DIXON AIRPORT

AIRPORT MASTER PLAN

NOVEMBER 2022

Dixon Airport (DWX) Master Plan

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DIXON, CARBON COUNTY, WYOMING

AIRPORT MASTER PLAN
AIP PROJECT #3-56-0038-017-2019
STATE PROJECT #ADW001A

NOVEMBER 2022

SUBMITTED TO:
FEDERAL AVIATION ADMINISTRATION
DENVER AIRPORTS DISTRICT OFFICE
AND
WYOMING DEPARTMENT OF TRANSPORTATION,
DIVISION OF AERONAUTICS

SUBMITTED BY:

T-O ENGINEERS

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Executive Summary

SECTION OVERVIEW

This Airport Master Plan investigated the Dixon Airport and was completed by T-O Engineers in 2021 on behalf of Carbon County. The previous Airport Master Plan and Airport Layout Plan (ALP) on-record was completed in 2011. This document adheres to all applicable rules, standards, and regulations outlined in the Federal Aviation Administration (FAA) Advisory Circulars (ACs) and orders.

E.S.1 EXECUTIVE SUMMARY

Dixon Airport (DWX or Airport) is a non-towered, general aviation (GA) airport. The Airport has a single runway, Runway 6/24 at a length of 7,000 feet and a width of 75 feet.

As part of this Airport Master Plan, a forecast of future aviation activity was created to project air traffic at the Airport over the next 20 years (2019-2039). Extensive research was conducted to examine current conditions of the Airport, and the aviation system on a local, regional, and national level. Additionally, data from motion-activated cameras was used to estimate a baseline number of annual operations and gave insight into the types of operations occurring at the Airport. Forecast annual operations ultimately ranged from 897 in 2019, the baseline year, to 934 operations in 2039. As of 2019, there were five based aircraft, and is expected to remain five throughout the planning period. The forecast identified the existing and future critical aircraft as the Cessna 525 (Citation CJ4), and the Airport Reference Code (ARC) is B-II.

Extensive public input was sought during the master plan process. Multiple public meetings and workshops were held along with numerous briefings and discussions with the County through board meetings. See Appendix A for a record of public involvement.

The Airport meets all ARC B-II FAA runway design requirements; however, it is deficient for some taxiway design criteria including runway centerline to taxilane centerline distance, runway centerline to aircraft parking distance, and separation of taxiway centerline to a fixed or movable object. Aside from FAA design standards, the master plan identified the existing apron and hangar facilities to be adequate for the demand, and the terminal, although dated, to also be adequate for the demand.

The 2016 Wyoming State Aviation System Plan (2016 WYSASP), the most current version at the time of this report, identified some system objectives where DWX was deficient. Airport system goal deficiencies include: the lack of a full perimeter wildlife fence (project programmed for 2022), adding a broom as part of SRE (project requested 2036), 24 hour WiFi, land use and airspace protection plan, and air show/fly-ins/public events. Additional suggested system plan objectives where the Airport was found deficient include a fixed base operator, courtesy car, public restrooms, flight training, aircraft rental, aircraft charter services, and fee and title ownership for all runway protection zones.

E.S.2 MASTER PLAN DOCUMENT OUTLINE

This document opens with an introduction to airport master plans which provided general concepts and topics that are central to the United States aviation system. This information provides an introductory foundation of knowledge to understand and interpret the remainder of this Master Plan. Topics such as the Airport Improvement Program (AIP), benefits of airports, types of pilot certificates, the Airport Master Plan Process, FAA design standards, ARC, critical aircraft, and airspace, are introduced.

Chapter 2. Socioeconomic Overview and Background provides a general depiction of Dixon Airport, and the surrounding area including the Town of Dixon, Carbon County, and the State of Wyoming. This is accompanied by a broad description of the airport's history, location, economic impact, socioeconomic indicators, and demographic characteristics. This data is later applied to the forecast of aviation demand in Chapter 4.

Chapter 3. Airside and Landside Inventory details the physical environment, such as soils, climate, and terrain of DWX. Land use and zoning are identified around the airport, and a detailed wind analysis is completed using data recorded on the airport. All major airport components, structures, vehicles, and pavements, are recorded along with their general condition.

Chapter 4. Forecast of Aviation Demand provides a forecast of future aviation demand at the Airport over a 20 year planning period (2019-2039). These projections are critical for airport planning and development. Forecasts are based on an assortment of data sources, including motion activated cameras to capture actual operations occurring at the Airport. The existing and future critical aircraft as the Cessna 525 (Citation CJ4), and the Airport Reference Code (ARC) is B-II.

Chapter 5. Facility Requirements describes the facilities required to safely accommodate the aircraft traffic forecasted at DWX, and outlines any deficiencies to FAA standards, and state system goals.

Chapter 6. Development Alternatives and Evaluation identifies and evaluates different alternatives to meet the needs of the Airport Sponsor and users. A key element of this step involves addressing the previously identified facility requirements and deficiencies. All proposed development options must meet or exceed the applicable FAA design standards and recommendations.

Chapter 7. Environmental Overview explores the potential impacts resulting from the proposed capital improvements at DWX. The purpose of considering environmental factors in airport master planning is to help the Sponsor assess potential development alternatives and to provide information that will help expedite future environmental processes. Information in this chapter is compiled from several sources, notably multiple governmental agencies. Environmental reviews look at several impact categories as defined by the National Environmental Policy Act (NEPA). These impact categories are briefly described as they relate to DWX. Potential impacts and appropriate mitigation measures are summarized in the conclusion of this chapter.

Chapter 8. Airport Layout Plan describes each sheet included in the final Airport Layout Plan (ALP). A key product of an Airport Master Plan is this detailed drawing set, which is intended to provide locations of the major components of an airport. The ALP provides a blueprint for future airport development and ensures that development meets airport standards and safety requirements.

Chapter 9. Facilities Implementation and Financial Feasibility reviews planned capital projects for DWX, in conjunction with the FAA Airport Capital Improvement Plan and the Wyoming Department of Transportation, Aeronautics Division (WYDOT Aeronautics). The facilities implementation plan guides how to implement the findings and recommendations of this planning effort. Projects are organized by phases with Phase I (Short Term) in the 1-5 year timeframe, Phase II (Mid Term) in the 6-10 year timeframe, and Phase III (Long Term) in the 11-20 year timeframe. The potential revenues and expenses of the airport are also described to illustrate the financial feasibility and commitment of the upcoming projects for the Airport Sponsor.

Chapter 10. Planning for Compliance provides a brief overview of the FAA Airport Compliance Manual, Order 5190.6B. The manual guides interpreting and administering the various commitments Airport Sponsors make to the U.S. government when they accept grants of federal funds or federal property for airport purposes. The FAA considers all federal airport obligations important; however, the most important objective in the FAA's oversight of the compliance program is to ensure and preserve safety at all federally obligated airports.

E.S.3 SUMMARY

Overall, Dixon Airport effectively serves the needs of the surrounding community. Carbon County has demonstrated a commitment to the Airport as an asset to the community through continued financial support. Various areas of need were identified during this Master Plan process and are detailed throughout this document. Future development projects should be weighed against need, benefit, and incoming revenue, as well as potential funding support from the FAA and WYDOT Aeronautics. In addition to the planned development projects, pavement maintenance and general upkeep is critical for every airport.

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1. Airports and Master Plans Introduction

SECTION OVERVIEW

Chapter 1. Airports and Master Plans Introduction provides general concepts and topics that are central to the United States aviation system. This information provides an introductory foundation of knowledge to understand and interpret the remainder of this Master Plan.

1.1 HISTORICAL CONTEXT

Aviation has been embedded in the United States for more than a hundred years, starting with the Wright brothers' famous 1903 Flight in Kitty Hawk, North Carolina. It did not take long for businesses and government to realize the opportunities offered by controlled, powered flight. From military applications to air-mail, government requirements grew with the burgeoning technology. Private business also pushed the development of faster, safer aircraft incorporating new technology into passenger and cargo transport. Through the war effort during World War II, aviation as an industry truly blossomed.

In the years following the war, some aviation officials estimated that half of all households would own private aircraft. Although that level of aircraft ownership never materialized, the historical period from the end of World War II to the early 1980s is considered the pinnacle of personal aviation. During this period, community airports were expanded, and new ones built regularly. Often a community airport that started as a simple grass runway, found itself needing to develop paved landing areas to accommodate the more sophisticated and demanding aircraft being developed. Some communities realized the economic benefits of a developed "aviation gateway," and invested in full airport facilities.

Since the 1980's, airport use has slowly shifted from private and recreational pilots to business and commercial services. Today, aircraft frequenting airport facilities are more demanding than ever, both in size and speed. This translates to ever-changing needs at airports, including increased runway lengths, stronger pavements, and larger safety areas.

Dixon Airport (DWX) is no exception to this development. The airport facility serves the local citizenry through business traffic, recreational flying, and access to medical evacuations. It also serves area businesses as an economic engine.

1.2 THE FEDERAL AVIATION ADMINISTRATION

The Civil Aeronautics Authority was created in 1938. It was replaced by the Federal Aviation Agency in 1958. When the United States Department of Transportation (USDOT) was created in 1967, the agency was replaced by

the Federal Aviation Administration (FAA). The FAA serves as the national aviation authority. The FAA is a large agency, employing more than 45,000 people and consisting of a myriad of divisions and offices across the country. Pilots most often encounter FAA staff from the Flight Standards District Offices (FSDO). The FSDO group handles topics like low-flying aircraft, accident reporting, air carrier certification and operations, aircraft permits, airmen certification (licensing) for pilots, mechanics, repairmen, dispatchers, and parachute riggers, certification and modification issues, and enforcement of Airmen & Aircraft Regulations.

Another division of the FAA that has direct interaction with airports and pilots is the Air Traffic Organization (ATO). These members write instrument approach procedures. Communication with this group is rare, but very important to the planning and safety of airports.

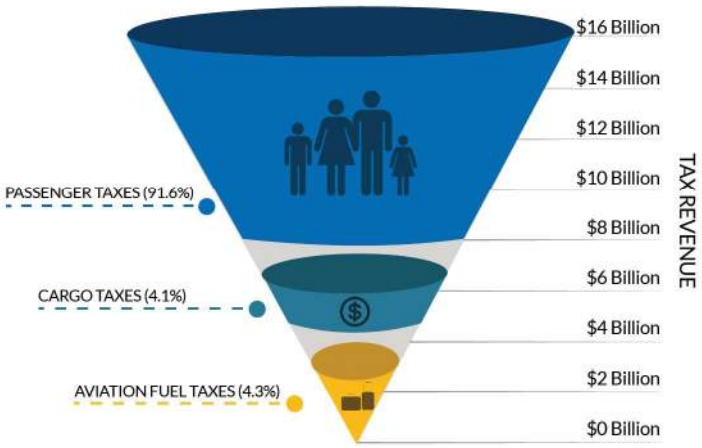
The Airports Division (ARP) is in charge of airport master planning, facility design, and inspection, and is the group that airport sponsors and airport planning consultants most often interact with for airport development projects and grant funding. This division is split into nine regions, including the Northwest Mountain Region, which is head-quartered in Seattle, Washington. The Northwest Mountain Region covers all of the airports in the states of Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. The Region office is further split into three Airports District Offices (ADO): Seattle, WA (covering Washington and Oregon), Helena, MT (covering Montana and Idaho), and Denver, CO (covering Utah, Colorado, and Wyoming).

Each ADO is primarily made up of civil engineers and planners. These staff serve as project managers and interact daily with airport sponsors, state officials, and consultants to manage and direct projects that further the overall goals of the national and state aviation systems. Generally, when speaking about airport planning, in this report and related discussions, the terms “FAA” or “federal” are in reference to the FAA Airports Division.

1.3 FUNDING AIRPORT PROJECTS

The Airport Improvement Program (AIP) was established by the Airport and Airway Improvement Act of 1982 to provide funding to airports on a priority needed basis. The FAA coordinates this program. The AIP is a user-funded program and is not funded by federal income tax dollars. The AIP is primarily funded through the Airport and Airway Trust Fund (AATF). While some of the funds are used for FAA overhead costs, the majority of the money is distributed to community airports through grants. Eligible airports range from small community facilities to the largest commercial airports in the national system. The AATF is funded by three components: passengers (tax on ticket sales), cargo (tax on shipping fees), and fuel (tax on fuels used by aircraft).

Figure 1.1 Airport and Airway Trust Fund (2019)



Source: FAA.gov

Eligible projects include those improvements that enhance airport safety, capacity, security, and address environmental concerns. Aviation demand at the airport must justify the projects. Eligible projects include pavement maintenance, runway construction, airfield lighting, land acquisition, planning studies, and automated weather observation stations (AWOS).

Ineligible projects include such things as landscaping, marketing plans, improvements for commercial enterprises, and maintenance or repairs of buildings.

Entitlements are funds that are apportioned by formula to airports and may generally be used for any eligible airport improvement or planning project. Under the current legislation, a nonprimary entitlement of up to $150,000 per year is granted to smaller general aviation airports, such as Dixon Airport. The nonprimary entitlement can be saved for up to three years for larger projects. If a project exceeds that amount, it may be eligible for state apportionment funds (money set aside for the state through the AIP program) for projects. If the project exceeds both the nonprimary and state apportionment funds available, or is a high priority, it can compete on a regional level for discretionary funds through the AIP program.

The Wyoming Department of Transportation, Division of Aeronautics (WYDOT) also contributes to airport development projects. WYDOT provides 6% as match to federal AIP funding. Local communities, such as Carbon County, provide the remaining 4% for eligible projects. The local community also supports the airport with an operations and maintenance budget.

1.4 NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS

The national infrastructure of public use airports form what the FAA defines as the National Plan of Integrated Airport Systems (NPIAS). The NPIAS was envisioned when civil aviation was in its infancy and has been developed and nurtured by close cooperation with airport sponsors and other local agencies, as well as federal and state agencies. The national airport system is critical to the national transportation system and helps air transportation contribute to a productive national economy and international competitiveness.

To meet the demand for air transportation, the airports and the airport system should have the following attributes:

- Airports should be safe and efficient, located where people will use them, and developed and maintained to appropriate standards.
- Airports should be affordable to both users and government, relying primarily on producing self-sustaining revenue, and placing minimal burden on the general revenues of the local, state, and federal governments.
- Airports should be flexible and expandable, able to meet increased demand, and to accommodate new aircraft types.
- Airports should be permanent, with assurance that they will remain open for aeronautical use over the long term.
- Airports should be compatible with surrounding communities, maintaining a balance between the needs of aviation, the environment, and the requirements of residents.
- Airports should be developed in concert with improvements to the air traffic control system and technological advancements.
- The airport system should support a variety of critical national objectives, such as defense, emergency readiness, law enforcement, and postal delivery.
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation, typically by having most of the population within 20 miles of a NPIAS airport.

1. Airports and Master Plans Introduction

According to the 2021-2025 NPIAS Report, there are 3,304 airports in the NPIAS, including six new airports. The six new airports are expected to open within the five years covered in the report. Airports in the NPIAS are classified as primary or nonprimary, and divided into subcategories under each classification.

Figures 1.1 and *1.2* show the distribution of existing nonprimary and primary NPIAS airports across the nation. To be eligible for federal funding, an airport must be included in the NPIAS. Dixon Airport is classified as a nonprimary, general aviation airport.

Figure 1.2 NPIAS Nonprimary Airports

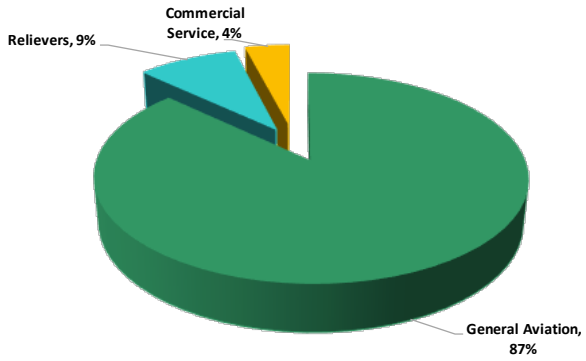
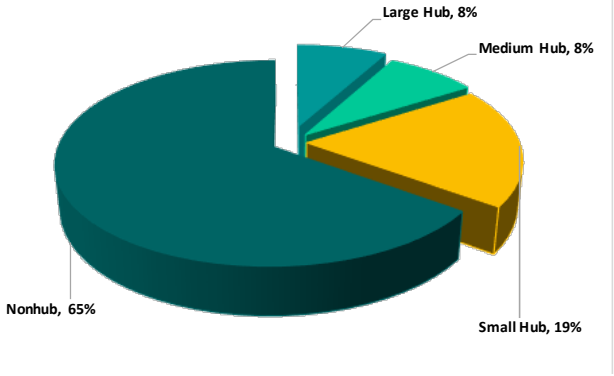


Figure 1.3 NPIAS Primary Airports



Source: FAA.gov

1.5 IMPORTANCE OF AIRPORTS

The aviation system plays a key role in the success, strength, and growth of the US economy. The national airport system is critical to the national transportation system and helps air transportation contribute to a productive national economy and international competitiveness. In 2014, economic activity attributed to civil aviation-related goods and services totaled $1.6 trillion.

General aviation is the manufacturing and operation of any type of aircraft that has been issued a certificate of airworthiness by the FAA, other than aircraft used for scheduled commercial air service (airlines) or operated by the US military. General aviation includes flights related to business or corporate transportation of people or cargo, personal transportation, air ambulance, flight training, and for many unique purposes, such as fire spotting and pipeline patrol. General aviation aircraft enable people, especially those in smaller communities and remote areas, to access the aviation system in order to move quickly and efficiently across the country and around the world for business and pleasure. General aviation is extremely important because it touches so many sectors of the economy - from helicopters transporting accident victims to hospitals, to corporate jets carrying executives to meetings, to single piston engine aircraft flown by enthusiasts.

The Regional Input-Output Modeling System (RIMS-II), a regional economic model created by the US Bureau of Economic Analysis, is a tool used by investors, planners, and elected officials to objectively assess the potential economic impacts of various projects. This model produces multipliers that are used in economic impact studies to estimate the total impact of a project on a region. Based on RIMS-II, every $1.00 generated on a general aviation airport results in an average of $2.53 generated in the community it serves. This is a cascading effect, creating local jobs and payroll. Many airports with fewer than 10,000 annual operations produce economic impacts exceeding the

amount of money necessary to operate and maintain their facilities. An operation is the landing, take off, or touch-and-go procedure by an aircraft on a runway at an airport. The general aviation industry, as a whole, generated a total of 1,101,800 jobs, $69.1 billion in payroll, and $218.6 billion in economic output in 2013.[5]

The United States is home to more than 19,000 airports, seaplane bases, heliports, and other landing facilities. The national system of airports, seaplane bases, and heliports was developed to provide communities with access to a safe and adequate public system of general aviation airports. Together these airports create a transportation infrastructure, providing access, goods, and services, unavailable through other means. AIP funding and involvement permits communities to have services that would be otherwise too costly or impossible to provide.

In addition to the economic benefits outlined above, there are many qualitative benefits that contribute to the overall value of airports. These qualitative benefits include activities for which dollar values cannot be readily assigned but are nonetheless valuable to the community because they enhance the quality of life, health, welfare, and safety of its citizens. For example, medical evacuation flights typically use general aviation airports because they are faster, easier on the patient, and less expensive. Helicopters are often used for aeromedical flights, however some of these flights, specifically, for neonatal patients, can only be conducted via fixed-wing aircraft due to the equipment needs. General aviation airports also provide a support network for disaster relief and search and rescue efforts. For example, following the wake of Hurricane Katrina in the southern United States, general aviation airports served as staging areas for the Red Cross, National Guard, and other organizations providing disaster relief.

In 2009, operators using general aviation airports accounted for an estimated 27 million flights for emergency medical services, aerial firefighting, law enforcement and border control, agricultural functions, flight training, time-sensitive air cargo services, business travel, and scheduled services. Overall, airports grant access to greater markets and provide unique and critical support to the local communities, businesses, and citizens.

1.6 TYPES OF PILOTS

There are different types of pilot certificates and ratings; a topic which is confusing to most people. A pilot certificate, which is often referred to as a pilot's license, is different than a rating. There are six types of pilot certificates that can be obtained in the U.S.

1. Student Pilot – This is the first step in earning any other certificate, and requires the holder to be at least 16 years of age, and have completed a physical examination which deemed the holder medically cleared to fly. Student pilot privileges are minimal, but with appropriate training and experience may fly the aircraft solo strictly to accomplish training requirements.
2. Sport Pilot – This certificate limits the user to light sport aircraft which is not defined on the certificate, but is an endorsement in the holder's logbook received after appropriate training (e.g. airplane, rotorcraft, glider). Sport pilots are limited to a single passenger, flights during the day when visibility is greater than three miles, may not fly above 2,000 feet above the ground, or in any controlled airspace without training and an appropriate logbook endorsement.
3. Recreational Pilot – This certificate offers slightly more privileges than a sport pilot certificate in regard to the types of aircraft which can be flown, but still limits when and where the holder can fly.

4. Private Pilot – This is the most common pilot certificate for basic hobbyist flying or personal business without compensation. The training requirements are more intensive than that of the recreational or sport pilot, but with the associated increase of privileges. Private pilots are allowed to fly at night and in controlled airspace. Private pilots, like recreational and sport pilots, are not allowed to fly for commercial purposes and must not be compensated for pilot services, though passengers can pay a pro-rated share of flight costs.

Figure 1.4 Pilot Certificate

Source: Epic Flight Academy

5. Commercial Pilot – This certificate allows a pilot to be paid for their flying services, though compensation is still regulatory in nature. Commercial pilots must have at least 10 hours of flight training in a complex airplane (retractable landing gear, flaps, and a controllable-pitch propeller), a turbine-powered airplane, or a technically advanced airplane (TAA). Commercial flight training demands more precision and knowledge about professional flight operations; therefore this certificate reflects the pilot's increase in aircraft knowledge, flying skills, and overall airmanship competency.

6. Airline Transport Pilot (ATP) – This is the most advanced pilot certificate that can be obtained and is necessary for those who want to fly charter or for a commercial operator. This certificate demands the highest level of piloting ability both in knowledge and practical competency.

7. Remote Pilot Certificate for Unmanned Aircraft Systems (UAS, or Drones) - Drone operators must operate under an FAA Remote Pilot Certificate. To be eligible for this pilot certificate one must be at least 16 years old, be able to read, speak, write, and understand English, be in a physical and mental condition to safely fly a drone, and pass a knowledge exam. Operational regulations differ with the types of drones, operation, and location, therefore it is important the user register the drone with the FAA, and abide by applicable rules and regulations.

Pilot certificates should not be confused with ratings or endorsements, which are additional skill sets requiring training and performance competencies. Each pilot certificate has an accompanying category (e.g., airplane, rotorcraft, glider, etc.) and class (e.g., single-engine land, multi-engine land etc.) which further define the pilot's flying capabilities. Additional ratings include multi-engine, seaplane, helicopter, instrument, and flight instructor, to name a few.

A logbook endorsement is a legal record of training, experience, and activity. An endorsement is received from a Certified Flight Instructor (CFI) as validation a pilot has met the requirements and competencies for a particular skill. Endorsements include specific aircraft types like tailwheel and experimental, as well as performance-based skills such as spins and acrobatics, and additionally, include knowledge based competencies and flight review information. In short, a certificate identifies legal privileges and limitations of the holder, ratings identify aircraft and specific skill-sets, and endorsements are a supplemental record of training and skills.

1. Airports and Master Plans Introduction

Understanding the different types of pilot certificates, ratings, and endorsements aids in understanding the varying needs of airport users. These needs influence aviation demand, which in turn impacts the facility requirements necessary to meet this demand.

1.7 AIRPORT MASTER PLANS

An Airport Master Plan is a comprehensive study of an airport that describes short, medium, and long term development plans to meet future aviation demand. The elements of the Master Plan are guided by the FAA, though vary in detail and complexity depending upon the size, function, and issues of individual airports (see *Figure 1.5*). The elements provide a systematic approach, and build upon each other throughout the process. Master Plans present a strategy for airport development by providing a framework to cost-effectively satisfy aviation demand while considering the potential safety, environmental, and socioeconomic impacts to users and the local community.

Master Plans generally meet the following objectives:

- Understand the issues, opportunities, and constraints of the airport.
- Consider the impact of aviation trends.
- Identify the capacity of existing airport infrastructure.
- Determine the need for airport improvements.
- Estimate project costs and funding sources.
- Develop a schedule for project implementation.
- Obtain stakeholder and public input.

Figure 1.5 FAA Airport Master Plan Process

Source: T-O Engineers

Public involvement is a key portion of any Airport Master Plan. Typically, T-O Engineers will break down the Master Plan process into five chronological phases, each ending with a public meeting. Each phase depends on a number of variables and can vary from project to project. Receiving public input and feedback is critical throughout the entire duration of a Master Plan. Presented below are the public involvement phases of the Dixon Airport Master Plan.

Phase 1: Complete pre-planning documents and meet with Sponsor. *Hold 1st public meeting to announce the project.*

Phase 2: Conduct physical inventory of airport, analyze socioeconomic and demographic data, research aircraft traffic, interview key users and members of the public, determine proper forecasting methodology, and create aviation forecast and submit to FAA and WYDOT for approval. *Hold 2nd public meeting.*

Phase 3: Determine airport requirements from forecast and design airside and landside alternatives. Sponsor selects final design alternatives. Incorporate any remaining public comment, finalize design alternatives, create cost estimates, provide draft Airport Layout Plan and Master Plan to Sponsor. Submit draft documents to FAA and WYDOT for review. *Hold 3rd public meeting.*

Phase 4: Incorporate final FAA, WYDOT, and Sponsor review items. *Publicly present final documents to Sponsor for signatures.* Submit final documents to FAA, WYDOT, and Sponsor.

More complex Master Plan projects may require additional public meetings. For example, phases may be divided in such a fashion that more than one public meeting is necessary to solicit the desired level of public participation. Some Master Plan projects also include additional elements, such as site selections, thereby prompting the need for subsequent public meetings.

Figure 1.5 First Public Meeting for DWX Master Plan

Source: T-O Engineers

1.8 PUBLIC INVOLVEMENT

Public input is highly encouraged during the Master Plan process. Each Master Plan includes a public involvement program, and the amount of public involvement typically corresponds to the complexity of the airport and project. Effective public involvement connects numerous parties, including but not limited to: aircraft owners, hangar tenants, staff of the airport and businesses on airport property, public officials, governmental agencies, and the general public. The earlier public input is received, the easier it is to incorporate in the planning process.

Public involvement programs are typically facilitated by the planning consultant and include multiple strategies, such as forming

an Airport Master Plan Technical Advisory Committee (TAC) of key stakeholders, local citizens, and decision makers. This group provides insight and input into issues that arise, as well as provides general information. Public workshops are another common public involvement element. These are held at public locations to inform the general public about the status of the airport and Master Plan process and to provide the public with access to the airport consultants and government officials. Other methods used to engage the public are user surveys and public awareness campaigns that utilize flyers, project websites, and newspaper articles. This Master Plan project will incorporate public meetings, public workshops, user surveys, a project website, and newspaper articles into its public involvement program. For more details regarding public involvement efforts pertaining to this Master Plan, refer to Appendix A.

1.9 FAA DESIGN STANDARDS

The FAA has established standards for the design and construction of airport facilities. There are design standards for practically every facet of an airport, ranging from Master Plans and wind cones to runway gradients, presented in a collection of hundreds of documents called Advisory Circulars (AC). Multiple ACs are pertinent to Airport Master Plans, notably AC 150/5070-6B *Airport Master Plans* and AC 150/5300-13A *Airport Design*. The first document details the requirements and provides guidance for Airport Master Plans. The second document contains the FAA standards and recommendations for the geometric layout and engineering design of runways, taxiways, aprons, and other airport facilities. The FAA design standards presented in FAA Advisory Circulars guide each Airport Master Plan.

Standards exist for the strength and width of pavements for runways, taxiways, and aprons. Numerous safety areas are defined around these areas, including the Runway Safety Area (RSA), Runway Protection Zone (RPZ), Runway Object Free Area (ROFA), and Taxiway Object Free Area (TOFA). These will be discussed later in relation to DWX.

1.10 CRITICAL AIRCRAFT

An important result of the forecasting chapter within each Airport Master Plan is the identification of the airport's critical (or design) aircraft. This is the most demanding aircraft with 500 annual operations, at the airport. The critical aircraft dictates which FAA Design Standards must be applied.

1.11 FAA CODES, CATEGORIES, AND GROUPS

The FAA has developed a two part aircraft coding system comprised of the Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The AAC is designated by a letter (A through E) and the ADG by a Roman numeral (I through VI). The combination of the critical aircraft's AAC and ADG (for example, A-I or B-II) signifies the Airport Reference Code (ARC). *Tables 1.1* and *1.2* list the AAC and ADG categories. The ARC provide insights into the performance, design characteristics, and physical facility requirements of aircraft using components of an airport.

Table 1.1 Aircraft Approach Category	
Category	**Speed**
A	less than 91 knots
B	91 knots or more, less than 121 knots
C	121 knots or more, less than 141 knots
D	141 knots or more, less than 166 knots
E	166 knots or more

Source: FAA

Table 1.2 Airplane Design Group		
Group	**Tail Height (Feet)**	**Wingspan (Feet)**
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

1.12 AIRPORT LAYOUT PLAN

A key product of an Airport Master Plan is a detailed drawing set called the Airport Layout Plan (ALP). The ALP is intended to provide detailed locations of the major components of an airport (existing, future, and ultimate); taxiways, aprons, runways, and hangar areas, as well as safety areas and other FAA Design Standards. An airport must have an FAA approved ALP on-record to receive AIP funding. Each airport is responsible to keep its ALP updated, per the AIP grant assurance requirements. When airport sponsors accept AIP funds from the FAA, they must agree to certain obligations, or assurances. The ALP provides a blueprint for future airport development needs and ensures that development meets airport standards and safety requirements.

1.13 AIRSPACE AND APPROACHES

There are four types of airspace: controlled, uncontrolled, special use, and other airspace. Controlled airspace is a generic term that covers the different classifications of airspace and defined dimensions within which air traffic control (ATC) service is provided. Controlled airspace consists of Classes A, B, C, D, and E. Uncontrolled airspace, or Class G airspace, is the portion of airspace that has not been otherwise designated. (In the US, there is no Class F airspace.) Special use airspace is the designation for airspace in which certain activities must be confined or where limitations may be imposed on aircraft operations that are not part of those activities. Prohibited areas, such as the White House or Camp David, and military operations areas are examples of special use airspace. Other airspace is a general term referring to the majority of the remaining airspace. Pilots must be familiar with the operational requirements for each of the various classes of airspace.

In 2002, the Aircraft Owners and Pilots Association (AOPA) developed a safety advisory entitled *Airspace for Everyone*. According to this publication, all airspace was uncontrolled in the early days of aviation. There were fewer airplanes and none had the instruments necessary to fly in clouds. Traffic density was very low and airplanes flew slowly. There were no standards regarding the specific weather conditions that aircraft could fly in, although it was generally agreed that if a pilot remained clear of clouds and had at least 1 mile of visibility, other airplanes and terrain could be seen in time to avoid a collision. This was called “see and avoid.” It formed the basis for Visual Flight Rules (VFR) flight.

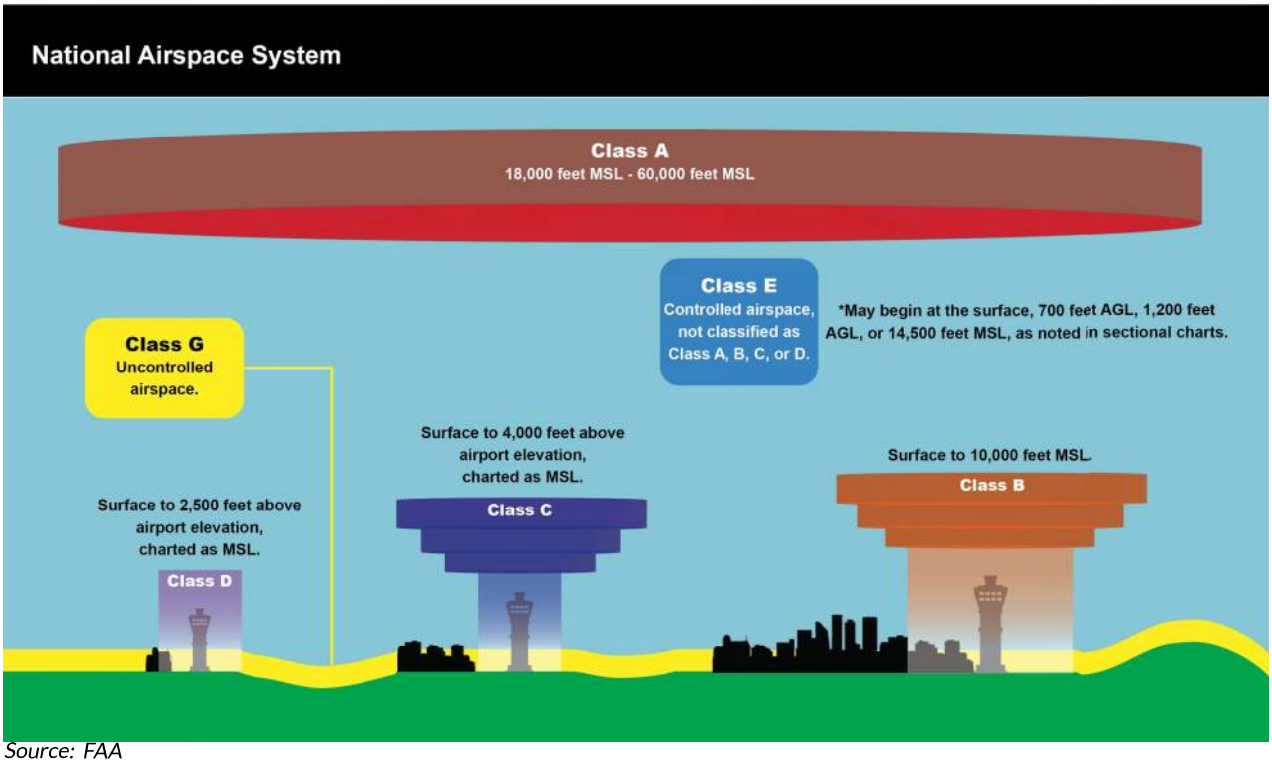
ATC was created when flight instruments made it possible to travel through the clouds. This also led to the creation of Class E airspace. The primary purpose of ATC is to prevent a collision between aircraft and to expedite the flow of air traffic. More stringent weather minimums for VFR operations were established for controlled airspace. In

poor weather conditions, pilots and aircraft had to be qualified and equipped for Instrument Flight Rules (IFR) flight, file IFR flight plans, and coordinate their positions with ATC. When weather conditions were good, pilots could still fly on IFR flight plans if they chose, but were responsible to "see and avoid" other aircraft. Controlled airspace does not mean that all flight is controlled; it means that IFR services are available to qualified pilots who choose to use them. Pilots operating under VFR may fly freely in controlled airspace as long as weather conditions meet current regulatory requirements for that airspace.

For aircraft operating under IFR, an instrument approach procedure (IAP) should be used. An IAP is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument meteorological conditions (IMC) from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually. There are two main classifications for IAPs: precision and non-precision. Precision approaches utilize both lateral (localizer) and vertical (glideslope) information. Non-precision approaches provide lateral course information only. Publications depicting instrument approach procedures are called Terminal Procedures. These documents depict the specific procedure to be followed by a pilot for a particular type of approach to an airport. They depict prescribed altitudes and courses to be flown, as well as obstacles, terrain, and potentially conflicting airspace. They list missed approach procedures and commonly used radio frequencies.

There is one non-precision instrument approach published for Dixon Airport: an Area Navigation (RNAV) or Global Positioning System (GPS) for Runway 24. One of the objectives of this Master Plan is to examine the approaches and identify if there are improvements that can be made, resulting in lower minimums.

Figure 1.6 National Airspace System



Source: FAA

1.14 SUMMARY

A successful Airport Master Plan provides answers and knowledge to a wide range of audiences, including pilots, government officials, and the general public. A basic understanding of these concepts will help the reader to successfully interpret this Master Plan. Even small general aviation airports are extremely complex entities. To plan for the future, consideration must be given to all aspects that involve an airport: current facilities and infrastructure; users and pilots; local, state, and federal zoning and regulations; regional socioeconomics; national and state aviation systems; approach procedures; and much more.

2. Socioeconomic Overview and Background

SECTION OVERVIEW

Chapter 2. Socioeconomic Overview and Background provides a general depiction of Dixon Airport (DWX) and the surrounding area, including the Town of Dixon, Carbon County, and the State of Wyoming. This is accompanied by a broad description of the airport's history, location, economic impact, and demographics.

2.1 AREA AND AIRPORT OVERVIEW

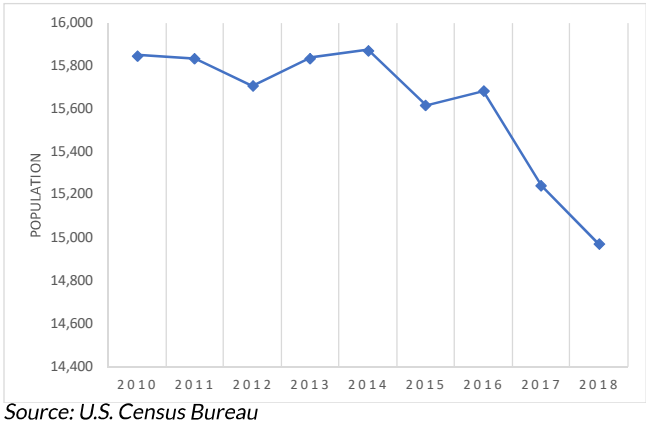
DIXON

Dixon, Wyoming is located on the Little Snake River Valley, the south-central gateway to the Medicine Bow National Forest. Dixon is on the west side of the Continental Divide, and in the foothills of Wyoming's Sierra Madre Mountains.

The Town of Dixon was incorporated in July 1887 and is named for Bob Dixon, one of the region's first white trappers with Jim Baker, who is considered one of the greatest trappers and scouts of all time. According to the 2009 Wyoming Municipal Directory published by the Wyoming Association of Municipalities, Dixon is the sixth oldest town in the state and the second oldest town in Carbon County. Laramie, Cheyenne, Chugwater, and Rawlins were incorporated prior to Dixon.

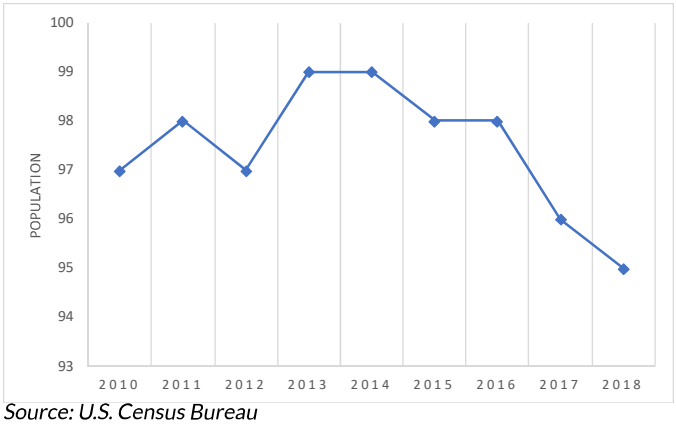
As of the 2010 Census, the total population of Carbon County was 15,848, and the town of Dixon was 97. Population estimates for 2018 indicate that Dixon's population had decreased to 77. However, 2018 estimates set the number at 95 residents. *Figures 2.1* and *2.2.* depict the historical populations of Carbon County and Dixon.

Figure 2.1 Historical Population of Carbon County



Source: U.S. Census Bureau

Figure 2.2 Historical Population of Dixon



Source: U.S. Census Bureau

2. Socioeconomic Overview and Background

The community (the towns of Baggs and Dixon) is home to five sites on the National Register of Historic Places, listed in *Table 2.1*. This register is the official list of the nation's historic places. There is also a register of National Historic Landmarks that hold national significance because of their abilities to illustrate U.S. heritage. According to this register, there are no national historic landmarks located in Dixon.

Table 2.1 Baggs and Dixon Historical Sites

Location	Description
NE of Baggs	Divide Sheep Camp
10 South Niles Street, Baggs	First State Bank of Baggs
24 miles NE of Baggs	JO Ranch Rural Historic Landscape
Address restricted	Powder Wash Archaeological District
Third Street, Dixon	Stockgrowers Bank

Source: National Register of Historic Places

CARBON COUNTY

Carbon County existed long before Wyoming was either a territory or a state. The State of Wyoming enacted conservation district law in 1954 and there are three conservation districts in Carbon County including the Little Snake, Platte, and Medicine Bow River Watersheds.

Carbon County has a rich history beginning with nomadic Plains Indians, pioneers that crossed the County by wagon train, and the growth of ranching. During the years, the population of Carbon County was solidified by the area's railroad activity and mining. The longest running oil refinery in Wyoming is located in Carbon County in the town of Sinclair.

Carbon County is located in the south-central part of the state and stretches north about 95 miles from the southern border and roughly 83 miles east to west. Carbon County includes 7,896 square miles with natural resources, mountainous terrain, scenic vistas, and multiple rivers and streams.

AIRPORT OVERVIEW

Dixon Airport is a general aviation public use facility owned by Carbon County. Three Forks Aviation provides aircraft services at the airport. According to the Economic Impact of Dixon Airport posted on Carbon County's website, "guests of the Three Forks Resort, based in nearby Savery, use the airport when traveling to and from the area. Three Forks Resort also bases its aircraft at the airport. These aircraft are used to transport guests to and from remote areas for hunting, fishing, hiking, and other activities, as well as to provide connections to the larger air transportation system. The airport is frequently used for recreational flights, business flights, and real estate tours. Other uses include aerial inspections and flight training."

Dixon Airport has an elevation of 6,548.6 feet and spans 248 acres. The unique three letter FAA identifier for Dixon Airport is DWX. According to the most recent FAA 5010 Airport Master Record, there are five based aircraft at DWX, and there approximately 1,190 operations per year. Services include 100 LL Avgas and transient storage. There is one runway at Dixon Airport, Runway 6/24, which is 7,000 feet long and 75 feet wide. The runway is

comprised of asphalt in good condition. The published pavement strength is 24,500 pounds single-wheel gear (SWG). *Figure 2.3* depicts Dixon Airport's location in relation to the town of Dixon.

Figure 2.3 Location of Dixon Airport

Source: Google Earth

AVIATION IN WYOMING

According to the 2016 Wyoming State Aviation System Plan, Wyoming relies on an extensive network of 40 publicly owned system airports to deliver essential commerce, personal, tourism, and medical transportation connections to the state, its business, and its residents. The national airport system includes 33 Wyoming airports. Of these 33 airports, 24, including Dixon Airport, are general aviation airports and 9 are commercial service airports. By definition, general aviation is the segment of aviation that encompasses all aspects of civil aviation except certified air carriers and other commercial operators, such as airfreight carriers.

GOVERNANCE AND AIRPORT ADMINISTRATION

The Board of County Commissioners for Carbon County governs Dixon Airport. The commissioners handle items, such as finances, leases, and grant applications. Day-to-day operations at the airport, such as upkeep of the grounds and maintenance of the airfield, are handled by the airport manager, who is a part-time employee of the County.

AREA AIRPORTS

There are a number of area airports within 100 nautical miles (nm) of Dixon Airport, including Craig-Moffat Airport (CAG), Shively Field Airport (SAA), Yampa Valley Airport (HDN), Rawlins Municipal Airport (RWL), Steamboat Springs Airport/Bob Adams Field (SBS), and Walden-Jackson County Airport (33V). Detailed information for each airport is presented in *Table 2.2*, including Pavement Classification Number (PCN) where available. Area airports are listed in ascending order of nautical mile distance from DWX.

The Aircraft Classification Number-Pavement Classification Number (ACN-PCN) was developed to indicate the strength of a runway, taxiway, or apron , which helps ensure that the airport's pavements are not subjected to excessive wear and tear, thus, prolonging the usable life of the pavement while promoting safe operations of the aircraft. The Airport Classification Number (ACN) expresses the effect of an individual aircraft on different pavements with a single unique number that varies according to aircraft weight and configuration, pavement type, and subgrade strength. The Pavement Classification Number (PCN) is a five-digit alpha numeric code that

expresses the load carrying capacity of a pavement without specifying a particular aircraft or detailed information about the pavement structure.

Table 2.2 Area Airports

Airport and City	Nautical Miles From DWX	Runway Condition	Runway (Length x Width)	PCN	Operations	Types of Operations	Based Aircraft	Instrument Approach Procedures
Dixon Airport (DWX), Dixon, WY	-	*Asphalt in good condition*	*7,000' x 75'*	*N/A*	*1,190 Year ending 07/31/2008*	*33% air taxi 27% local 40% transient*	*5 total: 4 single engine, 1 jet*	*GPS RWY 24*
Craig-Moffat Airport (CAG), Craig, CO	32.6 S	Asphalt in fair condition	5,606' x 100'	12/F/D/ X/T	12,000 Year ending 12/31/2015	75% local 25% transient	23 total: 23 single engine	GPS RWY 7 GPS RWY 25 VOR RWY 7 VOR RWY 25
Yampa Valley Airport (HDN), Hayden, CO	35.6 S	Asphalt/ grooved, in good condition	10,000' x 150'	N/A	11,474 Year ending 12/31/2018	18% air carrier, 34% air taxi 15% local, 32% transient, <1% military	8 total: 4single engine, 4 multi engine	LOC/DME RWY 10, RNP Z RWY 10, GPS RWY 28, GPS Y RWY 10, VOR/DME - B
Shively Field Airport (SAA), Saratoga, WY	38.6 NE	Asphalt/ porous friction courses, in good condition	8,801' x 100'	50/F/D/ X/U	8,706 Year ending 07/31/2008	11% air taxi <10% local 79% transient	15 total: 13 single engine, 1 jet, 1 multi engine	GPS RWY 5, GPS-B, NDB-A
Steamboat Springs Airport/ Bob Adams Field (SBS), Steamboat Springs, CO	42.3 SE	Asphalt/ grooved, in fair condition	4,425' x 100'	N/A	10,658 Year ending 12/31/2015	5% air taxi, 84% local, 10% transient, <1% military	65 total: 57 single engine, 4 multi engine, 1 jet, 2 helicopters, 1 glider	GPS-E, VOR/DME-C
Rawlins Municipal Airport (RWL), Rawlins, WY	47.9 N	Asphalt/ porous friction courses, in good condition	7,008' x 100'	N/A	3,770 Year ending 05/31/2018	60% local, 39% transient, 1% military	12 total: 10 single engine, 2 multi engine	GPS RWY 22
Walden-Jackson County Airport (33V), Walden, CO	58 ESE	Asphalt, in good condition	5,900' x 75'	N/A	1,000 Year ending 12/31/2015	20% air taxi, 80% transient	9 total; 8 single engine, 1 jet	GPS-A

Source: AirNav.com

2. Socioeconomic Overview and Background

There are three commercial service airports located within 100 nautical miles of Dixon Airport, CAG, HDN, and SBS, all of which are in Colorado. HDN is considered a major commercial service airport based on the Colorado aviation system plan, while CAG and SBS are considered intermediate airports. 33V is also considered an intermediate airport, although it does not offer commercial air service. Both RWL and SAA are considered business airports based on the Wyoming aviation system plan.

2.2 DIXON AIRPORT ACCIDENTS

The National Transportation Safety Board (NTSB), an independent federal agency that investigates every civil aviation accident in the United States, maintains the Aviation Accident Database & Synopses. Using this database, no accidents have been recorded on or near Dixon Airport.

2.3 AIRPORT GRANT HISTORY

Table 2.3 lists historic improvement projects at DWX. Data was provided by the FAA Denver Airports District Office (DEN-ADO). Descriptions of work are copied verbatim from the provided reports. Typically, funding is a mix of federal, state, and local funds. This Airport Master Plan study is one of multiple such projects funded by the FAA since 1985.

Table 2.3 Airport Improvement Program Grant History

Fiscal Year	Project Number	FAA Contributions	Work Description
1985	001-1985	$ 329,000.00	Construct Runway
1985	001-1985	$ 15,000.00	Acquire Aircraft Rescue & Fire Fighting Vehicle
1985	001-1985	$ 6,000.00	Improve Airport Drainage
1987	002-1987	$ 39,608.00	Acquire Land for Development
1992	003-1992	$ 40,500.00	Conduct Miscellaneous Study
1994	004-1994	$ 11,000.00	Expand Apron
1994	004-1994	$ 3,000.00	Install Apron Lighting
1994	004-1994	$ 9,000.00	Acquire Land for Approaches
1994	004-1994	$ 43,509.00	Extend Runway
1994	004-1994	$ 5,000.00	Construct Taxiway
1994	005-1994	$ 69,400.00	Install Apron Lighting
1994	005-1994	$ 95,500.00	Construct Taxiway
1994	005-1994	$ 135,150.00	Expand Apron
1994	005-1994	$ 25,000.00	Acquire Land for Approaches
1994	005-1994	$ 562,207.00	Extend Runway
2003	006-2003	$ 124,989.00	Construct Snow Removal Equipment Building
2004	007-2004	$ 56,470.00	Acquire Land for Approaches
2005	008-2005	$1,895,115.00	Rehabilitate Runway

Source: FAA

Table 2.3 Airport Improvement Program Grant History (continued)			
Fiscal Year	Project Number	FAA Contributions	Work Description
2008	009-2008	$ 11,240.00	Rehabilitate Runway
2009	010-2009	$ 48,693.00	Install Weather Reporting Equipment
2009	011-2009	$101,307.00	Install Weather Reporting Equipment
2010	012-2010	$144,831.00	Conduct Airport Master Plan Study
2011	013-2011	$ 20,000.00	Install Perimeter Fencing
2011	013-2011	$130,000.00	Rehabilitate Runway Lighting
2014	014-2014	$104,156.00	Rehabilitate Runway
2014	014-2014	$ 30,169.00	Rehabilitate Apron
2015	015-2015	$437,741.00	Expand Apron
2017	016-2017	$137,938.00	Improve Runway Safety Area
2017	016-2017	$ 39,130.00	Install Airport Beacons
2019	017-2019	$307,437.00	Update Airport Master Plan Study
2019	018-2019	$350,000.00	Rehabilitate Runway

Source: FAA

2.4 ECONOMIC IMPACT

There are economic benefits, including jobs, payroll, and output of airports, as well as qualitative benefits that contribute to the overall value of airports. To quantify the benefits derived from Wyoming's airport system, WYDOT commissioned the 2013 Economic Impact Study of Wyoming Airports. Each airport, from the largest to the smallest, contributes to the State's economy and to the quality of life enjoyed by Wyoming's businesses, residents, and visitors. Airports provide connectivity to worldwide markets and destinations, which is essential to Wyoming's business community and tourist destinations.

The 2013 Wyoming Aviation Economic Impact Study determined the potential benefits associated with 35 of the 40 public-use airports within Wyoming. According to this study 12,268 jobs are created by initial or multiplier impacts of airports with an annual economic output of $1.4 billion.

Wyoming airports support various aspects of the economy in the state of Wyoming; contributing to state and local tax revenues; improving efficiency for hundreds of Wyoming businesses; and supporting many vital services which help to improve the quality of life in Wyoming. Airports in Wyoming have helped to both lead and sustain growth and economic diversification. Airports support oil and natural gas field development and maintenance, enhance medical care, provide transportation for businessmen and vacationers, and move goods via air cargo.

Economic impacts of airports in Wyoming include both initial and multiplier impacts. Initial impacts are those that start with the day-to-day operation of each airport or with spending by visitors who arrive by air. Multiplier impacts are associated with the re-circulation of initial impacts in the economy.

The study used a program known as Impact Analysis for Planning (IMPLAN). This software program is approved for use by the FAA for estimating airport economic impacts and is widely used by other national organizations such as the Bureau of Reclamation, Bureau of Land Management, and the Environmental Protection Agency.

For this study, initial economic impacts came from two sources: on-airport and off-airport. On-airport impacts were characterized as economic impacts supporting airport administration, airport tenants, and/or capital investments. Off-airport impacts came from visitors spending who arrived on either a commercial airline or general aviation plane to Wyoming. When airport employees and employees sustained by visitors spending pay for goods and services, this is the multiplier impact. This subsequent spending leads to the recirculation of initial impacts that start from the airport and progress into the local and state economy. When the on-airport and off-airport initial and multiplier impacts are combined, the total annual impact is found.

WYDOT used IMPLAN to generate data for both state model and county (local) model specific to each airport. The Economic Impact Study found that DWX had less than one on-airport initial and multiplier jobs.

In the state model, DWX was found to create 2 jobs with a state annual economic impact of $229,810 and annual local and state aviation tax revenues resulted in $4,200.

2.5 SOCIOECONOMIC AND DEMOGRAPHIC OVERVIEW

As stated in FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, the economic characteristics of a community affect the demand for air traffic. The types of industries in an airport's service area also affect aviation demand. For example, manufacturing and service industries tend to generate more aviation activity than resource industries, such as mining. Additionally, the demographic characteristics of an area's population affect the demand for aviation services. Demographic characteristics influence the level, composition, and growth of both local traffic and traffic from other areas. An important demographic characteristic is the level of disposable income, usually measured on a per capita basis, which is a good indicator of the propensity to travel, as well as use and purchase of general aviation aircraft.

Socioeconomic status is a measure of an individual, family, or group of people, used to draw comparisons between groups. Socioeconomic status is derived from the relative economic and sociological position compared to other groups, such as income, wealth, education, and occupation. Demographic data is similar but distinct, typically describing a population, including items such as age and population. Local socioeconomic conditions and demographics play a considerable role in the demand for air transportation services. As a simple example, the demographics of a large urban area, such as Chicago, indicate very large population bases which correlate to a higher demand for commercial air service.

An examination was undertaken to determine whether current trends in social and economic indicators would predict stronger or weaker future aviation demand for Dixon Airport. The local geographic area examined as the focus of socioeconomic conditions was either Dixon or Carbon County, depending on the available data.

The key socioeconomic indicators examined include population, education, household income, per capita income, and employment. These indicators provide insight into the financial strength and well-being of the local economy and historically correlate with the local level of aviation activity and aircraft ownership. Population and employment

statistics assist in understanding the number of people and their ability to fulfill the employable positions that exist with businesses in the area. Both socioeconomic indicators also give an indication of stability with respect to the cost of living, commerce, and industry. Per capita personal income reflects the average annual monetary wage per head of household. High per capita personal income in an area is usually a good indicator for greater aviation demand as higher income populations are more likely to own and fly aircraft.

Aviation demand in a particular market is often strongly correlated with population. As depicted in Section 2.1, Carbon County and Dixon's population have declined. However, the downturn in Carbon County is not expected to continue. Population projections were obtained from Woods & Poole, a firm that specializes in long-term county economic and demographic projections. The projected numbers show a positive growth rate for Carbon County and Dixon between 2019 and 2039 and are presented in *Table 2.4*.

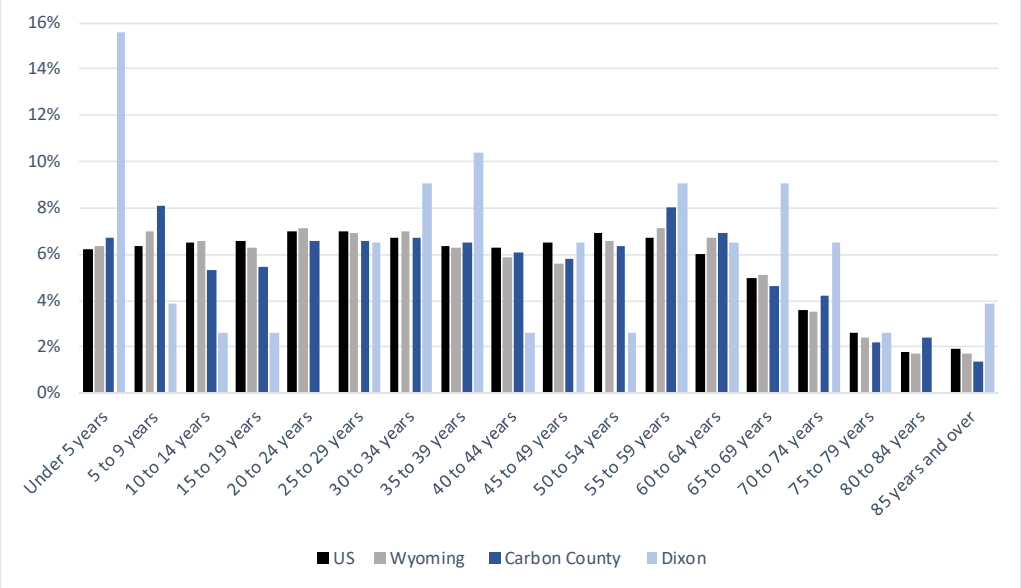
Table 2.4 Population Projections

Year	Carbon County Population	Carbon County Population Growth Rate	Dixon Population	Dixon Population Growth Rate
2019	15,409	-	97	-
2024	15,646	0.30%	98	0.2%
2029	15,842	0.25%	99	0.2%
2034	15,977	0.17%	100	0.2%
2039	16,043	0.08%	101	0.2%

Source: Woods & Poole

The age distribution for Dixon, Carbon County, Wyoming, and the United States are compared in *Figure 2.4*. Data is from the 2013-2017 American Community Survey 5-Year Estimates provided by the U.S. Census Bureau. Comparatively, Dixon's population is younger than that of the county, state, and nation.

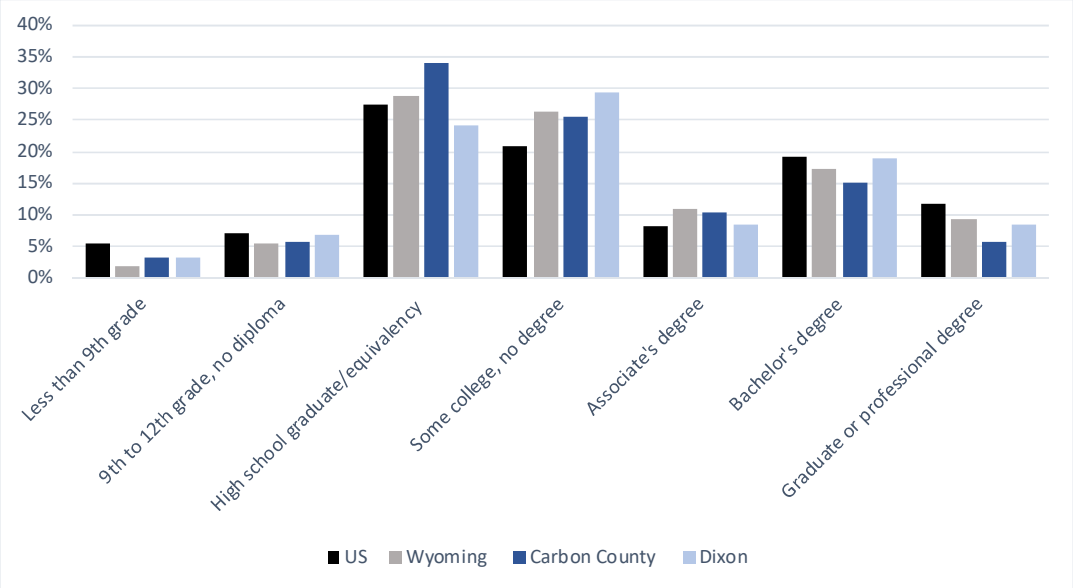
Figure 2.4 Age Distribution



Source: U.S. Census Bureau

A comparison of educational obtainment for Dixon, Carbon County, Wyoming, and the United States is presented in *Figure 2.5*. Dixon has a higher number of people with some college and no degree as compared to the county, state, and nation. Dixon's rate for graduate or professional degrees is slightly higher than the average for Carbon County.

Figure 2.5 Educational Attainment



Source: U.S. Census Bureau

Regarding the percentage of youth age 25 years and over who have earned a bachelor's degree, Dixon residents rate higher than Carbon County and Wyoming and slightly lower than the national average, as depicted in *Table 2.5*.

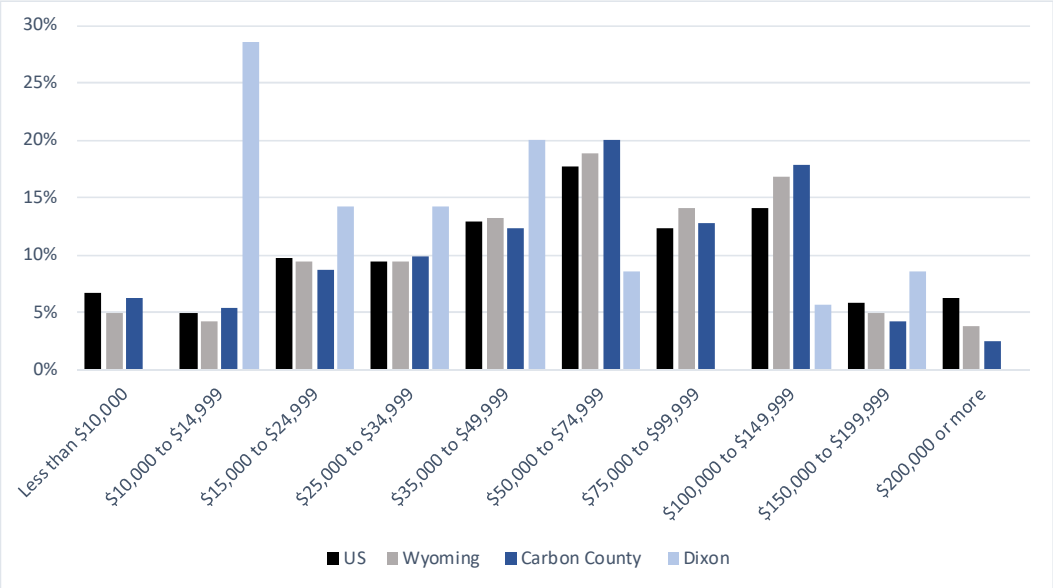
Table 2.5 Educational Attainment

	Dixon	Carbon County	Wyoming	United States
High school graduate	24.10%	33.90%	28.70%	27.30%
Some college, no degree	29.30%	25.60%	26.40%	20.80%
Bachelor's degree	19.00%	15.10%	17.40%	19.10%

Source: U.S. Census Bureau

When using 2010 U.S. Census Bureau data to compare household incomes among residents of Dixon, Carbon County, Wyoming, and the United States, as shown in *Figure 2.6*, it is evident that the greatest number of Dixon's residents fall within the $10,000 to $14,000, 15,000 to 34,000, and 35,000 to 49,000 categories. No Dixon residents earn less than $10,000 or $75,000 to $99,999.

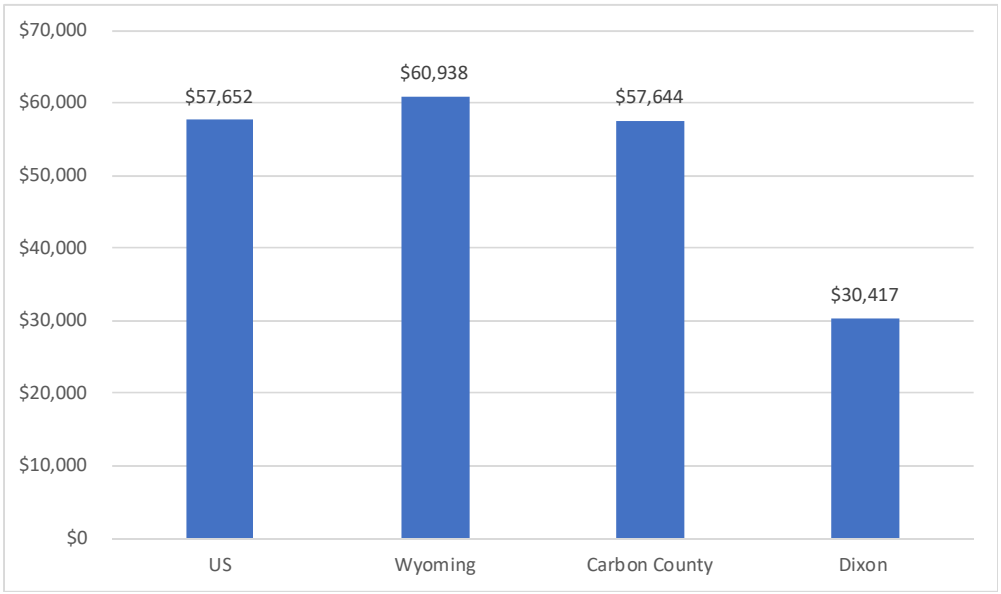
Figure 2.6 Household Income in 2017 Dollars



Source: U.S. Census Bureau

Figure 2.7 depicts the median household income for Dixon, Carbon County, Wyoming, and the United States. Median income is the amount that divides the income distribution into two equal groups, half having income above that amount, and half having income below that amount. Carbon County and U.S. median income levels are nearly identical, while Dixon's average is substantially lower.

Figure 2.7 Median Household Income



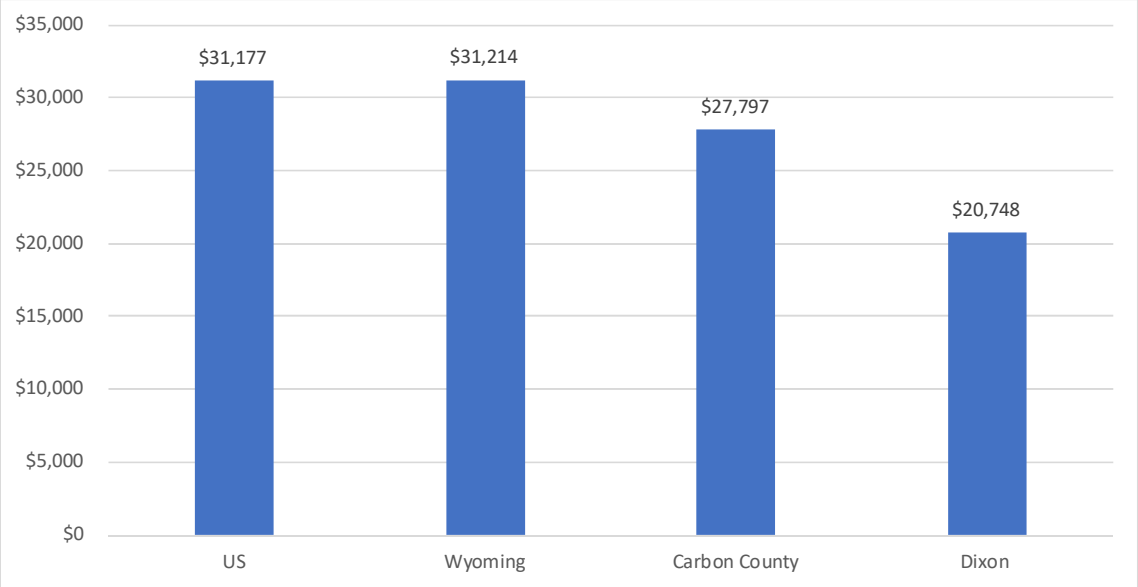
Source: U.S. Census Bureau

2. Socioeconomic Overview and Background

Per Capita Income (PCI) is the mean income of the people in an economic unit such as a country or city. It is calculated by taking a measure of all sources of income in the aggregate and dividing it by the total population. PCI is used to gauge the comparative economic well-being of residents in a specific region. Changes over time in per capita growth or decline have economic, social, and political repercussions. Counties with smaller populations are more likely to experience substantial fluctuations for several reasons, including bumper crops, natural disasters, and major state or federal projects.

Per Capita Income is one of the most widely used indicators for gauging the economic performance and changing fortunes of local economies. The 2017 PCI for Dixon, Carbon County, Wyoming, the United States is illustrated in *Figure 2.8*. As evidenced by this chart, the United States' and Wyoming's PCIs are identical while Dixon's PCI is substantially lower.

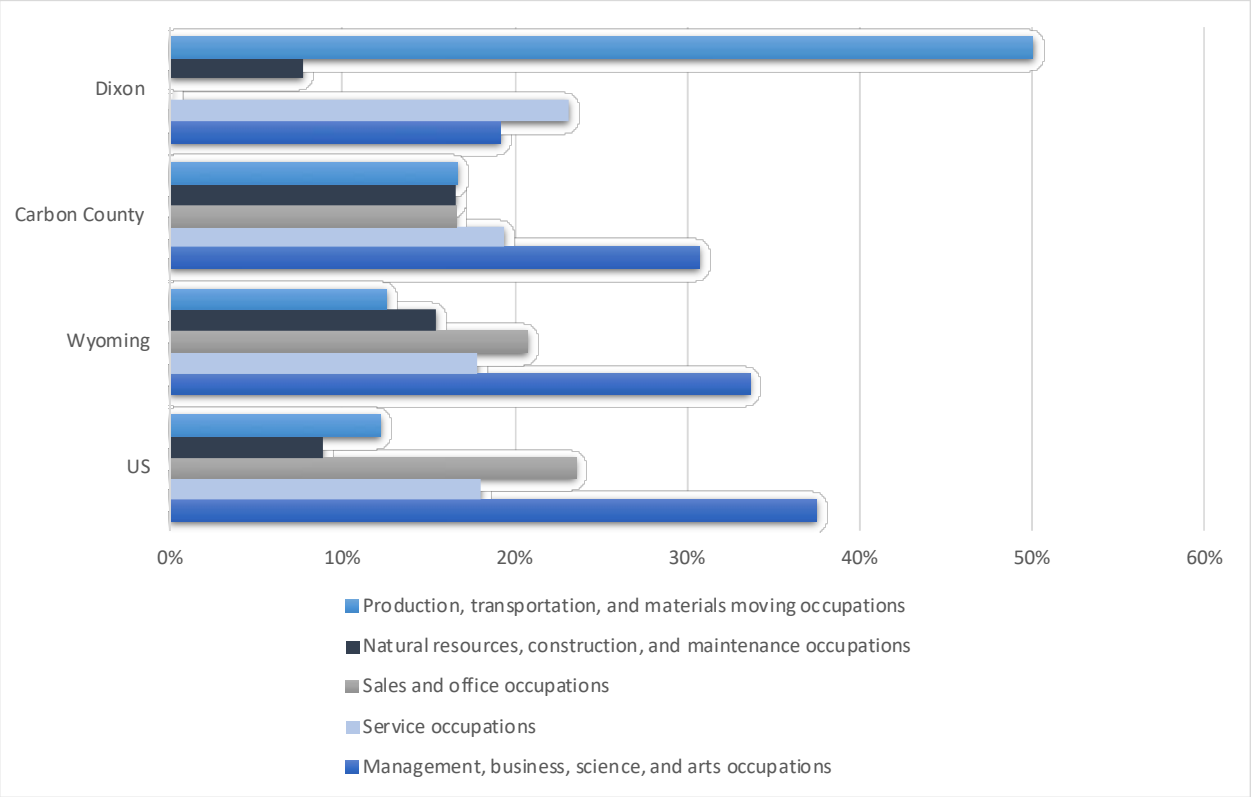
Figure 2.8 Per Capita Income



Source: U.S. Census Bureau

Figure 2.9 illustrates the occupations for the civilian population 16 years and over. As it is depicted, management, business, science, and art have the greatest percentage of employees in Carbon County, Wyoming, and the United States, while production, transportation, and materials moving has the greatest percentage in Dixon. The second greatest percentage of the workforce in Dixon is employed in occupations related to service companies. There are no employees working in the sales and office occupations category in Dixon.

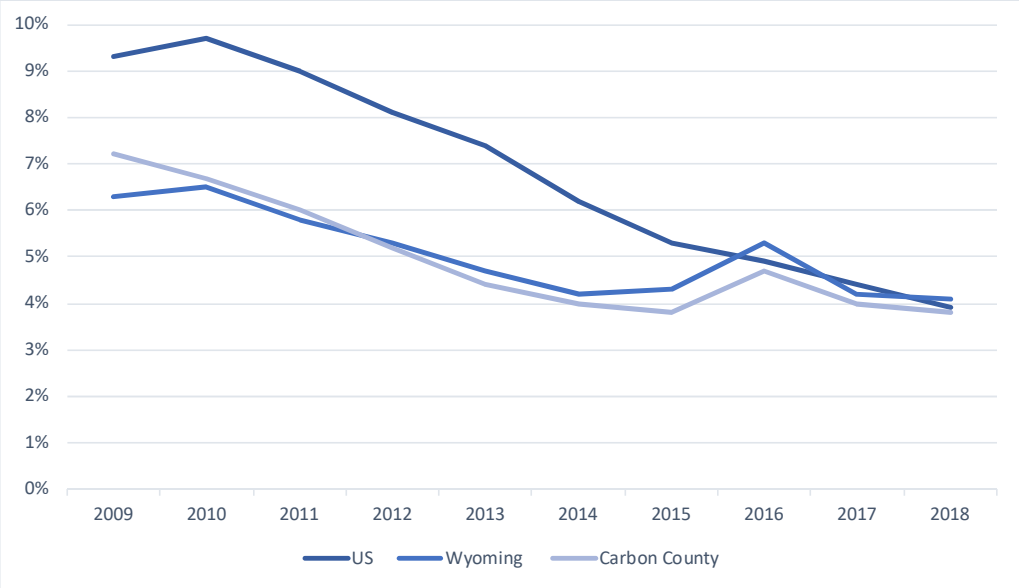
Figure 2.9 Employment by Occupation



Source: U.S. Census Bureau

Wyoming and Carbon County's unemployment rate has been below the national average since at least 2009. In 2016, Wyoming's unemployment rate surpassed the national unemployment rate. Between 2009 to 2012, Carbon County's unemployment rate surpassed the state's unemployment rate.

Figure 2.10 Unemployment Rates



Source: U.S. Census Bureau

Table 2.6 shows the Wyoming unemployment rates by county in June 2019. As it is presented, Teton County had the lowest unemployment rate of 2.3% and Fremont County had the highest unemployment rate of 4.7% in Wyoming.

Table 2.6 Unemployment Rates in Wyoming Counties

County	Unemployment Rate	County	Unemployment Rate
Albany	4.0%	Natrona	4.2%
Big Horn	4.5%	Niobrara	3.3%
Campbell	3.7%	Park	3.6%
Carbon	3.4%	Platte	3.7%
Converse	3.2%	Sheridan	3.6%
Crook	3.0%	Sublette	4.2%
Fremont	4.7%	Sweetwater	4.2%
Goshen	4.1%	Teton	2.3%
Hot Springs	3.7%	Uinta	4.3%
Johnson	3.4%	Washakie	4.3%
Laramie	3.7%	Weston	3.1%
Lincoln	3.4%	-	-

Source: U.S. Census Bureau

2.6 SOCIOECONOMIC AND DEMOGRAPHIC CONCLUSION

Dixon and Carbon County are projected to sustain a slowly increasing population through 2039. Dixon has a population that is somewhat younger than the county, state, and nation. Residents of Dixon tend to have some college, but no degree. Additionally, most residents of Dixon have an annual income of less than $50,000. The median household income and Per Capita Income for Dixon is significantly lower than that of the county, state, and nation. Most residents are employed in the production, transportation, and materials moving field. The unemployment rate for Carbon County has been below the state and nation since 2012. Carbon County's unemployment rate is about average for the state. Overall, Dixon and Carbon County are expected to experience an increase in population and these communities appear to maintain a relatively solid economic foundation. Based on this data, no extraordinary techniques or modifications are needed for forecasting aviation activity at the Dixon Airport.

3. Airside and Landside Inventory

SECTION OVERVIEW

This chapter details the physical environment, such as soils and terrain, of Dixon Airport (DWX). An in-depth wind analysis, using data recorded at the airport, is included. All major airport components, structures, and pavements on the airport property are documented.

3.1 NATURAL AND PHYSICAL ENVIRONMENT

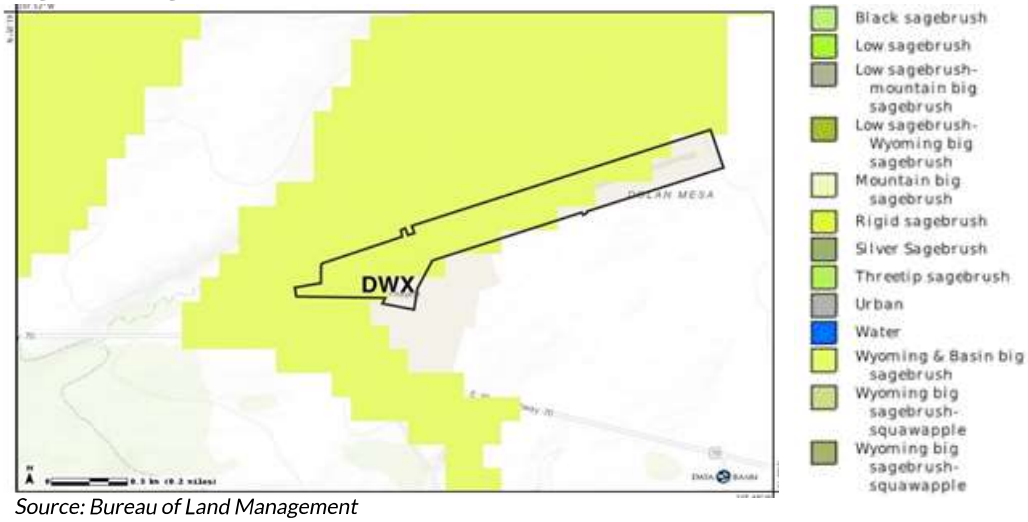
GEOLOGY AND SOIL

The soil around DWX is made up of primarily Terrace Gravels and Browns Park Formation. Terrace Gravels are made up of cemented silt, sand, gravel, cobbles, and boulders. These components are locally derived from the parent rock in the headwaters of the Little Snake River. Browns Park Formation is derived from sandstone and a basal conglomerate, which is made up of amphibolite, quartzite, felsic, and mafic igneous pebbles.

VEGETATION

According to the Bureau of Land Management, the Sagebrush Steppe is the most common plant in Wyoming, and it can be found both in the Wyoming Basin and the Northwestern Great Plains Ecoregions. These plants consist of a combination of flowering plants, grass, and shrubs, which are highly adaptable to the severe weather in Wyoming. *Figure 3.1* shows Dixon Airport and its surrounding sagebrush distribution. *Figure 3.2* depicts the vegetation at the airport.

Figure 3.1 Sagebrush Distribution Around Dixon Airport



Source: Bureau of Land Management

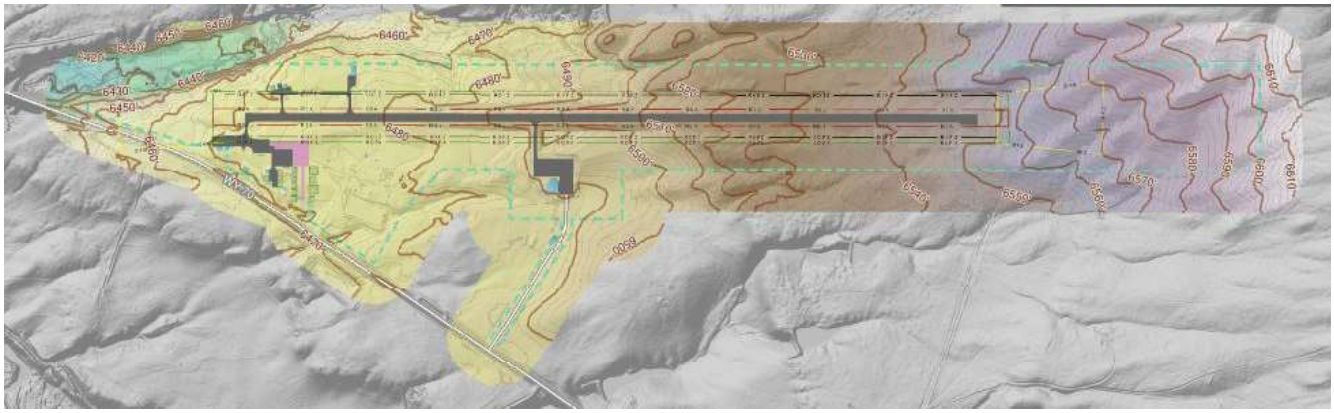
Figure 3.2 Vegetation Surrounding Dixon Airport

Source: T-O Engineers

TOPOGRAPHY AND DRAINAGE

The town of Dixon is located north of the Little Snake River off Wyoming Highway 70. Dixon Airport is approximately two miles east of Dixon along Wyoming Highway 70. DWX sits at a field elevation of 6,549 feet on the Dolan Mesa Mountain range. This area is relatively flat and DWX has a runway gradient of 1.09%. Through its tributaries, the Little Snake River drains into the Yampa River.

Figure 3.3 Contour Map



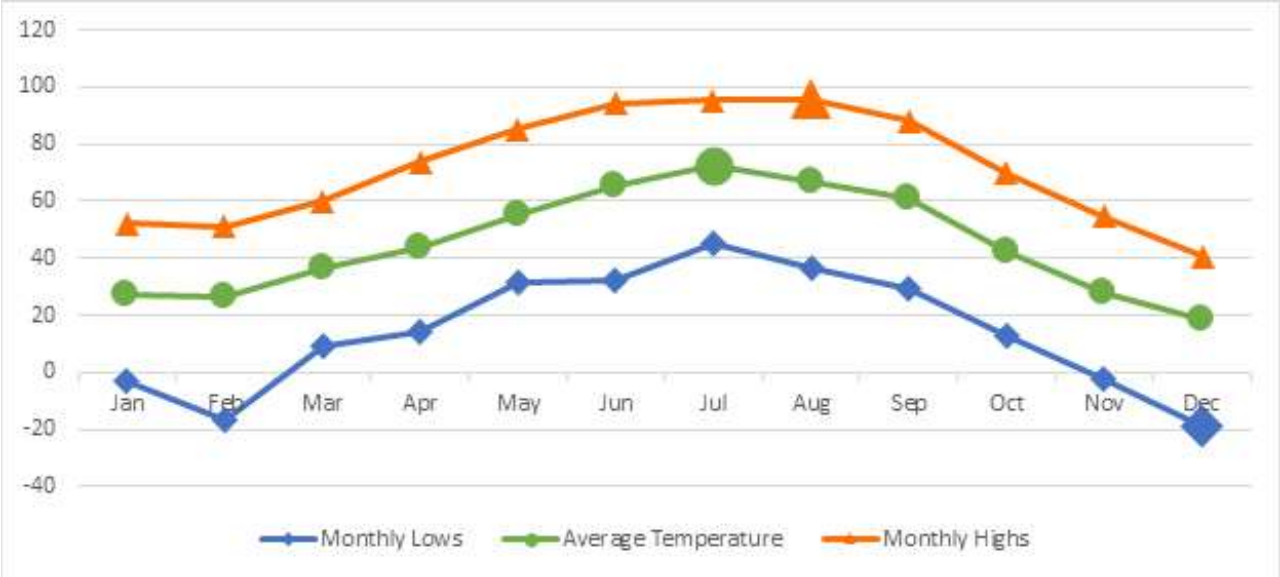
Source: T-O Engineers

3. Airside and Landside Inventory

CLIMATE

Due to its high elevation, the state of Wyoming has a relatively cool and dry climate, usually with sunny clear days. The temperatures can vary as much as 40 degrees Fahrenheit between day and night during the summer due to cold air drainage from the mountain slopes, and western storm patterns. *Figure 3.4* depicts the monthly high, average, and low temperatures for 2018.

Figure 3.4 2018 Monthly Temperatures (Fahrenheit)



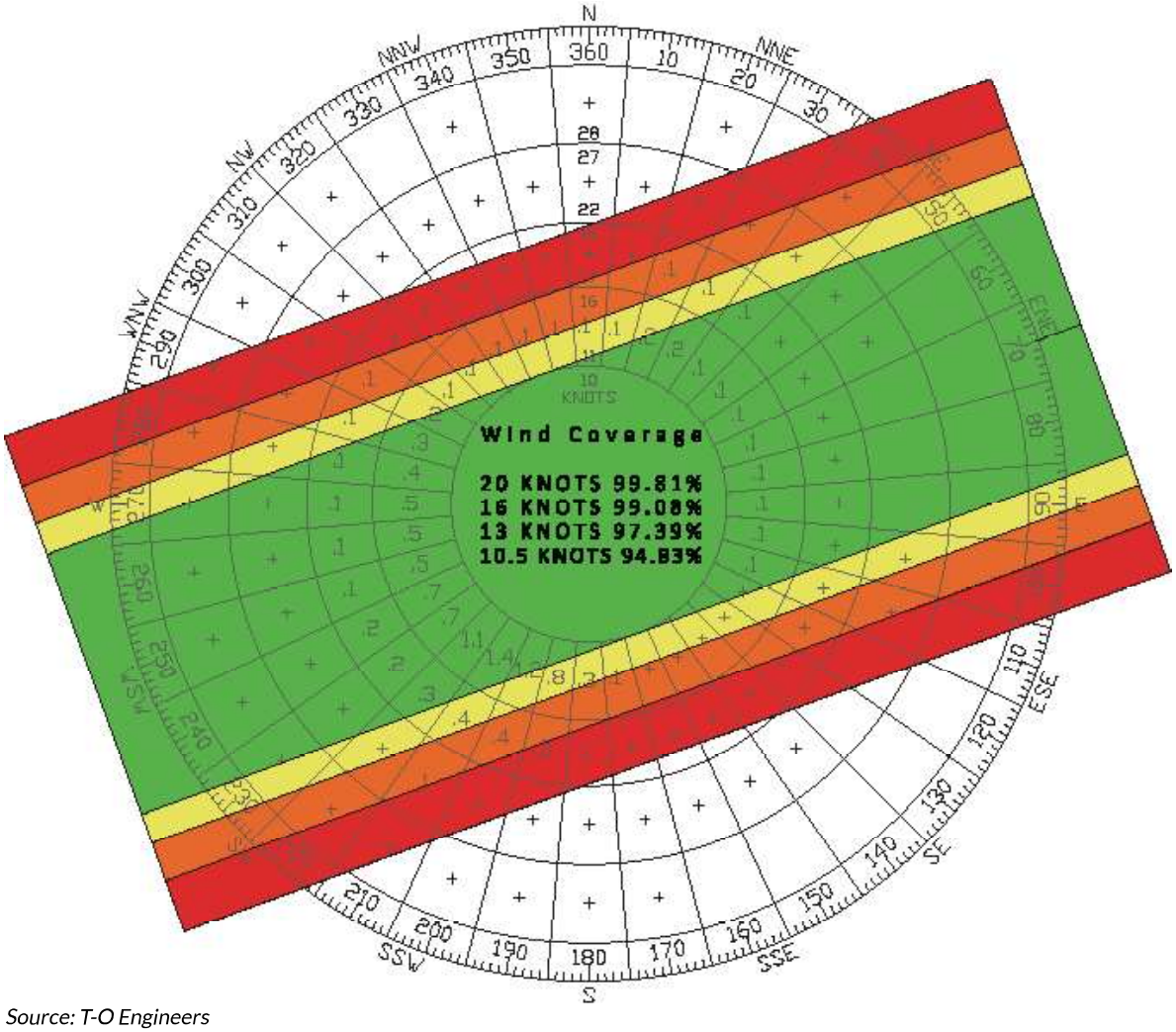
Source: U.S. Climate Data

WIND COVERAGE

Aligning the runway in the direction of the predominant winds increases operational safety and performance while minimizing crosswind components. Wind coverage, as defined by the FAA, is the percentage of time that crosswinds are below an acceptable value. Properly aligning runways provides the best wind coverage. The FAA recommends 95% coverage for allowable crosswind components.

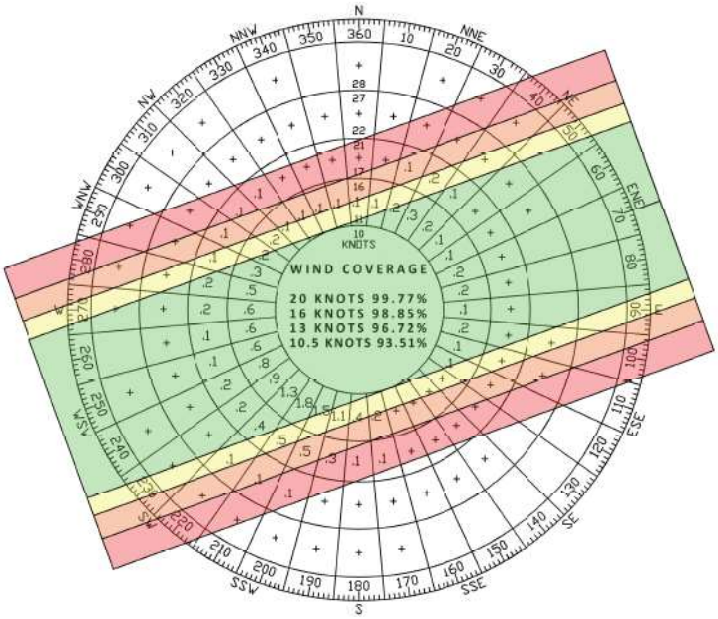
Wind data was directly downloaded from the Automated Weather Observation System (AWOS) located on the airport. The data contains wind direction and speeds for every hour of the day and reports them every 10 degrees. This data is collected for all weather phenomena, Instrument Meteorological Conditions (IMC), and Visual Meteorological Conditions (VMC). *Figure 3.5* details the all-weather data for each acceptable crosswind component. All crosswinds, except 10.5 knots, meet the parameters set by the FAA. The wind coverage for a 10.5 knot crosswind is 94.83%. 85% to 95% is considered the margin of error; thus, there is no justification for a crosswind runway at DWX. A total of 168,138 observations were used in the calculations for this wind analysis.

Figure 3.5 All Weather Wind Rose



Source: T-O Engineers

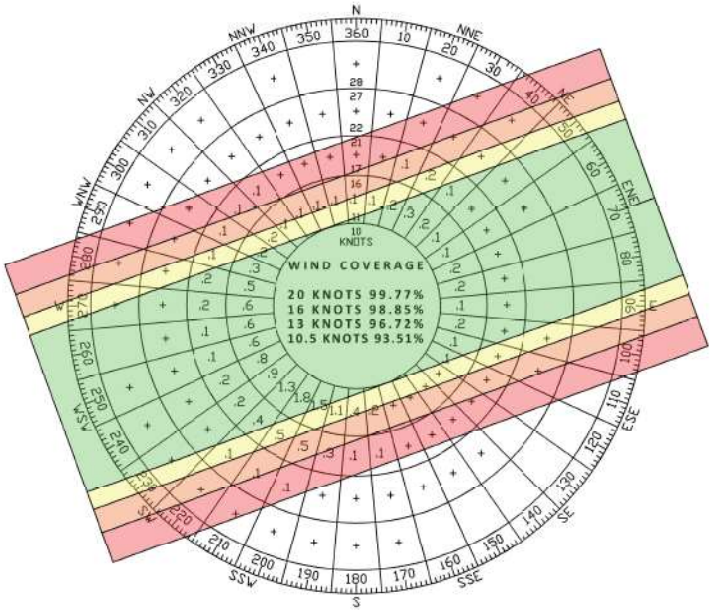
Figure 3.6 Wind Rose - VMC



Source: T-O Engineers

Figure 3.6 depicts the wind coverage data during Visual Meteorological Conditions (VMC) when visibility is at least one mile. During VMC, the 10.5 knot crosswind parameter does not meet the recommended 95% coverage by the FAA. A total of 119,800 observations were used in the calculations for this wind analysis.

Figure 3.7 Wind Rose - IMC

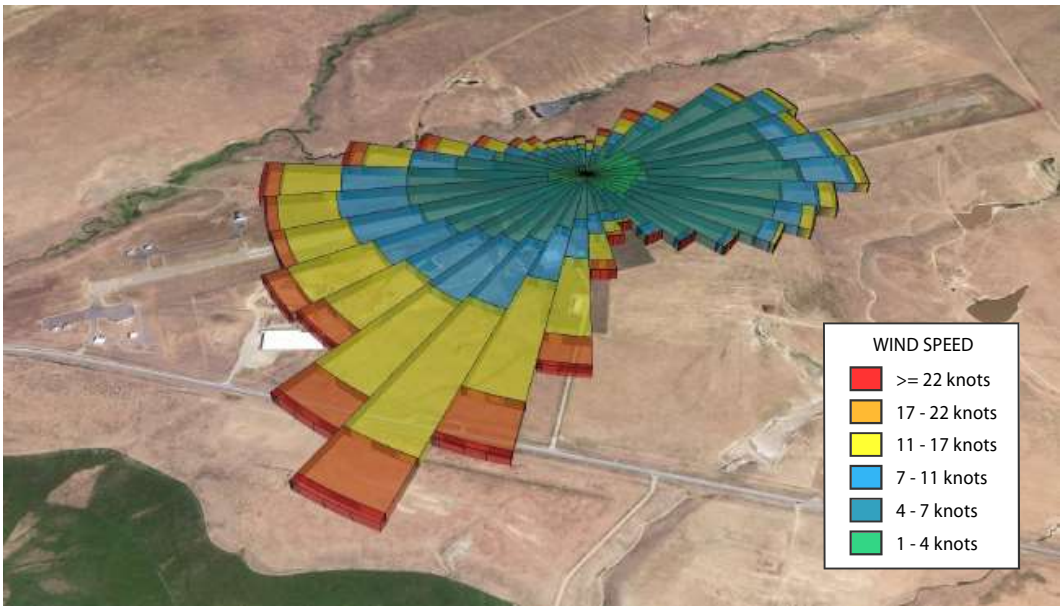


Source: T-O Engineers

Figure 3.7 depicts the wind coverage data during Instrument Meteorological Conditions (IMC) when visibility is under three miles. During IMC, the 10.5 knot crosswind parameter does not meet the recommended 95% coverage by the FAA. A total of 3,809 observations were used in the calculations for this wind analysis.

Wind direction and speed for available data are graphically overlaid on a satellite image of Dixon Airport. *Figure 3.8* illustrates all weather conditions, with the majority of wind blowing from southwest to northeast.

Figure 3.8 Wind Rose - All Weather Overlay



Source: T-O Engineers

Figure 3.9 displays wind direction and speed during VMC. There is relatively little change in the wind between the all weather conditions and Visual Meteorological Conditions.

Figure 3.9 Wind Rose - VMC Overlay

Source: T-O Engineers

Figure 3.10 displays wind direction and speed during IMC. The wind shifts towards the west, with very little wind coming from the east, during Instrument Meteorological Conditions.

Figure 3.10 Wind Rose - IMC Overlay

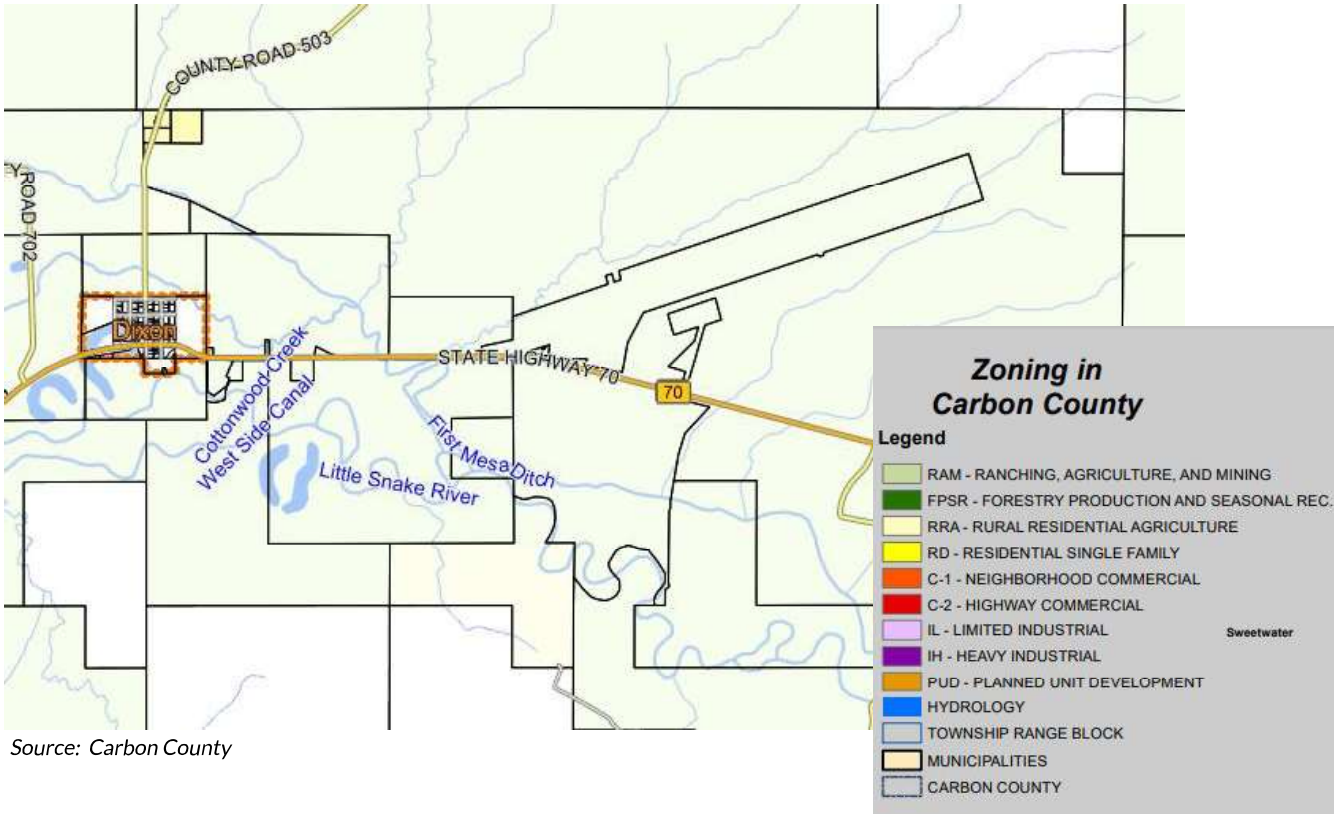
Source: T-O Engineers

3.2 AIRPORT AREA AND LAND USE

Dixon Airport is on Carbon County owned land and is designated Ranching, Agriculture, and Mining (RAM). Zoning in a RAM zones area is meant to preserve historic uses and open space, while also promoting ranching, agriculture, animal husbandry , forestry, and mining in a compatible way. Limits and restrictions apply to commercial and residential development within this zone.

DWX is surrounded by land that is privately owned by Three Forks Ranch Corporation, which is also RAM designated. *Figure 3.11* depicts the airport boundary and its surroundings and the designated land use classification.

Figure 3.11 Land Use Map



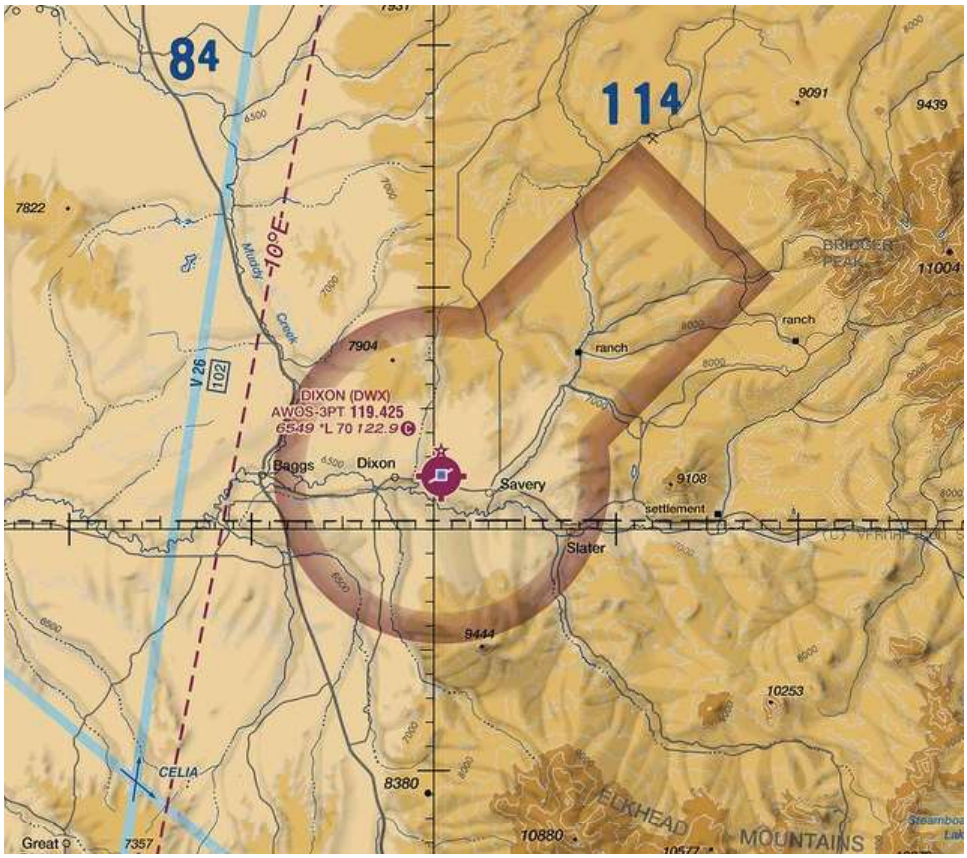
Source: Carbon County

3. Airside and Landside Inventory

AIRSPACE

Class G airspace surrounds the Airport from the surface up to 700 feet above ground level (AGL). At 700 feet AGL, class E airspace begins with a corridor to the northeast to accommodate the instrument approach. *Figure 3.12* depicts the airspace surrounding DWX.

Figure 3.12 DWX Airspace



Source: Airnav.com

3.3 BASED AIRCRAFT

FAA Form 5010 Airport Master Records and Reports, updated October 2018, lists five total based aircraft at DWX. Four aircraft are single engine and one is a jet. The FAA Terminal Area Forecast for Dixon lists five total based aircraft and does not forecast any increases/decreases for the next 26 years. According to the National Based Aircraft Inventory Program, which was last updated by the Sponsor in November 2015, there are five based aircraft. The airport manager stated that as of 2019, there are five based aircraft.

Table 3.1 Based Aircraft

Year	Terminal Area Forcast (TAF)	FAA 5010 Master Record	National Based Aircraft Inventory Program (NBAIP)	Physical Count by Airport Manager
2009	5			
2010	5			
2011	5			
2012	6			
2013	6			
2014	6			
2015	6		5	
2016	6			
2017	5			
2018	5	5		
2019	5			5

3.4 PAVEMENT CONDITION

Pavements at airports are routinely surveyed and tested. The result of these tests is a Pavement Condition Index (PCI), a score ranging from 0 to 100, which provides a general gauge of the current operational condition. A score of 100 indicates flawless pavement, while a 0 indicates extremely high degradation. The Wyoming Department of Transportation, Aeronautics Division (WYDOT) tracks pavement conditions at Wyoming's airports using PCI. This allows WYDOT to track and rank pavements across the state, determining the priority need for rehabilitation and maintenance.

Dixon Airport underwent an inspection in December of 2017. During the inspection, 12 sections were graded as listed in *Table 3.2*.

Table 3.2 PCI Scores at DWX

Section	Use	PCI Score
TWA1DI-10	Taxiway	88
AWESTDI-10	Apron	18
AWESTDI-20	Apron	56
AWESTDI-30	Apron	99
AEASTDI-10	Apron	89
AHOLD24DI-10	Apron	73
RW624DI-10	Runway	86
TH01DI-10	T - Hanger	80
TWA1DI-20	Taxiway	36
TWEASTDI-05	Taxiway	84
TWEASTDI-10	Taxiway	96
TWEASTDI-20	Taxiway	94

Source: WYDOT Aeronautics

3. Airside and Landside Inventory

Figure 3.13 shows the PCI by section at DWX at the time of the 2017 inspection. *Figure 3.14* illustrates the predicted PCI by section at DWX as of 2019.

Figure 3.13 DWX PCI - 2017

Source: WYDOT Aeronautics

Figure 3.14 DWX Predicted PCI - 2019

Source: WYDOT Aeronautics

A visual representation of the PCI scale is illustrated in *Figure 3.15*.

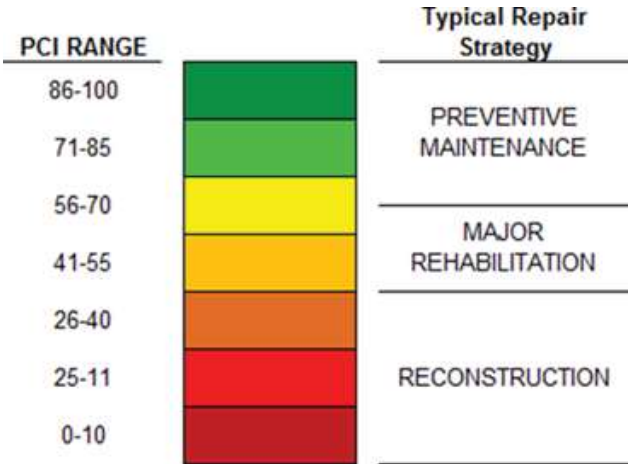
Figure 3.15 Pavement Surfaces

Typical Pavement Surface	PCI
	100
	60
	5

Source: WYDOT Aeronautics

Typical maintenance programs dictate that pavement with a score of 40 or less requires reconstruction and 41 to 70 requires major rehabilitation. PCI ratings above 70 typically only require preventative maintenance (see *Figure 3.16*).

Figure 3.16 PCI Scores and Repair Strategy



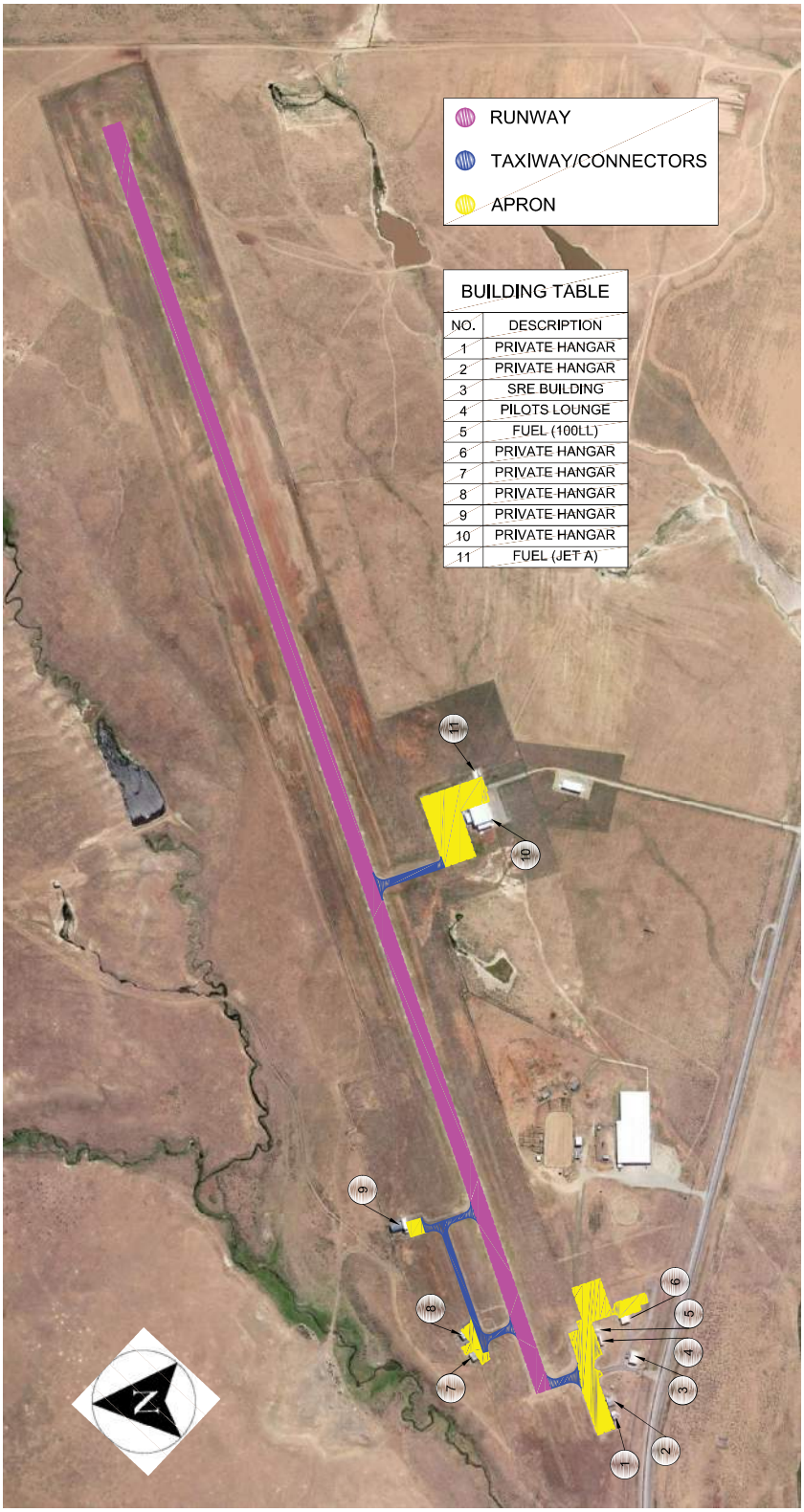
Source: WYDOT Aeronautics

3.5 EXISTING AIRPORT FACILITIES

RUNWAY

Dixon Airport has one asphalt runway. It is oriented in a northeast-southwest direction, magnetic heading 6/24. The runway is 7,000 feet long by 75 feet wide and is in good condition. The asphalt has a single-wheel weight bearing capacity of 24,500 pounds.

Figures 3.18 and *3.19* show the ends of Runways 6 and 24, respectively.



Source: T-O Engineers

Figure 3.18 Runway 6 End

Source: T-O Engineers

Figure 3.19 Runway 24 End

Source: T-O Engineers

TAXIWAYS AND CONNECTORS

DWX has a partial parallel taxiway on the north side of the runway. This taxiway and its two accompanying connectors are slated to be removed because they require crossing the runway to access. There are two connectors located on the south side of the runway, one is located at the Runway 6 end and the other one is located approximately midfield. The taxiways and connectors are shaded blue in *Figure 3.17*.

DWX does not have a full parallel taxiway. This means that pilots departing on Runway 24 have to back-taxi into position. Likewise, when landing on Runway 6, if the pilot misses the midway taxiway exit, they have to back-taxi in order to exit the runway environment. Extreme caution should always be used when back-taxiing on an active runway to avoid runway incursions.

SIGNAGE

Standard location and directional signs with reflective markers are located at the runway entrance and exit areas.

Figure 3.20 Dixon Airport Sign

Source: T-O Engineers

FENCING AND ACCESS GATES

The wildlife fence at DWX is made of eight-foot woven wire and it circumvents the entire airport with gated cattle guard entrances. There is also a one-way wildlife gate located on the property.

Figure 3.21 One-Way Wildlife Gate at DWX

Source: T-O Engineers

There are two automatic access gates. One that gives access to the Three Forks hangar area, and one that provides access to the airport.

Figure 3.22 Airport Access Gate

Source: T-O Engineers

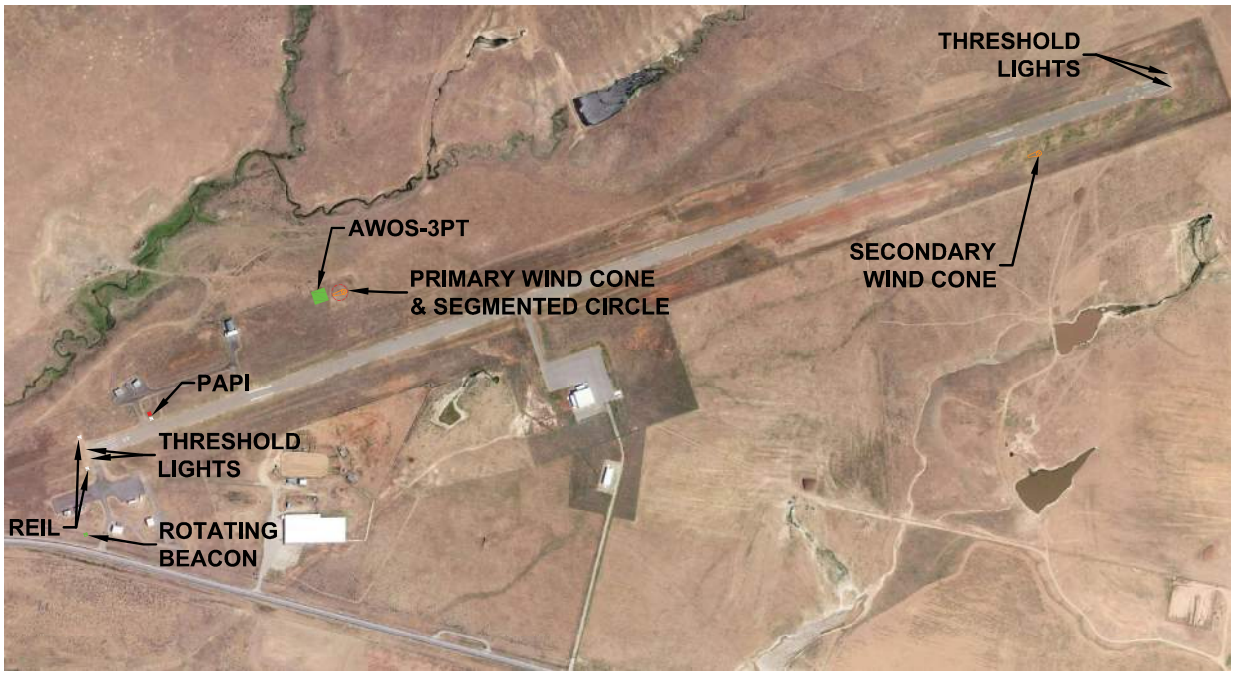
Figure 3.23 Hangar Area Access Gate

Source: T-O Engineers

3.6 NAVIGATIONAL AIDS (NAVAIDS)

Dixon Airport has an array of NAVAIDs assisting pilots with airport visibility and runway alignment. NAVAIDs allow for safer operations and increase airport usability, especially at night. *Figure 3.24* depicts the location of each NAVAID.

Figure 3.24 NAVAID Locations



Source: T-O Engineers

ROTATING BEACON

DWX has a rotating beacon located near the airport entrance road, approximately 400 feet to the south of the approach end to Runway 6. The beacon operates from sunset to sunrise and alternates green and white lights to indicate a civilian land airport.

Figure 3.25 Beacon, Hangars, and Vault at DWX

Source: T-O Engineers

RUNWAY END IDENTIFIER LIGHTS (REILS)

At the approach end of Runway 6 are runway end identifier lights. These unidirectional white lights are positioned at the corner of each runway landing threshold and flash in synchronization to provide positive identification of the approach runway.

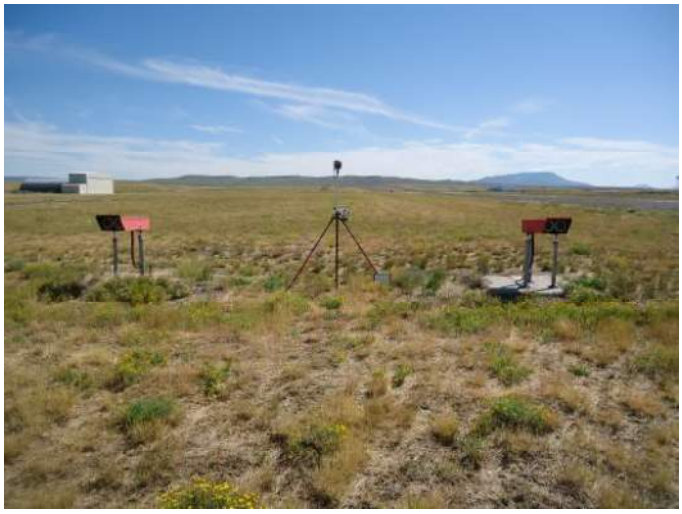
Figure 3.26 Runway End Identifier Light (REIL) (with survey equipment)

Source: T-O Engineers

PRECISION APPROACH PATH INDICATOR (PAPI)

Runway 6 is equipped with a 2-light PAPI system. These lights are installed on the left side of the runway and indicate when the pilot is on the proper glide path (3.0°) to the runway. One red light and one white light indicate proper glide path, two red lights indicate below the glide path, and two white lights indicate above the glide path.

Figure 3.27 Precision Approach Path Indicator (PAPI)

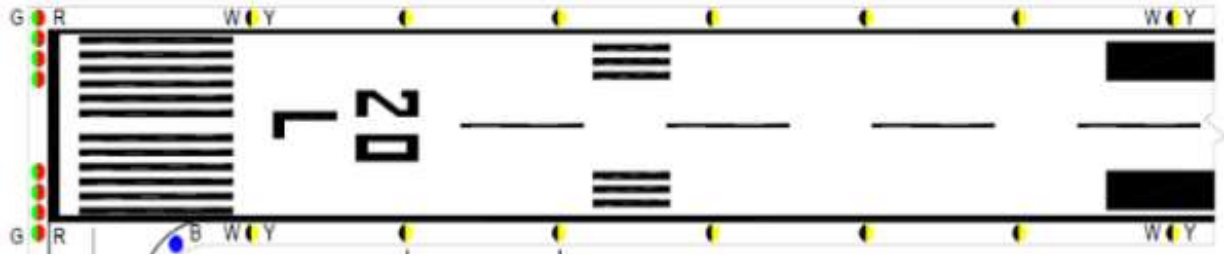


Source: T-O Engineers

RUNWAY EDGE LIGHTING

DWX is equipped with medium intensity runway lights (MIRL). These lights consist of omnidirectional white, bidirectional white/yellow, and bidirectional green/red lights. There are white omnidirectional lights from the midpoint of the runway that extend 1,500 feet in either direction. With 2,000 feet of runway left, the lights switch to the bidirectional yellow/white lights. The yellow is facing the pilot during landing and subsequent landing rollout to indicate the runway is ending shortly. At the end of each runway there are bidirectional red/green threshold lights that indicate the end (red) or beginning (green) of the active runway. *Figure 3.28* depicts the standard MIRL layout for instrument runways. The runway lights, REILs, and PAPI can be activated by the pilot through the Common Traffic Advisory Frequency (CTAF).

Figure 3.28 Standard MIRL Layout (runway orientation not indicative of DWX)



Source: FAA

PRIMARY WIND CONE AND SEGMENTED CIRCLE

The primary wind cone and segmented circle are located on the north side of the runway approximately 1,800 feet down Runway 6 and are displaced approximately 400 feet from the runway centerline. The primary wind cone is lighted, and the segmented circle depicts the traffic pattern. Both Runway 6 and Runway 24 traffic pattern direction are indicated so a pilot knows which direction to turn. Both Runway 6 and Runway 24 have standard left-hand traffic patterns.

Figure 3.29 Primary Wind Cone and Segmented Circle

Source: T-O Engineers

SECONDARY WIND CONE

There is a secondary wind cone located on the south side of the runway approximately 800 feet down Runway 24 and displaced approximately 250 feet from the runway. This wind cone is provided as an extra safety measure to allow a pilot to notice wind shift during the landing phase of flight. When wind speed reaches 15 knots or greater the windsock will be fully extended.

Figure 3.30 Secondary Wind Cone

Source: T-O Engineers

AUTOMATED WEATHER OBSERVING SYSTEM (AWOS)

An Automated Weather Observing System (AWOS) assists pilots with constant updates of the current weather conditions at the airport. An AWOS is comprised of a system of multiple sensors that are designed to interpret and report weather phenomena automatically. There are several different levels of AWOS system capabilities. DWX currently has an AWOS-3P/T system. This system has the capability to report the altimeter setting (in/Hg), wind data (direction/speed), temperature (°C), dewpoint (°C), density altitude, visibility (statute miles), cloud/ceiling data, precipitation identification, and thunderstorm/lightning reporting. All of this aids a pilot in making safer go/no-go decisions for flight. The system is located on the field near the primary wind cone and segmented circle. Pilots can access the AWOS through the radio frequency 119.425 or by calling (307) 383-2504.

3.7 FUEL FACILITIES

DWX has one fuel station that is self-serve and is available for use 24 hours a day. Avgas 100LL is the only fuel available to the public at Dixon Airport. This fuel station is number 5 on *Figure 3.17*.

Figure 3.31 Fuel Pump

Source: T-O Engineers

Three Forks Ranch owns the private hangar located midfield (number 10 on *Figure 3.17*). Across the apron from this hangar is a Jet A fuel tank used to fuel the aircraft used by Three Forks Ranch. Jet A fuel is not available for sale to the public. This fuel tank is number 11 on *Figure 3.17*.

3.8 APRON AND TERMINAL FACILITIES

APRON

The apron is approximately 2,311 square yards of pavement on the east side of Taxiway A1 and an estimated 3,250 square yards of pavement on the west side of Taxiway A1. The apron functions as an apron edge taxiway on the northern side. The electrical vault and two storage sheds are also located on this portion of the airfield. Dixon Airport has 10 aircraft tiedown positions.

Figure 3.32 Apron

Source: T-O Engineers

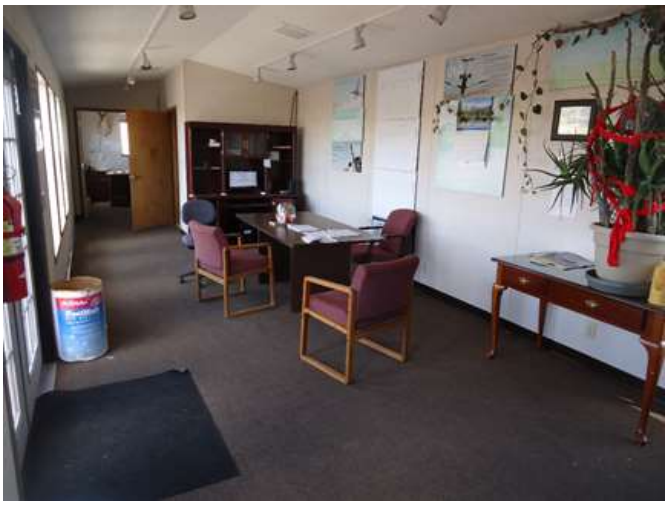
PILOT LOUNGE

The pilot lounge is connected to the terminal apron and is an estimated 200 square feet of waiting area and restrooms. The pilot lounge is number 4 in *Figure 3.17*.

Figure 3.33 Pilot Lounge (outside)

Source: T-O Engineers

Figure 3.34 Pilot Lounge (inside)



Source: T-O Engineers

HANGARS

Two ground lease hangars (numbers 7 and 8 in *Figure 3.17*) are located near Taxiway B1 to the north of the runway.

Figure 3.35 Private Hangar

Source: T-O Engineers

Figure 3.36 Private Hangar

Source: T-O Engineers

There are two hangars right next to the terminal apron. These hangars are depicted in *Figure 3.17* as numbers 1 and 2.

Figure 3.37 Private Hangars

Source: T-O Engineers

There is a hangar situated to the south of the pilot lounge along the access taxilane. This hangar is number 6 in *Figure 3.17*.

Figure 3.38 Private Hangar

Source: T-O Engineers

Another hangar is being utilized by Three Forks Ranch and is located near Taxiway B2 (number 9 in *Figure 3.17*).

Figure 3.39 Three Forks Ranch Private Hangar

Source: T-O Engineers

THREE FORKS RANCH FACILITIES

Three Forks Ranch facilities are located midfield on the southern side of Runway 6/24 (number 10 on Figure 3.x). These facilities can be accessed from Runway 6/24 through Taxiway A2. This area consists of 9,778 square yards of apron with two large and two small aircraft tiedowns and a 13,220 square foot building for operations and guest accommodations. These facilities are connected to Wyoming State Highway 70 through an access road and have 14 automobile parking spaces available.

Figure 3.40 Three Forks Ranch Hangar Facilities

Source: T-O Engineers

3.9 GROUND SUPPORT EQUIPMENT

In order to maintain safe operations all year at DWX, the airport operates a John Deere 5210 with a 6-foot mower, a 1981 Cat loader with a 14-foot dozer blade, and a 1981 GMC Top Kick 2-ton snow plow with broom and blade attachments. The Snow Removal Equipment (SRE) is housed in a 2,400 square foot building with two bays, adjacent to the access road near the entrance of the airport (number 3 in *Figure 3.17*).

Figure 3.41 Snow Removal Equipment (SRE) Building

Source: T-O Engineers

Figure 3.42 Snow Removal Equipment (SRE)

Source: T-O Engineers

3.10 AIRCRAFT RESCUE AND FIRE FIGHTING EQUIPMENT (ARFF)

The airport does not operate any Aircraft Rescue and Fire Fighting (ARFF) Equipment, but is supported by the Dixon Volunteer Fire Department for on-airport emergencies.

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4. Forecast of Aviation Demand

SECTION OVERVIEW

Chapter 4. Forecast of Aviation Demand provides a forecast of anticipated future aviation demands at Dixon Airport over the next two decades. These projections are critical for proper planning. Forecasts are based on an assortment of data sources. The existing and future Airport Reference Code (ARC) is B-II, Large.

4.1 GENERAL

Forecasts of future levels of aviation activity at an airport are the foundation for effective decisions in airport planning and development. The projections are used to determine the need and timing for new and/or expanded facilities or to decommission old facilities. Forecasts are intended to be realistic and based upon the most up-to-date available data and information, in order to provide adequate justification for airport planning and development. With an accurate forecast, an appropriate time frame or trigger points for phasing of capital investments can be created to help avoid early and unnecessary operating expenses or a loss of economic benefits through the airport for the community.

Although as accurate as possible, forecasts cannot be absolute as they only predict aviation trends based upon past and current events. This study focuses on the 5-, 10-, and 20-year time frames for Dixon. The degree of accuracy for the forecast is more precise short-term. A demographic and economic analysis for Carbon County and Dixon was provided in Chapter 2, as a background foundation upon which to base the forecast. A review of historic aircraft operations, based aircraft, and existing aviation forecasts, including the Federal Aviation Administration (FAA) and State of Wyoming forecasts, are also included.

Establishing realistic levels of "baseline" or existing demand is particularly important for DWX since the airport does not have an airport traffic control tower to record actual airport demand. Several options for establishing the baseline aviation demand are available including third party industry data sources, available FAA data, and compiled Fixed Base Operator (FBO) records. The specific methodology for establishing existing baseline airport demand will be discussed in subsequent sections of this chapter.

The forecast data in this chapter is organized as follows:

- Aviation Industry Trends
- Wyoming Aviation Trends
- Local Data
- FAA Terminal Area Forecast
- Forecasting Methodology
- Baseline Data for Forecast

4. Forecast of Aviation Demand

- Based Aircraft Projections
- Aircraft Operations
- Forecast by Aircraft Type
- Forecast by Airport Reference Code
- Forecast by Mix
- Forecast Comparison
- Critical Aircraft

4.2 AVIATION INDUSTRY TRENDS

A vibrant economy and healthy aviation industry go hand-in-hand. However, the aviation industry is a complex, global entity that cannot be broken down into a single number and it is important to understand the two main types of aviation present in Wyoming: commercial service and general aviation. Dixon Airport only has general aviation activity.

This section presents trends for the United States and, to the extent possible, Wyoming and Dixon. These trends are intended to provide a general frame of reference. Their analysis provides an understanding of how aviation activity within the region compares to aviation activity throughout the country. Their analysis also establishes a basis for predicting how aviation activity may be expected to develop in the future. This frame of reference is essential when identifying potential activity scenarios for the airport.

The most recent FAA Aerospace Forecast Fiscal Years 2019 – 2039 proclaimed the following in the forecast highlights: "The great recession of 2007-09 marked a fundamental change in the operations and finances of U.S. airlines. Since the end of this recession in 2009, U.S. airlines revamped their business models to minimize losses by lowering operating costs, eliminating unprofitable routes, and grounding older, less fuel-efficient aircraft. Fundamentally, over the medium and long term, aviation demand is driven by economic activity, and a growing U.S. and world economy provides the basis for aviation to grow over the long run.

To increase operating revenues, carriers initiated new services that customers were willing to purchase and started charging separately for services that were historically bundled in the price of a ticket. The industry experienced an unprecedented period of consolidation with three major mergers in five years. The results of these efforts have been impressive: 2018 marks the tenth consecutive year of profitability for the U.S. airline industry. Looking forward, there is confidence that U.S. airlines have transformed from a capital intensive, highly cyclical industry to an industry that generates solid returns on capital and sustained profits.

Although the U.S. and global economy saw growth accelerate in 2018, a combination of higher energy prices and labor cost increases resulted in profits for U.S. airlines falling from 2016's record levels. Over the long term, we see a competitive and profitable aviation industry characterized by increasing demand for air travel and airfares growing more slowly than inflation, reflecting over the long term a growing U.S. and global economy.

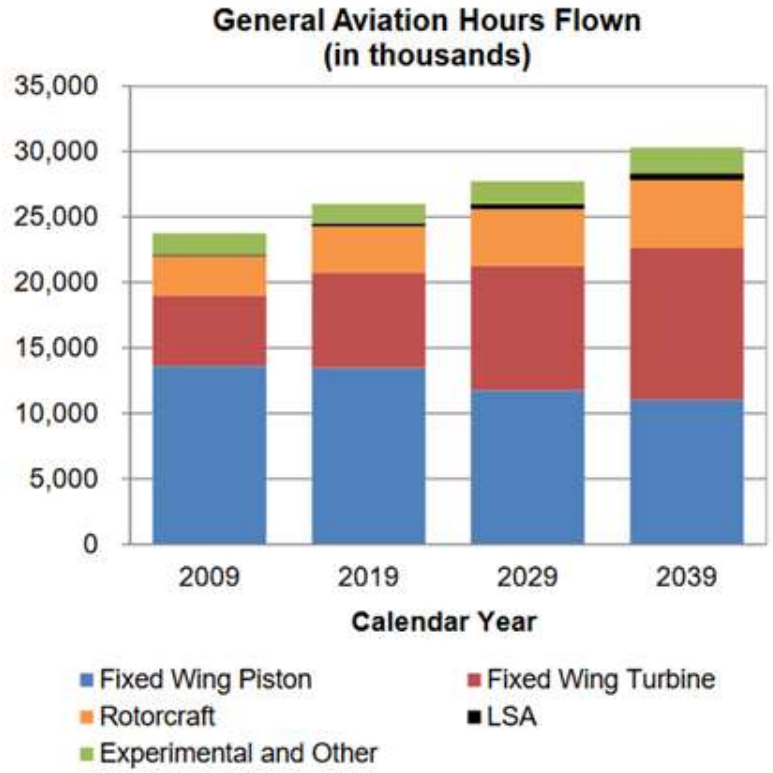
The active general aviation fleet is forecast to remain relatively stable between 2019 and 2039. While steady growth in both Gross Domestic Product (GDP) and corporate profits results in continued growth of the turbine and rotorcraft (helicopter) fleets. The largest segment of the general aviation fleet – fixed wing piston aircraft continues to shrink over the forecast. The number of general aviation hours flown is projected to increase by an average of

0.8% per year through 2039, as growth in turbine, rotorcraft, and experimental hours more than offset a decline in fixed wing piston hours.

Although the total active general aviation fleet is projected to remain stable, the number of general aviation hours flown is forecasted to increase an average of 0.8% per year through 2039 from 25.2 million in 2017 to 30.3 million, as the newer aircraft fly more hours each year."

This data is illustrated in *Figure 4.1* (LSA represents light sport aircraft).

Figure 4.1 General Aviation Hours Flown by Aircraft Type

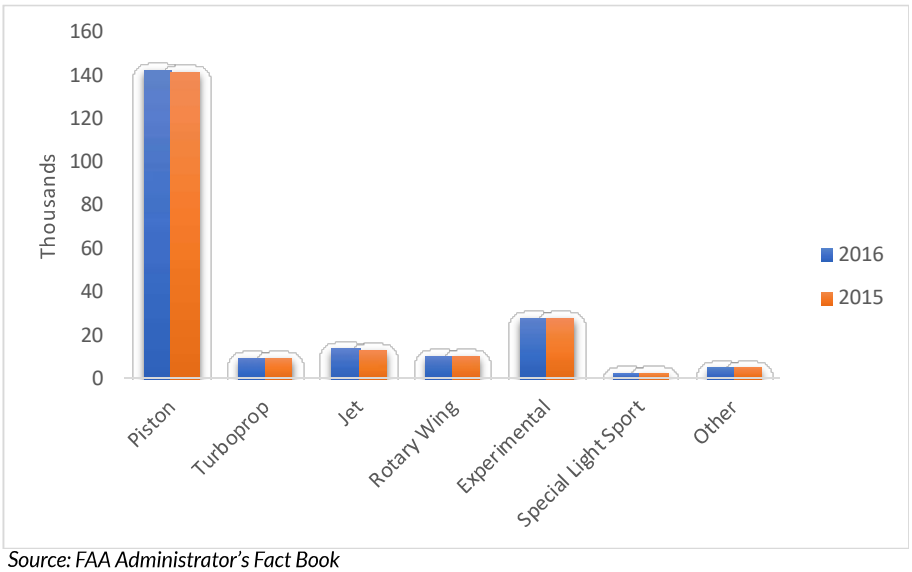


Source: FAA Aerospace Forecast for Fiscal Years 2019-2039

Each year, the FAA submits the National Plan of Integrated Airport Systems (NPIAS) report to Congress. The 2019 report, submitted in September 2018, stated that the U.S. general aviation manufacturing sector experienced a significant decline (48%) in deliveries in 2009 and in 2016 (4%). Single engine piston aircraft accounted for 45% of the deliveries in 2016 and business jet deliveries showed modest increase, but turboprop deliveries continued to decline. Based on figures released by the General Aviation Manufacturers Association (GAMA), 37 U.S. manufacturers of general aviation aircraft delivered an estimated 1,525 aircraft in CY 2016, 4.2% less than in CY 2015.

The long-term outlook for general aviation driven by turbine aircraft activity remains stable. The active general aviation fleet is projected to remain flat over the next 20 years. The more expensive and sophisticated turbine-powered fleet is projected to grow at an average annual rate of 2.0% with the turbine jet portion increasing at 2.2% a year. Fixed-wing piston aircraft, the largest segment of the general fleet, is predicted to shrink over the forecast period by 23,750 aircraft (at an average annual rate of 0.9%). Created in 2005, the light sport aircraft category is the smallest segment of the fleet but forecasted to grow by 3.6% annually, adding about 2,850 new aircraft by 2038. Light sport aircraft is aircraft, other than helicopters, that have a Maximum Gross Takeoff Weight of less than 1,320 pounds.

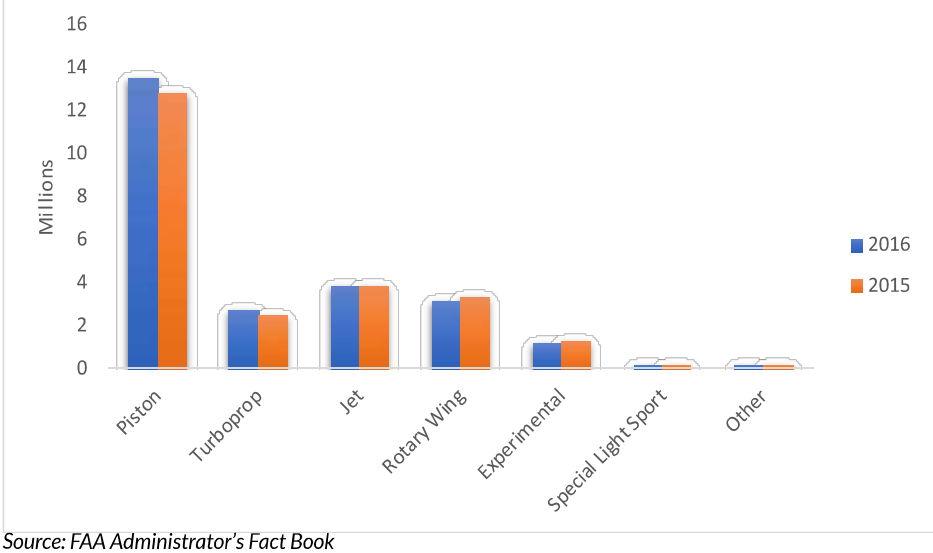
Figure 4.2 General Aviation and Part 135 Activity - Estimated Active Aircraft



Source: FAA Administrator's Fact Book

The FAA's December 2018 Administrator's Fact Book, compiled by the FAA Office of Communications, contains numerical data for several categories such as safety, FAA air traffic, airports, aircraft, and industry trends. Estimated active aircraft in thousands for the United States general aviation and Part 135 are shown for 2015 and 2016 in *Figure 4.2* Estimated Active Aircraft. The United States General Aviation and Part 135 activity hours flown for 2015 and 2016 are shown in *Figure 4.3 Estimated Hours Flown.*

Figure 4.3 General Aviation and Part 135 Activity - Estimate Hours Flown



Source: FAA Administrator's Fact Book

The FAA Administrator's Fact Book also contains data tables on a wide range of topics. Relevant data has been pulled and placed into *Table 4.1*. Regarding general aviation, the annual growth rate used to forecast annual operations in 2023 is 0.33%, while the annual growth rate used to forecast annual operations in 2033 and 2038 is 0.36% and 0.39%, respectively.

Table 4.1 Airplane Design Group				
Fiscal Year		**Forecast 2023**	**Forecast 2033**	**Forecast 2038**
Operations, Itinerant (thou.)	**Terminal Forecast**			
	Air Carrier	18,953	22,689	24,723
	Air Taxi & Commuter	7,983	8,567	8,915
	General Aviation	32,774	33,962	34,629
	Military	3,508	3,509	3,509
Domestic	**FAA Aerospace Forecast**			
	Available Seat Miles (mil.)	924,213	1,102,102	1,228,116
	Revenue Passenger Miles (mil.)	791,682	957,784	1,063,690
	Enplanements (thou.)	844,316	994,587	1,089,931

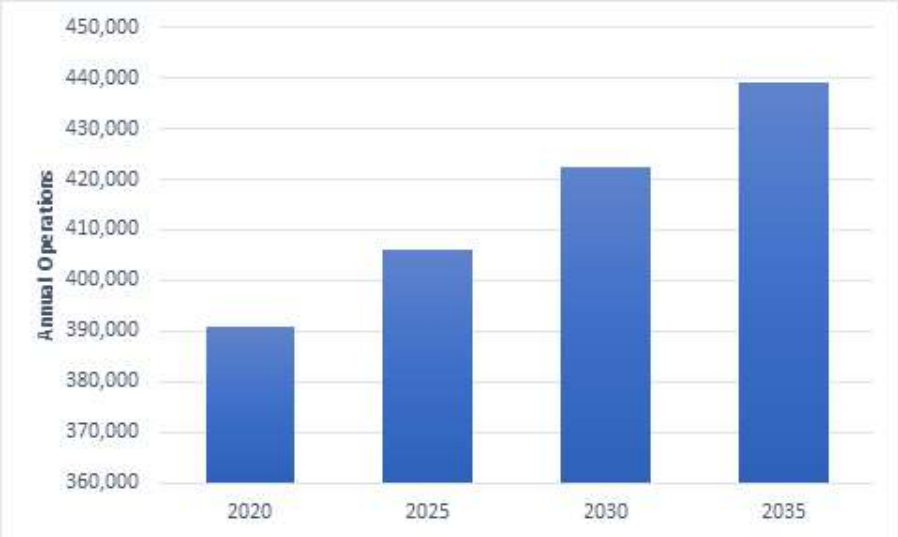
4.3 WYOMING AVIATION TRENDS

Of the 40 publicly owned airports in the state of Wyoming, 33 airports are included in the National Plan of Integrated Airport System (NPIAS) and 24 airports solely serve the general aviation community. These airports offer services that include private recreational flying, agricultural flying, firefighting, search and rescue flight, business and corporate flights, air taxi, helicopter operations, and much more. 77.5% of aviation activity in Wyoming is general aviation.

The National Plan of Integrated Airport System (NPIAS) 2019-2023 report states that among the 33 NPIAS airports in Wyoming there were 1,113 based aircraft and 552,703 enplanements in 2018. 478 of those aircraft were based at GA airports.

According to the 2016 Wyoming State Aviation System Plan Executive Summary, operations are forecasted to grow 16.5% with a compound annual growth rate (CAGR) of 0.8% during the 20-year planning period of 2015-2035.

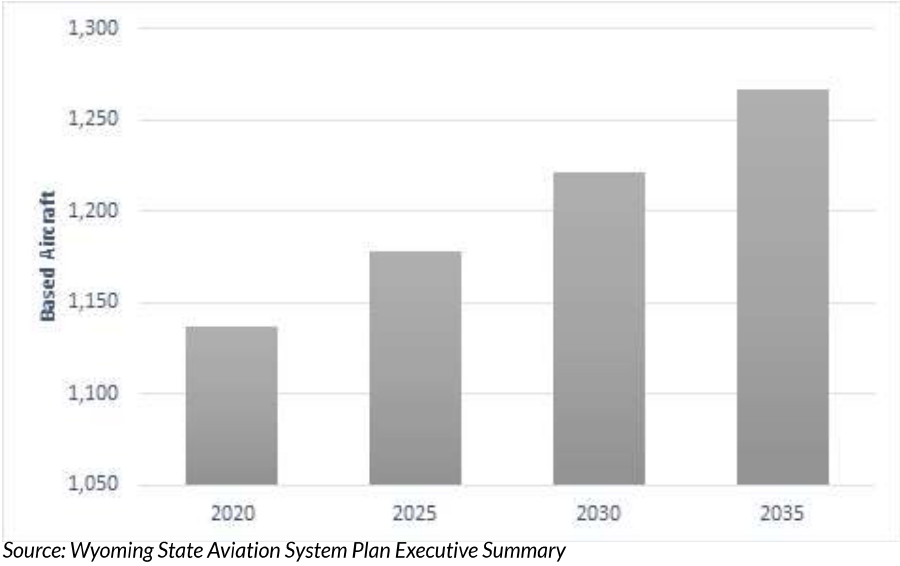
Figure 4.4 Forecast of Wyoming Statewide Aircraft Operations



Source: Wyoming State Aviation System Plan Executive Summary

According to the Wyoming State Aviation System Plan Executive Summary, based aircraft are also forecasted to increase by 15.5% by the forecast year 2035 with an annual CAGR of 0.7% during the planning period. The CAGR used to determine these forecasts is based on each county's estimated population growth during the planning period.

Figure 4.5 Forecast of Wyoming Statewide Based Aircraft

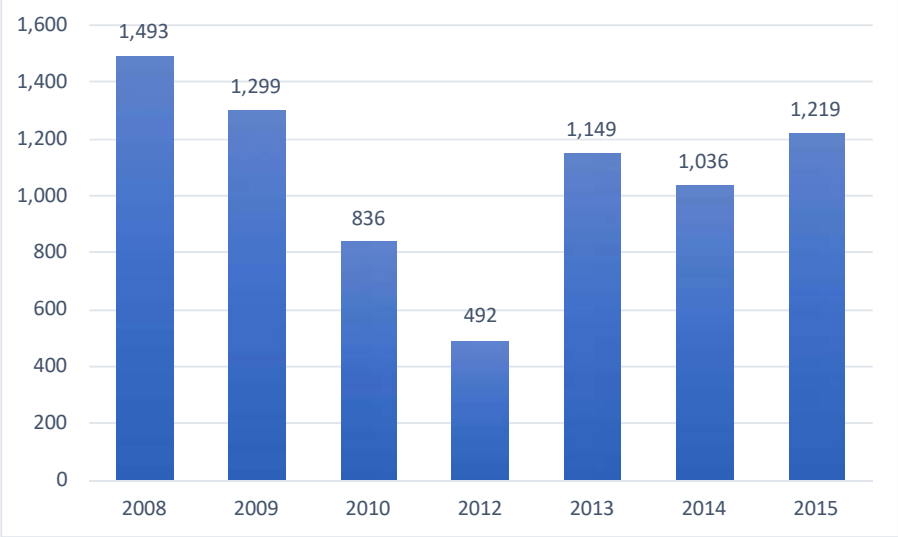


Source: Wyoming State Aviation System Plan Executive Summary

4. Forecast of Aviation Demand

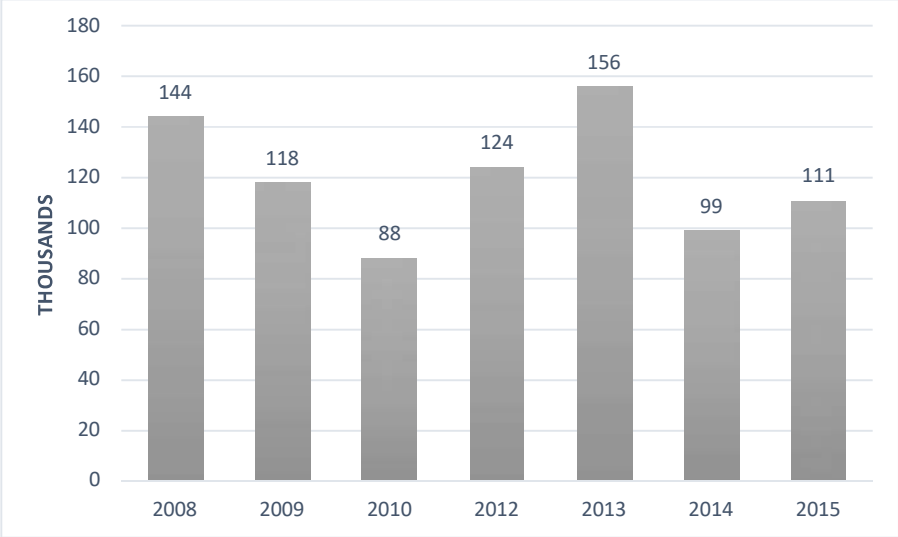
GAMA's 2016 General Aviation Statistical Databook & Industry Outlook provides the number of estimated active aircraft for Wyoming general aviation and Part 135 activity, as well as the estimated hours flown. This data is illustrated below. As the number of based aircraft increases, so should the number of estimated hours flown.

Figure 4.6 Wyoming General Aviation and Part 135 Activity- Estimated Active Aircraft



Source: 2016 General Aviation Statistical Databook and Industry Outlook

Figure 4.7 Wyoming General Aviation and Part 135 Activity- Estimated Hours Flown



Source: 2016 General Aviation Statistical Databook and Industry Outlook

4.4 LOCAL DATA

MOTION-ACTIVATED CAMERAS

In addition to examining aviation industry trends for Wyoming and the U.S., it is also important to review data on a local level, specific to Dixon Airport and the Town of Dixon. As part of the Airport Master Plan process, three motion activated cameras were mounted on the airport to capture live traffic, including both day and night operations over four months. The cameras were placed on the connectors between the runway and parking apron where aircraft move slower and stop. Cameras were aligned with the existing hold lines. Locations of the three cameras are displayed in *Figure 4.8*.

Figure 4.8 Camera Locations

Source: T-O Engineers

4. Forecast of Aviation Demand

The following pictures show an assortment of aircraft that operated at Dixon Airport during the Master Plan process. A total of eight unique aircraft were captured, including one rotorcraft. Small single-engine piston aircraft (e.g., Cessna 172) were photographed, as well as larger aircraft, such as a Cessna 525, Falcon 2000, and Cessna 750. The pictures show not only a sampling of the aircraft, but also assist the planning process with the assumed types of operation (business or recreational) and origin (local or transient). The Airport Reference Code (ARC) used to determine applicable airfield design standards for each aircraft type is overlaid on each picture below.

Piper PA-18 (A-I)

Cessna 150 (A-I)

Bell 429 Rotorcraft

Cessna 172 (A-I)

Cessna 177 (A-I)

Cessna 525 (B-II)

Cessna 750 (B-II)

Falcon 2000 (B-II)

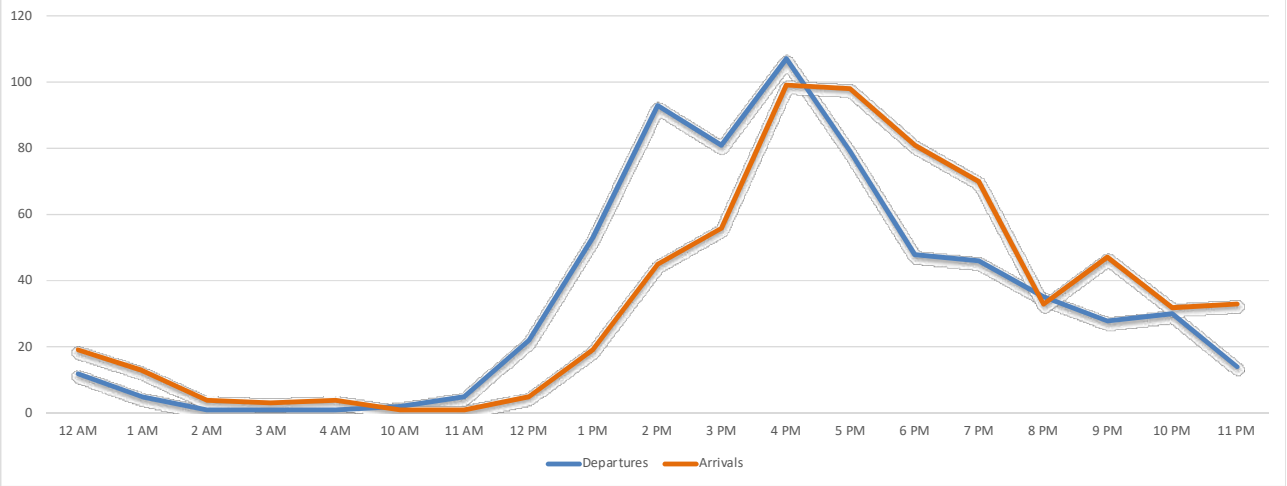
Traffic was captured for a period of 83 days total from April 26, 2019 through July 18, 2019. Nearly 25,000 photographs were examined by the consultant staff in two stages. Each photograph was categorized as either: aircraft traffic, other traffic (e.g., maintenance snow plow), or other (e.g., animals, joggers, empty picture).

Next, all aircraft traffic was further identified. A spreadsheet was used to log all relevant information, such as the aircraft make, model, N-number, and number of engines. This data helped set the minimum baseline operation numbers for use in the forecast later in this chapter. Importantly, the cameras also provided evidence of the exact types of aircraft that use the airport.

FLIGHT PLANS

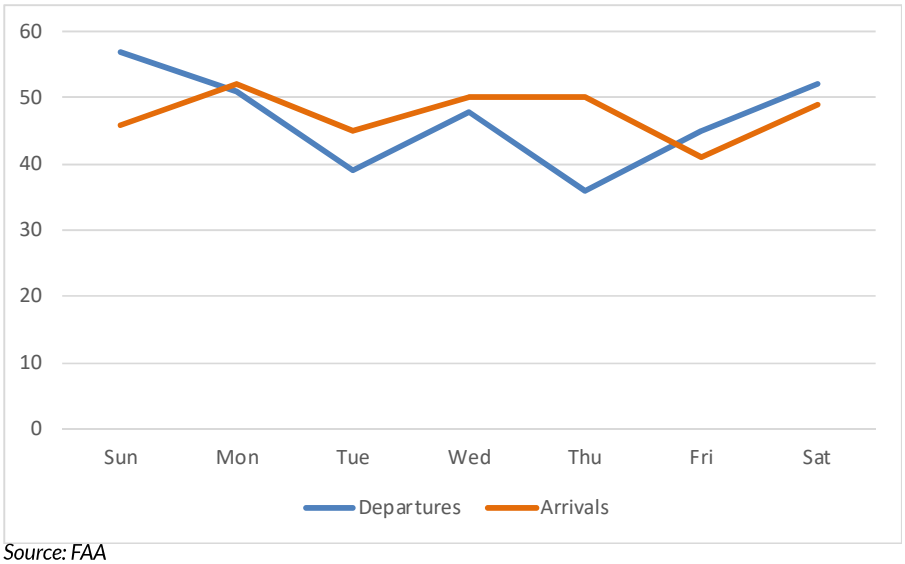
A flight plan is a document that a pilot files with the FAA prior to departure specifying the aircraft's planned route. Flight plans are required Instrument Meteorological Conditions (IMC), and are voluntary for GA operations in Visual Meteorological Conditions (VMC). Flight plan data for Dixon Airport was requested from the FAA for the period of March 2014 through November 2018. *Figures 4.9* and *4.10* show the breakdown of filed flight plans to or from Dixon Airport by time of day and day of the week.

Figure 4.9 Flight Plans – Operations by Time of Day



Source: FAA

Figure 4.10 Flight Plans – Operations by Day of Week



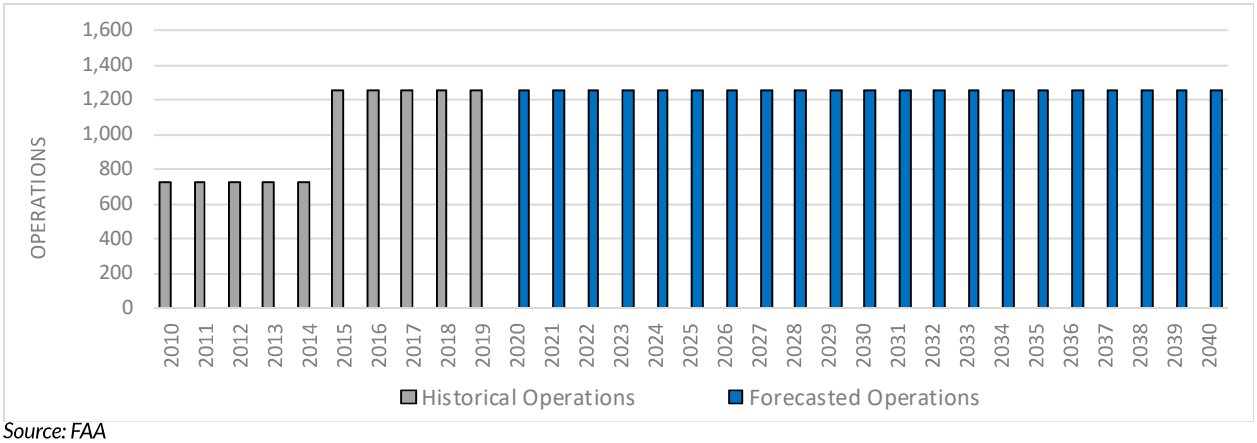
Source: FAA

4.5 FAA TERMINAL AREA FORECAST

The Terminal Area Forecast (TAF) is prepared to assist the FAA in meeting its planning, budgeting, and staffing requirements. It is also used by state aviation authorities as a basis for planning airport improvements. The TAF assumes an unrestrained demand for aviation services based upon national economic conditions, as well as conditions within the aviation industry.

The TAF uses operations at non-towered airports as reported by airport operators on the FAA Form 5010, Airport Master Record. Form 5010 reports on aviation activity at the airport as estimated by FAA inspectors or information provided by airport managers, state aviation activity surveys, and other sources. Based aircraft data is also taken from the FAA Form 5010. The total operations, historical and forecasted, for Dixon Airport from 2010 to 2040 are shown below in *Figure 4.11*.

Figure 4.11 FAA TAF Total Operations

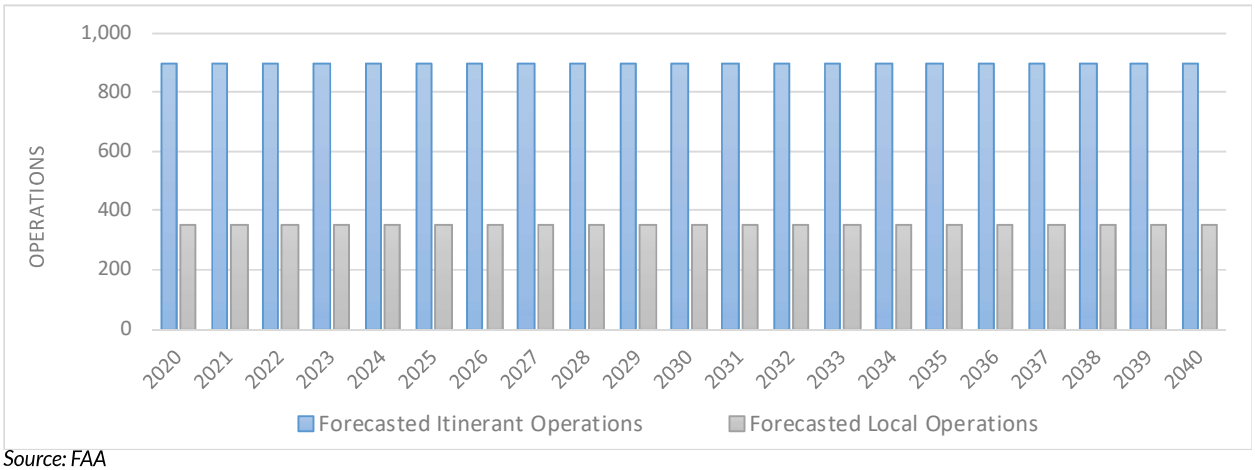


Source: FAA

The historical operations have not changed since 2015 and the TAF forecasts no change in activity for the 20-year forecast period, remaining at 1,250 annual operations forecasted through 2040.

Operations are typically divided into two categories: local and itinerant. Local operations are performed by aircraft that operate in the local traffic pattern, or within sight of the airport, are known to be operating for or arriving from flight in local practice areas within a 20-mile radius of the airport, or executing simulated instrument approaches or low passes at the airport. Itinerant operations are all aircraft operations other than local operations. *Figure 4.12* depicts the TAF forecasted operations from 2020 through 2040, split between itinerant and local. The majority, approximately 72%, of all operations at Dixon Airport are forecasted to be itinerant.

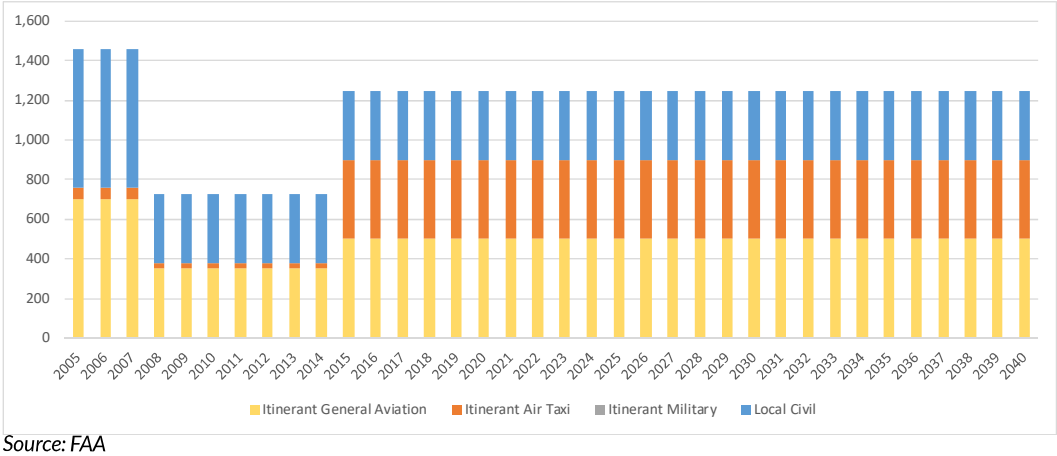
Figure 4.12 FAA TAF Itinerant and Local Operations



Source: FAA

Figure 4.13 shows the historical and forecasted number of operations for Dixon Airport from 2005 through 2040. These numbers are estimates from the TAF. Operations are split between itinerant and local, and then further divided into additional categories: itinerant general aviation, itinerant air taxi, itinerant military, and local civil. No air carrier operations, itinerant or local, were forecasted. Operations are projected to remain at 1,250 annually. Itinerant general aviation operations account for 40% of total operations, while air taxi operations account for 32% of the total operations. Local civil operations account for 28% of all forecasted traffic at Dixon Airport.

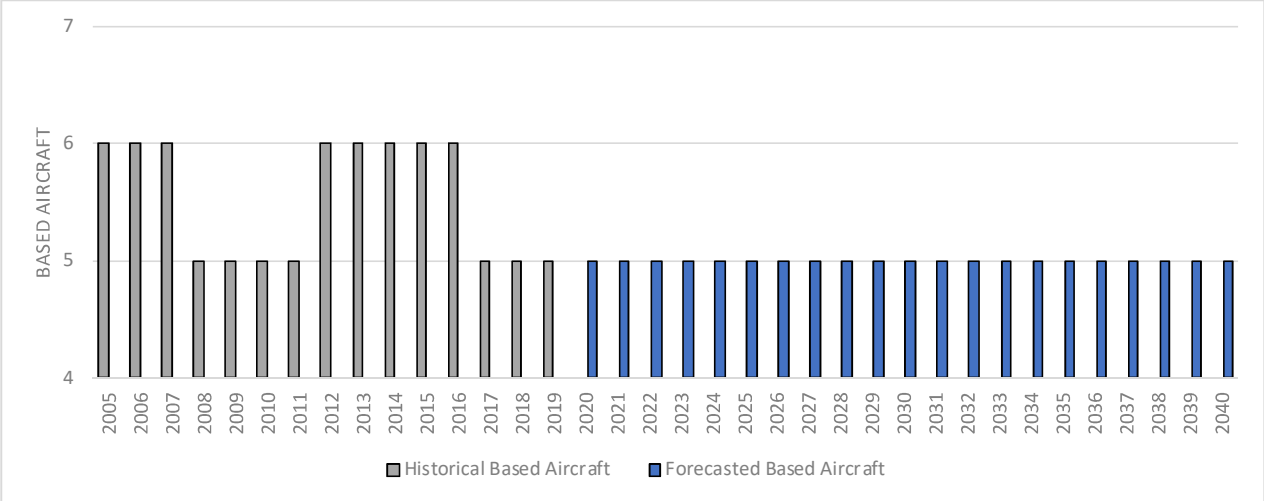
Figure 4.13 FAA TAF Operations Mix



Source: FAA

Figure 4.14 graphs the based aircraft Dixon Airport, both historic and forecasted. The FAA expects no change in based aircraft at the airport, remaining at 5 aircraft from 2017 through 2040.

Figure 4.14 TAF Total Based Aircraft



Source: FAA

4.6 FORECASTING METHODOLOGY

The FAA has several accepted forecasting techniques, including regression analysis, trend analysis, exponential smoothing, and cohort analysis. An "operations per based aircraft" or OPBA methodology is commonly used for small general aviation airports. However, Dixon Airport is a poor candidate for this method given the small local population and relatively few aircraft.

For Dixon Airport, given the limited amount of data sources, a time series analysis will be utilized. A time series analysis is another fundamental technique used to analyze and forecast aviation activity by projecting historical activity without using independent (explanatory) variables. Different statistical methods can be used to support a time series analysis. In this case, simple growth rates will be applied to the available historical data. These growth rates are derived from a variety of sources.

A summary of the forecast methodology is as follows:

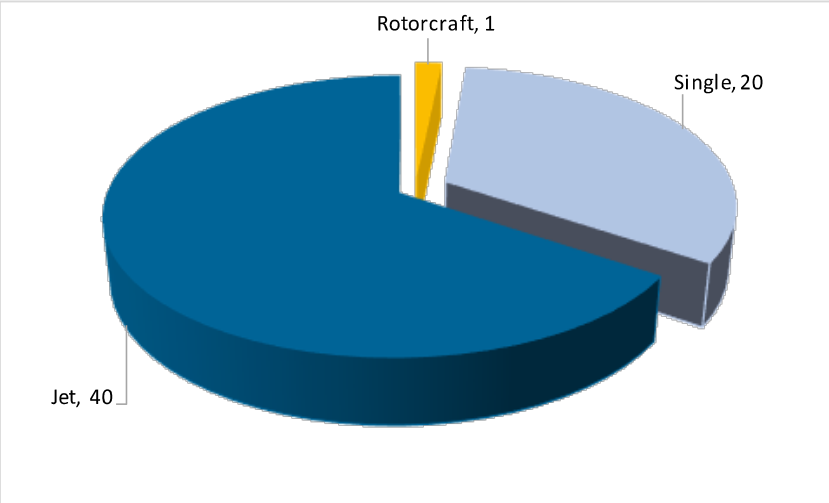
- Count aircraft operations from motion activated cameras deployed in airfield (for a period of 83 days).
- Review data from IFR filed flight plans to supplement photographic operation totals.
- Extrapolate data linearly to create a complete 12-month period of aviation activity.
- Breakdown operation counts by aircraft type (single engine piston, multi-engine piston, jet, etc.).
- Convert aircraft type operation totals into aircraft Airport Reference Code (ARC) totals and aircraft mix (itinerant, local, etc.) totals.
- Compare annual operation totals to TAF and Wyoming system plan forecasts.

4.7 BASELINE DATA FOR FORECAST

An aircraft operation is defined as a takeoff or landing, with a touch-and-go counting as two operations. To create the forecasted total operations two local data sources were employed, motion-activated camera photographs and IFR flight logs. This planning forecast covers a 20-year period, beginning in 2019 and ending in 2039.

Results of the photographed operations are displayed below in *Figure 4.15*. From 04/26/19 through 07/18/19, data was collected for a total of 83 days, during which 61 operations were cataloged. Of those, 65.6% were performed by jet aircraft, 32.8% were performed by single engine aircraft, and 1.6% were performed by rotorcraft.

Figure 4.15 Photographed Operations by Aircraft Type



Source: T-O Engineers

Table 4.2 Motion-Activated Camera Statistics	
Time Period	04/26/19 through 07/18/19 (83 days)
Total Operations Captured	61
ARC A-I Operations Captured	20
ARC B-II Operations Captured	38
ARC C-II Operations Captured	2
Most Frequently Operating Individual Aircraft	Cessna 525
ARC of Most Frequently Operating Individual Aircraft	B-II

Several parameters influence the cameras' performance, including the aircraft speed, air temperature, vegetation, and even the camera's reliability. For instance, faster aircraft are more likely to be missed due to the activation delay of the camera sensor. Also, vegetation may trigger cameras limiting the possibility to detect aircraft during the sensor's delay.

During the motion-activated camera installation of another Master Plan, a car was driven in front of the cameras to evaluate their efficiency. While remaining in the detection range, approximately one-third of the passes were not detected. In addition, based on the speed of the vehicle, the sensor would be activated without being able to take a framed picture of the vehicle, resulting in a picture without the vehicle. This level of efficiency is consistent with the results from previous uses of the motion-activated cameras in similar situations.

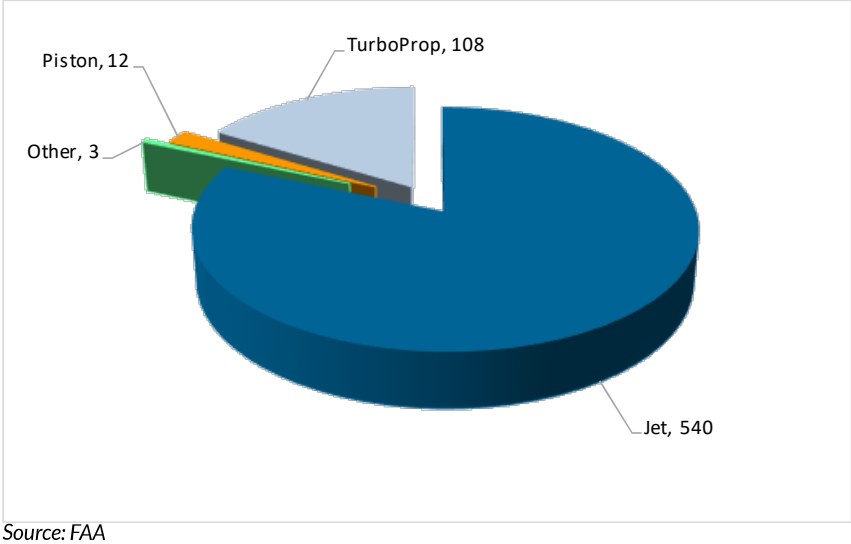
To account for these results, it is assumed that approximately 40% of the actual aircraft activity at the airport was not captured during the time period:

- 30% (approximately 1/3) due to missed detections
- 10% due to late and false sensor activations

Table 4.3 Adjusted Motion-Activated Camera Statistics	
Number of Aircraft Captured by Cameras	61
% of Missed Aircraft	40%
Adjusted Number of Aircraft	102
Minimum Number of Operations per Aircraft	2
Number of Operations Performed during Period	204
Extrapolated Number of Operations Performed/Year	897
ARC A-I Operations Performed – Adjusted	299
ARC B-II Operations Performed – Adjusted	568
ARC C-II Operations Performed – Adjusted	30

As noted previously, flight plans filed with the FAA were examined as part of this Master Plan. Based on this data, the aircraft using Dixon Airport were cataloged as depicted in *Figure 4.16*. The majority (81.4%) of flight plans were filed by jet aircraft, followed by turboprop aircraft (16.3%), piston aircraft (1.8%), and other aircraft (0.5%).

Figure 4.16 Flight Plan Operations by Aircraft Type



Source: FAA

Table 4.4 Filed Flight Plan Statistics	
Time Period	03/30/14 through 11/14/18 (1,690 days)
Total Flight Plans Filed during Time Period	663
Filed Flight Plans for ARC A-I Aircraft	33
Filed Flight Plans for ARC A-II Aircraft	12
Filed Flight Plans for ARC B-I Aircraft	19
Filed Flight Plans for ARC B-II Aircraft	580
Filed Flight Plans for ARC C-II Aircraft	17

4.8 BASED AIRCRAFT PROJECTIONS

Based aircraft are those aircraft that are permanently stored at an airport. Estimating the number and type of aircraft expected to be based at the airport over the next 20 years impacts the planning for future facility and infrastructure requirements. The number of based aircraft can provide the most basic form of general aviation demand. By developing a based aircraft forecast for an airport, other vital general aviation activity and demand can be projected. As reported in Chapter 3, a count of five based aircraft is assumed to be the most accurate and will be used for extrapolation in the forecast.

Scenario 1 – FAA Aerospace Forecast for Fiscal Years 2019-2039: This scenario utilizes an annual growth rate of -0.9% for piston-powered aircraft and 2.2% for turbine jet-powered aircraft.
Scenario 2 – 2018 Woods & Poole Economic and Demographic Data Source: This data source projects a variable growth rate for Carbon County during the planning period. Through 2024, a growth rate of 0.3% is applied; through 2029, 0.25%; through 2034, 0.17%, and through 2039, 0.08% growth is anticipated.
Scenario 3 – FAA TAF: This scenario utilizes the TAF's projection of no change (0%) in the number of based aircraft at the airport throughout the planning period.
Scenario 4 – 2016 Wyoming State Aviation System Plan: Based on the Wyoming classification system, this scenario utilizes an annual growth rate of 10% in the number of based aircraft for a Local airport, such as Dixon Airport.

Table 4.5 Based Aircraft Forecast					
Growth Rate	Base Year 2019	2024	2029	2034	2039
FAA Aerospace for Fiscal Years 2019-2039					
Variable	5	5	5	4	5
2018 Woods & Poole Economic and Demographic Data Source					
Variable	5	5 (0.3%)	5 (0.25%)	5 (0.17%)	5 (0.08%)
FAA Terminal Area Forecast					
0.0%	5	5	5	5	5
2016 Wyoming State Aviation System Plan					
10%	5	5	6	6	6

The results of these forecasting methodologies were compared, and the 2018 Woods & Poole Economic and Demographic Data Source variable growth rate methodology was chosen as the preferred based aircraft projection. This is the preferred method because it is the most conservative while still depicting some growth in activity. It is also the method that is most likely going to reflect the changes in Dixon's socioeconomic base. According to the Woods & Poole data, Carbon County's population is slated to grow during the planning period, but at a very modest rate that declines as time progresses.

4.9 AIRPORT OPERATIONS

Different factors impact the number of operations at an airport, including but not limited to the total based aircraft, area demographics, activity and policies of neighboring airports, and national trends. These factors were examined, and five methodologies were used to develop the general aviation operation projections.

Scenario 1 – FAA TAF: This scenario utilizes the TAF's projection of no change (0%) in the number of annual operations at the airport throughout the planning period.
Scenario 2 – 2018 Woods & Poole Economic and Demographic Data Source: This data source projects a variable growth rate for Carbon County during the planning period. Through 2024, a growth rate of 0.3% is applied; through 2029, 0.25%; through 2034, 0.17%, and through 2039, 0.08% growth is anticipated.
Scenario 3 – FAA Aerospace Forecast for Fiscal Years 2019-2039: This scenario utilizes an annual growth rate of 0.4% based on a forecasted increase in general aviation operations at towered airports.
Scenario 4 – FAA Aerospace Forecast for Fiscal Years 2019-2039: This scenario utilizes an annual growth rate of 0.8% based on a forecasted increase in general aviation hours flown.
Scenario 5 –2016 Wyoming State Aviation System Plan: Based on the Wyoming classification system, this scenario utilizes an annual growth rate of 10% in the number of annual operations for a Local airport, such as Dixon Airport.

Table 4.6 Airport Operations Forecast

Growth Rate	Base Year 2019	2024	2029	2034	2039
FAA Terminal Area Forecast					
0%	897	897	897	897	897
2018 Woods & Poole Economic and Demographic Data Source					
Variable	897	911 (0.3%)	922 (0.25%)	930 (0.17%)	934 (0.08%)
FAA Aerospace Forecast for Fiscal Years 2019-2039 (GA operations at towered airports)					
0.4%	897	915	934	952	972
FAA Aerospace Forecast for Fiscal Years 2019-2039 (GA hours flown)					
0.8%	897	933	971	1,011	1,052
2016 Wyoming State Aviation System Plan					
10%	897	943	991	1,041	1,095

The results of these forecasting methodologies were compared, and the 2018 Woods & Poole Economic and Demographic Data Source variable growth rate methodology was chosen as the preferred general aviation operations projection for the same reasons the Woods & Poole Economic and Demographic Data Source variable growth rate methodology was chosen for the preferred based aircraft projections. This varying growth rate will also be used to calculate the forecasts by aircraft type and ARC.

4.10 FORECAST BY AIRCRAFT TYPE

The breakdown by aircraft type for the 61 operations captured by the motion-activated cameras was as follows:

Single Engine	20	32.8%
Multi-Engine	0	0.0%
Jet	40	65.6%
Rotorcraft	1	1.6%

It should be noted that although no multi-engine aircraft were photographed using DWX during the 83 days that the motion-activated cameras were deployed for this Master Plan study, it is entirely plausible that multi-engine aircraft, such as the Cessna 441 or Piper Cheyenne 2, could fly into DWX. *Table 4.7* lists the forecast by aircraft type based on the variable growth rates established by the Woods & Poole socioeconomic data.

Table 4.7 Airport Operations by Aircraft Type

Aircraft Type	2019	2024	2029	2034	2039	Percent
Single Engine	294	299	302	305	306	32.8%
Multi-Engine	0	0	0	0	0	0.0%
Jet	589	598	606	611	613	65.6%
Rotorcraft	14	14	14	14	15	1.6%
Total	897	911	922	930	934	100%

4.11 FORECAST BY AIRPORT REFERENCE CODE

The FAA has developed an airport coding system referred to as the Airport Reference Code (ARC) that establishes the specific design criteria for facility development. The forecast by ARC may be the most important factor to review at an airport the size of Dixon Airport. The ARC provides insights into the performance, design characteristics, and physical facility requirements of aircraft using an airport. The ARC is based on two separate components of aircraft design: Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The ARC is designated by a letter (A through E) and a Roman numeral (I through VI).

The letter represents the aircraft approach category and is determined by an aircraft's speed as it approaches an airport for landing *(Table 4.8)*.

Table 4.8 Aircraft Approach Category

Category	Speed
A	Less than 91 knots
B	91 knots or more, less than 121 knots
C	121 knots or more, less than 141 knots
D	141 knots or more, less than 166 knots
E	166 knots or more

Source: FAA

Table 4.9 Airplane Design Group

Group	Tail Height (Feet)	Wingspan (Feet)
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

The higher an aircraft's speed, normally the longer the runway must be to accommodate that aircraft. Safety area dimensions are also expanded as the approach speed increases. The Roman numeral is the airplane design group and is determined by an aircraft's wingspan and tail height *(Table 4.9*). Typically, as an aircraft's wingspan increases, the separation requirements increase between runways, taxiways, aprons, and aircraft parking areas.

The ARC is determined based on the most demanding aircraft (or combination of aircraft) that uses the airport, referred to as the critical or design aircraft. The FAA requires an aircraft(s) to perform at least 500 annual operations (takeoffs or landings) to be established as the critical aircraft. Local operations are aircraft that are known to be departing or arriving from flight in local practice areas or aircraft executing practice instrument approaches at the airport. All aircraft operations other than local operations are considered itinerant. Itinerant operations are essentially takeoffs and landings of aircraft going from one airport to another.

After converting the aircraft type operations to ARC operations a similar merging of observable and calculated operations is possible. The huge range of aircraft used throughout the country ensures that no industry standard exists for converting operations by aircraft type into operations by ARC.

The ARC for the 61 operations captured by the motion-activated cameras was identified as follows:

A-I	20	32.8%
B-II	38	62.3%
C-II	2	3.3%
Rotorcraft	1	1.6%

Table 4.10 reflects the forecast by AAC and ADG. Rotorcraft operations were excluded from the calculations. Based on this information, Dixon Airport is currently a B-II facility and will remain a B-II facility throughout the planning period. Planning does not need to take steps to prepare the airport for greater design requirements until a category or group of aircraft starts approaching 350 operations. Dixon Airport is not expected to start approaching 350 Category C operations until well after the 20-year planning period.

4.12 FORECAST BY MIX

Table 4.10 Airport Operations by Aircraft Type

Aircraft Approach Category (AAC)	2019	2024	2029	2034	2039	Percent
Category A	299	304	307	310	311	33.3%
Category B	568	577	584	589	591	63.3%
Category C	30	30	31	31	32	3.3%
Total	897	911	922	930	934	99.9%
Airplane Design Group (ADG)	**2019**	**2024**	**2029**	**2034**	**2039**	**Percent**
Group I	299	304	307	310	311	33.3%
Group II	598	607	615	620	623	66.7%
Total	897	911	922	930	934	100%

The FAA's 2019 TAF reports that the 2019 fleet mix operating at Dixon Airport is as follows:

40% itinerant general aviation
32% air taxi and commuter
28% local general aviation
0% military

This percentage split was applied to Dixon Airport's operational totals, as depicted in *Table 4.11*.

4.13 FORECAST COMPARISON

Table 4.11 Airport Operations Forecast by Mix

Itinerant Operations	2019	2024	2029	2034	2039	Percent
Air Carrier	0	0	0	0	0	0%
Air Taxi/Commuter	287	291	295	298	299	32%
General Aviation	359	365	369	372	374	40%
Military	0	0	0	0	0	0%
Local Operations	**2019**	**2024**	**2029**	**2034**	**2039**	**Percent**
General Aviation	251	255	258	260	261	28%
Military	0	0	0	0	0	0%
Total	897	911	922	930	934	100%

The FAA will compare the forecasts included in this Master Plan to the TAF. Where the 5- or 10-year forecasts exceed 100,000 total annual operations or 100 based aircraft, the FAA prefers that the forecasts differ by less than 10% from the 5-year period and 15% from the 10-year period. While Dixon Airport is not projected to reach those numbers during this planning period, it still forms a good basis for any sound and defendable forecast.

The Master Plan forecast numbers for total operations are between 28.9% and 32.9% less than the FAA TAF. This difference is likely due to the very conservative approach applied to the Master Plan forecast and the limited amount of data available. The Master Plan forecast numbers for based aircraft are identical to the FAA TAF.

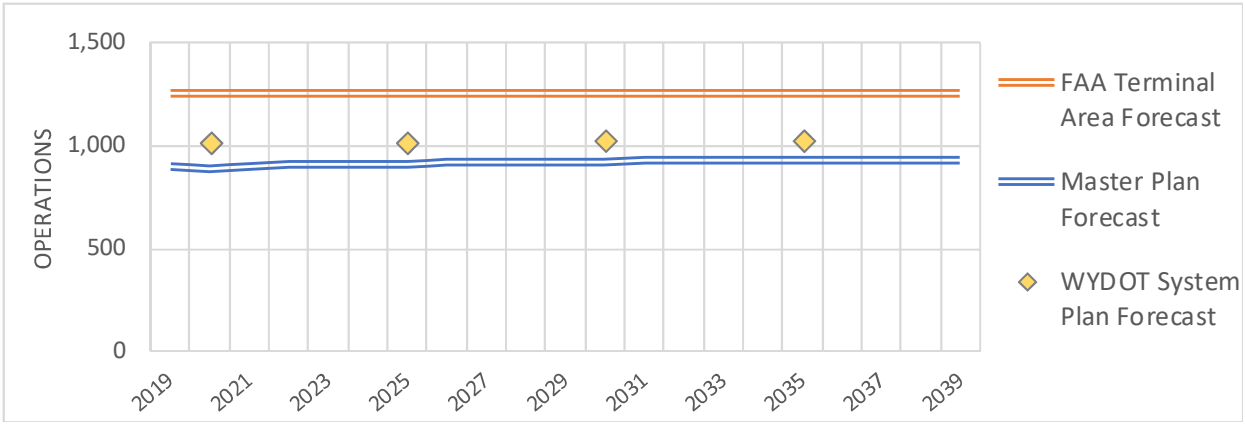
Table 4.12 Forecast Comparison

Total Operations	2019	2024	2029	2034	2039
Master Plan Forecast	897	911	922	930	934
FAA TAF	1,250	1,250	1,250	1,250	1,250
% Difference	-32.9%	-31.4%	-30.2%	-29.4%	-28.9%
Based Aircraft	**2019**	**2024**	**2029**	**2034**	**2039**
Master Plan Forecast	5	5	5	5	5
FAA TAF	5	5	5	5	5
% Difference	0.0%	0.0%	0.0%	0.0%	0.0%

Figure 4.17 is a comparison of annual forecasted operations from this Master Plan, the FAA TAF, and the Wyoming State Aviation System Plan. The period covers 20 years, from 2019 through 2039.

Overall, the Master Plan analysis forecasts fewer operations than the TAF and the system plan. The Master Plan forecasts a slight increase year to year, comparable to system plan growth, while the TAF operations remain flat. The Master Plan analysis forecasts 897 operations in 2019 up to 934 operations in 2039. The TAF forecasts 1,250 operations every year, with no annual changes. The state system plan only has operations forecasted for specific years, 1,005 in 2020, 1,010 in 2025, 1,015 in 2030, and 1,020 in 2035.

Figure 4.17 Forecast Comparison



4.14 FORECAST SUMMARY

The forecast of aviation demand for Dixon Airport is summarized in *Table 4.13*.

Table 4.13 Forecast Summary					
Total Operations	**2019**	**2024**	**2029**	**2034**	**2039**
Total	897	911	922	930	934
Operations (Aircraft Type)	**2019**	**2024**	**2029**	**2034**	**2039**
Single Engine	294	299	302	305	306
Multi-Engine	0	0	0	0	0
Jet	589	598	606	611	613
Rotorcraft	14	14	14	14	15
Operations (Aircraft ARC)	**2019**	**2024**	**2029**	**2034**	**2039**
A-I	299	304	307	310	311
B-II	568	577	584	589	592
C-II	30	30	31	31	31
Operations (Itinerant and Local)	**2019**	**2024**	**2029**	**2034**	**2039**
Itinerant	646	656	664	670	673
Local	251	255	258	260	261
Based Aircraft	**2019**	**2024**	**2029**	**2034**	**2039**
Total	5	5	5	5	5

4.15 CRITICAL AIRCRAFT

The development of airport facilities is impacted by both the demand for those facilities and the type of aircraft that are expected to make use of those facilities. Generally, airport infrastructure components are designed to accommodate the most demanding aircraft, referred to as the critical, or design aircraft, which will utilize the facilities regularly. The factors used to determine an airport's critical aircraft are the approach speed and wingspan of the most demanding class of aircraft anticipated to perform at least 500 annual operations at the airport during the 20-year planning period. However, when a category or group aircraft starts approaching 350 operations, planning should take steps to prepare the airport for the greater design requirements.

There are two aircraft weight classes used by the FAA for planning: Small Aircraft and Large Aircraft. Small Aircraft have a maximum takeoff weight of 12,500 pounds or less and Large Aircraft are all other aircraft. Some FAA documentation uses the terms utility and other than utility in place of Small Aircraft and Large Aircraft. The planned weight class of Dixon Airport is Large Aircraft; therefore, the existing Airport Reference Code (ARC) for the airport is B-II, Large.

The critical aircraft for Dixon Airport is the Cessna 525C, a B-II jet aircraft frequently flown by Three Forks Aviation. Of the 61 aircraft captured by the motion-activated cameras, this aircraft was photographed 20 times. The Cessna 525C, also known as the Citation CJ4, has a Maximum Takeoff Weight of 17,110 pounds, and is pictured in *Figure 4.18*. More details regarding the specifications of this aircraft are provided in *Chapter 5*.

Figure 4.18 Cessna 525C (Citation CJ4)

Source: Textron Aviation

Planning should take into consideration the long-term future of the airport, beyond the horizon of the forecast. Room for expansion and growth should be left in case the airport should start seeing more operations from larger aircraft.

5. Facility Requirements

SECTION OVERVIEW

The Facility Requirements chapter describes the facilities required to safely accommodate the aircraft traffic forecasted for Dixon Airport (DWX). FAA Design Standards for the airport's critical aircraft are detailed relative to the existing runway, taxiways, and other facilities.

5.1 GENERAL

The Facility Requirements chapter compares the current airport facilities and services at DWX to the forecasted aviation traffic to identify any deficiencies that require remediation through the Capital Improvement Program (CIP). Most dimensional standards and recommendations listed are described in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*. Additional FAA ACs and regulations are referenced where appropriate.

5.2 AIRPORT REFERENCE CODE, RUNWAY DESIGN CODE, AND TAXIWAY DESIGN GROUP

GENERAL DISCUSSION

As mentioned in chapters 1 and 4, the FAA has two coding systems for aircraft: Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The AAC is designated by a letter (A through E) and represents different levels of approach speed. The ADG is designated by a Roman numeral (I through VI), which represents aircraft wingspan and tail height. Each airport has a critical aircraft, typically defined as the most demanding aircraft (or combination of aircraft) that performs at least 500 itinerant operations annually. The combination of that aircraft's AAC and ADG (for example, A-I or B-II) signifies the Airport Reference Code (ARC).

Table 5.1 Airport Reference Code (ARC) Aircraft Approach Category

Category	Speed
A	Less than 91 knots
B	91 knots or more, less than 121 knots
C	121 knots or more, less than 141 knots
D	141 knots or more, less than 166 knots
E	166 knots or more

Source: FAA AC 150/5300-13A

Table 5.2 Airport Reference Code (ARC) Airplane Design Group (ADG)

Group #	Tail Height (Feet)	Wingspan (Feet)
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 150/5300-13A

Each runway also receives a combined AAC and ADG designation for approach and departure operations called the Runway Design Code (RDC). Each RDC also contains a third component based on visibility minimums (for example, B-II-4000). These categorizations are applied to individual runways, such that multiple runways at a single airport may have different RDCs. The ARC and RDC provides insights into the performance, design characteristics, and physical facility requirements of aircraft using components of an airport.

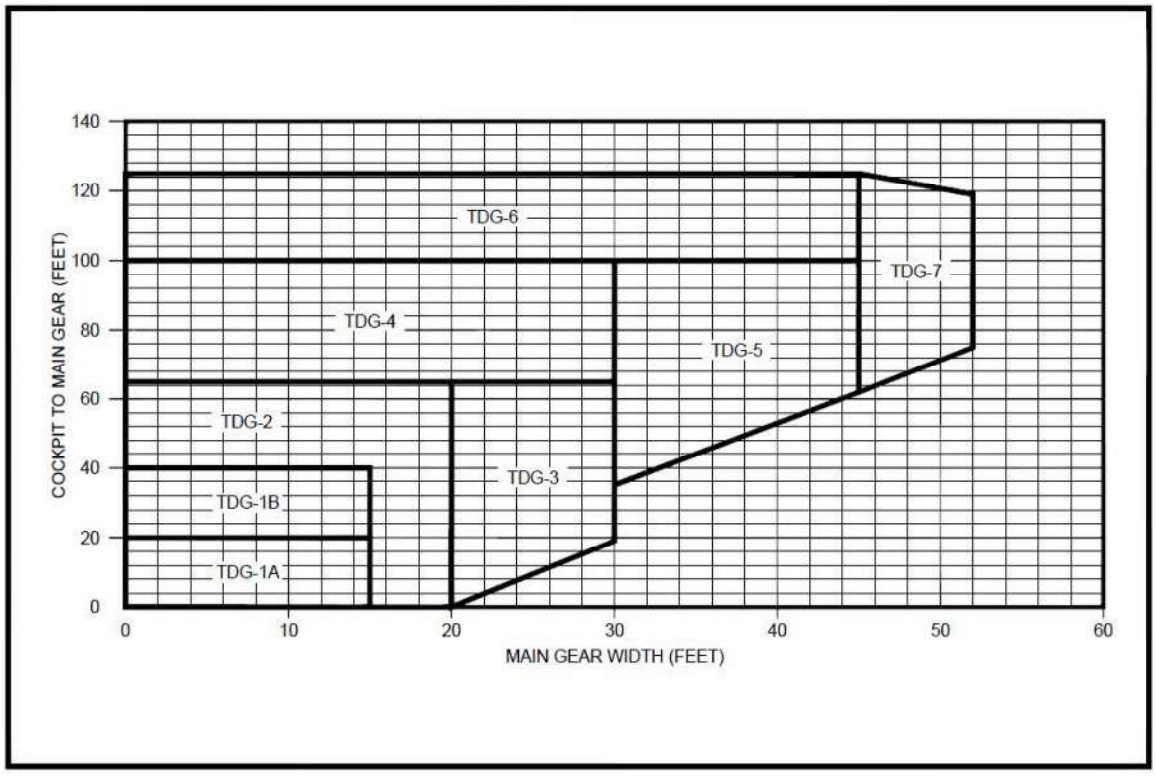
Table 5.3 Runway Visibility Range

RVR Value (Feet)	Visibility Minimum
1,200	<1/4 mile
1,600	1/4 mile - <1/2 mile
2,400	1/2 mile - <3/4 mile
4,000	3/4 mile - <1 mile
5,000	1 mile
VIS	Visual Approach Only

Source: FAA AC 150/5300-13A

The FAA design standard used for taxiway design is the Taxiway Design Group (TDG), a classification for airplanes based on outer-to-outer main gear width and cockpit to main gear distance. These measures are used because taxiways are designed for "cockpit over centerline" taxiing and such undercarriage dimensions must be considered for design of pavement fillets. *Figure 5.1* outlines the measurements for all Taxiway Design Groups.

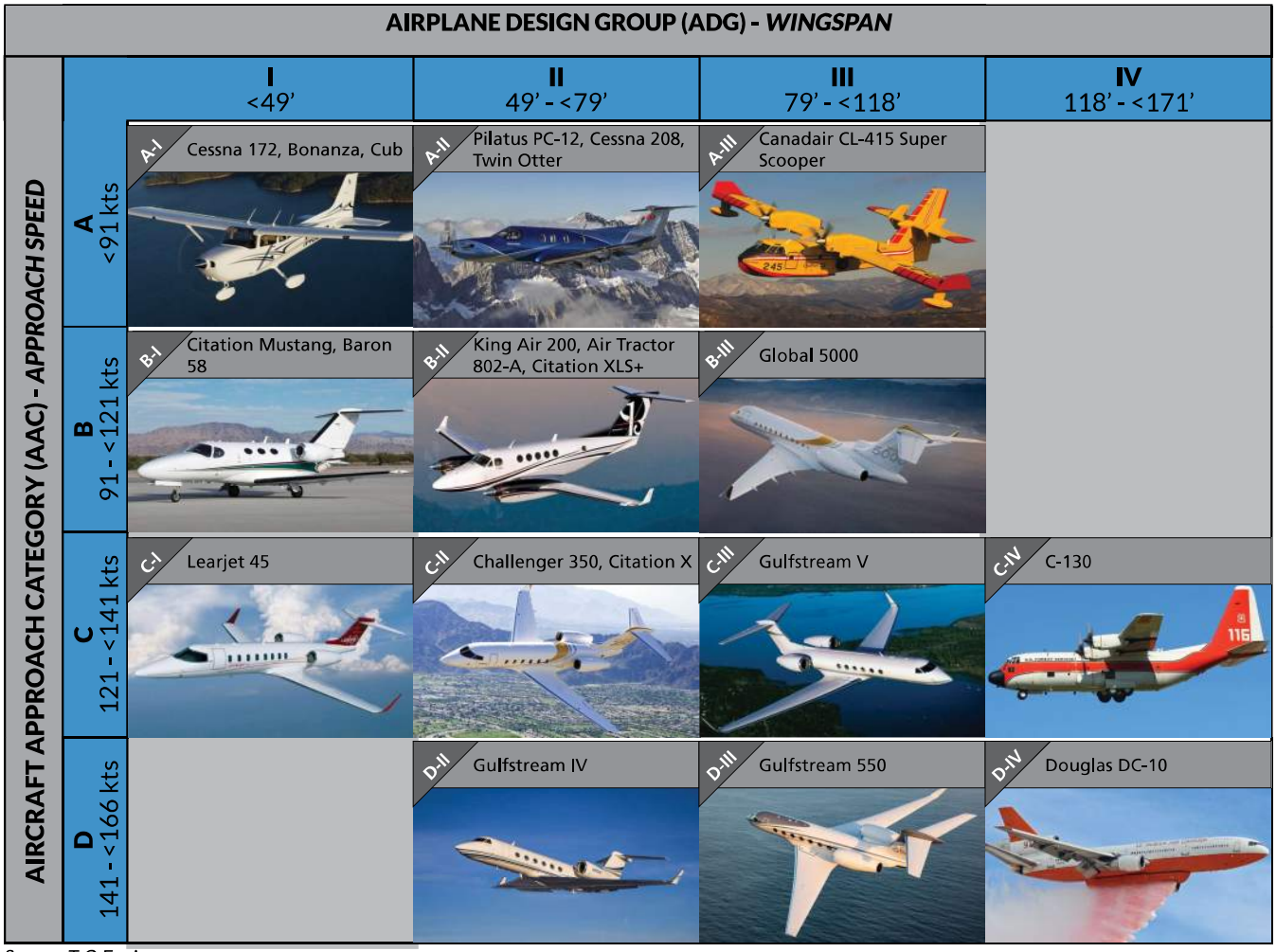
Figure 5.1 Taxiway Design Group Chart



Source: FAA AC 150/5300-13A

Figure 5.2 shows a small selection of common aircraft and their respective ARC.

Figure 5.2 Representative Aircraft



Source: T-O Engineers

DESIGN AIRCRAFT SPECIFICATION

The Forecast of Aviation Demand chapter established the current and forecast critical aircraft as the Cessna 525C (Citation CJ4), an ARC B-II jet aircraft. *Table 5.4* displays the specifications and applicable design standards for the design aircraft.

Table 5.4 Design Aircraft Specification

Cessna 525C Specification	
Wing span	50.10 feet
Tail height	15.42 feet
Approach speed (flaps down)	111 knots
Cockpit to Main Gear (CMG)	21.17 feet
Main Gear Width (MGW)	12.4 feet
Empty weight	10,280 pounds
Maximum Gross Takeoff Weight (MGTOW)	17,110 pounds
Applicable FAA Design Standards	
Aircraft Approach Category (AAC)	B
Airplane Design Group (ADG)	II
Taxiway Design Group (TDG)	1B
Weight classification	Large

AIRPORT REFERENCE CODE

The wingspans and approach speed of the Cessna 525C result in Dixon Airport having an ARC of B-II. The ARC is not forecasted to change throughout the planning period.

TAXIWAY DESIGN GROUP (TDG)

TDG relates to the undercarriage dimensions of the aircraft and it is a classification based on outer-to-outer Main Gear Width (MGW) and Cockpit to Main Gear distance (CMG). MGW and CMG of the critical aircraft at Dixon Airport result in a TDG 1B classification.

RUNWAY DESIGN CODE

Generally, runway standards are related to aircraft approach speed, aircraft wingspan, and designated or planned approach visibility minimums. Runway 6/24 is paved asphalt and the only runway at Dixon Airport. There is one non-precision instrument approach for the airport, with greater than 1-mile visibility minimums, resulting in an RDC for Runway 6/24 of B-II-5,000.

WEIGHT CLASS

There are two aircraft weight classes used by the FAA for planning: Small Aircraft and Large Aircraft. Small Aircraft have a maximum takeoff weight of 12,500 pounds or less, and Large Aircraft are all other aircraft. The FAA also uses the terms Utility and Other than Utility in place of Small Aircraft and Large Aircraft, respectively. The current and future weight class of Dixon Airport is Large Aircraft, as the Citation CJ4 has a maximum takeoff weight of 17,110 pounds.

5.3 AIRFIELD CAPACITY

Demand/capacity represents the relationship between anticipated aviation demand, especially during peak operational periods, and an airport's physical ability to safely accommodate that demand. The purpose of a demand/capacity analysis is to assess the ability of the airport's existing facilities to efficiently accommodate its day-to-day and long-term demand without undue delays or compromises to safety. The analysis also assists in determining when improvements are needed to meet specific operational demands.

At low activity airports, airfield capacity often exceeds the anticipated level of demand many times over. Several techniques for determining airfield capacity are available. The most widely recognized and accepted methodology can be found in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, and yields hourly capacities and annual service volumes. This method, also referred to as the "handbook method," permits the estimation of aircraft delay levels as demand approaches and exceeds the capacity of each airfield configuration. This study utilized this accepted methodology.

Based on the forecasted operations by type, discussed in chapter 4, the assumption is made that all single engine operations are under 12,500 pounds. Helicopter operations are excluded from the calculations. The remaining operations are assumed to be 12,500 pounds to not more than 300,000 pounds. In 2019, this would equal approximately 66% of the total operations at the airport (897 total operations – 14 rotorcraft = 883 operations, 883 operations – 294 single engine operations = 589 multi-engine operations, 589 multi-engine operations/897 total operations = 65.66%). With these assumptions and one paved runway configuration, Dixon Airport has an annual service volume of 205,000 operations.

Over the 20-year period, the highest forecast of total operations at the airport is 934, which will not exceed the calculated annual service volume of 205,000 operations. It is also not anticipated that the annual service volume will be exceeded beyond the 20-year planning period as the total 20-year forecasted operations are approximately 1% of the allowable value.

TABLE 5.5 RUNWAY AND CROSSWIND RUNWAY USE CONFIGURATION
SOURCE: FAA AC 150/5060-5, AIRPORT CAPACITY AND DELAY, TABLE 2-1 CONFIGURATION NO. 1

Mix Index % (C+3D)*	Hourly Capacity Ops/Hr		Annual Service Volume Ops/yr
	VFR	IFR	
0 to 20	98	59	230,000
21 to 50	74	57	195,000
51 to 80	63	56	205,000
81 to 120	55	53	210,000
121 to 180	51	50	240,000

*C= Percent of airplanes over 12,500 pounds but not over 300,000 pounds
*D= Percent of airplanes over 300,000 pounds

Source: FAA AC 150/5060-5

5.4 FAA DESIGN STANDARDS

The FAA uses design standards to provide an acceptable level of safety on airports. These standards include runway width, other surface dimensions such as safety areas and various separations from fixed or movable objects, and many more facets of the airport layout. By applying design standards to classes of aircraft, the FAA is able to match the level of safety appropriate to the level of risk. This is an important core concept for every Master Plan and is especially pertinent for future expansion. A key reason for Airport Sponsors to plan, develop, and maintain their airports to the FAA's design standards is to improve safety and ensure compliance with industry standards. Further, Airport Sponsors that receive federal funds, such as Dixon Airport, are required by federal Grant Assurances to comply with all FAA safety regulations and standards.

The FAA has established design standards for almost every aspect of airports, including relevant navigable airspace, airside facilities, and landside facilities. The standards that apply to an airport and/or runway are determined by the relevant reference code. Subsequently, a comparison of B-II standards to airport conditions is critically important and is discussed in detail throughout this chapter. Based on previous planning efforts, Dixon Airport is generally constructed to ARC B-II standards.

Through the investigation of this Master Plan, it was identified that the airport should plan to meet ARC B-II standards for existing conditions and planning period.

RUNWAY DESIGN STANDARDS

Table 5.6, Runway Design Standards, lists the FAA design standards for runways.

Table 5.6 Runway Design Standards			
Design Criteria **Runway**	**Existing Runway 6/24**	**ARC B-II Standard**	**Compliance**
Runway length	7,000 feet	75% of small airplanes with less than 10 passenger seats: 5,610 feet 95% of small airplanes with less than 10 passenger seats: 7,920 feet	Not a Design Standard
Runway width	75 feet	75 feet	Compliant with B-II Standards
Runway Safety Area (RSA) length beyond runway end	300 feet	300 feet	Compliant with B-II Standards
Runway Safety Area (RSA) width	150 feet	150 feet	Compliant with B-II Standards
Runway Object Free Area (ROFA) length beyond runway end	300 feet	300 feet	Compliant with B-II Standards
Runway Object Free Area (ROFA) width	500 feet	500 feet	Compliant with B-II Standards
Runway Obstacle Free Zone (ROFZ) length beyond runway end	200 feet	200 feet	Compliant with B-II Standards
Runway Obstacle Free Zone (ROFZ) width	400 feet	400 feet	Compliant with B-II Standards
Runway Protection Zone (RPZ) length	1,000 feet	1,000 feet	Compliant with B-II Standards
Runway Protection Zone (RPZ) inner width	500 feet	500 feet	Compliant with B-II Standards
Runway Protection Zone (RPZ) outer width	700 feet	700 feet	Compliant with B-II Standards

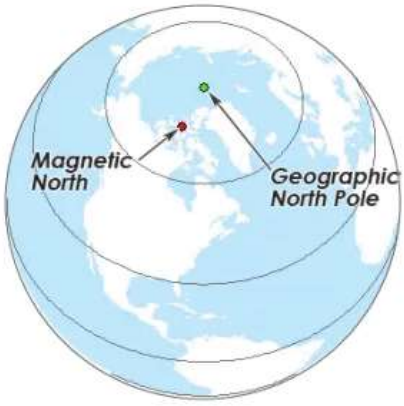
RUNWAY ORIENTATION

Runway orientation is primarily a function of wind coverage. As discussed in the wind analysis in Chapter 3, the runway at DWX provides greater than the FAA minimum coverage of 95% in all-weather scenarios.

Runways are designated based on magnetic azimuth. When considering directions or headings, there are two definitions for what constitutes north. First, magnetic north is the location where the earth's magnetic field leaves the earth. Second, true north is the physical, geographical location of the North Pole. These two poles do not coincide, and the magnetic poles are constantly wandering.

The measured difference in angle between the two poles is called magnetic declination or variation, which changes depending on geographical location. It is important to distinguish between the two when talking about runway alignment, as they are designated based on magnetic azimuth.

Figure 5.3 Magnetic vs. True North



Source: GISGeography.com

Because the magnetic pole is constantly changing, it is reassessed every five years to accurately provide declination. At some facilities, shifting in the magnetic pole has resulted in runway renumbering. The FAA advises airports to update their runway designation and markings when the magnetic heading changes by more than 5° from the existing runway marking. A review of the published azimuth compared to magnetic is provided in *Table 5.7*. Based on this information, it is not necessary to update the runway designation at DWX.

Table 5.7 Runway Orientation

	Runway 6/24	
Geodetic Heading	70°57'04.5487"	250°58'1.2299"
Magnetic Heading	61°31'04.5487"	241°32'1.2299"
Magnetic Declination	9° 26'E	
Updated Runway Designation	Not Applicable	

RUNWAY WIDTH

The FAA runway width design standard (*FAA AC 150/5300-13A, Table A7-4*) for an ARC B-II facility with not lower than a 1- mile visibility minimum is 75 feet. Runway 6/24 is currently 75 feet wide, which meets ARC B-II standards for runway width.

RUNWAY LENGTH

Many factors determine the suitability of runway length for airplane operations. These factors include airport elevation above mean sea level, temperature, wind velocity, airplane operating weights, takeoff and landing flap settings, runway surface condition (dry or wet), effective runway gradient, presence of obstructions in the vicinity of the airport, and any locally imposed noise abatement restrictions. A given runway length may not be suitable for all aircraft operations. FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides

recommendations and guidelines for use in the design of civil airports. The use of the Advisory Circular is mandatory for airport projects receiving federal funding.

Runway length is an FAA recommendation, not a design standard. It is up to the pilot taking off or landing under the unique meteorological conditions and demands of a particular flight to determine the safety of the available runway length for the operation. However, it does remain a goal of the Airport Sponsor to provide a safe environment suited for the aircraft regularly operating at the facility.

The calculations for recommended runway length are driven by the airport's critical aircraft. The critical aircraft is an aircraft, or family of aircraft types, which are the most demanding with at least 500 annual operations. The current and future design aircraft for DWX is the Cessna 525C (Citation CJ4), a large business jet.
The advisory circular mentioned above recommends runway length be determined according to the airport's ultimate development plan, thus ensuring a runway appropriate for the forecasted critical aircraft. By protecting for the future, the airport will avoid costly design and infrastructure upgrades.

FAA SOFTWARE METHOD

The FAA's computer software program provides estimates and not actual runway length requirements. Runway lengths are based on families of aircraft with performance characteristics similar to the design aircraft. The results are broken down and display recommended runway lengths for small aircraft (12,500 pounds or less) and large aircraft (between 12,500 pounds and 60,000 pounds). The maximum gross weight for the Cessna 525C is greater than 12,500 pounds, therefore, falls into the large aircraft classification.

The weight classifications are further broken down into subdivisions indicating the percent of the fleet that could be accommodated by the recommended runway length. The percentage of fleet refers to Tables 3-1 (Airplanes that Make Up 75 Percent of the Fleet) and 3-2 (Remaining 25 Percent of Airplanes that Make Up 100 Percent of Fleet). The Cessna 525C is not specifically identified on either table; therefore, the AC states to use the 75% of fleet category.

For the large aircraft, the weight classification is again subdivided into a percentage of useful load. Mathematically, the useful load is the difference between the maximum allowable structural gross weight of the aircraft and the operating empty weight. Therefore, the useful load is the aircraft's capacity for fuel, passengers, and cargo. Thus, the percent useful load is a direct correlated to weight which is the primary consideration for calculating take-off and landing distances for individual aircraft operations. The Cessna 525C is chartered by Three Forks Aviation for short distances, therefore, the 60% useful load can be utilized to determine the recommended runway length.

The FAA software recommended minimum runway length for aircraft weighing 12,500 pounds but less than 60,000 pounds, accommodates 75% of the large aircraft fleet at 60% useful load is 8,080 feet.

Table 5.8 Runway Length Recommendations	
Airport Elevation: 6,548 feet **Mean Daily Maximum Temperature of the Hottest Month: 86 F** **Maximum Difference in Runway Centerine Elevation: 76 feet**	
12,500 pounds or less with approach speeds less than 30 knots	500 feet
12,500 pounds or less with approach speeds less than 50 knots	1,320 feet
12,500 pounds or less with less than 10 passenger seats (Ex.: Beech King Air 200)	
75% of fleet	5,610 feet
95% fleet	7,920 feet
100% fleet	7,920 feet
12,500 pounds or less with 10 or more passenger seats	7,920 feet
Over 12,500 pounds but less than 60,000 pounds	
75% of fleet at 60% useful load	8,080 feet
75% of fleet at 90% useful load	9,360 feet
100% of fleet at 60% useful load	11,760 feet
100% of fleet at 90% useful load	11,760 feet
More than 60,000 pounds	7,310 feet approximately

Source: FAA Advisory Circular 150/5325-4B and FAA AD4.2 Program

FAA ADVISORY CIRCULAR METHOD

According to the AC 150/5325-4B, *Runway Length Requirements* for Airport Design, the recommended runway length for a maximum certificated takeoff weight of more than 12,500 pounds up to and including 60,000 pounds, is based on performance curves (Figures 3-1 and 3-2, 75 and 100 percent of the fleet at 60 or 90 percent useful load).

Using the same assumptions used in the FAA software scenario, over 12,500 pounds but less than 60,000 pounds, 75% of fleet at 60% useful load, the curves within the AC were used. Considering the airport's elevation of 6,548 feet above mean sea level and mean daily maximum temperature of the hottest month of the year of 86 degrees Fahrenheit, Figure 3-1 of the AC 150/5325-4B, 75 Percent of Fleet at 60 Percent Useful Load, recommends a runway length of approximately 7,290 feet.

According to Chapter 2 of the AC, Figure 2-1, the 100% of fleet chart must be used for airport elevations above 3,000 feet. Using the 100% of fleet mix curve for the same conditions, a runway length of approximately 7,880 feet is recommended.

Table 5.9 summarizes the runway length recommendations according to the FAA software and AC 150/5325-4B. While the recommended runway lengths are longer than the existing runway length of 7,000 feet, a runway extension project is not justified. Since runway length is not an FAA design standard, a runway extension would not be eligible for AIP funding unless all other safety related standards have been met. Additionally, based on the limited number of operations at the airport and the adequacy of the existing runway length for the primary user, Three Forks Aviation, a runway extension is not considered necessary.

Table 5.9 Runway Length Recommendations Summary	
Method	**Recommended Runway Length**
FAA Software – Large aircraft - 75% of fleet at 60% useful load	8,080 feet
AC 150/5325-4B – Large aircraft - 75% of fleet at 60% useful load	7,290 feet
AC 150/5325-4B – Large aircraft - 100% of fleet at 60% useful load	7,880 feet

RUNWAY PAVEMENT DESIGN STRENGTH

To meet the design life goals of the airport, runway pavements must be designed to physically withstand the weight of arriving, taxiing, and departing aircraft. This is calculated using a mix of aircraft. The maximum takeoff weight of the existing design aircraft and those aircraft forecasted to use the airport must be considered to determine pavement strength. The pavement must possess sufficient stability to withstand the abrasive action of traffic, adverse weather conditions, and other deteriorating influences.

Airport pavements degrade faster when over-stressed with loads beyond their design capability. Pavements are most stressed when aircraft loads are slowly applied, as in when an aircraft is taxiing or parked. Pavement loading is also a function of the number of pressure points, such that the more tires an aircraft has to distribute its load, the less stress is exerted on the pavements. According to Order 5100.38D, Change 1, *Airport Improvement Program Handbook*, "the useful life of the facility or equipment being rehabilitated, reconstructed or replaced must have been met in order for the project to be funded."

Following the runway repair project completed in the spring of 2020, typical construction equipment was causing the pavement to visibly move and rut, resulting in water being brought up from the subgrade through existing cracks. This is evidence of poor subgrade conditions. In the areas where the runway was repaired, the existing subgrade was found to be very moisture sensitive and have very little bearing capacity.

PCN calculations and previous construction experience suggest that the pavement section has very little strength and has severe underlying subgrade issues. A complete reconstruction of the runway is needed for the pavement to be able to support the planned fleet mix.

The runway was completely reconstructed in 2008 and a reconstruction project will not be eligible for federal funding until 2028. The Capital Improvement Plan (CIP) currently includes a request for this project in 2027, with construction beginning in 2028.

RUNWAY SEPARATION STANDARDS

There are several standards for runway separation distance between other facilities on the airport, dictated by the design aircraft. The runway separation standards for a B-II facility, as well as the existing conditions are shown in *Table 5.10*.

The FAA generally supports and recommends that separation distances between runways and parallel taxiways be increased to standards for larger and heavier aircraft than the current design aircraft, to protect for future expansion.

LINE OF SIGHT

The FAA requires that two points five feet above the centerline of a runway without a full parallel taxiway, such as Runway 6/24 at Dixon Airport, be mutually visible for the entire runway. DWX meets this requirement.

TAXIWAY ANALYSIS

Table 5.10 Runway Separation Standards

Design Criteria	Existing Runway 6/24	ARC B-II Standards	Compliance
Runway centerline to parallel taxiway/ taxilane centerline	217 feet	240 feet	Deficient
Runway centerline to aircraft parking area	240 feet	250 feet	Deficient
Runway centerline to holding position	200 feet	200 feet	Compliant with B-II Standards

Source: FAA Advisory Circular 150/5300-13A, Airport Design

As stated in FAA AC 150/5300-13A, Section 405, a basic airport consists of a runway with a full-parallel taxiway, connecting transverse taxiways between the runway, the parallel taxiway, and the apron. The current standards for taxiways and taxilanes are shown in comparison to dimensions at DWX in *Table 5.11*.

An important aspect of taxiway design standards compliance is the clear zones provided through the Taxiway and Taxilane Object Free Area. In general, when a runway or taxiway has a painted centerline, pilots should be able to assume that they have wingtip clearance and buffers based on the ADG of the airport.

The FAA promotes taxiway design to adhere to the "three-node concept." This concept is meant to prevent any taxiway and taxilane intersections from becoming overly complex and potentially confusing for pilots. The three-node concept states that a pilot should have no more than three choices of direction at each intersection, ideally left, right, or straight. All intersections, A-1, A-2, B-1, and B-2, at Dixon Airport meet the three-node concept. However, all of the connectors at DWX provide direct access from the apron to the runway, which is not recommended. Taxiways should not have direct access from the apron to the runway without requiring a turn because it can lead to confusion when a pilot typically expects to encounter a parallel taxiway, but instead accidentally enters a runway.

NAVIGATIONAL AIDS

Aids to navigation provide pilots with information to assist them in locating the airport and to provide horizontal and/or vertical guidance during landing. Navigational Aids (NAVAIDS) also permit access to the airport during poor weather conditions.

Table 5.11 Taxiway Standards			
Design Criteria	**Existing Runway 6/24**	**ADG II Standard**	**Compliance**
Taxiway Safety Area	79 feet	79 feet	Compliant
Taxiway Width	35 feet	25 feet (TDG 1B Standards)	Compliant
Taxiway Object Free Area Width	131 feet	131 feet	Compliant
Taxilane Object Free Area Width	115 feet	115 feet	Compliant
Separation of Taxiway Centerline to Fixed or Moveable Object	40 feet	65.5 feet	Deficient
Separation of Taxilane Centerline to Fixed or Movable Object	57.5 feet	57.5 feet	Compliant

Source: FAA Advisory Circular 150/5300-13A, Airport Design

There are multiple NAVAIDS installed at Dixon Airport to increase pilot safety. The facility has Runway End Identifier Lights (REILS) at the end of Runway 6 and threshold lights at both ends of the runway to assist the pilot in identifying the end of a runway. A 2-light PAPI is installed on Runway 6. DWX has an Automated Weather Observing System (AWOS), AWOS-3P/T, located near the primary wind cone and segmented circle. The AWOS reports altimeter setting (in/Hg), wind data (direction/speed), temperature (°C), dewpoint (°C), density altitude, visibility (statute miles), cloud/ceiling data, precipitation identification, and thunderstorm/lightning.
The primary wind cone and segmented circle are located on the north side of the runway, approximately 1,800 feet down Runway 6 and approximately 400 feet from the runway centerline.

A rotating beacon is located near the airport entrance road, approximately 400 feet to the south of the approach end to Runway 6. DWX is equipped with Medium Intensity Runway Lights (MIRL). A secondary wind cone is located on the south side of the runway, approximately 800 feet down Runway 24.

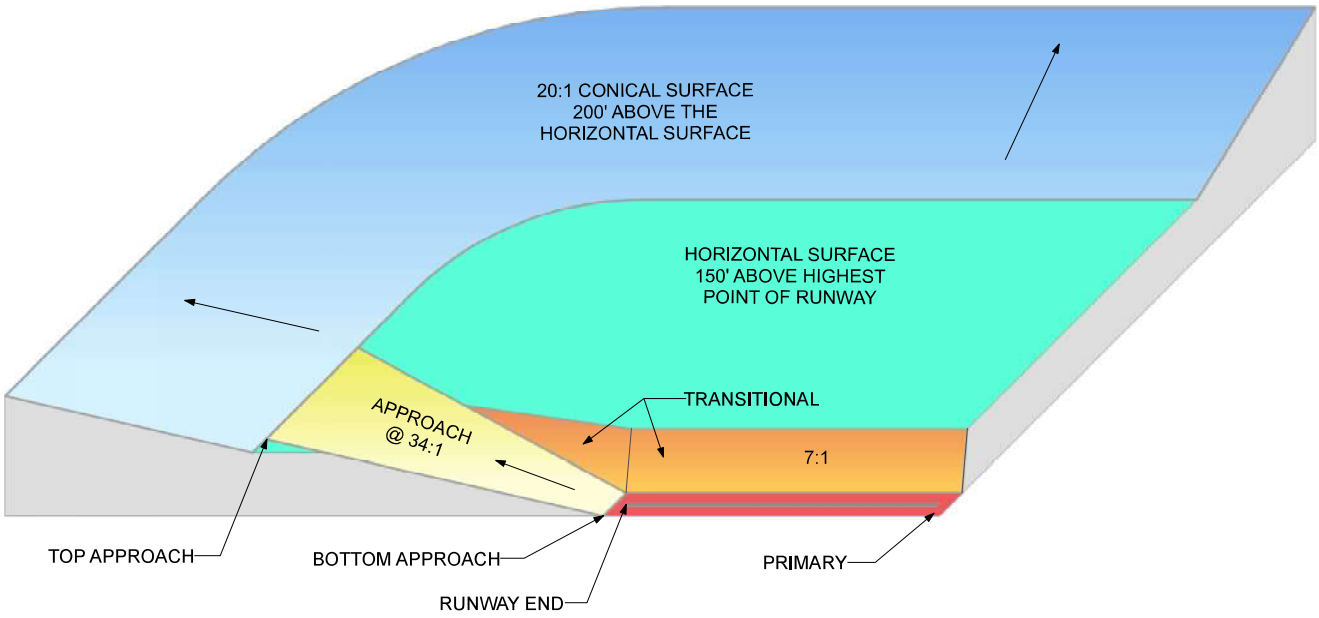
5.5 AIRSPACE AND APPROACHES

This section provides guidance on issues pertaining to airspace clearing and obstacle standards.

14 CFR PART 77 SURFACES

Title 14 Code of Federal Regulations (CFR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace establishes standards for determining obstructions in navigable airspace. Part 77 describes imaginary surfaces that surround each airport and are defined relative to the specific airport and each runway. The imaginary surfaces vary in size and configuration based on the category of each runway. The runway category is determined by the types of approaches that exist or are proposed for that runway.
The most precise existing or proposed approach for the specific runway end determines the slope and dimensions of each approach surface. Any object, natural or man-made, that penetrates these imaginary surfaces is considered to be an obstruction. *Figure 5.4* is a graphical illustration of these surfaces.

Figure 5.4 Part 77 Surfaces



Source: 14 CFR Part 77

Primary surface: A rectangular area, symmetrically located along the runway centerline and extending a distance of 200 feet beyond each runway threshold. The elevation of the Primary Surface is the same as the elevation of the nearest point on the runway centerline. The most demanding type of existing or planned approach for either runway end sets the width of the Primary Surface.

Horizontal Surface: An oval-shaped, level area situated 150 feet above the airport elevation. The perimeter is established by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The arcs at either end will have the same value.

Conical Surface: A sloping area whose inner perimeter conforms to the shape of the horizontal surface.

Transitional Surface: An area that begins at the edge of the Primary Surface and slopes upward at a ratio of 7:1 (horizontal: vertical) until it intersects the Horizontal Surface.

Approach Surface: A surface that begins at the ends of the Primary Surface and slopes upward and flares outward horizontally at a predetermined ratio. The width and elevation at the inner ends of the Approach Surface conform to that of the Primary Surface. The slope, length, and width of the outer of the outer ends are governed by the runway service category, existing or proposed instrument approach procedure, and approach visibility minimums.

Table 5.12 Part 77 Dimensions	
	DWX
Conical Surface	
Length	4,000’
Slope	20:1
Transitional Surface	
Slope	7:1
	Runway 6/24
Primary Surface	
Width	500’
Length Beyond Runway End	200’
Horizontal Surface	
Height Above Airport Elevation	150’
Radius Arc	10,000’
Approach Surface	
Inner Width	500’
Outer Width	3,500’
Length	10,000’
Slope	34:1

Source: 14 CFR Part 77

RUNWAY PROTECTION ZONE

The Runway Protection Zone (RPZ) is a portion of the inner approach zone projected onto the ground surface. While the RPZ provides additional value to the pilot, its main function is to enhance the protection of people on the ground. It is a ground-surface-level zone and begins 200 feet beyond the end of the area usable for takeoff or landing. The RPZ is trapezoidal in shape and centered around the extended runway centerline.

The RPZ dimensions are determined by the design aircraft ARC, aircraft weight,, and approach visibility minimums. Land uses prohibited within the RPZ include residences and places of public assembly including schools, hospitals, office buildings, churches, shopping centers, and other uses with similar concentrations of people. Fuel storage facilities, as well as the storage or use of significant amounts of materials which are explosive, flammable, toxic, corrosive, or otherwise exhibit hazardous characteristics are prohibited s within the RPZ.

Allowable uses include those that do not attract wildlife, do not interfere with navigational aids, and are located outside of the Runway Object Free Area. Automobile parking lots are allowable only if they are located outside of the central portion of the RPZ (which is equal to the width of the Object Free Area).

Whenever possible, the FAA strongly encourages fee simple Sponsor ownership of the RPZ for complete control of the land uses in these areas. An avigation easement is strongly recommended where fee simple Sponsor ownership is not possible.

Table 5.13 Runway Protection Zone Dimensions				
	Approach Visibility Minimums	Inner Width	Outer Width	Length
Future (B-II, Large)	Not Lower than 1 Mile	500 feet	700 feet	1,000 feet

Source: FAA Advisory Circular 150/5300-13A, Airport Design

OBSTRUCTIONS

The FAA recommends that all obstructions to the imaginary surfaces be removed if possible. The approach zones and RPZs define the most heavily used airspace around an airport and every effort should be made to minimize obstruction within these areas. However, sometimes it is impossible to achieve a completely obstruction-free airspace because of excessive costs or other considerations. The obstructions that cannot be removed or those obstructions that cause the FAA to reduce the approach minimums should be lighted with hazard beacons.

There is not a clearly defined point where the presence of obstructions renders the airport unusable. Influencing factors include type, height, and location of the obstruction. Carbon County should do everything possible to prohibit growth or construction of potential obstructions. This can be accomplished through a referral process that allows airport management to approve or at a minimum, comment on proposed construction that may result in an obstruction to the Part 77 surfaces. Federal law also stipulates that proponents of certain actions resulting in specific types of construction proposed in the airport vicinity be coordinated with the FAA and other interested agencies and parties through preparation and submittal of FAA Form 7460-1, "Notice of Proposed Construction or Alteration."

5.6 LAND USE ZONING

Compatible land use is discussed in more detail in chapter 8. Carbon County has established a zoning resolution for the unincorporated areas of the county to regulate buildings and structures according to their construction and the nature of and the extent of the uses of land, in the unincorporated area of Carbon County.

Airports are areas of interest for the State of Wyoming, and Carbon County has set general regulation that apply to all districts and uses, including airports. The following regulations apply to the development in areas around airports:

1. Airport Influence Area Height Limitations. Height Limitations within the Airport Influence Area are subject to the limitations of the district within which the project is located and subject to limitations of the Airport Board and other appropriate referral agencies.

    a. Submission of a Notice of Proposed Construction and Alteration (current form) and subsequent approval from the Federal Aviation Administration Administrator (FAA) shall be required for the construction or alteration of any structure penetrating a 100:1 foot plane located within twenty thousand feet (20,000') of any runway. Receipt of a FAA Form Determination of No Hazard (current form) for any structure is required before issuing a building permit.

2. Commercial Scale Solar Energy Projects shall not be placed in the vicinity of any airport in a manner that would interfere with airport flight patterns. As applicable, acknowledgment of location approval from the Federal Aviation Administration may be required prior to construction.

3. Dixon Airport is on Carbon County owned land and is designated Ranching, Agriculture, and Mining (RAM). DWX is surrounded by land that is privately owned by Three Forks Ranch Corporation, which is also RAM designated.

5.7 GENERAL AVIATION REQUIREMENTS

AIRCRAFT STORAGE FACILITIES

Two ground lease hangars are located near Taxiway B1 north of the runway. There are two hangars right next to the terminal apron. There is a hangar situated to the south of the pilot's lounge along the access taxilane. Another hangar is being utilized by Three Forks Ranch and is located near Taxiway B2. Three Forks Ranch facilities are located midfield on the southern side of Runway 6/24. These facilities can be accessed from Runway 6/24 through Taxiway A2. This area consists of 9,778 square yards of apron with two large and two small aircraft tiedowns and a 13,220 square foot building for operations and guest accommodations. These facilities are connected to Wyoming State Highway 70 by an access road and have 14 automobile parking spaces available.

There is adequate space available for hangars along the southern side of Runway 6/24 towards the Runway 6 end; however, there is no waiting list for hangars or aircraft parking at DWX, and existing aircraft storage facilities are sufficient for transient and based aircraft.

TRANSIENT AIRCRAFT PARKING APRONS

The apron is approximately 2,311 square yards of pavement on the east side of Taxiway A1 and an estimated 3,250 square yards of pavement on the west side of Taxiway A1. The apron functions as an apron edge taxiway on the northern side. Dixon Airport has 10 aircraft tiedown positions. At this time, the existing apron area adequately meets the airport's needs.

Pavement at DWX was surveyed by the Wyoming Department of Transportation (WYDT) in 2017. According to that inspection 3,250 square yards of apron pavement on the west side of Taxiway A1, scored Pavement Condition Index (PCI) value of 18 and requires reconstruction. The 2019 predicted PCI of the 2,311 square yards of pavement on the east side of Taxiway A1 indicated a PCI score value of 50, which requires pavement reconstruction for the eastern side of the apron, as well.

TERMINAL FACILITIES

The pilot's lounge is connected to the terminal apron and is an estimated 200 square feet of waiting area and restrooms. Although the facility is dated, it is currently meeting the basic needs of the airport users .

5.8 SUPPORT FACILITIES

DE- ICING

De-icing is not available at Dixon Airport and there are no plans to add it. There is no forecasted need to justify de-icing services at DWX.

FUEL FACILITIES

DWX has one fuel station that is self-serve and is available for use 24 hours a day. Avgas 100LL is the only fuel available to the public at Dixon Airport. Three Forks Ranch owns the private hangar located midfield. Across the apron from this hangar is a Jet A fuel tank used to fuel the aircraft used by Three Forks Ranch. Jet A fuel is not available for sale to the public. The existing fuel facilities meets the airport's needs.

AIRCRAFT MAINTENANCE

There is no Fixed Base Operator (FBO) to provide services at Dixon Airport.

AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF)

Dixon Airport does not possess its own ARFF equipment. Such services are provided by the Dixon Volunteer Fire Department for on-airport emergencies.

GROUND SUPPORT EQUIPMENT

The airport operates a John Deere 5210 with a 6-foot mower, a 1981 Cat loader with a 14-foot dozer blade, and a 1981 GMC Top Kick 2-ton snow plow with broom and blade attachments. The Snow Removal Equipment (SRE) is housed in a 2,400 square foot building with two bays, adjacent to the access road near the entrance of the airport. The airport manager is responsible for snow removal.

UTILITIES

Yampa Valley Electric provides electricity to the airport and Dubios Telephone Exchange provides telephone services. On-field facilities provide water and wastewater services for the airport and Questar Energy provide gas service to the airport. There are two automatic access gates. One that gives access to the Three Forks hangar area, and one that provides access to the airport.

SECURITY CONSIDERATIONS

The wildlife fence at DWX is made of eight-foot woven wire and it circumvents the entire airport with gated cattle guard entrances. There is also a one-way wildlife gate located on the property.

5.9 WYOMING AVIATION SYSTEM PLAN

The airport system in Wyoming is a major economic and transportation asset for the state. This plan assesses the current airport system and provides recommendations for future development based upon the goals and objectives established for the system as a whole. Using the FAA's system planning guidance, this plan provides value to state, federal, and local airport entities by aligning planning efforts and identifying areas of improvement.

Wyoming Aviation System Plan identifies needs based on creating a system that meets the established goals and objectives, but does not indicate if the development identified is practical, prudent, or feasible, and for this reason

local planning for individual airports such as master plans and Airport Layout Plans (ALPs) remain as the primary guide to development, and the system plan should be used to supplement this information to show how the development would benefit the system. System planning assists in assessing the current condition of Wyoming's airport system through a series of goals and objectives to identify future development, project priority, and funding.

The 2016 Wyoming State System Plan has improved the airports classification which provides transparency and a triggering mechanism for airports changing classification, which gives the airports and their sponsors, the opportunity to understand what circumstances may cause their airport to move between classifications (up or down).

The improved criteria (compared to the 2009 system plan) provides detailed, tangible values to use for determining airport classifications. Each system airport is analyzed against five categories of criteria:

- **Types of Facilities and Services Offered:** Considers five basic/critical airport services, and how many of those services are offered.
- **Type of Aircraft Accommodated:** Determined by the airport's designed Airport Reference Code (ARC).
- **Type of Community Served:** Based on the estimated annual retail sales in the city that is associated with the airport, from the Wyoming Department of Revenue.
- **Economic Impact:** Based on the number of jobs and statewide economic impact of airports.
- **Based Aircraft:** The number of aircraft presented based (stored) at an airport.

Table 5.14 WYSASP Classification Criteria

Criteria	Commercial Service	Business	Intermediate	Local
Types of Facilities and Services Offered	4 of the following 5, Plus Scheduled Commercial Service: • Ground Transportation • Weather Reporting • 24 Hour Restroom • Phone/Cell Coverage • Fuel	4 of the following 5, Plus Scheduled Commercial Service: • Ground Transportation • Weather Reporting • 24 Hour Restroom • Phone/Cell Coverage • Fuel	3 of the following 5, Plus Scheduled Commercial Service: • Ground Transportation • Weather Reporting • 24 Hour Restroom • Phone/Cell Coverage • Fuel	2 of the following 5, Plus Scheduled Commercial Service: • Ground Transportation • Weather Reporting • 24 Hour Restroom • Phone/Cell Coverage • Fuel
Type of Aircraft Accommodated	C-III or better	C-III or better	B-II or better	A-I / B-I or better
Type of Community Served*	Large Economic Centers ($200M+ annual retail sales)	Medium Economic Centers ($80M-$200M annual retail sales)	Small Economic Centers ($30M-$80M in annual retail sales)	Smallest Economic Centers (C$30M in annual retail sales)
Economic Impact**	Support a minimum of 200 local jobs, and statewide impact of more than $18 million	Support a minimum of 20 local jobs, and a statewide impact of more than $3 million	Support a minimum of 5 local jobs, and a statewide impact of more than $1 million	Support a minimum of 2 local jobs, and a statewide impact of more than $500,000
Based Aircraft	50+ based aircraft	30+ based aircraft	15+ based aircraft	<15 based aircraft

** WY Department of Revenue, Administrative Services Division; Mead & Hunt, Inc.*
*** 2013 Wyoming Airports Economic Impact Study*

Source: WYDOT Aeronautics Division

According to the WYSASP, Dixon Airport is a Local general aviation airport. *Table 5.15* shows the classification criteria and scores for Dixon Airport. DWX meets all of the criteria for a Local airport.

Table 5.15 Points Awarded by Classification Criteria Met

Criteria	Commercial Service	Business	Intermediate	Local
Types of Facilities and Services	4	3	2	1
Type of Aircraft	4	3	2	1
Type of Community	4	3	2	1
Economic Impact	4	3	2	1
Based Aircraft	4	3	2	1

Table 5.17 shows the Dixon Airport report card prepared by WYDOT Aeronautics.

Table 5.16 2016 WYSASP Dixon Airport Classifications

Airport	Types of Facilities and Services	Aircraft Accommodated	Community Served	Economic Impact	Based Aircraft	Total Points
Dixon	1	2	1	1	1	6

Point range for the Local (paved) airports is considered as less than 9 points.

Table 5.17 Airport Report Card			
	Local (Paved)Objectives	**Currently Has**	**Met?**
Airside Objectives			
Primary Runway Lights	Medium Intensity Runway Lights (MIRL)	MIRL	YES
Primary Runway Strength	Can Support Pilatus PC-12 – 10,450 pounds (SW)	24,500 pounds Single Wheel	YES
Taxiway	Maintain Existing Taxiways	Partial Parallel	YES
Taxiway Lights	Reflectors (MITL Suggested)	MITL	YES
Instrument Approach Type	Not an Objective	Non-Precision (expected 10/2017)	-
Primary Approach Lighting System (ALS)	Not an Objective	No	-
Runway Visual Aids	PAPI – One Runway End (Both Ends Suggested) REIL or ALS – One Runway End (Both Ends Suggested)	PAPI – One Runway End REIL – Both Runway Ends	YES
Airport Visual Aids	Beacon Lighted Wind Cone	Beacon Lighted Wind Cone	YES
Wind Coverage	≥ 95% Coverage at 13 knots	97.62% at 13 knots	YES
Runway Safety Area (RSA)	Standard RSA on All Paved Runways	Standard RSA on All Paved Runways	YES
Landside Objectives			
Weather Reporting	AWOS/ASOS	AWOS	YES
Terminal	General Aviation (GA)	Terminal	YES
Perimeter Fencing	Full Perimeter **Wildlife** Fence	Full Perimeter **Field** Fence	NO
Hangars	50% of Based Aircraft in Hangars	50% of Based Aircraft in Hangars	YES
Lighted Apron Area	Not an Objective	No	NO
Apron Size	Apron parking shortage 14 days per year or less	No Shortage - 0 days per year	YES
Paved Auto Parking	Suggested	Yes	YES
Paved Access Road	Suggested	Yes	YES
Snow Removal Equipment	Snow plow and broom, including a carrier vehicle	1 plow	NO
Service Objectives			
Fixed Base Operator (FBO)	Suggested	No	NO
Fuel	100LL Suggested	100 LL	YES
24-hour Fuel	Not an Objective	24-hour 100 LL	-
Ground Transportation	Courtesy Car Suggested	None	NO

Source: Wyoming State Airport System Plan

Table 5.17 - Airport Card - Continued			
	Local (Paved)Objectives	**Currently Has**	**Met?**
Service Objectives			
Wi-Fi Internet Access	24-hour Wi-Fi for Pilots and Passengers	Not Available	NO
Public Restrooms	Suggested	Not Available	NO
Food	Not an Objective	Vending Not Available	-
Aircraft Maintenance	Not an Objective	None	-
Aircraft Deicing	Not an Objective	No	-
Aircraft Deicing Containment System*	Not an Objective	No	-
Flight Training	Suggested	No	NO
Aircraft Rental	Suggested	No	NO
Aircraft Charter Service	Suggested	No	NO
Administrative Objectives			
Land Use Protection Plan	Airspace Protection	No Land Use Protection	NO
Current Master Plan	On Record with Aeronautics and Less than 15 years old	On Record with Aeronautics, April 2012	YES
Current Airport Layout Plan (ALP) with Exhibit A	On Record with Aeronautics and Less than 10 years old*	On Record with Aeronautics, September 2012	YES
Minimum Standards	Suggested on Record with Aeronautics	No	NO
Pavement Management Plan	Approved, Current and On Record with Aeronautics	Approved, Current and On Record with Aeronautics	YES
Airport Manager	Airport Manager	No	NO
RPZ Ownership	Suggested Fee and Title Ownership of All Existing RPZs	Not all RPZ land owned	NO
Wildlife Hazard Assessment	Not an Objective	No	-
Sustainability	One (1) Sustainable Measure Suggested	Motion Detected Lights	YES
Other Objectives			
Acceptable PCI (70+)	Acceptable PCI	83	YES
Marketing Efforts (websites)	Not a Performance Measure	Yes	-
Air Show/Fly-In/Public Event(s)	Air Show/Fly-In/Public Event(s)	None	NO

Source: Wyoming State Airport System Plan

5.10 FACILITY REQUIREMENTS SUMMARY

The critical aircraft for Dixon Airport is the Cessna 525C (Citation CJ4), which is an ARC B-II, Large aircraft. FAA B-II, Large airport design standards require 250 feet of separation from aircraft parking area to runway centerline. Currently, the separation from aircraft parking areas closer to the Runway 6 end are not compliant with the FAA design standards.

Additionally, FAA B-II, Large airport design standards require a runway to taxiway separation of 240 feet. DWX has a partial taxiway on the north side of the runway with 217 feet separation from the runway centerline; however, this non-standard condition requires the taxiway to be removed. Two connectors accompanying the taxiway require crossing the runway to access and are slated to be removed along with the hangars.

As was discussed in section 5.4.4, *Runway Length*, according to the FAA software, a runway extension to 8,080 feet is recommended to allow the runway length to accommodate 75% of the large aircraft fleet with a useful load of 60%. The FAA AC recommends a runway extension to 7,290 feet for large aircraft to accommodate 75% of fleet with a useful load of 60%.

As noted previously, a runway extension is not justified based on the limited number of operations at the airport. Additionally, the current runway length is sufficient for the airport's primary user, Three Forks Aviation, and the surrounding terrain would result in a runway extension being cost-prohibitive.

Dixon Airport has met most of the required Wyoming State Aviation System Plan (WYSASP) objectives (required and not suggested) for Local general aviation airports. In order to meet all of the state system plan objectives, DWX would need to pursue the followings:

- Add full perimeter wildlife fencing (project programmed in 2022),
- Add a broom as a part of SRE (project requested in 2036),
- Add Wi-Fi internet access,
- Add land use protection plan,
- Air Show/Fly-In/Public Event(s).

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6. Development Alternatives

SECTION OVERVIEW

Chapter 6. Development Alternatives identifies and evaluates different alternatives to meet the needs of the Airport Sponsor and users. A key element is addressing the previously identified facility requirements. Alternatives selected by the Airport Sponsor are summarized at the end of the chapter.

6.1 GENERAL

Previous chapters outlined the existing airport structures and pavements, current and future aviation users, and airport deficiencies. This alternatives chapter combines the previous information to determine future projects to address deficiencies and accommodate future aviation activity. Final alternatives, as well as preliminary and rough concepts, that were designed for future improvements at Dixon Airport are reviewed.

DWX has served the aviation needs of Dixon and Carbon County for decades, and development has taken place at the airport during this time with capital resources invested in the airport facilities. The most recent improvements include an apron rehabilitation and expansion, Runway Safety Area (RSA) improvements, and runway rehabilitation.

Multiple criteria were used in the development and evaluation of alternatives for Dixon Airport:

- Existing Infrastructure: Described in Chapter 3. *Inventory*, conceptual alternatives weighed the condition or lack of existing facilities at the airport.
- Future Aviation Activity: Detailed in Chapter 4. *Forecast of Aviation Demand*, conceptual alternatives considered the forecasted number of operations and type of aircraft for the next 20 years.
- FAA Design Standards: Outlined in Chapter 5. *Facility Requirements*, alternatives adhered to the applicable FAA Design Standards and recommendations.
- Community and Airport Goals: Conceptual alternatives were designed based on feedback from Carbon County, airport users, and other community members. Future improvements to the airport should support long term community and economic goals.
- Compatible Land Use: Alternatives were designed to ensure compatible and environmentally friendly land use.
- Efficiency: Alternatives aimed to utilize existing space most efficiently, balancing airfield traffic, hangar access, safety areas, and utility lines.
- Reasonable and Justified: Only alternatives that progressed toward a reasonable and justified goal were evaluated.
- Wyoming State System Plan: Design of alternatives incorporated Wyoming State System Plan goals and objectives.

6.2 SPONSOR AND USER INPUT

The general public contributed input throughout the development and evaluation of alternatives, and the FAA and WYDOT staff continually contributed to the discussions via email and teleconference. Sponsor, user, and public input, combined with the forecasted activity and facility requirements, resulted in a consensus for the Airport's needs.

6.3 NEEDED IMPROVEMENTS SUMMARY

Chapter 5. *Facility Requirements* identified airport deficiencies, which are summarized as follows:

- Non-compliant separation distance between the north parking apron and taxiway to the runway centerline.
- Incomplete perimeter wildlife fencing.
- A Snow Removal Equipment (SRE) broom.
- Inadequate land use policies.
- Wi-Fi internet access.
- Fly-ins and other public events.

The runway was found to be short of the recommended length of 8,080 feet; however, a runway extension was determined to be unjustified due to terrain and costs. As such, there are no runway alternatives in this chapter, and the existing runway length will be retained.

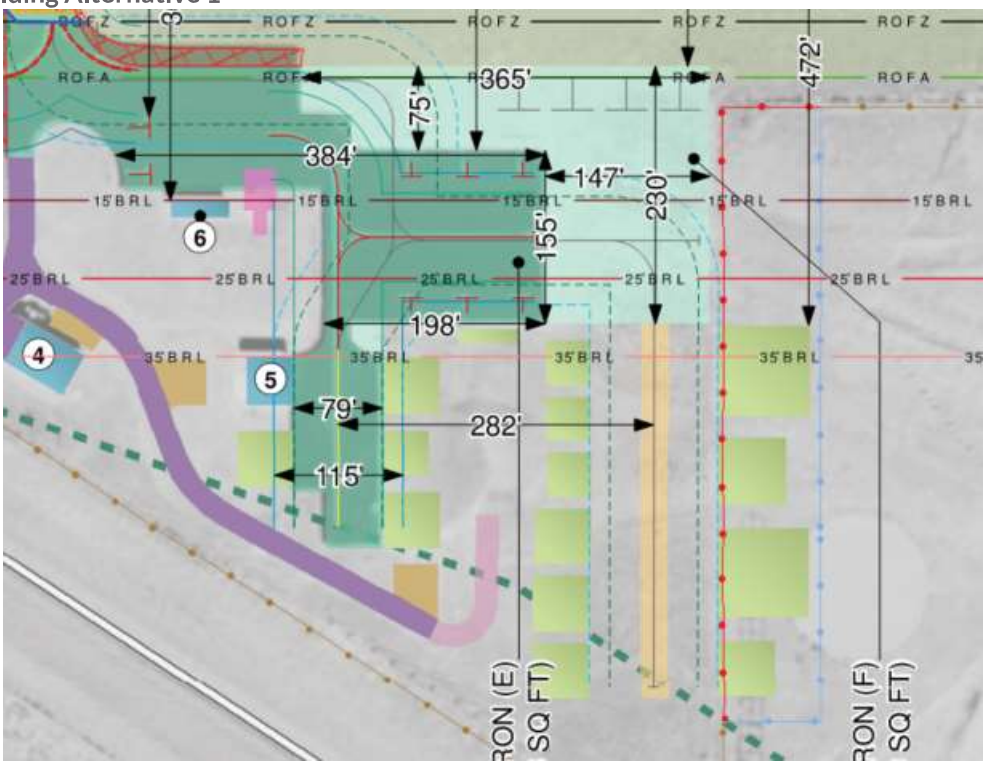
Correcting the non-compliant separation distance between the north parking apron and taxiway will require removing those facilities and relocating them to the existing terminal area south of the Runway 6 End. Two alternatives were explored to meet this requirement.

6.4 BUILDING ALTERNATIVES

The existing tie-down and hangar area south of the Runway 6 end provides direct access to State Highway 70 but is constrained on the airside by the Primary and Transitional Surfaces for the runway. Consequently, much of the existing apron near the runway is unusable for hangars or tie-downs. Building Alternative 1 adds a new taxilane designed for an ADG-II aircraft, along with five box hangars. Two existing hangars adjacent to the existing parking apron are to be eliminated, as they penetrate the Transitional Surface, see *Figure 6.1*.

Building Alternative 2 also adds a new taxilane designed for an ADG-II aircraft, which extends from the existing parking apron. This alternative allows the addition of eight box hangars, and requires the elimination of two existing tie-down spaces. As with Alternative 1, the two existing hangars adjacent to the existing apron are to be removed.

Figure 6.1 Building Alternative 1



Source: T-O Engineers

6.5 ALTERNATIVES SUMMARY

As previously stated, numerous criteria were used to design future development alternatives for DWX. These designs had to be custom tailored to suit the airport, given DWX's geometry, climate, aviation traffic, and the unique goals and financial capabilities of the local community. Effective planning is necessary to ensure development can occur in an orderly and focused manner. Airport Master Plans, such as this one, facilitate the process. Ultimately, reasonable alternatives were developed to address the short- and long-term needs of DWX.

7. Environmental Overview

SECTION OVERVIEW

This chapter presents environmental considerations and factors pertinent to the Dixon Airport (DWX), with an emphasis on the proposed development. Information is compiled from numerous sources, notably multiple governmental agencies and technical studies prepared by TRC as part of this Airport Master Plan.

7.0 INTRODUCTION

The purpose of considering environmental factors in airport master planning is to help the Airport Sponsor evaluate potential development alternatives and to provide information that will help expedite future environmental processes. Airport planning provides the basis for a project's purpose and need and aids in the completion of an environmental evaluation to fulfill requirements set forth by the National Environmental Policy Act (NEPA) of 1969.

NEPA PROCESS

The NEPA process evaluates the environmental effects of a federal undertaking, including its alternatives. There are three levels of analysis: categorical exclusion (CATEX) determination; preparation of an environmental assessment/ finding of no significant impact (EA/FONSI); and preparation of an environmental impact statement (EIS).

- CATEX: At the first level, an undertaking may be categorically excluded from a detailed environmental analysis if it meets certain criteria that a federal agency has previously determined as normally having no significant environmental impact.
- EA/FONSI: At the second level of analysis, a federal agency prepares a written EA to determine whether or not a federal undertaking would significantly affect the environment. If the answer is no, the agency issues a FONSI. The FONSI may address measures that an agency will take to mitigate potentially significant impacts.
- EIS: If the EA determines that the environmental consequences of a proposed federal undertaking may be significant, an environmental impact statement (EIS) is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives.

7.1 AIR QUALITY

The Clean Air Act (CAA) is the primary statute related to air quality. The CAA regulates air pollutant emissions from stationary and mobile sources and authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for six pollutants, called criteria air pollutants. The criteria pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particle pollution (PM-10 and PM-2.5), and sulfur dioxide (SO2).

Carbon County, along with Dixon Airport, is located in an area that is in attainment for all criteria pollutants. The projects proposed in this Airport Master Plan study are unlikely to cause or create a reasonably foreseeable increase in air emissions, as the projects are not anticipated to increase or change aircraft operations. Temporary air quality impacts during construction would be short-term and of local impact. Emission reduction strategies, or Best Management Practices (BMPs), would be employed to minimize the impacts.

7.2 BIOLOGICAL RESOURCES

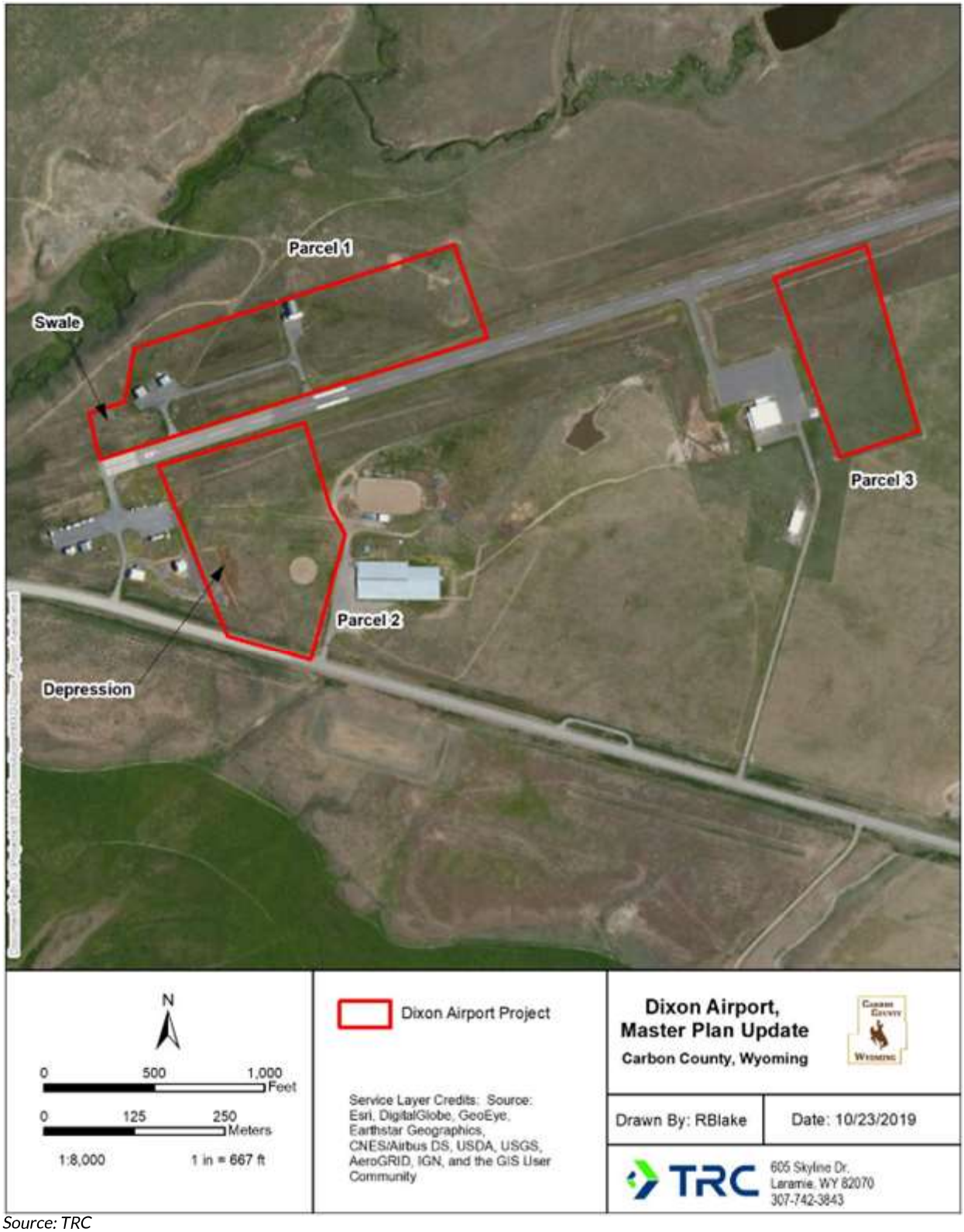
FEDERALLY LISTED SPECIES AND CRITICAL HABITATS

Section 7 of the Endangered Species Act (ESA), as amended, applies to the actions proposed or performed by federal agencies and sets forth requirements to determine if the proposed action(s) may impact endangered or threatened species. In accordance with Section 7 of the ESA, the FAA must initiate consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) if the FAA determines that an action may affect a threatened or endangered species or designated critical habitat.

The Information, Planning, and Conservation (IPaC) online system provides information regarding federally designated proposed, candidate, threatened, and endangered species, final critical habitats, species of conservation concern, and service refuges that may occur in an identified area or may be affected by proposed activities.

TRC Environmental Corp. (TRC) conducted a biotic resources inventory in October 2020 as part of the Airport Master Plan for areas of potential development, shown in *Figure 7.1* as Parcels 1-3. The IPaC resource report generated during the inventory identified five federally listed wildlife species and one plant species as potentially occurring within one mile of the project area. The federally listed wildlife species are the yellow-billed cuckoo (Coccyzus americanus), bonytail chub (Gila elegans), Colorado pikeminnow (Ptychocheilus Lucius), humpback chub (Gila cypha), and razorback sucker (Xyrauchen texanus). The federally listed plant species, Ute ladies' -tresses (Spiranthes diluvialis) is also identified. There is no designated critical habitat for any of the listed species within one mile of the project area, although there is proposed critical habitat for the yellow-billed cuckoo within one mile of the project area. The project area lacks suitable yellow-billed cuckoo habitat, which consists of densely wooded riparian corridors. Consequently, it is unlikely for yellow-billed cuckoo to occur in the project area. Additionally, the project area lacks the wetlands and Waters of the U.S. that comprise the suitable habitat for Ute ladies' -tresses. Thus, Ute ladies' -tresses are not expected to occur in the project area.

Figure 7.1 Biotic Resources Inventory Survey Area



Source: TRC

MIGRATORY BIRDS

Birds are protected by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Work that could lead to the take of an avian species protected under the MBTA and/or the BGEPA, their young, eggs, or nests, should be coordinated with the USFWS before any actions are pursued. The IPaC report generated by TRC during the biotic resources inventory concluded that there are no Migratory Birds of Conservation Concern within the vicinity of the project area.

Dutch Joe Creek runs just north of the airport property and flows under Wyoming Highway 70 into First Mesa Ditch, which flows into the Little Snake River, which is approximately one mile south of the airport. Each of these water features could be considered a wildlife attractant. The FAA Wildlife Strike Database revealed one reported wildlife strike for Dixon Airport, a Citation X that struck a Canadian goose on September 15, 2008, causing substantial damage.

7.3 CLIMATE AND COASTAL RESOURCES

The Intergovernmental Panel on Climate Change (IPCC) estimates that aviation accounted for 4.1 percent of global transportation GHG emissions. EPA data indicates that commercial aviation contributed 6.6 percent of total CO2 emissions in 2013, compared with other sources, including the remainder of the transportation sector (20.7 percent), industry (28.8 percent), commercial (16.9 percent), residential (16.9 percent), agricultural (9.7 percent) and U.S. territories (0.05 percent).

While it is well-established that Greenhouse Gas (GHG) emissions can affect climate, there are no federal standards for aviation related GHG emissions. The CEQ has indicated that climate should be considered in NEPA analyses, however, "it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand." Consequently, there was no attempt to determine the significance of such impacts at Dixon Airport.

Coastal resources include any natural resources occurring within coastal waters and their adjacent shorelands. The airport is located entirely inland and is not located within the Coastal Barrier Resource System. No shorelines are located within the state or the project area; therefore, a NOAA approved state Coastal Zone Management Plan (CZMP) would not apply.

7.4 DEPARTMENT OF TRANSPORTATION ACT 4(F)

Section 4(f) of the Department of Transportation Act, states 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 or historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative and the project includes all possible planning to minimize harm resulting from the use.

A property must be a significant resource for Section 4(f) to apply. Any part of a Section 4(f) property is presumed to be significant unless there is a statement of insignificance relative to the entire property by the federal, state, or local official having jurisdiction over the property. Section 4(f) protects only those historic or archaeological properties

that are listed or eligible for inclusion on the National Register of Historic Places (NRHP), except in unusual circumstances.

Russell Community Park is located adjacent to Dixon Airport among the rodeo facilities east of the proposed development area and south of the runway. Development of additional hangars is not expected to impact this community park.

7.5 FARMLANDS

The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert farmland to non-agricultural uses. Farmland includes prime farmland, unique farmland, and land of statewide or local importance. There is no published soil surveys of the airport property on the National Resources Conservation Service (NRCS) website; however, the Wetland Delineation report completed by TRC in October 2020 identified Forellee loam, 0-6% slopes on the Airport property.

7.6 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

HAZARDOUS MATERIALS

Federal, state, and local laws, including the Resource Conservation Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended (also known as the Superfund), regulate hazardous materials use, storage, transport, and disposal. RCRA set up a framework for the proper management of hazardous waste. From this authority, EPA established a comprehensive regulatory program to ensure that hazardous waste is managed safely from "cradle to grave" meaning from the time it is created, while it is transported, treated, and stored, and until it is disposed.

The EPA maintains a list of superfund sites called the National Priorities List (NPL) in accordance with CERCLA. These sites have known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. There are no superfund sites located in Carbon County, Wyoming.

A review of the EPA EnviroMapper did not identify any hazardous materials sites on the Airport property. According to AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program (AIP) Assisted Projects, as part of the project planning and environmental assessment phases, the Airport Sponsor should have an adequate due diligence environmental audit conducted for the presence of hazardous materials and contamination on property needed for a project. Contaminated property must be avoided as is feasible, or the use minimized to avoid excessive project costs for the clean-up and remediation of hazardous materials. These audits include Phase I and Phase II Environmental Site Assessments, which should identify quantities of any hazardous materials located at the proposed project site or in the immediate vicinity of a project site. No land acquisition is needed for the projects proposed in this Master Plan.

POLLUTION PREVENTION

There are many local, state, and federal regulations that address the impacts of construction activities, including noise, dust, disposal of construction debris, air pollution, and water pollution. Construction activities on airports should comply with FAA AC 150/5370-10H, Standards for Specifying Construction of Airports and FAA AC

150/5370-2G, Operational Safety of Airports During Construction. Permits may be required for air and water quality.

7.7 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) establishes the Advisory Council on Historic Preservation (ACHP) and the National Register of Historic Places (NRHP) within the National Park Service (NPS). Section 106 of the NHPA requires federal agencies to consider the effects of their undertaking on properties on or eligible for inclusion in the NRHP. According to the NRHP, there are two sites within two miles of Dixon Airport, both of these sites are located outside of the Airport property.

Table 7.1 NRHP Listed Sites Near Dixon Airport

Reference	Description	Location (City, Relation to Dixon Airport)
86001393	Stockgrowers Bank	Dixon, WY (1.6 miles west)
82000362	Baker, Jim, Cabin	Savery, WY (1.8 miles east)

Source: National Park Service (nps.gov)

A Class III cultural resource inventory was performed by TRC in December 2020 as part of this Airport Master Plan for areas of potential development, shown in *Figure 7.2* as Parcels 1-3. No new or previously recorded cultural resources were identified during the inventory. Three modern airport hangars, along with various rodeo facilities were determined to be not historic in age. TRC recommended a cultural clearance for the project with the following stipulations:

1. All disturbances should be restricted to the area inventoried.
2. If evidence of prehistoric or historic sites is discovered during ground-disturbing activities, all activities within a 100-foot radius of the site(s) should cease immediately and the Wyoming SHPO should be notified.

Figure 7.2 Class III Cultural Resources Inventory

Source: TRC

7.8 LAND USE

FAA Order 1050.1F states that the compatibility of existing and planned land uses in the vicinity of an airport are usually associated with the extent of the airport's noise impacts. Order 1050.1F requires documentation to support the required Sponsor's assurance under 49 USC 47107(a)(10) that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations for existing and planned land uses.

Zoning regulations for the Town of Dixon and Dixon Airport are governed by Carbon County. The zoning designation for Dixon Airport and the immediate area surrounding the airport is Ranching, Agriculture, and Mining (RAM). A description of the allowed uses within the RAM designation is stated in Section 4.4 of the Carbon County Zoning Regulation of 2015, Amended July 7, 2020. Presently, the RAM designation does not address uses related to an airport, including height restrictions. There is a separate requirement within the zoning regulations that require an applicant to comply with the FAA noticing requirements, prior to issuance of a building permit, as described in Chapter 5, Facility Requirements.

The Carbon County Comprehensive Land Use Plan, adopted November 9, 2010 and amended on April 3, 2012, establishes a future land use designation for Dixon Airport as Smaller Lot Rural, with Agricultural Rural Living east of the airport. Neither designation directly addresses compatible land use with an airport.

7.9 AIRCRAFT NOISE

Noise levels are measured in Day/Night Levels (DNL). DNL is an average of day and nighttime levels of sound and is computed so that nighttime sound levels are given more weight. The FAA and EPA have set the guideline at 65 DNL to determine compatible land use around airports. On noise contour maps, the louder contours will be at the core of the Airport around the runway(s) and decreases as they move outward.

The intent of this noise study is not meant to be a formal noise analysis, as the airport does not meet the threshold as stated in FAA Order 1050.1F, Appendix B, Paragraph B-1. However, existing and planned land use compatibility is influenced by the level of noise exposure.

For this Airport Master Plan, noise contours were generated for the 20-year forecasted conditions using the FAA's Aviation Environmental Design Tool (AEDT). *Table 7.2* outlines the assumptions used in the noise model, using forecast operations data from the approved forecast. *Figure 7.3* shows the noise contours for the future conditions at DWX. All future noise contours are contained within the airport property boundary.

Table 7.2 Noise Analysis Assumptions

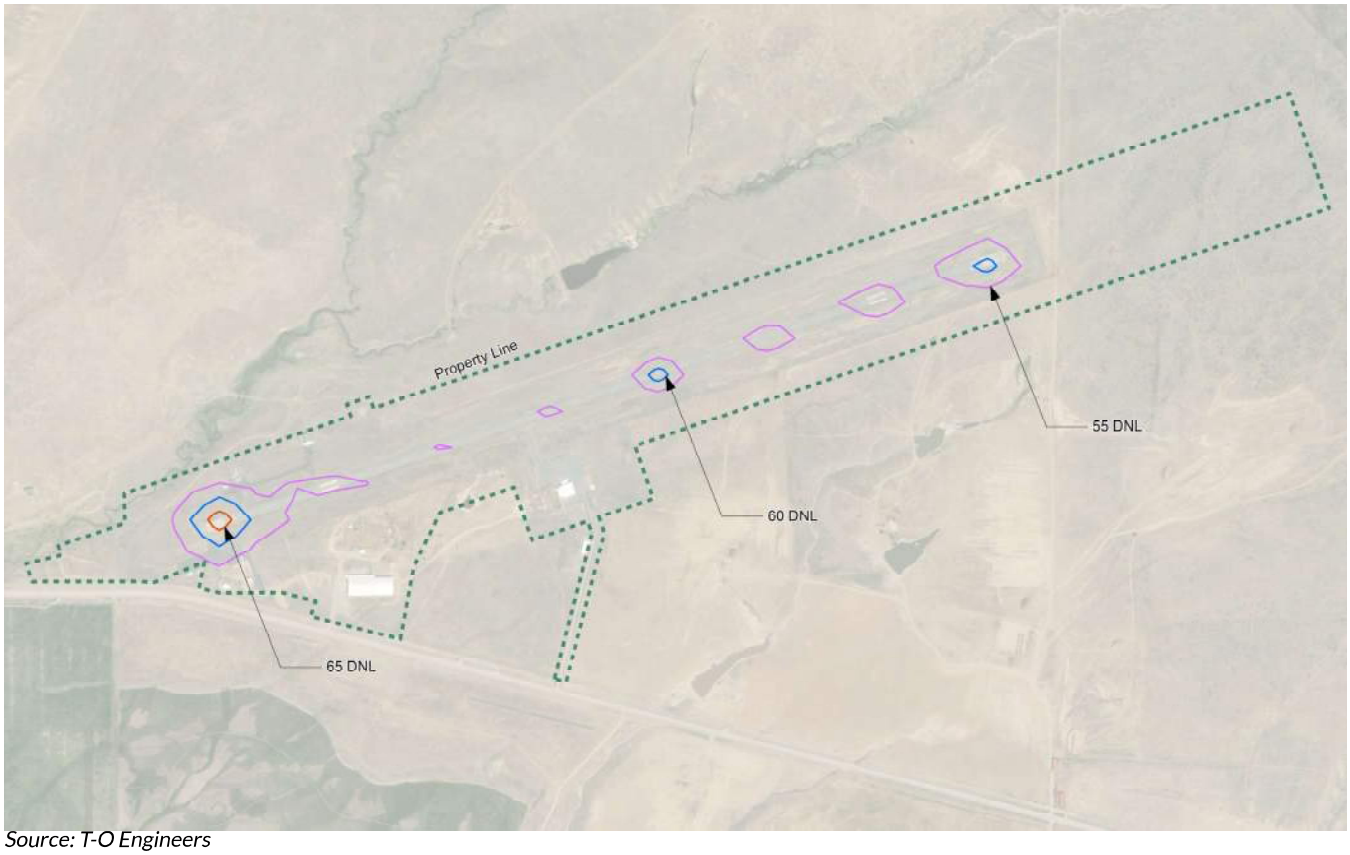
2039 Forecast Conditions: 934 total annual operations, with a daily average of 2.56 operations

Aircraft Type (% of total ops)	AEDT Representative Aircraft	Average Daily Operations by Runway (% of total ops)				
		RWY 6 Arrival (40%)	RWY 6 Departure (60%)	RWY 24 Arrival (60%)	RWY 24 Departure (40%)	Total (100%)
Single Engine Piston (32.8%)	Cessna 172	0.17	0.25	0.25	0.17	0.84
Jet (4%)	Citation 525	0.33	0.50	0.50	0.33	1.65
Helicopter (1%)	Bell 429	0.02	0.02	0.00	0.00	0.04
Night (1%)	Citation 525	0.01	0.01	0.01	0.01	0.03
Total		0.52	0.78	0.75	0.50	2.56

*Night operations account for 1% of total operations and occur between 10:00 pm and 7:00 am. Night operations are assumed to be jet operations and are subtracted from the average total jet operations.

Source: T-O Engineers

Figure 7.3 Future Noise Contours for Dixon Airport



Source: T-O Engineers

7.10 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY RISKS

SOCIOECONOMICS

A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by a proposed action or alternative. According to the to 2019 American Community Survey 5-year estimates, Dixon has a population of 91 people, with the median age being 31.8 years old. The median household income for Dixon is $24,464.

ENVIRONMENTAL JUSTICE

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, ethnicity, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The 2019 ACS five-year estimates report that 12.1% of the population in Dixon are living below the poverty line. *Table 7.3* shows the population distribution of Dixon by race.

Table 7.3 Dixon Race Makeup

Race	Total
White alone	91
Black or African American alone	0
American Indian alone	0
Asian alone	0
Native Hawaiian and Other Pacific Islander alone	0
Some Other Race alone	0
Two or More Races	0

Source: U.S. Census Bureau 2019 ACS Survey 5-Year Estimates

Proposed projects associated with this Airport Master Plan would provide positive long-term health and safety benefits around the airport to all persons equally, regardless of race or socioeconomic status. No concentrations of minority populations have been identified that would be affected by the proposed projects.

CHILDREN'S HEALTH AND SAFETY RISKS

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks requires agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. According to the U.S. Census 2019: ACS 5-Year estimates, approximately 36.3% of the population of the Town of Dixon are under 18 years old. Consequently, actions at the airport are not expected to disproportionately affect children.

7.11 VISUAL EFFECTS

FAA Order 1050.1F Desk Reference states that visual, or aesthetic impacts are inherently more difficult to define because of the subjectivity involved. Visual effects deal broadly with the extent to which the proposed action or alternatives would either produce light emissions that create an annoyance or interfere with activities or contrast with, or detract from, the visual resources and/or the visual character of the existing environment. The FAA has not established a significant threshold for light emissions and visual resources/visual character.

The development of hangars would change the appearance of the area during and after construction. The presence of structures would result in a temporary change to the visual character of the area, but development would be consistent with the style and uses of existing structures at the Airport. The proposed projects are not expected to affect the visual character of the area, as they are consistent with the existing airport infrastructure.

7.12 WATER RESOURCES

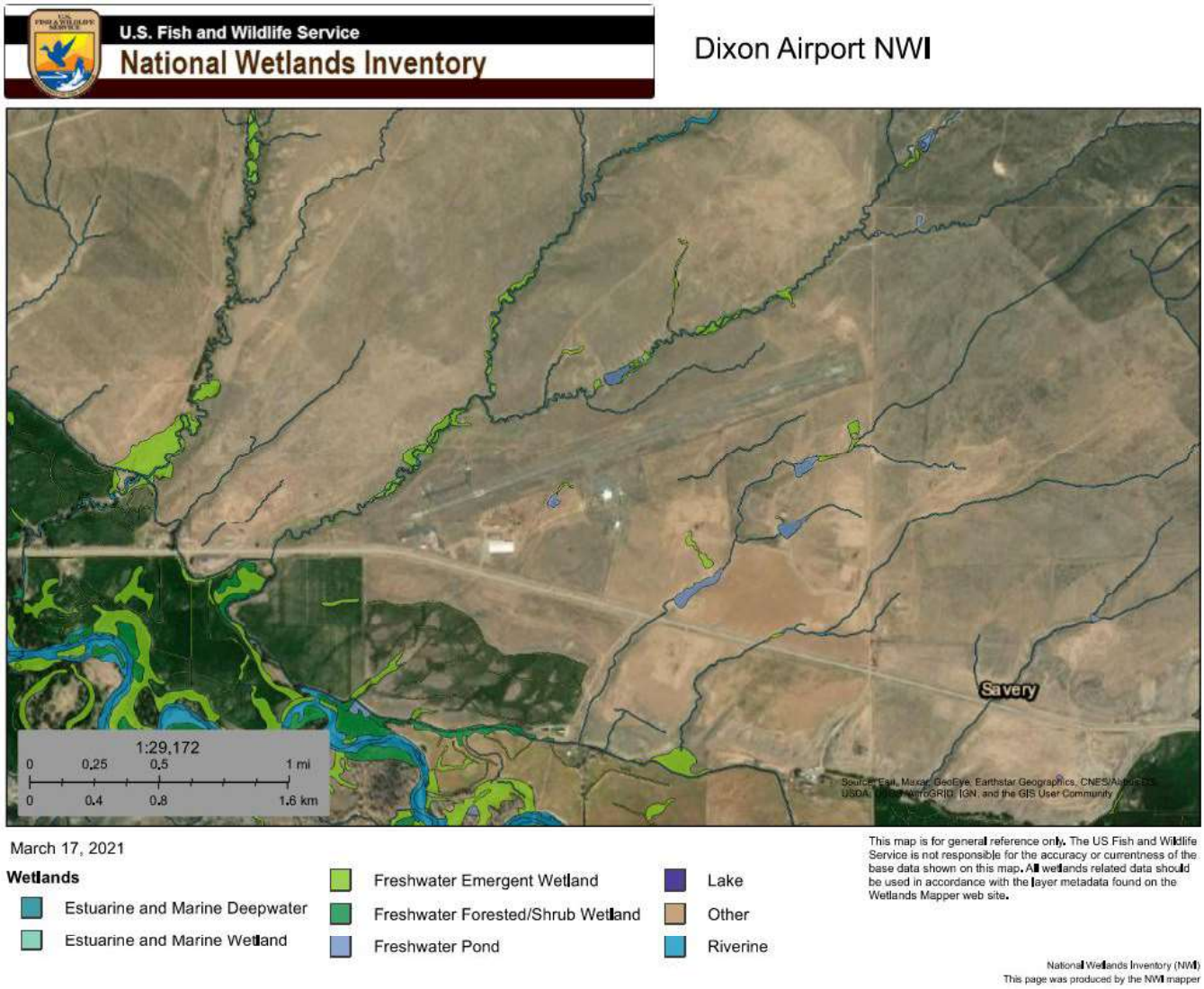
Water resources are surface waters and groundwater that are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. Surface water, groundwater, floodplains, and wetlands do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system. Disruption of any one part of this system can have consequences to the functioning of the entire system.

WETLANDS

Jurisdictional wetlands are federally protected under Section 404 of the Clean Water Act (CWA), which regulates the discharge of dredge or fill material into Waters of the United States, including wetlands. Under the CWA, the term wetlands are defined as areas that, under normal circumstances, support a prevalence of vegetation typically adapted for life in saturated soil conditions.

A review of the USFWS National Wetland Inventory (NWI) Map, *Figure 7.4*, identified freshwater emergent wetland, freshwater forested/shrub wetland, and freshwater pond associated with the Dutch Joe Creek, First Mesa Ditch, and the Little Snake River. Additionally, there is a freshwater emergent wetland and freshwater pond located south of the runway between the rodeo facility and the Three Forks Ranch hangar.

Figure 7.4 Dixon Airport NWI Map

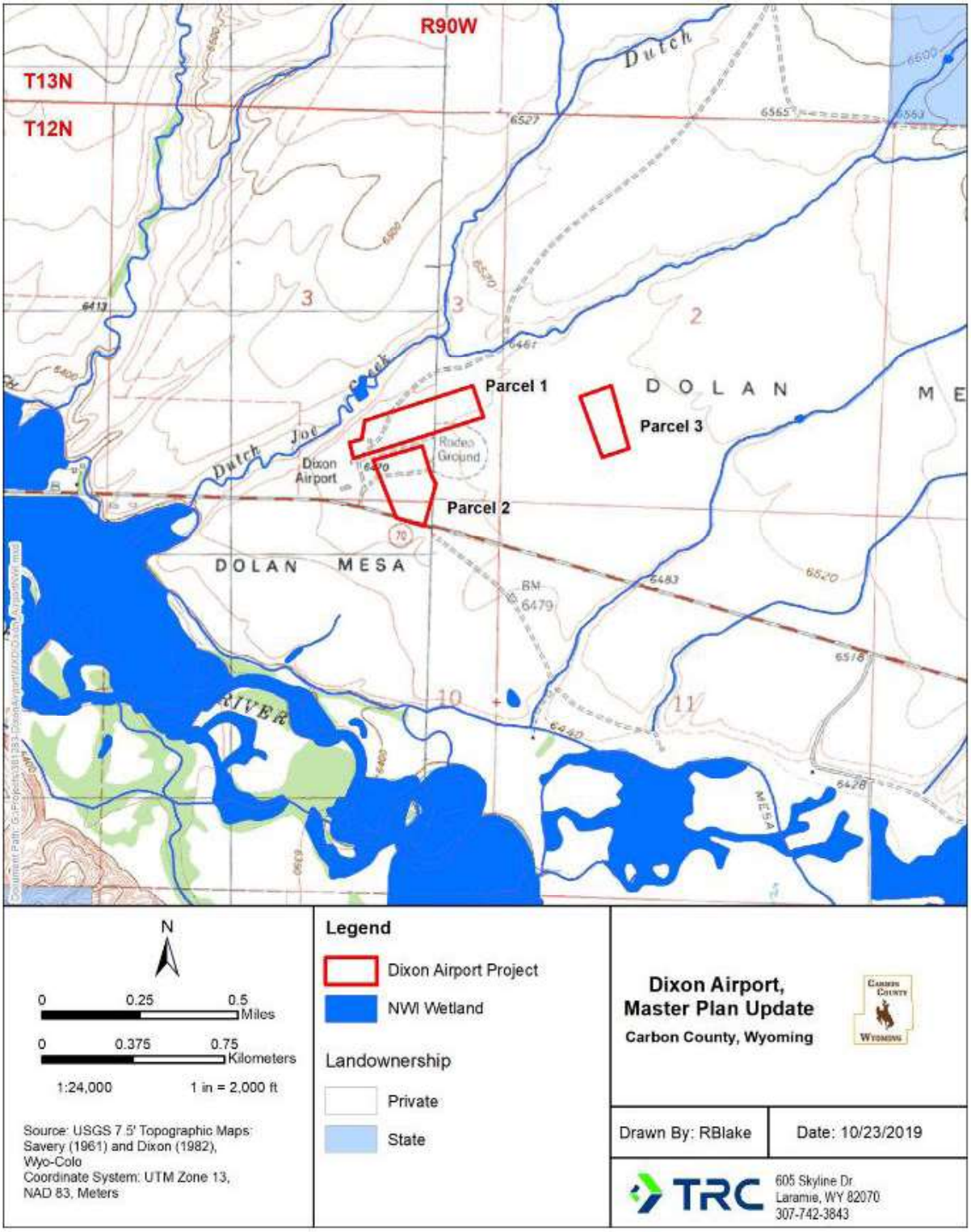


Source: USFWS

A wetland delineation was performed by TRC in October 2020 as part of this Airport Master Plan for areas of potential development, shown in *Figure 7.5* as Parcels 1-3. No wetlands or Waters of the U.S. were identified in the project areas. Future hangar development at the airport is not expected to impact wetlands or Waters of the U.S.

7. Environmental Overview

Figure 7.5 Dixon Airport Wetland Delineation Map



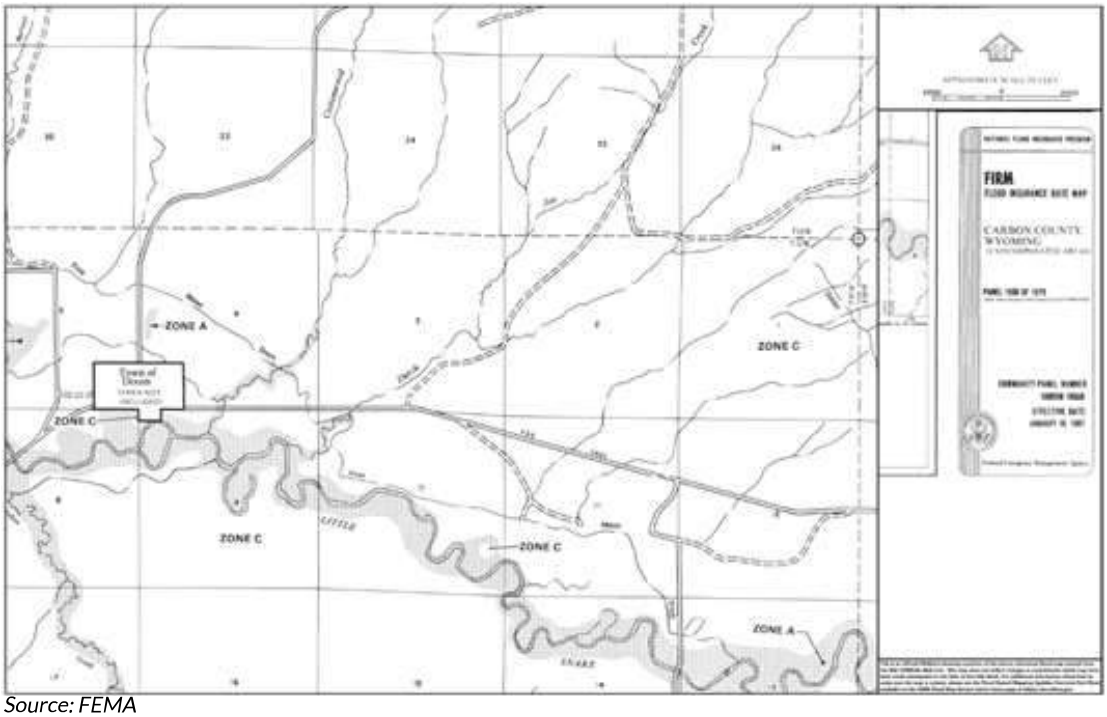
Source: TRC

FLOODPLAIN

According to the FAA 1050.1F Desk Reference Chapter 14, floodplains are lowland areas adjoining inland and coastal waters that are periodically inundated by flood waters. Floodplains are often discussed in terms of the 100-year flood. The 100-year flood is a flood having a 1% chance of occurring in any given year. The 100-year flood is also known as the base flood.

Dixon Airport is located in the "Zone C" flood zone (area of minimal flooding), which is outside the 100-year floodplain, as depicted in *Figure 7.6*. Thus, none of the projects proposed in this Airport Master Plan will impact floodplains.

Figure 7.6 Dixon Airport Floodplain Map



Source: FEMA

SURFACE WATER

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans. The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States, specific sections include Section 303(d), Section 404 and 401 (refer to wetland section), and Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES) permitting program. Section 303(d) sets forth the process to identify impaired waters and to establish the maximum amount of pollutant allowed in a waterbody, known as the total maximum daily load, necessary to assess current conditions and project impacts. If project activities have the potential to discharge pollutants into Waters of the U.S. through a point source, a NPDES permit will likely be required.

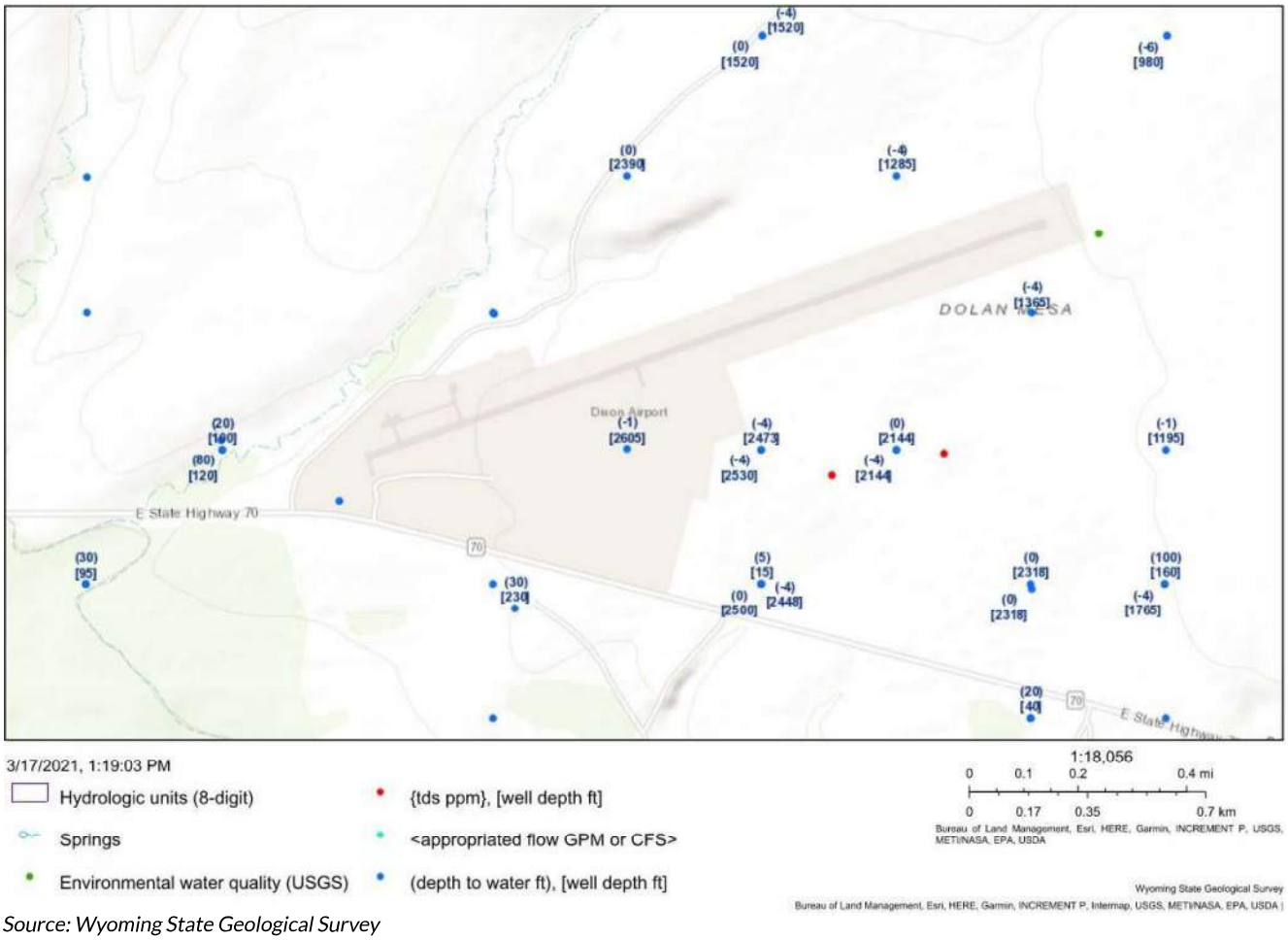
Surface water resources near Dixon Airport consist of Dutch Joe Creek, First Mesa Ditch, the Little Snake River, and a freshwater pond adjacent to the rodeo facility. Carbon County Zoning Resolution of 2015, amended July 7, 2020,

requires compliance with the Wyoming Department of Environmental Quality/Water Quality Division Rules and Regulations when applying for a building permit.

GROUND WATER

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. Water resources of Wyoming are the property of the State of Wyoming. The Wyoming State Engineer's Office (WSEO) regulates both surface water and groundwater. A WSEO permit is issued for the use of state water, such as a groundwater use permit for a water well. Dixon Airport is located within the Greater Green River Basin (GGRB) of Wyoming. Groundwater resources of the GGRB vary widely in occurrence, hydrological characteristics, quantity, quality, and availability. Figure 7.7 shows two wells located on Dixon Airport, with several others in the immediate vicinity.

Figure 7.7 Dixon Airport Groundwater Wells



Source: Wyoming State Geological Survey

WILD AND SCENIC RIVERS

Wild and Scenic Rivers are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values as defined by the Wild and Scenic Rivers Act. If the FAA is taking an action that would physically impact resources covered by the Wild and Scenic Rivers Act, there may be consultation requirements under the Act.

The Little Snake River is located approximately one mile south of Dixon Airport; however, it is not designated as a Wild or Scenic River. The nearest river designated as Wild or Scenic is the Encampment River approximately 35 miles east of Dixon Airport.

7.13 AIRPORT MASTER PLAN ENVIRONMENTAL OVERVIEW

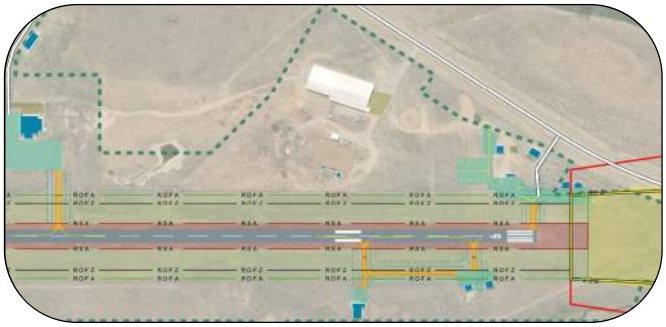
Table 7.4 Potential Environmental Impact Categories and Mitigation Measures

Impact Category	Potential Mitigation Measures
Air Quality	Use Best Management Practices (BMPs) during construction.
Biological Resources	Consultation with the Wyoming Game and Fish Department may be required to determine impacts to Wyoming SGCN.
Climate	Not applicable.
Coastal Resources	Not applicable.
DOT Act Section 4(f)	No Impacts are expected.
Farmlands	Not applicable.
Hazardous Materials, Solid Waste, and Pollution Prevention	Use BMP's during construction.
Historical, Architectural, Archaeological, and Cultural Resources	Not applicable for the surveyed areas unless cultural resources are discovered during ground disturbance.
Land Use	Comply with local land use policies and regulations. Coordination with the Carbon County Planning Department will be required.
Natural Resources and Energy Supply	No significant impacts are expected.
Noise and Noise Compatible Land Use	AEDT analysis revealed no impact to noise-compatible land use.
Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks	No significant impacts are expected, since the proposed project is on existing airport property. Airport design standards have not changed during this Airport Master Plan study.
Visual Effects	Use BMPs during construction. No significant impacts are expected from lighting.
Water Resources	Use BMP's to protect water quality and minimize impacts to the surrounding environment from pollutants (direct or indirect) related to development.
Cumulative Impacts	No significant cumulative impacts are expected.

8. Airport Layout Plan

SECTION OVERVIEW

The Airport Layout Plan is a drawing set that depicts the current airport facilities and proposed developments based on the previously determined aviation demand forecast, facility requirements, and selected alternatives. This chapter describes each drawing included in the set.



8.1 GENERAL

An approved Airport Layout Plan (ALP) is necessary for an airport to receive financial assistance under the terms of the Airport and Airway Improvement Act of 1982. An airport must keep its ALP current and follow the plan as part of AIP grant assurance requirements and previous airport improvement programs. The ALP creates a blueprint for airport development by depicting proposed facility improvements and a guideline to ensure that development meets airport design standards and safety requirements.

The ALP is a set of planning drawings and is provides locations of the major components of an airport; runways, taxiways, aprons, and hangar areas. The various parts of the airport are interconnected and need to be looked at as a whole. For this reason, the full ALP set is vetted through multiple divisions of the FAA. Each division analyzes the existing airport and planned improvements for overall compatibility with the national system of airports (such as airspace and planned approaches) and airport compliance. After the ALP is approved, minor changes by the Sponsor are allowed, but FAA design standards and overall use of the land and space as planned must be followed, otherwise, the airport drawings must be submitted to the FAA again for approval.

This chapter describes, in detail, the drawings of the Dixon Airport ALP and gives a description of the proposed improvements for the airport. The airport and the surrounding impact areas are graphically represented within the drawing set. All layout drawings appropriate to the project were produced with FAA standards as defined in AC 150/5070-6B, Change 2, *Airport Master Plans,* and AC 150/5300-13A, Change 1, *Airport Design*. The following drawings were produced on 24” x 36” sheets and on 11” x 17” sheets as included in **Appendix D:**

- Cover Sheet
- Airport Data Sheet
- Airport Layout Plan Sheet
- Airport Airspace
- Inner Portion of the Approach Surface - Runway Detail
- Runway Departure Surface
- Terminal Area
- Land Use
- Photo and Contours
- Airport Property Exhibit ‘A’

8.2 COVER SHEET

The Cover Sheet lists the drawings within the set, with approval signature blocks for the Sponsor, WYDOT Aeronautics, and designated space for the FAA acceptance letter. This sheet also includes the location and vicinity map, showing DWX, Dixon, and Carbon County in relation to the State of Wyoming. The project name, and AIP number are also included.

8.3 AIRPORT DATA SHEET

The data sheet includes the following information:

- Wind rose(s) including data source, period covered, and coverage percentages for the runway.
- Airport Data Table, existing and future, including airport elevation, Airport Reference Point data, mean maximum temperature, Airport Reference Code, and design aircraft.
- Runway Data Table, existing and future, including percent effective gradient, percent wind coverage, maximum elevation above Mean Sea Level (MSL), runway length and width, runway surface type, runway strength, 14 CFR Part 77 approach category, approach type, approach slope, runway lighting, runway marking, navigational and visual aids, and RSA dimensions.
- FAA Approved Airport Modifications to Standards Table, including the approval date.
- Declared Distances Table, existing and future, including Takeoff Run Available (TORA), Takeoff Distance Available (TODA), Accelerated Stop Distance Available (ASDA), and Landing Distance Available (LDA)

8.4 AIRPORT LAYOUT PLAN (ALP)

A set of drawings has been described as an ALP, but the main sheet of the set is also called the Airport Layout Plan. This sheet is the core of the set and is the overall representation of the existing and planned airport. The existing facility is depicted to show the actual improvements. The surfaces presented, like the Runway Safety Areas and Object Free Areas, include dimensions to indicate they meet FAA design standards. If a surface falls short of standards, a note in the appropriate table and/or on the drawing will point out the deficiency.

A very important function of the ALP sheet is to show planned development areas. These may be runways, extensions, taxiways, apron areas, or other aviation use on the airside of the facility. The development shown meets appropriate FAA design and safety standards. This is particularly important for aircraft movement areas and separation dimensions. The ALP sheet shows DWX meeting ARC B-II design standards, currently and in the future, as detailed in previous chapters.

The ALP depicts the existing and future airport facilities and includes facility identifications, description labels, imaginary surfaces, safety areas, and data tables. The ALP includes the following items:

- North Arrow showing True and Magnetic North and the year of the magnetic declination.
- Airport Reference Point (ARP), existing and future.
- Elevations, existing and future, for runway ends, touchdown zones, intersections, runway high and low points, structures on the airport, and roadways where they intersect the RPZ.
- Building limit lines.
- Runway details, existing and future, including dimensions, orientation, markings, threshold lighting, runway safety areas, and end coordinates.
- Taxiway details, existing and future, including widths and separations from the runway centerlines, parallel taxiway, aircraft parking, and objects.

- RPZ details, existing and future, including dimensions.
- Approach slope ratio.
- Sponsor and WYDOT Aeronautics plan acceptance and FAA conditional approval signature blocks.

8.5 AIRPORT AIRSPACE

The airport airspace drawing identifies all penetrations to surfaces, for the full extent of all airport development, as defined by 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. A primary function of the Part 77 drawing is to provide local planners and governments a means to check for potential obstructions from other planned development. A prime example of this would be an application to build a cellular tower near the airport. By using the Part 77 drawing, planners can check obstruction impacts to airport safety surfaces prior to any construction degrading the airspace or approach procedures. This drawing is one of two that addresses land use protections near the airport, the other, discussed later, is the Land Use Plan. Items in the Part 77 drawing include:

- Plan view of all 14 CFR Part 77 surfaces, based on the future runway lengths.
- Small scale profile views of future approaches.
- Obstruction data tables, including terrain and significant items, obstruction identification number and description, the amount of the approach surface penetration, and the proposed disposition of the obstructions.
- Contoured base map, runway end numbers, 50-foot elevation contours on all slopes, most demanding surfaces more darkly shaded, and top elevations of objects that penetrate any surface.
- Runway ends, existing and future, with latitude, longitude, and elevation coordinates.
- North Arrow showing True and Magnetic North and the year of magnetic declination.
- Obstruction notes listing applicable airspace protection regulations and obstruction survey completion date.
- Vertical buffer notes.

8.6 INNER PORTION OF APPROACH SURFACE AND RUNWAY DEPARTURE SURFACE DRAWINGS

The Inner Portion of Approach Surface sheet contains: 1) a top-down view of the inner approach for both runway ends with a contoured aerial image, 2) profile drawing that displays the center line ground profile detail and critical ground profile for the inner approach of both runway ends, and 3) obstructions to Part 77 surfaces.

The Runway Departure Surface contains: 1) a top-down view of the entire approach and departure surface for both runway ends with a topographical background with contours, 2) an oblique view of the same area with contours shaded, and 3) a profile that displays the center line ground profile and critical ground profile beyond the runway ends for approximately 10,000 feet, as well as all surfaces, to determine obstructions.

In summary, these drawings include:

- Large scale plan views of inner portions of approaches for each runway, usually limited to the RPZ areas.
- Large scale projected profile views of inner portions of approaches for each runway, usually limited to the RPZ areas.
- Plan View Details including aerial photos for base maps, numbering system to identify obstructions, property line, existing and future physical end of the runways with runway end numbers and elevation, and ground contours.
- Profile View Details including terrain and significant items and obstructions with numbers on the plan view.

- Approach Profile Details including a depiction of the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.
- The Approach Profile Details also include the identification of all significant objects within the approach surfaces, regardless of whether or not they are obstructions and the existing and future runway ends and 14 CFR Part 77 approach slopes.

8.7 TERMINAL AREA

The Terminal Area plan is a detailed view of the apron that allows sufficient scale to present dimensions and show imaginary surfaces. When the Sponsor is approached for new hangar development, this drawing should be referenced for available space, location, and appropriate restrictions to meet the design standards, thus ensuring a safe environment.

The Terminal Area plan presents large-scale depictions of highlighted areas with existing and future building development opportunities and facilities. The FAA, during the airspace review, ensures that existing and planned building development will not impact instrument approach procedures or hamper improvements to the approaches. Depicted on the drawing is the Building Restriction Line (BRL) which represents where a 35-foot building can be located without penetrating 14 CFR Part 77 surfaces. The Terminal Area drawing presents the following information:

- Large scale plan views of the area or areas where aprons, buildings, hangars, and parking lots are located.
- A building and data table that lists structures and shows pertinent information including a numbering system to identify structures, top elevations of structures, and existing and planned obstruction markings.
- Existing and future airport facility and building list.
- Title and revision blocks.

8.8 LAND USE

The next drawing used for local protection of the airport is Land Use. This drawing focuses on particular uses of the land near the airport, whereas the Part 77 drawing dealt with height obstructions. Incompatible land use can degrade the value of the public investment in the airport and/or heighten the exposure of danger to greater numbers of the public. Studies have shown that statistically, aircraft have a greater potential of incident near the ends of the runway on both takeoff and landing. This heightened potential for risk led the FAA to develop safety areas off of the runway ends and to provide guidance and standards to preclude congregations or gatherings of people in the zones.

Additional concerns with particular land uses near the airport are wildlife attractants and NAVAID interference. Limiting the amount of attractive natural ground is important to reduce the potential of wildlife impacts. Obvious problem areas are animal attractants, such as golf courses and parks (goose attractant), certain farming activities (mammal and bird attractants), landfills (bird attractant), and other uses like high cover that offer sanctuary to wildlife. Natural occurring attractants should be minimized when possible and man-made attractants should be avoided. Land uses that might interfere with NAVAIDs or aircraft operations must be avoided, including power plants or industrial uses that create steam columns/clouds or other visual obstructions. Uses that may cause interference with compasses or radios need to be avoided as well.

The land use and zoning photograph and map display the airport and a large surrounding area. Defined airport safety zones are overlaid. These drawings include:

- Aerial base map;
- Legend with symbols and land use descriptions;
- Airport and nearby communities, and
- City defined airport Safety Zones.

8.9 AIRPORT PHOTO AND CONTOURS

The Airport Photo and Contours sheet depicts the terrain contours using five-foot and two-foot land contours around the airport. General contours such as these are used for multiple purposes, including to highlight possible terrain obstructions and penetrations for approach and departures surfaces. Contours are also used in planning construction and earthwork. The existing airport and proposed facilities, as well as the airport property boundary and safety areas are included for reference against terrain contours.

8.10 AIRPORT PROPERTY MAP (EXHIBIT A)

The airport property map, also called the Exhibit "A" if prepared in accordance with AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*, depicts the various tracks of land that were acquired to develop the airport and the method of acquisition. It displays easements beyond the airport boundary. The airport property map includes the following information:

- Parcel Data Table with a numbering or lettering system to identify tracts of land, the date the property was acquired, the Federal Aid project number under which it was acquired, the type of ownership, and existing and future airport features that would indicate a future aeronautical need for airport property.

To qualify as an Exhibit 'A' (AC 150/5100-17, Figure 1.2), the drawing must:

- Identify the outside airport property boundary;
- All property parcels of the entire airport must be shown and numbered. In addition, parcels that were once airport property must also be shown;
- Show and/or directly reference parcel information including: Grantee (selling owner), type of interest acquired, acreage, public land record references such as book and page and date of recording;
- For each property parcel show FAA project number if acquired under a grant; Surplus Property Transfer or AP-4 Agreement if applicable; and type of easement (clearing, avigation, utility, ROW, etc.); and if released, date of FAA approval;
- Show the purpose of acquisition (current aeronautical, noise compatibility, or future development) and current use if different or in interim use pending development;
- Show runway protection zones, runway configurations, and building restriction lines;
- Show magnetic and true north arrows per standard drafting practices, and
- The Exhibit 'A' must be dated and amended whenever there is a change to any airport property.

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9. Facilities Implementation

SECTION OVERVIEW

This chapter reviews planned capital projects for Dixon Airport, in conjunction with the Federal Aviation Administration (FAA) Capital Improvement Plan (CIP), Wyoming Department of Transportation (WYDOT) Division of Aeronautics, and Wyoming Aviation Capital Improvement Program (WACIP). The airport's revenues and expenses are compared in order to describe the financial feasibility and commitment of the upcoming projects for the Sponsor.

9.1 GENERAL

The facilities implementation plan provides guidance on how to implement the findings and recommendations of this Master Plan. The plan must balance funding constraints, project sequencing limitations, environmental requirements, agency and tenant approvals, coordination processes, business issues (leases and property acquisition), and Sponsor preferences. Additionally, the plan must coordinate with the Airport Layout Plan (ALP) and the airport's financial plan. The plan should be implemented on an as needed basis that is consistent with the financial capability and needs of the airport and community.

Because airports are critical to the economic health of their communities, it is important to include stakeholders and the general public in planning major projects, such as those involving capital improvement funds. For a community to realize the full benefit of the economic impact of its airport, sufficient infrastructure investments are required. When it comes to major projects, airport personnel may be responsible for implementing the end product, but ideally, the entire community is involved in the development.

9.2 CAPITAL IMPROVEMENT PLAN

Capital projects differ from maintenance and general upkeep of the airport. Capital projects are normally large infrastructure improvements. Projects can include runways, runway extensions, taxiways, and aprons. Certain types of equipment, such as snow removal plows and blowers, fire fighting/rescue trucks, and their associated storage buildings, may also be eligible for FAA and/or state funding assistance. Capital projects often require substantial funding and must be planned for several years in advance.

Airport development items are determined and justified through Airport Master Plans. Once planning identifies a needed project, it is added to the CIP by the Airport Sponsor during the annual CIP review by the state and FAA. Typically, during the review, completed projects are removed, pending projects are refined, and new needs are added for future years. Once a project is on the CIP, it may take years to schedule (program) the funding depending upon the priority of the project. Runways and safety areas have top priority. Other projects related to safety, such as wildlife fencing, also have high priority.

9. Facilities Implementation

WYDOT Aeronautics assists the FAA in administering Airport Improvement Program (AIP) funds to Airport Sponsors through the WACIP. The majority of federal and state airport improvement funds are awarded on a competitive basis. As such, it is vital for WYDOT Aeronautics to have clearly established guidelines outlining how both AIP and state apportionment funds are awarded for airport development projects. The WACIP was developed to maintain and improve the statewide system of aviation and airports. This is achieved by awarding grants that help meet individual airport and statewide aviation targets and needs.

By Wyoming Statute 10-3-402 and Commission Policy, the WYDOT Aeronautics Commission is responsible for the disbursement of state funds for airport improvements. To assess airport projects for inclusion in the WACIP, WYDOT Aeronautics uses the 2021 Wyoming Priority Rating Model for Project Evaluation (PRM) . The purpose of the PRM is to classify (evaluate and rank) airport projects for planning, budgeting, and granting utilizing relevant information to make objective decisions considering the collective need of the state's aviation system. WYDOT Aeronautics is responsible for ensuring eligibility by conducting an initial review that assures each project meets state statute, Commission policies, grant assurances, regulations, and precedence. The PRM is then applied to eligible projects, at which time projects are evaluated and ranked. Rankings are then presented to the Commission for consideration and acceptance into the WACIP.

The PRM evaluates projects submitted by airport sponsors using seven weighted categories. These seven categories represent important project evaluation criteria with each category weighted to recognize differing levels of importance in an overall evaluation and ranking of eligible projects. The seven categories, with weights and brief descriptions, are:

- Purpose of Project – 5 point weight – this category is recognized as one of the most important individual categories in the PRM. It defines and classifies the primary purpose of each project as Safety, Security, Maintenance, Airport Enhancement, or Planning.
- Project Component – 3 point weight – this category further prioritizes those projects that are directed to preservation and enhancement of airside facilities.
- Type of Federal Funding – 5 point weight – this category is one of the most important individual categories as, in general, federal funds provide the majority of financial assistance to airport sponsors for airport improvement projects. The emphasis of the WAC to ensure all federal funding is matched is reflected in this category's importance.
- Systems Impact – 4 point weight – this category allows the Division to consider an individual project's overall impact to the Wyoming State Aviation System Plan (WYSASP).
- Project Timing – 4 point weight – this category allows the Division to match a project's schedule for delivery to the availability of funding and funding requirements of state and federal programs and/or community funding.
- Airport Usage – 3 point weight – this category prioritizes projects based on the airport's benefit to the most airport users/citizens. It uses the airport's state system plan classification (which is assigned based on the airport's type and level of usage) the role of the airport in the overall system, and the facilities and services offered at the airport.
- Status of Airport Protection – 1 point weight – this category recognizes the importance of safeguarding airport operations and minimizing impact to properties in proximity to the airport by implementing land use protections.

Using each of these seven categories, the PRM results in a numerical rating for each project. Once the numerical rating is assigned, it is multiplied by the category weight to determine a final category value. The seven category values are then summed, resulting in the final priority model ranking for those projects proposed for state or federal funding. For federal projects at Wyoming general aviation airports, the FAA provides 90% funding. In Wyoming, the remaining portion of 10% is matched with 6% state funding and 4% local funding.

WYDOT Aeronautics provides 80% funding on maintenance service contracts for navigational aids and on aviation encouragement grants with a $5,000 limit per project. These funds are designated for events which promote interest in community airports, encourage private flying, or aid in the expansion of commercial air service in the community. The Commission encourages airports to seek local sponsorships and donations, but does not require local matching funds for eligible events.

For non-federal projects, when safety is the purpose of the project, WYDOT Aeronautics provides 90% funding, leaving a 10% match for local funding. When security or maintenance is the purpose of the project, WYDOT Aeronautics provides 80% funding, leaving a 20% match for local funding. When Airport Enhancement or Planning is the purpose of the project, WYDOT Aeronautics provides 60% funding, leaving a 40% match for local funding. The local community's investment in the airport helps ensure that a safe route of transportation is available into and out of the community. This includes the ability to safely land emergency aircraft.

This facilities implementation plan addresses the Airport's planned capital projects, including, when relevant, those not associated with the recommendations of the Master Plan, to ensure adequate fiscal, staff, scheduling, and other resources are available.

9.3 MASTER SCHEDULE

The master schedule is intended to help establish interrelationships between projects, determine a sequence to minimize conflicts, and help ensure that the sequence is maintained throughout the implementation plan. Detailed information is provided for the 20-year horizon. Projects with significant costs may take years to receive funding. There are always more needs than funding available, so it is important for the Airport Sponsor to plan ahead and program needs well in advance of pavements failing or projects becoming urgent. Planning helps to ensure funding is available from the FAA, state, and the Airport Sponsor. For Sponsors who struggle with obtaining matching funds this level of planning is increasingly important.

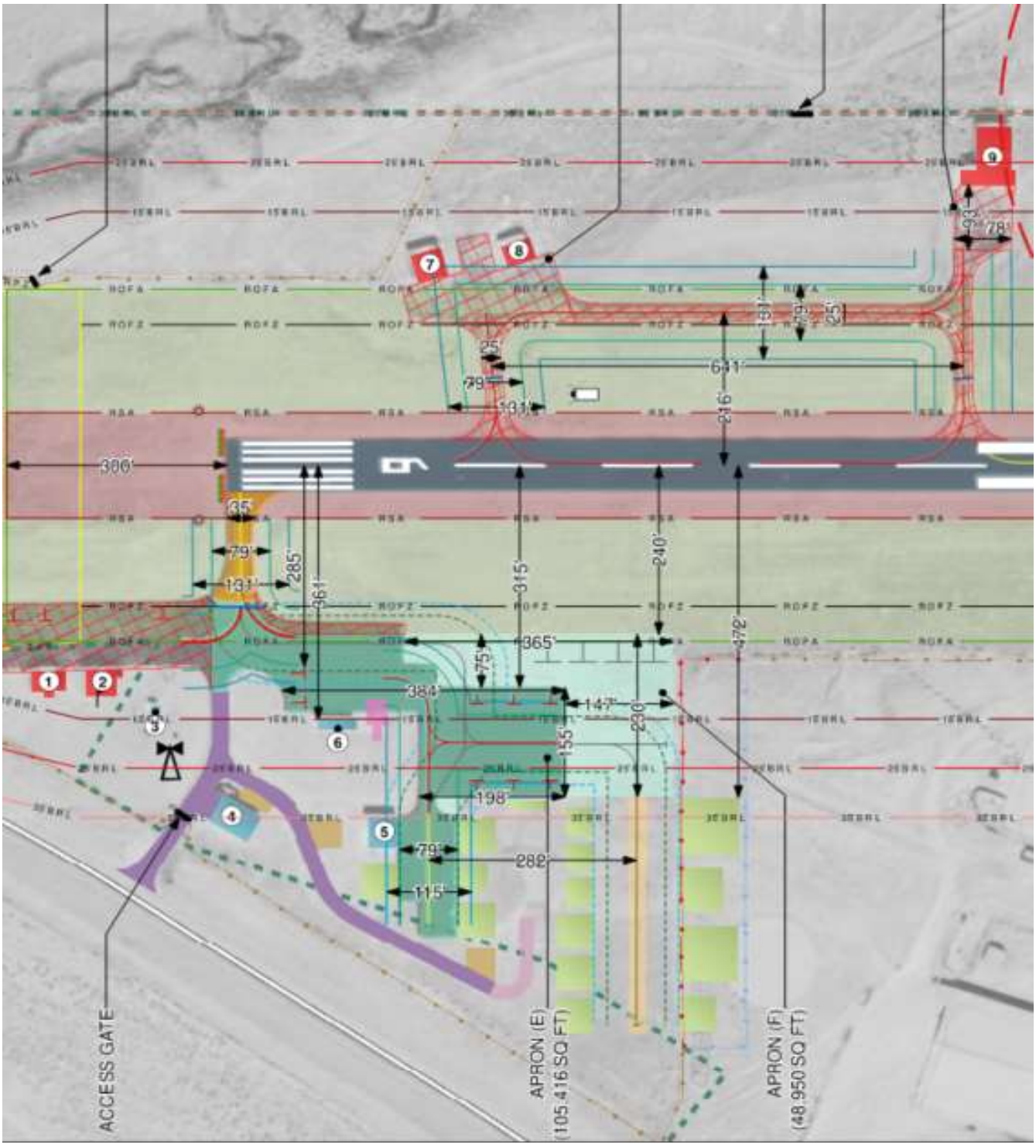
The FAA, WYDOT, and Airport Sponsor shares of the total costs are presented in the estimates. For DWX, the current FAA share is 90% of the total cost of eligible improvements under the AIP grant program. The state's match for eligible items is 6%, leaving the local community with the remaining 4%.

Other projects may be funded entirely by the Airport Sponsor, private funds from monetary donations, or work performed on private structures. Federal participation is usually available for runway, taxiway, and apron improvements. Other projects, such as access roads are eligible, but not a high priority in the federal model. Automobile parking areas, hangars, fuel storage facilities, and utilities are generally ineligible.

9. Facilities Implementation

Figure 9.1 presents the preferred alternative presented in this Master Plan, and includes those projects programmed in the Airport's CIP and locally funded projects.

Figure 9.1 DWX Preferred Alternative



9.4 IMPROVEMENT PROJECTS AND COSTS

Table 9.1 lists the proposed capital improvement projects identified by this Master Plan for Dixon Airport, along with associated cost estimates, over the next 20 years. Cost estimates are an approximation and are designed to provide a general starting point. Many items may affect these estimates, especially inflation or changes in unit prices, over the 20-year period. As projects are programmed into the WACIP, cost estimates are updated annually. Details of most projects are discussed in Chapter 6, Development and Evaluation of Alternatives. *Table 9.2* provides a list of projects which are completely locally funded.

The Coronavirus Aid, Relief, and Economic Security (CARES) act was awarded in 2020 as economic relief to eligible U.S. airports affected by the COVID-19 pandemic. The grant provided funds to increase the federal share to 100 percent for Airport Improvement Program (AIP) and supplemental discretionary grants already planned for the fiscal year 2020. Additional grants were provided in support of combating COVID-19 and as economic stimulus for airports and include, the Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA) of 2020, and the American Rescue Plan Act (ARPA), of 2021. Funding provided can be used as sponsor match for projects in line with grant conditions.

Table 9.1 Federally Programmed Projects

Federally Funded Projects	Year Requested	Requested Amount
Relocate Fence	2022	$575,555
Seal Coat and Mark Pavements	2022	$184,000
2023 NAVAID Maintenance	2023	$5,943
2023 NAVAID Maintenance - AWOS Repair	2023	$10,353
Acquire Hangars, Remove North Apron and Taxiway	2024	$500,000
South Apron Land Acquisition	2026	$166,667
Seal Coat and Mark Airfield Pavements	2026	$210,000
Reconstruct Runway and Rehabilitate Airside Pavements	2027	$8,500,000
Seal Coat and Mark Airfield Pavements	2030	$221,000
Acquire Mowing Equipment	2032	$190,000
Seal Coat and Mark Airfield Pavements	2034	$234,000
Acquire SRE	2036	$333,333
Seal Coat and Mark Airfield Pavements	2038	$248,000
Seal Coat and Mark Airfield Pavements	2042	$263,000

9.5 REVENUE DIVERSION

Carbon County, as the Airport Sponsor, agreed to several assurances as part of accepting AIP and state grant funds. One of these assurances states that "All revenues generated by the airport will be expended by it for the capital or operating costs of the airport, the local airport system, or the local facilities owned or operated by the owner or operator of the airport for aviation purposes.

Additionally, all funds generated by an airport and related aviation activities must be used for airport needs, according to Airport and Airway Improvement Act of 1982 (Public Law 97-248.)
Redirecting such funds to other sources is referred to as "revenue diversion," and the FAA (FAA Airport Compliance Manual - Order 5190.6B) defines revenue diversion as "the use of airport revenue for purposes other than airport capital or operating costs." Revenue diversion is strictly prohibited, and it is the responsibility of all parties involved in an airport's financials to be aware of this requirement and monitor for any such activity. It is permissible to spend airport revenue on the capital and operating costs of the airport, the local airport system, and other directly related aviation facilities and costs

9.6 AIRPORT FUNDING SOURCES

Data in this section is derived from the Airport Finance Report to Congressional Committees entitled Information on Funding Sources and Planned Capital Development submitted by the US Government Accountability Office (GAO) dated February 2020. This information is intended to provide a general overview of viable funding sources, not all of which apply to DWX.

U.S. airports are important contributors to the U.S. economy, providing mobility for people and goods, both domestically and internationally. About 3,300 airports in the United States are part of the national airport system and eligible to receive federal AIP grants to fund infrastructure projects.

The United States has more than 19,000 airports, which vary substantially in size and the type of aviation services they support. Of these, roughly 3,300 airports are designated by FAA as part of the national airport system and are therefore eligible for federal assistance for airport capital projects . From fiscal years 2013 through 2017, U.S. airports received an average of over $14 billion annually for infrastructure projects. The three largest funding sources include:

- Funding from federal Airport Improvement Program (AIP) grants, which has remained relatively constant at an annual average of $3.2 billion.
- Revenue from federally authorized passenger-facility charges (PFC), a per passenger fee charged at the ticket's point of purchase, increased by 9%, with an annual average of $3.1 billion.
- Airport-generated revenue (e.g., concessions and airline landing fees) increased by 18%, with an annual average of $7.7 billion.

From fiscal year 2013 through 2017 airports received funding from capital contributions at about $715 million annually.

In addition to these sources, some airports obtained financing by issuing bonds, secured by airport revenue or PFCs. According to FAA data, larger airports were able to generate more bond proceeds than smaller airports in part because larger airports are more likely to have a greater, more certain revenue stream to repay debt.

PASSENGER FACILITY CHARGES (PFCS)

Revenue from Passenger Facility Charges (PFCs) is another means of support for airport infrastructure projects. PFCs are federally authorized fees which were established in 1990 to help pay for infrastructure at commercial service airports. DWX is not a commercial service airport; therefore this source of funding is not available.

AIRPORT GENERATED REVENUE

Airport generated revenue consists of both "airside" aeronautical revenues derived from the operation and landing of aircraft, passengers, or freight, as well as "landside" non-aeronautical revenues derived from terminal concessions and parking fees. Of the $103 billion in national airport generated revenue over 5-year time period (2013 through 2017), 54% came from aeronautical revenues and 46% came from non-aeronautical revenues. Commercial service airline rates and charges— which include passenger airline's landing fees and passenger arrival fees, rents, and utilities—made up 75% of the total $55.9 billion in aeronautical revenue. The remainder came from a variety of other fees and taxes paid by airlines, general aviation, the military, and other aeronautical sources. Of the non-aeronautical revenues, parking and ground transportation accounted for the greatest portion (41%), followed by rental cars operations revenue (19%). Aeronautical revenues increased by 11% and non-aeronautical revenues increased by 16% over the time period.

BOND PROCEEDS

Airports can also obtain financing for airport infrastructure projects by issuing bonds. Airport bonds entail leveraging future funding to pay for projects. This financing mechanism enables airport authorities to borrow money up front to finance infrastructure projects; this money can then be paid back with interest over a longer time period. U.S. airports may qualify for tax-exempt bonds to support airport projects for federal tax purposes because the airports are owned by states, counties, cities, or public authorities. The tax-exempt status enables airports to issue bonds at lower interest rates than taxable bonds, thus reducing a project's financing costs. FAA officials said that because airports use some PFCs and airport generated revenue to pay off debt service, not all revenue generated from these two sources is available for additional infrastructure investment. From fiscal years 2013 through 2017, airports had averaged $84.6 billion in total bond debt per year.

STATE GRANT AND LOAN PROGRAMS

Nearly all states provide financial assistance to airports, primarily in the form of grants used as matching funds for federal AIP grants or as separate grants. States fund their grant programs through a variety of sources, including aviation fuel and aircraft sales taxes, highway taxes, bonds, and general fund appropriations. According to the 2020 GAO Airport Infrastructure report, during the 2015 study period (fiscal years 2009 through 2013), states provided an annual average of $477 million to national system airports, with $345 million (72%) going to smaller airports and $131 million (28%) going to larger airports. Matching grants accounted for $345 million (72%) of the state grant dollars, and state-only grants accounted for $132 million (28%). States vary significantly from one another, with some states being able to provide significant support to airports, while others are not due to a variety of factors. The 2020 GAO Airport Infrastructure report confirmed that the level of state funding has largely remained unchanged since the 2015 study.

OTHER FEDERAL LOAN PROGRAMS

Other sources of funding can be applied for through the United States Department of Agriculture (USDA), and the United States Economic Development Administration (USEDA). The USDA Rural Development program is for communities with a population less than 20,000 people. The mission is to create economic prosperity and improve the quality of life in rural areas, where access to financing is more challenging. Funding for Rural Development programs are for projects which enhance community infrastructure, and spur economic growth by providing quality jobs, and attract new businesses.

Under the Rural Development program is the Community Facilities Loan Program, specifically for transportation infrastructure, such as airports. Funding may be used for terminals, hangars, runways, parking areas, roadway, curbside, and administrative facilities. Additionally, USDA Community Facility loans may be used as the community match for FAA funding. The average direct loan size is four million, though much larger loans are available. The Community Facilities Program has funded projects greater than one hundred million dollars. The interest rates may be fixed or variable, and are determined quarterly and posted publicly. The repayment period is limited to the useful life of the facility, or any statutory limitation on the applicant's borrowing authority.

9.6 FINANCIAL FEASIBILITY ANALYSIS

The purpose of this section is to demonstrate the Airport Sponsor's ability to fund the projects as described in the Airport Master Plan. The large majority of project monies come from federal AIP funding, followed by Carbon County general funds. Ideally airports generate enough revenue to cover operating costs and save a cash reserve for capital project. At smaller airports like DWX, this is not always possible, therefore, the airports budget is included in the Sponsor's general fund, and programming for capital projects occurs at the county level.

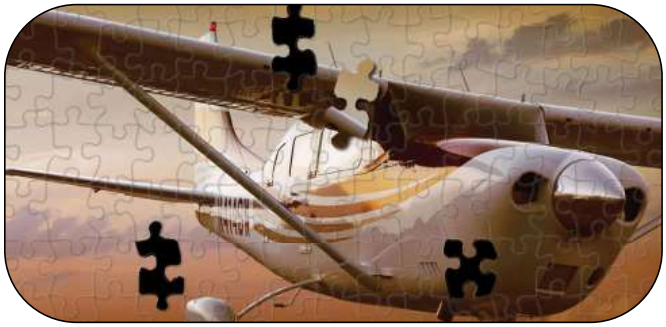
9.7 SUMMARY

In summary, Dixon Airport has few revenue streams with limited potential for others which would allow the Airport to be financially self sustaining. It is important that the County maintains a proactive approach in regard to fiscal planning which will allow the Airport to respond to changes in revenue and expenditures in a timely manner and reflect changes in the long term budget.

10. Planning for Compliance

SECTION OVERVIEW

The FAA has published the FAA Airport Compliance Manual, Order 5190.6B. This chapter provides a brief overview of planning needs for compliance with some of these standards.



10.1 GENERAL

The FAA published Order 5190.6B, *Airport Compliance Manual*, in September 2009 that provides guidance on interpreting and administering the various continuing commitments Airport Sponsors make to the US government when they accept grants of federal funds or federal property for airport purposes. The Airport Compliance Program was developed to ensure that Airport Sponsors comply with federal obligations in the form of grant assurances, surplus and nonsurplus obligations, or other applicable federal laws.

10.2 SOURCES OF OBLIGATIONS

The federal obligations an Airport Sponsor assumes by accepting FAA administered airport development assistance are mandated by federal statute. These obligations are incorporated in the grant agreements and property conveyance instruments entered into by the Airport Sponsor and the U.S. Government. The sources of Airport Sponsor federal obligations include:

- Grant agreements issued through airport development grant programs including:
  - Federal Aid to Airports Program (FAAP)
  - Airport Development Aid Program (ADAP)
  - Airport Improvement Program (AIP)
- Grant agreements and instruments of nonsurplus conveyance issued under the:
  - 1946 Airport Act
  - 1970 Airport Act
  - Airport and Airway Improvement Act of 1982 (AAIA)
- Surplus property instruments of transfer issued under the provisions of Section 13(g) of the Surplus Property Act of 1944, as amended
- Deeds of conveyance issued under section 16 of the 1946 Airport Act, Section 23 of the 1970 Airport Act, and Section 516 of the AAIA
- AP-4 agreements authorized by various acts between 1939 and 1944
- Exclusive Rights under section 303 of the Civil Aeronautics Act of 1938, as amended and section 308(a) of the FAA Act, as amended

- Commitments in environmental documents prepared in accordance with current Federal Aviation Administration requirements that address the National Environmental Policy Act of 1969 (NEPA) and the AAIA
- Separate written agreements between the Sponsor and the FAA, including settlement agreements resulting from litigation.

10.3 FEDERAL GRANT OBLIGATIONS

The following list of assurances and deed restrictions are those most commonly encountered in compliance cases.

a. Exclusive Rights Prohibition:
   1) Applies to airports subject to: Any federal agreement or property conveyance.
   2) Obligation: To operate the airport without granting or permitting any exclusive right to conduct any aeronautical activity at the airport. (Aeronautical activity is defined as any activity which involves, makes possible, or is required for the operation of an aircraft, or which contributes to or is required for the safety of such operations; i.e., air taxi and charter operations, aircraft storage, sale of aviation fuel, etc.)
   3) Duration of obligation: For as long as the property is used as an airport.

b. Maintenance of the Airport:
   1) Applies to airports subject to: FAAP/ADAP/AIP agreements, surplus property, conveyances, and certain section 16/23/516 conveyances.
   2) Obligation: To preserve and maintain the airport facilities in a safe and serviceable condition. This applies to all facilities shown on the approved ALP which are dedicated for aviation use, and includes facilities conveyed under the Surplus Property Act.
   3) Duration of obligation: Standard[1].

c. Operation of the Airport:
   1) Applies to airports subject to: FAA/ADAP/AIP agreements and surplus property conveyances.
   2) Obligation: To operate the aeronautical and common use areas for the benefit of the public and in a manner that will eliminate hazards to aircraft and persons.
   3) Duration of obligation: Standard[1].

d. Protection of Approaches:
   1) Applies to airports subject to: FAAP/ADAP/AIP agreements and surplus property conveyances.

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[1] Standard means:
   1) Grant agreements for development other than land purchase. Pavement and other facilities built to FAA standards are designed to last at least 20 years, and the duration of the obligation should generally be assumed to be 20 years. The duration may be shorter for grants made exclusively for certain equipment, such as a vehicle, that clearly has a useful life shorter than 20 years.
   2) Grant agreements for land purchase. AIP grant agreements for purchase of land provide that obligations do not expire, since the useful life of land does not end or depreciate. However, FAAP and ADAP grants did not always contain this language, and the grant documents should be reviewed to determine whether the obligations expire in 20 years or continue indefinitely. Also, grants to a private operator of a public-use general aviation airport provide for a defined duration of the obligations attached to the grant, and the grant documents should be reviewed to determine the actual obligations that apply.
   3) Surplus property deeds and nonsurplus land conveyance documents. Documents conveying federal land and property interests for airport use generally have no expiration date, and obligations continue indefinitely until the Sponsor is formally released from the obligation by the FAA. Obligations run with the land and bind subsequent owners.

2) Obligation: To prevent, insofar as it is reasonably possible, the growth or establishment of obstructions in the aerial approaches to the airport. (The term "obstruction" refers to natural or man-made objects which penetrate the imaginary surfaces as defined in FAR Part 77, or other appropriate citation applicable to the specific agreement or conveyance document.)
3) Duration of obligation: Standard[1].

e. Compatible Land Use
1) Applies to airports subject to: FAAP (after 1964)/ADAP/AIP agreements.
2) Obligation: To take appropriate action, to the extent reasonable, to restrict the use of lands in the vicinity of the airport to activities and purposes compatible with normal airport operations.
3) Duration of obligation: Standard[1].

f. Availability of Fair and Reasonable Terms:
1) Applies to airports subject to: Any federal agreement or property conveyance.
2) Obligation: To operate the airport for the use and benefit of the public to make it available to all types, kinds, and classes of aeronautical activity on fair and reasonable terms and without unjust discrimination.
3) Duration of obligation: Twenty years from the date of execution for grant agreement prior to 1964. For grants executed subsequent to the passage of the Civil Rights Act of 1964, the statutory requirement prohibiting discrimination remains in effect for as long as the property is used as an airport. The obligation runs with the land for surplus property and section 16/23/516 conveyances.

g. Adherence to the Airport Layout Plan:
1) Applies to airports subject to: FAAP/ADAP/AIP agreements.
2) Obligation: To develop, operate, and maintain the airport in accordance with the latest approved Airport Layout Plan. In addition, airport land depicted on the latest property map (Exhibit "A") cannot be disposed of or otherwise encumbered without prior FAA approval.
3) Duration of obligation: Standard[1].

h. Utilization of Surplus Property:
1) Applies to airports subject to: Surplus property conveyances.
2) Obligation: Property conveyed under the Surplus Property Act must be used to support the development, maintenance and operation of the airport. If not needed to directly support an aviation use, such property must be available for use to produce income for the airport. Such property may not be leased or rented at a discount or for nominal consideration to subsidize nonairport objectives. Airport property cannot be used, leased, sold, salvaged, or disposed of for other than for airport purposes without FAA approval.
3) Duration of obligation: Standard[1].

i. Utilization of Section 16/23/516 lands:
1) Applies to airports subject to: Section 16/23/516 conveyances.
2) Obligation: Property must be used for airport purposes; i.e., uses directly related to the actual operation or the foreseeable aeronautical development of the airport. Incidental use of the property must be approved by the FAA.
3) Duration of obligation: Standard[1].

j. Sale or Other Disposal of Property Acquired Under FAAP/ADAP/AIP:
1) Applies to airports subject to: FAAP/ADAP/AIP agreements.
2) Obligation: To obtain FAA approval for the sale or other disposal of property acquired under FAAP/ADAP/AIP, as well as approval for the use of any net proceeds realized.

3) Duration of obligation: Standard[1].

k. Utilization of Airport Revenue:
   1) Applies to airports subject to: Any federal agreement or property conveyance.
   2) Obligation: To use all airport revenues for the capital or operating costs of the airport, the local airport system, or other local facilities which are owned or operated by the owner or operator of the airport, and directly related to the actual air transportation of passengers or property.
   3) Duration of obligation: Standard for grants and conveyances executed prior to October 1, 1996. For airports receiving assistance on or after that date, the obligation continues as long as the facility is used as a public-use airport.
   4) Special Conditions Affecting Noise Land and Future Aeronautical Use Land: Apply interim revenue derived from noise land or future aeronautical use land to projects eligible for grants under the AIP. This income may not be used for the matching share of any grant.

l. National Emergency Use Provision:
   1) Applies to airports subject to: Surplus property conveyances (where Sponsor not released from this clause.)
   2) Obligation: That during any war or national emergency, the government has the right of exclusive possession and control of the airport.
   3) Duration of Obligation: Runs with the land (unless released from this clause by the FAA, with concurrence of the Department of Defense.)

m. Fee and Rental Structure:
   1) Applies to airports subject to: FAAP/ADAP/AIP agreements.
   2) Obligation: To maintain a fee and rental structure of the facilities and services being provided to the airport users which will make the airport as self-sustaining as possible. (Note: Fair and reasonable for aeronautical activities and fair market value for non-aeronautical activities.)
   3) Duration of obligation: Standard[1].

n. Preserving Rights and Powers:
   1) Applies to airports subject to: FAAP/ADAP/AIP agreements.
   2) Obligation: To not enter into any transaction which would operate to deprive it of any of the rights and powers necessary to perform any or all of the Sponsor assurances without FAA approval, and to act promptly to acquire, extinguish or modify any outstanding rights or claims of right of others that would interfere with such performance by the Sponsor. To not dispose of or encumber its title or other interests in the site and facilities for the duration of the terms, conditions, and assurances in the grant agreement without FAA approval.
   3) Duration of Obligation: Standard[1].

o. Environmental Requirements:
   1) The AAIA requires that for certain types of project, an environment review be conducted. The review can take the form of either an environmental assessment or an environmental impact statement. These environmental documents often contain commitments related to mitigation of environmental impacts. FAA approval of environmental documents containing such commitments has the effect of requiring that these commitments be fulfilled before FAA grant issuance or as part of the grant.

p. Other Obligations:
   1) The above obligations represent the more important obligations assumed by an airport Sponsor. Other obligations that may be found in grant agreements include:
      - Use of government Aircraft

- Land for Federal Facilities
- Standard Accounting Systems
- Reports and Inspections
- Consultation with Users
- Terminal Development Prerequisites
- Construction Inspection and Approval
- Minimum Wage Rates
- Veterans Preference
- Audits, Audit Reports and Record Keeping Requirement
- Local Approval
- Civil Rights
- Construction Accomplishment
- Planning Projects
- Good Title
- Sponsor Fund Availability

10.4 GRANT ASSURANCES

There are 39 Grant Assurances that are briefly described here. Complete descriptions and requirements are located within Appendix A of FAA Order 5190.6B.

1. General Federal Requirements - The Sponsor must comply with all applicable federal laws, regulations, executive orders, policies, guidelines, and requirements as they relate to the application, acceptance, and use of federal funds for the project.
2. Responsibility and Authority of the Sponsor - The Sponsor must have legal authority to apply for the grant and to finance and carry out the proposed project and comply with all terms, conditions, and assurances of the grant agreement. As applicable, a resolution, motion, or similar action must be duly adopted or passed as an official act of the applicant's governing body authorizing the filing of the application.
3. Sponsor Fund Availability - The Sponsor must have sufficient funds available for the portion of the project costs that will not be paid by the U.S. government. Sufficient funds must also be available to assure operation and maintenance of items funded under the grant agreement.
4. Good Title - The Sponsor must show that good title is held or will be acquired by the Sponsor, public agency, or federal government. The Sponsor must hold good title or obtain good title for noise compatibility program projects.
5. Preserving Rights and Powers - The Sponsor will not take or permit any action which would deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in the grant agreement. The Sponsor will not sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A or properties for which noise compatibility program funds have been expended. The Sponsor must enter into an agreement with the property owner for noise compatibility programs that are not on airport property.
6. Consistency with Local Plans - The project should be reasonably consistent with plans of public agencies that are authorized by the State to plan for area development existing at the time of application submission.
7. Consideration of Local Interest - The Sponsor should give fair consideration to the interest of communities located in or near the project location.

8. Consultation with Users - The Sponsor must undertake reasonable consultations with parties that use the airport.
9. Public Hearings - The Sponsor must give opportunities for public hearings for projects involving the location of an airport, an airport runway, or a major extension of the runway.
10. Metropolitan Planning Organization - Projects involving the location of an airport, an airport runway, or a major runway extension at a medium or large hub airport, the sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted.
11. Pavement Preventative Maintenance - The Sponsor assures or certifies that an effective pavement-maintenance management program has been implemented.
12. Terminal Development Prerequisites - The Sponsor must show that all required safety equipment, security equipment, and access to the passenger enplaning and deplaning areas have been provided for projects which include terminal area development.
13. Accounting System, Audit, and Record Keeping - All project accounts and records must be kept and be available for inspection.
14. Minimum Wage Rates - Contracts in excess of $2,000 that involve labor must have provisions establishing minimum wage rates to be paid.
15. Veterans Preference - The employment of labor preference shall be given to Veterans of the Vietnam era and disabled veterans. The preference does not apply to executive, administrative, and supervisory positions and only applies where individuals are available and qualified.
16. Conformity to Plans and Specifications - The project must be executed subject to FAA approved plans, specifications, and schedules.
17. Construction Inspection and Approval - The Sponsor must provide and maintain competent technical supervision at the construction site throughout the project to assure that the work conforms to the FAA approved plans, specifications, and schedules.
18. Planning Projects - Planning projects must be completed in an approved method. The material must be made available for examination. The plan may not be copyrighted and approval of the plan does not constitute or imply any assurance or commitment to approve any future airport grants.
19. Operations and Maintenance - The airport and all facilities that are necessary to serve the aeronautical users of the airport shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards that may be required. The Sponsor may not cause or permit any activity or action that would interfere with its use for airport purposes.
20. Hazard Removal and Mitigation - The Sponsor must take actions to ensure that terminal airspace as required to protect instrument and visual operations to the airport will be adequately cleared and protected by mitigating existing airport hazards and by preventing the creation of future hazards.
21. Compatible Land Use - The Sponsor must take appropriate action, to the extent reasonable, to restrict the use of land adjacent to and in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations. If the project is for noise compatibility program implementation, the Sponsor

will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility with respect to the airport or the noise compatibility program measures.

22. Economic Nondiscrimination - The Sponsor must make the airport available 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.
23. Exclusive Rights - The Sponsor may not permit an exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. There may be a single FBO serving the airport that would not be considered an exclusive right if certain conditions exist.
24. Fee and Rental Structure - The Sponsor must maintain a fee and rental structure for the facilities and services at the airport that will make the airport as self-sustaining as possible under the circumstances existing at the particular airport.
25. Airport Revenues - All revenues generated by the airport and any local taxes on aviation fuel will be expended for the capital or operating costs of the airport, the local airport system, or other local facilities that are owned or operated by the owner or operator of the airport and that are directly and substantially related to the actual air transportation of passengers or property. The revenues can also be used for noise mitigation purposes on or off the airport.
26. Reports and Inspections - Annual operations reports, airport development project records and documents, and noise compatibility program records must be maintained and be available for inspection.
27. Use by federal government Aircraft - The Sponsor must make all of the facilities of the airport developed with federal financial assistance and all those usable for landing and takeoff of aircraft available to the United States for use by government aircraft in common with other aircraft at all times without charge. If use by governmental aircraft is substantial, a reasonable and proportional charge for the cost of operating and maintaining the facilities may be charged.
28. Land for Federal Facilities - The Sponsor must furnish without cost land or water areas to the federal government for the use in connection with any air traffic control, air navigation activities, weather-reporting, and communication activities related to air traffic control.
29. Airport Layout Plan - The Sponsor must keep the Airport Layout Plan up to date at all times. Changes or alterations made on the airport that are not shown on an approved airport layout plan may be subject to elimination or relocation at the Sponsor's expense.
30. Civil Rights - The Sponsor must comply with existing rules to ensure that no person is excluded on the grounds of race, creed, color, national origin, sex, age, or disability from participating in any activity conducted with or benefiting from funds received.
31. Disposal of Land - Land no longer used for airport noise compatibility purposes or airport development purposes must be properly disposed of following existing guidelines.
32. Engineering and Design Services - All contracts or sub-contracts for services must be awarded in a qualifications-based method.
33. Foreign Market Restrictions - The Sponsor will not allow funds provided under the grant to be used to fund any project that uses any product or service of a foreign country when that country is listed by the United States Trade Representative as denying fair and equitable market opportunities for products and suppliers of the United States in procurement and construction.

34. Policies, Standards, and Specifications - The Sponsor must carry out the project in accordance with the FAA approved policies, standards, and specifications.
35. Relocation and Real Property Acquisition - The Sponsor must follow Subparts B, C, D, and E of 49 CFR Part 24.
36. Access by Intercity Buses - The airport owner will permit, to the maximum extent practicable, intercity buses or other modes of transportation to have access to the airport. There is no obligation by the airport owner to fund special facilities.
37. Disadvantaged Business Enterprises (DBE) - The grant recipient shall not discriminate on the basis of race, color, national origin, or sex in the award of any DOT-assisted contract, in the administration of its DBE program, or the requirements of 49 CFR Part 26. Implementation of the DBE program is a legal obligation.
38. Hangar Construction - The airport owner must grant a long term lease that may be subject to terms and conditions for hangars constructed on the airport at the aircraft owner's expense.
39. Competitive Access - Applies to medium or large hub airports.

The FAA has published additional guidance in a document entitled *Airport Sponsor and Airport User Rights and Responsibilities*. This 10-page booklet features a handful of key grant assurances in simplified terms. Notably, Grant Assurances 5, 22, 23, 24, and 25 are highlighted in this publication.

10.5 COMPLAINT RESOLUTION

Under 14 Code of Federal Regulations (CFR) 13.1, any person who knows of a violation of federal aviation laws, regulations, rules, policies, or orders may report the violation to the FAA informally as a "report of violation." Under this section, airport users may report allegations of grant assurance violations to the FAA. This is commonly referred to as an "informal complaint." Individuals seeking to file informal complaints are encouraged to do so in writing. Alleged violations are investigated by the FAA's local Airports District Office (ADO) or Regional Airports Division.

14 CFR 16, commonly referred to as Part 16, outlines a formal complaint process. In order to file a formal complaint under Part 16, complainants must be "directly and substantially affected" by any alleged noncompliance. Part 16 includes regulatory time frames and detailed procedures associated with the process. The Part 16 Decision Database contains copies of final FAA determinations. Because complaints often focus on similar issues, an understanding of how the FAA has decided a case in the past may be beneficial.

Most violations of Airport Sponsor federal obligations are not a deliberate attempt to circumvent federal obligations. Generally, violations occur because Sponsors do not understand specific requirements or how a requirement applies to
a specific circumstance. The Airport Compliance Program works to ensure Sponsors are fully informed of their federal obligations and of the applicability of those obligations to the circumstances at a given airport. Informal resolution is the preferred course of action when it comes to addressing complaints of violations.

10.6 COMPATIBLE LAND USE

Land use planning is important to ensure that airport investments are not affected by incompatible land uses adjacent to and in the immediate vicinity of the airport. Incompatible land uses at or near airports may result in the

creation of hazards to air navigation, reductions in airport utility resulting from obstructions to flight paths, or noise-related incompatible land use resulting from residential areas too close to the airport.

Zoning is an effective method of meeting the federal obligation to ensure compatible land use and to protect airport approaches. According to 5190.6B, restricting residential development near the airport is essential in order to avoid noise-related problems. Residential developments can also be incompatible for safety reasons. The development of public facilities such as schools, churches, public health facilities, and concert halls should also be avoided near the airport due to noise incompatibility.

Compatibility of land use is attained when the use of property adjacent to and near the airport neither adversely affects flight operations from the airport nor is itself adversely affected by the flight operations. Land uses that adversely affect flight operations are ones that create or contribute to a flight hazard. These can include tall structures, features that inhibit pilot visibility such as light or smoke, produce electronic aberrations in navigational guidance systems, or that attract birds.

Order 5190.6B states the FAA's position in regard to several variations on residential properties on or near airports. Airpark developments allow aircraft owners to reside and park their aircraft on the same property with immediate access to an airfield. The FAA considers residential use by aircraft owners to be no different from any residential use and finds it incompatible with the operation of a public use airport (20.4.b).

Permitting development of a residential airpark near a federally obligated airport, through zoning approval or otherwise, would be inconsistent with Grant Assurance 21 (20.4.b). Any residential use existing on the airport or any residential use granting "through-the-fence" access is an incompatible land use (20.4.a).

A "through-the-fence" operation is defined by the FAA as any activity or use of real property of an aeronautical or nonaeronautical nature that is located outside (or off) of airport property but has access to the airport's runway and/or taxiway system. Airport property is property owned by the airport Sponsor and shown on an FAA approved Airport Layout Plan (ALP). "Through-the-fence" operations occur from property that is immediately adjacent to the airport, but which is owned by corporations, businesses, or private parties. These properties are not under control in any manner by the Sponsor.

Off-airport residential airparks are privately owned and maintained residential facilities. The FAA does not consider them to be aeronautical facilities eligible for reasonable access to a federally obligated airport. Therefore, the Sponsor is under no federal obligation to allow "through-the-fence" access for privately owned residential airparks. Allowing access could be an encumbrance on the airport in conflict with Grant Assurance 5. Residential hangars with "through-the-fence" access are considered incompatible land uses at federally obligated public use airports.

Other non-residential "through-the-fence" activities may be allowed, but the Sponsor must make sure that the use agreement does not violate any of the grant assurances.

The most common improper and noncompliant land uses include nonaeronautical leaseholds being located on designated aeronautical use land without FAA approval (not shown on the ALP) or on property not released by the FAA. Another common noncompliant land use is allowing dedicated aeronautical property to be used for nonaeronautical uses. This includes using hangars to store vehicles, using property and buildings for animal control

facilities, nonairport vehicle and maintenance equipment storage, aircraft museums, and municipal administrative offices.

Some common incompatible land uses include the introduction of a wildlife attractant or failure to take adequate steps to mitigate hazardous wildlife at the airport. Other incompatible land uses include wastewater ponds, municipal flood control channels and drainage basins, sanitary landfills, solid waste transfer stations, electrical power substations, water storage tanks, golf courses, and other bird attractants. Towers or buildings that penetrate Part 77 surfaces or are located within a runway protection zone (RPZ), runway object free area (ROFA), object free zone (OFZ), and clearway or stopway are also incompatible uses.

10.7 CONCLUSION

According to FAA Order 5190.6B, the FAA Airport Compliance Program is contractually based; it does not attempt to control or direct the operation of airports. Rather, the program is designed to monitor and enforce obligations agreed to by Airport Sponsors in exchange for valuable benefits and rights granted by the United States in return for substantial direct grants of funds and for conveyances of federal property for airport purposes. The Airport Compliance Program is designed to protect the public interest in civil aviation. Grants and property conveyances are made in exchange for binding commitments (federal obligations) designed to ensure that the public interest in civil aviation will be served. The FAA bears the important responsibility of seeing that these commitments are met. The FAA considers all federal airport obligations important. However, the most important objective in the FAA's oversight of the compliance program is to ensure and preserve safety at all federally obligated airports.

11. Sustainability and Recycling

SECTION OVERVIEW

The purpose of this section is to provide a general overview of sustainability, as well as define the Airport Recycling, Reuse, and Waste Reduction Plan (Plan). The Plan is used to enhance airport recycling and waste minimization efforts at Dixon Airport, and comply with FAA requirements.

11.1 SUSTAINABILITY

The United Nations convened the Brundtland Commission to address the growing concern about the deterioration of natural resources. In its 1987 report, the commission defined sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Airport sustainability is a broad term that encompasses a wide variety of practices applicable to planning, design, building, and operating airport facilities. The principles of sustainability aim to protect the environment, maintain high and stable levels of economic growth, and promote social progress that recognizes stakeholder goals. The benefits of airport sustainability planning includes a progressive reduction in energy consumption, reduced noise impacts, reduced hazardous and solid waste generations, reduced greenhouse gas emissions, improved community relations, and cost savings.

Airports may maintain a unique definition of sustainability relating to variable circumstances of the airport and its role in the community; however, the airport industry has adopted the "EONS" approach to sustainability (economic vitality, operational efficiency, natural resources, and social responsibility. By including sustainability principles in the planning process, airport sponsors will prioritize and include these principles when it comes to management decisions.

Figure 11.1 Airport Sustainability

Source: T-O Engineers

11. Sustainability and Recycling

SUSTAINABILITY PRACTICES

Sustainability involves taking progressive steps to achieve evolving and long term goals. Airports that integrate sustainable elements into their operating culture and business practices can achieve benefits throughout the EONS elements, such as:

- greater utilization of assets;
- reduced operating and maintenance costs;
- improved work environment for employees;
- reduced energy consumption;
- reduced waste;
- reduced emissions;
- improved water quality; and
- positive community relationships.

SUSTAINABILITY IMPLEMENTATION AT VERNAL REGIONAL AIRPORT

Airports large and small have the ability to implement sustainable practices based on the needs and resources of individual facilities. Sustainability is a strategic investment that can leverage a facility's potential and supports operational longevity. Like any initiative, sustainability measures need to be formally documented and tracked to measure progress.

Practices that fall within the sustainability realm include, but are certainly not limited to, buying locally, recycling, stockpiling and reusing construction material. There are countless small practices commonly implemented such as motion sensor water facets and lighting, and appliances with sleep mode or low power modes. The first step is to identify existing activities that fall within the sustainability realm, then establish a formal sustainability program.

One of the practices that contribute to sustainability is a recycling and waste reduction plan. Areas of recycling and solid waste management can be split into multiple categories - those over which the airport has direct control, those over which the airport has influence, and those over which the airport has little or no control or influence.

11.2 RECYCLING, REUSE, AND WASTE REDUCTION

Decision-makers contemplating future planning efforts at the airport need to have a clear understanding of how recycling and solid waste management is performed for the entire facility, as this is a significant contribution to enhancing sustainability at the airport. The term solid waste is defined in accordance with the Resource Conservation and Recovery Act, of 1976 (RCRA) but is generally, non-soluble, discarded solid materials, including sewage sludge, municipal garbage, industrial wastes, agricultural refuse, demolition wastes, and mining residues. Sanitary sewer wastes are not considered solid wastes.

LEGISLATIVE BACKGROUND

The FAA Modernization and Reform Act of 2012 (FMRA), which amended Title 49, United States Code (U.S.C.), included several changes to the Airport Improvement Program (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports.

a. 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."

b. 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:
    i. The feasibility of solid waste recycling at the airport;
    ii. Minimizing the generation of solid waste at the airport;
    iii. Operation and maintenance requirements;
    iv. Review of waste management contracts; and
    v. The potential for cost savings or the generation of revenue.

For the purposes of this Plan, "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.

TYPES OF SOLID WASTE GENERATED AT AIRPORTS

Airports generate various types of solid waste. This Plan addresses the recycling, reuse, and reduction of municipal solid waste (MSW) and other materials that can be legally disposed of in a 42 U.S.C. §§ 6941-6949 landfill or equivalent state-permitted facility. Any reference to MSW for recycling, reduction, or reuse in this Plan includes construction and demolition (C&D) debris, organic compostable material such as food and yard waste, and deplaned waste. Definitions of these terms are provided below. Airports can recycle, reuse, or minimize many of the materials described below.

This Plan does not address other types of solid waste such as hazardous waste, universal waste (i.e., batteries, fluorescent bulbs, electronics, etc.), or industrial waste. These materials are often subject to federal, state, and local laws with specific disposal and recycling requirements. The Plan applies to:

- Municipal Solid Waste (MSW) consists of everyday items that are used and discarded. Recyclable MSW at airports includes, but is not limited to, aluminum and steel, glass bottles and containers, plastic bottles and containers, packaging, bags, paper products, and cardboard.
- Construction and Demolition (C&D) Debris is generally categorized as MSW. C&D debris is any non-hazardous solid waste that results from land clearing, excavation, or construction, demolition, renovation, or repair of structures, roads, and utilities. C&D debris includes, but is not limited to, concrete, wood, metals, soil, bricks and masonry material, asphalt, rock, stone, gravel, sand, roofing materials, drywall, carpet, plastic, pipe, rocks, earthwork, land-clearing debris, cardboard, and salvaged building components. In some instances, C&D debris requires special handling and may be subject to special requirements. Examples include tar-impregnated roofing materials and asbestos-containing building materials.
- Compostables, green waste, and food waste are also categorized as MSW. Green waste consists of tree, shrub, grass clippings, leaves, weeds, small branches, seeds, pods, and similar debris generated by landscape maintenance activities. Food waste is food that is not consumed or generated during food preparation activities and discarded.
- Deplaned Waste is MSW that is removed from passenger aircraft. These materials include bottles and cans, newspaper and mixed paper, plastic cups and utensils, food waste, food-soiled paper, magazines, unconsumed or surplus food, and paper towels. Waste that comes off airplanes after flights can represent 20% of an airport's total MSW stream. The composition is roughly 30% each of paper, compostable food

material, and non-recyclable materials, with the balance consisting of cups and beverage containers. Except for Canada, waste from international flights must be processed separately, as this waste can introduce plant pests and diseases. The United States Department of Agriculture regulates international waste. It must be handled in accordance with procedures in the Manual for Agricultural Clearance.

CONTENTS OF AN AIRPORT RECYCLING, REUSE, AND WASTE REDUCTION PLAN

The content and scope of an airport recycling, reuse, and waste reduction plan will vary depending on the unique conditions at each airport. For airports that already have recycling programs, certain tasks (such as a new waste audit) may not need to be completed.

Document scope is governed by the extent and accuracy of available information. This includes information on the airport's current recycling program, the types and amounts of airport waste, and factors that influence the scope of the program. Plans for small, low activity airports may also be less detailed. Though certain tasks may not need to be completed to prepare a formal plan, review and documentation of each of the five elements listed in the FMRA is required in airport master plans and master plan updates (see also 49 U.S.C. § 47106(a)(6)).

10.3 SOURCES AND PATHWAYS OF AIRPORT WASTE

Each airport activity has its own set of factors, resource requirements, and waste stream. Any plan to implement a recycling program must consider all the activities and waste streams at the facility. The list below describes the typical airport waste streams associated with smaller commercial and general aviation airports.

Airfield: Predominantly runways, taxiways, and infields. Waste produced from aircraft operations consists mostly of rubber from aircraft tires and green waste from mowing. The airport is responsible for waste associated with the airfield.

Aircraft: Maintenance of aircraft and ground support equipment produces waste, including oil, grease, chemicals, plastic, wastewater, universal waste, and vehicle waste, such as tires and fluids (brake, transmission, etc.). The party responsible for aircraft and ground support equipment waste varies, typically by whomever owns the vehicle or performs the maintenance. The amount of aircraft waste correlates with the number of operations at the Airport. The FBO and maintenance shop are responsible for waste associated with maintenance at the airport. Some waste associated with maintenance is considered hazardous waste and must be handled in accordance federal regulations.

Terminals and Pilot Lounges: Typically, generated waste includes food, paper, plastic, aluminum cans, trash, and deplaned waste. The airport is responsible for waste associated with the terminal and pilot lounge.

Administration Offices: Offices produce waste, such as paper, plastic, aluminum cans, food, and universal waste. Office waste is usually solid or compostable and is fairly steady throughout the year. The airport is responsible for waste associated with the administration offices.

Airport Construction: Construction at the airport is sporadic, corresponding with programmed Capital Improvement Program (CIP) projects and time of year. Construction activities have the potential to create a large amount of waste, including concrete, asphalt, wood, soil, and metal. These wastes increase during warmer months as that is when

construction usually occurs. Airport construction wastes are typically solid or C&D. The contractor is contractually responsible for waste associate with airport construction.

Figure 11.2 Pathways of Airport Waste

Source: T-O Engineers

11.3 RECYCLING FEASIBILITY

Many airports currently implement solid waste recycling programs. However, program scope varies considerably. This variability may occur due to the size and location of different airports, the amount of waste being produced, and external factors that affect the scope of recycling programs. Variables include, but are not limited to:

- Local markets for recyclable commodities;
- Cost for transport and processing recyclables;
- Local recycling infrastructure;
- Identify willingness of an airport and its tenants to implement recycling programs;
- The nature of the airport's waste stream;
- Competition between recycling and landfilling firms; and
- Airport layout and logistics

AIRPORT OPERATIONS AND MAINTENANCE REQUIREMENTS

Airport waste is transported to the Little Snake River (Baggs) Landfill. Currently there are no recycling bins located at the airport, as it was determined there is not a sufficient stream of recyclables generated to justify the need. Waste generated through airfield maintenance is negligible and not transported off-site. Sweeping, which does

not occur regularly, is primarily dust and dirt, and is swept back into the sand soil off the paved areas. Vegetation surrounding the airport is primarily small weedy bushes, therefore grass disposal from mowing is not a concern. Snow plowed during the winter months is pushed to the dirt and undeveloped areas of the airport and left to melt in the spring. There are no terminal facilities, flight kitchens, or catering services at the airport which would generate waste.

PLANS TO MINIMIZE SOLID WASTE GENERATION

The ACI-NA Policy Handbook provides a waste decision hierarchy that shows - in order of decreasing priority - what constitutes the best overall waste management choices: to **avoid**; to **reduce**; to **reuse**; to **recycle**; and finally, to **dispose** with the ultimate goal of eliminating waste going to landfills. By this decision hierarchy, the first consideration should be given to minimize the generation of waste at the airport and include opportunities for cost savings through improved management of waste, the feasibility of waste recycling at the airport, and the potential for generation of revenue from airport waste.

The FAA compiled a list of 10 steps, shown in *Table 11.1*, to assist with designing and implementing an effective recycling/waste minimization program, noting that each airport is unique and faces its own issues. Dixon Airport will explore the following steps while planning for a more sustainable future:

1. Establish a commitment from management to support a recycling/waste minimization program;
2. Include lease/contract language that supports recycling/waste minimization;
3. Provide additional containers and/or space for recycling;
4. Educate airport staff and users on the importance of recycling and waste minimization.

11.4 CONCLUSION

Dixon Airport has opportunities to enhance airport sustainability, recycling, and waste minimization at the airport by establishing formal policies and procedures. One opportunity to enhance sustainability is the addition of electric aircraft charging stations. Any program established at the airport should include a commitment from management to support sustainability, recycling, education and outreach, setting performance targets, monitoring progress, and seeking continuous improvement. Benefits gained from establishing a recycling and waste minimization program include:

1. Reduced operating costs.
2. Prolonged use of limited landfill space.
3. Reduced environmental liability.
4. Improved public perception of the airport.

Table 11.1 Steps to Recycling & Waste Minimization

Step	Description
1	Commitment from Management
2	Program Leadership
3	Waste Identification
4	Waste Collection and Hauler
5	Waste Management Plan Development
6	Education and Outreach
7	Monitor and Refine
8	Performance Monitoring
9	Promote Success
10	Continuous Improvements

12. Glossary

AC: Advisory Circular
AAC: Aircraft Approach Category
ADG: Airplane Design Group
ADO: Airports District Office
ADS-B: Automated Dependent Surveillance - Broadcast
ACN: Aircraft Classification Number
AGL: Above Ground Level
AIP: Airport Improvement Program
ALP: Airport Layout Plan
ALS: Approach Lighting System
AMSL: Above Mean Sea Level
AOA: Airport Operations Area
AOPA: Aircraft Owners and Pilots Association
APMS: Airport Pavement Management System
ARC: Airport Reference Code
ARFF: Aircraft Rescue and Fire Fighting
ASDA: Accelerate-Stop Distance Available
ASL: Above Sea Level
ASOS: Automated Surface Observation System
AT: Air Traffic
ATC: Air Traffic Control
ATCT: Air Traffic Control Tower
AVGAS: Aviation Gasoline
AWOS: Automated Weather Observation System

BARO: Barometric
BLM: Bureau of Land Management
BMP: Best Management Practices
BRL: Building Restriction Line
BVLOS: Beyond Visual Line of Sight

CAT: Category
CATEX: Categorical Exclusion
CEQ: Council on Environmental Quality
CFI: Certified Flight Instructor
CFR: Code of Federal Regulations
CIP: Capital Improvements Program
CTAF: Common Traffic Advisory Frequency
DEQ: Department of Environmental Quality
DME: Distance Measuring Equipment
DNL: Day/Night Equivalent Sound Level (see also Ldn)
DOI: Department of Interior
DOT: Department of Transportation
DTWG: Dual Tandem Wheel Gear
DWG: Dual Wheel Gear

EA: Environmental Assessment
EIS: Environmental Impact Statement
EPA: Environmental Protection Agency

FAA: Federal Aviation Administration
FAAP: Federal Aid Airport Program
FAR: Federal Aviation Regulation
FBO: Fixed Base Operator
FEMA: Federal Emergency Management Agency
FIRM: Flood Insurance Rate Maps
FONSI: Finding of No Significant Impact
FPPA: Farmland Protection Policy Act

GA: General Aviation
GIS: Geographic Information System
GPS: Global Positioning Satellite or System
GSE: Ground Support Equipment

HF: High Frequency
HIRL: High Intensity Runway Lights

IAP: Instrument Approach Procedure
IFR: Instrument Flight Rules
ILS: Instrument Landing System
IMC: Instrument Meteorological Conditions

LAAS: Local Area Augmentation System
Ldn: Day/Night Noise Levels
LIRL: Low Intensity Runway lights
LNAV: Lateral Navigation
LOC: Localizer
LPV: Localizer Performance with Vertical Guidance

MALS: Medium Intensity Approach Lighting System
MDA: Minimum Descent Altitude
ME: Multi-Engine Aircraft
MGW: Maximum Gross Weight
MGTW: Maximum Gross Takeoff Weight
MIRL: Medium Intensity Runway Lights
MOA: Military Operations Area
MSL: Mean Sea Level

NAS: National Airspace System
NAAQS: National Ambient Air Quality Standards
NAVAIDS: Navigational Aids
NBAA: National Business Aviation Association
NDB: Non-Directional Beacon
NEPA: National Environmental Policy Act
NM: Nautical Mile
NOAA: National Oceanic and Atmospheric Administration
NOTAM: Notice to Airmen
NPIAS: National Plan of Integrated Airport Systems
NRCS: National Resources Conservation Service
NTSB: National Transportation Safety Board
NWI: National Wetland Inventory
NWS: National Weather Service

OFA: Object Free Area
OFZ: Obstacle Free Zone
OTS: Out of Service

PAPI: Precision Approach Path Indicator (Visual Approach Aid)
PCI: Pavement Condition Index
PCN: Pavement Classification Number

RDC: Runway Design Code
REIL: Runway End Identifier Lights
RNAV: Area Navigation
RNP: Required Navigation Performance
ROD: Record of Decision
ROFA: Runway Object Free Area
RPZ: Runway Protection Zone
RSA: Runway Safety Area
RW: Runway

SE: Single Engine Aircraft
SHPO: State Historical Preservation Office
SID: Standard Instrument Departure
STAR: Standard Terminal Arrival
SWG: Single Wheel Gear

TAC: Technical Advisory Committee
TACAN: Tactical Air Navigation System (See VORTAC)
TAF: Terminal Area Forecast
TAP: Terminal Area Plan
TCS: Tribal Cultural Specialist
TDG: Taxiway Design Group
THPO: Tribal Historical Preservation Office
TODA: Takeoff Distance Available
TOFA: Taxiway Object Free Area
TORA: Takeoff Run Available
TFMSC: Traffic Flow Management System Counts
TSA: Taxiway/Taxilane Safety Area and Trasnportation Safety Administration

UAM: Urban Air Mobility
UAS: Unmanned Aerial System
UAV: Unmanned Aerial Vehicle
UNICOM: Universal Communications
USACE: U.S. Army Corps of Engineers
USDA: U.S. Department of Agriculture
USFWS: U.S. Fish and Wildlife Service
USGS: U.S. Geological Survey
UTM: Unmanned Aircraft System Traffic Management

VASI: Visual Approach Slope Indicator
VFR: Visual Flight Rules
VHF: Very High Frequency
VOR: VHF Omnidirectional Range
VORTAC: VHF Omnidirectional Range and Tactical Air Navigation System
VMC: Visual Meterological Conditions
VNAV: Vertical Navigation
VTOL: Vertical Takeoff and Landing
WAAS: Wide Area Augmentation System
WHA: Wildlife Hazard Assessment
WHMP: Wildlife Hazard Management Plan
WHSV: Wildlife Hazard Site Visit
WX: Weather

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COMMON TERMS

Above Ground Level (AGL): Altitude expressed as feet above terrain or airport elevation (see MSL).

Access Road: The right-of-way, the roadway and all improvements constructed thereon connecting.

Accelerate Stop Distance Available (ASDA): The runways plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff.

Access Taxiway: A taxiway that provides access to a particular location or area.

Active Aircraft: Aircraft registered with the FAA and reported or estimated to have been flown at least one hour during the preceding year.

Active Runway: The runway at an airport that is being used for landing, taxiing or takeoff operations.

Actual Runway Length: The length of a full-width usable runway from end to end of full strength pavement where those runways are paved.

Accelerate-Stop Distance Available (ASDA): The runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff.

Advisory Circular (AC): External publications issued by the FAA consisting of non-regulatory material providing for the recommendations relative to a policy, and guidance and information relative to a specific aviation subject.

Air Taxi: An aircraft operated under an air taxi operating certificate for the purpose of carrying passengers, mail, or cargo for revenue in accordance with FAR Part 121 and FAR Part 135.

Air Traffic Control: The control of aircraft traffic, in the vicinity of airports from control towers, and in the airways between airports from control centers.

Aircraft Approach Category (AAC): A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. The categories are Category A through Category E and range from a speed of less than 91 knots to 166 knots or more.

Aircraft Classification Number (ACN): expresses the relative effect of an aircraft at a given configuration on a pavement structure for a specified standard subgrade strength.

Aircraft Mix: The type of aircraft which are to be accommodated at the airport.

Aircraft Operation: The landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

Aircraft Tiedowns: Positions on the ground surface that is available for securing aircraft.

Aircraft: A device that is used or intended to be used for flight in the air (FAR Part 1).

Airplane Design Group (ADG): A grouping of aircraft based on wingspan and/or tail height. When an airplane is in two categories, the most demanding category should be used.

Airport Beacon: A visual navigation aid displaying alternating white and green flashes to indicate a lighted airport or white flashes only for an unlighted airport.

Airport Capital Improvement Plan (ACIP): The planning program used by the Federal Aviation Administration to identify, prioritize and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

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Airport Elevation: The highest point of an airport's usable runways measured in feet above mean sea level (MSL).

Airport Improvement Program (AIP): The Airport Improvement Program of the Airport and Airways Improvement Act of 1982 as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987. Under this program, the FAA provides funding assistance for the planning, design and development of airports and airport facilities.

Airport Layout Plan (ALP): A scaled drawing (or set of drawings), in either traditional or electronic form, of current and future airport facilities that provides a graphic representation of the existing and long-term development plan for the airport and demonstrates the preservation and continuity of safety, utility, and efficiency of the airport to the satisfaction of the FAA.

Airport Master Plan: The planner's concept of the long-term development of an airport.

Airport Obstruction Chart: A scaled drawing depicting the 14 Code of Federal Regulations (CFR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

Airport Operation Area (AOA): The area of the Airport bounded by a fence to which access is otherwise restricted and is primarily used or intended to be used for landing, takeoff, or surface maneuvering of aircraft and related activities.

Airport Reference Code (ARC): An airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport.

Airport Reference Point (ARP): The latitude and longitude of the approximate center of the airport.

Airport Sponsor: The entity that is legally responsible for the management and operation of an airport including the fulfillment of the requirements of laws and regulations related thereto. Often an Airport Sponsor is a City or County.

Airport: An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

Annual Service Volume (ASV): The number of annual operations that can reasonably be expected to occur at the airport based on a given level of delay.

Approach Area: The defined area the dimensions of which are measured horizontally beyond the threshold over which the landing and takeoff operations are made.

Approach Lights: High intensity lights located along the approach path at the end of an instrument runway. Approach lights aid the pilot as he transitions from instrument flight conditions to visual conditions at the end of an instrument approach.

Approach Slope Ratio: The ratio of horizontal to vertical distance indicating the degree of inclination of the approach surface.

Approach Surface: A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

Apron: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

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Automatic Dependent Surveillance - Broadcast (ADS-B): A primary technology which shifts aircraft separation and air traffic control from ground-based radar to satellite-derived positions. It broadcasts an aircraft's WAAS-enhanced GPS position to the ground. It's also transmitted to aircraft with ADS-B receivers, either directly or relayed by ground stations, increasing the pilot's situational awareness.

Automated Surface Observing System (ASOS): Equipment that is designated to support weather forecast activities and aviation operatins and gathers nationwide weather data .

Automated Weather Observing System (AWOS): Equipment that automatically gathers weather data from various locations on an airport and transmits the information directly to pilots by means of computer generated voice messages over a discrete frequency.

Avigation Easement: A land use easement permitting the unlimited operation of aircraft in the airspace above the land area involved and restricting incompatible development of areas.

Avionics: Airborne navigation, communications, and data display equipment required for operation under specific air traffic control procedures.

Based Aircraft: The total number of active general aviation aircraft which use or may be expected to use an airport as a home base.

Beyond Visual Line of Sight (BVLOS): Flying an unmanned aerial system aircraft beyond the remote pilot in command's direct sight of the aircraft.

Building Area: An area on an airport to be used, considered, or intended to be used, for airport buildings or other airport facilities or rights-of-way, together with all airport buildings and facilities located thereon.

Building Restriction Line (BRL): A line which identifies suitable building area locations on airports.

Capital Improvement Plan (CIP): The planning program used by the Federal Aviation Administration to identify, prioritize and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

Categorical Exclusion (CATEX): At the first level, an undertaking may be categorically excluded from a detailed environmental analysis if it meets certain criteria that a federal agency has previously determined as normally having no significant environmental impact.

Commercial Service: Commercial service airports are public use airports which receive scheduled passenger service aircraft, and which annually enplane 2,500 or more passengers.

Common Traffic Advisory Frequency (CTAF): A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.

Conical Surface: A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Controlled Airspace: Airspace in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.

Critical (Design) Aircraft: The most demanding aircraft (or combination of aircraft) with at least 500 annual operations that operates, or is expected to operate, at the airport.

Crosswind Component: A wind component that is at a right angle to the longitudinal axis of the runway or the flight path of the aircraft.

Crosswind Runway: A runway additional to the primary runway to provide for wind coverage not adequately provided by the primary runway.

Crosswind: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

Decibel (dB): A unit of measurement used for defining a noise level or an exposure level.

Displaced Threshold: A threshold that is located at a point on the runway other than the physical beginning. Aircraft can begin departure roll before the threshold, but cannot land before it.

Distance Measuring Equipment (DME): Equipment used to measure, in nautical miles, the distance of an aircraft from the DME navigational aid located on the airport.

Environmental Assessment (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Impact Statement (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

Federal Aviation Administration (FAA): Created by the act that established the Department of Transportation. Assumed all of the responsibilities of the former Federal Aviation Agency including aircraft safety, movement, and controls.

Finding of No Significant Impact (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

Fixed Base Operator (FBO): An individual or company located at an airport, and providing commercial general aviation services such as fuel, maintenance, and storage.

Flight Plan: Specified information relating to the intended flight of an aircraft, which is filed orally or in writing with air traffic control. (FAR Part 1)

Fuel Flowage Fees: Fees levied by the airport operator per gallon of aviation gasoline and jet fuel sold at the airport.

General Aviation (GA): The segment of aviation that encompasses all aspects of civil aviation except certified air carriers and other commercial operators such as airfreight carriers.

General Aviation Airports: Those airports with fewer than 2,500 annual enplaned passengers and those used exclusively by private and business aircraft not providing common carrier passenger service.

Glide Slope (GS): Generally, a 3-degree angle of approach to a runway established by means of airborne instruments during instrument approaches, or visual ground aids for the visual portion of an instrument approach and landing.

Global Positioning System (GPS): A satellite based radio positioning, navigation, and time-transfer system.

Hangar: A building used to store one or more aircraft, and/or conduct aircraft maintenance.

High Intensity Runway Lights (HIRL): These lights are used to outline the edges of runway during periods of darkness or restricted visibility conditions. HIRL system has variable intensity controls.

Horizontal Surface: An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a

portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

Instrument Approach: An approach to an airport, with intent to land, by an aircraft flying in accordance with an IFR flight plan, when the visibility is less than 3 miles and/or when the ceiling is at or below the minimum initial altitude.

Instrument Flight Rules (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

IFR Conditions: Weather conditions below the minimum for flight under visual flight rules.

Instrument Landing System (ILS): A precision instrument approach system which provides in the aircraft, the lateral, longitudinal, and vertical guidance necessary for a landing.

Instrument Meteorological Conditions (IMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorogical conditions (VMC).

Integrated Noise Model (INM): The FAA's standard methodology since 1978 for noise assessments.

Itinerant Operations: Operations by aircraft that leaves the local airspace.

Jet Noise: The noise generated externally to a jet engine in the turbulent jet exhaust.

Land Use Plan: Shows on-airport land uses as developed by the airport sponsor under the master plan effort and off-airport land uses as developed by surrounding communities.

Landing Gear: That part of an aircraft which is required for landing. Gear may be configured as Single Wheel Gear (SWG), Dual Wheel Gear (DWG), or Dual Tandem Wheel Gear (DTWG).

Landing Roll: The distance from the point of touchdown to the point where the aircraft can be brought to a stop, or exit the runway.

Large Aircraft: Aircraft of more than 12,500 pounds maximum certificated takeoff weight.

Local Operations: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

Localizer (LOC): A navigational aid that consists of a directional pattern of radio waves modulated by two signals which, when receding with equal intensity, are displayed by compatible airborne equipment as an "on-course" indication, and when received in unequal intensity are displayed as an "off-course" indication.

Low Intensiy Runway Lights (LIRL): These lights are used to outline the edges of runway during periods of darkness or restricted visibility conditions. LIRLs normally have one intensity setting.

Marking: On airports, a pattern of contrasting colors placed on the pavement, turf, or other usable surface by paint or other means to provide specific information to aircraft pilots and sometimes to operators of ground vehicles, on the movement areas.

Mean Seal Level (MSL): Altitude expressed as feet above sea level, rather than above local terrain.

Medium Descent Altitude (MDA): The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

Medium Intensity Runway Lights (MIRL): These lights are used to outline the edges of runway during periods of darkness or restricted visibility conditions. MIRL system has variable intensity controls.

Minimums: Minimum altitude a pilot can descend to when conducting an instrument approach. Also refers to the minimum visibility a pilot must have to initiate an instrument approach.

Multi-Engine Aircraft: Reciprocating, turbo-prop or jet powered fixed wing aircraft having more than one engine.

National Environmental Policy Act (NEPA): Federal legislation that establishes environmental policy for the nation. It requires an interdisciplinary framework for federal agencies to evaluate environmental impacts and contains action-forcing procedures to ensure that federal agency decision makers take environmental factors into account.

National Plan of Integrated Airport Systems (NPIAS): A plan prepared by the FAA which identifies, for the Congress and the public, the composition of a national system of airports together with the airport development necessary to anticipate and meet the present and future needs of civil aeronautics, to meet requirements in support of the national defense, and to meet the special needs of the postal service. The plan includes both new facilities and qualitative improvements to existing airports to increase their capacity, safety, technological capability, etc.

Nautical Mile Per Hour (Knot): Most common measure of aircraft speed. One knot is equal to one nautical mile per hour (1.15 knots = 1 mile).

Nautical Mile (NM): Most common distance measurement in aviation, equivalent to the length of one minute of latitude along the earth's equator or 6076.115 feet.

Navigable Airspace: Airspace at and above the minimum flight altitudes prescribed in the FARs, including airspace needed for safe takeoff and landing. (14 CFR Part 1)

Navigational Aid (NAVAID): Any facility used as, available for use as, or designed for use as an aid to air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio direction-finding, or for radio or other electronic communication, and any other structure or mechanism having similar purpose and controlling flight in the air or the landing or takeoff of aircraft.

Noise Contour: A line connecting equal points of noise exposure. Usually color coded by decibels.

Non-Directional Beacon (NDB): Signal that can be read by pilots of aircraft with direction finding equipment. Used to determine bearing and can "home" in or track to or from the desired point.

Non-Precision Approach: Provides course guidance without vertical path guidance.

Non-Precision Instrument Approach Aid: An electronic aid designed to provide an approach path for aligning an aircraft on its final approach to a runway. It lacks the high accuracy of the precision approach equipment and does not provide descent guidance. The VHF Omni range (VOR) and the non-directional beacon (NDB) are two examples of non-precision instrument equipment.

Non-Precision Instrument Runway: A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance for which straight-in non-precision instrument approach procedure has been approved.

Notice to Airmen (NOTAM): A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure) of, or hazard in the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

Object Free Area (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle Free Zone (OFZ): The OFZ is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway, and for missed approaches. The OFZ is divided into the Runway OFZ, the Inner-Approach OFZ, and the Inner-Transitional OFZ.

Obstruction: An object which penetrates an imaginary surface described in the FAA's 14 Code of Federal Regulations (CFR) Part 77.

Operation: The landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

Parallel Taxiways: Two taxiways which are parallel to one another which allow traffic to move simultaneously in different directions at busy airports.

Parking Apron: An apron intended to accommodate parked aircraft.

14 Code of Federal Regulations (CFR) Part 77: A federal regulation, titled "Objects Affecting Navigable Airspace," that establishes standards for determining obstructions and their potential effects on aircraft operations. Objects are considered to be obstructions to air navigation according to 14 CFR Part 77 if they exceed certain heights or penetrate certain imaginary surfaces established in relation to airport operations.

14 Code of Federal Regulations (CFR) Part 135: A federal regulation, titled "Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft," that defines a set of rules with more stringent standards for commuter and on demand operations.

14 Code of Federal Regulations (CFR) Part 139: A federal regulation, titled "Certification of Airports," requires the FAA to issue airport operating certificates to airports that meet a specific set of requirements, including those that serve scheduled and unscheduled air carrier aircraft with more than 30 seats and those that serve scheduled air carrier operations in aircraft with more than 9 seats but less than 31 seats. Commonly associated with commercial service airports.

Pavement Structure: The combination of runway base and subbase courses and surface course which transmits the traffic load to the subgrade.

Pavement Sub-Grade: The upper part of the soil, natural or constructed, which supports the loads transmitted by the runway pavement structure.
Peak Hour: An estimate of the busiest hour in a day. This is also known as the design hour.

Precision Approach Path Indicator (PAPI): A system of lights on an airport that provides visual descent guidance to the pilot of an aircraft approaching a runway.

Precision Approach: A standard instrument approach using a precision approach procedure. See precision approach procedure.

Precision Approach Procedure: A standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.

Precision Instrument Runway: A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

Primary Surface: An imaginary obstruction limiting surface defined in 14 CFR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

Public Airport: An airport for public use, publicly owned and under control of a public agency.

Ramp: A defined area, on a land airport, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance.

Rotating Lighted Beacon: An airport aid allowing pilots the ability to locate an airport while flying under VFR conditions at night.

Runway Bearing: The magnetic or true bearing of the runway centerline as measured from magnetic or true north.

Runway Configuration: Layout or design of a runway or runways, where operations on the particular runway or runways being used at a given time are mutually dependent. A large airport can have two or more runway configurations operating simultaneously.

Runway Direction Number: A whole number to the nearest tenth of the magnetic bearing of the runway and measured in degrees clockwise from magnetic north.

Runway End Identification Lights (REIL): An airport lighting facility in the terminal area navigation system consisting of one flashing white high intensity light installed at each approach end corner of a runway and directed toward the approach zone, which enables the pilot to identify the threshold of a usable runway.

Runway Environment: The runway threshold or approach lighting aids or other markings identifiable with the runway.

Runway Gradient (Effective): The average gradient consisting of the difference in elevation of the two ends of the runway divided by the runway length may be used provided that no intervening point on the runway profile lies more than 5 feet above or below a straight line joining the two ends of the runway. In excess of 5 feet, the runway profile will be segmented and aircraft data will be applied for each segment separately.

Runway Lights: Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway light intensity may be controllable or preset, and are uniformly spaced at intervals of approximately 200 feet.

Runway Markings: (1) Basic marking-markings on runways used for operations under visual flight rules, consisting of centerline marking and runway direction numbers, and if required, letters. (2) Instrument marking-markings on runways served by nonvisual navigation aids and intended for landings under instrument weather conditions, consisting of basic marking plus threshold marking. (3) All weather marking- markings on runways served by nonvisual precision approach aids and on runways having special operational requirements, consisting of instrument markings plus landing zone marking and side strips.

Runway Orientation: The magnetic bearing of the centerline of the runway.

Runway Protection Zone (RPZ): A runway protection zone is a trapezoidal area at ground level, under the

control of the airport authorities, for the purpose of protecting the safety of approaches and keeping the area clear of the congregation of people. The runway protection zone begins at the end of each primary surface and is centered upon the extended runway centerline.

Runway Safety Area (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runway Strength: The assumed ability of a runway to support aircraft of a designated gross weight for each of single-wheel, dual-wheel, and dual-tandem-wheel gear types.

Runway: A defined rectangular area at an airport designated for the landing and taking-off of an aircraft.

Segmented Circle: A system of visual indicators designed to provide traffic pattern information at an airport without an operating control tower.

Shoulder: As pertaining to airports, an area adjacent to the edge of a paved surface so prepared to provide a transition between the pavement and the adjacent surface for aircraft running off the pavement, for drainage and sometimes for blast protection.
Small Aircraft: Aircraft of 12,500 pounds or less maximum certificated takeoff weight.

Socioeconomic: Information dealing with population or economic characteristics of a region.

Stopway (SWY): A defined rectangular surface beyond the end of a runway prepared or suitable for use in lieu of runway to support an airplane, without causing structural damage to the airplane, during an aborted takeoff.

Straight-In Approach (IFR): An instrument approach wherein final approach is commenced without first having executed a procedure turn (not necessarily completed with a straight-in landing).
Straight-In Approach (VFR): Entry into the traffic pattern by interception of the extended runway centerline without executing any other portion of the traffic pattern.

Taxilane: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

Taxiway: A defined path, usually paved, over which aircraft can taxi from one part of an airport to another without interfering with takeoffs or landings.

Taxiway Design Group (TDG): A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear distance (CMG).

Taxiway/Taxilane Safety Area (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

Terminal Area Forecast (TAF): The official forecast of aviation activity, both aircraft and enplanements, at FAA facilities. This includes FAA-towered airports, federally contracted towered airports, non-federal towered airports, and many non-towered airports.

Terminal Area: The area used or intended to be used for such facilities as terminal and cargo buildings, gates, hangars, shops and other service buildings; automobile parking, airport motels and restaurants, and garages and vehicle service facilities used in connection with the airport; and entrance and service roads used by the public within the boundaries of the airport.

T-Hangar: An aircraft hangar in which aircraft are parked alternately tail to tail, each in the T-shaped space left by the other row of aircraft or aircraft compartments.

Threshold Lights: Lighting arranged symmetrically about the extended centerline of the runway identifying the runway threshold. They emit a fixed green light.
Threshold: The designated beginning of the runway that is available and suitable for the landing of airplanes.

Total Operations: All arrivals and departures performed by military, general aviation and air carrier aircraft.

Touch-and-Go: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

Touchdown Zone: The area of a runway near the approach end where airplanes normally alight.

Touchdown: (1) The point at which an aircraft first makes contact with the landing surface. (2) In a precision radar approach, the point on the landing surface toward which the controller issues guidance instructions.

Traffic Flow Management System Counts (TFMSC): Provide information on traffic counts by airport or by city pair for various data grouping such as aircraft type or by hour of the day. It includes data for flights that fly under Instrument Flight Rules (IFR) and are captured by the FAA's enroute computers. Most VFR and some non-enroute IFR traffic is excluded.

Traffic Pattern: The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport (FAR Part 1). The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

Transient Operations: Operations or other activity performed by aircraft not based at the airport.

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. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Transportation Security Administration (TSA): Regulates aviation security and operates airport screening checkpoints.

Turning Radius: The radius of the arc described by an aircraft in making a self-powered turn, usually given as a minimum.

UNICOM: Frequencies authorized for aeronautical advisory services to private aircraft. Only one such station is authorized at any landing area. The frequency 123.0 MHz is used at airports served by airport traffic control towers, and 122.8 MHz is used for other landing areas. Services available are advisory in nature, primarily concerning the airport services and airport utilization.

Utility Runway: A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds gross weight and less.

Very High Frequency (VHF) Omni directional range (VOR): A ground based electronic navigation aid transmitting navigation signals for 360 degrees orientated from magnetic north. VOR is the historic basis for navigation in the national airspace system.

VFR Airport: An airport without an authorized or planned instrument approach procedure.

Visual Approach Aid: Any device, light, or marker used to provide visual alignment and/or descent guidance on final approach to a runway. Also see REIL, VASI.

Visual Approach Slope Indicator (VASI): An airport lighting facility in the terminal area navigation system used primarily under VFR conditions that provides vertical visual guidance to aircraft during approach and

landing, by radiating a pattern of high intensity red and white focused light beams, which indicate to the pilot that they are above, on, or below the glide path.

Visual Approach: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

Visual Flight Rules (VFR): Procedures for the conduct of flight in weather conditions above Visual Flight Rules (VFR) weather minimums. The term VFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

Visual Runway: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, a military service approved military airport layout plan, or by a planning document submitted to the FAA by competent authority (FAR Part 77).

VORTAC: Very High Frequency Omni Range Facility (VOR co-located with a Tactical Air Navigation (TACAN) facility.)

VOR/DME: Refers to associated VOR and DME systems. VOR and DME are the international Civil Aviation Organization (ICAO) standard for navigation.

Wind Cone or Wind Sock: A free-rotating fabric truncated cone which when subjected to air movement indicates wind direction and wind force.

Wind Rose: A diagram for a given location showing relative frequency and velocity of wind from all compass directions.

Visual Meteorological Conditions (VMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima.

Wind Tee: A visual device in the shape of a "T" used to determine wind direction.

12. Glossary

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13. Appendix A - Public Involvement

T-O ENGINEERS

Dixon Airport (DWX) ~ Master Plan

Meeting 1 • July 31st, 2019 • 6:00 p.m. • Valley Community Center, Family Room

MEETING INVITATION

Carbon County is beginning work on an Airport Master Plan at Dixon Airport. You are invited to attend the first of four public meetings to learn more about this important project.

When: July 31st, 2019 at 6:00 p.m.
Where: Valley Community Center, Family Room
255 West Osborne Street in Baggs, Wyoming

PLANNED PROJECT MEETINGS

Meeting 1 • Project Kickoff
Meeting 2 • Presentation of Inventory and Forecast
Meeting 3 • Presentation of Facility Requirements and Development Alternatives
Meeting 4 • Presentation of Final Documents

AVIATION IN WYOMING

The Wyoming aviation system consists of 34 paved and six non-paved public use commercial service and general aviation airports that are important in supporting various aspects of the economy. These airports contribute to state and local tax revenues; create thousands of jobs; improve efficiency for hundreds of local businesses, and support many vital services, which help to improve the quality of life for everyone in Wyoming. Industries such as tourism, energy, agriculture, higher education, and federal and state agencies rely tremendously on aviation. Airports in Wyoming are also critical in supporting activities, such as emergency response, forest fire fighting, insect and predator control, and doctor and patient transport.

In 2013, it was calculated that aviation in Wyoming resulted in an estimated $55 million in state and local tax revenues, $526.4 million in payroll contributions, and 12,268 jobs. Additionally, an estimated 38,100 jobs relied on aviation to improve efficiency. The total economic impact from airport related activities was estimated at $1.4 billion.

Locally, Dixon Airport activities resulted in two jobs and $65,300 in payroll contributions, as well as $4,200 in tax revenues and an annual economic impact of $203,450.

PROJECT FUNDING

The Airport Improvement Program (AIP) is a user-funded program and is not funded by federal income tax dollars. The AIP is primarily funded through the Airport and Airway Trust Fund (AATF). While some of the funds are used for Federal Aviation Administration (FAA) overhead costs, most of the money is distributed to community airports, such as the Dixon Airport, through grants. The AATF is funded by three components: passengers (tax on ticket sales), cargo (tax on shipping fees), and fuel (tax on fuel used by aircrafts). In 2018, the tax revenue for the AATF was $15.820 billion. The majority (90%) of this project is being funded by AIP dollars. The remaining funds are comprised of state (6%) and local (4%) match.

13. Appendix A - Public Involvement

Dixon Airport (DWX) ~ Master Plan

AIRPORT MASTER PLANS

An Airport Master Plan is a comprehensive study of an airport that describes short- (1-5 years), medium- (6-10 years), and long-term (11-20 years) development plans to meet future and unmet aviation demand.

The elements of the master planning process vary in level of detail and complexity depending upon the size, function, and problems of the individual airport. Airport Master Plans are prepared to support the creation of a new airport, as well as the modernization and expansion or maintenance of an existing airport. Each plan presents a strategy for the development of the airport by providing a framework to cost-effectively satisfy aviation demand while considering the potential environmental and socioeconomic impacts.

Master plans generally meet the following objectives:

- Document the issues that the proposed development will correct or mitigate;
- Justify the proposed development with technical, economic, and environmental investigation of designs and alternatives;
- Provide an effective graphic representation of the development of the airport and the anticipated land uses in the vicinity of the airport;
- Establish a realistic schedule, especially for the short-term, for the implementation of the development proposed;
- Propose an achievable financial plan to support the implementation schedule;
- Provide sufficient project scope and detail for future environmental evaluations that may be required before the project is approved;
- Provide 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 land use controls, spending, debt, and other policies necessary to preserve the integrity of the airport and its surroundings; and
- Establish a framework for continued planning.

The master planning process usually includes a pre-planning phase, public involvement, a review of environmental considerations, an inventory of existing conditions, forecasts of aeronautical demand, facility requirements, alternative development and evaluation, airport layout plans, a facilities implementation plan, and a financial feasibility analysis. Feedback from the local community and airport users is critical for developing a successful Airport Master Plan.

Please plan on joining us for the first public meeting, during which we will present the Master Plan process, discuss the Dixon Airport Master Plan schedule, and answer questions from attendees.

Publisher's Affidavit and Proof of Publication

RIO BLANCO

Herald Times

592 Main Street, Suite 6 • Meeker, Colorado 81641-0720
Phone (970)878-4017 • FAX (970)878-4016

STATE OF COLORADO
COUNTY OF RIO BLANCO ss.

I, Debbie Watson, do solemnly swear that I am the office manager acting on behalf of Samantha Turner, owner/publisher of the Rio Blanco Herald Times, formerly known as The Meeker Herald and The Rangely Times weekly newspapers; that the same is a weekly newspaper published in the County of Rio Blanco, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said County of Rio Blanco for a period of more than fifty-two consecutive weeks next prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provision of the Act of March 3, 1879, or any amendments thereof; and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the period of 2 consecutive insertions; and that the first publication of said notice was in the issue of said newspaper dated August 15 A.D. 2019, and that the last publication of said notice was in the issue of said newspaper dated August 22 A.D. 2019.

In witness whereof I have hereunto set my hand this 22 day of August A.D. 2019

Debbie Watson
Debbie Watson, office manager acting on behalf of Samantha Turner, owner/publisher

Subscribed and sworn to before me, a notary public in and for the County of Rio Blanco, State of Colorado, this 22 day of August A., D. 2019

Patti J. Hoke
Notary Public

PATTI J. HOKE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID #19994026925
My Commission Expires October 17, 2019

Airport Master Plan Meeting Public Notice
Meeker Airport Coulter Field is in the process of completing an Airport Master Plan. The second public meeting will be held on Wednesday, August 28th at 6:00 p.m. in the Rio Blanco County Courthouse, 3rd Floor Hearing Room, 555 Main Street in Meeker. The meeting will include presentation of the aviation forecast. The public is invited to attend to learn more about the project, ask questions, and provide feedback. More information about the Airport Master Plan is available by contacting Traci Hodgins at T-O Engineers at 307.587.3411 or thodgins@to-engineers.com. Information is also available on the T-O Engineers website at https://www.to-engineers.com/ by clicking on "Project Ports" and selecting "Meeker Airport Coulter Field – Master Plan."
Published: August 15 & 22, 2019
Rio Blanco Herald Times

Dixon Airport ~ Master Plan

WEBSITE ACCESS

Throughout the Airport Master Plan process, information will be available on the T-O Engineers' website.

1. Go to https://www.to-engineers.com/.
2. Click on the "Project Portal" tab in the upper right hand corner.
3. Under "Recent Jobs Posted," click on Dixon Airport - Master Plan.
4. You may then view information and documents under several different tabs. No registration is needed.

AIRPORT USER SURVEY

We have developed a survey for the users of Dixon Airport. The survey will be available at the public meetings. Copies can be emailed or mailed upon request.

Your participation will provide critical public feedback for the Airport Master Plan. Specific responses and comments on the survey will not be associated with the individuals who provided them.

It is imperative that as many local users as possible participate in the survey. If you know of anyone else who should receive a copy of the survey, please provide their contact information to the following:

T-O Engineers
502 33rd Street
Cody, WY 82414
Email: thodgins@to-engineers.com
Telephone: 307.587.3411

T-O ENGINEERS

Dixon Airport ~ Master Plan

Meeting 1 • July 31st, 2019 • 6:00 p.m. • Valley Community Center, Family Room

MEETING INVITATION

Dixon Airport is beginning work on an Airport Master Plan. This is the first of four public meetings. The meeting should last approximately one hour.

PLANNED PROJECT MEETINGS

Meeting 1 • Project Start
Meeting 2 • Presentation of Inventory and Forecast
Meeting 3 • Facility Requirements and Development Alternatives
Meeting 4 • Presentation of Final Documents

MEETING AGENDA

- Introductions and Sign-In
- Airport Funding
  - National Plan of Integrated Airport Systems (NPIAS)
- Airport Master Plan Overview
  - Inventory of Existing Conditions
  - Forecast of Aviation Demand
  - Facility Requirements
  - FAA Design Standards
- Airport User Survey
- How to Get Involved
  - Public Comment Form
  - Public Meetings
  - Emails, Calls, Website
- Questions and Comments

Contact Information:

Jeremy McAlister, Project Manager
jmcalister@to-engineers.com
435.315.3168

Sue Jones, County Commissioner
suejones@carbonwy.com
307.329.5121

Traci Hodgins, Aviation Planner
thodgins@to-engineers.com
307.587.3411

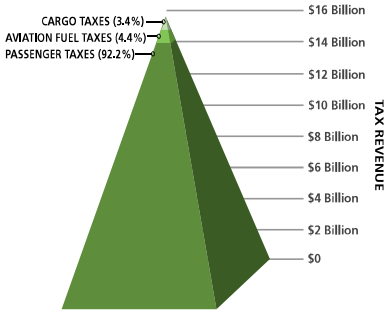
Ron Wille, Airport Manager
ronwille@carbonwy.com
307.380.8057

AIRPORT FUNDING

The Airport Improvement Program (AIP) was established by the Airport and Airway Improvement Act of 1982 to provide funding to airports on a priority needed basis. The Federal Aviation Administration (FAA) coordinates this program. Revenues that fund the AIP program are generated from taxes on aviation activity: taxes on airline tickets, cargo, and fuels used by aircraft.

The AIP is a user funded program and is not funded by federal income tax dollars. The AIP funds are collected in the Airport and Airway Trust fund, which is divided into several entitlements. While some of the funding is used for FAA overhead costs, the majority of the money is distributed to community airports, such as Dixon Airport, through grants. Eligible airports range from small community facilities to the largest commercial airports in the national system. Eligible projects include those improvements that enhance airport safety, capacity, or security or address environmental concerns.

Airport and Airway Trust Fund (2018)



Aviation demand at the airport must justify the projects. Eligible projects may include runway construction, airfield lighting, land acquisition, planning studies, and automated weather observation stations.

Currently, 90% of the total cost of eligible AIP projects at general aviation airports in Wyoming is paid for through federal grant funds. The Wyoming Department of Transportation (WYDOT), Division of Aeronautics also helps finance airport projects. WYDOT provides 6% as match to federal AIP funding. Local communities, such as Carbon County, provide the remaining 4% for eligible projects. The local community also supports the airport with an operation and maintenance budget. Additional information about AIP funding can be found at: www.faa.gov/airports/aip/.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)

The national infrastructure of public use airports form what the FAA defines as the National Plan of Integrated Airport Systems (NPIAS). The NPIAS was envisioned when civil aviation was in its infancy, and has been developed and nurtured by close cooperation with Airport Sponsors and other local agencies, as well as federal and state agencies. The national airport system is critical to the national transportation system and helps air transportation contribute to a productive national economy and international competitiveness. As of October 2018, there were 3,340 airports in the NPIAS: 3,332 existing and eight proposed airports. The eight proposed airports are expected to open within five years. Each state has many airports in the NPIAS. To be eligible for AIP funding an airport must be in the NPIAS.

Dixon Airport is one of 840 airports classified as "Basic" within the NPIAS. Basic airports fulfill the role of a community airport providing a means for private general aviation flying, linking the community with the national airport system, and making other contributions, such as emergency medical or fire fighting. Many of these airports, such as Dixon Airport, are located in rural areas.

AVIATION IN WYOMING

The NPIAS recognizes 33 public use airports in Wyoming; 9 commercial service airports and 24 general aviation airports.

In 2013, it was calculated that aviation in Wyoming supports 12,268 jobs, $526.4 million in payroll contributions, and a total economic impact of $1.4 billion annually. Additionally, airports in Wyoming are responsible for $55 million in annual local and state aviation tax revenues. Aviation in Wyoming also improves the efficiency of 38,100 jobs.

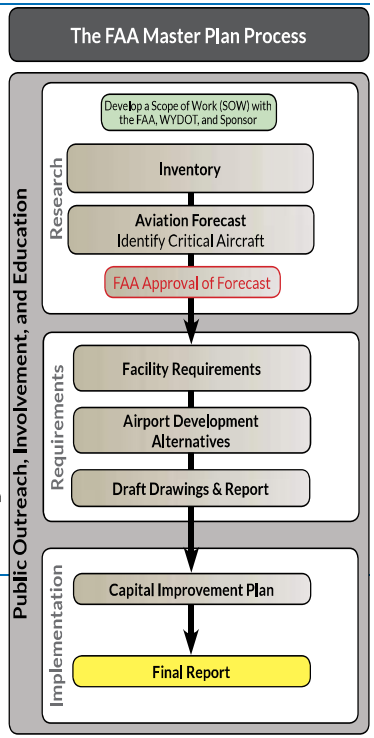
Dixon Airport supports two jobs, $70,870 in payroll contributions, and a total economic impact of $229,810 annually. By providing convenient air access to the Dixon area, the airport saves times and increases efficiency for nearby businesses, including several ranches. The airport also aids governmental entities, such as the Wyoming Game and Fish Department and U.S. Forest Service.

AIRPORT MASTER PLANS

An Airport Master Plan is a comprehensive study of an airport that describes short- (1-5 years), medium- (6-10 years), and long-term (11-20 years) development plans to meet future and unmet aviation demand.

The elements of the master planning process vary in level of detail and complexity depending upon the size, function, and issues of the individual airport. Airport Master Plans are prepared to support the creation of a new airport or the modernization and expansion or maintenance of an existing airport. Each plan presents a strategy for the development of the airport by providing a framework to cost-effectively satisfy aviation demand while considering the potential environmental and socioeconomic impacts.

The master planning process usually includes a pre-planning phase, public involvement, a review of environmental considerations, an inventory of existing conditions, forecasts of aeronautical demand, facility requirements, alternative development and evaluation, airport layout plans, a facilities implementation plan, and a financial feasibility analysis.



PUBLIC INVOLVEMENT

Public involvement is a key portion of any Airport Master Plan. Typically, T-O Engineers breaks down the Master Plan process into several chronological phases, each ending with a public meeting. Presented below are the general phases of a Master Plan. Each phase depends on a number of variables and can vary from project to project. **Receiving public input and feedback is critical throughout the entire duration of an Airport Master Plan.**

Phase 1: Complete pre-planning documents and meet with Sponsor. *Hold 1st public meeting to announce the project.*

Phase 2: Conduct physical inventory of airport, analyze socioeconomic and demographic data, research aircraft traffic, interview key users and members of the public, determine proper forecasting methodology, and create aviation forecast and submit to FAA for approval. *Hold 2nd public meeting.*

Phase 3: Determine airport requirements from forecast and design airside and landside alternatives. Sponsor selects final design alternatives. Incorporate any remaining public comment, finalize design alternatives, create cost estimates, provide draft Airport Layout Plan and Master Plan to Sponsor. Submit draft documents to FAA and WYDOT for review. *Hold 3rd public meeting.*

Phase 4: Incorporate final FAA, WYDOT, and Sponsor review items. *Publicly present final documents to Sponsor for signatures.* Submit final documents to FAA, WYDOT, and Sponsor.

Dixon Airport ~ Pilot User Survey

T-O ENGINEERS

Carbon County, as the sponsor and owner of the airport, is conducting an in-depth review of the activity and services that Dixon Airport provides to the community. This review is called an Airport Master Plan. Communities conduct Airport Master Plans approximately every seven to ten years. The majority of the funding for this study is provided by aviation user fees and supported by state and local matches. To ensure that the needs of the airport correspond to the needs of the users and the community, it is imperative that we receive your input.

We ask that you please **return this survey by August 21st, 2019**. Instructions for returning the survey are on the last page. Your responses will be held in strict confidence and results of the survey will only be released in aggregate form so that responses from individuals cannot be identified. An individual's information will not be released to any party without your written consent. To ensure the results fully capture the true size of the airport's user base, it is important that the entire airport community participates. Your time and effort are greatly appreciated.

Please print clearly. If you have any questions, please call Traci Hodgins with T-O Engineers at 307.587.3411.

Name: _____ **Business (if applicable):** _____

Mailing Address: _____ **City, State, Zip Code:** _____

Telephone Number: _____ **Email Address:** _____

Note: We will automatically add you to our contact list to inform you about public meetings and other project updates, unless you choose to opt out of these notices. I choose to opt out of future notices. _____ (initials)

1. **Do you currently have a pilot's license (certification)?**
   ○ Yes ○ No ○ Student

2. **Please provide make and model for all aircraft that you operate at Dixon Airport, where each is based, the N-number, and if you are the owner, pilot, or both:**

Make	Model	Based Airport	N-Number	Owner?	Pilot?
1.				Yes - ☐ No - ☐	Yes - ☐ No - ☐
2.				Yes - ☐ No - ☐	Yes - ☐ No - ☐
3.				Yes - ☐ No - ☐	Yes - ☐ No - ☐

3. **Where do you typically park your aircraft at Dixon Airport?**
   ○ Tiedown
   ○ Hangar
   Do you own or rent your hangar? _____

4. **On average, how often do you land at Dixon Airport per month?**

☐ monthly landings

5. **What length runway does your aircraft require to safely operate at Dixon Airport on a standard day?**

_____ feet

6. **What percentage of your flights to Dixon Airport are for:**

Business	____ %
Recreation	____ %
Flight Training	____ %
Government	____ %
Other: _____	____ %
Total	**100%**

7. **In your opinion, do the following airfield services and facilities at Dixon Airport need major improvement, minor improvement, or no improvement?**

	Needs major improvement	Needs minor improvement	Does not need improvement	Don't know or Not sure
A. Length of Runway 6/24	○	○	○	○
B. Surface condition of Runway 6/24	○	○	○	○
C. Runway 6/24 lighting	○	○	○	○
D. Lack of parallel taxiway	○	○	○	○
E. Taxiway pavement condition	○	○	○	○
F. Taxiway lighting	○	○	○	○
G. Airfield markings	○	○	○	○
H. Apron pavement condition	○	○	○	○
I. Instrument approach(es)	○	○	○	○
J. Hangar lot availability	○	○	○	○
K. Visual NAVAIDs	○	○	○	○
L. Fueling facilities	○	○	○	○
M. Pilot services	○	○	○	○
N. FBO/Pilot's lounge	○	○	○	○
O. Hangar rental	○	○	○	○
P. Airport access from Wyoming Highway 70	○	○	○	○

8. **Have you ever been unable to use Dixon Airport for the following reasons:**
   - ○ Insufficient runway length — If so, how often? _____
   - ○ Approach minimums — If so, how often? _____
   - ○ Pavement strength weight restriction — If so, how often? _____
   - ○ Other, please explain: _____

9. **If you have ever been unable to use Dixon Airport due to insufficient runway length, approach minimums, or pavement strength weight restriction, has this deterred your activity at the airport?**
   - ○ Yes ○ No

   If so, please explain: _____
   _____

10. **What are your top three concerns about operating from Dixon Airport?**
    1. _____
    2. _____
    3. _____

11. **Please list three advantages to operating from Dixon Airport.**
    1. _____
    2. _____
    3. _____

12. **During the Master Plan process, what are you interested in learning more about (check all that apply)?**

○ Inventory of Existing Conditions	○ Airport Funding Sources	○ Airport Governance
○ Forecast of Aviation Demand	○ Capital Improvement Program	○ Land Use Compatibility
○ Facility Requirements	○ Development Alternatives	○ Airport Layout Plan

13. **May we contact you for further details, if needed? We value your privacy and will only contact you with your permission.**
    - ○ Yes ○ No

14. **Additional comments:** _____
    _____
    _____
    _____
    _____

Thank you for completing this survey! Your feedback is valuable and will be considered.
Please return this survey via mail, email, or fax to:

T-O Engineers
ATTN: Traci Hodgins
502 33rd Street
Cody, WY 82414
Office: 307.587.3411
Fax: 307.527.5182
thodgins@to-engineers.com

T-O ENGINEERS

Dixon Airport ~ Master Plan

Meeting 1 • July 31st, 2019 • 6:00 p.m. • Valley Community Center, Family Room

MEETING SIGN-IN SHEET

Name: Ron Wille Business: Ranch - airport

Mailing Address:

Email Address: Phone Number:

Name: Ray Weber Kathleen Weber Business: Rancher

Mailing Address: P.O. Box 70 Baggs, WY 82321

Email Address: Phone Number:

Name: Sue Jones Business: County Commissioner

Mailing Address:

Email Address: Phone Number:

Name: Sarah Hutchins Business: (County) Planning / GIS

Mailing Address:

Email Address: Phone Number:

Name: Jared Wille Business: Crowheart Energy - Airport

Mailing Address:

Email Address: Phone Number:

Name: Tami Sue Wille Business: Snake River Press

Mailing Address:

Email Address: Phone Number:

Name: Business:

Mailing Address:

Email Address: Phone Number:

Name: Business:

Mailing Address:

Email Address: Phone Number:

Dixon Airport (DWX) Master Plan *www.to-engineers.com*

T-O ENGINEERS

Dixon Airport (DWX) ~ Master Plan

Meeting 2 • February 26th, 2020 • 5:00 p.m. • Valley Community Center, Family Room

PUBLIC MEETING INVITATION

You are invited to attend the second public meeting for the Dixon Airport Master Plan. This meeting will be held at 5:00 p.m. Please join us to learn more about the project, ask questions, and provide feedback. The airport inventory and aviation forecast will be presented and discussed.

When: February 26th, 2020 at 5:00 p.m.
Where: Valley Community Center, Family Room, 255 West Osborne Street in Baggs, Wyoming

PLANNED PROJECT MEETINGS

Meeting 1 • Project Kickoff (07/31/19)
Meeting 2 • Presentation of Inventory and Forecast
Meeting 3 • Presentation of Facility Requirements and Development Alternatives
Meeting 4 • Presentation of Final Documents

OVERVIEW

An inventory of Dixon Airport's airside and landside facilities will be presented. The inventory identifies the physical environment of the airport, such as soils and terrain, and includes documentation of all major airport components, structures, and pavements.

Identifying future aviation demand is a critical element in the overall planning process for any airport. The forecast process establishes the demand, which ultimately defines an airport's ability, or lack thereof, to accommodate both existing and future aircraft activity. Forecast demand determines the type, size, and timing of airside and landside facility development. Projections of aviation demand were prepared for the Dixon Airport Master Plan for the 20-year period through the year 2039. These projections, as well as the identified critical aircraft, will be presented during the meeting.

WEBSITE ACCESS

Throughout the Airport Master Plan process, information will be available on the T-O Engineers' website.

1. Go to https://www.to-engineers.com/.
2. Click on the "Project Portal" tab in the upper right hand corner.
3. Under "Recent Jobs Posted," click on "Dixon Airport - Master Plan."
4. You may then view information and documents under several different tabs. No registration is needed.

Questions? Please contact Traci Hodgins, Aviation Planner with T-O Engineers at 307.587.3411 or thodgins@to-engineers.com.

13. Appendix A - Public Involvement

Dixon Airport (DWX) ~ Master Plan

SUMMARY OF CHAPTERS

A successful Airport Master Plan provides answers and knowledge to a wide range of audiences, including pilots, government officials, and the general public. A basic understanding of the concepts outlined in ***Chapter 1. Airports and Master Plans Introduction*** will help the reader to successfully interpret the Master Plan.

Chapter 2. Socioeconomic Overview and Background provides a general overview of Dixon Airport and the surrounding area, including Dixon, Carbon County, and the State of Wyoming. This is accompanied by a broad description of the airport's history, location, economic impact, and demographics.

Chapter 3. Airside and Landside Inventory details the physical environment, such as soils and terrain, of Dixon Airport. A detailed wind analysis, using data recorded on the airport, is also included. All major airport components, structures, and pavements on the airport property are documented.

Chapter 4. Forecast of Aviation Demand provides a forecast of anticipated future aviation demands at Dixon Airport over the next two decades. The identified design aircraft is also discussed.

PUBLISHER'S AFFIDAVIT OF PUBLICATION

I, Kathleen Chase, being duly sworn and say, I am the President/Chairman of Snake River Press, published at Baggs, County of Carbon, State of Wyoming; and that the advertisement, a printed copy of which is attached hereto, was printed and published in said newspaper on the following date: February 21, 2020.

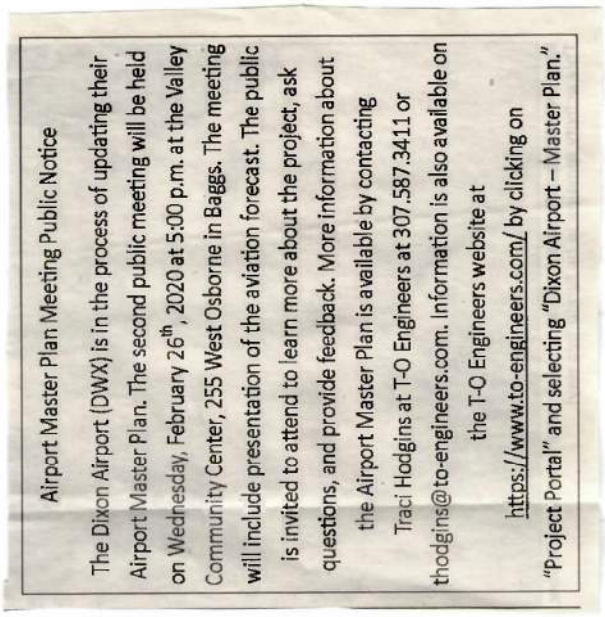
Kathleen Chase
President/Chairman

Hereby subscribed and sworn to before me on this 4 day of March, 2020.

Alethea Foster
Notary Public

ALETHEA FOSTER
State of Wyoming-Notary Public
County of Carbon
My Commission Expires
June 18, 2022

MY COMMISSION EXPIRES ON June 18, 2022



Airport Master Plan Meeting Public Notice

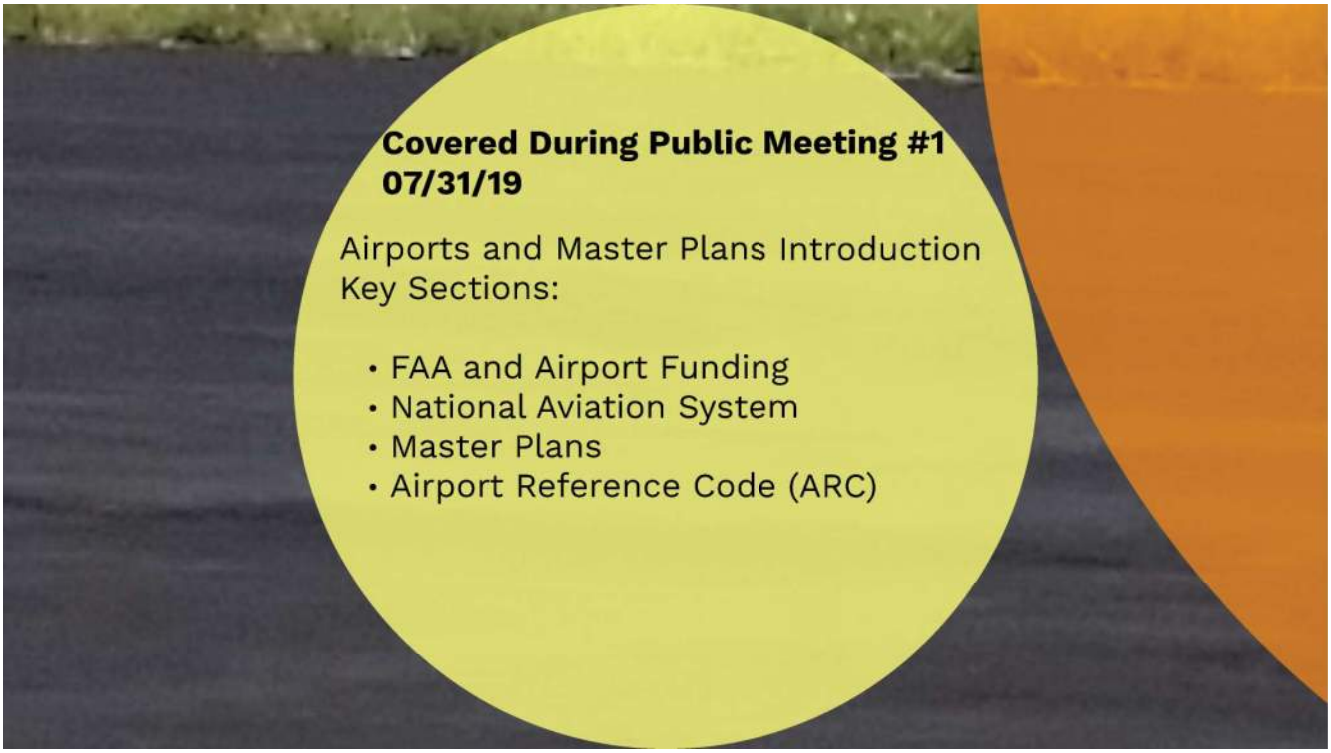
The Dixon Airport (DWX) is in the process of updating their Airport Master Plan. The second public meeting will be held on Wednesday, February 26th, 2020 at 5:00 p.m. at the Valley Community Center, 255 West Osborne in Baggs. The meeting will include presentation of the aviation forecast. The public is invited to attend to learn more about the project, ask questions, and provide feedback. More information about the Airport Master Plan is available by contacting Traci Hodgins at T-O Engineers at 307.587.3411 or thodgins@to-engineers.com. Information is also available on the T-O Engineers website at https://www.to-engineers.com/ by clicking on "Project Portal" and selecting "Dixon Airport – Master Plan."

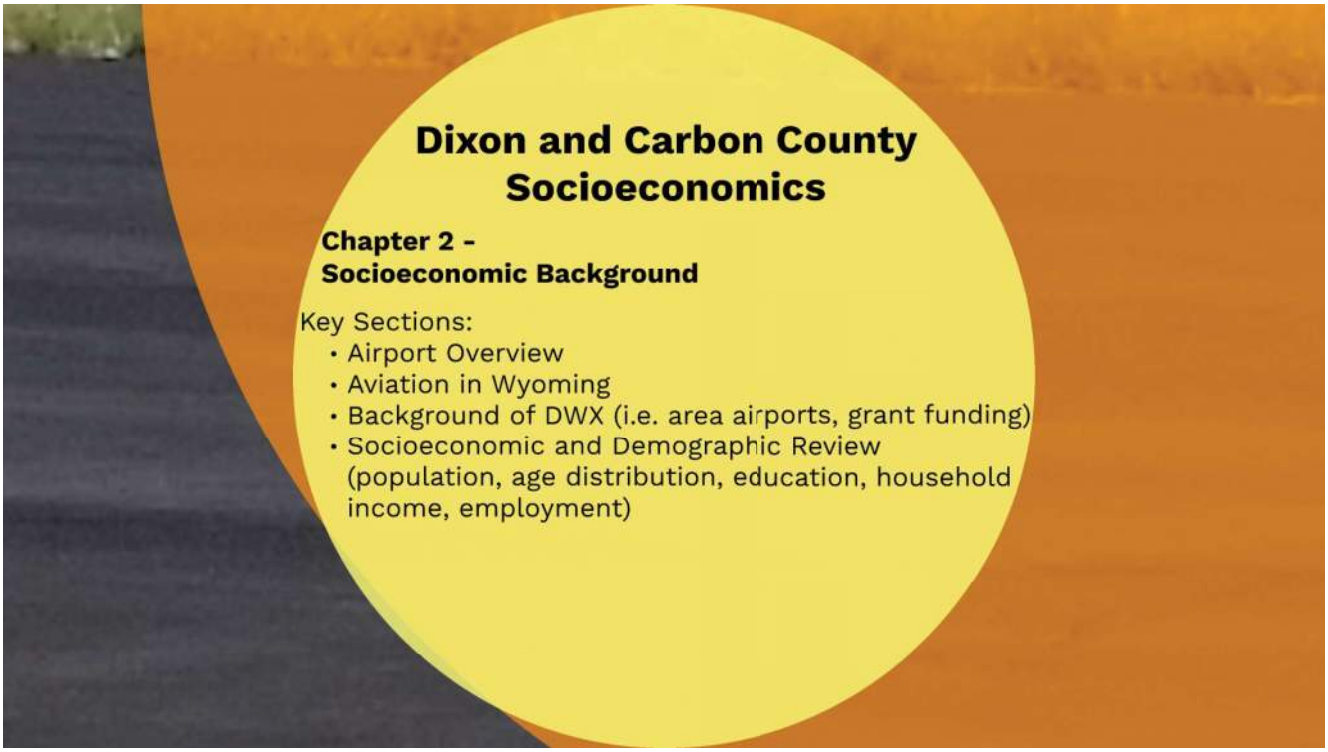

Dixon Airport - Master Plan
Public Meeting 2
Welcome
Project Status
Chapter 2- Socioeconomics
Chapter 3- Inventory
Chapter 4- Forecast
Next Steps
Conclusion
T-O ENGINEERS

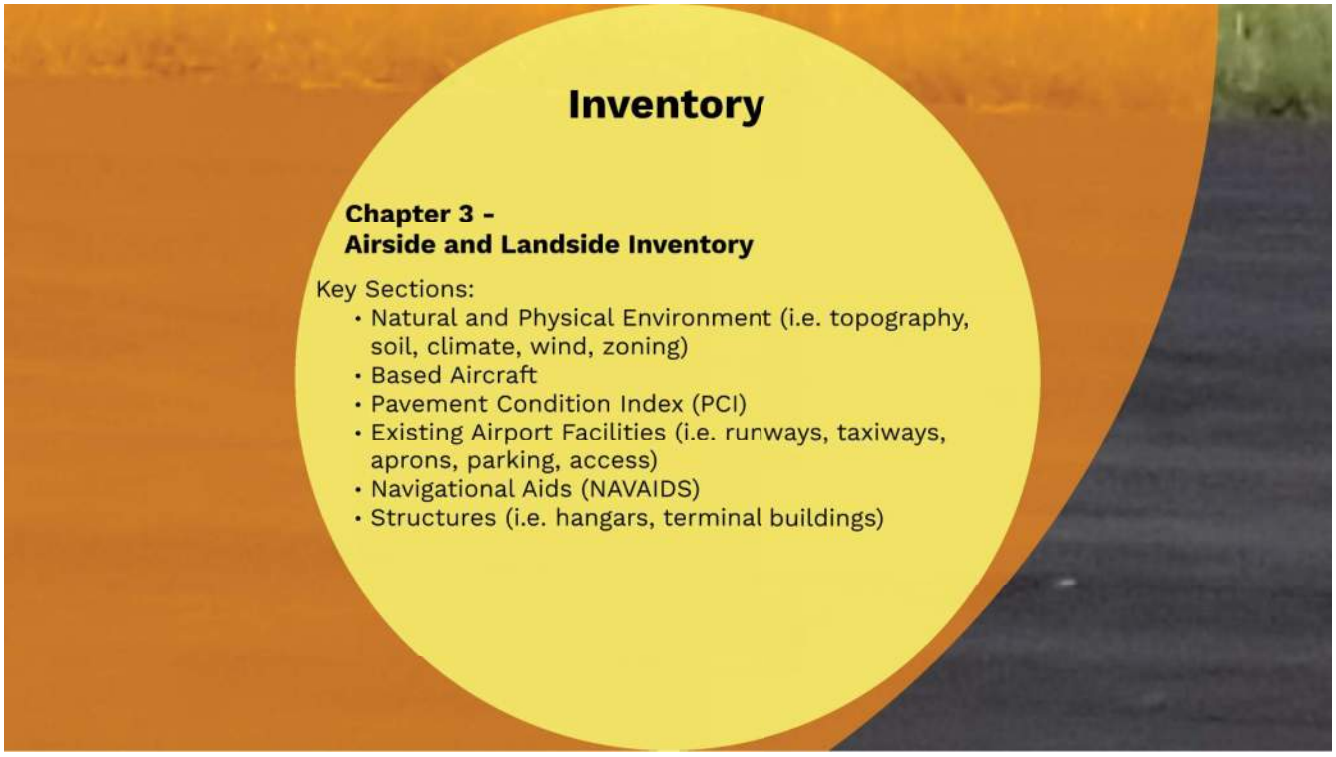

Welcome
Please Sign In
Traci Hodgins
Aviation Planner
(here)
Jeremy McAlister
Project Manager
(not here)

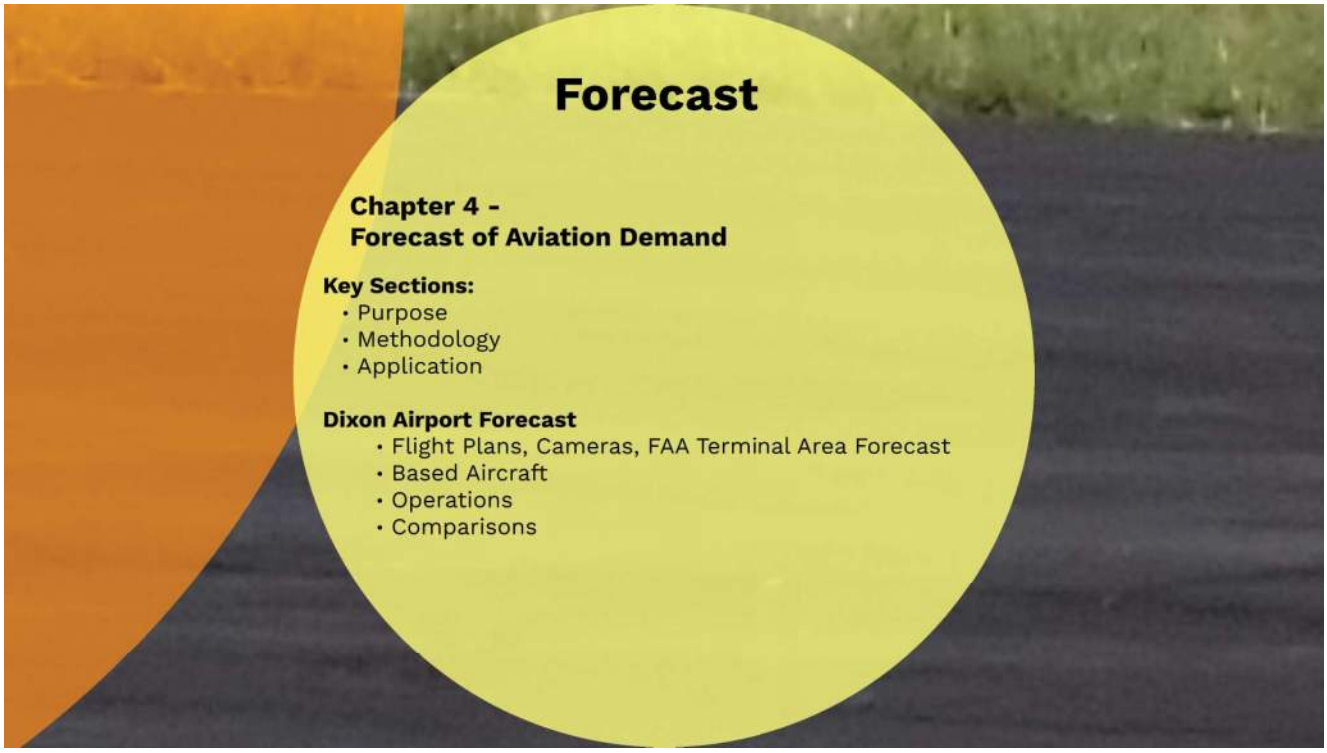

Dixon Airport - Master Plan
Public Meeting 2
Welcome
Project Status
Chapter 2- Socioeconomics
Chapter 3- Inventory
Chapter 4- Forecast
Next Steps
Conclusion
T-O ENGINEERS


Completion of First 4 Chapters
Chapter 1 Airports and Master Plans
Chapter 2 Socioeconomic Overview and Background
Chapter 3 Airside and Landside Inventory
Chapter 4 Forecast of Aviation Demand


Covered During Public Meeting #1
07/31/19
Airports and Master Plans Introduction
Key Sections:
• FAA and Airport Funding
• National Aviation System
• Master Plans
• Airport Reference Code (ARC)


Dixon and Carbon County
Socioeconomics
Chapter 2 -
Socioeconomic Background
Key Sections:
• Airport Overview
• Aviation in Wyoming
• Background of DWX (i.e. area airports, grant funding)
• Socioeconomic and Demographic Review
(population, age distribution, education, household
income, employment)


Inventory
Chapter 3 -
Airside and Landside Inventory
Key Sections:
• Natural and Physical Environment (i.e. topography, soil, climate, wind, zoning)
• Based Aircraft
• Pavement Condition Index (PCI)
• Existing Airport Facilities (i.e. runways, taxiways, aprons, parking, access)
• Navigational Aids (NAVAIDS)
• Structures (i.e. hangars, terminal buildings)


Forecast
Chapter 4 -
Forecast of Aviation Demand
Key Sections:
• Purpose
• Methodology
• Application
Dixon Airport Forecast
• Flight Plans, Cameras, FAA Terminal Area Forecast
• Based Aircraft
• Operations
• Comparisons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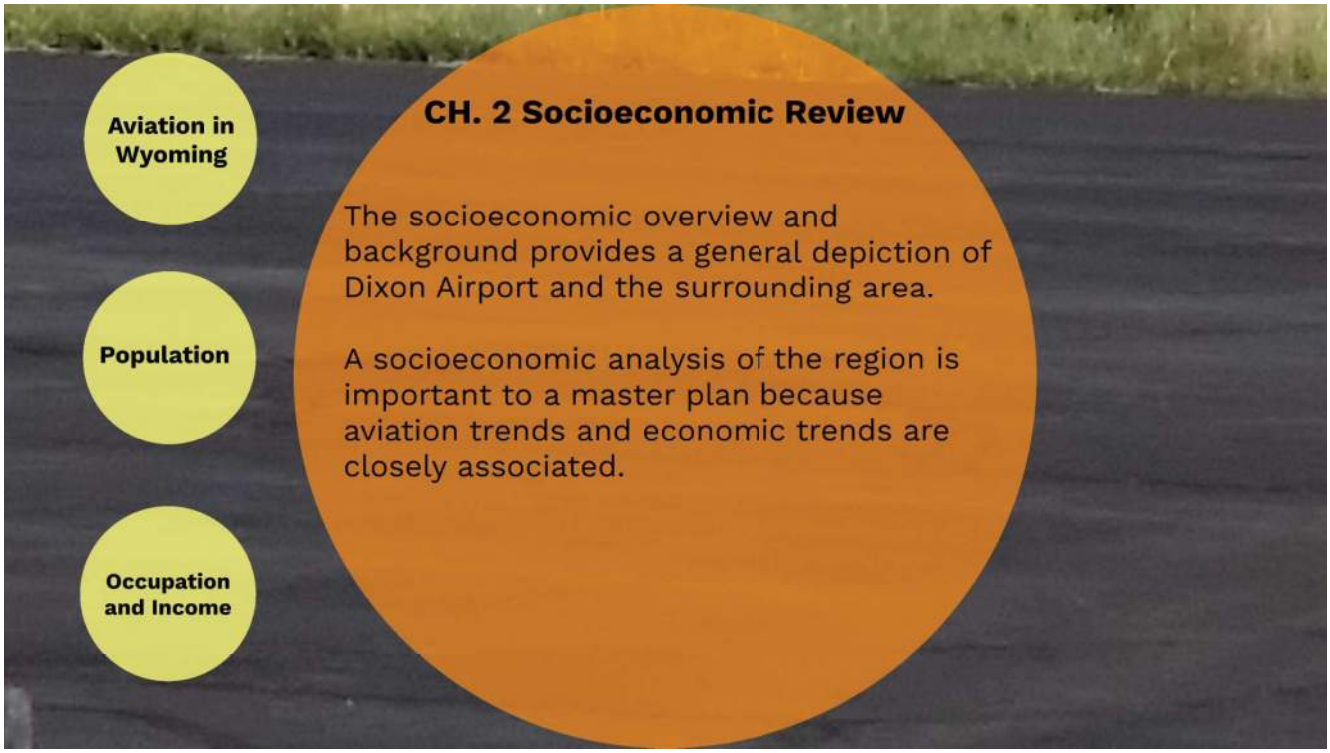
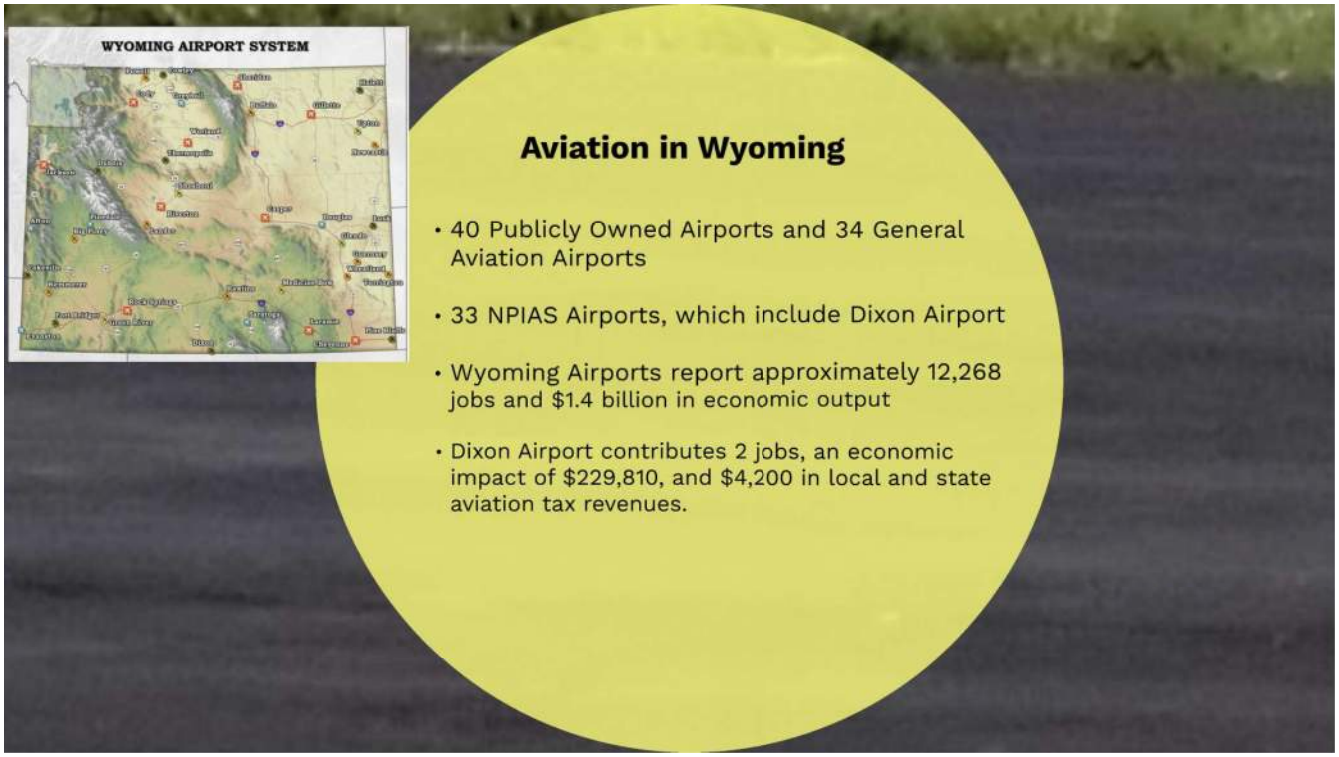
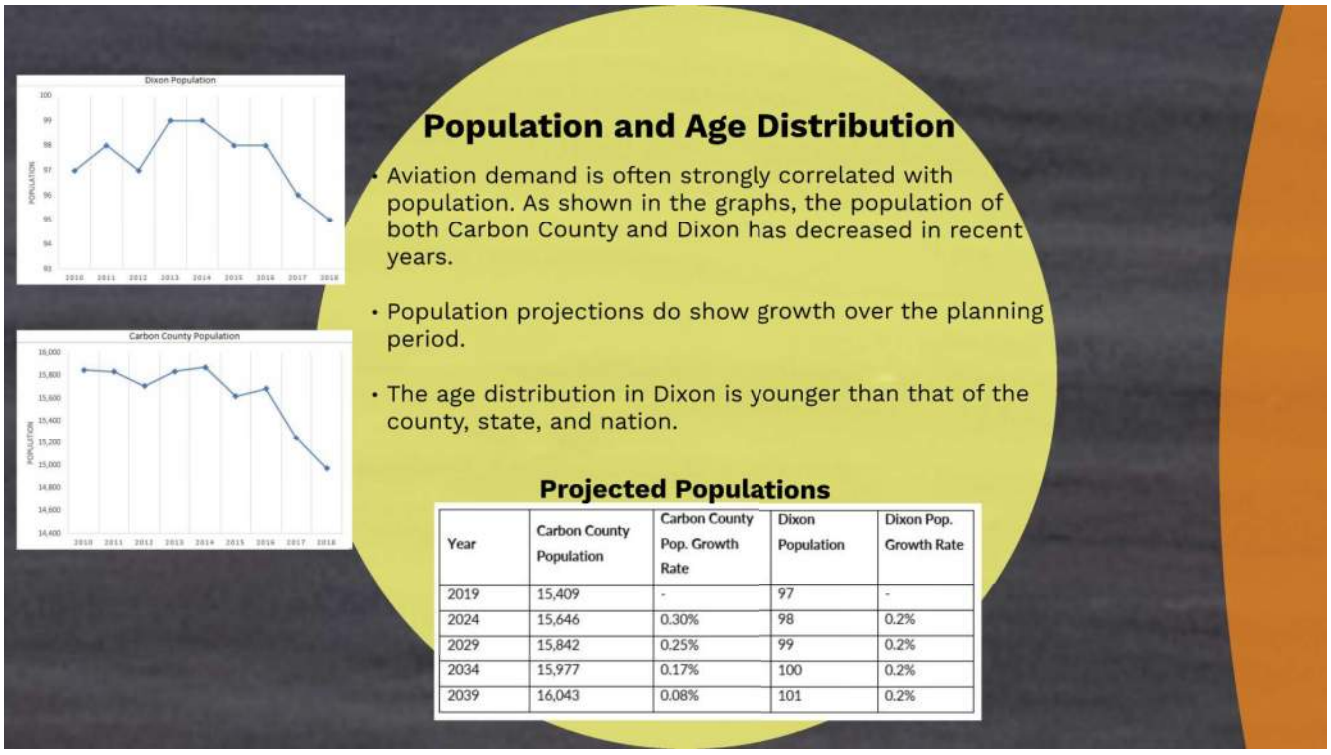
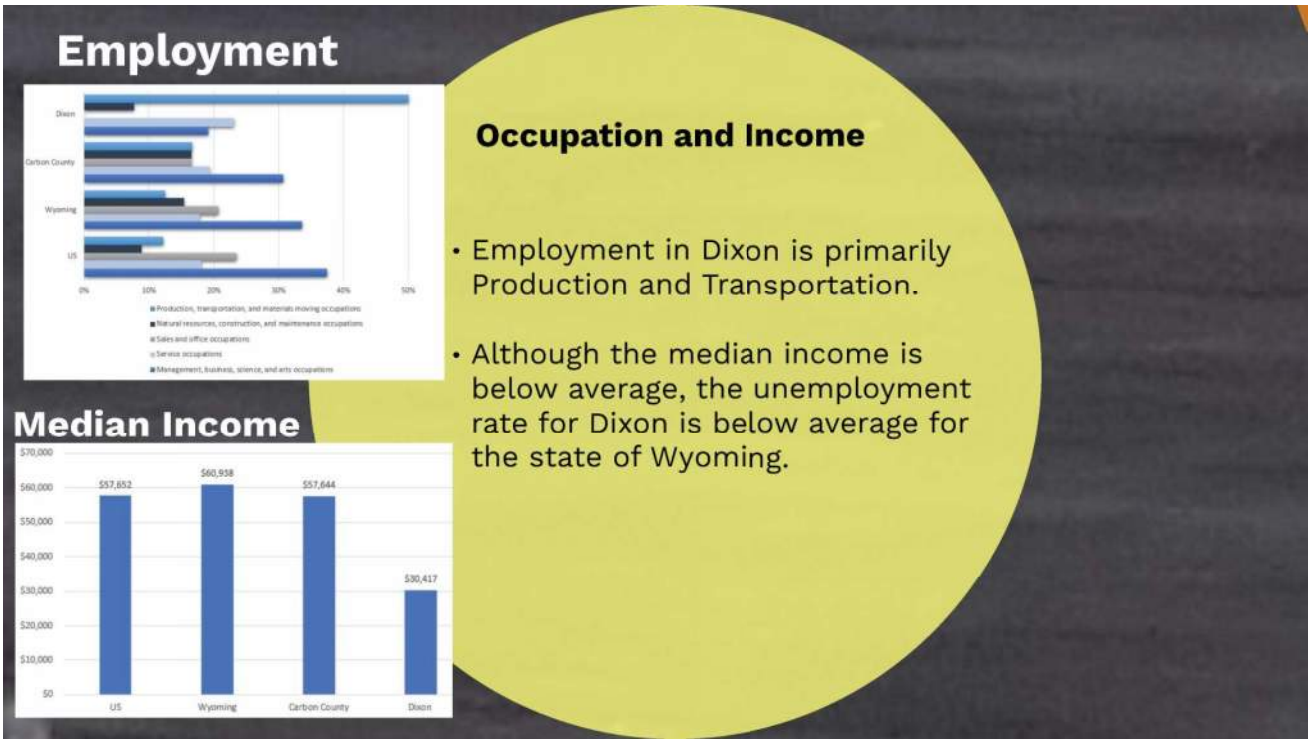

Aviation in Wyoming
Population
Occupation and Income
CH. 2 Socioeconomic Review
The socioeconomic overview and background provides a general depiction of Dixon Airport and the surrounding area.
A socioeconomic analysis of the region is important to a master plan because aviation trends and economic trends are closely associated.





Year	Carbon County Population	Carbon County Pop. Growth Rate	Dixon Population	Dixon Pop. Growth Rate
2019	15,409	-	97	-
2024	15,646	0.30%	98	0.2%
2029	15,842	0.25%	99	0.2%
2034	15,977	0.17%	100	0.2%
2039	16,043	0.08%	101	0.2%


Employment
Occupation and Income
• Employment in Dixon is primarily Production and Transportation.
• Although the median income is below average, the unemployment rate for Dixon is below average for the state of Wyoming.
Median Income
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
$57,852
$60,938
$57,644
$30,417
US
Wyoming
Carbon County
Dixon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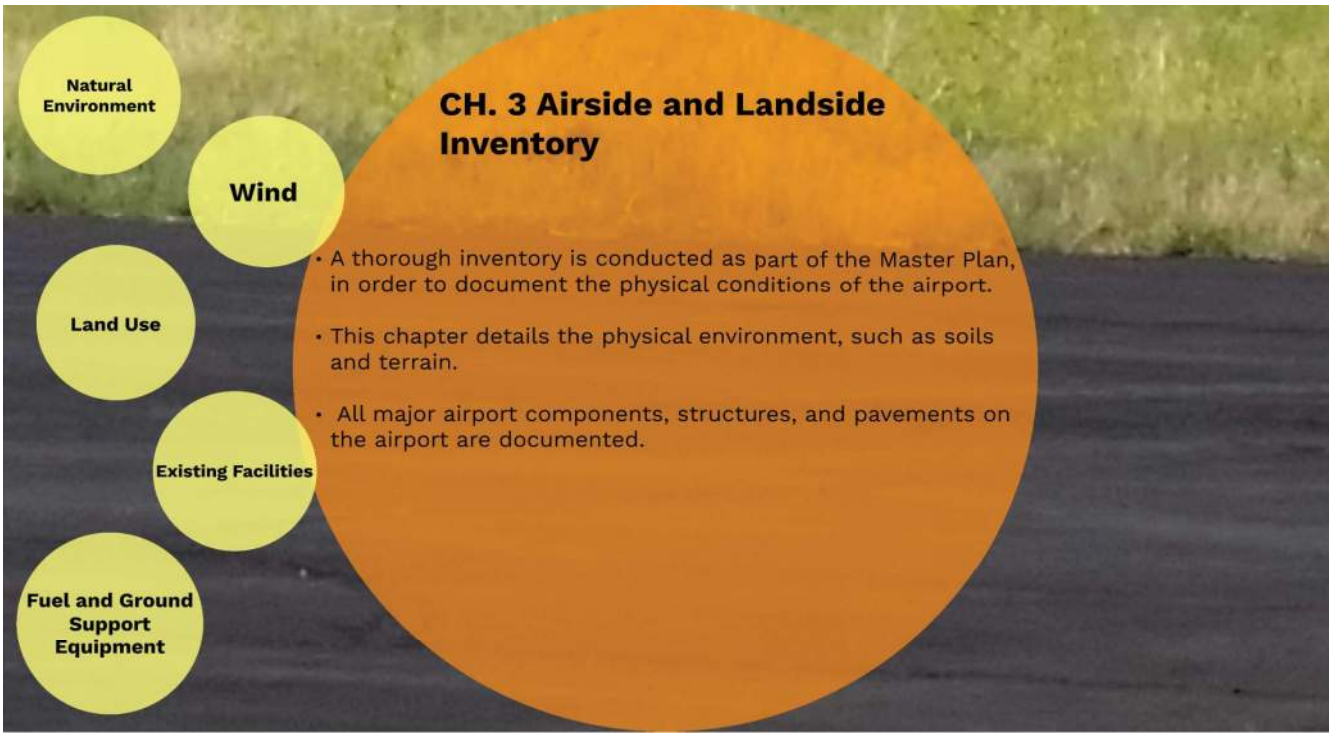
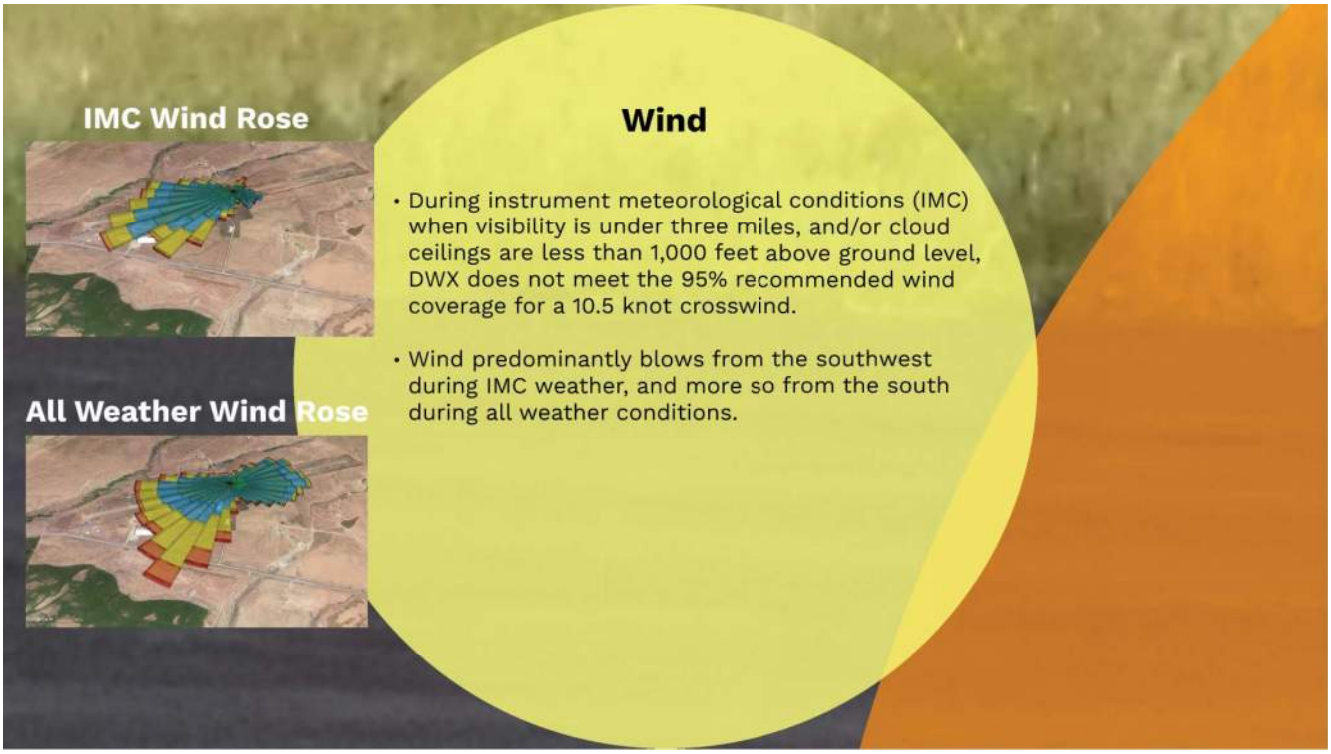
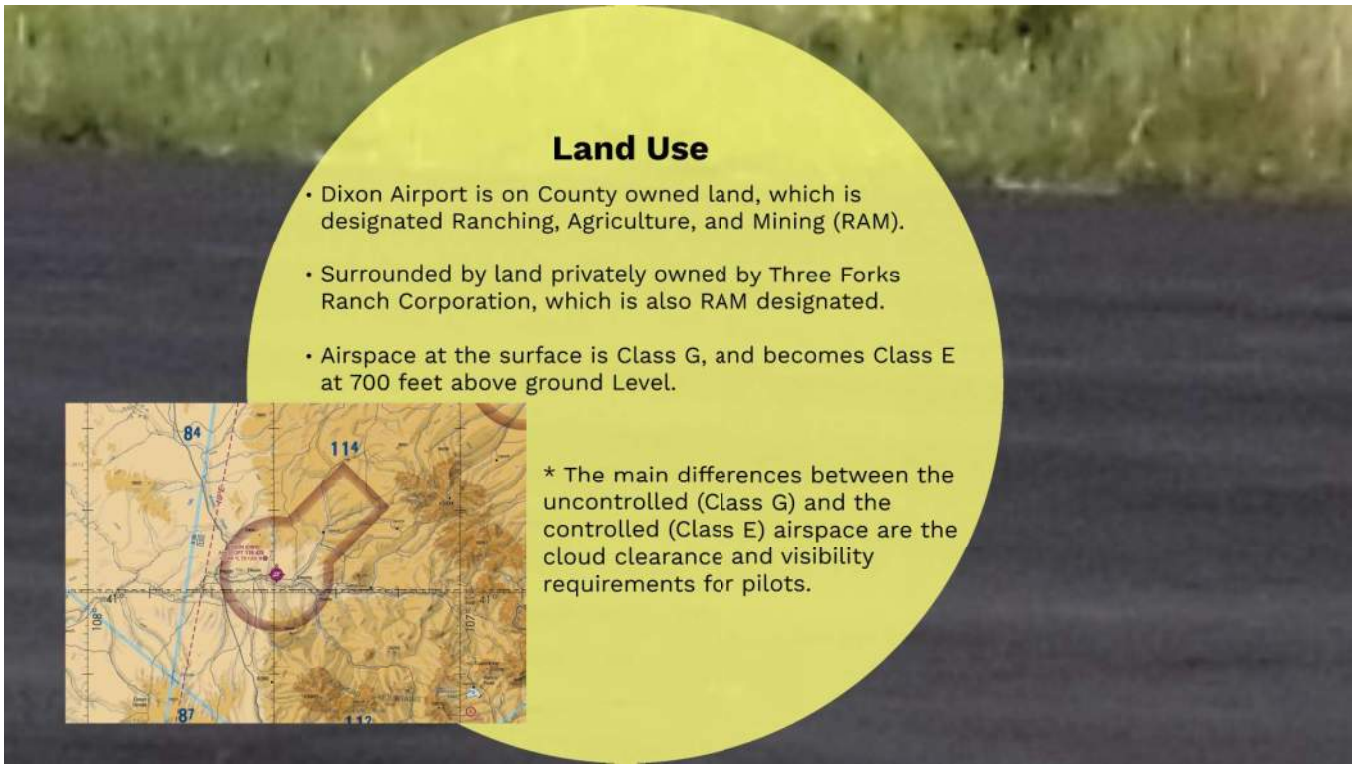
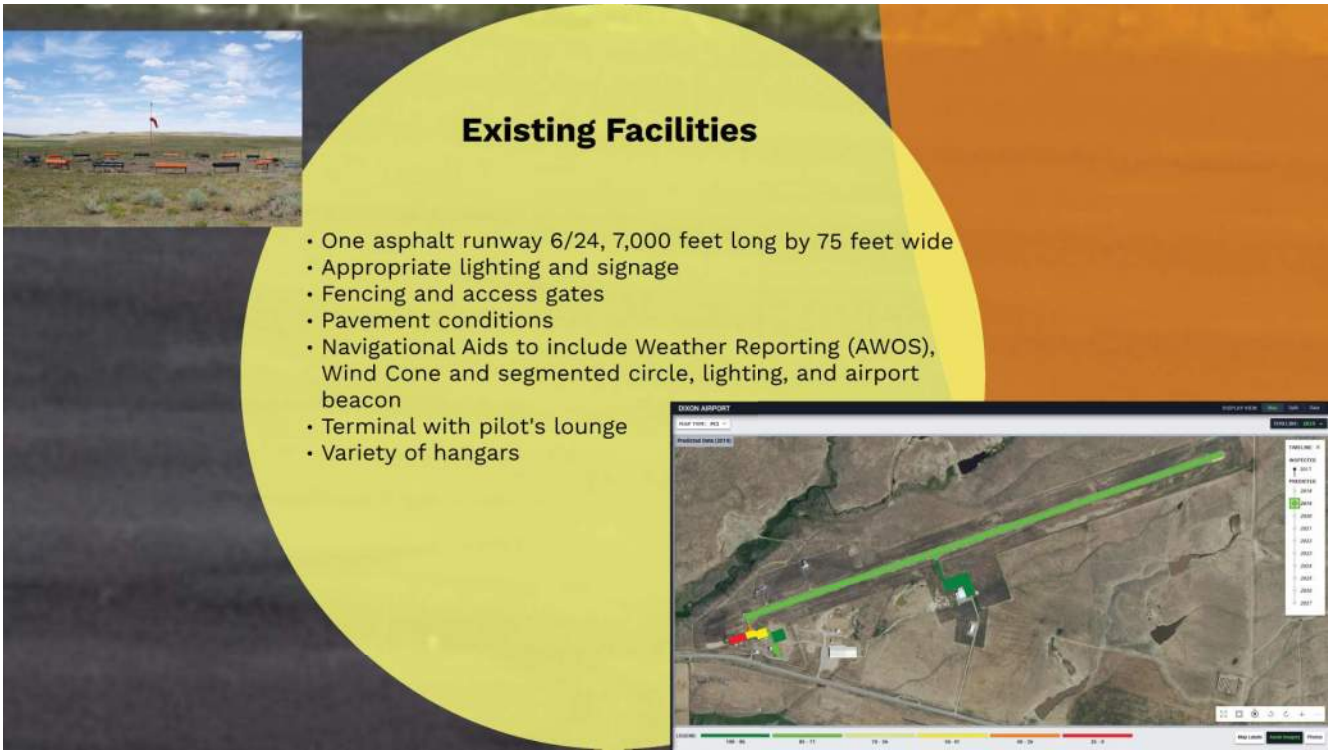
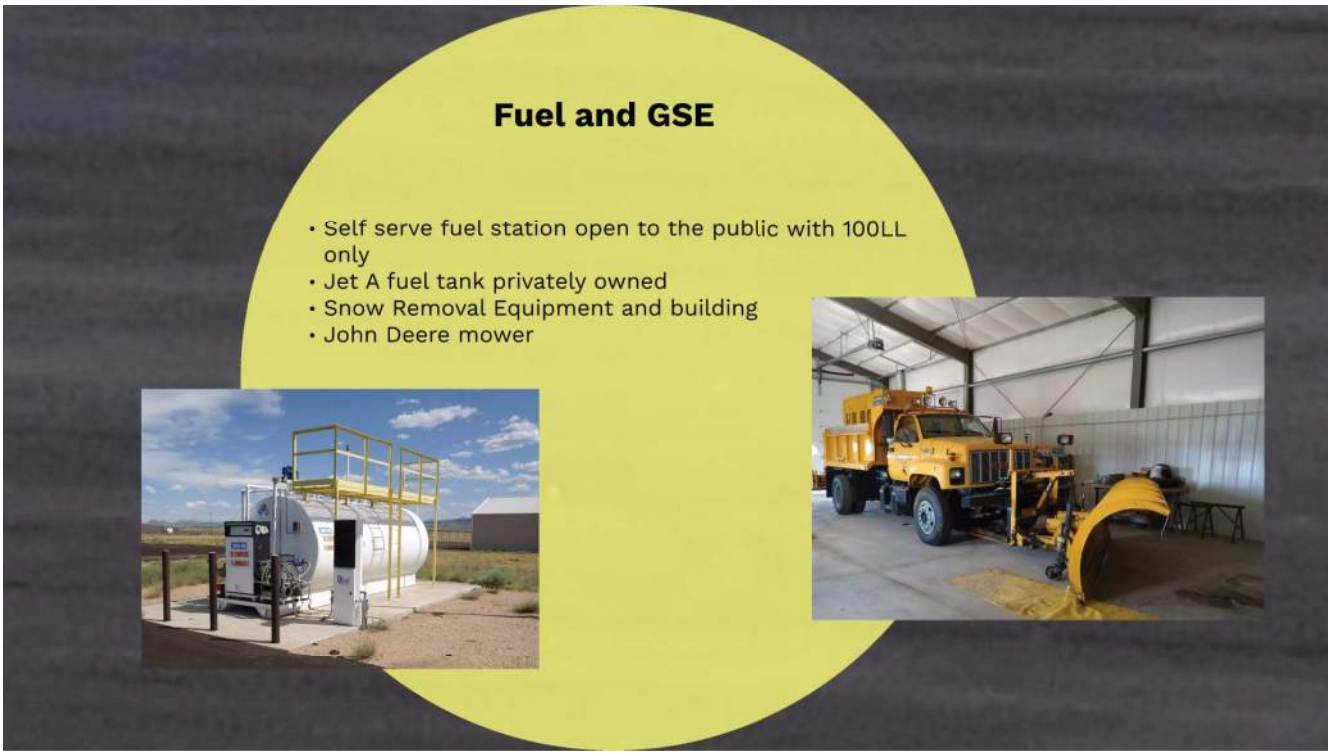

Natural Environment
Wind
Land Use
Existing Facilities
Fuel and Ground Support Equipment
CH. 3 Airside and Landside Inventory
• A thorough inventory is conducted as part of the Master Plan, in order to document the physical conditions of the airport.
• This chapter details the physical environment, such as soils and terrain.
• All major airport components, structures, and pavements on the airport are documented.


Natural Environment
• Vegetation - Sagebrush Steppe, including flowering plants, grass, and shrubs
• Climate - cool and dry with wide temperature variations
Sagebrush Map
DWX


IMC Wind Rose
All Weather Wind Rose
Wind
• During instrument meteorological conditions (IMC) when visibility is under three miles, and/or cloud ceilings are less than 1,000 feet above ground level, DWX does not meet the 95% recommended wind coverage for a 10.5 knot crosswind.
• Wind predominantly blows from the southwest during IMC weather, and more so from the south during all weather conditions.


Land Use
• Dixon Airport is on County owned land, which is designated Ranching, Agriculture, and Mining (RAM).
• Surrounded by land privately owned by Three Forks Ranch Corporation, which is also RAM designated.
• Airspace at the surface is Class G, and becomes Class E at 700 feet above ground Level.
* The main differences between the uncontrolled (Class G) and the controlled (Class E) airspace are the cloud clearance and visibility requirements for pilots.


Existing Facilities
• One asphalt runway 6/24, 7,000 feet long by 75 feet wide
• Appropriate lighting and signage
• Fencing and access gates
• Pavement conditions
• Navigational Aids to include Weather Reporting (AWOS), Wind Cone and segmented circle, lighting, and airport beacon
• Terminal with pilot's lounge
• Variety of hangars
DIXON AIRPORT


Fuel and GSE
• Self serve fuel station open to the public with 100LL only
• Jet A fuel tank privately owned
• Snow Removal Equipment and building
• John Deere mower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Methodology
FAA Forecast
TAF
Application
Forecast Purpose
• To determine future levels of activity at an airport.
• The types of aircraft using the airport drives the FAA design standards for the airport.
• To enable the Sponsor to plan for future aviation demand, and ensure the safety of the community and airport users.
Dixon Airport Forecast Data

Forecast Methodologies

Approved FAA forecast methodologies include:

- Regression Analysis
  - Ties statistical demand to economic measures
- Trend Analysis
  - Uses historical patterns, and applies them to future trends
- Market Share Analysis
  - Top-down approach using national, regional, and local economic trends, and applied to local trends
- Smoothing
  - Statistical technique applied to historical data trends

FAA Forecast

- Baseline for Terminal Area Forecast
- Uses national economic growth trends
- Includes additional statistics from General Aviation Manufactures Association (GAMA) and Transportation Research Board (TRB).

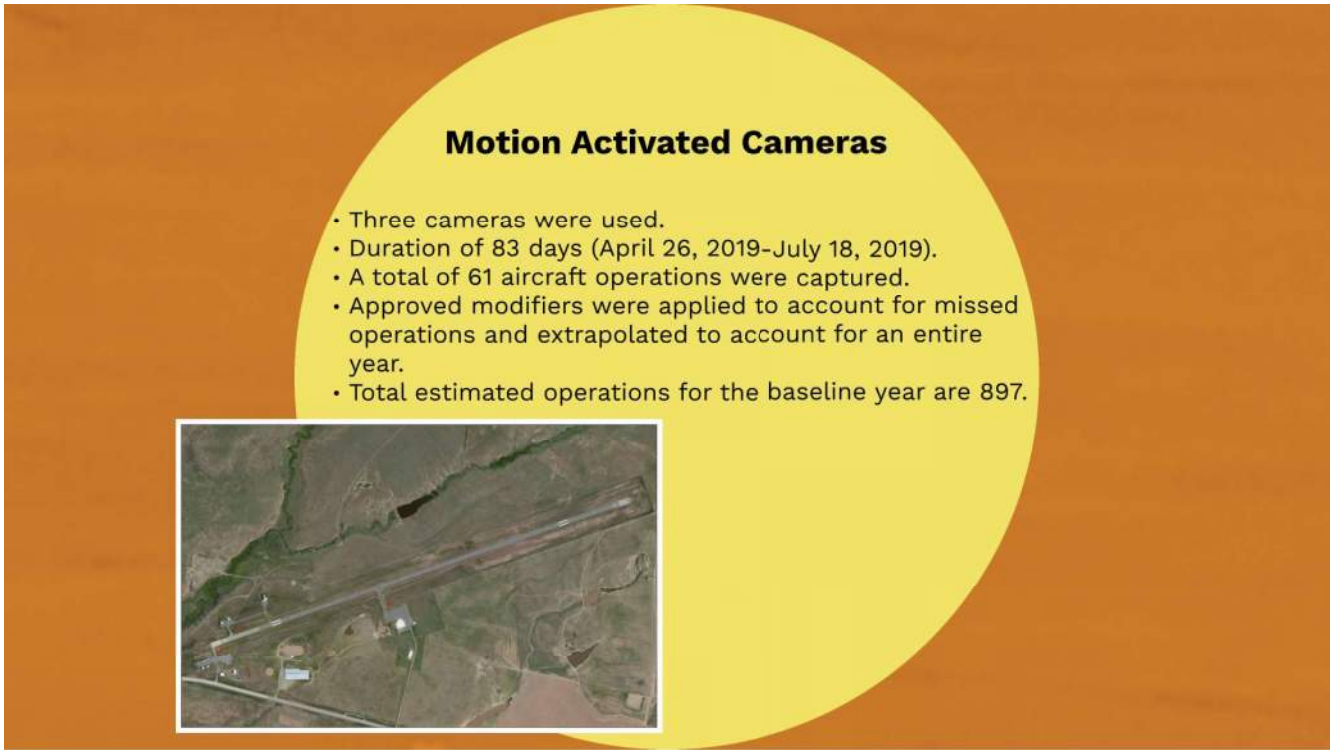
FAA Terminal Area Forecast

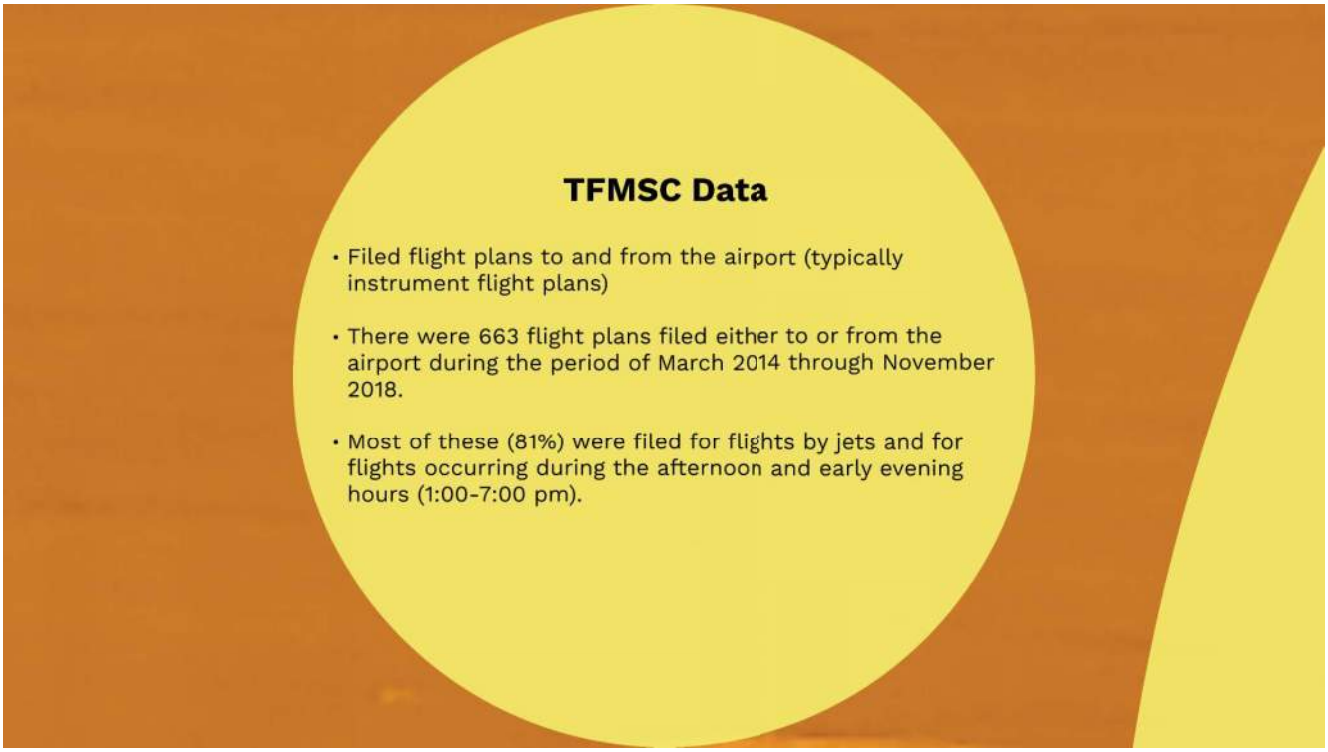
- Summary of historical and forecast statistics as published by the FAA.
- Uses demand-driven forecast based on local and national economies and aviation trends.
- Allows users to create forecast models applicable to individual airports.

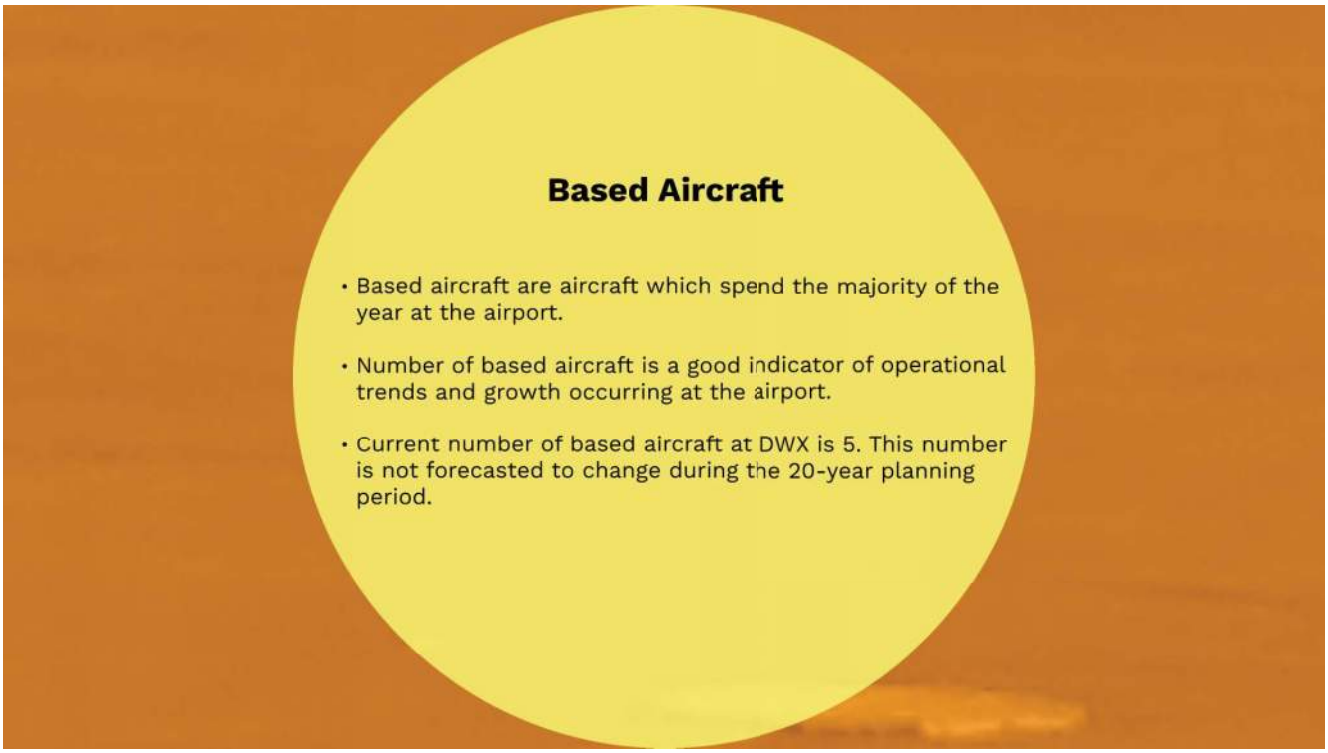
Application and Evaluation

- A combination of methods may be used to most appropriately fit the airport and community.
- Different methodologies will produce different results; therefore, justifications and explanations must be provided for the preferred forecast.
- All forecasts must be approved by the FAA and accepted by the Sponsor.


Motion Activated Cameras
TFMSC
Based Aircraft
Annual Operations
Design Aircraft
Dixon Airport Forecast
• Motion Activated Cameras
• Traffic Flow Management System Count (TFMSC)
• Based Aircraft
• Operations
• Design Aircraft


Motion Activated Cameras
• Three cameras were used.
• Duration of 83 days (April 26, 2019-July 18, 2019).
• A total of 61 aircraft operations were captured.
• Approved modifiers were applied to account for missed operations and extrapolated to account for an entire year.
• Total estimated operations for the baseline year are 897.


TFMSC Data
• Filed flight plans to and from the airport (typically instrument flight plans)
• There were 663 flight plans filed either to or from the airport during the period of March 2014 through November 2018.
• Most of these (81%) were filed for flights by jets and for flights occurring during the afternoon and early evening hours (1:00-7:00 pm).


Based Aircraft
• Based aircraft are aircraft which spend the majority of the year at the airport.
• Number of based aircraft is a good indicator of operational trends and growth occurring at the airport.
• Current number of based aircraft at DWX is 5. This number is not forecasted to change during the 20-year planning period.

Annual Operations

- Annual operations are broken down by aircraft type (single engine, multi-engine, jet), Airport Reference Code (ARC), and type of operation (local or itinerant).

Forecast Summary

Table 4.13 Forecast Summary					
Total Operations	2019	2024	2029	2034	2039
Total	897	911	922	930	934
Operations (Aircraft Type)	2019	2024	2029	2034	2039
Single Engine	294	299	302	305	306
Multi-Engine	0	0	0	0	0
Jet	589	598	606	611	613
Rotorcraft	14	14	14	14	15
Operations (Aircraft ARC)	2019	2024	2029	2034	2039
A-I	299	304	307	310	311
B-II	568	577	584	589	592
C-II	30	30	31	31	31
Operations (Itinerant and Local)	2019	2024	2029	2034	2039
Itinerant	646	656	664	670	673
Local	251	255	258	260	261
Based Aircraft	2019	2024	2029	2034	2039
Total	5	5	5	5	5

Aircraft Approach Category (AAC)	
Category	Speed
A	Less than 91 Knots
B	91 knots or more, less than 121 Knots
C	121 knots or more, less than 141 knots
D	141 knots or more, less than 166 knots
E	166 knots or more

Airplane Design Group		
Group	Tail Height (Ft)	Wingspan (Ft)
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

Design Aircraft

- The design aircraft is the most demanding aircraft with at least 500 operations.
- Called the design aircraft because the FAA classification of the aircraft becomes the design standard for the airport itself (Airport Reference Code- ARC).
- The design aircraft for Dixon Airport is a Cessna 525C, an ARC B-II light business Jet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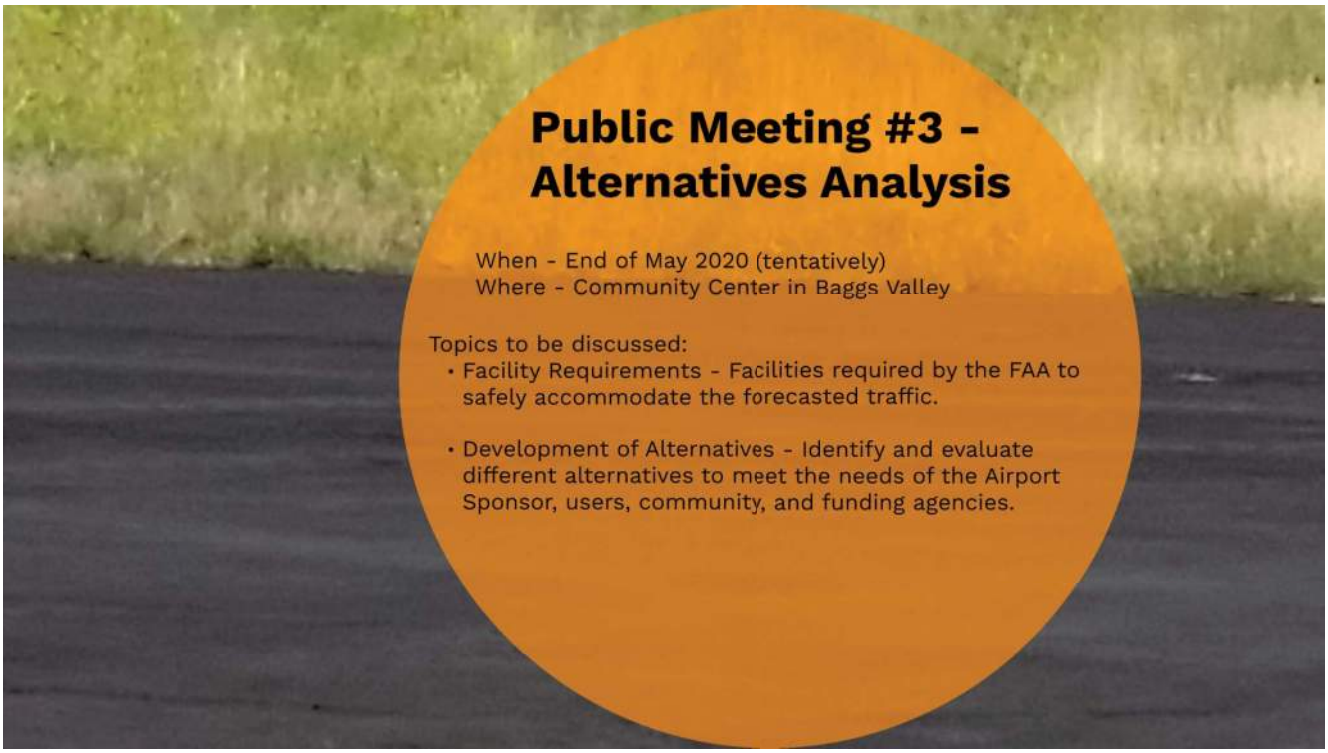
Public Meeting #3 - Alternatives Analysis
When - End of May 2020 (tentatively)
Where - Community Center in Baggs Valley
Topics to be discussed:
• Facility Requirements - Facilities required by the FAA to safely accommodate the forecasted traffic.
• Development of Alternatives - Identify and evaluate different alternatives to meet the needs of the Airport Sponsor, users, community, and funding agencies.


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Questions?
Thank you for attending this public meeting. Please remember to sign in. Leave comment sheets on the table, or submit comments online via the project portal.
Visit the Project Website
1. Go to http://www.to-engineers.com/.
2. Click on "Project Portal" in the upper right hand corner.
3. Under "Recent Jobs Posted" select Dixon Airport - Master Plan.
4. View information and documents under several tabs.
No registration is needed.


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Dixon Airport ~ Master Plan

Meeting 2 • February 26th, 2020 • 5:00 p.m. • Valley Community Center, Family Room, Baggs, WY

MEETING SIGN-IN SHEET

Name: Linda Flowers Business: Snake River Rose

Mailing Address:

Email Address: Phone Number:

==========

Name: Sue Jones by phone Business: Carbon Co. Commissioner

Mailing Address:

Email Address: Phone Number:

==========

Name: Business:

Mailing Address:

Email Address: Phone Number:

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Name: Business:

Mailing Address:

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Dixon Airport (DWX) Master Plan *www.to-engineers.com*

13. Appendix A - Public Involvement

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14. Appendix B - Forecast Approval

U.S. Department
of Transportation
**Federal Aviation
Administration**

Northwest Mountain Region
Colorado · Idaho · Montana · Oregon · Utah
Washington · Wyoming

Denver Airports District Office
26805 E. 68th Ave., Suite
224 Denver, CO 80249

February 6, 2020

Sue Jones
Dixon Airport
415 W Pine Street
Rawlins, WY 82301

Dixon Airport
Dixon, Wyoming
AIP: 3-56-0038-017-2019
Forecast Approval

Dear Ms. Jones:

The Federal Aviation Administration (FAA) reviewed forecast information for the subject airport. The forecast was received December 3, 2019. FAA approves the forecast. The FAA also approves CJ 4 for the existing and future critical aircraft. We found the forecast to be supported by reasonable planning assumptions and current data. Your forecast appears to be developed using acceptable forecasting methodologies.

The approval of the forecast and critical aircraft does not automatically constitute a commitment on the part of the United States to participate in any development recommended in the master plan or shown on the ALP. All future development will need to be justified by current activity levels at the time of proposed implementation. [*See FAA Order 5100.38D, Airport Improvement Program, Paragraph 3-12, for ADO options.*] Further, the approved forecasts may be subject to additional analysis or the FAA may request a sensitivity analysis if this data is to be used for environmental or Part 150 noise planning purposes.

If you have questions, please call me at 303-342-1263.

Sincerely,

14. Appendix B - Forecast Approval

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