Oregon Department of Transportation
Aeronautics Division

# Oregon Aviation Plan

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## Oregon Aviation Plan

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# Preface

The 1999 Oregon Aviation Plan defines policies and investment strategies for Oregon's public-use aviation system for the next 20 years. It further refines the goals and policies of the Oregon Transportation Plan and is part of Oregon's Statewide Transportation Plan. The Aviation Plan has five main sections:

**The Introduction** describes the major issues identified and the planning context.

**The Importance of Aviation to Oregon** presents the social and economic importance of Oregon's public use airports and shows aviation's importance for the state's continued prosperity.

**Oregon's Aviation System** provides an overview of the airports in the system and the jurisdictional responsibilities at all levels of government for the management, maintenance, operation, and funding of Oregon's airports. The plan's categorization of airports based on functional role and service criteria is presented.

The **Policy Element** presents the policies and recommended actions developed during the planning process – providing the "vision" for Oregon's aviation system. These are actions to be implemented by Aeronautics in coordination with state and local agencies and the Federal Aviation Administration.

The **System Element** presents system level service measures and needs analysis based on these measures. System level needs and revenues are addressed and funding gaps to meet the needs are analyzed. A core system of airports targeted for preservation and development resources are identified.

**System Investment Strategies** sets plan priorities to guide implementation. This provides guidance for identifying investments and programs.

Creation of the Aviation Plan's policies and investment strategies was guided by the Aviation Plan Advisory Committee (APAC). The 28 committee members represent airport sponsors, cities, counties, ports, federal and state agencies, user and industry groups, and the Oregon Department of Transportation.

# Executive Summary

## Oregon's Airport System

Oregon's system of airports[1] provides a crucial component of the state's transportation network. The public-use airports play a key role in ensuring economic growth and livability throughout the state. Airline passengers, overnight mail, air cargo, air ambulance, forest fire suppression, crop spraying, military use, and aviation-related businesses all depend on an adequate network of airports.

Oregon will continue to grow: forecasts predict that the state will have over one million new residents by 2018. Eighty percent of these new Oregonians will live in the Willamette Valley, placing additional demands on airports in that region. Oregon's size, geography, and population distribution make air transportation more important for access, mobility, and connectivity than in many other states. Air transportation plays a key role in connecting Oregon's rural populations with services and commerce in larger cities and to the national and international air transportation system.

Air transportation services, whether they are general aviation or scheduled service, are provided mainly by the private sector. The airports used by the businesses that provide these services are mainly government owned. Airport planning decisions are generally made on an airport-by-airport basis through facility specific master plans. The Oregon Aviation Plan provides a statewide perspective.

### Airport Categories

The Oregon Aviation Plan addresses public use airports. It establishes five categories of airports based on their functional roles. Exhibit E-1 lists the designation criteria and the function provided by each airport category.

[1] For the purpose of this study, the term "airport" also refers to heliports.

## Exhibit E-1: Oregon Airport Functional Categories

| Category[1] | Significant Function[2] | Designation Criteria[3] |
|---|---|---|
| **1 Commercial Service Airports** | Accommodate scheduled major/national or regional/commuter commercial air carrier service | • Scheduled commercial service. |
| **2 Business or High Activity General Aviation Airports** | Accommodate corporate aviation activity, including business jets, helicoptors, and other general aviation activities. | • 30,000 or more annual operations, of which a minimum of 500 are business related (turbine) aircraft. Business use heliports. |
| **3 Regional General Aviation Airports** | Accommodate a wide range of general aviation users for large service areas in outlying parts of Oregon. Many also accommodate seasonal regional fire response activities with large aircraft. | • Generally less than 30,000 operations.<br>• Geographically significant location with multiple communities in the service area. Nearest Category 1 airport is more than 90 minutes average travel time by road. |
| **4 Community General Aviation Airports** | Accommodate general aviation users and local business activities. | • 2,500 or more annual operations or more than ten based aircraft. |
| **5 Low Activity General Aviation Airports** | Accommodate limited general aviation use in smaller communities and remote areas of Oregon. Provide emergency and recreational use function. | • Less than 2,500 annual operations and ten or fewer based aircraft. |

Notes:

1. Category 1 airports are divided into two groups based on the level of air service provided and the forecast design aircraft.
2. "Significant Function" identifies the most demanding function associated with each airport. Most airports have multiple functions. It is recognized that in addition to the highest primary function identified, each airport also provides many of the functions identified in the subsequent categories.
3. Activity breakdowns or thresholds listed in the "Criteria" column reflect existing distributions among Oregon airports. Among Oregon's 101 public-use airports, only 22 have more than 30,000 annual operations; nearly half of Oregon's 101 public-use airports have less than 2,500 annual aircraft operations and ten or fewer based aircraft.

## Policy Element

The 1992 Oregon Transportation Plan created policies and investment strategies for Oregon's multimodal transportation system. The statewide plan called for a transportation system marked by modal balance, efficiency, accessibility, environmental responsibility, connectivity among places, connectivity among modes and carriers, safety, and financial stability. The 1999 Oregon Aviation Plan applies these general policies to the state's public-use aviation system.

The Policy Element presents state aviation policies and actions. The Aviation Plan Advisory Committee, with input from members' constituents, developed policies to guide planning decisions which will protect and preserve Oregon's system of public-use

airports. The actions are implementation items at the state level, in coordination and cooperation with airport sponsors, and different levels of government.

The policy element contains policies and actions in ten main areas. The policies and actions are listed below.

| **1. Preservation Policies and Actions** | |
|---|---|
| **Interest:** Preserve the investment in the Oregon airport system. | |
| **Policy:** Preserve Oregon's system of airports and its current level of service. | |
| **Actions:** | |
| 1.1 | Prioritize the preservation and maintenance of the physical condition and operational capacity of core system airports. |
| 1.2 | Preserve airports that fulfill a unique safety function. A number of airports that are rarely used serve a safety function as emergency landing strips. |
| 1.3 | Discourage duplication of services and facilities. |
| 1.4 | Provide input regarding system planning priorities to the FAA, when consulted, about Airport Improvement Program projects for core general aviation airports[2]. (Non-part 139 certificated airports.) |
| 1.5 | Coordinate the selection of state funded projects with the selection of Federal Airport Improvement Program projects for core airports. |
| 1.6 | Promote self-sufficiency of airport operators. |
| **2. Protection Policies and Actions** | |
| **Interest:** Protect airports from incompatible land uses. | |
| **Policy:** Protect airports from incompatible land uses. | |
| **Actions:** | |
| 2.1 | Guide local jurisdictions in implementing the land use and zoning requirements regarding airports contained in ORS 836.600 to 836.630 and in OAR Chapter 660 Division 13. |
| 2.2 | Revise, adopt, and implement the state-level Oregon Airport Land Use Compatibility Guidelines, November 1994, to help local jurisdictions establish zoning and land use regulations that preserve airports and avoid future land use conflicts. |
| 2.3 | Guide local jurisdictions to develop appropriate zoning as required by DLCD rules to keep runway protection zones free of all structures. |
| 2.4 | Coordinate with local jurisdictions to notify them of the requirement that proposed construction plans for areas surrounding airports are required to be submitted to airport owners in accordance with OAR Chapter 738 Division 100, and also to the Federal Aviation Administration in accordance to Federal Aviation Regulation, Part 77 and Oregon Aeronautics Division OAR 738-70. |
| 2.5 | Use the regular inspections carried out by the FAA and Aeronautics Division staff at general aviation airports to identify potential safety hazards. |
| 2.6 | Promote the use of standards to minimize the liability risk for state and local governments, and airport sponsors. |
| 2.7 | Promote compatible uses of surrounding areas by working with airport operators, affected communities, and aviation users. |
| 2.8 | Identify the extent of residential encroachment and monitor change, and notify local government of hazards. |

[2] In all cases general aviation airports refers to "non-part 139 certificated airports."

**3. Safety Policies and Actions**

**Interest:** Maintain Oregon's public-use airports so that they are safe, and ensure that the airport system can fulfill its role in the state's emergency response system.

**Policy:** Maintain Oregon's public-use airports in a safe operating condition.

**Actions:**

3.1 Assist airports in prioritizing safety-related airport improvements.

3.2 Conduct site approvals for new airports, license public airports, and respond to requests for technical assistance at general aviation airports.

3.3 Conduct FAA Airport Master Record inspections at general aviation airports under contract with the National Association of State Aviation Officials.

3.4 Use current FAA Advisory Circulars and Oregon Administrative Rules as the basis for design standards used in permitting airports.

3.5 Encourage the use of standards to minimize the liability risk for state and local government.

3.6 Follow current state and federal environmental guidelines and regulations.

**Policy:** Support airport access for emergency response and medevac services.

**Actions:**

3.7 Support a core system of airports that provides access for hospitals to the air transportation system.

3.8 Determine the current levels of access to medevac services throughout the state and identify areas that are under-served.

**4. Economic Development Policies and Actions**

**Interest:** Support economic development by providing access to regional, state, national, and international markets.

**Policy:** Provide information to increase understanding of the economic importance of Oregon's air transportation system.

**Actions:**

4.1 Increase public awareness of the economic benefits of air transportation.

4.2 Update information on the economic impact of Oregon's system of airports.

4.3 Coordinate with other state agencies and groups involved in economic development.

4.4 Share economic impact information with local officials to increase their understanding of the role of airports in economic development.

4.5 Facilitate economic growth by supporting the improvement efforts of airports that are important for local and/or regional economic development.

**5. Intermodal Accessibility Policies and Actions**

**Interest:** Provide access to the air transportation system and its connections with other modes for people and freight throughout the state.

**Policy:** Provide Oregon with an airport system that is integrated with surface transportation modes, and allows for a choice of modes for the movement of people and goods.

**Actions:**

5.1 Work with airport owners and the FAA to identify airport ground access issues.

5.2 Develop a comprehensive approach to airport ground access as part of local and regional transportation system plans, of corridor planning, and of modal planning.

5.3 Provide information to airport owners on highway and other surface mode planning and programming efforts affecting airports.

5.4 Encourage and support the integration of airports into local corridor and regional planning.

**6. Environmental Policies and Actions**

**Interest:** Comply with state and federal environmental protection requirements.

**Policy:** Support airport compliance with federal and state statutory requirements and guidelines.

**Actions:**

6.1 Ensure that state-owned airports are in compliance with state and federal environmental laws.

6.2 Assist airport owners and local planning jurisdictions in the application of environmental rules for their airports.

6.3 Coordinate with local jurisdictions to ensure that compatible land use is implemented within appropriate distances from airports.

**7. Modernization and Capacity Policies and Actions**

**Interest:** Support efforts to ensure sufficient system capacity and airport modernization.

**Policy:** Support airports that are in the system in meeting identified modernization needs for their facilities and instrumentation.

**Actions:**

7.1 Help system airports determine whether their facilities and/or instrumentation need updating.

7.2 Support federal funding requests for modernization projects at core general aviation airports that fulfill a significant function in the system.

7.3 Coordinate the implementation of new technology and other improvements, such as Global Positioning Systems technology, at Oregon airports with the FAA.

**Policy:** Support the efforts of Oregon system airports to meet future demands.

**Actions:**

7.4 Promote and encourage improvements to commercial air service and general aviation in Oregon.

7.5 Encourage the preservation and development of a core system of reliever and regional general aviation airports in Oregon.

**8. Funding Policies and Actions**

**Interest:** Seek adequate and stable funding to preserve system airports.

**Policy:** Establish a state funding program for system public-use airports.

**Actions:**

8.1 Seek state funding to meet plan priorities for core system preservation.

8.2 Use state funds to provide a portion of matching funds for local operators to leverage federal funds for core system airports.

8.3 Expand funding mechanisms for non-NPIAS general aviation airports, which are not eligible for federal or state funding.

8.4 Develop new funding mechanisms, such as seeking economic development funds.

8.5 Provide technical assistance to help airport operators become more self-sufficient.

8.6 Develop a funding ratio or formula to determine the state's participation in local core airport projects.

**Policy:** Work with the FAA to solicit federal funding support for the priorities in the Oregon Aviation Plan.

**Actions:**

8.7 Establish aviation plan funding objectives and implementation priorities.

8.8 Grant state funds as available as a portion of the local match to those projects that best address airport system priorities.

8.9 Work with the FAA and Oregon's elected representatives to accomplish plan objectives.

**9. Advocacy and Technical Assistance Policy and Actions**

**Interest:** Provide advocacy and technical assistance for airports and their users.

**Policy:** Provide advocacy and technical assistance.

**Actions:**

9.1 Act as an advocate for air transportation and airports.

9.2 Identify upcoming or current issues affecting aviation.

9.3 Provide technical assistance to airports.

9.4 Provide information to federal, state, and local government on aviation issues.

9.5 Compile and provide data and information on the role of the airport system to assist local governments in conducting public outreach on aviation facilities and policy.

9.6 Help public involvement and other staff at ODOT headquarters and in the regions to understand air transportation.

9.7 Provide community outreach and education.

**Policy: Facilitate intergovernmental coordination and cooperation.**

**Actions:**

9.8 Provide coordination between federal agencies, state agencies, local agencies, and airport operators.

9.9 Promote the efficient preservation, planning, and development of airports according to their function in the system.

9.10 Work with airport operators and the FAA to develop Airport Improvement Plans that support the Oregon Aviation Plan.

9.11 Try to balance the interests of the aviation industry and its customers with those of airport neighbors and with environmental protection goals.

9.12 Facilitate, where requested, communication among different aviation interests.

9.13 Support aerospace education.

**Policy: Provide the planning framework for an integrated airport system in Oregon.**

**Actions:**

9.14 Build a planning framework to determine the services and level of service provided by the existing system.

9.15 Identify and apply criteria/measures that can document the current role of the airport system, the function it fulfills, and the level of service it provides.

9.16 Develop and maintain a database of all airports in the system using the criteria/measures identified in the development of the plan.

9.17 Determine the funding that will be needed to maintain the system and its airports at current service levels.

9.18 Develop service level priorities with existing funds that reflect the relative importance of different airport projects in meeting core system goals.

9.19 Prioritize projects according to system needs.

**10. State-owned Airport Management Policies and Actions**

**Interest:** Manage state-owned airports efficiently and effectively.

**Policy:** Own and operate those airports that fulfill an important role in the system but that Aeronautics cannot transfer to local ownership.

**Actions:**

10.1 Minimize, through transfer, the number of airports maintained and operated by Oregon Aeronautics.

10.2 Assist interested local governments to take over state-owned airports.

# System Element

## System-level Objectives

The system element identifies the minimum facility needs required to achieve the following policy objectives established in the policy element:

- Preserving Oregon's system of public-use airports and its level of service.
- Minimizing duplicative service provision.
- Promoting the development of the system of airports so that the current level of service is maintained and enhanced.

The System Element describes the condition of Oregon's system of airports. These conditions are then compared to a set of standards that define the minimum acceptable conditions for preserving Oregon airport facilities and the services that they provide. The gap between conditions and the standards defines the needs for accomplishing the policy of preserving Oregon's airport system and the level of service it provides.

## System Needs

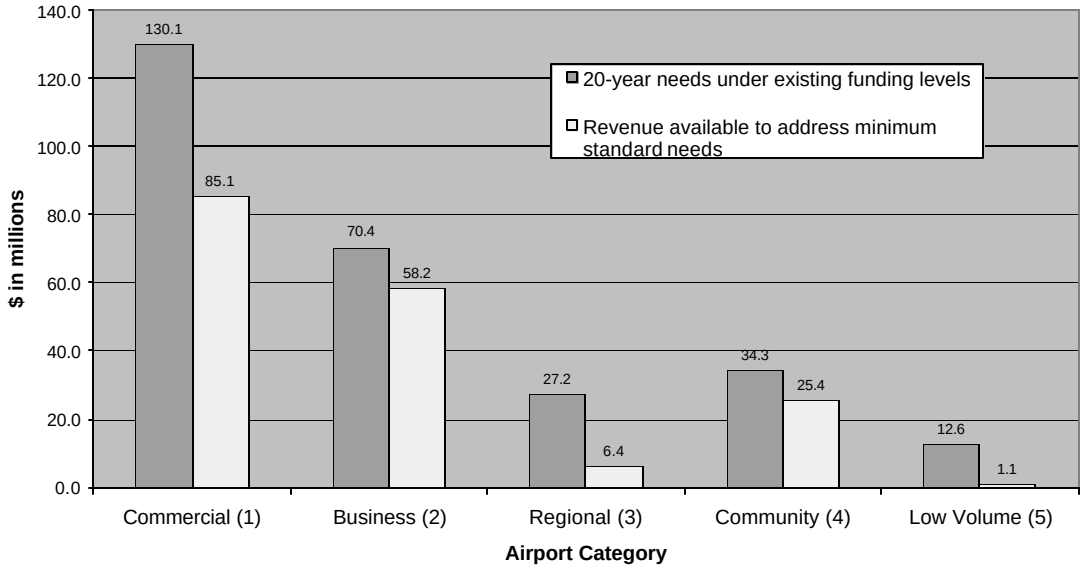
The system plan identifies $274.6 million of needs over the next 20 years to preserve Oregon's airport system to the minimum standards set by the plan[3]. If the construction program of Oregon's airports, which is developed in partnership with the Federal Aviation Administration (FAA), continues to have the current mix of projects, there will be an unmet system-level need of $98.4 million.

The system element further identifies a core set of airports to be preserved as part of plan implementation.

Exhibit E-2 illustrates the revenue gap faced by Oregon Airports just for projects that meet minimum standards. It does not account for many of the large, hard to quantify, costs arising from incompatible land use close to airports. These costs include: property acquisition, obstruction removal, and other actions in runway protection zones.

[3] Excluding Portland International Airport. When added, 20-year needs increase to $349.1 million.

**Exhibit E-2**
**Total Airport Needs to Address Minimum Standards***




*** Does not include Portland International Airport, federal and privately-owned public-use airports.**

## System Investment Strategies

The Oregon Aviation Plan will be implemented through five investment strategies:

**Strategy 1: Set system preservation program priorities.** The Oregon Aviation Plan establishes preserving the core airport system, identified in the system element, as the overall program priority. This is implemented through targeting all available funding on investments that address Oregon Aviation Plan system-level deficiencies.

Program priorities are:

- **Prevent future deficiencies and preserve existing facilities.**
- **Eliminate existing deficiencies.**
- **Modernization of an airport.**

**Strategy 2: Target capital expenditures on projects that address minimum-standard deficiencies.** Within the Oregon Aviation Plan program priorities, the plan further identifies specific project criteria for implementing state-level policy goals. These criteria will be further developed and applied by Aeronautics to allocate any new state funds or provide information to the FAA on state priorities.

Criteria listed in recommended order of importance are:

- **Minimize airport redundancy.**
- **Prioritize leverage of federal funds.**
- **Consider the costs and benefits of improvements.**

- **Evidence of local support.**
- **Potential for expansion, both on and off airport.**
- **Support economic development.**
- **Availability of adequate surface access to airport available.**
- **Significance of environmental impact of airport.**
- **Emergency role provided by airport.**

**Strategy 3: Target resources on a core system of airports.** Given the unfunded needs identified, the plan is to target investments on a core system of airports that minimizes redundancy and investment in airports that have no – or a limited – system role. The core system consists of airports that have a significant role in the statewide aviation system. The core system is listed in Exhibit E-3.

**Strategy 4: Increase state levied user fees to establish a system-level airport preservation program.** The Oregon Aviation Plan needs analysis shows that establishing a state-level pavement preservation program will reduce substantially the lifecycle cost of preserving the airport system's pavement. An increase to the jet fuel and aviation fuel taxes approved by the 1999 Oregon State Legislature is dedicated to maintaining pavement at Oregon's public-use airports.

**Strategy 5: Establish state-level funding program to address minimum standard needs.** This strategy implements the plan policy, "Establish a state funding program for public-use airports." The implementation would pursue the use of additional user fees, lottery funds, and other mechanisms such as general fund for projects that address plan deficiencies in addition to pavement preservation. This could include initiatives such as establishing a revolving loan program or using debt financing for pavement improvements.

The strategy recommends development of a funding mechanism for addressing incompatible land-use issues, instrumentation, and other improvement needs identified in the Oregon Aviation Plan. This could include land acquisition, obstruction removal, and property acquisition in runway approach zones.

# Exhibit E-3: Oregon's Core System of Airports

## Oregon's Core System of Public Use Airports (# = 70)

**Category 1 (9)**
Astoria Regional
Eastern Oregon Regional – Pendleton
Eugene - Mahlon Sweet Field
Klamath Falls
Newport Municipal
North Bend Municipal
Portland International
Roberts Field – Redmond
Rogue Valley International – Medford

**Category 2 (10)**
Aurora State
Bend Municipal
Corvallis Municipal
Hillsboro
McMinnville Municipal
Portland-Downtown Heliport
Roseburg Regional
Salem - McNary Field
Scappoose Industrial Airpark
Troutdale

**Category 3 (7)**
Baker City Municipal
Burns Municipal
Columbia Gorge Regional – The Dalles
Grant County Regional/Ogilvie Field
LaGrande/Union County
Lake County
Ontario Municipal

**Category 4 (27)**
Albany Municipal
Ashland Municipal
Bandon State
Chiloquin State
Condon State
Cottage Grove State
Creswell Municipal
Curry Coast Airpark
Florence Municipal
Gold Beach Municipal
Grants Pass
Hermiston Municipal
Hood River
Illinois Valley
Independence State
Joseph State
Lebanon State
Lexington
Madras City-County
Mulino
Myrtle Creek Municipal
Prineville
Siletz Bay State
Sisters Eagle Air
Sunriver
Tillamook
Wasco State

**Category 5 (17)**
Boardman
Cape Blanco State
Cascade Locks State
Christmas Valley
Crescent Lake State
McDermitt State
McKenzie Bridge State
Miller Memorial Airpark
Nehalem Bay State
Oakridge State
Pacific City State
Paisley State
Pinehurst State
Prospect State
Santiam Junction State
Toketee State
Vernonia Airfield

# I. Introduction

## Background

Oregon's system of airports is an important component of the state's infrastructure. Aviation is vital to the economic health of Oregon and to the quality of life of its citizens and visitors. Air transportation supports freight activity – providing Oregon's businesses with access to regional, national, and international markets – and allows for face-to-face business contact so important in today's economy.

Oregon airports provide good, convenient access to many of Oregon's tourist destinations. The airport system also enables Oregon's citizens to visit with family members in other parts of the country and provides for fast access to many areas of the state.

***Users of Oregon's Airports Include:***

- Business travelers
- Tourists
- Other intercity travelers
- Air freight haulers
- Emergency medical services
- Agricultural aerial applicators
- Search and rescue teams
- Fire fighters
- Law enforcement officers
- Recreational flyers
- Commercial service airlines
- Military
- Government agencies

### Major Issues

The Oregon Aviation Plan identifies the key issues affecting the system. The plan provides an analysis of the issues confronting Oregon's airport system and establishes state-level policies and actions for the system.

The major issues identified as impacting Oregon's system of airports are summarized as follows[4]:

- Oregon's airports increasingly face encroachment of land uses that are not compatible with airport operations.
- In common with many airports around the country, Oregon's airport pavements are aging and in need of repair.
- Local funding for general aviation airports is very limited, making it difficult to address capital needs.
- Federal funding for airports fluctuates, making it difficult to plan at the system level.
- While airport capacity is sufficient in most parts of the state, capacity problems are arising in the more heavily used airports in the most densely populated regions of the state.

[4] These are the issues that airport operators and others identified as most significant.

## Plan Development

Work to update the Oregon Aviation Plan was initiated in June 1998. The purpose is to provide a policy-level plan and system-level priorities that address the issues facing Oregon aviation.

## Public Involvement

A committee of aviation stakeholders, the Aviation Plan Advisory Committee (APAC), set the direction and provided input to the plan to ensure that the interests of all stakeholder groups were adequately considered in the planning process. This Committee developed the recommended policies and actions and provided direction for the system analysis. The plan will become effective after adoption by the Oregon Transportation Commission (OTC).

Airport operators, local jurisdictions, business organizations, and other stakeholders were surveyed to identify the major issues in the plan.

## Relation of Policy and System Elements

The policy element describes state-level policies and implementing actions. It establishes system preservation as the key policy priority. The system element then evaluates from the system perspective 20 year facility and service-level preservation needs.

### Purpose of the Oregon Aviation Plan

- Establish state policies and priorities for protecting, preserving, and developing the Oregon airport system.
- Provide a process and framework to make state-level policy decisions about the aviation system.
- Provide information on airport needs.
- Recommend approach to address airport needs.
- Guide Oregon Aeronautics' program management, advocacy, and investment decisions.

# Plan Organization

The Oregon Aviation Plan is organized as follows:

***I. Introduction.*** This section describes the planning process, planning context, and background.

***II. Importance of Aviation to Oregon.*** This section presents the social and economic importance of Oregon's airports and shows aviation's importance for the state's continued prosperity.

***III. Oregon's Aviation System***. This section provides an overview of the airports in the system and the jurisdictional responsibilities at all levels of government for the management, maintenance, operation, and funding of Oregon's airports. Functional roles and service criteria are used to develop five categories of airports.

***IV. Policy Element***. This section presents policies and actions for Oregon's aviation system.

***V. System Element.*** This section presents system level service measures and needs analysis based on these measures. System level needs and revenues are addressed and funding gaps to meet the needs are analyzed.

***VI. System Investment Strategies.*** This section sets plan priorities to guide implementation. This provides guidance identifying investments and programs that best address high priority needs.

***Appendices.*** This separate document includes three sections. *Appendix A: Glossary of Aviation Terms* defines acronyms and terminology used in the Oregon Aviation Plan. *Appendix B: Oregon Aviation Plan Findings of Compliance* demonstrates the Aviation Plan's conformity with statewide planning goals and the Oregon Transportation Plan. *Appendix C: Technical Papers* includes issue analysis results, minimum acceptable standards, airport system forecasts, and other technical supporting documentation.

# Planning Context

The Oregon Aviation Plan is linked to a number of federal, state, and local laws, policies, and plans.

## Statewide Planning Goals and the Transportation Planning Rule

Oregon's statewide planning goals, adopted in 1974, established state policies in 19 different areas, including transportation (Goal 12). In 1991 the Land Conservation and Development Commission, with the support of ODOT, adopted the Transportation Planning Rule to guide local and state implementation of Statewide Planning Goal 12. The Transportation Planning Rule requires ODOT to prepare a state Transportation System Plan and identify a system of transportation facilities and services adequate to meet identified state transportation needs. The Oregon Transportation Plan, together with the adopted modal/topic and facility plans, is the state's Transportation System Plan. The Oregon Aviation Plan is the aviation element of the plan.

The Transportation Planning Rule directs counties and metropolitan planning organizations to prepare regional Transportation System Plans that are consistent with the state plan. In turn, counties and cities must prepare local Transportation System Plans which are consistent with regional plans.

## State Agency Coordination Program

Oregon's 1973 land use planning act requires state agencies to coordinate their activities in two main ways: first, through the preparation, acknowledgement and periodic review of comprehensive plans, and second, by the preparation and certification of state agency coordination programs. Under the 1990 State Agency Coordination Program on Transportation, Aeronautics must carry out its programs affecting land use in compliance with Oregon's planning goals and in a manner compatible with acknowledged comprehensive plans.

## Oregon Transportation Plan and the Modal/Topic Plans

The Oregon Transportation Commission adopted the Oregon Transportation Plan (OTP), an innovative multimodal approach to transportation planning, in 1992. It meets the federal requirements as set out in the federal surface transportation act (TEA-21) for long-range surface transportation planning and state law (ORS 184.618), and is broad in scope, allowing modal plans to refine its policies. The OTP carries further legal authority through the Transportation Planning Rule.

Eight modal and topic plans (Aviation, Bicycle/Pedestrian, Highway, Public Transportation, Rail Freight, Rail Passenger, Transportation Safety, and Willamette Valley Strategy) set goals and policies for specific topics and modes of transportation. The Oregon Aviation Plan was developed to be consistent with federal surface transportation planning requirements and the OTP. Its goals, policies and actions are meant to complement those in previously adopted modal plans.

Some of the specific areas of the OTP addressed by the Oregon Aviation Plan include, for example:

**Rural Accessibility**

OTP Policy 2E – Minimum Levels of Service: *It is the policy of the state of Oregon to define and assure minimum levels of service to connect all areas of the state.*

OTP Policy 2F – Rural Mobility: *It is the policy of the state of Oregon to facilitate the movement of goods and services and to improve access in rural areas.*

**Economic Development**

OTP Policy 3B – Linkages to Markets: *It is the policy of the state of Oregon to assure effective transportation linkages for goods and passengers to attract a larger share of international and interstate trade to the state.*

OTP Policy 3D – Intermodal Hubs: *It is the policy of the state of Oregon to promote intermodal freight and passenger transportation hubs to enhance competitiveness, improve rural access and promote efficient transportation.*

OTP Policy 3E – Tourism: *It is the policy of the state of Oregon to develop a transportation system that supports intrastate, interstate and international tourism and improves access to recreational destinations.*

## Corridor and Transportation System Plans

Transportation planning is carried out at the local level by cities, counties, and metropolitan planning organizations and at the state-level through ODOT corridor plans. The regional and local transportation system plans adopted by regional and local governments, including the 1999 Oregon Aviation Plan, must be consistent with the state transportation system plan.

## Federal Aviation Administration (FAA) Plans

Current FAA regional objectives are described in The 1999 Northwest Mountain Regional Airport Plan (RAP-99). The objectives of the Oregon Aviation Plan are fully compatible with FAA objectives for improvements within the seven-state region. As noted in the Introduction of the 1999 Plan, "The RAP-99 is focused on capital improvements at airports. It details a series of initiatives which increase the level of safety, capacity, and efficiency of the Region's airport system." As with the FAA's Regional Plan, the Oregon Aviation Plan is focused on preserving, maintaining, and improving a system of airports that will have local and regional significance.

## Local Land Use Plans

Oregon has adopted by rule a list of airports that are subject to protection in local land use plans. The list includes all publicly owned airports licensed or recognized by Aeronautics on or before December 31, 1994 that were the base for three or more airplanes; or that are privately owned public use airports that provide important links in air traffic in this state, provide essential

safety or emergency services, or are of economic importance to the county where the airport is located. OAR 836.610(1)(6)(A)(B)(C). In consultation with the Oregon Department of Transportation, the Land Conservation and Development Commission (LCDC) has established rules for compatibility and safety standards for uses of land near airports identified in ORS 836.610. These rules are required to be implemented in accordance with OAR 660-013-0160(5).

# II. The Importance of Aviation to Oregon

## Overview

Air transportation is an important part of Oregon's transportation system. Airports are critical components of Oregon's transportation infrastructure. They support the state's economic and social well being and livability by enabling the quick, efficient, and safe movement of people and goods. As of October 1999, there are 101 public-use airports in Oregon that provide a variety of different services to Oregonians, businesses, and tourists.

**Oregon's airports support**

**Oregon Transportation Plan goals**

- Access
- Mobility
- Connectivity
- Economic development

Oregon's size, geography, and population distribution make air transportation more important for access, mobility, and connectivity than in many other states. Air transportation plays a key role in connecting Oregon's rural populations with services and commerce in larger cities and to the national and international air transportation system. This is particularly true in many areas outside of the Willamette Valley where access to the major commercial service airports is hours away. Oregon's urban and rural communities depend heavily on their airports.

*The importance of aviation facilities throughout Oregon has been very visible in recent years. Oregon's floods of February 1996 are one example of how aviation plays a vital role in the community. When surface transportation was unusable, air transportation provided emergency relief services to flood-isolated communities.*

## Economic Importance

Oregon's system of airports plays an important role in economic development. The direct and indirect economic impact of Oregon's commercial and general aviation airports is estimated to have exceeded $11.5 billion in 1995[5]. The significance of aviation is increasing in the modern economy and these benefits will grow.

[5] Unless otherwise noted, economic data in this section is drawn from the December 1996 report: The Economic Impact of Airports in Oregon, prepared by The Airport Technology and Planning Group, Inc. for the Oregon Department of Transportation – Aeronautics Section.

Commercial air service provides the ability to move goods and people to locations around the world in a short period of time, giving Oregon's businesses access to the global economy. Oregon's tourist industry, which is among the top employers in the state, is served by commercial air service. General aviation airports support economic development throughout the state by providing facilities for business/corporate use, agricultural spraying, air-cargo, military activities, and just-in-time shipping. Recreational aviation activities also support economic development.

The economic significance of Oregon's airport system is demonstrated by the following facts:

- More than 3 million visitors arrive each year at Oregon's commercial service and general aviation airports. Spending by these visitors and the associated spin-offs account for a total annual benefit of approximately $6 billion to Oregon's economy.
- Visitor spending supports over 135,000 jobs in Oregon with an annual payroll estimated at $2.4 billion.
- Approximately 12,000 jobs are created by aviation-related tenants at Oregon's airports, and an additional 13,000 secondary jobs support these tenant-related jobs.
- Annual output or spending related to all tenants at Oregon's system of commercial and general aviation airports is estimated at $5.9 billion.

Oregon's public-use airports play a key role in ensuring economic growth and maintaining high standards of livability throughout the state. Airline passengers, overnight mail, air cargo, air ambulance, forest fire suppression, crop spraying, military use, and aviation-related businesses all depend on an adequate network of airports.

## Social Importance of Aviation

Oregon's airports also play an important role in social well being and public safety. Law enforcement, traffic reporting, economic development, and natural resource management are supported by Oregon's system of airports. Throughout the state, citizens also depend on aviation for maintaining ties with family and friends.

Oregon airports are the base for search and rescue, medical emergency, military support, and disaster control activities – as was so evident in the floods of 1996.

Agriculture in Oregon is dependent on aviation for the spraying of crops, as is the forest industry for pest control, fire suppression, and minimal impact aerial timber harvesting. In addition, Oregon's aviation system plays a significant role in saving thousands of acres of forest and many homes from the ravages of fire.

## Strategic Importance of Aviation

Aviation will become more important in the future for Oregon's economic and social well being. The following trends indicate the strategic importance of air transportation in Oregon over the coming decade:

- **Continued migration to the state.** During the last decade, over 350,000 people moved to Oregon, and about 30,000 people are expected to move to the state each year during the next decade[6]. These new Oregonians will depend in part on air transportation to maintain ties with family and friends in other parts of the country and the world.

- **Population growth in the Portland metro, Willamette Valley and other areas.** Oregon is expected to grow by some 1.2 million people by 2020. About 72 percent of Oregon's projected growth will be in the Portland metro area and Willamette Valley. This means 950,000 new people are projected to be living in these areas by 2020 – the equivalent of eight new cities the size of Salem. The last decade has also seen growth in central Oregon. Crook, Deschutes, and Jefferson counties all had population growth greater than 27 percent in the last decade. There was also growth in Jackson and Josephine Counties in Southwest Oregon.

- **Growth in high-tech and other export-dependent industries.** Many of Oregon's new employers are air transportation-dependent industries that are export-oriented, fast growing, and high value added. Recent growth in Oregon's high technology and export-dependent industries is expected to continue. These industries require fast access to regional, national, and international locations for business travel and freight shipments.

- **Growth in just-in-time delivery.** Growth in just-in-time inventory practices has reduced warehousing and increased the demand for air freight and will continue to do so in the future.

- **Growth in tourism.** Tourism is one of the largest and fastest growing industries in the world. Oregon has an abundance of world class tourist destinations and is well positioned to develop its tourist industry. The segment of this industry that brings the most income to Oregon is heavily dependent on air transportation.

- **Increase in air travel by the general population.** With air transportation becoming increasingly affordable in recent years, people are traveling more in general for family, vacation, and business reasons. In the past decade, commercial passenger enplanements in Oregon have increased more than 40 percent.

- **An aging population.** Over the next decade the state is expected to see growth in the number of people between the ages of 55 to 70 years. Baby boomers will increase this segment of the population from 12.3 percent to 17.8 percent[7]. This segment of the

[6] Population and demographic statistics provided by the Oregon Office of Economic Analysis and Portland State University, Center for Population Research and Census.

[7] According to the Oregon Office of Economic Analysis, the 55 to 70 year old segment will increase from 420,008 out of 3,406,000 (12.3 percent) in 2000 to 686,774 out of 3,857,000 (17.8 percent) in 2010.

population has a large amount of discretionary income and will increase the demand for air transportation.[8]

**Trends Increasing Strategic Importance of Aviation**

- Migration to Oregon.
- Growth of high-tech and export-oriented industries.
- Growth in tourism.
- Increase in air travel by general population.
- Increase in number of retirees with high discretionary incomes.

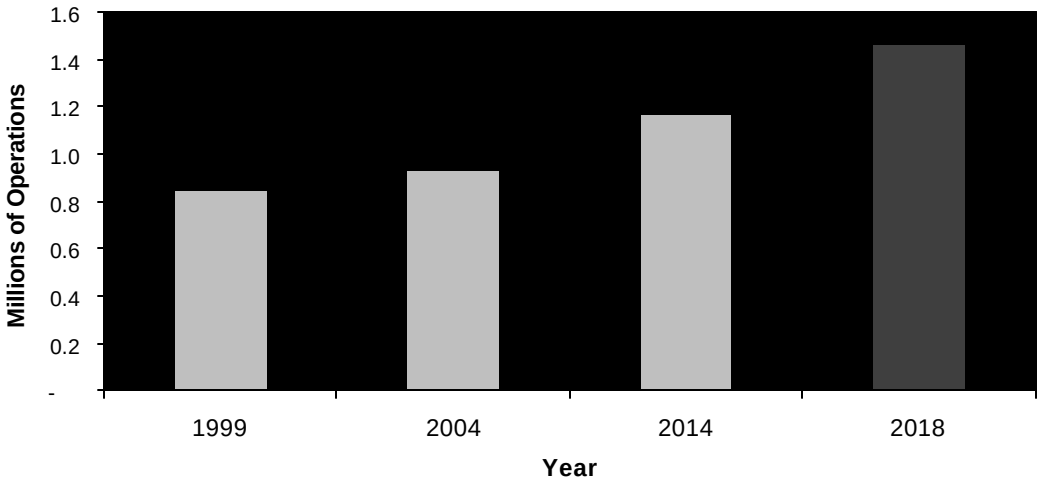
[8] According to recent publications such as The Demographics of Outdoor Recreation and Travel by Alison S. Wellner, Publ. 1997.

## Future Demand for Aviation

Market forces drive the demand for aviation services and the use of airports. As Oregon's population and economy continues to grow, the demand to transport people and goods by air will increase. Economic growth, in turn, generates income for people to spend on leisure activities, which in turn increases the demand for aviation.

Aviation demand will continue to grow steadily in the next century. The most significant growth will be in operations at commercial service airports and in enplanements as shown in Exhibits II-1 and II-2[9]. These operations are projected to grow 73 percent in the 1999 to 2018 planning period, increasing the

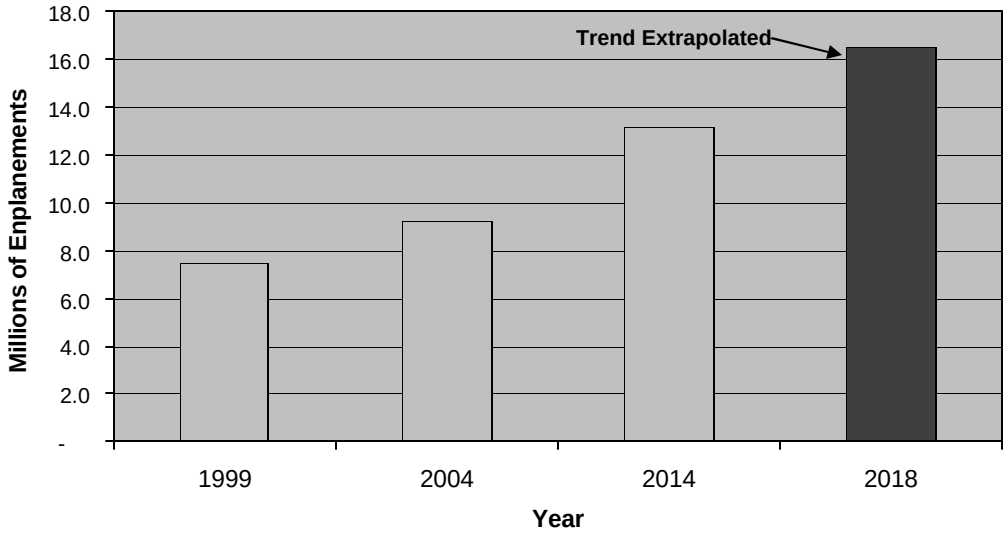
**Exhibit II-1**
**Forecast of Operations at Commercial Service Airports in Oregon**




Source: Oregon Continuous Aviation System Plan, March 1997

[9] Forecasts based on the Oregon Continuous Aviation System Plan, March 1997. Trend growth extrapolated to reflect 1999 to 2018 planning period.

## Exhibit II-2
## Forecast of Commercial Enplanements in Oregon



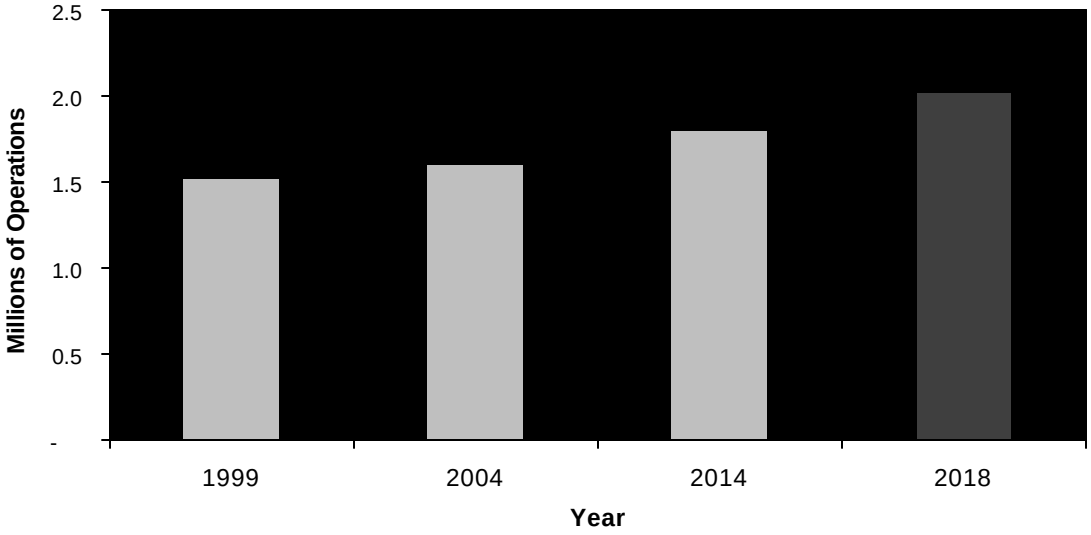

Source: Oregon Continuous Aviation System Plan, March 1997

number of operations from an estimated 848,000 in 1999 to over 1.46 million in 2018.

The increase in operations results in an even greater growth in the number of passengers using Oregon airports. Commercial enplanements are forecast to more than double, increasing from 7.5 million in 1999 to 16.5 million in 2018.

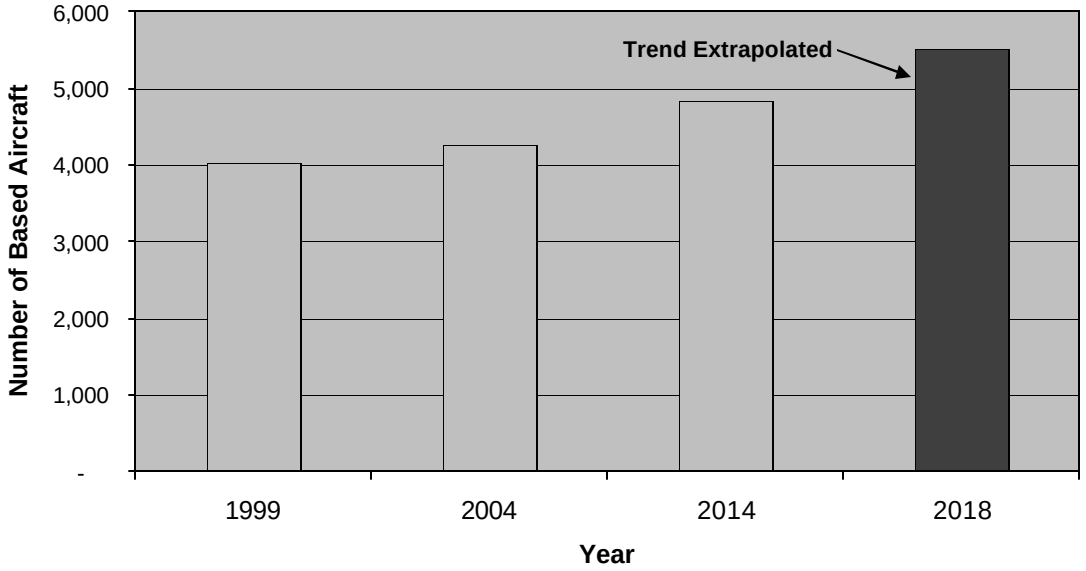
General aviation operations are forecast to grow at about half the rate of commercial operations. As shown in Exhibit II-3, general aviation operations are forecast to increase from 1.5 million in 1999 to 2.0 million in 2018, an increase of 32 percent. During this period the number of general aviation aircraft based in Oregon is forecast to grow 37 percent, as shown in Exhibit II-4.

## Exhibit II-3
## Forecast of General Aviation Operations in Oregon




Source: Oregon Continuous Aviation System Plan, March 1997

**Exhibit II-4**
**Forecast of General Aviation Based Aircraft in Oregon**




Source: Oregon Continuous Aviation System Plan, March 1997

## Freight

Freight activity includes the movement of cargo, express packages, and mail by aircraft and the surface connections made at airports throughout the system. As with commercial passenger activity, the movement of air freight in Oregon also relies heavily on connections with Portland International Airport through passenger and cargo air carriers, and surface carriers. Other airports are seeking to increase air freight. For example, Rogue Valley International is developing its air freight capabilities to bring more air cargo to the state, to take advantage of their strategic location on Interstate 5.

The majority of Oregon's enplaned and deplaned air freight volume occurs at the larger commercial service airports with limited amounts of cargo-related activity including bank flights (checks and other time-sensitive financial documents), contract express carriers, and cargo carried by charter or air taxi operators at other airports.

## Freight Facilities

Many Oregon airports play an important role in the statewide intermodal transportation of freight. Exhibit II-5 summarizes cargo enplanement. Although Portland International Airport serves as the prime air cargo hub in Oregon, much of its inbound and outbound freight involves a combination of surface and air transportation to serve points throughout Oregon. The use of surface and air transportation for movement of freight is generally a function of travel distance/time, delivery requirements, and the type of commodity. Most air cargo and express carriers utilize both air and surface transportation to efficiently meet their customers' needs.

Portland International Airport also accounts for the largest portion of freight and mail volume in Oregon with nearly 296,000 tons of enplaned and deplaned freight and mail in 1996. Although several commercial service airports do not provide historical or forecast cargo volumes in their master plans, it appears Portland International Airport-generated activity

accounts for well above 90 percent of total freight volume at Oregon airports. In general, the commercial service airports with recent cargo forecasts anticipate a doubling or tripling of volume over the next twenty years. Based on current levels, this trend could generate total cargo volumes approaching 1 million tons within the next twenty years. Portland International Airport is expected to continue in its role as Oregon's leading air cargo facility. Forecasted airside and surface access constraints at major west coast ports of entry are creating interest in investments to expand freight capacity at Rogue Valley International. Major infrastructure investments there will substantially increase Oregon air freight capacity.

Except for commercial service airports, the majority of Oregon airports do not have dedicated cargo facilities. Freight loading and unloading is generally conducted directly from the aircraft to truck, without the need for on-site facilities. These needs are generally satisfied through development of other facilities intended for itinerant aircraft.

## Exhibit II-5
## Category 1 Airports, Enplaned Freight (Tons)

| | | | Master Plan Projections | | | | |
|---|---|---|---|---|---|---|---|
| **Enplaned Cargo (in Tons)** | **Base Year** | **Base %** | **0-Year** | **5-Year** | **10-Year** | **15-Year** | **20-Year** |
| Portland International Airport | 1996 | 94.7% | 148,000 | 184,000 | 234,500 | 296,500 | 462,000 |
| Eugene | 1997 | 1.7% | 2,600 | ** | | | 6,000 |
| Medford | 1991 | 0.4% | 556 | 599 | | | 752 |
| Redmond | 1996 | 3.0% | 4,693 | | | | 15,000* |
| North Bend | 1993 | 0.2% | 389 | 458 | 540 | 650 | 758 |
| Total Enplaned Cargo (tons)*** | | | 156,238 | 185,057 | 235,040 | 297,150 | 484,510 |

Source: Data assembled from most recent master plans. No data are available for other Category 1 airports.

* Estimate for 20-year based on operational forecast.

** Blanks indicate that data was not provided in master plan or otherwise not readily available.

*** Medford is currently updating their airport master plan. Through efforts to develop the airport Foreign Trade Zone (FTZ), tonnage may exceed the 1991 Master Plan projections.

# III. Oregon's Aviation System

## Overview of the System

When we think of airports in Oregon, commercial service airports come to mind because of their size and familiarity. However, the over 400 public- and private-use airports in Oregon serve an important function. From small private airports, to regional and reliever general aviation airports, and other commercial service airports, their impact is significant.

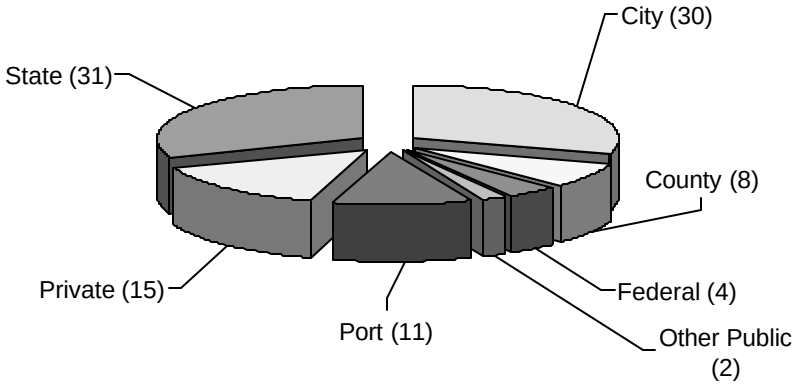
The Oregon Aviation Plan, as of October 1999, includes 101 public-use airports. In addition to the 101 public-use airports considered part of the statewide system of airports, there are over 300 privately owned, private-use airports located throughout Oregon. Due to their small size and private nature, these airports have not been included as part of the system addressed by the plan.

There are, as of October 1999, 86 publicly owned, public-use airports serving general aviation and commercial air carriers. Of these, 57 aviation facilities are of national interest and included in the National Plan of Integrated Airport Systems (NPIAS). These nationally significant aviation facilities include nine commercial service airports that provide regularly scheduled passenger services. There are three Federal Aviation Administration (FAA) designated reliever airports that serve to relieve congestion at Portland International Airport. Portland International Airport and Rogue Valley International both have the required federal approvals for international passenger arrivals and receiving international shipments.

Oregon's airport system includes 31 public general aviation airports that are not included in the NPIAS but which are of statewide interest because of their role in the system. These airports are not eligible for federal funds. They include state, municipal, and private facilities that are open to the public.

Exhibit III-1 below illustrates the ownership of the airports that are part of Oregon's system of public-use airports. Exhibit III-2 shows the function and services provided by these airports.

**Exhibit III-1**
**Public Use Airports in Oregon**
**by Ownership**



## Exhibit III-2:
## Functions and Services Provided by Oregon's Airports[10]

- Support scheduled commercial passenger service.
- Provide connections to other commercial service airports in Oregon and beyond.
- Support cargo service (includes express).
- Support corporate, business and general aviation connections in Oregon and beyond.
- Support large geographic or regional area.
- Support business-related activities and economic development.
- Serve local general aviation needs.
- Provide access to remote areas.
- Provide access to rural communities.
- Support medevac and other emergency flights.
- Support military operations.
- Support fire-fighting activities.
- Support other non-military government operations.
- Support air taxi and charter flights.
- Serve all general aviation needs, including recreation.
- Support agricultural operations.
- Provide navigational and weather aids, including en route.
- Provide emergency alternates for en route aircraft in remote areas.
- Support aviation training.

[10] Identified by the Aviation Plan Advisory Committee.

# Jurisdictional Responsibilities

Air transportation services, whether they are general aviation or scheduled service, are provided mainly by the private sector. The airports used by the businesses that provide these services are mainly government owned. The demand for most airport facilities is market driven and specific to individual airports or communities. Consequently, system-level planning has limited direct impact on the demand for or use of airports.

## Airport Planning Responsibilities

Airport planning decisions are generally made on an airport-by-airport basis through facility specific master plans. The master plans are developed through a community planning process. Typically they include planned facility improvements to meet current and future market demands for their use. Master plans are developed independently and are based on local needs. This is where implementation of the Oregon Aviation Plan is important. A funded Oregon Aviation Plan can help guide airports in meeting system level goals, thereby ensuring that the individual roles played by airports correspond to the needs of the statewide system of airports.

Airport owners, through their master planning and budgeting, define their responsibility for infrastructure investment to promote safety, including navigational aids, adequate runways, safety areas, airport security, and other safety-related items.

## City, County, and Ports

Cities, counties and ports are allowed by Oregon law to establish airports. These units of government are required to notify Oregon Aeronautics of, and allow Aeronautics to participate in an advisory capacity in all municipal airport or aviation system planning.

## State – Oregon Aeronautics

At the state level, Oregon Aeronautics is responsible for the management, maintenance, and operation of 31 airports. Aeronautics receives federal grants for development of several of the airports under its ownership and for statewide planning. In addition, the state through Aeronautics has a broad advocacy role in encouraging, fostering, and assisting in the development of aviation, providing for the protection of airports and the promotion of safety in aviation.

## Federal Aviation Administration

The primary jurisdictional role of the federal government is regulation and procedures with respect to safety, and the provision of funding for capital improvements. The federal government provides funding for NPIAS airports through the Airport Improvement Program (AIP).

The FAA controls the airspace through the air traffic control system. This system tracks and controls airplane operations to maintain safe operations. The federal government also regulates airplane manufacturers, airlines, and pilots to ensure safe equipment and operations.

## Funding Responsibilities

Federal, state, and local governments play different roles in funding the airport system.

### Locally Owned Airports

Locally owned airports (county, city, and port) use federal grants, local general funds, and airport-generated revenues to finance capital expenditures. Currently state revenue is not used at locally owned airports. Operations, maintenance, and administrative costs (operating expenses) are funded with airport-generated revenues and local general funds.

### State-owned Airports

State-owned airports are funded solely through user fees, primarily aviation fuel taxes, aircraft registrations and revenue from leases and agreements on state-owned airports. State-owned airports receive no state general fund revenue. Capital development and planning for the 11 state-owned NPIAS airports are funded through federal grants with a ten percent match provided from user fees.

### Statewide Advocacy and Other Programs

Oregon Aeronautics supports the statewide system through advocacy, addressing airport protection, system planning, coordination with surface transportation policy, planning and programming, and other programs. This is funded through statewide user fees and, in part, federal grants.

### Air Traffic Control, Safety, and Other Regulatory Activities

The federal government, through the FAA, provides the air traffic control and other services for air carrier and general aviation operations. The FAA and its programs are funded by the federal aviation fuel tax, airfreight tax, passenger ticket tax and international departure tax.

## Functional Role of Oregon's System of Airports

Oregon airports serve a variety of functional roles depending on the markets they serve, and their locations. The Oregon Aviation Plan establishes five categories of airports based on these different airport functions.

Exhibit III-3 lists the five airport categories, outlines the designation criteria for the category, and the functions provided by each airport category. The complete list of airports in each category is contained in Exhibit III-4. The categories describe the current functions performed by Oregon airports to meet the demand for the use of airport facilities.

There is a dynamic nature to the airport categories. As an airport changes in terms of service and/or functions performed, it may move to a different category. To move between categories an airport must meet the criteria associated with a different category for more than one year. The listing in Exhibit III-4 is

based on services provided by individual airports as of November 1998 when the categories were established. The list will be periodically updated by Aeronautics. The location of these airports is shown in the map following Exhibit III-4.

## Exhibit III-3: Oregon Airport Functional Categories

| Category[1] | Significant Function[2] | Designation Criteria[3] |
|---|---|---|
| **1 Commercial Service Airports** | Accommodate scheduled major/national or regional/commuter commercial air carrier service. | • Scheduled commercial service. |
| **2 Business or High Activity General Aviation Airports** | Accommodate corporate aviation activity, including business jets, helicoptors, and other general aviation activities. | • 30,000 or more annual operations, of which a minimum of 500 are business related aircraft. Business use heliports. |
| **3 Regional General Aviation Airports** | Accommodate a wide range of general aviation users for large service areas in outlying parts of Oregon. Many also accommodate seasonal regional fire response activities with large aircraft. | • Generally less than 30,000 operations.<br>• Geographically significant location with multiple communities in the service area. Nearest Category 1 or 2 airport is more than 90 minutes average travel time by road. |
| **4 Community General Aviation Airports** | Accommodate general aviation users and local business activities. | • 2,500 or more annual operations or more than ten based aircraft. |
| **5 Low Activity General Aviation Airports** | Accommodate limited general aviation use in smaller communities and remote areas of Oregon. Provide emergency and recreational use function. | • Less than 2,500 annual operations and ten or fewer based aircraft. |

Notes:

1. Category 1 airports are divided into two groups based on the level of air service provided and the forecast design aircraft.
2. "Significant Function" identifies the most demanding function associated with each airport. Most airports have multiple functions. It is recognized that in addition to the highest primary function identified, each airport also provides many of the functions identified in the subsequent categories.
2. Activity breakdowns or thresholds listed in the "Criteria" column reflect existing distributions among Oregon airports. Among Oregon's 101 public-use airports, only 22 have more than 30,000 annual operations; nearly half of Oregon's 101 public-use airports have less than 2,500 annual aircraft operations and ten or fewer based aircraft.

## Exhibit III-4:
## List of Oregon Airports by Category*

**Category 1**

Astoria Regional
Eastern Oregon Regional – Pendleton
Eugene – Mahlon Sweet Field
Klamath Falls
Newport Municipal
North Bend Municipal
Portland International
Roberts Field – Redmond
Rogue Valley International – Medford

**Category 2**

Aurora State
Bend Municipal
Corvallis Municipal
Hillsboro
McMinnville Municipal
Portland-Downtown Heliport
Roseburg Regional
Salem - McNary Field
Scappoose Industrial Airpark
Troutdale

**Category 3**

Baker City Municipal
Burns Municipal
Columbia Gorge Regional-The Dalles
Grant County Regional/Ogilvie Field
LaGrande/Union County
Lake County
Ontario Municipal

**Category 4**

Albany Municipal
Ashland Municipal
Bandon State
Chehalem Airpark (Private)
Chiloquin State
Condon State
Cottage Grove State
Country Squire Airpark (Private)
Creswell Municipal
Curry Coast Airpark
Enterprise Municipal
Florence Municipal
Gold Beach Municipal
Grants Pass
Hermiston Municipal
Hood River
Illinois Valley
Independence State
Joseph State
Lebanon State
Lenhardt Park (Private)
Lexington
Madras City-County
Mulino
Myrtle Creek Municipal
Prineville
Sandy River (Private)
Seaside Municipal
Siletz Bay State
Sisters Eagle Air (Private)
Sportsman Airpark (Private)
Stark's Twin Oaks (Private)
Sunriver (Private)
Tillamook
Valley View (Private)
Wasco State

**Category 5**

Alkali Lake State
Arlington Municipal
Beaver Marsh State
Boardman
Burns Junction BLM
Cape Blanco State
Cascade Locks State
Christmas Valley
Crescent Lake State
Davis (Private)
George Felt (Private)
Happy Valley (Private)
Juntura BLM
Lake Billy Chinook State
Lake Woahink SPB (Private)
Lakeside State
Malin
McDermitt State
McKenzie Bridge State
Memaloose USFS
Miller Memorial Airpark
Monument Municipal
Nehalem Bay State
Oakridge State
Owyhee Reservoir State
Pacific City State
Paisley State
Pinehurst State
Powers
Prospect State
Rome State
Santiam Junction State
Sheridan (Private)
Silver Lake USFS
Skyport (Private)
Toketee State
Toledo State
Vernonia Airfield
Wakonda Beach State

* This listing is based on services and functional roles provided by individual airports as of November 1998 (when the categories were approved by the Advisory Committee). Airports can move between categories based on the designation criteria. The Aviation Plan outlines an update process.

The following descriptions outline what it means for an airport to be in a category in terms of functions, activity, and facilities and services provided.

## Category 1: Commercial Service Airports

**Function: Accommodate scheduled major/ national or regional/commuter commercial air carrier service.**

**Designation Criteria: Presence of scheduled commercial service**

Category 1 airports provide Oregon's primary intrastate, interstate, and international connections for commercial passenger and cargo service. They accommodate scheduled service from major/national and/or regional air carriers. These airports have large geographic service areas.

For the purposes of evaluating facility needs, Category 1 airports were divided into two groups based on the level of air service provided and the forecast design aircraft. These were large commercial airports and small/medium commercial airports. Large commercial airports have higher traffic volumes, such as passenger enplanements, and are generally planned to accommodate transport category aircraft (Boeing 737 or larger). Small/medium commercial airports have lower traffic levels and are typically planned to accommodate turboprops, such as deHavilland Dash 8. The Klamath Falls Airport is categorized as a small/medium airport based on existing commercial air service. However, many facility requirements are dictated by the unique military activity at the airport. The minimum acceptable facility standards for this category are presented in the Technical Appendix.

**Activity**

At Category 1 airports, major/national or regional/commuter air carriers provide commercial passenger and cargo service. Service areas for larger commercial service airports include Oregon's largest population centers. Airport service areas for smaller commercial airports generally have surface travel times of more than one hour to the nearest commercial service airport.

Some Category 1 airports also accommodate substantial business and military aviation activity, including large aircraft. Aircraft weighing more than 12,500 pounds, including air carrier and business aviation, are generally the most common critical aircraft at smaller commercial airports.

**Facilities/Services**

Services provided at Category 1 airports generally include jet fuel, aviation gasoline, and aircraft maintenance. Pilot/passenger facilities are generally available. Airside (airfield, all weather capabilities, lighting, navigational aids, air traffic control) and landside (passenger, cargo, auto parking) facilities and passenger services are required to accommodate the needs of major/national or regional/commuter air carriers and users.

## Category 2: Business or High Activity General Aviation Airports

**Function: Accommodate corporate aviation activity, including business jets and other general aviation activities.**

**Designation Criteria: 30,000 operations per year, with at least 500 turbine business related.**

Category 2 airports provide access to the air transportation system for general aviation purposes. They are capable of serving small business jets and other aircraft used by business. Activity levels at these airports are typically higher than at other general aviation airports and some Category 1 airports.

**Activity**

Category 2 airports typically have locally-based business jets or turboprops and/or substantial amounts of itinerant turbine aircraft activity. Many also provide cargo service. Heliports in this category accommodate predominantly turbine-powered aircraft. Aircraft weighing more than 12,500 pounds are generally considered the most common critical aircraft at these airports.

**Facilities/Services**

Services such as jet fuel and aviation fuel, aircraft maintenance, and pilot/passenger facilities are generally available at Category 2 airports. A full range of airside (airfield, lighting, all weather capabilities, navigational aids) and landside (business/general aviation terminal, auto parking, corporate hangars) facilities and passenger services capable of serving the needs of business aviation and general aviation users are generally provided. Business use heliport facility needs are generally directed toward itinerant aircraft parking and passenger facilities.

## Category 3: Regional General Aviation Airports

**Function: Accommodate a wide range of general aviation users for large service areas in outlying parts of Oregon.**

**Designation Criteria: Airports serving communities or regions which are over 90 minutes drive from Category 1 or 2 airports.**

Category 3 airports serve large geographic areas with numerous small communities. They provide access to the air transportation system for communities that have surface travel times greater than 90 minutes to the next Category 1 or 2 airports. Many also accommodate seasonal regional fire response activities with large aircraft.

**Activity**

Category 3 airports accommodate general aviation users, including emergency medevac flights within large service areas. Activity levels (for example, aircraft operations) at these airports are generally lower than high activity or business general aviation facilities (less than 30,000 annual operations), although the geographic service areas are often considerably larger.

Twin-engine aircraft weighing 12,500 pounds or less are the most common critical aircraft for Category 3 airports; airports which have an established regional fire support role generally accommodate heavier aircraft.

**Facilities/Services**

Services such as jet fuel and aviation fuel, aircraft maintenance, and pilot/passenger facilities are generally available at Category 3 airports. All-weather capabilities, instrumentation, runway-taxiway system and aviation services capable of accommodating business and general aviation users are generally provided.

## Category 4: Community General Aviation Airports

**Function: Accommodate general aviation users and local business activities.**

**Designation Criteria: 2,500+ operations or more than ten based aircraft.**

Category 4 airports serve the needs of general and business aviation users and activities within the local area. The airports have the airfield facilities, navigational aids, lighting, and services necessary to accommodate general aviation users. Publicly owned community general aviation airports are typically included in the FAA's National Plan of Integrated Airport Systems.

**Activity**

Community airports serve locally-based business and general aviation users in addition to aircraft visiting the local area. Category 4 airports are designed to accommodate light single and multi-engine aircraft weighing 12,500 pounds and less.

**Facilities/Services**

Basic services such as aviation fuel, aircraft maintenance, and pilot/passenger facilities are generally available at Category 4 airports. Airfield facilities, lighting, and services capable of accommodating general aviation users are generally provided, along with runway-taxiway systems, lighting, and navigational aids to accommodate basic general aviation activities.

## Category 5: Low Activity General Aviation Airports

**Function: Accommodate limited general aviation use in smaller communities and remote areas of Oregon. Provide emergency and recreational use function.**

**Designation Criteria: Less than 2,500 operations and less than ten based aircraft.**

These airports have basic facilities located at or near small communities, or in remote areas throughout Oregon. Activity levels at these airports are generally lower than community airports and they are not typically included in the FAA's National Plan of International Airport System.

**Activity**

Category 5 airports are located in communities and remote outlying areas with small or no population within their service area. They have hard surfaced or unpaved runways (gravel, dirt, or turf). Some of the runways have lighting. The airports operate with visual flight rules (VFR) capabilities.

Several Category 5 airports provide an important emergency function due to their location in areas of hazardous terrain or weather conditions. Many of these airports provide access to unique recreational attractions in remote areas of Oregon.

**Facilities/Services**

Services such as aviation fuel and aircraft maintenance are generally very limited at Category 5 airports. Typically these airports only operate under visual flight rules (VFR) and have a runway-taxiway system capable of accommodating limited use general aviation activity.

## Seaplane Facilities

The Oregon Aviation System includes the one licensed public-use seaplane base (Lake Woahink, near Florence). There are other unlicensed seaplane bases and numerous unofficial landing areas located throughout the state. As of October 1999, it is estimated that Oregon has 50 to 80 locally based seaplanes and approximately 700 licensed seaplane pilots.[11] Seaplane activity in Oregon includes both local aircraft and itinerant aircraft from outside the state.

Maintaining safe and functional seaplane facilities is an important part of protecting Oregon's general aviation future. Public-use seaplane docks and aircraft pull-out ramps are commonly found on waterways throughout the Northwest, Canada, and in Alaska. Although Oregon's seaplane needs are modest in comparison, an improvement in basic seaplane facilities, such as development of docks that could accommodate seaplanes, could have a positive effect on this segment of general aviation in Oregon. Facility needs at seaplane bases are determined by local operators and user demand.

## Heliports

The Oregon Aviation System includes one public-use heliport (Portland Downtown Heliport, which is a Category 2 facility). Oregon also has numerous private-use and government helipads located throughout the state. As new public-use helicopter facilities develop, the Oregon Aviation System inventory of public-use facilities should be updated. Protection of private helipads, particularly hospital-based facilities, is also important to preserving a vital air transportation service to Oregonians.

## Movement Between Categories

**General Aviation**

Changes in airport categorization will be based on measured changes against the designation criteria. Airports may request review by Aeronautics of their categorization at any time. To move between categories, the airport must meet designation criteria using a three year average. The inventory itself will be updated approximately every five years and a system-wide review of categories will be conducted.

**Commercial Service Airports**

For an airport to be assigned to Category 1, commercial scheduled service must be in place continuously for two years. When Category 1 airports do not have commercial service for two years, they will be recategorized.

[11] Data provided by Columbia Seaplane Pilots Association.

# IV. Policy Element

## Overview

The policy element presents state aviation policies and actions. The advisory committee, with input from members' constituents, developed policies to guide planning decisions which will protect and preserve Oregon's system of airports. The actions will be mainly implemented by Oregon Aeronautics. The actions will be implemented by Aeronautics in coordination and cooperation with airport sponsors, and different levels of government, to achieve the system level interests. The system element evaluates the extent of system-level deficiencies that need to be addressed to accomplish the policy established in this policy element.

## What Are Oregon's Aviation Policy Interests?

The state has broad policy interest in a safe, efficient air transportation system that provides mobility for passengers and freight. With airports operated and funded by city and county governments, port authorities, federal agencies, the state, and the private sector, many entities have a role in the Oregon airport system.

The state's primary interest is in ensuring that the existing and future airport system will be adequate to meet the needs of Oregon citizens and businesses for air mobility. The state government's authority in meeting this state interest is achieved primarily through system planning, coordination, advocacy, and partnership. The Oregon Aviation Plan establishes policies that provide a more detailed framework to guide state-level actions and provide assistance to local airports.

### *Oregon's Interests in Aviation …*

***Preservation***

*Preserve investment in Oregon's system of airports and its level of service.*

***Protection***

*Protect airports from incompatible land uses.*

***Safety***

*Maintain Oregon's public-use airports so that they are safe, and ensure that the airport system can fulfill its role in the state's emergency response system.*

***Economic Development***
*Support economic development by providing access to regional, state, national, and international markets.*

***Intermodal Accessibility***
*Provide access to the air transportation system and its connections with other modes for people and freight throughout the state.*

***Environment***
*Comply with state and federal environmental protection requirements.*

***Modernization and Capacity***
*Support efforts to ensure sufficient system capacity and airport modernization.*

***Funding***
*Seek adequate and stable statewide funding to preserve system airports.*

***Advocacy and Technical Assistance***
*Provide advocacy and technical assistance for airports and their users.*

***State-owned Airport Management***
*Manage state-owned airports efficiently and effectively.*

# 1. Preservation Policies and Actions

## *Interest: Preserve the investment in Oregon's system of airports.*

**Issues:**

There is a significant public investment in Oregon's aviation facilities. The aviation plan issue analysis indicated that a key issue for airport operators is the short-fall in funds available to preserve this investment.[12] This is substantiated by the technical analysis, which finds limited funds are available for general aviation airports to target for pavement preservation projects, maintenance, lighting, instrumentation, and other improvements.

Airports are developed and operated on an airport-by-airport basis according to local operator priorities and federal funding criteria. Project funding at individual airports does not consider the system as a whole. Preservation projects may include resurfacing of runways, taxiways, or aprons; repair of lighting; or the rehabilitation of terminal buildings, other infrastructure, or technical instruments that allow the airport to function safely and efficiently.

About half of Oregon's general aviation airports are not eligible for federal funding and are dependent on local general funds, state user fees, and on-airport revenues. Many general aviation airports cannot generate adequate investment to maintain their infrastructure. In all cases, general aviation airports refers to "non-part 139 certificated airports." This trend is

[12] The Technical Appendix provides detail on the results of plan issue analysis.

resulting in costly deferred pavement maintenance at many airports.

It is in the state's interest to help preserve the existing investment in aviation facilities and to ensure that the air transportation system is able to maintain its functions and service level. The gap between airport preservation needs and available funding indicates the importance of targeting investments to preserve the integrity and function of the system. Investment at the core airports is the highest system priority; non-core airport needs will be addressed as a lower priority.

The State's interest includes preserving existing airports and ensuring that as Oregon's economy and population grows the airport system is developed so that Oregon maintains the current level of service for access to aviation.

**Policy: Preserve Oregon's system of airports and its current level of service.**

### *Actions …*

1.1 Prioritize the preservation and maintenance of the physical condition and operational capacity of core system airports.

1.2 Preserve airports that fulfill a unique safety function. A number of airports that are rarely used serve a safety function as emergency landing strips.

1.3 Discourage duplication of services and facilities.

1.4 Provide input regarding system planning priorities to the FAA, when consulted, about Airport Improvement Program projects for core general aviation airports. (Non-part 139 certificated airports).

1.5 Coordinate the selection of state funded projects with the selection of Federal Airport Improvement Program projects for core airports.

1.6 Promote self-sufficiency of airport operators.

## 2. Protection Policies and Actions

### *Interest: Protect airports from incompatible land uses.*

**Issues:**

The issue analysis identified the impact of encroaching incompatible land uses that conflict with the ability of airports to operate as the biggest issue facing the airport system. This was identified by aviation stakeholders as the most important issue by a wide margin.

There are a number of factors contributing to this problem. Airports can be subject to concerns from airport neighbors over noise and air pollution. The surrounding airspace must be free of obstructions to minimize safety problems for aircraft operations and the people on the ground. Because of these factors, it is becoming increasingly difficult to expand and/or relocate airports in more densely populated areas. Changes in land use and continuing growth also make airport land more valuable, making it attractive for the airport owner to lease or sell the land for non-aviation purposes.

Cities and counties are responsible for ensuring compatibility of land uses and establishing appropriate zoning requirements around

airports. The incremental and cumulative impact of land use decisions that result in incompatible land uses by allowing citizens to occupy noise impact or high hazard areas can limit an airport's ability to expand facilities and/or expand operations and, in some cases, threatens an airport's future.

Oregon's Transportation Planning Rule contains strong language requiring local jurisdictions to develop land use regulations and adopt measures to protect public-use airports by controlling land uses within airport noise corridors, by limiting physical hazards to air navigation, and by controlling land uses in approach corridors to airports.

Oregon Revised Statutes require that all airports with three or more based aircrafts, as of December 31, 1994, be identified and zoned as an airport in local planning documents. As mandated by Oregon Revised Statutes, the Oregon Land Conservation and Development Commission (LCDC) developed Airport Planning Rules addressing safety zones for airports with three or more based aircraft and land use compatibility requirements for public use airports. These rules became effective on February 12, 1999.

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**Policy: Protect airports from incompatible land uses.**

## *Actions …*

2.1 Guide local jurisdictions in implementing the land use and zoning requirements regarding airports contained in ORS 836.600 to 836.630 and in OAR Chapter 660 Division 13.

2.2 Revise, adopt, and implement the state-level Oregon Airport Land Use Compatibility Guidelines, November 1994, to help local jurisdictions establish zoning and land use regulations that preserve airports and avoid future land use conflicts.

2.3 Guide local jurisdictions to develop appropriate zoning as required by DLCD rules to keep runway protection zones free of all structures.

2.4 Coordinate with local jurisdictions to notify them of the requirement that proposed construction plans for areas surrounding airports are required to be submitted to airport owners in accordance with OAR Chapter 738 Division 100, and also to the Federal Aviation Administration in accordance with Federal Aviation Regulation, Part 77 and Oregon Aeronautics Division OAR 738-70.

2.5 Use the regular inspections carried out by the FAA and Aeronautics Division staff at general aviation airports to identify potential safety hazards.

2.6 Promote the use of federal and state standards to minimize the liability risk for state and local governments, and the airport sponsors.

2.7 Promote compatible uses of surrounding areas by working with airport operators, affected communities, and aviation users.

2.8 Identify the extent of residential encroachment and monitor change and notify local government of hazards.

# 3. Safety Policies and Actions

## *Interest: Maintain Oregon's public-use airports so that they are safe, and ensure that the airport system can fulfill its role in the state's emergency response system.*

**Issues:**

The FAA plays a large role in providing the air traffic control system, regulating air carrier and general aviation operations, and providing safety-related design standards for airports. Through these roles, the FAA ensures that the state's interest in safe air travel is addressed. There are also, from the statewide system plan perspective, facility safety issues which include: ensuring that there are emergency landing strips, addressing incompatible land use, and providing access for emergency services to remote areas of the state, and ensuring the safety of those living and working in proximity to airports.

An important issue for the aviation plan is that the costs involved to correct safety issues arising from land use incompatibility or to address deficiencies from FAA facility standards are large. The cost of mitigation can range from a few hundred thousand dollars to millions. An example is the FAA's standards for runway safety areas. Project costs at Hillsboro Airport to correct deficient runway safety areas will be approximately $5 million[13].

**Policy: Maintain Oregon's public-use airports in a safe operating condition.**

## *Actions …*

3.1 Assist airports in prioritizing safety-related airport improvements.

3.2 Conduct site approvals for new airports, license public airports, and respond to requests for technical assistance at general aviation airports. (All new airports require FAA site approval in accordance with Federal Aviation Regulation, Part 157.)

3.3 Conduct FAA Airport Master Record inspections at general aviation airports under contract with the National Association of State Aviation Officials.

3.4 Use current FAA Advisory Circulars as the basis for design standards used in permitting airports.

3.5 Encourage the use of standards to minimize the liability risk for state and local government.

3.6 Follow current state and federal environmental guidelines and regulations.

**Issue:**

Airports play a vital role in emergency management. In the case of natural disasters or other emergencies, airports provide access to all areas of the state, serving as staging areas for rescue functions, and providing for quick response to medical emergencies. Emergency management requirements reinforce the state's interest in preserving an adequate statewide system of aviation facilities and services.

[13] Case studies on runway safety area project costs from Hillsboro, Astoria, and Pendleton are included in Section V.

**Policy: Support airport access for emergency response and medevac services.**

## *Actions …*

3.7 Support a core system of airports that provides access for hospitals to the air transportation system.

3.8 Determine the current levels of access to medevac services throughout the state and identify areas that are under-served.

# 4. Economic Development Policies and Actions

## *Interest: Support economic development by providing access to regional, state, national, and international markets.*

**Issues:**

Air transportation plays a key role in Oregon's economy and in supporting economic development. As detailed earlier, the direct and indirect gains from Oregon's commercial and general aviation airports exceeded $11.5 billion in 1995. Aviation provides the ability to move goods and people to locations around the world in a short period of time, giving Oregon's business community fast access to the global economy. In addition, the tourist activities that bring the greatest income to the state are heavily dependent on regular commercial air service.

General aviation airports also support economic development in the state by providing facilities for business/corporate use, agricultural spraying, air-cargo, and just-in-time shipping. The analysis of the benefits and costs of airports is a key consideration for airport capacity and operational improvement decisions at the system level.

A key issue for preserving airports is the importance of increasing community understanding about the economic importance of airports to the state and local economies. Increased understanding will help address incompatible land use decisions, competing priorities for local funding, and the impact of environmental mitigation policies.

**Policy: Provide information to increase understanding of the economic importance of Oregon's air transportation system.**

## *Actions…*

4.1 Increase public awareness of the economic benefits of air transportation.

4.2 Update information on the economic impact of Oregon's system of airports.

4.3 Coordinate with other agencies and groups involved in economic development.

4.4 Share economic impact information with local officials to increase their understanding of the role of airports in economic development.

4.5 Facilitate economic growth by supporting the improvement efforts of airports that are important for local and/or regional economic development.

# 5. Intermodal Accessibility Policies and Actions

## *Interest: Provide access to the air transportation system and its connections with other modes for people and freight throughout the state.*

**Issues:**

The importance of intermodal connectivity is reflected in federal, state, and local planning. The need for greater coordination between the FAA, the states, and metropolitan planning organizations is emphasized in the 1996 reauthorization of the FAA. It is an important component for local jurisdictions when decisions are made to increase capacity at an airport, whether the increase is to expand an existing airport or to develop new facilities.

With passenger enplanements forecast to increase 120 percent in the next 20 years, surface transportation planning should address the increased needs for access to airports. The Oregon Department of Transportation's corridor planning program and local and regional Transportation System Plans developed at the local level are addressing access to airports.

The roads accessing Portland International Airport, Eugene, and Rogue Valley International Airport (Medford) are designated intermodal connectors on the National Highway System. The other six commercial airports have access roads on the state and local systems. Other modes such as bus, taxis, shuttles, limosines or light rail take people to work or provide passengers access to airports. Since many surface transportation connections accessing airports cross local jurisdictional boundaries, good intergovernmental communication and coordination is needed.

**Policy: Provide Oregon with an airport system that is integrated with surface transportation modes, and allows for a choice of modes for the movement of people and goods.**

## *Actions …*

5.1 Work with airport owners and the FAA to identify airport ground access issues.

5.2 Develop a comprehensive approach to airport ground access as part of local and regional transportation system plans, of corridor planning, and of modal planning.

5.3 Provide information to airport owners on highway and other surface mode planning and programming efforts affecting airports.

5.4 Encourage and support the integration of airports into corridor local and regional planning.

# 6. Environmental Policies and Actions

## *Interest: Comply with state and federal environmental protection requirements.*

**Issue:**

Airports in Oregon are required to meet federal, state, and local regulatory requirements. This includes the state's environmental policy act, which addresses issues such as water quality, air quality, socio-economic impacts, natural resources, biological resources, land use, and hazardous waste, among many other areas. Airports must comply with the federal National Environmental Policy Act and various other federal environmental laws.

One of the biggest environmental impacts from airports is noise. That is why ensuring compatibility of adjacent land use is so important. In 1990, the United States Congress passed the Airport Noise and Capacity Act of 1990. The Act stated that aviation noise management is crucial to the continued increase in airport capacity, that a noise policy must be implemented at a national level, and that federally controlled revenues can help resolve noise problems and carry with them a responsibility to the national airport system. A final rule was issued that established procedures for reviewing airport noise and operations.

The Oregon Aviation Plan acknowledges that environmental protection is ensured by complying with federal and state laws. Airports are expected to comply with these laws.

**Policy: Support airport compliance with federal and state statutory requirements and guidelines.**

### *Actions …*

6.1 Ensure that state-owned airports are in compliance with state and federal environmental laws.

6.2 Assist airport owners and local planning jurisdictions in the application of environmental rules for their airports.

6.3 Coordinate with local jurisdictions to ensure that compatible land use is implemented within appropriate distances from airports.

# 7. Modernization and Capacity Policies and Actions

## *Interest: Support efforts to ensure sufficientsystem capacity and airport modernization.*

**Issues:**

In most areas of the state modernization involves addressing deficiencies such as inadequate runway length or obsolete lighting systems. Modernizing airport facilities will improve safety, and often efficiency, through the use of new technology. Providing modern freight facilities such as improvements underway at Rogue Valley International will benefit the system. Ensuring that the capacity of

the air transportation system increases to meet future demand is important to the overall level of service provided by the system.

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**Policy: Support airports that are in the system in meeting identified modernization needs for their facilities and instrumentation.**

## *Actions …*

7.1 Help system airports determine whether their facilities and/or instrumentation need updating.

7.2 Support federal funding requests for modernization projects at core general aviation airports.

7.3 Coordinate the implementation of new technology and other improvements, such as Global Positioning Systems technology to enhance the Oregon airspace system.

**Issue:**

It is in the state's interest to ensure that future airport capacity can serve growing statewide demand. Experience in Portland and elsewhere has shown that it takes years of lead-time to plan and build new airports or additional capacity.

Most airports in Oregon have sufficient capacity throughout the planning horizon. However, population and employment in Oregon are projected to continue to increase in the future. This means that demand for access to air transportation facilities and services will continue to grow in some areas of the state. The plan anticipates that there will be capacity constraints at Portland International, Eugene, and Hillsboro, during the 1999 to 2018 planning period[14]. These capacity issues will be addressed by individual master plans.

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**Policy: Support the efforts of Oregon system airports to meet future demands.**

## *Actions …*

7.4 Promote and encourage improvements to commercial air service and general aviation in Oregon.

7.5 Encourage the preservation and development of a core system of reliever and regional general aviation airports in Oregon.

[14] Oregon Continuous Aviation System Plan, March 1997.Volume II: Roles and Requirements.

# 8. Funding Policies and Actions

## *Interest: Seek adequate and stable statewide funding to preserve system airports.*

**Issues:**

Some of the major issues in Oregon aviation system funding are summarized below:

- **There is limited funding for general aviation in Oregon.** As the commercial airports continue to grow there is less provision for general aviation at them. Airports serving general aviation face aging infrastructure and local, state, and federal assistance that does not meet their basic preservation needs.

- **The state currently has limited resources to assist general aviation airports.** In fiscal year 1997, the state provided limited funding to municipal airports. In 1998, the Financial Assistance to Municipal Airports (FAM) program reestablished very limited funding to municipal airports ($200,000 in the 1999-01 biennium). Even with increases to state-levied user fees, the state cannot provide enough assistance to other local general aviation airports.

**Policy: Establish a state funding program for system public-use airports.**

## *Actions …*

8.1 Seek state funding to meet plan priorities for core system preservation.

8.2 Use state funds to provide a portion of matching funds for local operators to leverage federal funds for core system airports.

8.3 Expand funding mechanisms for non-NPIAS general aviation airports, which are not eligible for federal or state funding.

8.4 Develop new funding mechanisms such as seeking economic development funds.

8.5 Provide technical assistance to help airport operators become more self-sufficient.

8.6 Develop a funding ratio or formula to determine the state's participation in local core airport projects.

**Issue:**

Working with the FAA will be important in ensuring that federal funding decisions are made in concert with the priorities of the Oregon Aviation Plan.

Airports depend mainly on federal funding that varies from year to year. By way of example, over the past ten years federal funds paid to the Aeronautics Division ranged from a low of $165,519 in fiscal year 1989 to a high of $2,310,181 in fiscal year 1996. Federal funds paid to non state-owned airports shows similar variation. The total Federal Airport Improvement Program funds paid to all Oregon airports totaled $14.1 million in fiscal year 1997 and $17.4 million in fiscal year 1998. These are only spent at NPIAS airports.

Oregon's airports are heavily dependent on federal funding for capital development. Federal funding makes up over 60 percent of state airport revenues and over 35 percent of total revenues for locally-owned airports – clearly representing a major contribution to the development of the state's airports. Capital projects are funded primarily through federal

grants. However, 44 airports in the state system are not eligible for federal funding, of which only 15 are included in the core system as important from a system perspective.

**Policy: Work with the FAA to solicit federal funding for the priorities in the Oregon Aviation Plan.**

### *Actions …*

8.7 Establish aviation plan funding objectives and implementation priorities.

8.8 Grant State funds as available as a portion of the local match to those projects that best address airport system priorities.

8.9 Work with the FAA and Oregon's elected representatives to accomplish plan objectives.

## 9. Advocacy and Technical Assistance Policies and Actions

### *Interest: Provide advocacy and technical assistance for airports and their users.*

**Issues:**

The state plays an important role in increasing the understanding and awareness of the importance of air transportation to Oregon's economic development and quality of life.

A central element of Oregon Aeronautics' work is to provide advocacy for the airport system and technical assistance to local general aviation airport operators. This includes review of proposals affecting airspace in the state. This role is important in preserving the system because local airports have very limited resources; these often extend to a part-time airport manager responsible for administration, maintenance, and all other work. The state role provides an economy of scale and a statewide system perspective.

**Policy: Provide advocacy and technical assistance.**

### *Actions ...*

9.1 Act as an advocate for air transportation and airports.

9.2 Identify upcoming or current issues affecting aviation.

9.3 Provide technical assistance to airports.

9.4 Provide information to federal, state, and local government on aviation issues.

9.5 Compile and provide data and information on the role of the airport system to assist local governments in conducting public outreach on aviation facilities and policy.

9.6 Help public involvement and other staff at ODOT headquarters and in the regions to understand air transportation.

9.7 Provide community outreach and education.

**Issue:**

There are many different units of government involved in air transportation. Given the complexity of the jurisdictional and regulatory environment in which airports operate, interjurisdictional coordination is important for safe, efficient airport operations and development. The state, through Aeronautics, can provide technical assistance and facilitation to ensure that airport issues are addressed in a timely manner.

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**Policy: Facilitate intergovernmental coordination and cooperation.**

## *Actions ...*

9.8 Provide coordination between federal agencies, state agencies, local agencies, and airport operators.

9.9 Promote the efficient preservation, planning, and development of airports according to their function in the system.

9.10 Work with airport operators and the FAA to develop Airport Improvement Plans that support the Oregon Aviation Plan.

9.11 Try to balance the interests of the aviation industry and its customers with those of airport neighbors and with environmental protection goals.

9.12 Facilitate, where requested, communication among different aviation interests.

9.13 Support aerospace education.

**Issue:**

Airport planning is heavily facility-based. All commercial service airports and many high activity general aviation airports prepare master plans. These plans address future facility needs. Other airports do not need this level of planning but require planning support to assess their facility needs – they do not have the technical resources for this work. These are provided by the state.

As most planning is at the individual airport level, the state plays a key role in providing a system planning perspective. This allows planning to identify the most cost-effective allocation of funding for pavement preservation and set system-level goals.

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**Policy: Provide the planning framework for an integrated airport system in Oregon**

## *Actions …*

9.14 Build a planning framework to determine the services and level of service provided by the existing system.

9.15 Identify and apply criteria/measures that can document the current role of the airport system, the function it fulfills, and the level of service it provides.

9.16 Develop and maintain a database of all airports in the system using the criteria/measures identified in the development of the plan.

9.17 Determine the funding that will be needed to maintain the system and its airports at current service levels.

9.18 Develop service level priorities with existing funds that reflect the relative importance of different airport projects in meeting core system goals.

9.19 Prioritize projects according to system needs.

# 10. State-owned Airport Management Policies and Actions

## *Interest: Manage state-owned airports efficiently and effectively.*

**Issues:**

The state is responsible for managing 31 airports. There is limited funding available for operation and maintenance, and the airports have a backlog of capital improvement needs. Many of these airports are in remote areas of the state and have no based aircraft. Some have very low levels of utilization. Aeronautics policy is to transfer these airports to local ownership whenever possible.

**Policy: Own and operate those airports that fulfill an important role in the system but that Aeronautics cannot transfer to local ownership.**

## *Actions …*

10.1 Minimize, through transfer, the number of airports maintained and operated by Oregon Aeronautics.

10.2 Assist interested local governments to take over state-owned airports.

# V. System Element

## Overview

The system element provides an evaluation of the system-level needs to accomplish the policy element. In chapter IV, the policy element establishes the overriding policy to preserve the airport system and the level of service it provides. The system element identifies, at the system-level, the 20 year needs to preserve the system.

This element of the plan provides a system-level description of the condition of Oregon's airports. Airport conditions are measured against the Aviation Plan policies. These conditions are then compared to a set of standards that defines the minimum acceptable conditions for preserving Oregon airport facilities and the services that they provide. The analysis considers the current backlog of unmet needs and identifies needs over the next 20 years (1999-2018).

## System Analysis

Transportation needs are measured as the resources needed to accomplish the policy goals or objectives established for the system. In the case of aviation, each airport owner sets the planning goals for their facility and defines the individual airport's needs in coordination with the local public. The FAA administers a grant program that is used by the airports to address many of these needs as they implement their plans.

Through the Oregon Aviation Plan, policies for the statewide system are established. The approach taken for the system analysis is to evaluate the system needs for accomplishing the policy priorities set for the system. These are defined as the minimum needs required to preserve the airport facilities and the services provided by Oregon's airport system.

**System Element Analysis**

- Set System-level Plan Objectives
- Establish System-level Condition Measures for System Preservation
- Measure Current Conditions and Forecast Future Facility Requirements
- Establish Minimum Standards – System-level
- Evaluate Gap (Deficiencies)
- Evaluate Revenue Available
- Determine Needs Based on the Minimum Standards

### Set System-level Plan Objectives

The policy element prioritizes preserving Oregon's airports and the current level of service provided by the airport system to Oregon's communities. This is translated into a

measurable plan objective of identifying the facilities needed to meet the minimum conditions required to perform the functional role of the airport category in which they are assigned, and a measurable service objective of ensuring the continued level of access to airports.

## Establish System-level Condition Measures for System Preservation

Condition measures were developed that measure the physical conditions of each airport in the system. The conditions measured are those required for the airport to perform the functional role of the category it is in. Service measures relating to community access to airports were established.

## Measure Current Conditions and Forecast Future Facility Requirements

Runway, taxiway, and apron conditions were measured using available pavement management system and airfield pavement data. Runway length, lighting instrumentation, and other facility conditions were measured using data from FAA documents, airport master plans, existing operational data and forecasts, and surveys of airport sponsors, among other sources. Future facility requirements were developed using forecast operations and estimated lifecycle costs for preserving pavement, lighting, and other systems.

## Establish Minimum Standards – System Level

Minimum acceptable facility standards were established for the condition measures for each airport category. The minimum facility standards indicate the conditions required at an airport, within a given category, for it to fulfill its function in the system. Minimum standards were also established for access to airport facilities and services.

## Evaluate Gap (Deficiencies)

The system element documents the gap between system conditions and minimum acceptable standards. These are the system-level deficiencies addressed by the plan.

## Evaluate Revenue Available

To determine the amount of funded and unfunded needs to preserve the system, the available revenue was analyzed. For system-level analysis, a key element involves identifying the revenue available to meet the minimum system needs identified in the plan.

## Determine Needs Based on the Minimum Standards

The cost of improvements that address plan deficiencies was quantified and identified as needs. The gap between the available revenue and these needs was quantified. Needs were divided between preservation, modernization, and safety.

# System-level Conditions

## System-level Objectives

The system element identifies the minimum facility needs required to achieve the following system objectives established in the policy element:

- Preserving Oregon's system of public-use airports and its level of service.
- Minimizing duplicative service provision.
- Promoting the development of the system of airports so that the current level of service is maintained and enhanced.

## Access to Airport Service

Oregon Aviation Plan policy is to maintain the current level of service provided by Oregon's airport system. This is measured as access to airport services. In the Oregon Aviation Plan travel time by road to the airport is used to measure access.

Two primary measures were defined to identify community-based access airports. For population centers of 10,000 or larger, a travel time of not more than 30 minutes to the nearest airport with instrument meteorological conditions (IMC) capabilities is the defined standard. For population centers of 2,500 or larger, a travel time of not more than 30 minutes to the nearest airport with basic general aviation capabilities is the defined standard.

Currently, Oregon meets the airport service objective set by the plan for each airport category. The plan is to preserve this level of service in the future through promoting and supporting the development of Oregon's system of airports. Current service levels are presented in a series of maps.

**Commercial Service (Category 1 Airports)**

Commercial service airports are concentrated in areas with large population centers. These airports also have relatively large service areas. Population centers of 50,000 should have travel time of not greater than 90 minutes to the nearest commercial service airport. The level and type of commercial air service provided is determined by individual air carriers and market conditions.

The plan service objective for commercial service is met, as Exhibit V-1 (MAP) shows all communities greater than 50,000 have a commercial service airport within 90 minutes driving distance. Category 1 coverage is concentrated along the Interstate-5 corridor, east of the Cascades for Redmond and Klamath Falls, and in eastern Oregon at Pendleton. Parts of eastern Oregon are served by the Boise airport in Idaho. Parts of southwest Oregon, particularly in areas surrounding Brookings, are served by the airport in Crescent City, California.

**High Activity or Business General Aviation (Category 2 Airports)**

These airports accommodate corporate aviation activity, including business jets and other general aviation activities in areas with a high level of business activity and/or population and development density.

New areas of air service will result from market forces and demand. Potential new service points in the next 20 years may include northeastern

Oregon (Baker/La Grande/John Day area), Corvallis, and Western Portland/Washington County/Hillsboro/Columbia County.

Category 2 airports are largely concentrated in the Portland metro area and Willamette Valley with several overlapping service areas. The overlaps in this area are a product of development density, business activity, and population base in the Valley. Outside the Willamette Valley, business/high activity general aviation service is provided at Roseburg and Bend. The coverage is shown in Exhibit V-2 (MAP).

**Regional General Aviation Airport (Category 3 Airports)**

Regional general aviation airports are located in areas with low population density and large geographic service areas. These areas have surface travel times of more than 90 minutes to the nearest commercial service airport. The airport provides regional access to business aviation, charter, small air cargo, and medevac services. The facilities needs are based on providing all weather access for this type of general aviation activity.

Oregon meets the service objective established for Category 2 and 3 airports that can accommodate general aviation aircraft and have Instrument Meteorological Conditions (IMC) capabilities. Regional general aviation airports are all located east of the Cascades where population density and market demand is less concentrated.

**Community General Aviation (Category 4 Airports)**

Community general aviation airports accommodate a range of needs related to providing basic airport facilities in visual flight rules (VFR) conditions. Some community general aviation airports also have business or medevac activity which supports more advanced instrumentation and lighting.

As shown in Exhibit V-4 all communities with populations greater than 2,500 have a general aviation airport within 30 minutes driving time. Category 4 coverage is concentrated on the coast, along the Interstate-5 corridor, and along the Columbia River Gorge.

**Low Activity General Aviation (Category 5 Airports)**

Low activity general aviation airports accommodate a number of uses with minimal facilities or services. These airports often provide emergency landing capabilities, access to recreational areas, or basic air transportation access to remote areas of Oregon. Many low activity airports have strategic value because of their geographic locations in the state.

Category 5 coverage is concentrated on the coast, in the Cascades, and dispersed throughout eastern Oregon.

**Service Gaps**

Based on the condition measures the only service gap as defined by driving time and population is in the community of Jordan Valley, which has previously been identified as a candidate for development of a new general aviation airport. The site is located in Southeast Oregon, near the Idaho-Oregon border. The area has a remote, scattered population located within its potential service area (Jordan Valley, Danner, Arock) in addition to several recreational attractions. Several federal and state resource and law enforcement agencies have indicated a need for an airport located in this area. The nearest existing Oregon airport to Jordan Valley is Rome State, which is located approximately 60 road-miles southwest.

**Service Area Overlaps**

The Oregon Aviation Plan policy is to minimize duplicative service provision. The maps show overlap between airport service areas.

The following criteria were used to evaluate service overlap and determine which airport is best positioned to meet the system plan objective of minimizing duplicative service provision:

- In areas where population and land use density makes it difficult to expand airports, airports with overlapping service areas may be necessary to provide adequate service.

- Overlapping service areas may be justified where different markets are served or functional roles performed; for example, when the overlap is driven by safety or access reasons. In these cases, both airports serve important system roles.

- In other cases where there is overlap, the plan identifies the system plan priority to meeting service needs.

Where Category 1, 2, and 3 airport service areas overlap they are meeting different market demand, and therefore are not duplicative. For example, Category 2 airports are servicing general aviation. The greatest potential for duplicative overlaps involves Categories 4 and 5. These service overlaps were analyzed to determine if there is duplication in service provided as a result of the overlap.

There are several Category 2, 4, and 5 airports in the Portland metro area and Willamette Valley that are in close proximity. Airports in Category 2 are not considered duplicative because of the development density, level of business activity, population base in the area, geographical dispersion of the airports and function performed by the airports. With the exception of Mulino, which is an FAA-designated reliever, the Category 4 and 5 airports are considered to provide duplicative service due to their proximity to Category 2 airports. The Category 2 airports have more potential for development and for meeting standards.

There are a number of Category 4 and Category 5 airports on the Oregon coast with overlapping service areas. These overlaps are not considered duplicative because of the different roles served, the potential for quickly changing weather conditions within very short distances on the coast, and the need for airports in a close proximity as a safety factor. The proximity and frequency of airports along the coast occurred due to a prior state plan to provide airports on the length of the coast for access and emergency purposes.

**Potential for Service Overlaps**

Exhibit V-6 identifies where there is overlapping service and identifies the recommended airport for meeting air transportation demands in that community. None of the airports in Exhibit V-6 meet the criteria for consideration as core systems airports. The Sandy River Airport, Country Squire Airpark and Valley View Airport provide marginally duplicative service with the rest of the system but were not included in Exhibit V-6 because this overlap was limited. However, these three airports also have overlapping service with each other, which further reduces their individual utility.

# Exhibit V-6: Airports with Overlapping Service

| Airports Overlaps | Duplicative Airport | Primary Factors |
|---|---|---|
| Chehalem Airpark/McMinnville | Chehalem Airpark | McMinnville airport is located nearby. Chehalem Airpark is constrained, lacks development capability, provides limited utility and would be difficult to improve. |
| Enterprise/Joseph | Enterprise | NPIAS airport located nearby, which is eligible for federal funding. Enterprise is constrained and would be difficult to expand/upgrade. Joseph was selected (local and state discussions prior to new construction) as the airport to service the local area. |
| George Felt/Roseburg | George Felt | Roseburg Regional Airport is located nearby. George Felt is a low use airport with a turf runway. It is constrained, lacks development capability, provides limited utility and would be difficult to improve. |
| Happy Valley/Troutdale | Happy Valley | Happy Valley is constrained and has incompatible land uses adjacent. It lacks development capability, provides limited utility and would be difficult to improve. |
| Lenhardt Airpark/Aurora | Lenhardt Airpark | Lenhardt Airpark is constrained and lacks development capability. There are other core airports located nearby. Lenhardt Airpark has incompatible land uses adjacent, provides limited utility and would be difficult to improve. |
| Seaside/Astoria | Seaside | Astoria is approximately 20 minutes away. Although Seaside has recreational and local access value, it is constrained and unable to expand. Usage at Seaside is low and the facility is presently substandard and would be difficult to improve. |
| Sheridan/McMinnville | Sheridan | Sheridan is a low use airport with a turf runway. It is constrained and has McMinnville located nearby. Sheridan provides limited utility and would be difficult to improve. |

| Airports Overlaps | Duplicative Airport | Primary Factors |
|---|---|---|
| Skyport/Hillsboro | Skyport | Skyport is a low use airport with a turf runway. It is constrained and lacks development capability. Hillsboro is located nearby. Skyport provides limited utility and would be difficult to improve. |
| Sportsman Airpark/McMinnville | Sportsman Airpark | Sportsman Airpark is constrained and lacks development capability. McMinnville is located nearby. Sportsman Airpark has incompatible land uses adjacent, provides limited utility and would be difficult to improve. |
| Stark's Twin Oaks/Hillsboro | Stark's Twin Oaks | Hillsboro is located nearby. Stark's Twin Oaks is constrained, provides limited utility and would be difficult to improve. |

## Access to Emergency Services

Oregon airports provide medevac capabilities. The Oregon Trauma Program, administered by Oregon Department of Emergency Medical Services, coordinates access to medical care facilities throughout the state. Four trauma levels are defined, ranging from the most advanced medical facilities to smaller community or rural hospitals. Through the use of ambulance, fixed wing and rotor aircraft, patients are transported from lower to higher level trauma facilities based on their condition and need for specific types of medical care.[12]

Oregon has 45 medical facilities included in the trauma program, in addition to six facilities located out of state (Boise, Crescent City, and two in Walla Walla). Every medical facility included in the trauma program has an airport located within a 30-minute drive time. The majority of these airports meet the instrument approach and weather observation facility standards associated with medevac requirements. Airports with deficiencies in these areas have been identified in the assessment of minimum standards.

There are seven Trauma Level I or II facilities in Oregon (two in Portland, two in Medford, one each in Bend, Eugene, and Springfield), which provide the highest level of care available. All of these facilities are located within 30 minutes of a Category 1 airport.

There are eighteen Trauma Level III facilities located in Oregon. These facilities often serve large outlying areas or regions. With the exception of Tillamook, all of these facilities are located within 30 minutes of an airport with instrument approach capabilities.

## System-level Safety

At the system level, safety policies are addressed by:

- Emergency landing capabilities providing coverage of the entire state through the availability of a system of airports and emergency landing strips at strategic geographic locations.

[12] See the technical appendix for more detail.

- Instrument approach capabilities, automated terminal and enroute weather, and radar coverage.

**Emergency Landing Capabilities**

Several airports in the Oregon aviation system are located in areas that present unique weather and/or terrain challenges for pilots. These are identified in Exhibit V-7. The emergency use function of these airports is related to common flight routes, localized weather conditions, and the proximity of other nearby airports. All of the designated emergency use airports are state owned. These airports are little used by local communities, but provide an important component of the statewide aviation system. Although every airport in Oregon is available to aircraft during emergency conditions, the geographic location of these low activity airports is the primary factor when considering their importance to the Oregon aviation system.

## Exhibit V-7: Low Activity Airports with Emergency Use Significance

| Airport | Geographic Area |
|---|---|
| Cape Blanco State | Southern Oregon Coast |
| Cascade Locks State | Columbia Gorge |
| Crescent Lake State | Cascade Range (east side) |
| McDermitt State | Southeast Oregon (Oregon-Nevada flight route) |
| McKenzie Bridge State | Cascade Range |
| Nehalem Bay State | Northern Oregon Coast |
| Pinehurst State | Southern Oregon (west side Cascade Range) |
| Prospect State | Cascade Range |
| Santiam Junction State | Cascade Range |
| Toketee State | Cascade Range |

**Instrument Approach Capabilities**

Most of the existing instrument approaches at Oregon airports are based on conventional ground-based navigation aids such as localizer/glide slopes or very high frequency omnidirectional radio range, tactical air navigation (VORTACs). The FAA is responsible for the design and commissioning of instrument approach procedures. The FAA is currently implementing Global Positioning System (GPS) approaches for airports throughout Oregon. Most instrument approach procedures have a GPS overlay, with many stand-alone GPS approaches. Nearly half of instrument approaches are now GPS.

An important feature of the new GPS approaches is that they do not require any ground-based equipment to provide nonprecision instrument approach capabilities. This will provide a significant system-wide cost savings in the acquisition and maintenance of conventional ground-based navigational aids. However, the FAA's policy on the replacement of older ground-based navigational aid systems has not been finalized. Currently, most Oregon airports with instrument approach capabilities maintain some redundancy with both GPS and conventional procedures.

All Oregon airports in Categories 1 through 3 have existing instrument approach procedures; several Category 4 airports also have instrument approaches. Airports with conventional ground-based instrument approaches are scheduled to have overlay GPS approaches published. New stand-alone GPS approaches are being developed based on airport user needs. Several

Category 4 airports that provide significant local access and have established charter, cargo/express, corporate, or medevac activity are candidates for new instrument approaches. Based on this criteria, the following airports are recommended as the highest priority to receive instrument approaches: Florence, Gold Beach, Hood River, Joseph, Lexington, Madras, Prineville, and Tillamook.

**Weather Observation**

On-site weather observation capabilities are required for aircraft operating under federal air regulations (FAR) 121 or 135, which include scheduled airlines, cargo/express carriers, medevac, and air taxi or charter operators. Instrument approach procedures at airports without on-site weather are not authorized for use by these operators in instrument flight rules (IFR) conditions. Without on-site weather data, these aircraft are required to operate under visual flight rules (VFR) conditions at these airports.

Twenty-four-hour weather observation is identified as a minimum standard for all airports in Categories 1 through 3, and for Category 4 airports with established commercial activity (i.e., medevac, charter, etc.). An automated weather observation system (AWOS) or automated surface observation system (ASOS) represents the minimum facility standard for this need. These systems provide reliable weather data on a 24-hour per day basis. Although some airports provide certified human weather observers, the hours of availability are often limited. The 24-hour minimum standard is based on the assumption that a critical need (for example, medevac) could occur at any time of the day. Airports unable to provide on-demand weather data are unable to meet this minimum standard.

In addition to site-specific airport needs, some gaps in enroute weather coverage have been identified in Oregon. Airport locations with terminal automated weather observation needs include: Albany, Baker City, Bend, Florence, Gold Beach, Grants Pass, Joseph, Lexington, Madras, Prineville, the Dalles, and Tillamook. Areas/airports with significant enroute geographic coverage requirements are Bandon, Brookings, Cascade Locks, Hood River, McDermitt, Myrtle Creek, and Siletz Bay. The addition of automated information at these locations will significantly improve air safety within the Oregon aviation system.

**Radar Coverage**

The existing enroute and terminal airspace throughout Oregon[13] has been documented. The Oregon Aviation Plan notes a significant gap of radar service coverage in central Oregon. This deficiency primarily affects terminal radar coverage below 7,000 feet mean sea level (MSL) in the area surrounding the Deschutes VORTAC, located 6.1 miles west of Roberts Field in Redmond. Several airports with demand for instrument procedures are located within 30 miles of the VORTAC. Gaps in enroute coverage also exist from this area to the south, although they would also be reduced with improved terminal coverage.

The lack of reliable radar coverage permits only one aircraft at a time to be cleared for arrival or departure within this area below the coverage altitude. For example, when an aircraft is cleared for an instrument approach to Sunriver Airport (23.2 miles south of Deschutes VORTAC), no other aircraft can be cleared in or out of Redmond via instrument procedures. Only once the cleared aircraft either terminates the flight or climbs high enough to appear on radar (departure or missed approach), can

[13] Review of airspace conducted in the 1997 *Oregon Continuous Aviation System Plan, Volume 1: Inventory and Forecasts.*

another aircraft be cleared for an instrument procedure. This process, which can create significant delays for arriving and departing aircraft, becomes even more critical as the number of airports with instrument capabilities increases.

The development of new instrument approach procedures within this airspace (for example, Bend, Prineville, Madras, and others) will create additional demands on the system. Without additional radar coverage, the existing traffic congestion in Central Oregon will become worse.

A gap in radar coverage has previously been identified along the South Coast. An improvement in terminal radar coverage has also been identified for the upper Willamette Valley. Existing coverage has altitude limitations for approaching aircraft at airports such as Salem, Aurora, McMinnville, and Portland Hillsboro.

**Recreational Airport System**

Tourism and recreation are important and growing elements of Oregon's economy. The role of general aviation is well established in Oregon where long distances separate populated areas and prime recreational sites. The light airplane can offer an economical alternative for family recreational activities and provides a unique outdoor experience. The feasibility of establishing a system of general aviation airports which provides aircraft access to camping and recreational facilities in remote areas around the state should be studied. The study should evaluate the contribution of recreational airports to the state's economy while promoting Oregon's natural attractions to residents and visitors alike.

# Airport Condition Measures

The Oregon Aviation Plan provides an assessment of airport facility conditions and the extent to which airports are protected from incompatible land use.

## Facility Condition Measures

The facility condition measures used are listed in Exhibit V-8. More detail on the measures is provided in the Technical Appendix and Working Papers.

### Exhibit V-8: Facility Condition Measures

| Performance Indicator | Measures |
|---|---|
| **Runway, Taxiway and Apron Requirements** | • Runway length, width<br>• Taxiway access/type<br>• Pavement condition, pavement condition index<br>• Weight bearing capacity |
| **Airport Lighting, Instrumentation and Weather** | Presence of components by type:<br>• Control tower (yes/no)<br>• Runway lighting (yes/no)<br>• Taxiway lighting (yes/no)<br>• Approach lighting (yes/no)<br>• Visual Guidance Indicators (yes/no) |

| Performance Indicator | Measures |
|---|---|
| | • Instrument approach capabilities (yes/no)<br>• On-field weather reporting (yes/no)<br>• Runway end identifier lights (yes/no) |
| **Compliance with FAA Dimensional Standards**<br>• Runway-Parallel Taxiway Separation<br>• Runway Safety Area<br>• Runway Object Free Area<br>• Runway Protection Zones | • Deviation from minimum standards defined for functional role<br>(The FAA's evaluation of dimensional standards is related to an established airport reference code (ARC) which is based on the designated critical aircraft for the runway/taxiway component).<br>• Use of declared distances on runways |
| **Pilot/Terminal Services** | Availability of Aviation Fuel:<br>• Aviation gasoline (AVGAS) (yes/no)<br>• Jet fuel (yes/no)<br>Presence of:<br>• Repair and maintenance facilities (yes/no)<br>• Terminal facilities (commercial & general aviation)<br>• Presence of restrooms (yes/no)<br>• Vehicle parking |
| **Airfield Capacity** | • Annual demand as a percentage of annual service volume (ASV) |

## Airport Protection

The measures used to identify the extent to which airports are protected from future incompatible land uses and the presence of existing incompatible land uses are summarized in Exhibit V-9. A baseline of current land uses around airports should be identified. This should include the extent of residential development in proximity to the airport.

### Exhibit V-9: Airport Protection Measures

| Indicator | Measures |
|---|---|
| **Airport Protection** | • Presence of airport overlay zoning ordinance (yes/no)<br>• Airports with 55 Dnl noise contour extending beyond airport property (yes/no)<br>• Presence or absence of a major incompatible land use within the vicinity of the airport.<br>– Open landfills<br>– Water impoundments<br>– Bird/migratory areas<br>• Airports with close-in obstructions (within runway primary surface or runway protection zones) (yes/no)<br>• Presence of incompatible land uses nearby, including residential uses, (as reported by airport operators) (yes/no) |

## Airport Use

The volume of current and forecast activity is an important indicator. The system level measures are listed in Exhibit V-10.

**Exhibit V-10: Airport Use Measures**

| Indicator | Measures |
|---|---|
| **Based Aircraft** | The number of aircraft permanently located at an airport by type of aircraft |
| **Aircraft Operations** | The number and type of aircraft operations at an airport<br>Type of operations include:<br>• Scheduled commercial service<br>• General aviation by type where available<br>• Military |
| **Indicator** | **Measures** |
| **Commercial Scheduled Passengers** | • Number of boarding passengers (enplanements) at commercial service airports |
| **Freight** | • Tonnage at certified airports reported in Master Plans |

# Minimum Acceptable Facility Standards

For each of the facility condition measures, minimum acceptable standards were established by the Oregon Aviation Plan. These standards are the minimum conditions acceptable for each category of airport and are summarized below[14].

## Runways, Taxiways, and Aprons

Three standards are set.

- **Runway length.** For Categories 1 and 2, the needs established in individual airport master plans define the standards. For other categories, the standard reflects the percentage of the general aviation fleet that is able to use the general aviation airport. The standard is based on the methodology in *FAA Runway Length Requirements for Airport Design, AC 150/5325-4A.*
- **Runway weight bearing capacity.** This is the minimum standard required for the type of aircraft that each airport category accommodates.
- **Pavement condition index.** A minimum standard is set for pavement condition based on lifecycle cost considerations. The index provides information on the condition of airport pavement in terms of smoothness, cracks, potholes, and other characteristics.

[14] The detailed criteria for the minimum standards, for each airport category, are presented in the Technical Appendix.

## Lighting, Instrumentation, and Weather

The plan establishes minimum standards for lighting, weather observation, and instrument approach capabilities for each category of airport.

- **Runway, taxiway, and approach lighting.** Standards specify lighting intensity that is highest at Category 1 airports. Category 5 airports do not have lighting requirements. With the exception of Category 5 airports, airports in the system should, as a minimum, provide runway lighting, Visual Approach Slope Indicator/Precision Approach Path Indicator (VASI/PAPI), and runway end identifiers on instrument runways.

- **Instrument approach and weather observation stations.** Each airport category has a standard approach type. Depending on the airport category, this may include precision or non-precision instrument approach capabilities, or for Category 5, VFR capabilities. For airport Categories 1, 2, and 3, 24-hour on-site weather observation is the standard. That is also the standard for Category 4 airports with FAR Part 135/medevac requirements. It should be noted, however, that some airports in lower categories also have weather observation equipment to provide information for enroute aircraft. These are noted in the inventory of weather observations stations in the Technical Appendix. Precision instrument approaches are the standard for Category 1 airports. Category 2 airports may have precision or nonprecision approaches, depending on local needs and site constraints. Nonprecision approaches are the standard for Category 3 airports and those Category 4 airports with established medevac, business, or FAR Part 135 activity.

## Other Facility Standards

In addition to these main airport facilities, there are a number of other facilities that are addressed by system plan standards. They include:

- **Aircraft storage capabilities.** Gate capacity and general aviation parking space. For economic development purposes, the availability of land for hangar construction should be a consideration.

- **Air traffic control.** The requirement for a tower is based on FAA criteria or other special circumstances.

- **Aircraft rescue and fire fighting.** Airports operating under FAR Part 139 are required to provide Airport Rescue and Fire Fighting (ARFF) capabilities. For other airports in Categories 2, 3 and 4, local capabilities suffice, and Category 5 airports do not have standards.

- **Terminal facilities.** This addresses both passenger and cargo facilities, surface access and vehicle parking. The Oregon Aviation Plan sets standards based on whether or not there is a facility. Air cargo facilities, for example ramp space and the presence of general aviation Terminal/Fixed Base Operator (FBO) facilities are standards for Categories 1 through 3. Basic restroom and telephone facilities are standards for Category 4 airports.

- **Aviation services.** The availability of jet fuel, AVGAS, and other aircraft services are established as standards. With the exception of Category 5 airports, fuel for the aircraft fleet using the airport should be provided by some means at the airport.

## Airfield Capacity

Following FAA national capacity planning guidelines, the Oregon Aviation Plan recommends that capacity planning be undertaken for airports with annual service volumes that exceed 60 percent of capacity. Therefore, the condition measure is whether or not capacity planning is taking place.

# System Deficiencies[15]

Airport facility conditions were measured against the minimum acceptable facility standards to identify system-level deficiencies at each airport.

To measure deficiencies, a data set was built based on the comprehensive inventory of the Oregon aviation system that was completed in 1997 and supplemented by a variety of data sources. The data sources used for the analysis include:

- Oregon Continuous Aviation System Plan, Volume II Inventory and Forecast (1997).
- Airport/Facility Directory, U.S. Department of Commerce, National Ocean Service.
- U.S. Terminal Procedures Northwest (NW), U.S. Department of Commerce, National Ocean Service.
- 1996 Oregon Aeronautical Chart.
- Oregon Aeronautics Pavement System.
- Airport Operator Survey (1998).

To undertake the airport operator survey, data sheets were prepared and mailed to each airport owner. The condition of existing facilities and the most recent estimates of based aircraft and operations were provided. Airport operators were asked to review the information and update as necessary. In addition, requests for information were made for several non-facility items, such as the presence of nearby incompatible land uses, and existing airport overlay zoning. In cases where data was not available or other items were unknown, "no data" responses were provided. The responses to the data surveys tabulated by airport category are provided in Exhibits V-12 through V-18.

## Pavement Condition

Currently 57.7 percent of airport pavements are in "very good" or "excellent" condition, 19.3 percent in "good" condition, 9.7 percent in "fair" and 13.3 percent in "poor," "very poor," or "failed" condition.

In general, pavements at Category 1, 2, and 4 airports are in better condition than that at airports in other categories. Current pavement conditions are summarized in Exhibit V-11.

[15] The condition data used in this section are drawn from the following sources: Oregon Aeronautics Pavement Management System, Airport Master Plans, and Oregon Aviation Plan condition assessment survey completed by airport operators.

## Exhibit V-11: Current Condition of Airport Pavement by Category

| Rating | Percent of Pavement Area | | | | | |
|---|---|---|---|---|---|---|
| | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Averages |
| Excellent | 33.8 | 39.7 | 40.9 | 36.9 | 4.3 | 35.2 |
| Very Good | 26.4 | 13.1 | 10.7 | 33.4 | 20.0 | 22.5 |
| Good | 20.0 | 17.2 | 21.0 | 16.9 | 28.2 | 19.3 |
| Fair | 9.4 | 17.2 | 8.4 | 4.0 | 10.6 | 9.7 |
| Poor | 3.4 | 2.3 | 10.6 | 3.8 | 16.7 | 5.0 |
| Very Poor | 3.5 | 2.7 | 2.8 | 3.5 | 19.8 | 4.0 |
| Failed | 3.5 | 7.7 | 5.8 | 1.5 | 0.5 | 4.3 |

Source: Derived from Aeronautics Pavement Management System.

## Runway and Taxiway Deficiencies

## Exhibit V-12: Runway and Taxiway Deficiencies

| Facility Condition Measure | Airport Category | Number of Airports Meeting Standard | Number of Airports *Not* Meeting Standard | Number of Airports Not Applicable |
|---|---|---|---|---|
| Primary Runway Length/Width | Category 1 | 7 | 2*** | - |
| | Category 2 | 4 | 5*** | 1* |
| | Category 3 | 6 | 1 | - |
| | Category 4 | 23 | 12 | - |
| | Category 5 | 18 | 21 | 1** |
| | Total | *58* | *41* | *2* |
| Runway Weight Bearing Capacity | Category 1 | 9 | - | - |
| | Category 2 | 8 | 1 | 1* |
| | Category 3 | 7 | - | - |
| | Category 4 | 28 | 7 | - |
| | Category 5 | 7 | 8 | 25 |
| | Total | *59* | *16* | *26* |
| Taxiway Access | Category 1 | 5 | 4 | - |
| | Category 2 | 3 | 6 | 1* |
| | Category 3 | 6 | 1 | - |
| | Category 4 | 25 | 10 | - |
| | Category 5 | 36 | 3 | 1** |
| | Total | *75* | *24* | *2* |

* Portland Downtown Heliport – minimum standards not applicable.
** Lake Woahink Seaplane Base – minimum standards not applicable.
*** Master Plan defined runway extension as other improvement.

### Runway Length/Width

As of October 1999, only 58 of the 101 system airports meet the plan minimum standards for primary runway length/width. It is mainly airports in Categories 2, 4, and 5 that do not meet the standard.

### Runway Weight Bearing Capacity

In general, airport runways meet the minimum system standards. Where applicable, almost 80 percent meet this standard. The measure is not applicable for many Category 5 airports which have dirt, grass, or gravel runways.

### Taxiway Access

Over 70 percent of the system's airports have taxiway access that meets the minimum standard.

## Lighting Deficiencies

The number of airports that do not meet system plan standards for lighting are summarized in Exhibit V-13.

### Exhibit V-13: Lighting Deficiencies

| Facility Condition Measure | Airport Category | Number of Airports Meeting Standard | Number of Airports *Not* Meeting Standard | Not Applicable |
|---|---|---|---|---|
| Runway Lighting | Category 1 | 9 | - | - |
| | Category 2 | 9 | - | 1* |
| | Category 3 | 7 | - | - |
| | Category 4 | 20 | 15 | - |
| | Category 5 | - | - | 40 |
| | Total | *45* | *15* | *41* |
| Taxiway Lighting | Category 1 | 8 | 1 | - |
| | Category 2 | 5 | 4 | 1* |
| | Category 3 | 5 | 2 | - |
| | Category 4 | 9 | 26 | - |
| | Category 5 | - | - | 40 |
| | Total | *27* | *33* | *41* |
| Visual Guidance Indicator (VGI) | Category 1 | 3 | 6 | - |
| | Category 2 | 5 | 4 | 1* |
| | Category 3 | 3 | 4 | - |
| | Category 4 | 10 | 25 | - |
| | Category 5 | - | - | 40 |
| | Total | *21* | *39* | *41* |
| Runway End Identifier Lights (REILS) | Category 1 | 4 | 5 | - |
| | Category 2 | 7 | 2 | 1* |
| | Category 3 | 1 | 6 | - |
| | Category 4 | 2 | 8 | 25 |
| | Category 5 | - | - | 40 |
| | Total | *14* | *21* | *66* |
| Approach Lighting | Category 1 | 7 | 2 | - |
| | Category 2 | 9 | - | 1* |
| | Category 3 | - | - | 7 |
| | Category 4 | - | - | 35 |
| | Category 5 | - | - | 40 |
| | Total | *16* | *2* | *83* |

* Portland Downtown Heliport – minimum standards not applicable.
No minimum standard requirement for Category 5 airports.

All Category 1, 2, and 3, airports meet the minimum standard for runway lighting. However, 40 percent of Category 4 airports do not meet the standard.

A total of seven airports across Categories 1 through 3 do not meet the standard for taxiway lighting. Most Category 4 airports do not meet the standard.

Less than half of Category 1 through 3 airports meet the minimum standard for visual guidance indicators (VGI), which recommends VGIs on all runways without approach lights. This generally means that they do not have VGI on every runway end as per the standards. Ten out of 35 Category 4 airports meet the standard.

About half of Category 1 through 3 airports in the system do not meet the minimum standard for runway end identifier lighting (REILS). REILS are recommended standards for instrument runways in all airport categories.

Category 1 and 2 airports generally have approach lighting at or above minimum standards, except for two airports in Category 1. These are North Bend Municipal and Newport Municipal. There is no approach lighting minimum standard requirement for Category 3 through 5 airports.

## Exhibit V-14: Instrumentation, Weather Reporting Services, and Capacity Deficiencies

| Facility Condition Measure | Airport Category | Number of Airports Meeting Standard | Number of Airports *Not* Meeting Standard | Not Applicable |
|---|---|---|---|---|
| Instrument Approach | Category 1 | 9 | - | - |
| | Category 2 | 9 | - | 1* |
| | Category 3 | 7 | - | - |
| | Category 4 | 4 | 10 | 21 |
| | Category 5 | - | - | 40 |
| | *Total* | *28* | *10* | *63* |
| 24-hour Weather Reporting | Category 1 | 9 | - | - |
| | Category 2 | 8 | 1 | 1* |
| | Category 3 | 4 | 3 | - |
| | Category 4 | 1 | 14 | 12 |
| | Category 5 | 1 | - | 39 |
| | *Total* | *23* | *14* | *64* |
| Aviation Services | Category 1 | 9 | - | - |
| | Category 2 | 9 | - | 1* |
| | Category 3 | 7 | - | - |
| | Category 4 | 26 | 9 | - |
| | Category 5 | - | - | 40 |
| | *Total* | *51* | *9* | *41* |
| Airfield Capacity | Category 1 | 7 | 2 | - |
| | Category 2 | 8 | 1 | 1* |
| | Category 3 | 7 | - | - |
| | Category 4 | 35 | - | - |
| | Category 5 | 40 | - | - |
| | *Total* | *97* | *3* | *1* |

* Portland Downtown Heliport – minimum standards not applicable.
No minimum standard requirement for Category 5 airports.

## Instrumentation and Weather Reporting

System-level and minimum standard deficiencies are reported in Exhibit V-14.

### Instrument Approach

All Category 1 through 3 airports have minimum standard level or above instrument approach capabilities. Four Category 4 airports have an instrument approach. There is no minimum standard requirement for instrument approach for Category 5 airports.

### 24-hour Weather Reporting

Twenty-four-hour weather reporting meets plan minimum standards for airports with instrument approach requirements. All Category 1 airports meet the standards. All Category 2 airports, with the exception of Bend meet the standard. Two Category 3 airports do not meet the standard (Baker City, and Columbia Gorge/The Dalles). Only one airport (Hermiston) in Category 4 has met the standard.

### Aviation Services

In general, most Category 1 through 4 airports provide aviation services, such as AVGAS and terminal facilities, at a level at or above plan minimum standards.

### Airfield Capacity

The Oregon Aviation Plan minimum standard for airfield capacity is that capacity planning be undertaken for airports with annual service volumes that exceed 60 percent of capacity. This threshold provides lead time to plan for and implement improvements to meet capacity needs. This applies to two airports in Category 1 (Portland International and Eugene – Mahlon Sweet Field) and one airport in Category 2 (Hillsboro). These airports are addressing capacity through their master planning activities.

## FAA Dimensional Deficiencies

Oregon airports have a number of deficiencies due to deviations from FAA dimensional standards. The data source is the Oregon Aviation Plan survey of airport operators undertaken in the fall of 1998[16]. The FAA dimensional deviations are summarized in Exhibit V-15 for runway safety area, runway object-free area, runway protection zone, and parallel taxiway separation.

### Runway Safety Areas

Runway safety area standards exist for dimensions and physical condition (maximum grades, surface condition, etc.). Safety areas are intended to support aircraft that leave (or miss) the runway environment during landing or takeoff.

### Runway Object Free Areas

Runway object free areas (OFA) are intended to be clear of ground objects protruding above the runway safety area edge elevation. Obstructions within the OFA may interfere with aircraft flight in the immediate vicinity of the runway. The dimensional standards vary by runway type, although the clearance standards are the same for runways.

[16] Responses from the airport operators varied in completeness and detail. “No Data” responses were used for items not known or lacking detailed information. These responses are assumed to indicate non-compliance with a particular standard or confirmation of an existing deficiency. The no data responses will require further investigation to determine accuracy. For the above reasons, the results and analysis of the survey findings should be treated as indicating trends and general findings.

**Runway Protection Zones**

Runway protection zones are intended to protect people and property on the ground by restricting development within the runway protection zone boundary. Runway protection zones are located beyond each runway end and underlie the inner approach surfaces for runways. Runway protection zones with buildings, roadways, or other items are considered not to comply with FAA standards.

**Parallel Taxiway Separations**

The FAA establishes recommended standards for the separation of runways and parallel taxiways, based on runway design type. Runways with parallel taxiways that are less than the FAA-recommended dimensions are considered not to meet minimum standards.

FAA dimensional deficiencies are important to the system plan. Typically any FAA funded project that addresses system plan defined deficiencies would also have to address any existing deficiencies from the FAA dimensional standards.

## Exhibit V-15: Deviation from FAA Dimensional Standards

| FAA Standard | Airport Category | Number of Airports Meeting FAA Standard | Number of Airports *Not* Meeting FAA Standard | Not Applicable |
|---|---|---|---|---|
| Runway Safety Area | Category 1 | 5 | 4 | - |
| | Category 2 | 6 | 3 | 1* |
| | Category 3 | 5 | 2 | - |
| | Category 4 | 19 | 16 | - |
| | Category 5 | 19 | 20 | 1** |
| | Total | *54* | *45* | *2* |
| Runway Object-Free Area | Category 1 | 6 | 3 | - |
| | Category 2 | 6 | 3 | 1* |
| | Category 3 | 3 | 4 | - |
| | Category 4 | 21 | 14 | - |
| | Category 5 | 14 | 25 | 1** |
| | Total | *50* | *49* | *2* |
| Runway Protection Zone | Category 1 | 3 | 6 | - |
| | Category 2 | 3 | 6 | 1* |
| | Category 3 | 1 | 6 | - |
| | Category 4 | 11 | 24 | - |
| | Category 5 | 12 | 27 | 1** |
| | Total | *30* | *69* | *2* |
| Parallel Taxiway Separation | Category 1 | 8 | 1 | - |
| | Category 2 | 5 | 4 | 1* |
| | Category 3 | 6 | 1 | - |
| | Category 4 | 21 | 5 | 9 |
| | Category 5 | 1 | - | 39 |
| | Total | *41* | *11* | *49* |

* Portland Downtown Heliport – minimum standards not applicable.
** Lake Woahink Seaplane Base – minimum standards not applicable.

There are high levels of deviation system-wide from runway safety area, runway object-free area, and runway protection zone standards.

- Slightly less than half of all airports reported deficient runway safety areas.
- Half of all airports in the system reported runway object-free area deficiencies.
- Only 30 percent of airports in the system reported meeting FAA standards for runway protection zone.

**Airport Protection**

The extent to which airports have land use protection in place to prevent future incompatible land uses, or have incompatible land use adjacent to the airport is summarized in Exhibit V-16.

## Exhibit V-16: Airport Protection Deficiencies

| Protection Item – Major Incompatible Land Uses | Airport Category | Number of Airports Reporting Deficiencies |
|---|---|---|
| Overlay Zoning Deficiency | Category 1 | 4 |
| | Category 2 | 2 |
| | Category 3 | 4 |
| | Category 4 | 24 |
| | Category 5 | 38 |
| | Total | *72* |
| 55 DNL Noise Contours Extending Off Airport | Category 1 | 9 |
| | Category 2 | 9 |
| | Category 3 | 7 |
| | Category 4 | 32 |
| | Category 5 | 24 |
| | Total | *81* |
| Incompatible Land Uses Near Airport | Category 1 | 6 |
| | Category 2 | 9 |
| | Category 3 | 6 |
| | Category 4 | 29 |
| | Category 5 | 19 |
| | Total | *69* |
| Water Impoundments Near Airport | Category 1 | 5 |
| | Category 2 | 6 |
| | Category 3 | 4 |
| | Category 4 | 17 |
| | Category 5 | 12 |
| | Total | *44* |
| Open Land Fills Near Airport | Category 1 | 2 |
| | Category 2 | 1 |
| | Category 3 | 1 |
| | Category 4 | 6 |
| | Category 5 | 5 |
| | Total | *15* |
| Bird Migratory Areas Near Airport | Category 1 | 6 |
| | Category 2 | 6 |
| | Category 3 | 4 |
| | Category 4 | 24 |
| | Category 5 | 13 |
| | Total | *53* |

### Overlay Zoning Deficiencies

There are substantial deficiencies relating to airport protection overlay zones. The percentage of airports that reported having existing airport overlay zoning generally declines by airport size.

### 55 DNL Noise Contours off Airport

A high number of airports in all categories have 55 Dnl contours extending beyond airport property. All Category 1 airports and nine out of ten Category 2 airports report 55 Dnl contours extending beyond airport property. This is not an unusual result for commercial and high activity/business general aviation airports, reflecting Oregon's more sensitive land use and noise compatibility planning guidelines.

### Incompatible Land Uses Identified

- Seventy percent of airports have reported major incompatible land uses located near their airports.
- Just under half of airports have reported water impoundments near their airports.
- Some (15 percent) airports have reported open landfills located nearby.
- Half of system airports have reported migratory bird areas located nearby.

## Deficiencies by Airport

Exhibit V-17 presents facility deficiencies from minimum standards by airport.

**Exhibit V-17: Facility Condition Deficiencies[17] (As of January 1999)**

Legend:
- Meets minimum standard
- Deficient
- * Not Applicable
- ~ Master Plan defined need

| | Primary Runway Length/Width | Rwy Pavement Strength | Taxiway Access | Runway Lighting | Taxiway Lighting | Visual Guidance Ind. (VGI) | REILS | Approach Lighting | Instrument Approach | 24-hour Weather | Aviation Services | Airfield Capacity | Runway Safety Area | Runway Object Free Area | Runway Protection Zones | Parallel Txy Separation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Category 1** | | | | | | | | | | | | | | | | |
| Portland International | | | | | | | | | | | | | | | | |
| Eugene - Mahlon Sweet Field | | | | | | | | | | | | | | | | |
| Rogue Valley International – Medford | ~ | | | | | | | | | | | | | | | |
| Roberts Field – Redmond | ~ | | | | | | | | | | | | | | | |
| Klamath Falls International | | | | | | | | | | | | | | | | |
| North Bend Municipal | | | | | | | | | | | | | | | | |
| Eastern Oregon Regional – Pendleton | | | | | | | | | | | | | | | | |
| Astoria Regional | | | | | | | | | | | | | | | | |
| Newport Municipal | | | | | | | | | | | | | | | | |
| **Category 2** | | | | | | | | | | | | | | | | |
| Aurora State | ~ | | | | | | | | | | | | | | | |
| Bend Municipal | ~ | | | | | | | | | | | | | | | |
| Corvallis Municipal | | | | | | | | | | | | | | | | |
| **Category 2 (Continued)** | | | | | | | | | | | | | | | | |
| Hillsboro (Portland ) | ~ | | | | | | | | | | | | | | | |
| McMinnville Municipal | | | | | | | | | | | | | | | | |

[17] For categories 1 and 2, runway, taxiway and other non-pavement deficiencies are identified from airport master plans.

# Exhibit V-17: Facility Condition Deficiencies[17] (As of January 1999)

Legend:
- Meets minimum standard
- Deficient
- * Not Applicable
- ~ Master Plan defined need

| | *Primary Runway Length/Width* | *Rwy Pavement Strength* | *Taxiway Access* | *Runway Lighting* | *Taxiway Lighting* | *Visual Guidance Ind. (VGI)* | *REILS* | *Approach Lighting* | *Instrument Approach* | *24-hour Weather* | *Aviation Services* | *Airfield Capacity* | *Runway Safety Area* | *Runway Object Free Area* | *Runway Protection Zones* | *Parallel Txy Separation* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Portland-Downtown Heliport | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Roseburg Regional | | | | | | | | | | | | | | | | |
| Salem - McNary Field | ~ | | | | | | | | | | | | | | | |
| Scappoose Industrial Airpark | ~ | | | | | | | | | | | | | | | |
| Troutdale (Portland) | | | | | | | | | | | | | | | | |
| ***Category 3*** | | | | | | | | | | | | | | | | |
| Baker City Municipal | | | | | | | | | | | | | | | | |
| Burns Municipal | | | | | | | | | | | | | | | | |
| Columbia R. Gorge Reg. – The Dalles | | | | | | | | | | | | | | | | |
| Grant County Regional - Ogilvie Field | | | | | | | | | | | | | | | | |
| LaGrande/Union County | | | | | | | | | | | | | | | | |
| Lake County | | | | | | | | | | | | | | | | |
| Ontario Municipal | | | | | | | | | | | | | | | | |
| ***Category 4*** | | | | | | | | | | | | | | | | |
| Albany Municipal | | | | | | | | * | | | | | | | | |
| Ashland Municipal | | | | | | | * | * | * | * | | | | | | |
| Bandon State | | | | | | | * | * | | | | | | | | |
| Chiloquin State | | | | | | | * | * | * | * | | | | | | * |
| Condon State | | | | | | | * | * | * | * | | | | | | * |
| Cottage Grove State | | | | | | | * | * | * | * | | | | | | |
| Creswell Municipal | | | | | | | * | * | * | * | | | | | | |
| Curry Coast Airpark | | | | | | | * | * | | | | | | | | |
| Enterprise Municipal | | | | | | | * | * | * | * | | | | | | |
| Florence Municipal | | | | | | | | * | | | | | | | | |
| Gold Beach Municipal | | | | | | | | * | | | | | | | | |
| Grants Pass | | | | | | | | * | | | | | | | | |
| Hermiston Municipal | | | | | | | | * | | | | | | | | |
| Hood River | | | | | | | * | * | | | | | | | | |
| Illinois Valley | | | | | | | * | * | * | * | | | | | | * |
| Independence State | | | | | | | * | * | * | * | | | | | | |
| Joseph State | | | | | | | | * | | | | | | | | * |
| Lebanon State | | | | | | | * | * | * | * | | | | | | |
| Lexington | | | | | | | | * | | | | | | | | |
| ***Category 4 (Continued)*** | | | | | | | | | | | | | | | | |
| Madras City-County | | | | | | | | * | | | | | | | | |
| Myrtle Creek Municipal | | | | | | | * | * | * | | | | | | | * |
| Mulino (Portland) | | | | | | | * | * | * | * | | | | | | |

# Exhibit V-17: Facility Condition Deficiencies[17] (As of January 1999)

Legend:
- Meets minimum standard
- Deficient
- * Not Applicable
- ~ Master Plan defined need

| | *Primary Runway Length/Width* | *Rwy Pavement Strength* | *Taxiway Access* | *Runway Lighting* | *Taxiway Lighting* | *Visual Guidance Ind. (VGI)* | *REILS* | *Approach Lighting* | *Instrument Approach* | *24-hour Weather* | *Aviation Services* | *Airfield Capacity* | *Runway Safety Area* | *Runway Object Free Area* | *Runway Protection Zones* | *Parallel Txy Separation* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prineville | | | | | | | | * | | | | | | | | * |
| Seaside Municipal | | | | | | | * | * | * | * | | | | | | |
| Siletz Bay State | | | | | | | * | * | * | | | | | | | * |
| Tillamook | | | | | | | | * | | | | | | | | |
| Wasco State | | | | | | | * | * | * | * | | | | | | * |
| ***Category 5*** | | | | | | | | | | | | | | | | |
| Alkali Lake State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Arlington Municipal | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Beaver Marsh State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Boardman | | | | * | * | * | * | * | * | * | * | | | | | * |
| Burns Junction BLM | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Cape Blanco State | | | | * | * | * | * | * | * | * | * | | | | | * |
| Cascade Locks State | | | | * | * | * | * | * | * | | * | | | | | * |
| Christmas Valley | | | | * | * | * | * | * | * | * | * | | | | | * |
| Crescent Lake State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Juntura BLM | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Lakeside State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Lake Billy Chinook State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Malin | | * | | * | * | * | * | * | * | * | * | | | | | * |
| McDermitt State | | | | * | * | * | * | * | * | * | * | | | | | * |
| McKenzie Bridge State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Memaloose USFS | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Miller Memorial Airpark | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Monument Municipal | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Nehalem Bay State | | | | * | * | * | * | * | * | * | * | | | | | |
| Oakridge State | | | | * | * | * | * | * | * | * | * | | | | | * |
| Owyhee Reservoir State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Pacific City State | | | | * | * | * | * | * | * | * | * | | | | | * |
| Paisley State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Pinehurst State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Powers | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Prospect State | | | | * | * | * | * | * | * | * | * | | | | | * |
| Rome State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| ***Category 5 (Continued)*** | | | | | | | | | | | | | | | | |
| Santiam Junction State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Silver Lake USFS | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Toketee State | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Toledo State | | | | * | * | * | * | * | * | * | * | | | | | * |

## Exhibit V-17: Facility Condition Deficiencies[17] (As of January 1999)

Legend:
- Meets minimum standard
- Deficient
- * Not Applicable
- ~ Master Plan defined need

| | *Primary Runway Length/Width* | *Rwy Pavement Strength* | *Taxiway Access* | *Runway Lighting* | *Taxiway Lighting* | *Visual Guidance Ind. (VGI)* | *REILS* | *Approach Lighting* | *Instrument Approach* | *24-hour Weather* | *Aviation Services* | *Airfield Capacity* | *Runway Safety Area* | *Runway Object Free Area* | *Runway Protection Zones* | *Parallel Txy Separation* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vernonia Airfield | | * | | * | * | * | * | * | * | * | * | | | | | * |
| Wakonda Beach State | | * | | * | * | * | * | * | * | * | * | | | | | * |

Exhibit V-18 presents land use compatibility by airport.

## Exhibit V-18: Land Use Compatibility

Legend:
- Deficiency Reported
- None Reported
- * Not Applicable

| | *Overlay Zoning Deficiency* | *55 DNL Contour off Airport* | *Incompatible Land Uses Nearby* | *Water Impoundments Near Airport* | *Open Land Fills Near Airport* | *Bird Migratory Areas Near Airport* |
|---|---|---|---|---|---|---|
| ***Category 1*** | | | | | | |
| Portland International | ■ | | | | ■ | |
| Eugene - Mahlon Sweet Field | | | | | ■ | |
| Rogue Valley International – Medford | ■ | | ■ | ■ | ■ | ■ |
| Roberts Field – Redmond | ■ | | ■ | ■ | ■ | ■ |
| Klamath Falls International | | | | | ■ | |
| North Bend Municipal | | | | | | |
| Eastern Oregon Regional – Pendleton | ■ | | ■ | ■ | ■ | ■ |
| Astoria Regional | | | | | | |
| Newport Municipal | ■ | | | ■ | ■ | |
| ***Category 2*** | | | | | | |
| Aurora State | ■ | | | ■ | ■ | ■ |
| Bend Municipal | ■ | | | | ■ | ■ |
| Corvallis Municipal | ■ | | | | ■ | |
| Hillsboro (Portland ) | | | | ■ | ■ | ■ |
| McMinnville Municipal | ■ | | ■ | ■ | ■ | ■ |
| Portland-Downtown Heliport | ■ | | | | ■ | |
| Roseburg Regional | ■ | | | ■ | ■ | |
| Salem - McNary Field | ■ | | | | | |
| Scappoose Industrial Airpark | ■ | ■ | | | ■ | |
| Troutdale (Portland) | | | | | ■ | |
| ***Category 3*** | | | | | | |
| Baker City Municipal | ■ | | | | ■ | ■ |
| Burns Municipal | | | | ■ | ■ | |
| Columbia R. Gorge Reg. – The Dalles | | | | | | |
| Grant County Regional - Ogilvie Field | | | | ■ | ■ | ■ |
| LaGrande/Union County | ■ | | | | ■ | |
| Lake County | ■ | | | | ■ | |
| Ontario Municipal | | | ■ | ■ | ■ | ■ |
| ***Category 4*** | | | | | | |
| Albany Municipal | | | | | ■ | |
| Ashland Municipal | | | | ■ | ■ | |
| Bandon State | | | | ■ | | |
| Chiloquin State | | | | | | |
| Condon State | | | ■ | ■ | ■ | ■ |

# Exhibit V-18: Land Use Compatibility

Legend:
- Deficiency Reported
- None Reported
- * Not Applicable

| | Overlay Zoning Deficiency | 55 DNL Contour off Airport | Incompatible Land Uses Nearby | Water Impoundments Near Airport | Open Land Fills Near Airport | Bird Migratory Areas Near Airport |
|---|---|---|---|---|---|---|
| ***Category 4 (Continued)*** | | | | | | |
| Cottage Grove State | | | | | | |
| Creswell Municipal | ■ | | | | | |
| Curry Coast Airpark | ■ | | | | | |
| Enterprise Municipal (non-NPIAS) | | | | ■ | ■ | ■ |
| Florence Municipal | ■ | | | ■ | ■ | |
| Gold Beach Municipal | ■ | | | | ■ | |
| Grants Pass | ■ | ■ | | | ■ | |
| Hermiston Municipal | | | | ■ | ■ | |
| Hood River | ■ | | | ■ | ■ | ■ |
| Illinois Valley | ■ | | | | ■ | |
| Independence State | | | | | ■ | |
| Joseph State | | | | ■ | | ■ |
| Lebanon State | | | | ■ | ■ | |
| Lexington | | | ■ | ■ | ■ | ■ |
| Madras City-County | | ■ | | | ■ | ■ |
| Myrtle Creek Municipal | | | | | ■ | |
| Mulino (Portland) | | ■ | | ■ | ■ | |
| Prineville | | | ■ | ■ | ■ | ■ |
| Seaside Municipal | | | | | ■ | |
| Siletz Bay State | | | | ■ | ■ | |
| Tillamook | ■ | | | | ■ | |
| Wasco State | | | ■ | ■ | ■ | ■ |
| ***Category 5*** | | | | | | |
| Alkali Lake State | | ■ | ■ | ■ | ■ | ■ |
| Arlington Municipal | | | | ■ | ■ | |
| Beaver Marsh State | | ■ | ■ | ■ | ■ | ■ |
| Boardman | | | ■ | ■ | ■ | ■ |
| Burns Junction BLM | | ■ | ■ | ■ | ■ | ■ |
| Cape Blanco State | | ■ | ■ | ■ | ■ | ■ |
| Cascade Locks State | | | | | ■ | |
| Christmas Valley | | | | ■ | ■ | |
| Crescent Lake State | | ■ | ■ | ■ | ■ | ■ |
| Juntura BLM | | | | | | |
| Lakeside State | | | | | | |
| Lake Billy Chinook State | | | ■ | | ■ | ■ |

# Exhibit V-18: Land Use Compatibility

Legend:
Deficiency Reported
None Reported
* Not Applicable

| | *Overlay Zoning Deficiency* | *55 DNL Contour off Airport* | *Incompatible Land Uses Nearby* | *Water Impoundments Near Airport* | *Open Land Fills Near Airport* | *Bird Migratory Areas Near Airport* |
|---|---|---|---|---|---|---|
| ***Category 5 (Continued)*** | | | | | | |
| Malin | | | ■ | ■ | ■ | ■ |
| McDermitt State | | | ■ | ■ | ■ | ■ |
| McKenzie Bridge State | | ■ | ■ | ■ | ■ | ■ |
| Memaloose USFS | | ■ | ■ | ■ | ■ | ■ |
| Miller Memorial Airpark | | | | ■ | ■ | ■ |
| Monument Municipal | | | | | | ■ |
| Nehalem Bay State | | | | | ■ | |
| Oakridge State | | | | ■ | ■ | ■ |
| Owyhee Reservoir State | | ■ | | | ■ | |
| Pacific City State | | | | | ■ | |
| Paisley State | | ■ | ■ | ■ | ■ | ■ |
| Pinehurst State | | ■ | ■ | ■ | ■ | ■ |
| Powers | | ■ | ■ | ■ | ■ | ■ |
| Prospect State | | | ■ | ■ | ■ | ■ |
| Rome State | | ■ | ■ | ■ | ■ | ■ |
| Santiam Junction State | | ■ | ■ | ■ | ■ | ■ |
| Silver Lake USFS | | ■ | ■ | ■ | ■ | ■ |
| Toketee State | | ■ | ■ | ■ | ■ | ■ |
| Toledo State | | | | | ■ | |
| Vernonia Airfield | | | ■ | ■ | ■ | ■ |
| Wakonda Beach State | | | | | | |
| ***Category 4 (Private Airports)*** | | | | | | |
| Chehalem Airpark (Private) | | | ■ | ■ | ■ | ■ |
| Country Squire Airpark (Private) | ■ | | ■ | ■ | ■ | ■ |
| Lenhardt Park (Private) | | | | | ■ | |
| Sandy River (Private) | ■ | | | ■ | ■ | |
| Sisters Eagle Air (Private) | | | | | ■ | |
| Sportsman Airpark (Private) | ■ | | | | ■ | ■ |
| Stark's Twin Oaks (Private) | | | | ■ | ■ | |
| Sunriver (Private) | | | | | ■ | |
| ***Category 5 (Private Airports)*** | | | | | | |
| Davis (Private) | | | | | ■ | ■ |
| George Felt (Private) | | | | | | |
| Happy Valley (Private) | | | | ■ | ■ | ■ |
| Lake Woahink SPB (Private) | ■ | * | | * | ■ | |

**Exhibit V-18: Land Use Compatibility**

Legend:
- Deficiency Reported
- None Reported
- * Not Applicable

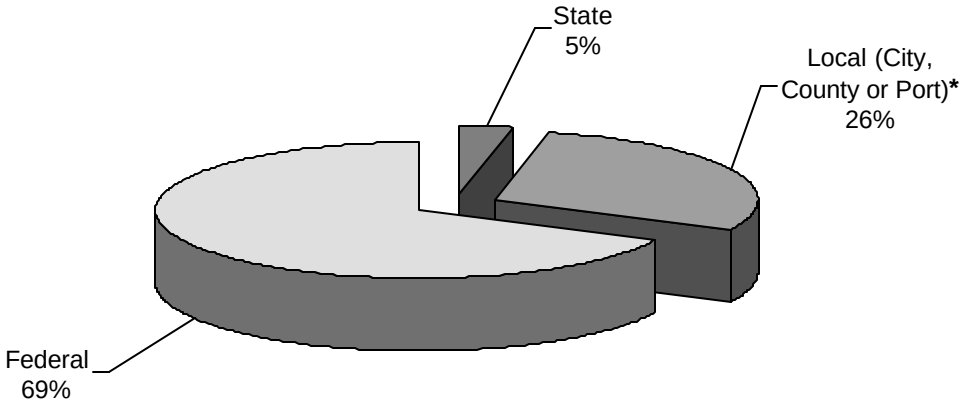
| | *Overlay Zoning Deficiency* | *55 DNL Contour off Airport* | *Incompatible Land Uses Nearby* | *Water Impoundments Near Airport* | *Open Land Fills Near Airport* | *Bird Migratory Areas Near Airport* |
|---|---|---|---|---|---|---|
| ***Category 5 (Private Airports) (cont.)*** | | | | | | |
| Sheridan (Private) | | | | | | |
| Skyport (Private) | | | | | | |
| Valley View (Private) | | | | | | |

## System Revenues

### Overview

Oregon's airports are funded from a combination of on-airport, state, and federal user fees and revenues from other funding sources. The airport system depends heavily on federal funding for capital expenditures that require a ten percent match from local or state funds. Federal funds cannot be used to cover airport operating costs, which are met using mainly revenue raised on-airport. Exhibit V-19 illustrates the dominant role of federal funding in capital construction. In 1997 it accounted for 69 percent of all airport capital construction funding in the state. For Portland International Airport, revenue for capital construction comes

**Exhibit V-19**
**Sources of Revenue for Capital Construction in 1997**




***Not including PDX.**
**Source: Aviation Plan survey of operators.**

largely from airport generated sources. Funding for the airport's current five-year capital plan comes from; federal Airport Improvement Program grants, (3.3 percent) passenger facility charges (12.8 percent), port funds (7.7 percent) and bonds (76.2 percent).

Given the dominant role of federal funding in aviation, airport eligibility and federal funding priorities have the major impact on funds available for capital improvement at Oregon's airports. Federal funding targets resources on the NPIAS airports and further concentrates resources on the airports with commercial service.

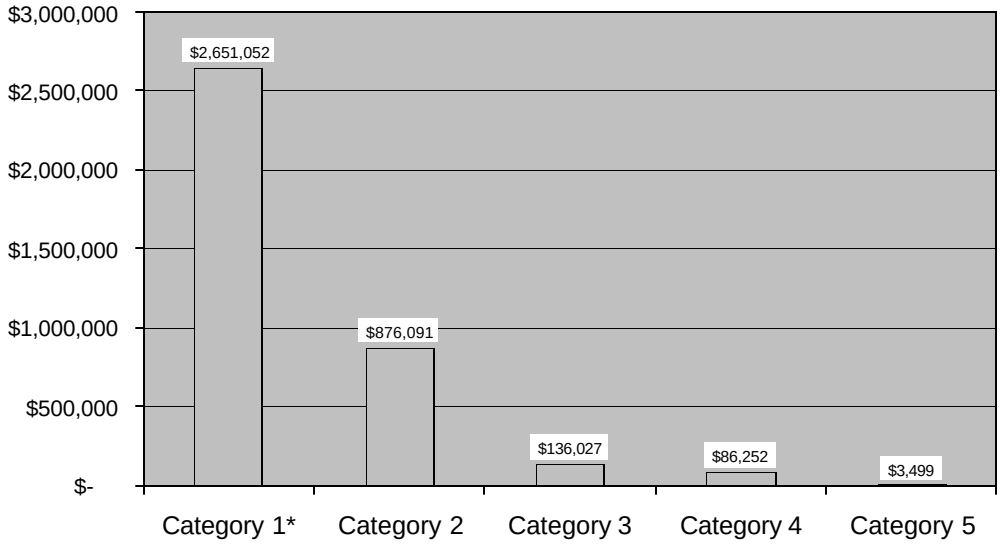
Airports that are used the most are best able to meet operating costs. Category 1 (Commercial Service) airports have access to certain funding sources not available to other airports. They receive an annual distribution of Airport Improvement Program funds from the Airport and Airways Trust Fund based on enplanments and/or cargo landed weights. Public agencies operating a commercial service airport can charge enplaning passengers a passenger facility charge (PFC). These agencies must apply to the FAA and meet certain requirements in order to impose a PFC. Commercial service airports, because of their revenue base, are often in a position to issue bonds to undertake capital improvements. The federal government requires that all revenue made on an airport be used in their entirety for funding of airport capital improvements and operations at that airport.

***Key features of aviation system funding:***

- Oregon airports are heavily dependent on FAA funding for capital construction.
- Non-NPIAS airports are not eligible for FAA funding.
- The state provides minimal funding for local airports.
- State jet fuel tax increased in 1999 for the first time since 1959, and the aviation gas tax increased for the first time since 1977. The jet fuel tax increased ½ cent. The aviation gas tax increased 3 cents in 1999, and will increase an additional 3 cents in 2000.
- Reductions in federal funding for state-owned airports would make it difficult for the state to maintain and develop its airports.
- Category 3, 4, and 5 airports have limited capacity to generate on-airport revenue to meet operating costs.

Oregon's airports differ markedly in their revenues. In general, the higher category airports have the most revenue. There is limited funding for lower category general aviation airports. Exhibit V-20 shows the average annual revenue per airport in each airport category in 1997.

**Exhibit V-20**
**Average Annual Revenue per Airport in 1997**




***Not including Portland International Airport.**

## Sources of Revenue

The proportion of funding from different sources varies for state- and locally owned airports. State-owned airports are funded from state-levied user fees (such as the jet fuel tax, aviation gas tax, and aircraft registration); on-airport generated funds (fuel flowage fees and airport leases); and federal funds for planning, 5010 safety inspections, and capital development.

Locally owned airports (city, county, and port) are funded from on-airport generated user fees (such as lease payments, fuel flowage fees, landing fees, and parking fees). A small amount of local non-airport generated revenues (such as dedicated property taxes and general fund) is used to fund operations and limited capital construction. Federal grants fund the vast majority of capital projects for airports that are NPIAS except for Portland International Airport.

### Revenue Analysis – Local Airports

Airport revenues are shown in Exhibit V-21, which is based on data up to and including fiscal year 1997, obtained by a survey of operators. Portland International Airport was considered separately because the high level of investment at the airport tends to skew the analysis of the other airports.

# Exhibit V-21
# Estimated Oregon Local Airport Revenue for 1997

City, County and Port Ownership.

| Revenue Source | FY 1997 Revenue | Proportion | Growth (FY '85 to FY '97) | |
|---|---|---|---|---|
| | | | Nominal Dollars | Constant Dollars[1] |
| **Revenue Sources for Operating Expenditures:** | | | | |
| *Local On-Airport Generated Revenues* | | | | |
| Lease payments[2] | 5,683,548 | 38.0% | 62.9% | 31.7% |
| Fuel flowage/facility fees | 1,442,531 | 9.6% | 428.2% | 215.8% |
| Landing fees | 1,355,931 | 9.1% | -86.0% | -43.4% |
| Auto parking fees | 2,060,624 | 13.8% | -68.6% | -34.6% |
| Interest earnings | 321,582 | 2.1% | -82.4% | -41.5% |
| Carry-over from previous year(s) | 848,096 | 5.7% | 1826.6% | 920.6% |
| Other airport-generated revenue | 2,333,816 | 15.6% | 7.3% | 3.7% |
| *Sub-total* | *$ 14,046,128* | *93.8%* | *78.3%* | *39.5%* |
| *Non-Airport Generated Revenues* | | | | |
| Dedicated Property Tax | 220,000 | 1.5% | N/A | N/A |
| Owner's General Fund | 335,606 | 2.2% | -78.5% | -39.6% |
| Other Local | 168,588 | 1.1% | 3.1% | 1.6% |
| Non-Local Revenue | 202,345 | 1.4% | N/A | N/A |
| *Sub-total* | *$ 926,539* | *6.2%* | *-48.7%* | *-24.5%* |
| **Total Operating Revenue** | **$ 14,972,667** | **100.0%** | **36.0%** | **18.2%** |
| **Revenue Sources for Capital Expenditures:** | | | | |
| *Local* | | | | |
| Airport generated revenue | $ 1,371,050 | 7.5% | 47.3% | 23.9% |
| Capital improvement funds[3] | 1,359,059 | 7.5% | 1464.0% | 737.9% |
| Interest earnings | 19,220 | 0.1% | N/A | N/A |
| Revenue bonds | 891,011 | 4.9% | N/A | N/A |
| Owner's General Fund | 203,874 | 1.1% | -89.9% | -45.3% |
| Other local | 1,963,342 | 10.8% | N/A | N/A |
| *Sub-total* | *$ 5,807,556* | *31.9%* | *53.9%* | *27.2%* |
| *State* | | | | |
| Aeronautics Division | 4,500 | 0.0% | N/A | N/A |
| Port Revolving Fund | 65,000 | 0.4% | N/A | N/A |
| OEDD direct grants | 90,000 | 0.5% | N/A | N/A |
| Other state | 28,158 | 0.2% | N/A | N/A |
| *Sub-total* | *$ 187,658* | *1.0%* | *N/A* | *N/A* |
| *Federal* | | | | |
| FAA | 11,153,927 | 61.2% | 70.6% | 35.6% |
| EDA | 1,016,070 | 5.6% | N/A | N/A |
| Other | 50,500 | 0.3% | -59.0% | -29.7% |
| *Sub-total* | *$ 12,220,497* | 67.1% | *64.6%* | *32.6%* |
| **Total Capital Revenue** | **$ 18,215,711** | **100.0%** | **60.9%** | **30.7%** |
| ***Portlland International Total Revenues*** | ***$ 230,152,000*** | | | |

Notes: 1) Based on growth between 1985 and 1997 for subset of airports surveyed by ODOT in both years. Inflation increased 49.6% from 1985 to 1997. Source: National Consumer Price Index (CPI). Bureau of Labor Statistics.
2) Includes tie-down/private hanger fees and ingress/egress fees.
3) Refers to local funds for all types capital improvements that have been channeled to airport improvement. Funds come from local taxes and/or special levies.

Source: Based on revenue survey data obtained from ODOT for 1997 report on Municipal Airport Finance in Oregon. Additional follow-up survey done for airports not in the report.

*Airports analyzed are as follows:* City: Albany Municipal, Arlington Municipal, Ashland Muni-Sumner Parker Field, Baker City Municipal, Bend Municipal, Burns Municipal, Columbia Gorge/The Dalles Municipal, Corvallis Municipal, Creswell Hobby Field, Eastern Oregon Regional at Pendleton, Enterprise Municipal, Florence Municipal, Hermiston Municipal, Klamath Falls International/Kingsley Field, Malin, McMinnville Municipal, Monument, Myrtle Creek Municipal, Newport Municipal, North Bend Municipal, Ontario Municipal, Prineville, Redmond Municipal – Roberts Field, Roseberg Regional, Salem Municipal – McNary Field, Seaside Municipal, Vernonia Airfield. City-County: Madras City-County. County: Grants Pass, Illinois Valley, LaGrande/Union County, Lake County, Lexington, Rogue Valley/Medford Intl. Other Public: Christmas Valley. Port: Astoria Regional, Boardman, Gold Beach Municipal, Hood River, Portland-Hillsboro, Portland-Mulino, Portland-Troutdale, Scappoose Industrial Airpark, Tillamook.

**Key Findings – Locally Owned Airports**

- Federal funding accounted for 68 percent of all revenue used for capital construction in 1997 (excluding Portland International Airport).

- Operators have almost no access to local general fund or other non-user fee revenue. By 1997, local general fund expenditures on all airports had decreased to just over $335,000.

- Local operators have increased revenues from on-airport revenue sources mainly from fuel flowage, parking fees, and lease payments. These revenues tend to be at the higher category airports.

- Both operating and capital revenues have increased in nominal and constrained dollars from 1985 to 1997.

- There are minimal state funds provided for capital projects.

- For Category 3, 4, and 5 airports, the only opportunities available for revenue to meet operating costs are from on-airport fees or from the general fund sources. These are not adequate sources, in part, because the airports have limited opportunity to generate on-airport revenues. The communities in which they are located have many competing calls on their general funds.

**Revenue Analysis – State-owned Airports**

State-owned airport revenues are analyzed in Exhibit V-22.

# Exhibit V-22
# Oregon State-Owned Airport Revenue, 1987-97[1]

| Revenue Source | FY 1987 Revenue | FY 1997 Revenue | Avg. Proportion FY '87 to FY '97 | Change (FY '87 to FY '97) Nominal Dollars | Change (FY '87 to FY '97) Constant Dollars[1] |
|---|---|---|---|---|---|
| **Revenue Sources for Operating Expenditures:** | | | | | |
| State-Levied User Fee Revenue[2] | $ 83,137 | $ 142,903 | 5.8% | 71.9% | 42.2% |
| *State On-Airport Generated Revenue* | | | | | |
| Leases[3] | 35,760 | 110,555 | 3.7% | 209.2% | 122.8% |
| Fuel Flowage | 16,736 | 13,710 | 0.8% | -18.1% | -10.6% |
| Miscellaneous/ Donations | 37,391 | 136,735 | 4.5% | 265.7% | 156.0% |
| *Subtotal* | *89,887* | *261,000* | 9.0% | 190.4% | 111.7% |
| **Total Operating Revenue** | **$ 173,024** | **$ 403,903** | **14.8%** | **133.4%** | **78.3%** |
| **Revenue Sources for Capital Expenditures:** | | | | | |
| *State* | | | | | |
| Aeronautics Division | 253,449 | 435,651 | 17.6% | 71.9% | 42.2% |
| *Federal* | | | | | |
| Federal Funds - Planning | 61,223 | 416,336 | 12.2% | 580.0% | 340.5% |
| Federal Funds - Capital Development | 618,275 | 1,546,435 | 55.4% | 150.1% | 88.1% |
| *Subtotal* | *679,498* | *1,962,771* | 67.6% | 188.9% | 110.9% |
| **Total Capital Revenue** | **$ 932,947** | **$ 2,398,422** | **85.2%** | **157.1%** | **92.2%** |
| ***Total Capital & Operating Revenue*** | ***$ 1,105,971*** | ***$ 2,802,325*** | ***100.0%*** | ***153.4%*** | ***90.0%*** |

Notes: 1) Revenue forecast made prior to 1999 tax increase.
2) Inflation increased 41.3% from 1987 to 1997. Source: National Consumer Price Index (CPI). Bureau of Labor Statistics.
3) Includes registration/licensing fee, motor gas transfer, aviation gas tax and jet fuel tax revenues.
4) Includes tie-down/private hanger fees and ingress/egress fees.

Source: This analysis based on 1987 to 1997 data provided by the ODOT Aeronautics Division for all state-owned airports: Alkali Lake State, Aurora State, Bandon State, Beaver Marsh State, Brookings State, Cape Blanco State, Cascade Locks State, Chiloquin State, Condon State-Pauling Field, Cottage Grove State, Crescent Lake State, Independence State, John Day State, Joseph State, Lake Billy Chinook State, Lakeside State, Lebanon State, McDermitt State, McKenzie Bridge State, Nehalem Bay State, Oakridge State, Owyhee Reservoir State, Pacific City State, Paisley State, Pinehurst State, Powers State, Prospect State, Rome State, Santiam Junction State, Siletz Bay State, Toketee State, Toledo State, Wakonda Beach State, Wasco State.

## Key Findings – State-owned Airports

- State user fees consist of jet fuel tax, aviation gas tax, and registration/licensing. In 1999, jet fuel tax increased to 1 cent per gallon. In 1999, aviation gas tax increased to 6 cents per gallon, and will increase in July 2000 to 9 cents. Aircraft registration fees vary by classification of aircraft and range from $25 to $187 annually. Pilot registration is $8 initially and $16 for renewal biannually. The latest aircraft registration fees were established in the 1991 legislative session.

- State-owned airports are increasingly dependent on jet fuel tax for funding. State-owned airports have limited ability to raise revenue on-airport. Jet fuel tax is the largest component of user fee revenue for state-owned airports, making up 28 percent of user fee revenue from fiscal year 1987 to fiscal year 1997. State receipts from the jet fuel tax were also the fastest growing source of user fee revenue from fiscal year 1987 to fiscal year 1997, growing over 73 percent in nominal dollars.

- There has been little growth in revenues from the aviation gas tax, which grew only

four percent in nominal dollars over the same period.

## Revenue Forecasts

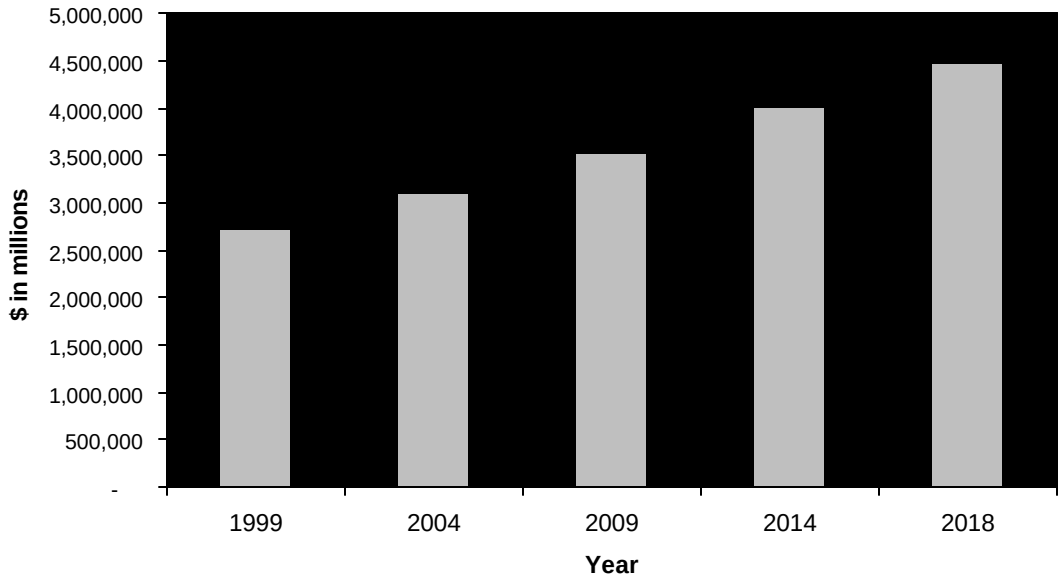
### Forecast Assumptions

Historical revenue growth rates were determined and used to project revenues into the future. To account for the significant year-to-year fluctuations in federal funding, historical levels were averaged. For the state-owned airports the average was based on ten years between 1987 and 1997. For the locally owned airports, the average was based on only three years (due to data limitations). The average was then used as the base, and federal funding was assumed to grow at a rate of inflation[12].

### State-Owned Airports

Total state-owned airport revenues are forecast to grow at a rate of 6.6 percent per year when adjusted for inflation. This increase is driven by the trend increase in the use of jet fuel as commercial operations continue to grow. Receipts from the aviation gas tax will just keep pace with inflation.

**Exhibit V-23**
**Forecast of Revenue for State-Owned Airports**



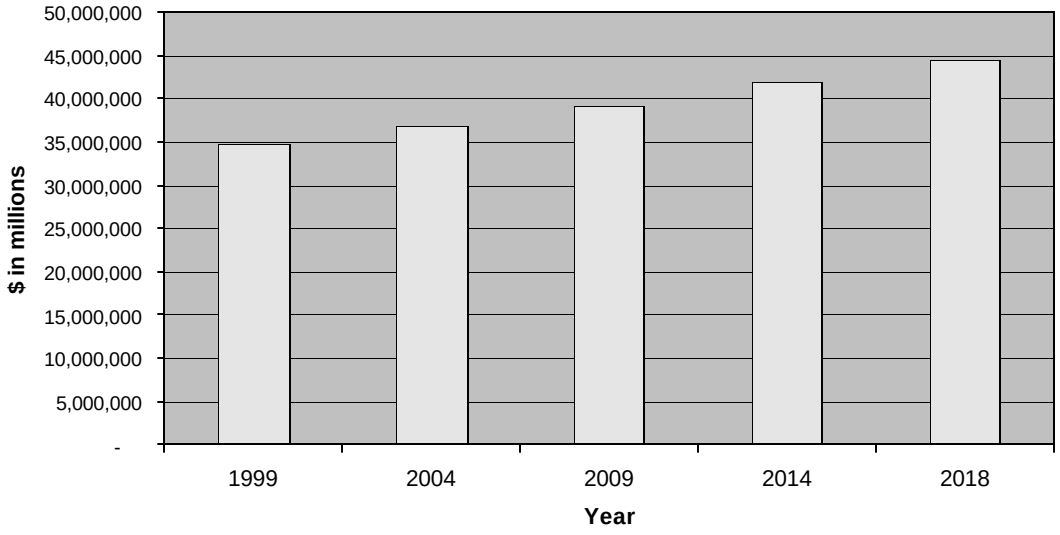

Adjusted for assumed inflation rate of 3.0 percent per year.

[12] 3.0 percent per year over the 20-year period, as per direction from ODOT.

**Locally Owned Airports**

Locally owned airport revenues are forecast to grow at a rate of 1.2 percent per year in constant dollars as shown in Exhibit V-24. On-airport lease payments and fuel flowage fees are the most significant revenue growth components for locally owned airports as shown in Exhibit V-22. Those revenue sources tend to be unavailable for general aviation airports in the lower categories. The revenue forecast suggests at best a constant, and most likely a decline in future revenue at lower category general aviation airports.

**Exhibit V-24**
**Forecast of Revenue for Locally-Owned Airports***
***Does not include Portland International Airport***




**Adjusted for assumed inflation rate of 3.0 percent per year.**

## Identifying Revenues to Address Minimum System Standards

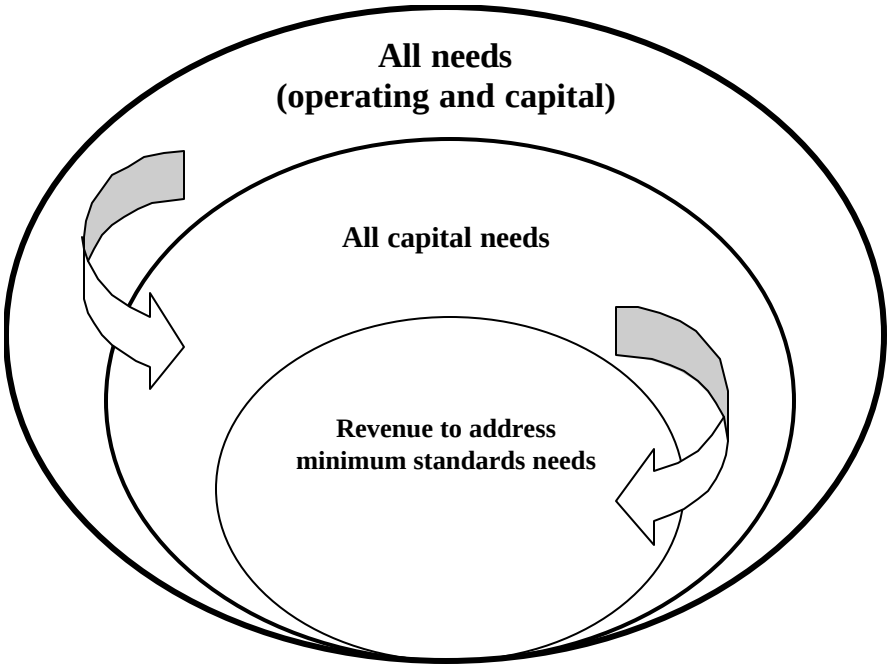
System plan needs represent the estimated cost of addressing the existing backlog of deficiencies and making the investments necessary over the next 20 years to ensure that the airport system meets the minimum system standards. To determine the plan's revenue gap (unfunded needs) it is important to

recognize that the system plan cannot direct individual airports' revenues to just meet minimum standards. Also, the revenue available to Oregon's airports is determined to a large extent by the federally funded projects. Many of these projects address airport and federally defined needs in addition to the Oregon Aviation Plan needs. For example, terminal facility improvements are not quantified in the Oregon Aviation Plan. Therefore, to determine the revenue gap it is necessary to estimate the system-level revenue available to meet the system plan defined minimum standard needs.

The total revenue forecasts presented above include revenue that is applied to three different areas:

- Operations.
- Capital expenditures beyond minimum standards.
- Capital expenditures that address minimum standard deficiencies.

**Exhibit V-25:**
**Revenue to Address Minimum Standard Needs**




The following approach was used to estimate the portion of revenue available to address minimum standards.

- The current five-year program of NPIAS projects represents programmed projects in fiscal years 2000-2004. These projects were evaluated by airport category to determine whether the individual projects fell under the criteria for minimum standards, or whether they were for development above the minimum standards. The proportion of funds

spent on minimum standard needs was then applied to the forecast of capital revenue.

- Another step took place for the purpose of estimating pavement preservation needs. Since the pavement preservation needs are a function of the amount of funds actually spent on pavement preservation, it was necessary to estimate the amount of revenue to be applied to pavement preservation. This also used the five-year program of NPIAS projects. Pavement projects were identified to determine the amount of revenue applied to the pavement preservation.

Exhibit V-26 shows the forecast revenue available by category to address system-defined minimum standards needs.

**Exhibit V-26: Forecasts of 20-Year Revenue to Address Minimum Standards**

| Airport Category | $ Million 1998 |
|---|---|
| Category 1* | 85.1 |
| Category 2 | 58.2 |
| Category 3 | 6.4 |
| Category 4 | 25.4 |
| Category 5 | 1.1 |
| *Total* | *176.2* |
| Portland International Airport** | $ 93.8 |

*Does not include Portland International Airport.
**Forecast based on extrapolation of current Five-Year Capital Improvement Program.

# System Needs

## Needs Based on System Plan Standards

The Oregon Aviation Plan recognizes that funding will not be sufficient to meet all needs. The plan establishes a system-level role to identify and fund needs that will maintain the level of service provided by the system today in the most cost-effective manner. The plan is to preserve a core system of airports according to minimum facility standards required for each airport to perform the function of the category that it is in. This results in a constrained needs estimate that *does not* reflect the total needs of individual airports as outlined in their airport capital improvement plans. These individual airport plans often call for capital improvements that are deemed necessary from a community standpoint but extend beyond the system-level preservation.

### System Needs

The total 20-year system needs (excluding Portland International Airport) to preserve the system based on minimum standards are $274.6 million. The revenue available to address these needs over this period is $176.2 million. This results in a $98.4 million gap in funding to address minimum standard needs.

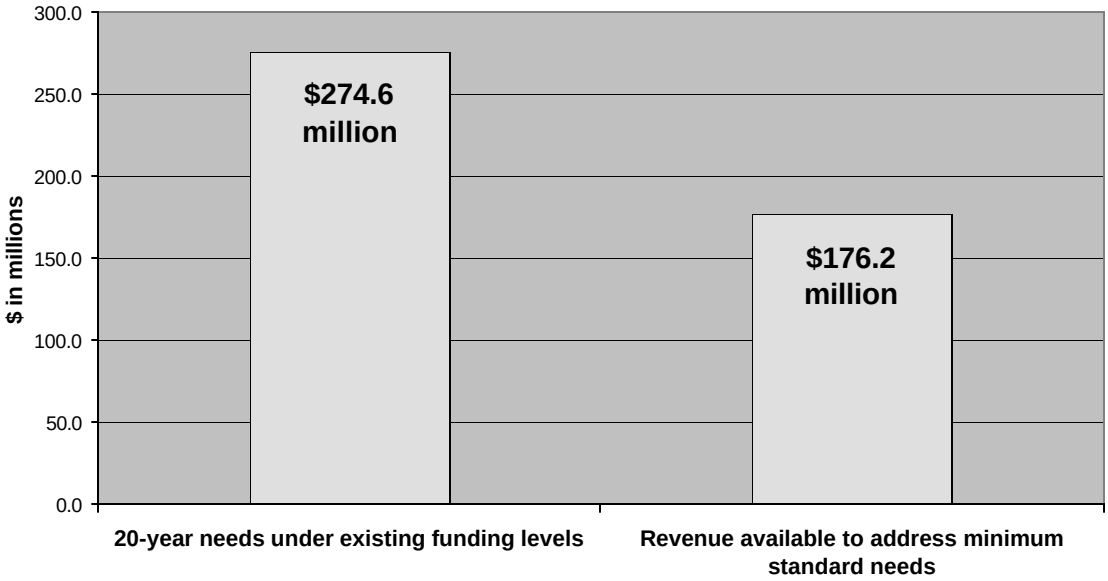
## Portland International Airport

As indicated in this plan, Portland International Airport has a unique role in Oregon's aviation system. Portland International Airport accounts for the majority of commercial air passenger and cargo activity in Oregon, and is the busiest airport in Oregon. Portland International Airport also has the highest level of facility capabilities among Oregon's commercial airports. As is the case with all of Oregon's commercial service airports, the facility needs at Portland International Airport are driven more directly by the demands of commercial airlines and less by statewide system planning minimum standards.

Portland International Airport is currently in the process of both a multi-year terminal area construction project and a new 20-year master plan. Programmed NPIAS projects at Portland International Airport totaled more than $140 million between 1994 and 2006; over the next five years NPIAS projects identified for Portland International Airport are more than $82 million. It is estimated that upwards of 90 percent of the projects will be related to improvements beyond system plan minimum standards.

Although the master plan update is not yet completed, it is expected to address several major facility improvements including a new terminal, light rail access to the airport, on-airport people movers, major roadway and parking improvements, and possibly a third major runway. The total costs of the updated 20-year master plan have not been determined. However, the 1993 master plan's 20-year capital improvement program (CIP) was more than $1.1 billion; it is anticipated that the updated CIP will be considerably higher.

**Exhibit V-27**
**Total Airport Minimum Standards Needs Gap***



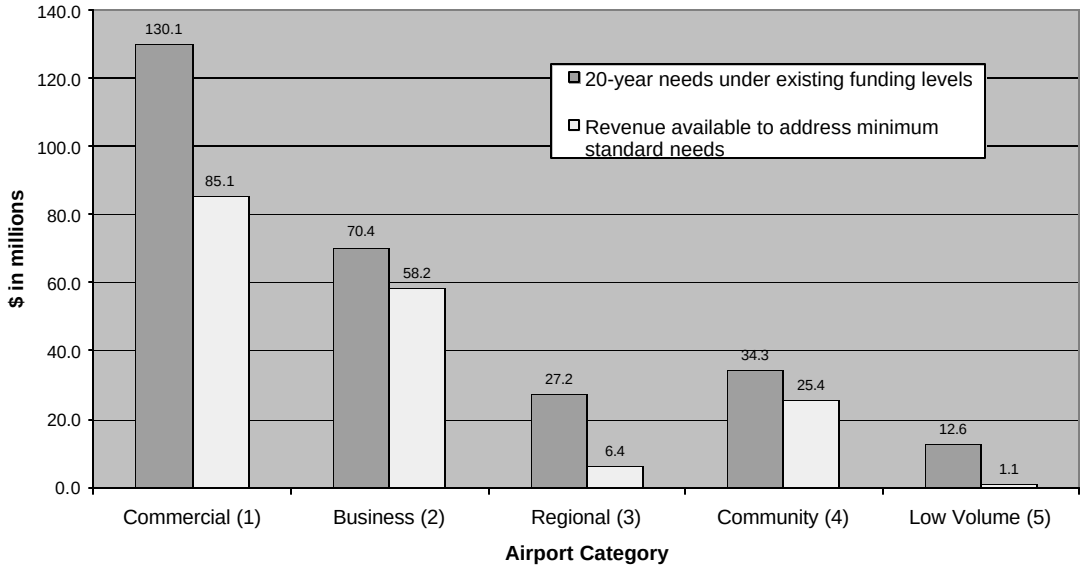

*** Does not include Portland International Airport, federal and privately-owned public-use airports.**

## Needs by Airport Category

The needs assessment results by airport category are presented in Exhibit V-28. There is a revenue gap in each of the airport categories. The largest dollar gaps are for commercial service airports (Category 1). The largest percentage gaps are for Regional Airports (Category 3) and low volume General Aviation Airports (Category 5).

There are two ways in which the short-fall can be met. First, revenues can be increased at the local, state, or federal levels. Second, revenues used for other projects could be allocated for projects that meet system goals. In either case, the options open to Category 1 airports are greater than for other categories. However, Category 3, 4, and 5 airports have little revenue to reallocate and are unable to raise on-airport revenue.

## Exhibit V-28
## Total Airport Minimum Standards Needs by Category*




*** Does not include Portland International Airport, federal and privately-owned public-use airports.**

### Categories of Need

Minimum standard needs were divided into four categories: airport and systems modernization, airport safety, facility preservation, and airport protection. Deficiencies from minimum standards were costed except for airport protection and those that cannot be meaningfully quantified. These needs under existing funding levels are presented in Exhibit V-29.

On the needs side, the short-fall can be reduced by lowering the standards and/or reducing the number of airports in the system. The minimum standards adopted by the Oregon Aviation Plan reduce need substantially. A major investment strategy for the plan addressed in section VI is to target investments on a recommended core system.

- **Airport and System Modernization**

  This includes needs for extending runways and updating navigational systems to minimum standards. System plan needs are less than individual airports' master plan defined needs for modernization.

- **Airport Safety**

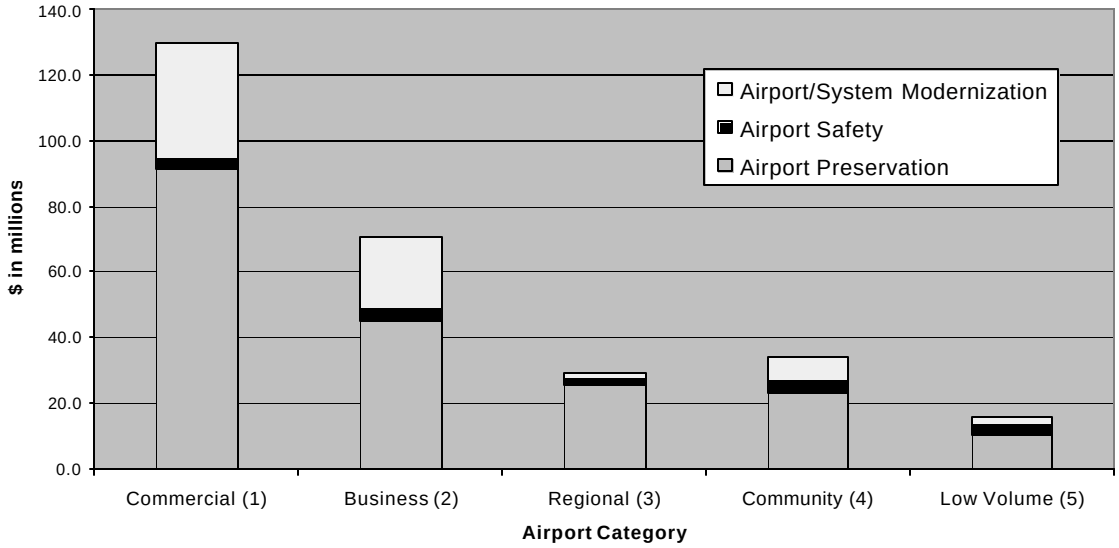
  This includes projects that address FAA defined deficiencies and safety-related runway length/width, taxiway separation, and lighting for Category 3, 4, and 5 airports. This does not include the cost to address all deficiencies such as runway safety zones, many of which can only be assessed on an airport-by-airport basis.

- **Airport Preservation**

  This includes the investment required to preserve runway, taxiway, apron pavement, and other systems such as lighting. It does

not include facilities such as terminals or parking structures. By far the largest category of need defined in the plan is for pavement preservation.

**Exhibit V-29**
**Breakdown of 20-Year Airport Needs to Meet Minimum Standards***
**Under Existing Funding Levels**




*** Does not include Portland International Airport, federal and privately-owned public-use airports.**

Exhibit V-30 shows the breakdown of 20-year system needs to meet minimum standards. Pavement preservation comprises a significant portion of airport need.

**Exhibit V-30**
**20-Year Revenue Needs to Meet Minimum Standards***

| | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | System Total |
|---|---|---|---|---|---|---|
| **Airport Preservation** | | | | | | |
| Pavement | $ 81,150,000 | $ 39,670,000 | $ 24,880,000 | $ 21,470,000 | $ 10,280,000 | $ 177,450,000 |
| Lighting/Weather | 10,150,000 | 5,580,000 | 700,000 | 1,270,000 | - | 17,690,000 |
| ***Subtotal*** | 91,300,000 | 45,250,000 | 25,580,000 | 22,740,000 | 10,280,000 | 195,140,000 |
| **Safety** | | | | | | |
| Dimensional Standards | - | 1,820,000 | 300,000 | 1,880,000 | 1,900,000 | 5,900,000 |
| Lighting/Weather | 3,280,000 | 1,330,000 | 400,000 | 1,880,000 | - | 6,890,000 |
| ***Subtotal*** | 3,280,000 | 3,150,000 | 700,000 | 3,760,000 | 1,900,000 | 12,790,000 |
| **Airport/System Modernization** | | | | | | |
| Runway | 24,470,000 | 14,710,000 | - | - | 100,000 | 39,280,000 |
| Taxiway | 9,680,000 | 820,000 | 550,000 | 4,400,000 | - | 15,440,000 |
| Apron | 720,000 | 4,850,000 | - | 1,470,000 | 150,000 | 7,190,000 |
| Lighting/Weather | 190,000 | 400,000 | 280,000 | 1,200,000 | 70,000 | 2,130,000 |
| Other (Terminal, etc.) | 440,000 | 1,270,000 | 60,000 | 720,000 | 200,000 | 2,690,000 |
| ***Subtotal*** | 35,500,000 | 22,050,000 | 890,000 | 7,790,000 | 520,000 | 66,730,000 |
| ***Total Needs*** | 130,080,000 | 70,450,000 | 27,170,000 | 34,290,000 | 12,700,000 | 274,660,000 |
| **Total Needs** | 130,080,000 | 70,450,000 | 27,170,000 | 34,290,000 | 12,700,000 | 274,660,000 |
| **Revenue to Address Min. Stnds.** | 85,130,000 | 58,190,000 | 6,380,000 | 25,400,000 | 1,130,000 | 176,240,000 |
| **Funding gap** | **$ (44,950,000)** | **$ (12,260,000)** | **$ (20,790,000)** | **$ (8,890,000)** | **$ (11,570,000)** | **$ (98,420,000)** |

** Does not include Portland International Airport, federal and privately-owned public-use airports.*
*Analysis conducted prior to 1999 fuel tax increases.*

- **Airport Protection**

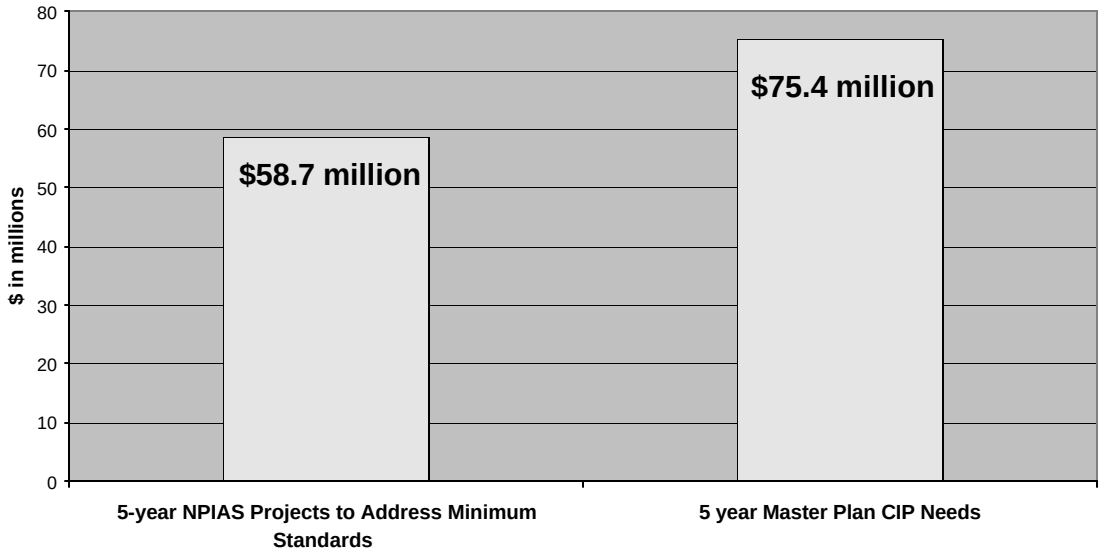
  This includes needs for advocacy and investment to ensure compatible land use. These needs cannot be quantified and could involve buying additional property outside of existing airport boundaries.

## Minimum Standard Needs in Perspective

As previously discussed, the needs presented above are based on minimum system-level needs for preserving the airport system and do not reflect all the needs of individual airports as outlined in airport capital improvement plans. In order to put the minimum standard needs in perspective, Exhibit V-31 compares five-year capital improvement plan needs with needs related to Aviation Plan defined minimum standards from the fiscal year 2000 to 2004 NPIAS program listing.

This example illustrates the difference between the needs defined by individual airports in their master plan capital improvement programs and system plan defined needs that address minimum standards.

**Exhibit V-31**
**5 Year Minimum Standard Needs versus Master Plan CIP Needs**
**Category 1**
***Not including Portland International Airport***




**Note: Master Plan CIPs from the different airports in Category 1 vary in terms of base year dollars. For this reason, the result should only be considered as indicative and not exact.**

## Unquantified System Needs - Deviations from FAA Dimensional Standards

When airports undertake capital improvement projects they must comply with FAA dimensional standards. These standards are design requirements that address safety at airports. Although not quantified in the plan, they represent a considerable need, because FAA dimensional standard deficiencies frequently must be addressed as part of construction projects.

A significant percentage of airports appear not to meet at least some of the FAA dimensional standards for runway safety area, runway object-free zone, runway protection zone, and runway-parallel taxiway separation.

To illustrate the magnitude of the costs incurred in addressing these needs, the following case studies show actual needs to address safety area-related dimensional deviations at three different airports. Much of the cost of the project needs illustrated in the case study are those quantified in the needs analysis.

### *Case Study Example 1:*

### *Runway Safety Area – Hillsboro Airport*

The safety area on the north end of Runway 12-30, the primary runway at Hillsboro, is approximately 500 feet short of the 1,000 feet that is required to support the class of aircraft utilizing the airport. The short-fall is the result of a wetland area being within 500 feet of the runway threshold, and Evergreen Road being within 650 feet of the threshold. The safety area on the south end of the runway is 150 feet short due to Cornell Road running through the southwest corner, and an airport perimeter road crossing through the safety area. Three

alternatives have been considered to remedy the problem at the north end of the runway:

1. Build a bridge over Evergreen Road with a 500-foot wide tunnel and fill the wetland area. The cost of this alternative is estimated at over $18 million.

2. Relocate Evergreen Road. The cost is estimated at $7.4 million; however, this cost includes several "soft" costs, such as mitigation of adverse impacts to wetlands, acquisition of three separate properties, and a shift in the existing urban growth boundary.

3. Displace the runway threshold 370 feet and use declared distances. The cost is estimated at $7.2 million, primarily based on a need to relocate all of the airport's navigational aids, and also to mitigate adverse impacts to the wetlands.

The current direction is to consider displacing the threshold 500 feet to remove any impact on the wetlands, and to thereby reduce the cost and the difficulty of completing the project. At the south end of the runway, the current plan is to reconstruct 340 feet of old runway overrun for Runway 30 departures to offset some of the 500 feet lost on the north end.

## *Case Study Example 2:*

## *Runway Safety Area – Astoria Airport*

Runway 08/26, the primary runway at Astoria (5,790 feet long by 150 feet wide), required an overlay in the fall of 1998. The Port of Astoria approached the FAA, which determined that the runway did not meet the safety area standard, a requirement for Airport Improvement Program funding. Also, the FAA was not willing to pay to overlay the 150-foot width because it was wider than the standard.

The Port of Astoria was left with two options:

1. Overlay the runway to 100-foot width with 600-foot safety areas.

2. Overlay the runway to 75-foot width with 300-foot safety areas.

Option 1 was chosen because it reduced minimum visibility on approach from 3/4 mile to 1/2 mile. This meant the airport could remain open longer because of improved IFR capabilities.

The requirement for a 600-foot safety area caused a problem in that construction beyond original safety areas was impractical due to lack of land, the presence of wetland areas, and costs. For this reason, it was more practical to reduce runway threshold and use declared distances.

The FAA also determined that runway lights would have to be moved with the reduction in runway width from 150 feet to 100 feet. The cost of moving the runway lights was $352,320. It was later determined that the location of the Runway End Identifier Lights (REIL) at the 08 landing end was non standard under the declared distances. The cost to move the REIL lights is $70,000.

In total, the cost of the project is currently greater than $1.5 million, of which $422,320 can be attributed to the costs of runway displacement and lighting to meet the FAA standard.

## *Case Study Example 3:*

## *Runway Safety Area – Eastern Oregon Regional Airport at Pendleton*

Eastern Oregon Regional Airport at Pendleton will be completely reconstructing Runway 11/29 during FY 99/2000. As part of this reconstruction, runway safety area improvements will be included. Since its original construction in the 1930s, Runway 29

has had an approach over the westernmost portion of the city, which is approximately 450 feet lower in elevation than the runway. The safety area drops 100 feet in the first 200 feet of horizontal distance and continues the slope downward. An access road also traverses this safety area. This does not conform to FAA safety area regulations, which requires 600 feet of "clear space" with some constraints on allowable grades.

Solutions to the problem ranged from filling the entire 600 feet necessary and rerouting the access road, to displacing the runway threshold the full 600 feet. Filling the full 600 feet and rerouting the access road was financially prohibitive, if not totally impractical in terms of rerouting the access road. On the other hand, displacing the runway threshold a full 600 feet would effectively reduce a 5,588-foot runway to 4,988 feet, also not a desired outcome.

The solution chosen has been to utilize grindings from the pavement rehabilitation and other fill material available at the airport to fill all that is practical (essentially so the toe of the slope meets, but does not cross, the access road). It appears that an additional 437 feet of runway displacement will be needed to meet the new regulations.

This project is currently under design with a total estimated project cost of $1.7 million. It is estimated that approximately ten percent of the total project cost can be directly attributable to meeting safety area requirements. Pendleton expects to bid this project in June/July of 1999 with a 90 to 120 day completion date. The impacts on the airport are twofold: (1) additional cost to the project due to safety area improvements and (2) shortening of Runway 29 (landing) by 437 feet due to the displaced threshold.

## Unquantified System Needs - Airport Protection

The condition analysis showed that a significant percentage of airports report they do not have existing airport overlay zoning, and many have 55 Dnl noise contours extending beyond airport property, incompatible land uses located nearby, and water impoundments, open landfills and migratory bird areas located near their airports. Projects undertaken to address these deficiencies and land use compatibility could impose significant costs to airport operators. Monitoring airports' compliance with the FAA dimensional standards and land use compatibility should be undertaken regularly and used to assess the state of the system.

# VI. System Investment Strategies

## Overview

The system plan identifies $274.6 million of needs over the next 20 years to preserve Oregon's airport system to the minimum standards set by the plan[13]. If the construction program of Oregon's airports, which is developed in partnership with the FAA, continues to have the current mix of projects, there will be an unmet system-level preservation need of $98.4 million.

To implement the Oregon Aviation Plan, the system-level investment strategies are:

- Strategy 1: Set system level program priorities.
- Strategy 2: Target capital expenditures on projects that most closely implement policy and actions.
- Strategy 3: Target resources on a core system of airports.
- Strategy 4: Increase state levied user fees to establish a system-level airport preservation program (Implemented by the 1999 Legislature).
- Strategy 5: Establish state-level funding program to address minimum standard needs.

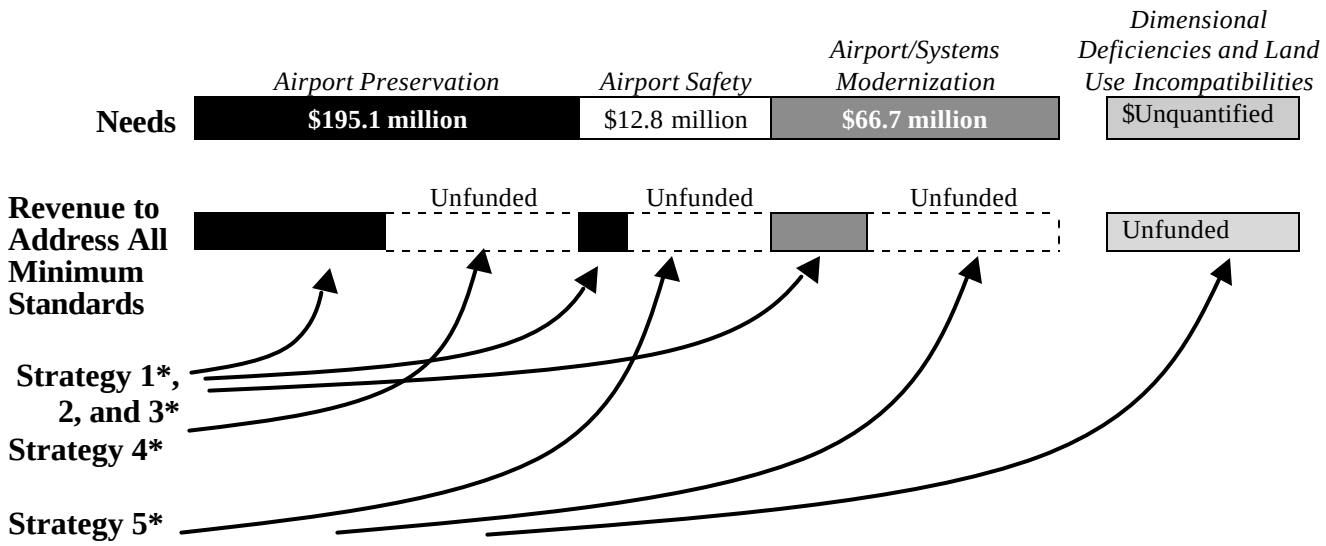
The Oregon Aviation Plan is implemented through:

- Policies and actions.
- Establishing system-level program priorities.
- Establishing system-level project prioritization.
- Seeking additional revenue for pavement preservation (Implemented by the 1999 Legislature).

The strategies aim to target resources on a core system of airports and provide a state funding mechanism to address this core system's needs. This is illustrated in Exhibit VI-1.

[13] Excluding Portland International Airport. When added 20-year needs increase to $349.1 million.

**Exhibit VI-1:**
**System Investment Strategies**




*Note:
Strategies 1, 2, and 3 = Target existing resources on plan minimum standard needs
Strategy 4 = Establish a State-level System Preservation Program
Strategy 5 = Establish State-level Funding Program to Address Minimum Standard Needs

## Strategy 1: System Level Program Priorities

The Oregon Aviation Plan establishes preserving the airport system and the services it provides as the overall program priority. This is implemented through targeting all available funding on investments that address Oregon Aviation Plan defined deficiencies.

In order of importance, program priorities are to:

- **Prevent future deficiencies and preserve existing facilities.** For example, a large element of needs is preventive maintenance on airport pavement, such as sealing a runway pavement to maintain the required condition.
- **Eliminate existing deficiencies.** For example, undertake runway reconstruction or providing assistance to establish an airport overlay zone in a community.
- **Modernization of an airport.** For example, a project extending the length of a runway to address minimum standard deficiencies and allow larger aircraft to use the airport.

Therefore, a key element for plan implementation strategies is to establish funding mechanisms to address plan needs.

## Strategy 2: Target Capital Expenditures on Projects That Implement Policy and Actions

Within the Oregon Aviation Plan program priorities, the plan further identifies specific project criteria that support implementation of state-level policy goals. These criteria further prioritize projects that address minimum standard deficiencies. Aeronautics would use these criteria for project selection and prioritization.

The recommended criteria to prioritize projects are:

- **Ensure Geographic Coverage**

  The Oregon Aviation Plan has a level of service goal based on population and driving distance to an airport. For most parts of the state, this service level goal has been achieved. To the extent feasible, the existing geographic coverage should be maintained without creating redundancy.

- **Leverage federal funds**

  Airports that are able to secure federal funding (NPIAS airports) on projects to meet minimum standards will be given priority over those that cannot (non-NPIAS airports) for project selection.

- **Consider the costs and benefits of improvements**

  The benefit provided by a project should be considered in relationship to its cost. For example, a project costing $1 million maintaining infrastructure at Eugene or Rogue Valley International serves a far greater number of users than a project with the same cost in a Category 5 airport.

- **Evidence of local support**

  Oregon Aviation Plan policy is to target resources on airports supported by their communities. The following provides a list of factors that indicate the support of a community for its airport. They help to ensure that public investment is focused on projects that are in fact important to the community.

  - **Existence of airport zoning**

    Communities that request funding for their airport shall show their support for the facility by adequately protecting it.

  - **Availability of local match**

    The willingness and ability of the local aviation community and jurisdiction to financially support an airport should be considered.

  - **Maintenance commitment**

    Spending money on capital projects is not a good investment if there are no funds or willingness to maintain the facility afterwards. For example, if runway pavement is not properly maintained, its replacement cost will be much higher than under a lifecycle approach. A documented pavement maintenance program and adequate funding should be in place to demonstrate sponsor commitment to maintenance.

- **The potential for expansion, both on and off airport**

  Real estate for airports is scarce and existing land use laws and regulations make siting new airports difficult, especially in more densely populated areas. Any airport project funding decision must therefore consider the ability of the airport to fulfill its function now and in the future. Improving an airport whose role in the system is bound to decline over time due to physical limitations should have lower priority than support of an airport that has potential to accommodate increased demand.

- **Support for economic development**

  Airports contribute significantly to economic development. The extent to which an airport can contribute to economic growth and prosperity is a factor in determining the importance of airport needs.

- **Availability of adequate surface access to airport**

  Air transportation is only one component of the overall transportation system and cannot function by itself. Adequate surface access is critical in protecting an airport's ability to perform its role.

- **Significance of environmental impact of airport**

  Airports vary in their impacts on the human and natural environment in which they are located. Issues such as noise, storm water run-off, wetlands, and other environmental concerns should be a component of the decision-making process.

- **Emergency role provided by airport**

  The emergency role of the airport within the system is an important criteria in prioritizing projects that address minimum standard deficiencies. This includes emergency access, medevac, and emergency landing capabilities.

## Strategy 3: Target Resources on a Core System of Airports

Given the unfunded needs, Aeronautics' policy is to target investments on a core system of airports. The core system minimizes overlap and investment in airports that have no – or a limited – system role. The investments that are to be targeted are:

- Aeronautics' capital expenditures on airports using state funds.

- Any additional state funds from increased user fees or other funding mechanisms.

The core system consists of airports that have a significant role in the statewide aviation system. The core system includes:

- All of the airports included in Categories 1 through 3 which, by definition, meet the criteria on page 89.

- Category 4 that meet the criteria on page 89.

- Category 5 airports with significant community access or emergency use functions.

# Exhibit VI-2: Oregon's Core System of Airports (70)

**Category 1 (9)**
Astoria Regional
Eastern Oregon Regional – Pendleton
Eugene - Mahlon Sweet Field
Klamath Falls
Newport Municipal
North Bend Municipal
Portland International
Roberts Field – Redmond
Rogue Valley International – Medford

**Category 2 (10)**
Aurora State
Bend Municipal
Corvallis Municipal
Hillsboro
McMinnville Municipal
Portland-Downtown Heliport
Roseburg Regional
Salem - McNary Field
Scappoose Industrial Airpark
Troutdale

**Category 3 (7)**
Baker City Municipal
Burns Municipal
Columbia Gorge Regional – The Dalles
Grant County Regional/Ogilvie Field
LaGrande/Union County
Lake County
Ontario Municipal

**Category 4 (27)**
Albany Municipal
Ashland Municipal
Bandon State
Chiloquin State
Condon State
Cottage Grove State
Creswell Municipal
Curry Coast Airpark
Florence Municipal
Gold Beach Municipal
Grants Pass
Hermiston Municipal
Hood River
Illinois Valley
Independence State
Joseph State
Lebanon State
Lexington
Madras City-County
Mulino
Myrtle Creek Municipal
Prineville
Siletz Bay State
Sisters Eagle Air
Sunriver
Tillamook
Wasco State

**Category 5 (17)**
Boardman
Cape Blanco State
Cascade Locks State
Christmas Valley
Crescent Lake State
McDermitt State
McKenzie Bridge State
Miller Memorial Airpark
Nehalem Bay State
Oakridge State
Pacific City State
Paisley State
Pinehurst State
Prospect State
Santiam Junction State
Toketee State
Vernonia Airfield

## Candidates for Redevelopment or Relocation

Among all publicly owned airports in the Oregon Aviation System, three airports have been identified with site deficiencies significant enough to warrant redevelopment/relocation of the airport to a new site unless current limitations can be mitigated:

- Pacific City State
- Vernonia Airfield
- Lebanon State

Pacific City State Airport is recognized as an important airport within the system, with strong local support and a recreational use component. However, the airport site deficiencies have been thoroughly documented for many years. Due to significant deficiencies in dimensional standards, poor site improvement potential and other problems inherent to the site, Pacific City State is identified as a candidate for redevelopment/relocation. As part of the aviation system, the existing airport facilities will be preserved until an alternative site is located. However, due to the significant deficiencies of the existing site, no investment in new on-site facilities is recommended.

Vernonia Airfield has a turf surfaced runway on a site with development constraints. Hills, trees, a road and power lines significantly obstruct Vernonia Airfield. The approach slopes are far below standard, as are the runway dimensions. Hangars are too close to the runway. To displace the thresholds in order to meet the standard approach slopes would leave insufficient usable runway. Further inspection of the site and surrounding area would be necessary to determine if realignment or redevelopment/relocation would be feasible. The airfield cannot meet standards in its present configuration.

Vernonia Airfield provides a community access function, although the current site and facilities appear to limit its potential use. Due to deficiencies in dimensional standards and poor site improvement potential, Vernonia Airfield is identified as a candidate for redevelopment/ relocation. As part of the aviation system, the existing airport facilities will be preserved until an alternative site is located. The significant deficiencies of the existing site should be considered in any investment decision. The City of Vernonia is working to evaluate redevelopment/relocation possibilities.

Lebanon State Airport is an important airport location within the system because of several localized transportation and development issues. Although Lebanon State and Albany Municipal have overlapping service areas, both airports have good local access potential and established user bases. In addition, the status of Albany Municipal Airport within its local community has been uncertain for an extended period. From a statewide system planning perspective, it appears reasonable to support both airports due to their respective community-based needs.

However, Lebanon State Airport has numerous deficiencies that cannot adequately be addressed on site. Due to deficiencies in dimensional standards and poor site improvement potential, Lebanon State is identified as a candidate for redevelopment/relocation. A new master plan should be prepared for Lebanon State that evaluates alternate sites. Until this is accomplished, the existing airport facilities should be preserved.

## New Airport Development

Based on the need for community access, Jordan Valley has previously been identified as a candidate for development of a new general aviation airport. The site is located in southeast Oregon, near the Idaho-Oregon border. The area has a remote, scattered population located within its potential service area (Jordan Valley, Danner, Arock). Several federal and state resource and law enforcement agencies have indicated the need for an airport located in this area.

The nearest existing Oregon airport to Jordon Valley is Rome State, which is located approximately 60-road miles southwest. Rome State has been identified as a candidate for closure. Given the gap in funding, new airport development is not currently recommended using current or any new state funds. The recommended approach is for Aeronautics to assist with the study and development, but with a local unit of government taking on the responsibility for ownership, operations, and maintenance.

## Candidate State-owned Airports for Local Transfer, Privatization, or Closure

Oregon Aviation Plan policy is to transfer state-owned airports to local public ownership where possible. Among the group of state-owned airports that are candidates for local transfer, four airports have also been identified as candidates for closure if local transfer is not feasible. These four airports have very limited activity and/or narrow use or other site-specific conditions which result in their low functional value within the overall system. Unlike the majority of candidates for local transfer, these four airports would be considered for closure if local sponsorship is not available. In the event that the airports were transferred to local sponsorship, they would not be included in the core system of airports.

### Exhibit VI-3: Candidate Airports for Redevelopment or Relocation

| Airport | Primary Factors |
|---|---|
| Pacific City State (Redevelopment/Relocation) | Significant deficiencies in airfield dimensional standards<br>Significant site development constraints<br>Poor cost-benefit relationship for improving existing site |
| Lebanon State (Redevelopment/Relocation) | Significant deficiencies in airfield dimensional standards<br>Significant site development constraints |
| Vernonia Airfield (Redevelopment/Relocation) | Deficiencies in airfield dimensional standards<br>Significant site development constraints |
| Jordan Valley (New Development) | Gap in existing service<br>Local community access need<br>State and federal agency use need identified |

**Exhibit VI-4: Candidate Airports for Local Transfer, Privatization, or Closure**

| Airport | Primary Factors |
|---|---|
| **Alkali State** | • No based aircraft; low level of activity (Fewer than 500 annual operations)<br>• No significant recreational or emergency use component<br>• No community access or medevac access<br>• Other landing options for emergency conditions<br>• No economic significance to the statewide system |
| **Beaver Marsh State** | • No based aircraft; low level of activity (Fewer than 500 annual operations)<br>• No significant recreational or emergency use component<br>• No community access or medevac access<br>• Very poor condition of runway surface<br>• No economic significance to the statewide system |
| **Lake Billy Chinook** | • Low level of activity (Fewer than 500 annual operations)<br>• User base predominantly private adjacent residences<br>• No significant recreational or emergency use component<br>• No community access or medevac access<br>• No economic significance to statewide system |
| **Rome State** | • No based aircraft; low level of activity (Fewer than 500 annual operations)<br>• No significant recreational or emergency use component<br>• No community access or medevac access<br>• Poor condition of runway surface<br>• No economic significance to the statewide system |

## Non-core System Airports

There are 31 public-use airports included in the Oregon Aviation System that are not included in the core airport system (see Exhibit VI-5). Although these airports are not included in the core airport system, they should be protected through available land use measures. The non-core system airports, although not excluded from funding, will have a lower priority status and should be maintained in a basic preservation mode.

The following criteria were considered when determining which airports are not in the core system:

- Emergency use
- Medevac capabilities
- Overlapping service areas
- Significant local community access
- Significant local or regional economic benefits

The airports shown in Exhibit VI-5 are identified as low priorities for investment. These airports fail to meet the baseline criteria established for minimal level of system function, or they have other overriding features (such as overlapping/duplicative service areas) which lower their priority within the system.

## Exhibit VI-5: Non-core System Airports (31)

| | Duplicative Service | Nominal System Benefits |
|---|---|---|
| **Alkali State** | | • |
| **Arlington Municipal** | | • |
| **Beaver Marsh State** | | • |
| **Burns Junction BLM** | | • |
| **Chehalem Airpark** | • | • |
| **Country Squire Airpark** | | • |
| **Davis** | | • |
| **Enterprise Municipal** | • | • |
| **George Felt** | • | • |
| **Happy Valley** | • | • |
| **Juntura BLM** | | • |
| **Lake Billy Chinook State** | | • |
| **Lake Woahink SPB** | | • |
| **Lakeside State** | | • |
| **Lenhardt Airpark** | • | • |
| **Malin** | | • |
| **Memaloose USFS** | | • |
| **Monument** | | • |
| **Owyhee Reservoir State** | | • |
| **Powers** | | • |
| **Rome State** | | • |
| **Sandy River** | | • |
| **Seaside Municipal** | • | • |
| **Sheridan** | • | • |
| **Silver Lake USFS** | | • |
| **Skyport** | • | • |
| **Sportsman Airpark** | • | • |
| **Stark's Twin Oaks Airpark** | • | • |
| **Toledo State** | | • |
| **Valley View** | | • |
| **Wakonda Beach State** | | • |

Within an overall group of 101 public use airports there are 70 core system airports and 31 non-core system airports. The 70 core system airports includes three airports which may require redevelopment or relocation and does not include a new airport site at Jordan Valley that may be added to the core system in the future.

Exhibit VI-6 shows that system needs are reduced by $4.37 million when only the core system is targeted for investment. This reduces Category 4 needs by around 12 percent and Category 5 needs by a third.

**Exhibit VI-6**
**20-Year Non-Core System Needs**
**To Meet Minimum Standards**

| | Category 4 | Category 5 | Total |
|---|---|---|---|
| **Airport Preservation** | | | |
| Pavement | $ 1,190,000 | $ 260,000 | $ 1,460,000 |
| Lighting/Weather | 130,000 | - | 130,000 |
| ***Subtotal*** | 1,320,000 | 260,000 | 1,590,000 |
| **Safety** | | | |
| Dimensional Standards | 1,120,000 | 920,000 | 2,040,000 |
| Lighting/Weather | 360,000 | - | 360,000 |
| ***Subtotal*** | 1,480,000 | 920,000 | 2,400,000 |
| **Airport/System Modernization** | | | |
| Apron | 160,000 | 90,000 | 250,000 |
| Other (Terminal, etc.) | 52,000 | 78,000 | 130,000 |
| ***Subtotal*** | 212,000 | 168,000 | 380,000 |
| | | | |
| ***Total Needs*** | $ 3,012,000 | $ 1,348,000 | $ 4,370,000 |

## Strategy 4: Establish a State-level System Preservation Program

The Oregon Aviation Plan needs analysis shows that establishing a state-level pavement preservation program will reduce substantially the lifecycle cost of preserving the airport system's pavement. The contrast is stark – without a revenue increase 20-year pavement preservation needs would be $177.5 million. With a revenue increase that dedicated funds to the optimal lifecycle preservation projects 20-year needs would be $108.0 million, a reduction in costs of $69.5 million. This applies to the core system. Many airports outside the core system are not paved.

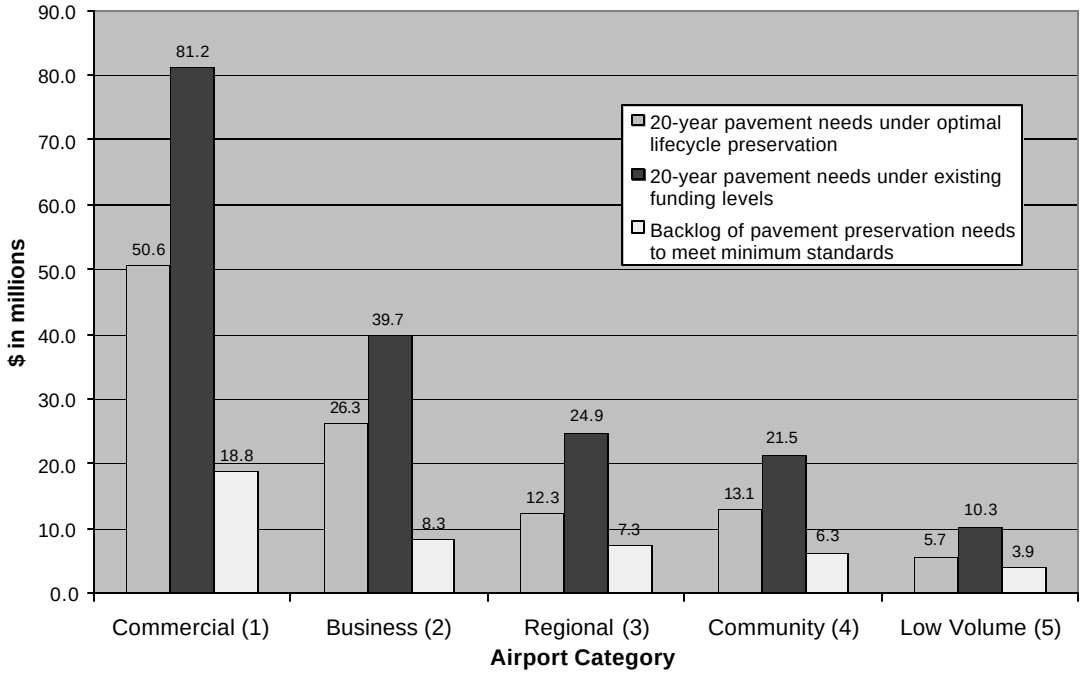
This requires an increase of $44.6 million over the 20-year plan to clear the backlog of pavement preservation needs.

### The Need for Pavement Preservation Program

As the system needs analysis has shown, a large portion of airport needs relate to pavement preservation. Of the $195.1 million airport preservation needs (excluding Portland International Airport) $177.5 million, or 90.9 percent is attributable to pavement preservation. Many of Oregon's World War II vintage airport pavements are now deteriorating due to a lack of funding. The problem is particularly acute for many smaller general aviation airports that simply do not have the resources to sufficiently maintain their pavements. According to the U.S. General Accounting Office (GAO) report *Airfield Pavement: Keeping Nation's Runways*

*in Good Condition Could Require Substantially Higher Spending*, pavement preservation projects are extremely cost-effective.

**Exhibit VI-7**
**Pavement Preservation Needs to Address Minimum Standards***




*** Does not include Portland International Airport, federal and privately-owned public-use airports. Analysis conducted prior to 1999 fuel tax increase.**

Exhibit VI-7 shows that pavement preservation needs under optimal lifecycle preservation are approximately half the preservation needs under existing funding. The reason for this is the current backlog of pavement preservation needs shown in the chart. The existence of a backlog means that many pavements have already deteriorated past the "optimal" or more cost-effective time to intervene with pavement preservation treatments. This drives up the cost of maintaining those pavements since the more they deteriorate the more it costs to bring them up to the desired condition level. The longer the backlog exists, the more pavements deteriorate past the cost-effective time to intervene with preventive maintenance.

Given that the FAA does not generally fund pavement preventive maintenance through the Airport Improvement Program, airports may not have the incentive to invest in pavement preservation, rather, they may choose to let the pavements deteriorate until they can apply for Airport Improvement Program funding for reconstruction. This results in higher overall costs compared to maintenance on the optimal lifecycle; however, the airport only has to pay the required ten percent match for the reconstruction projects. This frees capital that could be applied to pavement preservation to be used on other types of projects.

For airports in Categories 3, 4, and 5, the problem is more lack of revenues to fund pavement preservation rather than resource allocation. For example, if all available capital revenue for Category 5 were channeled to pavement maintenance, the backlog would still exist at the end of the planning horizon. This makes the long-term picture for pavement condition at these airports an area for concern.

## The State-level Preservation Program

The Oregon Aviation Plan recommends establishing a state funding program for pavement preservation projects. This strategy is being implemented through the fuel tax increases enacted by the 1999 Legislature.

State levied user fees provide a mechanism to generate the revenue required to implement a statewide pavement preservation program. Options include raising the state tax on jet fuel and/or aviation gas. Analysis of state revenues has shown that an incremental increase in the jet fuel tax will provide the greatest revenue yield. Exhibit VI-8 illustrates the magnitude of increases over 20 years required for a lowest life cycle cost approach to pavement preservation.

### Exhibit VI-8: Impact of State Aviation Fuel Tax Increases on Pavement Preservation Backlog*

| Fuel Tax Increases** | Year Backlog Cleared |
|---|---|
| Jet Fuel @ 1/2¢ per gallon<br>Avgas @ 3¢ per gallon | 2017 |
| Jet Fuel @ 1¢ per gallon<br>Avgas @ 9¢ per gallon | 2009 |
| Jet Fuel @ 1¢ per gallon<br>Avgas @ 6¢ per gallon | 2010 |
| Jet Fuel @ 1-1/2¢ per gallon<br>Avgas @ 9¢ per gallon | 2007 |
| Jet Fuel @ 2¢ per gallon<br>Avgas @ 12¢ per gallon | 2005 |

** Does not account for potential reduced fuel demand as a result of fuel tax increase.*
***Assumes incremental increase dedicated to a preservation program. Fuel tax increases assumed to occur in fiscal year 1999/2000. All revenue assumed dedicated to pavement projects.*

This analysis shows the effect various fuel tax increases have on clearing the pavement preservation backlog in order to follow a lowest cost lifecycle approach.

Exhibit VI-9, lists current aviation gas and jet fuel tax rates for eight western states.

**Exhibit VI-9: State Fuel Tax Rates**

| State | AVGAS*** | Jet Fuel |
|---|---|---|
| Oregon | 6 cents | 1 cent |
| Washington | 5 1/2 cent or 3% | 5 1/2 cent or 3% |
| California | 18 cents | 2 cents ** |
| Nevada | 10 1/2 cents | 1 cent |
| Idaho | 5 1/2 cent | 4 1/2 cent |
| Montana | 3 cents | 3 cents (GA)<br>1 cent (airlines) |
| Utah | 4 cents | 4 cents |
| Arizona | 5 cents | 1 1/2 cent |

* Indicates sales tax solely or in addition to the listed fuel tax
** California 7.25% sales tax on Jet fuel
* Increases to 9 cents in July 2000

The exhibit shows that, of the eight western states listed, Oregon has the lowest aviation gas tax (tied with Montana) at three cents per gallon. California has the highest aviation gas tax at 18 cents per gallon.

Oregon has a lower jet fuel tax than any of the eight western states shown. Other states range form twice to more than ten times the rate applied in Oregon.

## Strategy 5: Establish State-level Funding Program to Address Minimum Standard Needs

The Oregon Aviation Plan sets policy priorities and establishes criteria that identify project improvements and other investments for Oregon's system of airports. The plan analysis documents that there is limited revenue available to address these needs. Further, at the state level there is no funding source for implementing plan priorities.

This strategy implements the plan policy, "Establish a state funding program for public-use airports." The implementation would pursue the use of additional user fees, lottery funds, and other mechanisms such as general fund for projects that address plan deficiencies in addition to pavement preservation. This could include initiatives such as establishing a revolving loan program or using debt financing for pavement improvements.

The strategy recommends development of a funding mechanism for addressing incompatible land-use issues, instrumentation, and other improvement needs identified in the Oregon Aviation Plan. This could include land acquisition, obstruction removal and property acquisition in runway approach zones.