

KANAB
MUNICIPAL AIRPORT

AIRPORT MASTER PLAN 2016



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EXECUTIVE SUMMARY

Kanab Municipal Airport (FAA identifier = KNB) is owned and operated by the City of Kanab, Utah. The Airport Master Plan was undertaken with a grant issued by the Federal Aviation Administration (FAA) as well as by the City of Kanab. The Master Plan was prepared in accordance with pertinent FAA advisory circulars and other guidance documents. A master plan process evaluates an airport's existing conditions, determines future aviation demands, and provides a comprehensive and systematic approach to meeting that demand over a twenty-year period. The Master Plan was formally adopted by the Kanab City Council on _____.

Existing Conditions

KNB is classified by the FAA as a general aviation airport, which means that it does not accommodate airline service. The airport has a single runway, 1-19, 6,193' x 75'. There are taxiway turnarounds at each runway end and a taxiway in the middle of the runway to the terminal area. The City constructed a new airport terminal building (shown below), which was opened in the summer of 2016. The old building was demolished.



FIGURE 1 NEW TERMINAL BUILDING

The FAA has published a non-precision GPS instrument approach to Runway 1. Due to high terrain north of the airport, FAA is unable to publish an instrument approach to Runway 19.

FAA records indicate there are 20 based aircraft at KNB and approximately 3,000 aircraft operations (takeoffs and landings) per year, or approximately 8 operations per day on average. The airport meets FAA design standards for Airport Reference Code (ARC) B-II, which means it can accommodate all piston-engine GA airplanes, as well as smaller corporate turboprops and jets such as the Beech King

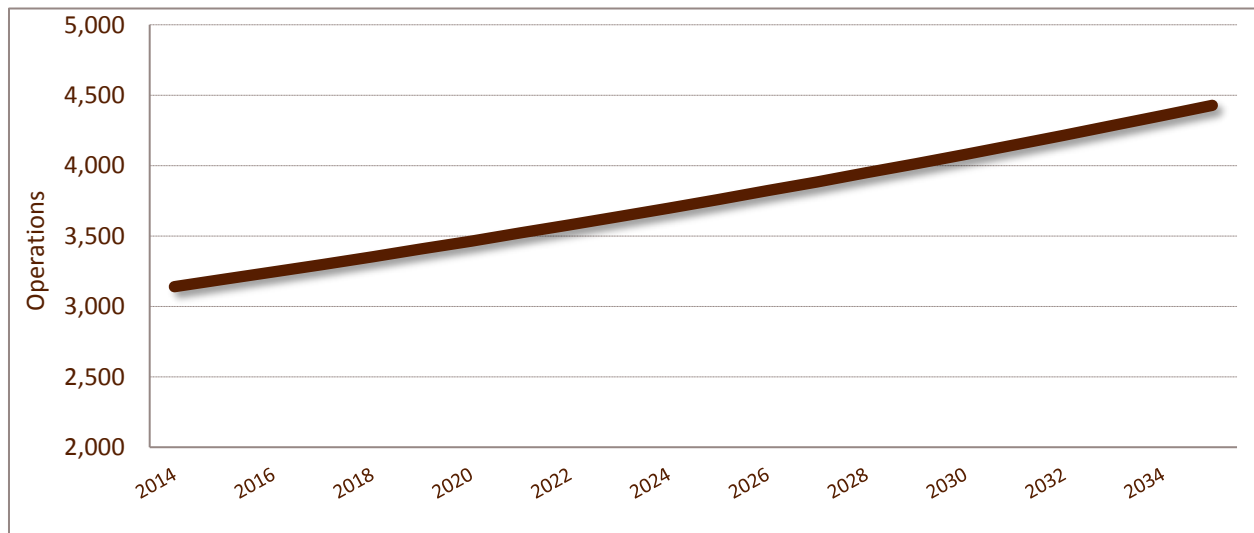
Air 200, Cessna Mustang, Citation CJ-1, CJ-2, and CJ-3, and Embraer Phenom 100 & 300. Larger jets such as the Hawker 800, Falcon 900 and 2000, Challenger 300, and Gulfstream G-IV also occasionally use KNB, but do not generate sufficient activity to meet FAA's 'substantial use threshold' of 500 itinerant operations per year needed to justify expanding the airport to ARC C-II standards. The operational capacity of the runway and taxiway system exceed existing and projected activity, and there are no operational delays at the airport.

Mapping was prepared by Woolpert, Inc. to FAA's Airport Geographic Information System (AGIS) standards, and was uploaded on FAA's web site and accepted and approved by the FAA and the National Geodetic Survey (NGS). The mapping documented penetrations to the FAA's 14 CFR Part 77 imaginary surfaces, particularly to the north of the airport. There are a number of red obstruction lights situated on top of utility poles on the north side of the City, and an analysis was prepared and discussions held with FAA to determine if the obstruction lights could be removed or reduced in number, to reduce the light impact at night. The FAA determined that the utility poles would need to be relocated or shortened in order for the obstruction lights to be removed.

Aviation Demand Forecasts

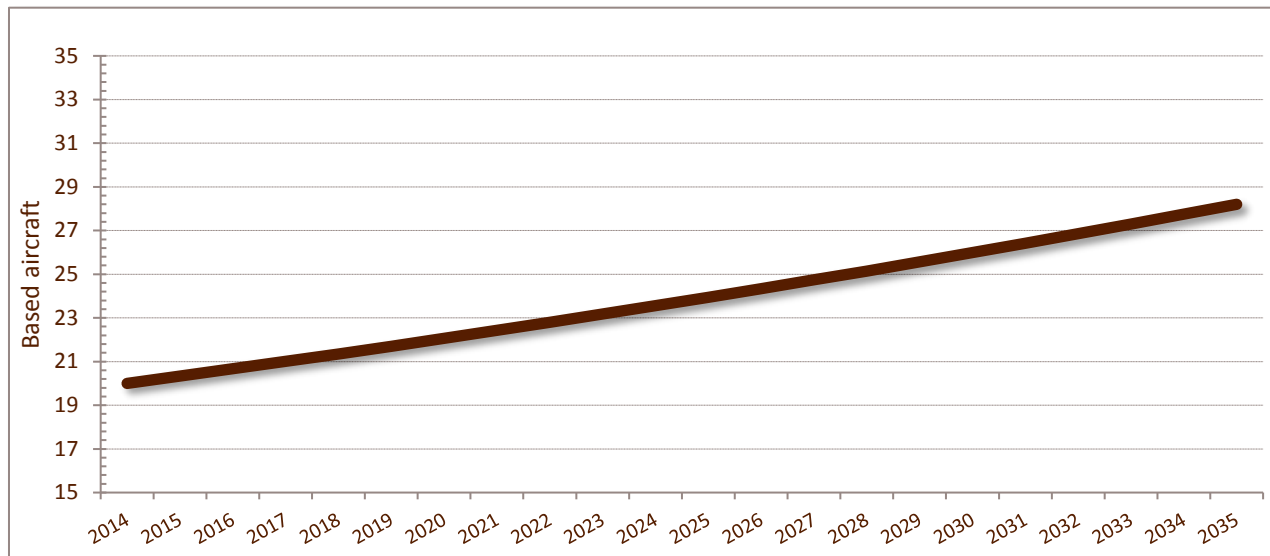
The forecasts of aviation activity identified and analyzed three scenarios to account for a number of variables that could affect future activity at KNB. The analysis also examined the FAA's Terminal Area Forecast (TAF) for KNB. The City decided that the High Growth Scenario, shown below, most accurately reflects future trends at the airport. The FAA accepted the forecasts.

FIGURE 2 RECOMMENDED AIRCRAFT OPERATIONS FORECAST - KANAB AIRPORT



Source: Jviation. Note: Increase = 1.7% per year growth rate.

FIGURE 3 RECOMMENDED BASED AIRCRAFT FORECAST KANAB AIRPORT



Source: Jviation. Note: Increase = 1.7% per year growth rate

Based on the operational capacity of the existing airport facilities and the projected rate of growth of future aviation activity, shown above, the Master Plan recommended that the Airport Reference Code (ARC) remain B-II throughout the forecast period. The critical design aircraft will remain the Beech King Air 200, Cessna Citation CJ-1, CJ-2, and CJ-3. Larger corporate jets will continue to use KNB on an as-needed basis.

Capital Improvement Plan (CIP)

The Master Plan recommended that, based on the forecast of activity, the runway and taxiway remain in place at their current location and dimensions. Kanab Airport's CIP was updated to include projects recommended in the Master Plan. It was noted that FAA's share of eligible costs of future improvement projects is subject to the requirements adopted by Congress as the FAA's Airport Improvement Program (AIP) is reauthorized.

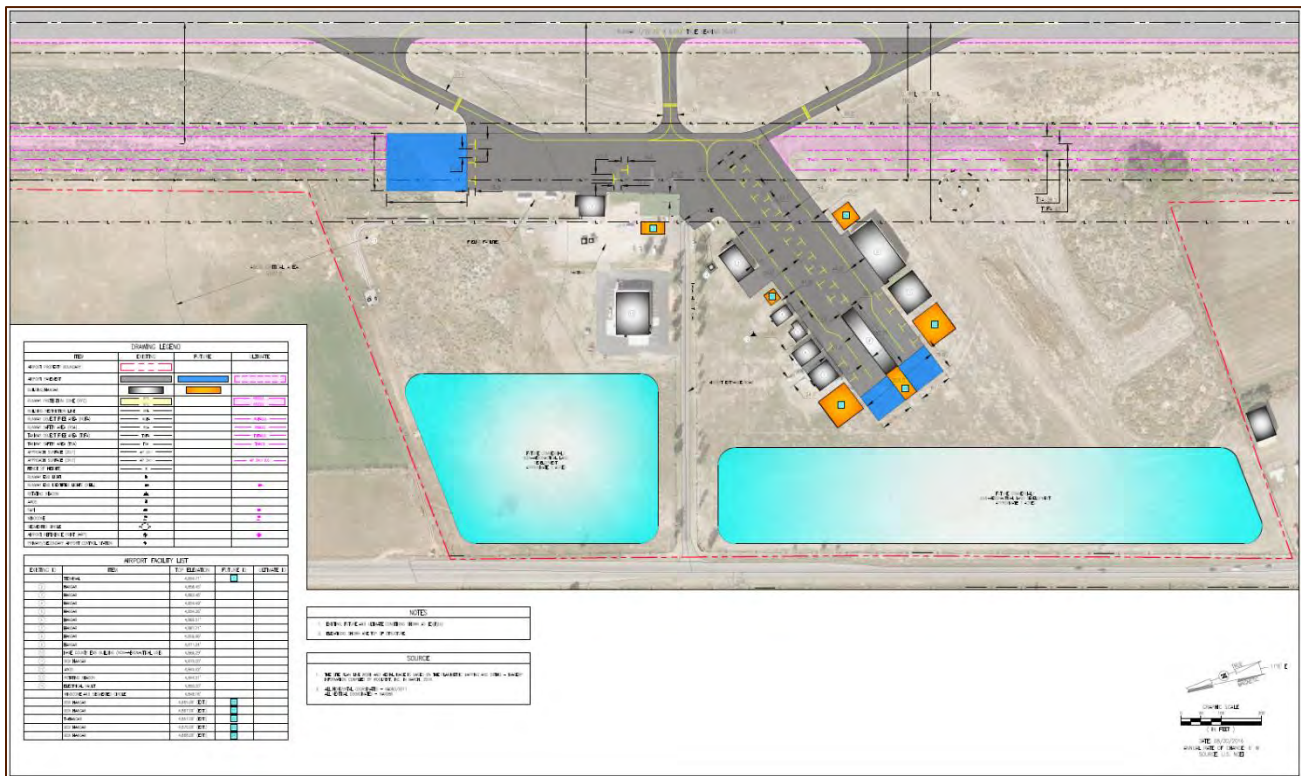
The airport financial situation was examined. It was noted that airport-related revenue could be increased by increasing rates and charges on land and building leases, consistent with FAA policies regarding leases. FAA grant assurances require airports to be as financially self-sufficient as possible. FAA policies also limit lease terms to a maximum of 50 years.

The Master Plan identified approximately 12 acres of land in the terminal area that could be designated as surplus in relation to future aeronautical purposes, which could be developed for non-aeronautical uses such as light industrial, commercial, etc. The City must ensure that such development will be fully compatible with aircraft and airport activities, and that the revenue generated by such development be dedicated to the airport for operations, maintenance, and capital improvements.

The Master Plan also identified additional hangar development, and an extension of the aircraft parking apron to accommodate future based and transient aircraft.

Kanab Municipal Airport Master Plan

FIGURE 4 RECOMMENDED AIRPORT DEVELOPMENT PLAN



The Master Plan noted that ultimate development (i.e. beyond the 20-year planning period) should include the runway extension and widening recommended in the 2002 Airport Master Plan, a full length parallel taxiway, and the Airport Reference Code (ARC) be upgraded to C-II. The determination to implement those improvements will be based on actual traffic levels at KNB over the next 10 – 20 years.

The FAA requires that Master Plans include a reuse, recycle, and waste management plan. It was noted that the City of Kanab actively participates in a recycling program, and is making efforts to improve the city's recycling capabilities. The City recently approved the submission of a Recycling Market Development Zone application. The Master Plan also included best practices adopted at other airports and recommended by the FAA.

Airport Layout Plan (ALP)

The Airport Layout Plan is graphic depiction of the existing and proposed airport facilities. The ALP set consists of a number of drawings depicting various aspects of the airport facilities as well as the airspace and land use on and in the vicinity of the airport. The ALP drawing set was prepared in accordance with FAA Standard Operating Procedures 2.00, Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs). The ALP was submitted for review by the FAA. Approval of the ALP by the FAA was received on _____.



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- Attachment B – Utah Continuous Airport System Plan (UCASP)
- Attachment C – 2002 Kanab Airport Layout Plan (ALP)
- Attachment D – Kanab Airport Facility Records
- Attachment E – Kanab Airport Facility Directory/Chart Supplement
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Public Outreach Program

- City Council Meeting/Presentation, October 13, 2015
- City Council Meeting/Presentation, February 23, 2016
- City Council Meeting/Presentation, July 12, 2016
- Airport Users Public Meeting/Presentation, July 12, 2016

1.0 STUDY INTRODUCTION & GOALS

This Airport Master Plan (AMP) defines a development concept for Kanab Municipal Airport (KNB or the Airport) over the course of a 20-year planning period. This plan will provide the City of Kanab (the Airport Sponsor or Sponsor) with a long-range vision for airport development that is designed to result in a safe, efficient, economical, and environmentally-acceptable air transportation facility that meets both existing and projected aviation demand levels. The study was funded by the Federal Aviation Administration (FAA) and the City of Kanab.

The ultimate goal of the AMP is to provide a carefully considered, systematic approach to the Airport's overall maintenance, development, and operation over a 20-year period. This planning document is intended to identify and then plan for future facility needs well in advance of the actual demand for those future facilities. The AMP is also designed to review and assess the Airport's current conformance with federal and state airport design and operational standards to help ensure that the Airport continues to operate in as safe a manner as possible. This is being undertaken to ensure that KNB can appropriately coordinate project approvals, design, financing, and construction, while avoiding the detrimental effects that could be realized due to inadequate or noncompliant airport facilities.

1.1 Master Plan Purpose and Objectives

The primary purpose of this Airport Master Plan is to produce a comprehensive planning guide for the continued development of a safe, efficient, and environmentally compatible aviation facility that meets the goals of the City of Kanab, Airport users and tenants, and the surrounding Airport service area. The plan must also satisfy FAA and Utah Department of Transportation (UDOT) guidelines for the development of Airport Master Plans and facilities, while incorporating characteristics that are unique to the service area. The study focuses on aeronautical forecasts, need and justification for development, and a staged plan for recommended development. Proposed airport development must adhere to standards that provide for safe aviation facilities while accommodating future demand. The staged plan typically looks at planning horizons of 0–5 years, 6–10 years, and 11–20 years. The first phase generally addresses existing facility deficiencies or non-compliance to airport design standards. The subsequent phases typically address the facilities and resources needed to accommodate predicted growth based on reasonable assumptions.

In addition to addressing these objectives, the AMP must also fulfill the broad master planning objectives established in FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, as well as those defined by the Airport. These objectives include the following:

- Document the issues that are considered at the time of the plan.
- Justify proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Prepare a graphic presentation of development and anticipated land uses in the vicinity of the airport.

- Develop a realistic implementation schedule, particularly the short-term capital improvement program (CIP).
- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required.
- Present a plan that adequately addresses the issues and satisfies local, state, and Federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
- Establish the framework for a continuing planning process.

1.2 Master Plan Study Elements

The Kanab Municipal Airport Master Plan has been prepared to be consistent with the guidance provided in FAA AC 150/5070-6B, *Airport Master Plans*, and other industry-accepted principles and practices. Specifically, this Master Plan has seven chapters that are designed to identify future facility requirements and provide the supporting rationale for their implementation.

Chapter One - Study Introduction & Goals provides an overview of the AMP, including its purpose, objectives, work products, and overall structure of the project.

Chapter Two - Inventory of Existing Conditions establishes a sound basis for plan and program development through the assimilation and documentation of relevant data. The inventory is designed to assemble essential data regarding the physical, operational, and functional characteristics of KNB, its sub-components, and its environs. This data collection process also includes the gathering of environmental data so that it can be considered throughout the master planning process and potential follow-on environmental efforts.

Chapter Three - Aviation Activity Forecasts essentially serve as the hub of the AMP by utilizing local socioeconomic information, as well as regional and national air transportation trends, to project the levels of aviation activity that can reasonably be expected to occur over the upcoming 20-year planning period. Assessing these future trends relating to airport utilization and operational activity levels is especially important in that many of the proposals and recommendations within the plan are principally based on aviation activity demand forecasts. Therefore, it is very important that the forecasts be both reasonable and defensible.

Chapter Four - Airfield Capacity & Facility Requirements utilize the results of the Forecast to assess the ability of existing airside and landside facilities to meet the projected level of demand for the short-, mid-, and long-term planning horizons. This analysis results in the definition of requirements for additional facilities, expansion to existing facilities, and the determination of those facilities that will meet the forecast of demand over the course of the 20-year planning period. Beyond this, airport facilities are examined with respect to improvements needed to safely serve the type of aircraft expected to operate at the airport in the future, including compliance with FAA design standards, as well as navigational aids to increase the safety and efficiency of operations.

Chapter Five - Development Alternatives & Recommended Plan considers a variety of solutions to accommodate the anticipated facility needs identified within the Facility Requirements analysis. Through this process, various facility and site plan alternatives are proposed and evaluated with respect to their ability to meet the projected facility needs. This analysis ultimately results in the preferred alternative that is deemed to best meet the facility requirements in the most efficient and appropriate manner available to achieve the airport's long-term goals. As a tool for the alternatives review and evaluation, matrixes are employed to help identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development. This evaluation method focuses on several key criteria including: cost, efficiency, feasibility, operational effectiveness, impacts, and other measures. Also included in this chapter is an environmental screening of the preferred development plan.

Chapter Six - Airport Financial Plan provides an overview of the funding sources for the airport capital improvement plan (CIP), and discusses the cost estimates for the projects listed in the CIP. The chapter also examines the rates and charges in place, the revenue sources, current tenant lease provisions, and presents recommendations to meet FAA's goal of financial self-sustainability.

Chapter Seven - Airport Recycling, Reuse, and Waste Reduction Plan presents recommendations for developing and implementing a recycling, reuse, and waste management program at the Airport. Mandated by the U.S. Congress and the FAA, the goal of the reuse, recycling, and waste management program is to help airports achieve environmental sustainability and lower energy costs. The program incorporates best practices from other airports, as well as recommended practices from the FAA and EPA.

Chapter Eight - Airport Layout Plan (ALP) provides graphic description of the recommended plan for the use, development, and operation of the airport. The ALP is a set of drawings intended to illustrate the existing and future facilities at the airport as well as other key features such as airport geometrics, airspace, property lines and interests, and other facets.

1.3 Overview of Airport Issues and Concerns

KNB's previous Airport Master Plan was completed in 2004 by Creamer and Noble. Since that time, some of the Airport issues and focal points identified in that master planning effort have been addressed through the completion of specific projects and/or the updating of specific airport documents. Some issues may not have been addressed due to changing industry circumstances and/or master plan assumptions and are yet to be resolved.

The FAA wants every master plan to identify and focus on the unique issues at each airport. For the 2016 KNB Airport Master Plan, the following issues and concerns have been identified and will be addressed:

- **Airport Reference Code (ARC):** The Airport currently has an ARC of B-II. This Master Plan will determine if this Runway Design Code (RDC) is still appropriate or if an upgrade to an ARC of C-II is required based on the future aviation traffic projected at KNB.

- **Aerial Survey and Photogrammetry:** To be consistent with FAA master plan requirements, this Master Plan must obtain FAA AGIS-compliant base mapping and provide a detailed analysis of all approaches.
- **Minimum Standards:** Assess KNB's minimum standards and lease rates and make recommendations.
- **Regional Economic Development Initiatives:** Define the role of KNB in relation to the City's overall economic development program. As noted in the City's recently adopted General Plan, one of its top overall community goals is to, "Encourage the attraction, retention and development of business and industry that gives Kanab economic vitality and balance."
- **Instrument Approach:** Determine if the current published instrument approach procedure to Runway 1 can be improved by lowering instrument approach minimums, given the obstructions to the north of the Airport

1.4 Master Plan Communication and Coordination

Public involvement is a part of many airport planning studies since it encourages information sharing and collaboration among the community and the airport stakeholders that hold a collective interest in the Airport. Stakeholders typically include airport management, the airport sponsor, tenants, users, local businesses and residents, federal and state agencies, elected and appointed public officials, and the general public. With a diverse stakeholder group, a variety of forums are often employed to enhance the effectiveness of project coordination.

Jviation undertook a comprehensive public outreach process throughout the course of the Master Plan, in conformance with FAA guidance in their Advisory Circular 150/5070-6B, *Airport Master Plans*, Chapter 4. Specifically, Jviation prepared for, attended, and made presentations at three meetings of the City Council, held a user's meeting at the Airport, and an open house for the public.

- Tuesday, October 13, 2015: meeting with the Kanab City Council presenting the project overview, the inventory, and draft forecasts.
- Tuesday, February 23, 2016: Airport user's meeting held at KNB.
- Tuesday, February 23, 2016: meeting with the Kanab City Council, presenting the facility requirements and alternatives.
- Tuesday, July 12, 2016: Open House and final presentation to the City Council presenting the final alternatives and financial plan.

All meeting presentations and project documents and information are available on the project website: <http://sites.jviation.com/knb/MP/index.html>



2.0 INVENTORY

The first step in the airport master planning process, as outlined in Federal Aviation Administration (FAA) Advisory Circular 150/5070-6B, *Airport Master Plans*, involves gathering information about the airport and its environs. An inventory of current conditions is essential to the success of a master plan since the information also provides a foundation, or starting point, for subsequent evaluations.

2.1 Airport Overview

Kanab Municipal Airport (KNB or the Airport) is owned and operated by the City of Kanab. Kanab City is the most populous community in Kane County, Utah. Kanab Municipal Airport is located approximately three miles south of the City's commercial business district. The south boundary of the airport is the Utah-Arizona border. The Airport also serves the community of Fredonia, Arizona, six miles south of the state border. The municipal boundaries of Kanab City have been drawn to include the airport property, but several of the adjacent parcels are outside of the city boundaries. This Airport Master Plan is being undertaken with a grant from the Federal Aviation Administration (FAA), and therefore is prepared in compliance with FAA Advisory Circular 150/5070-6B, *Airport Master Plans*.

2.2 Airport History¹

The first landing strip for aircraft in Kanab was built on the Chamberlain farm in 1934 following the adoption of the federal Air Mail Act, but it was little more than cleared brush in a pasture². At the end of World War II, several Kanab men who served in the Army Air Corps saw the potential of air service to boost the local economy. Emron F. Robinson, a veteran and flight officer, spearheaded the efforts. A plaque honoring his achievements is mounted in the current terminal building. With funds from the Federal Airport Act of 1946, the State of Utah, and a \$1,500 donation from the local Lions Club, a site approved by the Civil Aeronautics Authority (CAA) was purchased by Kanab City. The Airport included a ranch owned by a widow, Clara E. Spencer, who successfully sued the city, which had undervalued her land along Kanab Creek³.

Work on KNB began in the spring of 1948 by the contractor A. O. Thorn & Sons. By August, both the mile-long oiled runway and a shorter dirt runway were nearing completion. On October 24, 1948, the official dedication of KNB was conducted by Governor Herbert Maw. There was a crowd of approximately 2,000 in attendance, including movie stars flown in by the Universal Motion Picture Studio. Yvonne De Carlo christened a civilian twin-engine plane and the field⁴. Within a few months of the airport opening, Kanab City received money for three metal hangars.

¹ "Architectural Resources Survey and Effects Assessment, Kanab Airport Terminal & Electric Vault Project" prepared by Korral Broschinsky, November, 2015

² Kane County Standard, March 16, 1934

³ Salt Lake Magazine, May-June 1994: 35-36, 101

⁴ Kane County Standard, October 29, 1948

Between 1958 and 1959, Kanab City completed \$50,000 worth of improvements to the airport. The Whiting and Haymond Construction Company from Springville was the low bid for two miles of pipeline to supply culinary water, two parking aprons, two taxi strips, and re-oiling of the access road from US Highway 89¹. See **Figure 2-1**.

A local Kanab builder, Clifford Heaton, was awarded the contract for a new airport administration building with a bid of \$10,835². The administration building was a square brick structure with Modern-style sloped roof. The building also functioned as the main passenger terminal for the airport. The building was expanded with a frame addition around 1980. The addition included an outdoor waiting area under a sheltered canopy. Around this time, two additional hangars were built. Richard Brewer, the airport manager for seventeen years, lived in a house built just south of the terminal building (demolished in 2013).

FIGURE 2-1 – KANAB MUNICIPAL AIRPORT CIRCA 1960



Source: "Architectural Resources Survey and Effects Assessment, Kanab Airport Terminal & Electric Vault Project" prepared by Korral Broschinsky, Nov. 2015

At the turn of the twenty-first century, Kanab City built a long narrow hangar at the northeast end of the parking apron. A large private hangar was built south of the manager's house around 2003. The United Parcel Service (UPS) uses a storage shed just east of this hangar. Three additional private hangars were built around 2008. The largest building at KNB is the Kane County Sheriff's Department Search & Rescue facility (KCSAR) also built around 2008. The proposed new terminal

¹ Springville Herald, September 11, 1958

² Salt Lake Tribune, August 22, 1958

building and electrical vault are part of a long range plan for improvements to the airport, which is projected to have a steady increase in activity for through the next decade (KNB 2002 Master Plan).

2.3 Existing Documents

Existing documentation relating to the airport has been obtained and reviewed. This includes the following documents, plans, and information:

- KNB airport engineering and construction projects. The City has completed a number of projects at the Airport, as listed in **Table 2-1**. The City is constructing a new terminal building, which will be completed in spring/summer 2016.¹ The existing terminal building will be removed when the new building is opened.

TABLE 2-1 – PAST PROJECTS COMPLETED AT KNB

Year	Funding Source	Project	Amount
2014	FAA	AIP-12 Security Fencing	\$418,773
2013	UDOT	Airport Pavement Maintenance (Crack Seal & Paint)	\$106,690
2012	FAA	AIP-11 - Replace Rotating Beacon and Record of Survey	\$86,283
2010	FAA	UDOT & AIP-09/10 - Apron Rehabilitation	\$1,051,292
2007	FAA	AIP-08 - Rehabilitate Runway Lighting & Signing	\$389,312
2006	UDOT	Airport Pavement Maintenance (Apron Crack Seal & Paint)	\$26,631
2005	FAA	AIP-07 - Runway Overlay	\$480,585
2003	FAA	AIP-06 - Rehabilitate Runway 1/19 and Lengthen to 6,200'	\$1,792,302
2002	FAA	AIP-05 - AWOS III Installation & Airport Layout Plan Update	\$150,475

Source: Kanab Municipal Airport, Creamer & Noble, and Jviation

- The previous KNB Airport Master Plan (AMP) was prepared in 2002. The forecasts of demand and the facility recommendations presented in the 2002 Master Plan were reviewed against actual recent trends in activity since the previous Plan. Based on activity trends in the late 1990s and early 2000s, as well as the forecasts and the then-current FAA design standards, the 2002 Master Plan recommends upgrading KNB to accommodate medium to large size corporate jets (see **Appendix C**).
- The Airport receives grants from Utah Department of Transportation (UDOT), and also accommodates aircraft operated by the State of Utah. The State of Utah has completed a number of studies as part of its continuous airport system planning process. In 2007 the State System Plan presented information about KNB (see **Appendix B**), as well as an economic impact study. Utah DOT classifies KNB as a regional airport.

¹ The terminal was completed in the summer of 2016.

- FAA's Kanab Municipal Airport Terminal Area Forecast (TAF). The TAF is discussed in **Chapter 3, Aviation Activity & Forecasts**.
- Airport draft Minimum Standards, Tenant Leases, and Airport Budget. The FAA strongly recommends that airport sponsors adopt minimum standards, but does not require them. Minimum standards are a tool to ensure that the airport and its tenants are in compliance with the FAA grant assurances, and also ensure a level playing field for airport tenants by ensuring that everyone that provides aeronautical services on the airport is required to meet the same minimum standards. In addition to minimum standards, airports also typically have tenant leases, and in some cases airport operating rules and regulations, that are used as management tools. The FAA notes that minimum standards should be tailored to each individual airport, and they should also be consistent with the grant assurances. FAA does not approve minimum standards, although it will review and comment on them if requested to do so.
- Kanab City General Plan, Zoning Ordinance, and Guidance Documents. The City of Kanab adopted their latest General Plan in February, 2015. The Airport Master Plan must be consistent with the General Plan. The City's vision statement notes, "Acknowledging our past and planning for the future, Kanab is a well-planned community that continues to:
 - Promote our western heritage, culture and values.
 - Retain a friendly small-town feel and charm.
 - Strive for a diversified economy and desirable development.
 - Provide a healthy and happy atmosphere of enrichment for all residents through all stages of life.
 - Act as a destination and gateway to regional parks, monuments and open spaces, and
 - Ensure an environment that promotes the highest quality of life for living, working, visiting, and playing.

The General Plan also specifically addresses KNB:

- Preserve industrial land use near the Airport
- Future possible areas of annexation include ... the County lands in the vicinity of the city airport.
- Encourage future industrial growth to occur primarily near the airport
- Plan airport improvements. Review and update Master Plan including needs for future air transportation in the region. Include the public and seek funding for improvements with transportation professionals.
- Airport Improvements. The Kanab Municipal Airport, located in the south end of Kanab, serves the business and tourist community with scenic flights and charter service. The paved runway is 6,193 feet long and 75 feet wide. As the community grows, more emphasis on expanded development and use of the airport will become an important issue. Updates of the Airport Master Plan should be completed using a public involvement process, utilizing professional transportation consultants, specializing in airport planning.

2.4 Acquire Aerial Imagery and Base Mapping

The FAA requires airport sponsors to have Airport Geographic Information System (AGIS) mapping prepared as part of airport master plans. The AGIS mapping is prepared for the FAA, and it is also used as a base for the Airport Layout Plan (ALP) drawing set that is included in the Airport Master Plan. The FAA published “A Guide to Airport Surveys” dated May 15, 2009¹ that explains the AGIS program. The FAA has also prescribed the mapping standards in three advisory circulars:

- Federal Aviation Administration, Advisory Circular 150/5300-16A, *General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey*. February 13, 2006.
- Federal Aviation Administration, Advisory Circular 150/5300-17C, *Standards for Using Remote Sensing Technologies in Airport Surveys*. September 30, 2011.
- Federal Aviation Administration, Advisory Circular 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*. February 24, 2014. Note: FAA issued AC 150/5300-18C, *Survey and Data Standards for Submission of Aeronautical Data Using Airports GIS*, on September 30, 2015. However, FAA AC 150/5300-18B is the guiding document for the mapping undertaken for this Master Plan.

The FAA adopted the Airports Surveying Geographic Information System (AGIS) to help the Agency collect airport and aeronautical data to meet the demands of the Next Generation National Airspace System. One of the primary goals of the AGIS program is to streamline the airport survey process and centralize airport data storage into one integrated web-based Geographic Information System (GIS), called “Airports-GIS (AGIS).” Both the FAA and the National Geodetic Survey (NGS) review and approve the AGIS mapping for each airport when it is uploaded to FAA’s web site.

A number of lines of business within the FAA use the AGIS data, including Flight Procedures, Aeronautical Information Services, Air Traffic, and Airports, among others. The AGIS system is designed to be a complete “one-stop-shopping” site for obtaining and maintaining airport data for not only the FAA but airport sponsors as well.

Woolpert, Inc. acquired aerial imagery and mapping for the AGIS for KNB in the fall of 2015. Woolpert uploaded the AGIS files to FAA’s web site in the spring of 2016, where it was reviewed and accepted by the FAA and the National Geodetic survey (NGS). In addition to the mapping for the AGIS, Woolpert also collected the mapping necessary for the 14 CFR Part 77 imaginary surfaces that are shown in the Airport Layout Plan (ALP) drawing set. The areas that were mapped for the AGIS and Part 77 imaginary surfaces are shown in **Figure 2-2** and **Figure 2-3**. One of the specific uses of the mapping was to analyze the future need for the obstruction lights situated on top of utility poles on the north side of the City in relation to FAA requirements, which is presented in Chapter 5, Alternatives Analysis.

¹ FAA, https://airports-gis.faa.gov/public/data/Airport_Survey_White_Paper.pdf

FIGURE 2-2 – LIMITS OF FAA AC-18B AGIS SURVEY



Source: Woolpert, Inc.

FIGURE 2-3 – LIMITS OF ALP MAPPING AND ONE FOOT CONTOURS



Source: Woolpert, Inc.

2.5 Existing Conditions

2.5.1 Airfield Facilities

Kanab Municipal Airport has a number of airside and landside facilities as shown in **Table 2-2**, **Table 2-3**, **Figure 2-4**, **Figure 2-5**, and **Figure 2-6**. See **Appendix D** and **Appendix E** for more information about airport facilities.

TABLE 2-2 – KNB AIRSIDE FACILITIES

Airside	Dimensions	Condition
Runway 1-19	6,193' x 75'	Fair
Taxiway	35' wide	Good
Transient parking – south apron	7,655 s.y. (530' x 130')	Excellent
Based aircraft tiedown – north apron	10,666 s.y. (200' x 480')	Excellent
	26 marked tiedowns	
Hangar 1	80' x 50' (approx. 4,000 s.f.)	Fair
Hangar 2	140' x 67' (approx. 9,380 s.f.)	Very Good
Hangar 3	57' x 50' (approx. 2,850 s.f.)	Good
Hangar 4	60' x 40' (approx. 2,400 s.f.)	Good
Hangar 5	32' x 30' (approx. 960 s.f.)	Fair
Hangar 6	47' x 28' (approx. 1,316 s.f.)	Good
Hangar 7	60' x 50' (approx. 3,000 s.f.)	Good
T-1 T-Hangars (10 units)	180' x 33' (approx. 5,940 s.f.)	Fair
100LL Avgas Storage Tank	Above Ground, 10,000 gals.	Good

Sources: Kanab Municipal Airport, Jviation, site visits, 2002 Airport Master Plan

Notes:

1. Building dimensions scaled off of aerial photos – buildings not measured.
2. Building condition assessment based on visual inspection. Engineering/structural/utility analysis not performed.

TABLE 2-3 – KNB LANDSIDE FACILITIES

Landside	Dimensions	Condition
Terminal Building (being replaced in 2016)	60' x 28' (approx. 1,680 s.f.)	Poor
Vehicle Parking Lot- Paved	90' x 90' (approx. 8,100 s.f.)	Good
Kane County Emergency Building	82' x 100' (approx. 8,200 s.f.)	Very Good
Airport access road – Paved two-lane	Approx. 20' wide	Good

Source: Kanab Municipal Airport, Jviation, site visits, 2002 Airport Master Plan, Creamer & Noble

FIGURE 2-4 – KNB AERIAL, 2015



Source: Google Earth 2016

FIGURE 2-5 – KNB TERMINAL AREA, 2015



Source: Jviation

FIGURE 2-6 – KNB AIRPORT HANGARS



Source: Google Earth

Note: See **Table 2-2** for list of facilities

2.5.2 Airspace and Air Traffic Control (ATC)

Kanab Municipal Airport does not have a control tower. Of the 47 public use airports in the State of Utah (source: UDOT), only three have control towers: Salt Lake City, Provo, and Ogden Hill AFB, north of Salt Lake City, also has a control tower.

Kanab Airport is situated in Class G airspace, which is defined by FAA as uncontrolled – i.e. air traffic controllers do not provide traffic separation for aircraft and aircraft do not issue ATC clearances to operate at Kanab Airport.

Starting at 700 feet above KNB elevation is Class E airspace, which is approximately four nm in radius and extends from 700 feet AGL up to 18,000 feet (**Figure 2-7**). Aircraft operators are only required to obtain a clearance from air traffic control (ATC) to fly within the Class E airspace when weather reports indicate that clouds are lower than 1,000 feet above the Airport and/or visibility is less than three miles. The weather at KNB is defined as Visual Flight Rules (VFR) more than 95% of the time. There is a low altitude instrument training route used by military aircraft that proceeds generally east-west, located approximately two miles south of KNB and just south of Fredonia, AZ (**Figure 2-7**). The military training route (MTR) has little impact on aircraft operations at the Airport.

For aircraft operating on instrument flight plans, Los Angeles Center is the controlling ATC facility. Radar and ATC communications coverage in the vicinity of Kanab does not extend below 9,000' above mean sea level (MSL). Due to the high percentage of time that the weather is visual (VFR), and that the majority of aircraft landing and departing Kanab operate under VFR, there are no delays reported by aircraft operators using the GPS Runway 1 approach, or with obtaining instrument approach clearances when operating at KNB. Los Angeles Center noted: "(Instrument – IFR) Traffic into and out of KNB is minimal." There is not a remote communications outlet (RCO) at the airport to allow pilots on or close to the ground at Kanab to talk directly with Los Angeles Center when obtaining instrument flight plan clearances or cancelling instrument clearances. Pilots use phones to call LA Center or a Flight Service station for clearances, which is less efficient and more time consuming than being able to use their radios via an RCO.

FIGURE 2-7 – AIRSPACE IN THE VICINITY OF KNB



Source: FAA

2.5.3 Instrument Approach and Departure Procedures

The FAA has published one instrument approach procedure to KNB – a non-precision (i.e. lateral guidance only) GPS approach to Runway 1. See **Attachment F** for the instrument approach and departure procedures. The lowest minimums on the approach are 569 above airport elevation and one mile visibility. There is no approach light system to Runway 1. The minimums are higher than can be typically achieved with a non-precision GPS approach, indicating that there are obstructions in the vicinity of the airport. In addition, the departure procedures for aircraft operating under instrument flight rules (IFR) indicate the need to turn shortly after departing on Runway 1 to avoid high terrain north of the airport.

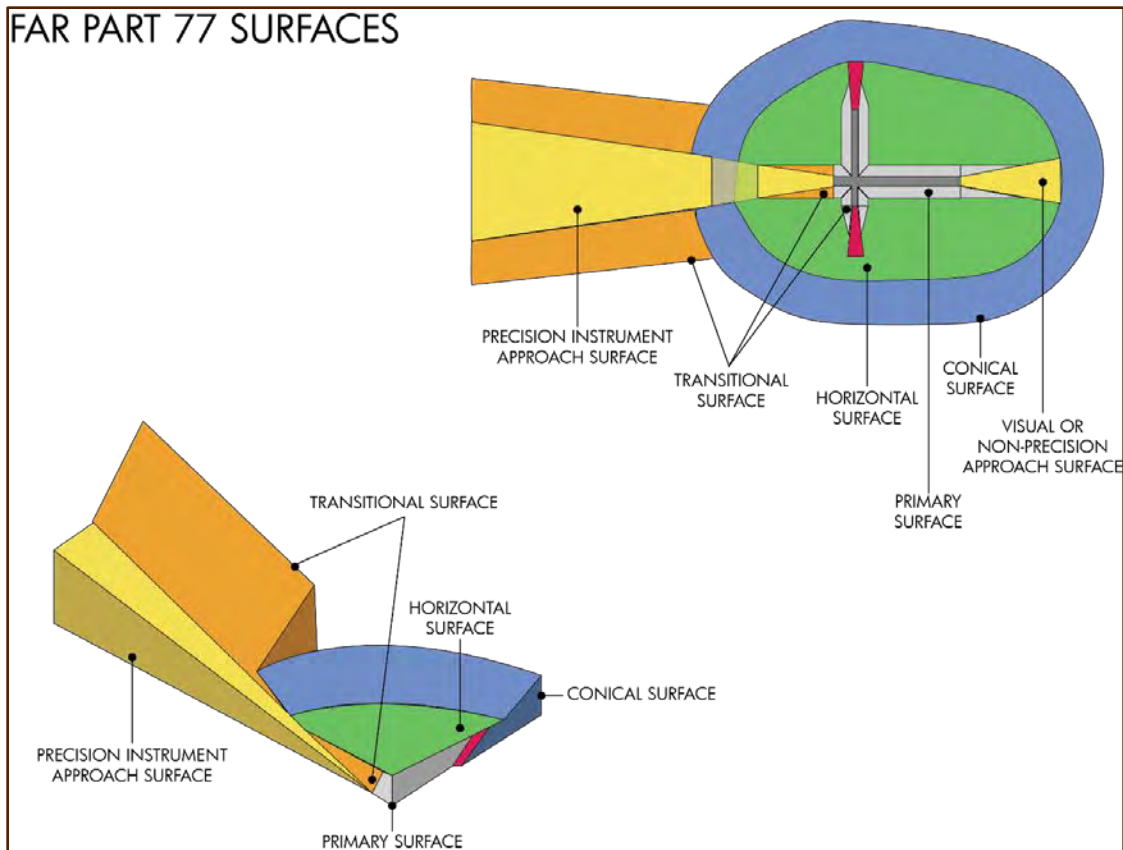
2.5.4 Obstruction Analysis

FAA defines the airspace in the vicinity of an airport in 14 CFR Part 77.25, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. There are five imaginary surfaces (shown in **Figure 2-8**) that constitute airport-related airspace:

- **Primary surface.** A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway.
- **Approach surface.** A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

- **Transitional surface.** These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.
- **Horizontal surface.** A horizontal plane 150 feet above the established airport elevation.
- **Conical surface.** A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1.

FIGURE 2-8 – PART 77 SURFACES



Source: FAA

When an airport sponsor, such as the City of Kanab, accepts an FAA grant they agree to abide by the FAA's Sponsor Assurances. The FAA requires airport sponsors to adopt plans to address penetrations to the imaginary surfaces.

"20. Hazard Removal and Mitigation: It (the airport sponsor) will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards."¹

¹ Source: FAA - Sponsor Grant Assurances

There are penetrations to the imaginary surfaces in the vicinity of KNB. The mountains situated north of the airport, for example, penetrate the conical surface. The utility poles situated on the north side of the City penetrate the horizontal surface, and also have obstruction lights on top of a number of the poles. The FAA acknowledges that sponsors are not able to remove certain natural objects, such as mountains, from imaginary surfaces, in which case obstruction lights can be installed.

Chapter 5, Alternatives Analysis, presents discussion concerning penetrations to the imaginary surfaces and FAA criteria regarding lighting and removal, and presents alternatives and recommendations regarding the obstruction lights on the utility poles.

2.5.5 Terminal Building / Landside Facilities

The existing terminal building (Figure 2-9) was constructed in 1958, with an addition constructed in 1980. It is a one story structure, constructed of mixed materials including brick, cinder block and wood, and includes offices, public lounge, and restrooms. It is approximately 1,680 square feet in size, and is connected with electricity, water, phone, and a septic system.

FIGURE 2-9 – EXISTING KNB TERMINAL BUILDING

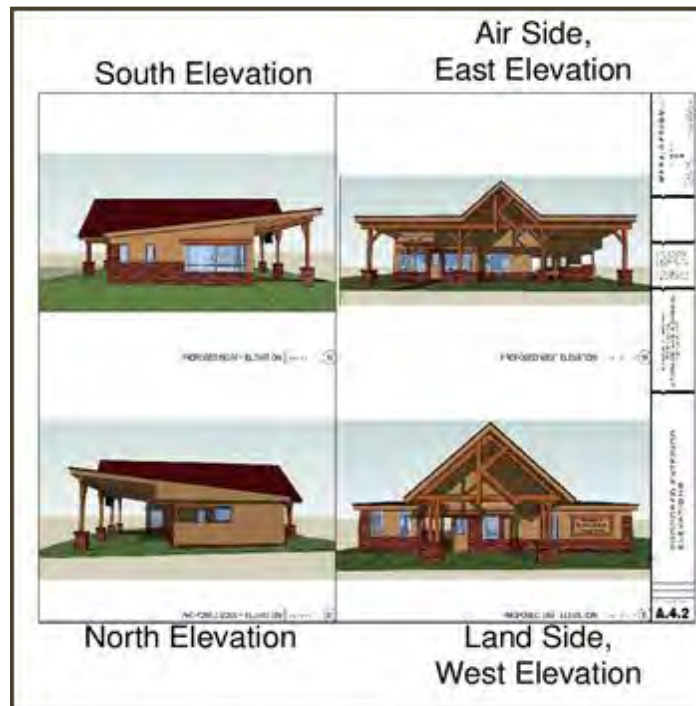


Source: Jviation

The City replaced the existing terminal building in the summer of 2016 (**Figure 2-10** and **Figure 2-11**). The new terminal building was designed by Mesa Design, and draft exterior plans are shown in **Figure 2-10**. The new building is one story, approximately 2,186 square feet in size, located east of the existing terminal building (i.e. further away from Runway 1-19). After the new building was constructed, the existing terminal building was demolished and removed.¹

¹ The new terminal building was completed in the summer of 2016.

FIGURE 2-10 – NEW KNB TERMINAL BUILDING



Source: City of Kanab website

FIGURE 2-11 – NEW KNB TERMINAL AERIAL LAYOUT



Source: Jviation, Google Earth

2.5.6 Aircraft Storage & Parking Facilities

There are seven conventional hangars and ten T-hangar units nested in a row. The total aircraft storage capacity in the hangars ranges from 20 to 40 aircraft depending on what type and size of aircraft are stored. There are 26 tie-downs for based aircraft. The transient parking apron can accommodate between 20 and 40 aircraft depending on the type and size of the aircraft parked, and how they are parked. The FAA's Airport Master Record Form 5010 for KNB lists 20 based airplanes (18 single engine and two multi-engine), which is less than the storage capacity available. The tie-down and transient parking aprons are in good condition with appropriate pavement markings.

2.5.7 Airport Ground Access and Parking

KNB is accessible to cars, trucks, and emergency vehicles utilizing US Highway 89 and US Highway 89-A (Alternate). Highway 89 is located approximately three miles north of the Airport and U.S. Highway 89-A roughly parallels the airport one quarter mile to the east. The airport access road is two-lane, paved, and is large enough for commercial and emergency vehicles. There is a stop sign at the end of Airport Road at the intersection with Highway 89.

2.5.8 Utilities

As noted above, the terminal building has electricity, water, phone, and septic system hook-ups.

2.5.9 Airport Support/Maintenance Equipment

Airports utilize a variety of equipment for airfield maintenance including snow plows, grass mowers, tugs for aircraft and vehicles, crack sealers, pickup trucks for airfield inspection and moving equipment and supplies around the airfield, etc. Many airports utilize municipal equipment such as snow plows on an as-needed basis, rather than owning and maintaining their own equipment. When airports own and maintain their own support equipment they often store them in equipment storage buildings. Currently there is not an equipment storage building on the Airport.

2.5.10 Navigation & Communications Aids

As noted above, the existing published instrument approach to KNB utilizes satellite-based GPS. The nearest ground-based navigation aid (NAVAID) is Bryce Canyon VORTAC¹ (frequency 112.8 MHz, identifier = BCE), situated 42.1 nautical miles north of KNB. There are several radio communication aids available to pilots in the vicinity of the Airport, as shown in **Table 2-4**.

¹ VORTAC = Very High Frequency Radio Range with Tactical Air Navigation. MHz = megahertz.
Source: FAA, Kanab Municipal Airport Facility Directory

TABLE 2-4 – COMMUNICATION AIDS

Communications Aid	Frequency	Purpose/Function
Unicom/Common Traffic Advisory Frequency (CTAF)	122.8 MHz	Airport advisories (other traffic in the vicinity, pilot intentions, runway in use, etc.)
Los Angeles Center	124.2 MHz	Instrument flight plan clearances and radar services. Limited to approx. 9,000' or higher in vicinity of KNB
AWOS-3	133.175 MHz	Weather observation

Source: Form 5010, KNB Chart Supplement

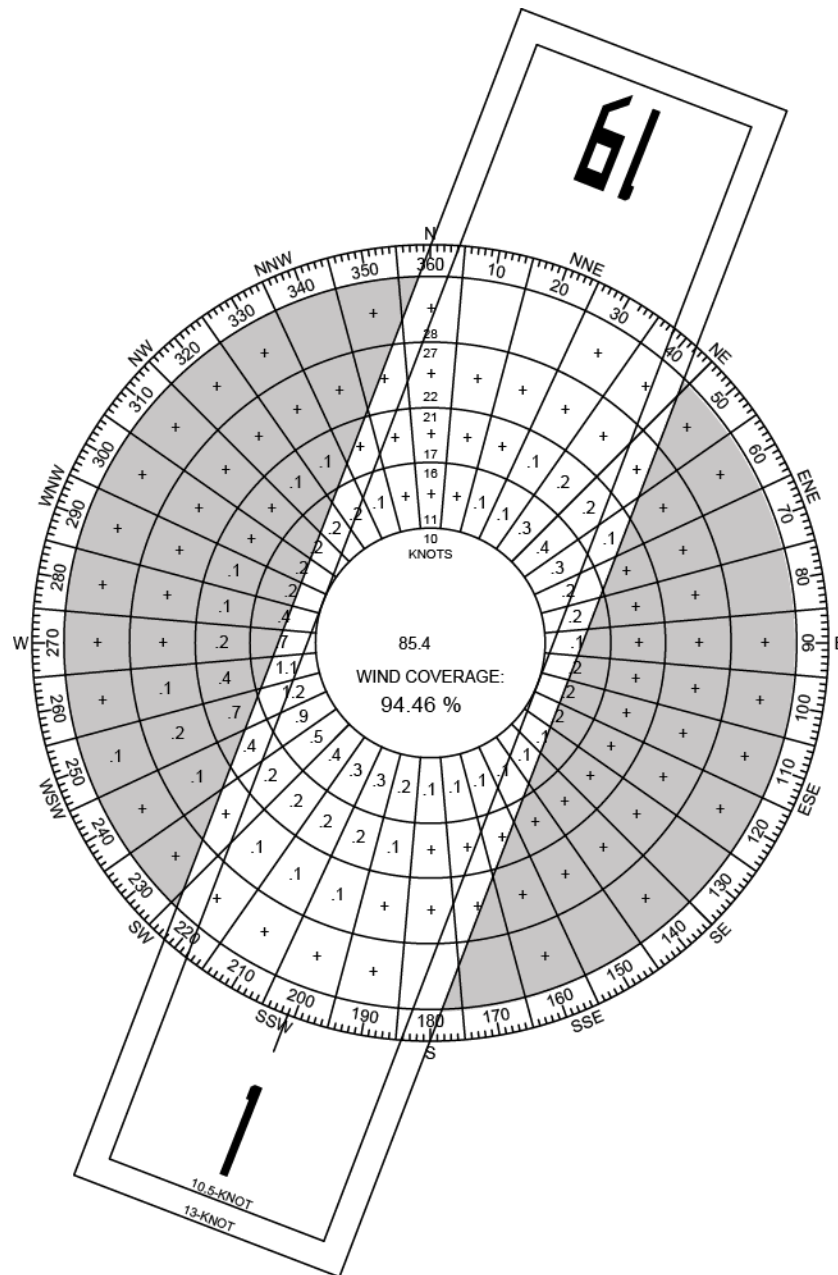
2.5.11 Wind Coverage and Runway Utilization

Whenever possible, pilots takeoff and land into the wind. Pilots are also trained to land and take off when the wind blows across runways (crosswind conditions). In addition, aircraft manufacturers are required by the FAA to publish the maximum allowable crosswind condition for each airplane. Airports with multiple runways typically have less crosswinds than single-runway airports, such as KNB.

The 2002 KNB Master Plan notes that Runway 19 accommodates approximately 70 percent of all takeoffs and landings, and Runway 1 accommodates approximately 30 percent of all operations. The 2002 Master Plan also notes that Runway 1-19 provides better than 95 percent wind coverage for 11.5-knot and 13-knot crosswinds. That exceeds FAA's threshold for considering the need for a crosswind runway. As a result, there is no need to consider a crosswind runway at KNB.

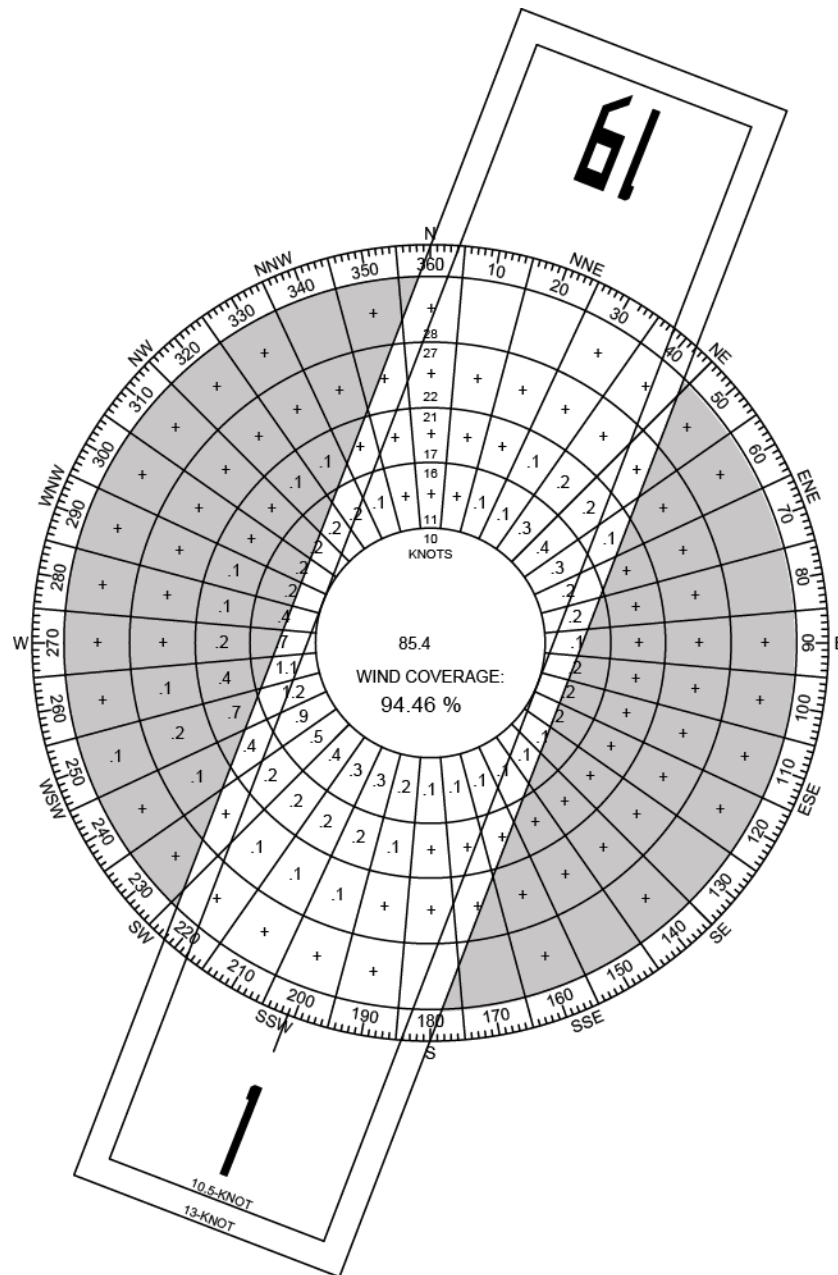
Just for comparison, the wind analysis for the new St. George Regional Airport (SGU) concludes: "Through analysis of wind data collected by the Utah Department of Transportation at the proposed replacement airport site, it was determined that a Runway 01/19 alignment (oriented to magnetic headings of approximately 10 degrees and 190 degrees) would provide 94.1 percent wind coverage for the 10.5-knot crosswind component and 96.7 percent wind coverage for the 13-knot crosswind component. It would further provide 99 percent wind coverage for the 16-knot crosswind component." SGU is the nearest airport with weather reporting and wind data, and the all-weather and IFR wind roses are shown in **Figure 2-12** and **Figure 2-13**.

FIGURE 2-12 – ALL-WEATHER WIND ROSE



Source: St. George Regional Airport, NCDC, Station 724754, Annual Period of Record: 2006-2015

FIGURE 2-13 – IFR WIND ROSE



Source: St. George Regional Airport, NCDC, Station 724754, Annual Period of Record: 2006-2015

2.5.12 Airport Operational Capacity

The FAA examines the Airport's operational capacity in relation to existing and future activity (demand) to determine when facility improvements are needed. A wide variety of factors affect an airports operational capacity and the extent of delays experienced by aircraft operators, including:

- The number of aircraft operations within a given time period
- Type of aircraft that operate within a given time period
- The percentage/mix of aircraft operations that are training (i.e. touch and go) vs. full-stop

- Weather conditions (visual, marginal, or instrument) when the majority of operations occur
- Percent/mix of aircraft that operate under visual (VFR) vs. instrument (IFR) flight rules
- The runway/taxiway system - specifically, the runway occupancy time by arriving and departing aircraft
- Air traffic control services and radar coverage

The operational capacity of KNB's runway and taxiway exceeds the estimated current activity levels (**Figure 2-14**). KNB has a single runway, 1-19, with three taxiways in the middle, adjacent to the terminal building, and two taxiway turnarounds (aka run-up aprons) at each runway end. As a consequence, aircraft must back-taxi on the runway prior to departure, and many arriving aircraft also back-taxi after landing. The need to back-taxi increases the runway occupancy time, and reduces the operational capacity of the airport. Given the level of activity at KNB, however, there are no delays experienced by aircraft operators.

FIGURE 2-14 – KNB ACTIVITY VS. CAPACITY

	2015 KNB Operations	KNB Operational Capacity
Annual Operations	3,140	230,000
Peak Hour Activity:		
– Visual (VFR) Ops	4	98
– Instrument (IFR) Ops	2	54

Sources: FAA Terminal Area Forecast, FAA Advisory Circular 150/5060-2

The FAA recommends that, where feasible, runways have full parallel taxiways to eliminate back-taxiing on the runway and to enhance safety. KNB's previous AMP recommends constructing a full parallel taxiway to Runway 1-19, with a separation of 400 feet between the runway and taxiway centerlines. The parallel taxiway was recommended to be 35 feet wide, which would meet FAA airport reference code (ARC) C-II design standards. A full parallel taxiway constructed to those standards would require property acquisition, as well as the cost of an environmental analysis, design and construction.

Due to the existing level of aviation activity at KNB and the lack of air traffic delays, a parallel taxiway to Runway 1-19 is not required to enhance operational capacity. However, a parallel taxiway would enhance operational safety by eliminating back-taxiing on the runway by arriving and departing aircraft. This will be examined further in the alternatives analysis.

2.6 Environmental Inventory & Data Collection

The FAA AC 150/5070-6B, *Airport Master Plans* states, "The principal objective of an environmental overview is to document environmental conditions that should be considered in the identification and analysis of airport development alternatives." This section will address various environmental factors that specifically apply to KNB.

FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and Order 5050.4B, *National Environmental Policy Act: Implementation Instruction for Airport Actions* addresses specific

environmental categories that are to be evaluated in environmental documents in accordance with the National Environmental Policy Act (NEPA).

2.6.1 Environmental Review Process

FAA Order 1050.1F also presents the environmental review process and level of analysis required for each type of airport development project. Airport projects typically require the completion of an environmental assessment (EA) or can be categorically excluded through a documented categorical exclusion form (CATEX).

Actions normally requiring an EA include the establishment or relocation of approach light systems not on airport property and/or instrument landing system navigation aids, a new runway, construction or relocation of an airport entrance road, land acquisition associated with any of those improvements, etc.

Actions that are normally categorically excluded from further environmental analysis include administrative procedures, the installation/repair/upgrade of equipment necessary for safety and operations, the repair or replacement of infrastructure or facilities that are “generally minor in nature,” as well as other actions.

2.6.2 Airport Environment

The following section inventories the applicable environmental categories and their existence at KNB. However, the following resources will not be discussed as they are not relevant to KNB and/or they relate to impacts from a specific project.

- Coastal Resources
- Climate
- Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks

Air Quality

Air quality analysis for federally funded projects must be prepared in accordance with applicable air quality statutes and regulations that include the Clean Air Act (CAA) of 1970¹, the 1977 Clean Air Act Amendments², the 1990 Clean Air Act Amendments³, and the National Ambient Air Quality Standards⁴ (NAAQS). In particular, the air pollutants of concern in the assessment of impacts from airport-related sources include six “criteria pollutants:” carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO₂).

All areas within the State of Utah are designated with respect to the NAAQS as being in attainment, nonattainment, maintenance, or unclassifiable. An area with air quality better than the NAAQS is

¹ U.S. Code. The Clean Air Act of 1970. U.S. Congress, Public Law 91-604, 42 U.S.C. §7401

² U.S. Code. The 1977 Clean Air Act Amendments, U.S. Congress, Public Law 95-95, 42 U.S.C. §7401

³ U.S. Code. The 1990 Clean Air Act Amendments, U.S. Congress, Public Law 101-549, 42 U.S.C. §7401

⁴ 40 CFR Part 50, Section 121, National Ambient Air Quality Standard

designated attainment, while an area with air quality worse than the NAAQS is designated nonattainment. An area may also be designated unclassifiable when there is a lack of data to form a basis of attainment status.

KNB is located in Kane County, which is an attainment area for all pollutants.

Biological Resources (Including Fish, Wildlife, and Plants)

Requirements have been set forth by The Endangered Species Act¹, The Sikes Act², The Fish and Wildlife Coordination Act³, The Fish and Wildlife Conservation Act⁴, and the Migratory Bird Treaty Act⁵ for the protection of fish, wildlife, and plants of local and national significance. The U.S. Fish and Wildlife Service's (USFWS) Information, Planning, and Conservation (IPaC) System was used to identify species of concern.

It was found that various species listed by the USFWS as being threatened, endangered, or candidates may be found in the vicinity of the Airport. The identified species are depicted in **Table 2-5**. In addition to the species listed in **Table 2-5**, numerous migratory birds and eagles may exist in the area.

TABLE 2-5 – THREATENED AND ENDANGERED SPECIES NEAR KNB

Group	Species	Scientific Name	Status
Birds			
	California Condor	<i>Gymnogyps californianus</i>	Experimental population/non-essential
	Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
	Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened
Flowering Plants			
	Jones Cycladenia	<i>Cycladenia humilis var. jonesii</i>	Threatened
	Siler Pincushion Cactus	<i>Pediocactus sileri</i>	Threatened
Mammals			
	Utah Prairie Dog	<i>Cynomys parvidens</i>	Threatened
Snails			
	Kanab Amersnail	<i>Oxyloma haydeni kanebensis</i>	Endangered

Source: USFWS, Information, Planning, and Conservation System, Species Report, <https://ecos.fws.gov>, accessed January 2016

A survey would need to be completed prior to development to determine if any listed species occur on Airport property.

¹ Endangered Species Act of 1973, U.S. Congress, Public Law 93-205, 16 U.S.C §1531-1544

² Sikes Act, Amendments of 1974, U.S. Congress, Public Law 93-452

³ Fish and Wildlife Coordination Act of 1958, U.S. Congress, Public Law 85-624, 16 U.S.C §661-666c

⁴ Fish and Wildlife Conservation Act of 1980, U.S. Congress, Public Law 96-366, 16 U.S.C §2901-2912

⁵ Migratory Bird Treaty Act of 1981, 16 U.S.C §703-712

Wildlife Management Planning

In addition to the information presented above, UDOT prepared a Programmatic Sensitive Habitat Management Plan (HMP) in 2010. The HMP evaluated the potential for federally listed threatened, endangered, or candidate species, or state sensitive species to be present at each Utah Airport. From this report it was found that seven sensitive species have the potential to occur at KNB. **Table 2-6** depicts the species identified in the HMP.

TABLE 2-6 – POTENTIAL FOR SPECIES AT RISK NEAR KNB

Common Name	Scientific Name	Status	Habitat Requirements
Arizona Toad	<i>Bufo microscaphus</i>	Wildlife Species of Concern	Streams, washes, irrigated crop lands, reservoirs, and uplands adjacent to water
Burrowing Owl	<i>Athene cunicularia</i>	Wildlife Species of Concern	Usually inhabits open grassland and prairies, but also utilizes other open situations, such as golf courses, cemeteries, and airports; usually nests in mammal burrows, e.g., prairie dog, ground squirrel, or badger
Ferruginous Hawk	<i>Buteo regalis</i>	Wildlife Species of Concern	Open farmlands, grasslands, deserts, and shrub steppes; nest substrates may include trees and shrubs, cliffs, utility structures, ground outcrops, haystacks, or abandoned buildings; high elevations, forests, and narrow canyons are avoided; however, because of a strong preference for elevated nest sites, cliffs, buttes, and creek banks are usually present
Fringed Myotis	<i>Myotis thysanodes</i>	Wildlife Species of Concern	Inhabits caves, mines, and buildings, most often in desert and woodland areas
Great Plains Toad	<i>Bufo cognatus</i>	Wildlife Species of Concern	Desert, grassland, and agricultural areas
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Federally Endangered	Riparian habitats, especially areas of dense willow
Western Toad	<i>Bufo boreas</i>	Wildlife Species of Concern	Includes a variety of habitats, including slow moving streams, wetlands, desert springs, ponds, lakes, meadows, and woodlands

Source: UDOT, Programmatic Sensitive Habitat Management Plan, Volume II, May 2010

Department of Transportation Act, Section 4(f)

The Department of Transportation (DOT) Act, Section 4(f) provides that the:

Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance unless there is no feasible or prudent alternative and the use of such land includes all possible planning to minimize harm resulting from the use.¹

¹ U.S. Department of Transportation Act, section 4(f), recodified and renumbered as § 303(c) of 49 U.S.C.

The FAA has adopted the regulations the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued in March 2008 (23 CFR Part 774)¹ to address project-related effects on Section 4(f) resources.

For Section 4(f) purposes, a proposed action would eliminate a resource's use in one of two ways, physical use or constructive use.

Physical Use: Action physically occupies and directly uses the Section 4(f) resource. An action's occupancy or direct control (via purchase) causes a change in the use of the Section 4(f) resources. For example, building a runway safety area across a fairway of a publicly-owned golf course is a physical taking because the transportation facility physically used the course by eliminating the fairway.

Constructive Use: Action indirectly uses a Section 4(f) resource by substantially impairing the resource's intended use, features, or attributes. For example, a constructive use of an overnight camping area would occur when project-related aircraft noise eliminates the camping area's solitude. Although not physically occupying the area, the project indirectly uses the area by substantially impairing the features and attributes (i.e., solitude) that are necessary for the area to be used as an overnight camping area.²

KNB is located in a rural area, primarily surrounded by open agriculture and ranch land. The nearest Section 4(f) properties are located in the City of Kanab, approximately one mile north of KNB. None of the properties are located adjacent to the Airport.

Farmlands

The Farmland Protection Policy Act (FPPA) regulates federal actions that may impact or convert farmland to a non-agricultural use. FPPA defines farmland as "prime or unique land as determined by the participating state or unit of local government and considered to be of statewide or local importance."

The Natural Resources Conservation Service (NRCS) Web Soil Survey is commonly used to identify areas of prime and unique farmland; soil data was not available for the area surrounding KNB. Currently, no land within the airport property boundary is actively being used for farmland. However, land adjacent to the Airport is actively being farmed. If future development projects would extend off airport property, potential impacts to the existing farmland should be considered.

Hazardous Materials, Solid Waste, and Pollution Prevention

The Resource Conservation and Recovery Act (RCRA)³, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)⁴, Superfund Amendments and Reauthorization Act

¹ Vol. 73 Federal Register, page 13395, Mar. 2008.

² A de minimis use cannot occur if a project constructively uses a Section 4(f) property. This is because the substantial impairment associated with a constructive use is more severe than the minor effects to which de minimis provisions apply.

³ U.S. Code, 1976, Resource Conservation and Recovery Act, 42 USC, §6901

⁴ U.S. Code 1980, Comprehensive Environmental Response, Compensation and Liability Act, 42 USC, §9601-9628

(Superfund)¹, and the Community Environmental Response Facilitation Act (CERFA)² are the four predominant laws regulating actions related to the use, storage, transportation, or disposal of hazardous materials, chemicals, substances, and wastes. Federal actions that pertain to the funding or approval of airport projects require the analysis of the potential for environmental impacts per the regulating laws. Furthermore, property listed or considered for the National Priority List (NPL) should be evaluated in relation to the Airport's location.

According to the NPL, no sites are located on or near the Airport.

The Airport provides 100LL and JetA fuel, which are stored on Airport property, in above-ground storage tanks.

Historical, Architectural, Archeological, and Cultural Resources

The National Historic Preservation Act³ and the Archaeological and Historical Preservation Act⁴ regulate the preservation of historical, architectural, archaeological and cultural resources. Federal actions and undertakings are required to evaluate the impact on these resources.

For the purposes of this Master Plan, historic, archaeological and cultural resources are districts, sites, buildings, structures, objects, landscapes, and Native American Traditional Cultural Properties (TCPs) that are on or eligible for listing on the National Register of Historic Places (NRHP). The NRHP currently lists 10 properties in Kanab, as noted in **Table 2-7** and shown in **Figure 2-15**.

In addition, the Kaibab Indian Reservation is located southwest of the Airport, across the Arizona state border, and approximately half a mile from the Airport.

A survey is required prior to development to determine if any historic, archaeological and cultural resources occur on Airport property.

TABLE 2-7 – NATIONAL REGISTER OF HISTORIC PLACES NEAR KNB

Property Name	Location	Date Added to Registry
Bowman-Chamberlain House	14 E. 100 South	1975
Cottonwood Canyon Cliff Dwelling	Address Restricted	1980
Kanab Library	600 South 100 E.	1995
Parry Lodge	89 E. Center St.	2003
Kanab Hotel and Cafe	19 W. Center St.	2003
Kanab (Union Pacific) Lodge	86 S 200 W	2003
Stewart-Woolley House	106 W 100 N	2001
Johnson, William Derby, Jr., House	54 S. Main St.	2001
Rider-Pugh House	17 W 100 S	2001
Kanab Post Office	22 N Main St	2011

Source: National Register of Historic Places, www.nationalregisterofhistoricplaces.com, Accessed January 2016

¹ U.S. Code 1986, Superfund Amendments and Reauthorization Act, 42 USC

² U.S. Code 1992, Community Environmental Response Facilitation Act, Public Law 102-426

³ U.S. Code, 1966, National Historic Preservation Act of 1966, Public Law 89-665

⁴ U.S. Code, 1974, Archaeological and Historical Preservation Act of 1974, 16 USC 469

FIGURE 2-15 – DESIGNATED HISTORIC SITES



Source: Utah State Geographic Information Database (SGID)

Land Use

The compatibility of land uses promotes the safety, health, and welfare of airport users and surrounding neighbors by protecting airspace and ensuring appropriate uses of land within airport property boundaries, and surrounding an airport. Typically, development actions that may affect surrounding land uses are changes in airport fleet mix and/or the number of aircraft operations, air traffic changes, and new approaches.

Land within and surrounding the Airport property is zoned and regulated by the City of Kanab. The **Land Use** section below has zoning and land use information.

Noise and Noise Compatible Land Use

Aircraft noise and noise sensitive land uses adjacent to airports are often important issues related to the airport environment. The FAA has established guidance on compatible land uses based on noise levels created by aircraft operations. The land uses adjacent to KNB are primarily open space and commercial. Based on the type of aircraft and level of existing aircraft activity at KNB, the land uses adjacent to the airport are considered to be compatible with aviation activity based on FAA's guidance.

Visual Effects (Including Light Emissions)

Federal regulations do not specifically regulate airport light emissions; however, the FAA does consider airport light emissions on communities and properties in the vicinity of the airport. A

significant portion of light emissions at airports are a result of facilities, and safety and security equipment. KNB has four primary sources of light.

- Runway Lighting System
- Approach Lighting System
- Airport Beacon
- Apron/Parking Lights

All sources of light aid in the safety of operations at the airport and produce an insignificant amount of light on the surrounding area.

Water Resources

Water resources are vital to society and include wetlands, floodplains, surface waters, ground waters, and Wild and Scenic Rivers. They provide drinking water and support recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. These resources act together as one integrated natural system. Impacts to one resource can disrupt the entire system. Water resources in the vicinity of the Airport are summarized in the following sections.

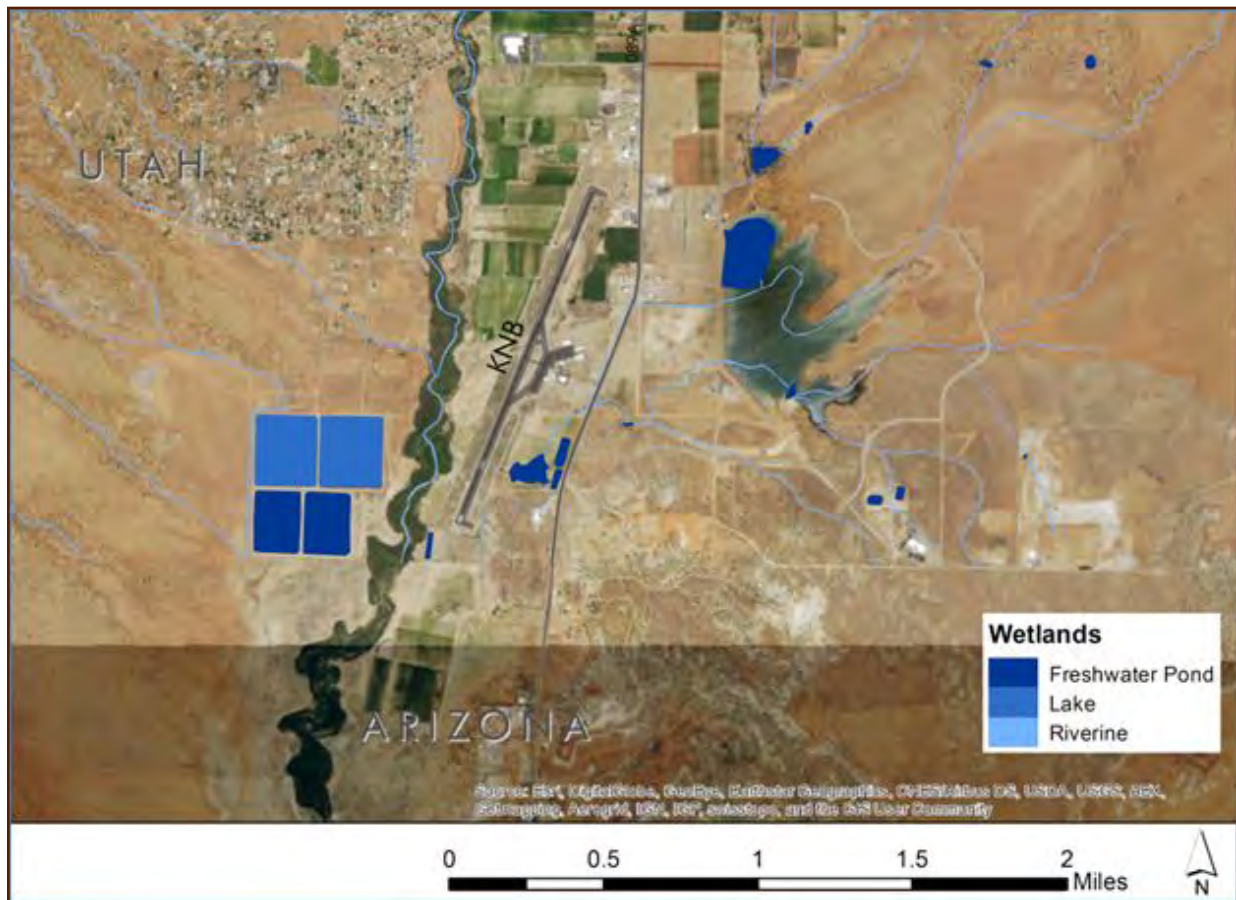
Wetlands

Executive Order 11990, Protection of Wetlands, defines wetlands as “those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.”

As such, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands. According to the Utah State Geographic Information Database (SGID), wetlands may exist on airport property as well as on adjacent land as show in **Figure 2-16**.

If future development is to occur in areas with the potential to have wetlands, a survey should be completed to determine the exact location of wetlands and potential impacts.

FIGURE 2-16 – WETLANDS IN THE VICINITY OF KNB



Source: Utah State Geographic Information Database (SGID)

Floodplains

Executive Order 11988, Floodplain Management, directs federal agencies to “avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.”

According to the Federal Emergency Management Association (FEMA) Flood Insurance Rate Map (FIRM) panel number 4900850005A and 4900830039B, the Airport is within Zone C, an area of minimal flooding. Flood Zone A, an area of 100-year flood that has not had base flood elevations and flood hazard factors determined, exists to the east of the Airport along the Kanab Creek.

Surface and Ground Waters

The Federal Water Pollution Control Act, as amended by the Clean Water Act¹ and the Safe Drinking Water Act, as amended, protect and regulate Federal actions that have the potential to impact surface and ground waters².

The Kanab Creek is located to the east of the Airport and runs parallel to the runway. Additionally, the Spencer Number Two Reservoir is located approximately half a mile to the west of the Airport. Additionally, no ground water sites are present on or near the Airport.³

Wild and Scenic Rivers

The Wild and Scenic Rivers Act, as amended, designates rivers and those eligible to be designated in the Wild and Scenic Rivers System. Wild and Scenic Rivers are designated as “rivers having remarkable scenic, recreational, geological, fish, wildlife, historic, or cultural values.” The Department of the Interior (National Park Service, U.S. Fish and Wildlife Service, and Bureau of Land Management) and the Department of Agriculture (U.S. Forest Service) are the oversight agencies for the Wild and Scenic Rivers System. Federal agencies with jurisdiction over lands the border upon, or are adjacent to any designated rivers, are required to take the necessary actions to protect the rivers, as stated in Section 12 of the Wild and Scenic Rivers Act.

Utah has one river listed in the National Wild and Scenic Rivers System, the Virgin River. The nearest designated portion of the River is approximately 30 miles northwest of the Airport.⁴

2.7 Land Use Plan

The City of Kanab adopts and updates the Land Use Plan. Land around the Airport is designated as MD/GC/AG, which is mixed manufacturing, general commercial, and agricultural (**Figure 2-17**). Those land use types are typically compatible with aircraft activity and airport operations.

However, there are areas adjacent to the west and east of the airport that have been developed as medium density residential (MDR) and mixed medium residential (MDR), general commercial (G/C), agricultural (AG). Residential land uses are generally considered to be noise sensitive.

Based on the type of noise metrics used by the FAA, and the level and type of aircraft activity at KNB, the land uses adjacent to the Airport are compatible with airport and/or aircraft operations.

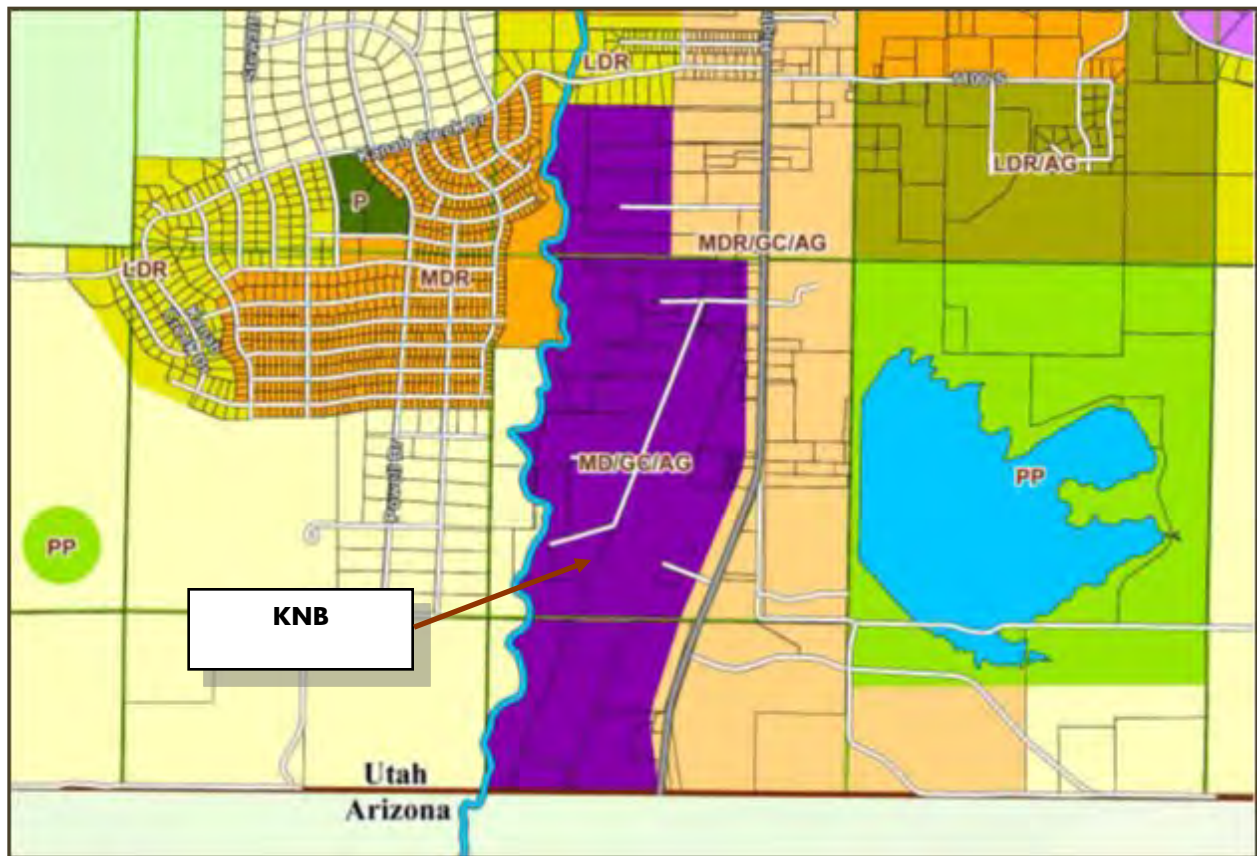
¹ 33 U.S.C. Chapter 26.

² 42 U.S.C. 300.f.

³ USGWS, National Water Information System: Mapper, <http://maps.waterdata.usgs.gov/mapper/index.html?state=co>, Accessed January 2016

⁴ National Wild and Scenic Rivers System, <http://www.rivers.gov/rivers/virgin.php>, Accessed January 2016

FIGURE 2-17 – KNB GENERAL PLANNING – FUTURE LAND USE



Source: Kanab General Plan, 2015

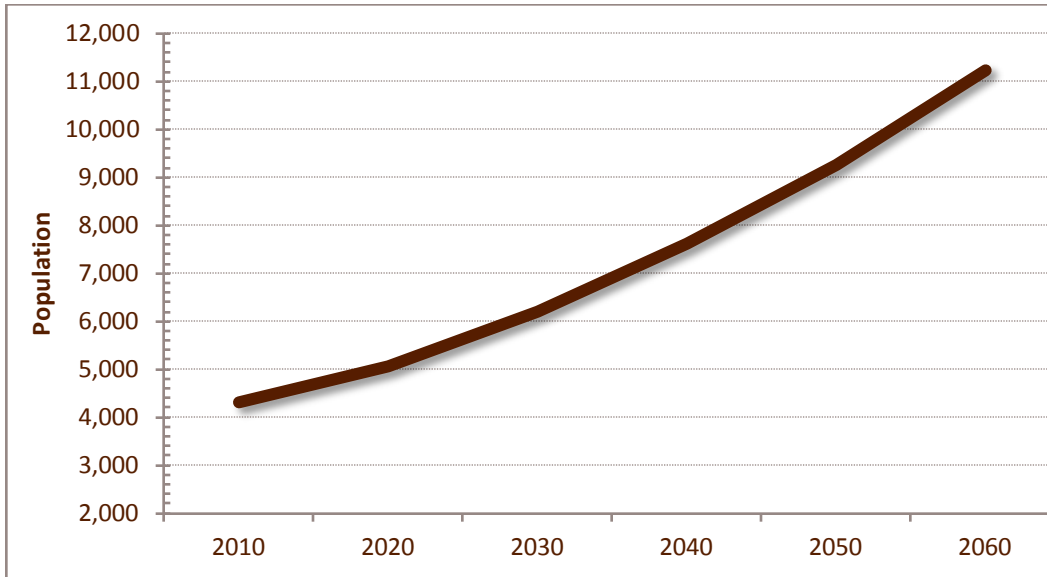


Source: Kanab General Plan, 2015

2.8 Demographics and Socioeconomic Analysis

According to the Utah Office of Management and Budget, the City of Kanab is projected to experience a 44% increase in population between 2010 and 2030. Between 2030 and 2060, the City's population is projected to increase by 81% (**Figure 2-18** and **Table 2-8**).

FIGURE 2-18 – KANAB CITY POPULATION PROJECTIONS



Source: Utah State Office of Management and Budget, 2012

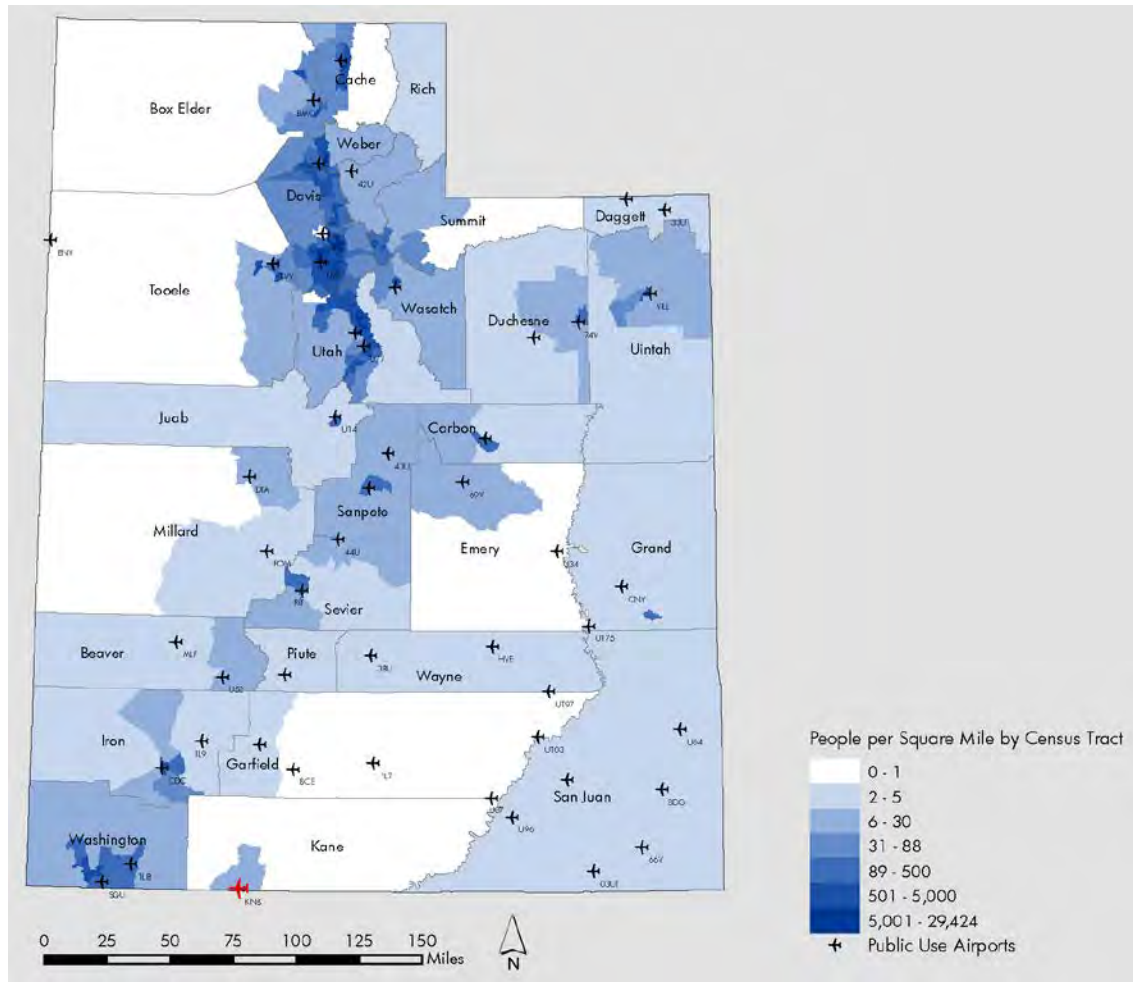
TABLE 2-8 – KANAB POPULATION PROJECTIONS

Year	Population
2010	4,312
2020	5,058
2030	6,209
2040	7,626
2050	9,268
2060	11,246

Source: Utah State Office of Management and Budget, 2012

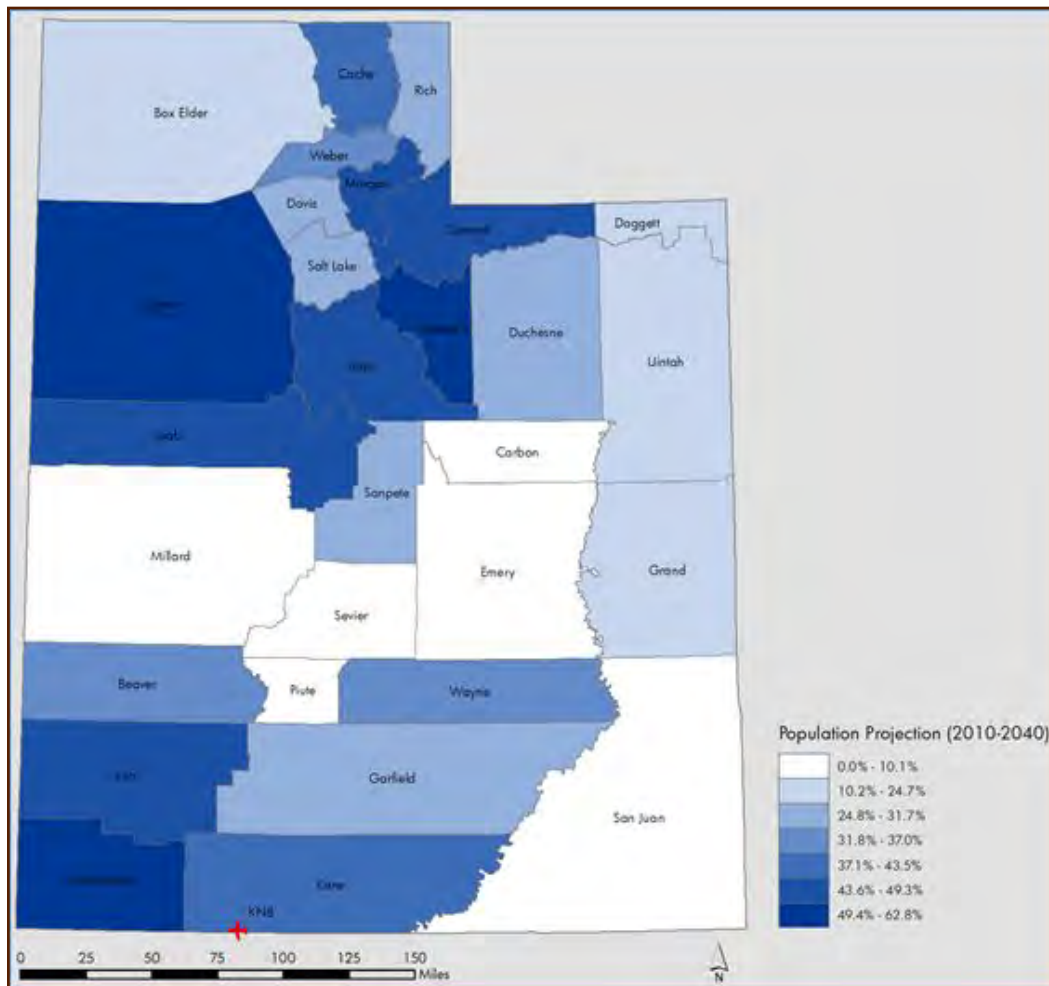
Kane County, located on the southern border of Utah, adjacent to Arizona, has a relatively low population density. By 2040, the County's population is projected to increase by approximately 40%, but it will continue to be relatively low density (**Figure 2-19** and **Figure 2-20**).

FIGURE 2-19 – KANE COUNTY POPULATION DENSITY



Source: Utah State Geographic Information Database (SGID)

FIGURE 2-20 – KANE COUNTY POPULATION GROWTH RATE 2010-2040



Source: Utah State Geographic Information Database (SGID)

3.0 AVIATION ACTIVITY & FORECASTS

3.1 Introduction

The FAA notes: “Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning. These projections are used to determine the need for new or expanded facilities. In general, forecasts should be realistic, based upon the latest available data, be supported by information in the study, and provide an adequate justification for airport planning and development. Any activity that could potentially create a facility need should be included in the forecast. Planners should prepare a reliable activity baseline, select an appropriate forecast methodology, develop a forecast, compare it to other forecasts for reasonableness, and submit the forecasts to the FAA for approval. The planning agency should use appropriate statistical techniques to estimate activity where actual operations counts are not available.”¹

In general, all forecasts are subject to similar constraints:

- Forecast accuracy (i.e. the level of statistical confidence) decreases over time. The number of variables that can affect aviation activity increase as time passes, and are difficult to predict, such as the cost of airplane ownership & operation, another economic recession, or more security regulations adopted by the TSA.
- Forecasts rely on assumptions about existing and future conditions, which change over time.
- External events on the statewide, national, and international level affect local activity, which can be difficult to predict or anticipate. For example, if the U.S. Environmental Protection Agency (EPA) adopts a rule that leaded fuel is no longer allowed to be sold in the United States, 100LL avgas could disappear and many piston engine airplanes could be grounded if a replacement fuel hasn’t been certified by FAA.
- One other factor that affects the forecasts is the accuracy of the existing database. As noted previously, Kanab Municipal Airport (KNB or the Airport) is similar to most airports in Utah in that it does not have a control tower, and therefore activity levels are estimated, versus counted. The actual level of operations (takeoffs and landings) at KNB likely fall within the ranges discussed below, but it would require the use of manual or electronic counters, including audio or video monitors, to validate the estimated activity ranges.
- It should also be noted that KNB accommodates a variety of aircraft missions/activities, ranging from personal/discretionary flying to corporate and business, emergency medical services, government agency, construction support, law enforcement, sightseeing, flight training (currently from other airports), agricultural support, etc. KNB is used by second home owners and customers of local resorts, as well as other visitors who hike and hunt in the area.
- The Utah Airports Economic Impact Study listed numerous activities occur at KNB (**Table 3-1**). Each one of the activities and missions listed respond to different economic and

¹ FAA AC 150/5070-6B, *Airport Master Plans*, Chapter 7

industry-related factors. For example, discretionary/pleasure flying is relatively price sensitive and therefore declines as the cost of flying increases (e.g. when fuel prices increase), while corporate/business aviation, public service missions, and government aircraft are not as price sensitive.

TABLE 3-1 - AVIATION ACTIVITIES AT KNB

Type	Activity Level	Type	Activity Level	Type	Activity Level
Recreational Flying	M	Community Events	L	Environmental Patrol	L
Ag Spraying	L	Police	M	Medical Evacuation	H
Corporate/Business	M	Prisoner Transfer	M	Patient Transfers	H
Aerial Inspections	L	Military	L	Forest/Wildfire Fighting	H
Air Cargo	L	Career Training	L	Aerial Photography	L
Visitor Gateway	M	Search & Rescue/CAP	M	Real Estate Tours	L
Aerial Advertising	L	Traffic/News Reports	L	Air Shows	L

Key Activity Levels: H = High; M = Medium; L=Low.
Source Utah Airports Economic Impact Study

3.2 Aviation Industry Trends

Aviation is a dynamic industry, and it is constantly adjusting to both internal and external pressures (such as fluctuating aviation fuel prices, federal regulations that increased minimum experience required for newly hired airline pilots, rising cost of airplane ownership, etc.) The general aviation industry has experienced a number of challenges over the last decade, and industry analysts anticipate that a number of challenges will continue into the future, some of which are discussed below.

One specific indicator of the impact those challenges are having can be seen in the declining number of General Aviation (GA) aircraft operations at towered airports throughout Utah and the Western United States. GA activity on the national level over the last decade have shown similar trends (Table 3-2 and Figure 3-1, Figure 3-2, Figure 3-3, Figure 3-4, Figure 3-5, and Figure 3-6) which indicates that the pressures from rising operating costs, changing pilot demographics, etc., are being reflected in declining GA activity.

TABLE 3-2 – GA AIRCRAFT OPERATIONS AT TOWERED AIRPORTS
PERCENT CHANGE C.Y. 2000-2014

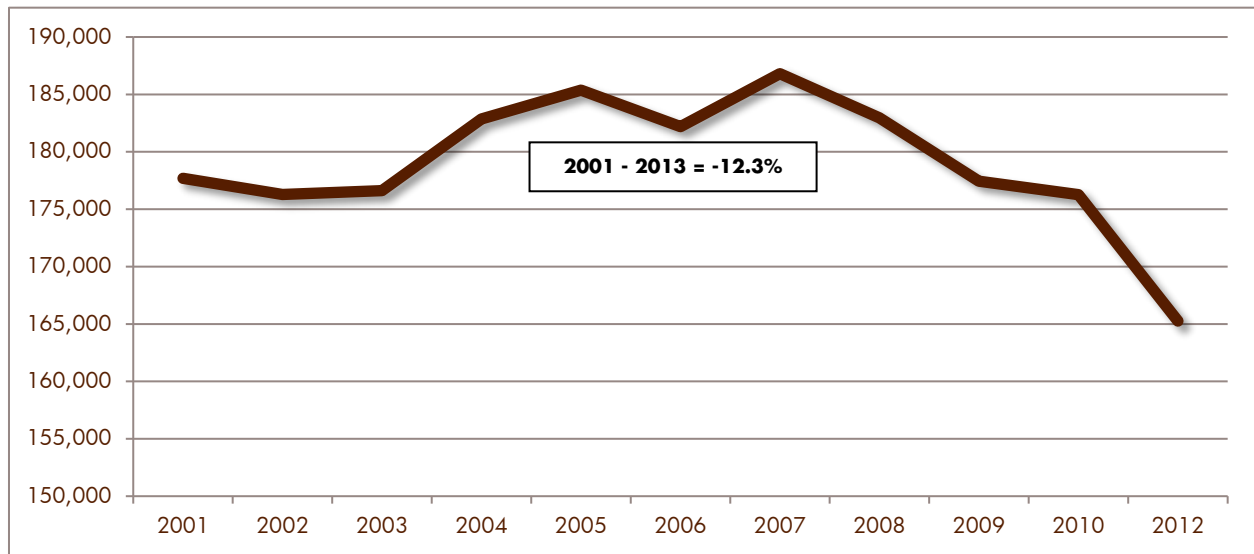
	GA Itinerant	GA Local	GA Total
FAA Northwest Mountain Region*	-31.7%	-23.2%	-27.8%
United States	-37.4%	-29.7%	-34.1%

Source: FAA Air Traffic Activity Data System (ATADS)

* FAA Northwest Mountain Region includes Utah, Colorado, Wyoming, Idaho, Oregon, Washington, and Montana.

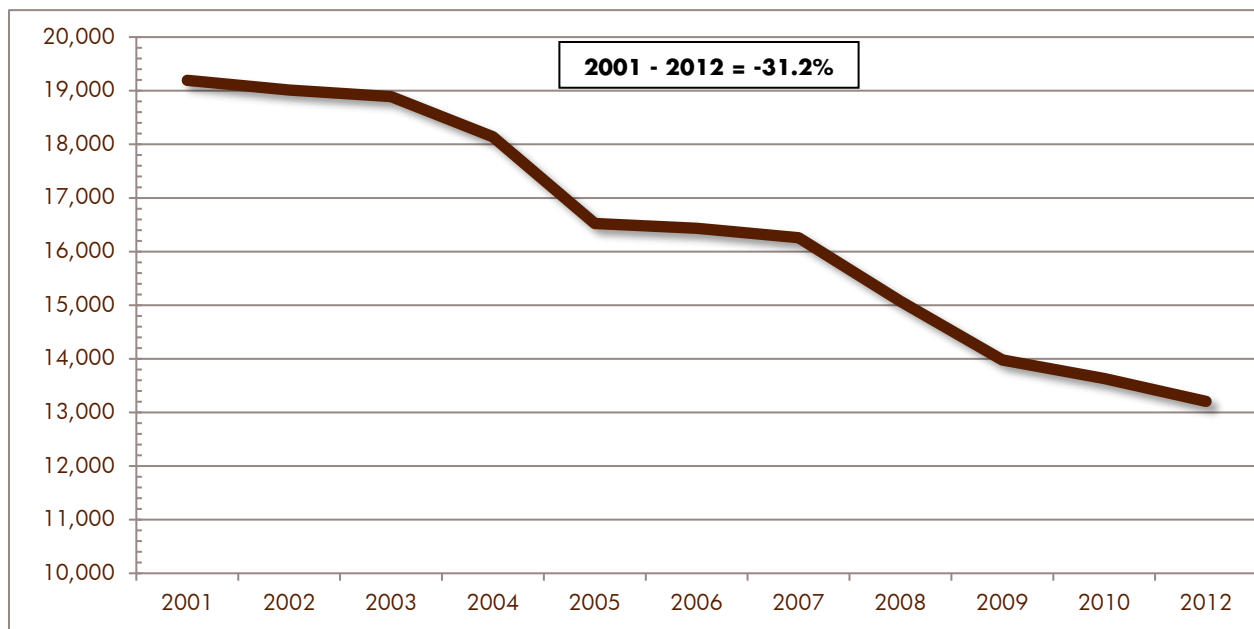
It is apparent from the activity data that different segments of the general aviation industry (nationally) are moving in different directions. For example, piston aircraft activity has been declining for more than a decade, pre-dating the recession of 2008-2010, particularly in terms of hours flown and fuel (100LL avgas) sold. In addition, the number of private and commercial pilots has also been declining. By contrast, corporate jets and turboprops have seen steady increases in the number of hours flown and active aircraft, although they did experience a drop between 2008-2010 due to the recession.

FIGURE 3-1 – NUMBER OF ACTIVE GA FIXED-WING AIRCRAFT IN THE UNITED STATES



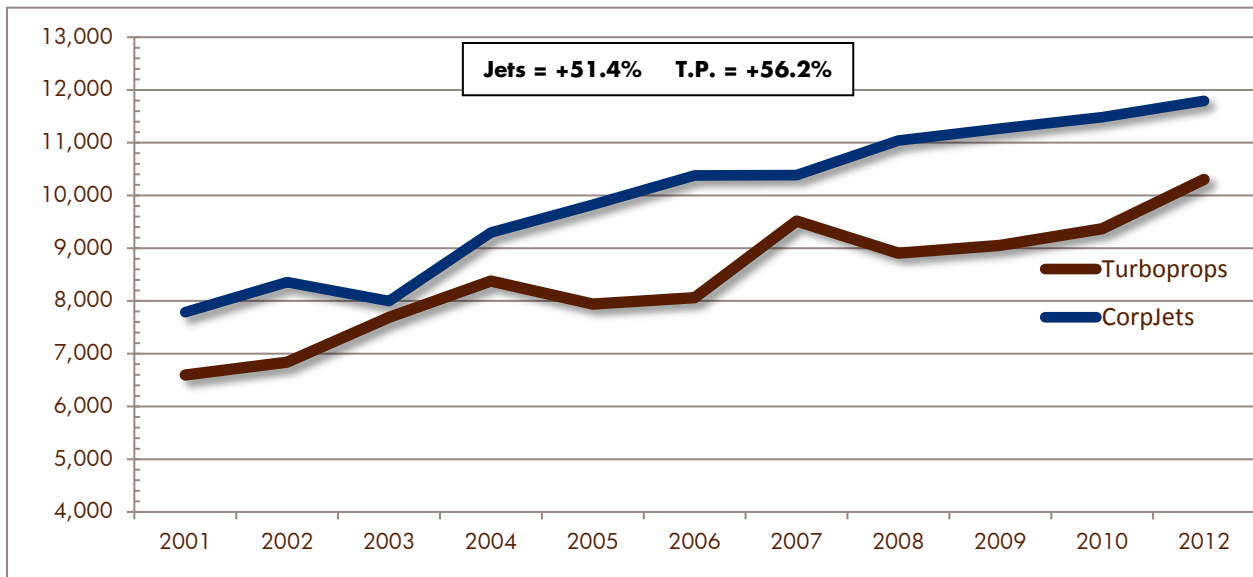
Source: FAA GA and Air Taxi Survey, 2012

FIGURE 3-2 – NUMBER OF HOURS FLOWN BY ALL PISTON AIRCRAFT IN THE UNITED STATES (X 1,000)



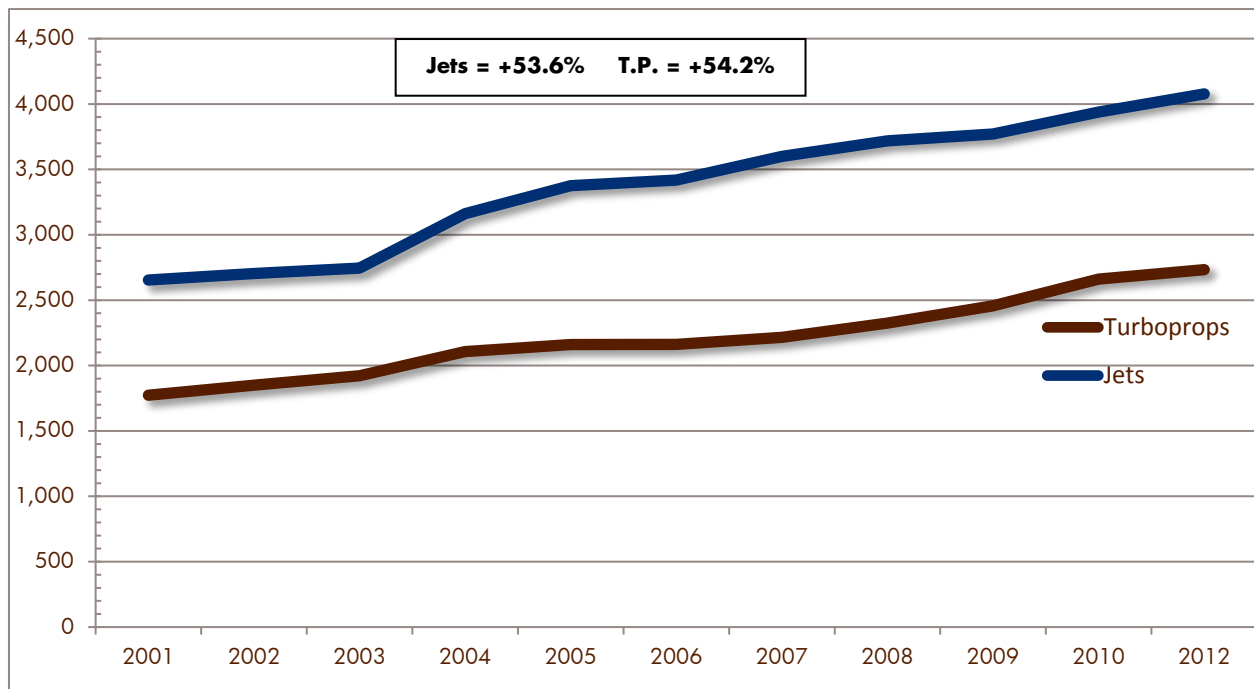
Source: FAA GA and Air Taxi Survey, 2012

FIGURE 3-3 – NUMBER OF ACTIVE TURBOPROPS & CORPORATE JETS IN THE UNITED STATES



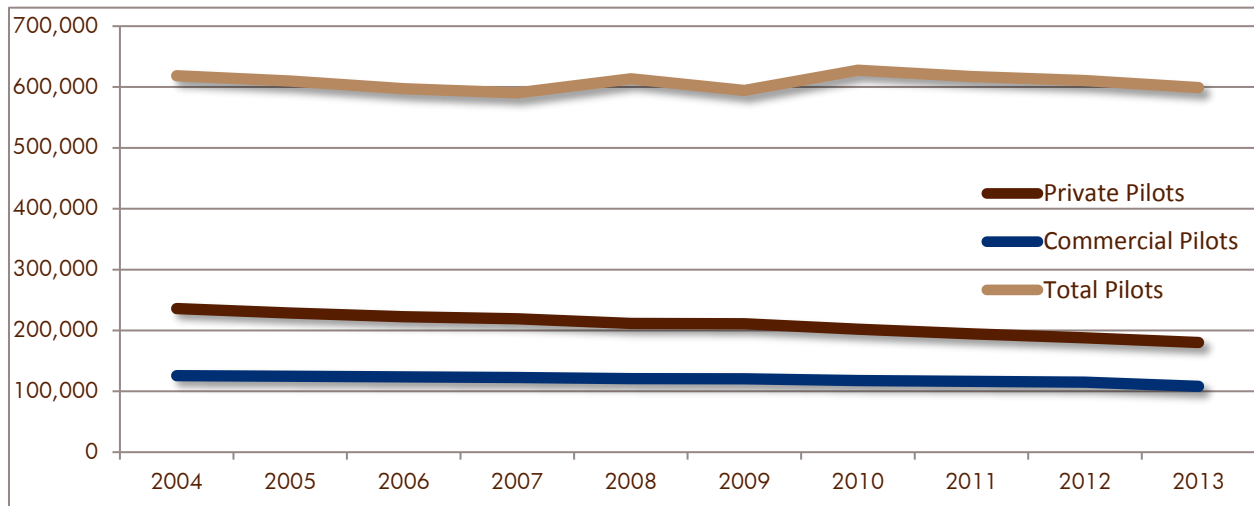
Source: FAA GA and Air Taxi Survey, 2012

FIGURE 3-4 – NUMBER OF HOURS FLOWN BY TURBOPROPS & JETS (X 1,000) IN THE UNITED STATES



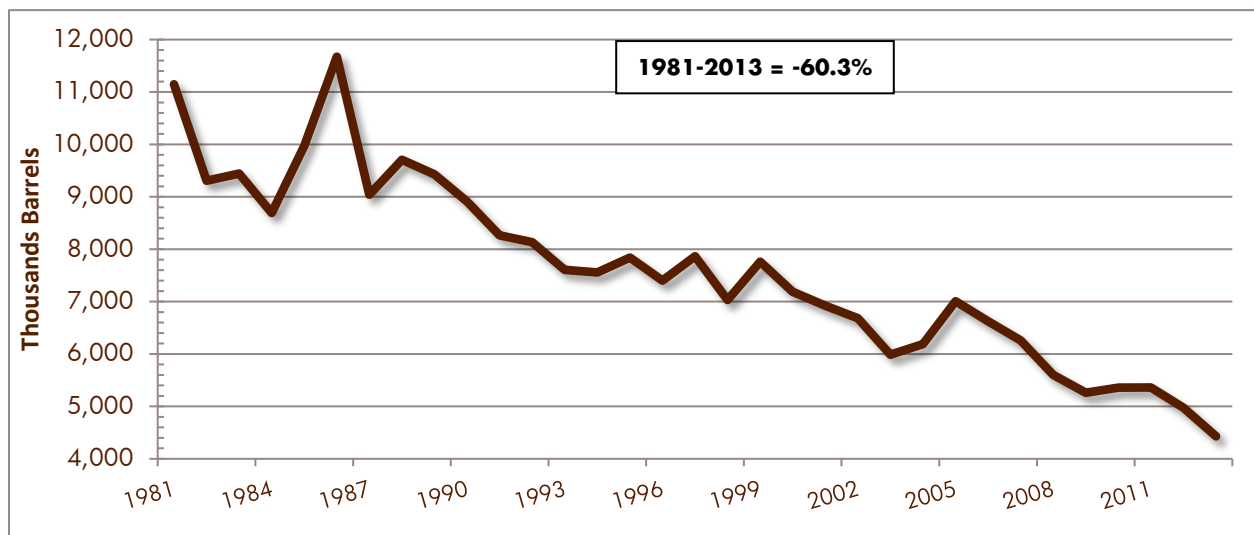
Source: FAA GA and Air Taxi Survey, 2012

FIGURE 3-5 – NUMBER OF PILOT CERTIFICATES BY TYPE IN THE UNITED STATES



Source: FAA GA and Air Taxi Survey, 2012

FIGURE 3-6 – AVIATION GASOLINE (100LL AVGAS) SUPPLIED (THOUSANDS BARRELS)



Source: U.S. Energy Information Agency (EIA)

Individual airport sponsors have little control over most of these national trends. However, as noted above, local positive trends can counterbalance some of the national challenges. Factors impacting GA activity are discussed below.

3.2.1 Fuel Price and Availability

Airports and their tenants operate in a competitive environment, and many GA aircraft operators are price sensitive. One area where competition between airports and Fixed Base Operators (FBOs) is having an impact is on fuel sales, particularly for Jet A. Many of the newer corporate aircraft have

large fuel capacities, very efficient engines, operate long range, and can tanker fuel. Thus, corporate operators regularly negotiate with FBOs for lower priced Jet A fuel (below the posted price). If the local FBO cannot match their desired price per gallon, operators will not buy fuel.

Many aircraft have sufficient reserves to fly to another airport and buy fuel at lower prices. A number of FBOs have reported that even as the number of corporate aircraft has increased, fuel sales have not kept pace, in part because of their ability to tanker fuel and buy wherever the price is lowest. That is expected to be a long term trend in corporate aviation. Since 2010 many airports have seen an increase in corporate aircraft activity, including KNB. In general, fuel sale volumes tend to track aircraft activity levels, but more in terms of general trends vs. specific numbers on a weekly, monthly, or annual basis. For example, the amount of Jet A fuel sold in gallons at KNB does not fluctuate exactly with the number of corporate aircraft operations, because fuel sales are determined by a variety of factors including the type of aircraft, the price of fuel at KNB, the specific mission being flown (non-stop range vs. mission fuel requirements), the amount of fuel needed for each trip, etc.

GA piston aircraft operators will also buy avgas at other airports with lower prices, as well as rent hangar storage and tie-downs depending on price. That puts pressure on airports to maintain competitive pricing even as their operating costs increase. A number of airports provide self-service fuel pumps at lower prices than full service, and also to make it available all of the time (24/7). Corporate aircraft generally prefer full service fueling. Full-service fueling increases overhead costs to airports and FBOs due to staffing, training, insurance, etc. As can be seen in **Table 3-3**, fuel prices at KNB are very competitive with other regional airports.

TABLE 3-3 – AVIATION FUEL PRICE COMPARISON

Airport / FBO	Distance from KNB (miles)	100LL	JET A
KKNB Kanab Municipal Airport/City		\$5.09 (ss)	\$4.65
KAZC Colorado City Municipal Airport/Escalade Air	23	\$5.95 (fs)	\$5.95
1L8 General Dick Stout Field Airport/Airport Quick Stop	38	\$5.05 (ss)	\$4.29
KBCE Bryce Canyon Airport/Airport FBO	46	\$5.30 (fs)	\$4.30
KSGU St George Regional Airport/Above View Jet Center	47	\$5.09 (fs)	\$5.09
KCDC Cedar City Regional Airport/ Sphere One Aviation	49	\$4.99 (ss)	\$4.75
KPGA Page Municipal Airport/ Classic Aviation, Lake Powell Jet Center, & American Aviation	52	\$5.08 (fs)	\$4.55
1L9 Parowan Airport/Parowan Aero Services	53	\$5.22 (fs)	\$4.91
Fuel Price Low – High / Average		\$4.99-\$5.95/ \$5.22	\$4.29-\$5.95/ \$4.81

Source: AirNav

Note: Lowest price available at each airport shown. Some airports with multiple FBOs sell fuel at higher price than shown. ss= self serve; fs = full service. Source: Airnav.com, December 2015.

The majority of aircraft piston engines use 100LL avgas. Some smaller displacement piston engines use unleaded auto fuel (that does not contain ethanol). The amount of 100LL avgas sold in the United States represents less than one quarter of one percent (approximately 0.14%) of the total fuel sold in the country, which makes it highly specialized for a small market (referred to in the oil industry as a boutique fuel). The amount of 100LL fuel sold in the United States has also been

declining steadily for more than 30 years (from approximately 11 million barrels per year in 1981 to four million barrels per year in 2013, a 60% decline).

The availability of 100LL is also decreasing (and disappearing), particularly in many places outside of the United States, which further decreases overall demand. Many large GA aircraft manufacturers are re-equipping their piston engine airplanes with diesel engines that use Jet A, further reducing demand for 100LL avgas. 100LL is the only fuel that contains tetraethyl lead (TEL), a toxic substance used to prevent engine knocking (detonation). Environmental groups have petitioned the U.S. EPA to eliminate the grandfather clause allowing 100LL, and the EPA has been studying the proposals. In addition, there is only one source of TEL that is added to avgas, and the producer is based in the United Kingdom. All of those factors have driven up the price of avgas. Although aviation fuel prices have declined over the last year, as of December 2015 100LL avgas averaged \$5.14 per gallon in the Western United States, compared to \$4.55 per gallon for Jet A, and to \$2.06 per gallon for regular unleaded auto gas.

If avgas 100LL supplies were to diminish significantly, or if avgas prices were to rise significantly, or if 100LL were no longer available, GA activity would decline significantly. Some aircraft with smaller piston engines (i.e. less than 360 cubic inch) have been approved by the FAA to use auto gas without ethanol. However, aircraft with larger piston engines (such as the Cessna 402, Cirrus SR-22, Beech Baron and Bonanza, Piper Seneca, Matrix and Malibu, for example)—which also use the largest amount of 100LL—cannot use any unleaded auto fuel, or fuel with less than 100 octane.

At present there is no replacement for 100LL avgas that will work in all piston engines, although some industry analysts are optimistic such a replacement can be found. FAA has sponsored studies to find replacement fuels and has shortlisted three different unleaded fuels for detailed testing and evaluation. If a replacement fuel for 100LL is found, the key questions will then be: what will the retail price at the pump be for the replacement fuel? If the replacement fuel is priced significantly higher than the retail price for avgas then overall GA activity will likely decline even if replacement fuel is readily available. Secondly, will the replacement fuel be fully compatible with the existing fuel storage tanks used for 100LL? If not, it is possible that many FBOs and airports could not make the investment needed for new fuel storage tanks.

3.2.2 Airport and Airspace Security Regulations

After the terrorist attacks on New York and Washington DC on 9/11/2001, the U.S. Congress created the Transportation Security Administration (TSA) as part of the Department of Homeland Security, and imposed new airport and airspace regulations. Most new airport security regulations apply to airports with airline service. Thus, GA airports such as KNB have not been encumbered by the same security regulations as commercial airports such as Salt Lake City or Las Vegas. However, many GA airports have implemented security measures such as full perimeter fencing, video monitoring, and electronic gate access.

A recent in-depth study on GA activity conducted by MIT¹ included an extensive survey of GA pilots across the United States, and the MIT study noted: “Post-9/11 security changes were selected

¹ Source: MIT International Center for Air Transportation, Current and Historical Trends in General Aviation in the U.S., August 2012, Report ICAT-2012-6

by approximately half the participants of having a real negative impact on their flying, indicating that a portion of the post- 9/11 trend downwards in operations may be a persisting, rather than transient, force.”

Temporary Flight Restrictions (TFRs) impose a combination of no-fly areas as well as designated areas for transient flights with strict conditions imposed. The imposition of TFRs reduces GA activity within a 50+ mile radius. The National Business Aircraft Association (NBAA) noted: “TFRs do have a significant restrictive impact on general and business aviation.” The reduced activity levels under and adjacent to TFRs have adversely impacted many FBOs and other GA businesses. Airport managers and state aeronautic agencies have no discretion or input about when TFRs are imposed or how long they remain in effect. GA activity is very dependent on convenience—the ability to fly when demand warrants. If Congress were to impose additional airport or airspace security procedures targeted specifically at general aviation, as has been proposed in recent years, such as the proposed large aircraft security rule, the new rules would result in higher costs, less convenience, and reduced GA activity.

3.2.3 Cost of Aircraft Ownership and Operation

Costs associated with owning and maintaining aircraft have been rising faster than the overall rate of inflation for many years. A new Cessna 172, a four-seat, single-engine piston aircraft used for training, currently retails for almost \$400,000. A number of high-performance four-seat, single-engine piston airplanes retail for \$700,000 to \$1 million (e.g. Cirrus SR-22 GTS, Cessna TT, Piper Malibu and Matrix, and the Beech G36). As a result, many airplane owners continue to fly used aircraft, the average age of a GA aircraft in the United States is more than 40 years old; subsequently, maintenance costs and replacement parts are high and rising. Because a high percentage of GA flying is conducted for personal/recreational purposes, rising aircraft ownership costs have decreased overall activity.

3.2.4 Pilot Population Demographics

The U.S. pilot population has been declining for years. According to the FAA, between 2004 and 2013 the number of total licensed pilots declined 3.2%. Licensed private pilots have declined 23.6% and commercial pilots dropped 11.7% over that period. Congress recently mandated that the FAA change the requirements for pilots holding an Airline Transport Pilot (ATP) License. This requires pilots to have a minimum of 1,500 hours logged flight time plus additional provisions before being hired with any airline. Some regional carriers have stated that requirement has already impacted their ability to hire qualified pilots and have reduced their schedule because of a shortage of pilots.

Analysts have said that the rule change would decrease the number of student pilots who had originally intended to become airline pilots but cannot afford the time or cost to meet the new standards. Also, the military has been reducing their pilot training pipeline and have been offering more incentives to retain rated pilots, while rapidly shifting their training focus to operators of remotely piloted vehicles (RPVs). Many commercial and military pilots also fly general aviation aircraft, and declines in airline and military pilots affect GA activity.

The pilot population is aging faster than the population as a whole. Between 1990 and 2010 the average age of U.S. pilots increased from 40.5 to 44.2 years old, and the average age of private pilots is currently 48.5 years old. By comparison, the median age of the U.S. population is 37.2 years old according to the U.S. Census Bureau. While private pilots do not have a mandatory retirement age, the amount of flying decreases as they age, as well as increasing difficulty meeting FAA medical standards. Barriers to attract younger pilots include the high cost of flight training, the uncertainty of the aviation industry as a career path, the military's shrinking pilot training, combined with rapidly growing interest in RPVs that require less training and cost less than airplanes.

3.2.5 Economic Trends

National economic trends affect GA activity on the local level. The economic recession that occurred between late 2007 and 2010 significantly depressed corporate aviation and impacted piston-engine activity throughout the United States and internationally. The decline in corporate aviation over that period clearly illustrated the very close correlation between corporate aircraft activity and the stock market and corporate profits. KNB accommodates corporate aircraft, which fly into the airport for business and recreation. Both the stock market and corporate profits have been rising steadily since late 2010, like corporate aviation activity (Figure 3-7).

FIGURE 3-7 – CORPORATE PROFITS AFTER TAXES

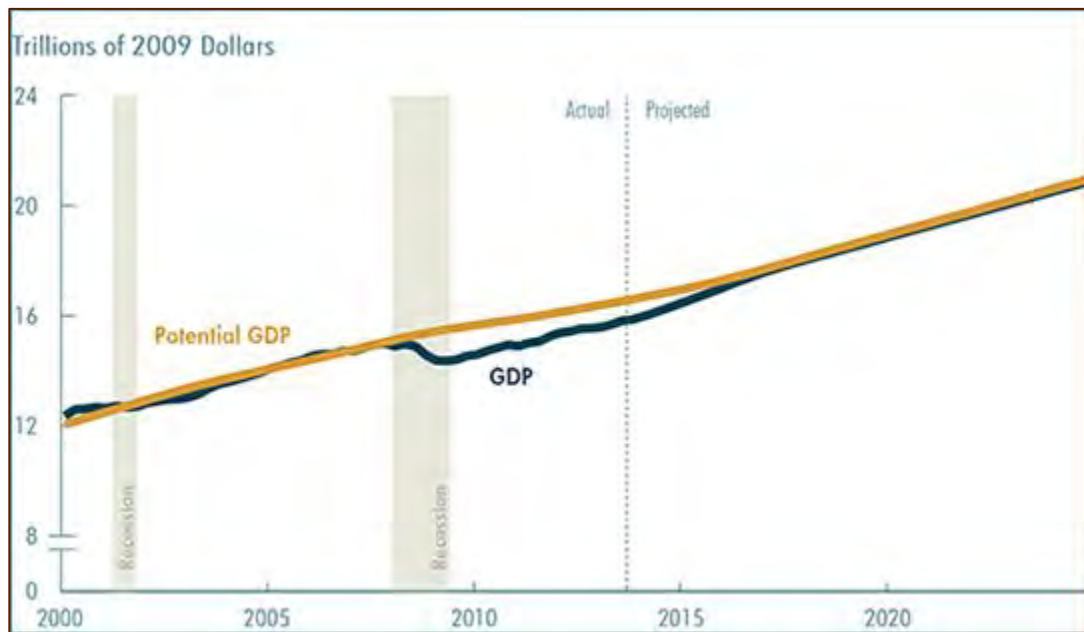


Source: U.S. Department of Commerce, BEA

The Congressional Budget Office (CBO) assessment of the U.S. economy in 2014 noted: “After a frustratingly slow recovery from the severe recession of 2007 to 2009, the economy will grow at a solid pace in 2014 and for the next few years.”

Longer term, however, the CBO is less optimistic: “Beyond 2017, CBO expects that economic growth will diminish to a pace that is well below the average seen over the past several decades.” That projected slowdown mainly reflects long-term trends—particularly slower growth in the labor force because of the aging of the population. The FAA, as well as a number of private companies are optimistic about the long-term growth potential for corporate aviation. For example, Honeywell’s Global Business Aviation Forecast sees four to five percent average annual industry growth over next decade. Up to 9,250 deliveries of new business jets valued at over \$250 billion are expected through 2023. Operators plan to replace 28 percent of their fleets with new jets in the next five years. And large-cabin jets account for more than 55 percent of new purchases.

FIGURE 3-8 – U.S. GDP & POTENTIAL GDP



Source: Congressional Budget Office (CBO)

Honeywell’s forecast goes on to say, “Shifting from jet purchases to flight activity, over the course of the past year the pace of recovery has been mixed. Much of the ground lost by corporate aircraft operations during the 2009 recession still remains to be recaptured, but modest improvements in international flight activity and in United States operations in general have been seen in recent months.”

3.3 Historical Aviation Activity

As noted previously, KNB does not have a control tower, so activity levels are estimated as opposed to actual traffic counts¹. The FAA’s Terminal Area (TAF) estimated historical operations and based aircraft at the KNB (**Figure 3-9** and **Figure 3-10**). The estimates were developed based on

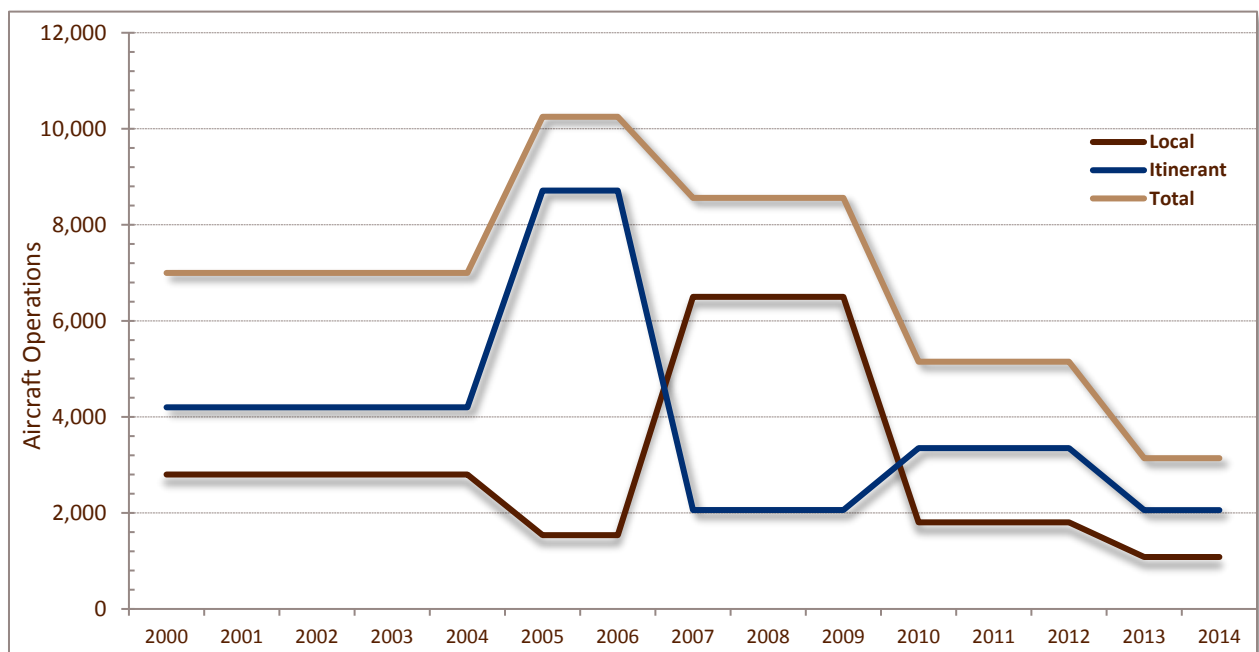
¹ Both acoustical and video monitors have been used to count activity at non-towered airports. The Airport Cooperative Research Program (ACRP) has sponsored studies of the various counters, including their cost and reliability. Aircraft activity data generated by acoustical and/or video monitors are useful in validating activity estimates compiled from a variety of sources such as FAA’s Form 5010, previous airport master plans, airport tenants, etc.

discussions with the airport manager, and other planning studies such as the State Airport System Plan and previous airport master plan.

The FAA estimated that activity levels at KNB fluctuated considerably between 2000 and 2014, but does not explain why such variations occurred over that period. Recent discussions with airport management indicate that activity levels in 2015 appear to be close to FAA's estimate of approximately 3,000 operations per year, or nine takeoffs and landings per day.

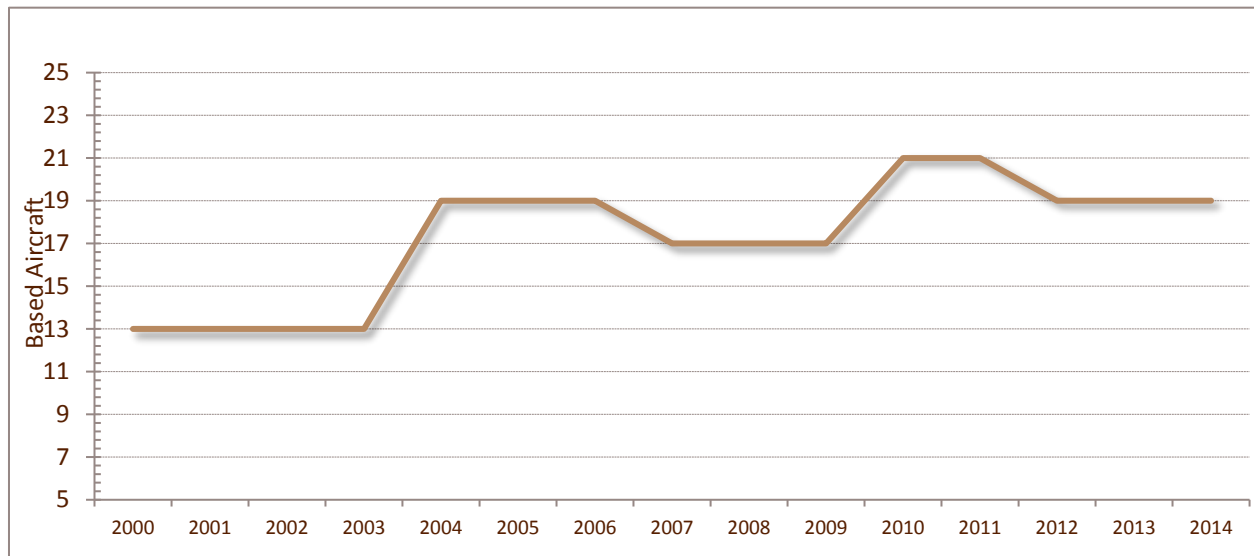
Typically, large changes in activity levels are caused by events such as an FBO opening or closing, a runway closed for a period for reconstruction, the basing of a new corporate flight department at the airport, construction or demolition of T-hangars or community hangars, etc. However, those events do not appear to be the case at KNB.

FIGURE 3-9 – HISTORIC AIRCRAFT OPERATIONS - KNB



Source: FAA Terminal Area Forecast (TAF)

FIGURE 3-10 – BASED AIRCRAFT AT KNB



Source: FAA Terminal Area Forecast (TAF)

The 2002 Airport Master Plan estimated that historical activity levels at KNB were approximately 9,500 operations per year, or 26 takeoffs and landings each day (**Table 3-4**). That is consistent with FAA’s estimate of activity for the same period. The 2007 Utah Continuous Airport System Plan estimated that activity at KNB was approximately 7,000 operations per year in 2004 and 2005 (**Table 3-5**).

TABLE 3-4 – HISTORIC OPERATIONS AT KNB

Year	GA Aviation Operations
1997	9,360
1998	9,410
1999	9,470
2000	9,540
2001	9,620

Sources: KNB Master Plan, 2002; UDOT Records; KNB Management

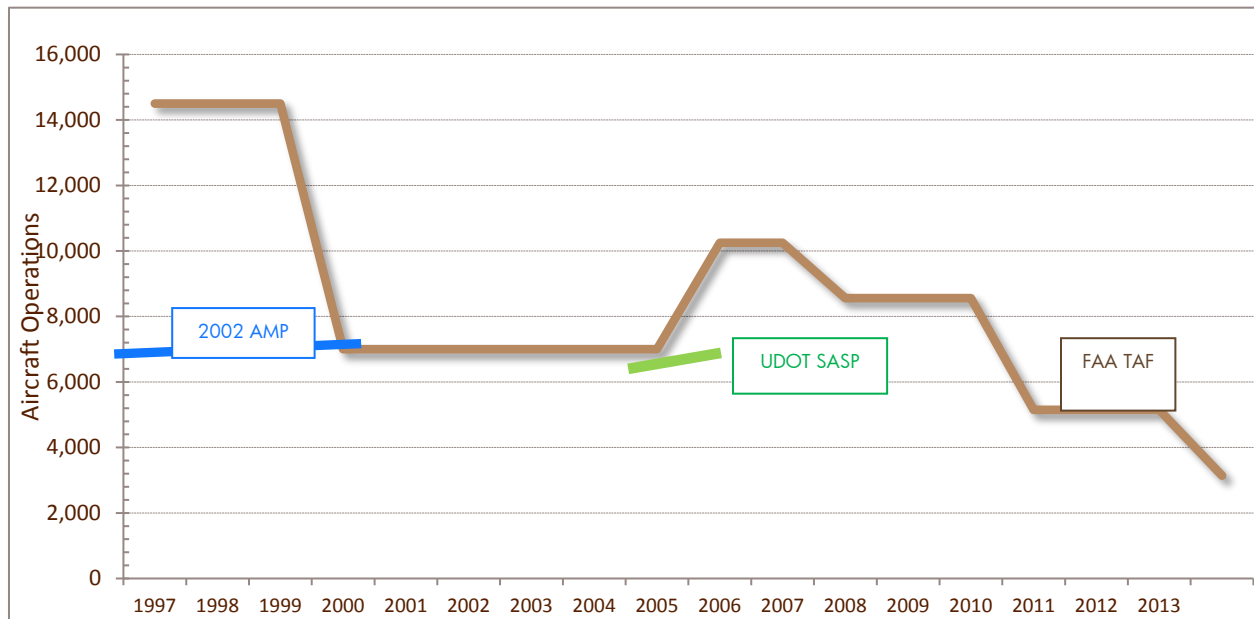
TABLE 3-5 – LOCAL AND ITINERANT OPERATIONS - KNB

Year	GA Operations		
	Local	Itinerant	Total
2004	4,161	2,829	7,040
2005	4,307	2,930	7,286

Source: UDOT Continuous Airport System Plan, 2007

The State’s Airport System Plan estimated less activity than FAA’s Terminal Area Forecast in 2005, but the State’s estimated activity represented a downward trend from the late 1990s and early 2000s. FAA estimated that the downward trend in activity occurred after 2006/2007 (**Figure 3-11**).

FIGURE 3-11 – KNB AIRCRAFT OPERATIONS - 1997-2013

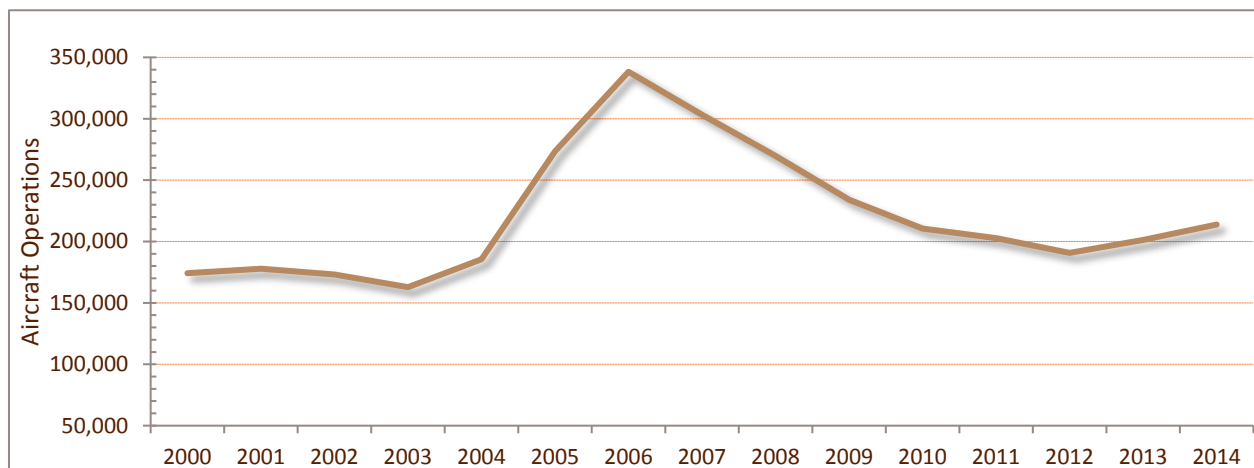


Sources: 2002 AMP = KNB Master Plan, 2002/2004; UDOT SASP = Utah Department of Transportation State Airport System Plan, 2007; FAA TAF = FAA Terminal Area Forecast, Jan. 2015

General aviation aircraft operations at towered airports in Utah experienced a decline between 2006 and 2012, with a slight upturn in CY 2013 and 2014 (**Figure 3-12**). The GA activity counts include corporate aircraft as well as piston engine airplanes.

Between the peak periods in 2006 and 2013, GA aircraft operations at towered airports in Utah declined by 40.5%, with local (training) operations declining by 48.3%. Those trends in GA operations are consistent with towered airports in other states, and nationally as well. The decline in activity estimated at KNB is consistent with trends seen throughout Utah, and the region.

FIGURE 3-12 – GA AIRCRAFT OPERATIONS - UTAH TOWERED AIRPORTS, 2000-2014



Source: FAA Air Traffic Activity Data System

3.4 Current Aviation Activity at KNB

The KNB Airport Manager provided estimates of activity for 2015, as shown in **Table 3-6**. Based on the data available it is not possible to annualize the operations counts. The manager noted that the counts are based on part-time observation, four days per week. The observations included:

- 50 pilots used the courtesy car.
- 16 based aircraft, including one helicopter.
- Hangars off-airport may have airplanes that use KNB.
- Fuel sales first FY 2016 higher than all CY 2015.

TABLE 3-6 – RUNWAY EVENTS AT KNB
6/1/15 - 12/31/15

Month	Prop	Jet	Heli
June	57	11	30
July	39	16	33
August	27	12	35
September	94	16	31
October	45	19	40
November	28	12	40
December	27	10	20
Total	317	96	229

Source: KNB Airport Manager

The FAA's Airport Master Record Form 5010 and Terminal Area Forecast estimate that in 2014 and 2015 there were 3,140 annual aircraft operations, or an average of nine takeoffs and landings per day at KNB. The FAA also estimates there are 20 based aircraft at KNB; 18 single engine pistons and two multi-engine. The FAA typically updates their records based on information provided by the Airport Manager. The number of based aircraft at every airport fluctuates over time, and there are also different definitions of what constitutes a based aircraft based on how long it is parked at a specific airport. As a result, different sources often provide different estimates of the number of based aircraft at a specific airport depending on their time frame and definition of based aircraft.

TABLE 3-7 – 2014 KNB BASED AIRCRAFT

Aircraft Type	Amount
Single Engine (SE)	18
Multi Engine (ME)	2
Jet (J)	0
TOTAL FIXED WING (SE + ME + J)	20
Helicopters	0
Gliders	0
Military	0
Ultra-Light	0

Sources: FAA's Airport Master Record Form 5010 and Terminal Area Forecast

TABLE 3-8 – OPERATIONS FOR 12 MONTHS
ENDING 01/01/2012

Aircraft type	Amount
Air Carrier	0
Air Taxi	100
General Aviation Local	1,082
General Aviation Itinerant	1,958
Military	0
Total Operations	3,140

Source: FAA Airport Master Record, Form 5010

The FAA and private flight tracking companies such as FlightAware, Passur, and GCR download data from flight plans filed by aircraft operators with FAA. That data indicates that there were approximately 26 operations by business jets and turboprops in CY 2014 at KNB. The aircraft include turboprops such as the Beech King Air and Pilatus PC-12, as well as jets; the Cessna Citation, Raytheon Premier, Astra SPX, Lear 45, etc. The companies that flew aircraft into KNB are shown in **Table 3-9**. The information was compiled from aircraft registration data and flight plans maintained by the FAA.

TABLE 3-9 – COMPANIES THAT FLEW INTO KNB

Company Names			
AVN Air	RR and D Ltd.	Whiskey Tango LLC	Tenax Aviation Services LLC
Raging River Management	Empire LLC	M&J Leisure	McCoy Corporation
Flax Services Corp.	DBS Air LLC	MetAir	CTE II LLC
Keeton Riemen Schneider	Aero Film	GBB (Hawaii)	HFP LLC
Southern California Piper	State of Utah	Smithfield Foods	
Mango Air Inc.	Strongwell Corp.	Management Company Holdings	

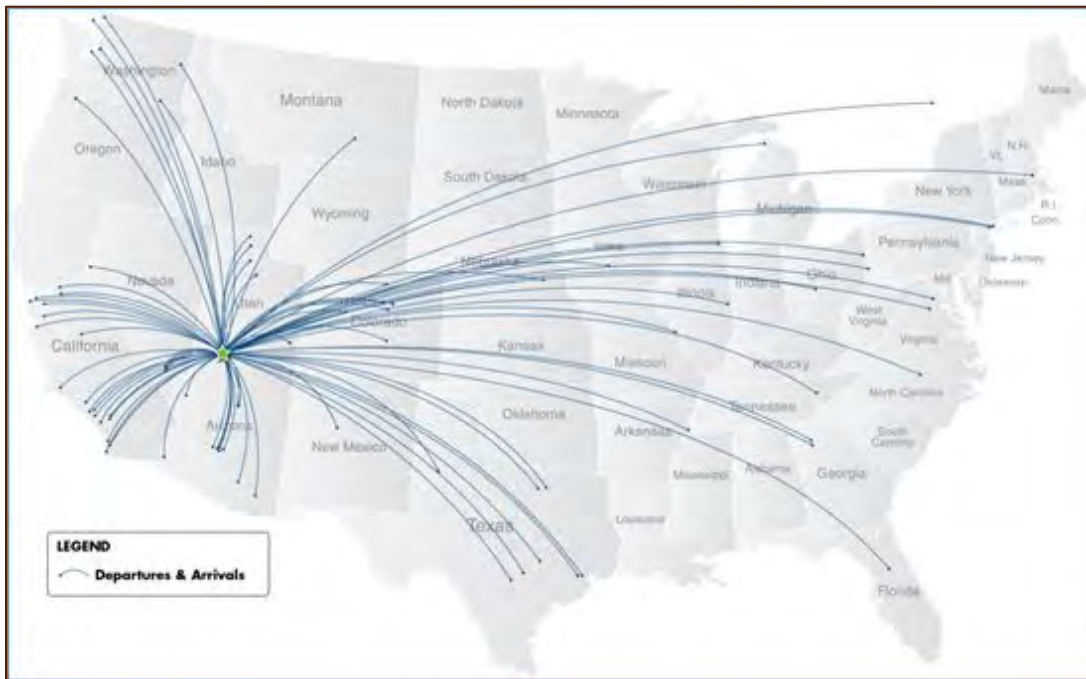
Source: FAA and GCR, Inc.

The number of turboprop and corporate jet operations at KNB are well below FAA’s threshold for determining airport design standards. As noted in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, Chapter 3: “Airport dimensional standards (such as runway length and width, separation standards, surface gradients, etc.) should be selected which are appropriate for the critical aircraft that will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations, or scheduled commercial service.

The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. The critical aircraft (or composite aircraft) is used to identify the appropriate Airport Reference Code for airport design criteria.”

Based on the flight plan data for CY 2014, which includes origins and destinations, corporate and business aircraft fly throughout the country to and from KNB (**Figure 3-13**). The fact that aircraft can fly non-stop to the East Coast from KNB, as well as the Pacific Northwest, indicates that the existing runway length (6,193 feet) does not significantly constrain aircraft operations.

FIGURE 3-13 – NON-STOP FLIGHTS TO/FROM KNB, CY 2014



Source: GCR and FAA

3.4.1 Critical Design Aircraft & Airport Reference Code (ARC)

Based on the various sources of activity data, and FAA's definition of substantial use (i.e. a minimum of 500 itinerant operations per year), the current Airport Reference Code (ARC) for KNB is B-II. The majority of operations are conducted by single-engine piston airplanes, followed by multi-engine airplanes, turboprops such as Beech King Airs and PC-12s, and small corporate jets such as Cessna Citations. KNB can accommodate the occasional operations conducted by mid- or large-size corporate jets such as the Gulfstream G-IV/450, Hawker 800, Falcon 2000, Challenger 300, etc.

The FAA classifies airports in the United States with a coding system known as the Airport Reference Code (ARC). This classification helps apply design criteria appropriate to operational and physical characteristics of the aircraft types operating at each airport. The design standards are presented in various FAA advisory circulars, primarily in FAA AC 150/5300-13A, *Airport Design*.¹

The ARC is made up of two separate components: the Aircraft Approach Category (AAC) and the Airplane Design Group (ADG). The approach category for an airport is determined by the approach speed of the fastest aircraft that operates at the Airport at least 500 times per year, with Category A being the slowest approach speed and E being the fastest. Approach Categories are summarized in Table 3-10.

¹ FAA, AC 150/5300-13A, *Airport Design*, Sept. 2013.

TABLE 3-10 – AIRCRAFT APPROACH CATEGORY

Approach Category	Approach Speed	KNB Airport
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	

Source: FAA AC 15/5300-13A, Airport Design

The ADG is a numerical classification of aircraft based on wingspan and tail height. If an airplane's wingspan and tail height is in two categories, the most demanding category is used. Similar to the approach category, the ADG for an airport is determined by the largest aircraft operating at least 500 times per year at the airport. ADG classifications are summarized in **Table 3-11**.

TABLE 3-11 – AIRPLANE DESIGN GROUP (ADG)

Group #	Tail Height (ft)	Wingspan	KNB Airport
I	<20	<49	
II	20≤30	49≤79	
III	30≤45	79≤118	
IV	45≤60	118≤171	
V	60≤66	171≤214	
VI	66≤80	214≤262	

Source: FAA AC 15/5300-13A, Airport Design

3.4.2 Runway Design Code (RDC)

The RDC is specific to each runway at each airport. The most critical aircraft which uses a runway at least 500 times per year is used to determine the RDC. The RDC uses the same AAC, and ADG criteria utilized to determine the ARC, but adds a visibility minimums component. The current RDC for Runway 1-19 at KNB is B-II-5000. The reference to 5000 in the RDC is related to approach visibility minimums.

3.4.3 Taxiway Design Group (TDG)

Taxiways are designed using the Airplane Design Group and the Taxiway Design Group. The Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG) to determine the TDG for each taxiway. The current taxiway design criteria for KNB is TDG-1A, which can accommodate a maximum gear width of 15 feet and cockpit to main gear distance of 20 feet. That encompasses ARC B-I and most B-II aircraft. The existing taxiways at KNB meet FAA's criteria for TDG-1A aircraft.

FIGURE 3-14 – FAA AIRPORT REFERENCE CODES (ARC) & AIRCRAFT

AIRCRAFT GROUPINGS

SINGLE ENGINE Aircraft Design Group A1	 Cessna 150  Cessna Caravan	→ Small aircraft typically used for flight training and personal use.
MULTI ENGINE Aircraft Design Group A1-C1	 Piper Navajo  Cessna 402	→ Aircraft having more than one engine but aren't jets. → Typically larger and faster than single engine aircraft. → Used for both personal and commercial operations.
TURBO PROP Aircraft Design Group B1-B11	 Pilatus PC-12  King Air 100	→ Can be both single and multi-engine aircraft. → Rather than being powered by a piston, these aircraft have a propeller driven by a turbine engine. → These aircraft are typically faster and more demanding than a piston powered airplane. → Frequently used in commercial operations and as charter and business aircraft.
SMALL-MEDIUM SIZED GA JETS Aircraft Design Group B1-D1	 Cessna Citation Mustang  Cessna Citation 2	→ Aircraft that are powered by a jet turbine engine. → These aircraft are faster and can travel further than propeller powered aircraft. → Due to the speed airport facilities must be increased to accommodate their performance. → These aircraft are commonly used in charter operations and corporate flight departments. → Very rarely are they used for personal recreation.
LARGE GA JETS Aircraft Design Group C11-D11	 Bombardier Challenger 605  G550	→ Similar characteristics as small and medium GA jets. → These aircraft are typically faster and wider, increasing the demand on airport facilities. → Used by large charter operations and found in large corporate flight departments.
COMMERCIAL AIRLINERS Aircraft Design Group C111-DV1	 Boeing 757-200  Boeing 747	→ Aircraft typically seen at a commercial airport. → These aircraft are very large and jet powered. → Due to the large wingspan and heavy weight airport facilities are larger and require longer runways.

KNB Airport

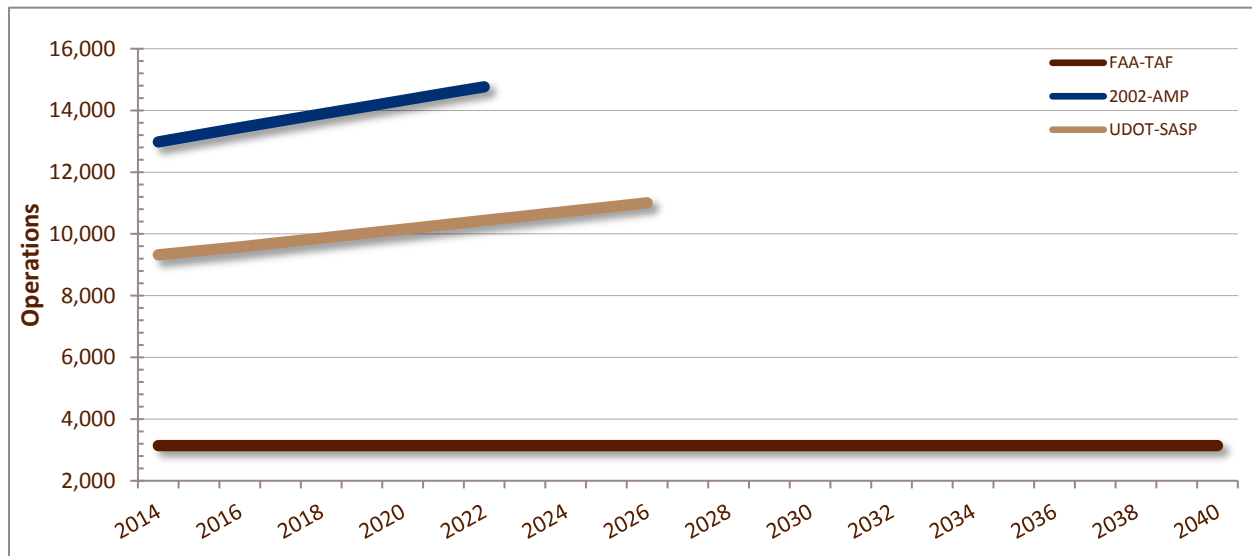
Source: Jviation

3.5 Previous Aviation Activity Projections

Previous forecasts of aviation activity prepared for KNB were examined in this chapter to identify a potential range of activity in the future, and also to compare against recent trends. In addition, recent historic trends in activity as well as certain external factors (discussed previously in the forecast scenarios) were evaluated in developing new forecasts for this Master Plan. The previous forecasts were based on higher historical estimated traffic levels compared to current trends.

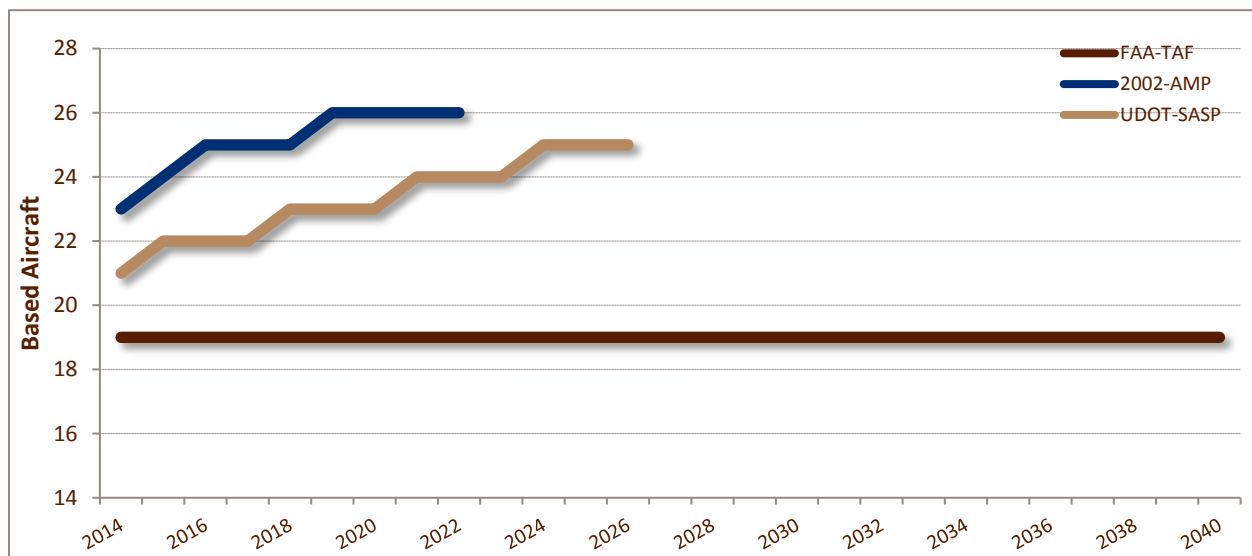
Three different sources forecasted aviation activity at KNB previously; the FAA's TAF issued January 2015; the Airport Master Plan prepared in 2002; and the Utah State Airport System Plan prepared in 2007. Each forecast was prepared in different periods and started with different base year data (Figure 3-15 and Figure 3-16).

FIGURE 3-15 – PREVIOUS AIRCRAFT OPERATIONS FORECASTS - KNB



Source: FAA's Terminal Area Forecast (TAF) issued January 2015; the Airport Master Plan prepared in 2002; and the Utah State Airport System Plan prepared in 2007

FIGURE 3-16 – PREVIOUS BASED AIRCRAFT FORECASTS - KNB



Source: FAA's Terminal Area Forecast (TAF) issued January 2015; the Airport Master Plan prepared in 2002; and the Utah State Airport System Plan prepared in 2007

The 2002 Master Plan was the most optimistic of the three sources in terms of future activity, in part because activity was at higher levels when that master plan was prepared. In addition, trends prior to that master plan were indicating potentially strong growth at KNB. The most recent FAA TAF, issued in January 2015, projected no growth in aircraft operations or based aircraft through

2040. The FAA provided no specific reasons why they anticipate no growth in activity, but this FAA approach is typical for small airports like KNB.

3.6 Activity Forecast Periods

The FAA recommends that forecasts for airport master plans extend for a period of twenty years. The forecasts for KNB are divided into three periods:

- Short Term: 2016-2020
- Medium Term: 2021-2025
- Long Range: 2026-2035

The short term planning period has the highest confidence level in terms of future activity. By 2020 and beyond, an increasing number of external events may occur that could affect aviation activity at KNB, such as those discussed in earlier sections of this chapter. At many airports, for example, corporate activity has not returned to the levels experienced in 2005-2007, prior to the start of the economic recession that depressed corporate and GA activity. The continued steady growth of the stock market and corporate profits will be key factors to the long-term growth of corporate aviation activity, but economic conditions are subject to significant changes.

It is recommended that actual activity levels at KNB be compared against the forecasts on an annual basis to determine if the assumptions used remain valid and the growth rate matches the forecasted levels. If differences between the forecasts and actual operations are noted in the future, facility requirements should be re-examined.

3.7 Forecast Scenarios for KNB

Based on all of the factors and variables discussed above, three forecast scenarios were developed in an effort to capture the range of possible activity at KNB:

Forecast Scenario 1 – Growth: This scenario assumed that the cost of aircraft ownership and operation, including fuel prices, will not increase any faster than the overall rate of inflation; that the economy in the City of Kanab and Kane County will grow steadily throughout the forecast period, including population, employment and per capita income; and that demand for pilots by the airlines, private companies, and government agencies will continue to increase. This scenario also assumed that second home owners and area visitors will continue to fly into KNB, and that a full-time flight school would be located at KNB, which would generate both local and transient operations. In this scenario, aircraft activity and based aircraft would grow at approximately 1.7% per year through 2035.

Forecast Scenario 2 – No Growth: This scenario assumed that current trends will continue, namely that the cost of aircraft ownership and operation will continue to fluctuate, occasionally rising faster than the overall rate of inflation; the local economy will grow steadily; there will be no full-time flight school located at the Airport; demand for professional pilots will fluctuate; second home owners and visitors will continue to fly into KNB, but not increase significantly, and the

overall size of the pilot population will hold steady. In this scenario, aircraft activity and based aircraft will remain at current levels through 2035.

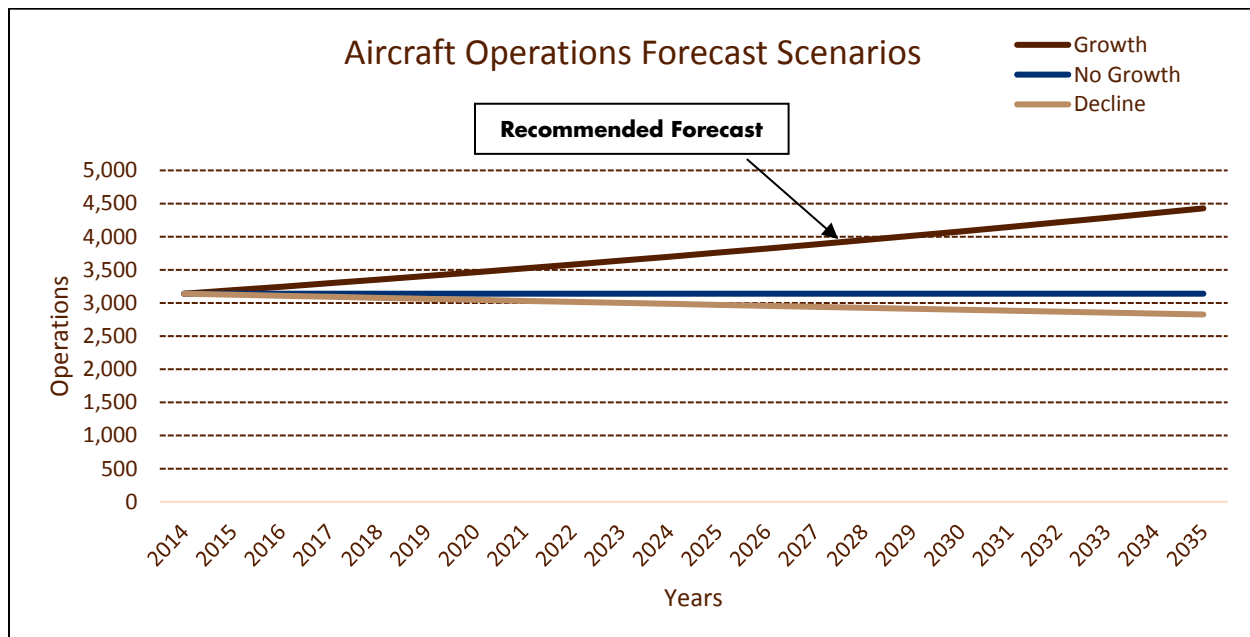
Forecast Scenario 3 – Decline: This scenario assumed that the cost of aircraft ownership and operation will increase faster than the overall rate of inflation, including the price of aviation fuel; second home owners and visitors flying into KNB will decrease; 100LL avgas, used in piston aircraft engines will become scarce, a drop-in replacement fuel will not become available at the same cost as existing 100LL avgas; the local economy will not grow as rapidly as projected; the number of active pilots will continue to decline; and no new operators will locate at the Airport to offer new services such as flight instruction, aircraft rental, charters, etc. In this scenario, aircraft activity would decline at 0.5% per year throughout the forecast period.

3.8 Preferred Aircraft Activity Projection

There are both positive and negative influences that have affected aviation activity at KNB, and the GA industry over the last 10 to 15 years. And as discussed in this chapter, those trends may continue throughout the forecast period. It is difficult to predict future trends, such as economic conditions locally, regionally, and nationally, as well aviation factors such as the cost of aircraft ownership and operation, and the long-term future of 100LL avgas. Based on the assumption that the forces acting on general aviation activity in the future will be reasonably balanced, and the proactive economic development program undertaken by the City of Kanab will be successful, the Growth Scenario appears to be the most reasonable.

There are risks to the forecast. For example, it is possible that aviation fuel prices may rise faster than predicted, as well as the overall cost of aircraft ownership, and that new security regulations may be imposed on general aviation airports, as well as airspace. It is important, therefore, to monitor the forecasts and the underlying assumptions against actual activity and events on regular basis, at a minimum annually, and adjust the forecasts and resulting facility requirements if conditions change substantially from what was anticipated.

FIGURE 3-17 – AIRCRAFT OPERATIONS FORECAST SCENARIOS - KNB



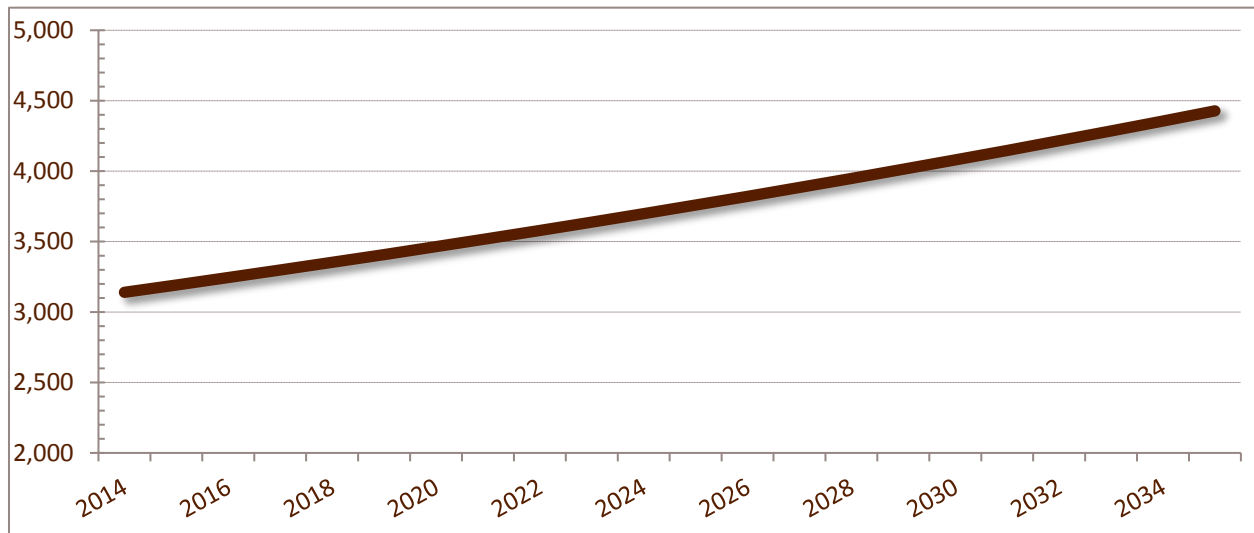
Source: Aviation. Note: Growth = 1.7% per year growth rate. No Growth (recommended) = 0% growth rate. Decline = -0.5% per year.

3.8.1 Recommended Forecast Rationale

Scenario 1 Growth is the likeliest of the three scenarios to occur at KNB, for the following reasons:

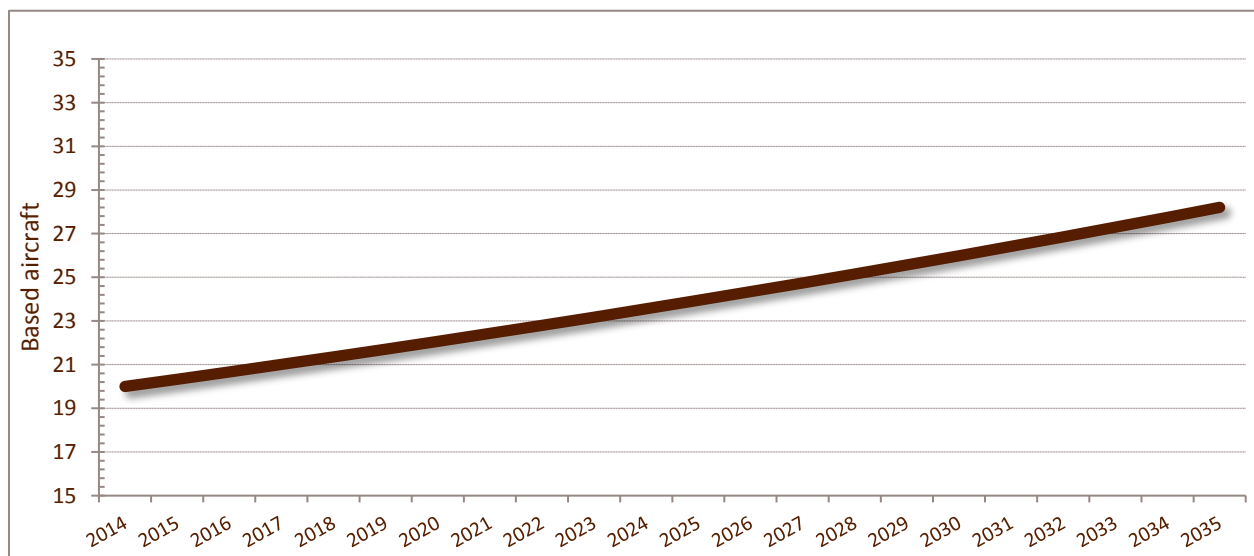
- It represents a balanced approach in terms of rising costs of aircraft ownership and operation, the growth of the local economy, and external factors such as demand for professional pilots, availability of 100LL avgas, etc. The recommended forecast is shown in **Figure 3-18** is within reasonable tolerances from the FAA's TAF.
- Scenario 1 anticipates that the local economy will continue to expand, although it does not assume any significant change to the economy (e.g. no significant shift in industry types, employers, or rapid growth in urbanization), and the local demographics will not change significantly. Tourism will continue to be a large component of the local economy.
- The operation of a full-time flight school and/or the basing of an active corporate flight department could generate more traffic at KNB than anticipated in the Growth Scenario.
- The price of avgas has dropped over the last year and a half, which has helped stimulate GA traffic. Energy analysts anticipate that fuel prices will remain low compared to levels seen in 2010-2014, which will continue to stimulate GA demand. In addition, the FAA and industry are working on finding an unleaded "drop-in" replacement for 100LL avgas, and FAA anticipates it will certify a replacement fuel within two years.
- Numerous aviation organizations including EAA, AOPA, NBAA, etc., are actively promoting general aviation. Programs like the EAA's Young Eagles have generated interest in GA among young people. It is anticipated that such programs will continue to generate more GA activity.

FIGURE 3-18 – RECOMMENDED AIRCRAFT OPERATIONS FORECAST - KNB



Source: Jviation. Note: Growth = 1.7% per year growth rate.

FIGURE 3-19 – RECOMMENDED BASED AIRCRAFT FORECAST - KNB



Source: Jviation. Note: Growth = 1.7% per year growth rate

3.9 Comparison Between Recommended Forecast and FAA TAF

The FAA AC 150/5070-6B, *Airport Master Plans*, states: “Planners should compare their forecast results with those contained in the most recent FAA Terminal Area Forecast (TAF). The general requirement for FAA approval of the master plan study’s forecasts is that they are supported by an acceptable forecasting analysis and are consistent with the TAF. Master plan forecasts for operations, based aircraft, and enplanements are considered to be consistent with the TAF if they meet the following criteria: Forecasts differ by less than 10 percent in the 5-year forecast and 15 percent in the

10-year period.” While the percentage difference between the master plan forecast and the FAA’s TAF in 2025 exceeds FAA’s guidelines, the actual numbers are relatively small and differences viewed as reasonable considering historical levels of activity. As noted previously, a full-time flight school and/or the location of corporate flight department at KNB could generate more traffic than projected in the Growth Scenario.

TABLE 3-12 – COMPARISON OF FORECASTS AND TAF FORECASTS, 2014-2029 (FAA FORMAT)

Operations	Airport Master Plan Forecast	FAA TAF ¹	AMP Forecast / TAF % Difference
GA Aircraft Operations			
– Base Year (2015)	3,140	3,140	0.0%
– 2020	3,464	3,140	10.3%
– 2025	3,759	3,140	19.7%
– 2035	4,428	3,140	41.0%
Based Aircraft			
– Base Year (2015)	16	20	-20.0%
– 2020	22	20	10.0%
– 2025	24	20	20.0%
– 2035	28	20	40.0%

Source: Aviation

¹ TAF data is on a U.S. Government fiscal year basis (October through September)

3.10 Future Critical Design Aircraft, Airport Reference Code

The FAA notes that to qualify as the critical design aircraft, and determine the airport reference code (ARC), they must generate a minimum of 500 itinerant operations per year, which is almost one takeoff and landing every day over a year. Based on the factors described in the Growth Scenario, the future airport reference code (ARC) and critical design aircraft will remain the same as existing; ARC B-II, and the Beech King Air and Cessna Citation CJ series (**Figure 3-20**) as the critical design aircraft.

FIGURE 3-20 – CRITICAL AIRCRAFT



Source: Google Images

ARC B-II accommodates a wide range of piston and turbine aircraft, as shown below, in addition to almost every piston engine aircraft. Therefore, the importance of the B-II designation is that it represents a broad range, or family of aircraft, that encompasses most of the general aviation fleet that fly to KNB on a regular basis. In addition, KNB will continue to accommodate transient corporate aircraft, including occasional large corporate jets such as the Gulfstream IV, Falcon 2000,

and Challenger 605, etc., but they will not generate sufficient levels of activity to meet FAA's threshold for "substantial use," 500 itinerant operations per year.

TABLE 3-13 – AIRPORT REFERENCE CODE (ARC) B-II AIRCRAFT

Aircraft	Make & Model
Beechcraft	1900
Beechcraft	KING AIR C90
Beechcraft	SUPER KING AIR 200/250
Bombardier	BD-300/350
Cessna	208 Caravan
Cessna	CITATION CJ-1, CJ-2, CJ-3, MUSTANG, M@, SOVEREIGN
Dassault Falcon	50
Dassault Falcon	900
Dassault Falcon	2000
Embraer	Phenom 100/300
Fokker	F-28-1000/2000
Grumman	GULFSTREAM I
Honda	HondaJet HA-420
Pilatus	PC-12NG
Rockwell	Aero Commander 500/560/680
Sabreliner Corp	SABRELINER 65
Socata	TBM 900

Source: Burns & McDonnell Aircraft Characteristics



4.0 DEMAND-CAPACITY ANALYSIS AND AIRPORT FACILITY REQUIREMENTS

4.1 Introduction

FAA notes that the primary method for determining airport facility requirements is by analyzing what additional facilities will be required to accommodate existing and forecasted aviation activity as well as improvements necessary to meet design standards. This task begins with an assessment of the ability of the existing facilities to meet current and future demand. If there is any shortfall in terms of airfield capacity, the additional facilities needed to accommodate demand will be identified.

Appendix 4-A summarizes the demand-capacity analysis and facility recommendations, discussed in more detail in this chapter.

A number of other factors were also considered in relation to determining airport facility requirements:

Comparison of existing facilities with FAA design C-II standards. Kanab Municipal Airport (KNB or the Airport) currently meets FAA Airport Reference Code (ARC) B-II standards, and based on the forecast of activity and future critical design aircraft (i.e. Beech King Air 200, Cessna Mustang, Cessna Citation CJ-1/CJ-2, Embraer Phenom 100), KNB is recommended to remain B-II (**Table 4-1**) throughout the 20-year planning period.

The previous airport master plan and the Utah Continuous Airport System Plan both recommend upgrading KNB to FAA ARC C-II standards (**Figure 4-1**). However, there is insufficient existing or forecasted activity by C-II aircraft such as the Hawker 800/900, Gulfstream G-III/-IV, Challenger 300/350/604, Embraer Legacy 600/650, and other C-II aircraft to meet FAA's substantial use threshold.¹ Data compiled from flight plans filed with the FAA² indicate that there were less than 50 operations per year by C-II aircraft at KNB. While the data does not capture all corporate jet operations at KNB, the majority of corporate operators file flight plans with FAA. It is important to note that while KNB currently meets B-II design standards, KNB has, and will continue to accommodate mid- and large-size corporate jets on an as-needed basis.

As discussed in later chapters, significant financial investments would be required to bring KNB's facilities up to FAA's airport reference code (ARC) C-II design standards (**Table 4-1** and **Figure 4-1**). Cost estimates in the Airport's current Capital Improvement Plan (CIP) indicate that upgrading to C-II could cost as much as \$18.78 million. In addition to that, the parallel taxiway to Runway 1-19 could cost another \$4 million to \$5 million, depending on the specific design standards used.

¹ FAA's substantial use threshold is a minimum of 500 itinerant operations per year by the critical design aircraft. That requires at least one takeoff and one landing by the critical aircraft 250 days per year. Sources: FAA Memorandum, Northwest Mountain Regional Policy and Guidance, Runway Extension Justification, April 3, 2009; and FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

² Source: GCR, Inc.

Given the level of forecasted activity within the planning period, but considering previous airport and state planning efforts, it is recommended that the ultimate plan for KNB be to aim for C-II ARC status beyond the 20-year planning period. By creating this ultimate plan, the airport preserves the ability to accommodate a greater level of service established in these other planning efforts while developing toward realistic goals within the planning period.

Improve or replace facilities that create operational conflicts, such as eliminate designated or potential hot spots where multiple taxiways intersect at a single point; taxiway/runway intersections that cause confusion; etc. One example is KNB's existing midfield taxiway that runs at a right angle between Runway 1-19 and the parking apron. That taxiway configuration does not meet current FAA design standards in that the direct taxiway connection between the runway and parking apron could potentially lead to a runway incursion.

Mitigation needed for existing or potential environmental impacts. Based on the current situation and future facilities recommended within the planning period at KNB, no environmental mitigation is required.

The need to bring airport facilities into compliance with local and state building and fire codes. The new terminal building at KNB meets all appropriate building and fire codes.

TABLE 4-1 – FAA AIRPORT DESIGN STANDARDS

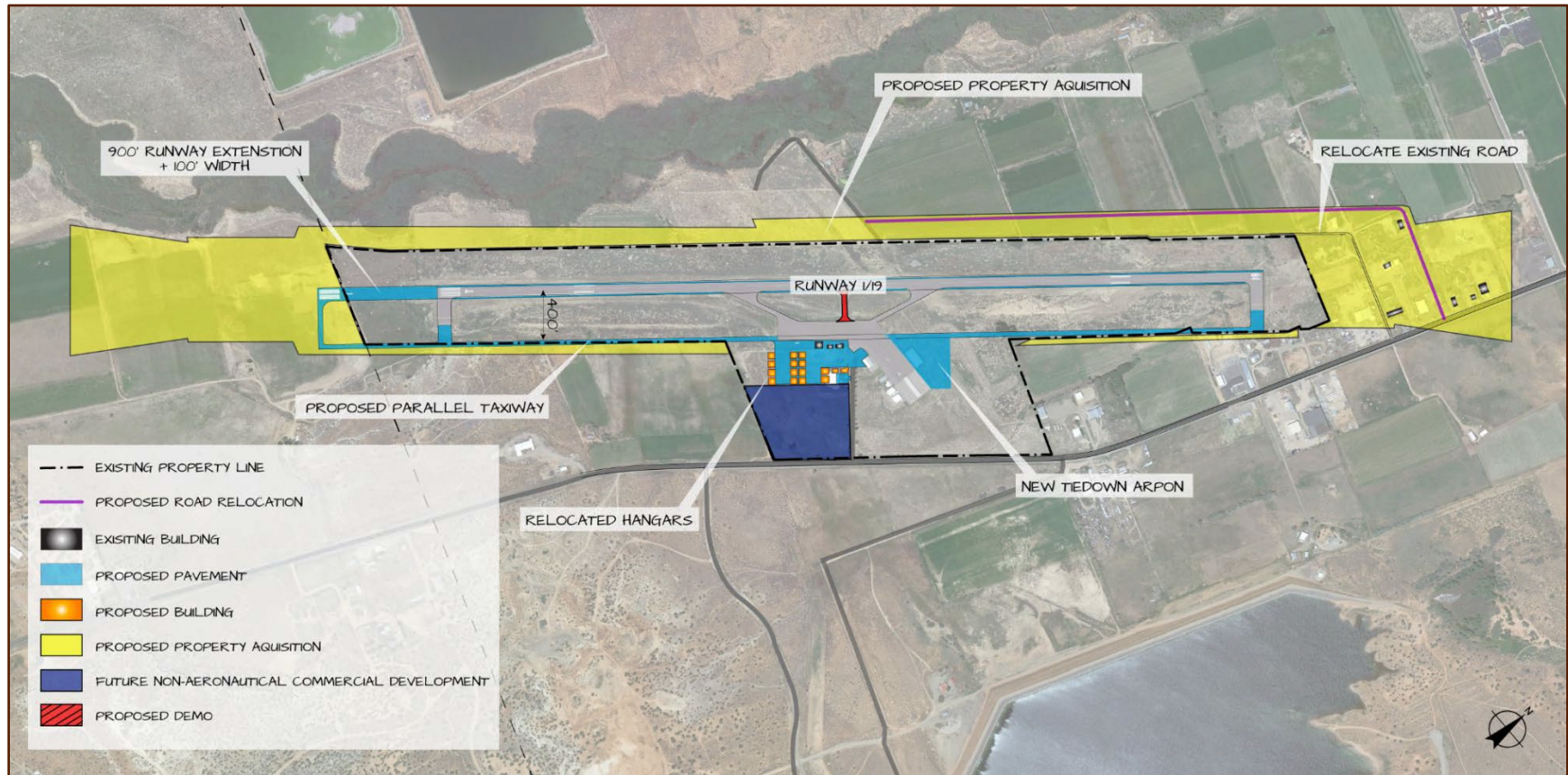
Airport Facility	B-II	C-II
Runway 1-19	6,193' x 75'	7,100' x 100'
Existing Tie-down/Parking Apron	Meets B-II standards	Requires expansion and relocate tie-downs to meet C-II
Taxiway	Existing layout*	Full parallel, 25'W, Rwy CL-Twy CL = 300'
Runway Object Free Area (ROFA)	500'W x 300'L	800'W x 1,000'L
Runway Safety Area (RSA)	150'W x 300'L	500'W x 1,000'L
Runway Protection Zone (RPZ)	500'IWx700'OWx1,000'L	500'IWx1,010'OWx1,700'L

Sources: FAA AC 150/5300-13A, Airport Design; 2002 Kanab Municipal Airport Master Plan.

Notes: ROFA = Runway Object Free Area; RSA = Runway Safety Area; RPZ = Runway Protection Zone. L = length beyond runway end. IW = inner width. OW = outer width.

*A full length parallel taxiway may be justified within the planning period. If so, it should be constructed to C-II standards to meet potential ultimate design requirements.

FIGURE 4-1 – CAPITAL IMPROVEMENTS REQUIRED TO UPGRADE KNB TO FAA REFERENCE CODE C-II



Source: Creamer & Noble, Kanab Airport Master Plan, 2004

Note: Current FAA design criteria allows 300' separation between Runway 1-19 and future parallel taxiway centerline, vs. the 400' separation shown in the 2002 Master Plan.

4.2 Airside Facility Requirements

Airside facilities deal with aircraft operational areas, including runways, taxiways, aircraft parking aprons, as well as navigation and communications aids. Each airside facility is discussed individually below.

4.2.1 Runways

The single runway at KNB, 1-19, meets FAA Runway Design Code (RDC) standards for B-II-5000. It is 6,193 feet long by 75 feet wide, with a 0.7% upslope from Runway 1 to 19. The wind data shows that Runway 1-19 provides better than 95% wind coverage for 10.5-knot, 13-knot, and 16-knot crosswinds. While there are periods when crosswinds exceed the limits of some aircraft operating at KNB, they are not of sufficient duration to justify constructing a new crosswind runway. A crosswind runway would require property acquisition, the preparation and approval of an environmental assessment (EA), and substantial cost to construct, as well as on-going maintenance costs.

In terms of runway length, Runway 1-19 is adequate for the type of aircraft that use the airport and the missions that they fly. **Table 4-2** shows that a number of corporate aircraft classified as B-II can take off from KNB on Runway 1-19 at maximum gross weight, i.e. with no weight penalty.

TABLE 4-2 – ACCELERATE/STOP TAKEOFF DISTANCE REQUIRED¹

Aircraft	Distance (feet)
Beech King Air C90	4,779
Beech King Air 200GT	4,859
Embraer Phenom 300	5,114
Cessna CJ-2	5,180
Cessna CJ-3	4,750
Cessna CJ-4	5,021

Source: Business & Commercial Aviation, May 2014

It is likely that some corporate aircraft that operate at KNB reduce their takeoff weight to safely depart on Runway 1-19, particularly when temperatures are high in the summer, which increases the airport's density altitude and reduces performance. However, according to surveys undertaken by the National Business Aircraft Association (NBAA) and Business & Commercial Aviation (BCA)², the majority of all corporate aircraft takeoff at reduced weight, even on runways that impose no operational constraints. The majority of corporate aircraft fly missions shorter than their maximum range, and therefore they do not need to carry full fuel, and they typically carry less than full passenger loads.

In addition, aircraft reduce takeoff weight to improve climb performance after takeoff, particularly in the vicinity of high terrain. As a result, reducing weight to takeoff on Runway 1-19, particularly in

¹ Accelerate/stop distances are required by the FAA to be calculated by turbine aircraft prior to each takeoff to ensure that the runway being used is adequate. The accelerate/stop takeoff distances shown above are at maximum gross weight, 5,000' elev. above sea level, 25° C (77° F) outside temperature, zero wind. Source: Business & Commercial Aviation, May 2014.

² Sources: Harris Interactive for NBAA, *The Real World of Business Aviation: A Survey of Companies Using General Aviation Aircraft*, October, 2009; Business & Commercial Aviation, *Operations Planning Guide*, April, 2014

the summer, may limit the fuel carried and non-stop range an airplane could fly, but it is not unusual for corporate aircraft to takeoff at reduced weights.

FAA Advisory Circular (AC) 150/ 5325-4B, *Runway Length Requirements*, notes that 100% of “small airplanes” (those that weigh less than 12,500 pounds) can operate from an airport at an elevation of 5,000 feet with a 6,300-foot runway. The AC also notes that 75% of aircraft that weigh more than 12,500 pounds but less than 60,000 pounds (which encompasses a large share of the corporate jet fleet) can takeoff on a 6,200-foot runway at 60% useful load. In addition, based on flight plan data filed with FAA, some aircraft fly non-stop from KNB for 1,000 nautical miles (nm). Those missions fall within the range of the typical corporate flight, and indicate that turbine aircraft can depart KNB with adequate useful loads. Based on their average mission profile, turbine aircraft typically take off at less than maximum gross weight.

In general, corporate aircraft takeoff performance has been improving steadily for more than 20 years due to more efficient and powerful engines and to advanced aerodynamic design, thereby reducing the required runway length. One outcome has been to allow larger corporate aircraft to operate from airports with runways of 5,000 feet and shorter, particularly at reduced takeoff weights, as shown below. While some aircraft under certain conditions (for example, very high temperatures in the summer) may be required to takeoff from KNB at reduced weight, the existing runway length adequately serves the majority of existing and future aircraft at KNB. The airport is currently used occasionally by large corporate jets such as the Gulfstream G-IV, Canadair Challenger, etc. Those aircraft operate at reduced weights, particularly on takeoff during the summer months. A number of large corporate jets can takeoff from KNB’s Runway 1-19 at reduced weight (**Table 4-3**). Therefore, maintaining the current Runway 1-19 length (6,193 feet) will not prevent large corporate jets from using KNB in the future, albeit at reduced take-off weight.

TABLE 4-3 – TAKEOFF DISTANCE AT REDUCED WEIGHT

Aircraft	Distance (feet)
Gulfstream G-550	5,274
Gulfstream G-450	4,838
Global Challenger 6000	3,446
Falcon 2000XLS	4,436
Falcon 7X	3,716
Challenger 350	5,244
Embraer Legacy 600	5,132

Source: Business & Commercial Aviation, May 2014

Note: Takeoff performance based on following mission profile:

- Balanced Field Length (BFL) shown
- Typical corporate passenger/ baggage payload
- Non-stop 1,000 nm mission
- Airport elev. 5,000' @ 25C / 77F temperature, 0 wind

Because the runway currently meets FAA B-II design standards and is long enough to accommodate B-II aircraft, as well as occasional operations by larger corporate jets, it is recommended that Runway 1-19 remain at its current size (6,193 feet by 75 feet) within the planning period. When additional, more demanding aircraft use the airport on a regular basis, the ultimate plan to meet C-II design

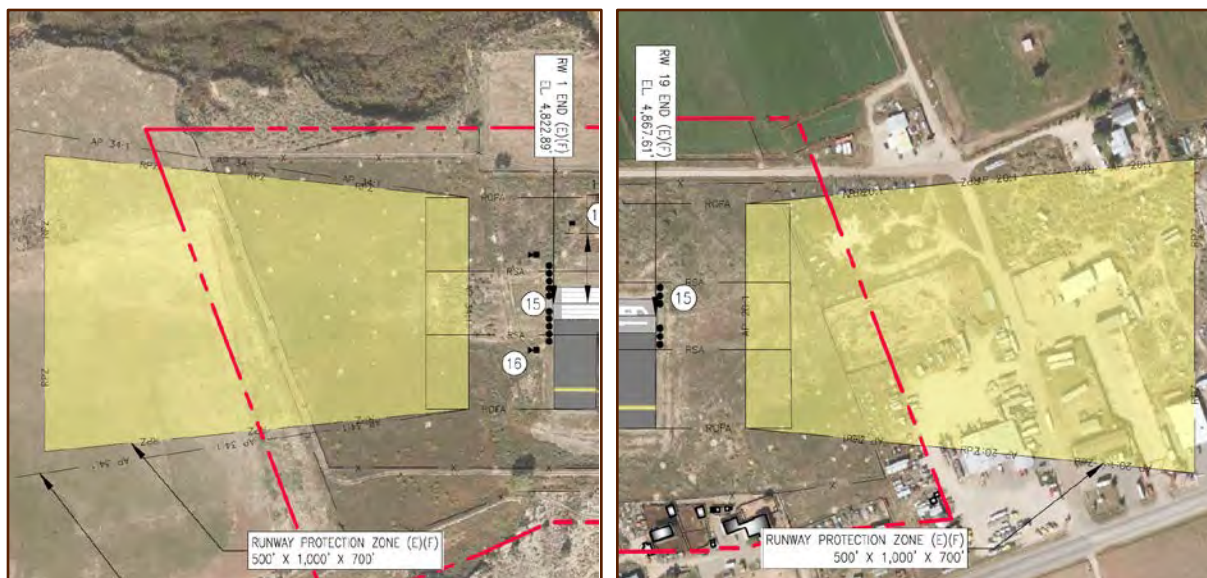
standards and increase the runway's length and width should be pursued. Based on the forecast of aviation activity this may likely take place beyond the 20-year planning period, but is included in the Airport Layout Plan set to preserve the ability to carry out this project.

4.2.2 Runway Protection Zones (RPZ)

Runway 1 and 19 each have a runway protection zone (RPZ). FAA defines RPZ as an “area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground. This is best achieved through airport owner control over RPZs. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ and includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities.”

FAA issued a Memorandum dated September 27, 2012, *Interim Guidance on Land Uses Within a Runway Protection Zone*. The Memorandum states: “Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses.” FAA requires coordination with the airport sponsor concerning certain land uses if they are situated in RPZs, including non-aviation buildings (particularly residences, churches, hospitals, etc.), recreational facilities such as golf courses, amusement parks, sports fields, etc., rail facilities, public roads, vehicular parking facilities, fuel storage facilities, hazardous material storage, wastewater treatment plants, and above ground utilities. Both the Runway 1 and 19 RPZ extend off airport property, as shown below in yellow. The City has easements over the portions of both RPZs that extend off airport (see Exhibit A map).

FIGURE 4-2 – RUNWAY 1 AND RUNWAY 19 RPZ



Source: Jviation

A portion of the Runway 1 RPZ is situated in Arizona, and appears to be vacant. There are mixed land uses in the Runway 19 RPZ including a truck, trailer, and vehicle repair and sales business owned by Little's Diesel Service. When the runway is extended, it is recommended that the City

attempt to acquire the property within the RPZs that are situated off-airport (approximately six acres south of Runway 1, and approximately 10 acres north of Runway 19). Where property acquisition is not feasible FAA expects sponsors to “take all possible measures to protect against and remove or mitigate incompatible land uses.”

4.2.3 Taxiways

There are three mid-field taxiways, two of which are high-speed exits off of Runway 1-19. Taxiway turnarounds located at both runway ends allow aircraft turnaround for departure or after landing. The distance from the south high-speed taxiway to the Runway 1 threshold is approximately 2,066 feet, and from the north high-speed taxiway to the Runway 19 threshold is approximately 2,320 feet. At typical taxi speeds¹ it takes approximately 2.5 minutes to taxi between the high-speed exit taxiway and the runway threshold.

The existing mid-field taxiway at KNB is at a right angle between the runway and parking apron (**Figure 4-4**). FAA design standards require changing that configuration to prevent inadvertent runway incursions by aircraft taxiing directly from the parking apron onto the runway (**Figure 4-3**). It is recommended that an island be constructed on the apron adjacent to the taxiway intersection by removing existing pavement or painting of an artificial island on the pavement. The island would require aircraft to taxi around it, thereby reducing the chance of a runway incursion. Another option would be to close that taxiway, however, it is used by aircraft to exit the runway after landing, and it is recommended to remain open.

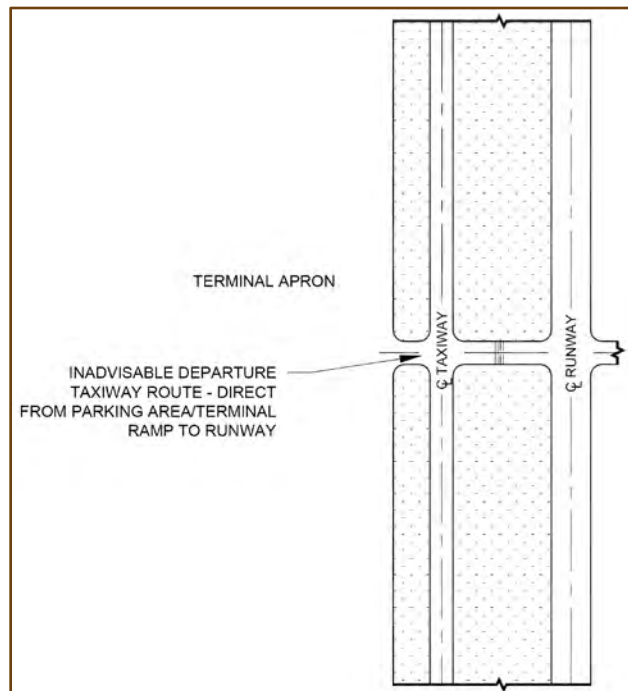
The 2002 KNB Master Plan and the 2007 Utah Continuous Airport System Plan recommended constructing a full parallel taxiway to FAA ARC C-II design standards. Both plans recommend a 400-foot separation between Runway 1-19 and parallel taxiway centerline. The current C-II design standard calls for a 300-foot separation from runway to taxiway and 400-foot separation from aircraft parking areas.

A full parallel taxiway would minimize aircraft back-taxiing on the runway after landing or before takeoff, therefore enhancing safety and the level of service offered to airport users. Several aircraft tie-downs located in front of the terminal building would have to be relocated in order to meet the 400-foot runway to aircraft parking area separation requirement.

A full parallel taxiway would cost between \$4 million and \$5 million, depending on the specific design criteria used and the amount of property acquisition required. A parallel taxiway would also require property acquisition as well as relocating existing paved tie-downs and some of the apron. The estimates do not include replacing the lost paved tie-downs, or environmental mitigation.

¹ FAA Safety Alert for Operators (SAFO 09004), 2/11/09, states: “Slow the aircraft to a fast walking speed on the centerline of the landing runway prior to attempting to exit the runway. Taxi at a fast walking speed until parked at the ramp or until aligned with the centerline of the runway for takeoff.”

FIGURE 4-3 – FAA DIAGRAM OF INADVISABLE TAXIWAY CONFIGURATION



Sources: FAA Advisory Circular 150/5300-13A, *Airport Design*, Chp. 4

FIGURE 4-4 – EXISTING TAXIWAYS AT KNB



Source: Jvation

Consistent with previous plans and basic facilities offered at B-II airports in Utah, it is recommended that the existing taxiway system be improved to include the development of a full-length parallel taxiway with 300' separation between the runway and taxiway centerlines, designed to C-II standards. It is anticipated that the new parallel taxiway would be constructed when the activity

reaches FAA's threshold for Airport Reference Code (ARC) C-II, after the 20-year planning period. The recommendation to develop a new parallel taxiway is based on the following reasons:

- Pilots operating B-II and larger aircraft, such as corporate and business users, have come to expect full-length parallel taxiways at the airports they operate from. Providing this airfield feature may attract some users that may otherwise be deterred.
- Many states and B-II airports throughout the country see full-length parallel taxiways as a basic necessity. Many states recommend this feature for B-II airports throughout their systems.
- Although the amount of time to taxi between the mid-field taxiways and the taxi turnarounds at each runway end is less than three minutes, less time spent taxiing on a runway reduces the risk of potential accidents or incidents.
- A full-length parallel allows taxiing aircraft to remain clear of the runway for landing and departing traffic.
- While separation standards for a B-II airport are slightly greater than C-II airports, the taxiway width of 25 feet, based on taxiway design group standards, is the same.
- The FAA recommends parallel taxiways for airports with instrument approach procedures. KNB has straight-in and circling procedures.

4.2.4 Navigation and Communication Aids

There are no ground-based radio navigation aids on KNB. The nearest ground-based navigation aids (NAVAIDs) are the Bryce Canyon VHF Omni-Range Transmitter (VOR), situated 42.1 nm to the north and the Colorado City Non-Directional Radio Beacon (NDB), situated 23.1 nm west of KNB. Communications are on Unicom radio (Common Traffic Advisory Frequency: CTAF), 122.8 MHz.

There is a published non-precision GPS approach to Runway 1 (lowest minimums = 569 feet and one mile). There are airport lights that serve as visual aids:

- Runway end identifier lights (REIL) – two flashing strobe lights – on Runway 1*
- Precision Approach Path Indicator Lights (PAPI), glide angle of 3° - Runway 1*
- Medium Intensity Runway Lights (MIRL)*
- Rotating Beacon

** According to the FAA Airport Facility Directory, lights are pilot controlled (PCL), activated by radio on CTAF freq. 122.8 MHz.*

Discussions with FAA Flight Procedures indicated that due to the high terrain north of KNB, FAA cannot publish an instrument approach procedure to Runway 19. Instrument approach procedures must comply with FAA Order 8260.3B, *U.S. Standard for Terminal Instrument Procedures (TERPS)*. As a result, Runway 19 will remain a visual runway end.

In addition, for the existing GPS non-precision instrument approach to Runway 1, the missed approach procedure requires a steep climb gradient because of the high terrain to the north. The

climb gradient on the missed approach impacts the minimum descent altitude (MDA) that can be certified on an instrument approach to Runway 1.

Recommendations:

- FAA publish a GPS lateral procedure with vertical guidance (LPV) approach to Runway 1 to provide vertical guidance to approaching aircraft and lower the MDA, if feasible. The mountains north of the airport impose steep climb requirements on the missed approach procedure, which limits the lowest minimum descent altitude that FAA can certify.
- An approach light system (ALS) would need to be installed to Runway 1 to lower the visibility minimums to less than one mile. However, it is **not** recommended that an ALS be installed due to the following considerations:
 - Cost (both installation and on-going maintenance costs);
 - ALS would require property acquisition—it would extend outside of airport property and across the state border into Arizona, which is approximately 745 feet south of the Runway 1 threshold;
 - With the steep climb requirements discussed above being a driving factor to the minimum descent altitude, approach lights would not likely lower minimums; and
 - There are relatively few periods of time when visibility is less than one mile.
- FAA, in concert with the National Weather Service (NWS), develop terminal aerodrome forecasts (TAF) for KNB. TAFs would benefit corporate aircraft operators, particularly those operating as air taxi/charter under 14 CFR Part 135.
- FAA install a remote communications outlet (RCO) on KNB to allow pilots on the ground and in the vicinity of KNB to talk directly with Los Angeles Center.
- FAA improve radar coverage by Los Angeles Center in the vicinity of KNB. The implementation of NextGen by the FAA, which will rely on satellite monitoring and communications, will improve ATC tracking where radar coverage is poor. FAA currently requires all aircraft owners that use ATC services to install equipment that meets some of the tracking requirements for NextGen¹ by 2020.
- No new instrument approach procedure to Runway 19 is proposed—it will remain visual. It is recommended that the airport study and engage the FAA in discussions regarding the potential installation of a PAPI to Runway 19 to aid visual approaches, particularly at night.

4.2.5 Airspace Obstruction Removal

The FAA has sole jurisdiction for the management and operation of the National Airspace System (NAS). The FAA has delegated some of that responsibility to airport sponsors. The FAA's Sponsor Grant Assurance Number 20, *Hazard Removal and Mitigation*, states: "It (i.e. the airport sponsor) will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be

¹ The new equipment is Automatic Dependent Surveillance-Broadcast (ADS-B). ADS-B uses GPS technology to determine an aircraft's location, airspeed and other data, and broadcasts that information to a network of ground stations, which relays the data to air traffic control displays and to nearby aircraft equipped to receive the data via ADS-B. Operators of aircraft equipped with ADS-B can also receive weather and traffic position information delivered directly to the cockpit. Source: FAA <https://www.faa.gov/nextgen/programs/adsb/faq/>

adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.” That policy is also stated in FAA advisory circulars and FAA’s Airport Compliance Manual, Order 5190.6B. The FAA has defined the airspace to be protected by airport sponsors in several sources:

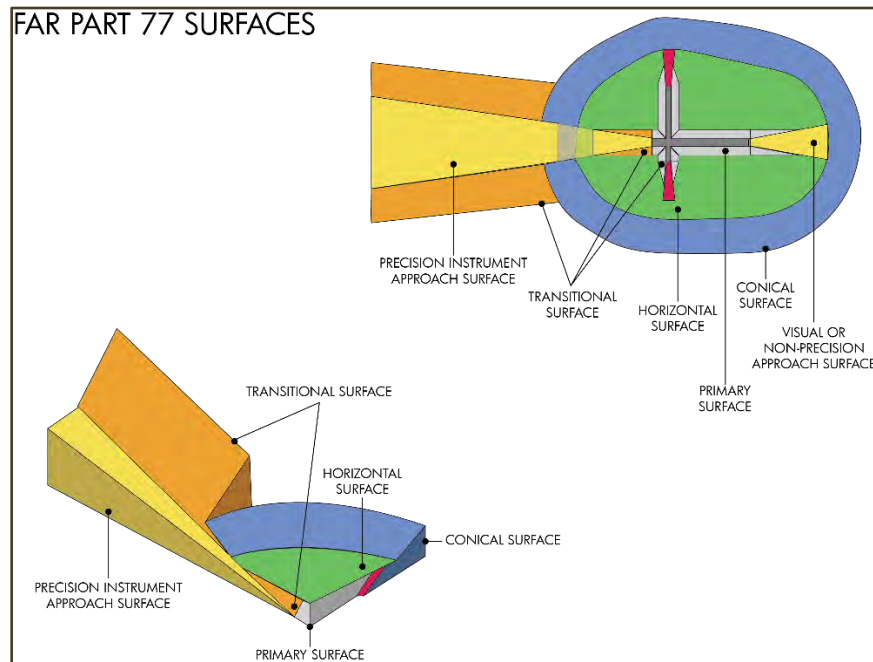
- 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace
- FAA Order 8260.3, U.S. Standard for Terminal Procedures (TERPS)
- FAA AC 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*
- FAA Advisory Circular 150/5300-13A, *Airport Design*

Digital mapping of Kanab Municipal Airport and surrounding area was compiled by Woolpert, Inc. in the Fall of 2015. FAA requires that airport sponsors acquire digital mapping in compliance with Airports Geographic Information System (AGIS) standards. The area covered by AGIS mapping corresponds to the imaginary surfaces prescribed in FAA AC 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*.

The AGIS mapping has been uploaded to FAA’s website (<https://airports-gis.faa.gov/public/index.html>), and has been reviewed and approved by FAA and the National Geodetic Survey (NGS). FAA will use that data to update their records regarding the airport and objects in the vicinity of the airport, particularly in relation to instrument approach procedures. Woolpert also compiled digital mapping for the 14 CFR Part 77 imaginary surfaces. There are five imaginary surfaces defined in Part 77 (**Figure 4-5**):

- Primary surface
- Approach surface
- Transitional surface
- Horizontal surface
- Conical surface

FIGURE 4-5 – AIRPORT IMAGINARY SURFACES



Source: Code of Federal Regulations 14 CFR Part 77

The protection of those imaginary surfaces is the responsibility of airport sponsors. The FAA notes in 14 CFR Part 77 that, “any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used and any permanent or temporary apparatus” that penetrates one or more of the imaginary surfaces is defined as an obstruction to air navigation.

FAA further notes that, “Objects that are considered obstructions under the standards described in this subpart are presumed hazards to air navigation unless further aeronautical study concludes that the object is not a hazard. Once further aeronautical study has been initiated, the FAA will use the standards in this subpart, along with FAA policy and guidance material, to determine if the object is a hazard to air navigation.”

The FAA presumes that all penetrations are obstructions and hazards to air navigation unless it determines that specific penetrations are not hazards. FAA requires airport sponsors to protect the imaginary surfaces by “removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.”

A large portion of the imaginary surfaces extend beyond airport property, and even beyond the Kanab City limits and into Arizona to the south. In addition, to the north of the airport and the city there is high terrain (**Figure 4-9**). FAA recognizes that airport sponsors have limited jurisdiction over property situated off-airport, particularly outside of municipal boundaries. However, as noted in the grant assurances, FAA requires airport sponsors to make good faith efforts to remove, mark or light penetrations to the imaginary surfaces, wherever feasible. If penetrations to the imaginary surfaces cannot be removed, then sponsors use FAA Advisory Circular 70/7460-1L, *Obstruction Marking and Lighting*, to determine the appropriate methods.

There are a number of red obstruction lights that are situated on top of utility poles approximately two to three miles north of KNB, within the City limits (see **Figure 4-6** and **Figure 4-7**). The obstruction lights are on top of utility poles, and the red obstruction lights were installed years ago in coordination with FAA (see photos on following page). The utility poles penetrate the Horizontal Surface, which is a flat surface situated 150 feet above airport elevation (horizontal surface = 5,018 feet above mean sea level). The obstruction lights create significant visual glare at night on the north side of the city. The utility poles and obstruction lights are approximately 900 feet lower than the mountain to the north.

FAA has examined the obstruction lights previously and determined that the lights are required. Based on extensive coordination with FAA as part of this Master Plan, FAA reiterated that determination. The options for removing the obstruction lights would require either burying the power lines and removing the poles, which is expensive, or re-routing the power lines and poles so that they do not penetrate the Horizontal Surface, which is also expensive.

Runway 19 is, and will continue to be, a visual approach with an approach surface slope of 20:1, and no utility poles penetrate the approach surface.

FIGURE 4-6 – UTILITY POLES AND OBSTRUCTION LIGHTS NORTH OF KNB



Source: Jviation

FIGURE 4-7 – UTILITY POLES AND OBSTRUCTION LIGHTS NORTH OF KNB



Source: Jviation

TABLE 4-4 – UTILITY POLES AND HILLS IN RELATION TO KNB

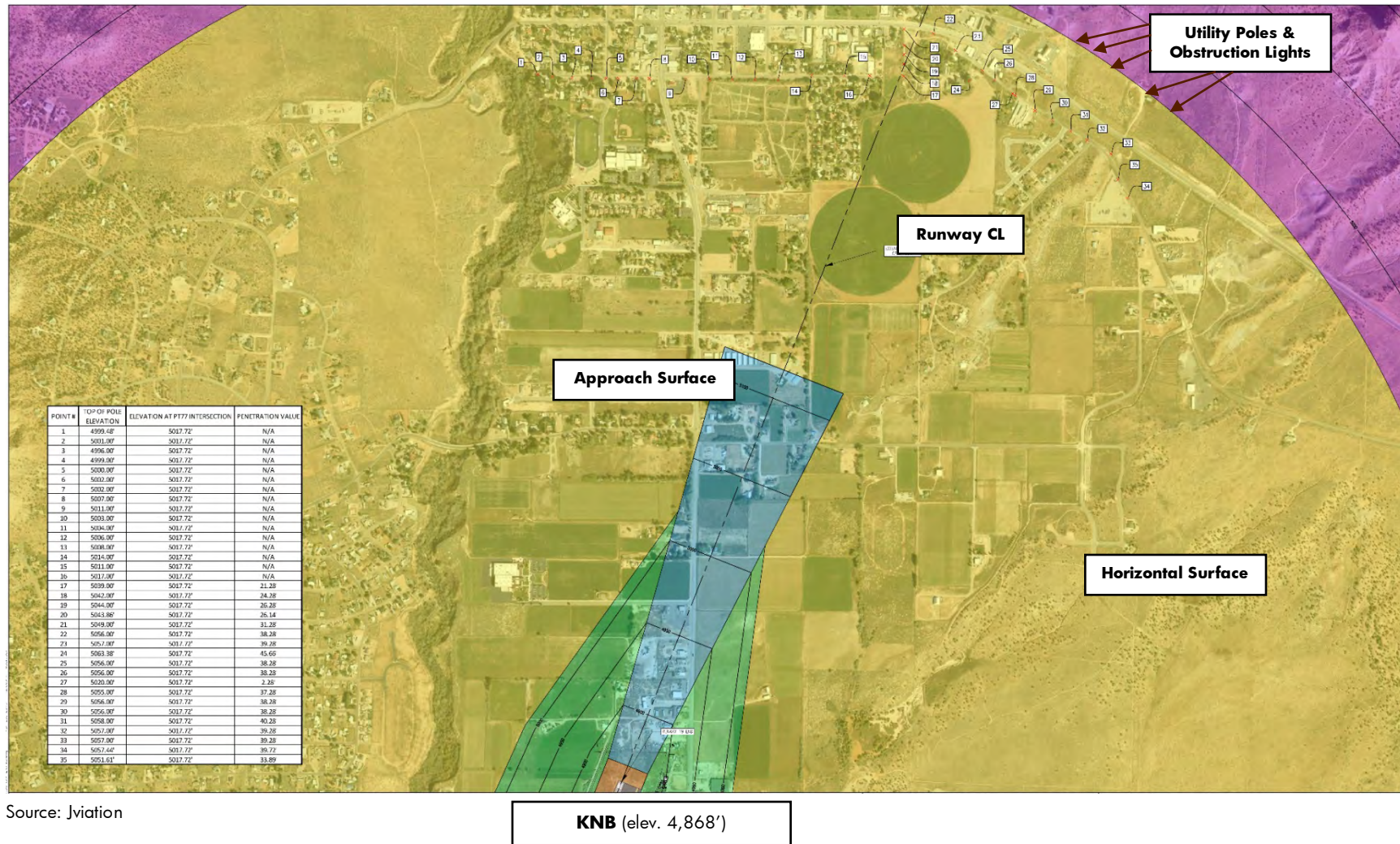
Feature	Distance from Airport	Elevation	Height Above Airport	Bearing off of RW1/19	Ownership
Airport	--	4,868'	--	--	Kanab
Utility Poles	2.3 nm	5,000'	130' – 190'	0 deg	Garkane Energy
Indian Dance Hall	2.8 nm	5,605'	740'	2 deg West	BLM
Savage Point	3.3 nm	5,805'	940'	4 deg East	BLM
TV Towers Ridge	3.5 nm	5,815'	950'	10 deg West	Verizon & AT&T

Source: Jviation

The top of the mountain is approximately 27 nm north of KNB, at an elevation of 9,440 feet, which is 4,572 feet above the Airport's elevation of 4,868 feet. There is another peak situated approximately 34 nm north of the Airport at 9,580 feet elevation, which is 4,712 feet above the Airport elevation.

Kanab Municipal Airport
2016 Airport Master Plan

FIGURE 4-8 – FAA IMAGINARY SURFACES – UTILITY POLES



Source: Jviation

FIGURE 4-9 – HIGH TERRAIN NORTH OF KNB



Source: Jvation

Note: Photo taken facing North from Runway 1 Threshold

Recommendations

Based on extensive coordination with FAA as part of this Master Plan, FAA has reiterated their previous determination that the obstruction lights must remain as long as the utility poles remain in their current locations and penetrate the 14 CFR Part 77 Horizontal Surface. As a result, the only options currently available to remove the obstruction lights are to either bury the power lines and remove the poles, which would be expensive, or re-route the utility poles and power lines so that the poles do not penetrate any FAR Part 77 imaginary surfaces, which would also be expensive. Either option would require extensive involvement and cooperation by the utility company that owns the utility poles and power lines.

Based on the feedback from FAA and cost associated with relocating the utility poles or burying the powerlines, it is recommended that the City keep the utility poles and obstruction lights as they are. The FAA would not likely assist with the cost of addressing this issue since the obstruction lights currently in place meet FAA guidelines for obstruction awareness.

4.2.6 Aviation Fuel Storage & Dispensing

There is one 10,000-gallon, above-ground fuel storage tank at KNB for 100LL avgas (**Figure 4-10**). There is no permanent JetA fuel storage tank at the Airport, although there are two mobile fuelers for JetA. KNB owns and operates the fuel service. The storage capacity needed for each type of fuel is determined by demand and through-put capacity, measured by how frequently wholesale fuel deliveries are required to replenish the storage tank.

For example, if sales were sufficiently strong to require wholesale fuel deliveries every day to replenish the storage tanks that would be a strong indicator that additional fuel storage is required. If the fuel storage capacity in relation to retail fuel sales requires wholesale deliveries once or twice a month that is considered adequate.

FIGURE 4-10 – 100LL AVGAS STORAGE TANK



Source: Jvation

The fuel storage capacity, in relation to the volume of fuel sold, should allow for regular use (rotation) of the fuel in the storage tanks. All fuel deteriorates over time the longer it sits in storage tanks, in part due to contamination from water, particulates, and bacteria. Quality control of the fuel is important, primarily to eliminate the possibility of an engine failure.

As noted by a large fuel wholesaler¹:

“Fuel quality degradation needs to be identified, characterized and addressed whenever aviation fuel is stored for a length of time. Jet fuel can form gum and must be regularly monitored in order to avoid problems in the future with aircraft fuel systems. Another danger to jet fuel quality is the growth of bacteria that develops within the product. Hydrocarbon utilizing micro-organisms can grow and develop in untreated Jet Fuel, causing fuel filter problems. If left untreated, bacteria growth can cause catastrophic problems in the future. Bacterial fuel contamination is usually overcome by treating the fuels with a biocide.”

Another factor is that wholesale fuel distributors/wholesalers typically require airports (or FBOs) to buy a minimum amount of fuel on each delivery (approximately 8,000 gallons). Fuel wholesalers typically charge more per gallon if they deliver less than that.

The City of Kanab recently signed a contract with AVFUEL to serve as the wholesale supplier to the Airport. Airports typically order wholesale deliveries when there is sufficient available capacity in the storage tank to buy and store the minimum amount required. As a result, storage capacity needs to be sufficient to accept minimum deliveries from wholesalers, but not so great as to leave fuel in storage tanks for extended periods. The existing 100LL avgas storage tank is sufficient for the volume of fuel sold at KNB. In 2016 the city purchased a used Jet A fuel truck from the Moab Airport, which had been inspected and certified. It replaced an older fuel truck that required significant maintenance.

¹ Source: Intertek, “Jet Fuel Degradation Storage Problems - Jet fuel quality and degradation testing for jet fuels stored for long periods of time”, <http://www.intertek.com/petroleum/testing/jet-fuel/storage-degradation/>

The City plans to install a new 10,000-gallon above-ground JetA storage tank to replace the current 5,000-gallon mobile fuelers, which will allow the Airport to purchase more fuel at each delivery thereby further lowering the wholesale cost per gallon. Regarding Jet A fuel storage, there are two factors to consider:

- The need to sell a minimum volume of fuel per month to amortize the investment cost or operating and maintenance cost of a 10,000-gallon JetA storage tank. Margins on fuel sold are very small (i.e. profit after marked-up cost of goods). Corporate aircraft operators typically negotiate the price of fuel (i.e. do not pay listed retail price), and corporate aircraft have the capacity to tanker fuel so that operators can buy fuel at the airport that offers the lowest price.
- Maintaining the quality of JetA fuel that is stored for long periods of time (i.e. months or more) requires careful monitoring. Fuel handlers on airports are required to comply with National Fire Protection Association (NFPA) 407, *Aircraft Fuel Servicing*, as well as pertinent FAA advisory circulars such as AC 150/5230-4B, *Aircraft Fuel Storage, Handling, Training and Dispensing on Airports*, and AC 20-43C, *Aircraft Fuel Control*.

Recommendations

Install a Jet A storage tank with sufficient capacity to meet regular demand, but not so large that fuel will sit in the tank for long periods of time and suffer potential deterioration.

4.2.7 Aircraft Parking and Storage Requirements

As summarized in **Table 4-5**, the existing hangar storage and aircraft tie-down capacity exceeds existing and future demand. Some of the existing hangars will need to be replaced within the next 10 years due their current age and condition. There is room available for additional hangar development, shown in **Figure 4-11** (future hangars are shown in orange). The actual size of each hangar can vary depending on the specific needs of each operator. The existing row of T-hangars can be extended as well. It is anticipated that all future hangar development will be privately funded, including the site preparation and utility hook-ups. The future hangars will provide more than sufficient capacity to accommodate demand beyond the 20-year planning period (**Figure 4-11**).

TABLE 4-5 – AIRCRAFT STORAGE DEMAND – CAPACITY

Existing Storage Demand-Capacity	Future Storage Demand-Capacity
Current Based aircraft = 20	Future Based Aircraft = 29
Conventional Hangar storage capacity = 20 aircraft	Assume 20 stored in hangars, 9 on tie-downs
T-Hangar Capacity = 8 aircraft	Transient A/C Parking Peak Hour: 5 aircraft
Tie-down Apron (approximately 11,000 S.Y.) = 26 positions	
Total parking/storage capacity = 56 aircraft	
Transient parking positions = 8 (Beech King Air 200)	

Source: Jviation

The existing transient parking apron is large enough to meet projected demand. The transient parking apron can be expanded to the south if needed to accommodate additional transient parking.

FIGURE 4-11 – FUTURE HANGARS AND APRON EXPANSION



Source: Jviation

4.2.8 Airport Support Facilities

Airport support facilities include buildings for snow removal equipment (SRE) and airfield maintenance equipment, as well as the equipment itself. An SRE building should be constructed on the airport to protect the airport snow removal and maintenance equipment from the weather. The building can also include office/shop space. An example of a simple SRE storage building is shown in Figure 4-12.

The FAA has set limits on uses of the storage building that are eligible for FAA funding. As noted by the Airport Cooperative Research Program (ACRP): “Funding snow and ice control buildings is limited to space in the building necessary for eligible Snow Removal Equipment as well as storing abrasive or chemicals used in treatment of paved areas.

All other areas and equipment recommended in the current version of Advisory Circular 150/5220-18, *Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials*, must be paid for by the sponsor.”

FIGURE 4-12 – EXAMPLE OF SNOW REMOVAL EQUIPMENT (SRE) STORAGE BUILDING



Source: ACEC Wisconsin, Becher Hoppe Associates, Inc.

4.3 Landside Facility Requirements

Landside facility requirements focus on the non-aircraft movement areas, including the terminal building, utilities, access road, and vehicle parking.

4.3.1 Transportation/Road Network

KNB is served by a public, paved, two-lane road, Route 89A. South of the Airport, Route 89A connects with Route 389 in Arizona and Route 59 in Utah to St. George and I-15. To the north, Route 89A connects with Route 89 that connects with I-70 north of Marysville, and to Route 89 to the east which proceeds to Page, Arizona, and then south to Flagstaff, Arizona. There are signs to the Airport on Route 89A. There are no constraints in terms of vehicle access to KNB.

4.3.2 Airport Road Circulation & Vehicle Parking

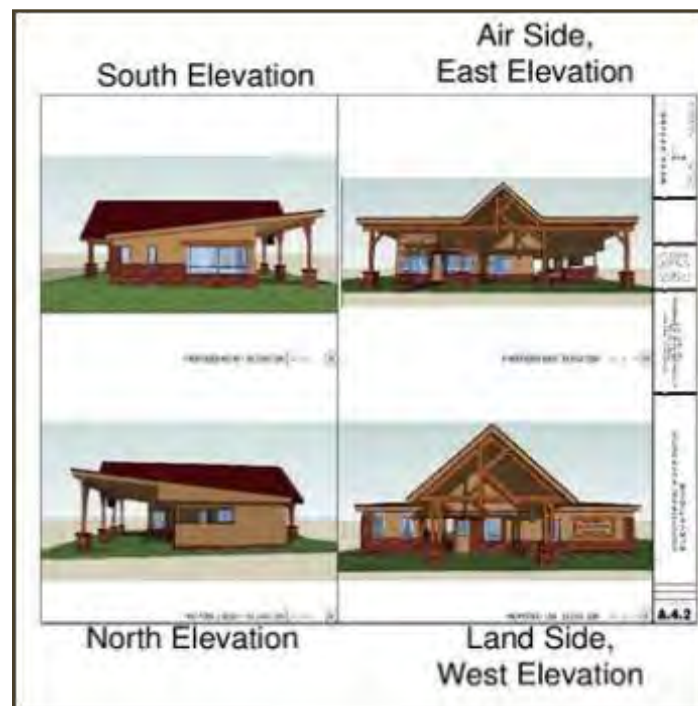
There is a two-lane paved road from Route 89A to the Airport terminal and parking lot. There is a prominent sign for the Airport at the intersection with Route 89A. There is paved and unpaved vehicle parking available and sufficient to meet demand. The existing access road and vehicle parking are adequate to meet existing and future demand. The vehicle parking lot will be upgraded and expanded as part of the new terminal building construction, and will provide more than adequate capacity for future demand.

4.3.3 Airport Terminal Building

The City of Kanab is in the process of constructing a new terminal building, directly behind the existing building, which will be removed. The new terminal project started before the current airport master plan, and is not FAA funded. The new building will be constructed in 2016 (**Figure 4-13** and **Figure 4-14**). The new terminal building was designed by Mesa Design, and the contract was awarded to the construction company, RBI Contracting (Ray Brothers) in March 2016; the City plans to have the building operational by October 2016. (Note: the new terminal building was constructed and the old building removed in the summer of 2016).

The new terminal building will be one story, approximately 2,186 square feet in size, located east of the existing terminal building (i.e. further away from Runway 1-19). The paved parking lot will also be expanded. After the new building is constructed, the existing terminal building will be demolished and removed.

FIGURE 4-13 – FUTURE KNB TERMINAL BUILDING



Source: City of Kanab website

FIGURE 4-14 – FUTURE KNB TERMINAL BUILDING LOCATION



Source: Jvation

4.3.4 Utilities

The existing utilities—electricity, water, sewer, cable—meet existing and future demand. It is anticipated that the developers of future hangars at KNB will extend the utilities needed to their respective hangars.

4.3.5 Automated Weather Observation System (AWOS)

The AWOS-III is situated on the Airport, approximately 620 feet south of the Kane County Emergency Building. It is situated approximately 520 feet east of the runway centerline, and approximately 2,200 feet north of the Runway 1 threshold. The antennas are clear of the 14 CFR Part 77 imaginary surfaces, and it meets the current siting criteria specified for AWOS stations (Source: FAA Order 6560.20B). The AWOS was installed in 2003, and requires increasing maintenance. This Master Plan does not recommend moving the AWOS.

In general, any structure should be at least 500 feet from the AWOS sensors, and any new structures erected closer than 500 feet to the AWOS may interfere with the sensors. The height of the sensors relative to the top of the structure have a bearing on the extent of possible interference. The existing 100LL avgas storage tank is approximately 373 feet from the AWOS, but does not interfere with the sensors.

If new structures were constructed within 500 feet of the AWOS, and if it interfered with the sensors, the AWOS could be relocated. The previous Airport Master Plan had recommended it be relocated to the west of Runway 1-19. The AWOS could be relocated if it were replaced with an Airport Surface Observation System (ASOS). Installation of an ASOS could allow the FAA and National Weather Service (NWS) to develop terminal aerodrome forecasts (TAF) for KNB, which would provide operational benefits to pilots, particularly those operating under 14 CFR Part 135.

4.4 Non-Aeronautical Development

All non-aeronautical development on airports encumbered by FAA grant assurances, including KNB, must be approved by the FAA prior to the initiation of the non-aeronautical development. FAA approval to use land for non-aeronautical purposes is not included in an approval of an Airport Layout Plan (ALP). Approval for non-aeronautical uses “requires a separate approval from the FAA regional airports division.”

All non-aeronautical activities such as restaurants and other terminal concessions, ground transportation, and car rentals, are excluded from the requirement for separate approval. FAA Order 5190.6B, *Airport Compliance Manual*, states that airport sponsors must “Use specific lands approved by the FAA for non-aeronautical use to generate revenue to support the airport’s aviation needs.”

The FAA Order also states: “In order for any surplus real or personal property to be transferred (for non-aeronautical use), the FAA must determine that it (i.e. the transfer to non-aeronautical use) is essential, suitable, or desirable for the development, improvement, operation, or maintenance of a public airport. This includes real property needed to develop sources of revenue from non-aeronautical commercial businesses at a public airport.”

As a result, FAA must approve the designation of property on an airport as surplus for aeronautical purposes before the sponsor can allow non-aeronautical development. In addition, the sponsor must ensure that all non-aeronautical development will be fully compatible with airport operations and aircraft activity, and in compliance with appropriate FAA requirements.

4.4.1 Reasons for Non-Aeronautical Development

The primary reason for an airport sponsor to allow non-aeronautical development on an airport is to generate revenue. The revenue generated must be dedicated to the airport in terms of operations and maintenance (O&M) and/or capital investments in aeronautical facilities. Revenue generated on an airport by non-aeronautical tenants/uses cannot be used for items such as municipal police, fire, or public works. An airport may reimburse other departments and services only for the cost of the services provided directly to the airport. In addition, it is anticipated that all non-aeronautical development will be privately funded, although the city may participate in extending utility lines, if required.

In order to permit non-aeronautical development, property on the airport must be designated by the airport sponsor and the FAA as surplus for aeronautical purposes. In order to be designated as surplus it must be shown that the property will not be needed to accommodate any aeronautical uses beyond the end of the 20-year planning period. There are approximately 12.5 acres of property identified in the terminal area, adjacent to Route 89A, that could be reserved for non-aeronautical, commercial development. The remaining property is more than adequate to meet aviation demand beyond the 20-year planning period. Assuming a land lease rate of .20 cents per square foot per year, for example, 12.5 acres could generate approximately \$108,000 annually. All non-aeronautical development must be fully compatible with airport operations and aircraft activity, and must be in full compliance with pertinent FAA standards and requirements.

4.4.2 FAA Policy Regarding Non-Aeronautical Development

FAA's grant assurances require airport sponsors to maintain their control and authority over the airport, including assuring that all development on an airport is fully compatible with airport and aircraft operations. **Appendix 4-B** provides draft provisions dealing with non-aeronautical tenants on an airport. Such provisions are not directly applicable to non-aeronautical activities such as a restaurant and/or rental car agencies situated in the terminal building, for example. They are applicable to commercial, light industrial, or other stand-alone non-aeronautical uses on and in the vicinity of an airport.

4.4.3 Recommendations for Kanab Municipal Airport

The City of Kanab and the FAA should designate approximately 12.5 acres of property in the terminal area (**Figure 4-15**) as surplus for aeronautical purposes (i.e. it can be used for non-aeronautical purposes).

The City should ensure that any non-aeronautical development be fully compatible with airport and aircraft operations, as well as the pertinent FAA grant assurances. **Appendix 4-B** presents sample lease provisions for non-aeronautical tenants describing compatibility with airport and aircraft operations.

In addition, no structures should be constructed within 500 feet of the AWOS unit. If it is relocated to the west of Runway 1-19, additional hangar and non-aeronautical development may occur south of the Kane County Emergency Building.

FIGURE 4-15 – AREAS RESERVED FOR NON-AERONAUTICAL DEVELOPMENT



Source: Jviation

4.5 Summary of Recommendations

- Maintain current Airport Reference Code (ARC) B-II within 20-year planning period, with ultimate goal of achieving C-II ARC after the 20 year planning period. The airport will qualify for Airport Reference Code (ARC) C-II when activity levels meet FAA's threshold, which is a minimum of 500 annual itinerant operations by C-II aircraft, which are mid and large corporate jets such as the Hawker 800/900, Challenger 300/350/605. Cessna Citation X, Gulfstream G-IV, G-280.
- Maintain Runway 1-19 at 6,193 feet by 75 feet and runway design code (B-II-5000) through the end of the 20-year planning period.
- There is insufficient justification to install an approach light system (ALS) to Runway 1. The current GPS non-precision instrument approach visibility minimums (1 mile) are adequate based on projected traffic levels and prevailing visual meteorological conditions. Pursue the development of an LPV approach to Runway 1 by the FAA to provide vertical guidance.
- Extend Runway 1 to the south in the ultimate planning period (i.e. beyond 20-years).
- Construct full length parallel taxiway to Runway 1-19 to C-II standards, with 300' separation between the runway and parallel taxiway centerlines, in the ultimate planning period (i.e. beyond 20-years).
- Utilize space adjacent to existing hangars for future hangar development, as demand warrants. Future hangar development will be privately funded, on as-needed basis.
- Snow equipment removal building size based on eligible equipment.
- Study the feasibility of a PAPI on Runway 19 and coordinate with the FAA.
- Designate approximately 12.5 acres of the airport terminal area as surplus for aviation-related purposes, to be made available for future non-aeronautical development. All non-aeronautical development must be fully compatible with aircraft and airport operations.
- FAA install remote communications outlet (RCO) for pilots to talk with Los Angeles Center ATC; prepare terminal weather forecasts for KNB; and lower radar coverage by Los Angeles Center in the vicinity of KNB, if feasible.
- Portions of the Runway 1 and 19 runway protection zones (RPZ) extend off of airport property. The City of Kanab has easements over the RPZs that extend beyond airport property. The City should coordinate with FAA to determine the most appropriate measures to remove or mitigate incompatible land uses if/when the runway is extended and/or RPZ dimensions increase. The City should aim to acquire the property of those portions of the RPZs situated off airport, or "take all possible measures to protect against and remove or mitigate incompatible land uses."

APPENDIX 4-A

Demand-Capacity Tables

Kanab Municipal Airport
2016 Airport Master Plan

TABLE 4-6 – DEMAND – CAPACITY ANALYSIS

Existing Operational Capacity	Existing & Future Demand (operations)
Annual service volume = 230,000 ops	3,200 ops / 4,500 ops
Peak hour visual (VFR) = 98 ops	4 ops
Peak hour instrument (IFR) = 59 ops	2 ops
Current Based aircraft = 20 Transient A/C Parking Peak Hour: 5 aircraft Conventional Hangar storage capacity = 20 aircraft T-Hangar Capacity = 10 aircraft Tie-down Apron (approximately 11,000 S.Y.) = 26 positions Transient parking positions = 8 (Beech King Air 200)	Future Based Aircraft = 29 Total parking/storage capacity = 56 aircraft

Miscellaneous	
Existing Facilities/Capacity	Future Facilities
Runway Wind Coverage	Exceeds 95% crosswind coverage – no new runway needed.
Utilities: Water, Sewer, Electricity, Phone, Cable	Yes - all connected to airport
Aviation Fuel: – 100LL Avgas - 10,000 gals. above ground storage w/ self-serve pump – JetA - mobile fuelers	Maintain 100LL avgas storage tank Install 10,000 gal. storage tank with self-serve pump
Pavement Condition: – Tie-down & Transient Apron – Runway 1-19	Pavement Condition: – Very good – Fair
Public Paved Road Access Vehicle Parking: – # Spaces paved 10 +/- – # Spaces unpaved 10 +/-	Yes (Route 89A & airport entrance road. Both are two-lane, paved, airport signs) – Peak hour 5 vehicles (paved) – Peak hour 2 vehicles (unpaved)
Instrument Approach Procedures: – Rwy 1 – Rwy 19	– GPS Non-Precision (LNAV) 569' & 1 mile. Recommend FAA publish LPV Rwy 1 approach w/lower MDA. if feasible. Approach slope=34:1 – Existing and Future Visual. Approach slope=20:1
Airfield Lighting: – Rwy 1-19 Medium Intensity Lights – Rwy 1 - REIL & PAPI – Rwy 19 – No REIL or PAPI – Rwy 1 Approach Light System (ALS)	– Maintain MIRLS – Maintain REIL & PAPI – Install REIL & PAPI – Not required
Communications: – Unicom/CTAF – AWOS-III – Los Angeles Center	– 122.8 – 133.175 (Ph: 435-644-2267) – 124.2

Kanab Municipal Airport
2016 Airport Master Plan

TABLE 4-7 – FAA DESIGN CRITERIA & EXISTING CONDITIONS

FAA Design Standards	Existing & Future Facilities
FAA Airport Reference Code (ARC) = B-II	FAA ARC = B-II
Critical Design Aircraft:	Beech King Air 200; Cessna Citation Mustang/CJ-1/CJ-2/CJ-3; Embraer Phenom 100/300
Runway 1-19 6,193' x 75'	Accelerate/Stop Takeoff Distance Required * – Beech King AirC90 4,779' – Beech King Air 200GT 4,859' – Embraer Phenom 300 5,114' – Cessna CJ-2 5,180' – Cessna CJ-3 4,750' – Cessna CJ-4 5,021'
* Accelerate/stop distances shown at max. gross weight, 5,000' elev. @ 25°C, zero wind. Source: Business & Commercial Aviation. Note: Runway 1-19 can accommodate mid & large corporate jets (Falcon 2000, Gulfstream G-450, Hawker 800, Canadair Challenger 300, Embraer Legacy 600) at reduced takeoff weights.	FAA Runway Length Requirements (AC 150/ 5325-4B) – Airplanes <12,500 pounds 100% fleet = 6,300' – Aircraft >12,500 pounds <60,000 pounds (75% fleet @ 60% useful load) = 6,200'
– Runway 1-19 Design Code = B-II-5000	– Rwy 1-19 = B-II-5000
– Rwy Width = 75'	– Rwy Width = 75'
Runway weight bearing capacity	Single Wheel = 12,500 pounds
Runway lights & markings	– Medium Intensity runway lights (MIRLs) – Non-precision markings – Rwy 1 – REILs & PAPI
Taxiway – Runway Separation = NA	Taxiway – Runway Separation = NA
Runway 1-19 Object Free Area = 300'L x 500'W	Runway 1-19 Object Free Area = 300'L x 500'W
Runway 1-19 Safety Free Area = 300L' x 150'W	Runway 1-19 Safety Free Area = 300'L x 150'W

Sources:

FAA AC 150/5300-13A, Airport Design
 FAA AC 150/5325-4B, Runway Length Requirements for Airport Design
 FAA Airport/Facility Directory (AFD); Form 5010
 Business & Commercial Aviation, Planning & Purchasing Handbook, May 2014

5.0 ALTERNATIVES ANALYSIS

5.1 Introduction

As noted in FAA's AC 150/5070-6B, *Airport Master Plans*: "Airports have a wide variety of development options, so an organized approach to identifying and evaluating alternative development options is essential for effective planning. The key elements of this process are:

1. Identification of alternative ways to address previously identified facility requirements.
2. Evaluation of the alternatives, individually and collectively, so that planners gain a thorough understanding of the strengths, weaknesses, and other implications of each.
3. Selection of the recommended alternative."

5.1.1 Identify Alternatives

Kanab Municipal Airport (KNB or the Airport) has been operational for more than 60 years, and the Airport's physical facilities have been developed over that period to meet aviation demand in conformance with appropriate FAA design standards in effect at those times.

The existing and future aviation demand identified in this Master Plan can be accommodated within the boundaries of the existing Airport, and future development will be consistent with existing facilities. The identification and evaluation of alternatives was accomplished based on the need to accommodate demand and meet appropriate FAA design criteria.

Six areas were identified for alternatives evaluation, each of which is described below:

1. Upgrade KNB from FAA airport reference code (ARC) B-II to C-II design standards, as recommended in the 2002 Master Plan and the 2007 State System Plan.
2. Construct a full parallel taxiway to Runway 1-19, or use the existing taxiway system.
3. Publish another instrument approach procedure to Runway 1 with lower minimums, and potentially publish a new instrument approach to Runway 19.
4. Develop portions of the terminal area for non-aeronautical development purposes, primarily to generate additional revenue for the Airport.
5. Remove the obstruction lights on the utility poles located approximately two miles north of the Airport.
6. Do nothing/no action.

5.1.2 Evaluate Alternatives

Five alternatives were identified and are evaluated below. Each alternative analysis addresses unique issues, however, a common theme is the concept of the cost-benefit. For example, upgrading Kanab Airport to FAA airport reference code (design standards) C-II, or constructing a full parallel taxiway, or removing the utility poles and obstruction lights situated north of the airport, would require significant financial investments. FAA and UDOT could potentially award grants to cover some of the cost, but the City would be required to also contribute their share. Based on the existing and forecasted traffic levels at the airport, this analysis determined that the costs associated with some of the improvements cannot be justified by the potential benefits.

TABLE 5-1 – ALTERNATIVE 1 - UPGRADE KNB FROM ARC B-II TO C-II

PROS	CONS
KNB would meet design standards for C-II corporate jets, such as the Hawker 800, Challenger 605, Gulfstream G-III, G-IV	KNB currently accommodates occasional C-II corporate jets, and can continue to do so in its present configuration.
	The existing and forecasted level of operations by ARC C-II aircraft does not meet FAA's substantial use threshold of a minimum of 500 itinerant operations per year. Many corporate jets, including the Cessna Citation series, Embraer Phenom, Falcon 50, 900, 2000, among others, are classified as B-II. The critical design aircraft for KNB, the Beech King Air 200/250 and the Cessna Citation CJ-3, fall within B-II.
	To meet C-II standards would require property acquisition, expanding the runway, moving the existing tie-down apron and some buildings, plus increasing pavement weight bearing capacity.
	The cost to upgrade KNB to C-II standards could range between \$18 million to \$22 million, including a new parallel taxiway to Runway 1-19. The actual cost will depend on a number of variables such as the cost to acquire property, facility relocation, etc.
	FAA funding for facility upgrades to C-II standards would be subject to FAA priority ranking, which places safety projects in the highest category, as well as funding availability.
Recommended Action	
Maintain KNB in conformance with FAA Airport Reference Code (ARC) B-II standards within the planning period. To preserve future opportunity for C-II capabilities identified in the previous master plan, however, an ultimate plan to achieve C-II status beyond the planning period should be maintained.	

TABLE 5-2 – ALTERNATIVE 2 - CONSTRUCT FULL PARALLEL TAXIWAY TO RUNWAY 1-19

PROS	CONS
Enhance operational safety by moving back-taxiing aircraft from the runway to the taxiway.	Jviation estimated the cost to construct a full parallel taxiway would be approximately \$4 to \$5 million depending on the specific design standards applied.
Increase operational capacity of the runway/taxiway system.	The existing taxiway system includes three mid-runway exits plus taxiway turnarounds/run-up pads at each runway end. The amount of time an aircraft spends back taxiing on the runway is 2-3 minutes.
	There are no operational delays at KNB. The line of sight from aircraft on the parking apron to both runway ends and the traffic pattern is clear.
Recommended Action	
Construct a full-length parallel taxiway to enhance safety and the level of service to users. The taxiway should be constructed to C-II standards to comply with long-term, ultimate development potential.	

TABLE 5-3 – ALTERNATIVE 3 - PUBLISH ADDITIONAL INSTRUMENT APPROACH TO RUNWAY 1 AND
NEW APPROACH TO RUNWAY 19

PROS	CONS
Enhance access to KNB during periods of poor weather, particularly by corporate aircraft.	FAA Flight Procedures has indicated that the mountains north of KNB require steep climb-out on the missed approach to Runway 1, which limits the approach minimums that can published on an instrument approach.
	FAA Flight Procedures has indicated that the mountains to the north of KNB prevent an instrument approach to Runway 19 from meeting their criteria in FAA Order 8260.3B, TERPS.
	The predominant weather throughout the year at KNB are visual meteorological conditions (VMC), which decrease the need for low minimums on an instrument approach.
	Publishing new instrument approaches would increase the size of the imaginary surfaces that would need to be clear, and potentially require the installation of additional obstruction lights in the vicinity of the airport.
Recommended Action	
FAA maintain existing Non-Precision GPS approach to Runway 1. If changes in instrument approach criteria in the future allow, FAA should publish a Localizer Performance with Vertical Guidance (LPV) instrument approach to Runway 1. No approach light system is recommended to Runway 1 due to its construction and on-going maintenance cost, including the need to acquire property, as well as potential light impacts on residents south of KNB. Study and coordinate with the FAA on the ability to install a PAPI on Runway 19.	

TABLE 5-4 – ALTERNATIVE 4 - DEVELOP NON-AERONAUTICAL LAND USES ON KNB

PROS	CONS
The Master Plan accommodated projected aviation demand needs beyond the 20-year planning period, and also identified property surplus for aviation purposes that could be developed for non-aeronautical purposes.	FAA will not permit non-aeronautical development if property is needed for existing or future aviation activity.
Generates needed revenue for the Airport.	City of Kanab is responsible for ensuring that all non-aeronautical development is in full compliance with FAA requirements.
Will be done in full compliance with FAA requirements.	City may need to make investments in utilities, access roads, etc. to accommodate future non-aeronautical development, although that can be negotiated with future tenants/developers.
Recommended Action	
Property designated surplus for non-aviation related purposes should be developed commercial, light industrial, and other non-aeronautical uses in order to generate revenue for the Airport. City of Kanab, as the airport sponsor, is responsible for ensuring that all future non-aeronautical development will fully comply with FAA requirements.	

TABLE 5-5 – ALTERNATIVE 5 - REMOVE THE OBSTRUCTION LIGHTS ON UTILITY POLES
APPROXIMATELY TWO MILES NORTH OF KNB

PROS	CONS
Would remove annoying lights and glare for residents and visitors to City.	FAA has determined that the obstruction lights are required because the utility poles penetrate the 14 CFR Part 77 Horizontal surface.
	The utility company could bury the powerlines and remove the utility poles and obstruction lights. This would be potentially expensive, and the construction would be disruptive to local residents, businesses and visitors.
	The utility company could relocate the powerlines and wires outside of the Horizontal surface, and then remove the obstruction lights. This would be potentially expensive, and given the rising terrain in the area, it would be challenging to meet the utility company needs for pole height and spacing, and also remain clear of the Horizontal Surface.
Recommended Action	
Maintain the utility poles and obstruction lights north of the airport as they are. Relocating the utility poles and wires outside of the Horizontal Surface would likely be costly with no FAA assistance.	

TABLE 5-6 – “DO NOTHING” ALTERNATIVE

PROS	CONS
This option assumes that no further improvements are made to KNB once the new terminal is completed. It represents the lowest cost option.	It does not address safety and convenience issues associated with the taxiway. It also would not allow future private hangar development, nor future non-aeronautical development that could potentially generate needed revenue for the Airport.
Recommended Action	
While the lowest cost of each of the options, the “Do Nothing” option does not address specific issues, and could result in lost revenue to the Airport.	

5.2 Preferred Alternatives

Based on the foregoing analysis the recommended preferred alternatives are listed below and shown in **Figure 5-1** and **Figure 5-2**:

Alternative 1

- Maintain KNB as FAA airport reference code (ARC) B-II within the planning period. KNB currently meets B-II design standards, and the Airport presently accommodates occasional operations by C-II corporate jets. The forecasts of demand do not project that activity by C-II aircraft will meet FAA’s substantial use threshold of a minimum of 500 itinerant operations per year by the end of the planning period. FAA has stated that they will fund facility upgrades only when aviation demand has been clearly documented that it requires the upgrade. An ultimate plan to achieve and maintain C-II status should be developed in order to preserve development in the previous master plan and allow for opportunities beyond the 20-year planning horizon.

Alternative 2

- Construct a full parallel taxiway to better serve airport users and enhance safety. Direct apron to runway access taxiways should be altered to avoid possible runway incursions.

Alternative 3

- FAA Flight Procedures has indicated that, given their current design standards, it is not feasible to publish another instrument approach procedure to Runway 1 with lower minimums, or to publish a new instrument approach to Runway 19 due to the mountains and high terrain to the north of the City. If FAA design standards change in the future, FAA should publish a Localizer Performance with Vertical Guidance (LPV) instrument approach to Runway 1.
- No approach light system is recommended to Runway 1 due to its construction and on-going maintenance cost, including the need to acquire property, as well as potential light impacts on residents south of KNB.
- A PAPI for Runway 19 should be considered and studied.
- A Remote Communications Outlet (RCO) should be considered to improve communication capabilities with Los Angeles Center.

Alternative 4

- Terminal area improvements include the expansion of the T-hangar, in-fill conventional hangar development, and itinerant tie-down expansion as demand warrants. The Airport has on-going plans to replace/improve the terminal building, auto parking and Jet A fuel storage. Included in this area is the development of a snow removal equipment building.
- FAA should concur in the designation of property identified as surplus for aviation needs, and the City of Kanab should promote non-aeronautical development in designated areas on the airport in order to generate more revenue for the airport. The City will be responsible for ensuring the non-aeronautical development will be in full compliance with FAA requirements.

Alternative 5

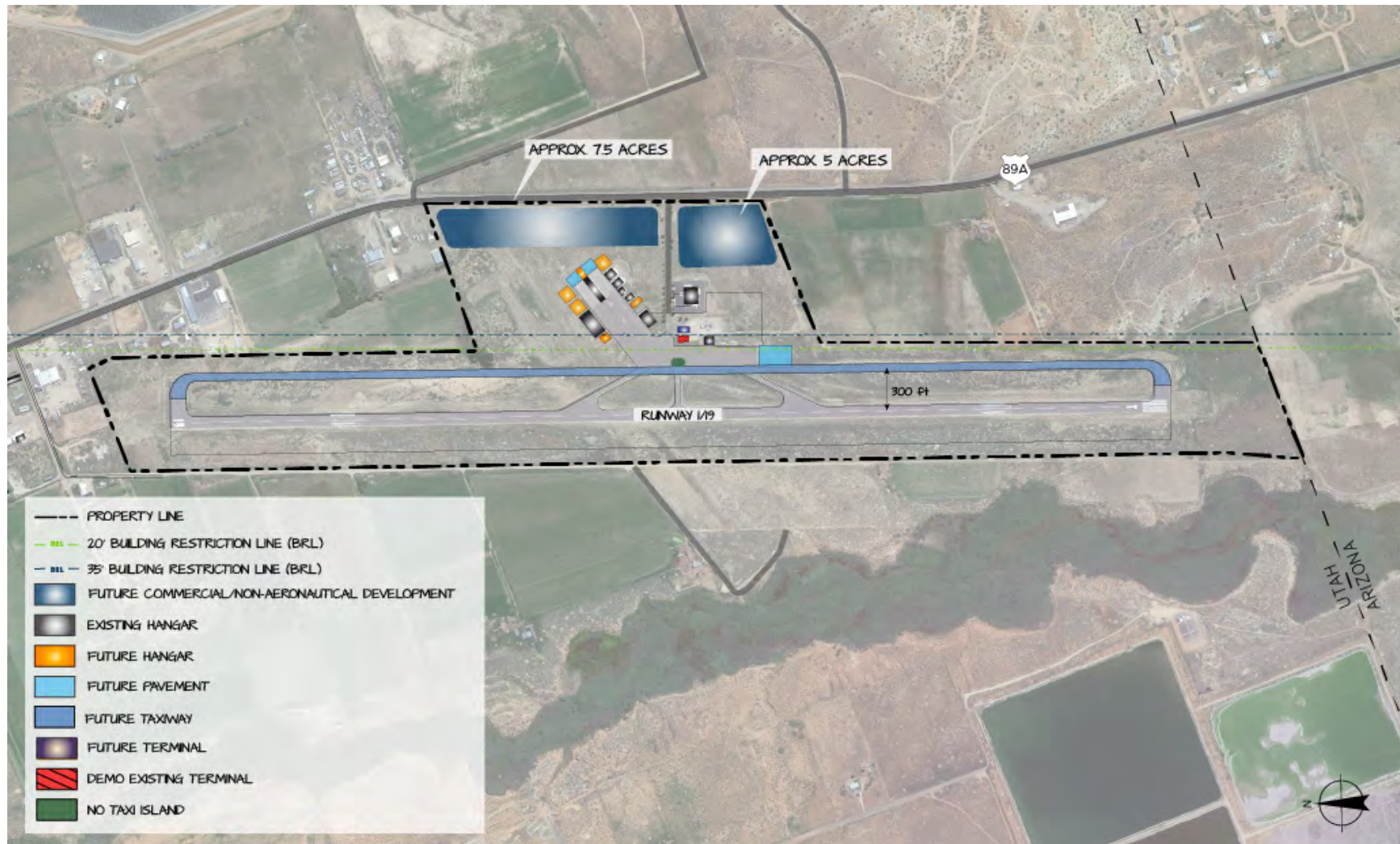
- The City should maintain the utility poles and obstruction lights north of the Airport as they are, based on their compliance with FAA obstruction awareness and 14 CFR Part 77 guidelines.

FIGURE 5-1 – KANAB MUNICIPAL AIRPORT – FUTURE TERMINAL LAYOUT



Source: Jvation

FIGURE 5-2 – KANAB MUNICIPAL AIRPORT – FUTURE AIRPORT LAYOUT



Source: Jvation

6.0 AIRPORT FINANCIAL PLAN

6.1 Introduction

This chapter examines the financial situation at Kanab Municipal Airport (KNB or the Airport), and presents recommendations to achieve FAA's goal of financial self-sustainability for the Airport.

Airport sponsors that accept FAA grants, including the City of Kanab, are legally encumbered by the Sponsor Assurances. Some of the assurances specifically address airport financial management:

22. Economic Nondiscrimination.

- a. It (the airport sponsor) will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.
- b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to furnish said services on a reasonable, and not unjustly discriminatory, basis to 1) all users thereof, and charge reasonable, and not unjustly discriminatory, prices for each unit or 2) service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.
- c. Each fixed-based operator at the airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.

24. Fee and Rental Structure. It (i.e. the airport sponsor) will maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible under the circumstances existing at the particular airport, taking into account such factors as the volume of traffic and economy of collection. No part of the Federal share of an airport development, airport planning ... project for which a grant is made under Title 49, United States Code...shall be included in the rate basis in establishing fees, rates, and charges for users of that airport.

25. Airport Revenues. All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it (the airport sponsor) for the capital or operating costs of the airport.

FAA acknowledges that each airport is unique in terms of its financial situation, as well as in relation to each airport sponsor's financial goals and objectives. However, FAA requires each airport to work

towards the goal of achieving and maintaining financial self-sufficiency to the extent feasible given each airport's unique circumstances.

6.2 Airport Capital Improvement Plan (CIP)

The FAA is required by the U.S. Congress to prepare a capital improvement plan (CIP) for every airport in the National Plan of Integrated Airport Systems (NPIAS), including KNB). In turn, the FAA requires each airport sponsor to submit their individual CIP to FAA on an annual basis. FAA uses the CIPs to develop the NPIAS, which identifies airport funding needs for at least five years. Many states and airports prepare CIPs that identify projects, cost estimates, and funding sources for a period of 10 years or more.

Each CIP is focused on airport improvements and development, and not airport operation and maintenance (O&M) expenses. FAA requires each airport CIP to cover a five-year period, however, CIPs are updated every year, and sometimes more frequently depending on circumstances. Each CIP is required to identify:

- Individual improvement projects
- The cost estimate for the project
- Potential funding sources—typically FAA, Sponsor, State, Private, as appropriate
- The time period for implementation

KNB's current CIP Airport Development Plan Project List is shown in **Table 6-1**. The FAA has established criteria for what is eligible for FAA funding. Eligible projects must be shown on an approved Airport Layout Plan (ALP), and must be available for public use (i.e. not an exclusive-use facility or subject to a lease with a private entity).

The FAA uses “three basic tests” to determine funding eligibility for projects:

- The project advances an AIP policy (i.e. dealing with airport safety, security, capacity, meeting FAA standards, preserving infrastructure, etc.).
- There is an actual need (i.e. facility requirements are demand-driven).
- The project scope is appropriate.

When a project is determined to be eligible for FAA funding it is then subject to FAA's priority ranking system. Projects dealing with safety, security, standards, environment, and capacity are typically ranked highest. Projects with lower priority ranking (such as hangars, vehicle parking, airport access roads, etc.) receive FAA funding after higher ranked projects have been implemented. In addition, FAA will issue a grant for an eligible project only after all of the necessary environmental reviews and approvals have been obtained, and the sponsor has the local share of the project cost available.

Kanab Municipal Airport
2016 Airport Master Plan

TABLE 6-1 – AIRPORT DEVELOPMENT PLAN PROJECT LIST

Utah Division of Aeronautics Airport Development Plan Project List										
Kanab (KNB)										
Project Description & Cost Estimate										
Scheduled/ Requested Federal Fiscal Year	Project Description	Project Identification in ALP/MP	Comments	Sponsor Priority Number	Estimated Total Cost of Project	Cost Allocation \$				
						Federal Participation	NP Entitlement	State Apportionment/D iscretionary	State Participation	Sponsor Participation
Federally Funded Projects						90.63%			4.685%	4.685%
2016	Bank GA Entitlement				\$ -	\$ -			\$ -	\$ -
2017	Pavement Preservation (Apron, Taxiways & Turnarounds)				\$ 165,508	\$ 150,000	\$ 150,000		\$ 7,754	\$ 7,754
2018	Resurface Runway 1/19 (replace PFC, mill & overlay)				\$ 1,257,862	\$ 1,140,000	\$ 450,000	\$ 690,000	\$ 58,931	\$ 58,931
2019	Re-pay borrowed funds				\$ -	\$ -			\$ -	\$ -
2020	Bank GA Entitlement				\$ -	\$ -			\$ -	\$ -
2021	Land Acquisition - AWOS				\$ 331,016	\$ 300,000	\$ 300,000		\$ 15,508	\$ 15,508
2022	Reconstruct East Apron				\$ 717,202	\$ 650,000	\$ 300,000	\$ 350,000	\$ 33,601	\$ 33,601
2023	Re-pay borrowed funds				\$ -	\$ -			\$ -	\$ -
2024	Environmental Assessment				\$ 331,016	\$ 300,000	\$ 150,000	\$ 150,000	\$ 15,508	\$ 15,508
2025	Land Acquisition Phase I				\$ 2,112,987	\$ 1,915,000	\$ 150,000	\$ 1,765,000	\$ 98,993	\$ 98,993
2026	Strengthen, Widen Rwy 1/19, Phase I				\$ 1,268,896	\$ 1,150,000	\$ 150,000	\$ 1,000,000	\$ 59,448	\$ 59,448
2027	Paving Phase I				\$ 7,889,220	\$ 7,150,000	\$ 150,000	\$ 7,000,000	\$ 369,610	\$ 369,610
2028	Paving Phase II				\$ 6,785,833	\$ 6,150,000	\$ 150,000	\$ 6,000,000	\$ 317,916	\$ 317,916
Participation Totals					\$ 20,859,539	\$ 18,905,000	\$ 1,950,000	\$ 16,955,000	\$ 977,269	\$ 977,269
State Funded Projects										
									90.00%	10.00%
2016	Electrical Vault & New PAPI				\$ 166,667				\$ 150,000	\$ 16,667
2019	Pavement Preservation				\$ 180,000				\$ 162,000	\$ 18,000
									\$ -	\$ -
									\$ -	\$ -
Participation Totals					\$ 346,667				\$ 312,000	\$ 34,667
Note: Attach additional sheets as necessary to fully describe projects or to add information needed for a full understanding of project scope, location and costs.										
For Planning Purposes Only										

Source: Utah Division of Aeronautics

Airport sponsors can also implement projects without FAA funding. The new terminal building being constructed at KNB is an example of a project that is not using FAA grants. Many airports rely on private investment for projects such as hangars, concessions in terminal buildings, non-aeronautical development, etc. It is proposed in this Master Plan that future hangars and any non-aeronautical commercial development be privately funded, and not built by the City.

While there are pros and cons associated with private investment on airports (**Table 6-2**), airport sponsors can mitigate some of the risks with specific lease provisions. For example, sponsors can include reversion clauses in leases whereby all improvements made on leasehold property revert to the ownership of the airport sponsor at the end of the lease term. In addition, sponsors can require construction and performance bonds before private parties begin improvement projects.

TABLE 6-2 – PRIVATE INVESTMENT IN AIRPORTS

Pros	Cons
– Reduces capital outlay by the airport sponsor.	– Facilities not eligible for FAA funding
– Reduces the risk associated with capital development projects.	– Sponsor typically receives less revenue from land lease compared to building & land lease it sponsor constructs project.
– Potentially improve the sponsors bond ratings	– Investor may insist on long-term lease to amortize investment
	– Without strong lease provisions, airport sponsors may have limited control over use of private facilities, sub-leasing, etc.

Under the FAA’s current Airport Improvement Program (AIP), general aviation airports receive \$150,000 per year in entitlement grants, which can be used on FAA-eligible capital improvement projects each year, or else banked for a maximum of three years, at which time the airport has \$450,000 available for eligible projects. KNB is banking the entitlement grants and will apply \$450,000 to the Runway 1-19 mill and overlay project in 2018. Entitlement grants for GA airports are dependent on Congressional appropriations each fiscal year. If annual appropriations were to fall below pre-determined levels, then GA airports would not receive their annual entitlements. To date Congress has appropriated sufficient money each year for GA airports to receive entitlement grants.

In KNB’s current CIP (**Table 6-1**), the projects shown in years 2021-2028 include relocating the AWOS, widening Runway 1-19, an environmental assessment, and land acquisition Phase 1, all of which deal with upgrading KNB to FAA airport reference code (ARC) C-II standards. Collectively those projects have a total estimated cost of \$19.436 million; the City’s share of those project costs is \$910,584, which represents 4.685% of the total.

These estimates do not include constructing a full parallel taxiway to Runway 1-19, which was recommended in the previous airport master plan and the State Airport System Plan. A new parallel taxiway could potentially cost between \$4 million and \$5 million. Based on the forecasts of demand as well as the existing and future critical design aircraft, this Master Plan recommends that KNB remain ARC B-II within the planning period, but construct the parallel taxiway to C-II design standards. **Table 6-3** presents a comparison of the costs between upgrading KNB to FAA ARC C-II design standards (current CIP) vs. leaving it in its current layout (proposed CIP).

TABLE 6-3 – COMPARISON OF EXISTING KNB CIP TO PROPOSED MASTER PLAN CIP

	Existing CIP (2016-2028)	Proposed Master Plan CIP (2017-2025)
Cost Estimate/Funding Source*		
Total Cost of Projects on CIP	\$20,859,539	\$4,890,573
FAA Total Share	\$18,905,000	\$2,146,576
Subtotal FAA - Non-Primary Entitlement	\$1,950,000	\$900,000
Subtotal FAA - State Apportionment	\$16,955,000	\$1,266,576
City	\$977,269	\$111,998
State	\$977,269	\$111,998
Private	NA	\$2,500,000
Cost Estimate		
Upgrade to ARC C-II	\$18,786,169	\$0
State Funded Projects		
State	\$312,000	\$312,000
City	\$34,667	\$34,667

Sources: KNB's existing CIP, Utah Division of Aeronautics Airport Development Plan Project List, Proposed Master Plan CIP

*In order to demonstrate the cost differential between upgrading KNB to FAA ARC C-II design standards vs. leaving it in its current layout, the proposed parallel taxiway is not reflected in the amounts above.

The proposed hangars at KNB, discussed in **Chapter 4** and shown in **Figure 6-1**, will cost approximately \$2.5 million. The hangars will be constructed on an as-needed basis by private investors. The new facilities include four corporate/conventional hangars, each one approximately 80 feet by 80 feet (6,400 square feet), and an extension/addition of the existing T-hangar building by approximately eight units.

The southern-most future hangar shown on the edge of the parking apron would have to be sited so as not to interfere with the AWOS, based on the height of the AWOS antenna and top of the hangar. It is possible that the hangar could be situated further to the east, away from the parking apron, if needed to provide sufficient clearance from the AWOS, however that would require constructing an access taxiway between the apron and the hangar. It is recommended that the future hangars shown to the northeast be constructed first, and the southern-most hangar only if demand warrants after the other hangars have been constructed and are occupied.

It is anticipated that all of the hangar costs will be borne by private parties. Each hangar developer will determine their particular needs, timing, and available financing, and therefore it is difficult to determine exactly when private parties will approach the City to construct the hangars, how many hangars or what size they will want to build, the utility hookups needed, etc.

Some airport sponsors share in the cost of the utility hookups, but that is a policy decision to be made by the City of Kanab. The actual hangar construction costs will vary depending on a variety of factors:

- The extent of utilities (water, sewer/septic, electric, cable, etc.) to each hangar.
- The size, configuration, and layout of each hangar and associated apron.
- Whether hangars have sprinkler or other fire suppression systems such as fire walls.

- The cost of materials at the time the hangars are constructed. The cost of some construction materials such as copper, steel mill products, fabricated structural metal, and prefabricated metal buildings, for example, have been extremely volatile since 2006.
- The type and extent of interior and exterior fittings installed, included security systems.
- Whether multiple hangars are constructed at the same time by the same contractor, or built individually by multiple contractors over different periods. The former process is typically less expensive than the latter.

Table 6-4 presents a revised Capital Improvement Plan without the projects needed to upgrade to C-II design standards, but includes private hangar development.

6.2.1 FAA Grants

In addition to the entitlement grants, FAA also issues discretionary grants. While the term discretionary implies flexibility in terms of which projects can be awarded grants, under the recently expired AIP program, two thirds of all discretionary money is earmarked for specific types of projects such as the military airport program, noise mitigation, and environmental projects. Discretionary grants are awarded on the basis of the priority ranking system, discussed previously, which ranks all eligible projects at GA airports within the FAA's Northwest Mountain Region, and compares the needs against the funding available to issue each fiscal year as grants. In addition, the FAA requires a benefit-cost analysis (BCA) to demonstrate the merit of capacity projects for which airport sponsors are seeking AIP discretionary funds.

Because available AIP funding does not meet all of the financial needs identified throughout a given FAA region, some lower ranked projects (such as hangars, access roads, etc.) will receive grants after higher priority projects. Due to the uncertainties of Congressional appropriations each fiscal year, the need to fund high priority projects, and fluctuations in the availability of local and state matching funds, it is difficult to predict with certainty when FAA funding for lower ranked projects will be available. FAA's latest AIP program expired at the end of September 30, 2015, and the program has since been funded by short-term Continuing Resolutions (CR) passed by Congress. Congress is studying legislation to create a new AIP program, but it is currently not known:

- when the new AIP program will be passed and signed into law;
- how long it will remain in effect;
- how much money will be appropriated for airport development projects;
- if the entitlement and discretionary formulas will remain the same, or be changed;
- if FAA's priority ranking system or project eligibility criteria will remain the same, or be changed;
- if FAA's share of project costs (currently 90% for most eligible projects) will remain the same or change.

As a result, once the new AIP program has been passed, the FAA and each airport will need to re-examine their CIP and determine how changes in the new program will impact their CIP.

Kanab Municipal Airport
2016 Airport Master Plan

FIGURE 6-1 – KNB FUTURE LAYOUT PLAN



Source: Jviation

Kanab Municipal Airport
2016 Airport Master Plan

TABLE 6-4 – KANAB MUNICIPAL AIRPORT – REVISED CIP

FY	Project Description	Estimated Total Project Cost						
			Federal Participation	NP Entitlement	State Apportionment/ Discretionary	State Participation	Sponsor Participation	Private Investment
Federally Funded Projects			90.63%			4.69%	4.69%	
2017	Pavement Preservation	\$165,508	\$150,000	\$150,000		\$7,754	\$7,754	
2018	Resurface Runway 1-19	\$1,257,862	\$1,140,000	\$450,000	\$690,000	\$58,931	\$58,931	
2019	Bank GA Entitlement	\$0	\$0					
2020	Bank GA Entitlement	\$0	\$0					
2021	New Hangar Development	\$625,000	\$0					\$625,000
	Reconstruct East Apron	\$283,000	\$254,700	\$254,700	\$0	\$14,150	\$14,150	
2022	Bank GA Entitlement	\$0	\$0					
2023	New Hangar Development	\$625,000	\$0					\$625,000
	SRE Building	\$100,000	\$90,000	\$90,000	\$0	\$5,000	\$5,000	
2024	New Hangar Development	\$625,000	\$0					\$625,000
	SRE Equipment	\$250,000	\$225,000	\$225,000	\$0	\$12,500	\$12,500	
2025	New Hangar Development	\$625,000	\$0					\$625,000
	Construct Additional Apron	\$250,000	\$225,000	\$225,000	\$0	\$12,500	\$12,500	
2026	Bank GA Entitlement	\$0	\$0					
2033	Parallel Taxiway	\$4,500,000	\$4,078,350	\$450,000	\$3,628,350	\$210,825	\$210,825	
	TOTAL	\$9,306,370	\$6,163,050	\$1,844,700	\$4,318,350	\$321,660	\$321,660	\$2,500,000
State Funded Projects						90.00%	10.00%	
2018	Electrical Vault & New PAPI	\$166,667				\$150,000	\$16,667	
2019	Pavement Preservation	\$180,000				\$162,000	\$18,000	
	TOTAL	\$346,667				\$312,000	\$34,667	

Source: Proposed CIP, Jviation

6.3 Airport Development Plan

The new 2,186-square-foot terminal building is scheduled to be constructed by Fall 2016. That project cost is approximately \$349,000, and was funded by an Interlocal Finance Agreement between the City of Kanab and the Recreation and Transportation Special Service District. The District paid for the terminal building construction, but it is owned and operated by the City of Kanab.

Runway 1-19 is programmed in the CIP for a mill and overlay in 2018. The City is also planning to install an above ground JetA 10,000-gallon storage tank with a self-serve pump. The proposed hangars will be constructed by private parties on an as-needed basis over the next 5 to 15 years. This area also includes the development of a snow removal equipment building measuring approximately 1,800 square feet. As noted previously, it is recommended that the City maintain FAA ARC B-II status during the planning period, but construct a full-length parallel taxiway to C-II standards for long-term planning. The timing of the taxiway construction is recommended for 2026 to garner as much federal entitlement funding as possible. Property acquisitions required for runway improvements and RPZ control are recommended if/when the runway is extended.

There are approximately 12.5 acres in the terminal area identified as surplus for aeronautical purposes that could be developed for revenue-producing, non-aeronautical commercial or light industrial land uses (**Figure 6-2**). **Appendix 6-A** presents draft language that could be incorporated by the City in leases defining acceptable development that is compatible with airport and aircraft operations. FAA requires the airport sponsor (i.e. City of Kanab) ensure that all non-aeronautical development be fully compliant with FAA requirements.

If the City charged a land lease rate of 20 cents per square foot/per year, for example, that could generate approximately \$108,000 per year in revenue, which must be dedicated to airport operation, maintenance, and improvements. As noted in **Chapter 4**, the City is required by the FAA grant assurances to adopt appropriate restrictions on the future land uses to ensure that the development is fully compatible with both airport and aircraft operations.

6.4 Airport Leases, Rates, and Charges

The City has signed leases with a number of Airport tenants. Based on the review of the leases in relation to pertinent FAA guidance, the general conclusions are:

1. There are some leases with indefinite terms, and some leases with 50-year terms or greater, contrary to FAA guidance. The FAA has determined that sponsors cannot enter into agreements with terms that exceed 50 years. As stated by FAA: “Most tenant ground leases of 30 to 35 years are sufficient to retire a tenant’s initial financing and provide a reasonable return for the tenant’s development of major facilities. Leases that exceed 50 years may be considered a disposal of the property in that the term of the lease will likely exceed the useful

life of the structures erected on the property. FAA offices should not consent to proposed lease terms that exceed 50 years.”¹

Recommendation:

The City of Kanab should approach the lessees with long-term leases and explain that the leases are in violation of the FAA grant assurances, and request the lessees to open negotiations to bring the lease terms into compliance with FAA requirements.

2. Most of the lease rates prescribed in the leases at KNB appear to be below market value. For example, a number of leases specify \$125 per year for up to 1.35 acres of land. Several statewide surveys of general aviation airport rates and charges indicate that land lease rates range between 15 cents to 25 cents per square foot, per year. If those rates were applied to KNB, 1.35 acres would generate between \$8,800 and \$14,700 per year. At 10 cents per square foot, per year, 1.35 acres would generate \$5,900 per year. If KNB is not financially self-sufficient, lease rates may need to be increased to achieve financial self-sufficiency. As noted previously, FAA Sponsor Grant Assurance #24, Fee and Rental Structure, and FAA Airport Compliance Manual, FAA Order 5190.6B, Chapter 17, require airports to be as financially self-sustaining as possible.

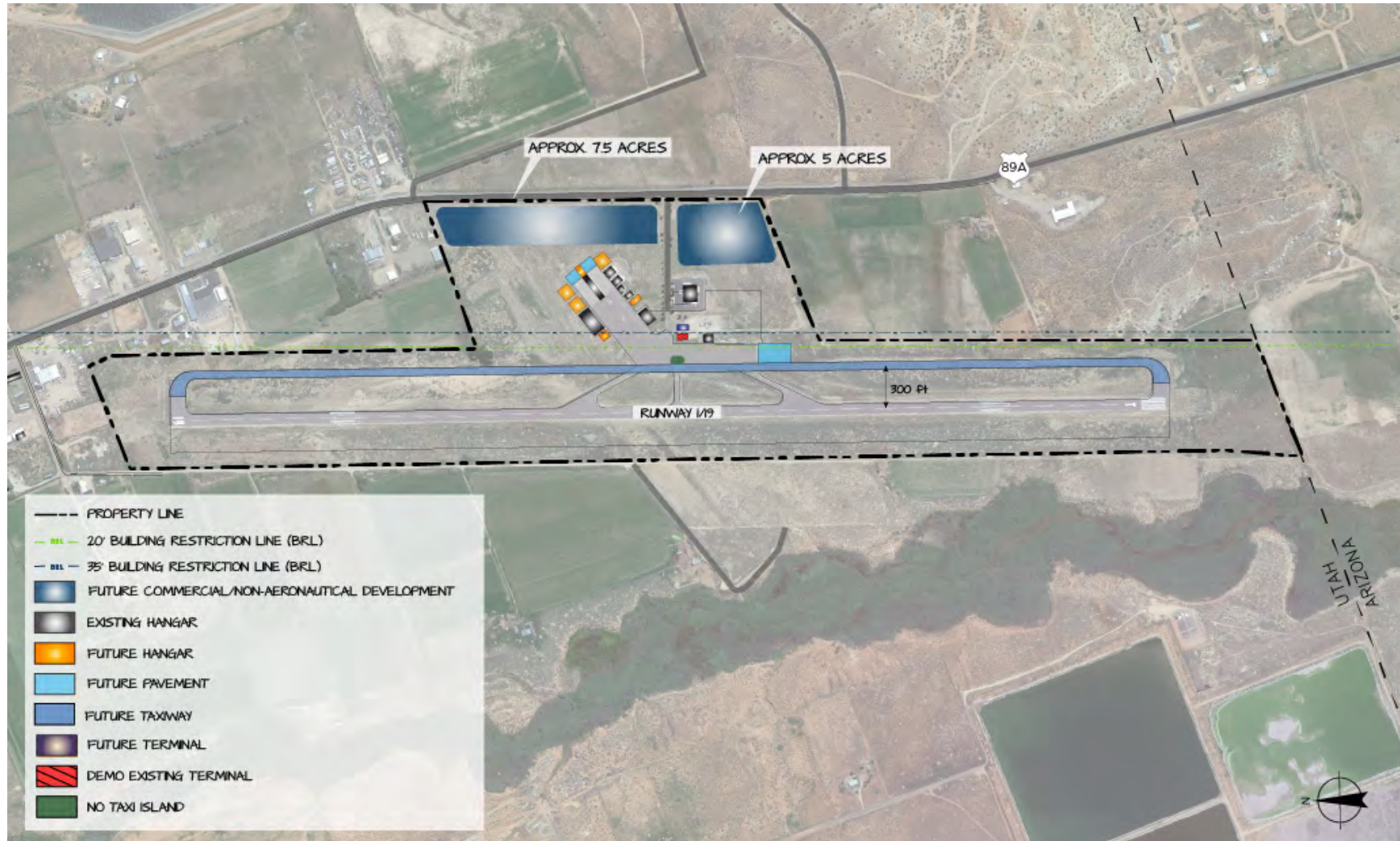
Recommendation:

The City of Kanab should examine their options to raise land and building lease rates closer to industry standards, and also negotiate lease terms shorter than 50 years. The current leases do not include provisions for renegotiating before the lease term expires. If the City attempts to force renegotiation of the leases before the term expires, there may be penalties and other costs, unless both parties mutually agree to renegotiate the terms of the lease. The City should obtain a legal opinion concerning their options in moving forward with lease holders.

Only three leases, all with the same party, have subordination clauses that stipulate the lease is subordinate to federal agreements. However, the City could approach lease holders, particularly Kane County regarding the land lease for the emergency building, and note that the lease is not in conformance with the FAA grant assurances and should be amended. If the lease holders agree to voluntarily renegotiate, that would allow the City to bring the leases into conformance with the grant assurances. If the lease holders do not agree to renegotiate voluntarily, then the City can either wait until the leases reaches the end of their current terms, or else attempt to force parties to renegotiate before the lease term expires, which could be potentially costly to the City. Again, a legal opinion should be obtained before moving forward.

¹ Source: FAA Airport Compliance Manual, Chapter 12, Sect. 12.3 Review of Agreements, b. Form of Lease or Agreement, (3) Term.

FIGURE 6-2 – PROPOSED COMMERCIAL/NON-AERONAUTICAL DEVELOPMENT



Source: Jvation

Future leases at KNB should consider charges within the following ranges. It is up to the City to determine the appropriate rates and charges to negotiate with each tenant, within the provisions of FAA's sponsor grant assurances.

- unimproved land lease: 10 cents to 25 cents per square foot, per year
 - improved land (graded, with utility hookups): 25 cents to 30 cents per square foot, per year
 - building lease: \$1.00 to \$2.00 per square foot, per year
 - T-hangar rental rate: \$200 per month
 - Tie-downs: \$70 to \$100 per month
 - Corporate hangar: \$800 to \$1,000 per month
3. In the current KNB tenant leases, there are no references to Airport Minimum Standards; compliance with airport security or environmental regulations; the sponsor's right to relocate tenants; renegotiate rates and charges; and no reference to rate escalation clauses.

Recommendation:

The City of Kanab should insert clauses in the tenant leases, when existing leases come up for renewal and in new leases, that reference the airport minimum standards, if they are adopted, as well as compliance with any pertinent airport security or environmental regulations (including those promulgated by the federal and/or state government), as may be appropriate to Kanab; the City's right to relocate tenants with prior notice; the City's right to renegotiate rates and charges at regular intervals (e.g. every five years – to be decided by the City); and insert rate escalation clauses based on the consumer price index (CPI), or other appropriate measures of inflation.

Regarding tenant leases in general, airport sponsors should include lease provisions that:

- Ensure the sponsor controls the land uses within the leasehold area, including having the right to review and approve or deny any changes to land uses prior to any changes.
- Specify that the sponsor has the right to review and approve or deny any sub-lease prior to entering into such agreements.
- For any lease with a term of 10 years or longer, specify the sponsor's right to renegotiate the lease term at specific intervals if conditions on the airport have changed, and/or FAA has amended their guidance to sponsors regarding leases and/or rates and charges within that time period. For lease terms greater than 30 years, request FAA review and comment prior to executing the lease.
- Specify who is responsible for maintenance of the leasehold area and the improvements situated on it, including a clear definition of "good condition."
- Include a reversion clause specifying that all improvements made to the leasehold area revert to the ownership of the airport sponsor at the termination of the lease. The owner typically has the right of first refusal to negotiate a lease as a tenant.
- Specify a fixed schedule of increases in rates and charges within specific time periods. Often such increases are tied to the Consumer Price Index (CPI), but other measures can also be used.

- Specify the conditions and time periods when the lease terms can be renegotiated.
- Include a subordination clause that specifies that all lease provisions are subordinate to any federal agreement entered into by the City, and as may be amended from time to time.
- Clearly stipulate that tenants must comply with all appropriate and pertinent federal, state, and local regulations dealing with environmental issues, licenses, permits, and approvals, building and fire codes, etc., as may be amended from time to time.
- Include a specific provision to allow the airport sponsor to enter and inspect the leasehold area and all improvements at sponsor's discretion.
- Specify that the airport sponsor has the right to relocate the tenant and the improvements on the leasehold area with a specified amount of prior notice, and just compensation.
- Specify that any and all tenants will ensure that their activities and improvements are fully compatible with airport and aircraft operations, including all pertinent FAA requirements.
- Include specific references to the FAA Sponsor Assurances, in particular to the clauses requiring tenants to "furnish their services on a reasonable, and not unjustly discriminatory, basis to 1) all users of the airport, and 2) charge reasonable, and not unjustly discriminatory, prices for each unit or service."

6.4.1 FAA Guidance and Role in Airport Leases

Leases between airport sponsors and tenants are not formally approved by the FAA, but FAA may review and comment on leases if specifically requested to do so by the Airport Sponsor, or in response to complaints filed under 14 CFR Part 13 or Part 16 by airport tenants or parties wishing to be tenants (i.e. those entities with legal standing).

Leases are typically just one of a number of guiding documents adopted by airport sponsors, along with minimum standards and airport rules and regulations. Some of the more significant differences between leases and minimum standards include:

- Leases are legal contracts between the Sponsor and individual legal entities situated on and/or doing business on the airport. Minimum standards are applicable to a broad class of commercial aeronautical service providers physically based on the airport, and standards also frequently identify exempted parties.
- Lease terms and rates are negotiated between the Sponsor and each individual tenant, and are updated at specified intervals. Minimum standard terms and conditions are applicable to a broad class of commercial aeronautical service providers situated on the airport.
- Leases can only be updated / amended / extended at specified periods, unless otherwise mutually agreed to by both parties. Minimum standards can be amended or revised at the sole discretion of the airport sponsor at whatever interval or frequency determined solely by the sponsor.
- Every tenant situated and/or doing business on the airport has a lease or other agreement with the Airport Sponsor. Some airport tenants are excluded from the provisions of minimum standards, such as concessions, private non-commercial parties, and airlines.

Leases with airport tenants must be consistent with the following provisions of the FAA grant assurances:

- Grant Assurance 5 - Preserving Rights and Powers
- Grant Assurance 22 - Economic Nondiscrimination
- Grant Assurance 23 - Exclusive Rights
- Grant Assurance 24 - Fee and Rental Structure
- Grant Assurance 25 - Airport Revenues
- Grant Assurance 38 - Hangar Construction

Leases with non-aeronautical tenants on an airport should include provisions that specify that the land use is fully compatible with airport and aircraft operations, particularly regarding noise, penetrations of imaginary surfaces, creation of any visual or electronic interference with aircraft communications, navigation, or other instruments (Appendix 5-A).

The Transportation Research Board (TRB) Airport Cooperative Research Program (ACRP) published the “Guidebook for Developing and Leasing Airport Property,” ACRP Report 47, in 2011. That report summarized the legal requirements for leases in terms of compliance with FAA policies, noted above, as well as project development considerations, leases for FBO and specialized aviation service operators (SASO), airport finances, project analysis and lease agreement checklist, a list of best practices (presented below), as well as a number of specific case studies of leases executed by various airport sponsors. The ACRP report noted:

“A recommended best practice is that airport sponsors develop a standard Airport Leasing Policy that applies to both facility and land leases. The Leasing Policy must be flexible enough to allow for unanticipated development opportunities while being comprehensive enough to account for multiple tenant types and operations. A standard, comprehensive Leasing Policy provides for the equitable treatment of all airport tenants and will minimize questions, concerns, and potential conflict between the airport and its tenants. The Leasing Policy should include, at a minimum, the following provisions:

- Land lease rates (per square foot), differentiated by area. Aeronautical versus non-aeronautical, for example, and consideration of the land’s proximity to infrastructure.
- Hangar lease rates (per square foot), with consideration to the gauge of aircraft that the hangar will accommodate in terms of hangar door size, height, and clear span distance.
- Building and facility lease rates (per square foot).
- Standard lease terms that are compliant with state and local law.
- FBO/SASO (specialized aviation service operator) lease requirements, which are consistent with an airport’s Minimum Standards.
- Process for adjusting rents and fees (living clause).
- Insurance requirements, preferably in one document and adopted by official action, of the governing body.
- Consolidation of all insurance requirements applicable to the airport allows an airport to review, update, and have them reconsidered by the governing body from time to time.

- Obligations of lessee as specified in a Rules and Regulations document.
- Routine inspection provisions for safety and compliance of airport tenants and users.
- Construction and improvement standards that outline pre-approval by the landlord and the airport sponsor, local permitting agency requirements, and FAA notification of proposed construction once all other approvals are secured.
- Subletting policy.”

“Ensuring that any proposed project is in compliance with all applicable FAA, NEPA, state, and local regulations is the responsibility of the airport sponsor, and, as such, the sponsor must remain engaged throughout the project planning, development, and execution phases.”

6.5 Revenue Enhancement Options

The FAA requires airports to be as “financially self-sufficient as possible.” The FAA also requires that all revenue generated on an airport, from both aeronautical and non-aeronautical sources, be dedicated solely to airport operating or capital expenses.

The two primary ways to achieve financial self-sufficiency are to control costs and maximize revenue generation (**Table 6-5**). FAA does not dictate what specific rates and charges should be in place. FAA’s primary criteria is that the rates and charges in effect at an airport are “reasonable and non-discriminatory,” that the airport charge fair market value for use of airport land and buildings, and that the rates and charges result in the Airport being as financially self-sufficient as possible.

TABLE 6-5 – EXAMPLES OF AIRPORT REVENUES AND EXPENSES

Type of Expense/Revenue	Costs/Expenses	Revenue/Funds
Capital	– Airfield construction – Terminal construction – Ground transportation infrastructure	– FAA, State Grants – Loans – Operating Surplus
Operating	– Operations & Maintenance (O&M) – Administration – Airport/air service marketing/promotion	– Aeronautical (landing fees, parking fees, fuel flowage, etc.) – Non-aeronautical (vehicle parking, concessions, advertising, non-aeronautical commercial uses, etc.)

Source: Airport Cooperative Research Program (ACRP) Report 77

In response to a number of filings from airport tenants concerning the reasonableness of rates and charges, FAA has held that airports are allowed to set rates and charges that recover the cost of maintaining and operating the airport. However, airport sponsors cannot set rates and charges to recover capital expenditures made with FAA grants.

Table 6-6 shows the City of Kanab’s budgeted and actual expenses for the airport budget for fiscal years (FY) 2015 and 2016.

TABLE 6-6 – KNB AIRPORT EXPENSES, FY 2015 AND 2016

	FY 2015	FY 2016	% Difference
Budgeted Expenditures	\$171,500	\$185,892	8.4%
Actual Expenditures	\$218,945	\$139,765	-36.2%
Difference between Budgeted vs. Actual	27.7%	-24.8%	--

Source: City of Kanab Budget. Note: airport revenues were not available.

The two largest expense categories were fuel purchases (61.5%) and labor (9.3%). Labor costs declined by 46.7% between FY 2015 and 2016. Equipment supplies and maintenance represented 7.1% of expenses.

In order to achieve financial self-sufficiency, airports can adjust their rates and charges periodically to increase revenue. The leases in effect at KNB do not include escalation clauses or a schedule to renegotiate rates and charges, which limits the City's ability to adjust rates and charges based on changing conditions at the airport (e.g. rising operating and maintenance costs, etc.)

While increasing rates and charges typically result in higher revenues, there are a number of factors to be considered:

- Existing tenant leases and agreements: The provisions of the existing tenant leases and agreements serve as legal obligations, and terms and conditions can be renegotiated at periods specified within the lease, or when the lease/agreement expires and a new lease is negotiated. As noted previously, FAA does not allow tenant leases with terms of 50 years or greater since that constitutes de facto transfer of property, as well as the transfer of the airport sponsor's rights and powers.
- Competition from area airports: increases in rates and charges have an impact on aviation activity at the Airport. General aviation aircraft owners and operators are relatively price sensitive, and will shift their operations to other airports with lower hangar and tie-down fees, and fuel prices. Hangar fees, parking fees, and fuel prices at KNB are very competitive regionally.
- FAA Sponsor Grant Assurances state that airport sponsors and its tenants must charge "reasonable and not unjustly discriminatory prices;" each FBO is subject to uniform rates and fees utilizing similar facilities; and the airport cannot enter into exclusive agreements for aeronautical services.
- It (i.e. the airport sponsor) will make the Airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities.
- In any agreement, contract, lease, or other arrangement...the sponsor will insert and enforce provisions requiring the contractor to furnish said services on a reasonable, and not unjustly discriminatory, basis to 1) all users thereof, and 2) charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.
- Each fixed-based operator (FBO) at the Airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.
- It (i.e. the airport sponsor) will permit no exclusive right for the use of the Airport by any person providing or intending to provide aeronautical services to the public.

6.6 Minimum Standards

FAA recommends that airport sponsors adopt minimum standards primarily as a management tool. FAA notes: “A sponsor's establishment of minimum standards and self-service rules and regulations contributes to nondiscriminatory treatment of airport tenants and users. It also helps the sponsor avoid granting an exclusive right.”¹

However, FAA does not require airport sponsors to adopt minimum standards – the airport sponsor decides whether to adopt standards or not. Also, unless specifically requested to do so, FAA typically does not review or comment on minimum standards.

FAA’s Advisory Circular, 150/5190-7, *Minimum Standards for Commercial Aeronautical Services*, provides guidance for airports that wish to adopt or amend their minimum standards. As noted in the AC:

1.1. POLICY. The airport sponsor of a federally obligated airport agrees to make available the opportunity to engage in commercial aeronautical activities by persons, firms, or corporations that meet reasonable minimum standards established by the airport sponsor. The airport sponsor’s purpose in imposing standards is to ensure a safe, efficient and adequate level of operation and services is offered to the public. Such standards must be reasonable and not unjustly discriminatory. In exchange for the opportunity to engage in a commercial aeronautical activity, an aeronautical service provider engaged in an aeronautical activity agrees to comply with the minimum standards developed by the airport sponsor. Compliance with the airport’s minimum standards should be made part of an aeronautical service provider’s lease agreement with the airport sponsor.

The FAA suggests that airport sponsors establish reasonable minimum standards that are relevant to the proposed aeronautical activity with the goal of protecting the level and quality of services offered to the public. Once the airport sponsor has established minimum standards, it should apply them objectively and uniformly to all similarly situated on-airport aeronautical service providers. The failure to do so may result in a violation of the prohibition against exclusive rights and/or a finding of unjust economic discrimination for imposing unreasonable terms and conditions for airport use.

c. Developing Minimum Standards. When developing minimum standards, the most critical consideration is the particular nature of the aeronautical activity and operating environment at the airport. Minimum standards should be tailored to the specific aeronautical activity and the airport to which they are to be applied. For example, it would be unreasonable to apply the minimum standards for a fixed-base operator (FBO) at a medium or large hub airport to a general aviation airport serving primarily piston-powered aircraft. The imposition of unreasonable requirements illustrates why “fill- in-the-blank” minimum standards and the blanket adoption of standards of other airports may not be effective. (note: underline added)

¹ FAA Order 5190.6B, Chapter 10, Section 10.2

There are a number of factors regarding minimum standards that are relevant in terms of whether a particular airport should adopt them:

- Minimum standards are typically applied only to privately-owned, commercial aeronautical service providers on an airport (as noted in the title of FAA's advisory circular). Minimum standards are normally not applicable to private tenants such as airplane owners who base their aircraft at the airport. FAA also notes that there is no requirement to include non-aeronautical activities in minimum standards, such as rental car agencies, restaurants, concessions, etc., because they are not subject to the grant assurances. If the City of Kanab attracts non-aeronautical tenants such as light industrial, office, storage companies, for example, those businesses would not be subject to minimum standards. FAA also notes that minimum standards typically do not apply to flying clubs because they are (usually) non-profit organizations, although an airport sponsor could make their standards applicable to flying clubs and other non-profit organizations (such as the CAP) if they so choose.
- FAA Order 5190.6B, *Airport Compliance Manual*, Chapter 10, Reasonable Commercial Minimum Standards, notes that airport sponsors have the "prerogative to establish minimum standards for commercial service providers, and to establish self-service rules and regulations for all other airport activities. Flying clubs are not-for-profit commercial operations and are not normally covered by commercial minimum standards."
- Because the City is the FBO at KNB, and because there are leases in place with the airport tenants, the City may not need to adopt minimum standards. If a privately-owned FBO will come onto the airport (e.g. a flight school, maintenance shop, etc.), it is often more efficient to adopt minimum standards before that business arrives.
- Where the City of Kanab currently has leases with airport tenants, the leases legally supersede any minimum standards that may be adopted. And leases typically stipulate standards and procedures for a sponsor to ensure that tenants are maintaining their facilities and complying with City and FAA rules and regulations. FAA recommends that sponsors incorporate references to the minimum standards in the tenant leases, however, it is challenging to renegotiate leases and insert new references, particularly if there are any differences between the lease provisions and the minimum standards.
- As noted by FAA, minimum standards are primarily intended as a management tool for airport sponsors. FAA states that minimum standards are one way of demonstrating compliance with the grant assurances. In addition, minimum standards help protect investment made by private aeronautical service providers by restricting access by other businesses (such as independent flight instructors and mechanics) that do not comply with the standards but siphon business away from approved businesses. Given the current situation at KNB, it is possible that there are adequate management tools in place without minimum standards. However, a private aeronautical service provider on the airport could be offered greater protection with minimum standards.
- Because minimum standards are just one of a number of management tools that include leases (already in place), FAA grant assurances and regulations (already in place), approved airport master plan and airport layout plan (previous one in place), and airport operating rules and regulations (may be adopted), any standards must be fully compatible with the other guiding documents. Given that leases, as well as FAA grant assurances and regulations,

legally supersede minimum standards, the City should identify clear goals and objectives for minimum standards so that they do not overlap or contradict the other guiding tools/documents that are currently in place. For example, if minimum standards were adopted that contained different requirements than are currently stipulated in tenant leases, it would be difficult for the City to renegotiate the leases to make them consistent with the minimum standards. Additionally, if the minimum standards were not fully compliant with the FAA grant assurances, FAA would object.

If the City wishes to adopt minimum standards, FAA provides the following guidelines:

- Minimum standards must be:
 - reasonable and not unjustly discriminatory
 - attainable by existing and future tenants
 - applied uniformly to all tenants
 - relevant for the activity to which they apply
 - tailored to each individual airport
- Minimum standards may not confer an exclusive right

One other factor is that once minimum standards are enacted, it is the airport manager's responsibility to enforce them. When considering adopting standards, in addition to FAA's requirements noted above, they should also be evaluated in terms of the airport management's ability to enforce the standards.

Because FAA strongly recommends that minimum standards be tailored to each individual airport, reviewing other airport minimum standards have some, but limited applicability to KNB.

6.7 Summary and Conclusions

Financial management for all airport sponsors is challenging. Airports operate in a highly regulated and at the same time competitive environment. As noted above, while FAA does not set rates and charges, it does set specific guidelines for leases, and FAA also strongly encourages airports to be as financially self-sufficient as possible. The FAA also requires that all revenues generated on an airport, from both aeronautical and non-aeronautical sources, be dedicated solely to airport-related operating and capital expenses.

A related challenge for airport sponsors is that capital costs are often high, and airports are dependent on a variety of sources of funding for capital improvements including the FAA, the State, other agencies, as well as investment from private parties.

On the other hand activity levels at airports, along with airport-related revenues, fluctuate over time, sometimes over a very large range. And as discussed in previous chapters, aviation activity levels and revenues are subject to a wide variety of factors that are difficult to predict. As a result, airport sponsors must monitor activity and revenues on a regular basis, including aviation-related revenues, and adjust their capital investment plan as well as their operating and maintenance costs as needed.

For KNB, the development of the approximately 12 acres in the terminal area by non-aeronautical commercial – light industrial tenants has the greatest potential to increase revenues for the airport. Bringing the leases into compliance with FAA guidance, for example lease terms will be less than 60 years, as well as setting rates and charges that will move the airport towards financial self-sufficiency, are also recommended. The City of Kanab can prepare an airport business plan that can provide a detailed road map to achieve those objectives, building on the recommendations presented in this Master Plan.

In addition, the U.S. Congress is in the process of developing a new Airport Improvement Program (AIP), which serves as the funding source for FAA grants for airport development. The federal formulas and funding levels that have been in place since 2012 may change in the new program, which could directly impact funding availability for GA airports such as Kanab.

Once the new AIP program has been signed into law, changes in funding levels and formulas for the disbursement of the funds, including the GA entitlement grants, should be assessed for their impact on KNB's CIP.

The financial goals and strategy presented in this chapter are consistent with FAA's grant assurances that airports should be as financially self-sufficient as possible.

APPENDIX 6-A

Sample Airport Lease Provisions for Non-Aeronautical Tenants

NON-AERONAUTICAL TENANT - SAMPLE LEASE PROVISIONS

RIGHT OF AIRCRAFT OVERFLIGHT OF LEASEHOLD PROPERTY AND COMPLIANCE WITH APPROPRIATE STANDARDS

Lessee agrees that it will permit the unobstructed use and passage of any and all types of aircraft in and through the airspace at any height or altitude above the surface of the leasehold property without any restriction or interference to said aircraft.

Lessee agrees to the right of said aircraft to cause noise, vibrations, fumes, deposits of dust, fuel particles (incidental to the normal operation of aircraft); fear, interference with sleep or communication, and any other effects associated with the normal operation of aircraft taking off, landing or operating in the vicinity of Kanab Municipal Airport (KNB).

As used herein, the term “aircraft” shall mean any and all types of aircraft, whether now in existence or hereafter manufactured and developed, to include jet, propeller-driven, civil, military or commercial aircraft; helicopters, regardless of existing or future noise levels, for the purpose of transporting persons or property through the air, by whoever owned or operated.

Lessee agrees to make no improvements, modifications, or other physical changes within or to the leasehold area without prior written approval of the Lessor.

Lessee agrees that they will not construct, erect, suffer to permit or allow any structure, improvements, or vegetation on or in the vicinity of the surface of the designated leasehold property that may currently or potentially impact airport and/or aircraft operations on and in the vicinity of the Airport, including violate any standard, requirement, or prescription applicable to the Airport that has been or may be imposed by the Federal Aviation Administration, including but not limited to 14 CFR Part 77, *Safe, Efficient Use, And Preservation of the Navigable Airspace*, FAA Advisory Circular 150/5300-13A, *Airport Design*, FAA Order 8260.3B, *United States Standard for Terminal Instrument Procedures (TERPS)*, and the Airport Layout Plan (ALP) approved by the City of Kanab, Utah, and the Federal Aviation Administration, as may be amended from time to time.

Further, any places of public assembly or gatherings on or within the leasehold property are not permitted. Examples of uses not permitted on leasehold property include but are not limited to: places of worship, schools, child day care facilities, hospitals, stadiums, residential areas, or other uses that may attract an assembly or gathering of people.

Lessor may permit the construction of offices or other places of employment on leasehold property if said development is fully consistent with all standards, requirements, and prescriptions that have been or may be imposed by the Federal Aviation Administration, and consistent with the approved Airport Layout Plan (ALP).

Lessor will permit Lessee, if requested to do so, the right to grow and harvest crops or graze livestock within the leasehold property, so long as the activity will not attract or permit wildlife that may pose a hazard to aircraft, and will not violate any standard, requirement, or prescription that has been or may be imposed by the Federal Aviation Administration.

Lessee agrees to keep the leasehold area free of the following:

- Structures, lights, or emissions (permanent or temporary) that might create visual glare, distractions, or misleading lights to pilots or other airport users;
- fuel handling and storage facilities;
- any smoke generating activities;
- the creation of any electrical signal or transmission that could potentially interfere with the movement of aircraft over or in the vicinity of the Airport, or interfere with the communications or navigation equipment used in aircraft on and in the vicinity of the Airport.

Lessor and its assigns has a perpetual right of ingress/egress to the leasehold property, as well as the right to remove any structure or vegetation, at full cost to the Lessee, that is not specifically approved by Lessor, or which violates any standard, requirement, or prescription that has been or may be imposed by the Federal Aviation Administration.

7.0 AIRPORT RECYCLING, REUSE, AND WASTE REDUCTION PLAN

7.1 Introduction

The U.S. Congress passed the FAA Modernization and Reform Act (FMRA) of 2012 was signed into law, which amended Title 49 of the United States Code. The law included a number of changes to the Airport Improvement Program (AIP), two of which related to recycling, reuse, and waste reduction at airports. Section 132(b) of the FMRA expanded the definition of airport planning to include, “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit.” Section 133 of the FMRA added a provision requiring airports that have or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the Airport. This includes:

- The feasibility of solid waste recycling at the airport;
- Minimizing the generation of solid waste at the airport;
- Operation and maintenance requirements;
- Review of waste management contracts;
- The potential for cost savings or the generation of revenue.

As defined by Congress, “recycling” refers to any program, practice, or opportunity to reduce the amount of waste disposed in a landfill. This includes reuse and waste reduction as well as the recycling of materials.

The Federal Aviation Administration (FAA) issued a memorandum on September 30, 2014, to provide guidance on preparing airport recycling, reuse, and waste reduction plans as an element of airport master plans, as well as within a sustainability document, or as a standalone document. The guidance is mandatory when preparing an airport master plan.

The purpose of this chapter is to review the City of Kanab’s current recycling, reuse, and waste program, and to provide guidance on ways to reduce waste and improve recycling and reuse at the Airport, in compliance with the FAA’s guidance.

7.2 Airport Description and Background

Kanab Municipal Airport (KNB or the Airport) is classified as a general aviation facility, and is situated in Kane County, Utah, just north of the state border with Arizona. The Airport is owned and operated by the City of Kanab, and is managed on a day-to-day basis by the City. Additional facility information is presented in **Chapter 1, Introduction** and **Chapter 2, Inventory**, of this Master Plan. The City just opened a new airport terminal building in the summer of 2016, and removed the old building. Kane County has an emergency response building located on the Airport, although the County does not operate aircraft from the building.

As noted in **Chapter 3, Aviation Activity and Forecasts**, the number of operations and based aircraft at KNB have fluctuated over the past ten years. The forecasts anticipate growth in activity in the future, although it will remain a general aviation airport. KNB accommodates a variety of users, including emergency medical services, corporate, business, and private operators.

7.3 Existing Waste Sources

The identification and evaluation of sources of waste at an airport can be complicated. There are numerous groups, agreements, operational styles, and collection/disposal processes that play into the overall generation of waste at a given airport. The three primary sources of waste at KNB are the airfield, the terminal building, and hangars/tenants. The sources of waste, per the FAA's September 30, 2014 memo, can be further broken down by how much control the Airport has on the generation and disposal of waste. The three levels of control are:

1. Areas where the Airport has direct control of waste management (public space, office space, terminal building, airfield). These areas are controlled by the Airport and they are able to introduce recycling, reuse, and waste reduction programs directly.
2. Areas where the Airport has no direct control but can influence waste management (tenants). These are areas owned by the airport; however, they are leased out to tenants. The Airport can recommend that recycling, reuse, and waste reduction programs be used and can include language in the tenant contracts, but realistically can't control what is done.
3. Areas where the Airport has no control or influence over waste management. These are areas the Airport neither owns or leases (none of which are included in this chapter).

Table 7-1 shows the identified areas of waste generation, what waste is generated, how the waste is collected, if any reduction and/or recycling programs are in place, and KNB's level of control.

TABLE 7-1 – WASTE GENERATION

Area	Waste Generated	Control
Area 1: Airfield	General debris found on airfield. Construction material (asphalt, concrete, wood, metal)	Direct Control
Area 2: Terminal Building	Plastic, glass, aluminum, oil, batteries, trash	Direct Control
Area 3: Hangars/Tenants	Plastic, glass, aluminum, oil, batteries, trash	No Direct Control but can Influence

Source: Aviation field visit

7.4 Local Recycling and Waste Management Programs

The City of Kanab actively promotes reuse and recycling. As noted on its website <http://www.myyp.com/guide/Kanab,UT/The-Three-Rs-of-Recycling>:

“As a nation, the United States creates 40% of the world's waste but only recycles approximately 28% of everything it uses. Although 28% is two times more than the U.S. recycled a decade ago, this number could be dramatically higher. There is much need for improvement, especially given the fact that each person in this country produces 1,606 pounds of trash each year. Of that trash, approximately 60-70% could be recycled or reused.

That would go a long way in protecting the environment and reducing the amount of trash piling up in landfills.

Making a conscious effort to recycle can significantly reduce the amount of waste generated every year and in turn protect the environment and natural resources. Use the information found in this section to learn the importance of recycling and the significant impact it can have on the planet. A few simple changes can really make a big difference.

The three “R”s of recycling are reduce, reuse and recycle. All three are necessary components in eliminating the amount of waste we generate and protecting the environment. As every American produces an average of 4.5 pounds of waste per day, simply purchasing recycled products or placing them in blue bins will do little to reduce that number.

Practicing the three “R”s of recycling requires a change in mindset, behavior and purchase patterns. Instead of immediately purchasing the latest vehicle, electronic device or buying the latest fashion jeans or shoes, thought must be given as to the length of product life and the impact the purchase will make on the environment.”



7.5 Overview of Airport Recycling, Reuse, and Waste Management

Airports throughout the United States are “greening” their operations. Both the FAA and the U.S. Congress have directed airports to develop reuse, recycling, and waste management programs. Airports, other government agencies, and private companies have seen financial as well as environmental benefits from adopting environmentally sustainable practices, including recycling, reuse, and waste management programs. In response, airports have installed solar panels and energy efficient light fixtures, use low-emission vehicles in their fleets, constructed LEED¹ certified buildings, and have changed their waste management programs.

As one agency within a larger government entity (county, municipality, state), airports typically use the recycling, reuse, and waste management programs that are in place throughout the larger government entity, as is the case at KNB. A number of commercial service and general aviation airports have adopted their own individual reuse, recycling, and waste management programs, in part because of their financial benefits, and also because they reduce waste and energy usage.

The U.S. Environmental Protection Agency (EPA) published a guide titled *Developing and Implementing an Airport Recycling Program* to help airport managers who want to create a more environmentally-friendly waste operation. The EPA hierarchy of waste management prioritizes source reduction, then reuse, recycling and finally disposal in landfills. However, the EPA’s guide focuses on recycling as a positive first step for airports to take as they conquer their waste issues. The following figures are from the EPA guide.

¹ LEED = Leadership in Energy and Environmental Design

FIGURE 7-1 – ESTABLISHING AN AIRPORT RECYCLING PROGRAM

Ten Steps to Establishing an Airport Recycling Program

1. Obtain commitment from upper management
2. Organize a green team
3. Identify types and sources of waste
4. Assess current waste collection contracts
5. Develop a plan
6. Educate staff and customers
7. Monitor and refine the plan
8. Measure performance
9. Promote successes
10. Expand the program

Source: EPA, *Developing and Implementing an Airport Recycling Program*, April 2009

FIGURE 7-2 – SPECIAL CONSIDERATIONS FOR AIRPORTS

Special Considerations for Airports

Airport Security

The first priority for airports is to ensure that all program elements are consistent with security requirements. Including a recycling element in your waste management plan may require additional personnel in secure areas of the airport and on the airfield. Bins may need to be additionally secured and inspected. Bomb-proof receptacles may be required outside secure areas.

Facility Space Constraints

Airports have unique space considerations. Gates areas, tenant space, and concessionaires often do not have large amounts of additional space for bins, and staging areas are limited. The airfield generally has space constraints as well, leaving little area for additional bins. On the airfield, airports need to be aware of concerns recycling bins may raise such as foreign object debris (FOD), animal attractants, and stormwater contamination. However, a successful recycling program will reduce the amount of trash generated and the number of containers to store trash. This space can be used for recyclable materials.

Time

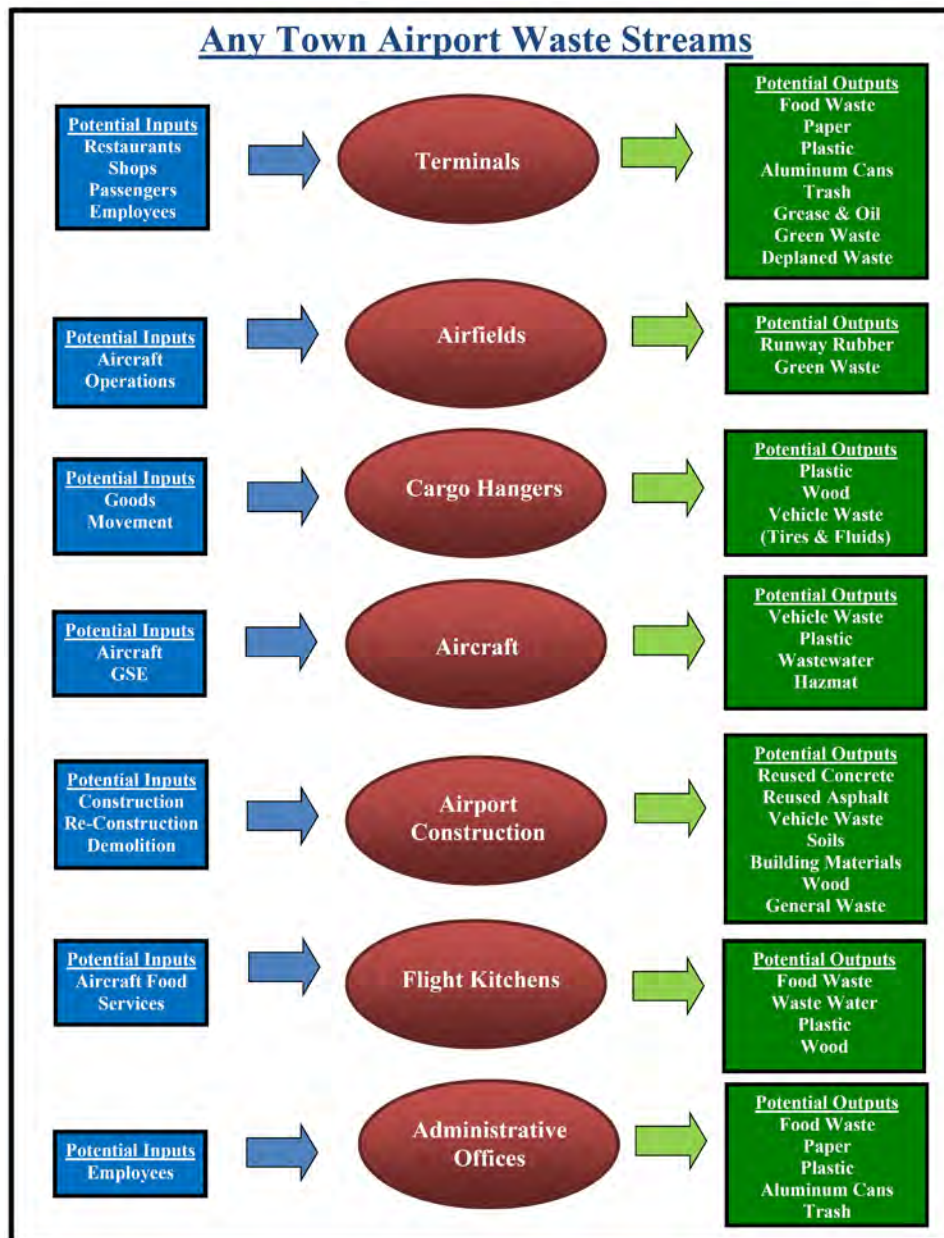
When airlines become involved with your recycling program, time is a primary concern. Airline staff or cleaning service providers have limited time to clean an aircraft before it is scheduled for another departure. A program with easily accessible collection receptacles (dumpsters, compactors, etc) and clear instructions make it easier for airlines to actively participate in recycling.

Working with Tenants

Establishing and maintaining consistent recycling practices and educating airport tenants (food/beverage, concessions, airlines and others) are key components of an airport's recycling program. Educational material that is readily available for easy distribution to all new employees allows tenants to stay involved.

Source: EPA, *Developing and Implementing an Airport Recycling Program*, April 2009

FIGURE 7-3 – AIRPORT WASTE



Source: FAA, *Recycling, Reuse and Waste Reduction at Airports: A Synthesis Document*, April 24, 2013

FIGURE 7-4 – WASTE ASSESSMENT APPROACHES

Strengths	Limitations
Records Examination - Provides weights and volumes of waste generated - Tracks major potential waste from the point of origin - Identifies the expensive or valuable components of an organization's waste - Documents financial benefits of reuse and recycling including total revenues and avoided disposal costs - Requires the least time and effort - Establishes baseline for metrics	- Lack of quantitative data for specific waste components - Does not provide qualitative data on how or why wastes are generated - Substantial effort necessary to collect and analyze data
Facility Walk-Through - Requires less time and effort than waste sorts - Allows first-hand examination of facility operations - Provides qualitative information about major waste components and waste-generating processes - Reveals waste reduction activities - Develops appreciation of logistics and obstacles tenants encounter in their efforts to recycle	- Limited identification of wastes generated - Multiple attempts may be necessary for comprehensive evaluation - Relies on estimates of waste generation
Waste Sort - Provides quantitative data on total waste generation and specific waste components - Allows problem solving and design of recycling program to be site specific	- Requires more time and effort than other approaches - Multiple attempts may be necessary for comprehensive evaluation - Does not provide qualitative data on how or why wastes are generated

Source: EPA, *Business Guide for Reducing Solid Waste*, 1993

FIGURE 7-5 – COMMON RECYCLABLE MATERIALS FOUND AT AIRPORTS

	WHERE												
		Public Terminals	Ticketing	Security Gates	Food Service Areas	Offices	Cargo Shipping	Maintenance Areas	Airport Grounds	Aircraft	Airfield Ramps	Construction Areas	Concessionaires, Retailers, Rental Car Facilities
WHAT	Corrugated Cardboard				x	x	x	x		x			x
	Mixed Paper	x	x	x	x	x	x	x	x	x	x		x
	Newspaper	x	x	x		x				x			
	Glass	x	x	x	x	x	x	x		x			
	Aluminum Cans	x	x	x	x	x	x	x		x			
	Plastic Bottles	x	x	x	x	x	x	x		x			
	Pallets						x						
	Food Waste & Cooking Oil	x			x	x							
	Organics/ Green Waste								x				
	Electronics					x							
	Used Tires							x					
	Used Oil							x					
	Scrap Metal						x	x				x	
	Concrete											x	
	Lumber											x	
	Batteries					x							
	Toner Cartridges					x							x
	Plastic (non-bottles, e.g. film)						x	x					x

Source: EPA, Developing and Implementing an Airport Recycling Program, April 2009

8.0 AIRPORT LAYOUT PLAN DRAWING SET

8.1 Introduction

The Federal Aviation Administration (FAA) requires, in part, a current Airport Layout Plan (ALP) that has been approved by both the airport sponsor (City of Kanab) and the FAA prior to the approval of an airport development project.

The FAA further requires that the airport sponsor maintain an ALP that ensures the safety, utility and efficiency of the airport. FAA sponsor grant assurance number 29 also requires that the airport sponsor (City of Kanab) keep the ALP up to date at all times.

As stated in FAA Order 5100.38, *Airport Improvement Program Handbook*, an ALP remains current for a five-year period, or longer, unless major changes at the Airport are made or planned.

As noted in FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, the ALP has five primary functions:

- Create a blueprint for airport development by depicting proposed facility improvements. The ALP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements, and is consistent with airport and community land use plans.
- A public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
- To enable the airport sponsor and the FAA to plan for facility improvements at the airport. It also allows the FAA to anticipate budgetary and procedural needs. The approved ALP also allows the FAA to protect the airspace required for facility or approach procedure improvements.
- To serve as a working tool for the airport sponsor, particularly its development and maintenance staff.
- Requirement for the airport sponsor to receive financial assistance from the FAA.

KNB's ALP drawing set was developed in conformance with FAA SOP 2.00, ALP Review Checklist, dated October 1, 2013. The specific drawings included in the ALP set are determined by a number of factors, including the number of runways at the Airport, and the type of instrument approaches.

8.2 Airport Layout Plan Drawing Set

The following is a brief description of the ALP drawing sheets. FAA SOP 2.00 provides a detailed checklist of items required to be included in each drawing.

- **Cover Sheet**— A separate cover sheet, with approval signature blocks, airport location maps, and other pertinent information as required by the local FAA Airports office.

- ***Airport Layout Plan*** – The drawing depicting the existing and future airport facilities. The drawing should include the depiction of all applicable design standards contained in the latest version of Advisory Circular 150/5300-13, including but not limited to, landing areas, movement areas and aircraft parking areas (e.g., runways, taxiways, helipads, aprons, etc.), required facility identifications, description labels, imaginary surfaces, Runway Protection Zones, Runway and Taxiway Safety Areas, Runway and Taxiway Object Free Areas, Runway Obstacle Free Zones and basic airport and runway data tables. The various data tables are on a separate sheet.
- ***Terminal Area Plan(s)*** – A large-scale depiction of areas with significant terminal facility development. The Terminal Area drawing is an enlargement of a portion of the ALP.
- ***Airport Airspace Drawing*** – 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, defines the five imaginary surfaces that are depicted for each runway and the airport as a whole. This drawing depicts the obstacle identification surfaces for the full extent of all airport development. It also depicts airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing.
- ***Inner Portion of the Approach Surface Drawing*** – The plan and profile view of the inner portion of the approach surface to the runway end, as well as a tabular listing of all of the imaginary surface penetrations. The drawing depicts the obstacle identification approach surfaces contained in 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. The drawing also depicts other approach surfaces including the threshold-siting surface and those surfaces associated with United States Standards for Instrument Procedures (TERPS).
- ***Land Use Drawing*** – Depicts the land uses within the airport property boundary. It also depicts land uses and zoning districts in the area around the airport, outside of the airport property boundary.
- ***Airport Property Map*** – Exhibit A depicts the airport property boundary, the various tracts of land that were acquired to develop the airport, and the methods of acquisition (where appropriate). Obligations that were incurred by the airport sponsor as a result of obtaining property, or an interest therein, for the airport are noted. The obligations that stem from Federal grant or an FAA-administered land transfer program, such as surplus property programs, are also noted. The drawing also depicts easements beyond the airport boundary. An airport property map is not a substitute for an Exhibit A unless it is prepared in accordance with AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*.
- ***Runway Departure Surface Drawing*** – Depicts the applicable departure surfaces as defined in FAA AC 150/5300-13A, *Airport Design*. The departure surfaces are shown for runway end(s) designated primarily for instrument departures.

ATTACHMENT A

KANAB MUNICIPAL AIRPORT – PHOTOS OF AIRPORT FACILITIES



Photo Source: City of Kanab



Photos Taken by Jviation Summer 2015



Source: Jvation



Kanab Municipal Airport
2016 Airport Master Plan

Source: Jvation



Source: Jvation



Source: Jvation



Source: Jvation



Source: Jvation



Source: Jvation



Source: Jvation



Source: Jviation



**100LL Avgas Fuel Storage Tank
(10,000 gallons)**



**Emergency Medical Bell 407 on South End of
Transient Apron with Mobile Fueler**

Source: Jviation



Small Mobile Fueler



**Transient Apron in Front of Terminal Building
Looking North**

Source: Jvation



Existing Terminal Building

Note: New Terminal Building being replaced in Summer 2016



Existing Terminal Building

Source: Jvation



Source: Jvation

ATTACHMENT B

**KANAB MUNICIPAL AIRPORT ROLE AND FACILITIES
UTAH CONTINUOUS AIRPORT SYSTEM PLAN, 2007**

Kanab Municipal Airport
2016 Airport Master Plan

Utah Continuous Airport System Plan 2007

Kanab Municipal

UCASP Role: Regional



Primary Generators of Demand/Outside Influences:

Population Growth,
Employment Growth,
Retirement/Second Home,
Development,
Tourism

Issues/Notes:

n/a

2006 Aviation Activity

Measure	Total
2006 Based Aircraft	19
2006 Based Multi-Engine Aircraft	2
2006 Based Jet Aircraft	0
2006 Total Operations	8,394
2006 GA Itinerant Operations	1,826
2006 Total IFR Arrivals	89
2006 IFR Arrivals from Outside Utah	44
2006 Passenger Enplanements	0

Airside Facilities

Facility	Existing	Minimum UCASP Objective	Recommendation
Airport Reference Code	B-II	C-II or Greater	Upgrade ARC
Primary Runway Length	6,193'	75% of Large Airplanes at 60% Useful Load – 6600'	Extend 407'
Primary Runway Width	75'	To Meet ARC	Widen to 100'
Primary Runway Strength	12,500 lbs. SWG	30,000 lbs. SWG or DWG Equivalent	Increase Pavement Strength to 30,000 lbs. SWG
Taxiway Type	Turnarounds & Connectors	Partial Parallel	Construct Partial Parallel
Navigational Aids	Non-Precision Straight-In Approach	Non-Precision Straight-In Approach	None
Visual Aids	PAPI	GVGIs and REILs	Install REILs
Lighting	MIRL	MIRL-Medium Intensity Runway Lighting	None
	Beacon	Beacon	None
	Windsock	Windsock	None
Weather	AWOS III	Automated Weather Reporting	None

Source: UDOT

Kanab Municipal Airport
2016 Airport Master Plan

Utah Continuous Airport System Plan 2007

Kanab Municipal		UCASP Role: Regional	
Landside Facilities			
Facility	Existing	Minimum UCASP Objective	Recommendation
FBO	Full Service	FBO - Limited Service	None
Maintenance Facilities/Hangar	Limited Service	Maintenance Facilities - Limited service	None
Ground Communications	Phone	Phone	None
Restrooms	Restrooms	Restrooms	None
Ground Transportation	On-site Courtesy Car	On-site Courtesy Car	None
Terminal/Pilots' Lounge	Terminal	Terminal with Appropriate Facilities	None
Aircraft Storage	15 Aircraft in Hangars	Hangars – 60% of Based Fleet & 25% of Overnight Aircraft	None
Aircraft Storage	40 Tie-downs	Apron – 40% of Based Fleet & 50% for Transient	None
Auto Parking	15 Paved Spaces	Auto Parking – Equal to 33% of Based Aircraft	None
Fencing	Perimeter Fencing	Perimeter Fencing	None

Recommended Development Costs				
Project Description/Details	Total Estimated Cost	Costs During Future Time Periods		
		1-5 Year	6-10 Year	11-20 Year
Apron Rehabilitation & Pavement Preservation (Runway & Connectors)	\$2,200,324	\$550,081	\$550,081	\$1,100,163
Remove Part 77 Obstructions, Fencing and Relocate Road from Runway 19 RPZ	\$447,368	\$447,369	\$0	\$0
Acquire Property for Approaches	\$394,736	\$394,736	\$0	\$0
Install REILs; REILs & Various Additional Lighting Upgrades	\$37,500	\$37,500	\$0	\$0
Rehabilitate Runway Lighting (Construction) Sch I	\$417,790	\$417,791	\$0	\$0
Construct Partial Parallel Taxiway; Construct Partial Parallel Taxiway to RW 19, Phases I and II	\$2,131,579	\$0	\$2,131,579	\$0
Widen Runway to 100' (25' x 6600'-new area)	\$2,062,500	\$0	\$0	\$2,062,500
Extend Runway 407'	\$381,563	\$0	\$0	\$381,563
Subtotal Costs	\$8,073,361	\$1,847,478	\$2,681,660	\$3,544,225

Source: UDOT

UTAH AIRPORTS ECONOMIC IMPACT STUDY

TOTAL IMPACTS OF GENERAL AVIATION 2003

Associated City	Airport Name	Total GA Employment	Total GA Payroll	Total GA Output
Kanab	Kanab Municipal	37.5	\$912,000	\$6,623,200
GA Airports Total		3,672.5	\$96,670,800	\$274,280,800

Source: State of Utah, Wilbur Smith & Associates

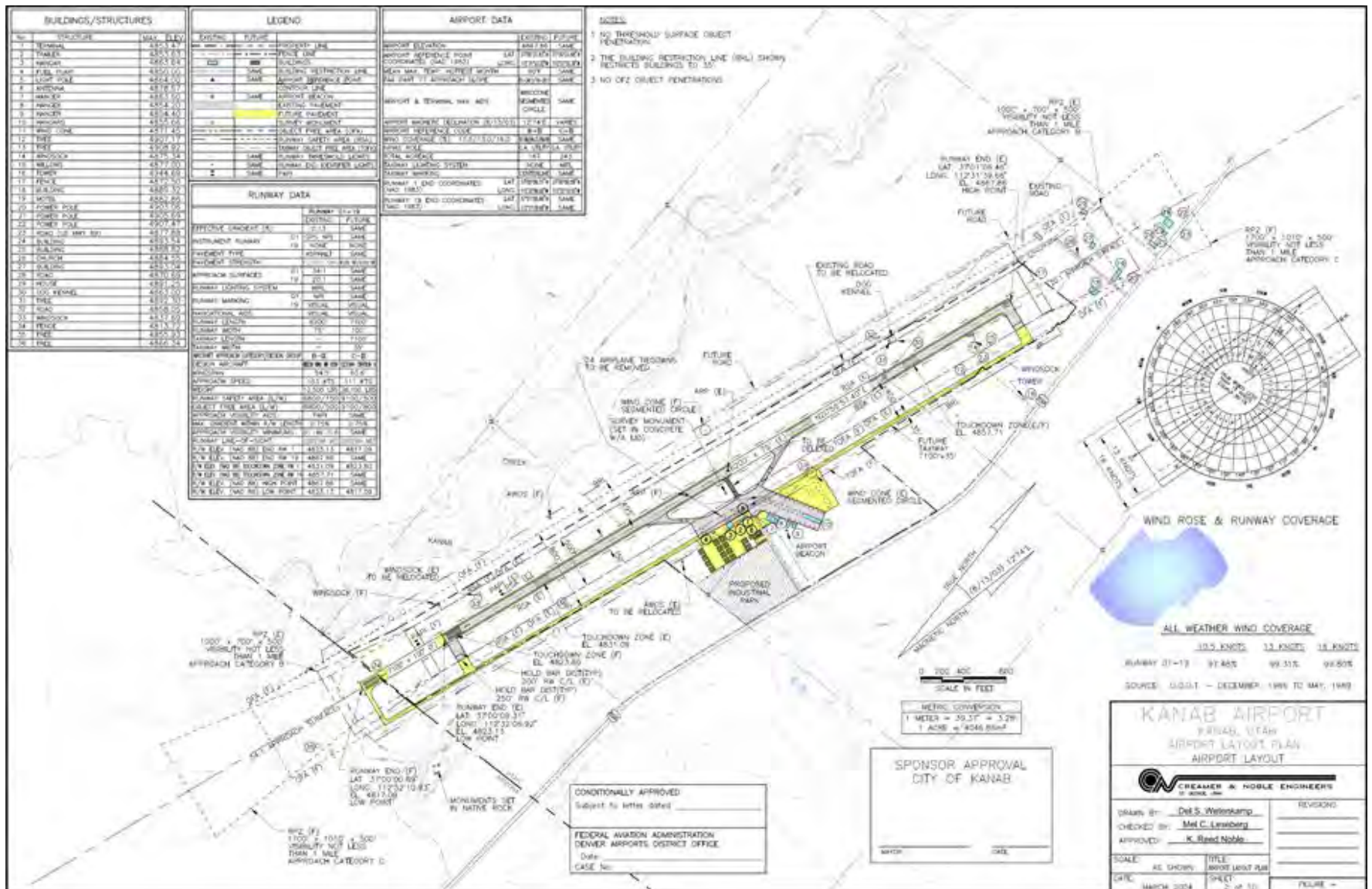
ATTACHMENT C

KANAB MUNICIPAL AIRPORT MASTER PLAN, 2002

RECOMMENDED LAYOUT PLAN DRAWING

Source: Creamer & Noble

Kanab Municipal Airport 2016 Airport Master Plan



Source: 2004 Kanab Municipal Airport Layout Plan, Creamer & Noble

ATTACHMENT D

KANAB MUNICIPAL AIRPORT FACILITIES RECORD

Source: FAA Flight Procedures (AVN)

Kanab Municipal Airport
2016 Airport Master Plan

Airport Details for KKNB - ACTIVE

Chart Date: 03/10/2011

KANAB MUNI

KANAB

AL #: 9072

State:	UTAH	Magnetic Variation/Year:	E15/1980	Weather Station:	YES
Country:	United States	Site Nbr:	25172	Control Tower:	NO
Category:	AERODROME ONLY	Data Source:	AOC NGS	Use:	CIVIL
FAR Part 139:	NO	Owner:	NTL	Military Type:	
Reimbursable Agreement:					
Coordinates		Office		Local Auto Weather	
Latitude:	N 37° 00' 39.9810"	Flight Inspection:	SAC	Weather Source:	AWOS
Longitude:	W 112° 31' 52.2970"	Procedure Development:	130	Type:	3
Field Elevation:	4867.9	Region Code:	NM	Frequency:	133.175
Ellipsoid Elevation:		Service Area:	WEST	Service A:	Y
Horizontal Datum:	NAD83	OCC Code:	PAC	Phone number	
Vertical Datum:	NAVD88	International:	NO		

CONTACTS

Contact Role	Last Name	First Name	Phone Number	E-mail	Remark
OWNER			(435)644-2299		

ALTIMETERS

Type	Primary	Airport ID	Field Alt Source	Latitude	Longitude	Operational Timing
L	YES	KKNB	AWOS	N 37° 00' 39.9810"	W 112° 31' 52.2970"	FULL-TIME

ALTIMETER COMMENTS

RUNWAYS

01 (A) 19 (A) 01 (P) 19 (P)

RUNWAY DETAIL

Landing Strip		Chart Date: 08/22/2013		Publication Status: A	Pseudo Rwy: NO
Surface: ASPH FAIR				Width: 75	Physical Length: 6193
Rwy Number: 01		Rwy Number: 19			
Use Category: RUNWAY ONLY		Use Category: RUNWAY ONLY			
Chart Date: 08/22/2013		Chart Date: 08/22/2013			
Data Source: UNOFFICIAL: 11/10/1995		Data Source: AOC 11/10/1995 NGS			
Markings: NPI-P		Markings: BSC-P			
Threshold		Threshold			
Latitude: N 37° 00' 08.3100"		Latitude: N 37° 01' 05.4800"			
Longitude: W 112° 32' 06.9200"		Longitude: W 112° 31' 39.6800"			
Elevation: 4823.1		Elevation: 4867.9			
Ellipsoid Elev: 4750.6 E		Ellipsoid Elev: 4795.5 E			
Ellipsoid Elev Model: WGS84		Ellipsoid Elev Model: WGS84			
Horz. Datum: NAD83		Horz. Datum: NAD83			
Vert. Datum: NAVD88		Vert. Datum: NAVD88			
Displaced Threshold		Displaced Threshold			
Latitude:		Latitude:			
Longitude:		Longitude:			
Elevation:		Elevation:			
Ellipsoid Elev:		Ellipsoid Elev:			
Ellipsoid Elev Model:		Ellipsoid Elev Model:			
Horz. Datum:		Horz. Datum:			
Vert. Datum:		Vert. Datum:			
Landing Length: 6193		Landing Length: 6193			
FI RWY Length: 6193		FI RWY Length: 6193			
FI RWY Height: 4867.9		FI RWY Height: 4823.1			
TdZ Elevation: 4831.1		TdZ Elevation: 4867.9			
True Bearing: 20.93		True Bearing: 200.94			
FI Disp Th:		FI Disp Th:			
Gradient: 0.7%		Gradient: -0.7%			
RVR Touchdown:		RVR Touchdown:			
MidPoint:		MidPoint:			
Rollout:		Rollout:			
Rail: NO		Rail: NO			
OIS Data Source: SUPPLC 11/10/1995 NGS SURVEY		OIS Data Source: SUPPLC 11/10/1995 NGS SURVEY			
Assoc. Fac:		Assoc. Fac:			

RUNWAY LANDING STRIP COMMENTS

RUNWAY 01 COMMENTS

RUNWAY 19 COMMENTS

Source: FAA

Kanab Municipal Airport
2016 Airport Master Plan

RUNWAY DETAIL

Landing Strip		Publication Status: P		Pseudo Rwy: NQ	
Chart Date: 11/12/2015		Width: 75		Physical Length: 6193	
Surface: ASPH GOOD					

Rwy Number: 01 Use Category: RUNWAY ONLY Chart Date: 11/12/2015 Pub Status: P Data Source: UNOFFICIAL 11/10/1995 Markings: NPI-G	KXNB01 VGSI Lights VGSI Lights Type: PAPI/2L Owner: STATE Pilot Cnt Freq: 122.800 Th Cross Ht: 40.0 High Angle: Com. Date: 12/21/2005 Com. Angle: 3.00 DWS Elev: DWS Thres: Ref Pt Lat: N 37° 00' 09.3100" Ref Pt Long: W 112° 32' 00.9200" Ref Pt Elev: 4827.7 Ref Pt Thres: 677 Height Group: Lights <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Config</th> <th>Len</th> <th>Owner</th> <th>Mt Type</th> <th>Com Dr</th> <th>Plat Data</th> </tr> <tr> <td>REL</td> <td></td> <td>NTL</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MFL</td> <td></td> <td>NTL</td> <td></td> <td></td> <td>122.800</td> </tr> </table>	Config	Len	Owner	Mt Type	Com Dr	Plat Data	REL		NTL				MFL		NTL			122.800	Rwy Number: 19 Use Category: RUNWAY ONLY Chart Date: 11/12/2015 Pub Status: P Data Source: AOC 11/10/1995 NGS Markings: BSC-G	KXNB19 Lights <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Config</th> <th>Len</th> <th>Owner</th> <th>Mt Type</th> <th>Com Dr</th> <th>Plat Data</th> </tr> <tr> <td>REL</td> <td></td> <td>NTL</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MFL</td> <td></td> <td>NTL</td> <td></td> <td></td> <td>122.800</td> </tr> </table>	Config	Len	Owner	Mt Type	Com Dr	Plat Data	REL		NTL				MFL		NTL			122.800
Config	Len	Owner	Mt Type	Com Dr	Plat Data																																		
REL		NTL																																					
MFL		NTL			122.800																																		
Config	Len	Owner	Mt Type	Com Dr	Plat Data																																		
REL		NTL																																					
MFL		NTL			122.800																																		

Threshold Latitude: N 37° 00' 09.3100" Longitude: W 112° 32' 00.9200" Elevation: 4823.1 Ellipsoid Elev: 4750.6 E Ellipsoid Elev Model: WGS84 Horiz. Datum: NAD83 Vert. Datum: NAVD83	Threshold Latitude: N 37° 01' 06.4600" Longitude: W 112° 31' 39.6600" Elevation: 4867.9 Ellipsoid Elev: 4795.5 E Ellipsoid Elev Model: WGS84 Horiz. Datum: NAD83 Vert. Datum: NAVD83
--	--

Displaced Threshold Latitude: Longitude: Elevation: Ellipsoid Elev: Ellipsoid Elev Model: Horiz. Datum: UNKNOWN Vert. Datum: UNKNOWN	Displaced Threshold Latitude: Longitude: Elevation: Ellipsoid Elev: Ellipsoid Elev Model: Horiz. Datum: UNKNOWN Vert. Datum: UNKNOWN
--	--

Landing Length: 6193 FI RWY Length: 6193 FI RWY Height: 4867.9 TdZ Elevation: 4831.1 True Bearing: 20.93 FI Disp Th: Gradient: 0.7% RVR Touchdown: MidPoint: Rollout: Rail: NQ OIS Data Source: SUPLC 11/10/1995 NGS_SURVEY Assoc. Fac:	Landing Length: 6193 FI RWY Length: 6193 FI RWY Height: 4823.1 TdZ Elevation: 4867.9 True Bearing: 200.94 FI Disp Th: Gradient: -0.7% RVR Touchdown: MidPoint: Rollout: Rail: NQ OIS Data Source: SUPLC 11/10/1995 NGS_SURVEY Assoc. Fac:
---	---

RUNWAY LANDING STRIP COMMENTS

Topic	Priority	Date	Remark
GENERAL	1	10/20/2015	RWY MARKINGS MODIFIED PER WXL REPORT DATED 10/20/2015

RUNWAY 01 COMMENTS

RUNWAY 19 COMMENTS

COMMENTS

Topic	Priority	Date	Remark
SURVEY	2	11/05/1999	NOS SURVEY DATED 11/10/95. RWY MODIFIED SINCE SURVEY.
ADDITIONAL_FLIGHT_DATA	3	04/15/2003	AWOS PH: 435-644-2267
NFDD	4	05/13/2004	PER NFDD #093-49, RWY 01 MARKING NPI-G
NFDD	1	07/13/2004	RY 01 LENGTHENED PER NFDD #097-9 DATED 05/19/04. NEW RWY LAT/LONG & ELEVATIONS PER STATE.
OWNER	5	10/26/2005	RWY 01 VGSI OWNER IS THE COUNTY OF KANE

SIAPS

Nav Ident	Nav Type	Description	FAS	Amendment	Type
		RNAV (GPS) RWY 1	5139 / 100' TREE / N36°57'24.00" / W112°33'24.00"	1	CIVIL

ASSOCIATED MONITORS

ASSOCIATED DGPS

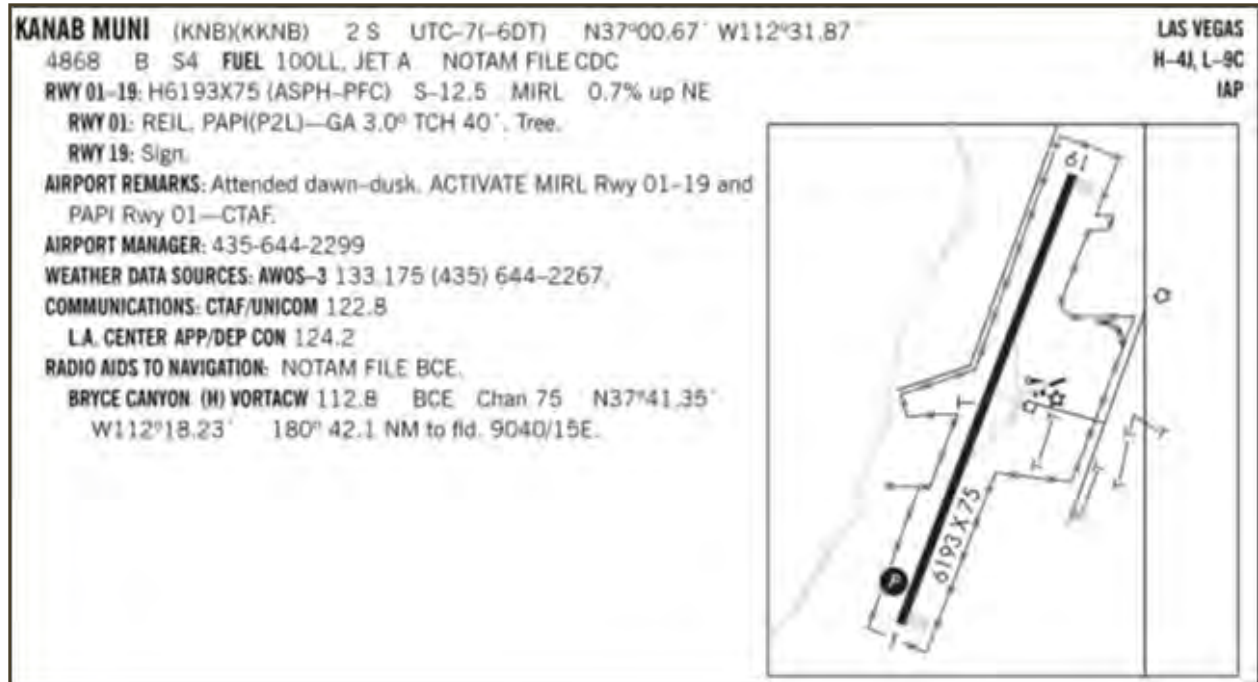
Source: FAA

ATTACHMENT E

**KANAB MUNICIPAL AIRPORT
FAA AIRPORT FACILITIES DIRECTORY**

Source: FAA

Kanab Municipal Airport
2016 Airport Master Plan



Source: FAA

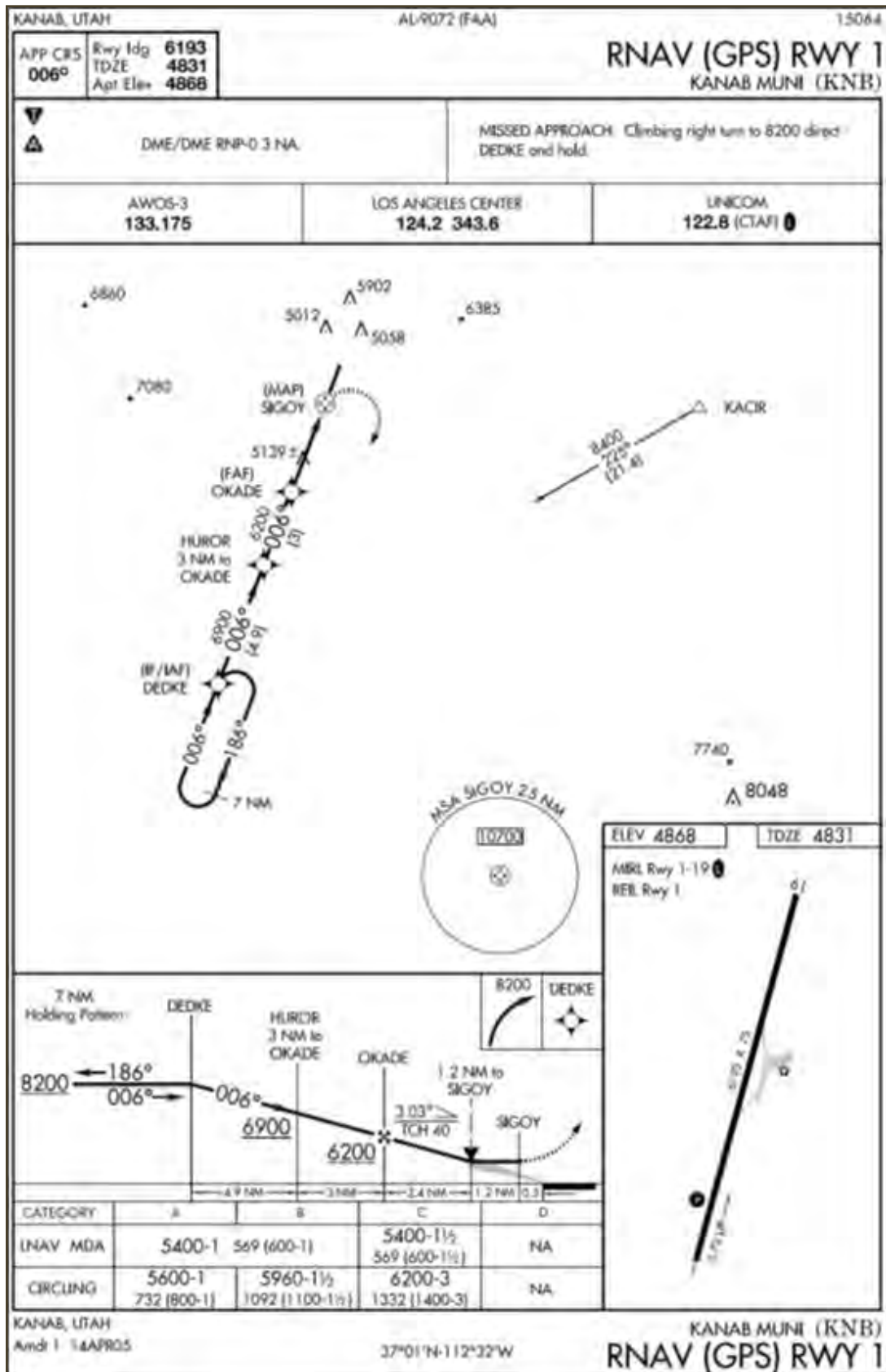
Not To Be Used For Navigation

ATTACHMENT F

**KANAB MUNICIPAL AIRPORT
PUBLISHED INSTRUMENT APPROACH & DEPARTURE PROCEDURES**

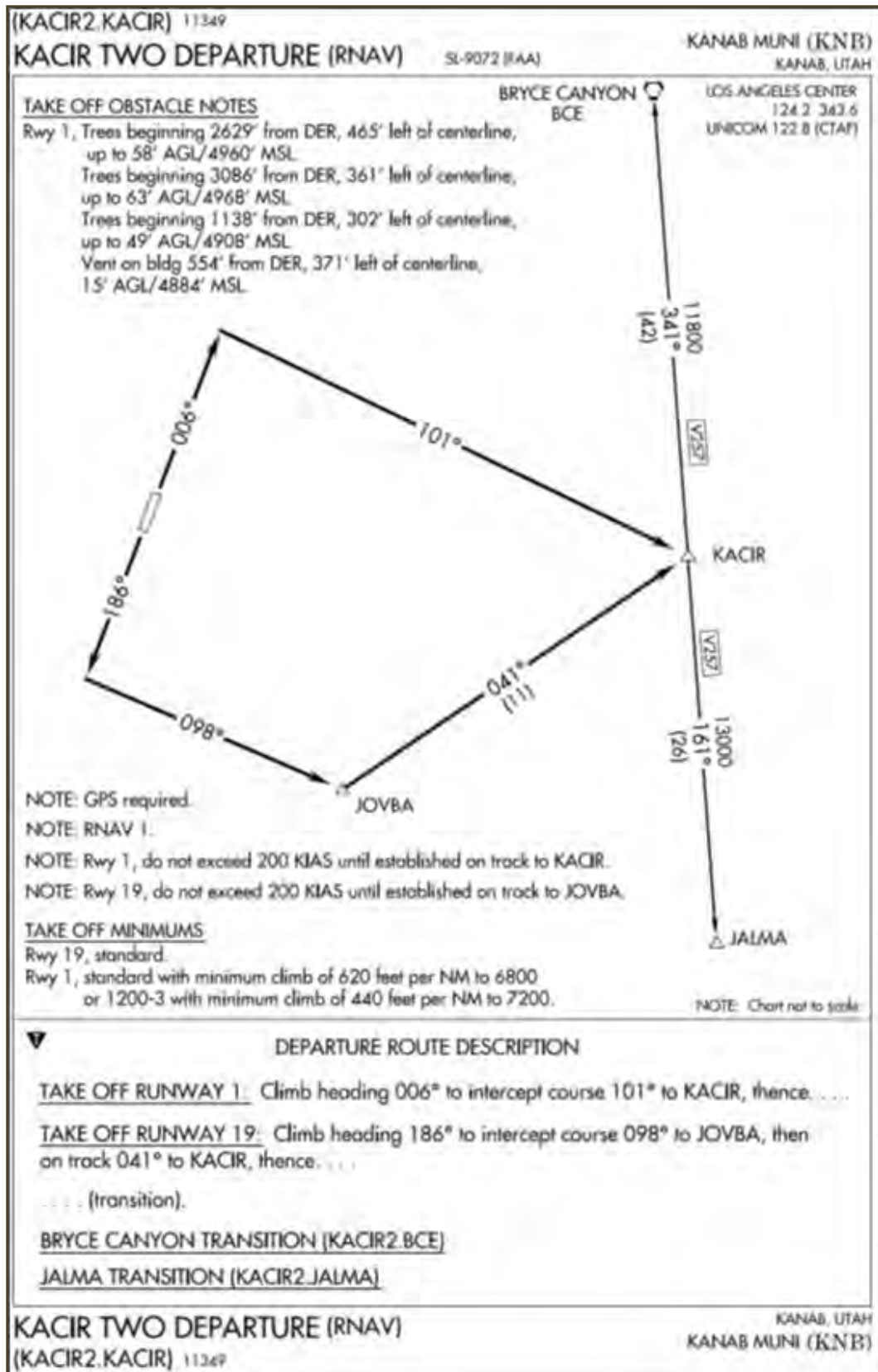
Source: FAA

Kanab Municipal Airport
2016 Airport Master Plan



Source: FAA

Not To Be Used For Navigation



Source: FAA

Not To Be Used For Navigation

KANAB, UT

KANAB MUNI (KNB)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

AMDT 3 10042 (FAA)

TAKEOFF MINIMUMS: **Rwy 1**, std. with min. climb of 742' per NM to 6600, or 1100-3 with min. climb of 535' per NM to 6900, or 2400-3 for climb in visual conditions.

DEPARTURE PROCEDURE: **Rwy 19**, climb heading 171° to 6800 before turning. **Rwy 1**, climb heading 006° to 6100 before turning, or for climb in visual conditions, cross Kanab Muni airport at or above 7100 before proceeding on course.

NOTE: **Rwy 1**, vent on building 554' from DER, 370' left of centerline, 16' AGL/4884' MSL. Trees beginning 1138' from DER, 302' left of centerline, up to 100' AGL/5939' MSL. Rising terrain and trees beginning 1.68 NM from DER, 247' right of centerline, up to 100' AGL/5239' MSL. Rising terrain and trees beginning 1.76 NM from DER, 766' left of centerline, up to 100' AGL/5599' MSL. Rising terrain beginning 3.5 NM from DER, left and right of centerline, up to 6359' MSL. **Rwy 19**, trees beginning 271' from DER, 506' right of centerline, up to 100' AGL/4899' MSL.

Source: FAA

Not To Be Used For Navigation

ATTACHMENT G

CITY OF KANAB DEMOGRAPHICS

Sources:

City of Kanab

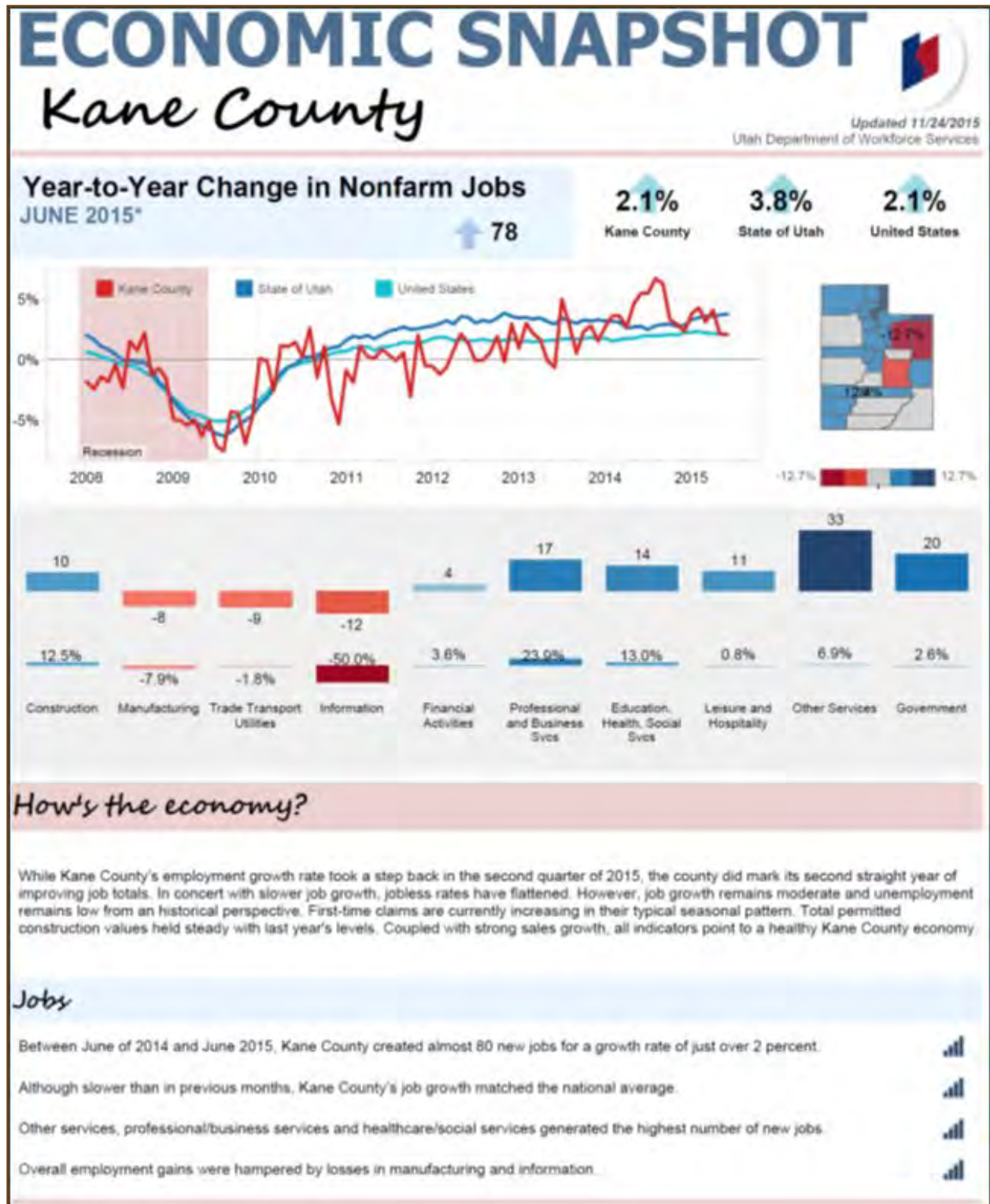
State of Utah

U.S. Census Bureau

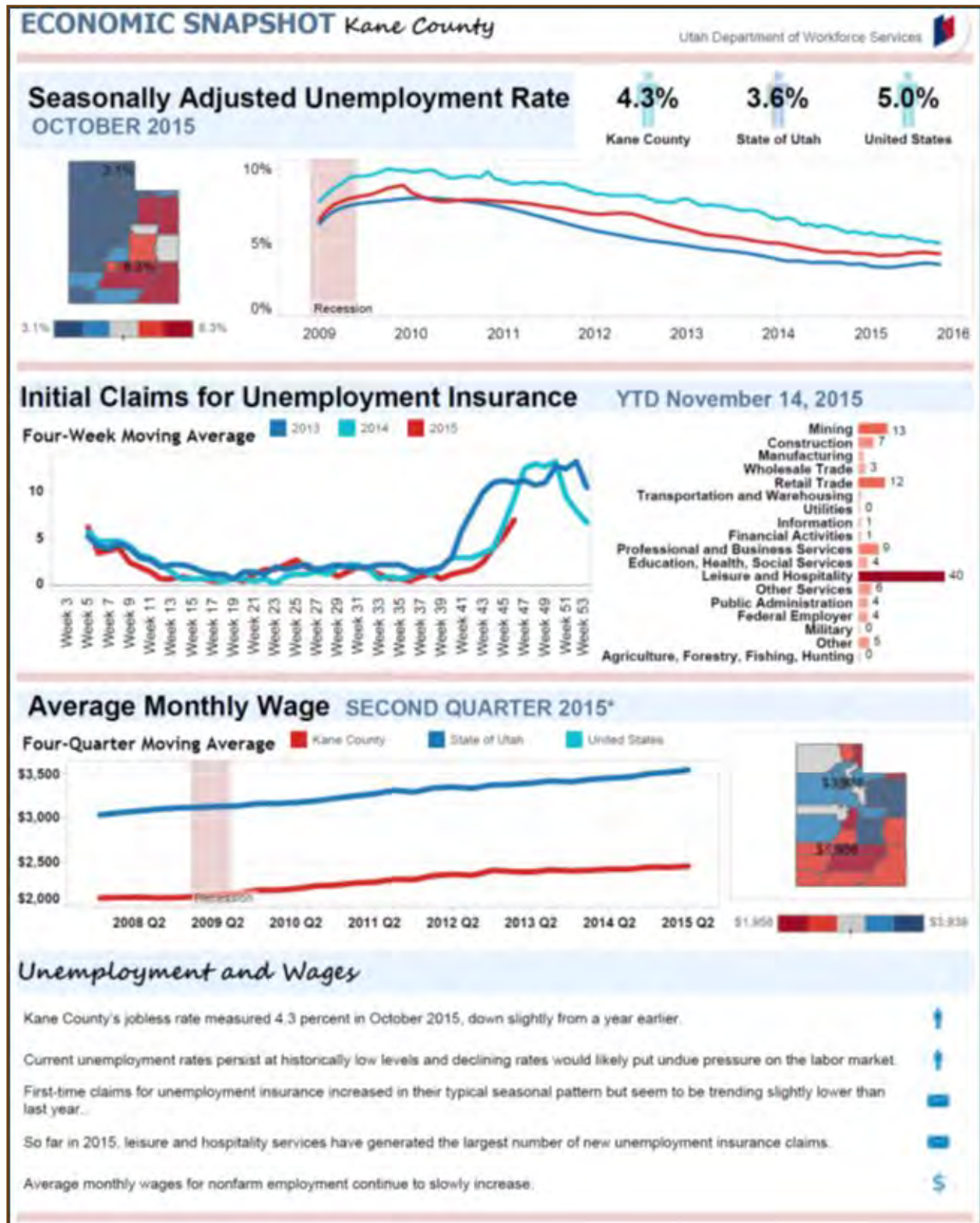
City of Kanab

Source: U.S. Census Bureau, Census 2010			
Population and Density		Class of Worker	
Total Population	4,312	Private wage and salary workers	63.6%
Total land area in square miles	14	Government workers	21.5%
Density per square mile	308	Self-employed (not incorporated)	12.4%
Sex and Age		Employment by Industry	
Male	48.5%	Agriculture, forestry, fishing and hunting, and mining	4.3%
Female	51.5%	Construction	8.1%
Median Age	40.1	Manufacturing	7.1%
Households		Wholesale trade	1.3%
Total households	1,729	Retail trade	11.4%
Average household size	2.44	Transportation and warehousing, and utilities	8.6%
Average family size	3.08	Information	1.2%
School Enrollment		Finance, insurance, real estate, and rental and leasing	3.9%
Kindergarten through High School	776	Professional, scientific, management, admin, waste mgmt	4.9%
College or graduate school	98	Educational, health, social services	16.1%
Educational Attainment		Arts, entertainment, recreation, accommodation, food services	14.1%
High school graduate or higher	94.7%	Public administration	8.3%
Bachelors degree or higher	29.5%	Other services	10.7%
Employment Status (16 yrs+)		Commuting to Work	
Labor Force	2,256	Mean time to work in minutes	10.6
Unemployed	2.9%		
Females employed	63.9%		
Income			
Median household income	\$50,265		
Median family income	\$62,288		
Per capita income	\$23,927		

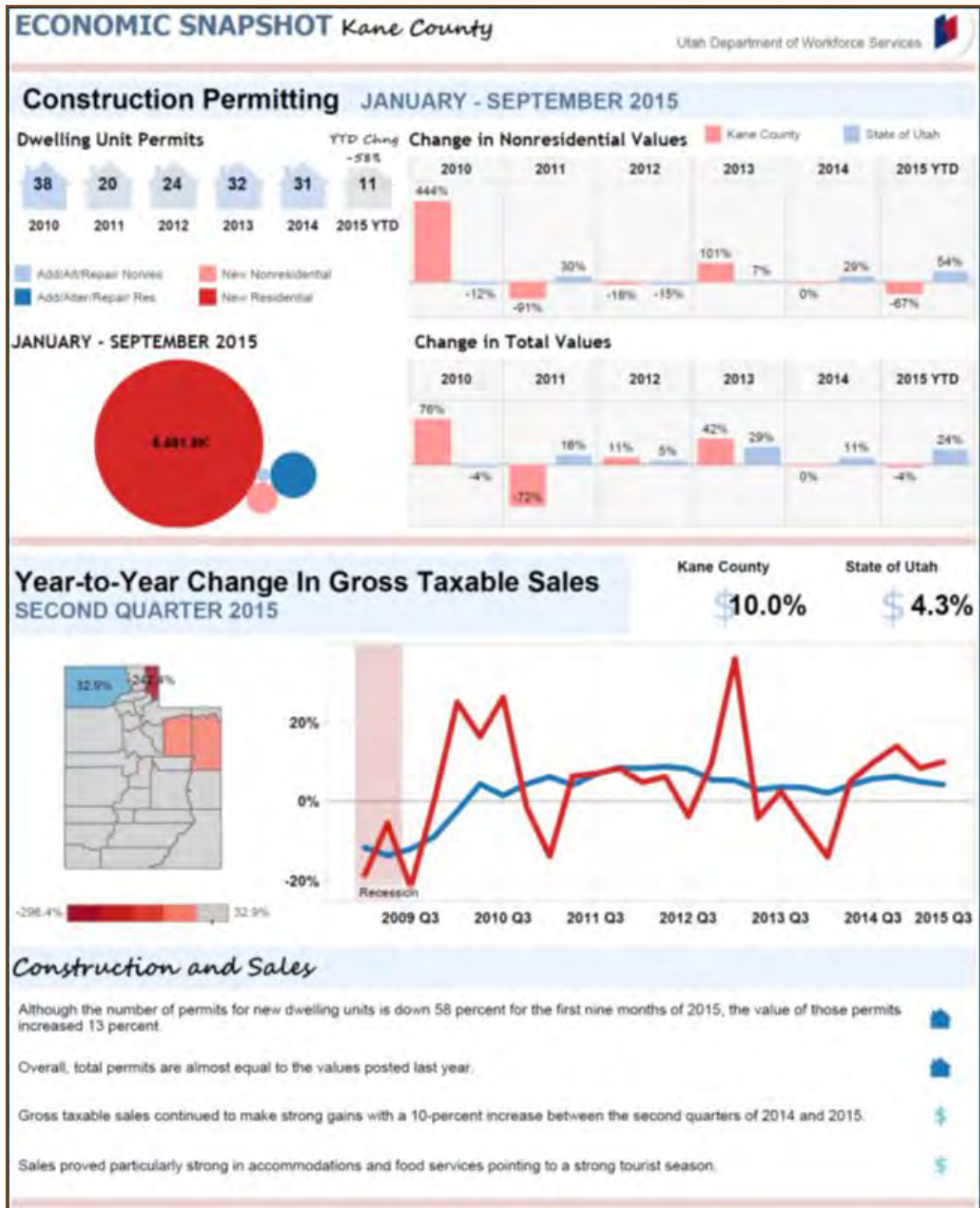
Source: U.S. Census Bureau



Source: Utah Department of Workforce Services



Source: Utah Department of Workforce Services



Source: Utah Department of Workforce Services

Kanab Municipal Airport
2016 Airport Master Plan

ECONOMIC SNAPSHOT Kane County				Utah Department of Workforce Services					
Nonfarm Jobs by Month				SECOND QUARTER 2015*					
	April 2015			May 2015			June 2015		
	Total Jobs	Year-Ago Percent Change	Year-Ago Numeric Change	Total Jobs	Year-Ago Percent Change	Year-Ago Numeric Change	Total Jobs	Year-Ago Percent Change	Year-Ago Numeric Change
TOTAL	3,240	4.1%	129	3,481	2.2%	74	3,721	2.1%	78
GOODS PRODUCTION	179	8.1%	7	180	5.9%	10	188	0.2%	0
Construction	79	14.5%	10	80	19.4%	13	90	12.5%	10
Manufacturing	97	0.0%	0	98	-2.0%	-2	93	-7.9%	-5
SERVICE PRODUCTION	3,061	4.2%	122	3,301	2.0%	64	3,533	2.3%	79
Trade Transport Utilities	440	0.9%	4	480	0.4%	2	491	-1.8%	-9
Wholesale Trade	30	-6.3%	-2	32	0.0%	0	30	-11.8%	-4
Retail Trade	350	1.4%	5	388	0.3%	1	397	-0.3%	-1
Transportation and Warehousing	28	3.7%	1	30	15.4%	4	32	6.7%	2
Information	13	-43.5%	-10	12	-47.8%	-11	12	-50.0%	-12
Financial Activities	114	5.6%	9	112	1.8%	2	116	3.6%	4
Finance and Insurance	82	5.1%	4	80	-2.4%	-2	85	1.2%	1
Real Estate and Rental and Leasing	32	18.5%	5	32	14.3%	4	31	10.7%	3
Professional and Business Svcs	90	42.9%	27	90	36.4%	24	88	23.9%	17
Professional/Scientific/Techn Svcs	47	42.4%	14	46	39.4%	13	45	28.6%	10
Management of Companies	0		0	0		0	0		0
Administrative Support/Waste Mgmt	43	43.3%	13	44	35.3%	11	43	19.4%	7
Education, Health, Social Svcs	104	-4.8%	-5	114	-2.6%	-3	122	13.0%	14
Educational Services	0		0	0		0	0		0
Health Care and Social Services	104	-4.8%	-5	114	-2.6%	-3	122	13.0%	14
Leisure and Hospitality	1,063	6.3%	63	1,219	3.0%	39	1,420	0.8%	11
Accommodation and Food Services	1,004	8.7%	63	92	7.0%	6	101	11.0%	10
Arts, Entertainment and Recreation	59	0.0%	0	1,127	2.6%	29	1,319	0.1%	1
Other Services	499	5.5%	28	509	4.7%	23	511	6.9%	23
Government	736	1.1%	8	765	-1.0%	-8	775	2.8%	20
Federal	79	-6.0%	-5	97	-6.7%	-7	100	-7.4%	-8
State	74	1.4%	1	74	0.0%	0	73	1.4%	1
Local	585	2.1%	12	594	-0.2%	-1	602	4.7%	27
Unclassified	0		0						

* Not included in total
Note: Detail may not add to total due to rounding and the exclusion of confidential data
Source: Utah Department of Workforce Services.

Source: Utah Department of Workforce Services

ATTACHMENT H

KANAB AIRPORT PAVEMENT CONDITION (PCN) ANALYSIS

Source:

Jviation

PCN ANALYSIS

Runway 1/19

Kanab Municipal Airport

Kanab, Utah

JVIATION®

35 South 400 West, Suite 200
St. George, UT 84770

Main 435.673.4677

August 24, 2016

JVIATION.COM

Pavement PCN Number

In accordance with FAA AC 150/5335-5C Standard Method of Reporting Pavement Strength-PCN, a PCN analysis was completed using COMFAA software (version 3.0) and the supporting Excel spreadsheet. The following assumptions were made to provide the most accurate PCN analysis based on available information.

The PCN for Runway 1/19 was arrived at with the Using Aircraft Method as described in section 4.3 of FAA AC 150/5335-5C. The aircraft used for this method were chosen from the operations reports for 2014 and 2015 in conjunction with the Master Plan being developed for AIP Project No. 3-49-0013-013. This fleet mix can be found in Appendix A of this report. Without detailed knowledge of the pavement structure, subgrade classification, and aircraft usage, the PCN number is derived from the largest ACN of the assumed aircraft using this runway. Assuming a subgrade classification of "A" based on the highest values in the FAA Pavement Strength Survey, and using the tire pressures available for the using aircraft, the PCN value for Runway 1/19 can be reported as 22/F/A/X/U. The ACNs used for this analysis can be found in Appendix B of this report.

The above PCN value to be reported for Runway 1/19 at the Kanab Municipal Airport is only as accurate as the assumptions described within this analysis. If the Airport wishes to obtain a more accurate PCN value for Runway 1/19, investigations should be conducted to:

1. Verify pavement section thicknesses, conditions, and underlying materials.
2. Obtain actual CBR values for underlying soils.
3. Obtain data to create an accurate airport fleet mix, including annual departures.

When this data is obtained, a complete PCN value for in-situ conditions using the Technical Method can be reported for Runway 1/19.

It is recommended that if there are any aircraft traffic modifications for either runway, the PCN be reevaluated to determine how the pavement will perform to the modified traffic.

APPENDIX A – CURRENT AIRCRAFT FLEET MIX

PCN Analysis
August 24, 2016

A1

Jviation, Inc.
Kanab Municipal Airport

Kanab Municipal Airport
2016 Airport Master Plan

Aircraft Name	COMFAA Name	Gross Weight (lbs.)
Beechcraft Premier I	Single Wheel 10	8,000
Astra SPX	Single Wheel 25	24,650
Cessna Citation III	Single Wheel 20	22,000
Piper PA 46	Single Wheel 5 (1)	4,100
Pilatus PC-12/45	Single Wheel 5 (2)	6,782
Cessna Citation II	Citation-550B	15,000
Cessna Citation Jet	Citation-525	10,500
Gulfstream G-IV	Gulfstream-G-IV	75,000
King Air C-90	KingAir-C-90	9,710
Beechcraft B200	SuperKingAir-B200	12,590
Beechcraft B36TC	Bonanza-F-33A	3,412
Learjet 45	Learjet-35A/65A	18,000
Canadair Challenger	Challenger-CL-604	48,200
Hawker 750	Hawker-800	27,520

*Aircraft used are based on the operation reports for 2014 and 2015 used in the development of the Master Plan.

**APPENDIX B – ACN LISTING FOR THE CURRENT AIRCRAFT FLEET
MIX**

PCN Analysis
August 24, 2016

B1

Jviation, Inc.
Kanab Municipal Airport

Kanab Municipal Airport 2016 Airport Master Plan

Runway 1/19 ACNs

ICAO ACN Computation, Detailed Output

Unit Conversions Show Alpha Show Ext File Single Aircraft ACN: ☒ Flexible ☐ Rigid Other Calculation Modes: ☐ PCN ☒ ACN Batch ☐ Thickness ☐ Life ☐ MGW Back

☐ Save PCN Output to a Text File

Flexible ACN at Indicated Gross Weight and Strength. Units = English.

No.	Aircraft Name	Gross Weight	% GW on Main Gear	Tire Pressure	ACN at Indicated Code			
					A(15)	B(10)	C(6)	D(3)
1	Single Wheel 10	8,000	100.00	50.0	3.0	4.1	5.4	6.3
2	Single Wheel 25	24,650	95.00	100.0	8.2	9.1	9.7	10.2
3	Single Wheel 20	22,000	95.00	75.0	5.9	7.0	8.3	8.7
4	Single Wheel 5 (1)	4,100	100.00	45.0	1.4	1.9	2.6	3.2
5	Single Wheel 5 (2)	6,782	100.00	45.0	2.2	3.1	4.3	5.3
6	Citation-550B	15,000	95.00	130.0	5.7	6.1	6.1	6.3
7	Citation-525	10,500	95.00	98.0	3.5	3.9	4.1	4.3
8	Gulfstream-G-IV	75,000	95.00	185.0	22.2	23.6	24.6	25.4
9	KingAir-C-90	9,710	95.00	58.0	2.0	2.6	3.3	3.7
10	SuperKingAir-B200	12,590	95.00	98.0	2.3	2.7	3.0	3.7
11	Bonanza-F-33A	3,412	95.00	40.0	0.5	0.7	1.0	1.3
12	Leasjet-35A/65A	18,000	95.00	171.0	4.3	4.4	5.0	5.6
13	Challenger-CL-604	48,200	95.00	145.0	11.6	12.4	14.1	15.5
14	Hawker-800	27,520	95.00	135.0	6.5	7.0	8.0	8.8

ICAO ACN Computation, Detailed Output

Unit Conversions Show Alpha Show Ext File Single Aircraft ACN: ☒ Flexible ☐ Rigid Other Calculation Modes: ☐ PCN ☒ ACN Batch ☐ Thickness ☐ Life ☐ MGW Back

☐ Save PCN Output to a Text File

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No.	Aircraft Name	Gross Weight	% GW on Main Gear	Tire Pressure	ACN at Indicated Code			
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1	Single Wheel 10	8,000	100.00	50.0	3.0	4.1	5.4	6.3
2	Single Wheel 25	24,650	95.00	100.0	8.2	9.1	9.7	10.2
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PUBLIC OUTREACH PROGRAM

1. Kanab City Council Presentation, October 13, 2015
2. Kanab City Council Presentation, February 23, 2016
3. Local News Article
4. Kanab City Council Presentation, July 12, 2016
5. Kanab Airport Users Meeting, July 12, 2016

Kanab Municipal Airport
Master Plan

**KANAB CITY COUNCIL MEETING
OCTOBER 13, 2015
KANE COUNTY COMMISSION CHAMBERS**

PRESENT: Mayor Robert D. Houston, Council Members Kirt Carpenter, Cheryl Brown, Kent Burggraaf, Brent Chamberlain and Joe B. Wright, Recorder Joe Decker, Attorney Jeff Stott and City Treasurer RaeLene Johnson.

WORK MEETING: A presentation was given on the Airport Master Plan. Mel Leesburg, Samuel Roth, and Stephen Berardo with Jviation addressed the Council. Mr. Berardo presented the process of preparing a master plan. They start with an investigation identifying demands and needs. Next they will recommend different needed issues. The master plan will be tailored to the City's individual airport. The master plan will be a 20-year plan. It has to meet FAA standards, but they don't have to sign off on it because it is the City's master plan. The FAA approves the airport layout plan. There is going to be a new digital mapping plan. The Plan has to be environmental compliant. Some of the key issues and goals are to analyze existing and future aviation activity into Kanab City's airport. Define the role of Kanab in relation to the overall economic development program. Mr. Berardo said that they hope to have the Plan completed by next summer. Council Member Carpenter asked if the new terminal was going to be included in the Master Plan. They said that it would.

Prayer was offered by Joe B. Wright and the pledge was led by Brent Chamberlain.
Mayor Houston called the regularly scheduled meeting to order at 7:05 p.m. and roll call was taken.

APPROVAL OF AGENDA: A motion was made by Council Member Wright and 2nd by Council Member Chamberlain to approve the agenda of October 13, 2015. Motion passed unanimously.

APPROVAL OF MINUTES: A motion was made by Council Member Brown and 2nd by Council Member Wright to approve the minutes of the September 8th meeting. Motion passed unanimously. A motion was made by Council Member Chamberlain and 2nd by Council Member Brown to approve the minutes of the September 22nd meeting as corrected. Motion passed. Council Member Wright abstained since he wasn't at the meeting.

APPROVAL OF ACCOUNTS PAYABLE VOUCHERS: A motion was made by Council Member Wright and 2nd by Council Member Chamberlain to approve the vouchers and check register in the amount of \$179,736.92. Motion passed unanimously.

PUBLIC COMMENT PERIOD: No comments were received.

APPOINTMENT TO THE ARTS COUNCIL: A motion was made by Council Member Brown and 2nd by Council Member Burggraaf to approve Russell Wulfenstein to serve on the Arts Council in the Performing Arts division with a term ending December 31, 2018. Motion passed unanimously.

Kanab Municipal Airport
Master Plan

**KANAB**
A Woman's Choice

Airport Master Plan



2015



1

**KANAB**
A Woman's Choice

Airport Master Plan

The Master Plan Process





2

**Airport Master Plan**

**Advisory Circular**
Consolidated AC includes Change I

"This Advisory Circular (AC) provides guidance for the preparation of master plans for airports that range in size and function from small general aviation to large commercial service facilities. The intent of this AC is to foster a flexible approach to master planning that directs attention and resources to critical issues. The scope of each master plan must be tailored to the individual airport under evaluation."

3

**Airport Master Plan**

FAA Airports
ASSURANCES
Airport Sponsors

5. Preserving rights & Powers
6. Consistency with Local Plans
20. Hazard Removal and Mitigation
21. Compatible Land Use
22. Economic non-Discrimination
23. Exclusive Rights
24. Fee and Rental Structure
25. Airport Revenues

4



Airport Master Plan

KNB AMP GOALS

- **Guide KNB's development in a safe, efficient, and effective manner**
- **Ensure compliance with appropriate FAA design standards**
- **Ensure consistency with the City's General Plan:**
 - Promote our western heritage, culture and values
 - Retain a friendly small-town feel and charm,
 - Strive for a diversified economy and desirable development
 - Provide a healthy and happy atmosphere of enrichment for all residents through all stages of life,
 - Act as a destination and gateway to regional parks, monuments and open spaces, and
 - Ensure an environment that promotes the highest quality of life for living, working, visiting and playing.

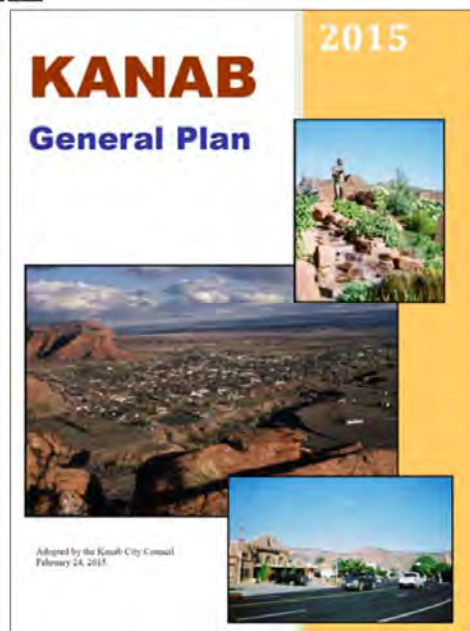


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5



Airport Master Plan



JVIATION

Goal:

Plan airport improvements.

- Review and update Master Plan including needs for future air transportation in the region.
- Include the public and seek funding for improvements with transportation professionals.



6



KANAB
A Western Oasis

Airport Master Plan

MASTER PLAN KEY ISSUES

- Analyze existing and future aviation activity levels - corporate/business aircraft activity
- Prepare forecasts based on local airport users + regional economic trends
- Determine whether the current FAA design standard is appropriate for KNB
- Analyze the published instrument approach procedure to Runway 1
- Analyze the need for a new parallel taxiway
- Define the role of KNB in relation to the city's overall economic development program
- Assess the Airport's Minimum Standards and lease rates, and make recommendations
- Provide guidance on environmental requirements

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8

Kanab Municipal Airport Master Plan



KANAB
A WORTHY CLASSIC

Master Plan- Introduction

The Master Plan is a *20 year plan* to understand the needs of current and future users of the airport. This is important to ensure that *safe and orderly development* occurs in a manner that is *reflective of the community's values and goals*. The plan is developed through a *purposeful, inclusive and educational process*.

The flowchart on the right lists the following steps: Pre-Planning, Public Involvement, Inventory of Existing Conditions, Aviation Forecasts, Facility Requirements, Alternatives Development and Evaluation, Environmental Considerations, Economic Feasibility Analysis, and Airport Layout Plan (ALP).

JVIATION



Master Plan – Overview

→ Airport Master Plan

- Required by the FAA
- FAA does **not** approve Master Plan
- FAA **approves** forecasts and the Airport Layout Plan
- FAA approval of ALP conditional
- FAA approval for individual projects comes later

→ Airport Layout Plan (ALP)

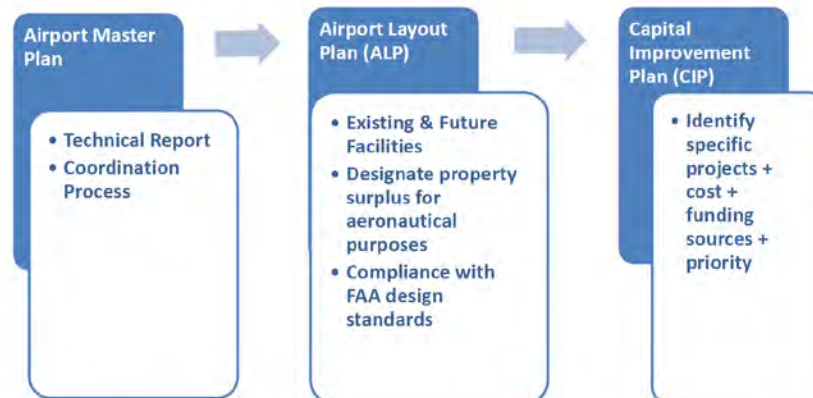
- Must be kept current
- Airport development must be consistent with ALP

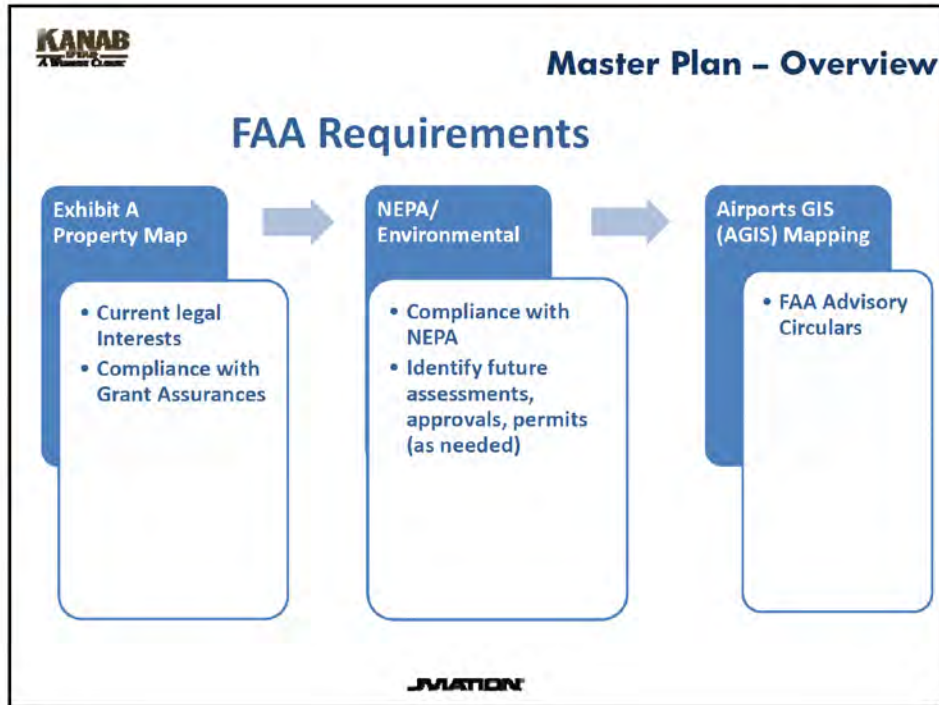
→ *City Coouncil decides whether and what to build* – *This is Your Plan*



Master Plan – Overview

FAA Requirements







Additional Study Components

- Geographic Information System (GIS) data
 - Geodetic Control
 - Aerial Photography
 - Aeronautical Survey



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Project Timeline



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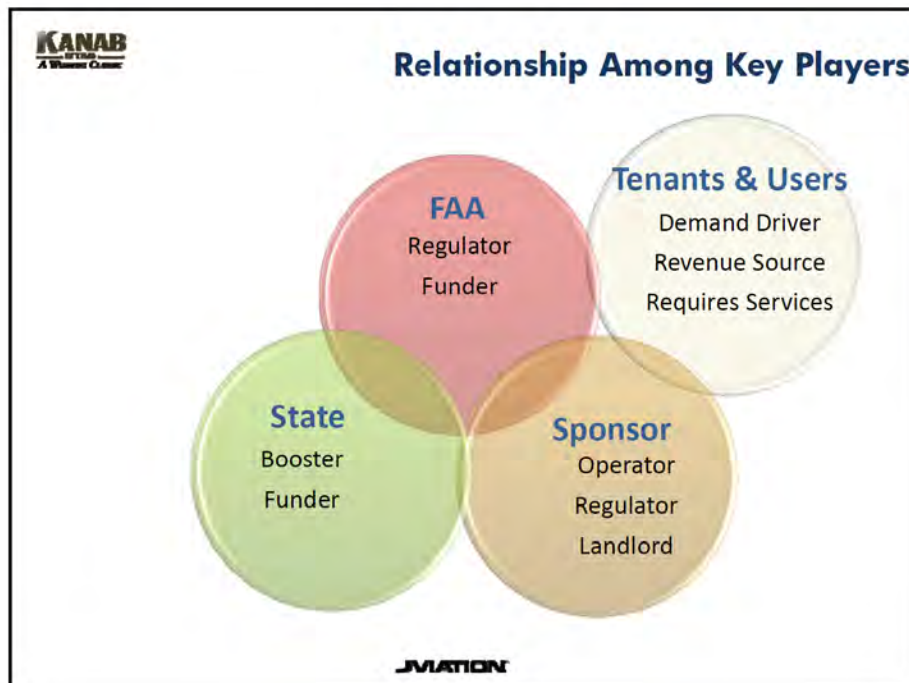
KANAB
UTAH
A Winner's Circle

Airport Master Plan

Key Relationships & Roles



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Airport Master Plan

CHAPTER 1 - INVENTORY

1. Collect & Review Existing Documentation
2. Airport Overview - Introduction
3. Acquire Aerial Imagery and Base Mapping
4. Assess Existing Airport Facilities
5. Environmental Conditions
6. Zoning & Land Use Plans
7. Airport Financial Condition



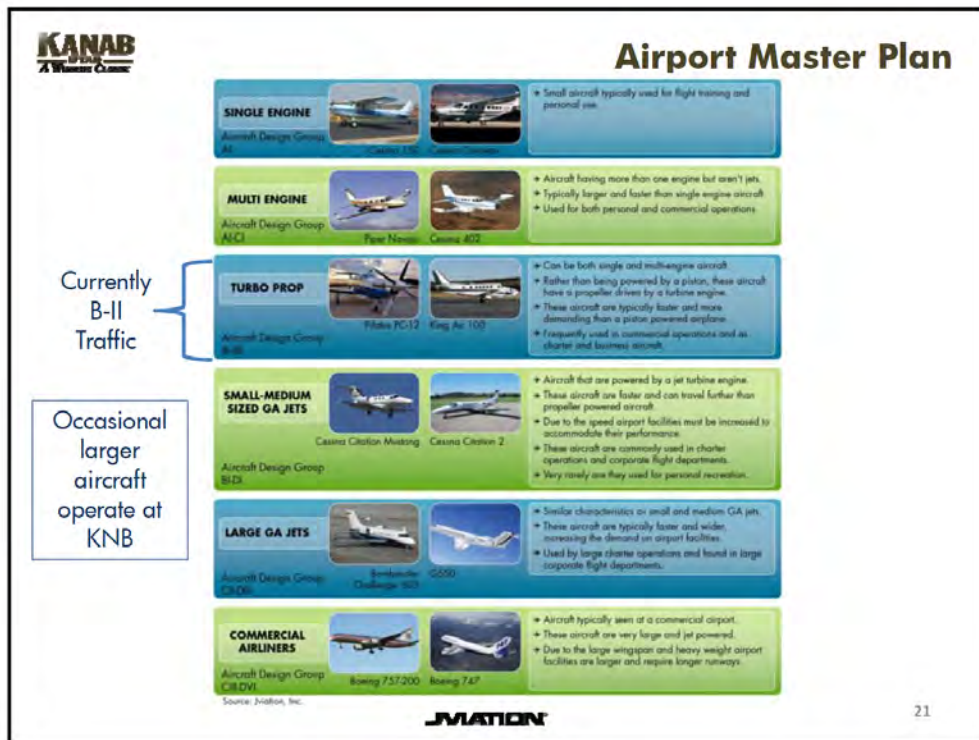
19

INVENTORY SUMMARY & CONCLUSIONS

- KNB meets FAA design standards for GA & small corp. jets
- Current traffic is predominantly piston & small corporate aircraft
- Airfield capacity exceeds demand
- KNB accommodates variety of GA & corporate aircraft
- Runway 1-19 Length (6,193') adequate for type of aircraft

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Kanab Municipal Airport Master Plan



INVENTORY SUMMARY & CONCLUSIONS



- KNB Meets FAA Design Standards for GA & small corp. jets
- Current Traffic is predominantly pistons & small corp. A/C
- Airfield Capacity Exceeds Demand
- KNB Accommodates Variety of GA & Corporate Aircraft
- Runway 1-19 Length (6,193') Adequate

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Kanab Municipal Airport Master Plan



Airport Master Plan

FAA Airport Design Standards

Item	Existing KNB	B-II
Runway :		
Length	6,193'	As Needed
Width	75'	100'
Runway Safety Area (RSA):		
Length	300'	300'
Width	150'	150'
Runway Object Free Area:		
Length	300'	300'
Width	500'	500'
Runway Protection Zone:		
Length	1,000'	1,700'
Width (I + O)	500' x 700'	1,000' x 1,510'
Runway Centerline To:		
Parallel Taxiway	N.A.	240'
Aircraft Parking	475'	250'
Taxiway Centerline To:		
Aircraft Parking	N.A.	65.5'

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23



Airport Master Plan

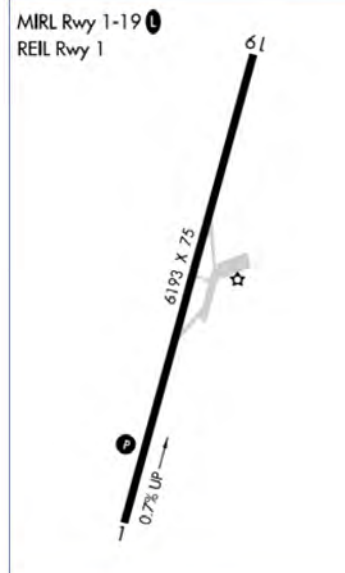
KNB Airport Activity vs. Capacity

	2015 KNB Operations	KNB Operational Capacity
Annual Operations	3,140	230,000
Peak Hour Activity:		
Visual (VFR) Ops	4	98
Instrument (IFR) Ops	2	54

Sources:
FAA Terminal Area Forecast (TAF)
FAA Advisory Circular 150/5060-2

KNB Condition

Facility	Condition
Runway 1-19	Fair
Aircraft Apron	Excellent
Terminal Building	New



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INVENTORY SUMMARY & CONCLUSIONS

→ Few operational or airport facility constraints to
General Aviation or Corporate/Business Aircraft
operating at KNB

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Airport Master Plan

Existing Documentation

1. KNB Airport Master Plan, 2002/2004
2. Airfield Improvements: Plans & Grant Awards
3. FAA Airport Master Record, Form 5010
4. FAA Terminal Area Forecast (TAF)
5. FAA Terminal Instrument Procedure Charts
6. State Aviation System Plan, UDOT
7. Kane & Coconino County Demographic Data
8. Kane & Coconino County Land Use Data
9. Sensitive Species Habitat Management Plan



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Airport Master Plan

New Mapping

1. Airports Geographic Information Systems (AGIS)

- Required by FAA
- Stringent Quality Standards
- Primarily to analyze Instrument Approaches
- Mapping completed & uploaded to FAA



2. Airport Layout Plan (ALP)

- Airspace Analysis
- Mapping completed



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KNB Airport Role

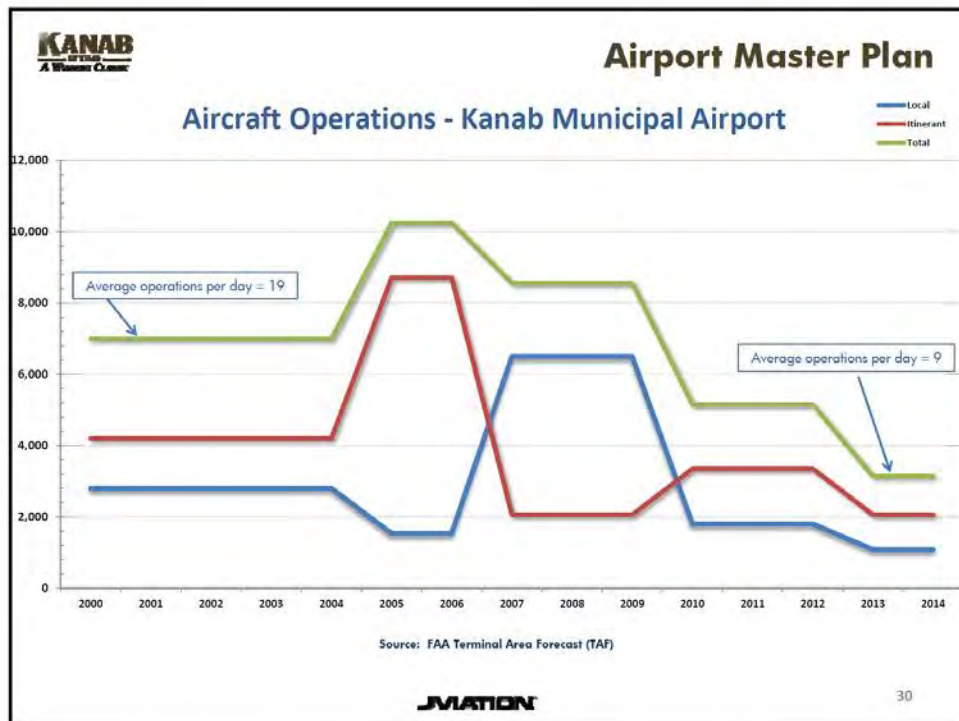
Utah Continuous Airport System Plan 2007

Regional Airports				
Bountiful	Skypark	BTF	Regional	GA non-NPIAS
Brigham City	Brigham City Municipal	BMC	Regional	GA
Cedar City	Cedar City Regional	CDC	Regional	CM
Heber	Heber City Municipal	36U	Regional	GA
Hurricane	Hurricane	1L8	Regional	GA non-NPIAS
Kanab	Kanab Municipal	KNB	Regional	GA

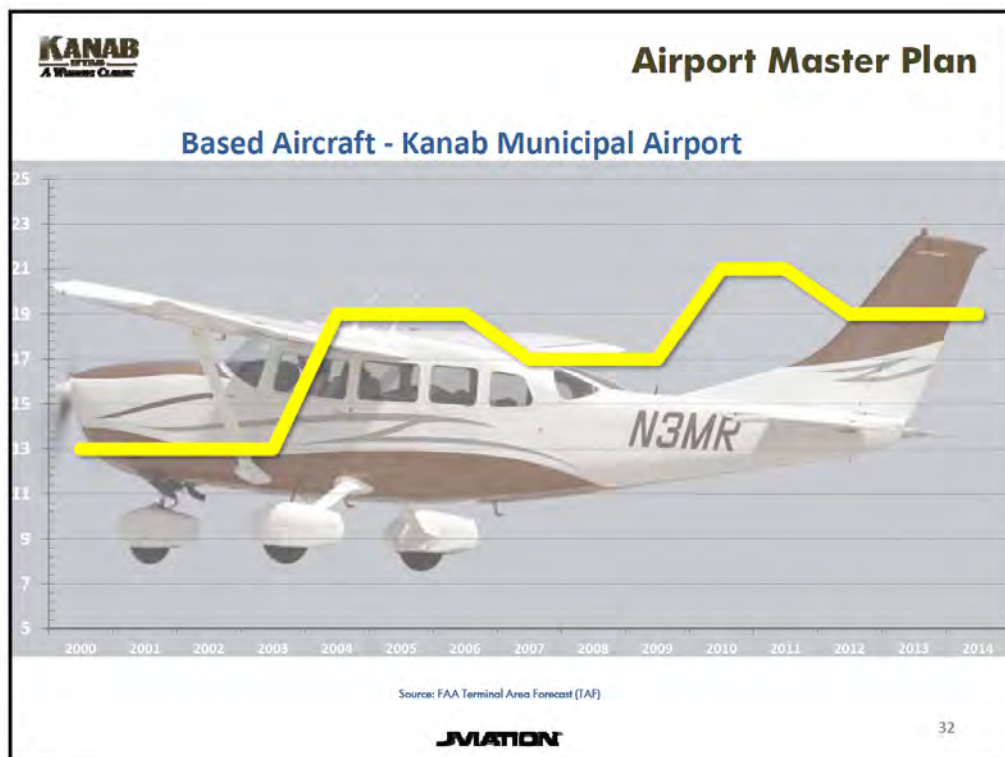
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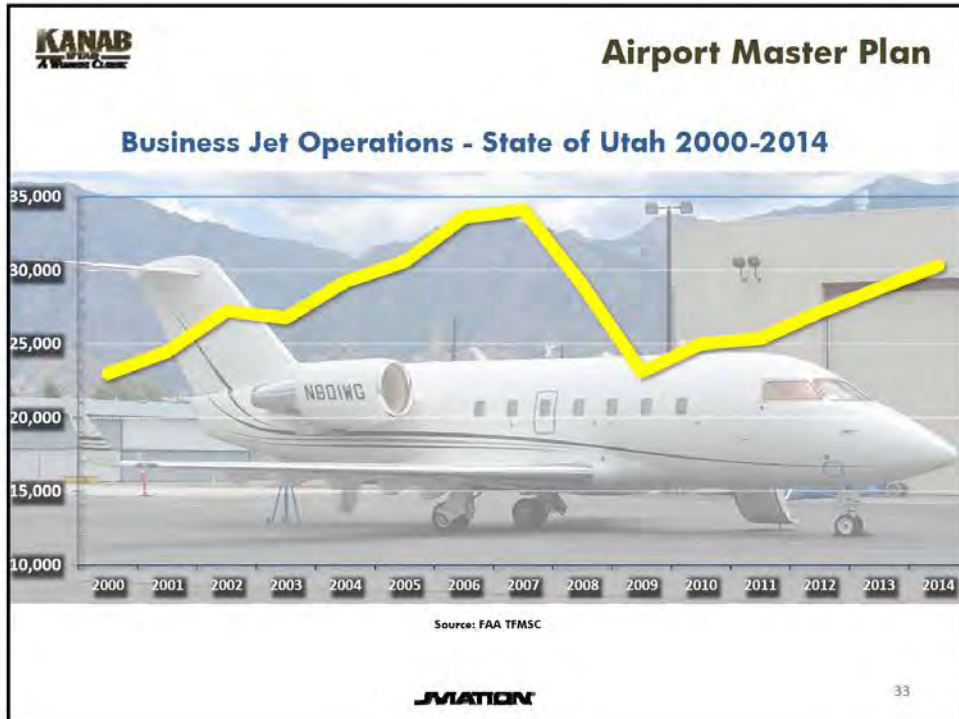
Kanab Municipal Airport Master Plan

Airport Improvement Projects			
Year	Source	Project	Amount
2014	FAA	AIP-12 Security Fencing	\$418,773
2013	UDOT	Airport Pavement Maintenance (Crack Seal & Paint)	\$106,690
2012	FAA	AIP-11 - Replace Rotating Beacon and Record of Survey	\$86,283
2010	FAA	UDOT & AIP-09/10 - Apron Rehabilitation	\$1,051,292
2007	FAA	AIP-08 - Rehabilitate Runway Lighting & Signing	\$389,312
2006	UDOT	Airport Pavement Maintenance (Apron Crack Seal & Paint)	\$26,631
2005	FAA	AIP-07 - Runway Overlay	\$480,585
2003	FAA	AIP-06 - Rehabilitate Runway 1/19 and Lengthen to 6,200'	\$1,792,302
2002	FAA	AIP-05 - AWOS III Installation & Airport Layout Plan Update	\$150,475



Kanab Municipal Airport Master Plan





KANAB
A World Class Airport

Airport Master Plan

KNB Jet & Turboprop Operations 2000-2014

Calendar Year	Corp. Jet	Turboprops
2009	8	56
2010	30	64
2011	24	14
2012	12	22
2013	30	26
2014	26	26
2015 (YTD Jan. 1 – Sept. 30)	28	22

Source: GCR, Inc

Note: Operations = takeoffs & landings

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Types of Corporate Aircraft at KNB



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Kanab Municipal Airport Master Plan



Airport Master Plan

Aviation Fuel Prices within 55 miles of KNB

Airport / FBO		Sept./Oct. 2015		100LL (per gallon)		Jet A (per gallon)	
KNB	Kanab Municipal Airport	SS		\$5.09		FS	\$4.85
	City						
AZC	Colorado City Municipal Airport, AZ (23 miles)	FS		\$6.25		FS	\$6.25
	Escalade air						
118	Gen. Stout Airport, Hurricane, UT (38 miles)	SS		\$5.05		SS	\$4.29
	Airport Quick Stop						
BCE	Bryce Canyon Airport, UT (46 miles)	FS		\$5.30		FS	\$4.30
	Bryce Canyon Airport						
SGU	St. George Municipal Airport, UT (52 miles)	FS		\$5.49		FS	\$5.09
	Above View Jet Center	SS		\$5.09			
CDC	Cedar City Regional Airport, UT (49 miles)	FS		\$5.69		FS	\$5.26
	Sphere One Aviation	SS		\$4.99			
PGA	Page Municipal Airport, UT (52 miles)	FS		\$5.08		FS	\$4.55
	Classic Aviation/Lake Powell Jet Center/American Aviation						
119	Parowan Airport, UT (53 miles)	FS		\$5.22		PS	\$4.91
	Parowan Aero Services						

Source: Airmav.com

FS = Full Service
SS = Self Service



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KANAB
A VETERAN'S AIRPORT

Airport Master Plan

Possible Reasons for Fluctuating Activity at KNB

1. Rising cost of new airplanes & parts (2x rate of inflation)
2. Fluctuating fuel prices
3. Declining military pilots + more stringent airline standards
4. Limited growth in regional disposable income
5. GA pilots average age higher than general pop. & rising
6. Number of private pilots declined 24% 1999-2011
7. No flight training at KNB - shortage of flight instructors

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38

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38



Airport Master Plan

Kanab Demographics

- Utah State Governor's Office project the community's growth at 1.7% per year.
- Population = 6,209 by the year 2030.
- Median age of the city's population = 41.8 years
- Median household income = \$50,265.
- Total households numbered at 1,729 (2.44 average persons per household)

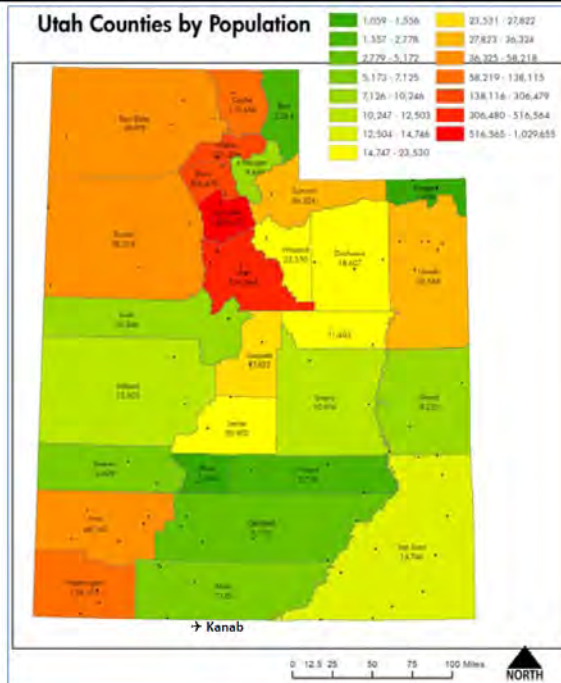
Source: Kanab General Plan



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Utah Counties by Population

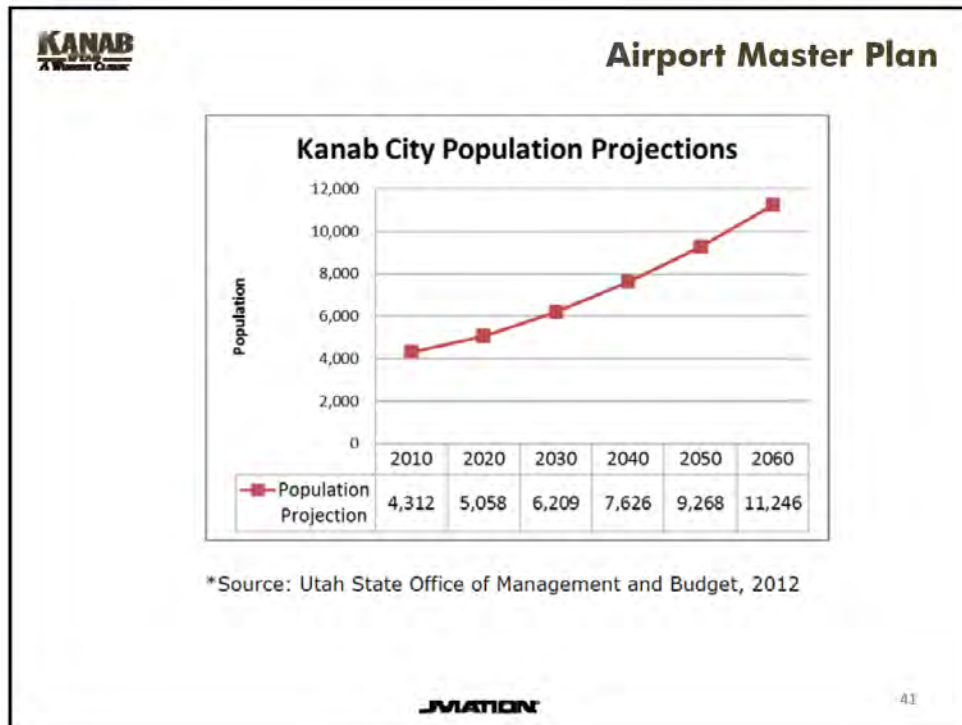


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Kanab Municipal Airport Master Plan



KANAB
A World Class

Airport Master Plan

Kanab Employment

Industry	Percent Employment
Education, Health, Social Services	16.1%
Arts, entertainment, recreation, accommodation	14.1%
Retail Trade	11.4%
Other Services	10.7%
Transportation & warehousing, utilities	8.6%
Public administration	8.3%
Construction	8.1%

Source: Kanab General Plan

DRAFT 9/22/2015

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Airport Master Plan

Factors Impacting Aviation Activity at KNB

- Rural County – low population density
- No Fixed Base Operator (FBO)
- No flight school
- Cost of flying relatively high – requires discretionary income
- Low levels of business-related flying



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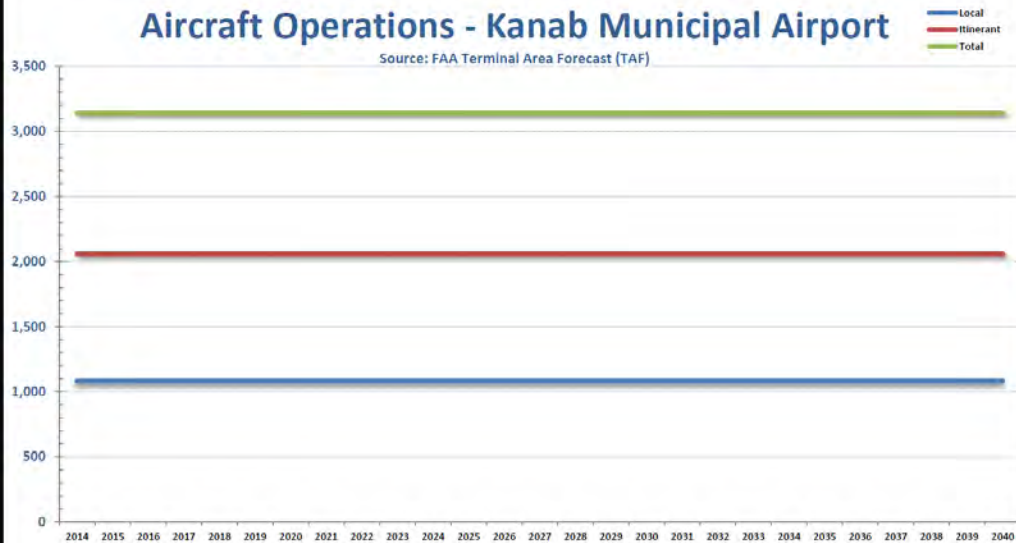
43



Airport Master Plan

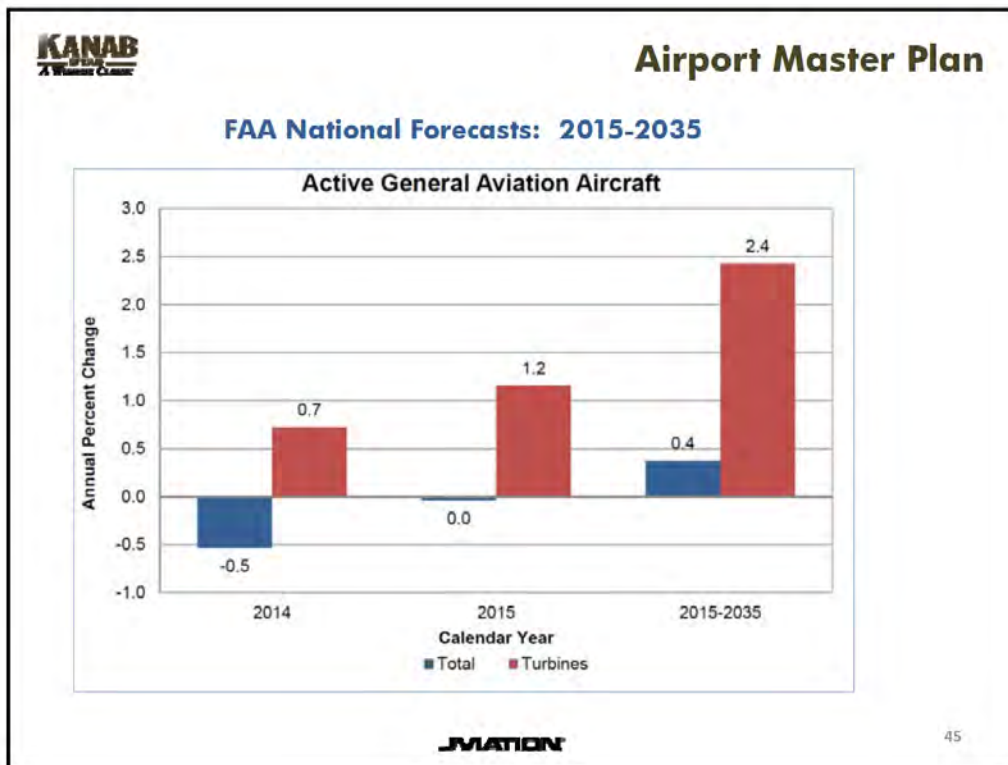
Aircraft Operations - Kanab Municipal Airport

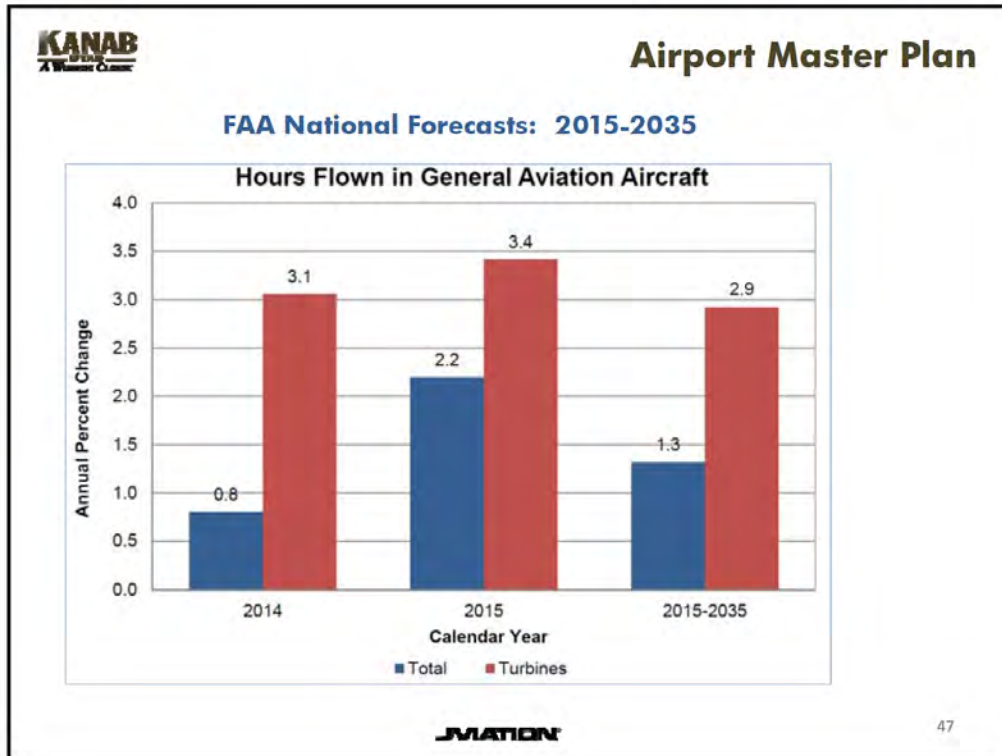
Source: FAA Terminal Area Forecast (TAF)



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Airport Master Plan

KNB SWOT ANALYSIS

Strengths	Weaknesses
- Excellent airfield facilities - Good instrument approach - New terminal building - Pro-active Sponsor	- No terminal weather forecast – impacts commercial operations - Lack of low altitude radar coverage
Opportunities	Threats
- Attract additional corporate traffic - Potential non-aviation uses	- Regional economy impacted by tourism – affected by gas prices, disposable income, employment - Shrinking piston GA airplane market - Aging & declining pilot population - Rising cost of airplanes & parts - Future of Avgas


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**KANAB CITY COUNCIL MEETING
FEBRUARY 23, 2016
KANE COUNTY COMMISSION CHAMBERS**

PRESENT: Mayor Robert D. Houston, Council Members Byard Kershaw, Jeff Yates, Brent Chamberlain and Joe B. Wright, Recorder Joe Decker, Attorney Jeff Stott and Treasurer RaeLene Johnson. Council Member Michael East excused.

WORK MEETING: Presentation from Jviation on the Airport Master Plan update. Mr. Samuel Roth and Hilary Fletcher with Jviation addressed the Council. The inventory results, the aviation activity, the forecasts scenarios, and future development were presented. The airport meets all FAA design standards. There is adequate runway length for the current small jet traffic. There is significant capacity for additional traffic. The FAA requires the master plan be changed every 10 years. The facility can handle a 1.7% growth. The Master Plan Draft Working Paper No. 1 is on file in the City Office.

Joe Decker presented the City's financial update. He said that the trending is 5% over what it was last year. Financially the City is doing well.

Prayer was offered by Joe B. Wright and the pledge was led by Jeff Yates.

Mayor Houston called the business meeting to order and roll call was taken.

APPROVAL OF AGENDA: A motion was made by Council Member Wright and 2nd by Council Member Chamberlain to approve the agenda for February 23, 2016. Motion passed unanimously. Council Member East absent.

APPROVAL OF MINUTES: A motion was made by Council Member Kershaw and 2nd by Council Member Yates to approve the minutes of January 26th with changes as discussed. Motion passed unanimously. Council Member East absent.

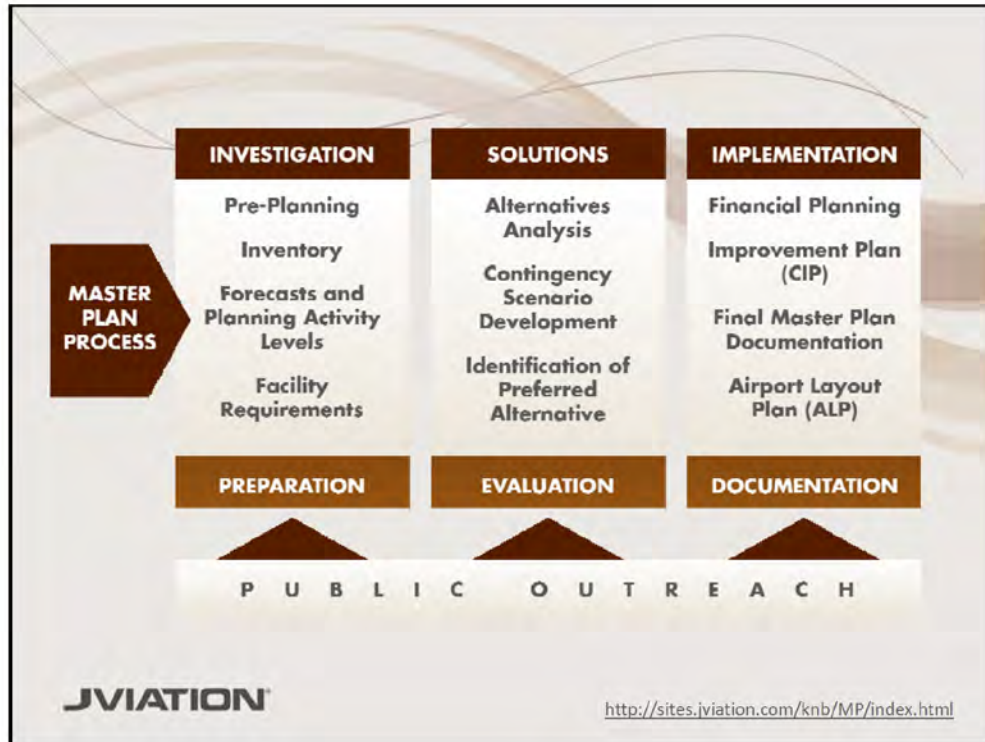
APPROVAL OF VOUCHERS: A motion was made by Council Member Wright and 2nd by Council Member Chamberlain to approve the vouchers and check register dated February 23rd in the amount of \$272,839.54. Motion passed unanimously. Council Member East absent.

PUBLIC COMMENT PERIOD: Grant Ramsay addressed the Council and expressed how impressive and outstanding the Balloon Festival was. He said he wasn't sure who was in charge of the event, but he wanted to thank everyone, the City, the County and everyone involved. Mr. Jeff Frey also expressed that the Balloon Festival was a great event. It brought a lot of people

Kanab Municipal Airport
Master Plan



Kanab Municipal Airport
Master Plan



KNB Airport Layout Plan

- KNB Meets FAA Design Standards for GA & Corporate Jets
- Current traffic is predominantly pistons & small corporate aircraft
- Airfield Capacity Exceeds Demand
- Runway 1-19 Length (6,193') Adequate

JVIATION
<http://sites.jviation.com/knb/MP/index.html>

Kanab Municipal Airport
Master Plan

KNB Airport Terminal Area Plan



JVIATION

<http://sites.jviation.com/knb/MP/index.html>

KNB Flight Activity

Kanab Municipal Airport (KNB)
100 Flight Map
January 2014 - December 2014



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<http://sites.jviation.com/knb/MP/index.html>

Types of Corporate Aircraft at KNB



Data indicates that there were approximately 26 operations by business jets and turboprops in CY 2014 at KNB

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KNB Operators

- Raging River Management
- Flax Services Corp.
- Keeton Riemen Schneider LLC
- Southern California Piper
- Mango Air Inc.
- Management Company Holdings
- RR and D Partnership
- Empire LLC
- Aero Film
- Smithfield Foods
- Strongwell Corp.
- Whiskey Tango LLC
- M&J Leisure
- McCoy Corporation
- DBS Air
- AVN Air
- GBB LLC
- Tenax Aviation Services LLC
- Metair LLC
- CTE II LLC
- HFP LLC
- Arizona Department of Safety



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Kanab Municipal Airport
Master Plan

Aircraft Operations 2000-2014



Source: FAA Terminal Area Forecast

JVIATION

<http://sites.jviation.com/knb/MP/index.html>

Aircraft Movements June-December 2015



- 16 Based Aircraft (includes 1 helicopter)
- Fuel sales in FY 2016 are double compared to FY 2015

Source: KNB Airport Management

JVIATION

<http://sites.jviation.com/knb/MP/index.html>

Master Plan Forecast Scenarios*

- Scenario 1 – High Growth (+1.7%)
- Scenario 2 – Status Quo (0%)
- Scenario 3 – Low Growth/Decline (-0.5%)

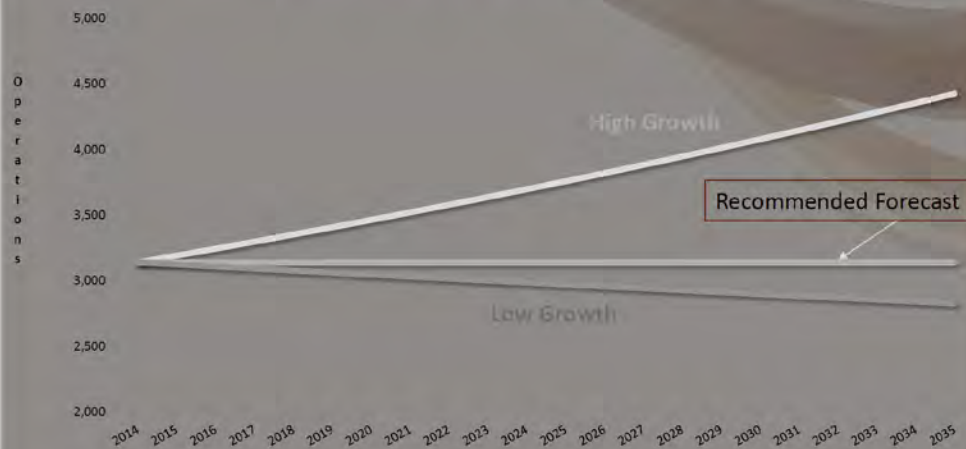


*CAGR – Compounded Annual Growth Rate

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<http://sites.jviation.com/knb/MP/index.html>

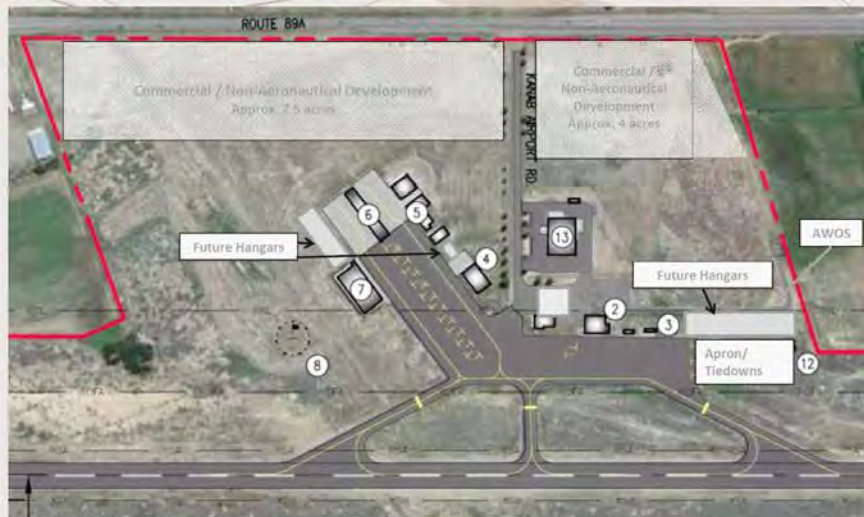
KNB Aircraft Operations Forecast Scenarios



JVIATION

<http://sites.jviation.com/knb/MP/index.html>

Potential KNB Terminal Layout



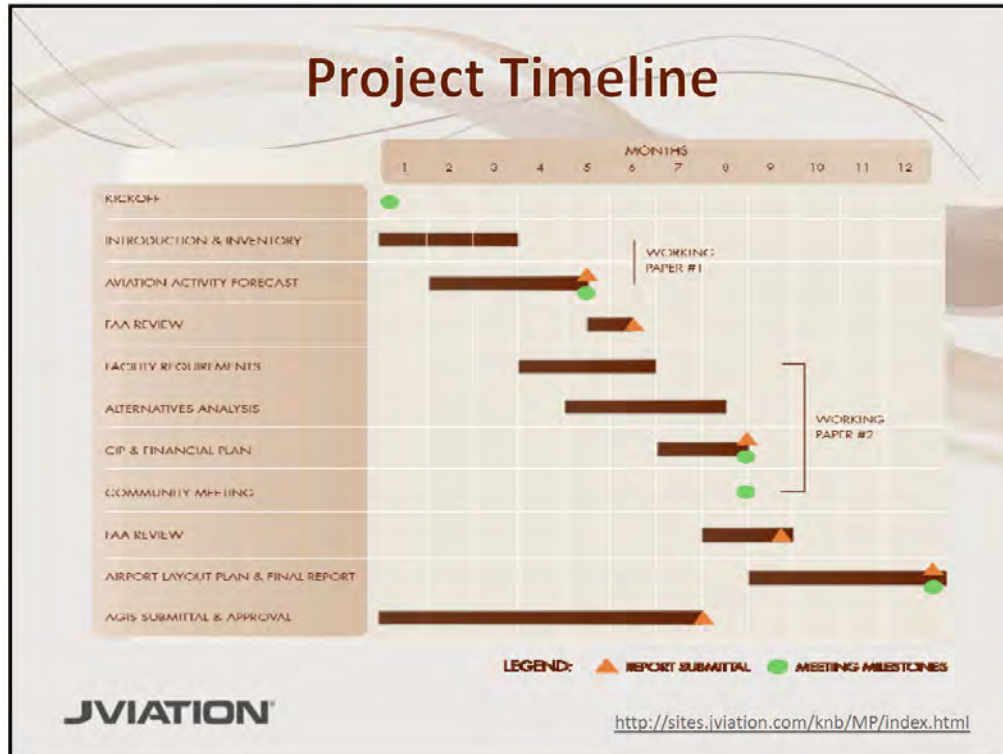
<http://sites.jviation.com/knb/MP/index.html>

Future Aeronautical Development

- Only as demand warrants
- Hangars = private investment
- Full parallel taxiway enhances safety – not needed for capacity or delays
- Request FAA:
 - ✓ Prepare terminal weather forecasts
 - ✓ Install remote communications outlet (RCO)

JVIATION

<http://sites.jviation.com/knb/MP/index.html>



Next Steps

- ✓ Complete Airport facility requirements & alternatives analysis
- ✓ Examine non-aeronautical development options
- ✓ Prepare Airport Layout Plan (ALP) drawing set
- ✓ Update Capital Improvement Plan (CIP)
- ✓ Prepare Reuse, Recycle, and Waste Management Plan
- ✓ Review of Leases & Minimum Standards



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<http://sites.jviation.com/knb/MP/index.html>

Questions and Comments



Samuel Roth, Jviation Project Director

samuel.roth@jviation.com

Steve Berardo, Jviation Project Manager

steve.berardo@jviation.com

Hilary Fletcher, Jviation Deputy Project Manager

hilary.fletcher@jviation.com

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Southern Utah News
March 3, 2016

Kanab City Council awards airport terminal building project to RBI Contracting of Kanab

At the February 23 Kanab City Council meeting, Hilary Fletcher, of the firm, Jviation, updated the council on the Kanab Municipal Airport Master Plan. Fletcher stated that the airport's 6189 foot long runway could accommodate aircraft with a wingspan of 115 feet, which includes medium sized jets and turbo-prop airplanes like the Gulfstream 650.

Presently there are 16 planes and one helicopter based at the airport. But the small segment aircraft operations (an operation is a take-off or landing) are not growing significantly, and have declined to about one third the level of the 2006 peak of nearly 10,000. That amount was largely due to a Kanab-based commercial air tour operation.

However, operations by business affiliated planes have been increasing, and with increased tourism, the development of a convention center, and the impact of Best Friends Animal Sanctuary on visitation to Kanab, the council felt a high growth rate of 1.7 percent would better reflect the airport's potential, than the status quo growth rate of about 3,000 operations per year predicted by the Federal Aviation Administration (FAA).

Fletcher stated the FAA focuses on hard data and not the idea of "if they build it, they will come" philosophy. She also pointed out that planning for additional airplane hangers should be undertaken in the near future. Development of commercial space in the southeast corner of the airport grounds should also be considered at some time, although she warned any buildings there must be leased at fair market value.

RBI Contracting (Ray Brothers), out of Kanab, was awarded the contract to construct the new Kanab Airport terminal building with a bid of \$348,619, which was \$20,000 under five other bidders. The city would like the new terminal operational by October 1, to accommodate the Remote Control Fly-in scheduled for that weekend.

The council also approved an agreement with AVFUEL to supply aviation grade fuel to the airport. According to Airport Manager Jeff Turner, the previous supplier's fuel had the de-icing component added by the transport company, which produced a mixed level of de-icer in the fuel mixture shipments. AVFUEL will mix in the de-icer at their plant before shipping to assure adequate levels in the fuel. They will also sell this fuel to Kanab at a lower price and with cheaper transportation costs from Phoenix.

Turner also reported the city purchased a newer fuel truck, which had recently been inspected and certified for the price of \$3,000, from the Moab Airport. He said the previous truck had well over that amount in maintenance requirements to be done, plus the tank was 30 years older than the 1998 tank on the new truck. The 2800-gallon fuel truck is used to fuel jets on the runway. A new 10,000-gallon fixed tank is in the works to replace the current 5,000-gallon tank and allow the airport to purchase more fuel at a time, further lowering the cost.

Kanab Municipal Airport
Master Plan

City Manager Joe Decker scored a significant savings to the city by working through Utah State Contracting to purchase a new John Deere 544K front endloader through Honnen Equipment of St. George. The deal specifies a price of \$126,561, and allows the city to sell the loader back to Honnen at the end of one year for \$149,000. It allows for 300 hours of operation, with any time over that billed at \$30 per hour. Decker said he reviewed this deal several times before he could believe it. Utah State Contracting works directly with John Deere and offers some great deals to municipalities.

The council approved a \$196,146 road project along 100 South from 100 East (Hwy 89) to 200 East to include curb and gutter on both sides of the street and a sidewalk along the south side. This project correlates with the Hampton Inn frontage on 100 South, who will contribute to the cost. It will also serve to channel storm water run-off to the drains along the highway. Ramsay's indicated they will repave their parking lot along 100 South. Homeowners along the 100 South block are being asked to fund half the cost of the curb and gutter portion of the project at the rate of \$9.50 per linear foot of street frontage, averaging \$2800 per residence. The city's portion would be funded by Class C state road funds and city impact fees.

Kanab Municipal Airport
Master Plan

Mayor

Robert Houston

City Manager

Joseph Decker

Treasurer

RaeLene Johnson



KANAB
— UTAH —

City Council

Brent Chamberlain

Joe B. Wright

Jeff Yates

Michael East

Byard Kershaw

KANAB CITY COUNCIL

July 12th, 2016

76 NORTH MAIN, KANAB, UTAH

NOTICE is hereby given that the Kanab City Council will hold its regular council meeting on the 12th day of July, 2016, in the Commission Chambers at the Kanab City Court House, 76 North Main, Kanab, Utah. The Council Meeting will convene at 6:30 p.m., and the agenda will be as follows:

6:30 P.M. Work Meeting

- Update on the Airport Master plan from Jviation
- Presentation from Kristen Lavelett on Buy Local First

Business Meeting

1. Call to Order and Roll Call
2. Approval of Agenda
3. Approval of minutes of previous meeting
4. Approval of Accounts payable vouchers
5. Public Comment Period – Members of the public are invited to address the Council. Participants are asked keep their comments to 3 minutes and follow rules of civility outlined in Kanab Ordinance 3-601
6. Closed Session:
 - Discuss the purchase, exchange, or lease of real property
 - Discuss the character, professional competence, or physical or mental health of an individual.
 - Discuss pending or reasonably imminent litigation.

Times listed for each item on the agenda may be accelerated as time permits. If you are planning to attend this public meeting and due to a disability need assistance in understanding or participating in the meeting, please notify the City eight or more hours in advance of the meeting, and we will try to provide whatever assistance may be required. Please contact RaeLene Johnson at the Kanab City offices.

— A Western Classic —

76 North Main No. 14 • Kanab, Utah 84741 • Phone 435-644-2534 • Fax 435-644-2536 • www.kanab.utah.gov

**KANAB CITY COUNCIL MEETING
JULY 12, 2016
KANE COUNTY COMMISSION CHAMBERS**

PRESENT: Mayor Robert D. Houston, Council Members Byard Kershaw, Michael East, Jeff Yates, Brent Chamberlain and Joe B. Wright, Recorder Joe Decker, Attorney Rob VanDyke and Treasurer RaeLene Johnson. Attorney Jeff Stott excused.

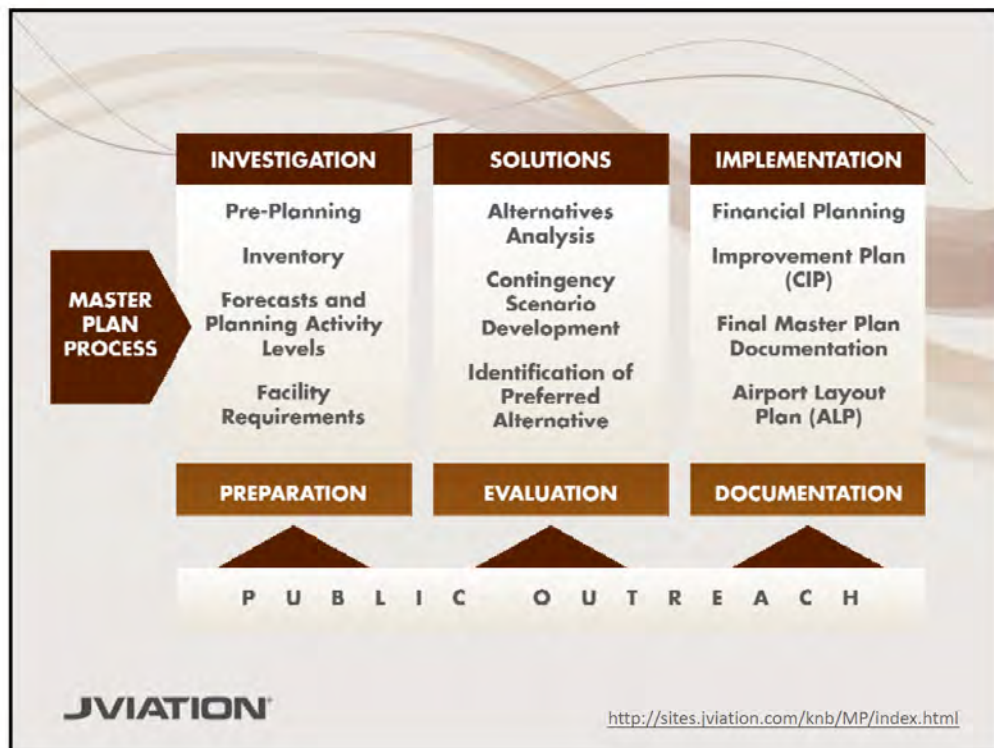
WORK MEETING: Jviation presented an update on the Airport Master Plan to the Council. Samuel Fletcher and Hillary Roth presented a power point, and discussed about the alternatives and financial planning on the Master Plan. Ms Roth reminded the Council that they had approved Scenario #1 (growth rate +1.7%). The current traffic at the airport is predominately piston and small aircraft. The airfield capacity exceeds the demand, and the runway has adequate protection zones. Mr. Fletcher went over the recommendations for improvements within the next 20-years. Near the end of the 20 years, there will need to be a full parallel taxiway which is a safety improvement. Study the feasibility of a PAPI (precision approach path indicator) on Runway 19 and coordinate with the FAA. Utilize space adjacent to existing hangars for future hangar development. Purchase snow removal equipment and build a building to store equipment. Install remote communications outlet. Lease land for non-aeronautical development. Jviation will be back in October to finalize the Master Plan and sign the resolution.

Ms Kristen Lavelett addressed the Council concerning “Buy Local First”. Local First Utah is a non-profit organization with the mission to empower a movement to recognize the value of locally owned, independent businesses to our economy and community. They are the backbone of any community. Some of the reasons for shopping locally are you create more jobs, keep your tax dollars local, embrace the character of your community, keep American dreams alive and make Kanab a destination area. Ms Lavelett encouraged the community to shift their spending. The campaign launches annually for citizens to shift their holiday spending by just 10% and buy locally. Businesses that join “Buy Local First” will be included on an online directory and are authorized to use the Local First Utah brand, and an online toolkit to strengthen their businesses. The Council agreed to support the Local First Utah organization.

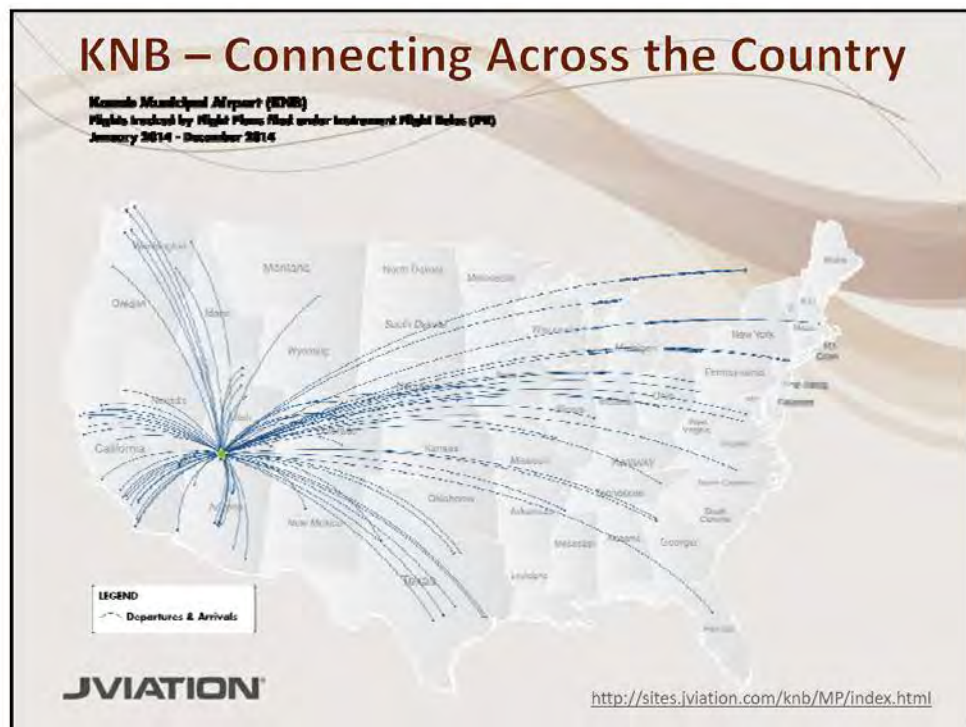
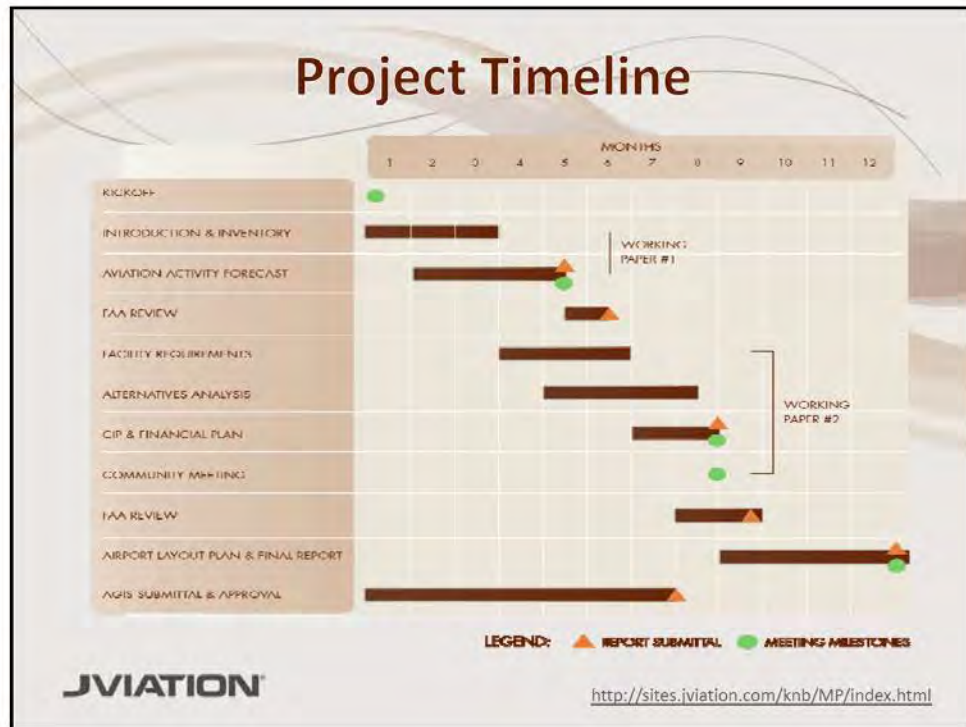
Prayer was offered by Council Member Chamberlain and pledge was led by Mayor Houston. Mayor called the regularly scheduled meeting to order and roll call was taken.

APPROVAL OF AGENDA: A motion was made by Council Member Wright and 2nd by Council Member Chamberlain to approve the agenda for the July 12th meeting. Motion passed unanimously.

Kanab Municipal Airport
Master Plan



Kanab Municipal Airport Master Plan



KNB Operators

- Raging River Management
- Flax Services Corp.
- Keeton Riemen Schneider LLC
- Southern California Piper
- Mango Air Inc.
- Management Company Holdings
- RR and D Partnership
- Empire LLC
- Aero Film
- Smithfield Foods
- Strongwell Corp.
- Whiskey Tango LLC
- M&J Leisure
- McCoy Corporation
- DBS Air
- AVN Air
- GBB LLC
- Tenax Aviation Services LLC
- Metair LLC
- CTE II LLC
- HFP LLC
- Arizona Department of Safety



JVIATION

<http://sites.jviation.com/kanb/MP/index.html>

KNB Aircraft Operations Forecast Scenarios



- Scenario 1 – Growth (+1.7%)
- Scenario 2 – Status Quo (0%)
- Scenario 3 – Decline (-0.5%)

*CAGR – Compounded Annual Growth Rate

JVIATION

<http://sites.jviation.com/kanb/MP/index.html>

Existing Airfield Facilities



- KNB meets FAA Design Standards for general aviation & corporate jets
- Current traffic is predominantly pistons & small corporate aircraft
- Airfield capacity exceeds demand
- Runway 1-19 length (6,193') is adequate

JVIATION

<http://sites.jviation.com/knb/MP/index.html>

Master Plan Recommendations



- **Maintain KNB as FAA airport reference code (ARC) B-II**
 - As future demand increases, an ultimate plan to achieve and maintain C-II status should be developed beyond the current 20-year planning horizon
- **Construct a full parallel taxiway**
 - Safety improvement
- **Evaluate installation of Precision Approach Path Indicator (PAPI) for Runway 19**
- **Install a Remote Communications Outlet (RCO)**
- **Expand T-hangar, in-fill conventional hangar development, and itinerant tie-down**
 - As demand warrants and funded by private investment
- **Purchase snow removal equipment (SRE) and construct SRE storage building**
- **Lease land for non-aeronautical development consistent with FAA guidelines**
- **Keep utility poles and obstruction lights north of the Airport**
 - Based on compliance with FAA obstruction awareness and 14 CFR Part 77 guidelines

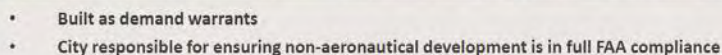
JVIATION

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Proposed Airport Layout Plan Facilities



Proposed Airport Layout Plan Non-Aeronautical Development

**JVIATION®**

<http://sites.jviation.com/knb/MP/index.html>

Kanab Municipal Airport Master Plan

Proposed Airport Layout Plan Airfield



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<http://sites.jviation.com/knb/MP/index.html>

Proposed Capital Improvement Schedule (CIP)

FY	Project Description	Estimated Total Project Cost	Cost Allocation \$					
			Federal Participation	NP Entitlement	State Apportionment/ Discretionary	State Participation	Sponsor Participation	Private Investment
Federally Funded Projects			NO FICA			4.00%	4.00%	
2017	Terminal Renovation	\$185,508		\$185,000	\$185,000		\$7,754	\$7,754
2018	Resurface Runway 4-22	\$4,257,862	\$1,140,000		\$450,000	\$650,000	\$58,981	\$58,981
2019	Basic CA Enhancement	\$0	\$0					
2020	Basic CA Enhancement	\$0	\$0					
2021	New Hangar Development	\$675,000	\$0					\$675,000
2022	Reconstruct Basic Apron	\$283,000	\$254,700	\$254,700		\$0	\$14,150	\$14,150
2023	Basic CA Enhancement	\$0	\$0					
2024	New Hangar Development	\$625,000	\$0					\$625,000
2025	SFR Building	\$100,000	\$100,000	\$100,000		\$0	\$5,000	\$5,000
2026	New Hangar Development	\$645,000	\$0					\$645,000
2027	SFR Equipment	\$775,000	\$775,000	\$775,000		\$0	\$17,500	\$17,500
2028	New Hangar Development	\$675,000	\$0					\$675,000
2029	Construction Administration Agency	\$775,000	\$775,000	\$775,000		\$0	\$17,500	\$17,500
2030	Basic CA Enhancement	\$0	\$0					
2031	Parallel Taxiway	\$4,500,000	\$4,078,350	\$450,000	\$3,028,350		\$210,825	\$210,825
TOTAL		\$9,306,370	\$6,163,050	\$1,844,700	\$4,318,350		\$321,000	\$321,000
State Funded Projects								
2016	Elemental Study & New BRL	\$166,667					\$166,667	\$166,667
2018	Equipment Replacement	\$180,000					\$180,000	\$180,000
TOTAL		\$346,667					\$346,667	\$346,667

* The primary revisions from the current KNB CIP include removal of the projects associated with upgrading KNB from FAA ARC B-II to C-II, and include parallel taxiway development and privately funded future hangar development.

Note: The AWOS is not recommended to be relocated. If the City decides to relocate the AWOS to allow additional development, the cost for the AWOS relocation will need to be included in the CIP.

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<http://sites.jviation.com/knb/MP/index.html>

Next Steps

- ✓ Finalize Airport Layout Plan (ALP)
- ✓ Prepare Reuse, Recycle, and Waste Management Plan
- ✓ Prepare Final Draft Master Plan Report



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<http://sites.jviation.com/knb/MP/index.html>

Open House

**COME AND LEARN MORE ABOUT THE KANAB
AIRPORT MASTER PLAN!**

**TUESDAY, JULY 12TH
4:30PM - 6:00PM**

**KANE COUNTY COMMISSION CHAMBERS
76 N. MAIN ST., KANAB, UT**

JVIATION

KANAB MUNICIPAL
AIRPORT MASTER PLAN

Open House Sign-In Sheet

(Please Print)

Name	Email/Contact Information
Rhonda Grant	rgant@kane.utah.gov
KELLY STOWELL	STOWELL@KANAB.NET
DIRK CLAYSON	DIRKCLAYSON@GMAIL.COM
MARK GOLPY	markgolpy70@gmail.com
RANDY BOSLEY	E-MEOW@XPRESSWEB.COM
CATHY BOSLEY	" " " "

COMMENT CARD

Name (optional): ZELLY STOWELL
Address (optional): 468 E. 300 S. KANAB, UT 84741
Phone (optional): 435 899 0443
Email (optional): STOWELL@KANAB.NET
COMMENTS: Improved accessibility is important to the economy. As the airport is improved the better off we will be in the community. we need to take the next steps in the MASTER PLAN to accomodate more planes and people. Commercial air service would be great as well.

COMMENT CARD

Name (optional): DIRK CLAYSON
Address (optional): _____
Phone (optional): 616-1234
Email (optional): DIRKCLAYSON@GMAIL.COM
COMMENTS: _____
1- FIX THE ENTRANCE AND STREET LANDSCAPING BY REPLACING AND WATERING THE TREES THAT DIED 15 YEARS AGO.
2- LOOK AT ACQUIRING DEVELOPMENT RIGHTS OR FREE SIMPLE TITLE TO LAND NEEDED FOR EXPANSION TO C2. THANKS
3- GREAT TO SEE EFFORT TO IMPROVE + MAINTAIN