Chapter 1 Introduction

The state of Oregon has an extensive aviation system spread throughout the state, providing valuable transportation options for the public which range from small emergency use airports in remote regions to the extensive passenger enplanements at Portland International. Managing such a large and diverse system of airports can be a daunting task if a comprehensive plan isn't in place to serve as a guide. In addition, with the ever increasing demands for project funding, it is imperative that the Oregon Department of Aviation (ODA) have a solid inventory, understanding of need, and plan for development for the entire state aviation system to meet the needs of existing and future development.

This report is a combination of three studies which will guide the development of the aviation system in Oregon for years to come. This document is organized into three distinct sections. *Chapter Two* summarizes the overall study goals, roles, and methodologies used to develop the study. *Chapter Three* is a summary of the various inventory efforts associated with the individual airport facilities. *Chapter Four* contains specific roles, recommendations, and funding options for the airport. This report will provide each community with information which can guide the development of each facility in an orderly, economic, and environmentally friendly manner.

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Chapter 2

The growing aviation demand in Oregon has prompted the Oregon Department of Aviation (ODA) to update the previous State Aviation System Plan published in 2000 and develop economic impact assessments that gauge the benefits of aviation to the state. Oregon is currently experiencing an unprecedented growth in population as well as aircraft operations. In order for the state to continue to provide a safe and efficient aviation system while accommodating growth, it is important to evaluate what facilities and capabilities are here today and what will be needed for tomorrow.

This chapter is organized into the following sections:

2.1 *Oregon Aviation Plan 2007* (*OAP 2007*) Study Components
2.2 Overall Study Goals & Objectives
2.3 Airport Functional Roles
2.4 Performance Measures
2.5 Summary

2.1 *Oregon Aviation Plan 2007 (OAP 2007)* Study Components

Three unique studies were originally undertaken which resulted in the development of the *OAP 2007*. This included a traditional state aviation system plan update which was developed to meet Federal Aviation Administration (FAA) requirements. An economic impact study was completed to assess the economic value of the aviation system at the state and local levels. The state aviation master plan component evaluated airports not included within the traditional state system plan criteria, as well as evaluating additional areas of interest or special consideration topics. The aforementioned goals were originally distributed over these three separate studies as outlined above, however, since there were numerous commonalities between the studies, they were combined into a single report for greater ease of use. Additional detail on each of these three studies is listed below. The information contained in the *OAP 2007* is the compilation of information, findings, and recommendations for all three studies.

2.1.a State Aviation System Plan

The *OAP 2007* addresses many different issues related to each individual airport and regional and state aviation system components. It is important to have a comprehensive understanding of the existing facilities, the need for future facilities, and the feasibility of reaching future goals. A state aviation system plan update is based upon sound evaluation of existing facilities, coupled with a clear understanding of the state and nation aviation interests, as well as the needs of the general public. The methodology used to evaluate the state system is consistent with that advocated for use by the FAA in Advisory Circular (AC) 150/5070-7 — *The Airport System*

Planning Process, issued November 10, 2004. All 97 public-use airports are listed in **Table 2.1 – Public-Use Airports in Oregon**. Their associated city, FAA classification, and their type of ownership are noted within the table.

The *OAP 2007* includes 66 public-use airports, which are part of the National Plan of Integrated Airport Systems (NPIAS). The study group of airports was based upon extensive coordination with the ODA and the FAA. The study group includes the 57 airports currently listed on the NPIAS, eight state-owned airports which serve either a recreational/tourism base or have more than two based aircraft, and one privately owned airport, which serves a significant number of based aircraft.

2.1.b State Aviation Master Plan

The state aviation master plan element of the *OAP 2007* was included to ensure a comprehensive evaluation of all public-use airports within Oregon and was funded independently by the ODA. There are an additional 31 public-use airports in Oregon that were not included in the federally funded state aviation system plan component (NPIAS). These airports were evaluated using the same methodology of the state aviation system plan to provide the ODA a complete inventory of the state's aviation system resources. In addition to the evaluation of individual airports, the state aviation master plan was designed to evaluate broader, more conceptual issues related to the entire state aviation system. The evaluation of these issues will help the ODA better manage and improve the state system of airports.

2.1.c State Aviation Economic Impact Study

With the movement towards a global economy, it is now recognized that airports are no longer just another mode of transportation. Airports are vital components of the economic engine that drives the state, regional, and local economic climate and it is essential the state system of airports support these economies by providing adequate facilities and services. This study will provide the ODA, individual communities, airports and governmental agencies, and politicians the opportunity to assess the economic value of the aviation system as a whole as well as each individual airport. All 97 public-use airports, as shown in **Table 2.1**, are included in the analysis.

Table 2.1 Public-Use Airports in Oregon

Associated City	*Airport Name*	*NPIAS Status*	*Ownership*
Albany	Albany Municipal Airport	Yes	Publicly Owned
Alkali Lake	Alkali Lake State Airport	No	Publicly Owned
Arlington	Arlington Municipal Airport	No	Publicly Owned
Ashland	Ashland Municipal Airport - Sumner Parker Field	Yes	Publicly Owned
Astoria	Astoria Regional Airport	Yes	Publicly Owned
Aurora	Aurora State Airport	Yes	Publicly Owned
Baker City	Baker City Municipal Airport	Yes	Publicly Owned
Bandon	Bandon State Airport	Yes	Publicly Owned
Beaver Marsh	Beaver Marsh Airport	No	Privately Owned
Bend	Bend Municipal Airport	Yes	Publicly Owned
Boardman	Boardman Airport	Yes	Publicly Owned
Brookings	Brookings Airport	Yes	Publicly Owned
Burns	Burns Municipal Airport	Yes	Publicly Owned
Cascade Locks	Cascade Locks State Airport	No	Publicly Owned
Cave Junction	Illinois Valley Airport	Yes	Publicly Owned
Chiloquin	Chiloquin State Airport	Yes	Publicly Owned
Christmas Valley	Christmas Valley Airport	Yes	Publicly Owned
Clearwater	Toketee State Airport	No	Publicly Owned
Condon	Condon State Airport – Pauling Field	Yes	Publicly Owned
Cornelius	Skyport Airport	No	Privately Owned
Corvallis	Corvallis Municipal Airport	Yes	Publicly Owned
Cottage Grove	Cottage Grove State Airport – Jim Wright Field	Yes	Publicly Owned
Crescent Lake	Crescent Lake State Airport	No	Publicly Owned
Creswell	Creswell Hobby Field	Yes	Publicly Owned
Culver	Lake Billy Chinook Airport	No	Privately Owned
Denmark	Cape Blanco State Airport	No	Publicly Owned
Enterprise	Enterprise Municipal Airport	No	Publicly Owned
Estacada	Valley View Airport	No	Privately Owned
Eugene	Eugene Mahlon Sweet Field	Yes	Publicly Owned
Florence	Florence Municipal Airport	Yes	Publicly Owned
Florence	Lake Woahink Seaplane Base - *closed*	No	Privately Owned
Gates	Davis Field	No	Privately Owned

Table 2.1 Public-Use Airports in Oregon (Continued)

Associated City	*Airport Name*	*NPIAS Status*	*Ownership*
Gleneden Beach	Siletz Bay State Airport	Yes	Publicly Owned
Gold Beach	Gold Beach Municipal Airport	Yes	Publicly Owned
Grants Pass	Grants Pass Airport	Yes	Publicly Owned
Hermiston	Hermiston Municipal Airport	Yes	Publicly Owned
Hillsboro	Stark's Twin Oaks Airpark	No	Privately Owned
Hood River	Ken Jernstedt Airfield	Yes	Publicly Owned
Hubbard	Lenhardt Airpark	No	Privately Owned
Imnaha	Memaloose Airport (USFS)	No	Publicly Owned
Independence	Independence State Airport	Yes	Publicly Owned
John Day	Grant County Regional Airport – Ogilvie Field	Yes	Publicly Owned
Joseph	Joseph State Airport	Yes	Publicly Owned
Klamath Falls	Klamath Falls Airport	Yes	Publicly Owned
La Grande	La Grande / Union County Airport	Yes	Publicly Owned
Lakeside	Lakeside Municipal Airport	No	Publicly Owned
Lakeview	Lake County Airport	Yes	Publicly Owned
Lebanon	Lebanon State Airport	Yes	Publicly Owned
Lexington	Lexington Airport	Yes	Publicly Owned
Madras	Madras City - County Airport	Yes	Publicly Owned
Malin	Malin Airport	No	Publicly Owned
Manzanita	Nehalem Bay State Airport	No	Publicly Owned
McDermitt	McDermitt State Airport	Yes	Publicly Owned
McKenzie Bridge	McKenzie Bridge State Airport	No	Publicly Owned
McMinnville	McMinnville Municipal Airport	Yes	Publicly Owned
Medford	Rogue Valley International – Medford Airport	Yes	Publicly Owned
Monument	Monument Municipal Airport	No	Publicly Owned
Myrtle Creek	Myrtle Creek Municipal Airport	Yes	Publicly Owned
Newberg	Chehalem Airpark	No	Privately Owned
Newberg	Sportsman Airpark	Yes	Privately Owned
Newport	Newport Municipal Airport	Yes	Publicly Owned
North Bend	Southwest Oregon Regional Airport	Yes	Publicly Owned
Oakridge	Oakridge State Airport	No	Publicly Owned
Ontario	Ontario Municipal Airport	Yes	Publicly Owned
Owyhee	Owyhee Reservoir State Airport	No	Publicly Owned

Table 2.1 Public-Use Airports in Oregon (Continued)

Associated City	*Airport Name*	*NPIAS Status*	*Ownership*
Pacific City	Pacific City State Airport	No	Publicly Owned
Paisley	Paisley Airport	No	Publicly Owned
Pendleton	Eastern Oregon Regional Airport at Pendleton	Yes	Publicly Owned
Pinehurst	Pinehurst State Airport	No	Publicly Owned
Portland	Portland Downtown Heliport	Yes	Publicly Owned
Portland	Portland International Airport	Yes	Publicly Owned
Portland	Portland Hillsboro Airport	Yes	Publicly Owned
Portland	Portland Mulino Airport	Yes	Publicly Owned
Portland	Portland Troutdale Airport	Yes	Publicly Owned
Powers	Powers Hayes Field	No	Publicly Owned
Prineville	Prineville Airport	Yes	Publicly Owned
Prospect	Prospect State Airport	No	Publicly Owned
Redmond	Redmond Municipal Airport - Roberts Field	Yes	Publicly Owned
Rome	Rome State Airport	No	Publicly Owned
Roseburg	Roseburg Regional Airport	Yes	Publicly Owned
Roseburg	George Felt Airport	No	Privately Owned
Salem	Salem McNary Field	Yes	Publicly Owned
Sandy	Country Squire Airpark	No	Privately Owned
Sandy	Sandy River Airport	No	Privately Owned
Santiam Junction	Santiam Junction State Airport	No	Publicly Owned
Scappoose	Scappoose Industrial Airpark	Yes	Publicly Owned
Seaside	Seaside Municipal Airport	Yes	Publicly Owned
Silver Lake	Silver Lake Strip (USFS)	No	Publicly Owned
Sisters	Sisters Eagle Air Airport	No	Privately Owned
Sunriver	Sunriver Airport	Yes	Privately Owned
The Dalles	Columbia Gorge Regional Airport – The Dalles Municipal Airport	Yes	Publicly Owned
Tillamook	Tillamook Airport	Yes	Publicly Owned
Toledo	Toledo State Airport	No	Publicly Owned
Vale	Miller Memorial Airpark	No	Publicly Owned
Vernonia	Vernonia Municipal Airport	No	Publicly Owned
Waldport	Wakonda Beach State Airport	No	Publicly Owned
Wasco	Wasco State Airport	Yes	Publicly Owned

2.2 Overall Study Goals & Objectives

The primary goal of the three studies is to provide a comprehensive plan which addresses all public-use airports in the state of Oregon and which identifies how to improve individual airports as part of the larger state system, to meet the needs of tourism, economic development, and transportation services for each community and the state as a whole.

This information provides the framework that supports informed decisions related to planning and developing the Oregon aviation system. The objectives of these studies are to:

- Assess aviation facilities: including airside, landside, and ground facilities and services, and general aviation needs
- Assess the economic value of airport facilities to the host community as well as the overall importance to the state
- Provide guidance for the development of the Oregon system of airports to meet the state's future aviation needs to ensure the safety and efficiency of the state aviation system
- Enhance communication opportunities among ODA, airport sponsors, local government, other state and federal agencies, and airport users so that the future development of the state aviation system can be more readily accomplished
- Provide each airport the direction to develop their airport to meet the needs of the state aviation system and local community as well as promote the airport for the purposes of economic development and tourism

Each of these individual studies is a portion of the overall process necessary to create a systematic approach to meeting the improvements which are identified, as well as proposing development strategies. This report provides a summary of the results of three planning studies undertaken by ODA to assess the condition of the existing aviation infrastructure, the economic benefit of the aviation industry, and the passenger demands for air service.

2.3 Airport Functional Roles

Each airport in the state impacts the overall operational capacity and efficiency of the state aviation system by supporting different types and levels of aviation activity. The types of facilities and services that should be provided at each category of airport were determined throughout the development of this plan. Airport functional roles have been broken out into five categories and the following criteria were utilized to classify the airports:

- Current airport infrastructure, facilities, and services
- Aviation activity levels and type of aviation demand served
- Ability to accommodate future growth
- Accessibility and geographic service area

The five airport functional roles are defined on the following page.

Category I – Commercial Service Airports

These airports support some level of scheduled commercial airline service in addition to a full range of general aviation aircraft. This includes both domestic and international destinations.

Category II – Urban General Aviation Airports

These airports support all general aviation aircraft and accommodate corporate aviation activity, including business jets, helicopters, and other general aviation activity. These airports' primary users are business related and service a large geographic region or they experience high levels of general aviation activity.

Category III – Regional General Aviation Airports

These airports support most twin- and single-engine aircraft and may also accommodate occasional business jets. These airports support a regional transportation need.

Category IV – Local General Aviation Airports

These airports support primarily single-engine, general aviation aircraft, but are capable of accommodating smaller twin-engine general aviation aircraft. These airports support local air transportation needs and special use aviation activities.

Category V – RAES (Remote Access/Emergency Service) Airports

These airports support primarily single-engine, general aviation aircraft, special use aviation activities, and access to remote areas or provide emergency service access.

Volume I of the *OAP 2007* displays all airports within their various categories.

2.4 Performance Measures

Airport performance measures were developed for the functional roles. These objectives were developed in cooperation with ODA and the state aviation system plan and master plan Advisory Committee. The purpose of the performance measures is to compare existing airport facilities to the minimum and desired facility criteria for each functional role. The performance measures should not be considered a requirement for development standards and any development would require additional support and justification through the airport master planning process as well as environmental documentation.

The performance measures for each functional role are defined below. Many airports have multiple runways; therefore, the primary runway for each airport was used to evaluate the facility against the performance measures.

Category I – Commercial Service Airports

These airports support some level of scheduled commercial airline service in addition to a full range of general aviation aircraft. This includes both domestic and international destinations.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located below.

Airside Facilities	Minimum Criteria	Desired Criteria
FAA - ARC	C-II	Varies
NPIAS	Yes	Yes
Based Aircraft	Not an Objective	Not an Objective
Runway Orientation	Varies by Airport	Varies by Airport
Runway Length	6,000 feet	Varies by Aircraft
Runway Width	100 feet	Varies by Aircraft
Runway Pavement Type	Bituminous, Concrete	Bituminous, Concrete
Runway Pavement Strength	Varies by Airport	Varies by Airport
Runway Pavement PCI	Varies by Airport	Varies by Airport
Taxiways	Full Parallel	Full Parallel/High Speed Exits
Approach Type	Precision	Precision
Visual Approach Aids	Both Runway Ends	Both Runway Ends
Instrument Approach Aids	One Runway End	Both Runway Ends
Runway Lighting	MIRL/HIRL	MIRL/HIRL
Taxiway Lighting	MITL/HITL	MITL/HIT

General Facilities	Minimum Criteria	Desired Criteria
Rotating Beacon	Yes	Yes
Lighted Wind Indicator	Yes	Yes
Weather Reporting	AWOS/ASOS	AWOS/ASOS
Hangared Aircraft Storage	75% of Based Aircraft	100% of Based Aircraft
Apron Parking/Storage	75% of Daily Transient	100% of Daily Transient
Terminal Building	Yes	Yes, Gates and Covered Walkways
Auto Parking	Moderate	Adequate
Fencing	Perimeter	Perimeter
Cargo	Small Handling Facility w/ Apron	Handling Facility w/ Apron
Deicing Facility	Yes	Yes, 24 hour

Services	Minimum Criteria	Desired Criteria
Fuel	100 LL & Jet A	100 LL & Jet A, 24 hour service
FBO	Full Service, 24 hour service	Full Service, 24 hour service
Ground Transportation	Rental Car, Taxi, or Other	Rental Car, Taxi, or Other
Food Service	Coffee Shop/Deli & Cold Foods	Restaurant
Restrooms	Yes	Yes
Pilot Lounge	Yes w/ Weather Reporting Station	Yes w/ Weather Reporting Station
Snow Removal	Yes	Yes
Telephone	Yes	Yes

Category II – Urban General Aviation

These airports support all general aviation aircraft and accommodate corporate aviation activity, including business jets, helicopters, and other general aviation activity. These airports' primary users are business related and service a large geographic region or they experience high levels of general aviation activity.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located below.

Airside Facilities	Minimum Criteria	Desired Criteria
FAA - ARC	C-II	Varies
NPIAS	Yes	Yes
Based Aircraft	Not an Objective	Not an Objective
Runway Orientation	Varies by Airport	Varies by Airport
Runway Length	5,000 feet	Varies by Aircraft
Runway Width	100 feet	Varies by Aircraft
Runway Pavement Type	Bituminous, Concrete	Bituminous, Concrete
Runway Pavement Strength	Varies by Airport	Varies by Airport
Runway Pavement PCI	Varies by Airport	Varies by Airport
Taxiways	Full Parallel	Full Parallel/High Speed Exit
Approach Type	Precision	Precision
Visual Approach Aids	One Runway End	Both Runway Ends
Instrument Approach Aids	Not an Objective	One Runway End
Runway Lighting	MIRL/HIRL	MIRL/HIRL
Taxiway Lighting	MITL/HITL	MITL/HITL

General Facilities	Minimum Criteria	Desired Criteria
Rotating Beacon	Yes	Yes
Lighted Wind Indicator	Yes	Yes
Weather Reporting	AWOS/ASOS	AWOS/ASOS
Hangared Aircraft Storage	75% of Based Aircraft	100% of Based Aircraft
Apron Parking/Storage	75% of Daily Transient	100% of Daily Transient
Terminal Building	Yes	Yes
Auto Parking	Moderate	Adequate
Fencing	Perimeter	Perimeter
Cargo	Designated Apron Area	Small Handling Facility w/ Apron
Deicing Facility	Not an Objective	Yes

Services	Minimum Criteria	Desired Criteria
Fuel	100 LL & Jet A	100 LL & Jet A, 24 hour service
FBO	Full Service	Full Service, 24 hour service
Ground Transportation	Offsite Rental Car, Taxi, or Other	Rental Car, Taxi, or Other
Food Service	Vending	Coffee Shop/Deli & Cold Foods
Restrooms	Yes	Yes
Pilot Lounge	Yes w/ Weather Reporting Station	Yes w/ Weather Reporting Station
Snow Removal	Yes	Yes
Telephone	Yes	Yes

Category III – Regional General Aviation

These airports support most twin- and single-engine aircraft and may also accommodate occasional business jets. These airports support a regional transportation need.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located below.

Airside Facilities	Minimum Criteria	Desired Criteria
FAA - ARC	B-II	Varies
NPIAS	Not an Objective	Not an Objective
Based Aircraft	Not an Objective	Not an Objective
Runway Orientation	Varies by Airport	Varies by Airport
Runway Length	4,000 feet	Varies by Aircraft
Runway Width	75 feet	Varies by Aircraft
Runway Pavement Type	Bituminous, Concrete	Bituminous, Concrete
Runway Pavement Strength	Varies by Airport	Varies by Airport
Runway Pavement PCI	Varies by Airport	Varies by Airport
Taxiways	Partial or Turnarounds	Full Parallel
Approach Type	Non-Precision	Precision
Visual Approach Aids	One Runway End	Both Runway Ends
Instrument Approach Aids	Not an Objective	Not an Objective
Runway Lighting	MIRL	MIRL/HIRL
Taxiway Lighting	MITL	MITL/HITL

General Facilities	Minimum Criteria	Desired Criteria
Rotating Beacon	Yes	Yes
Lighted Wind Indicator	Yes	Yes
Weather Reporting	AWOS/ASOS	AWOS/ASOS
Hangared Aircraft Storage	75% of Based Aircraft	100% of Based Aircraft
Apron Parking/Storage	30% of Daily Transient	50% of Daily Transient
Terminal Building	Small Meeting Area	Yes
Auto Parking	Minimal	Moderate
Fencing	Terminal Area	Perimeter
Cargo	Space on Existing Apron	Designated Apron Area
Deicing Facility	Not an Objective	Not an Objective

Services	Minimum Criteria	Desired Criteria
Fuel	100 LL & Jet A	100 LL & Jet A, 24 hour service
FBO	Full Service	Full Service, 24 hour service
Ground Transportation	Courtesy Car / Offsite Rental Car	Rental Car, Taxi, or Other
Food Service	Vending	Vending
Restrooms	Yes	Yes
Pilot Lounge	Yes w/ Weather Reporting Station	Yes w/ Weather Reporting Station
Snow Removal	Yes	Yes
Telephone	Yes	Yes

Category IV – Local General Aviation Airport

These airports support primarily single-engine general aviation aircraft but are capable of accommodating smaller twin-engine general aviation aircraft. These airports support local air transportation needs and special use aviation activities.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located below.

Airside Facilities	Minimum Criteria	Desired Criteria
FAA - ARC	B-I	B-II
NPIAS	Not an Objective	Not an Objective
Based Aircraft	Not an Objective	Not an Objective
Runway Orientation	Varies by Airport	Varies by Airport
Runway Length	3,000 feet Paved; 2,500 feet Turf	Varies by Aircraft
Runway Width	60 feet Paved; 120 feet Turf	Varies by Aircraft
Runway Pavement Type	Bituminous, Concrete, Turf	Bituminous, Concrete
Runway Pavement Strength	Varies by Airport	Varies by Airport
Runway Pavement PCI	Varies by Airport	Varies by Airport
Taxiways	Exits Needed	Partial or Turnarounds
Approach Type	Visual	Non-Precision
Visual Approach Aids	Not an Objective	One Runway End
Instrument Approach Aids	Not an Objective	Not an Objective
Runway Lighting	LIRL	MIRL
Taxiway Lighting	LITL	MITL

General Facilities	Minimum Criteria	Desired Criteria
Rotating Beacon	Yes	Yes
Lighted Wind Indicator	Yes	Yes
Weather Reporting	Not an Objective	AWOS/ASOS
Hangared Aircraft Storage	75% of Based Aircraft	100% of Based Aircraft
Apron Parking/Storage	30% of Daily Transient	50% of Daily Transient
Terminal Building	Not an Objective	Small Meeting Area
Auto Parking	Minimal	Minimal
Fencing	Not an Objective	Terminal Area
Cargo	Not an Objective	Not an Objective
Deicing Facility	Not an Objective	Not an Objective

Services	Minimum Criteria	Desired Criteria
Fuel	100 LL	100 LL & Jet A
FBO	Not an Objective	Limited
Ground Transportation	Not an Objective	Courtesy Car/Offsite Rental Car
Food Service	Not an Objective	Vending
Restrooms	Yes	Yes
Pilot Lounge	Not an Objective	Yes w/ Weather Reporting Station
Snow Removal	Yes	Yes
Telephone	Not an Objective	Yes

Category V – RAES (Remote Access/Emergency Services)

These airports support primarily single-engine general aviation aircraft, special use aviation activities, access to remote areas, or provide emergency service access.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located below.

Airside Facilities	Minimum Criteria	Desired Criteria
FAA - ARC	A-I	B-I
NPIAS	Not an Objective	Not an Objective
Based Aircraft	Not an Objective	Not an Objective
Runway Orientation	Varies by Airport	Varies by Airport
Runway Length	2,500 feet Turf	3,000 feet Paved; 2,500 feet Turf
Runway Width	60 feet Turf	60 feet Paved; 120 feet Turf
Runway Pavement Type	Turf, Gravel	Bituminous, Concrete
Runway Pavement Strength	Varies by Airport	Varies by Airport
Runway Pavement PCI	Varies by Airport	Varies by Airport
Taxiways	Not an Objective	Exits Needed to an apron
Approach Type	Visual	NPIA
Visual Approach Aids	Not an Objective	One Runway End
Instrument Approach Aids	Not an Objective	One Runway End
Runway Lighting	Not an Objective	LIRL
Taxiway Lighting	Not an Objective	LITL

General Facilities	Minimum Criteria	Desired Criteria
Rotating Beacon	Not an Objective	Yes
Lighted Wind Indicator	Not an Objective	Yes
Weather Reporting	Not an Objective	AWOS/ASOS
Hangared Aircraft Storage	Not an Objective	75% of Based Aircraft
Apron Parking/Storage	Not an Objective	100 X 100 foot Apron
Terminal Building	Not an Objective	Small Meeting Area
Auto Parking	Not an Objective	Minimal
Fencing	Not an Objective	Limited
Cargo	Not an Objective	Not an Objective
Deicing Facility	Not an Objective	Not an Objective

Services	Minimum Criteria	Desired Criteria
Fuel	Not an Objective	100 LL
FBO	Not an Objective	Not an Objective
Ground Transportation	Not an Objective	On-Call Service
Food Service	Not an Objective	Not an Objective
Restrooms	Not an Objective	Yes
Pilot Lounge	Not an Objective	Yes
Snow Removal	Not an Objective	Yes
Telephone	Not an Objective	Yes

Table 2.2 *OAP 2007* Recommended Airport Classification

Category I – Commercial Service Airports
Eastern Oregon Regional Airport at Pendleton
Eugene Airport - Mahlon Sweet Field
Klamath Falls International Airport
Portland International Airport
Redmond Municipal Airport - Roberts Field
Rogue Valley International - Medford Airport
Salem McNary Field
Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports
Astoria Regional Airport
Aurora State Airport
Bend Municipal Airport
Corvallis Municipal Airport
McMinnville Municipal Airport
Newport Municipal Airport
Portland Downtown Heliport
Portland - Hillsboro Airport
Portland - Troutdale Airport
Scappoose Industrial Airpark

Category III – Regional General Aviation Airports
Ashland Municipal Airport - Sumner Parker Field
Baker City Municipal Airport
Bandon State Airport
Burns Municipal Airport
Columbia Gorge Regional - The Dalles
Grant County Regional Airport
Grants Pass Airport
Hermiston Municipal Airport
La Grande / Union County Airport
Lake County Airport
Ontario Municipal Airport
Roseburg Regional Airport
Tillamook Airport

Category IV – Local General Aviation Airports
Albany Municipal Airport
Boardman Airport
Brookings Airport
Chehalem Airpark
Christmas Valley Airport
Condon State Airport - Pauling Field
Cottage Grove State Airport - Jim Wright Field
Creswell Hobby Field Airport
Florence Municipal Airport
Gold Beach Municipal Airport
Illinois Valley Airport
Independence State Airport
Joseph State Airport
Ken Jernstedt Airfield
Lebanon State Airport
Lenhardt Airpark

Category IV – (Continued)
Lexington Airport
Madras/City-County Airport
Myrtle Creek Municipal Airport
Portland - Mulino Airport
Prineville Airport
Seaside Municipal Airport
Siletz Bay State Airport
Sisters Eagle Air Airport
Sportsman Airpark
Sunriver Airport
Wasco State Airport

Category V – Remote Access/Emergency Service Airports
Alkali Lake State
Arlington Municipal
Beaver Marsh
Cape Blanco State Airport
Cascade Locks State Airport
Chiloquin State Airport
Country Squire Airpark
Crescent Lake State Airport
Davis Field
Enterprise Municipal
George Felt
Lake Billy Chinook
Lake Woahink Seaplane Base - *Closed*
Lakeside Municipal Airport
Malin
McDermitt State Airport
McKenzie Bridge State
Memaloose (USFS)
Miller Memorial Airpark
Monument Municipal
Nehalem Bay State Airport
Oakridge State
Owyhee Reservoir State
Pacific City State Airport
Paisley
Pinehurst State Airport
Powers Hayes Field
Prospect State Airport
Rome State
Sandy River
Santiam Junction State
Silver Lake Strip (USFS)
Skyport
Stark's Twin Oaks Airpark
Toketee State
Toledo State Airport
Valley View
Vernonia Municipal Airport
Wakonda Beach State

Source: Mead & Hunt, Inc.

2.5 Summary

Each of these study efforts will provide valuable information to the state as well as the individual airports as stand alone documents. Combined together, these studies provide a comprehensive resource for airport development throughout the entire state.

Chapter 3

As outlined in the Federal Aviation Administration (FAA) Advisory Circular 150/5070-7, *The Airport System Planning Process*, the process of system planning for aviation is based upon the collection and evaluation of information about each airport within the overall system and the area they serve. The inventory task is accomplished through physical inspection of the facilities, field interviews and surveys, telephone conversations, and review of previous studies.

The objective of the inventory task is to document existing conditions, thereby providing the background information essential to the development and recommendations for the *Oregon Aviation Plan 2007 (OAP 2007)*. The inventory information covers a broad spectrum and includes information on the following elements of the Airport:

- Airside and landside facilities and their uses
- Navigational aids
- Auxiliary support facilities and services
- Environmental observations
- Air traffic activity data
- Survey analyses

A large volume of data was collected, reviewed, and analyzed during the inventory effort. This chapter presents an overall summary of this information and is organized in the following sections:

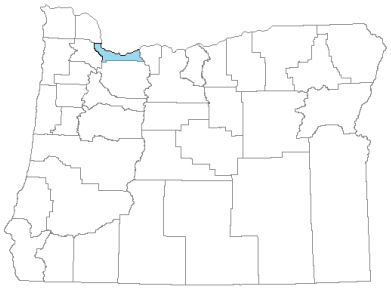
3.1 General Airport Description and Location
3.2 Existing Airport Facilities
3.3 Current and Forecast Demand
3.4 Survey Responses

3.1 General Airport Description and Location

Portland Troutdale Airport is located one mile north of the city of Troutdale, 10 miles east of Portland, within Multnomah County (**Figure 3.1**). Multnomah County is bounded by the Columbia River to the north, Washington County to the west, Clackamas County to the south, and Hood River County to the east. Access to the Airport is provided by Interstate 84 which serves as a critical transportation link to the rest of the state.

According to the State of Oregon Office of Economic Analysis, Multnomah County contained 687,073 residents in 2005, up 3.7 percent from 662,400 in 2000. Oregon has grown from 3,436,750 residents in 2000 to 3,618,200 residents in 2005, up 5.3 percent. This indicates that Multnomah County is growing at a slower pace than the state as a whole.

Figure 3.1
Multnomah County Location Map



The Airport is owned and operated by the Port of Portland and is included in the National Plan of Integrated Airport Systems (NPIAS), making this airport eligible for federal funding. Portland Troutdale Airport, designated by the airport code TTD, occupies approximately 284 acres of land.

3.2 Existing Airport Facilities

Existing airport facilities are presented in three categories: airside, landside, and support facilities. The airside facilities include such areas as the runways, taxiways, aprons, aircraft parking and storage areas, airfield lighting, and navigational aids. The landside facilities include items such as the airport terminal building, vehicular access, auto parking, and support facilities. The support facilities may include fuel facilities, aircraft rescue and firefighting (ARFF) facilities, airport maintenance, snow removal equipment (SRE) and facilities, and utilities. The existing airside, landside, and support facilities are detailed below.

3.2.a Airside Facilities

The airfield consists of many components that are required to accommodate safe aircraft operations. This consists of runways, taxiways, and an apron network; the visual and electronic navigational aids associated with runways; runway protection zones; and general aviation facilities.

Runways. Portland Troutdale Airport has a single paved runway, Runway 07-25. The runway is 5,399 feet long and 150 feet wide. The Airport currently has an Airport Reference Code (ARC) of B-II. Additional runway information such as pavement strength and condition are located in **Section 4.2**, *Definition of Airport System Role*.

Taxiways. The existing taxiway system at the Airport consists of dual parallel taxiways and all associated connecting, access, and entrance/exit taxiways.

Taxiway A is a full parallel taxiway, with a bituminous surface, is 50 feet wide, and provides runway access from the north landside development.

Taxiway B is a full parallel taxiway, with a bituminous surface, is 50 feet wide, and provides runway access from the south landside development.

Aprons. General Aviation aircraft aprons are located on both the north and south sides of the runway. On the south side, there are two designated apron areas for general aviation. They are located north of the terminal building and east of the T-Hangar development. On the north side, there are three designated apron areas for general aviation. They are located south of the U.S. Government Warehouse, south of the aircraft wash area, and in front of the air traffic control tower.

A Transient Corporate apron is located on the north side of the field adjacent to Gorge Winds Aviation.

Lighting and Navigational Aids. The Airport lighting and navigational systems extend the Airport's usefulness into night and/or poor visibility conditions.

Pavement edge lighting consists of light fixtures located near the edge of the runway/taxiway to define the lateral limits of the pavement. This lighting is essential for the safe and efficient movement of aircraft during periods of darkness or poor visibility. The runway is equipped with medium intensity runway lighting (MIRL). All taxiways at the Airport are equipped with medium intensity taxiway lighting (MITL).

A four-light visual approach slope indicator (VASI) is installed on both approach ends of Runway 07-25. A VASI system provides a pilot with a red, red/white, or white signal that indicates if the pilot is below, above, or on the glide path to the runway.

Runway end identifier lights (REILs) consist of two synchronized flashing lights located near the runway threshold which provide rapid and positive identification of the approach end of a runway. REILs help pilots identify the end of a runway especially when other light sources obscure other runway lighting. REILs are installed on both runway ends.

The Airport also provides navigational systems which provide the pilots of properly equipped aircraft with point-to-point guidance and position information. The systems available to pilots using the Airport include nondirectional beacon (NDB) and global positioning system (GPS).

The NDB transmits nondirectional radio signals whereby the pilot of properly equipped aircraft can determine the bearing to or from the NDB facility and then track to or from the station. Pilots flying to or from the Airport can utilize the NDB located approximately six miles northeast of the Airport.

GPS uses satellites placed in orbit around the earth to transmit electronic signals, which properly equipped aircraft use to determine altitude, speed, and position information. GPS allows pilots to

navigate to any airport in the country, and they are not required to navigate using a specific navigational facility.

At Portland Troutdale Airport there are two published instrument approaches which utilize the navigational aids noted above. The instrument approaches include:

- GPS-A approach to Runway 07
- GPS-A circling approach to Runway 25
- NDB approach to Runway 07

In addition to lighting and navigational aids, the Airport also is equipped with an automated surface observation system (ASOS). The ASOS provides automated aviation weather observations 24 hours a day. This system updates weather observations every minute, continually reporting significant weather changes as they occur. This system also reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting, and density altitude (airfield elevation corrected for temperature).

3.2.b Landside Facilities

General Aviation Facilities. Full general aviation services at the Airport are provided by Gorge Winds Aviation; however, there are more than twelve limited service fixed based operators (FBOs) at the Airport. Gorge Winds Aviation offer aviation fuel, aircraft parking (ramp and tie-down), flight training, aircraft rental, aircraft maintenance, pilot supplies, catering, rental cars, and courtesy transportation.

Hangar space at the Airport is comprised of corporate hangars and both open and closed T-Hangars. There are approximately 164 hangar facilities at the Airport.

3.2.c Support Facilities

Parking. The Airport has moderate automobile parking.

Fuel Facilities. The Airport has both 100 LL and Jet A fuel service provided by Gorge Winds Aviation.

Portland Troutdale Airport

Source: 2003 Oregon Airport Directory

3.3 Current and Forecast Demand

This element of the report provides projections of future aviation demand at the Airport. Projections of short-, intermediate-, and long-term activity at the Airport are based on 5-, 10-, and 20-year milestones, using 2005 as the base year of analysis as it is the most recent year for which a full year of activity data is currently available.

Projections of aviation demand are an important element of the system planning process as they provide the basis for several key analyses, including:

- Determining the role of the Airport with respect to the type of aircraft to be accommodated in the future
- Evaluating the capacity of existing airport facilities and their ability to accommodate projected aviation demand
- Estimating the extent of airside and landside improvements required in future years to accommodate projected demand

This analysis uses the most recent aircraft activity available to project future levels of aviation demand through the year 2025. The forecast analysis contained in this section includes methodologies based on historical aviation trends at the Airport, as well as other socioeconomic trends related to the state of Oregon. National projections of aviation activity developed by the FAA were also reviewed within the context of this forecast analysis, where available.

This section provides discussions of the methodologies and findings used for projecting passenger enplanements, aircraft operations, and based aircraft at the Airport. The projections of aviation demand are documented below in **Table 3.1**.

3.3.a Forecasting Approach

There are a number of different forecasting techniques available for use in the projection of aviation activity, ranging from subjective judgment to sophisticated mathematical modeling. Due to the fact that a large number of variables affect a facility plan, it is important that each variable be considered in the context of its use in the plan. For variables that significantly affect the nature and extent of facilities, redundancy has been achieved through the utilization of several forecasting techniques so as to minimize the uncertainty associated with the range of the forecast variable.

The analysis includes the assessment of historical trends on aviation activity data at the local, regional, and national level. Aviation activity statistics on such items as passenger enplanements, aircraft operations, and based aircraft are collected, reviewed, and analyzed. Similarly, socioeconomic factors such as population and income are analyzed for the effect they may have on aviation growth. The comparison of relationships among these various indicators provides the initial step in the development of realistic forecasts of aviation demand.

The following general methodologies were used in projecting various components of aviation demand at the Airport.

Time Series Methodology. Historical trend lines and linear extrapolation are some of the most widely used methods for forecasting. These techniques utilize time-series types of data and are most useful for a pattern of demand that demonstrates a historical relationship with time. In utilizing this technique, an assumption is made that the same factors that have influenced demand will continue to affect future demand. While this is a rather broad assumption, it often provides a reliable benchmark for comparing the results of other analyses. Linear extrapolation established a linear trend by fitting a straight line using the least squares method to known historical data. Historic trend lines, as utilized in these analyses, examine historic compounded annual growth rates and extrapolate future data values by assuming a similar compounded annual growth rate in the future.

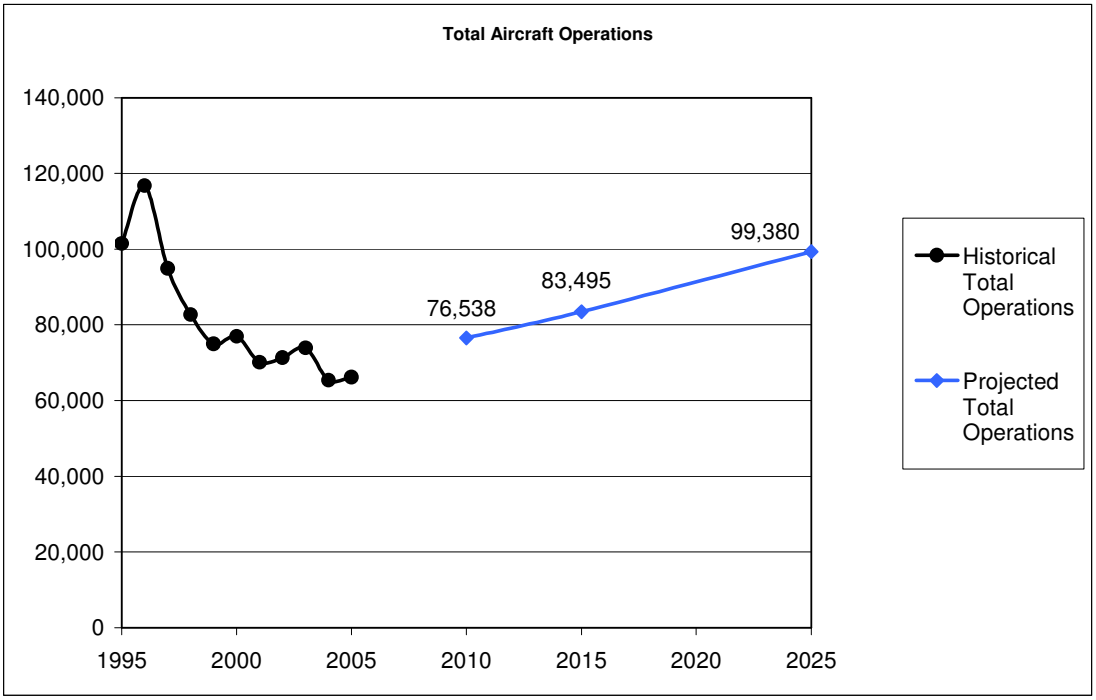
Market Share Methodology. Market share, ratio, or top-down models are utilized to scale large-scale aviation activity down to a local level. Inherent to the use of such a method is the demonstration that the proportion of the large-scale activity that can be assigned to the local level is a regular and predictable quantity. This method has been used extensively in the aviation industry for aviation demand forecasting at the local level. Its most common use is in the determination of the share of total national traffic activity that will be captured by a particular region or airport. Historical data is examined to determine the ration of local airport traffic to total national traffic. From outside data sources, in this case the FAA, projected levels of national activity are determined and then proportioned to the Airport based upon the observed and projected trends.

Socioeconomic Methodology. Socioeconomic or correlation analysis examines the direct relationship between two or more sets of historical data. In this case, socioeconomic analyses have been performed, relating historical aviation activity to historical population levels within the Airport region. Based upon the observed and projected correlation between historical aviation activity and the socioeconomic data sets, future aviation activity projections are developed based upon the projected socioeconomic data sets. In this case, projected population levels were obtained from Woods & Poole Economics, Inc. (W&P), an independent firm that specializes in long-term economic and demographic projections. This forecasting methodology is subject to how accurately an airport's activity reflects local demographic makeup.

Table 3.1 Summary of Aviation Projections

Portland-Troutdale Airport (TTD)

Year	Operations				Based Aircraft
	Commercial Air Carrier	General Aviation	Military	Total	
Historical:					
1995	2,305	97,158	2,025	101,488	176
1996	7,199	105,888	3,688	116,775	176
1997	6,311	86,989	1,615	94,915	177
1998	6,703	74,267	1,754	82,724	177
1999	1,109	72,082	1,834	75,025	177
2000	9	74,138	2,828	76,975	177
2001	68	68,537	1,524	70,129	177
2002	320	69,248	1,797	71,365	193
2003	842	72,608	484	73,934	197
2004	1,545	63,638	247	65,430	177
2005	2,640	63,199	386	66,225	196
Projected:					
2010	2,821	73,331	386	76,538	214
2015	3,015	80,095	386	83,495	227
2025	3,443	95,552	386	99,380	252
CAGR (2005-2025)	*1.34%*	*2.09%*	*0.00%*	*2.05%*	*1.27%*



Source: Historical Enplanements, Operations - FAA Terminal Area Forecast System (TAF)
Historical Based Aircraft - FAA Terminal Area Forecast System (TAF)
Projections - Mead & Hunt, Inc.

3.4 Survey Responses

As previously discussed, surveys were a critical part of the data collection effort. Below is a summary of the surveys and staff interviews that provide the context that surrounds the *OAP 2007*. Surveys were sent to state, local, and county government officials, businesses, airport managers, pilots, chamber of commerce members, and host communities to solicit input of the state aviation system from diverse interests groups.

3.4.a Community Information

Currently, manufacturing is noted as the primary industry in the Troutdale area. The Airport is perceived to be a valuable economic asset to the community by survey respondents.

3.4.b Economic Development

The importance of aviation for growth from an economic perspective is ranked very high in survey results. Respondents noted that airport upgrades would increase economic growth for the surrounding communities. It was identified that the most important item that Troutdale Airport could do to promote economic growth is to innate an executive shuttle service. Also, it was perceived that the impact to the economy would be negative if the Airport was no longer available. Respondents were unsure if the city of Troutdale and Multnomah County would be supportive of a funding mechanism to finance future airport developments.

3.4.c Airport Development and Use

The airport users for Troutdale Airport are recreation, local business, tourism, out-of-town business, and agriculture. Surrounding communities rely on the Airport for fire protection and the local news stations are an important airport user. There are perceived operational limitations which include:

- Navigational aids
- Terminal amenities
- Auto parking/storage
- Runway length
- Availability of fuel
- Inclement weather significantly reduces the “usability” of the Airport

3.4.d Air Shuttle

Upon the request of ODA, the feasibility of a state operated and subsidized air shuttle service is being investigated. This air shuttle service would link various communities within the state. Traditionally, air shuttle services do not compete with regular commercial service, their intent is to commute between smaller local communities instead of large regional airports; therefore, they are

viewed as a supplement to air service for airports. The air shuttle concept is not intended to compete with scheduled air service.

Survey respondents noted that some form of an air shuttle service would fulfill a community need and would likely promote economic growth for communities. Businesses, local residents, higher education, government services, and transportation of cargo are a few of the segments that may benefit from the air shuttle service. The order of importance of issues for travelers is listed in survey results as schedule, cost, comfort, reliability, and type of aircraft. Three of the destinations within the state that users are expected to want to travel to include Salem, Eugene, and Bend. The city of Troutdale and Multnomah County would not be willing to "guarantee" seats for their community on the air shuttle service.

3.5 Summary

Providing a comprehensive summary of the existing airport facility is an essential part of the planning process. The information contained in this chapter provides the foundation for the recommendations found in *Chapter Four*.

Chapter 4

As discussed, the inventory and forecasts provide a basis from which recommendations can be made for future development. The recommendations illustrated within the *Oregon Aviation Plan 2007 (OAP 2007)* reflect the Oregon Department of Aviation's (ODA) desire to create a comprehensive aviation system that adequately services the aviation needs of the state and the various interest groups associated with this resource. This chapter is organized in the following sections:

4.1 Airport Facility and Service Needs
4.2 Definition of Airport System Role
4.3 Economic Impact Analysis

4.1 Airport Facility and Service Needs

A primary focus of this report is to identify and evaluate airside, landside, and other general facility needs and deficiencies at the Airport utilizing information collected through the physical inspection of the facility, field interviews and surveys, telephone conversations, review of previous studies, and review of appropriate airport records. The following section presents the recommended airport facility and service needs identified during the study process.

4.1.a Recommendations Based on Performance Criteria

The Portland Troutdale Airport has been classified as a *Category II – Urban General Aviation* airport and should provide appropriate facilities and services commensurate with its system role. The existing airport facilities were compared to the minimum and desired criteria for a Category II airport which identified the following airport facility and service needs:

- Develop Precision Instrument Approach

4.1.b General Observations and Recommendations

Taxiway B should be relocated to provide adequate runway / taxiway separation. The purpose for this project would be to ensure aircraft wing tips do not hit one another while one is taxiing and the other is utilizing the runway.

4.1.c Airport Capital Improvement Program

The Airport Capital Improvement Program (ACIP) is the primary planning tool the FAA utilizes to identify, prioritize, and assign funds to capital airport development and associated capital needs for all NPIAS airports. The following projects are included in the 2007 ACIP:

- Construct taxiway
- Install airfield guidance signs
- Remove obstructions
- Improve airport drainage
- Construct heliport/helipad
- Construct apron
- Rehabilitate taxiway
- Rehabilitate apron
- Update airport master plan study
- Improve access road

4.2 Definition of Airport System Role

Category II – Urban General Aviation
These airports support all general aviation aircraft and accommodate corporate aviation activity, including business jets, helicopters, and other general aviation activity. These airports primary users are business related and service a large geographic region or they experience high levels of general aviation activity.

Performance criteria were evaluated by analyzing each airport's primary runway. A complete description of airport facilities is located in **Section 3.2**, *Existing Airport Facilities*.

Airside Facilities	**Existing Facilities**	**Minimum Criteria**	**Desired Criteria**
FAA - ARC	B-II	C-II	Varies
NPIAS	Yes	Yes	Yes
Based Aircraft	203	Not an Objective	Not an Objective
Runway Orientation	07/25	Varies by Airport	Varies by Airport
Runway Length	5,399 feet	5,000 feet	Varies by Aircraft
Runway Width	150 feet	100 feet	Varies by Aircraft
Runway Pavement Type	Bituminous	Bituminous, Concrete	Bituminous, Concrete
Runway Strength	19,000 (SW) 25,000 (DW)	Varies by Airport	Varies by Airport
Runway Pavement PCI	N/A	Varies by Airport	Varies by Airport
Taxiways	Dual Parallel, High Speed Exits	Full Parallel	Full Parallel/High Speed Exit
Approach Type	Non-Precision	Precision	Precision
Visual Approach Aids	V4L, REIL (07/25)	One Runway End	Both Runway Ends
Instrument Approach Aids	NDB, GPS (07/25)	Not an Objective	One Runway End
Runway Lighting	MIRL	MIRL/HIRL	MIRL/HIRL
Taxiway Lighting	MITL	MITL/HITL	MITL/HITL

General Facilities	**Existing Facilities**	**Minimum Criteria**	**Desired Criteria**
Rotating Beacon	Yes	Yes	Yes
Lighted Wind Indicator	Yes	Yes	Yes
Weather Reporting	ASOS	AWOS/ASOS	AWOS/ASOS
Hangared Aircraft Storage	164	75% of Based Aircraft	100% of Based Aircraft
Apron Parking/Storage	100	75% of Daily Transient	100% of Daily Transient
Terminal Building	Yes	Yes	Yes
Auto Parking	Moderate	Moderate	Adequate
Fencing	Perimeter	Perimeter	Perimeter
Cargo	Designated Apron Area	Designated Apron Area	Small Handling Facility w/ Apron
Deicing Facility	No	Not an Objective	Yes

Services	**Existing Facilities**	**Minimum Criteria**	**Desired Criteria**
Fuel	100 LL & Jet A	100 LL & Jet A	100 LL & Jet A, 24 hour service
FBO	Full Service	Full Service	Full Service, 24 hour service
Ground Transportation	Onsite Rental Car, Taxi, Other	Offsite Rental Car, Taxi or Other	Rental Car, Taxi, or Other
Food Service	Vending	Vending	Coffee Shop/Deli & Cold Foods
Restrooms	Yes	Yes	Yes
Pilot Lounge	Yes w/ Weather Station	Yes w/ Weather Station	Yes w/ Weather Station
Snow Removal	Yes	Yes	Yes
Telephone	Yes	Yes	Yes

4.3 Economic Impact Analysis

The economic impact analysis of airports in Oregon was developed for each airport, measuring economic impacts of airport facilities, within regions and throughout the state. Airports that are part of the Port of Portland were not part of this study, except for the regional-based analysis of aviation dependent businesses. This study used the five regions of *ConnectOregon* to measure local/regional economic impacts of airports and for dependent non-aviation businesses. The regions are shown by the accompanying map.

Total economic impacts are the sum of on-airport economic activities, off-airport spending by visitors who arrive by air, and spin-off impacts (multiplier effect). Airport impacts are provided by region and state to show the contribution of each airport to the regional and state economies. In addition, aviation dependent impacts are provided by region to show the importance of airports in each region to non-aviation businesses. All impacts reported represent a base year of 2005. Each type of impact is defined in the following paragraphs.

On-Airport direct impacts represent economic activities that occur on airport grounds. By separating aviation related activities from non-aviation activities, The *OAP 2007* illustrates the regional economic contribution of aviation by airport in the regional and state economies, as well as the overall impact of each airport as a facility. Aviation related activities are those that would not occur without the airport, such as airlines, fixed base operators (FBO), government, and other tenants located at the airport or directly dependent on the airport. This category also includes airport management and other individuals employed directly by the airport, as well as retail and service operations for passengers, pilots, and other airport employees. In some cases, airports provide land or building space for companies that are not affiliated with aviation. These tenants are not related to the aviation mission of the airport, but are using the facility as a convenient and affordable business or industrial parks.

Off-Airport visitor spending (Direct Impacts) are expenditures made by air travelers who are visiting from outside the region, and occurs off the airport-in the regional economy. Visitor spending includes lodging, food, entertainment, retail purchases and ground transportation (retail purchases and on-airport car rentals are captured by on-airport impacts). Visitor spending is analyzed for commercial passengers as well as for general aviation pilots and passengers. Visitors flying into Oregon from another state or nation contribute to the airport's regional economy as well as to the state. However, passengers flying within Oregon, from one region to another, contribute to the region of their destination airport, but are not bringing additional money into Oregon. Therefore, in regions with air carrier airports, the direct impact of visitor spending for the region is higher than the impact of visitor spending for the state.

Airport dependent impacts represent area businesses that are dependent on an airport for incoming and outgoing, and for business travel. These businesses may relocate or suffer substantial loss if the airport were not available. This impact is not included in traditional economic impact methodology and is analyzed and reported by region for this study. Thus the

economic dependence of a region on aviation represents the cumulative impacts of all airports within a region. The analysis is provided as an indicator of the importance of airports to regional economies.

Spin-off impacts (Multiplier Affect) are calculated using impact multipliers, which are used to reflect the recycling of dollars through both the regional and state economy. A dollar spent in the economy does not disappear; rather, it continues to move through the local economy in successive rounds until it is incrementally exported from the community. As the expenditures described above are released into the economy, they circulate among other industry sectors, creating successive waves of additional economic benefit in the form of jobs, payroll, and output (expenditures). These successive rounds of spending are known as spin-off impacts, and help to represent the full impact of each dollar spent in a region. An example would be an airport employee spending his or her salary for housing, food, and other services. Spending occurring outside the area is considered economic leakage and is not reflected in the multiplier. Spin-off impacts are often reported as indirect and induced impacts. Indirect impacts reflect the purchase of goods and services by businesses. Induced impacts reflect worker making consumer purchases.

The project team analyzed the economic contributions of 91 airports under the jurisdiction of the Oregon Department of Aviation (ODA). In addition, the Port of Portland commissioned a separate economic impact studies of Portland International Airport, Portland Hillsboro Airport and Portland Troutdale Airport, which are administered by the Port. The sum of economic impacts derived from the OAP 2007 and the Port of Portland studies account for economic impacts generated by all public use airports in Oregon.

4.3.a Contribution of Airports to the Economy of Oregon

As shown in **Table 4.1**, Oregon public-use airports contributed a total economic impact of $8.3 billion to the state economy, including $3 billion from ODA airports and more than $5 billion from Port of Portland airports. Following Table 4.1 is a summary entitled *Airport Role in Economy*, which illustrates the individual airport economic impact.

Additional study highlights include:

- Oregon ODA public-use airports, including airport tenants, directly employ 7,000 people for aviation related activities and expend $259 million in wages
- Oregon ODA public-use airport employees and tenants earned an average annual salary of $36,000 per year for aviation activities and $35,000 per worker, when including non-aviation jobs
- Off-airport visitor industry employees earn an average annual salary of $15,000 per year

Table 4.1 Economic Contribution of Airports to the Oregon Economy

	Jobs	Wages	Business Sales
Direct Effects of ODA On-Airport Aviation Activities and Visitor Spending			
On-Airport, including FBO & air related tenants	7,273	$262,147,000	$827,475,000
Off-Airport: visitor spending	6,762	$101,641,000	$324,097,000
Subtotal of Direct Effects From ODA Airports	14,035	$363,788,000	$1,151,572,000
ODA Spin-off Effects of Supplier and Income Re-spending			
Due to On-Airport Aviation	12,029	$305,851,000	$883,988,000
Due to Visitor Spending	3,558	$94,459,000	$310,756,000
Subtotal of Spin-off Effects	15,587	$400,310,000	$1,194,744,000
Total ODA Airport Aviation Related Impacts	29,621	$764,098,000	$2,346,316,000
ODA Airport Generated Impacts of Non-Aviation Activities			
On Airport Non-Aviation Activities	2,177	$67,294,000	$320,530,000
Spin-offs due to Non-Aviation Activities	3,374	$96,239,000	$332,084,000
Total ODA Airport Non-Aviation Impacts	5,551	$163,533,000	$652,614,000
ODA Airports Total Aviation and Non-Aviation Related	35,172	$927,631,000	$2,998,930,000
Port of Portland Totals*			
Airport Generated	20,005	$941,244,000	$3,533,456,000
Visitor Generated	39,418	$907,718,000	$1,740,344,000
Total Impact Port of Portland Airports	59,423	$1,848,862,000	$5,273,800,000
Grand Total – All Airports	94,595	$2,776,493,000	$8,272,630,000

Source: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.
Note: Numbers may not add due to rounding.
*Port of Portland Airports include Portland International Airport, ,Portland Hillsboro Airport and Portland Troutdale Airport. Data for the Port of Portland airports was provided by the Port.