

# INTRODUCTION

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## CHAPTER TWO

# INTRODUCTION

This chapter introduces topics and concepts central to the aviation system in the United States. The information provides an introductory foundation of the knowledge needed to understand and interpret the remainder of this airport master plan.

### 2.1. 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. The aviation industry began to truly take off during World War II.

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 1980s, 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.

Idaho Falls Regional Airport (IDA) is no exception to this development. The airport facility serves the community with scheduled commercial airline service, air cargo, business traffic, recreational flying, and access to emergency services. It also serves area businesses as an economic engine.

## 2.2. Federal Aviation Administration

The Civil Aeronautics Authority (CAA), which was created in 1938, was replaced by the Federal Aviation Agency in 1958. At that time, it was an independent agency. However, when the U.S. Department of Transportation (DOT) was created in 1967, it became the Federal Aviation Administration (FAA) and was no longer an independent agency. It is now one of several organizations within the DOT.

The FAA serves as the nation's aviation authority and is responsible for the safety of civil aviation. The FAA is a large agency, employing more than 45,000 people, and includes a myriad of divisions and offices across the country. The major roles of the FAA are to regulate civil aviation and promote safety, encourage and develop civil aeronautics to include new aviation technology, develop and maintain an operating system of air traffic control and navigation for both civilian and military aircraft, research and develop the National Airspace System (NAS) and civil aeronautics, develop and carry out programs to control aircraft noise and other environmental effects of aviation, and regulate U.S. commercial space transportation.<sup>1</sup> The FAA is divided into a myriad of divisions, regions, and districts in order to provide comprehensive aviation authority across the nation.

For airport development projects and grant funding, airport sponsors and planning consultants work with the FAA Airports Division (ARP). The ARP is further divided into nine regions, which is again split into Airports District Offices (ADO). Each ADO is primarily made up of civil engineers and planners. The staff serves as project managers for federally funded projects, and interact daily with airport sponsors, state officials, and consultants to manage and direct projects which further the overall goals of the national and state aviation systems.

The Idaho Falls Regional Airport is within the northwest mountain region. This means the airport sponsor and consultants work directly with the engineers, planners, and environmental specialists at the Helena ADO for all federally funded projects.

## 2.3. 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). An integrated system of public use airports is critical to the national transportation system and 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 mail and shipping needs.
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation.

According to the 2021-2025 NPIAS Report, there are 3,304 existing airports in the NPIAS, with six proposed to be constructed and open within five years. Airports in the NPIAS are classified as primary or nonprimary, and divided into subcategories under each classification, as described in [Table 2.1](#).

**Table 2.1: Airport Classifications**

Classifications		Hub Type: Annual % of Enplanements	Common Name
<b>Commercial Service:</b> Publicly owned airports that have at least 2,500 passenger enplanements each calendar year and receive scheduled passenger service	<b>Primary:</b> More than 10,000 annual enplanements	<b>Large:</b> 1% or more	Large Hub
		<b>Medium:</b> 0.25% to 1%	Medium Hub
		<b>Small:</b> 0.05% to 0.25%	Small Hub
		<b>Nonhub:</b> More than 10,000, but less than 0.05%	Nonhub Primary
	<b>Nonprimary</b>	<b>Nonhub:</b> Between 2,500 and 10,000 enplanements	Nonprimary Commercial Service
Nonprimary (Except Commercial Service)	N/A	Reliever, General Aviation	

Source: FAA

Figure 2.1 and Figure 2.2 show the distribution of existing nonprimary and primary NPIAS airports. To be eligible for federal funding, an airport must be included in the NPIAS. Idaho Falls Regional Airport is included in the NPIAS and is classified as a nonhub primary airport.

**Figure 2.1: NPIAS Nonprimary Airports**



- General Aviation
- Relievers
- Commercial Service

**Figure 2.2: NPIAS Primary Airports**



- Large Hub
- Medium Hub
- Small Hub
- Nonhub

Source: T-O Engineers

### 2.4. Funding Improvements

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. This program, which is coordinated by the FAA, 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.

As shown in Figure 2.3, 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 2.3: Airport and Airway Trust Fund**



- Passenger Taxes
- Cargo Taxes
- Aviation Fuel Taxes

Source: FAA



Expenditure of federal funds on airport projects must be justified by aviation demand and meet eligibility requirements. To be eligible, projects need to enhance airport safety, capacity, security, and address environmental impacts. Eligible projects typically include pavement maintenance, runway construction, airfield lighting, land acquisition, planning and environmental studies. Ineligible projects include office equipment, landscaping, marketing plans, and building maintenance.

Entitlements are funds that are apportioned by formula to airports and may generally be used for any eligible airport improvement or planning project. Under current legislation, a nonprimary entitlement of up to \$150,000 per year is granted to smaller general aviation airports. Nonprimary entitlements 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. Entitlement funds for commercial airports that board more than 10,000 passengers each year is based on the number of enplanements during the prior calendar year. The minimum allocation to any primary airport is \$1 million and the maximum is \$26 million.

The COVID-19 pandemic placed a substantial financial burden on airports during 2020, commercial service airports in particular, due to lockdowns and travel restrictions. To assist airports, the federal government passed three laws which injected stimulus funding into the airport system: the Coronavirus Aid, Relief, and Economic Security (CARES) Act in 2020, the Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA) in 2020, and the American Rescue Plan Act of 2021 (ARPA). These federal laws allowed federal funding to be used for items not eligible under the Airport Improvement Program such as operations, personnel, maintenance costs, rent relief, payment of debt service, cleaning, and sanitation. CARES, CRRSAA, and ARPA grant funding came from the U.S. Treasury General Fund rather than the Airport and Airway Trust Fund.

## 2.5. 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 (Figure 2.4). The elements of the airport master plan are guided by the FAA, though vary in detail and complexity depending upon the size, function, and issues of each airport. The elements provide a systematic approach and build upon each other throughout the process. Airport master plans present a strategy for airport development by providing a framework to cost-effectively satisfy aviation demand while considering the safety, environmental, and socioeconomic impacts to users and the local community.

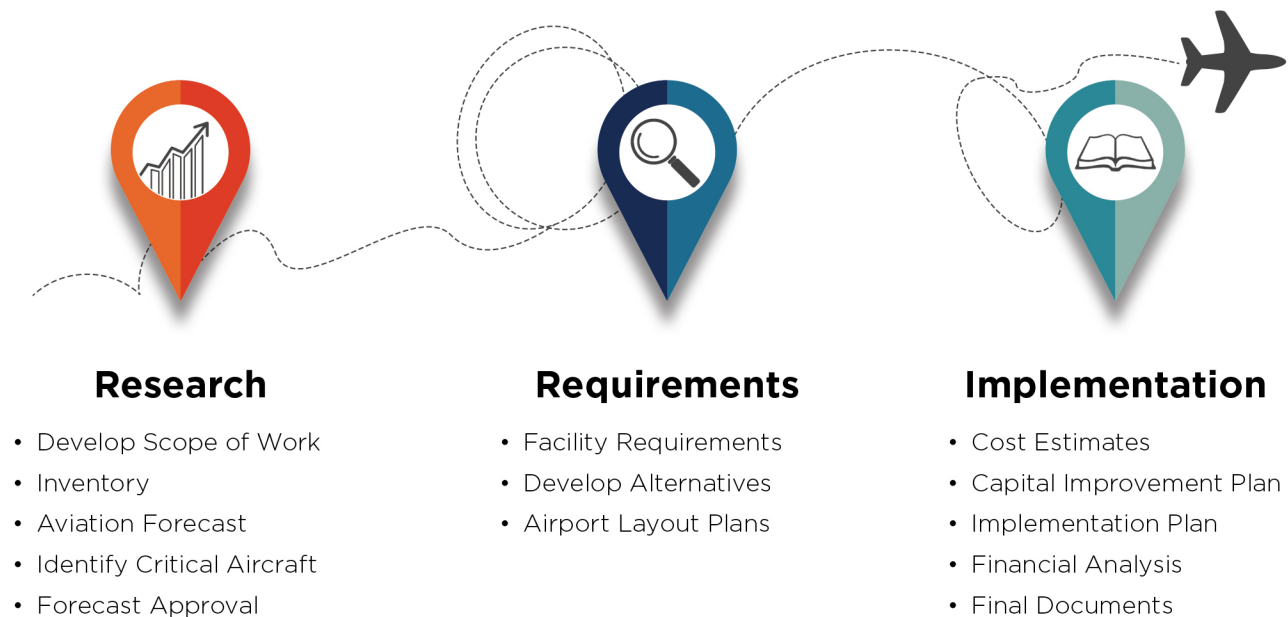
### **Airport master plans generally meet the following objectives:**

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

## 2.6. Airport Layout Plans

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.

**Figure 2.4: FAA Airport Master Plan Process**



Source: FAA

## 2.7. Public Involvement

Public input is highly encouraged throughout the planning process. Each airport master plan includes a public involvement program, and the amount of public involvement typically corresponds to the complexity of the airport, community, and project. Effective public involvement connects numerous stakeholders, including but not limited to aircraft owners, hangar tenants, airport and businesses on airport property, public officials, governmental agencies, and the 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 typically held at public locations to inform the public about the status of the airport and airport 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 fliers, project websites, and newspaper articles.

Due to the COVID-19 pandemic, public meetings evolved from traditional in-person meetings and presentations to virtual or hybrid formats. To promote a high level of public involvement and maintain public safety, five public meetings were scheduled, with a combination of meeting formats. For more details regarding public involvement efforts pertaining to this airport master plan, refer to Appendix A.

## 2.8. FAA Design Standards

The FAA has established standards for the design and construction of airport facilities. There are design standards for nearly every aspect of an airport, and these standards are presented in a collection of documents called *Advisory Circulars (AC)*. Several of these relate to airport master plans with AC 150/5070-6B, *Airport Master Plans* and AC 150/5300-13A, *Airport Design* being two of the most relevant. The first document details the requirements and guidance for airport master plans, and the second contains the FAA standards and recommendations for the geometric layout and engineering design of runways, taxiways, aprons, and other airport facilities.

### 2.8.1. Critical Aircraft

A key determination of any airport master plan is the identification of the critical aircraft. (Discussed in detail in Chapter 4, *Forecast of Aviation Demand*.) The critical aircraft, which is the most demanding aircraft with at least 500 annual operations, prescribes which FAA design standards are to be applied at the airport.

### 2.8.2. FAA Codes, Categories, and Groups

The FAA has developed a coding system to aid in defining airport design. There are several codes and groups which define the design elements and are driven by the airport's critical aircraft. Particularly important is the two-part coding system which includes the aircraft approach category (AAC) and airplane design group (ADG). The AAC is designated by a letter (A through E) and is based off the approach speed of an aircraft ([Table 2.2](#)).

**Table 2.2: Aircraft Approach Category**

Category	Approach Speed (Knots)
A	Less than 91
B	91 or more, but less than 121
C	121 or more, but less than 141
D	141 or more, but less than 166
E	166 or more

Source: FAA

The ADG is identified by a Roman numeral (I through VI) and represents the tail height and wingspan of an aircraft ([Table 2.3](#)). The combination of the critical aircraft's AAC and ADG (for example, A-I or B-II) signifies the Airport Reference Code (ARC). The ARC is the code representing the design standards to be applied at the airport. There are additional design codes, which will be explained throughout the airport master plan.

**Table 2.3: Airplane Design Group**

Category	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

## 2.9. Summary

A successful airport master plan provides answers and knowledge to a wide range of audiences including pilots, government officials, and the public. A basic understanding of these concepts will help the reader to successfully interpret this airport master plan. 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.

# Endnotes

- 1 U.S. Department of Transportation. Federal Aviation Administration. "What We Do." FAA.gov. Accessed May 26, 2021. <https://www.faa.gov/about/mission/activities>.

