*

Ultimately, air taxi operations by turbo-prop aircraft are expected to increase at a relatively steady pace of 1.3 percent annually resulting in an additional 200 operations by turbo-prop aircraft to total 700 annual Part 135 operations due to stagnant utilization and fleet growth estimates. Business jet air taxi operations, however, are forecast by the FAA to grow by a robust five percent annually over the 20-year planning period to total nearly 7,400 annual operations at HFJ. This projected growth can be attributed to the continued success of the fractional ownership market and increased reliance on point-to-point general aviation transportation rather than travel by commercial airlines coupled with current and anticipated corporate and business aviation located at HFJ, as well as ever increasing demand for air transportation within the tri-county area.

### OPERATIONAL FLEET MIX DEMAND

Given the close correlation of based aircraft to annual operational activity, just as with determining the projected annual operational forecasts based on OPBA, the relationship of both based airplanes and operations can be evaluated to determine an ultimate level of activity (operations) conducted by a particular aircraft category.

Projected operational mix by aircraft category can be determined by highlighting a particular category's share of the existing based aircraft fleet and apply that figure/percentage to the future operations for each aircraft category. For example, the single engine fleet at HFJ, for 2008, comprises approximately 66 percent of the overall based aircraft. Given the parallel trends of operations versus based aircraft, it can be surmised that approximately 66 percent of the annual activity, or 11,200 operations, are contributed by single engine airplanes. Accordingly, this method was utilized to project the single and twin-piston operational mix at HFJ throughout the planning period as indicated in **Table 2.5**. The operational mix for turbo-prop and jet aircraft was determined by taking into account FAA's annual turbine utilization estimates and applying them to HFJ's annual based aircraft and transient operational projections including air taxi activity.

Table 2.5  
Operational Fleet Mix Summary, 2009-2029

Year	Total Annual Operations	Single Engine	Multi-Engine Piston	Multi-Engine Turbine	
				Turbo-Prop	Business Jet
Existing	<b>17,000</b>	11,200	1,900	1,000	2,900
2009	<b>20,300</b>	13,600	2,200	1,400	3,100
2014	<b>25,100</b>	16,700	2,900	1,500	4,000
2019	<b>29,400</b>	19,700	3,300	1,600	4,800
2024	<b>35,800</b>	24,100	3,900	1,700	6,100
2029	<b>38,500</b>	25,200	4,000	1,900*	7,400*

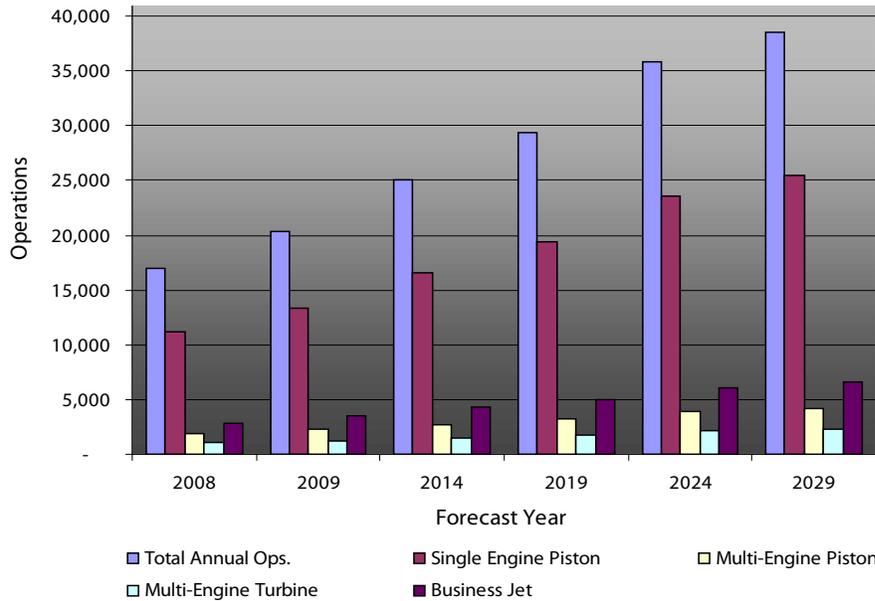
Note: Fleet mix percentages rounded to the nearest whole number.

Note: Refer to the *Conditions and Assumptions* section for fleet mix methodology and percentage of operations.

(\*) Approximately 2,400 annual operations are expected to be conducted by 12 locally based turbine powered aircraft. The remaining 6,900 annual operations are expected to be conducted by turbo-prop and jet aircraft operating under FAR Part 135 as air taxi and/or Part 91 and Part 91K private, not-for-hire flights.

Source: BWR.

Exhibit 2.4: Operational Fleet Mix Summary (2009-2029)



Ultimately, single engine aircraft are expected to contribute approximately 25,200 total operations or roughly 66 percent of the annual activity at the Airport. Multi-engine piston aircraft are expected to contribute approximately 11 percent of the operational activity or 4,000 annual operations. Multi-engine turbo-props will conduct nearly 1,900 operations and account for approximately five percent of the yearly activity. Business jets, while providing an impressive 7,400 annual operations at the Airport throughout the planning period, will account for 19 percent of the annual activity in 2029. The large increase in jet activity is expected to be attributed to the introduction of corporate and privately-owned VLJs, continued success of and increases in the fractional ownership fleet, as well as sustained air transportation demand by locally-based companies within the tri-county region.

**Based Turbine Aircraft Operations**

Currently, JKHY and EFCO base jet aircraft at HFJ and account for approximately 500 and 200 annual operations, respectively, totaling 700 annual itinerant Part 135 operations. A privately owned Eclipse Jet is assumed to conduct nearly 120 operational annually at HFJ as well. Assuming each of these airplane’s operational activity at the airport increase commensurate with the overall annual 4.1 percent operational growth of the airport over the 20-year planning period, it is expected that, combined, the two corporate and one private jet aircraft will conduct approximately 1,900 annual operations at HFJ in 2029.

Golden Aviation’s vast expansion at HFJ modernizing piston and jet-powered military aircraft is expected to increase demand for turbine transportation to and from the facility by Federal and allied foreign military representatives in addition to Hawk’s Group’s fleet of turbine-powered cabin class aircraft. Ultimately,

**Operational Fleet Mix**

*The large increase in jet activity is expected to be attributed to the introduction of corporate and privately-owned VLJs, continued success of and increases in the fractional ownership fleet, as well as sustained air transportation demand by locally-based companies within the tri-county region.*

**Future Based Turbine Activity**

*Combined, HFJ's existing and anticipated turbine aircraft operators are expected to contribute nearly 2,400 annual operations at the facility.*

according to company officials, Golden Aviation's fleet is expected to total five turbine powered aircraft which is anticipated to conduct approximately 500 annual operations at the facility.

Combined, HFJ's existing and anticipated turbine aircraft operators are expected to contribute nearly 2,400 annual operations at the facility.

**ANNUAL INSTRUMENT APPROACH DEMAND**

**Table 2.6** summarizes the forecast of annual civilian instrument approaches for HFJ throughout the 20-year planning period. Forecasts of annual instrument approaches (AIA) are generated to provide guidance in determining requirements for installation of NAVAID equipment. Based on the volume of 1) approaches conducted in instrument conditions (AIAs) and 2) operations (approaches and departures) conducted during IMC conditions, the type and timing of future NAVAIDs can be determined. Technological and equipment improvements (airborne as well as ground based) will also affect NAVAID installation and instrument approach procedures.

The AIA forecast considers the existing and projected total IMC operations at the Airport compared to the percentage of instrument rated pilots, as well as percent of instrument flight conditions in the area. This analysis will determine a projected annual instrument approach estimate at HFJ. According to the National Business Aircraft Association (NBAA), approximately 25 percent of all AIAs are conducted by air taxi and/or itinerant turbine aircraft operating in accordance with Part 91 and/or Part 135 regulations. Of the approximate 2,100 annual IMC arrivals and departures projected in 2029, nearly 525 of those are estimated to be conducted by turbine powered airplanes. In 2029, turbine aircraft are expected to conduct approximately 250 AIAs.

Table 2.6  
Annual Instrument Approaches, 2009-2029

Forecast Year	Air Taxi Ops.	Military Ops.	Itinerant/ Transient Ops.	Total Itinerant Ops.	Percent IFR Pilots	Percent IMC Conditions	Total IMC Ops.*	Total AIAs**
Existing	3,500	100	8,900	12,500	53%	9.4%	<b>900</b>	<b>500</b>
2009	3,600	100	11,300	15,000	53%	9.4%	<b>1,100</b>	<b>600</b>
2014	4,500	100	14,000	18,600	54%	9.4%	<b>1,400</b>	<b>700</b>
2019	5,400	100	16,300	21,800	54%	9.4%	<b>1,700</b>	<b>900</b>
2024	6,700	100	19,700	26,500	54%	9.4%	<b>2,000</b>	<b>1,000</b>
2029	8,100	100	20,300	28,500	54%	9.4%	<b>2,100</b>	<b>1,000</b>

Note: Figures rounded to the nearest hundred for planning purposes.  
 (\*) Total IMC operations include arrivals and departures in instrument weather conditions.  
 (\*\*) total AIAs represents the projected number of annual approaches in instrument weather conditions.

Source: BWR.

## ULTIMATE CRITICAL AIRCRAFT

The critical aircraft is the largest airplane within a composite family of aircraft conducting at least 500 itinerant operations (combination of 250 takeoffs and landings) per year at the airport. The critical aircraft is evaluated with respect to size, speed and weight, and is important for determining airport design and safety area standards, as well as structural and equipment needs for the airfield and terminal area facilities. **Table 2.7** provides information regarding the ultimate critical aircraft for HFJ.

The Cessna Citation X, or a business jet aircraft with similar operational and physical characteristics, was chosen as the aircraft around which future terminal area and runway safety area parameters will be based. Due to its sophistication, operational capabilities, passenger capacity and range, as well as the potential of this aircraft type to replace one of JKHY's Citation Encores, a transition to the Citation X will likely result in increased passenger loads on long-haul flights including international flight operations. The Citation X, or a similar cabin class aircraft, is highly prevalent within the air taxi and fractional ownership general aviation market segments.

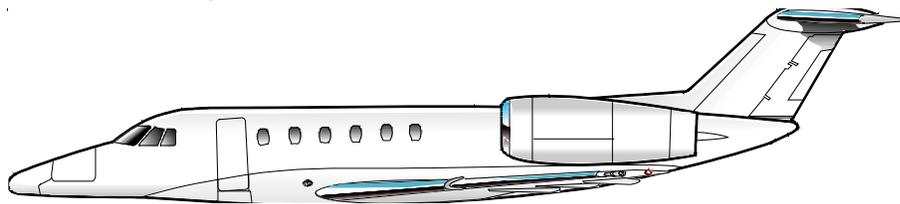


Table 2.7  
Ultimate Critical Aircraft- Cessna Citation X (750 Series)

Characteristic	Specifications/Performance
Airport Reference Code (ARC)	C-II
Wing Span	63 ft. 11 in.
Length	72 ft. 2 in.
Height	18 ft. 11 in.
Seating (Crew + Pax)	2 + 12
Maximum Takeoff Weight (MTOW)	34,500 lb.
Normal Approach Speed	121-141 knots
Takeoff Field Length	5,200 feet
Landing Distance	3,400 feet
Max. Range Performance	3,070 Nm

Note: Take-off and landing distances are over a 35 foot obstacle.

Note: Range assumption based on typical cruise weight, ISA, NBAA IFR Reserves (200 nm), M 0.82, max fuel and MTOW.

Note: Airport performance is based on sea level and ISA (standard temperature).

Source: Cessna Aircraft Corporation, Wichita, Kansas.



Cessna Citation X on the Ramp



Cessna Citation X Passenger Cabin



Cessna Citation X Flight Deck



Cessna Citation X Flight Perspective

Source: Cessna Aircraft Corporation, Wichita, Kansas.

**DEMAND FORECAST SUMMARY**

**Table 2.8** summarizes the demand forecast elements of the projected activity at the Monett Municipal Airport throughout the 20-year planning period.

HFJ is expected to witness an increase in based aircraft by approximately 37 units and average approximately four percent annual growth throughout the planning period. The ultimate fleet mix at the airport includes 48 single engine, eight twin engine, four multi-engine turbo-props and 12 business jets.

Annual operations are anticipated to increase at approximately four percent annually as well and experience an overall increase in operational activity by nearly 21,500 operations to total approximately 38,500 annual operations. Local operations will comprise 26 percent of the overall 2029 activity and increase at a rate of nearly four percent annually totaling approximately 10,000 annual operations. In 2029, transient operations are expected to total nearly 74 percent of the overall activity at the facility equaling nearly 28,500 annual operations. Air taxi operations are anticipated to increase from 3,500 operations per year to 8,100 operations in 2029.

Table 2.8  
Demand Forecast Summary, 2009-2029

Forecast Element	2009	2014	2019	2024	2029
<b>Based Aircraft</b>					
Single-Engine Aircraft (A-I & B-I)	25	31	36	44	48
Multi Engine Piston Aircraft (B-I)	4	5	6	7	8
Multi-Engine Turbine Aircraft (B-II)	2	3	3	4	4
Business Jet Aircraft (B-II/C-II)	6	8	9	11	12
<b>Total Based Aircraft</b>	<b>38</b>	<b>47</b>	<b>55</b>	<b>67</b>	<b>72</b>
<b>Annual Operations</b>					
Local Operations	5,300	6,500	7,600	9,300	10,000
Itinerant/Transient Operations	11,300	14,000	16,300	19,700	20,300
Air Taxi Operations	3,600	4,500	5,400	6,700	8,100
Military Operations	100	100	100	100	100
<b>Total Annual Operations</b>	<b>20,300</b>	<b>25,100</b>	<b>29,400</b>	<b>35,800</b>	<b>38,500</b>
<b>Annual Instrument Approaches</b>					
<b>Total AIAs</b>	<b>600</b>	<b>700</b>	<b>900</b>	<b>1,000</b>	<b>1,000</b>

Note: Figures rounded to the nearest hundred for planning purposes.

Source: BWR Forecasts.

At the conclusion of the 20-year time frame, HFJ is expected to experience approximately 2,100 IMC arrivals and departures and nearly 1,000 AIAs per year.