# Executive Summary
# FACILITY REQUIREMENTS

### Preface

To properly plan for the future of the Hillsboro Airport, it is necessary to identify specific types and quantities of facilities required or desired to adequately serve the Airport over the next 20 years. Facilities are broadly classified as airside (i.e., runways, taxiways, navigational aids, marking and lighting) and landside (i.e., hangars, aircraft parking apron, and automobile parking). There are four primary sources to identify the facility requirements:

- Aviation Demand Forecasts: The forecasts of aviation demand developed in the previous chapter serve as data inputs to various models, which have been constructed following Federal Aviation Administration (FAA) guidance, to generate facility needs.
- Design Standards Review: Various design standards that apply to the Airport are reviewed as they can change based on modifications to FAA guidance or activity changes at the Airport. Design standards primarily relate to the numerous imaginary safety related surfaces and separation distances.
- Facility Maintenance: Airports are required to maintain their pavement surfaces for the useful life of those pavements. The pavements require routine maintenance and occasionally must be rehabilitated or reconstructed. This category includes maintenance of airport structures and landside facilities.
- Support Facilities: This category includes all airport related facilities that do not naturally fall into the airside and landside categories and includes elements such as fuel facilities, access and circulation, and general on-airport land use.

### Airfield Capacity

Following guidance in FAA Advisory Circular (AC), 150/5060-5, *Airport Capacity and Delay,* an analysis of the current and future airfield capacity was conducted. It was determined that the airfield is fully capable of accommodating projected growth in aviation demand. Therefore, no projects specifically aimed at enhancing airfield capacity are needed during the 20-year planning horizon for the Master Plan.

Annual Service Volume is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year without incurring significant delay factors. As operations near, or surpass, the ASV, delay factors increase exponentially. Specifically, the calculated current annual service volume (ASV) is approximately 384,000 annual operations. This is forecast to remain largely unchanged, decreasing to 381,000 annual operations by 2036. Only when annual operations reach 60-75 percent of the ASV should planning for capacity improvements begin. Operations are forecast to reach approximately 191,000 by 2036, which is 50 percent of the ASV.

### Airfield Requirements

The airfield requirements include detailed analysis of the following:

- Runway Configuration
- Runway Design Standards
- Runways
- Taxiways
- Instrument Approaches

### Runway Configuration

There are three runways at Hillsboro Airport. Primary Runway 13R-31L is 6,600 feet long, Crosswind Runway 2-20 is 3,421 feet long, and Parallel Runway 13L-31R is 3,600 feet long. The three-runway configuration is in the proper orientation and provides adequate wind coverage for all aircraft utilizing the airport. All three runways should be maintained.

### Runway Design Standards

The FAA has established several design standards to protect aircraft operational areas and keep them free from obstructions that could affect their safe operation. These include the runway safety area (RSA), runway object free area (ROFA), runway obstacle free zone (OFZ), and runway protection zone (RPZ).

The RSA north of the Runway 13R threshold is traversed by a drainage ditch which causes the RSA to not meet grading standards. Alternatives will be considered for bring the RSA up to grading standard. All other RSAs meet the design standards.

The ROFA beyond both ends of Primary Runway 13R-31L extend beyond the airport perimeter fence which constitutes an object penetration. Options for mitigating the ROFA deficiency are examined in the alternatives analysis.

The OFZ's surrounding all runways meet design standards and are planned to be maintained.

RPZs are a two-dimensional trapezoidal area beyond the runway ends. The RPZ has been established by the FAA to provide an area clear of obstructions and incompatible land uses in order to enhance the protection of people and property on the ground. FAA Memorandum, *Interim Guidance on Land Uses Within a Runway Protection Zone*, provides information related to RPZ land use compatibility. This guidance, published in September 2012, clarifies that the following are considered incompatible land uses:

- Buildings and structures;
- Recreational land uses (golf courses, sports fields, amusement parks, and other places of public assembly, etc.);
- Transportation facilities such as railroads, public roads and highways, vehicular parking facilities;
- Fuel storage facilities;
- Hazardous material storage;
- Wastewater treatment facilities;
- Above-ground utility infrastructure (sub-stations, solar arrays)

Many airports have incompatible land uses within their RPZs, including Hillsboro Airport. It is the responsibility of the airport sponsor (Port of Portland) to pursue policies that will ultimately provide for compatible land uses within the RPZs. If the size or location of an RPZ changes, thus introducing new incompatible land uses into the RPZ, a detailed alternatives analysis must be undertaken and approved by FAA headquarters. Changes in the size and/or location of an RPZ is a function of an airfield project (i.e. runway extension), a change in the critical design aircraft, a new or revised instrument approach, or a local development proposal within the RPZ (i.e., new or modified public roadway). Existing RPZ land use incompatibilities are generally acceptable, with the understanding that as opportunities arise to clear the RPZ, the airport sponsor should pursue and/or support those.

### Runways

The length of Primary Runway 13R-31L is generally capable of accommodating nearly all aircraft in the general aviation fleet, including the largest business jets in production. Under certain conditions (hot days, wet runways, heavy loading), some aircraft may need a longer runway for standard operation. The analysis undertaken, utilizing flight planning manuals of specific large business jets which are based at the airport, determined that a runway length of 7,500 feet would fully meet the needs under most operating conditions, although it would also require resolving serious land use incompatibilities and significant infrastructure investments that could make a runway extension infeasible. The potential to extend the primary runway will be examined in the alternatives analysis.

Both the crosswind and the parallel runway are adequate and should be maintained at their current length and width.

### Taxiways

The FAA has issues new recommendations for taxiway design in the recent past. These include the following:

- Eliminate direct access from an apron to a runway;

- Eliminate wide expanses of pavement;
- Redesign the taxiway geometry for FAA identified Hot Spots and Runway Incursion Mitigation (RIM) locations;
- Provide clearly defined bays, typically with pavement islands, for hold bays.

Several areas on the airfield do not meet the current recommendations for taxiway and hold apron design. Alternatives will be considered for each of these areas. Of particular concern are the two Hot Spots and the RIM location at Taxiway A8. The non-standard design of the existing hold bay at Runway 31L contributes to the RIM issue. Alternatives for a more standard design of the hold apron will be considered in the alternatives.

### Instrument Approach Procedures (IAP)

Visibility minimums and cloud ceiling heights define the capability of an IAP to a runway. The following describes the current IAPs to each runway and future considerations:

- Runway 31R has a Category 1 (CAT 1) IAP with ½-mile visibility minimums. This is an excellent IAP, typically the best for a general aviation airport, and it should be maintained.
- Runway 31L has an IAP with 1-mile visibility minimums. As this is the most heavily utilized end of this runway, visibility minimums as low as ½-mile were considered. It was determined that visibility minimums lower than 1-mile would enlarge the RPZ, adding new incompatible land uses to the RPZ, which would require FAA approval. Because of this, visibility minimums are planned to remain at 1-mile for Runway 31L.
- Runway 2-20 does not have IAPs to either end. Ideally, a crosswind runway, such as this, would have an IAP with visibility minimums of not lower than 1-mile. Having IAPs to Runway 2-20 may increase traffic on this runway which would not adhere to the fly-friendly program at the airport which discourages use of this runway. As a result, no IAPs are planned for Runway 2-20.
- Runway 13L-31R is the training runway. Training operations typically occur in reasonably good weather. No IAPs are needed for this runway.

### Landside Requirements

Landside facilities are those necessary for handling aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs. This analysis focused on the need to support general aviation activity, which includes recreational flying, business aviation, charter, military, and some portions of air cargo and air ambulance activity. The calculated landside need by component over the next 20-years is:

- Aircraft Hangars: Approximately 100,000 square feet.
- Aircraft Parking Apron: Approximately 13,000 additional square yards.
- Auto Parking and Access: Approximately 431 new vehicle spaces (285 in the terminal area).
- General Aviation Terminal Building Services: FBOs are the primary provider of general aviation terminal services. This is planned to continue.

- Terminal Building: Consider construction of a new terminal building in a new location because of the age and location of the current facility.
- Airport Land Use Plan: Reserve all flight line property for aviation uses. Other land not needed for aviation purposes may be used for non-aviation revenue support development with FAA approval.

### Summary

A variety of alternatives for both the airside and landside will be considered in the alternatives chapter. From the alternatives process will emerge a recommended development concept for the airport.