Airport Layout Plan Update

May, 2011

Prepared by:
CRAWFORD, MURPHY & TILLY, INC.
Springfield, Illinois

Table of Contents

Section One: Inventory

Section Two: Forecast

Section Three: Facility Requirements

Section Four: Development Alternatives

Section Five: Plan Implementation

List of Tables

Section One
Inventory

1.0 Introduction

The general objective for the planning process at Pekin Municipal Airport (C15) is to evaluate its role in the aviation system, the potential for growth over short term (5-year) and longer term (10 to 20-year) planning prospects, and to ensure that the facility will be able to safely and securely accommodate future demand for aviation services for the City of Pekin and the surrounding communities. The overall goals of this study are to:

1) Protect and improve existing infrastructure that represents many years of airport investment.
2) Preserve land and resources that will be necessary to accommodate future aviation growth.
3) Equip local decision makers with a planning tool that provides flexibility to adapt to an ever-changing aviation environment, in a manner that benefits stakeholders.

The current Airport Layout Plan for the Pekin Municipal Airport was approved in May of 1993. This new study is being developed considering the changes that have taken place in the aviation industry, both locally and nationally, in the years since the current plan was developed. It will provide an update to the existing plan, and will also address the role of the Airport in meeting the present and future aviation needs of the Pekin area.

In collecting and examining various types of data pertaining to the Airport and the region served, historic and current conditions will be touched on in the Inventory section of this Narrative Report, thus providing a basis for assessing the future development needs for the Airport.

The planning of an airport with regard to demand and facility conditions must be coordinated to satisfy aviation demand while being compatible with its surrounding environs. Planning and development cannot proceed without evaluation of the circumstances and influences of the airport service areas. It is essential to examine the existing conditions of the airport and evaluate the character of the community served.

The following inventory is intended to provide an understanding of past and present conditions in order to assist planners in forecasting and demand/capacity analysis.

1.1 The Community

Tazewell County is located on the Illinois River adjacent to Peoria and part of the Peoria-Pekin Metropolitan Statistical Area. Tazewell County has a population of approximately 132,466; according to 2010 U.S. Census data.

The largest community in Tazewell County, and also the County seat, is Pekin; having a population of more than 33,000. Tazewell County also contains 15 other incorporated communities, with populations ranging from 639 to 23,000.

Agriculture plays an important role in the history of Tazewell County. Seventy-eight percent of the County's land area consists of farmland, and agriculture remains one of the County's major industries.

The "town site" was established in 1827 and given the name "Pekin", which came from China's City of the Sun (also known as Peking, Peiping, or Beijing). Within the next 10 years the community had begun to grown and included, a post office, three stores, two taverns, a church, a ferry service, and a railroad.

Today, Pekin has grown to be the largest city in Tazewell County, Illinois. **Exhibit 1-1** and **Exhibit 1-2** show Pekin Municipal Airports' location in Tazewell County and its location compared to the City of Pekin.

1.1.1 Location

The Pekin Municipal Airport is located in the southern portion of the City of Pekin, Illinois, approximately 6 miles from the city center. Tazewell County is bordered by Peoria and Woodford Counties on the north, McLean County on the east, Logan and Mason Counties on the south, and Fulton County on the west. The location of Pekin between Chicago and St. Louis provides access to a number of means of transport.

Exhibit 1-2 shows the location of the Pekin Municipal Airport compared to the City of Pekin.

1.1.2 Population

According to the most recent U.S. Census Bureau information, in 2006 the estimated population in Pekin, IL was 33,368. The most current data collected for the entire county was in 2009. It shows the population of Tazewell County at approximately 132,466. The population has gradually increased over the years, despite the projection in 1990 that the population may decrease through year 2010 and then increase in the years following.

Table 1-1 shows historical population data of the surrounding airport area.

Table 1-1:
Population

	2010	***2000***	***1990***
Village of South Pekin	1,200	1,162	1,184
City of Pekin	33,368	33,857	32,254
Tazewell County	132,466	128,485	123,692

Source: U.S. Census Bureau

1.1.3 Labor Force/Demographics

The industry, in which the Pekin Municipal Airport is located and operates, is lead by a sector employed in industrial, manufacturing, and production occupations. Tazewell County and the City of Pekin have slightly declined in most characteristics of labor force in the past few years. The current unemployment rate in Pekin Illinois is 10.6%, which is a 6% decrease from the highest unemployment rate calculated in Pekin, which occurred February 2010. This is higher than the national average, 9.2%, as of March 2011. The median household income for Tazewell County was approximately $42,250, according to Census data for 2000 and has considerably increased in the current census poll to approximately $54,271. The City of Pekin and Tazewell County's Labor Force Characteristics are shown in **Table 1-2 and Table 1-3. Table 1-4** shows the Major Employers in the City of Pekin.

Table 1-2:
Labor Force Characteristics – City of Pekin

	2009	***2008***
Management, Professional, & Related occupations	4,086	4,388
Service occupations	3,136	2,770
Sales & Office occupations	3,790	4,049
Farming, Fishing, & Forestry occupations	55	43
Construction, Extraction, Maintenance, & Repair occupations	1,093	1,095
Production, Transportation, & Material moving occupations	2,766	2,803
TOTAL	**14,926**	**15,148**

Source: U.S. Census Bureau

Table 1-3:
Labor Force Characteristics – Tazewell County

	2009	***2008***
Management, Professional, & Related occupations	20,923	21,995
Service occupations	10,977	10,348
Sales & Office occupations	15,290	16,085
Farming, Fishing, & Forestry occupations	299	221
Construction, Extraction, Maintenance, & Repair occupations	5,742	5,774
Production, Transportation, & Material moving occupations	10,259	10,566
TOTAL	**63,490**	**64,989**

Source: U.S. Census Bureau

Table 1-4:
Pekin Illinois Major Employers

Major Employer	*Industry*	*Employees*	*Year Established*
Pekin Insurance	Insurance	582	1921
Pekin Memorial Hospital	Health Care	836	1913
Excell Foundry & Machine	Manufacturing	279	1929
Midwest Generation, LLC.	Electricity/Light Industrial	202	1928
Tazewell Machine Works	Industrial Machinery	115	1945
Federal Bureau of Prisons	Corrections	325	1989
CenturyLink	Communications	85	1938
Aventine Renewable Energy, Inc.	Ethanol	293	1981
Super Wal-Mart	Retail	400	N/A

Source: Illinois Department of Commerce and Economic Opportunity & US Census Bureau (January 2011)

1.2 Area Aviation Facilities

A search identified five (5) public use airports with paved runways in the vicinity (a 30 NM radius) of the Airport.

Table 1-5 illustrates the nearest public use airports to the Pekin Municipal Airport.

Table 1-5:
Area Public Airports

ID	Facility Name	Direction (Distance)	Longest Runway
C45	Manito Mitchell Airport	4.7 nm W	2,188 ft
PIA	General Wayne A. Downing - Peoria International Airport	10.6 nm N	10,104 ft
3MY	Mount Hawley Auxillary Airport	18.6 nm N	3,600 ft
CTK	Ingersoll Airport	18.8 nm WNW	3,899 ft
AAA	Logan County Airport	25.2 nm SE	3,999 ft

Source: AirNav

1.3 Pekin Municipal Airport

1.3.1 Airport Airside Facilities

The airport airside facilities include areas on the airport directly associated with aircraft operations (runways, taxiways, lighting and/or markings, and navigational aids).

1.3.1.1 Runway and Taxiway

There is presently one runway at the Pekin Municipal Airport. Runway 9/27 is 5,000 feet long and 75 feet wide. The runway is constructed of a bituminous pavement. There is a turnaround taxiways located at the Runway 9 end, which is 40 feet wide. An existing taxiway 40 feet wide

parallels the runway from the 27 end, approximately 3,800 feet and provides access to the terminal apron and aircraft storage hangars.

Table 1-6:
Runway Features

Feature	Runway 9-27
Airport Reference Code	B-II (Small)
Length	5,000'
Width	75'
Pavement	Bituminous
Strength (lbs)	15,000 lbs – (SW)
Gradient	0.19%
Lighting	MIRL
Approach Instrumentation	Non-Precision
Approach Slope Aids	PAPI
Runway Marking	Non-Precision

Source: CMT, Inc and AirNav

1.3.1.2 Navigational Aids

The airport currently is served by three instrument approach procedures. Both runways 6 and 24 have area navigation (RNAV) Global Positioning System (GPS) approaches. The airport is also equipped with PAPIs, a Rotating Beacon, and a circling VOR-A approach.

Table 1-7 provides a summary of the straight-in approach minima (ceiling and visibility in statute miles) are as follows:

Table 1-7:
Runway 9/27 Straight – In Approach Minima

		Category			
Approach	**Type**	**A**	**B**	**C**	**D**
RNAV (GPS) RWY 9	LPV	332' – 1¼			
	LNAV/VNAV	452' – 1½			
	LNAV	410' – 1		410' – 1¼	
RNAV (GPS) RWY 27	LPV	339' – 1¼			
	LNAV/VNAV	485' – 1¾			
	LNAV	495' - 1		495' – 1¼	495' – 1½

LPV – Localizer Performance with Vertical Guidance
LNAV/VNAV – Lateral Navigation / Vertical Navigation
LNAV – Lateral Navigation

Source: FAA Aviation Systems Standards, AeroNav Services

1.3.1.3 Windrose

Windrose information was taken at the General Downing Peoria International Airport through the National Oceanic & Atmospheric Administration (NOAA) and has been used to calculate crosswind coverage at the Pekin Municipal Airport. Runway 9/27 provides coverage 90.30% of the time for a 10.5-knot crosswind and 94.53% for a 13-knot crosswind.

Exhibit 1-3 depicts the windrose for the Pekin Municipal Airport.

1.3.1.4 Aprons

The airport currently maintains one terminal apron. The existing aircraft parking apron is approximately 30,500 square yards and provides parking area for 8 based and transient aircraft. Airport administration indicated the immediate need for an additional aircraft parking apron.

Exhibit 1-4 depicts the existing facilities at Pekin Municipal Airport.

Picture 1: Aerial view of the terminal building, apron, vehicle parking & Hangars

1.3.2 Airport Landside Facilities

The airport landside facilities include areas associated with the movement of passengers and aircraft storage (passenger terminal, general aviation hangars, vehicle parking, etc.)

Currently, there are two 10-unit T-hangars and four Corporate hangars at Pekin Municipal Airport. There apron provides adequate access to all hangars.

1.3.2.1 Passenger Terminal Building

The existing terminal building provides approximately 1,000 square feet for airport administration and fixed based operations. Administration areas include: a public area for concessions and passenger pickup, pilots lounge, administration office, conference room, and restroom. A 24 hour pilot restroom is located west of the main terminal building just past the T-hangar area. A 4 digit Unicom frequency number can be used to access this restroom. The airport also offers a courtesy car on a first come first serve basis.

1.3.2.2 Fuel Facilities

An airport entrance road exists just east of the terminal area and extends to Illinois Route 29. Two underground fuel storage tanks, one 10,000 gallon 100LL and one 10,000 gallon Jet A, are located southwest of the terminal area

1.3.3 Airport Reference Code

The FAA has established standards and criteria for use in the design and sizing of airside facilities. The selection of appropriate FAA design standards for airside facility development is based on the characteristics of the aircraft types that are expected to use the airport.

According to FAA AC 150/5300-13 Airport Design, airport dimensional standards should be selected based upon the critical aircraft that uses, or is highly likely to use, the airport on a regular basis. The critical aircraft is defined by its approach speed (Approach Category) and wingspan (Design Group) or tail height, whichever is most restrictive; the two criteria are used to assign an Airport Reference Code (ARC). Generally, aircraft approach speed dictates design standards used for runway and runway-related facilities, while airplane wingspan or tail height primarily dictates separation criteria between facilities and objects.

These two criteria are reflected in the FAA's coding system by a letter for approach speed and a roman numeral for the wingspan or tail height. The coding system used in airport planning is explained in **Table 1-7.**

Table 1-8:
Airport Reference Code (ARC) Coding System

Approach Category	Design Group (Wingspan or Tail Height)	
A – less than 91 knots	Group I -	up to but not including 49 feet or tail height up to but not including 20 feet
B – 91 knots or more but less then 121 knots	Group II -	49 feet up to but not including 79 feet or tail height from 20 feet up to but not including 30 feet
C -121 knots or more but less than 141 knots	Group III -	79 feet up to but not including 118 feet or tail height from 30 feet up to but not including 45 feet
D - 141 knots or more but less than 166 knots	Group IV -	118 feet up to but not including 171 feet or tail height from 45 feet up to but not including 60 feet
E - 166 knots or more	Group V -	171 feet up to but not including 214 feet or tail height from 60 feet up to but not including 66 feet
	Group VI -	214 feet up to but not including 262 feet or tail height from 66 feet up to but not including 80 feet

Source: Advisory Circular 150/5300-13 "Airport Design"

The FAA recommends designing airport functional elements to meet the standards required for the most demanding ARC for the airport. It is necessary to identify the critical aircraft for each runway to determine the ARC.

The Airport is served by a variety of general aviation and corporate aircraft operations. The Airport has a designated Airport Reference Code (ARC) that represents the most demanding aircraft that currently utilizes each runway on a regular basis. Runway 9-27 at the Pekin Municipal Airport has an existing ARC of B-II.

1.3.4 Airspace and Tall Structures

There are currently no obstructions to the Part 77 approaches around the Airport.

Section Two
Forecast

2.0 Introduction

Aviation forecasting provides an estimate of future activity. It relies on trends which occur locally, in Illinois and across the United States.

This Forecast will be prepared for the following key General Aviation activity categories:

- Based Aircraft
- Aircraft Operations
- Critical Aircraft

2.1 General Aviation Activity Forecast

This section presents forecasts for based aircraft and activity associated with general aviation activity at the Airport. General aviation is inclusive of all aviation activity other than that associated with commercial air carriers (passenger and cargo) and the military.

The FAA Aerospace Forecast was used as a source to help understand those trends affecting the general aviation industry overall.

2.1.1 Historic Based Aircraft

The 2010 Illinois Inventory Report indicated that 32 aircraft were based at the Pekin Municipal Airport in 2008. The number of based aircraft at the Airport has maintained a slight increase over the past couple of years, averaging around 35. In 2010, the number of aircraft based at the Airport was 41 according to the latest information available by the airport. The FAA Terminal Area Forecast Report indicates 36 aircraft, while the most recent report from FAAs 5010 Airport Master Report, shows 38 based aircraft at C15 in 2010.

For planning purposes, it will be assumed that 41 aircraft are currently based at the Pekin Municipal Airport.

Businesses in Pekin and the surrounding county are comprised of general manufacturing, retail, industrial, corrections, and healthcare. Some of these business types and other non-local businesses have historically been a source of corporate aviation demand at C15. As Pekin continues to see growth in businesses in the area, it is likely corporate aviation demand will continue to increase over the 20-year forecast period.

Table 2-1 provides a listing of typical aircraft which are currently and anticipated to operate at the Pekin Municipal Airport. Small aircraft weigh less than or equal to 12,500 pounds while large aircraft exceed 12,500 pounds.

Table 2-1:
Typical Aircraft at C15

Category	Aircraft Type
A-I (Small Aircraft)	Cessna 172
A-II (Small Aircraft)	Raytheon AI B300
B-I (Small Aircraft)	Cessna 425
B-II (Small Aircraft)	King Air B200 Rockwell 840
B-II (Large Aircraft)	Falcon 900 Cessna Citation V
C-I (Large Aircraft)	LearJet 45

Source: Airport Data

2.1.2 Based Aircraft Forecast

This section provides projections for general aviation based aircraft growth during the 20-year forecasting period. Considerations that influence the number of based aircraft at an airport include socio-economic factors, industry trends, and adequate facilities located at the airport.

The goal of the forecast process is to develop a range of activity that may be accommodated over the 20-year planning period. The airport does have a waiting list for hangar storage, including a helicopter, and will be reflected in the forecasted numbers. The extension of the primary runway could also attract new corporate users to base at the Pekin Municipal Airport. Furthermore a boost in the economy after the current recession should play a role in increasing based aircraft and operations over the next 20 years. Growth induced by these factors would be anticipated within the ten year planning period.

The anticipated growth at Pekin Municipal Airport will also be contingent on local factors which may exceed national trends. These local factors include:

- The eagerness of City of Pekin to develop adequate facilities to maintain and attract businesses that rely upon aviation.
- An existing waiting list of users prepared to base at the Pekin Municipal Airport upon completion of airfield and aircraft storage improvement projects.
- The airport's ability to attract a private FBO to base at C15

FAA Aerospace Forecast

The FAA Aerospace Forecast is produced on a yearly basis to identify trends affecting aviation demand on the national level. While this document focuses primarily on passenger and air cargo demand, it also provides general aviation demand forecasts. The following average annual growth (AAG) rates were identified in the FAA Aerospace Forecast (FY 2010 – 2030):

- Single-engine piston: 0.2%
- Multi-engine piston: -0.8%

- Turboprop: 1.4%
- Jet: 4.2%
- Rotorcraft: 2.8%

Corporate and business aviation is expected to steadily increase throughout the forecast period as major U.S. airports face increasing delays and more stringent security protocol. Supporting this notion, the FAA estimates that the number of multi-engine piston aircraft will decrease at an AAG of -0.8% while turbine driven aircraft will grow at an AAG of 4.2% throughout the forecast period. A review of IFR records and discussions with Airport Management shows a credible level of corporate traffic utilizing the airport today. The airport would likely receive additional traffic in the future, because of the aforementioned reasons. Using the growth rates based on the FAA Aerospace Forecast the total based aircraft forecasted for 2031 is **43**.

Terminal Area Forecast (TAF)

The TAF utilizes national growth trends, coupled with historical local growth trends, to develop airport-specific activity forecasts on a fiscal year basis (October – September). The most recent TAF projection shows the based aircraft at Pekin Municipal Airport at 36 and projects that it will stay the same until 2030. To get a more accurate count, two growth rates were calculated in order to project the forecasted based aircraft in 2030, based on the TAF information. In 2003 the number of based aircraft was 32. Using the current airport based aircraft inventory total (41) and extrapolating the TAF growth rate from 2003 until 2010 (~0.018), the total projected based aircraft for 2030 is approximately **59**. Using the current based aircraft number (41) and calculating the TAF growth rate from 2003 – 2030 (~0.004) the 2030 anticipated based aircraft result is approximately **45**.

Surrounding Based Aircraft

National data is generally used for FAA forecasting. Unfortunately, this approach to forecasting aviation activity levels at most general aviation airports does not account for variations and influences experienced by specific regions, as a result of local socio economic factors. Therefore, occasionally it is practical to examine data collected from a localized region, in order to anticipate local market trends that are specific to a constrained area. In this method, Average Annual Growth (AAG) rates were applied, for based aircraft, to airports within a 40 nautical mile radius of C15, and compared to the national growth rates. The average annual growth (AAG) for the based aircraft at three airports surrounding the Pekin Municipal Airport was collected from the TAF.[1] This allowed us to anticipate the percentage of local growth and project a more accurate number of based aircraft for 2031. The growth rates were calculated and extrapolated for the period from 1990 – 2010 and, what is anticipated from the TAF, over the period of 2011 – 2030. The combined historical (1990 – 2010) average growth rate (0.0006%) of the analyzed airports was applied to the current number of based aircraft (41) at Pekin Municipal Airport. The forecasted (2011 – 2030) average growth rate (0.004%) was also applied to the existing based aircraft.

[1] Three airports used in study and located within 30 nautical miles of the Pekin Municipal Airport – Mt. Hawley Auxiliary Airport, Ingersoll Airport, and Logan County Airport.

The forecast scenarios project that the number of based aircraft at the Airport using the historical growth rate will be approximately **41** over the 20-year planning period and **45** using the anticipated growth rate. **Table 2-2** and **Table 2-3** present the projected fleet mix of based aircraft derived from the forecast.

Table 2-2:
Forecasted Based Aircraft (Fleet Mix), 1990 – 2010 growth rate

		Forecast Period				
Aircraft Type	**Existing**	**2011**	**2016**	**2021**	**2026**	**2031**
Single Engine (SE)	38	38	38	38	38	38
Multi-Engine (ME)	2	2	2	2	2	2
Turboprop	1	1	1	1	1	1
Helicopter	0	0	0	0	0	0
Jet						
	41	**41**	**41**	**41**	**41**	**41**

Source: CMT Analysis

Table 2-3:
Forecasted Based Aircraft (Fleet Mix), 2011 – 2030 growth rate

		Forecast Period				
Aircraft Type	**Existing**	**2011**	**2016**	**2021**	**2026**	**2031**
Single Engine (SE)	38	38	39	40	40	41
Multi-Engine (ME)	2	2	2	2	2	2
Turboprop	1	1	1	1	1	1
Helicopter	0	0	0	0	0	0
Jet						
	41	**41**	**42**	**43**	**44**	**45**

Source: CMT Analysis

There is 1 Single Engine turboprop aircraft currently based at C15. It is used primarily for aerial application. Though they are included in the Single Engine projection, there will likely be no increase of single engine turboprop aircraft.

Selected Based Aircraft Forecast

Based on the forecast scenarios, which were looked at over the course of this study, the range for based aircraft is between **41** and **59** over the 20 year planning period. The FAA Aerospace scenario projected 43 based aircraft, which would only increase the number of aircraft by 2 in a 20 year period. Based on historic data and airport information this scenario was not selected. The surrounding airports (within a 30NM radius) were analyzed using two different scenarios. The historic projection from 1990 – 2010 showed the number of based aircraft remaining the

same (41), while the forecasted (2011 – 2030) average growth rate was also applied to the existing based aircraft giving us a projection of 45 aircraft to be based at C15 over the next 20 years. The Terminal Area Forecast, also the selected methodology, projected 59 aircraft to be based at C15 using the historic (2003 – 2010) growth rate. 45 aircraft were derived at using the forecasted (2003 – 2030) TAF growth rate. Definite historic based aircraft numbers were used in calculating the growth rate for the preferred methodology, in lieu of using forecasted based aircraft numbers. The information is likely to provide us with a more accurate forecast over our 20 year planning period.

While the forecast of based aircraft provides a total quantity, it is important to identify the types of aircraft anticipated within the total, as certain types of aircraft require different facilities to support their operation. **Table 2-4** shows 59 based aircraft in 2031, based on the preferred Methodology.

Table 2-4:
Preferred Forecasted Based Aircraft (Fleet Mix)

		Forecast Period				
Aircraft Type	**Existing**	**2011**	**2016**	**2021**	**2026**	**2031**
Single Engine (SE)	38	39	42	46	50	55
Multi-Engine (ME)	2	2	2	2	3	3
Turboprop	1	1	1	1	1	1
Helicopter	0	0	0	0	0	0
Jet	0	0	0	0	0	0
	41	**42**	**46**	**50**	**54**	**59**

Source: CMT Analysis

2.1.3 General Aviation Operations Forecast

The Pekin Municipal Airport does not offer an Airport Traffic Control Tower (ATCT) for traffic control and reporting and activity estimates are reported in FAA Form 5010 Airport Master Record. In lieu of FAA Form 5010 operational data, which is based upon estimates at non-towered facilities, this forecast will utilize general planning guidelines provided by the FAA.

A customary method utilized in forecasting general aviation aircraft operations at non-towered airports is to relate the level of operations to the number of based aircraft or "operations per based aircraft" (OPBA) approach. The rationale is that similar sized airports will see similar levels of activity based in part on the number of airplanes located at the facility. The National Plan of Integrated Airport Systems (NPIAS) provides common guidelines for the OPBA methodology. The preferred based aircraft forecast of 59 aircraft by 2031 was utilized in projecting the OPBA.

The NPIAS indicates that 250 OPBA are anticipated to occur at rural general aviation airports. Applying this ratio to the number of based aircraft currently reported at the Airport yields a total of 10,250 operations, currently.

Therefore, if OPBA remain constant throughout the planning period and the preferred NPIAS method is applied to the preferred forecast of based aircraft; total general aviation operations would grow to approximately 14,864 by 2031.

Due to differing information, other methodologies were also examined and are described below. The IL TAF data is not discussed below, because the forecasted TAF shows the number of total operations at C15 remaining the same (9,000) over the next 20 year planning period. Based on historic data at the airport this method was deemed inaccurate.

Towered Illinois Airport Operations Forecast

OPBA were configured utilizing towered airports in Illinois excluding airports with unique operations; for example, flight schools. A review of operations at the towered airports indicated an average of approximately 278 general aviation operations per based aircraft (currently) and 382 average OPBA in the next 20 years.

Using an average OPBA (278), at towered Illinois airports, over the past 5 years multiplied by 41 based aircraft in 2010, the current OPBA for C15 is 11,398. The Average 20 year projection of OPBA for towered airports in Illinois (382) was figured with the 59 forecasted based aircraft at C15, and operations were projected to be 22,713 for the 20 year planning period. These figures are summarized in **Table 2-6**.

FAA Aerospace Forecasts

The FAA's most recent general aviation forecasts in the *FAA Aerospace Forecast* (2010-2030) provide growth rates for general aviation operations. Average annual growth rates between 2010 and 2030 are expected to be 2.5%. This growth rate was applied to the number of operations per existing based aircraft at C15 during 2010 and extrapolated through 2031. This results in a total of 16,529 general aviation operations in 2031.

Preferred Operations Forecast

Based upon recent trends, it is reasonable to assume that general aviation operations will remain within the range illustrated above through the forecast period, resulting in approximately 9,000 to 22,713 annual operations in 2031. Most likely, growth patterns associated with general aviation operations will continue to fluctuate from year to year, with the airports Aerial Application operations increasing and decreasing seasonally. For planning purposes, the NPIAS OPBA forecast, will be used in developing future general aviation facility requirements. 14,864 operations are projected in the 20-year plan utilizing the preferred operational scenario. This forecast assumes continued growth in operations as a result of the airport gaining additional based aircraft. Corporate traffic is also anticipated to grow in the Pekin area throughout the planning period.

2.2 Critical Aircraft

Identifying a critical aircraft is necessary for planning purposes to apply the pertinent runway dimensions and design standards, taxiway dimensions, apron space requirements, and required terminal support facilities. In addition, FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, requires the identification of a family of aircraft that are expected to operate at the Airport on a regular basis (500 annual itinerant operations) to determine applicable runway length requirements. Therefore, the critical aircraft will be identified in two forms, a family of aircraft to determine runway length requirements for each individual runway and a specific aircraft type to determine Airport design standards.

As the Airport may see a number of different users over the 20-year planning period including corporate and general aviation aircraft, the future critical aircraft may be comprised of multiple aircraft type/users. Based on IFR records, the majority of corporate aircraft fall into the B-II category. Due to the demand projected over the 20-year planning period by a number of users, the Airport will need to be able to accommodate a wide range of aircraft types to remain as a key aviation access point to central Illinois. This is especially true as aviation demand continues to increase over the planning period.

The future critical aircraft for Runway 9/27 (primary runway with a length of 5,821 feet) will most likely consist of a number of different aircraft types throughout the 20-year planning period. For future facility planning, C15 will utilize a large (greater than 12,500 lb) critical aircraft with a composite Airport Reference Code (ARC) of B-II. The future critical aircraft will be represented by the Falcon 900 family.

Table 2-5 presents the existing and future critical aircraft identified for planning purposes and use in the Facility Requirements phase of this report.

Table 2-5:
Critical Aircraft

	Critical Aircraft	ARC
Existing Runway 6/24	King Air B200	B-II (Small)
Future Runway 6/24	Falcon 900	B-II (Large)

Source: CMT analysis

The identification of a future critical aircraft and the subsequent facility requirements are not intended as justification for individual airfield projects. The justification process is accomplished as a part of the Airport Capital Improvement Plan (ACIP) application process.

2.3 Forecast Summary

Table 2-6 provides a summary of the aviation forecasts prepared for the Airport (based on the preferred methodology discussed above).

Table 2-6:
Forecast Summary

	Forecast Period				
Activity	**2011**	**2016**	**2021**	**2026**	**2031**
Annual Operations					
Local Operations	3,478	8,207	8,966	9,796	10,702
Itinerant Operations	4,637	2,850	3,113	3,401	3,716
Air Taxi	2,318	342	374	408	446
Total Annual Operations	**10,433**	**11,398**	**12,453**	**13,605**	**14,864**
Based Aircraft					
Single Engine	39	42	46	50	55
Multi Engine	2	2	2	3	3
Turboprop	1	1	1	1	1
Helicopter	0	0	0	0	0
Jet	0	0	0	0	0
Total Based Aircraft	***42***	***46***	***50***	***54***	***59***

Source: CMT analysis

Section Three
Facility Requirements

3.0 Introduction

This planning document projects anticipated growth during a 20-year planning period. The proposed airport development plan should address those 20-year needs so that, when the demand is realized, the airport and the surrounding community will be adequately prepared to accommodate the anticipated aeronautical activity. Any differences between the forecasted demand and the existing facility capacity will be identified to determine future facility requirements.

Airside facilities are related to the arrival, departure, and ground movements of aircraft. These facilities include:

- Runways
- Taxiways
- Aprons
- Navigational Aids

Landside facilities support or utilize the airside facilities. These facilities include:

- General aviation facilities
- Hangers
- Fixed Base Operators (FBO's)
- Fueling

3.1 Airside Facility Requirements

This section presents facility requirements associated with airside components at C15.

3.1.1 Airport Reference Code

The FAA has established standards and criteria for use in determining the size and configuration of airside facilities. The selection of appropriate FAA design standards for airside facility development is based on the characteristics of the aircraft types that are expected to use the airport.

The critical aircraft is defined as the most demanding aircraft with at least 500 annual itinerant operations expected at the airport. The critical aircraft is assigned an Airport Reference Code (ARC), which is a coding system using aircraft approach speed, wingspan, and tail height to relate airport design criteria to the operational and physical characteristics of the airplanes intended to use the airport. Generally, aircraft approach speed dictates the design standards

used for runway related facilities, while aircraft wingspan dictates separation criteria between facilities. This coding system, used in airport planning, is explained in **Table 1-7**.

3.1.2 Runway Orientation and Meteorology

The runway configuration has been constructed to take advantage of prevailing winds in the Pekin area, and helps to minimize the percentage of time that strong crosswinds makes the use of the airport inadvisable.

In AC 150/5300-13, the FAA states that; "when a runway provides less than 95% wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended." The 95% wind coverage is computed on the basis of crosswinds not exceeding 10.5 knots for ARC A-I and B-I, 13 knots for ARC A-II and B-II, 16 knots for ARC A-III, B-III, and C-I through D-III, and 20 knots for ARC A-IV through D-VI. It is at these thresholds that a pilot may choose to use a more favorable runway, or if none is available, an alternative airport.

Table 3-1 provides a summary of the all weather wind condition analysis for Proposed Runways 9/27 and proposed 18/36 at Pekin Municipal Airport. The wind data used for the airport was derived from observations taken at the General Downing Peoria International Airport from 1997 - 2006.

Table 3-1:
Runway Wind Coverage (All Weather Wind Conditions)

	Crosswind Component (kts)	
Runway	**10.5**	**13**
Runway 9/27	90.30%	94.53%
Runway 18/36	91.11%	95.14%
All Runways	***99.18%***	***99.83%***

Source: NOAA Wind Data

Using the airfield configuration shown on the ALP, adequate crosswind coverage is provided for a 10.5 knot crosswind and for 13 knot conditions.

Runway *18/36* is shown to accommodate a B-II (Small) aircraft, for purposes of initial crosswind runway development; while the ARC for Runway *9/27* will be maintained.

3.1.3 Critical Aircraft

A design critical aircraft is selected from aircraft which satisfy the condition of performing or expecting to perform at least 500 annual operations at the airport. Based on the forecast data and discussions with the airport, it is anticipated that future development should accommodate aircraft such as the Dassault Falcon 900 (Large Aircraft) on Runway 9/27.

A portion of the area businesses operate large aircraft (greater than 12,500 pounds) with approach speeds of less than 121 or Category B. Even though some users are anticipated to operate Category C & D aircraft (approach speed greater than 121 knots), it is not anticipated that these aircraft will conduct over 500 annual operations at the Pekin Municipal Airport. Therefore, it is recommended that B-II (Large) aircraft be utilized as the ARC for Runway *9/27.*

3.1.4 Runway Length

The factors that strongly influence required runway length could be grouped into the following categories:

- Elevation of the airport
- Mean maximum air temperature for the hottest month at the airport
- Runway gradient
- Gross takeoff and landing weights for the critical aircraft expected to use the runway
- Stage length (trip distance) of critical aircraft

In general, aircraft performance decreases as elevation, temperature, runway gradient, and aircraft weight increases. For calculating aircraft performance characteristics at C15, an elevation of 530 MSL and a mean maximum air temperature of 87 degrees Fahrenheit for the hottest month were used.

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design,* provides guidance in determining the required runway length. Based upon guidance provided within AC 150/5325-4B, the runway should be designed to accommodate the operational needs of the most demanding aircraft within a specified Fleet Mix expected to operate at the airport on a regular basis within the 20-year planning period. As such, C15 plans to accommodate mid-sized ARC B-II aircraft represented by the 75% Fleet Mix identified in AC 150/5325-4B.

Table 3-2 provides the max runway length requirements for each "family" of aircraft operations anticipated to operate at the Airport over the planning period.

Table 3-2:
Takeoff Length Requirements

Aircraft Family	Aircraft	MGTOW [N2]	Takeoff Distance (Standard Day)	Takeoff Distance (Hot Day)
General Aviation	Falcon 900 [N2]	45,000	4,700'	6,550'
	Rockwell 840 [N3]	10,325	2,830'	3,200'

Note 1: Maximum Gross Takeoff Weight (MGTOW)
Note 2: 75% fleet Mix (60 & 90% Useful Load) figures obtained from AC 150/5325-4B. MGTOW values vary per aircraft.
Note 3: 95% Fleet Mix, small aircraft with 10 or more seats, figures obtained from AC 150/5325-4B. MGTOW values vary per aircraft.

Source: CMT Analysis, AC 150/5325-4B, & Manufacturers Airport Planning Manuals

The forecasted fleet mix at C15 is proposed to be made up of aircraft in the Falcon 900 and Rockwell Commander 840 categories. The runway length requirements were calculated using Maximum Gross Takeoff Weight (MGTOW) figures published by the aircraft manufacturers. Typically, aircraft do not operate at or near MGTOW due to a number of variables including trip distance (stage length), fuel requirements, passenger load, etc. However, utilizing the MGTOW runway length provided is considered the maximum necessary to accommodate the identified aircraft without any operational constraints. 60% & 90% useful load figures were analyzed.

3.1.4.1 Proposed Runway 9/27 Length Requirements

The primary runway should be designed to accommodate the runway length needs of the family of aircraft expected to operate at the airport over the 20-year planning period.

The necessary runway length for the proposed fleet at 60% was calculated to be approximately 4,700 feet, and approximately 6,550 feet at 90% useful load. 5,821 feet was recommended for the proposed runway length to accommodate the anticipated airport traffic. This also utilizes the existing property owned by the airport, allowing us to minimize the amount of land needing to be acquired. 6,550 feet is not feasible due to land constraints and obstructions near the airport.

From the data presented in **Table 3-2**, it appears that the proposed primary runway length of 5,821 feet will be sufficient for this family of aircraft and provides operational flexibility. Although, the existing length would accommodate most aircraft departures at a 60% useful load, this is not adequate with corporate aircraft departures coming from the midwest and traveling to the westcoast. A length of 5,821 feet also complies with regional FAA guidance for the minimum runway length that should be provided to accommodate ARC B-II corporate jet operations. A runway extension is recommended to accommodate the future corporate fleet and identified critical aircraft at Pekin Municipal Airport.

3.1.4.2 Proposed Crosswind Runway 15/33 Requirements

By providing an alternative to the primary runway in crosswind conditions, and during periods when Runway 9/27 may not be operational, Runway 18/36 would be a valuable asset to the Pekin Municipal Airport.

The anticipated Fleet Mix to operate on proposed Runway 18/36 are in the Small B-II aircraft family, such as, the Rockwell Commander 840. **Table 3-2** indicates that the runway length required for the 95% Fleet Mix is approximately 2,830 to 3,200 feet. Specifically, the takeoff distance specifications for a Rockwell Commander 840 are 1,830' while the landing distance is 2,050'. Given the site constraints previously identified, the crosswind runway length is limited to 2,827 feet. This will limit operations on this runway for some aircraft, either in payload or only during favorable weather conditions, but provides maximum wind coverage desired by the airport. The Rockwell Commander 840 was selected because traditionally this aircraft frequented the airport and is the largest aircraft that will likely be used based on the desired runway length.

3.1.5 Critical Aircraft – Crosswind Runway

A design critical aircraft is selected from aircraft which satisfy the condition of performing or expecting to perform at least 500 annual operations at the airport. Based on the forecast data and discussions with the airport, it is anticipated that future development should accommodate aircraft such as the Rockwell Commander 840 (Small Aircraft) for Runway 18/36.

Table 3-3:
Critical Aircraft – Crosswind Runway

Future	Critical Aircraft	ARC
Runway 18/36	Rockwell Commander 840	B-II (Small)

Source: CMT Analysis

3.1.6 Runway Width Requirements

In accordance with FAA airport design criteria, a runway designed to accommodate ARC B-II aircraft with approach minimums not lower than ¾ mile, require a runway width of 75 feet. The existing 75-foot width of Runway 9/27 at C15 is consistent with FAA standards and shall be maintained throughout and beyond the planning period.

Proposed Runway 18/36 shows a 75 foot runway width to be consistent with FAA standards in accommodating B-II aircraft with visibility not lower than 1 mile.

3.1.7 Runway Pavement Strength

Runway 9/27 currently provides a strength rating of 15,000 pounds for single wheel aircraft. Analysis of the existing and anticipated aircraft fleet mix operating on Runway 9/27 indicates that the pavement strength should be increased to 25,000 pounds single wheel and 50,000 pounds dual wheel within the 20-year planning period.

Proposed Runway 18/36 should be built with a runway strength compatible to the ARC for this runway. In this case 12,500 pounds single wheel is sufficient.

3.1.8 Runway Safety Area

The Runway Safety Area (RSA) is an integral part of the runway environment. RSA dimensions are established in AC 150/5300-13, Airport Design, and are based upon the airport reference code (ARC) of the critical aircraft utilizing the runway. The RSA is intended to provide a measure of safety in the event of an aircraft's excursion from the runway by significantly reducing the extent of personal injury and aircraft damage during overruns, undershoots, and veer-offs. The FAA has implemented a RSA Program with the intent to ensure that all RSA's at federally obligated airports and all RSA's at airports certified under Part 139 conform to the standards contained in AC 150/5300-13.

For existing Runway 9/27 and proposed Runway 18/36, the standard RSA width is 150 feet, extending 300 feet beyond each runway end.

3.1.9 Runway Lighting and Marking

Runway 9/27 is currently equipped with pilot controlled, Medium Intensity Runway Lights (MIRL) and shall be maintained through the planning period. MIRLs are also proposed on Runway 18/36.

Non-Precision pavement markings currently exist on Runway 9/27 and will be maintained throughout the planning period. Non- Precision markings are also proposed for Runway 15/33 for compliance with AC 150/5340-1H, incorporating the most recent changes as applicable.

3.1.10 Taxiway Requirements

Construction of parallel and connecting taxiways provide many benefits including enhanced safety conditions by minimizing back taxiing runways and also increased airfield capacity. A full-length parallel taxiway, 40 feet wide, is proposed for Runway 9/27. A full-length parallel taxiway on Runway 18/36 has also been shown to be constructed along with the crosswind runway. FAA recommends a runway centerline to taxiway centerline separation of 240-feet for B-II not lower than ¾ mile visibility. Currently the separation between the runway and taxiway is 250 feet. It has been shown to maintain this width throughout the planning period, as it meets FAAs minimum standard of 240 feet.

3.1.11 Navigational Aids

Runway End Identifier Lights (REILs) are recommended for all future runway ends, to assist pilots in visually identifying the runway end at night. Touchdown zone wind cone indicators will also be added to aid pilots in determining winds near the end of the runway. Precision Approach Path Indicators (PAPIs) are shown to be maintained on the Runway 9/27 and included on proposed Runway 18/36; while the Rotating Beacon and AWOS are also to be maintained throughout the planning period.

Non-precision pavement markings are shown on all runway ends.

3.2 Landside Facilities Requirements

This section will provide requirements for facilities supporting general and corporate aviation activities at C15.

3.2.1 Aprons

The apron area at C15 is located south of the terminal building and hangars. It is approximately 30,323 square yards and provides parking area for based and transient aircraft. An apron rehab is in the works at the Airport and should suffice throughout the 20 year planning period.

A component of the Airport Layout Plan process is to assess the present and future apron space needs based on the forecasts of aviation activity presented in Section Two. Apron space is a

function of the number of based and itinerant aircraft parking requirements, fueling requirements, Fixed Base Operator needs and short-term loading and unloading needs.

Existing tie-downs areas should be adequate to accommodate future airport activity. As corporate aircraft are anticipated to operate on a greater level in the future, it is recommended that additional apron space be developed for larger aircraft and to accommodate proposed hangar space.

Based upon the representative fleet mix of Falcon 900 and Rockwell Commander 840, previously presented, it will be assumed that future itinerant and based aircraft at C15 will most likely be made up of Aircraft Design Group (ADG) II aircraft. Thus, the apron layout should be designed and maintained appropriately. Existing and future apron areas should provide ADG II taxilanes, along with appropriate safety area and object free area setbacks, to facilitate the safe maneuvering of aircraft into and out of the terminal area. A long term future expansion area for corporate aviation should be identified.

Currently, the airport is equipped with (1) 10,000 gallon Jet A self-fueling tank and (1) 10,000 gallon 100 LL self-fueling tank. These tanks should provide sufficient fuel for the number of existing and anticipated aircraft to utilize the airport.

3.2.2 General Aviation Facilities

The existing terminal building provides administration and fixed based operations and is approximately 1000 square feet. A public area for concessions and passenger pickup, pilots lounge, administration office, conference room, and restrooms are available in the administration area. It is recommended that the existing Terminal Building be maintained during this planning period, but due to age and useful life updates and/or replacement may need to occur and will be at the airports discretion. A 24 hour pilots restroom, which can be accessed by a 4-digit Unicom frequency number and is located past the T-hangars area, west of the terminal building, should also be maintained during the planning period.

3.2.2.1 Aircraft Storage (Hangars)

It is assumed that with the ownership of an aircraft constitutes a sizeable investment, both in terms of the aircraft itself and the avionics package installed; and therefore the owner of an aircraft would desire to protect such an investment using covered aircraft storage. Currently, there are two T-hangars and 4 Corporate hangars at C15.

For planning purposes, hangar facility requirements will be based on the assumption that the majority of future based aircraft will be stored in indoor hangar facilities. Based on the forecasts of future activity, the number of based aircraft is anticipated to grow from 42 to 59 by the end of the forecast period. Additional hangar facilities to accommodate anticipated Corporate and General Aviation aircraft have been shown as future development at C15. It is assumed that future hangar demand will be for a mix of T-Hangar, corporate hangar, and community/group hangar facilities, depending upon owner preferences and the actual fleet mix. In order to properly plan for these facilities, and not interfere with future airfield development

recommendations, general development areas need to be designated. To accommodate demand beyond the planning period and to protect areas, we have shown additional hangar locations.

Along with the need for corporate hangar facilities, comes the need for sufficient landside access and vehicle parking. Proposed corporate aviation development areas should be set aside on the Airport Layout Plan to provide flexible space for varying hangar sizes, parking, apron layouts, and landside infrastructure needs. The Pekin Municipal Airport currently owns enough land adjacent to the existing apron to add additional hangars, as needed, and to extend the vehicle access road to accommodate parking near the proposed hangar facilities.

3.2.2.2 Fueling Storage

As previously discussed, C15 provides aircraft fueling by (2) two self-service; 1 – 100LL and 1 – Jet A fuel, tanks located on the eastern portion of the ramp. These existing fueling facilities are recommended to be maintained throughout the planning period.

3.3 Land Acquisition

Acquisition of land in fee simple is necessary for the protection of Runway 27's Runway Protection Zone (RPZ). Land will also need to be acquired to accommodate a crosswind runway. This land is currently used for agricultural purposes. Avigation Easements will need to be acquired in various areas around the airport, to protect the airports Part 77 approach surfaces.

Section Four
Development Alternatives

4.0 Introduction

As a component of the planning process, the generation of development alternatives is necessary to identify scenarios which best accommodate both the existing and anticipated level of aviation demand at C15. In the previous section, recommended airside and landside facilities were identified to satisfy projected demand levels. The next step is to evaluate the various ways that these facilities can physically be accommodated. As an Airport Master Plan update has not been accomplished for several years at C15, further analysis of development alternatives should be completed to provide a comprehensive assessment of future expansion needs and opportunities.

The generation of airfield alternatives will include:

- Runway extension
- Addition of Crosswind Runway

The generation of landside alternatives will include:

- Terminal area development

An important objective in preparing these development alternatives is to distinguish improvement projects that yield the optimum combination to accommodate the airport's future aviation demand while minimizing potential adverse impacts on airport operations, efficiency, flexibility, and the environment. An additional consideration while selecting preferred alternatives is the funding capacity of the community and/or airport sponsor to implement the recommended projects.

4.1 Development Constraints

Potential constraints must be identified during the development alternative's process to determine the associated impacts to development. A general analysis of airport development indicated the following constraints:

- Developed Lands – Runways 9/27 & 18/36
- Existing Roadways – Runways 9/27 & 18/36

4.1.1 Developed Lands

Land use around the Pekin Municipal Airport consists of agricultural and residential land. Land acquisition to the east will be limited due to the confines of Illinois State Highway 29. Any alternatives will be configured to the North, West, and South and on lands currently owned by the airport. These areas are less developed and have fewer constraints than the other areas.

4.1.2 Existing Roadways

The location of Illinois State Highway 29 is not optimal for expansion of Runway 27 or airport development. Presently, the Runway 27 Runway Protection Zone (RPZ) is located, partially, on the opposite side of Highway 29. The north boundary of the airport is South Pekin road. It is far enough from the airport to account for a future north/south crosswind runway. The west and south boundaries, Wagonseller Road and Townline Road have minimal restraints on expanding the airport. The south boundary leaves plenty of room to entertain a crosswind Runway at C15, while the west boundary is more than 1,000 feet from the end of existing runway 09, leaving room to extend the east/west runway in the future.

4.2 Airfield Development

Airfield facilities, primarily the runway system, require a large amount of land and often influence development of alternatives for other airport facilities. In general, proposed airfield modifications should both facilitate compliance with FAA design criteria and meet the long-term development needs of the airport. This section will present development alternatives for bringing the airfield into compliance with current FAA regulations, and those necessary for meeting long-term runway length and width requirements identified in the *Facility Requirements Section*. Constraints associated with airfield development will be indicated for each development alternative.

4.2.1 Existing Airfield Compliance

The current airport facility meets minimum FAA airport standards for small B-II aircraft. Past land acquisition in the approach areas of Runway 09 fully protect the approach surface and Runway Protection Zone.

The function of the RPZ is to protect people and property on the ground in the event of an aircraft undershooting the runway. Where practical, airport owners should completely own property comprising the RPZ and clear it of all above ground objects. Where this is impractical, airport owners are to, at a minimum, maintain the RPZ clear of all facilities supporting incompatible uses including, but not limited to, those that lead to an assembly of people.

The airport does not currently control all of the area in the approach to Runway 27. The Runway Protection Zone will need to be shown as future fee simple acquisition.

It is necessary to expand the airport to meet future aviation demand. To address this need, as well as contending with the constraints at the airport, the following alternatives were developed:

4.2.2 Alternatives

Due to the location of Illinois State Highway 29, expansion of runway 9/27 in that direction is restricted. Development to the west allows the airport to utilize their property and minimizes the amount of land needing to be purchase to enhance the runway. There is plenty of available land northwest and southwest of the airport, which is potentially obtainable for use in constructing a crosswind runway. Each alternative has been designed using a Falcon 900, as

mentioned in the facility requirements section of this report. A Falcon 900 is in the B-II aircraft design category, using the FAA's Advisory Circular 150/5300-13.

A north/south runway is included in each alternative to meet crosswind requirements and A-I aircraft.

Alternative 1 – Straight-In Non-Precision Approach

This alternative was discussed to improve the facility without extending the current runway at C15. Incorporating a Straight-In, Non-Precision Instrument Approach procedure to the airport was looked at. It was decided that this would satisfy the current needs, but not the long term requirements.

Alternative 2 – Runway 9/27 ~500' Extension

Airport owned land west of the runway 9 end allows for future expansion in that direction. Alternative 2 shows a 500' extension of runway 9, keeping the RPZ inside of the airport property lines and concurring with FAA requirements for Runway Protection Zones. Acquiring avigation easement is recommended to encompass the side transitional surfaces of the approaches at C15.

Also shown in Alternative 2 is the addition of a crosswind runway (18/36), slightly larger than 2,800 feet in length. This would require approximately 120 acres of land to be acquired and a small amount of avigation easement to be obtained over the side transitional surfaces of the proposed runway 18 and 36 ends.

Exhibit 4-1 provides an illustration of this alternative.

Alternative 3 – Runway 9/27 ~820' Extension

This alternative is slightly different from alternative 2. To utilize the entire property west of the runway 9 end, it is recommended to extend the runway approximately 820 feet to the west. This extension allows for the approach surface to stay within airport property; no other fee simple acquisition is needed with this extension.

A crosswind runway is also proposed for alternative 3. Runway 18/36 is projected to be approximately 3,300 feet long. This runway is constrained by South Pekin Road, to the north, and Townline Road, to the south. This alternative allows for the approach surface at the runway 18 end to extend no further than the boundary of South Pekin Road. The airport expressed a greater interest in expanding further on the south side of the airport. The runway 36 end extends just short of Townline Road, positioning a portion of the RPZ and approach surfaces on the opposite side of the road. It is recommended that the airport purchase that land in fee, to abide by the FAA's RPZ requirements. Avigation easement will need to be purchased over the side transitional surfaces on the primary and proposed crosswind runway's.

Exhibit 4-2 provides an illustration of this alternative.

Alternative 4 – Runway 9/27 Approach down to ¾ Mile

Alternative 4 proposes a lower approach to runway 9 and 27. The proposed crosswind runway and runway 9, approximately a 500 foot extension, are the same as Alternative 2. An approach down to ¾ mile, on runway ends 9 and 27, are shown in this alternative. Acquisition of the runway protection zones on each end, are recommended, along with obtaining avigation easement over the side transitional surfaces on runway 9/27. This alternative requires approximately 20 acres of additional land acquisition on the opposite side of Illinois State Highway 29.

Exhibit 4-3 provides an illustration of this alternative.

Summary

The determination of a preferred development alternative is dependent upon several factors including development potential, phasing, and impacts upon other communities. In reviewing the options, the City of Pekin weighed the following:

- Aviation demand
- Utilization of airport owned property
- Future Land Acquisition
- Perceived cost implications

Upon review of the above considerations, the City of Pekin has selected Alternative 3 (Runway 9/27 Extension to ~820′ and Crosswind Runway - ~2,800′ x 75)

- It provides the greatest aeronautical value per dollar invested by accommodating future traffic at the lowest cost.

- Maximizes previous facility investment by limiting removal or abandonment of existing pavements

- Efforts to expand beyond to large aircraft and/or lower minimums was deemed too aggressive of a plan

4.3 Terminal Area Development

This section will provide development concepts to support the long-term terminal area facilities.

4.3.1 Recommended Terminal Area Development

In previous sections of this report it was determined that the number of based aircraft at C15 will increase during the 20 year forecast period. This increase is forecasted to include the addition of corporate aircraft.

The Pekin Municipal Airport currently has a waiting list for General Aviation aircraft owners. There is plenty of room for expansion to the west of the existing terminal area. The airport

showed interest in expanding the terminal area to the west and making the proposed crosswind, a north/south runway to utilize the existing airport property. With anticipated corporate and general aviation demand the existing airport owned property is sure to be exhausted. Two alternatives were proposed to the sponsor for terminal development with increased t-hangar and corporate hangar expansion. The addition of t-hangars and corporate hangars will be adequate in meeting the forecasted demand at C15. **Exhibit 4-4** and **Exhibit 4-5** provide illustrations of both alternatives.

The determination of the sponsors preferred terminal development alternative was based upon the most efficient use of airport owned land. The airport chose **Exhibit 4-5** as the preferred alternative to fulfill the future needs at the Pekin Municipal Airport.

Section Five
Plan Implementation

5.0 Introduction

The resulting outcome of the planning process is the development of an implementation plan that considers the current and planned capital improvements needed for plan completion.

Most general aviation airports throughout the country rely on a combination of local, state and federal funds for the development of an airport. Major airport development projects such as land acquisition, avigation easements, navigational aids, runways, taxiways, aprons, entrance roads, lighting, fencing, etc., are eligible for 95% funding from the Airport Improvement Program (AIP). This program is administered by the Federal Aviation Administration (FAA) through the Illinois Department of Transportation -Division of Aeronautics under a block grant program. The AIP is funded from the Airport and Airways Trust Fund, a user-based tax collected from the sales of air travel tickets and sales of aviation fuel.

Available state funding measures usually equate to 2.5% of the eligible project costs, leaving the local sponsor's share, for eligible development items, to approximately 2.5%.

The following section presents a description of the short and long-term physical development program for the Airport. Based on information presented in previous sections, a number of facility improvements may be necessary over the 20-year planning period to accommodate future aviation demand.

This section will mainly focus on infrastructure improvements projects that will require funding from multiple sources including federal, state, and local sources.

5.1 Airport Development Schedule and Cost Summaries

For preliminary scheduling and budgeting purposes, it is necessary to prepare a development schedule that indicates when the recommended airport development projects are most likely to be implemented. The timing for specific projects were estimated upon anticipated infrastructure conditions and forecasted levels of activity, in conjunction with existing TIP priorities already established by C15. However, the actual airport activity levels and/or infrastructure conditions that will ultimately establish the need, justification, and prioritization for the recommended improvements will likely vary somewhat from the anticipated timeline in this plan.

Therefore, this Implementation Plan should not be construed as a rigid development schedule, but rather as a flexible reference tool for local decision-makers to identify and evaluate future development needs at C15. As such, these plans should be continually reviewed and updated to reflect actual activity level trends, local financial circumstances and/or funding opportunities, and any adjustments in local priorities that may influence future airport development patterns.

The long-term physical development of the airport has been separated into three planning phases, short-term (0-5 years), intermediate-term (6-10 years), and long-term (11-20 years).

5.1.1 Short Term CIP (0-5 Years)

Table 5-1 provides a summary of the proposed short term development phase of the Implementation Plan for C15. The cost estimates presented in this section are approximate in nature in accordance with the conceptual character of the planning process. Detailed costs for each project will be determined through an Application for Funds, Transportation Improvement Program (TIP), and/or through the project design process.

The short-term CIP projects focus on updating the airport to FAA standards, runway, and taxiway rehabilitation/extension, electrical/lighting, and site development are among the projects proposed in the short-term plan.

Total development cost for projects identified in the short-term CIP is estimated at approximately $3.2 million (2010 dollars). The rehabilitation of the electrical system and the construction of a full parallel taxiway are the largest projects identified in the short-term CIP (approximately $1.6 million). **Table 5-1** provides a list of projects identified in the Short-Term CIP.

Table 5-1:
C15 Short Term Capital Improvement Plan

Years	PROJECT DESCRIPTION	ESTIMATED PROJECT COST
1 - 5 Years (2012- 2016)	Installation of automated UNICOM to provide basic weather information to pilots	$88,500
	EA is for the completion of the parallel taxiway to the west end of the runway.	$6,000
	Rehabilitate runway and taxiway electrical system, including replacement of PAPIs	$700,000
	Construct, light and mark 1200 foot Parallel Taxiway to Runway 9/27 and install a lighted windcone	$903,200
	New T-Hangar Taxiway and T-Hangar Site Development; Extend T-hangar access road; relocate drainage ditch, Phase 1.	$390,960
	New T-Hangar Taxiway and T-Hangar Site Development; Extend T-hangar access road; relocate drainage ditch, Phase 2.	$367,200
	New Taxiway, West Apron to Parallel Taxiway, including lighting, marking and drainage.	$518,400
	Phase 1 - Crosswind runway construction; EA for crosswind runway and land acquisition	$125,000
	TOTAL	***$3,099,260***

Source: CMT, Inc.; 2012-2016 IDOT Transportation Improvement Program (TIPs) submittal

5.1.2 Intermediate Term CIP (6-10 Years)

The intermediate-term CIP was developed to focus on land acquisition and the addition of a crosswind runway at C15.

Total development cost for projects identified in the intermediate-term CIP is estimated at approximately $4.1 million (2010 dollars). The construction of the crosswind runway is the largest project identified in the intermediate-term CIP (approximately $3.0 million). **Table 5-2** provides a list of projects identified in the Intermediate-Term CIP.

Table 5-2:
C15 Intermediate Term Capital Improvement Plan: 6 – 10 Years

6 - 10 Years (2017 - 2021)	Phase 2 - Crosswind runway construction; land acquisition for crosswind runway	$557,065
	Extend T-hangar access road; relocate drainage ditch; new auto parking lot.	$203,040
	Phase 3 - Crosswind runway construction; construct, light and mark crosswind runway	$3,024,000
	Reimbursement for EA for Crosswind Runway	$62,500
	Rehabilitate Entrance Road & Parking Lot	$304,800
	TOTAL	***$4,151,405***

Source: CMT, Inc.; 2017-2021 IDOT Transportation Improvement Program (TIPs) submittal

5.1.3 Long Term CIP (11-20 Years)

The long-term CIP was developed to focus on completing aircraft storage, vehicle access and parking, extension of primary runway, and airport facility expansions. Total development cost for projects identified in the long-term CIP is estimated at approximately $6.1 million (2010 dollars). The hangar construction and primary runway extension are the largest projects identified in the long-term CIP (approximately $5.6 million). **Table 5-3** provides a list of projects identified in the Long-Term CIP.

Table 5-3:
C15 Long Term Capital Improvement Plan: 11 – 20 Years

11 - 20 Years (2022 - 2031)	Corporate Hangar (5)	$1,440,000
	8-unit T-hangar (4)	$1,619,352
	Vehicle Parking/T-hangar access road extension	$381,000
	Acquire Easement over transitional surfaces and to comply with FAA standards; clearzone protection for runway clearance	$161,000
	Fee Simple Acquisition, comply with FAA standards; clearzone protection for runway clearance	$32,640
	Taxiway Turnaround Pavement Removal & Extend Primary Runway 820' & Parallel Taxiway Extension; Relocation of PAPIs & REILs	$2,538,800
	TOTAL	***$6,172,792***

5.2 Key Actions and Responsibilities

Capital improvements at airports require a number of steps to be completed prior to construction activities begin. The following actions with associated responsibility are required:

- **Sponsor Approval** – the airport sponsor must approve the proposed capital improvement project including board approval if required.
- **Planning Efforts** – the Airport or their representing engineering firm must complete the appropriate level of planning documentation for capital improvement projects. These documents can include an Airport Layout Plan, Airspace Approval, Benefit-Cost Analysis, Project Justification, etc. In addition, depending on the size and complexity of the proposed capital improvement project (i.e. new runway or runway expansion), the Airport may need to complete a public outreach program to identify the benefits of the project and allow the public to provide critical feedback on potential impacts. The level of effort necessary to conduct a public outreach program is dependent on specific project details.
- **Environmental Documentation** – the Airport under the National Environmental Protection Act (NEPA) and in accordance with FAA policies must submit the necessary environmental documentation and receive approval by the appropriate agencies prior to federal funding being allocated to the proposed capital improvement project. Environmental documentation should be submitted early in the planning/design stage of a project due to amount time required to complete the environmental review process. Specific environmental documentation requirements are provided in the Environmental Overview Section.
- **Land Acquisition** – the Airport must secure any additional land resources (fee simple or avigation easement) necessary for the proposed capital improvement project prior to construction beginning. The Airport should begin the land acquisition process as soon as practicable as this process can take anywhere from 9 months to 2 or 3 years to complete depending on level of complexity. There are no proposed capital improvements that will require land acquisition.
- **Project Design** – this process involves the design of the proposed capital improvement project and typically takes between 36 and 60 weeks to complete depending on the level of complexity and the level of agency coordination. If the runway centerline or threshold is being relocated, project design should begin as early as possible as it may take between 12-24 months to complete depending on coordination of the AGIS (obstruction) survey and the development of revised and or new instrument approach procedures.
- **Agency Coordination Activities** – depending on the size and complexity of the proposed capital improvement project, coordination and permitting with a number of agencies may be required. The time to complete coordination and permitting efforts with agencies is dependent on specific project details.
-

APPENDIX

Airport Layout Plan