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 1980's 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, the 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.

Heber Valley Airport (HCR) 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.

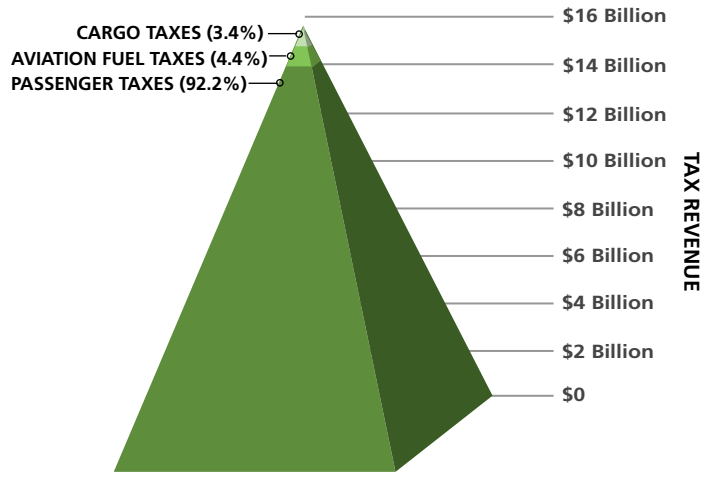
The Airports Division (ARP) is in charge of airport master planning, facility design, and inspection, and is the group that airport sponsors and airport planning consultants most often interact with for airport development projects and grant funding. This division is split into nine regions, including 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). In 2018, the tax revenue for the AATF was $15.820 billion.[1]

Figure 1.1 Airport and Airway Trust Fund (2018)



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 Heber Valley 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 Utah Department of Transportation, Division of Aeronautics (UDOT) also contributes to airport development projects. Generally speaking, UDOT funds are allocated to pavement maintenance projects and projects at nonprimary airports. Additionally, local communities provide matching funds for eligible projects, while also supporting 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.

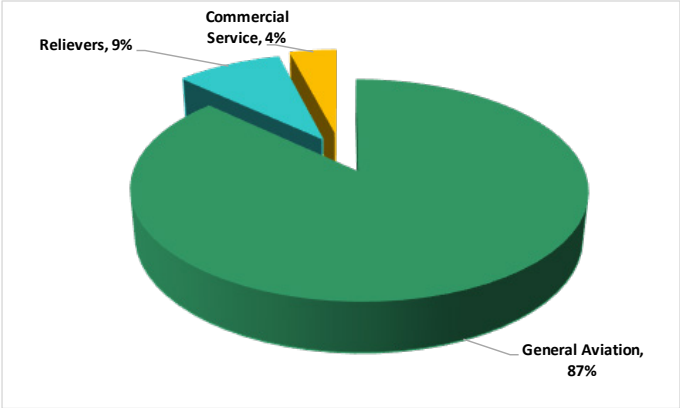
To meet the demand for air transportation, the airports and the airport system should have the following attributes:

- 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.

As of September 2018, there were 3,328 airports in the NPIAS: 3,321 existing and seven proposed airports.[2] The seven proposed airports are expected to open within five years. *Figure 1.2* shows the distribution of the 2,941 existing nonprimary NPIAS airports across the nation, by airport role, which includes 2,554 general aviation airports.

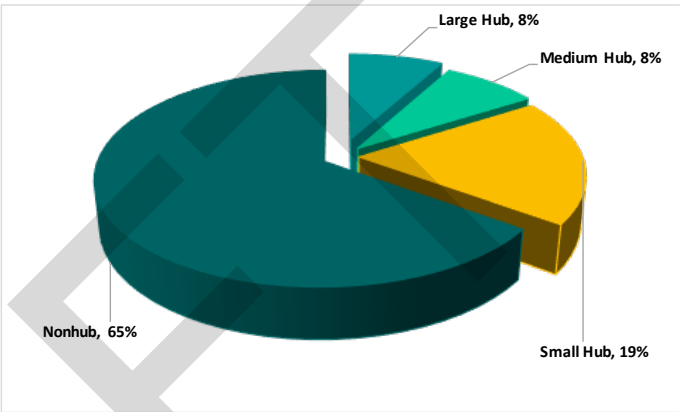
Figure 1.3 shows the distribution of primary NPIAS airports by airport category. Nonprimary airpors are general aviation airports and commercial service airports with 2,500 to 10,000 annual enplanements while primary airports are commercial service airports with more than 10,000 anuual enplanements (see *Table 1.1*). An airport is classified as a reliever if it relieves congestion by drawing slower-moving general aviation activity away from congested airports in large metropolitan areas. Each state has many airports in the NPIAS, and to be eligible for AIP funding an airport must be in the NPIAS.

Figure 1.2 NPIAS Nonprimary Airports



Source: FAA.gov

Figure 1.3 NPIAS Primary Airports



Source: FAA.gov

Table 1.1 Categories of Airport Activities

Airport Classifications		Hub Type: Percentage of Annual Passenger Enplanements	Common Name
Commercial Service: Publicly owned airports that have at least 2,500 passenger enplanements each calendar year and receive scheduled passenger service	**Primary**: Have more than 10,000 passenger enplanements each year	**Large**: 1% or more	**Large Hub**
		Medium: At least 0.25%, but less than 1%	**Medium Hub**
		Small: At least 0.05%, but less than 0.25%	**Small Hub**
		Nonhub: More than 10,000, but less than 0.05%	**Nonhub Primary**
	Nonprimary	**Nonhub**: At least 2,500 and no more than 10,000	**Nonprimary Commercial Service**
Nonprimary (Except Commercial Service)		Not Applicable	**Reliever** **General Aviation**

Source: FAA.gov

1.5 WHY ARE AIRPORTS SO IMPORTANT?

The aviation system plays a key role in the success, strength, and growth of the U.S. 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.[3]

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.[4] 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. Additionally, following Hurricane Dorian, volunteers from Key West, Florida filled multiple Cessna planes to transport needed supplies to the Bahamas.

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.

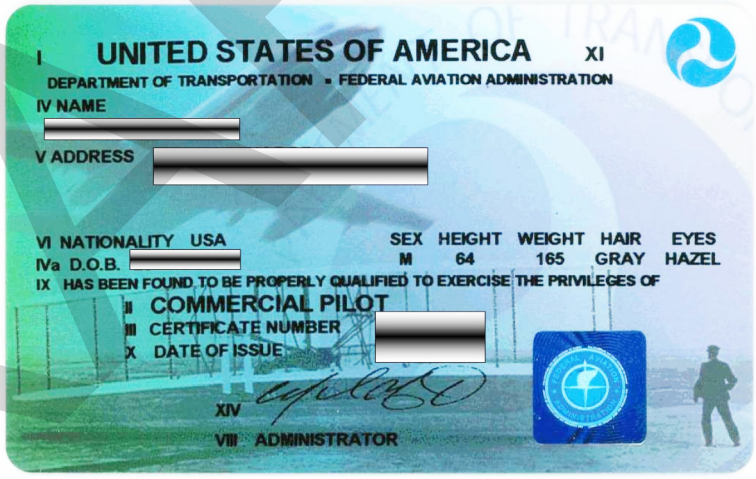
Sport Pilot – The easiest and least restrictive certificate to obtain. It is intended for pilots who wish to fly in light aircraft only at low altitudes in their local area. Sport pilots are limited to just one passenger and are prohibited from flying at night, above 10,000 feet, or in congested airspace. A sport pilot certificate only requires 20 hours of training time and most applicants are not required to obtain an FAA medical certificate.

Recreational Pilot – This certificate can be a good option for pilots who want to fly heavier aircraft than those used for sport pilot flying, but who do not necessarily want to move on to more advanced training. The recreational pilot certificate requires at least 30 hours of flight time, including 15 hours of dual instruction. Recreational pilots are limited to flights less than 50 nautical miles from their departure airport, can only fly during the day, and must stay out of controlled airports (congested airspace).

Private Pilot – This is the most common pilot certificate. The training requirements are more intensive than that of the recreational or sport pilot. Private pilots are allowed to do much more, such as fly at night and at controlled airports. Private pilots, like recreational and sport pilots, are not allowed to fly for commercial purposes and must not be compensated for pilot services. Private pilot training consists of multiple maneuvers and at least 40 hours of flight time, 20 of which must be with an instructor.

Commercial Pilot – This certificate allows a pilot to be paid for his/her flying services. Since there are separate regulations for scheduled flights, commercial pilots must also abide by additional federal aviation regulations pertaining to commercial flying operations. Commercial pilots must learn to fly complex aircraft, which have retractable landing gear, flaps, and a controllable-pitch propeller. Commercial flight training also demands more precision and knowledge about professional flight operations.

Figure 1.4 Pilot Certificate



Source: Epic Flight Academy

Flight Instructor – Many pilots choose to become a flight instructor as a way to build experience while getting paid to fly. Becoming a flight instructor involves learning about instructional design, learning theory, and going into all of the commercial pilot topics in much more depth. The flight instructor certificate allows pilots to share their knowledge of flight with others while gaining necessary experience to move on to an airline.

Airline Transport Pilot (ATP) – This is the most advanced pilot certificate that can be obtained and it is necessary for those who want to fly commercial airliners for a living. To become eligible for an ATP certificate, a pilot must have logged at least 1,500 hours and be 23 years old at a minimum. All commercial airlines now require a pilot applicant to have an ATP certificate.

Pilot certificates should not be confused with ratings or endorsements, which are separate training requirements that allow a pilot with a certain type of certificate to perform additional types of flying, such as instrument flying,

which allows a pilot to fly by sole reference to the instruments in the flight deck and without any reference to the ground outside. Examples of other ratings include multi-engine, seaplane, and helicopter.

An endorsement is earned when a certified flight instructor states that the pilot has received the required training for a particular task. Examples of endorsements include tailwheel, high performance, complex, and high altitude. In short, a certificate is the main pilot license that permits the privilege of flying a specific category or class of aircraft. Ratings and endorsements provide additional privileges in conjunction with the certificate.

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. Master planning studies that address major revisions are referred to as "Master Plans" while those that only change parts of the existing document and require a relatively low level of effort are referred to as "Master Plan Updates." The purpose of this comprehensive Master Plan for Heber Valley Airport is to conduct a detailed study that identifies, evaluates, and documents issues at the airport. These issues are then addressed through proposed development plans for the airport. *Table 1.2* lists the previous planning studies completed at Heber Valley Airport.

Table 1.2 Previous Planning Studies Completed at HCR

Year	Document	Consultant
1984	Master Plan and Airport Layout Plan	Horrocks Engineers
2003	Feasibility Study and Terminal Area Drawing	Armstrong Consultants, Inc.
2005	Airport Layout Plan	Armstrong Consultants, Inc.
2013	Terminal Area Drawing Update	Armstrong Consultants, Inc.

The elements of the master planning process vary in the 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. Master Plans present the strategy for the development of the airport by providing a framework to cost-effectively satisfy aviation demand while considering the potential safety, 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;
- Establish the framework for continued planning; and
- Provide the necessary Airport Layout Plan (ALP) drawing set.

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 news articles into its public involvement program. For more details regarding public involvement efforts pertaining to this Master Plan, refer to Appendix A.

Figure 1.5 First Public Meeting for HCR Master Plan

Source: T-O Engineers

Public involvement is a key portion of any Airport Master Plan. Receiving public input and feedback is critical throughout the entire duration of a Master Plan. Typically, T-O Engineers will break down the Master Plan process into five chronological phases, each ending with a public meeting. This Master Plan is a more complex project than most Master Plan projects for smaller general aviation airports and will require additional phases to solicit the desired level of public participation. As a result, a public outreach subconsultant will be utilized for the project to facilitate the exchange of information with the public. The public involvement phases of the Heber Valley Airport Master Plan include the following:

Phase 1: Meet with Sponsor, complete pre-planning documents, establish community advisory committee and technical advisory committee, and analyze socioeconomic and demographic data. Hold 1st public meeting to announce the project.

Phase 2: Conduct physical inventory of airport, research aircraft traffic, interview key users and members of the public, determine proper forecasting methodology, create aviation forecast, present forecast to the community advisory committee and technical advisory committee. Hold 2nd public meeting to present this information to the public. Then submit forecast to FAA for approval.

Phase 3: Determine airport requirements from approved forecast. Share this information with the community advisory committee and technical advisory committee. Design airside and landside alternatives. Hold 3rd public meeting to present initial development alternatives. Allow public input regarding which development alternative(s) should be selected by the Sponsor.

Phase 4: Present a development schedule to the community advisory committee and technical advisory committee, including cost estimates calculated by engineers, to implement the development alternative(s) selected by the Sponsor.

Phase 5: Hold 4th public meeting, incorporate any remaining public comments, finalize design alternatives, and provide draft Airport Layout Plan and draft Master Plan to Sponsor. Submit draft documents to FAA and State Aeronautics for review.

Phase 6: Incorporate final FAA, Aeronautics, and Sponsor review items. Publicly present final documents to Sponsor for signatures during City Council meeting. Submit final documents to FAA, State Aeronautics, and Sponsor.

Phase 7: Hold 5th public meeting to provide details regarding the final documents and explain next steps in the airport development process.

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 HCR.

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 at least 500 annual local operations that operates or is expected to operate, at the airport. The critical aircraft of an airport 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 1.3* and *1.4* 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 1.3 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 1.4 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.

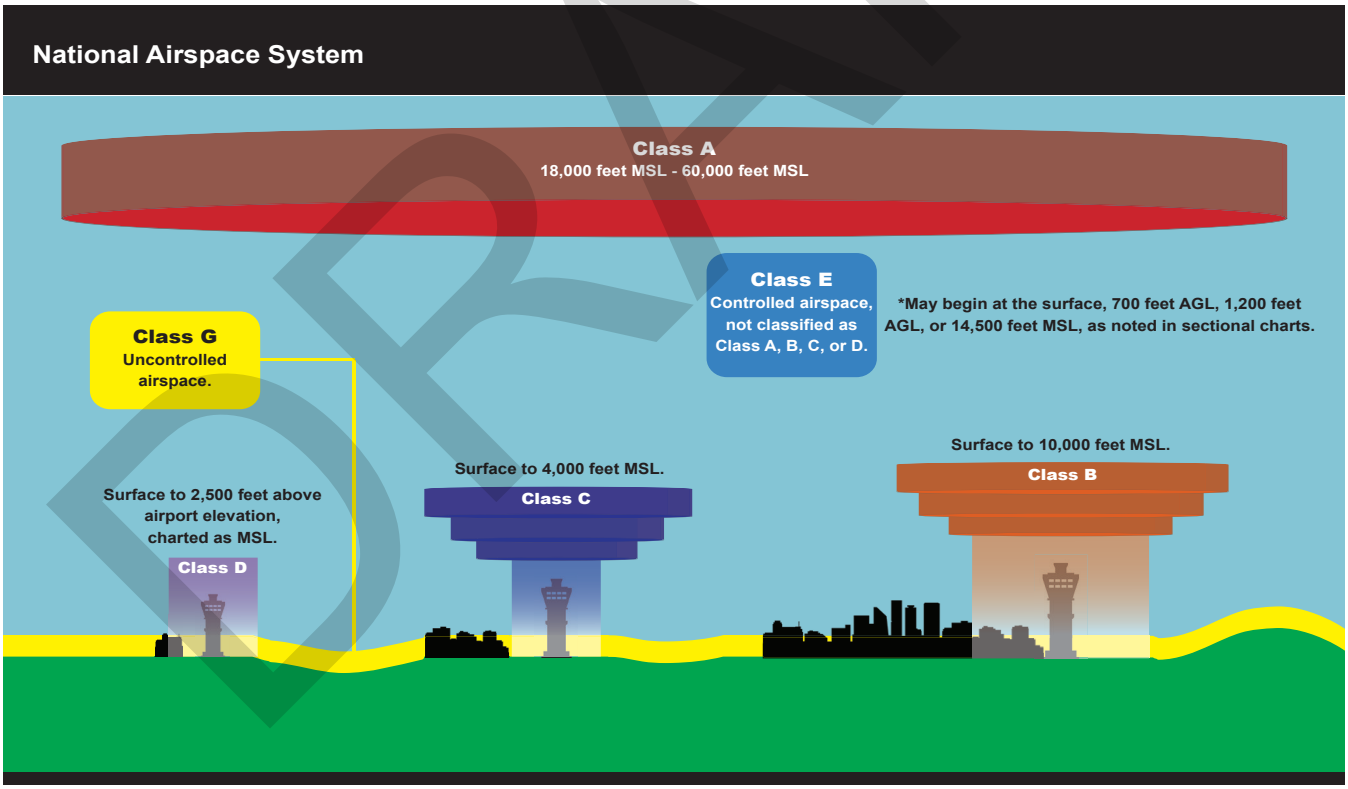
1.13 AIRSPACE AND APPROACHES

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 U.S., 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. It is important that pilots 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 one 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. *Figure 1.6* illustrates the various classes of airspace. *Table 1.5* indicates the basic VFR weather minimums for each airspace classification.

Figure 1.6 National Airspace Classifications



Source: T-O Engineers

Table 1.5 Basic VFR Weather Minimums			
Airspace		**Flight Visibility**	**Distance from Clouds**
Class A		Not applicable	Not applicable
Class B		3 statute miles	Clear of clouds
Class C		3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class D		3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class E	At or above 10,000 feet MSL	5 statute miles	1,000 feet above 1,000 feet below 1 statute mile horizontal
	Less than 10,000 feet MSL	3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class G	1,200 feet or less above the surface (regardless of MSL altitude)	*Day - 1 statute mile	Clear of clouds
		*Night - 3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
	more than 1,200 feet above the surface, but less than 10,000 feet MSL	Day - 1 statute mile	1,000 feet above 500 feet below 2,000 feet horizontal
		Night - 3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
	More than 1,200 feet above the surface and at or above 10,000 feet MSL	5 statute miles	1,000 feet above 1,000 feet below 1 statute mile horizontal

**except as provided in section 91.555(b) of 14 Code of Federal Regulations Part 91*

Source: FAA

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 Heber Valley Airport: an Area Navigation (RNAV) or Global Positioning System (GPS)-A approach. 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.

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.

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