



# Airport Master Plan



**Prepared for:**  
Kentucky Transportation Cabinet  
Department of Aviation  
Capital City Airport  
90 Airport Road  
Building 400  
Frankfort, KY 40601



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## Capital City Airport Master Plan

Frankfort, Kentucky

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**Appendix A Airport Layout Plan Set**

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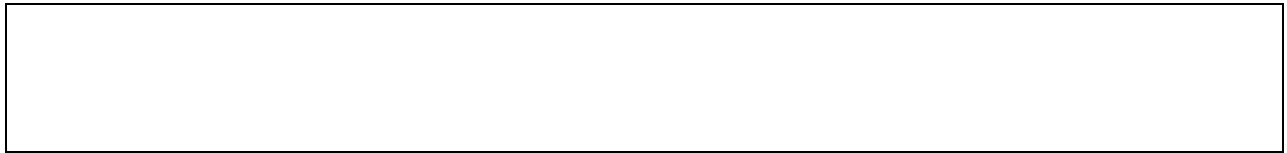
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# Introduction



*Chapter One*

## 1. Introduction

Capital City Airport is located one (1) mile southwest of Frankfort, in Franklin County Kentucky. Scott, Woodford, Anderson, Shelby, Henry and Owen Counties all border Franklin County, where Frankfort is the county seat. The County is located in north-central Kentucky and lies in the Kentucky Bluegrass Land Resource Area.

Frankfort is the State capital as well as a principal trading center in the north-central region of Kentucky, making transportation vital to its economy. Per 2009 data, the population of Franklin County was approximately 48,968. The County's main natural resource is soil so many residents are engaged in farming; however, several residents work for industrial companies as well as the State government. The average unemployment rate for Franklin County during 2009 was 9.0% compared to 10.5% for the State.

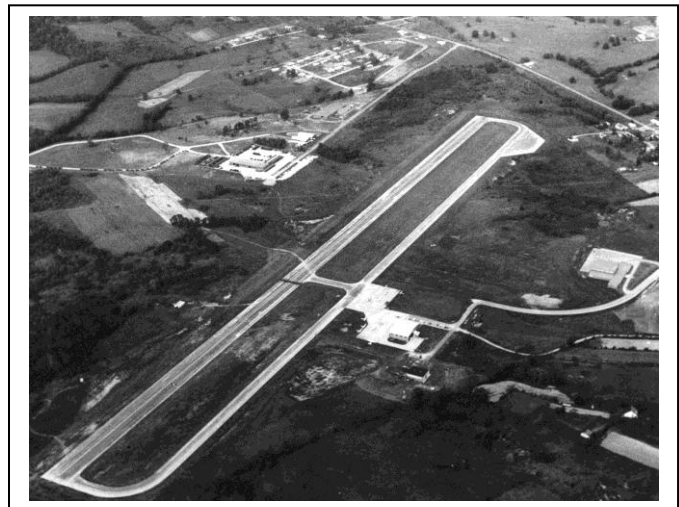
This Master Plan was conducted under the direction of the Federal Aviation Administration and the Kentucky Transportation Cabinet Department of Aviation (KDA). The document for the Capital City Airport, Frankfort, Kentucky is intended to provide the KDA a long-term land use planning document that will allow for optimum use of the remaining land available for development of civil aviation facilities. An Airport Layout Plan (ALP) is provided in addition to the written documentation found in the body of this report. The ALP includes those airfield improvements that have been made and are currently planned in response to aviation demand as well as those projects that will be undertaken in the future to comply with the FAA's Finding of No Significant Impact (2005).

### 1.1 History

Franklin County, formed in 1794, was the 18<sup>th</sup> county to be incorporated in Kentucky and was named to honor Benjamin Franklin. The county was formed from parts of Woodford, Mercer and Shelby Counties. Its 212 square mile area is well drained by many small streams which flow into the Kentucky River. The Kentucky River bisects the county flowing northwesterly to the Ohio River. The topography of the landscape is gently rolling and hilly with fertile soils.

In 1773, the present site of Frankfort was surveyed, but the town was not established until 1786. It was named in honor of Stephen Frank who was killed by Indians while traveling to Mann's Salt Lick in Jefferson County.

On November 3, 1794, almost two and one half years after Kentucky's statehood, the first capitol building was to be constructed in Frankfort. Four capitol buildings have been built during Kentucky's history. The first two succumbed to fire; the third was the home of the Kentucky Historical Society and was restored as a showplace of its original use. The fourth capitol, built after attempts to move the capital to another city failed during the 1890's, remains as the State Capitol today.



Construction of the Capital City Airport (FFT) began on state owned property in September of 1952, with the original 2,800 x 80 foot runway opening for light aircraft use in November 1953. Improvements such as a 1,200 foot runway extension, hangars, access road, beacon and lighting system were added between 1953 and June of 1955. The airport was officially dedicated by the Frankfort Chamber of Commerce and the Kentucky Department of Aeronautics on June 25, 1955. Federal Aviation Administration (FAA) records indicate that all work prior to 1991 was done without the use of federal funds. Table 1.1 lists those projects undertaken with federal participation since 1991. The dollar amount listed is the amount of the federal grant and typically reflects 90 or 95 percent of the total project amount.

**Table 1.1 Federally Funded Projects Since 1991**

<i>Grant Number</i>	<i>Project Description</i>	<i>Amount of Grant</i>
<i>001-1991</i>	Master Plan and Obstruction Removal	\$270,212.00
<i>002-1993</i>	Runway Safety Area Improvements	\$318,584.00
<i>003-1996</i>	Construct Taxiway Connector, Rehabilitate Runway Lighting, Install Guidance Airfield Signs	\$390,336.00
<i>004-1999</i>	Install Perimeter Fencing	\$121,436.00
<i>005-2003</i>	Construct Service Road	\$238,415.00
<i>006-2004</i>	Rehabilitate Runway and Taxiway, Improve Runway Safety Area, Extend Runway	\$1,506,643.00
<i>007-2005</i>	Rehabilitate Runway and Taxiway, Improve Runway Safety Area, Extend Runway, continued, and Install Perimeter Fencing	\$3,600,655.00
<i>008-2009</i>	Update Master Plan and Install Fence	\$250,464.00
<i>010-2010</i>	Update Master Plan	\$32,000.00
<i>011-2010</i>	Install Perimeter Fencing	\$344,055.00
<b>TOTAL FAA GRANTS 1991 - 2010</b>		<b>\$7,072,800.00</b>

**1.1.1 Airport Administration and Property**

The airport property, totaling 641.88 acres, is owned by the Commonwealth of Kentucky and as such is administered by the Finance Cabinet. Currently, through the implementation of interagency agreements, the day-to-day administration and management of the property has been divided between the Department of Aviation Capital City Airport Division (CCAD) and the Kentucky National Guard (KYNG). CCAD is responsible for approximately 262.42 acres including the airfield and those facilities comprising the *civilian side* of the property. This area is generally defined by the Runway Object Free Area to the north; U.S. Route 127 to the east; Route 60,

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Louisville Road, to the south; and, property operated by the Kentucky Department of Fish and Wildlife to the west. The remaining property, approximately 379.46 acres is managed by the KYNG.

## **1.2 Master Plan Objectives**

The purpose of this Master Plan is to evaluate existing aviation demand of pilots, aircraft owners, businesses, existing and potential industries and the public in Franklin and adjacent Counties. Additional objectives of this Master Plan are as follows:

- To establish current and future aviation demand for Franklin County and the airport service area.
- To define land use requirements necessary to meet future aviation demand, to enhance airport revenue and to upgrade existing facilities.
- To evaluate the airfield requirements.
- To outline a capital development plan providing a phased approach to aviation facility development.
- To produce an Airport Layout Plan submitted to and accepted by FAA.



# Inventory of Existing Conditions



*Chapter Two*

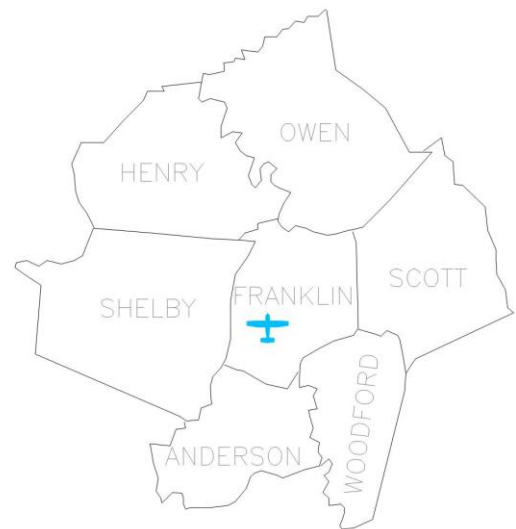
## 2. Inventory of Existing Conditions

The inventory section presents and summarizes the information collected at the outset of the Master Plan study. A full and comprehensive inventory will serve as the foundation for the report and all future planning studies for this facility.

### 2.1 Setting

Franklin County is located in north-central Kentucky, along the Kentucky River. It is served by I-64, U.S. 60, U.S. 127, U.S. 460 and U.S. 421. Franklin County is part of the area identified as the Kentucky Bluegrass Land Resource Area. Franklin County totals 135,040 acres with an elevation that ranges from 450 to 920 feet above sea level. Frankfort, the county seat, is the largest city with a 2009 population estimated to be 27,382.

FFT serves a large portion of the region. This region is referred to as the Airport Service Area (ASA). For purposes of this study, it was determined that this area would encompass Franklin County, and all other bordering counties. These counties represent both the area of potential users and the area of economic influence for the municipal airport. The following counties make up the Capital City Airport Service Area: Scott, Woodford, Anderson, Shelby, Henry, Owen and Franklin. The seven counties making up the service area encompass 1,925 square miles. These counties, with a total of 194 registered aircraft are served by only 2 public use airports.



### 2.2 Socioeconomic Trends

Historically, the growth or decline in aviation activity is closely tied to the dynamic movement of the areas socioeconomic statistics. During the 1980's and 1990's general aviation (GA) activity experienced little growth compared to other national economic trends. This stagnation was primarily attributed to the political reluctance to change aviation product liability laws resulting in a loss in general aviation aircraft manufacturers and significant increases in the cost of new and used aircraft and aircraft parts. Recent years, however, have seen a resurgence of GA aircraft manufacturers entering the market, partially a result of limitations placed on aircraft product liability and changes to FAA aircraft certification requirements. These changes have created a more direct correlation between aviation activity and socioeconomic trends in some areas of the country. In any case, it is important to look at a service area's socioeconomic factors to determine its past and present economic growth. Population, per capita income and a description of the area's economic base are provided.

#### 2.2.1 Population

In many locations throughout the United States, a relationship can be found between socioeconomic growth and aviation activity. In order to develop a socioeconomic basis from which to anticipate airport activity, historical

population numbers for all seven (7) counties within the Airport Service Area were researched and tabulated. The following table lists these counties and their populations since 2000.

As can be seen in Table 2.1, county populations throughout the Airport Service Area grew over 8.8% during the ten-year period between 2000 and 2009.

**Table 2.1 Study Area Historical Population Trends**

<b>Year</b>	<b>Anderson</b>	<b>Franklin</b>	<b>Henry</b>	<b>Owen</b>	<b>Scott</b>	<b>Shelby</b>	<b>Woodford</b>	<b>7 County TOTAL</b>
2000	19,184	47,848	15,097	10,574	33,407	33,548	23,267	182,925
2001	19,459	48,115	15,219	10,661	34,492	34,066	23,349	185,361
2002	19,434	48,179	15,253	10,868	35,499	34,812	23,451	187,496
2003	19,657	48,079	15,436	10,895	36,534	35,829	23,610	190,040
2004	19,908	48,338	15,546	11,107	37,810	36,882	23,775	193,366
2005	20,220	48,377	15,189	11,160	39,318	38,017	24,030	196,311
2006	20,800	48,428	15,772	11,194	41,511	39,523	24,253	201,481
2007	21,334	48,540	15,824	11,351	43,035	40,615	24,367	205,066
2008	21,468	49,017	15,934	11,390	44,663	41,376	24,772	208,620
2009	21,790	48,968	16,060	11,380	45,841	42,078	24,986	211,103

Source: U.S. Census Bureau, Population Division 2009 estimates - Release Date: March 2010

In order to develop an understanding of the region’s economic vitality, it is essential that an approved and accepted population growth rate for the ASA be reviewed. The following table details the projected population forecasts for the seven-county Airport Service Area, Franklin County, and the State of Kentucky. In general, the entire service area is expected to have a steady population increase throughout the twenty-year forecasting period from 2010 to 2030. A growth rate of 8.8% was used to project populations for 2020 and 2030. Removing Franklin County from the ASA and evaluating it individually resulted in the same steady growth trend.

**Table 2.2 Population Projections**

	<b>2010</b>	<b>2020</b>	<b>2030</b>
<b>Total Airport Service Area</b>	211,103	229,680	249,891
<b>Airport Service Area (without Franklin)</b>	162,135	180,712	200,924
<b>Franklin County</b>	48,968	50,094	51,425
<b>Kentucky</b>	4,314,113	4,601,101	4,906,968

Source: Kentucky State Data Center & Population Research

### 2.3 Per Capita Personal Income

The average Per Capita Personal Income (PCPI) in Franklin County in 2008 was \$34,331. That was a 23% increase from its 2000 PCPI of \$27,900. When compared to the State’s change of 29% over the same period, Franklin County appears to be growing at a slightly slower rate than the State average. Some of the counties in the service area are growing at a rate faster than the State average. Although a large portion of the area is agricultural, there is a favorable industrial and business climate that is currently recovering from the recent economic downturn experienced throughout the United States.

**Table 2.3 Historical Per Capita Personal Income (\$)**

Year	Anderson	Franklin	Henry	Owen	Scott	Shelby	Woodford	Kentucky
2000	24,429	27,900	23,802	19,143	30,154	29,160	36,589	24,786
2001	24,592	27,693	23,562	18,919	28,366	28,519	34,070	25,319
2002	24,853	28,397	23,646	18,897	27,288	28,387	36,867	25,809
2003	25,103	29,060	24,690	19,259	28,157	28,645	36,090	26,299
2004	25,444	29,960	25,646	19,735	28,687	29,650	37,921	27,436
2005	26,492	30,918	25,994	20,334	29,782	29,370	38,457	28,446
2006	27,399	32,416	26,699	21,124	31,447	30,465	40,353	29,987
2007	28,129	34,114	27,590	21,951	32,731	31,874	42,069	31,060
2008	28,803	34,331	28,254	22,921	33,232	32,160	41,954	31,936

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis

**Table 2.4 Per Capita Personal Income Comparison**

	2000	2008	Percent Change
Franklin County	\$27,900	\$34,331	23.0
Service Area Range	\$19,143- \$36,589	\$22,921- \$41,954	N/A
Kentucky	\$24,786	\$31,936	28.0
U.S.	\$30,318	\$40,166	32.5

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis

### 2.4 Industrial Growth and Development

The city of Frankfort has an economy heavily dependent on state government payrolls. However, the civilian workforce in Franklin County employs approximately 24,991 people. Metal stampings, automotive brakes and parts; steel building components and distilled liquor are principle products of the county’s major industries.

Several major manufacturing facilities in the area have recently expanded operations with investments up to sixty-two million dollars. These expansions are due to the favorable business and industrial climate in the area. Table 2.5 presents a sampling of existing major industries located in Franklin County and number of employees.

**Table 2.5 Major Industries Located within Franklin County**

<i>Existing Industries</i>	<b>Number of Employees</b>
<i>Montaplast of North America</i>	927
<i>Topy Corp</i>	335
<i>GECOM Corporation</i>	307
<i>Ohi Automotive of America</i>	300
<i>Buffalo Trace Distillery</i>	270
<i>Jim Beam Brands Co.</i>	225
<i>Meritor Automotive Inc.</i>	160
<i>AWP Industries Inc.</i>	150
<i>CENTRIA</i>	125
<i>WMI Incorporated</i>	120

Source: Capital Community Economic/Industrial Development Authority, 2010

## 2.5 Ground Access

Franklin County is 29 miles northwest of Lexington and 54 miles east of Louisville. Interstate I-64 runs just south of the city and there are numerous state highways that connect the city with surrounding communities and counties. The primary ground access to the city of Frankfort from the north and the south is State Highway 127. To access the Capital City Airport from I-64: take exit #53 North onto Highway 127, then turn left onto State Highway 60. To access the airport from the north: follow Highway 127 south to Highway 60. From downtown Frankfort (Main Street): turn left on St. Clair Street then right onto Highway 60.

## 2.6 Climate

The climate of Franklin County Kentucky provides a wide range of temperatures. Weather movement and wind direction is generally from the south. Summers are warm and humid, with about 26 days above 90 degrees Fahrenheit (32 degrees Celsius). Winters are moderately cold with approximately 136 days below 32 degrees Fahrenheit (0 degrees Celsius).

The maximum temperature on record for the county is 103.0 degrees Fahrenheit (F) and the lowest is -21.0F. Average high temperature (30 years) for the month of July is 75.2F and for January is 30.3F. Average annual precipitation for Franklin County is 53.39 inches. Average annual snowfall is 15.7 inches. Prevailing winds throughout the year are from the south.

## 2.7 Topography and Soils

Topographic conditions are a critical element in an airport site feasibility study. Topographic features can restrict, prohibit, or enhance the suitability of a given site. For instance, areas that are subject to extremes in terrain are generally more difficult and more costly to develop than areas that are relatively flat. U.S. Geological Survey 7.5-minute quadrangle maps were reviewed, together with county road maps, to assess the topographic character of the area. These sources, along with area reconnaissance, will be used to determine the conditions, either natural or manmade, that would influence the potential for expansion.

Examination of the different soils that make up the county is an important factor in determining whether a site is suitable for both aviation and roadway development. All of the soil classifications or associations were evaluated using the soil survey for Franklin County. The general soil map identifies the soil associations in the County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils classification. The soils in one association may occur in another, but in a different pattern. General soils information is obtained from the U.S. Department of Agriculture, Natural Resources Conservation Service, National Cooperative Soil Survey.

Franklin County is in the Bluegrass Region of Kentucky, which is underlain by sedimentary rocks of Ordovician age. The County is dissected by the Kentucky River and has a landscape of gently sloping to steep hills. Elevations in the Franklin County Area range between 450 to 920 feet above mean sea level. The Capital City Airport is located in the southwestern portion of the County and has an elevation of 812 feet. The existing airport property lies atop a Lowell soil association. This particular soil has a surface layer of brown silt loam typically seven inches thick, followed by subsoil that extends to a depth of fifty-seven inches at which point a layer of limestone bedrock begins. The soil is interbedded with thin layers of calcareous shale and siltstone. It has slow permeability and is well drained. This soil is well suited to urban development. The eastern portion of the site is composed of a Faywood soil association. This soil series is similar to the Lowell Association; the only difference is the depth. The surface layer of Faywood soil is only five inches thick and the limestone bedrock begins at thirty-four inches.

## 2.8 Regional Airport Facilities

The Capital City Airport serves an important role in serving the General Aviation demand in the seven county service area. FFT serves: as a means of travel into the airport service area; a catalyst for economic development; and, as a location for local aircraft owners to base aircraft. A review of current FAA aeronautical data indicates that there are 12 other airports within 25 nautical miles (nm) (28.8 statute miles) of FFT. Two of the airports are public-owned airports that are open to the public. The remaining 10 airports are private in both ownership and use. Combined the 12 airports offer 13 runways ranging in length from 1,400 feet to 7,003 feet, four of the runways are paved while the others are turf. Each of the known airport facilities within 25nm straight-line radius from FFT are briefly described below and the location of each is shown on **Exhibit 2.1**.

### **Georgetown Scott County Airport-Marshall Field (27K)**

This public-owned and public use airport is located approximately five (5) miles northeast of Georgetown, Kentucky, 22.4 nm west/northwest of FFT. This airport has one runway 5,498 foot x 100 foot, oriented to 3/21. It has high intensity runway edge lights and a 4-light Precision Approach Path Indicator (PAPI) system. Current FAA data indicates that this airport has 68 based airplanes and 8 helicopters. The based aircraft mix includes 54

single engine, 12 multi-engine and 2 turbine powered aircraft. The airport handles approximately 19,000 annual operations. Aviation 100 low lead gasoline (AvGas) and Jet-A are available.

### **Blue Grass Airport (LEX)**

This airport, located two (2) miles west of Lexington, Kentucky is the only airport in the area offering air carrier service. The airport has two runways, 4/22, which is 7,003 feet x 150 feet and the recently opened (September 2010) 9/27 which is 4,000 x 75 feet. Runway 4/22, the primary runway, has high intensity runway edge lights, a 4-box Visual Approach Slope Indicator (VASI) and a Simplified Short Approach Lighting System (SSALR). Both ends of the runway have an ILS approach.



LEX accommodates more than 65,000 operations each year 2,000 of which are air carrier. The airport has 143 based aircraft, 140 airplanes and 3 helicopters. The airplane mix is 88 single engine, 29 multi-engine and 23 turbine. AvGas

and Jet-A fuel are available. Blue Grass Airport is 16.5nm southeast of Capital City, however, it is in Fayette County which is not one of the seven counties that make up the Capital City Service Area.

**Seldom Scene – Private:** This airport is a private use facility with one turf runway that is 2,000 feet long. The airport is located approximately five (5) nautical miles south/southeast of FFT. Lighting, taxiway and fuel are not available.

**Lucas - Private:** Located approximately 23.5nm south/southeast of FFT, this airport has one paved runway that is listed in the FAA data base to be 5,500 feet long. The airport is located approximately 1.5 miles west of Nicholasville, KY.

**Buzzards Roost - Private:** This airport is private and has one turf runway approximately 1,400 feet long. The airport is located ten (10) nautical miles south/southeast of Capital City. Lighting, taxiway and fuel are not available.

**Little Mount - Private:** This airport is private and has one turf runway 2,000 feet long. The airport is located 16.5nm southwest of Capital City. Lighting, taxiway and fuel are not available.

**Willow Island – Private:** This airport is private and has one turf runway approximately 2,500 feet long. The airport is located twenty (20) nautical miles west/southwest of FFT. Lighting, taxiway and fuel are not available.

**Hemp Ridge – Private:** This airport is private and has one runway approximately 2,500 feet long. The airport is located 9.8 nm west of Capital City. Lighting, taxiway and fuel are not available.

**Rooster – Private:** This private airport has one turf runway 2,000 feet long. The airport is located 15.4 nm northwest of Capital City. Lighting, taxiway and fuel are not available.

**Jefferies – Private:** This airport is private and has one 1,500 foot long turf runway. The airport is located 18.9 nm northwest of Capital City. Lighting, taxiway and fuel are not available.

**Forree – Private:** This airport is private and has one runway approximately 2,500 feet long. The airport is located twenty-one (21) nautical miles north/northwest of Capital City. Lighting, taxiway and fuel are not available.

**Deer Run Farm – Private:** This private airport has one turf runway approximately 3,100 feet long. The airport is located twenty (20) nautical miles north/northwest of FFT. Lighting, taxiway and fuel are not available.

## 2.9 Regional Airspace

The airspace surrounding the Capital City Airport is defined by several Federal Aviation Regulations (FARs). The two classification systems evaluated in this report are under FAR Parts 71, 73 and 91, and those areas classified under FAR Part 77. Under the former system, pilots are restricted to certain operations and must follow strict requirements for flights in specific areas. In addition to physical ground facilities, the availability of above ground space is part of the consideration in the inventory of an airport. Potential airspace conflicts have the ability to hinder the development and growth of an airport. The airspace is shown on **Exhibit 2.1**. There are no airspace conflicts associated with the operation of the Capital City Airport.

The airspace defined in FAR Part 77 provides guidelines for identifying obstructions to air navigation. A review of the imaginary surfaces associated with this regulation reveals that there are no obstructions in the area that will interfere with the primary mission of the Capital City Airport. See Appendix A for a copy of the draft Airport Layout Plan that illustrates these surfaces.

## 2.10 Airspace Classification

FAR Parts 71, 73 and 91 subdivides all airspace into controlled and uncontrolled, with controlled airspace being subdivided into Class A, Class B, Class C, Class D, Class E and special use airspace. Special Use airspace areas can include: Prohibited Areas, Restricted Areas, Warning Areas, Military Operations Areas (MOAs), Alert Areas and Controlled Firing Areas. Other controlled areas are Airport Advisory Areas, Military Training Routes (MTRs), Temporary Flight Restrictions and Parachute Jump Areas.

The classifications of airspace are dictated by: (1) the complexity or density of aircraft movements; (2) the nature of the operations conducted within the airspace; (3) the level of safety required and (4) national and public interest. Operational requirements vary with each of the airspace categories.

There is one Victor Airway in the vicinity of the Capital City Airport: **V512, Exhibit 2.1**. It connects the *Lexington* VORTAC and the *Bowman* VORTAC between Lexington and Louisville and passes approximately one (1) mile south of the Capital City Airport. Because there are more direct paths between Lexington and Louisville, this Victor Airway would most likely be used by traffic intending to land at and or leave the Capital City Airport. It can be assumed based upon terrain and FAR regulations, most flights along these airways would be above 3,000 feet Mean Sea Level (MSL).

Another item to note in this discussion is the ongoing transition to the Global Positioning System (GPS) for enroute navigation. As this system becomes more prevalent throughout the industry, the VOR Airway System



will be utilized less due to direct navigation being possible due to GPS. This will in turn reduce the number and concentration of flights along established corridors.



The Blue Grass Airport, located seventeen (17) nautical miles southeast of the Capital City Airport, is a Class C airfield. This means that the airport is surrounded by controlled airspace, which is governed by specific FAA guidelines. The Blue Grass shelf area extends into a small portion of the Capital City airspace, which indicates that traffic could be directed to over-fly Capital City en-route to the Blue Grass Airport. However, the minimum altitude for the shelf area is 2,200 feet MSL.

There are no Military Operations Areas (MOA) located in the vicinity of FFT.

### 2.11 Instrument Approach Capabilities

Existing instrument approach capabilities at the airport include published *non-precision approaches* to both runway ends. Non-precision instrument approaches provide aircraft operators with electronic signals for use during Instrument Flight Rule (IFR) conditions. The electronic signal provides only horizontal guidance for straight-in approaches to the runway end.

Runway end 6 (the west end off the runway) has one published GPS based approach providing weather minimums down to 600 foot cloud ceiling and one mile visibility. Runway end 24 has three (3) different non-precision approaches. Two of these approaches, a Localizer and a GPS based approach, provide minimums of 500 foot cloud ceiling and one (1) mile visibility. The third, a VOR based approach to Runway 24, provides minimums to 700 foot elevation and one mile visibility. These approaches are included as **Appendix B**.

Wind and weather information provided by the Lexington observation center indicates that FFT operates under IFR conditions approximately 22 percent of the time annually. Airport wind history data indicates that during IFR conditions Runway 24 is available to the Critical Aircraft type (CII) for landing 80.4 percent of the time and the Runway 6 end is available 71.2 percent of the time.

### 2.12 Aircraft Activity

There are various federal, state and local sources available for determining the existing activity levels at airports. These sources can include, but are not limited to, Federal Aviation Administration (FAA) 5010-1 Form, FAA Terminal Area Forecast (TAF), on-site inventory and airport sponsor's records.

The FAA *Airport Master Record*, Form 5010-1, is the official record kept by the FAA to document airport physical conditions and operational data. The airport data, usually collected from the individual airport operator, includes an annual estimate of aircraft operations as well as the number of based aircraft. The accuracy of the



information in the 5010-1 report for a particular airport is dependent on the record keeping of the airport administration. For purposes of this inventory, the 5010-1 reports have been compared with the reports generated by the airport administration.

#### 2.12.1 Based Aircraft

Airport administrative records indicate 81 aircraft currently based at the airport (2010). The mix of these aircraft can be defined as follows:

- 62 private and/or corporate owned,
- 15 owned and operated by various agencies of the Commonwealth: 8 helicopters and 7 airplanes,
- 4 airplanes operated by the KYNG: 3 C-23 *Sherpa*; and 1 C-12 *King Air*,
- And, 62 single engine piston; 9 twin-engine; and 10 turbine aircraft.



The number of based aircraft has increased from 66 aircraft in 2005 and 51 in 1990.

North of the runway the KYNG has 19 based helicopters. These aircraft, based at the Boone National Guard Center (BNGC), include 13 UH-60 *Blackhawks*, a twin-engine helicopter, and 6 single engine OH-58 *Kiowa* helicopters. These aircraft primarily operate from a designated helipad located on the north side of the Boone Center utilizing the runway for approach and departure training flights.

### 2.12.2 County Registered Aircraft

FAA records indicate that there are 58 civil aircraft registered in Franklin County. Privately owned aircraft are registered by the owner's primary residence therefore it is common for aircraft to be registered in one municipality and based at another airport or one of the numerous private landing strips in the vicinity. Forty of these aircraft are registered to individual owners and the remaining 18 are list as government owned.

### 2.12.3 Aircraft Operations

The recording of air traffic activity is an important function in the operation of an airport. Historical accounting of aircraft operations (takeoffs and landings) often provides a basis for forecasting future activity trends. Aircraft operations at FFT are reported in four categories: air taxi, local, itinerant and military. The first source of information regarding the existing, and forecast, aircraft operations came from the FAA Airports Division December 2009 - Terminal Area Forecast (TAF). This document indicated total airport operations for 2008 were 34,200 (33,200 general aviation and 1,000 military). The TAF report further identified that 68 percent of the operations were itinerant and the remaining 32 percent local operations.

Typically for general aviation airports, the number of general aviation operations is derived through the use of an Operations-Per-Based Aircraft (OPBA) ratio with the addition of military operations. Two methods were used to determine the OPBA for Capital City Airport. The first method was to identify Kentucky airports that serve communities in a manner similar to that of Capital City. Six airports located in central Kentucky were selected that have a similar number of based aircraft. The average OPBA ratio of these combined airports is 483. Using this OPBA, multiplied by the number of based civil aircraft (77) results in an annual operations number of 37,191. Adding to that number the annual operations by military aircraft, obtained from KYNG records, indicates an annual operations number of 41,191 (37,191 + 4,000).

**Table 2.6 Airport Operations Data**

<i>Airport Name</i>	<i>City</i>	<i>Based Aircraft</i>	<i>Annual Operations</i>	<i>OPBA*</i>
<i>Addington Field</i>	Elizabethtown	60	12,400	207
<i>Bowling Green-Warren County</i>	Bowling Green	58	62,640	1080
<i>Georgetown – Scott County</i>	Georgetown	80	24,850	311
<i>Samuels Field</i>	Bardstown	31	11,650	375
<i>Lebanon-Springfield</i>	Springfield	13	5,510	424
<i>Stuart Powell Field</i>	Danville	43	18,000	499
<b>Total OPBA</b>		<b>285</b>	<b>135,050</b>	<b>483 Average</b>

Source: Federal Aviation Administration, 5010 reports.

\* Operations per Based Aircraft

The second method was to use OPBA numbers used by many states to estimate the number of annual operations at airports with typically a Low number of operations (200), Medium number (350) or a High number (400). Use of one of these numbers would result in an estimate number of operations per based aircraft to be used throughout the planning period. These multipliers, plus the 4,000 military operations, will yield annual operations numbers for the Low (19,400); Medium (30,950); and, High (34,800) planning scenarios.

### 2.13 Design Standards

The FAA has established design standards to ensure safety and efficiency within the national system of airports. FAA Advisory Circular (AC) 5300-13, *Airport Design*, defines these design standards for runways and taxiways; surface gradient and runway line of site; runway threshold, navigational aids and air traffic control facility siting requirements; wind analysis; airport reference points; and numerous other factors affecting airport dimensional criteria. The selection of the appropriate FAA design criteria for the airport is based upon the *critical aircraft*, or family of aircraft type with similar design and operational characteristics, that will be utilizing the airport. Federal funding projects currently require that critical aircraft have, or be forecast to have, at least 500 or more annual operations at the airport (landings and takeoffs are considered separate operations) for an individual airplane or family grouping of airplanes.

**Airport Reference Code** – The ARC is a system established by the FAA to relate airport design criteria to the operational and physical characteristics of the aircraft operating, and forecast to operate, at a particular airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the aircraft Approach Category and correlates to the speed of the aircraft during the landing phase of flight. This criterion is generally used to define standards associated with runway safety surfaces and facilities. The second component, depicted by a Roman numeral, is the grouping of aircraft based upon the wing span and tail height of the airplane.

The **Aircraft Approach Category** is based on the landing speed of the aircraft, defined as 1.3 times the stall speed of the aircraft, as follows:

- Category A – Speed less than 91 knots
- Category B – Speed 91 knots or more but less than 121 knots
- Category C – Speed 121 knots or more but less than 141 knots**
- Category D – Speed 141 knots or more but less than 166 knots
- Category E – Speed 166 knots or more



The **Airplane Design Group** is based on airplane wingspan or tail height (feet) as follows:

- Group I – wingspan < 49 ft; tail height < 20 ft
- Group II – wingspan 49 - < 79; tail height 20 - < 30**
- Group III – wingspan 79 - < 118; tail height 30 - < 45
- Group IV – wingspan 118 - < 171; tail height 45 - < 60
- Group V – wingspan 171 - < 214; tail height 60 - < 66
- Group VI – wingspan 214 - < 262; tail height 66 - < 80

A review of the aircraft types utilizing the airport indicate that the critical aircraft characteristics fall within the Aircraft Approach Category C and Airplane Design Group II (CII). The development of an Existing Airport Layout Drawing in conjunction with this Inventory indicates that the current airfield is in compliance with the design standards. **Table 2.7** includes a listing of the critical design standards for the criteria identified below.

**Table 2.7 Existing FAA Design Standards**

<i>Description</i>	<i>FAA Design Criteria</i>	
	<b>C – II</b>	<b>C - II</b>
<i>Rwy centerline to parallel Txy</i>	300'	300'
<i>Rwy centerline to aircraft parking apron</i>	400'	450'
<i>Rwy width</i>	100'	100'
<i>Rwy Safety Area width</i>	500'	500'
<i>Rwy Safety Area length beyond Rwy end</i>	1,000'	1,000*
<i>Rwy Object Free Area Width</i>	800'	800'
<i>Rwy Object Free Area length beyond Rwy end</i>	1,000'	1,000'
<i>Rwy Obstacle Free Zone width</i>	400'	400'
<i>Rwy Obstacle Free Zone length beyond Rwy end</i>	200'	200'
<i>Rwy centerline to aircraft hold lines</i>	250'	250'
<i>Txy width</i>	35'	50'
<i>Txy Safety Area width</i>	79'	79'
<i>Txy Object Free Area width</i>	131'	131'
<i>Taxilane Object Free Area width</i>	115'	115'

\* Length of Runway End 24 RSA obtained by use of Declared Distance – see Safety Area below

As previously discussed, the ARC system is used to assign airfield design criteria to the operational and physical characteristics of the aircraft that intend to operate at the airport. FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, contains airport design standards based on the selected airport reference code.

**Safety Area** – Runway and taxiway safety areas (RSA and TSA) are defined surfaces surrounding the runway or taxiway. These safety areas are specifically prepared and maintained to minimize damage to aircraft that overshoot, undershoot or otherwise deviate from the prepared movement surface. The safety areas must be:

- Graded to a specific slope and free of potentially hazardous surface variations.
- Free of objects, except those necessary for navigation.
- Drained to prevent water ponding and to facilitate drainage.
- Capable of supporting airport maintenance and emergency equipment and the occasional aircraft without causing structural damage.

The RSA on the west end of the runway (Runway 6 end) meets the above standards for the full 1,000 foot length beyond the runway and 500 foot width. The final 600 feet of RSA on the 24 Runway end does not meet the RSA standard for slope and objects. Therefore the CCAD has implemented Declared Distances on to provide for the full 1,000 RSA. The declared distance for Runway 6 operations (east departures and landings) is 5,500 feet. The Taxiway Safety Area (TSA) meets standards throughout the airport.

**Runway Object Free Area (OFA)** - The OFA is centered on the runway or taxiway centerline. The standards for this surface require the clearing of objects that penetrate the corresponding safety area edge elevation. Objects that are not necessary for navigation and that penetrate the elevation of the safety area edge are to be removed from the area within this surface. It is acceptable to taxi aircraft within the runway object free area. Both the ROFA and TOFA meet the standard for objects and elevation.

**Obstacle Free Zone (OFZ)** – The runway OFZ is a defined volume of airspace centered above the runway centerline. The ROFZ is 400 feet wide, extends 200 feet beyond the runway surface and up to 150 feet above the runway elevation. This airspace is required to be clear of all objects, except those necessary for navigation, including taxiing aircraft. The width of the ROFA is 400 feet. The purpose of the OFZ is to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The ROFA meets the design standard.

**Runway Protection Zones (RPZ)** – The RPZ is a trapezoid shaped surface centered along the extended runway centerline. The dimensions of each RPZ are defined by the design aircraft category and the approach visibility minimums associated with that runway end. The RPZ surface begins 200 feet beyond the end of the runway pavement. The dimensions of the RPZ at both ends of Runway 6-24 are defined by *C Category* aircraft weighing more than 12,500 pounds (large aircraft) and, *Non-precision approaches having not lower than one mile visibility minimums*. The RPZs have a width of 500 feet at the inner end; a length of 1,700 feet; and, an outer width of 1,010 feet.

The function of the RPZ is to enhance the protection of people on the ground. FAA policy is that the area should be clear of incompatible objects and activities. For land use determination the RPZ is divided into two areas: *the Central Portion* and the *Controlled Activity Area*. The *Central Portion* of the RPZ extends the full length of the surface along the extended centerline. The width of this portion of the RPZ corresponds to the width of the

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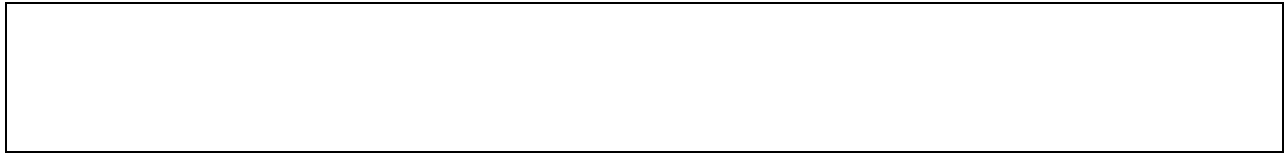
runway object free area (OFA), in this case 400 feet either side of the centerline. The *Controlled Activity Area* is the portion of the surface to the sides of the central portion of the RPZ.

While it is desirable to clear all objects from the RPZ, uses such as agricultural operations and golf courses are normally acceptable provided the land use does not attract birds. Prohibited uses include residences and places of public assembly such as churches, schools, hospitals and shopping centers. The FAA *recommends* that the airport control the land use within the RPZ. In those instances where it is not practical for the airport to acquire and control the land uses within the entire RPZ, the RPZ land use standards have *recommendation status* for those portions of the surface that is not under the airport's control.

The RPZ on the west end (Runway 6 end) of the runway currently meets the FAA land use standard. Although only a portion of this RPZ is controlled by the airport administration the entire property is owned by the Commonwealth of Kentucky. That portion of the property that is not a part of the airport (approximately 4.1 acres) is managed by the KY Department of Fish and Wildlife Resources.

The RPZ on the east end of the runway (Runway 24 end) is also only partially owned and controlled by the airport administration. The remainder of this RPZ, 19.03 acres, consists of the Right-of-Way for U.S. Highway 127 (0.68 acres) and the Juniper Hills Park and Golf Course (18.35 acres) which is part of the City of Frankfort Parks and Recreation Department. The Parks Department owns and maintains seven buildings totaling approximately 10,622 square feet of combined space, within the *Central Portion* of the RPZ, approximately 1,060 feet from the existing runway end. The buildings provide office space, storage, and vehicle maintenance and storage necessary to support golf course maintenance and are not a portion of the public access area of the park.

# Environmental Inventory



*Chapter Three*

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### 3. Environmental Inventory

An airport's impact on its neighbors and the immediate environment is a major concern in the airport planning and development process. The purpose of this section is to provide an inventory of environmental items that should be considered throughout the planning process. As part of this process, these areas will be examined as specified in the FAA's Environmental Handbook, Order 5050.4A. Because this is a preliminary review of potential issues, no coordination was made with the Kentucky environmental clearinghouse. The environmental categories are examined for the potential to allow, or to interfere with, development of the Capital City Airport.

Areas of environmental concern that were examined as a part of the environmental inventory include:

- Noise Impacts
- Land Use
- Air Quality
- Water Quality
- Section 4(f) and 6(f) Lands
- Cultural Resources
- Endangered/Threatened Species and Biotic Communities
- Wetlands
- Floodplains
- Coastal Barriers
- Prime and Important Farmland
- Solid/Hazardous Waste
- Wild and Scenic Rivers
- Environmental Justice
- Alternative Energy Sources

#### 3.1 Aircraft Noise

Aircraft noise is recognized as potentially the most critical environmental parameter in airport planning and can become one of the most controversial issues in community acceptance and approval of airport development projects.

The extent of aircraft noise generated by airport operations is a function of variables such as the physical configuration of the airfield, the level of aircraft operations and the type of aircraft that use the airport. According to FAA Order 5050.5A, *Airport Environmental Handbook*, "No noise analysis is needed for airports involving Design Group I and II airplanes on utility or transport type airports whose forecast operations in the period do not exceed 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations." The rationale for this policy is that the cumulative effect of this level of operations does not produce a 60 DNL noise contour beyond the limits of the runway.

Annual operations at FFT currently are less than 45,000 with military helicopters accounting for approximately just under 9 percent (4,000) of those operations. In the February 2001 issue of the U.S. Army Center for Health Promotion and Preventive Medicine, a report titled, *Installation Environmental Noise Management Plan*, explained the noise analysis conducted for a number of training sites operated by the KYNG. Noise contours



were developed to depict the operating environment at the BNGC. They used NOISEMAP, a computer program that generates noise contours from annual operations and depicts an average annual noise level. The findings indicated that all noise contours measuring DNL 65 dB or greater at the Capital City Airport occurred within the airfield. A portion of this report is included in Appendix A. A copy of the entire report can be obtained by contacting the Directorate of Environmental Health Engineering, 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland, 21010-5403

Using FAA forecast data and community growth projections it is apparent that the airport will not exceed the threshold of aircraft operations, or of turbojet operations, requiring a noise evaluation. Further it is not anticipated that the level of “non-adjusted” turbojet aircraft will exceed 700 annual operations within the 20 year planning period. The majority of the turbojet operations are anticipated to be from the Cessna Citation 500, Bombardier Learjet 35 and the Hawker 800 XP class of aircraft. These aircraft, and others with similar noise characteristics, are not noisier than many propeller driven aircraft.

### **3.2 Land Use**

The Frankfort/Franklin County Comprehensive Plan Update (January 2001), labels the area surrounding the airport as Public/Semi-Public use and states: “...the land in these areas should be public uses including, but not limited to schools, government buildings, churches, etc. Residential uses and non residential uses should be discouraged in these areas.” Sheet 12 of the ALP, found in Appendix A, shows the County/City Land Use Plan.

There are two residential neighborhoods adjacent to the airport boundary. The residential neighborhood along Hawkeegan Drive consists of forty (40) homes. This neighborhood is south and west of the existing runway end, approximately 750 feet from the runway centerline. The sixty-nine (69) home community northeast of the airport, and west of Highway 127, consists of Ashland, Juniper and Exmoor Drives. This neighborhood, which lies due east of the BNGC, is approximately 800 feet north of the runway centerline. Neither of these close-in neighborhoods is under the typical operating corridors for aircraft using the runway. Along the extended centerline west of the runway residential land uses begin to appear approximately 6,000 feet from the edge of the existing runway. East of the runway the nearest residential property is 5,038 feet out along the extended runway centerline.

Public buildings in the area consist of three (3) schools, nine (9) churches and numerous commercial and state offices located less than one (1) nautical mile from the airport site. Most of these facilities are located along State Highway 60. Although these facilities are within one (1) mile of the airport they are not near the extended centerline and are therefore not within the final approach or the departure pattern for either runway end.

West of the airport, the Kentucky Department of Fish and Wildlife (KDF&W) operates the Salato Wildlife Center. This facility campus includes a wildlife education center and the offices of the Department. The CCAD currently has a ‘Clearing Agreement’ for the control of trees affecting the approach to Runway 6.

### **3.3 Air Quality**

According to paragraph 47e(5) of the Federal Aviation Administration's Environmental Handbook (FAA Advisory Circular 5050.4A), no air quality analysis is needed if the airport generates less than 180,000 general aviation operations annually or less than 1.3 million passengers per year. One general aviation operation is one

landing or one takeoff of an aircraft of any size. At the Capital City Airport, operations are less than 180,000 landings and takeoffs and do not warrant the need for an air quality analysis. Air Carrier operations are not expected to occur at the airport within the planning period, therefore the threshold of 1.3 million annual passengers will not be approached. In addition the Franklin County area is currently classified by EPA as attainment for air quality standards. Franklin County is not listed on the EPA Non-attainment list dated September 16, 2010. No additional Air Quality analysis is necessary at this time.

### **3.4 Water Quality**

The Capital City Airport is part of the Kentucky River Watershed, drained by an unnamed tributary north of the airport. There are no wild or scenic rivers, outstanding resource waters, cold-water aquatic habitat waters, or exceptional waters in the project area. The Kentucky Department of Environmental (DEP), Division of Water is the agency that has been given the responsibility to manage, protect and enhance the quality of the water resources through voluntary, regulatory and educational programs.

The City of Frankfort has initiated a comprehensive plan to address storm water quality issues. Drainage from the airport is part of the cities storm water management plan. It is recommended that the development of additional landside facilities such as additional hangar and aircraft parking aprons, fuel delivery systems, aircraft and vehicle maintenance areas, aircraft wash facilities, and alterations of drainage patterns be coordinated with the City of Frankfort and include measures to limit the introduction of contaminants into the storm water.

### **3.5 Section 4(F) and 6(F) Lands**

Section 4(f) of the Department of Transportation Act of 1967 states that approval will not be given from proposed Federal actions requiring use of publicly-owned land from a public park, recreation area, wildlife or waterfowl refuge, or any land from an historical site unless:

- There is no feasible and prudent alternative to the use of such land; and
- Such a program includes all possible planning to minimize harm to such areas.

Section 6(f) of the Land and Water Conservation Fund Act (L&WCFA) states that L&WCFA supported recreational facilities or resources cannot be converted to non-recreational uses unless the Director of the National Park Service approves that conversion.

As stated in the section describing the RPZ, much of the property both east and west of the runway falls within the definition of Section 4(f) and 6(f) Land. These properties, managed by the Department of Fish and Wildlife Resources (west) and the City of Frankfort Parks and Recreation Department, have been developed and are maintained in a manner that is consistent and compatible with the current operation of the airport.

### **3.6 Cultural Resources**

Cultural Resources includes those areas of historical, architectural, archeological, and culture that might be affected by expansion. These areas can include centers of Native American culture, historical culture centers and areas of archeological significance. The airport property has been the subject of two archaeological investigations.

The first investigation, conducted in 1988, was a reconnaissance of 842.43 acres of property. The report concluded that "...no further cultural resources investigations are recommended for this parcel."

The second report is a *Geophysical Survey of the Baxter Cemetery* conducted in December of 2004. The Baxter Cemetery was identified on old site maps but the status of the site and exact location were unknown. The field investigation revealed no evidence of the presence of graves in the vicinity of the area identified as the Baxter Cemetery. During 2006 the identified cemetery location was affected by an airport project to grade the Runway Safety Area. The contractor, project engineer and state investigators monitored the area during excavation to ensure that no grave sites, and no evidence of the presence of gravesites, were uncovered during construction.

### **3.7 Endangered/Threatened Species and Biotic Communities**

During the conduct of the Environmental Assessment coordination was made with the United States Department of the Interior, Fish and Wildlife Service concerning the presence of rare, threatened, and endangered species in Franklin County. The U.S. Fish and Wildlife Service indicated a concern for the Indiana bat. The agency stated:

"according to our records, summer roost habitat for the endangered Indiana Bat (*Myotis sodalis*) may exist within the proposed project site. Based on this information, we believe that: 1) forested areas in the vicinity of and on the project areas may provide potentially suitable summer roosting and forage habitat for the Indiana bat and 2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project areas may provide potentially suitable winter hibernacula habitat for the Indiana bat."

The airport property does not have caves, rockshelters, or underground mines that constitute typical habitat for the Indiana Bat. The forested area west of the runway will periodically require removal or topping of select trees in order to maintain a clear, unobstructed approach to Runway 6. It is recommended that this activity be conducted during the winter months in order to ensure that summer roosts are not disturbed.

### **3.8 Wetlands**

According to wetland maps and correspondence provided by the U.S. Fish and Wildlife Service, wetlands are not expected to occur on and around the airport property. A field review has indicated no visual evidence that wetland conditions exist within the airport boundary and in the immediate vicinity of the airport. If any future construction is proposed an additional wetland investigation will be required.

### **3.9 Floodplains**

According to the Franklin County Flood Insurance Rate Maps and the Frankfort/Franklin County Comprehensive Plan the existing airport is not located in a 100-year floodplain.

### **3.10 Coastal Zone Management**

The Capital City Airport has no direct or significant impact on coastal waters or barriers. This category will not be an impediment to future development of the airport.

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### **3.11 Prime and Unique Farmland**

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, etc., without intolerable soil erosion and is not already committed to urban development or water storage. The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) confirmed that a portion of the project area consists of Lowell silt loam with a 2-6% slope. This soil is identified as a prime farmland soil. The other soils in the project site are not identified as prime, state important or hydric soils. Therefore these soils do not contain the soil types that meet the criteria for prime farmland as defined by the Farmland Policy Protection Act. Any development of this land will require coordination with USDA, NRCS and the Kentucky Department for Natural Resources including the completion of the AD-1006 Form and/or the Farmland Conversion Impact Rating Form. The Prime and Unique Farmland environmental category will not be an impediment to future airport development.

### **3.12 Solid/Hazardous Waste**

One product of the operation of any public facility is the generation of solid waste materials such as metal, paper, plastic, wood and food wastes produced by human activity. Solid waste is generated as a by-product of several airport activities, including aircraft, FBO and construction operations. Waste from aircraft operations generally consists of paper refuse. Airport FBO operations produce solid wastes from maintenance and clerical operations. Packing materials and debris are the solid waste products from construction associated with the airport development.

Solid waste must be disposed of at a permitted facility. Estimates of the annual quantity of solid waste generated at the airport show that it would be a minor contributor to the solid waste generated annually in Franklin County. These estimates were based on solid waste generation rates for other airports similar in size. The generation of Solid and Hazardous Waste materials will not impede future airport development.

### **3.13 Wild and Scenic Rivers**

Contact was made previously with the Kentucky Division of Water concerning wild and scenic rivers. Response from this agency indicated that there are not any wild rivers, outstanding resource waters, cold-water aquatic habitat waters, or exceptional waters in the project area. This environmental category

### **3.14 Environmental Justice**

Environmental justice is the process of identifying those areas where proposed actions may have a disproportionately high and adverse human health or environmental effect on minority and/or low-income communities. The redevelopment of the airport is consistent with community development and zoning. In addition, indirect impact from noise has been evaluated and there appears to be no possibility of affecting surrounding residences or communities. There are no predominately minority and/or low income residential neighborhoods within the airport study area. Therefore, environmental justice is not considered a factor in the development of the Capital City Airport.

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### **3.15 Alternative Energy Sources**

Alternative sources of energy do not currently exist to provide sustainable energy to existing airport facilities. Sustainable energy refers to environmentally friendly energy generated from sources such as hydro, solar, biomass or wind. The airport has the potential to utilize solar energy as a future source.

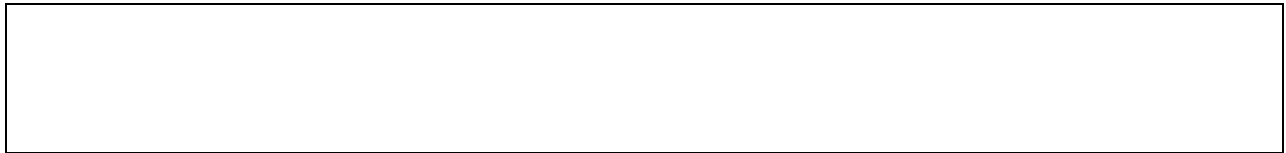
Solar power is an alternative source of energy that can be utilized on airport property to produce environmentally friendly energy. Current technology exists that can provide the airport with green energy capable of powering part of the airport's demand for energy. Installation of solar panels on existing building surfaces could be evaluated.

Wind energy was also investigated at the airport site location to see if it is feasible and economical to install wind generators. A study done by AWS Truewind, LLC (2008) analyzed the state of Kentucky for wind resources. The city of Frankfort lies in a generally low wind speed area, falling in the lower 20<sup>th</sup> percentile at the 50 meter height, and the lower 38<sup>th</sup> percentile at the 100 meter height, concerning potential for installation of turbines. These elevations are not compatible with aircraft operations. Because surface winds are not considered to be high enough to sustain current wind turbine technologies no further investigation is warranted at this time.

### **3.16 Cumulative Impacts**

According to the Council on Environmental Quality (CEQ) 1508.7, "Cumulative Impact" is the impact on the environment that results from the incremental impacts an action when added to past, present and reasonably foreseeable future actions. These impacts can result from individually minor but collectively significant actions taking place over a period of time. CEQ 1508.25 defines three types of actions to be considered in determining the scope of an EIS: connected actions; cumulative actions and similar actions. These actions can be considered in the same impact statement, however when considered together, the projects may exceed the threshold values.

# Aviation Demand Forecasts



*Chapter Four*

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## 4. Aviation Demand Forecasts

Forecasts of aviation demand are a key element in future planning to determine requirements for aviation facilities. Demand forecasts, based upon the desires and needs of the service area, provide a basis for determining the type, size, and timing of aviation facility development and a platform upon which this master planning study will be based. Consequently, these forecasts influence virtually all phases of the planning process.

The term “general aviation” is used to define all aspects of aviation activity except commercial air carriers and the military. General aviation is an important part of the aviation industry and of the overall national economy. Although the recent economic downturn caused a large portion of general aviation to reduce flying, with a rebound in the economy, a strong recovery is possible and anticipated.

### 4.1 Purpose

The purpose of a forecast for FFT is to provide a conservative (maximum) number of foreseeable based aircraft and operations and to indicate the relative timing for airport investments. The goal is to forecast the different elements of aviation demand, compare that demand over time with airport facilities and to identify the time when new or expanded facilities will be needed. When this basic concept is included into the master planning process, the forecasts can be updated to reflect the appropriate time for phasing capital investments. The aviation demand forecasts will serve three purposes in the development of this master plan. Specifically, they provide the basis for:

- Determining the necessary capacity of the airfield, airside and landside facility requirements, and the ground access system serving the airport.
- Evaluation of potential environmental effects of the airport's operation such as noise and air pollution.
- Evaluating the financial feasibility of alternative airport development proposals.

Low, medium and high range forecast scenarios were developed for purposes of better understanding any changing need in facilities requirements over the 20-plus year master plan horizon.

### 4.2 Based Aircraft

This Master Plan will use a conservative approach to defining facility requirements. That is, the use of a forecast that anticipates the greatest increase in based aircraft within the planning period (years 2010-2030). This will allow the airport management team to anticipate facility needs and to develop a comprehensive plan to locate and finance facility development. Identification of a facility such as a hangar or additional apron on an Airport Layout Plan does not require that facility to be constructed. Instead, the early identification of infrastructure needs will allow the airport management team to predetermine the location of all anticipated facilities. With this comprehensive plan in place the airport can proceed with a systematic approach to development.

At FFT the based aircraft fall into four categories: general aviation private and corporate owned; aircraft owned by various civilian agencies of the Commonwealth; and, fixed wing aircraft and helicopters operated by the KYNG. The military helicopters are and will continue to be based on the north side of the airport at the BNGC. These aircraft use the runway but typically do not use the civilian facilities on the south side and have therefore not been included in the based aircraft count.

At the present time the airport serves 81 based general aviation aircraft: 62 private/corporate owned; fifteen (15) owned and operated by various agencies of the Commonwealth; and, 4 airplanes operated by the KYNG. The civilian government fleet consists of 8 helicopters and 7 fixed wing aircraft. This number of aircraft operated by the agencies of Kentucky government is not expected to change although the aircraft fleet mix may change as existing aircraft are replaced. The four airplanes (3 C-23s and 1 C-12) operated by the KYNG, and based on the general aviation side of the airport, are included in the existing based aircraft number but will not be included in the 2020 and beyond forecasts as it is anticipated that these aircraft will move to the Boone Center as additional support facilities are constructed. The remaining 62 aircraft on the airport are private/corporate owned and operated. **Table 4.1** provides a history of the number of private based aircraft. This forecast effort will use 62 as the current number of general aviation aircraft for forecasting future based aircraft and will add 15 general aviation aircraft for purposes of forecasting operations.

Federal Aviation Administration general aviation aircraft fleet forecasts anticipates that nationwide the number of single and multi-engine, piston powered aircraft will grow at a rate below 0.2 percent per year through 2022. The turbine powered fleet is expected to increase at an average annual rate of 3.7 percent over the same period (1.2 percent per year for turboprop aircraft and 5.4 percent for turbojet aircraft). For purposes of forecasting the number of based aircraft it is assumed that only the number of private/corporate owned aircraft will increase at this rate. The number of government agency aircraft based at FFT is not expected to increase during the planning period. Further it is assumed that the number of based aircraft will increase at a rate above the national average. This assumption is made based upon two factors: the population growth of Kentucky and the number of based aircraft and operations in the southeast region are both increasing at a rate above the national average. Therefore a conservative, for planning purposes, growth rate of 0.4 percent per year has been used. The results of this forecast method are reflected in **Table 4.1** in the column identified as FAA-GA.

Another source of forecast data is the *Terminal Area Forecast* issued from the FAA Airport Planning Office in 2005. This document predicts that the Capital City Airport will have 87 based aircraft in 2030. This number, less the fifteen government owned aircraft, reflects an increase of ten during the twenty year planning period.

Use of a conservative (higher) forecast number leads to planning decisions well in advance of needed infrastructure resulting in a cohesive and functional terminal area. It is important to point out that the decision to add infrastructure such as hangar space and parking apron is based upon a short-term (5 year or current) demand and is not dependant on longer term forecasting. The advantage to the airport administration is that airport layout and placement decisions are made well in advance of needed facilities. **Table 4.1** presents the number of based aircraft resulting from each of these forecasting methods.



**Table 4.1 Number of Based Aircraft**

<i>Historic Based Aircraft – Private/Corporate-Owned</i>			
<i>1975</i>		37	
<i>1980</i>		45	
<i>1990</i>		36	
<i>2005</i>		50	
<i>Existing (2010)</i>		62	
<i>Forecast Based Aircraft</i>			
<i>Year</i>	<i>FAA – GA*</i>	<i>TAF**</i>	<i>Master Plan - Total <sup>1</sup></i>
<i>2015</i>	63	60	82
<i>2020</i>	65	63	80
<i>2025</i>	66	67	82
<i>2030</i>	67	70	85

\*Source: FAA: Based aircraft numbers depict a standard rate of growth of 0.4 aircraft per year.

\*\* FAA-TAF forecast 2008.

<sup>1</sup> Master Plan Total equals the higher forecast growth of private aircraft plus the government owned aircraft (plus 19 aircraft 2015; plus 15 aircraft years 2020, 2025 and 2030).

#### **4.2.1 Based Military Aircraft**

Although the total number of aircraft operated by the civilian agencies of Kentucky government is not expected to change, the KYNG anticipates that an expansion of its mission and a consolidation of facilities will result in growth in the based military helicopter fleet. North of the runway the KYNG currently has 19 helicopters. These aircraft, based at the National Guard’s Boone Center, include 13 UH-60 *Blackhawks*, a twin-engine turbine helicopter, and 6 single turbine engine OH-58 *Kiowa* helicopters. These aircraft primarily operate from a designated helipad located on the north side of the Boone Center utilizing the runway periodically for approach and departure training and proficiency check flights. Communication with the KYNG indicates that plans for the based military helicopter fleet include the addition of 10 UH-60 *Blackhawks*; 6 UH-72s, *Dakota* twin-engine, light utility; and, 6 CH-47, *Chinook*, twin-engine heavy-lift helicopters. Because these aircraft will continue to be based at the BNGC and will not demand services and facilities from the CCAD, this aircraft count will only be used to determine runway utilization/capacity. No change in the KYNG fixed wing fleet is anticipated throughout the planning period and, as indicated previously, it is anticipated that these 4 aircraft will be relocated to the BNGC between 2015 and 2020. For capacity evaluation it is assumed that increasing the KYNG fleet from 23 aircraft to 45 aircraft will result in a doubling of annual military operations from 4,000 to 8,000.

#### **4.2.2 Aircraft Operations**

An aircraft operation is defined as a takeoff or a landing. Typically, for general aviation airports, operations numbers are derived for both local and itinerant operations. A review of the annual operations data obtained from the current FAA 5010 form and from a previous Master Plan document indicates that the number of general aviation and military operations has remained relatively constant. FAA’s 2009 TAF report indicates an annual operations total of 34,200 forecast throughout the planning period.

The second method was to use the previously estimated OPBA multiplied by the total number of based aircraft and add the number of military operations provided by the KYNG. This process reveals an anticipated operations number of multiplied by the current OPBA of 483 results in a twenty year forecast of 49,055 aircraft operations.

**Table 4.2 Annual Aircraft Operations**

<i>Year</i>	<b>Based Civil Aircraft</b>	<b>Operations per Based Aircraft</b>	<b>Total Civil Operations</b>	<b>Military Operations</b>	<b>Total Operations</b>
<i>Existing</i>	77	483	37,191	4,000	41,191
<i>2015</i>	78	483	37,674	4,000	41,674
<i>2020</i>	80	483	38,640	6,000	44,640
<i>2025</i>	82	483	39,606	8,000	47,606
<i>2030</i>	85	483	41,055	8,000	49,055

Within this total there are four types of operations that are considered in the planning process. These are termed *local*, *based*, *itinerant*, and *transient*. The terms are defined as follows:

*Local operations* are defined as aircraft departures or arrivals for the purpose of training, pilot currency or pleasure flying within the immediate area of the local airport. These operations typically consist of touch-and-go operations, practice instrument approaches, flights to and within the local practice areas and pleasure flights that originate and terminate at the airport. **Consistent with the FAA-TAF, the assumption for this forecast is that 32 percent of the total operations are local.**

*Based aircraft operations* are defined as the total operations made by aircraft based at FFT on a permanent, seasonal or long-term basis, with no attempt to classify the operations purpose.

*Itinerant operations* are defined as aircraft arrivals and departures that originate or terminate at another airport. These types of operations are closely tied to local demographic indicators, such as local industry, business or government use of aircraft as well as for recreational purposes. Itinerant operations may be conducted by based or transient aircraft. **The assumption for this forecast, consistent with FAA data, is that 68 percent of the FFT operations are itinerant.**

*Transient operations* are those operations made by aircraft other than those based at the airport. These operations typically consist of business or pleasure flights originating at other airports with termination or a stopover at FFT, **are estimated to be 60 percent of itinerant operations.**

The terms transient and itinerant are often erroneously used interchangeably. This study will use the *itinerant* and *local* operations total to define runway demand and the *transient* aircraft operations, estimated to be 60 percent of *itinerant* operations, to define transient facility requirements. In addition, the planning process requires the determination of *Peak Month*, *Peak Day*, and *Peak Hour* in order to quantify runway and facility demand.

*Peak Month* activity at FFT was determined using the recorded percent of fuel sales. Fuel sales totals for 2008, 2009 and year-to-date 2010 were evaluated to identify the percent of fuel sold during the busiest month. Fuel sales for December 2010 were projected to determine annual fuel sales for the year. During this three year period fuel sales during the busiest month (July) represented 12.6 percent of the total gallons of fuel sold.

*Average Day* operations are determined to be 1/31st of the peak month.

*Peak Hour* operations are determined to be ten (10) percent of the average day.

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**Analysis of these assumptions with the 2030 forecast reveals the following projected activity:**

- **Based Aircraft: Civilian = 85; Military = 45<sup>1</sup>**
- **Annual Total Operations = 49,055; Military = 8,000 and Civilian = 39,123**
- **Local Operations = 15,698**
- **Itinerant Operations = 33,357**
- **Transient Operations = 20,014**
- **Peak Month Operations (12.6%): Total = 6,181; Itinerant Ops. = 4,203; Transient = 2,522**
- **Peak Month/Average Day Operations: Total Operations = 200 Transient = 82**
- **Peak Month/Average Day/Peak Hour Operations (10.0%): Total Operations = 20 Transient = 8**

<sup>1</sup> Based Military Aircraft considered for determining Runway Operations only.

# Airport Facility Requirements



*Chapter Five*

## 5. Airport Facility Requirements

This chapter of Capital City Airport Master Plan presents the requirements for the landside and airside facilities to be developed or maintained. These facility recommendations are based upon meeting the forecasted demand presented in Chapter 4 and conversations with the airport management team. The facility requirements identified in this chapter will help determine future airport projects and solidify Capital City Airport as a premier general aviation airport. The methodologies employed to develop the facility requirements and resulting recommendations are contained in the following sections.

### 5.1 Airport Reference Code

The selection of the appropriate FAA design criteria to be used for future development of the Capital City Airport is based primarily upon the critical or design aircraft that will be utilizing the airport. The airport's design aircraft is the most demanding aircraft type that is anticipated to account for at least 500 operations per year at the facility.

The current Airport Reference Code for the facility is C-II. This reference code reflects the aircraft currently using and anticipated to use the facility. This category represents aircraft with approach speeds between 121 and 141 knots and with wingspans ranging from 49 to 78 feet. **Table 5.1** presents aircraft characteristics that are critical to the planning process. The aircraft listed in this table are typical of the general aviation aircraft that are expected to operate at the Capital City Airport. **Based upon the aircraft anticipated to use FFT the ARC will continue to be C-II.**

**Table 5.1 Aircraft Types Using Capital City**

<i>Aircraft</i>	<i>Wingspan</i>	<i>Approach Speed</i>	<i>Airport Reference Code</i>	<i>Maximum Takeoff Weight</i>
<i>Beech 58 (Baron)</i>	37' 8"	96 knots	B-I	5,300 lbs
<i>Beech King Air B200 (C-12')</i>	50' 2"	103 knots	B-II	12,500 lbs
<i>Shorts 360 ( C-23 Sherpa<sup>1</sup>)</i>	74' 8"	104 knots	B-II	26,453 lbs
<i>Cessna Citation II</i>	53' 6"	108 knots	B-II	13,300 lbs
<i>Dassault Falcon 20</i>	53' 5"	107 Knots	B-II	28,660 lbs
<i>Gates Learjet 35</i>	39' 5"	143 knots	D-I	18,300 lbs
<i>Grumman Gulfstream II</i>	68' 10"	141 knots	D-II	65,300 lbs
<i>Grumman Gulfstream III*</i>	77' 10"	136 knots	C-II	68,700 lbs
<i>Hawker 800 XP</i>	51' 4"	130 knots	C-II	25,500 lbs
<i>Eclipse</i>	37' 4"	87 knots	A-I	5,640 lbs
<i>Cessna Mustang</i>	42' 3"	91 knots	B-I	8,730 lbs

<sup>1</sup> Military designation of this aircraft

\* Design standard (critical) aircraft

### 5.2 Airside Design Standards

The most important factor determining the potential size, shape, and orientation of the airfield is the determination of dimensions and orientation of all runways and taxiways. In addition, the location of all support facilities such

as T-hangars and terminal area facilities is based primarily on the location of the airport's runways and taxiways. Therefore, the controlling factors determining the configuration of runways and taxiways must be closely examined. The following sections identify and discuss the airside and landside facilities at FFT. **Table 5.2** depicts the required design and dimensional standards for a C-II airport.

**Table 5.2 Airport Design and Dimensional Standards**

<i>Aircraft Approach Category</i>	<b>C</b>
<i>Airplane Design Group</i>	<b>II</b>
<i>Runway centerline to parallel taxiway/taxilane centerline</i>	300 feet
<i>Runway centerline to edge of aircraft parking</i>	400 feet
<i>Runway width</i>	100 feet
<i>Runway shoulder width</i>	10 feet
<i>Runway Safety Area width</i>	400 feet*
<i>Runway Safety Area length beyond each runway end</i>	1,000 feet
<i>Runway Object Free Area width</i>	800 feet
<i>Runway Object Free Area length beyond each runway end</i>	1,000 feet

\* Per FAA AC 150/5300-13, Table 3.2, footnote 4.

### 5.2.1 Runway Length

The Capital City Airport currently has one 5,905 x 100 foot runway (6/24) supported by a full length parallel taxiway. At the present time this runway is functioning with a *declared distance* of 5,505 feet for Runway 6 operations (east) to meet the FAA’s Runway Safety Area design standard. Runway length requirements are calculated through the comparison of specific data inputs to FAA runway design standards. The factors used to determine these dimensions are: critical aircraft type, takeoff weight and stage lengths, mean maximum temperature of the hottest month, runway gradient and airport elevation. This information was applied to the FAA computer model identified in Advisory Circular 150/5300-13. Based on this program, a 5,470-foot runway would be the minimum length for the Capital City Airport. This length would accommodate 75 percent of the large (over 12,500 pounds) general aviation aircraft at 60 percent their certified useful load and would be sufficient to accommodate all aircraft weighting less than 12,500 pounds (small).

**Table 5.3 Runway Length Calculations**

<b>Runway Length Calculations</b>	
Airport Elevation:	812 ft.
Mean Maximum Temperature	87 degrees
Maximum difference in runway centerline elevation	20 ft.
Length of haul for airplanes of more than 60,000 lbs.	1,000 miles
<i>Wet and slippery runways</i>	
Small airplanes with approach speeds of less than 30 knots	320 ft.
Small airplanes with approach speeds of less than 50 knots	860 ft.
<i>Small airplanes with less than 10 passenger seats</i>	
75% of these small airplanes	2,750 ft.
95% of these small airplanes	3,280 ft.
100% of these small airplanes	3,900 ft.
Small airplanes with 10 or more passenger seats	4,370 ft.
<i>Large airplanes of 60,000 lbs. or less</i>	
<b>75% of these large airplanes at 60% useful load</b>	<b>5,470 ft.</b>
75% of these large airplanes at 90% useful load	7,700 ft.
100% of these large airplanes at 60% useful load	5,720 ft.
100% of these large airplanes at 90% useful load	8,570 ft.
Airplanes of more than 60,000 pounds	6,290 ft.

Source: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design

In addition, the appropriate FAA runway length tables contained in FAA AC 150/5325-4B *Runway Length Requirements for Airport Design* were evaluated. The result of this process is summarized below with the FAA steps identified in Blue and the results in Black:

- Identify the list of critical design airplanes that will make regular use of the runway for an established planning period and identify the most demanding family grouping of airplanes that meet the *substantial use criteria*: The most demanding family grouping of airplanes responsible for 500 or more operations are the Category B and C airplanes with a Maximum Certificated Takeoff Weight (MTOW) of more than 12,500 pounds but less than 60,000 pounds. The majority of these aircraft fall within the FAA grouping of aircraft that *make up 75% of the Fleet*. During 2010 the grouping of aircraft that *make up 100 percent of the fleet* accounted for only 34 operations. Therefore the runway length calculation graphs for 75 percent of the fleet at 60 and 90 percent useful load were used.
- Select the recommended runway length using the appropriate chapter and figures from the AC and using the applicable airport characteristics: Selected grouping of airplanes dictated the use of Chapter 3, Figures 3-1 and 3-2. Using the following airport characteristics:
  - Airport Elevation . . . . .812 feet
  - Mean Maximum Temperature – Hottest Month . . . . . 89 degrees Fahrenheit
  - Runway Elevation Change . . . . . 27 feet
  - Wet Runways

- **Apply the necessary adjustments to the obtained runway length to determine a final runway length:** A 270 foot adjustment (10 feet per foot) has been made to account for the 27 foot difference in the runway end elevations. Resulting runway lengths are as follows:
  - 75% fleet @ 60% useful load                      4,945 feet
  - 75% fleet @ 90% useful load                      6,870 feet

**Consultation with the existing and potential operators and with the Kentucky Department of Aviation concluded that a runway length of 5,505 feet will be sufficient to accommodate future airfield requirements.**

### **5.2.2 Runway Orientation and Capacity**

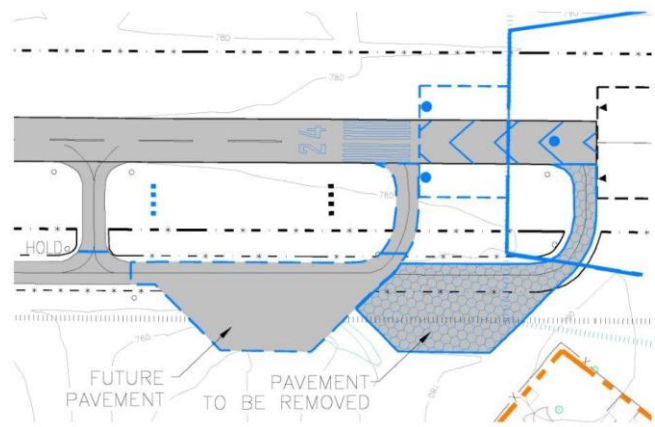
The preferred orientation of a runway is a function of wind velocity and direction. Generally, the primary runway at any airport should be oriented as close as practical in the direction of the prevailing wind. The Federal Aviation Administration desires that all general aviation runway systems provide at least 95% wind coverage for aircraft within the Airport Reference Code. If a single runway does not provide at least 95% wind coverage for the critical aircraft the FAA typically recommends the construction of a second, crosswind runway. The runway at FFT, with a bearing of 63 degrees, 53 minutes, 28 seconds, provides 99.50% wind coverage for aircraft with a 16 knot (18.4 mph) crosswind component. In addition, it is recognized that many of the airport's operations are by smaller single-engine aircraft that are within the 13 knot crosswind category. Runway 6/24 provides 97.5% wind coverage for these aircraft.

A review of FAA AC 150/5060-5, *Airport Capacity and Delay*, reveals that the estimated Annual Service Volume (total annual capacity) for a single runway configuration with the FFT fleet mix (meet index) is 205,000. FAA recommends the use of *Table 2-2, page 7* and *figure 2-1, page 8*, from this advisory circular for long range planning. Assumptions used in the review were: Aircraft Mix Index of 0-20; Percent Touch and Goes 0-50%; and, 50% arrivals. The hourly capacity for a single runway with this mix of aircraft is assumed to be 63 under visual flight rule conditions (VFR) and 56 under instrument flight rules (IFR). A comparison of the runway capacity with the forecast operations reveals that demand will remain below 30 percent of capacity throughout the planning period. **Therefore an additional runway for wind coverage and/or capacity is not anticipated in this planning period.**



### 5.2.3 Taxiways

The configuration of taxiways along a runway is an important factor in the overall airport layout plan. Exit taxiways and partial or full parallel taxiways serve as the sole connectors between an airport's landside and airside facilities. The strategic location of exit taxiways determines the capacity of a runway by reducing the amount of time each operation occupies the runway. A properly placed taxiway can also reduce fuel usage for aircraft owners and operators by reducing the ground taxi distance to enter or exit the runway.



Currently, a full-length parallel taxiway serves runway 6/24. The taxiway meets FAA design standards of a C-II airport with a width of 50 feet and a runway centerline to taxiway centerline separation of 300 feet. Six connector taxiways provide sufficient flexibility to aircraft operators to keep the runway occupancy time to a minimum. **It is recommended that a new connector taxiway serving runway end 24, as well as a new engine run-up and compass calibration pad, be constructed to accommodate the relocated threshold. No additional taxiway development to serve the runway is recommended.**

### 5.2.4 Runway and Taxiway Pavement Strength

The determination of required pavement strength is a function of the design aircraft using the facility and the airport's need to serve the community. The current pavement strength for the airport is listed in FAA documents as 55,000 pounds for dual wheel aircraft. It has been determined that the current pavement strength is sufficient to serve the airport and the community. **Current weight bearing capabilities are adequate to meet future demand.**

### 5.2.5 Runway Safety Area

The Runway Safety Area (RSA) is an area around a runway that is cleared, graded and maintained to be capable of supporting the occasional passage of aircraft. The FAA considers the maintenance of the designated Runway Safety Area as a point of emphasis when considering airport safety standards and grant applications. Design standards require that an airport serving Approach Category 'C' aircraft provide a RSA that is not less than 400 feet wide and extends 1,000 feet beyond the end of the runway. Further, the ground within the RSA must not exceed a maximum grade and must be capable of supporting emergency vehicles.

At the present time the Runway end 24 RSA does not meet the minimum design standards as it extends approximately 400 feet beyond the right-of-way for Highway 127. As previously stated, the CCAD has implemented declared distances for operations on Runway 6 in order to comply with the FAA standard until the Runway end 24 threshold can be relocated. In order to minimize disruption of service to the general aviation community, this relocation will take place to coincide with the publication of a new non-precision approach. **The KDA will initiate a project to relocate the threshold for Runway 24 approximately 400 feet to the west to provide a full length RSA without the use of declared distances for Runway 6 (east) operations.**

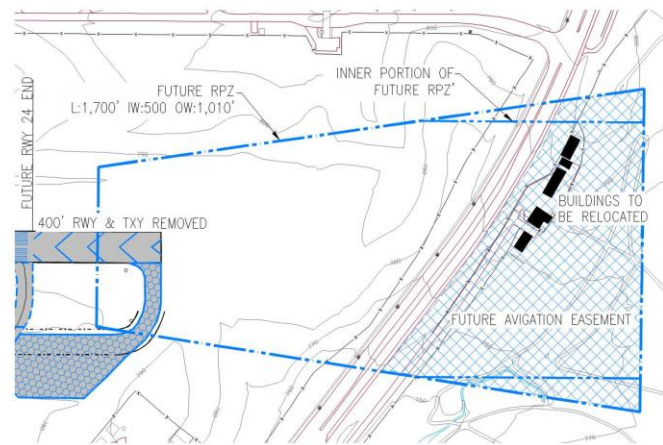
### 5.2.6 Runway Object Free Area

The ROFA is centered on the runway centerline. The standards for this surface require the clearing of objects that penetrate the elevation of the corresponding safety area edge. Objects that are not necessary for navigation and that penetrate the safety area edge elevation are to be removed from the area within this surface. It is acceptable to taxi aircraft within the ROFA. In the existing condition the vehicles using U.S. Highway 127 penetrate the ROFA. **This deviation from FAA design standards will be resolved with the relocation of the Runway 24 threshold previously described.**

Further, the ground survey conducted in support of this master plan effort has identified numerous areas within the ROFA where the ground elevation exceeds the RSA edge elevation. **These areas must remain clear of objects in order to comply with the design standard.**

### 5.2.7 Runway Protection Zone

The RPZ is a trapezoid shaped surface centered along the extended runway centerline. The RPZ surface begins 200 feet beyond the end of the runway pavement. The dimensions of the RPZ at both ends of Runway 6-24 are defined by *C Category* aircraft weighting more than 12,500 pounds (large aircraft) and, *Non-precision approaches having not lower than one mile visibility minimums*. The RPZs have a width of 500 feet at the inner end; a length of 1,700 feet; and, an outer width of 1,010 feet.



The function of the RPZ is to enhance the protection of people on the ground. FAA policy is that the area should be clear of incompatible objects and activities. For land use determination the RPZ is divided into two areas: the *Central Portion* and the *Controlled Activity Area*. The *Central Portion* of the RPZ extends the full length of the surface along the extended centerline. The width of this portion of the RPZ corresponds to the width of the ROFA, in this case 400 feet either side of the centerline. The *Controlled Activity Area* is the portion of the surface to the sides of the central portion of the RPZ.

As indicated in the Existing Conditions section of this document, the RPZ on the west end (Runway 6 end) of the runway currently meets the FAA land use standard. Although only a portion of this RPZ is controlled by the airport administration the entire property is owned by the Commonwealth of Kentucky. That portion of the property that is not a part of the airport (4.10 acres) is managed by the Kentucky Department of Fish and Wildlife Resources (KYF&WR). The KDA has an agreement with the KYF&WR to control the height of objects within this portion of the RPZ.

Following the relocation of the Runway 24 threshold the area within the RPZ that is not owned and controlled by the State will total 11.94 acres, compared to 18.35 acres in the existing condition. The right-of-way for Highway

127 and a portion of the golf course will remain within the dimensions of the future RPZ. These areas remain within the current Avigation Easement allowing the CCAD to control object penetrations.

**Therefore no additional effort is recommended for the management of the land use within the RPZs to control object penetrations. It is recommended that the KDA relocate the Frankfort Park District maintenance buildings that remain within the future (and existing) RPZ in order to conform to the current FAA land use standard.**

### **5.2.8 Airfield Lighting and Visual Aids**

Appropriate lighting and visual aids at an airport can increase both its capacity and safety. Runway and taxiway lighting allows the airport to operate more effectively at night and during times of reduced visibility. Other visual aids, such as signage, wind cones, rotating beacons, and visual slope indicators, provide valuable information to the pilot.

The airport currently has:

- Medium Intensity Runway and Taxiway Lights (MIRL and MITL);
- 4-Light Precision Approach Path Indicator Lights (PAPIs);
- Runway End Identifier Lights;
- Rotating Beacon;
- Segmented Circle and lighted Wind Cone;
- Airfield signage consistent with FAA standards.

**It is recommended that the airport consider the installation of an approach lighting system to support the non-precision approach to Runway 24.** The Omni-Directional Approach Light System (ODALS) provides straight-in or circle guidance and visual identification of the approach end of the runway for landing aircraft. The installation of this system will enhance operational safety and could result in lower approach minimums during poor weather conditions.

**It is recommended that the airport install a lighted wind cone on the north side of the runway, near the PAPI, to improve pilot awareness during operations on runway 6.** The location of the segmented circle and wind cone on the east side of the terminal area makes sighting of the wind indicator difficult during times of high activity and/or poor visibility.

### **5.2.9 Airfield Instrumentation**

Instrument approaches are a valuable tool to properly certified instrument pilots. As many who fly know, one of the greatest detriments to aviation is its unreliability caused by weather. Once instrument rated, a pilot has the ability to alleviate this unreliability to a certain level. This level is based upon the published approach minimums at the destination airport.

For most general aviation airports, these minimums can vary from 2,000 feet or higher above the ground and three miles visibility to as low as 200 feet above the ground and 1/2 mile visibility dependent upon the instrumentation, airfield facilities, and terrain. The Capital City Airport currently has a GPS (Global Positioning System) approach

on both ends of the runway as well as Localizer/Distance Measuring Equipment (LOC/DME) and Very High Frequency Omni-directional Range Station (VOR) approaches on Runway 24. These approaches provide instrument flight weather minimums down to a ceiling 500 feet above the ground and visibility of one (1) mile. **These IFR approach minimums are sufficient to meet the existing demand.**

Lowering the approach minimums to *Not Lower Than 3/4 - mile* visibility would require the installation of an approach light system, such as the ODALS system described above, glide slope transmitter or other device to provide vertical guidance to the runway. These minimums however would require that the FAR Part 77 Primary Surface and the Runway Protection Zone surface be enlarged up to the next category. The width of the Primary Surface would expand from 500 to 1,000 feet (centered on the runway centerline), with a proportional effect on the transitional surface. The expansion of this imaginary surface would require abandonment of a significant portion of the existing aircraft parking apron, three hangars and the existing terminal building. The RPZ associated with instrument approaches with minimums less than one mile visibility, not lower than 3/4 mile, is 19.51 acres larger. Although this larger RPZ would include additional property that is not owned or controlled by the Sponsor, the land use within this area is compatible with FAA standards. **Installation of an ODALS system is recommended to improve runway identification during IFR conditions and to support lower minimums as demand warrants.**

### 5.3 Landside Facilities

An analysis was undertaken to determine the extent and nature of landside facilities that would be required to support the forecasted level of aviation demand for the Capital City Airport. Projected maximum demand indicates that there will be 81 civil based aircraft at Capital City in 2030. **This demand however will not occur during the initial or short term planning period thereby reducing the need for immediate decisions on specific building requirements. It is the goal of this section of the Master Plan to provide the Sponsor with a general land use plan for the ultimate placement of required facilities.** Implementation of the plan and construction of specific facilities will be undertaken on a case by case basis as demand requires and funding is arranged. The land use designations, illustrated in **Exhibit 5.1** are defined as follows:

- Transient Operations Support Area: terminal building, apron, parking/tie-down positions, aircraft fuel facilities and auto parking.
- Aircraft Maintenance Service Area: hangars, apron and auto parking.
- Based Aircraft Support Facilities: box hangars, T-Hangars, tie-down positions, aircraft washing area, aircraft fuel, auto parking.
- Airport Administration and Support Area: administration building and parking.
- Airport/Community Buffer.

#### 5.3.1 Transient Operations Support Area

**Terminal Building:** At nearly all airports the terminal building is the focal point of activity for transient passengers, pilots and aircraft. The terminal building at a general aviation airport typically provides space for the following activities: transient passenger and pilot lounge; flight planning area; vending/food service; restrooms; administrative offices; classrooms; and storage.

*Transient passenger and pilot lounges:* An average of 40 square feet per individual is routinely used for determining the size requirements for transient pilot and passenger waiting areas. To calculate the terminal space requirements for FFT at the end of the planning period the following formula is used: one half of the peak hour transient operations multiplied by 2.5 (the average occupancy of a general aviation aircraft), the number of people is then multiplied by 40 square feet per person. This calculation reveals a minimum need of 400 square feet of space for the waiting area ( $4 \times 2.5 \times 40 = 400$  square feet). A more conservative approach would be to assume that 25 percent of the average day transient operations occur during the peak hour. The resulting facility requirement reveals  $41 \times 0.25 \times 2.5 \times 40 = 1,025$  square feet required. The existing terminal building has 1,391 square feet of space for transient passengers and pilots including 337 square feet dedicated to a pilot lounge and a flight planning area.

*Airport administrative offices:* The FAA recommends 180 square feet of office space be provided for airport administrative functions at small general aviation airports. The existing terminal provides nearly 700 square feet of space dedicated to administrative offices, FBO operations functions and employee break room.

**Transient Aircraft Parking/Tie-down:** FAA recommends 360 square yards (sq yds) of apron space per transient aircraft. To calculate the future apron space requirement for transient aircraft at FFT the formula is: assume  $\frac{1}{2}$  the peak month average day aircraft are on the ground multiplied by 360 sq yds per aircraft ( $41 \div 2 \times 360 = 7,560$  sq yds). The existing apron identified for use by transient aircraft comprises 16,255 sq yds. Currently 1,650 sq yds of this space is dedicated for the aircraft fuel facilities leaving 14,605 sq yds for aircraft movement and parking.

At the present time much of this apron area is dedicated for use by based aircraft. If, during the planning period, the apron needs to expand to accommodate an increase in transient aircraft it is recommended the based aircraft be relocated to the Based Aircraft Support Area as described in a later section of the Chapter.

**Fuel Storage and Delivery:** The amount of fuel sold at an airport can fluctuate greatly due to the economy, fuel pricing, competition, and location. The amount of fuel sold dictates the amount of storage capacity necessary at the airport. Projected fuel storage requirements indicate that the current facility: a 12,000 gallon tank for AvGas; one 20,000 gallon tanks for Jet-A fuel; and two delivery tanker trucks, one carrying 750 gallons of Jet fuel and the other 1,200 gallons of AvGas, is adequate to meet future needs.



Leaving the fuel tanks at the present location and relocating the based aircraft tie-down positions in this area would enable aircraft to access the fuel pumps from two sides offering an opportunity to fuel aircraft directly from the tanks rather than using a fuel truck., thereby increasing delivery capacity. **No additional fuel capacity for transient aircraft is identified in the planning period.**

**Auto Parking:** The primary parking lot supporting the terminal building has 31 spaces. In addition, a lot directly behind hangar 401 has capacity for up to 40 spaces resulting in a total capacity of 71 spaces directly adjacent to the terminal. Further, in the event that during periods of activity beyond the forecast average day additional parking is needed the lot supporting the Administration building could be used as an overflow parking lot. Due to the distance involved however, approximately 1,250 feet, the airport should consider a shuttle service for this location. **No additional auto parking is needed during the planning period.**

### 5.3.2 Aircraft Maintenance Service Area

The *aircraft maintenance service area* is defined as the apron area and hangars west of the terminal building (including the connected hangar), west along the full width of the contiguous apron. The limits of the area are identified in **Exhibit 5.1**.

**Hangars:** Hangar requirements are determined primarily by the number and type of aircraft expected to be serviced at the airport and the preferences of individual aircraft owners or the companies that provide maintenance services. The maintenance service area has six hangars offering a total of approximately 57,816 square feet of space. Two of the hangars, buildings T1 and T3 on the ALP-Sheet 11, offer approximately 22,200 square feet of floor space that the airport leases to individual aircraft owners for based aircraft storage. Hangar T2, an 8,000 square foot hangar is leased to a company that offers aircraft maintenance services. The remaining three hangars, 27,616 square feet of combined space, are leased to various Kentucky agencies for aircraft storage and maintenance. At the present time these hangars meet the needs of the airport. For this Master Plan, specific hangar requirements will not be forecast. Instead portions of the landside area will be identified for each hangar use type. This will allow the airport administration to provide locations for new hangars to meet future demand.

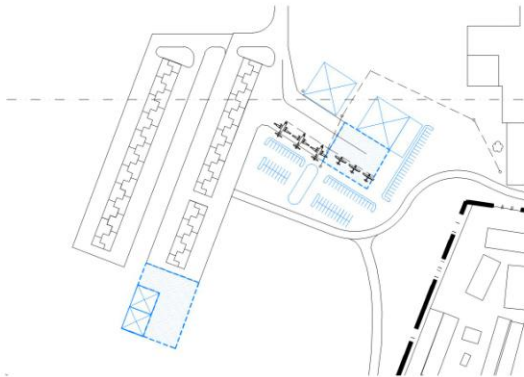
It is common practice at general aviation airports to have a large (6,400 or more square feet) conventional hangar or a series of hangars dedicated for use by a Fixed Based Operator (FBO) to provide aircraft maintenance and storage of fleet aircraft. The existing hangar area provides sufficient space for these FBO services today. Additional space could be made available within existing hangars by relocating the private aircraft currently leasing space in hangars T1 and T3. Relocating these aircraft to the *based aircraft support facilities*, discussed later in this report, would make the larger hangars available for maintenance, or other traditional FBO activities.

**Apron:** The apron area serving these hangars encompasses 15,946 sq yds of asphalt pavement. Using the FAA's criteria of 360 yards per aircraft this amount of pavement should accommodate up to 44 aircraft. However, because this pavement is dispersed around the hangars the actual number of aircraft served is less. This existing pavement is used to serve the hangars and to provide tie-down facilities for based and transient aircraft. Similar to the hangars, this space could meet any forecast growth by relocating some or all of these based aircraft to another location. In addition, the apron could be expanded to the west where there is sufficient room to add approximately 3,300 sq yds of pavement.

**Auto Parking:** The aircraft maintenance service area is currently served by three parking lots with a combined capacity of 66 autos. Although there is little room for growth in these lots they are sufficient to meet anticipated needs.



### 5.3.3 Based Aircraft Support Facilities



The *based aircraft support facilities area* at FFT is approximately 38 acres west of the existing terminal and aircraft maintenance areas as shown on **Exhibit 5.1**. Only 13 percent of this identified area has currently been developed for aircraft support, leaving approximately 25 acres for additional development as demand requires.

**Hangars:** Currently this landside area has 63,315 square feet under roof in the form of three T-hangar buildings providing space for individual based single engine or light twin engine aircraft. As previously identified in this document all of the privately owned and operated based aircraft fall within this aircraft type. Although there is not currently a demand for additional T-hangars the area will accommodate approximately 62,000 additional square feet of hangar space south and west of the existing hangars and in a consistent configuration. Demand for this area could also be generated if the airport relocates the based aircraft that are currently leasing space in the *aircraft maintenance service area*.

The area east of the existing T-hangars, including the existing concrete apron, should be reserved for larger box hangars to accommodate larger aircraft or individual fleets of aircraft. This portion of the *based aircraft support area* totals approximately 425,000 square feet (9.7 acres). The airport administration is currently (2011) preparing two lots for lease to potential tenants that would build up to two 10,000 square foot hangars. These hangars will provide good anchor tenants for future development. **It is recommended that the area east of the existing T-hangars be reserved for box hangars to be added as needed.**

**Apron area and tie-down positions:** The amount and configuration of apron area must be carefully planned to ensure that it meets the needs of the airport and the potential for expansion is not limited. For T-hangars the apron area required is approximately 1.5 times the area of the building. For conventional and FBO hangars the apron required is approximately equal to the area of the structure being used.

The *based aircraft support facilities area* of the airport currently has 157,635 square feet of hard surface to support the existing hangars. East of the existing T-hangars and adjoining the hangar apron the airport provides a 24,150 square foot concrete apron in a configuration that will support two large open span hangars up to 10,000 square feet each. By adding approximately 15,600 square feet of apron area two buildings of this size can be added in a straight alignment on the north end of the apron thereby maximizing use of the remaining space in the future. The remaining area south of this apron, approximately 7 acres, will be available for future growth and the addition of apron pavement to support appropriately sized box hangars. The remaining area, south and west of the existing T-hangars, will accommodate additional individual hangar units, and supporting apron, as demand warrants. In addition, apron area can be added to provide tie-down positions for based aircraft that may be displaced from the transient and maintenance aprons as demand in these areas evolves.



**Aircraft wash facility:** Local and state clean water regulations will soon require the airport to monitor and control storm water discharges. The development of local procedures and plans to address these regulations will require the airport to provide a location for washing aircraft. This facility will be constructed in a manner to prevent the introduction of contaminants into the drainage system during storm events. This plan provides two such locations, one within the maintenance area and the other near the T-hangars. These facilities are to be placed at locations that allow installation of oil/water separators and direct connection to the local sanitary sewer system during use.

**Fuel storage/dispensing:** As the west hangar area develops it will be advantageous to add fueling capability at this location. The majority of the aircraft in these hangars will require Avgas, therefore it is recommended that one tank with a capacity of approximately 10,000 gallons be installed at this location. This slightly oversized tank



will accommodate the facility throughout the planning period. Fuel deliveries can be made more or less frequently as demand requires. The addition of a self-serve pump will allow aircraft owners to access fuel without waiting for service from the FBO. Providing fuel service in the vicinity of the west side hangars will also have the benefit of reducing congestion in the terminal area as the based aircraft will not need to taxi to this area for fuel or the fuel trucks will not have to travel to the based aircraft area to fuel aircraft.

**Auto parking and access:** The number of auto spaces required in the based aircraft area is highly dependent upon the nature of the use of facilities that are added. Aircraft owners that lease T-hangar space typically desire auto parking adjacent to their individual hangar. In many cases these autos are parked inside the hangar when the aircraft is being used. The addition of 6-7 parking spaces at the end of each T-hangar will typically meet demand. Larger box hangars need additional parking as defined by the particular use. A 10,000 square foot hangar used to accommodate a company with corporate aircraft would need long and short-term auto parking for passengers, pilots, mechanics and administrators.

Access to the based aircraft area is currently provided by an extension of the airport access road that passes south of the maintenance area. Although currently adequate to meet demand this road would not be sufficient to accommodate fuel delivery trucks or a larger volume of traffic. **It is recommended that the airport add a second entrance south of the T-hangar area to provide direct access.** This entrance could be secured by use of a card reader gate system to ensure use by authorized individuals only.

#### 5.3.4 Airport Administration and Support Area

This facility is used to accommodate the Kentucky Department of Aviation offices and a portion of the airport administration services. The area currently has an administration building of approximately 10,500 square feet on two levels and two parking lots providing 135 parking spaces. The lower level of the administration building has frontage on the transient aircraft apron and is used by the states corporate aircraft. This area is adequate to meet current and anticipated demand. In addition, the auto parking lot east of the administration building is sufficient to handle long or short-term parking for vehicles on those occasions that the terminal parking lot is full.



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### 5.3.5 *Airport/Community Buffer*

No land acquisition is required to accommodate existing or anticipated demand. The airport administration currently has sufficient land south of the runway to redevelop facilities to meet anticipated changes in demand. During the initial phases of this development period airport resources will be directed toward improving the existing landside facilities to serve the based aircraft as well as the local and itinerant passengers. Acquisition of additional property south of the runway centerline should be part of the long-term plan. Control of this property will ensure that the airport has sufficient land resources to meet the community's aviation demand.

Existing land east, south and west of the airport's landside facilities provide sufficient buffer to those residential areas along the west side of U.S. 127. Terrain changes and distance provide a buffer to those residential properties along Hawkeegan Drive. In addition, as the based aircraft area is developed, placement of hangars along the east boundary, parallel to the property line, with apron and doors on the west exposure, will provide a noise and visual buffer to the adjacent apartment buildings.

# Alternatives Analysis



*Chapter Six*

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## 6. Alternatives Analysis

The stated purpose of the Alternative Analysis section of an airport Master Plan is to identify and evaluate alternative ways to meet the forecast demand of the airport users as well as develop a strategic vision of the airport sponsor. Typically airports have a wide variety of development options making an organized approach of identifying and evaluating alternatives essential for effective planning. In the case of FFT, and for the purposes of this master plan, the analysis of future facility requirements (see section 5) revealed that the current facilities are adequate to meet the forecast need provided adjustments are made to the strategic use of some of the land side facilities. Therefore, the Alternatives Analysis section of this Master Plan will identify and summarize the rationale for the recommended land use plan described in the previous section.

### 6.1 Runway

Since the completion of the runway extension project in 2005, Capital City Airport has been utilizing a 5,905 foot runway with the use of *Declared Distances* to define operating limitations on Runway End 6 to meet RSA and ROFA design criteria. For purposes of this Master Plan, existing runway length is assumed to be 5,505 feet due to the future removal of 400 feet from the east end of the runway. The relocation of the Runway End 24 threshold, phase 2 of the runway project, will bring the runway into compliance with design standards and eliminate the need for use of declared distances.

As described in Section 5.2.1 a 5,505 foot runway at FFT will accommodate 75 percent of all aircraft with a maximum certificated operating weight of more than 12,500 pounds and less than 60,000 pounds at 60 percent of their useful load. Further, this length is sufficient to accommodate all aircraft with an operating weight less than 12,500 pounds at 100 percent of their useful load. This runway operating limitation is reasonable and sufficient to accommodate the facility demand. Should the facility demand change and the airport need additional runway length, the alternatives are limited:

**Extend Runway to the East:** This alternative would require the realignment of U.S. Route 127 and the acquisition of a significant portion of the golf course.

**Extend Runway to the West:** This alternative would require the relocation of the west boundary of the airport into the state owned property currently used for the Salato Wildlife Center and the headquarters for the Department of Fish and Wildlife Resources. Any movement of the runway threshold to the west would require the relocation of west access road for the Department of Military Affairs and the relocation of facilities at the Salato Center.

### 6.2 Landside Support Facilities

A review of the forecast and the facility inventory indicates that the airport has sufficient space to accommodate future requirements without the development of additional facilities. However, airports have a responsibility to their local community, their service area and to the federal airport system to meet local and regional aviation demand. As described in the *Facility Requirements* section the airport has existing facilities sufficient to accommodate the forecast demand and will be able to accommodate additional demand by strategically managing those existing facilities.

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This Master Plan has concentrated on the development of a Strategic Facility Management Plan to define the ultimate use of existing facilities to meet forecast demand. Opportunities (demand) for additional facilities, not forecast in this document, can be accommodated within each *support area* on a case by case basis. The Airport Layout Drawing developed with this Master Plan does not show additional landside facilities, other than those currently being negotiated, because the need does not appear within the planning period.

# Financial Implementation Plan



*Chapter Seven*

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## 7. Financial Implementation Plan

The Financial Implementation Plan for the Capital City Airport is specifically designed to provide the KDA, the county governments and local industry with a Capital Investment Plan (CIP) and a financial schedule that will allow systematic capital investment throughout the planning period. This financial plan will provide a phased approach to developing the airport facilities that have been defined in previous sections of this Master Plan. Preliminary cost estimates have been developed at a level appropriate for planning purposes. Changing demand, activity levels, inflation rates, as well as state and federal legislation and funding levels can greatly change the optimal plan from one year to the next. Therefore the information in this section should be periodically reexamined and adjusted in order to remain current with changing conditions.

### 7.1 Capital Investment Plan

Typically the initial step in providing an adequate CIP within a Master Plan is to assign each anticipated development item to a specific phase consistent with the Authority's desires and funding possibilities. This Master Plan however, does not identify any specific development projects in the 5-20 year time periods. Therefore the CIP will only show those development projects that are in the short-term planning window, fiscal years 2011 through 2015. For the remainder of the planning period, FY 2016-2031, this document will identify cost estimates for development items that are typical of general aviation airports. Listing order and number system of these development projects does not reflect the airport's priority. Each project would be initiated in response to a specific demand.

Preliminary cost estimates have been developed at a level appropriate for planning purposes. These cost figures, estimated in 2011 dollars, include construction, materials, engineering, observation, legal, and all other professional fees. These figures, shown in Table 7.1, should be reviewed and updated as necessary before submittal for grant applications and other requests for funding assistance. Each of these projects has been identified in Section 5.

**Table 7.1 Capital Investment Plan and Cost Estimates**

<i>Item</i>	Description	Estimated Cost*
<b>Planning Period FY 2011 – 2015</b>		
<i>Item 1</i>	Relocate Runway 24 Threshold 400' west	\$500,000
<i>Item 2</i>	Expand Concrete Apron	\$350,000
<i>Item 3</i>	Large Hangar (10,000 sq. ft.) for Based Tenant	\$800,000
<i>Item 4</i>	Large Hangar and Educational Facility (16,000 sq. ft.)	\$1,100,000
<i>Item 5</i>	Land Acquisition-Easement	\$250,000
	<b>TOTAL FY 2011-2015</b>	3,000,000
<b>Planning Period FY 2016-2031</b>		
<i>Item 5</i>	Construct 10,000 sq. ft. Corporate Hangar	\$800,000
<i>Item 6</i>	Construct 7,200 sq. ft. Box Hangars (2 nested 60 x 60s)	\$520,000
<i>Item 7</i>	Construct T-Hangars (12 unit)	\$850,000
<i>Item 8</i>	Relocation of Buildings within RPZ	\$1,171,500
<i>Item 9</i>	Access Road Construction and Realignment	\$435,000
<i>Item 10</i>	Aircraft Wash Rack	\$50,000
<i>Item 11</i>	Aircraft Self-Fuel System	\$175,000
	<b>TOTAL FY 2016-2031</b>	4,001,500
	<b>TOTAL CIP 2011-2031</b>	7,001,500

\* All costs listed are for planning purposes and include administrative expenses – actual costs will vary. All cost estimates in 2011 dollars.

## 7.2 Funding the Capital Investment Plan

Having established the project list for the CIP, the next step is to determine methods for funding the improvements. Three sources of funding are available at FFT, federal, state and private investment. Each is discussed in the following sections:

### 7.2.1 Federal Funding

Since the conclusion of the Second World War the federal government has recognized the need to develop and maintain a system of aviation facilities across the nation for the purpose of conducting and promoting interstate commerce. Several federal airport development programs have been enacted since that time including the Airport and Airway Improvement Act of 1982. This program reestablished the Airport and Airway Trust Fund (created in 1970) and authorized a new airport capital improvement program titled the Airport Improvement Program (AIP). The AIP remains the primary source of development funding for general aviation facilities.

In the spring of 2004, Congress approved Public Law 108-176 the *Century of Flight Authorization Act of 2003* (Vision 100). The stated goal of Vision 100 was “. . . to address many of the problems plaguing the aviation system by making airports and aviation safer, by injecting competition into the airline industry, and by ensuring

that the investment taxpayers have made in the Aviation Trust Fund is returned in the form of affordable, safe air travel". Vision 100, originally intended to be a comprehensive 4-year authorization bill benefiting all sectors of the airport and airway system, has been extended by Congress each of the last four annual budget cycles during and remains the foundation of AIP funding during FY 2011.

For the Capital City Airport CIP it is assumed that the maximum level of federal funding will be available. For the initial projects, items 1 and 2, the participation ratio of 95 percent federal funding is assumed. For the remainder of the eligible projects it is assumed that federal funding will be returned to the traditional AIP level of 90%. It is unlikely that a higher percentage of federal participation will ever be enacted, although a lower level federal share is possible.

### 7.2.2 State Participation

Similar to many states, Kentucky has established an airport development fund which is supported by aviation fuel taxes. In addition to matching federal grants, the State can fund other projects in whole or with a negotiated portion of local participation.

At the present time budget constraints, coupled with a reduction in revenues due to reduced fuel sales, have limited the KDA's ability to provide funding for airport projects that are not eligible for federal participation. In addition, because KDA is the *Airport Sponsor*, the state is responsible for all non-federal funds in support of projects. Therefore the KDA will fund the FAA eligible projects at 5% or 10% of project total. It is anticipated that this funding formula (95% federal, 5% state) will continue to be used for items 1 and 2 and that the remainder will be 90/10 percent projects.

### 7.2.3 Private Development

There are many reasons why private individuals or corporations provide funds for development at airports. Sometimes the development is strictly for business reasons, such as an FBO installing a fuel system or the construction of hangars in order to increase revenue opportunities. Aircraft owners may also develop hangars on the airport for private use. These facilities are typically constructed on airport property that is leased to the aircraft owner who then builds the hangar. Terms of this type land lease are typically 15-20 years depending upon the amount of private investment required. At the end of the lease term the improvements revert back to the airport. Local businesses and industries are also known to participate in developing or helping maintain an airport. At FFT, it is anticipated that the private development will be limited to the construction of hangars.

**Table 7.2** lists the development items and cost estimates previously identified and distributes those costs according to anticipated Federal and State participation.



**Table 7.2 Capital Development Program – Estimated Costs and Agency Share**

<i>Phase I (FY 201-2015)</i>		<b>Total</b>	<b>Federal</b>	<b>State</b>	<b>Private</b>
<i>Item 1</i>	Relocate Runway 24 Threshold	\$500,000	\$475,000	\$25,000	\$0
<i>Item 2</i>	Expand Concrete Apron	\$300,000	\$0	\$300,000	\$0
<i>Item 3</i>	Large Hangar (10,000 sq. ft.)	\$800,000	\$0	\$0	\$800,000
<i>Item 4</i>	Large Hangar and Educational Facility	\$1,100,000	\$0	\$0	\$1,100,000
<i>Item 5</i>	Land Acquisition-Easement	\$2,950,000	\$235,000	\$25,000	\$0
	<b>Subtotal</b>	<b>\$2,950,000</b>	<b>\$700,000</b>	<b>\$350,000</b>	<b>\$1,900,000</b>
<i>Long- Term</i>					
<i>Item 6</i>	Construct Large Corporate Hangar	\$800,000	\$0	\$0	\$800,000
<i>Item 7</i>	Construct 2 Box Hangars	\$520,000	\$0	\$0	\$520,000
<i>Item 8</i>	Construct T-Hangars (12 unit)	\$850,000	\$765,000	\$85,000	\$0
<i>Item 9</i>	Relocation of Buildings within RPZ	\$1,171,500	\$1,054,350	\$117,150	\$0
<i>Item 10</i>	Access Road Construction	\$435,000	\$391,500	\$43,500	\$0
<i>Item 11</i>	Aircraft Wash Rack	\$50,000	\$45,000	\$5,000	\$0
<i>Item 12</i>	Aircraft Self-Fuel System	\$175,000	\$157,500	\$17,500	\$0
	<b>Long-Term Subtotal</b>	<b>\$4,001,500</b>	<b>\$2,413,350</b>	<b>\$268,150</b>	<b>\$1,320,000</b>

## Airport Layout Plan Set



*Appendix A*

## Instrument Approaches



*Appendix B*