

Chapter 5 System Analysis and Recommendations

The previous chapter of the *Oregon Aviation Plan 2007 (OAP 2007)* outlined the airport classification process which was developed by a series of performance measures generated by the Oregon Department of Aviation (ODA), project Advisory Committees, and the Project Team. Airports were assigned to one of five functional roles:

- Level I – Commercial Service Airport
- Level II – Urban General Aviation Airport
- Level III – Regional General Aviation Airport
- Level IV – Local General Aviation Airport
- Level V – RAES (Remote Access/Emergency Service) Airport

This chapter summarizes the analysis that determined the adequacy of the *OAP 2007* system of airports and identifies the recommended improvements to the aviation system. Each airport was evaluated by the performance criteria for its assigned functional level to determine the ability of the system of airports to adequately serve the system users and population of Oregon. Based on the findings of this evaluation, the next step in the *OAP 2007* was to determine where enhancements to the airport system might be warranted.

This chapter is organized to review system performance criteria and the objectives associated with each. The performance criteria are presented in the following order:

- 5.1 User Accessibility Criteria Analysis and Recommendations
- 5.2 Development Criteria Analysis and Recommendations
- 5.3 Economic Support Criteria Analysis and Recommendations
- 5.4 Safety and Security Criteria Analysis and Recommendations

5.1 User Accessibility Criteria Analysis and Recommendations

User accessibility refers to an airport's ability to provide air and community access to the population of Oregon. Review of air access capabilities includes approach types, lighting systems, navigational aids, and other airside capabilities. Community access reviews the ability of people to access an airport on the ground in terms of time or distance. Both of these types of access and their associated capabilities are evaluated on the following pages.

5.1.a Air Accessibility

Air accessibility objectives for the aviation system are evaluated based upon the ability of individual airports to provide various types of approaches, weather reporting, and airfield lighting; all of which contribute to the ability of pilots to operate in all-weather conditions.

The system's ability to provide all-weather instrument coverage is essential for it to be completely functional, especially in Oregon, which is known for its diverse climate and rapidly changing weather. Much of the state's land area can become isolated during periods of inclement weather due to limited road infrastructure and mountain passes that becomes unusable, effectively severing many communities' connection to vital services such as health care facilities. Access to airports can be limited during periods of poor weather, especially at those airports without all-weather instrument coverage. An inventory of types of available approaches and weather reporting services was completed to evaluate the adequacy of all-weather instrument approaches.

Approach Types

Two types of approaches that contribute to all-weather accessibility are precision and non-precision. Each is evaluated to identify appropriate system recommendations.

Precision approach systems utilize both horizontal and vertical guidance providing better than 21-foot horizontal and 21-foot vertical accuracy. These systems allow aircraft to locate an airport and land on a specific runway during periods of poor visibility and/or inclement weather. Typically, the most demanding general aviation aircraft, such as corporate aircraft, prefer to operate at an airport with all weather instrument coverage. These systems reduce travel delays associated with airport closure due to poor visibility, which would result in rerouting aircraft and an increased ground travel time due to not being able to access the nearest airport to the final destination.

Non-precision approaches provide only horizontal or lateral guidance, along with electronic information to aircraft during their approach and landing procedures at an airport. These systems provide support to aircraft approaching an airport during periods of poor visibility and inclement weather when visual approaches are not possible. Typically these systems are less expensive to install and maintain compared to a precision approach.

Figure 5.1 illustrates the *OAP 2007* airports displayed by the type of approach they provide (visual, non-precision, or precision). Additionally, **Figure 5.1** presents the airport service areas for airports providing a non-precision or precision approach. The percentage of land area within a 30-minute drive time of an airport with a precision approach is 10.3 percent (10.3%). Airports with non-precision and precision approaches cover 12.5 percent (12.5%) of the land area in Oregon. Further evaluation of the airport service areas revealed that 2,664,545 persons or 72 percent (72%) of the state's population live within a 30-minute drive time of an airport with a precision approach. Approximately 3,145,644 persons or 85 percent (85%) of the state's population lives within a 30-minute drive time of an airport with either a precision or a non-precision approach.

Analysis of the existing approach types at Oregon airports indicates that the existing system does not provide adequate coverage for all-weather instrument approaches, especially to those communities located in remote regions of the state. The coastal region of Oregon regularly

experiences changing weather conditions, which can vary significantly depending upon location and elevation. Because of the rapidly changing weather conditions that can vary significantly just a few miles away, it is important that system users have airports available that would allow them to safely land their aircraft during periods of inclement weather.

Central and eastern Oregon residents often find themselves isolated during winter months or during periods of inclement weather. Much of the road network which provides access through the mountains are often impassable which results in much of Oregon's remote areas being isolated from critical services. Airports are a vital link for these communities and it is critical that airports in these regions have all-weather capabilities to ensure access to essential public services.

The *OAP 2007* recommends the following airports for consideration of an all weather instrument approach:

- Brookings Airport
- Cape Blanco State Airport
- Christmas Valley Airport
- Florence Municipal Airport
- Gold Beach Municipal Airport
- Joseph State Airport

Figure 5.2 illustrates the future airport system with the recommended improvements. Airfield lighting at the above airports should be upgraded where applicable to a minimum of medium intensity lighting to compliment the installation of an all-weather approach with either a precision or non-precision approach.

Weather Reporting

Weather reporting equipment is also an important element to consider and compliments both precision and non-precision approach systems by providing an increased level of safety. Providing on-site weather reporting equipment at airports throughout the state provides users with information regarding weather conditions at their destination airport and the surrounding area. This information allows a pilot to make an informed decision regarding their operations during inclement or questionable weather.

Accurate weather information is critical for Oregon pilots as weather conditions are known to change rapidly. Airports in proximity to each other can have vastly different weather conditions due to topography or elevation. **Figure 5.3** illustrates the *OAP 2007* airports that currently have an automated weather reporting station; either an Automated Weather Observation Station (AWOS) or Automated Surface Observation Station (ASOS). The airport service areas represent the area that can be traveled in 30 minutes by car following posted speed limits and assuming no travel time delays, such as stoplights or road construction. A geographic information system (GIS) was utilized to generate 30-minute ground travel times by using the existing road network and known speed limits. The percentage of land area within a 30-minute drive time of an airport

with an automated weather reporting station is forty-four percent (44%). Further evaluation of the airport service areas revealed that 2,407,607 persons or sixty-seven percent (67%) of the state's population lives within a 30-minute drive time of an airport with an automated weather reporting station.

Oregon's diverse climate has been known to change rapidly. The Project Team was able to experience the dramatic changes in weather along the Oregon coast firsthand while conducting site visits at Gold Beach Municipal Airport and Brookings Airport. The Project Team arrived at Gold Beach during clear conditions with visibility greater than five miles. Within minutes of arrival, a dense fog descended upon the airport, reducing visibility to zero, and effectively closing the airport. The Project Team quickly drove 30 miles south to Brookings Airport to determine the accessibility of the next nearest airport to Gold Beach. Due to the increased field elevation at Brookings Airport, the weather conditions were clear with unlimited visibility. A blanket of fog is visible to the north and at lower elevations surrounding Brookings.



Figure 5.4 Fog at Gold Beach Municipal Airport

Weather information is critical to pilots. When installed at an airport, automated weather reporting systems provide the most accurate information available for the airport and surrounding area. These weather reporting systems are a vital component of maintaining access to communities during periods of inclement weather.

The *OAP 2007* recommends the following airports for consideration of a weather reporting system:



Figure 5.5 Clear at Brookings Airport

- Albany Municipal Airport
- Cape Blanco State Airport
- Cascade Locks State Airport
- Christmas Valley Airport
- Gold Beach Municipal Airport
- Joseph State Airport
- Madras City – County Airport
- Nehalem Bay State Airport
- Pacific City State Airport
- Prineville Airport
- Seaside Municipal Airport
- Siletz Bay State Airport
- Wasco State Airport

Figure 5.3 illustrates the recommended improvements.

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Airfield Lighting

Airfield lighting, which includes runway and taxiway lights, extends an airport's accessibility into nighttime, inclement weather, and periods of reduced visibility. The intensity of airfield lighting varies by the type of approaches utilized at an airport. Low and medium intensity lighting is often found at airports with visual approaches, while medium and high intensity lighting is generally installed at airports having non-precision or precision approach types. **Table 5.1** illustrates the type of lighting systems for the primary runways at the *OAP 2007* airports. It should be noted that airports having high intensity lighting also have low and medium intensity lighting capabilities.

Table 5.1 Airfield Lighting (Primary Runway)

<i>Airfield Lighting System</i>	<i>Total Number of Airports</i>
None	38
Low Intensity	39
Medium Intensity	10
High Intensity	10

Source: Mead & Hunt Inventory

Airfield lighting should be considered based upon the type of activity occurring at the airport and should be comparable with the type of approach that the airport provides. The following recommendations are based on the performance criteria for user accessibility. Recommendations for airfield lighting based on the minimum criteria for each functional level are identified later in this chapter.

The *OAP 2007* recommends the following airports upgrade their runway lighting to a minimum level of medium to accommodate the recommended changes in approach type:

- Cape Blanco State Airport
- Christmas Valley Airport
- Gold Beach Municipal Airport
- Joseph State Airport

5.1.b Ground Access

To adequately evaluate ground access to the aviation system, it is first necessary to identify information about the population of the state, which may require access to the system. Based upon this information service areas can be identified.

The 2000 U.S. Census reported the Oregon population to be 3,421,399 residents. By July 2006 the population had grown by 8.2 percent (8.2%) or 279,359, ranking Oregon 27th for population size in the United States, with a population of 3,700,758. Oregon has experienced a moderately high population growth rate since 2000 (8.2%), compared to an average national growth rate of 0.7 percent (0.7%). **Figure 5.6** graphically depicts the population densities throughout Oregon.

Between 2000 and 2006, 26 of Oregon's 36 counties experienced an overall increase in population. Of the 26 counties that experienced growth, 10 counties grew at a rate greater or equal to the 8.2 percent (8.2%) state average. Deschutes County, located in central Oregon, experienced the greatest population increase, growing by 29.3 percent (29.3%) or 33,773 persons. This population growth can be attributed to year round recreational opportunities and ample employment opportunities. Of the 10 counties experiencing a decline in growth, Sherman County experienced the greatest decline of 12.2 percent (12.2%) or a loss of 235 residents.

According to the U.S. Census, the recent population growth experienced throughout the state is expected to continue. Population projections indicate that by the year 2025, Oregon's population will have grown by sixteen percent (16%) or 599,242 persons resulting in 4.3 million total residents.

The location of system airports in relation to the geographic location of the state's population is important to consider as most users of airports live within that population center or travel to it. The FAA guidelines indicate that general aviation airports should be located within 30 minutes of their users. Airports with scheduled commercial service typically have larger service areas because passengers are willing to drive greater distances to access the national air transportation system.

For purposes of this study, airport service areas were developed to analyze the availability of airport facilities and services to the people of Oregon. The airport service areas represent the area that can be traveled in 30 minutes by car following posted speed limits and assuming no travel time delays, such as stoplights or road construction. A geographic information system (GIS) was utilized to generate ground travel times by using the existing road network and known speed limits.

An assessment by service level is provided to illustrate the functionality of each category of airport.

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Service by Airport Functional Category

A review of the airports by functional role was performed to determine the existing airport system ability to adequately serve the population of Oregon. This analysis included a review of the geographic area covered by each airport, as well as the population it served within a 120-minute drive time for Category I – Commercial Service Airports and a 30-minute drive time for all other levels.

- **Category I – Commercial Service Airports**

Commercial service airports typically service a larger geographic area when compared to general aviation airports because people are willing to travel greater distances to access the national air transportation system. Therefore, further analysis was required for Category I – Commercial Service Airports. Additional coverage areas were created based on acceptable travel times for persons utilizing commercial service airports. **Figure 5.7** illustrates the 120-minute drive times, which reflect the service area of Category I – Commercial Service Airports. **Table 5.2** lists the Category I – Commercial Service Airports and their associated cities.

Table 5.2 Category I – Commercial Service Airports

<i>Associated City</i>	<i>Airport Name</i>
Eugene	Mahlon Sweet Field
Klamath Falls	Klamath Falls Airport
Medford	Rogue Valley International Airport
North Bend	Southwest Oregon Regional Airport
Pendleton	Eastern Oregon Regional Airport at Pendleton
Portland	Portland International Airport
Redmond	Redmond Municipal – Roberts Field
Salem	McNary Field

Source: Mead & Hunt

The percentage of land area of the state within a 120-minute drive time of a Category I - Commercial Service Airport is fifty-two-percent (52%). Further evaluation of the service area for commercial service airports revealed that 3,310,641 persons, or eighty-nine-percent (89%) of the state's population, live within a 120-minute drive time of a Commercial Service airport. **Table 5.3** illustrates the population served by each Category I - Commercial Service Airport.

The analyses revealed that there are several overlaps in service areas for Category I – Commercial Service Airports, particularly near the Portland Metropolitan Area. Interstate 5 (I-5) provides access to Portland International Airport, Salem McNary Field, and Mahlon Sweet Field in Eugene. Each airport serves a significant population and should continue to provide commercial service regardless of service overlaps.

Commercial service airports located in neighboring states are important to consider when discussing access as they provide additional opportunities for Oregon residents to access the national air transportation system. There are three commercial service airports located in Washington (Tri-Cities Airport, Walla Walla Regional Airport, and Yakima Air Terminal / McAllister Field) and one in Idaho (Boise Air Terminal). These airports provide access to approximately 145,661 (4.3%) of Oregon residents.

Table 5.3 Population of Service Areas for Category I – Commercial Service Airports

<i>Airports</i>	<i>Population Served within a 30-Minute Drive Time</i>		<i>Population Served within a 60-Minute Drive Time</i>		<i>Population Served within a 120-Minute Drive Time</i>	
	<i>(Percent of State Population)</i>		<i>(Percent of State Population)</i>		<i>(Percent of State Population)</i>	
Eastern Oregon Regional	39,418	(1.1%)	93,421	(2.7%)	138,002	(4%)
Klamath Falls	52,484	(1.5%)	59,174	(1.7%)	236,052	(6.9%)
Mahlon Sweet Field	291,250	(8.5%)	486,781	(14.2%)	2,274,159	(66.5%)
McNary Field	376,433	(11.1%)	663,781	(19.4%)	2,387,833	(69.8%)
Portland International	1,251,366	(36.6%)	1,763,484	(51.5%)	2,405,732	(70.3%)
Redmond Municipal	113,503	(3.3%)	149,979	(4.4%)	160,787	(4.7%)
Rogue Valley International	198,315	(5.8%)	251,647	(7.4%)	398,709	(11.7%)
Southwest Oregon Regional	50,835	(1.5%)	77,213	(2.3%)	177,343	(5.2%)
Neighboring State Airports	19,253	(0.6%)	36,378	(1.1%)	145,661	(4.3%)

Source: U.S. Census & Mead & Hunt

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- **Category II – Urban General Aviation Airports**

Urban general aviation airports accommodate all general aviation aircraft and corporate aviation activity, including business jets, helicopters, and other general aviation activity. The primary users of these airports are business related and service a large geographic region, or they experience high levels of general aviation activity. **Table 5.4** lists the Category II – Urban General Aviation Airports and their associated cities and **Figure 5.8** illustrates the 30-minute service areas for all Category II - Urban General Aviation Airports.

The percentage of land area within a 30-minute drive time of all Category II - Urban General Aviation Airports is six-percent (6%). Further evaluation of the Category II – Urban General Aviation Airport service areas revealed that 1,985,035 persons or fifty-four-percent (54%) of the State's population lives within a 30-minute drive time of a Category II – Urban General Aviation Airport.

Table 5.4 Category II – Urban General Aviation Airports

<i>Associated City</i>	<i>Airport Name</i>
Astoria	Astoria Regional Airport
Aurora	Aurora State Airport
Bend	Bend Municipal Airport
Corvallis	Corvallis Municipal Airport
McMinnville	McMinnville Municipal Airport
Newport	Newport Municipal Airport
Portland	Portland Downtown Heliport
Portland	Portland Hillsboro Airport
Portland	Portland Troutdale Airport
Scappoose	Scappoose Industrial Airpark

Source: Mead & Hunt

Analysis of Category II – Urban General Aviation airports identified duplication in services for much of the Portland Metropolitan Area. The overlap in service areas is needed in this region as the majority of the states population is located here which results in a high level of aviation activity. Conversely, there is no Category II – Urban General Aviation Airport east of Bend Municipal Airport, which is located in central Oregon. Several communities throughout Oregon with significant population are underserved by their airports. Consideration should be given to improving these airports to meet the minimum criteria for Category II - Urban General Aviation Airports. These improvements would help those airports better serve the people of Oregon and the users of the state aviation system.

Several airports could accommodate Category II – Urban General Aviation Airport users if the airport facilities were improved. The *OAP 2007* recommends the following airports provide facilities consistent with Category II – Urban General

Aviation airports. **Table 5.5** lists the airports and the required improvements to meet the minimum criteria of a Category II airport while **Figure 5.8** illustrates the recommended future changes.

Table 5.5 Recommended Future Category II – Urban General Aviation Airports

<i>Airport</i>	<i>Needed Improvements</i>
Bandon State Airport	Runway Extension, Runway Widening, Precision Approach, Terminal Development, Perimeter Fencing, Auto Parking
Burns Municipal Airport	Runway Widening, Parallel Taxiway, Precision Approach, Complete Perimeter Fencing
Grant County Regional / Ogilvie Field	Runway Extension, Runway Widening, Precision Approach, Taxiway Lighting
Ontario Municipal Airport	Runway Extension, Precision Approach, Taxiway Lighting, Complete Perimeter Fencing
Roseburg Regional Airport	Runway Extension, Precision Approach, Taxiway Lighting, Complete Perimeter Fencing

Source: Mead & Hunt, Inc.

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- **Category III – Regional General Aviation Airports**

Regional general aviation airports support most twin- and single-engine aircraft and may accommodate occasional business jet use. These airports support a regional transportation need. **Table 5.6** lists the Category III – Regional General Aviation Airports and their associated cities while **Figure 5.9** illustrates the 30-minute service areas for all Category III – Regional General Aviation Airports.

The percentage of land area within a 30-minute drive time of all Category III - Regional General Aviation Airports is seven-percent (7%). Further evaluation of the Category III – Regional General Aviation Airport service areas revealed that 503,513 persons or fourteen-percent (14%) of the State’s population lives within a 30-minute drive time of a Category III – Regional General Aviation Airport.

The analysis identified minimal duplication in services for Category III – Regional General Aviation airports. **Figure 5.9** illustrates the geographic coverage Category III – Regional General Aviation Airports and the overall aviation system coverage provided by Category II – Urban General Aviation Airports and Category III – Regional General Aviation Airports. Review of the aviation system indicates that the Category III – Regional General Aviation Airports satisfy the needs of aviation users and provide adequate access to the people of Oregon from a system prospective.

Table 5.6 Category III – Regional General Aviation Airports

<i>Associated City</i>	<i>Airport Name</i>
Ashland	Ashland Municipal Airport – Sumner Parker Field
Bandon	Bandon State Airport
Burns	Burns Municipal Airport
Grants Pass	Grants Pass Airport
Hermiston	Hermiston Municipal Airport
John Day	Grant County Regional Airport – Ogilvie Field
La Grande	La Grande / Union County Airport
Lakeview	Lake County Airport
Ontario	Ontario Municipal Airport
Roseburg	Roseburg Regional Airport
The Dalles	Columbia Gorge Regional Airport – The Dalles Municipal
Tillamook	Tillamook Airport

Source: Mead & Hunt

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- **Category IV – Local General Aviation Airports**

Local general aviation airports support primarily single-engine, general aviation aircraft, but are capable of accommodating smaller twin-engine general aviation aircraft. These airports support local air transportation needs and special use aviation activities. **Table 5.7** lists the Category IV – Regional General Aviation Airports and their associated cities and **Figure 5.10** illustrates the 30-minute service areas for all Category IV – regional General Aviation Airports.

The percentage of land area within a 30-minute drive time of all Category IV - Local General Aviation Airports is eleven-percent (11%). Further evaluation of the Category IV – Local General Aviation Airports service areas revealed that 1,873,183 persons or fifty-percent (50%) of the State's population lives within a 30-minute drive time of a Category IV– Local General Aviation Airport.

The analysis of Category IV – Local General Aviation airports identified minimal duplication in services, although airports located in the Portland Metropolitan Area do have overlapping service areas due to high levels of aviation activity and the concentration of Oregon's population in this area. **Figure 5.10** illustrates the geographic coverage Category IV – Local General Aviation Airports and the overall aviation system coverage provided by Category II – Urban General Aviation Airports, Category III – Regional General Aviation Airports, and Category IV – Local General Aviation Airports. Review of the aviation system indicates that the Category IV – Local General Aviation Airports satisfy the needs of aviation users and provide adequate access to the people of Oregon from a system perspective.

Table 5.7 Category IV – Local General Aviation Airports

<i>Associated City</i>	<i>Airport Name</i>
Albany	Albany Municipal Airport
Boardman	Boardman Airport
Brookings	Brookings Airport
Cave Junction	Illinois Valley Airport
Christmas Valley	Christmas Valley Airport
Condon	Condon State Airport – Pauling Field
Cottage Grove	Cottage Grove State Airport
Creswell	Creswell Airport - Hobby Field
Florence	Florence Municipal Airport
Gleneden Beach	Siletz Bay State Airport
Gold Beach	Gold Beach Municipal Airport
Hood River	Ken Jernstedt Airfield
Independence	Independence State Airport
Joseph	Joseph State Airport
Lebanon	Lebanon State Airport
Hubbard	Lenhardt Airpark
Lexington	Lexington Airport
Madras	Madras City – County Airport
Myrtle Creek	Myrtle Creek Municipal Airport
Newberg	Chehalem Airpark
Newberg	Sportsman Airpark
Portland	Portland Mulino Airport
Prineville	Prineville Airport
Seaside	Seaside Municipal Airport
Sisters	Sisters Eagle Air Airport
Sunriver	Sunriver Airport
Wasco	Wasco State Airport

Source: Mead & Hunt

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

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

Table 5.8 lists the Category V – RAES Airports and their associated cities while **Figure 5.11** illustrates the 30-minute service areas for all Category V airports.

The percentage of land area within a 30-minute drive time of all Category V - RAES Airports is twelve-percent (12%). Further evaluation of the Category V service areas revealed that 1,599,712 persons or forty-three-percent (43%) of the state's population lives within a 30-minute drive time of a Category V – RAES Airport.

The airport system analysis revealed that twelve-percent (12%) or 1,599,712 people live within a 30-minute drive time of a Category V – RAES and revealed minimal duplication of services. **Figure 5.11** illustrates the geographic coverage Category V - RAES airports and the overall Aviation System coverage provided by Category II – Urban General Aviation Airports, Category III – Regional General Aviation Airports, Category IV – Local General Aviation Airports, and Category V - RAES Airports. Review of the aviation system indicates that the Category V – RAES Airports satisfy the needs of aviation users and provide adequate access to the people of Oregon from a system prospective.

Table 5.8 Category V – RAES (Remote Access / Emergency Service) Airports

<i>Associated City</i>	<i>Airport Name</i>
Alkali Lake	Alkali Lake State Airport
Arlington	Arlington Municipal Airport
Beaver Marsh	Beaver Marsh Airport
Cascade Locks	Cascade Locks State Airport
Chiloquin	Chiloquin State Airport
Clearwater	Toketee State Airport
Cornelius	Skyport Airport
Crescent Lake	Crescent Lake State Airport
Culver	Lake Billy Chinook Airport
Denmark	Cape Blanco State Airport
Enterprise	Enterprise Municipal Airport
Estacada	Valley View Airport
Gates	Davis Field
Hillsboro	Stark's Twin Oaks Airport
Imnaha	Memaloose Airport (USFS)
Lakeside	Lakeside Municipal Airport
Malin	Malin Airport
Manzanita	Nehalem Bay State Airport
McDermitt	McDermitt State Airport
McKenzie Bridge	McKenzie Bridge State Airport
Monument	Monument Municipal Airport
Oakridge	Oakridge State Airport
Owyhee	Owyhee Reservoir State Airport
Pacific City	Pacific City State Airport
Pinehurst	Pinehurst State Airport
Powers	Powers Hayes Field
Prospect	Prospect State Airport
Rome	Rome State Airport
Roseburg	Roseburg Regional Airport
Sandy	Country Squire Airport
Sandy	Sandy River Airport
Santium Junction	Santium Junction State Airport
Silver Lake	Silver Lake Strip (USFS)
Toledo	Toledo State Airport
Vale	Miller Memorial Airpark
Vernonia	Vernonia Airfield
Waldport	Wakonda Beach State Airport

Source: Mead & Hunt

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Summary

The overall service area provided by all five functional levels is shown in **Figure 5.12**. This exhibit illustrates the areas that do not have access to a general aviation airport within a 30-minute drive and/or a commercial service airport within a 120-minute drive.

To identify accurately the total population served and land area served by the entire Oregon system of airports, all overlapping service areas must be removed. **Table 5.9** summarizes the population and land area served for each of the functional levels and also the total population and land area served by the Oregon system of airports.

Table 5.9 Population and Land Area Served by Functional Level

	<i>Category I</i>	<i>Category II</i>	<i>Category III</i>	<i>Category IV</i>	<i>Category V</i>
Total Population	3,310,641	1,985,035	503,513	1,873,183	1,599,712
Percent of State Population	89%	54%	14%	51%	43%
Percent of State Land Area Served	52%	6%	7%	11%	12%
Total System Population Coverage	3,386,392				
Total System Population Coverage (%)	92%				
Total System Land Area Coverage (%)	60%				

Source: U.S. Census and Mead & Hunt

The Category I – Commercial Service Airports serve nearly ninety percent (90%) of the states population. The largest population centers not served by an Oregon commercial service airport are all located in central eastern Oregon and include the cities of Burns, John Day, and Ontario, as shown in **Figure 5.7**. Burns is located 130 miles southeast of Redmond and would require a two-and-one-half-hour drive to access commercial service. John Day is located centrally between Boise Airport (Idaho), Eastern Oregon Regional Airport at Pendleton, and Redmond Municipal Airport – Roberts Field. The drive to Boise, Idaho and Redmond, Oregon are approximately three hours and thirty minutes, respectively; while driving to Pendleton, Oregon is just two and half hours. Ontario is located adjacent to the Idaho border and is just 50 miles west of the Boise Airport, which provides commercial service.

General aviation airports include functional Categories II - V. These airports serve 3,204,998 residents or eighty-seven-percent (87%) of the total state population. In contrast, these airports only cover thirty-six-percent (36%) of the land area of Oregon. **Figure 5.12** identifies the land area not having access to airports and it appears to be rather significant. However, it is important to keep in mind that nearly ninety-percent (90%) of the state population lives within 150 miles of the Portland Metropolitan Area. Therefore, much of the land area that appears to be lacking airport coverage is not a system deficiency, since it would not serve a significant population.

The majority of the population of Oregon is located within a 120-minute drive of a commercial service airport and a 30-minute drive of a general aviation airport, as shown in **Figure 5.7**. The

numbers and percentages presented in this chapter demonstrate an overlap of coverage in the northwest portion of the state for both commercial service and general aviation airports. There are a few small gaps for commercial service airports, but the majority of the state is adequately covered by air service. Airports providing general aviation services are also sufficient, as they serve the majority of the population of Oregon.

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5.2 Development Criteria Analysis and Recommendations

Airports provide a mode of transportation that safely and efficiently moves both people and goods and is essential to the state economy. One of the most critical elements of any system of airports is the ability to provide the infrastructure necessary to accommodate the needs of the system users. Maintaining and improving the aviation infrastructure is crucial to the continued success of the Oregon system of airports.

5.2.a Development Criteria

This section examines the ability of the aviation system to serve adequately the existing and future needs of the system users. Chapter 4 presented the *OAP 2007* airport classification system and the minimum facility criteria for each of the five functional airport roles. It should be noted that the minimum facility criteria outlined in Chapter 4 are objectives, not requirements. It is possible that airports will not meet all of the minimum facility standards for their functional role. Airports not meeting all minimum facility standards are not necessarily precluded from performing the functional role within the aviation system, but may have some form of limitation.

Minimum standards were developed for airside facilities, general facilities, and service facilities to establish a baseline for level of service. The following items are included in the review of each facility area:

- **Airside Facilities**

- | | |
|----------------------------|------------------------|
| ○ Approach type | ○ Runway width |
| ○ Instrument approach aids | ○ Taxiways |
| ○ Runway length | ○ Taxiway lighting |
| ○ Runway lighting | ○ Visual approach aids |
| ○ Runway pavement type | |

- **General Facilities**

- | | |
|-----------------------------|--------------------------|
| ○ Apron parking/storage | ○ Lighted wind indicator |
| ○ Auto parking | ○ Rotating beacon |
| ○ Cargo | ○ Terminal building |
| ○ Deicing facility | ○ Weather reporting |
| ○ Fencing | |
| ○ Hangared aircraft storage | |

- **Service Facilities**

- | | |
|------------------------------|----------------|
| ○ Fixed Based Operator (FBO) | ○ Pilot lounge |
| ○ Food services | ○ Restrooms |
| ○ Fuel | ○ Snow removal |
| ○ Ground transportation | ○ Telephone |

The adequacy of the existing airport system to meet the minimum standards for each functional role is presented within this chapter. The following presents the findings and recommendations of

the analysis for airport compliance with the functional role and minimum criteria based upon the level of service the airport provides. Detailed information for each individual airport is included in *Volume II – OAP 2007 Individual Airport Reports*.

Category I – Commercial Service Airports

Analysis of the aviation system identified eight airports, which function as commercial service airports. The existing facilities and services for each of these airports were evaluated against the minimum standards for Category I – Commercial Service Airports. **Table 5.10** presents a summary of the existing commercial service airports and their ability to meet the minimum standards for airside, general, and service facilities.

Table 5.10 Category I – Commercial Service Airports

<i>Airports Meeting the Minimum Criteria</i>	
Airside Facilities	
Approach type	100 percent
Instrument approach aids	100 percent
Runway length	73 percent
Runway lighting	100 percent
Runway pavement type	100 percent
Runway width	100 percent
Taxiways	50 percent
Taxiway lighting	78 percent
Visual approach aids	100 percent
General Facilities	
Apron parking/storage	100 percent
Auto parking	100 percent
Cargo	50 percent
Deicing facility	100 percent
Fencing	100 percent
Hangared aircraft storage	50 percent
Lighted wind indicator	100 percent
Rotating beacon	100 percent
Terminal building	100 percent
Weather reporting	100 percent
Service Facilities	
Fixed Based Operator	100 percent
Food service	88 percent
Fuel	100 percent
Ground transportation	100 percent
Pilot lounge	100 percent
Restrooms	100 percent
Snow removal	100 percent
Telephone	100 percent
Source: Mead & Hunt Inventory	

Category II – Urban General Aviation Airports

Analysis of the aviation system identified 10 airports that meet the definition of an urban general aviation airport. The existing facilities and services for each airport were evaluated against the minimum standards for Category II – Urban General Aviation Airports. **Table 5.11** presents a summary of the existing urban general aviation airports and their ability to meet the minimum standards for airside, general, and service facilities. Categories not reporting a percentage are not an objective for that functional airport role.

Table 5.11 Category II – Urban General Aviation Airports

<i>Airports Meeting the Minimum Criteria</i>	
Airside Facilities	
Approach type	50 percent
Instrument approach aids	Not an Objective
Runway length	100 percent
Runway lighting	100 percent
Runway pavement type	100 percent
Runway width	90 percent
Taxiways	50 percent
Taxiway lighting	80 percent
Visual approach aids	90 percent
General Facilities	
Apron parking/storage	30 percent
Auto parking	100 percent
Cargo	30 percent
Deicing facility	Not an Objective
Fencing	90 percent
Hangared aircraft storage	40 percent
Lighted wind indicator	100 percent
Rotating beacon	100 percent
Terminal building	100 percent
Weather reporting	90 percent
Service Facilities	
Fixed Based Operator	90 percent
Food service	70 percent
Fuel	90 percent
Ground transportation	100 percent
Pilot lounge	90 percent
Restrooms	90 percent
Snow removal	80 percent
Telephone	90 percent
Source: Mead & Hunt Inventory	

Category III – Regional General Aviation Airports

Analysis of the aviation system identified 12 regional general aviation airports. The existing facilities and services for each airport were evaluated against the minimum standards for Category III – Regional General Aviation Airports. **Table 5.12** presents a summary of the existing regional general aviation airports and their ability to meet the minimum standards for airside, general, and service facilities. Categories not reporting a percentage are not an objective for that functional airport role.

Table 5.12 Category III – Regional General Aviation Airports

<i>Airports Meeting the Minimum Criteria</i>	
Airside Facilities	
Approach type	62 percent
Instrument approach aids	Not an Objective
Runway length	78 percent
Runway lighting	92 percent
Runway pavement type	100 percent
Runway width	85 percent
Taxiways	8 percent
Taxiway lighting	92 percent
Visual approach aids	92 percent
General Facilities	
Apron parking/storage	100 percent
Auto parking	100 percent
Cargo	85 percent
Deicing facility	Not an Objective
Fencing	100 percent
Hangared aircraft storage	54 percent
Lighted wind indicator	100 percent
Rotating beacon	100 percent
Terminal building	92 percent
Weather reporting	78 percent
Service Facilities	
Fixed Based Operator	78 percent
Food service	85 percent
Fuel	100 percent
Ground transportation	100 percent
Pilot lounge	69 percent
Restrooms	92 percent
Snow removal	78 percent
Telephone	92 percent
Source: Mead & Hunt Inventory	

Category IV – Local General Aviation Airports

Analysis of the aviation system identified 25 local general aviation airports. The existing facilities and services for each airport were evaluated against the minimum standards for Category IV – Local General Aviation Airports. **Table 5.13** presents a summary of the existing local general aviation airports and their ability to meet the minimum standards for airside, general, and service facilities. Categories not reporting a percentage are not an objective for that functional airport role.

Table 5.13 Category IV – Local General Aviation Airports

<i>Airports Meeting the Minimum Criteria</i>	
Airside Facilities	
Approach type	100 percent
Instrument approach aids	Not an Objective
Runway length	78 percent
Runway lighting	93 percent
Runway pavement type	100 percent
Runway width	74 percent
Taxiways	4 percent
Taxiway lighting	93 percent
Visual approach aids	Not an Objective
General Facilities	
Apron parking/storage	96 percent
Auto parking	100 percent
Cargo	Not an Objective
Deicing facility	Not an Objective
Fencing	Not an Objective
Hangared aircraft storage	78 percent
Lighted wind indicator	78 percent
Rotating beacon	78 Percent
Terminal building	Not an Objective
Weather reporting	Not an Objective
Service Facilities	
Fixed Based Operator	Not an Objective
Food service	Not an Objective
Fuel	75 percent
Ground transportation	Not an Objective
Pilot lounge	Not an Objective
Restrooms	78 percent
Snow removal	56 percent
Telephone	Not an Objective
Source: Mead & Hunt Inventory	

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

Analysis of the aviation system identified 39 local general aviation airports. The existing facilities and services for each airport were evaluated against the minimum standards for Category V – RAES Airports. **Table 5.14** presents a summary of the existing remote access/emergency service airports and their ability to meet the minimum standards for airside facilities. No development objectives were identified for general and service facilities for Category V - RAES Airports since many of these airports are located in remote areas of the state and are intended to provide a very minimal facility. These airports focus primarily on providing an adequate runway surface for emergency access. Therefore, only the airside facilities are presented in **Table 5.14**. Categories not reporting a percentage are not an objective for that functional airport role.

Table 5.14 Category V – RAES (Remote Access / Emergency Service) Airports

<i>Airports Meeting the Minimum Criteria</i>	
Airside Facilities	
Approach type	Not an Objective
Instrument approach aids	Not an Objective
Runway length	66 percent
Runway lighting	Not an Objective
Runway pavement type	92 percent
Runway width	50 percent
Taxiways	Not an Objective
Taxiway lighting	Not an Objective
Visual approach aids	Not an Objective
Source: Mead & Hunt Inventory	

5.2.b Development Criteria Recommendations

The following section provides a comprehensive review of each functional category and an airports ability to meet the minimum criteria for airside, general, and service facilities. All system airports were evaluated with the established minimum criteria for the five functional airport categories based on their identified role in the aviation system. Airports not meeting the minimum criteria for their functional category are identified. The *OAP 2007* recommends that the identified airports be improved to meet the minimum criteria for the deficient category within their functional category. The minimum criterion for the five functional categories was presented in *Chapter 4 – Airport Functional Roles*. A detailed review of each airport can be found in *Volume II – OAP 2007 Individual Airport Reports*.

5.2.c Airside Facilities Recommendations

The airfield consists of many components that are required to accommodate safe aircraft operations. These consist of:

- Runways
- Taxiways
- Apron network
- Visual and electronic navigational aids associated with runways
- Runway protection zones
- General aviation facilities

The following paragraphs present the airside facility deficiencies identified through the system evaluation process presented in *Chapter 4 – Airport Functional Roles*. The *OAP 2007* recommends that airports consider improving airside facilities to meet the minimum criteria for their assigned functional role where feasible.

Runway Length

The primary runway length for each *OAP 2007* airport was evaluated with the established runway length minimum criteria for the five functional airport levels based on their identified role in the Oregon aviation system. The following paragraphs identify the airports not meeting the minimum criteria for runway length for their assigned functional category. It is recommended that airports correct the deficiency where practical. This study has not evaluated the feasibility of extending any of the identified runways. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service airports require a minimum of 6,000 feet of runway length. Two Category I Airports do not meet the minimum criteria for runway length. The *OAP 2007* has identified the following airports, which do not meet the minimum criteria for runway length:

- Salem McNary Field
- Southwest Oregon Regional Airport

Category II – Urban General Aviation airports have a 5,000-foot minimum criterion for runway length. All ten Category II airports meet or exceed the minimum criteria for runway length.

Category III – Regional General Aviation Airports have a 4,000-foot minimum criterion for runway length. Three Category III – Regional General Aviation airports do not meet the 4,000-foot minimum criteria for runway length. The *OAP 2007* has identified the following airports, which do not meet the minimum criteria for runway length:

- Ashland Municipal Airport –
- Bandon State Airport
- Sumner Parker Field
- Grants Pass Airport

Category IV – Local General Aviation airports have minimum criteria of 3,000 feet for paved runways and 2,500 feet for turf or gravel runways. Six Category IV airports do not meet the minimum criteria for runway length. The *OAP 2007* has identified the following airports, which do not meet the minimum criteria for runway length:

- Brookings Airport
- Chehalem Airpark
- Lebanon State Airport
- Myrtle Creek Municipal Airport
- Seaside Municipal Airport
- Sportsman Airpark

Category V – RAES (Remote Access / Emergency Service) airports have been identified to have a minimum runway length of 2,500 feet. Thirteen Category V airports do not meet the minimum criteria for runway length. The *OAP 2007* has identified the following airports, which do not meet the minimum criteria for runway length:

- Cascade Locks State Airport
- Davis Field
- George Felt
- Lakeside Municipal Airport
- Monument Municipal Airport
- Nehalem Bay State Airport
- Owyhee Reservoir State Airport
- Pacific City State Airport
- Sandy River Airport
- Skyport
- Stark's Twin Oaks Airport
- Toledo State Airport
- Wakonda Beach State Airport

Runway Width

The primary runway width for each airport was evaluated with the established runway width minimum criteria for the five functional airport levels based on their identified role in the aviation system. The following paragraphs identify the airports not meeting the minimum criteria for runway width for their assigned functional level. It is recommended that airports correct the runway width deficiency where practical. This study has not evaluated the feasibility of widening any of the identified runways. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports have a minimum criterion of 100 feet for runway width. Analysis revealed that all Category I – Commercial Service Airports meet or exceed the minimum criteria for runway width.

Category II – Urban General Aviation Airports have a minimum criterion of 100 feet for runway width. Study results identified all Category II – Urban General Aviation Airports meet or exceed the minimum criteria for runway width.

Category III – Regional General Aviation Airports have a minimum criterion of 75 feet for runway width. Evaluation of the Category III – Regional General Aviation Airports identified two facilities not meeting the minimum criteria. Those airports are listed below:

- Bandon State Airport
- Grant County Regional / Ogilvie Field

Category IV – Local General Aviation Airports have a minimum criterion for runway width of 60 feet for paved runways and 120 feet for turf runways. Seven Category IV- Local General Aviation Airports do not meet the minimum criteria for runway width. Those not meeting the minimum criteria are listed below:

- Chehalem Airpark
- Lebanon State Airport
- Lenhardt Airpark
- Myrtle Creek Municipal Airport
- Seaside Municipal Airport
- Sisters Eagle Air Airport
- Sportsman Airpark

Category V – Remote Access / Emergency Access (RAES) airports have a minimum criterion for runway width of 60 feet for turf runways. Nineteen Category V – RAES airports do not meet the minimum criteria for runway width. Those not meeting the minimum criteria are listed below:

- Cascade Locks State Airport
- Country Squire Airpark
- Crescent Lake State Airport
- Davis Field
- Enterprise Municipal Airport
- Lake Billy Chinook Airport
- Malin Airport
- Monument Municipal Airport
- Nehalem Bay State Airport
- Oakridge State Airport
- Owyhee Reservoir State Airport
- Pacific City State Airport
- Pinehurst State Airport
- Prospect State Airport
- Stark's Twin Oaks Airport
- Toledo State Airport
- Valley View Airport
- Vernonia municipal Airport
- Wakonda Beach State Airport

Runway Pavement Type

All airports within each all-functional category meet the minimum criteria for runway pavement type within their specific level.

Taxiways

The taxiway system at each airport was evaluated with the established minimum criteria for the five functional airport levels based on their identified role in the aviation system. The following paragraphs identify the airports not meeting the minimum criteria for their assigned functional level. It is recommended that identified airports provide taxiway infrastructure consistent with their assigned functional level to enhance the utility and safety of their airport. This study has not

evaluated the practicality of taxiway development at each airport. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports have four facilities that do not meet the minimum criteria for taxiway development. The following airports do not meet the minimum criteria for taxiway development as outlined by the *OAP 2007*:

- Eastern Oregon Regional Airport at Pendleton
- Klamath Falls Airport
- Salem McNary Field
- Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports were identified to have two facilities not meeting the minimum criteria for taxiway development. Those airports are listed below:

- Astoria Regional Airport
- Newport Municipal Airport

Category III – Regional General Aviation Airports were identified to have one facility not meeting the minimum criteria for taxiway development. The airport is listed below:

- Lake County Airport

Category IV – Local General Aviation Airports were noted to have only two airports not meeting the minimum criteria. Those airports are listed below:

- Boardman Airport
- Christmas Valley Airport

Category V – Remote Access / Emergency Service Airports did not have taxiway development as an objective.

Approach Type

Criteria were established to identify system needs for approach types, including visual, non-precision, or precision approaches. Approaches are classified as visual, non-precision, or precision depending on the accuracy and capabilities of the navigational aids used. Visual approaches do not require any navigational aids. Non-precision approaches provide only lateral course information while precision approaches utilize both lateral and vertical information. Specific criteria for approaches were identified to be:

- Precision Approach (Category I and Category II Airports)
- Non-Precision Approach (Category III Airports)
- Visual Approach (Category IV and Category V Airports)

The *OAP 2007* recommends the listed airports consider an approach that meets the minimum criteria for their assigned functional category. This study has not evaluated the feasibility of new approaches at any airport. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports all meet or exceed the minimum criteria for approach type.

Category II – Urban General Aviation Airports were noted to have five airports that do not meet the minimum criteria for approach types. Those airports are listed below:

- Aurora State Airport
- Bend Municipal Airport
- Portland Downtown Heliport
- Portland Troutdale Airport
- Scappoose Industrial Airpark

Category III – Regional General Aviation Airports were identified to have one facility that does not meet the minimum criteria. The Level III airports not meeting the minimum criteria for approach type are listed below:

- Ashland Municipal Airport –Sumner Parker Field

Category IV – Local General Aviation Airports all meet the minimum criteria for approach type.

Category V – Remote Access / Emergency Service Airports all meet the minimum criteria for approach type.

Visual Approach Aids

Visual approach aids at an airport are used to facilitate identification, approach, and landing at night and in adverse weather conditions. Several facilities assist pilots utilizing an airport during these conditions. A brief description of each of these facilities is provided below:

- Runway end identifier lights (REILs) consist of two synchronized flashing lights located near the runway threshold, which provide rapid and positive identification of the approach end of a runway. REILs help pilots identify the end of a runway especially when other light sources obscure other runway lighting.
- A precision approach path indicator (PAPI) is a system of either two or four identical light units that provide pilots with either red, white, or a combination of red/white lights that indicate whether a pilot is below, above, or on the glide path to the runway.

- A visual approach slope indicator (VASI) system provides a pilot with a red, red/white, or white signal that indicates if the pilot is below, above, or on the glide path to the runway. VASIs are no longer being manufactured and are being replaced with PAPIs at the end of their useful life.
- A Medium Intensity Approach Lighting System (MALS) provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on final approach for landing. A MALS consists of a threshold bar and nine other five-light bars that extended at specific intervals back along the approach path from the threshold before the runway is reached.
- Omni Directional Approach Lighting System (ODALS) consists of seven Omni directional flashing lights located in the approach area of a non-precision runway. ODALS provide a 360-degree horizontal beam pattern, bright flashes of light, and five light sequential flash pattern aids pilots use when identifying the active runway. The system consists of seven Omni-directional flashing light assemblies.

The *OAP 2007* recommends the following airports consider the installation of visual approach aids that satisfy the minimum criteria for their assigned functional category. This study has not evaluated the practicality of installing visual approach aids at any airport. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports were identified to have one facility that does not meet the minimum criteria for visual approach aids. The airport is identified below:

- Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports were revealed to have one airport not meeting the minimum criteria for visual approach aids. The airport not meeting the minimum criteria is identified below:

- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have one airport not meeting the minimum criteria for visual approach aids. The Category III airport not meeting the minimum criteria is identified below:

- Columbia Gorge Regional – The Dalles

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airport do not have an objective for visual approach aids.

Instrument Approach Aids

An instrument approach is a type of navigation that allows pilots to land an aircraft in reduced visibility (instrument meteorological conditions (IMC)), or to reach visual conditions permitting a normal landing. Several navigational aids assist pilots during IMC. A brief summary of some of these navigational aids are included below.

- An Instrument Landing System (ILS) is a ground-based instrument approach system, which provides precise guidance to an aircraft approaching a runway, using a combination of radio signals and high-intensity lighting arrays to enable a safe landing during IMC.
- A localizer is one component of an ILS and provides runway centerline guidance to aircraft. Localizers also exist in stand-alone instrument approach installations that are not always part of an ILS. The localizer is placed about 1,000 feet off the far end of the approach runway.
- The VHF Omni-directional Radio Range (VOR) provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance-measuring equipment (DME) is combined with a VOR facility (VOR/DME) to provide distance, as well as directional information to the pilot. In addition, military Tactical Air Navigation (TACAN) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots.
- A Non-Directional Beacon (NDB) transmits non-directional radio signal whereby the pilot of properly equipped aircraft can determine the bearing to or from the NDB facility and then track to or from the station.
- A Microwave Landing System (MLS) is an all-weather, precision landing system originally intended to replace or supplement the ILS. The MLS has a number of operational advantages, including a wide selection of channels to avoid interference with other nearby airports, excellent performance in all weather, and the equipment requires a smaller land area on the ground when compared to ILS equipment. Some MLS systems became operational in the 1990's; the widespread deployment initially envisioned by its designers never came to be.
- Instrument approach aids are only being considered for Category I – Commercial Service airports. All other functional levels do not consider instrument approach aids as a minimum criterion. Non-precision and precision approach procedures can be established for airports not having instrument approach aids. The FAA is moving away from ILS installations and promoting Wide Area Augmentation System (WAAS) Global Positioning System (GPS) approaches. These approaches provide

comparable horizontal and vertical guidance without the expensive ground based systems.

- A GPS is the only fully functional global navigation satellite system. Utilizing a constellation of at least 24 medium earth orbit satellites that transmit precise microwave signals, the system enables a GPS receiver to determine its location, speed and direction. The WAAS is an extremely accurate navigation system developed for civil aviation by the FAA. The system augments the GPS to provide additional accuracy, integrity, and availability necessary to enable users to rely on GPS for all phases of flight, from en route through approach for all qualified airports within the WAAS coverage area. Before WAAS, GPS did not have the ability to provide horizontal and vertical navigation for precision approaches.

All Category I – Commercial Service airports meet or exceed the minimum criteria for instrument approach aids. Instrument approach aids are not an objective for any of the remaining four functional levels, although these are certainly recommended where appropriate to enhance the overall utility of the system.

Runway Lighting

Runway edge lights are used to outline the edges of runways during periods of darkness or reduced visibility. These light systems are classified according to the intensity they are capable of producing. High and medium intensity runway lighting (HIRL and MIRL) systems have variable intensity settings while low intensity runway lighting typically has one intensity setting. Runway edge lights are white, except on instrument runways where yellow replaces white on the last 2,000 feet or half the runway length, whichever is less, to form a caution zone for landings and takeoffs. The lights marking the ends of the runway emit red light toward the runway to indicate the end of the runway to a departing aircraft and emit green outward from the runway end to indicate the threshold to landing aircraft.

The *OAP 2007* recommends that airports consider the installation or upgrade of runway lighting to satisfy the minimum criteria for their assigned functional level. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports and Category II – Urban General Aviation Airports all meet or exceed the minimum criteria for runway lighting.

Category III – Regional General Aviation Airports all meet or exceed the minimum criteria for runway lighting.

Category IV – Local General Aviation Airports were identified to have two airports not the minimum criteria for their functional role. The airports not meeting the minimum criteria are listed below:

- Chehalem Airpark
- Sisters Eagle Air Airport

Category V – Remote Access / Emergency Service Airports did not have an objective for runway lighting.

Taxiway Lighting

Taxiway edge lights are used to outline the edges of taxiways. Similar to runway edge lights, these light systems are classified according to the intensity of light they are capable of producing.

The *OAP 2007* recommends that airports be considered for the installation of taxiway lighting that satisfies the minimum criteria for their assigned functional level. This study has not evaluated the feasibility of installing taxiway lighting at any airport. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports were identified to have one airport not meeting the minimum criteria. That airport is listed below:

- Salem McNary Field

Category II – Urban General Aviation Airports were identified to have five facilities not meeting the minimum criteria for their functional category. These airports are listed below:

- Aurora State Airport
- Bend Municipal Airport
- McMinnville Municipal Airport
- Newport Municipal Airport
- Portland – Troutdale Airport

Category III – Regional General Aviation airports were analyzed and no airports meet the minimum criteria for their functional category. These airports are listed below:

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

Category IV – Local General Aviation Airports were identified to have 24 airports not meeting the minimum standard for taxiway lighting for this functional category. These airports listed below:

- Albany Municipal Airport
- Boardman Airport
- Brookings Airport
- Chehalem Airpark
- Christmas Valley Airport
- Condon State Airport – Pauling Field
- Cottage Grove State Airport – Jim Wright Field
- Creswell Hobby Field Airport
- Florence Municipal Airport
- Gold Beach Municipal Airport
- Illinois Valley Airport
- Independence State Airport
- Joseph State Airport
- Ken Jernstedt Airfield
- Lebanon State Airport
- Lexington Airport
- Madras City – County Airport
- Myrtle Creek Municipal Airport
- Prineville Airport
- Seaside Municipal Airport
- Siletz Bay State Airport
- Sisters Eagle Air Airport
- Sportsman Airpark
- Sunriver Airport

Category V – Remote Access / Emergency Service Airports do not have an objective for taxiway lighting.

Summary

Table 5-15 summarizes the deficiencies of airside facilities across the system.

Table 5-15: Airport Services Deficiencies (As of November 2005)

Airside Facilities									
	<i>Runway Length</i>	<i>Runway Width</i>	<i>Runway Pavement Type</i>	<i>Taxiways</i>	<i>Approach Type</i>	<i>Visual Approach Aids</i>	<i>Instrument Approach Aids</i>	<i>Runway Lighting</i>	<i>Taxiway Lighting</i>
Legend:									
	●	○	○	○	○	○	○	○	○
	●	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	N/A								
Category I - Commercial Service									
Eastern Oregon Regional Airport at Pendleton	○	○	○	●	○	○	○	○	○
Mahlon Sweet Field	○	○	○	○	○	○	○	○	○
Klamath Falls Airport	○	○	○	●	○	○	○	○	○
Redmond Municipal Airport - Roberts Field	○	○	○	○	○	○	○	○	○
Rogue Valley International - Medford Airport	○	○	○	○	○	○	○	○	○
McNary Field	●	○	○	●	○	○	○	○	●
Southwest Oregon Regional Airport	●	○	○	●	○	●	○	○	○
Category II - Urban General Aviation									
Astoria Regional Airport	○	○	○	●	○	○	○	○	○
Aurora State Airport	○	○	○	○	●	○	○	○	●
Bend Municipal Airport	○	○	○	○	●	○	○	○	●
Corvallis Municipal Airport	○	○	○	○	○	○	○	○	○
McMinnville Municipal Airport	○	○	○	○	○	○	○	○	●
Newport Municipal Airport	○	○	○	●	○	○	○	○	●
Portland Downtown Heliport	N/A	N/A	○	N/A	●	●	○	○	N/A
Portland - Hillsboro Airport	○	○	○	○	○	○	○	○	○
Portland - Troutdale Airport	○	○	○	○	●	○	○	○	○
Scappoose Industrial Airpark	○	○	○	○	●	○	○	○	●
Category III - Regional General Aviation									
Ashland Municipal Airport - Sumner Parker Field	●	○	○	○	●	○	○	○	●
Baker City Municipal Airport	○	○	○	○	●	○	○	○	●
Bandon State Airport	●	●	○	○	○	○	○	○	●
Burns Municipal Airport	○	○	○	○	○	○	○	○	●
Columbia Gorge Regional - The Dalles Airport	○	○	○	○	○	●	○	○	
Grant County Regional / Ogilvie Field	○	●	○	○	○	○	○	○	●
Grants Pass Airport	●	○	○	○	●	○	○	○	●
Hermiston Municipal Airport	○	○	○	○	●	○	○	○	●
La Grande / Union County Airport	○	○	○	○	○	○	○	○	●
Lake County Airport	○	○	○	●	●	○	○	○	●
Ontario Municipal Airport	○	○	○	○	○	○	○	○	●
Roseburg Regional Airport	○	○	○	○	○	○	○	○	●
Tillamook Airport	○	○	○	○	○	○	○	○	●
Category IV - Local General Aviation									
Albany Municipal Airport	○	○	○	○	○	○	○	○	●
Boardman Airport	○	○	○	●	○	○	○	○	●
Brookings Airport	●	○	○	○	○	○	○	○	●
Chehalem Airpark	●	●	○	○	○	○	○	●	●

Table 5.15 Continued

	<i>Runway Length</i>	<i>Runway Width</i>	<i>Runway Pavement Type</i>	<i>Taxiways</i>	<i>Approach Type</i>	<i>Visual Approach Aids</i>	<i>Instrument Approach Aids</i>	<i>Runway Lighting</i>	<i>Taxiway Lighting</i>
Legend:									
	●	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category IV - Local General Aviation(Continued)									
Christmas Valley Airport	○	○	○	●	○	○	○	○	●
Condon State Airport - Pauling Field	○	○	○	○	○	○	○	○	●
Cottage Grove State Airport	○	○	○	○	○	○	○	○	●
Creswell Hobby Field Airport	○	○	○	○	○	○	○	○	●
Florence Municipal Airport	○	○	○	○	○	○	○	○	●
Gold Beach Municipal Airport	○	○	○	○	○	○	○	○	●
Illinois Valley Airport	○	○	○	○	○	○	○	○	●
Independence State Airport	○	○	○	○	○	○	○	○	●
Joseph State Airport	○	○	○	○	○	○	○	○	●
Ken Jernstedt Airfield	○	○	○	○	○	○	○	○	●
Lebanon State Airport	●	●	○	○	○	○	○	○	●
Lenhardt Airpark	○	●	○	●	○	○	○	○	●
Lexington Airport	○	○	○	○	○	○	○	○	●
Madras/City-County Airport	○	○	○	○	○	○	○	○	●
Myrtle Creek Municipal Airport	●	●	○	○	○	○	○	○	●
Portland-Mulino Airport	○	○	○	○	○	○	○	○	○
Prineville Airport	○	○	○	○	○	○	○	○	●
Seaside Municipal Airport	●	●	○	○	○	○	○	○	●
Siletz Bay State Airport	○	○	○	○	○	○	○	○	●
Sisters Eagle Air	○	●	○	○	○	○	○	●	●
Sportsman Airpark	●	●	○	○	○	○	○	○	●
Sunriver Airport	○	○	○	○	○	○	○	○	●
Wasco State Airport	○	○	○	○	○	○	○	○	●
Category V - RAES (Remote Access / Emergency Service)									
Alkali Lake State Airport	○	○	○	○	○	○	○	○	○
Arlington Municipal Airport	○	○	○	○	○	○	○	○	○
Beaver Marsh Airport	○	○	○	○	○	○	○	○	○
Cape Blanco State Airport	○	○	○	○	○	○	○	○	○
Cascade Locks State Airport	●	●	○	○	○	○	○	○	○
Chiloquin State Airport	○	○	○	○	○	○	○	○	○
Country Squire Airpark	○	●	○	○	○	○	○	○	○
Crescent Lake State Airport	○	●	○	○	○	○	○	○	○
Davis Field Airport	●	●	○	○	○	○	○	○	○
Enterprise Municipal Airport	○	●	○	○	○	○	○	○	○
George Felt Airport	●	○	○	○	○	○	○	○	○
Lake Billy Chinook Airport	○	●	○	○	○	○	○	○	○
Lakeside Municipal Airport	●	○	○	○	○	○	○	○	○
Malin Airport	○	●	○	○	○	○	○	○	○
McDermitt State Airport	○	○	○	○	○	○	○	○	○

Table 5.15 Continued

	<i>Runway Length</i>	<i>Runway Width</i>	<i>Runway Pavement Type</i>	<i>Taxiways</i>	<i>Approach Type</i>	<i>Visual Approach Aids</i>	<i>Instrument Approach Aids</i>	<i>Runway Lighting</i>	<i>Taxiway Lighting</i>
Legend:									
●	Deficient								
⊙	Meets Minimum Criteria								
○	Not an Objective								
N/A	Not Applicable								
Category V - RAES (Remote Access / Emergency Service) (Continued)									
Miller Memorial Airpark	⊙	⊙	⊙	○	⊙	○	○	○	○
Monument Municipal Airport	⊙	⊙	⊙	○	⊙	○	○	○	○
Nehalem Bay State Airport	●	●	⊙	○	⊙	○	○	○	○
Oakridge State Airport	●	●	⊙	○	⊙	○	○	○	○
Owyhee Reservoir State Airport	●	●	⊙	○	⊙	○	○	○	○
Pacific City State Airport	●	●	●	○	⊙	○	○	○	○
Paisley Airport	●	●	⊙	○	⊙	○	○	○	○
Pinehurst State Airport	⊙	⊙	⊙	○	⊙	○	○	○	○
Powers Hayes Field	⊙	●	⊙	○	⊙	○	○	○	○
Prospect State Airport	⊙	⊙	⊙	○	⊙	○	○	○	○
Rome State Airport	⊙	●	⊙	○	⊙	○	○	○	○
Sandy River Airport	⊙	⊙	⊙	○	⊙	○	○	○	○
Santiam Junction State Airport	●	⊙	⊙	○	⊙	○	○	○	○
Skyport Airport	⊙	⊙	⊙	○	⊙	○	○	○	○
Stark's Twin Oaks Airport	●	⊙	⊙	○	⊙	○	○	○	○
Toketee State Airport	●	●	⊙	○	⊙	○	○	○	○
Toledo State Airport	⊙	⊙	●	○	⊙	○	○	○	○
Valley View Airport	●	●	⊙	○	⊙	○	○	○	○
Vernonia Municipal Airport	⊙	●	⊙	○	⊙	○	○	○	○
Wakonda Beach State Airport	⊙	●	⊙	○	⊙	○	○	○	○

5.2.d General Facilities

Several landside development components are important to the growth and development of the aviation system. In addition to providing a safe and efficient operating environment, landside facilities provide additional amenities such as aircraft storage capabilities. The following paragraphs present the general facility deficiencies identified through the system evaluation process presented in *Chapter 4 – Airport Functional Roles*. The *OAP 2007* recommends that airports consider improving general facilities to meet the minimum criteria for their assigned functional role where feasible.

Rotating Beacons

Rotating airport beacons are installed at airports to help pilots in the air identify an airports location. Typically, airport beacons are mounted on top of a tower or other structure above all other buildings at the airport. The beacons are designed to rotate at a constant speed, which produces the visual effect of flashes at regular intervals. Flashes may be of just a single color or two alternating colors.

All Category I, Category II, and Category III airports meet the minimum criteria for rotating beacons.

Category IV – Local General Aviation Airports were identified to have six airports that do not meet the minimum criteria. Those airports are listed below:

- Boardman Airport
- Chehalem Airpark
- Lenhardt Airpark
- Myrtle Creek Municipal Airport
- Sisters Eagle Air Airport
- Sportsman Airpark

Lighted Wind Indicator

Wind indicators allow pilots to identify the direction of the wind at a specific airport and assist them with determining which runway to land on or takeoff from. A lighted wind indicator allows pilots to determine the wind direction during night or reduced visibility situations.

The *OAP 2007* recommends that airports consider the installation of a lighted wind indicator that satisfies the minimum criteria for their assigned functional level. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports, Category II – Urban General Aviation Airports, and Category III – Regional General Aviation Airports all meet the minimum criteria for their respective functional roles.

Category IV – Local General Aviation Airports were identified to have six airports that do not meet the minimum criteria. Those airports are listed below:

- Joseph State Airport
- Ken Jernstedt Airfield
- Lebanon State Airport
- Lenhardt Airpark
- Sisters Eagle Air Airport
- Sportsman Airpark

Category V airports did not have an objective for a lighted wind indicator.

Weather Reporting

Weather reporting equipment is an important element to consider and compliments both precision and non-precision approach systems by providing an increased level of safety. Providing on-site weather reporting equipment at airports throughout the state provides users information regarding weather conditions at their destination airport and the surrounding area. This information allows the pilot to make a more informed decision regarding their operations during inclement or questionable weather.

Typically, airports have either an Automated Weather Observation System (AWOS) or an Automated Surface Observation System (ASOS). Both systems provide automated weather observations 24-hours a day. This system updates weather observations every minute, continually reporting significant weather changes as they occur. This system reports cloud ceiling elevation, visibility, temperature, dew point, wind direction, wind speed, altimeter setting, and density altitude (airfield elevation corrected for temperature).

The *OAP 2007* recommends that airports consider the installation of a weather reporting system based on the minimum criteria developed for each functional category. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports are all equipped with weather reporting equipment and meet the minimum standards identified for their functional role.

Category II – Urban General Aviation Airports have all been identified to meet the minimum criteria for the exception of one facility. The Portland Downtown Heliport is listed as not meeting the minimum criteria for weather reporting systems; however, the installation of this equipment is not practical due to the roof top location of the heliport.

Category III – Regional General Aviation Airports have been identified to have one airport that does not meet the minimum criteria for weather reporting equipment. That airport is listed below:

- Bandon State Airport

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports do not have weather-reporting equipment as an objective.

Figure 5-13 illustrates the recommended locations of additional weather reporting systems that satisfy both the User Accessibility and Development criteria recommendations.

Insert Figure 5.13

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Hangared Aircraft Storage

Hangars are enclosed structures that provide protection to aircraft from weather conditions and provide secured storage areas. There are a variety of types and sizes of aircraft hangars that provide aircraft storage. Minimum criteria for hangared aircraft storage were developed when comparing the number of based aircraft with the number of available hangars. The percentage of hangars compared to based aircraft varies by functional category.

The *OAP 2007* recommends that airports consider increasing their aircraft storage capabilities through the construction of additional hangars. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports were identified to have four airports that do not provide adequate aircraft storage. These airports are listed below:

- Eastern Oregon Regional Airport at Pendleton
- Klamath Falls Airport
- Salem McNary Field
- Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports were found to provide adequate hangar facilities at all but three airports. The Portland Downtown Heliport is excluded from this category. The airports not meeting the minimum criteria are listed below:

- Astoria Regional Airport
- Aurora State Airport
- Bend Municipal Airport
- McMinnville Municipal Airport
- Newport municipal Airport
- Portland – Hillsboro Airport

Category III – Regional General Aviation Airports were identified to have six airports not meeting the minimum criteria for hangared aircraft storage. The following airports were identified:

- Ashland Municipal Airport – Sumner Parker Field
- Baker City Municipal Airport
- Columbia Gorge Regional – The Dalles
- Grant County Regional Airport
- Roseburg Regional Airport
- Tillamook Airport

Category IV – Local General Aviation Airports were identified to have six airports not meeting the minimum criteria for hangared aircraft storage. The following airports were identified:

- Christmas Valley Airport
- Florence Municipal Airport
- Madras / City-County Airport
- Prineville Airport
- Sisters Eagle Air Airport
- Wasco State Airport

Category V – Remote Access / Emergency Service Airports did not have hangared aircraft storage as an objective.

Apron Parking / Storage

An apron or ramp is an area where aircraft can be parked, unloaded or loaded, refueled or boarded. Aprons provide parking to both based aircraft and transient aircraft. Similar to the hangared aircraft storage criteria, each airports apron parking capacity was evaluated against the number of based aircraft. The *OAP 2007* recommends that airports consider increasing their aircraft storage capabilities through the construction of additional aircraft parking locations. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports analysis revealed all airports are currently providing adequate apron parking.

Category II – Urban General Aviation Airports were identified to have seven airports that do not meet the minimum criteria for this category. These airports are listed below:

- Astoria Regional Airport
- Aurora State Airport
- Corvallis Municipal Airport
- McMinnville Municipal airport
- Newport Municipal Airport
- Portland – Hillsboro Airport
- Scappoose Industrial Airpark

Category III – Regional General Aviation Airports analysis revealed that all airports meet the minimum criteria for apron parking.

Category IV – Local General Aviation Airports were found to provide adequate apron parking facilities at all but one airport. That airport is listed below:

- Portland – Mulino Airport

Category V – Remote Access / Emergency Service Airports did not have apron parking as an objective.

Auto Parking

A cursory review of automobile parking spaces was conducted at each airport. A classification of low, moderate, or adequate was assigned based on the number of based aircraft or number of enplanements where applicable.

Category I – Commercial Service Airports, Category II – Urban General Aviation Airports, Category III – Regional General Aviation Airports, and Category IV – Local General Aviation Airports all meet or exceed the minimum criteria established for their respective level.

Category V – Remote Access / Emergency Service Airports did not have auto parking as an objective.

Fencing

Airport fencing provides an additional level of safety and security at airports of all sizes. It provides protection to pilots using the airport by minimizing the accessibility of wildlife such as elk or deer to airport environs. Additionally, airport fencing can provide a secure environment that increases the level of safety for the traveling public and to aircraft owners who store their aircraft either in a hangar or on the apron.

Category I – Commercial Service Airports all meet the minimum criteria for this category.

Category II – Urban General Aviation Airports were identified to have one airport not meeting the minimum criteria for fencing. That airport is listed below:

- Bend Municipal Airport

Category III – Regional General Aviation Airports all meet the minimum criteria for fencing.

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports do not have fencing as an objective.

Cargo

A variety of cargo facilities at airports can provide communities access to just-in-time freight services from providers like Federal Express, United Parcel Service, or the U.S. Postal Service. Cargo facilities can be found at airports near major population centers, areas that can easily access the ground transportation network, or areas within remote areas. Cargo facilities are an objective for Category I through Category III airports in the *OAP 2007*.

The *OAP 2007* recommends that airports consider completing a cargo needs assessment to determine the level of cargo facilities required to meet the needs of the state aviation system. A cargo needs assessment was not completed as a part of the *OAP 2007*. Further study to determine the feasibility, justification, and potential environmental impacts would be required.

Category I – Commercial Service Airports should provide a dedicated cargo handling facility with an apron to accommodate the delivery aircraft. Air carrier airports are logical locations for distribution of just-in-time mail freight. They provide adequate facilities to accommodate larger

aircraft and have the ability to store additional aircraft for distribution to smaller airports. Four Category I airports do not meet the minimum criteria for cargo facilities. Airports not meeting the minimum criteria outlined in the *OAP 2007* for cargo facilities are listed below:

- Eastern Oregon Regional Airport at Pendleton
- Klamath Falls Airport
- Salem McNary Field
- Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports should provide a small cargo handling facility with a dedicated apron for the delivery aircraft. Analysis of Category II airports identified seven airports that do not meet the minimum criteria for cargo facilities. These airports are listed below:

- Astoria Regional Airport
- Aurora State Airport
- Bend Municipal Airport
- Corvallis Municipal Airport
- McMinnville Airport
- Portland – Hillsboro Airport
- Scappoose Industrial Airpark

Category III – Regional General Aviation Airports identified only two airports not meeting the minimum criteria for its functional level. Those airports are identified below:

- Baker City Municipal Airport
- Bandon State Airport

Deicing Facility

An aircraft deicing facility is a facility or specific area where frost, ice, or snow is removed from an aircraft to provide clean surfaces, and where clean surfaces receive protection against the formation of frost or ice and the accumulation of snow or slush for a limited time. Aircraft deicing facilities are recommended at any airport where icing conditions are expected. However, these facilities are typically found at commercial service airports to facilitate on time delivery of passengers and goods. The number, location, and size of the facilities required for a particular airport depends on the number of operations, type of aircraft using the airport, weather conditions typically experienced at the airport, availability of land, and the layout of the airport.

The *OAP 2007* considered deicing facilities an objective only for Category I – Commercial Service Airports. All Category I – Commercial Service Airports meet the minimum criteria for deicing facilities. Airports within Category II and Category III that experience icing conditions may wish to consider development of a deicing pad as a minimum facility where applicable, although it is not a system objective.

Summary

Table 5-16 summarizes the deficiencies of general facilities across the system.

Table 5-16: Airport Services Deficiencies (As of November 2005)

General Facilities									
	<i>Rotating Beacon</i>	<i>Lighted Wind Indicator</i>	<i>Weather Reporting</i>	<i>Hangered Aircraft Storage</i>	<i>Apron Parking/Storage</i>	<i>Terminal Building</i>	<i>Auto Parking</i>	<i>Fencing</i>	<i>Cargo</i>
Legend:									
	●	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category I - Commercial Service									
Eastern Oregon Regional Airport at Pendleton	○	○	○	●	○	○	○	○	●
Mahlon Sweet Field	○	○	○	○	○	○	○	○	○
Klamath Falls Airport	○	○	○	●	○	○	○	○	●
Redmond Municipal Airport - Roberts Field	○	○	○	○	○	○	○	○	○
Rogue Valley International - Medford Airport	○	○	○	○	○	○	○	○	○
McNary Field	○	○	○	●	○	○	○	○	●
Southwest Oregon Regional Airport	○	○	○	●	○	○	○	○	●
Category II - Urban General Aviation									
Astoria Regional Airport	○	○	○	●	●	○	○	○	●
Aurora State Airport	○	○	○	●	●	○	○	○	●
Bend Municipal Airport	○	○	○	●	○	○	○	●	●
Corvallis Municipal Airport	○	○	○	○	●	○	○	○	●
McMinnville Municipal Airport	○	○	○	●	●	○	○	○	●
Newport Municipal Airport	○	○	○	●	●	○	○	○	○
Portland Downtown Heliport	N/A	○	●	N/A	N/A	N/A	N/A	N/A	N/A
Portland - Hillsboro Airport	○	○	○	●	●	○	○	○	●
Portland - Troutdale Airport	○	○	○	○	○	○	○	○	○
Scappoose Industrial Airpark	○	○	○	○	●	○	○	○	●
Category III - Regional General Aviation									
Ashland Municipal Airport - Sumner Parker Field	○	○	○	●	○	○	○	○	○
Baker City Municipal Airport	○	○	○	●	○	○	○	○	●
Bandon State Airport	○	○	●	○	○	●	○	○	●
Burns Municipal Airport	○	○	○	○	○	○	○	○	○
Columbia Gorge Regional - The Dalles Airport	○	○	○	●	○	○	○	○	○
Grant County Regional / Ogilvie Field	○	○	○	●	○	○	○	○	○
Grants Pass Airport	○	○	○	○	○	○	○	○	○
Hermiston Municipal Airport	○	○	○	○	○	○	○	○	○
La Grande / Union County Airport	○	○	○	○	○	○	○	○	○
Lake County Airport	○	○	○	○	○	○	○	○	○
Ontario Municipal Airport	○	○	○	○	○	○	○	○	○
Roseburg Regional Airport	○	○	○	●	○	○	○	○	○
Tillamook Airport	○	○	○	●	○	○	○	○	○
Category IV - Local General Aviation									
Albany Municipal Airport	○	○	○	○	○	○	○	○	○
Boardman Airport	●	○	○	○	○	○	○	○	○
Brookings Airport	○	○	○	○	○	○	○	○	○
Chehalem Airpark	●	○	○	○	○	○	○	○	○

Table 5.16 Continued

	<i>Rotating Beacon</i>	<i>Lighted Wind Indicator</i>	<i>Weather Reporting</i>	<i>Hangered Aircraft Storage</i>	<i>Apron Parking/Storage</i>	<i>Terminal Building</i>	<i>Auto Parking</i>	<i>Fencing</i>	<i>Cargo</i>
Legend:									
	●	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Category IV - Local General Aviation(Continued)									
Christmas Valley Airport	○	○	○	●	○	○	○	○	○
Condon State Airport - Pauling Field	○	○	○	○	○	○	○	○	○
Cottage Grove State Airport	○	○	○	○	○	○	○	○	○
Creswell Hobby Field Airport	○	○	○	○	○	○	○	○	○
Florence Municipal Airport	○	○	○	●	○	○	○	○	○
Gold Beach Municipal Airport	○	○	○	○	○	○	○	○	○
Illinois Valley Airport	○	○	○	○	○	○	○	○	○
Independence State Airport	○	○	○	○	○	○	○	○	○
Joseph State Airport	○	○	○	○	○	○	○	○	○
Ken Jernstedt Airfield	○	○	○	○	○	○	○	○	○
Lebanon State Airport	○	○	○	○	○	○	○	○	○
Lenhardt Airpark	●	○	○	●	○	○	○	○	○
Lexington Airport	○	○	○	○	○	○	○	○	○
Madras/City-County Airport	○	○	○	●	○	○	○	○	○
Myrtle Creek Municipal Airport	●	○	○	○	○	○	○	○	○
Portland-Mulino Airport	○	○	○	○	●	○	○	○	○
Prineville Airport	○	○	○	●	○	○	○	○	○
Seaside Municipal Airport	○	○	○	○	○	○	○	○	○
Siletz Bay State Airport	○	○	○	○	○	○	○	○	○
Sisters Eagle Air	●	●	○	●	○	○	○	○	○
Sportsman Airpark	●	●	○	○	○	○	○	○	○
Sunriver Airport	○	○	○	○	○	○	○	○	○
Wasco State Airport	○	○	○	●	○	○	○	○	○
Category V - RAES (Remote Access / Emergency Service)									
Alkali Lake State Airport	○	○	○	○	○	○	○	○	○
Arlington Municipal Airport	○	○	○	○	○	○	○	○	○
Beaver Marsh Airport	○	○	○	○	○	○	○	○	○
Cape Blanco State Airport	○	○	○	○	○	○	○	○	○
Cascade Locks State Airport	○	○	○	○	○	○	○	○	○
Chiloquin State Airport	○	○	○	○	○	○	○	○	○
Country Squire Airpark	○	○	○	○	○	○	○	○	○
Crescent Lake State Airport	○	○	○	○	○	○	○	○	○
Davis Field Airport	○	○	○	○	○	○	○	○	○
Enterprise Municipal Airport	○	○	○	○	○	○	○	○	○
George Felt Airport	○	○	○	○	○	○	○	○	○
Lake Billy Chinook Airport	○	○	○	○	○	○	○	○	○
Lakeside Municipal Airport	○	○	○	○	○	○	○	○	○
Malin Airport	○	○	○	○	○	○	○	○	○
McDermitt State Airport	○	○	○	○	○	○	○	○	○

Table 5.16 Continued

	Rotating Beacon	Lighted Wind Indicator	Weather Reporting	Hangared Aircraft Storage	Apron Parking/Storage	Terminal Building	Auto Parking	Fencing	Cargo
Legend:									
●	Deficient								
⊙	Meets Minimum Criteria								
○	Not an Objective								
N/A	Not Applicable								
Level V - RAES (Remote Access / Emergency Service) (Continued)									
Miller Memorial Airpark	○	○	○	○	○	○	○	○	○
Monument Municipal Airport	○	○	○	○	○	○	○	○	○
Nehalem Bay State Airport	○	○	○	○	○	○	○	○	○
Oakridge State Airport	○	○	○	○	○	○	○	○	○
Owyhee Reservoir State Airport	○	○	○	○	○	○	○	○	○
Pacific City State Airport	○	○	○	○	○	○	○	○	○
Paisley Airport	○	○	○	○	○	○	○	○	○
Pinehurst State Airport	○	○	○	○	○	○	○	○	○
Powers Hayes Field	○	○	○	○	○	○	○	○	○
Prospect State Airport	○	○	○	○	○	○	○	○	○
Rome State Airport	○	○	○	○	○	○	○	○	○
Sandy River Airport	○	○	○	○	○	○	○	○	○
Santiam Junction State Airport	○	○	○	○	○	○	○	○	○
Skyport Airport	○	○	○	○	○	○	○	○	○
Stark's Twin Oaks Airport	○	○	○	○	○	○	○	○	○
Toketee State Airport	○	○	○	○	○	○	○	○	○
Toledo State Airport	○	○	○	○	○	○	○	○	○
Valley View Airport	○	○	○	○	○	○	○	○	○
Vernonia Municipal Airport	○	○	○	○	○	○	○	○	○
Wakonda Beach State Airport	○	○	○	○	○	○	○	○	○

5.2.e Service Facilities

Several other factors beyond runways and taxiways can influence an airport’s activity level. The *OAP 2007* identified the following services as important facilities to inventory and evaluate:

- Fuel
- Fixed based operator (FBO)
- Ground transportation
- Food services
- Restrooms
- Pilot lounge
- Snow removal

The availability of these services at each *OAP 2007* airport was compared to the minimum criteria for each functional level. The following paragraphs present the service facility deficiencies identified through the system evaluation process presented in *Chapter 4 – Airport Functional Roles*. The *OAP 2007* recommends airports consider improving service facilities to meet the minimum criteria for their assigned functional role where feasible.

Fuel

An important indicator of the type and level of aviation activity occurring at an airport is the availability of fuel. Airports providing jet fuel are more likely to be used by corporate jets while airports providing only AvGas will not be as likely to attract these types of aircraft. The minimum criteria for each functional category varies depending on the type of aircraft that category of airport are responsible for serving. This analysis provides a review of each functional category as it compares to the minimum criteria. Additionally, a summary of airports providing fuel by type is also presented.

Category I – Commercial Service Airports, Category II – Urban General Aviation Airports, and Category III – Regional General Aviation Airports all meet the minimum criteria for fuel for their respective functional levels.

Category IV – Local General Aviation Airports were identified to have eight airports not meeting the minimum criteria and are listed below:

- Christmas Valley Airport
- Condon State Airport – Pauling Field
- Illinois Valley Airport
- Lebanon State Airport
- Seaside Municipal Airport
- Siletz Bay State Airport
- Sisters Eagle Air Airport
- Wasco State Airport

Category V – Remote Access / Emergency Service Airports did not have fuel availability as an objective.

Fixed Based Operator (FBO)

A fixed based operator (FBO) offers services at an airport to its users. The services offered by an FBO vary from airport to airport; however, typical services FBOs can provide are aircraft fueling, aircraft parking such as tie-down and hangar storage, aircraft maintenance, flight training, and aircraft charter or rental services. The FBO may also provide pilots or travelers with services such as rental cars, charters, lounges, catering, hotel reservations, weather briefing, and flight planning services, business centers, and a variety of other services.

Category I – Commercial Service Airports all meet the minimum criteria.

Category II – Urban General Aviation Airports were identified to have one airport that does not meet the minimum criteria. That airport is identified below:

- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have three airports that do not meet the minimum criteria. These airports are listed below:

- Bandon State Airport
- Roseburg Regional Airport
- Tillamook Airport

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports did not have FBO services as an objective.

Ground Transportation

Ground transportation is provided at airports for the continued movement of passengers and pilots to their final destination. There is a variety of methods of ground transportation provided at airports. These include rental cars, taxi or bus service, limousine service, or loaner cars.

Category I – Commercial Service Airports, Category II – Urban General Aviation Airports, and Category III – Regional General Aviation Airports all meet the minimum criteria for ground transportation by providing one or more of the aforementioned methods of transportation.

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports did not have ground transportation as an objective.

Food Service

Several types of food services are available at airports, including full service restaurants, coffee shops or delis, and vending machines. The type of food service offered depends on the level of activity at the airport.

Category I – Commercial Service Airports were identified to have one airport not meeting the minimum criteria. That airport is identified below:

- Southwest Oregon Regional Airport

Category II – Urban General Aviation Airports were identified to have three airports not meeting the minimum criteria for food service. These airports are identified below:

- Corvallis Municipal Airport
- McMinnville Municipal Airport
- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have two airports that do not meet the minimum criteria for food service. These airports are identified below:

- Bandon State Airport
- Lake County Airport

Category IV – Local General Aviation Airports and Level V – Remote Access / Emergency Service Airports did not have food services as an objective.

Restrooms

Restroom facilities were inventoried for each *OAP 2007* airport. The following paragraphs identify those airports that do not meet the minimum criteria for their assigned functional level.

Category I – Commercial Service Airports all meet the minimum criteria for restrooms.

Category II – Urban General Aviation Airports were identified to have one airport that does not meet the minimum criteria. That airport is identified below:

- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have one airport that does not meet the minimum criteria for restroom facilities. That airport is identified below:

- Bandon State Airport

Category IV – Local General Aviation Airports were identified to have six airports not meeting the minimum criteria for restroom facilities. These airports are listed below:

- Christmas Valley Airport
- Condon State Airport – Pauling Field
- Joseph State Airport
- Lebanon State Airport
- Seaside Municipal Airport
- Wasco State Airport

Category V – Remote Access / Emergency Service Airports do not have restrooms as an objective.

Pilot Lounge

Airports of all sizes often provide an area for pilots to complete flight plans, obtain weather briefings, and a place to rest while waiting for passengers or cargo. These facilities are often located in an FBO or terminal building. The following paragraphs identify those airports that do not meet the minimum criteria for their assigned functional level.

Category I – Commercial Service Airports all meet the minimum criteria.

Category II – Urban General Aviation Airports were identified to have one airport not meeting the minimum criteria for pilot lounge facilities. That airport is identified below:

- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have four airports not meeting the minimum criteria. These airports are listed below:

- Ashland Municipal Airport – Sumner Parker Field
- Bandon State Airport
- Lake County Airport
- Roseburg Regional Airport

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports do not have pilot lounge facilities as an objective.

Snow Removal

Providing snow removal services is a critical component to maintaining an airports operational status during winter months. Commercial service airports are required to own and operate their own snow removal equipment to ensure the airport remains open during periods of snow when possible. However, the majority of general aviation airports do not own their own snow removal equipment, requiring them to enter into service agreements with a city or county government or contract the services to a private company. Additionally, many general aviation airports do not have the activity to support snow removal and therefore, close during winter months or close the runway during periods of snow. The following paragraphs identify the airports that do not meet the minimum criteria for snow removal services. It should be noted that some airports do not require snow removal services due to minimal aviation activity, or minimal snow accumulation due to their geographic location, but are listed as not meeting the minimum criteria for their functional level.

Category I – Commercial Service Airports are required by the FAA to provide snow removal services. All eight Category I airports comply with this requirement.

Category II – Urban General Aviation Airports identified only the Portland Downtown Heliport as not meeting the minimum criteria. This facility is likely closed during periods of heavy snow at pilot discretion and, therefore, not a significant concern.

Category III – Regional General Aviation Airports were identified to have three airports not meeting the minimum criteria for snow removal. These airports are identified below:

- Ashland Municipal Airport
- Columbia Gorge Regional – The Dalles
- Tillamook Airport

Category IV – Local General Aviation Airports were identified to have 12 airports not meeting the minimum criteria for snow removal. Those airports are listed below:

- Boardman Airport
- Brookings Airport
- Chehalem Airpark
- Christmas Valley Airport
- Condon State Airport – Pauling Field
- Illinois Valley Airport
- Joseph State Airport
- Lebanon State Airport
- Lexington Airport
- Seaside Municipal Airport
- Sisters Eagle Air Airport
- Wasco State Airport

Category V – Remote Access / Emergency Service Airports do not have snow removal as an objective.

Telephone

Public telephone services are important to airport users for several reasons. Pilots use public telephones to complete flight planning and weather briefings while passengers use public telephones for access to ground transportation arrangements, hotel reservations, or to reach local contacts. In addition, public telephones are important in the event of an emergency. Cellular telephones have nearly replaced the need for “land line” telephones. It is anticipated that most “land line” telephones at general aviation airports will be eliminated in the future. This is a concern in more remote areas as cellular coverage still experiences some “dead” zones, which affect airports within the state. Regardless, an inventory of public telephones was completed for each functional category. Airports not meeting the minimum criteria are identified in the following paragraphs.

Category I – Commercial Service Airports all meet the minimum criteria.

Category II – Urban General Aviation Airports were identified to have one airport that does not meet the minimum criteria. That airport is listed below:

- Portland Downtown Heliport

Category III – Regional General Aviation Airports were identified to have one airport not meeting the minimum criteria. That airport is listed below:

- Bandon State Airport

Category IV – Local General Aviation Airports and Category V – Remote Access / Emergency Service Airports do not have telephone services as an objective.

Summary

The amenities outlined as service-related facilities are summarized in **Table 5.17**, which notes each airport’s ability to meet the minimum criteria.

Table 5-17: Airport Services Deficiencies (As of November 2005)

Service Facilities	Fuel	FBO	Ground Transportation	Food Service	Restrooms	Pilot Lounge	Snow Removal	Telephone
Legend:								
●	Deficient							
⊙	Meets Minimum Criteria							
○	Not an Objective							
N/A	Not Applicable							
Category I - Commercial Service								
Eastern Oregon Regional Airport at Pendleton	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Mahlon Sweet Field	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Klamath Falls Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Redmond Municipal Airport - Roberts Field	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Rogue Valley International - Medford Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
McNary Field	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Southwest Oregon Regional Airport	⊙	⊙	⊙	●	⊙	⊙	⊙	⊙
Category II - Urban General Aviation								
Astoria Regional Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Aurora State Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Bend Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Corvallis Municipal Airport	⊙	⊙	⊙	●	⊙	⊙	⊙	⊙
McMinnville Municipal Airport	⊙	⊙	⊙	●	⊙	⊙	⊙	⊙
Newport Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Portland Downtown Heliport	●	●	⊙	●	●	●	●	●
Portland - Hillsboro Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Portland - Troutdale Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Scappoose Industrial Airpark	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Category III - Regional General Aviation								
Ashland Municipal Airport - Sumner Parker Field	⊙	⊙	⊙	⊙	⊙	●	●	⊙
Baker City Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Bandon State Airport	⊙	●	⊙	●	●	●	⊙	●
Burns Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Columbia Gorge Regional - The Dalles Airport	⊙	⊙	⊙	⊙	⊙	⊙	●	⊙
Grant County Regional / Ogilvie Field	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Grants Pass Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Hermiston Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
La Grande / Union County Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Lake County Airport	⊙	⊙	⊙	●	⊙	●	⊙	⊙
Ontario Municipal Airport	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Roseburg Regional Airport	⊙	●	⊙	⊙	⊙	●	⊙	⊙
Tillamook Airport	⊙	●	⊙	⊙	⊙	⊙	●	⊙
Category IV - Local General Aviation								
Albany Municipal Airport	⊙	○	○	○	⊙	○	⊙	○
Boardman Airport	●	○	○	○	⊙	○	●	○
Brookings Airport	⊙	○	○	○	⊙	○	●	○
Chehalem Airpark	⊙	○	○	○	⊙	○	●	○

Table 5.17 Continued

	<i>Fuel</i>	<i>FBO</i>	<i>Ground Transportation</i>	<i>Food Service</i>	<i>Restrooms</i>	<i>Pilot Lounge</i>	<i>Snow Removal</i>	<i>Telephone</i>
Legend:								
●	Deficient							
⊙	Meets Minimum Criteria							
○	Not an Objective							
N/A	Not Applicable							
Category IV - Local General Aviation(Continued)								
Christmas Valley Airport	●	○	○	○	●	○	●	○
Condon State Airport - Pauling Field	●	○	○	○	●	○	●	○
Cottage Grove State Airport	⊙	○	○	○	⊙	○	⊙	○
Creswell Hobby Field Airport	⊙	○	○	○	⊙	○	⊙	○
Florence Municipal Airport	⊙	○	○	○	⊙	○	⊙	○
Gold Beach Municipal Airport	⊙	○	○	○	⊙	○	⊙	○
Illinois Valley Airport	●	○	○	○	⊙	○	●	○
Independence State Airport	⊙	○	○	○	⊙	○	⊙	○
Joseph State Airport	●	○	○	○	●	○	●	○
Ken Jernstedt Airfield	⊙	○	○	○	⊙	○	⊙	○
Lebanon State Airport	●	○	○	○	●	○	●	○
Lenhardt Airpark	⊙	○	○	○	⊙	○	⊙	○
Lexington Airport	⊙	○	○	○	⊙	○	●	○
Madras/City-County Airport	⊙	○	○	○	⊙	○	⊙	○
Myrtle Creek Municipal Airport	⊙	○	○	○	⊙	○	⊙	○
Portland-Mulino Airport	●	○	○	○	⊙	○	⊙	○
Prineville Airport	⊙	○	○	○	⊙	○	⊙	○
Seaside Municipal Airport	●	○	○	○	●	○	●	○
Siletz Bay State Airport	●	○	○	○	⊙	○	⊙	○
Sisters Eagle Air	●	○	○	○	⊙	○	●	○
Sportsman Airpark	⊙	○	○	○	⊙	○	⊙	○
Sunriver Airport	⊙	○	○	○	⊙	○	⊙	○
Wasco State Airport	●	○	○	○	●	○	●	○
Category V - RAES (Remote Access / Emergency Service)								
Alkali Lake State Airport	○	○	○	○	○	○	○	○
Arlington Municipal Airport	○	○	○	○	○	○	○	○
Beaver Marsh Airport	○	○	○	○	○	○	○	○
Cape Blanco State Airport	○	○	○	○	○	○	○	○
Cascade Locks State Airport	○	○	○	○	○	○	○	○
Chiloquin State Airport	○	○	○	○	○	○	○	○
Country Squire Airpark	○	○	○	○	○	○	○	○
Crescent Lake State Airport	○	○	○	○	○	○	○	○
Davis Field Airport	○	○	○	○	○	○	○	○
Enterprise Municipal Airport	○	○	○	○	○	○	○	○
George Felt Airport	○	○	○	○	○	○	○	○
Lake Billy Chinook Airport	○	○	○	○	○	○	○	○
Lakeside Municipal Airport	○	○	○	○	○	○	○	○
Malin Airport	○	○	○	○	○	○	○	○
McDermitt State Airport	○	○	○	○	○	○	○	○

Table 5.17 Continued

	<i>Fuel</i>	<i>FBO</i>	<i>Ground Transportation</i>	<i>Food Service</i>	<i>Restrooms</i>	<i>Pilot Lounge</i>	<i>Snow Removal</i>	<i>Telephone</i>
Legend:								
●	Deficient							
⊙	Meets Minimum Criteria							
○	Not an Objective							
N/A	Not Applicable							
Category V - RAES (Remote Access / Emergency Service) (Continued)								
Miller Memorial Airpark	○	○	○	○	○	○	○	○
Monument Municipal Airport	○	○	○	○	○	○	○	○
Nehalem Bay State Airport	○	○	○	○	○	○	○	○
Oakridge State Airport	○	○	○	○	○	○	○	○
Owyhee Reservoir State Airport	○	○	○	○	○	○	○	○
Pacific City State Airport	○	○	○	○	○	○	○	○
Paisley Airport	○	○	○	○	○	○	○	○
Pinehurst State Airport	○	○	○	○	○	○	○	○
Powers Hayes Field	○	○	○	○	○	○	○	○
Prospect State Airport	○	○	○	○	○	○	○	○
Rome State Airport	○	○	○	○	○	○	○	○
Sandy River Airport	○	○	○	○	○	○	○	○
Santiam Junction State Airport	○	○	○	○	○	○	○	○
Skyport Airport	○	○	○	○	○	○	○	○
Stark's Twin Oaks Airport	○	○	○	○	○	○	○	○
Toketee State Airport	○	○	○	○	○	○	○	○
Toledo State Airport	○	○	○	○	○	○	○	○
Valley View Airport	○	○	○	○	○	○	○	○
Vernonia Municipal Airport	○	○	○	○	○	○	○	○
Wakonda Beach State Airport	○	○	○	○	○	○	○	○

5.3 Economic Support Criteria

The ability of the aviation system to support economic development opportunities is critical. Aviation provides support to the economy on several levels from providing cargo services, access to visitors from around the world for business and recreational purposes, to the agricultural industry utilizing the local airport for aerial applications of fertilizer. Oregon visitors and businesses are utilizing aviation more than ever and it is critical to continue to provide the services that support their needs.

All sizes of businesses are now using private aircraft, from the Fortune 500 companies to thousands of small and medium sized businesses. Many companies are choosing to use general aviation over air carrier airports for increased convenience and efficiency. Access to local air transportation that allows businesses to quickly move goods and personnel from point to point saves time and increases productivity.

The demand for air travel and the increasing use of airfreight to move high value, time-sensitive or perishable commodities is growing at a fast pace. It is essential for communities to be in proximity to adequate aviation infrastructure to provide the necessary resources to both sustain existing business within a community and attract new business opportunities. Commercial service airports are widely accepted by the public as critical to the movement of goods and people for the benefit of the economy. However, communities having general aviation airports capable of supporting the needs of business users are realizing the economic benefits of aviation.

The following section presents the key facilities that are likely to attract, support, and maintain business use of all types of airports throughout the state of Oregon. Airport development projects for the purpose of economic development should be considered on a case-by-case basis. Consideration should be given to the type of aircraft, required facilities for that aircraft, and type of landside needs a business may have. No specific recommendations have been made in the *OAP 2007* for the economic support criteria since the variables previously noted with guide local demand.

5.3.a Runway Length

The number of business jets in active use today continues to increase as corporate travel by private aircraft becomes a more effective and affordable alternative to commercial air service and cargo carriers. According to the FAA Terminal Area Forecast, business or corporate aircraft accounted for nearly thirty-five-percent (35%) of all general aviation operations nationally. The level of activity associated with this segment of general aviation is anticipated to grow due to the production of more affordable very light jets (VLJ) that have entered the market in 2007. This is an indication that the Oregon system of airports will continue to see an increase in business jet operations as more businesses turn to private aircraft for the movement of product and personnel.

Business jet aircraft typically require 5,000 feet of runway length to operate without performance concessions such as a reduced payload or to meet insurance requirements. **Table 5.18** lists a variety of business jet runway length requirements. The runway length requirements identified in **Table 5.18** should be adjusted for altitude, temperature, maximum difference in runway centerline elevations, wet and dry runway conditions for each airport, along with aircraft weight. Therefore, runway length for business jet aircraft should be determined on a case-by-case basis.

Table 5.18 Typical Business Jet Runway Length Requirements

Business Jets	Takeoff Distance ISO (feet)	Landing Distance ISO (Feet)
Bombardier CL-600 Challenger	5,700	2,775
Bombardier BD-700 Global Express	6,300	2,700
Cessna 650 Citation III/VI	5,150	2,900
Cessna 750 Citation X	5,140	3,410
Dassault Falcon 2000	5,240	5,220
Dassault Falcon 900 EX	4,985	5,880
Gulfstream IV	5,450	3,190
Gulfstream V	5,990	2,950
Raytheon/Hawker 125-800	5,380	4,500
Raytheon/Hawker 125-1000	5,250	2,340
Learjet 35/36	5,000	2,900
Learjet 60	5,360	3,420
Sabreliner T-39	4,900	2,950
Sabreliner 75	5,500	3,750

*ISO = Sea Level at 59 Degrees Fahrenheit

Source: Federal Aviation Administration

5.3.b Instrument Approach Procedure

Businesses that utilize private aircraft rely on convenient, all-weather access to airports for movement of personnel and products. During periods of low clouds or reduced visibility, an airport can only be used with the aid of instruments, which allow flight through poor weather conditions. The precision of the navigational landing aids (in the cockpit, on the ground, or in space) determines the minimum altitude and visibility a pilot can safely encounter and still see the runway to land. The higher these minimums, the more frequently a pilot has to divert to an alternate airport during periods of adverse weather conditions. An airport's utility to the business community, as well as other users, is enhanced by increasing the availability of precision navigational landing aids.

5.3.c Other Facilities

Businesses often consider several factors when determining whether to utilize their private aircraft or fly commercially to their destination. Typically, the most important factor is the location of the destination airport in relation to their final destination. However, if a general aviation airport is closer and does not provide adequate facilities to accommodate their needs, businesses will typically choose an alternate airport, or in some cases, fly commercially.

There are several facilities that business users will look for in a general aviation airport. Depending on the length of the trip and type of aircraft, the availability of jet fuel may be the most important of these to allow for direct flight rather than having to stop at another airport to refuel.

An FBO that provides ground services, arranges ground transportation, and provides other amenities is also very attractive to business users.

5.4 Safety

A primary concern in achieving safety in and around airports involves land use compatibility. It is important to identify those safety risks associated with air transportation in order to minimize the consequences of accident potential. In addition, specific areas near airports are exposed to various levels of accident potential. Identifying and protecting these specific areas through effective land use controls is essential for the safe and efficient operation of an airport. It also protects the public from the impacts of a potential aircraft accident. Areas around the airport should be free of development that could pose a hazard to pilots operating aircraft in the airport environs.

Safety issues are a significant consideration for pilots, airports, and land uses surrounding airports. Several factors determine which areas around an airport need to be protected from a safety perspective. These factors include the phase of operation during which aircraft accidents most often occur, the cause of these accidents, and the location of these accidents relative to the airport. Data from the National Transportation Safety Board (NTSB) regarding these factors are available to determine these areas.

The critical areas at an airport that need to be secured and protected from a land use compatibility standpoint include the approach and departure paths to the runways. To enhance airport safety, it is important to maintain obstruction-free airport airspace and a reasonable amount of vacant land at both ends of each runway. Areas to be maintained and the dimensions of these areas are dependent upon the type of aircraft that operate at the airport.

Perhaps the most critical factor in determining which areas around an airport should be protected is knowing where aircraft accidents occur. Data compiled by the NTSB indicate that the largest number of aircraft accidents occur on airport property. Specific data regarding the location of general aviation aircraft accidents, relative to the airports' location, are also available from the NTSB. With regard to general aviation aircraft accidents, data from the NTSB indicate that roughly forty-five-percent (45%) of all aircraft accidents occurred on airport property, while fifteen-percent (15%) occurred within one mile of the airport, and forty-percent (40%) occurred beyond one mile of the airport. Considering the general aviation aircraft accidents that occurred within one mile of the airport, thirty-three-percent (33%) of these occurred within one-quarter mile of the airport and twenty-nine-percent (29%) occurred in the airport traffic pattern. The remaining thirty-eight-percent (38%) percent occurred within one mile of the airport. This data suggests that three geographic areas should be considered when addressing incompatible land use: land use under the airport traffic pattern, within one-quarter mile of an airport, and off the approach ends to the runways. The areas within a quarter ($\frac{1}{4}$) mile of the runway and the approach ends of the runway will be discussed later in this chapter, while the airport traffic pattern is discussed on the following page.

Specific areas to be considered at and around an airport are defined by two major FAA criteria: Federal Aviation Regulation (FAR) Part 77 - Objects Affecting Navigable Airspace, and FAA Advisory Circular 150/5300-13 Airport Design Standards. These two primary documents provide the foundation for delineating the limits of the environs affected by aircraft near airports.

No specific recommendations were made for the Safety and Security Criteria. Airport sponsors should review their airport for these issues, as they are critical to maintaining a safe and secure system of airports. Field visits were conducted and airports with questionable facilities were noted. *Volume II – OAP 2007 Individual Airport Reports* includes a summary of the observations of each airport.

5.5 Summary

Analyses of the Oregon airport system's performance has resulted in specific recommendations for individual airports. These recommendations relate to improving the aviation system's safety, efficiency, and overall performance. **Table 5.19** presents a summary of the recommended improvements based on the performance criteria and site visit observations. The recommended projects have not been analyzed from an engineering or environmental standpoint to determine their feasibility. Due to the geographic diversity, unknown design constraints, and variety of project types, cost estimates for the *OAP 2007* recommendations are not included. Projects costs should be evaluated by the airport sponsor on a case-by-case basis.

Table 5.19 Summary of OAP 2007 Recommended Improvements

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Category I – Commercial Service Airports	
Eastern Oregon Regional Airport at Pendleton	Construct parallel taxiways for air carrier runways Construct designated cargo apron with small handling facility Construct hangars
Eugene Airport - Mahlon Sweet Field	None
Klamath Falls International Airport	Construct full parallel taxiway to Runway 14/32 Construct hangars Construct designated cargo apron with small handling facility
Portland International Airport	None
Redmond Municipal Airport - Roberts Field	Install high intensity runway lights
Rogue Valley International - Medford Airport	None
Salem McNary Field	Install medium intensity taxiway lighting Construct designated cargo apron with small handling facility Extend runway to 6,000 feet Construct full parallel taxiway Construct hangars
Southwest Oregon Regional Airport	Install runway vertical/visual guidance system Construct designated cargo apron with small handling facility Construct parallel taxiway Extend runway to 6,000 feet Construct hangars Provide coffee shop/deli and cold foods
Category II – Urban General Aviation Airports	
Astoria Regional Airport	Develop high speed exits on existing taxiways Install high intensity runway lights Construct designated cargo apron Construct hangars Expand aircraft apron
Aurora State Airport	Change airport reference code from B-II to C-II Correct parallel taxiway/ runway centerline separation Install medium intensity taxiway lighting Construct designated cargo apron Develop precision approach to one runway end Construct hangars Expand aircraft apron
Bend Municipal Airport	Increase runway width from 75 feet to 100 feet Rehabilitate runway pavement Upgrade Runway 16 approach to a precision approach Install medium intensity taxiway lighting Install apron lighting Construct hangars Install perimeter fencing for both security and wildlife control Construct designated cargo apron
Corvallis Municipal Airport	Construct designated cargo apron Develop on-site food service Provide food vending Expand aircraft apron
McMinnville Municipal Airport	Install medium taxiway lighting Construct designated cargo apron Shift Runway 17/35 north to intersect with primary runway Rehabilitate taxiway between Runway 4/22 and 17/35 Construct hangars

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
McMinnville Municipal Airport (continued)	Expand aircraft apron Provide food vending
Newport Municipal Airport	Construct full parallel taxiway to Runway 16/34 Install medium intensity taxiway lighting Expand aircraft apron Construct hangars
Portland Downtown Heliport	Provide public telephone Provide public restrooms Provide pilot lounge Provide food vending
Portland - Hillsboro Airport	Construct designated cargo apron Expand aircraft parking Construct hangars
Portland - Troutdale Airport	Develop precision approach Install medium intensity taxiway lighting
Scappoose Industrial Airpark	Develop precision approach Install medium intensity taxiway lighting Construct hangars Obstruction removal Expand aircraft apron Construct designated cargo apron
Category III – Regional General Aviation Airports	
Ashland Municipal Airport-Sumner Parker Field	Install medium intensity taxiway lighting Extend runway to 4,000 feet Provide non-precision approach Install weather reporting equipment Clear obstructions Make courtesy car available Construct hangars Provide pilot lounge Provide snow removal capabilities
Baker City Municipal Airport	Install medium intensity taxiway lighting Rehabilitate runway 08/26 Update airport master plan Construct hangars
Bandon State Airport	Extend runway to accommodate larger jet aircraft Widen runway to accommodate larger jet aircraft Provide precision approach to one runway end Install medium intensity runway lighting Install weather reporting equipment Install perimeter fencing for both security and wild life control Provide public restrooms Provide public telephone Provide pilot lounge Expand apron Construct terminal building Provide food vending Provide pilot lounge Expand auto parking Expand FBO services

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Burns Municipal Airport	Construct parallel taxiway for primary runway Install medium intensity runway lighting Construct vehicle parking lot Relocate existing fuel farm Develop precision approach to one runway end Complete perimeter fencing for security and wildlife control Widen runway to 75 feet
Columbia Gorge Regional - The Dalles	Install rotating beacon Procure snow removal equipment Raise Runway 34 end to avoid flooding and increase line of sight Clear obstructions Install visual approach aid to one runway end Construct hangars Provide snow removal capabilities
Grant County Regional Airport	Widen runway to 75 feet Install medium intensity taxiway lighting Improve line of sight down runway Provide a partial taxiway to Runway 09/27 Review local land use plans and coordinate development with locals Extend runway to 5,000 feet Develop precision approach to one runway end Construct hangars
Grants Pass Airport	Install medium intensity taxiway lighting Install weather reporting equipment Study feasibility of 5,000 foot runway Study feasibility of north side parallel taxiway Install perimeter fencing for both security and wild life control
Hermiston Municipal Airport	Install medium intensity taxiway lighting Complete perimeter fencing Rehabilitate runway pavement Extend runway to accommodate change in critical aircraft
La Grande / Union County Airport	Install medium intensity taxiway lighting Relocate road near Runway 12 end to obtain compliant RSA
Lake County Airport	Install medium intensity taxiway lighting Provide vending food service Remove vegetation in Runway 16 RSA Rehabilitate apron pavement Provide food vending Provide pilot lounge
Ontario Municipal Airport	Extend runway to 5,000 feet Install medium intensity taxiway lighting Remove non-frangible objects located in Runway 32 RSA Remove vegetation around VASI on Runway 32 Provide precision approach to one runway end Complete perimeter fence for security and safety
Roseburg Regional Airport	Extend runway to 5,000 feet Provide precision approach to one runway end Install medium intensity taxiway lighting Complete perimeter fence for both safety and wildlife control Construct hangars Expand FBO services

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Roseburg Regional Airport (continued)	Provide pilot lounge
Tillamook Airport	Expand FBO services
	Install medium intensity taxiway lighting
	Improve airport to accommodate B-II aircraft
	Construct Hangars
	Construct parallel taxiway
	Provide snow removal capabilities
Category IV – Local General Aviation	
Albany Municipal Airport	Install low intensity taxiway lighting
	Develop non-precision approach procedure
	Install weather reporting equipment
	Relocate drainage ditches outside of RSA
Boardman Airport	Install low intensity taxiway lighting
	Provide 100 LL fuel
	Provide snow removal capabilities
Brookings Airport	Install low intensity taxiway lighting
	Expand FBO services
	Extend runway to 3,000 feet (if feasible)
	Provide snow removal capabilities
Chehalem Airpark	Improve facility to support B-II aircraft
	Extend runway to 3,000 feet
	Widen runway to 60 feet
	Install low intensity runway lighting
	Install low intensity taxiway lighting
	Provide courtesy car
	Procure snow removal equipment
	Clear obstructions
	Relocate aircraft storage buildings with RVZ
	Provide snow removal capabilities
Christmas Valley Airport	Install low intensity taxiway lighting
	Provide 100 LL fuel
	Provide public restrooms
	Remove vegetative growth surrounding runway edge lighting
	Install helipad lighting
	Construct dedicated access road
	Install weather reporting equipment
	Install medium intensity runway lighting
	Construct hangars
	Provide snow removal capabilities
Condon State Airport - Pauling Field	Provide 100 LL fuel
	Provide public restrooms
	Provide snow removal – as required
	Install perimeter fencing
	Provide snow removal capabilities
Cottage Grove State Airport - Jim Wright Field	Install low intensity taxiway lighting
	Remove “hump” near runway midpoint
	Explore options to provide a compliant RSA for Runway 15
	Clear obstructions
Creswell Hobby Field Airport	Install low intensity taxiway lighting
	Construct hangars
	Clear obstructions

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Florence Municipal Airport	Install low intensity taxiway lighting Clear obstructions Construct hangars
Gold Beach Municipal Airport	Install low intensity taxiway lighting Rehabilitate runway and sub-grade Clear obstructions Install weather reporting equipment Install medium intensity runway lighting
Illinois Valley Airport	Construct parallel taxiway Provide 100 LL fuel Remove vegetation around VASI systems Rehabilitate apron pavement Provide snow removal capabilities
Independence State Airport	Install low intensity taxiway lighting Restrict balloon operations near runway ends
Joseph State Airport	Install low intensity taxiway lighting Install automated weather reporting equipment Provide public restrooms Provide public telephone Clear obstructions Install containment pad for fire fighting operations Install medium intensity runway lighting Install lighted wind indicator Provide snow removal capabilities
Ken Jernstedt Airfield	Install low intensity runway lighting Install low intensity taxiway lighting Relocate taxiway for proper runway/taxiway separation Remove and mitigate wetlands within Runway 07 RSA Install lighted wind indicator
Lebanon State Airport	Extend runway to 3,000 feet Widen runway to 60 feet Install low intensity taxiway lighting Provide 100 LL fuel Provide snow removal capabilities Rehabilitate apron pavement Relocate or enclose ditches in RSA Install lighted wind indicator Provide public restrooms
Lenhardt Airpark	Widen runway to 60 feet Clear obstructions Improve Runway 20 RSA (grade change, excess vegetation) Install lighted wind indicator
Lexington Airport	Install low intensity taxiway lighting Provide snow removal capabilities Rehabilitate apron pavement Rehabilitate taxiway pavement
Madras/City-County Airport	Install low intensity taxiway Evaluate taxiway configuration Install automated weather reporting equipment Rehabilitate runway, taxiway, apron pavements Install perimeter fencing for both security and wild life control

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Madras/City-County Airport (continued)	Construct hangars
Myrtle Creek Municipal Airport	Evaluate feasibility of a runway extension to 3,000 feet Widen runway to 60 feet Install low intensity taxiway lighting Rehabilitate runway pavement Enclose drainage ditches
Portland-Mulino Airport	Clear obstructions Expand aircraft apron
Prineville Airport	Install low intensity taxiway lighting Rehabilitate runway pavement Rehabilitate terminal building Construct hangars Install automated weather reporting equipment
Seaside Municipal Airport	Extend runway to 3,000 feet Widen runway to 60 feet Install low intensity taxiway lighting Provide 100 LL fuel Provide public restrooms Consider drainage improvements Provide snow removal capabilities Install automated weather reporting equipment Install path approach indicator lights on one runway end
Siletz Bay State Airport	Install low intensity taxiway lighting Provide 100 LL fuel Rehabilitate apron pavement Install automated weather reporting equipment
Sisters Eagle Air Airport	Widen runway to 60 feet Install low intensity runway lighting Provide 100 LL fuel Provide snow removal capabilities Install lighted wind indicator Rehabilitate runway, taxiway, apron pavement Evaluate through-the-fence operations
Sportsman Airpark	Extend runway to 3,000 feet Widen runway to 60 feet Install low intensity taxiway lighting Install lighted wind indicator Rehabilitate runway, taxiway, apron pavements Relocate aircraft parking location
Sunriver Airport	Install low intensity taxiway lighting Clear obstructions
Wasco State Airport	Install low intensity taxiway lighting Provide 100 LL fuel Provide public restrooms Provide snow removal capabilities Provide proper gradient within RSA Relocate agricultural operations to dedicated area Install automated weather reporting equipment

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
	Category V – Remote Access / Emergency Service Airport (RAES)
Alkali Lake State	Relocate or close road that runs through Runway 18 RSA Install perimeter fencing for both security and wild life control Provide signage to and from the airport
Arlington Municipal	Install lighted wind indicator Provide signage to and from the airport
Beaver Marsh	Upgrade runway surface to turf or gravel Install low intensity runway lighting Install lighted wind indicator Install rotating beacon Clear obstructions
Cape Blanco State Airport	Rehabilitate apron pavement Rehabilitate taxiway pavement Install medium intensity runway lighting Remove vegetation and grade RSA Provide signage to and from the airport
Cascade Locks State Airport	Extend runway to 2,500 feet Widen runway to 60 feet Install medium intensity taxiway lighting Construct vehicle parking lot Relocated existing fuel farm
Chiloquin State Airport	Rehabilitate apron pavement Clear obstructions
Country Squire Airpark	Widen runway to 60 feet Clear obstructions Rehabilitate pavement markings
Crescent Lake State Airport	Widen runway to 60 feet (presently not a consistent width) Install perimeter fencing for security and wild life control
Davis Field	Extend runway to 2,500 feet Widen runway to 60 feet Clear obstructions
Enterprise Municipal	Widen runway to 60 feet Extend runway to accommodate fire protection operations
George Felt	Extend runway to 2,500 feet Clear obstructions Remove wood posts located along runway edge
Lake Billy Chinook	Widen runway to 60 feet Provide visual warning that the south end of the runway not available Clear obstructions Install low intensity runway lighting Install 100 LL fuel Rehabilitate pavement markings
Lakeside Municipal Airport	Extend runway to 2,500 feet Clear obstructions
Malin	Widen runway to 60 feet
McDermitt State Airport	Install perimeter fencing for security and wild life control Discuss partnership with State of Nevada
McKenzie Bridge State	Clear obstructions
Memaloose USFS Airport	Install lighted wind indicator
Miller Memorial Airpark	Clear obstructions Increase visibility of displaced threshold

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Miller Memorial Airpark (continued)	Provide proper runway markings
Monument Municipal	Extend runway to 2,500 feet Widen runway to 60 feet Clear obstructions Regrade Runway 14 RSA and remove storage structure Relocate apron Install pavement markings
Nehalem Bay State Airport	Extend runway to 2,500 feet Widen runway to 60 feet Install visual approach aid to one runway end Install low intensity runway lighting Install automated weather reporting equipment Construct apron Provide 100 LL fuel Clear obstructions
Oakridge State	Widen runway to 60 feet Clear obstructions
Owyhee Reservoir State	Extend runway where feasible Widen runway to 60 feet Upgrade surface to gravel or turf Provide public restrooms
Pacific City State Airport	Extend runway where feasible Widen runway to 60 feet Clear obstructions Improve drainage near end of Runway 32 Rehabilitate apron Install automated weather reporting equipment
Paisley	None
Pinehurst State Airport	Widen runway to 60 feet Install perimeter fencing for both security and wildlife control Clear obstructions from RSA
Powers Hayes Field	Clear obstructions
Prospect State Airport	Widen runway to 60 feet Install perimeter fencing for both security and wildlife control Remove objects from RSA (boulders, trees, shrubs) Clear obstructions
Rome State	Provide airport signage to and from airport
Sandy River	Extend runway to 2,500 feet
Santiam Junction State	None
Silver Lake USFS Airport	None
Skyport	Extend runway to 2,500 feet
Stark's Twin Oaks	Extend runway to 2,500 feet Widen runway to 60 feet Construct full parallel taxiway Clear obstructions
Toketee State	Clear vegetation from tie-down areas Clear obstructions Install perimeter fencing for both security and wild life control Clear RSA of obstructions
Toledo State Airport	Extend runway to 2,500 feet Widen runway to 60 feet

Table 5.19 Summary of OAP 2007 Recommended Improvements (Continued)

(Recommendations are based on the performance criteria and Project Team observations. Additional projects being considered by airport sponsors are included within *Volume II – Individual Airport Reports*)

<i>Airport</i>	<i>OAP 2007 Recommendations</i>
Toledo State Airport (continued)	Clear obstructions Provide adequate RSAs Consider closure of airport
Valley View	Widen runway to 60 feet Clear obstructions Relocate entrance road outside of RSA
Vernonia Municipal	Widen runway to 60 feet Clear obstructions
Wakonda Beach State	Extend runway to 2,500 feet Clear obstructions Improve airport signage to and from airport

Source: Mead & Hunt, Inc.