4.0 Forecast

4.1 Introduction

Forecasts of commercial and general aviation activity, presented in this chapter, estimate the level of activity expected at Wyoming airports during the next 20 years. These activity projections assist in verifying the roles of individual airports in the Wyoming Aviation System and help to determine whether existing facilities are adequate to accommodate future demand. The forecast period is 2007-2027.

This chapter examines and projects the following components of Wyoming airport activity:

- Commercial airline enplanements
- Based general aviation aircraft
- Total aircraft operations

To set a context for the forecasts, also presented in this chapter is a brief discussion of methodology as well as a review of national and statewide aviation trends where they have bearing on the outlook for the forecasts.

4.2 Methodology

In 2005, Wilbur Smith Associates (WSA) prepared a statewide forecast of aviation activity for Wyoming. The forecasts were built on an extensive analysis of aviation trends in Wyoming up through 2004 as well as review of available individual airport planning documents, FAA forecasts for each airport and the U.S. domestic market for general aviation activity and commercial service. The forecasts examined socio-economic trends in the state including population, employment, personal income, cost of living and tourism. In addition, WSA back-tested previous forecasts against actual recorded activity to discern which forecasts and forecast methodologies resulted in the most accurate forecasts. Individual and statewide forecasts were prepared applying three basic methodologies: (1) a bottom-up approach; (2) a top down approach using state and national growth rates; and (3) individual airport circumstances to adjust forecast rates of growth. Taking into account the three methodologies, WSA prepared a high and low forecast for each airport.

The forecasts presented in this chapter essentially update the forecasts prepared in 2005 by applying the same Compound Annual Growth Rates (CAGR) for each airport and activity that was developed by WSA to 2007 activity levels. This approach takes into account changes in aviation activity over the last three years and demonstrates clearly the consequences of using a different base year for forecasting. **Table 4-1** compares the statewide totals for passenger enplanements, based aircraft and operations for 2004 and 2007. Between 2004 and 2007, enplanements grew by 27%. Based aircraft declined by 10% and total operations declined by 9%. Applying the same annual growth rates to 2007 resulted in a slightly dampened based aircraft and operations forecast and a more aggressive enplanement forecast. That said, the 2005 forecast's annual high growth rate for passenger enplanements over the forecast period was 2% per year. The most recent FAA Aerospace forecasts project domestic passenger enplanements to grow an average of 2.8% per year through 2025.[1]

[1] FAA Aerospace Forecast Fiscal Years 2008-2025

Table 4-1
Wyoming Airport Activity - 2004 and 2007

Airport Metric	2004	2007	Difference	Change %
Passenger Enplanements	390,655	495,739	105,084	27%
Based Aircraft	1,076	964	(112)	(10%)
Total Operations	465,350	425,581	(39,769)	(9%)

Source: 2005 Statewide Aviation Forecast Update, WYDOT Aeronautics, SEH, KRAMER aerotek

4.3 National Trends

In 2007, demand for commercial air service and general aviation remained strong and returned aviation activity to levels seen before the tragic events of September 11, 2001 (9-11). However, by 2008, this recovery appeared to be leveling off or coming to an end. The full impact of dramatic increases in fuel costs not only offset airline efforts to reduce operating costs, but these high energy costs plus tight credit markets dampened the outlook for aviation activity in the U.S.

The State of Wyoming is an integral part of the national transportation system. As such, what happens nationally will impact the statewide aviation system. Current economic uncertainties are clouding the near term view. Among the most important national factors that will influence Wyoming today, and in the near future include:

- The worldwide credit crisis has and will spillover into every sector of economic activity, including aviation.
- For the airline industry, intense competition and high fuel prices previously sent numerous carriers into bankruptcy. The airlines have aggressively cut costs and restructured debt. Available options to further reduce operating costs are probably limited.
- Because the legacy carriers have substantially lowered their costs, low cost and legacy carriers are operating with similar cost structures today and can compete more effectively with each other.
- While structurally the airlines are already lean, with softening demand for domestic air travel, airlines are moving quickly to cut capacity as the next means of reducing costs.
- Historically, when the going is tough, airlines cut service to smaller airports first.
- In this environment, retention of air service in Wyoming will be as critical as development of new air service.
- Tight capital markets and slow approval of new technology have slowed down the development, production (and consequently use) of very light jets.
- An aging general aviation fleet and the cost of fuel will continue to dampen the extent of recreational flying.

4.4 Wyoming Trends

4.4.1 Passengers Enplanements

Wyoming has ten Commercial Service Airports and in 2007 these airports enplaned approximately 496,000 passengers as shown in **Table 4-2**. Jackson handles more than half the state's passengers and serves as an important tourist destination. Casper has the second largest number of enplanements followed by Cody, Gillette, Rock Springs and Sheridan.

Table 4-2
Passenger Enplanements - 2007

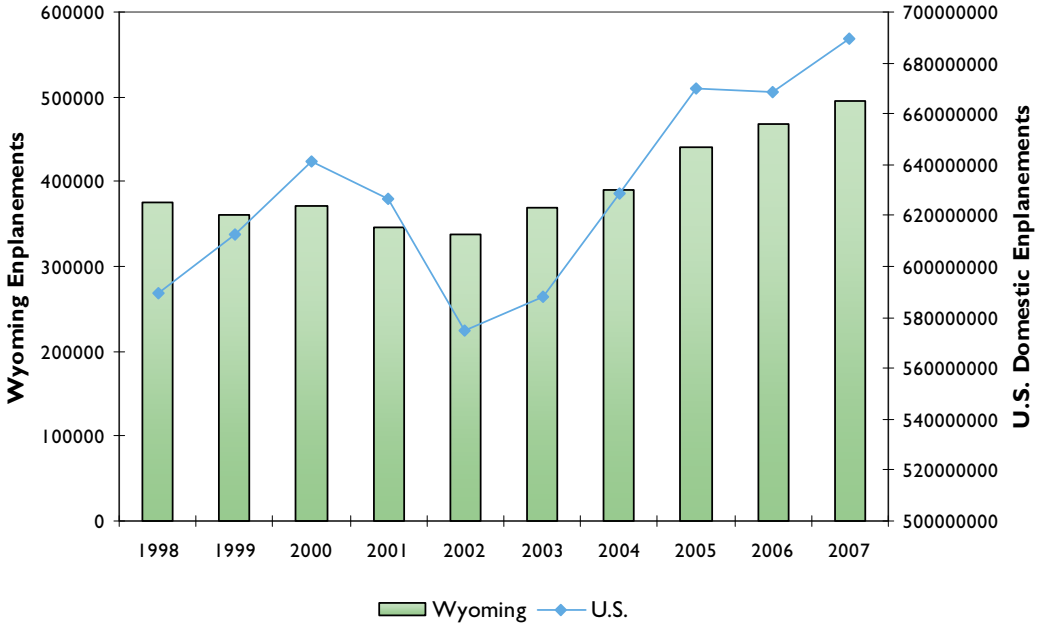
Associated City	2007 Enplanements	Percent Share of State Enplanements
Jackson	277,361	57
Casper	76,908	16
Cody	26,799	5
Gillette	25,647	5
Rock Springs	21,791	4
Sheridan	20,978	4
Cheyenne	16,766	3
Riverton	15,831	3
Laramie	9,939	2
Worland	3,719	1
Total Enplanements	**495,739**	**100**

Source: WYDOT Aeronautics

With the exception of seasonal point-to-point service to Jackson, Wyoming airports function as spoke cities in network carrier hubs. In 2007, Wyoming had air service to Denver, Salt Lake City and Minneapolis/St. Paul and seasonal service between Jackson and Chicago, Dallas-Ft. Worth and Atlanta. There are also a significant number of potential Wyoming passengers who drive to Denver, Salt Lake City, and Billings to fly from these larger airports.

The State of Wyoming and the ten Commercial Service Airports actively support retention and development of air service. Grants from the state's Air Service Enhancement program since 2004, positive results from the Fly Wyoming campaign to raise awareness of Wyoming airports and/or an increase in the state's economic position has contributed to an increased use of the Commercial Service Airports in Wyoming. It is unknown if the increase in use is attributable to one of these items or some combination. Additional stimulators not mentioned here may also have contributed to the increase. Additional discussion of the state's programs, the state and national economy, and their impacts on air service is discussed in greater detail in **Chapter 8**. **Chart 4-1** compares Wyoming enplanement trends to national trends.

Chart 4-1
Wyoming and U.S. Enplanements 1998-2007



Several points are noteworthy. First, Wyoming enplanements appear to represent, at least through 2003, a base and steady level of demand (and service) within the state. Wyoming did not experience as significant a drop in enplanements following the terrorist attacks of September 11, 2001. Starting in 2004, the U.S. (including Wyoming) began to recover. However, the steady increase in Wyoming enplanements is certainly a departure from national trends. **Table 4-3** shows the changes in capacity at airports of different hub sizes.[1] Capacity is measured as the number of seats available at a particular airport. At the national level, capacity is down for every size airport, but the number of seats available at non-hub airports diminished most significantly (-21.2%). Wyoming airports are all non-hub airports. However, in Wyoming the number of seats available grew as **Chart 4-2** shows. In 2004, the first year of the Air Service Enhancement Program, capacity grew to 626,423 outbound seats and in 2007, outbound capacity increased 25% to 783,435 seats. In addition to the Air Service Enhancement Program, oil, gas and coal development has contributed to increases in air service activity throughout Wyoming.

[1] FAA definitions of hub sizes are shown in **Table 4-4**.

Table 4-3
U.S. Capacity Change in Number of Available Seats

Airport Hub Size	Percent Change Domestic Seats 2000-2007
Large	(7.8)
Medium	(7.5)
Small	(10.5)
Non-Hub	(21.2)

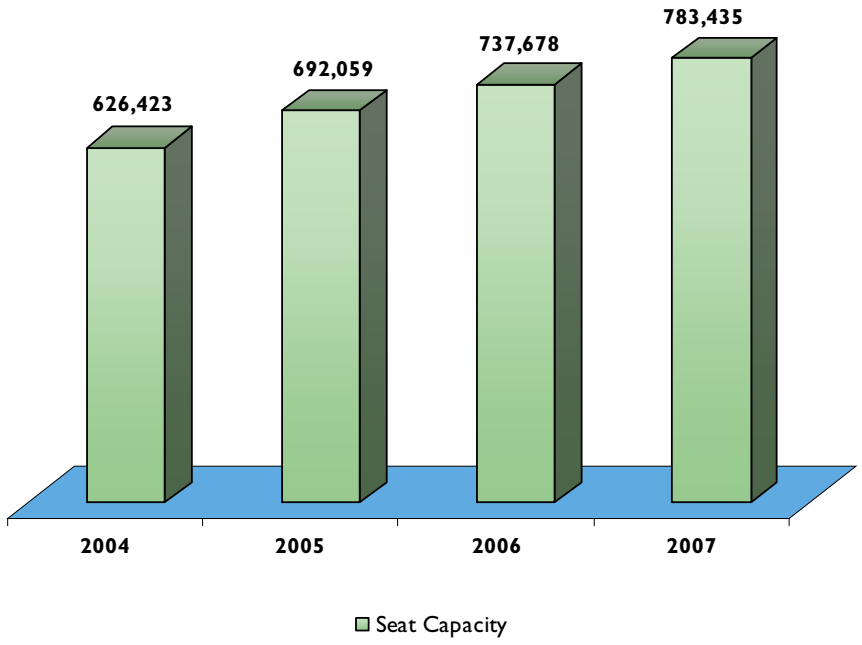
Source: Official Airline Guide and US DOT

Table 4-4
FAA Hub Definitions

Hub Type	Annual Enplanements Levels	2007 Enplanement Benchmark
Large Hub	1% or more of annual enplanements	7,647,230
Medium Hub	At least .25%, but less than 1%	1,911,807
Small Hub	At least .05%, but less than .25%	382,361
Non-hub	More than 10,000 but less than .05%	10,001
Non-primary non-hub	At least 2,500 but no more than 10,000	2,500

Source: Federal Aviation Administration

Chart 4-2
Wyoming Capacity Change in Seats



Source: US DOT T100

4.4.2 Based Aircraft

Chart 4-3 shows the aggregate changes in based aircraft in the state over the last ten years. The number of based aircraft was growing steadily until the terrorist attacks of September 11, 2001. Since 2002, total based aircraft have remained essentially unchanged. However, there are some significant changes in the number of based aircraft at individual airports. **Table 4-5** shows the airports with largest gains in based aircraft and those with the greatest losses. Cheyenne, Lander and Afton had the largest increases in based aircraft; Greybull, Cody and Wheatland, experienced the largest decreases.

Chart 4-3
Based Aircraft in Wyoming, 1997-2007

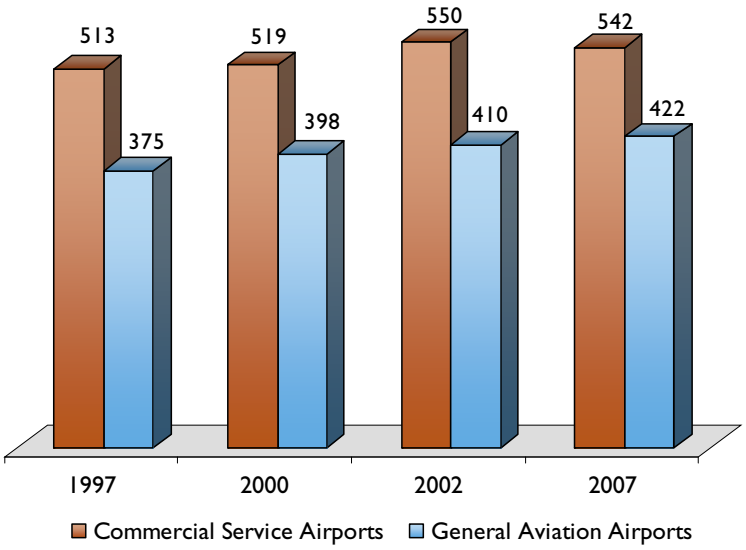


Table 4-5
Largest Changes in Based Aircraft

Associated City	1997	2007	1997-2007 Change
Cheyenne	37	77	40
Sheridan	75	88	13
Cody	70	57	(13)
Jackson	54	47	(7)
Afton	19	40	21
Saratoga	15	27	12
Greybull	56	27	(29)
Pinedale	26	17	(9)
Lander	31	55	24
Wheatland	25	14	(11)

Source: FAA Terminal Area Forecasts (TAF), FAA Form 5010, 2007 SEH Airport Survey

4.4.3 Aircraft Operations

Annual operations represent the number of aircraft takeoffs and landings occurring at an airport during a calendar year. **Chart 4-4** shows operations at commercial service and general aviation airports over the last ten years. General aviation operations did not appear to decline after 9-11 although total operations at Commercial Service Airports declined by approximately 11,000. In 2007, operations at Commercial Service Airports increased significantly in large part because of increases in air service capacity. The decline in GA operations is consistent with the national trends of less discretionary flying due to high fuel costs and the national general aviation fleet growing older and flying fewer hours and therefore generating fewer annual operations.

Chart 4-4
Wyoming Annual Aircraft Operations 1997-2007

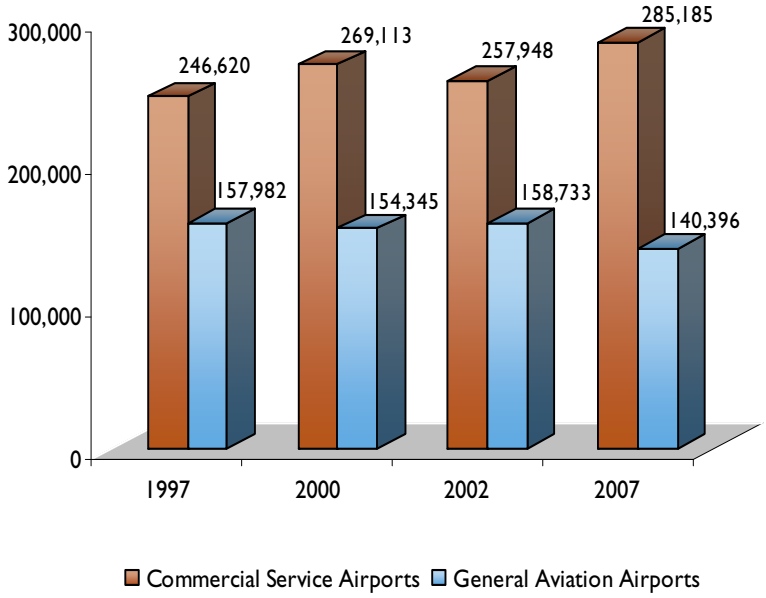


Table 4-6 shows the greatest changes in annual operations at individual Wyoming airports during the last ten years. Casper has experienced significantly more growth in operations than any other Wyoming airport. Cheyenne and Sheridan have also grown. Airports with declining operations include Greybull, Guernsey and Wheatland.

Table 4-6
Largest Changes in Annual Operations

Associated City	1997	2007	1997-2007 Change
Casper	41,800	61,297	19,497
Cheyenne	48,324	58,953	10,629
Cody	33,250	38,285	5,035
Riverton	15,080	8,423	(6,657)
Sheridan	27,507	37,230	9,723
Greybull	24,600	4,175	(20,425)
Guernsey	18,000	3,900	(14,100)
Wheatland	11,400	3,820	(7,580)
Dubois	1,000	5,000	4,000

Source: FAA TAF, Form 5010, 2007 SEH Airport Survey

4.5 Forecast Summary

The forecasts prepared in 2005 were updated using 2007 as the base year and 2012, 2017 and 2027 as the forecast reference years. A high and low forecast was prepared using the compound annual growth rates developed for the 2005 forecasts. **Table 4-7** and **Charts 4-5** through **4-7** present a summary of statewide high and low forecasts for passenger enplanements, based aircraft and aircraft operations. Individual airport forecasts are presented in following tables.

Table 4-7
Summary of Statewide Forecasts

	2007	2012		2017		2027		2007-2027 CAGR	
	Actual	Low	High	Low	High	Low	High	Low	High
Based Aircraft	964	962	1,041	966	1,148	981	1,410	0.09%	1.92%
Operations	425,581	428,059	456,141	430,617	491,029	435,957	577,340	0.12%	1.54%
Enplanements	495,739	527,784	547,336	562,985	604,303	644,139	736,642	1.25%	2.00%

Chart 4-5
Statewide Based Aircraft Forecasts (High and Low)

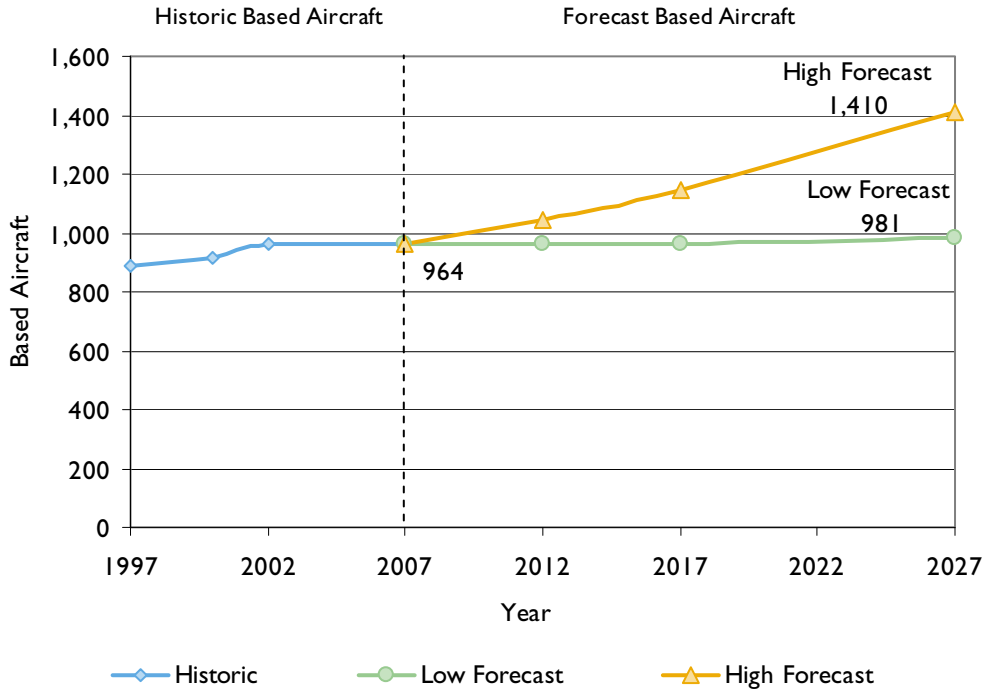


Chart 4-6
Statewide Operations Forecasts (High and Low)

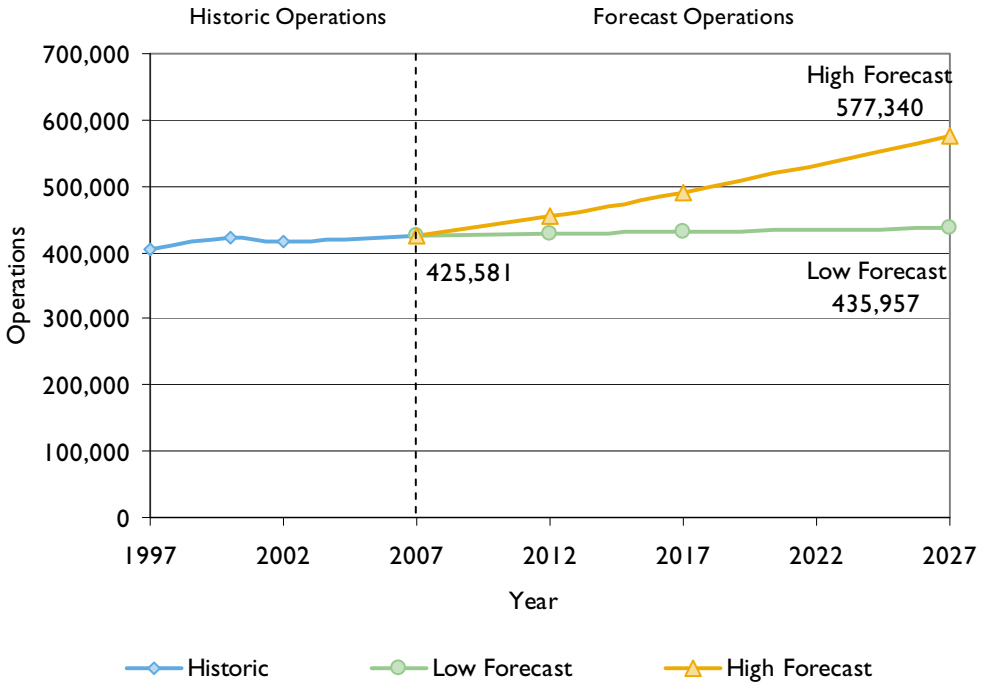
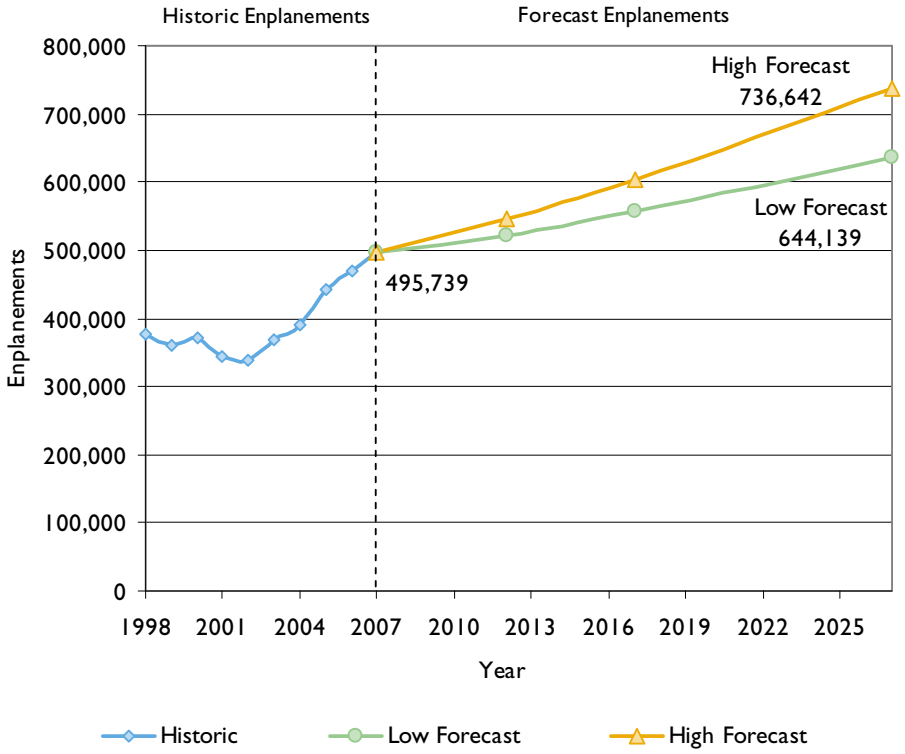


Chart 4-7
Statewide Enplanements Forecasts (High and Low)



Over the forecast period, based aircraft are not expected to grow substantially. Some of the based aircraft will be retired and may be replaced. Incrementally at the low end, less than 20 aircraft will be added to the Wyoming fleet. At the high end, as many as 446 aircraft are in the 20 year forecast. If trends persist, most of the aircraft added will be based at Commercial Service Airports. The airports forecast to have the largest based aircraft fleet are: Sheridan, Cheyenne, Casper and Lander.

The forecast for aircraft operations has a wide spread. At the low end operations will increase by approximately 10,400. At the high end, operations could grow statewide by as much as 152,000. Almost two thirds of aircraft operations take place at Wyoming's Commercial Service Airports. The forecast is thus heavily influenced by sustained and developing levels of air service.

The enplanement forecasts are moderate and aggressive. This is because the CAGRs from the 2005 forecasts were applied to 2007 enplanement levels. Passenger activity in 2007 had the benefit and stimulus of revenue guarantees provided by the Air Service Enhancement Program as well as increased oil and gas activity in the state. Over the 20 year forecast period, enplanements could grow by between 148,000 and 240,000 enplanements.[1]

Forecasts for individual airports are presented in **Tables 4-8** through **4-11**.

[1] This forecast assumes continued support by the Air Service Enhancement Program through the forecast period.

Table 4-8
Based Aircraft Forecast

Airport Name	2007	2012		2017		2027		2007-2027 CAGR	
	Actual	Low	High	Low	High	Low	High	Low	High
Casper	85	85	88	85	93	85	103	0.00%	1.00%
Cheyenne	77	78	83	79	90	82	107	0.32%	1.75%
Cody	57	58	59	59	63	61	70	0.32%	1.05%
Gillette	53	54	56	55	59	56	66	0.32%	1.19%
Jackson	47	48	51	48	56	50	68	0.00%	1.99%
Laramie	39	39	41	38	44	38	49	(0.17%)	1.26%
Riverton	34	34	37	35	40	36	49	0.14%	1.92%
Rock Springs	49	50	52	50	57	52	68	0.00%	1.73%
Sheridan	88	89	94	91	101	94	119	0.32%	1.58%
Worland	13	13	14	13	16	12	20	(0.26%)	2.18%
CS Total	**542**	**548**	**575**	**553**	**619**	**566**	**719**	**0.22%**	**1.42%**
Afton	40	41	46	41	56	43	81	0.32%	3.75%
Douglas	37	38	40	38	44	39	54	0.32%	1.96%
Evanston	18	18	20	18	22	18	26	(0.12%)	2.05%
Greybull	27	27	27	27	28	27	29	0.00%	0.40%
Pinedale	17	17	19	18	22	18	29	0.32%	2.86%
Saratoga	27	28	30	29	35	31	47	0.77%	2.92%
Big Piney	7	7	8	7	9	7	11	0.32%	2.29%
Buffalo	20	15	21	12	22	7	25	(5.34%)	1.12%
Guernsey	6	5	7	4	7	2	9	(4.48%)	2.38%
Kemmerer	7	7	8	7	10	7	14	0.32%	3.53%
Lander	55	55	63	56	75	57	106	0.14%	3.53%
Newcastle	11	11	12	11	14	11	17	(0.18%)	2.43%
Powell	17	17	18	18	20	18	25	0.32%	2.05%
Rawlins	22	22	24	22	26	22	32	(0.05%)	1.96%
Torrington	27	27	30	27	35	27	47	(0.04%)	2.94%
Wheatland	14	14	14	13	15	12	15	(0.62%)	0.40%

Table 4-8 (Continued)
Based Aircraft Forecast

Airport Name	2007	2012		2017		2027		2007-2027 CAGR	
	Actual	Low	High	Low	High	Low	High	Low	High
Cokeville	2	0	3	0	4	0	8	(100.00%)	7.18%
Cowley	10	10	11	10	13	10	19	0.01%	3.35%
Dixon	9	9	10	9	11	10	13	0.32%	2.05%
Dubois	11	11	13	11	15	11	22	0.14%	3.81%
Fort Bridger	10	9	10	9	10	8	11	(1.11%)	0.40%
Glendo (non-paved)	0	0	0	0	0	0	0	0.00%	0.40%
Green River (non-paved)	0	0	0	0	0	0	0	0.00%	0.40%
Hulett	5	6	7	8	10	13	20	4.73%	7.60%
Lusk	2	2	3	1	4	1	7	(3.41%)	6.46%
Medicine Bow (non-paved)	0	0	0	0	0	0	0	0.00%	0.40%
Pine Bluffs	9	9	10	9	10	10	12	0.32%	1.45%
Shoshoni (non-paved)	3	3	3	3	3	3	3	0.00%	0.40%
Thermopolis	8	5	8	4	8	2	9	(7.73%)	0.40%
Upton (non-paved)	1	1	1	1	1	1	1	0.00%	0.40%
GA Total	**422**	**414**	**466**	**413**	**529**	**415**	**692**	**(0.09%)**	**2.50%**
System Total	**964**	**962**	**1,041**	**966**	**1,148**	**981**	**1,410**	**0.09%**	**1.92%**

Table 4-9
Forecast of Aircraft Operations

Airport Name	2007	2012		2017		2027		2007-2027 CAGR	
	Actual	Low	High	Low	High	Low	High	Low	High
Casper	61,297	61,297	62,939	61,297	64,624	61,297	68,132	0.00%	0.53%
Cheyenne	58,953	58,953	59,932	58,953	60,928	58,953	62,968	0.00%	0.33%
Cody	38,285	38,901	40,198	39,528	42,207	40,811	46,530	0.32%	0.98%
Gillette	19,105	19,105	19,578	19,105	20,062	19,105	21,067	0.00%	0.49%
Jackson	30,605	31,098	37,343	31,599	45,565	32,624	67,837	0.32%	4.06%
Laramie	10,090	10,090	10,340	10,090	10,595	10,090	11,126	0.00%	0.49%
Riverton	8,423	8,478	9,694	8,533	11,156	8,645	14,776	0.13%	2.85%
Rock Springs	17,017	17,291	18,170	17,569	19,401	18,140	22,120	0.32%	1.32%
Sheridan	37,230	37,830	41,186	38,439	45,561	39,687	55,757	0.32%	2.04%
Worland	4,180	4,247	4,790	4,316	5,488	4,456	7,205	0.32%	2.76%
CS Total	**285,185**	**287,290**	**304,170**	**289,429**	**325,587**	**293,808**	**377,518**	**0.15%**	**1.41%**
Afton	12,200	12,396	14,736	12,596	17,800	13,005	25,971	0.32%	3.85%
Douglas	5,585	5,521	5,695	5,458	5,807	5,334	6,037	(0.23%)	0.39%
Evanston	6,080	6,178	6,859	6,277	7,737	6,481	9,847	0.32%	2.44%
Greybull	4,175	4,217	4,257	4,259	4,341	4,345	4,513	0.20%	0.39%
Pinedale	9,516	9,669	9,766	9,825	10,023	10,144	10,556	0.32%	0.52%
Saratoga	8,965	9,109	9,596	9,256	10,272	9,557	11,769	0.32%	1.37%
Big Piney	3,500	3,556	3,904	3,614	4,355	3,731	5,419	0.32%	2.21%
Buffalo	7,320	7,438	8,799	7,558	10,578	7,803	15,285	0.32%	3.75%
Guernsey	3,900	3,900	3,900	3,900	3,900	3,900	3,900	0.00%	0.00%
Kemmerer	3,400	3,329	3,463	3,260	3,528	3,126	3,661	(0.42%)	0.37%
Lander	11,180	11,024	11,394	10,871	11,612	10,570	12,061	(0.28%)	0.38%
Newcastle	5,000	5,081	5,437	5,162	5,912	5,330	6,991	0.32%	1.69%
Powell	3,130	2,907	3,198	2,699	3,267	2,328	3,410	(1.47%)	0.43%
Rawlins	12,000	12,193	13,683	12,390	15,602	12,792	20,286	0.32%	2.66%
Torrington	4,431	4,300	4,536	4,172	4,644	3,929	4,867	(0.60%)	0.47%
Wheatland	3,820	3,820	3,897	3,820	3,976	3,820	4,137	0.00%	0.40%

Table 4-9 (Continued)
Forecast of Aircraft Operations

Airport Name	2007	2012		2017		2027		2007-2027 CAGR	
	Actual	Low	High	Low	High	Low	High	Low	High
Cokeville	1,250	1,281	1,811	1,313	2,625	1,378	5,511	0.49%	7.70%
Cowley	4,175	4,175	4,259	4,175	4,345	4,175	4,522	0.00%	0.40%
Dixon	2,600	2,600	2,651	2,600	2,703	2,600	2,810	0.00%	0.39%
Dubois	5,000	5,000	5,825	5,000	6,785	5,000	9,208	0.00%	3.10%
Fort Bridger	3,500	3,460	3,567	3,420	3,635	3,342	3,776	(0.23%)	0.38%
Glendo (non-paved)	450	450	450	450	450	450	450	0.00%	0.00%
Green River (non-paved)	34	34	34	34	34	34	34	0.00%	0.00%
Hulett	1,400	1,400	1,843	1,400	2,426	1,400	4,203	0.00%	5.65%
Lusk	7,030	7,030	7,165	7,030	7,302	7,030	7,584	0.00%	0.38%
Medicine Bow (non-paved)	40	40	40	40	40	40	40	0.00%	0.00%
Pine Bluffs	8,000	8,000	8,165	8,000	8,334	8,000	8,682	0.00%	0.41%
Shoshoni (non-paved)	75	75	75	75	75	75	75	0.00%	0.00%
Thermopolis	2,580	2,526	2,906	2,474	3,274	2,372	4,154	(0.42%)	2.41%
Upton (non-paved)	60	60	60	60	60	60	60	0.00%	0.00%
GA Total	**140,396**	**140,769**	**151,971**	**141,188**	**165,442**	**142,151**	**199,819**	**0.06%**	**1.78%**
System Total	**425,581**	**428,059**	**456,141**	**430,617**	**491,029**	**435,957**	**577,340**	**0.12%**	**1.54%**

Table 4-10
Passenger Enplanements Forecasts: Low Growth

Associated City	2007-2027 CAGR	2007	2012	2017	2022	2027
	Low					
Casper	0.28%	76,908	77,991	79,089	80,202	81,331
Cheyenne	0.32%	16,766	17,036	17,310	17,589	17,872
Cody	0.46%	26,799	27,421	28,058	28,709	29,375
Gillette	1.19%	25,647	27,210	28,868	30,627	32,493
Jackson	1.99%	277,361	306,079	337,770	372,743	411,336
Laramie	(0.17%)	9,939	9,855	9,771	9,689	9,606
Riverton	0.14%	15,831	15,942	16,054	16,167	16,280
Rock Springs	(0.77%)	21,791	20,965	20,170	19,405	18,670
Sheridan	0.60%	20,978	21,615	22,271	22,947	23,644
Worland	(0.26%)	3,719	3,671	3,623	3,577	3,530
Total		**495,739**	**527,784**	**562,985**	**601,654**	**644,139**

Table 4-11
Passenger Enplanements Forecasts: High Growth

Associated City	2007-2027 CAGR	2007	2012	2017	2022	2027
	High					
Casper	2.00%	76,908	84,913	93,750	103,508	114,281
Cheyenne	2.00%	16,766	18,511	20,438	22,565	24,913
Cody	2.00%	26,799	29,588	32,668	36,068	39,822
Gillette	2.00%	25,647	28,316	31,264	34,517	38,110
Jackson	2.00%	277,361	306,229	338,102	373,291	412,144
Laramie	2.00%	9,939	10,973	12,116	13,377	14,769
Riverton	2.00%	15,831	17,479	19,298	21,306	23,524
Rock Springs	2.00%	21,791	24,059	26,563	29,328	32,380
Sheridan	2.00%	20,978	23,161	25,572	28,234	31,172
Worland	2.00%	3,719	4,106	4,533	5,005	5,526
Total		**495,739**	**547,336**	**604,303**	**667,199**	**736,642**

4.6 Capacity Analysis (Annual Service Volume)

Using the 2007 operations shown in **Table 4-9**, the annual service volume (ASV) for each airport was calculated. Annual Service Volume (as defined in AC 150/5060-5 *Airport Capacity and Delay*) is a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

For purposes of calculating the ASV, some assumptions were made concerning the users of each airport. It was assumed that all air carrier, air taxi/air charter and military operations were conducted by aircraft over 12,500 pounds maximum takeoff weight and all general aviation itinerant and general aviation local operations were conducted by aircraft under 12,500 pounds maximum takeoff weight.

The characteristics of the runway configuration at each airport were combined with the main users and uses to determine the annual service volume using the calculations defined in AC 150/5060-5. The ASV for each airport and the total operations for 2007 and the high forecast operations for 2027 are shown in **Table 4-12**. Using ASV as a deciding factor, it can be seen that each airport has sufficient capacity to meet the demand (annual operations) identified through the year 2027.

Table 4-12
Annual Service Volume

Associated City	2007 Operations	2027 High Forecast Operations	Annual Service Volume (ASV)
Casper	61,297	68,132	200,000
Cheyenne	58,953	62,968	215,000
Cody	38,285	46,530	230,000
Gillette	19,105	21,067	200,000
Jackson	30,605	67,837	195,000
Laramie	10,090	11,126	200,000
Riverton	8,423	14,776	200,000
Rock Springs	17,017	22,120	200,000
Sheridan	37,230	55,757	230,000
Worland	4,180	7,205	200,000
Afton	12,200	25,971	230,000
Douglas	5,585	6,037	230,000
Evanston	6,080	9,847	230,000
Greybull	4,175	4,513	230,000
Pinedale	9,516	10,556	195,000
Saratoga	8,965	11,769	230,000

Table 4-12 (Continued)
Annual Service Volume

Associated City	2007 Operations	2027 High Forecast Operations	Annual Service Volume (ASV)
Big Piney	3,500	5,419	230,000
Buffalo	7,320	15,285	230,000
Guernsey	3,900	3,900	205,000
Kemmerer	3,400	3,661	230,000
Lander	11,180	12,061	230,000
Newcastle	5,000	6,991	200,000
Powell	3,130	3,410	230,000
Rawlins	12,000	20,286	200,000
Torrington	4,431	4,867	230,000
Wheatland	3,820	4,137	230,000
Cokeville	1,250	5,511	230,000
Cowley	4,175	4,522	230,000
Dixon	2,600	2,810	230,000
Dubois	5,000	9,208	230,000
Fort Bridger	3,500	3,776	230,000
Glendo (non-paved)	450	450	230,000
Green River (non-paved)	34	34	230,000
Hulett	1,400	4,203	230,000
Lusk	7,030	7,584	230,000
Medicine Bow (non-paved)	40	40	230,000
Pine Bluffs	8,000	8,682	230,000
Shoshoni (non-paved)	75	75	230,000
Thermopolis	2,580	4,154	230,000
Upton (non-paved)	60	60	230,000

5.0 System Objectives and Performance

5.1 Overview

Facilities and services available at an airport largely define the types of aircraft and users able to operate at an airport. Attributes were assigned previously to the four classifications of airports in Wyoming. In keeping with the Vision, Goals and Objectives for the Wyoming Aviation System and in an effort to provide consistency across the system, minimum facilities and service objectives by classification of airport have been established. It needs to be stressed that these are minimum requirements. Individual airports may actually have greater objectives based on airport specific users but each should strive to meet the minimum objectives set for their individual classification. The minimum objectives have been established to provide adequate and safe facilities and services to meet the roles and attributes established for each classification. All objectives need to be justified and approved through the local master planning and environmental processes. Airport Facilities and Services Objectives are subdivided by Airside, Landside, Services and Administration.

The terms *essential*, *suggested*, and *not an objective* are included in the objectives. The term *essential* means that Aeronautics believes these items to be necessary for the category shown and that airport sponsors should make every effort to make sure these items are in place at their airport. A *suggested* facility is one that Aeronautics would like to see at the airport but is not considered in the system analysis, and *not an objective* simply means that Aeronautics does not have an objective for that particular classification or facility, service, etc.

It was determined that airports in the Local Airport classification needed to be subdivided into paved and non-paved facilities. As such, facility and service objectives were developed for both of these sub-classifications within the Local Airport classification.

The minimum objectives by classification of airport are shown in **Tables 5-1** through **5-5.** The objectives have been applied to each airport and are documented on each airport's individual Airport Report Card included in **Chapter 9**. Facility and service objectives are sorted alphabetically and applied to each airport in **Appendix A**. Supporting documentation for each objective, airports not meeting an objective and system performance related to each objective is presented following the minimum system objectives **Tables 5-1** through **5-5.**

The objectives for Administration include reports, plans, maps and actions and are discussed in the following sections. Throughout this section, *on record with Aeronautics* means that a copy of the report, plan or map has been sent by the sponsor to Aeronautics and that Aeronautics has acknowledged receipt.

Table 5-1
Commercial Service Airports - Facility and Service Objectives

AIRSIDE	
ARC	C-II
Primary Runway Length	75% of Large Airplanes at 60% Useful Load
Primary Runway Width	100 Feet
Primary Runway Lights	HIRL
Primary Runway Strength	55,000 lbs Dual
Taxiway	Full Parallel, 35 Feet Width
Taxiway Lights	MITL
Primary Approach Type	Precision
Primary Approach Lighting System (ALS)	MALSR
Visual Aids	PAPI or VASI – Both Runway Ends REIL or ALS – Both Runway Ends Beacon Lighted Wind Cone
Wind Coverage	≥ 95% Coverage
Runway Safety Area (RSA)	Standard RSA on All Paved Runways
LANDSIDE	
Weather Reporting	AWOS/ASOS
Terminal	Terminal
Perimeter Fencing	Security or Wildlife Fence
Hangars	100% of Based Aircraft in Hangars
Lighted Hangar Area	Lighted Hangar Area
Paved Auto Parking	Paved Auto Parking
SERVICES	
FBO	Suggested
Fuel	Jet A and 100LL
Ground Transportation	On-Airport Rental Car
Pilot Lounge/Planning Room	Pilot Lounge/Planning Room
Public Restrooms	Public Restrooms - 24/7
Food	Restaurant Suggested
Public Phone	Public Phone - 24/7
Aircraft Maintenance	Major Airframe & Powerplant (A & P)
Aircraft Deicing	Aircraft Deicing
Aircraft Deicing Containment System	Containment System
ADMINISTRATION	
Land Use Protection Plan	On Record with Aeronautics
Current Master Plan	On Record with Aeronautics and Less Than 10 Years Old
Current Airport Layout Plan	On Record with Aeronautics and Less Than 5 Years Old
Minimum Standards	On Record with Aeronautics
Pavement Management Plan	On Record with Aeronautics
Current Noise Contour Map	On Record with Aeronautics and Less Than 10 Years Old
Legislative Liaison	Legislative Liaison
Airport Manager	Airport Manager
RPZ Ownership	Fee/Easement Ownership of All Existing RPZs

Note: Objectives listed are essential unless noted otherwise

Table 5-2
Business Airports - Facility and Service Objectives

AIRSIDE	
ARC	C-II
Primary Runway Length	75% of Large Airplanes at 60% Useful Load
Primary Runway Width	100 Feet
Primary Runway Lights	MIRL
Primary Runway Strength	30,000 lbs Single
Taxiway	Full Parallel, 35 Feet Width
Taxiway Lights	MITL
Primary Approach Type	Non-Precision
Primary Approach Lighting System (ALS)	MALSR Suggested
Visual Aids	PAPI or VASI – Both Runway Ends REILs or ALS – Both Runway Ends Beacon Lighted Wind Cone
Wind Coverage	≥ 95% Coverage
Runway Safety Area (RSA)	Standard RSA on All Paved Runways
LANDSIDE	
Weather Reporting	AWOS/ASOS
Terminal	Terminal
Perimeter Fencing	Wildlife Fence
Hangars	100% of Based Aircraft in Hangars
Lighted Hangar Area	Lighted Hangar Area
Paved Auto Parking	Paved Auto Parking
SERVICES	
FBO	Suggested
Fuel	Jet A and 100LL
Ground Transportation	Courtesy Car
Pilot Lounge/Planning Room	Pilot Lounge/Planning Room
Public Restrooms	Public Restrooms – 24/7
Food	Vending Machines Suggested
Public Phone	Public Phone – 24/7
Aircraft Maintenance	Major Airframe & Powerplant (A & P)
Aircraft Deicing	Aircraft Deicing
Aircraft Deicing Containment System	Suggested
ADMINISTRATION	
Land Use Protection Plan	On Record with Aeronautics
Current Master Plan	On Record with Aeronautics and Less Than 10 Years Old
Current Airport Layout Plan	On Record with Aeronautics and Less Than 5 Years Old
Minimum Standards	On Record with Aeronautics
Pavement Management Plan	On Record with Aeronautics
Current Noise Contour Map	On Record with Aeronautics and Less Than 10 Years Old
Legislative Liaison	Legislative Liaison
Airport Manager	Airport Manager
RPZ Ownership	Fee/Easement Ownership of All Existing RPZs

Note: Objectives listed are essential unless noted otherwise

Table 5-3
Intermediate Airports - Facility and Service Objectives

AIRSIDE	
ARC	B-II
Primary Runway Length	95% of Small Airplanes
Primary Runway Width	75 Feet
Primary Runway Lights	MIRL
Primary Runway Strength	20,000 lbs Single
Taxiway	Partial Parallel, Connector and/or Turn Arounds - 35 Feet Width
Taxiway Lights	MITL
Primary Approach Type	Non-Precision
Primary Approach Lighting System (ALS)	Not an Objective
Visual Aids	PAPI or VASI – Both Runway Ends REILs or ALS – Both Runway Ends Beacon Lighted Wind Cone
Wind Coverage	≥ 95% Coverage
Runway Safety Area (RSA)	Standard RSA on All Paved Runways
LANDSIDE	
Weather Reporting	AWOS/ASOS
Terminal	Terminal
Perimeter Fencing	Wildlife Fence
Hangars	75% of Based Aircraft in Hangars
Lighted Hangar Area	Suggested
Paved Auto Parking	Suggested
SERVICES	
FBO	Suggested
Fuel	100LL
Ground Transportation	Courtesy Car
Pilot Lounge/Planning Room	Suggested
Public Restrooms	Public Restrooms – 24/7
Food	Vending Machines Suggested
Public Phone	Public Phone – 24/7
Aircraft Maintenance	Minor Airframe & Powerplant (A & P)
Aircraft Deicing	Not an Objective
Aircraft Deicing Containment System	Not an Objective
ADMINISTRATION	
Land Use Protection Plan	On Record with Aeronautics
Current Master Plan	On Record with Aeronautics and Less Than 10 Years Old
Current Airport Layout Plan	On Record with Aeronautics and Less Than 5 Years Old
Minimum Standards	On Record with Aeronautics
Pavement Management Plan	On Record with Aeronautics
Current Noise Contour Map	On Record with Aeronautics and Less Than 10 Years Old
Legislative Liaison	Legislative Liaison
Airport Manager	Airport Manager
RPZ Ownership	Fee/Easement Ownership of All Existing RPZs

Note: Objectives listed are essential unless noted otherwise

Table 5-4
Local Paved Airports - Facility and Service Objectives

AIRSIDE	
ARC	B-II
Primary Runway Length	Maintain Existing Length
Primary Runway Width	75 Feet
Primary Runway Lights	MIRL
Primary Runway Strength	12,500 lbs Single
Taxiway	Maintain Existing Taxiway
Taxiway Lights	Reflectors (MITL Suggested)
Primary Approach Type	Not an Objective
Primary Approach Lighting System (ALS)	Not an Objective
Visual Aids	PAPI – One Runway End (Both Ends Suggested) REIL or ALS – One Runway End (Both Ends Suggested) Beacon Lighted Wind Cone
Wind Coverage	≥ 95% Coverage Suggested
Runway Safety Area (RSA)	Standard RSA on All Paved Runways
LANDSIDE	
Weather Reporting	AWOS/ASOS
Terminal	Not an Objective
Perimeter Fencing	Wildlife Fence
Hangars	50% of Based Aircraft in Hangars
Lighted Hangar Area	Not an Objective
Paved Auto Parking	Suggested
SERVICES	
FBO	Suggested
Fuel	Suggested
Ground Transportation	Suggested
Pilot Lounge/Planning Room	Suggested
Public Restrooms	Suggested
Food	Not an Objective
Public Phone	Public Phone – 24/7
Aircraft Maintenance	Not an Objective
Aircraft Deicing	Not an Objective
Aircraft Deicing Containment System	Not an Objective
ADMINISTRATION	
Land Use Protection Plan	On Record with Aeronautics
Current Master Plan	Suggested On Record and Less Than 15 Years Old
Current Airport Layout Plan	On Record with Aeronautics and Less Than 10 Years Old
Minimum Standards	Suggested
Pavement Management Plan	On record with Aeronautics
Current Noise Contour Map	Suggested
Legislative Liaison	Suggested
Airport Manager	Airport Manager
RPZ Ownership	Suggested

Note: Objectives listed are essential unless noted otherwise

Table 5-5
Local Non-Paved Airports - Facility and Service Objectives

AIRSIDE	
ARC	A-II
Primary Runway Length	Maintain Existing Length
Primary Runway Width	Maintain Existing Width
Primary Runway Lights	Runway Edge Markers
Primary Runway Strength	Not an Objective
Taxiway	Maintain Existing Taxiway
Taxiway Lights	Not an Objective
Primary Approach Type	Not an Objective
Primary Approach Lighting System (ALS)	Not an Objective
Visual Aids	PAPI – Not an Objective REIL or ALS – Not an Objective Beacon – Not an Objective Wind Cone
Wind Coverage	≥ 95% Coverage Suggested
Runway Safety Area (RSA)	Not an Objective
LANDSIDE	
Weather Reporting	Not an Objective
Terminal	Not an Objective
Perimeter Fencing	Field Fence (4-Strand Barbed Wire)
Hangars	50% of Based Aircraft in Hangars
Lighted Hangar Area	Not an Objective
Paved Auto Parking	Not an Objective
SERVICES	
FBO	Not an Objective
Fuel	Not an Objective
Ground Transportation	Not an Objective
Pilot Lounge/Planning Room	Not an Objective
Public Restrooms	Suggested
Food	Not an Objective
Public Phone - 24/7	Suggested
Aircraft Maintenance	Not an Objective
Aircraft Deicing	Not an Objective
Aircraft Deicing Containment System	Not an Objective
ADMINISTRATION	
Land Use Protection Plan	Not an Objective
Current Master Plan	Suggested On Record and Less Than 15 Years Old
Current Airport Layout Plan	Suggested On Record and Less Than 10 Years Old
Minimum Standards	Not an Objective
Pavement Management Plan	Not an Objective
Current Noise Contour Map	Not an Objective
Legislative Liaison	Not an Objective
Airport Manager	Suggested
RPZ Ownership	Suggested

Note: Objectives listed are essential unless noted otherwise

5.2 Airport Layout Plan

An ALP shows the existing and planned facilities at an airport; these facilities include runways, taxiways, terminal areas and building areas. Also depicted on an ALP are the existing and planned approaches to each runway, the FAA Part 77 Surfaces and any associated obstructions, existing and planned airport property ownership, and surrounding land uses. It is important that an ALP be current and shows the existing and planned facilities, airspace obstructions, property ownership, and land use. **Table 5-6** shows the ALP objectives by classification of airport.

Table 5-6
Airport Layout Plan Objective

Classification	Objective
Commercial Service Airports	Less than 5 years old and on record with Aeronautics
Business Airports	Less than 5 years old and on record with Aeronautics
Intermediate Airports	Less than 5 years old and on record with Aeronautics
Local Paved Airports	Less than 10 years old and on record with Aeronautics
Local Non-Paved Airports	Less than 10 years old and on record with Aeronautics Suggested

In order for an airport to be eligible to receive state funding, Aeronautics must have on record an approved and current ALP.

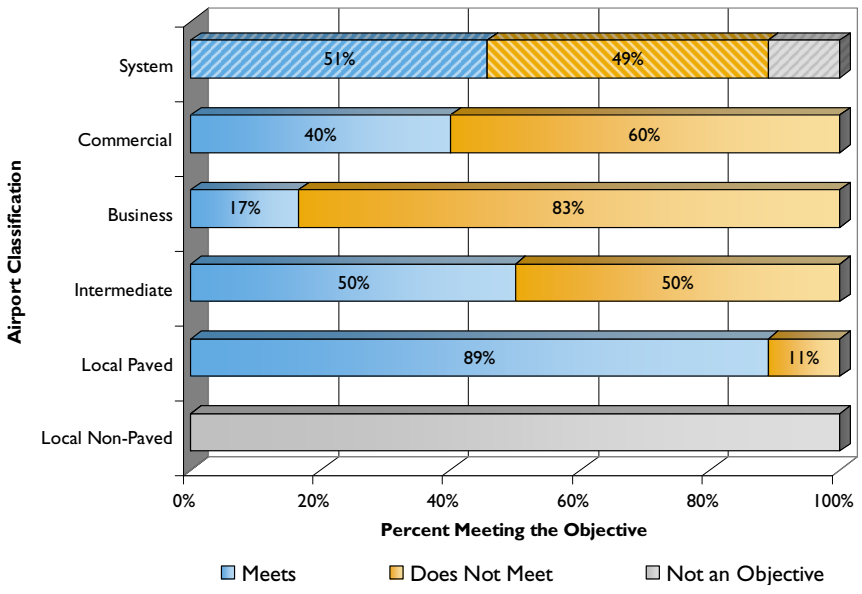
5.2.2 System Performance – Airport Layout Plan

Table 5-7 lists airport not meeting the objective. Eleven of the airports not meeting the objective currently have an ALP update in progress. Fifty-one percent of the airports meet the ALP objective as shown in **Chart 5-1**.

Table 5-7
Airport Layout Plan Objective - Airports Not Meeting Objective

Airport	Existing	Plan Needed to Meet Objective
Gillette	ALP Greater than 5 years old*	Update ALP
Jackson	ALP Greater than 5 years old*	Update ALP
Laramie	ALP Greater than 5 years old*	Update ALP
Riverton	ALP Greater than 5 years old*	Update ALP
Rock Springs	ALP Greater than 5 years old	Update ALP
Worland	ALP Greater than 5 years old	Update ALP
Afton	ALP Greater than 5 years old	Update ALP
Douglas	ALP Greater than 5 years old	Update ALP
Evanston	ALP Greater than 5 years old*	Update ALP
Pinedale	ALP Greater than 5 years old*	Update ALP
Saratoga	ALP Greater than 5 years old	Update ALP
Guernsey	ALP Greater than 5 years old*	Update ALP
Lander	ALP Greater than 5 years old*	Update ALP
Powell	ALP Greater than 5 years old*	Update ALP
Rawlins	ALP Greater than 5 years old*	Update ALP
Torrington	ALP Greater than 5 years old	Update ALP
Cokeville	None*	Update ALP
Note: *ALP Update in progress		

Chart 5-1
Airport Layout Plan Objective - System Performance



5.3 Airport Reference Codes

The ARCs set for each classification of airports are minimum objectives. The actual ARC for each airport should be determined at the master planning level and should be for the most demanding or "critical" aircraft using or forecast to use an airport. To design a facility to accommodate the demands of a critical aircraft, the activity of this aircraft should be approximately 500 annual operations. This activity can be either existing or future anticipated use. The minimum objectives for ARC by classification of airport are presented in the following sections.

5.3.1 Commercial Service Airports

Commercial Service Airports are intended to serve major populations, economic centers and areas of tourism providing a connection to national and global economies; they are designed to accommodate commercial air service and business general aviation activity consistent with user demand.

It was determined that in order to meet current and future demands, Commercial Service Airports should be designed to at least ARC C-II standards. Some Commercial Service Airports have a need for higher ARCs which should be accommodated and planned for in the Airport Master Plan. ARC C-II allows the Commercial Service Airports to accommodate the existing air carrier aircraft currently serving Wyoming and should be adequate to accommodate future changes in the airline fleet.

ARC C-II accommodates aircraft with approach speeds of 121 knots or more but less than 141 knots and wingspans of 49 feet up to but not including 79 feet. A few examples of aircraft types included in this ARC include the popular business sized jets including the Lear Jets 35 and 60, Falcon 50 and Gulfstreams 100, 150, and 200. The commercial service aircraft currently serving the State of Wyoming and their associated ARCs are shown in **Table 5-8.**

Table 5-8
2008 Commercial Service Aircraft Operating in Wyoming

Aircraft Identifier	Description	Aircraft Reference Code (ARC)
BE1	Beech 1900D	B-II
CRJ	CRJ 200	C-II
CRJ7[1]	CRJ 700	C-II
DH2	Dash 8-200	B-II
EM2	Embraer Brasilia	B-II
B757[1]	Boeing 757	C-IV
A319[1]	Airbus 319	C-III
Note: [1] Used only at Jackson Hole Airport for seasonal service		

Source: Official Airline Guide, Boeing (www.boeing.com), *Jane's All the World's Aircraft* (2004-2005)

5.3.2 Business Airports

Business Airports are intended to serve multi-county areas and economic centers providing a connection to state and national economies; they are intended to accommodate larger business jet activity and support tourism and recreational demand.

To meet current and future demands of a Business Airport and to aid in support of a multi-county economy, ARC C-II design standards should also be the minimum design standards applied to this classification of airport. This standard allows Business Airports to accommodate the popular business sized jet aircraft listed in **Table 3-5**. As with the Commercial Service Airports, some Business Airports may have a need for increased ARCs which should be accommodated and planned for locally through the airport master planning process.

5.3.3 Intermediate Airports

Intermediate Airports are intended to serve counties and medium to small communities to support local economies and accommodate medium to small business jet activity and recreational users.

To meet this intended use, an ARC of B-II has been assigned to Intermediate Airports. This design standard accommodates smaller business jets such as Cessna Citation 500 series and turbo-props such as the Beech King Air Series which are commonly seen at these airports.

5.3.4 Local Airports

Local Airports are intended to serve small communities and have the basic facilities to accommodate business, training, and recreational users and support emergency use.

A minimum design standard of ARC B-II has been established for Local Paved Airports. For Local Non-Paved Airports, an ARC of A-II has been established as the objective. ARC A-II aircraft are generally characterized by small single or twin engine, piston aircraft.

5.3.4.1 System Performance – ARC

Table 5-9 summarizes the ARC objective for each airport classification.

Table 5-9
ARC Objective

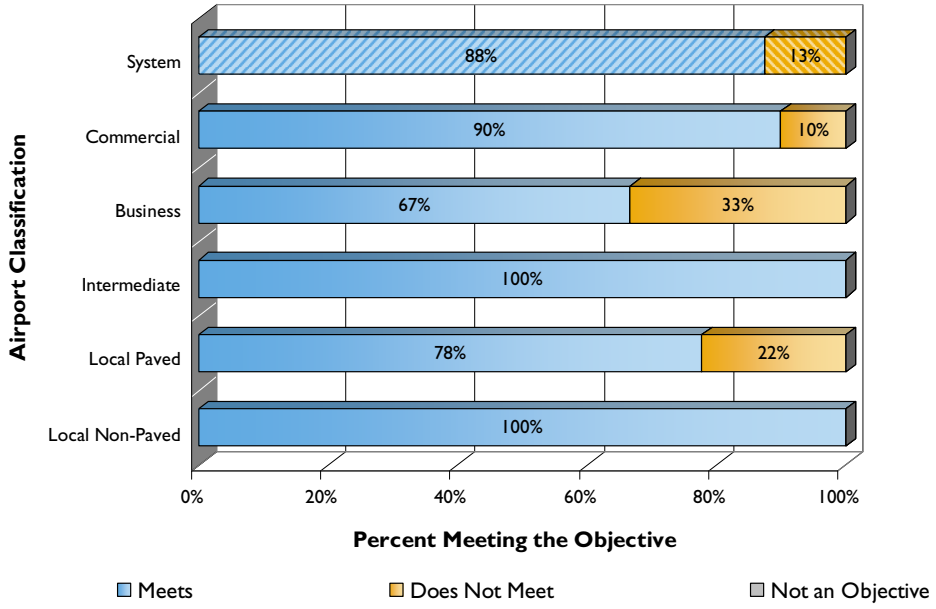
Classification	ARC Objective
Commercial Service Airports	C-II
Business Airports	C-II
Intermediate Airports	B-II
Local Paved Airports	B-II
Local Non-Paved Airports	A-II

Only five airports in the Wyoming Aviation System do not meet the minimum ARC objective and are shown in **Table 5-10.** Eighty-eight percent of the airports in Wyoming meet the ARC objective as shown in **Chart 5-2.**

Table 5-10
ARC Objective - Airports Not Meeting Objective

Airport	Existing ARC	ARC Objective
Worland	B-II	C-II
Douglas	B-II	C-II
Evanston	B-II	C-II
Cokeville	B-I	B-II
Thermopolis	B-I	B-II

Chart 5-2
ARC Objective - System Performance



5.4 Primary Runway Approach Lighting Systems

There are several approach lighting systems used to augment the selected instrument approach. These systems provide visual guidance to the approaching pilot to aid in runway alignment and lead-in guidance as well as roll guidance. These systems typically include a MALS, a MALSR , and ODALS.

The MALS consists of an array of lead-in lights extending outward from the threshold of the runway in the direction of the approaching aircraft and on the extended runway centerline. The MALS function to provide lead-in visual guidance to the approaching pilot as well as some degree of roll guidance. This system is typically installed in conjunction with non-precision instrument approaches.

The MALSR is similar to the MALS in that it also provides lead-in visual guidance but this system has additional sequenced flashing lights to provide a greater degree of roll guidance. The MALSR is typically installed in conjunction with a precision instrument approach.

The ODALS system also extends outward from the runway threshold in the approach and on the runway centerline and provides visual guidance for non-precision instrument runways. The ODALS system is used for straight-in and circling approaches and does not provide roll guidance. Although the ODALS system is an approved and safe technology, it is no longer manufactured.

Table 5-11 shows the primary runway approach lighting system objective for each classification.

Table 5-11
Primary Runway Approach Lighting System Objective

Classification	Objective
Commercial Service Airports	MALSR
Business Airports	MALSR Suggested
Intermediate Airports	Not an Objective
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

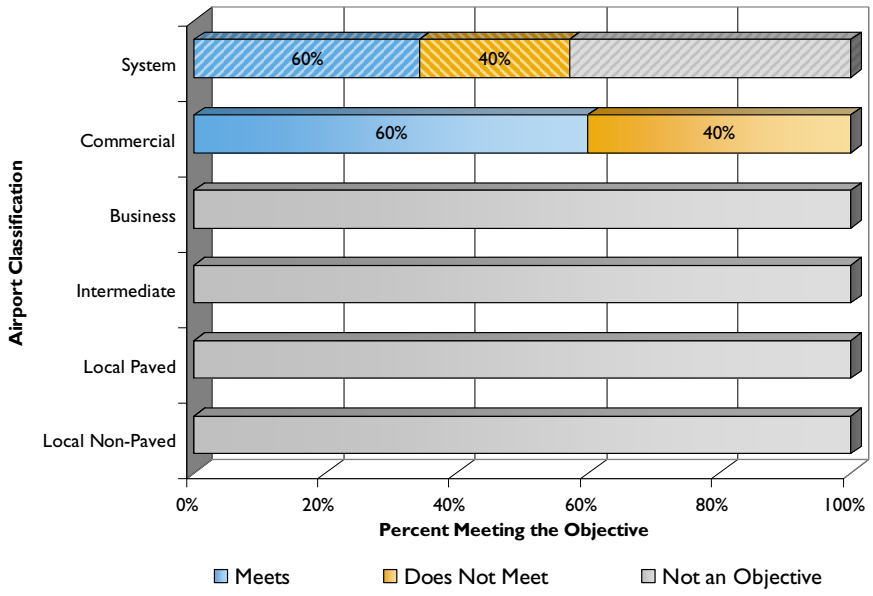
5.4.1 System Performance – Primary Runway Approach Lighting Systems

Airports not meeting the objective are shown in **Table 5-12**. The primary runway approach lighting system is an objective for only the Commercial Service Airports. As shown in **Chart 5-3**, 60% of these airports meet the approach lighting objective.

Table 5-12
Primary Runway Approach Lighting System - Airports Not Meeting Objective

Airport	Existing Approach Lighting	Approach Lighting Objective
Cody	NONE	MALSR
Jackson	MALS	MALSR
Laramie	NONE	MALSR
Worland	NONE	MALSR

Chart 5-3
Primary Runway Approach Lighting System Objective - System Performance



5.5 Primary Runway Instrument Approach Type

Inclement weather can have an impact on the usability of any aviation facility. Providing instrument approaches at an airport supplies pilots with a tool allowing for greater ability to land and takeoff during these times. Pilots either operate under Visual Flight Rules (VFR) or Instrument Flight Rules (IFR).

There are three main types of approaches to an airport and they include: visual, non-precision and precision approaches. Visual approaches are completed under the visual guidance of the pilot whereas non-precision instrument approach provides course guidance to the facility, and a precision instrument approaches provides both course and vertical guidance. For precision and non-precision approaches, varying combinations of approach lighting systems, runway edge lighting and other airport facilities can lower the visibility minimums of a given approach. **Table 5-13** lists the objectives by classification for approach type.

Table 5-13
Primary Runway Instrument Approach Type Objective

Classification	Approach Objective
Commercial Service Airports	Precision
Business Airports	Non-Precision
Intermediate Airports	Non-Precision
Local Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

5.5.1 System Performance – Primary Runway Instrument Approach Type

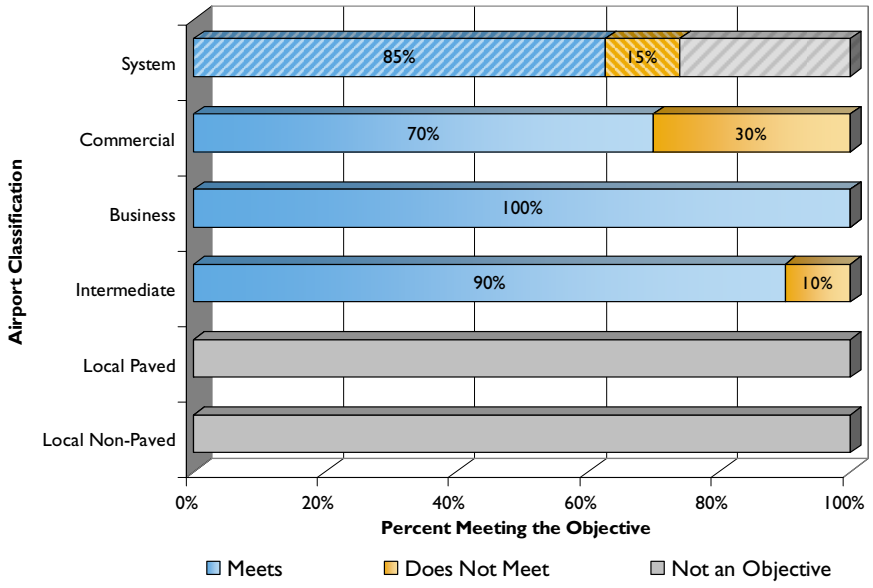
Four airports (three Commercial and one Intermediate) do not meet the primary runway instrument approach type objective. These airports are shown in **Table 5-14**. Eighty-five percent of the airports in the system meet the primary instrument approach type objective as shown in **Chart 5-4**.

Table 5-14
Primary Runway Instrument Approach Type Objective - Airports Not Meeting Objective

Airport	Existing Approach	Approach Objective
Cody	Non-precision	Precision
Laramie*	Non-precision	Precision
Worland**	Non-precision	Precision
Lander	Visual	Non-Precision

Note: *Laramie has a precision approach to the secondary runway.
**Does not meet FAA runway/taxiway separation standards for a precision approach with visibility minimums lower than ¾ statute miles

Chart 5-4
Primary Runway Instrument Approach Type Objective - System Performance



5.6 Paved Auto Parking

Paved auto parking is essential at Commercial Service and Business Airports; it is suggested at Intermediate and Local Airports. Paved auto parking areas help to reduce dust and the potential for foreign object debris (FOD) from being transferred onto airport aprons, hangar areas and other surfaces by vehicle traffic providing for a safer airport environment. Paved auto parking also provides more accessible access to airport facilities, helping to provide accessible transportation options to the Wyoming population.

The objectives for paved auto parking are shown in **Table 5-15**.

Table 5-15
Paved Auto Parking Objective

Classification	Objective
Commercial Service Airports	Essential
Business Airports	Essential
Intermediate Airports	Suggested
Local Paved Airports	Suggested
Local Non-Paved Airports	Not an Objective

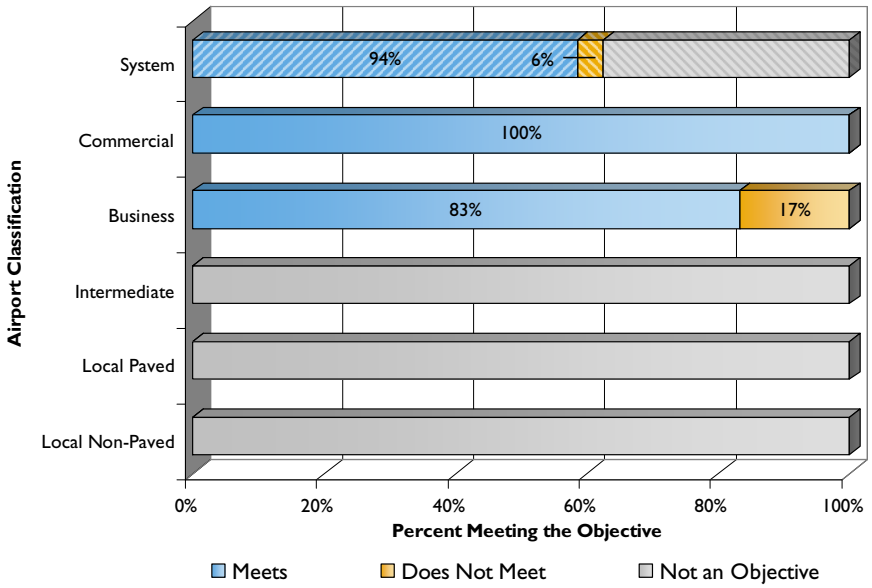
5.6.1 System Performance – Paved Auto Parking

The one airport not meeting this objective is shown in **Table 5-16**. Ninety-four percent of airports in the system meet the paved auto parking objective. System performance of the objective is shown in **Chart 5-5**.

Table 5-16
Paved Auto Parking Objective - Airports Not Meeting Objective

Airport	Existing Paved Auto Parking	Paved Auto Parking Needed to Meet Objective
Greybull	Unpaved	Essential

Chart 5-5
Paved Auto Parking Objective - System Performance



5.7 Deicing

A deicing system is generally operated by the airport, an airline or an FBO. Deicing systems aid in allowing aircraft to fly during inclement weather conditions providing more reliable transportation options. Ice accumulation on an aircraft's wings and other surfaces is a safety hazard. Deicing facilities can also aid in attracting transient airport users, especially those traveling for business purposes.

Deicing containment systems are important in order to capture deicing fluid, a glycol substance, and prevent it from entering the ground and nearby water sources. Glycol runoff is harmful to nature as it uses oxygen while it breaks down.

The deicing objective for each classification is shown in **Table 5-17**.

Table 5-17
Deicing & Deicing Containment System Objectives

Classification	Objective
Commercial Service Airports	Deicing System
	Containment System
Business Airports	Deicing System
	Containment System – Suggested
Intermediate Airports	Not an Objective
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

5.7.1 System Performance – Deicing

Eighty-one percent of airports in the system meet both of the deicing system objectives. While all but one Commercial Service Airport have aircraft deicing, many do not have a deicing containment system. Two of the Business Airports do not have a deicing system. **Table 5-18** shows the airports which do not meet the deicing system objective for their respective classification. System performance of this objective is shown in **Charts 5-6** and **5-7**.

Table 5-18
Deicing Objective - Airports Not Meeting Objective

Airport	Existing Facility	Facilities Needed to Meet Objective
Cody	No Containment System for Aircraft Deicing	Aircraft Deicing with Containment System
Jackson	No Containment System for Aircraft Deicing	Aircraft Deicing with Containment System
Laramie	No Containment System for Aircraft Deicing	Aircraft Deicing with Containment System
Riverton	No Containment System for Aircraft Deicing	Aircraft Deicing with Containment System
Rocks Springs	No Containment System for Aircraft Deicing	Aircraft Deicing with Containment System
Worland	No Aircraft Deicing	Aircraft Deicing with Containment System
Douglas	No Aircraft Deicing	Aircraft Deicing Containment System Suggested
Greybull	No Aircraft Deicing	Aircraft Deicing Containment System Suggested

Chart 5-6
Deicing System Objective - System Performance

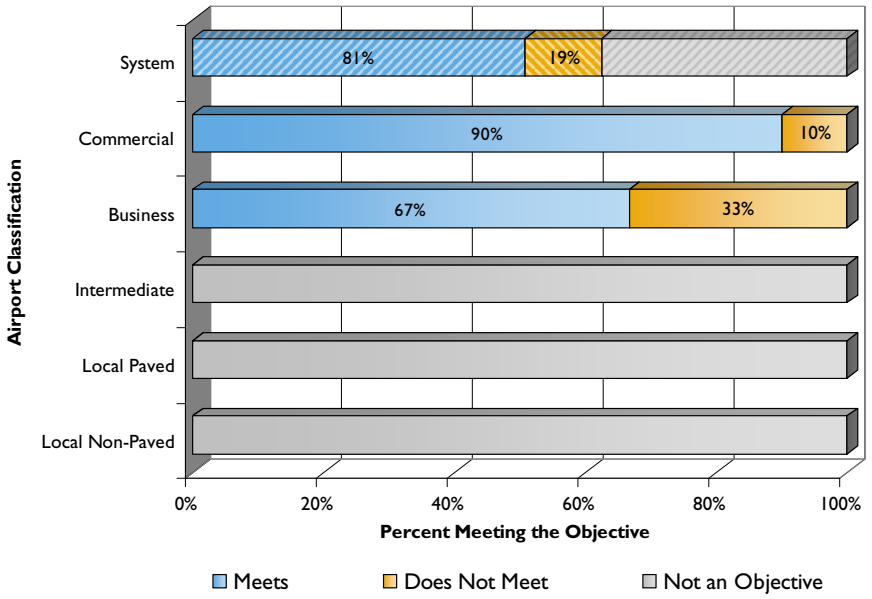
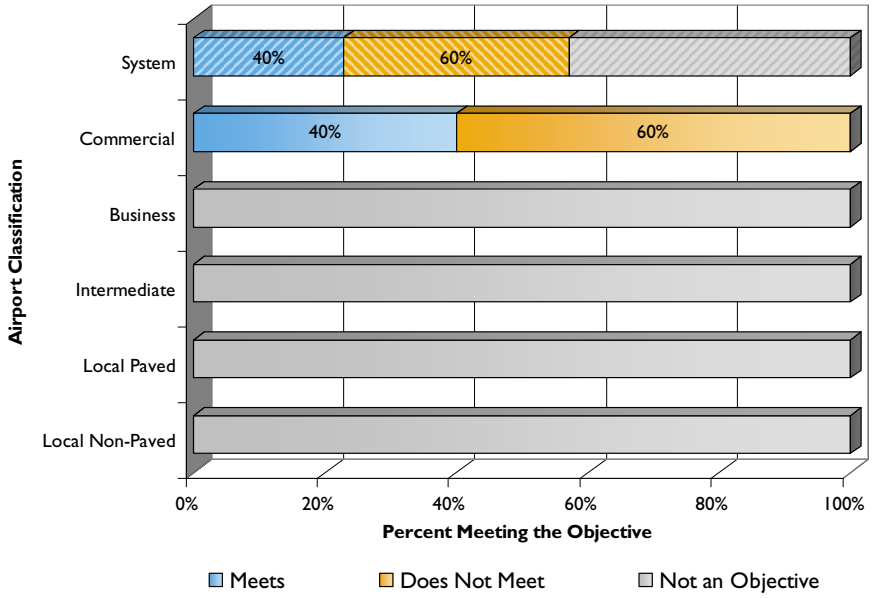


Chart 5-7
Deicing Containment Objective- System Performance



5.8 Perimeter Fencing

For security and wildlife protection of the airport facility, each airport in the Wyoming Aviation System should have perimeter fencing. This is especially critical at the Commercial Service, Business and Intermediate Airports. Perimeter fencing can be described as *Security, Wildlife* or *Field Fence.*

Security Fencing is nine-foot-high chain-link fencing. This is typically installed at Commercial Service Airports. Wildlife Fencing is six to eight foot high woven fence designed to keep wildlife out of the airport environment. Field Fence is four-strand barbed wire fence functioning to physically delineate the airport property.

The perimeter fencing objectives are shown in **Table 5-19**.

Table 5-19
Perimeter Fencing Objective

Classification	Objective
Commercial Service Airports	Security or Wildlife Fence
Business Airports	Wildlife Fence
Intermediate Airports	Wildlife Fence
Local Paved Airports	Wildlife Fence
Local Non-Paved Airports	Field Fence

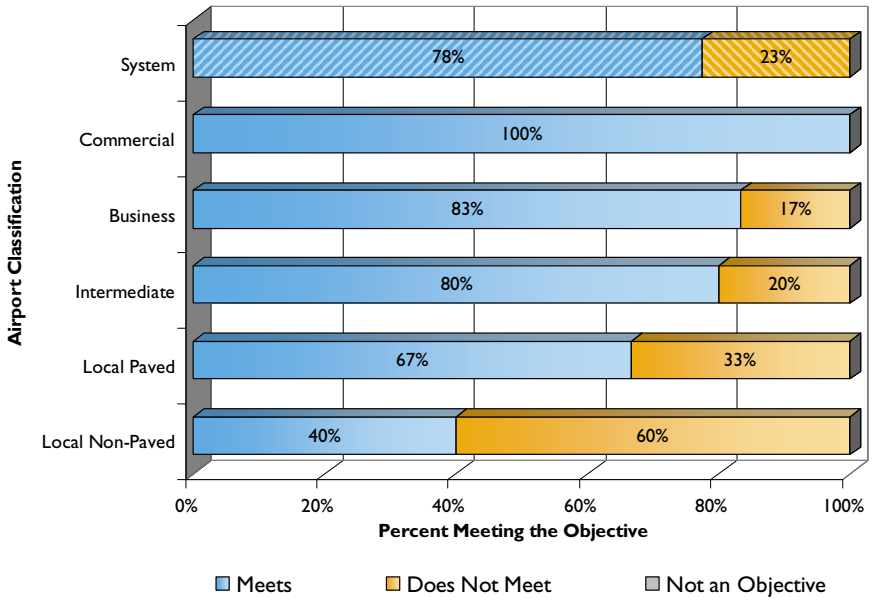
5.8.1 System Performance – Perimeter Fencing

Airports not meeting the perimeter fencing objectives are shown in **Table 5-20**. Seventy-eight percent of the airports meet the perimeter fencing objective as shown in **Chart 5-8**.

Table 5-20
Perimeter Fencing Objective - Airports Not Meeting Objective

Airport	Existing Fencing	Perimeter Fencing Needed to Meet Objective
Afton	Field Fence	Wildlife Fence
Guernsey	Security Fence – Not Perimeter	Wildlife Fence
Wheatland	Field Fence	Wildlife Fence
Cokeville	Field Fence	Wildlife Fence
Cowley	Field Fence	Wildlife Fence
Glendo (non-paved)	No Fence	Wildlife Fence
Green River (non-paved)	Field Fence – Not Perimeter	Field Fence
Medicine Bow (non-paved)	No Fence	Field Fence
Pine Bluffs	Field Fence	Wildlife Fence

Chart 5-8
Perimeter Fencing Objective - System Performance



5.9 Fixed Based Operator

An FBO is an aviation business located at an airport. An FBO can serve in many different capacities and offer many different combinations of services. Typically, an FBO offers some combination of flight instruction and flight ground school, fuel services, pilot flight planning facilities, lounge, restrooms, phone, food, conference centers, aircraft rental and sales, aircraft maintenance and inspection, charter operations, deicing services, etc. The availability of these services to the flying community aids in attracting pilots to the airport thereby adding to the economic viability of the airport. These amenities not only aid in attracting transient pilots but are generally seen as attractants for pilots and business when selecting which airport to frequent or base their aircraft.

Local influence is a key component to attracting and retaining an FBO. Therefore, this service objective is "suggested" at each airport in the system, with the exception of Local Non-Paved, as its success requires that an FBO is available to operate at the airport and that local conditions (lease agreements, facilities, adequate client base) are sufficient for an FBO to be successful.

If an FBO is not present on an airport, the sponsor may offer basic services such as a small terminal building, restrooms, phone, fuel and ground transportation.

5.10 Food Choices

It is desired that Commercial Service, Business and Intermediate Airports have food choices available to airport users. For Commercial Service Airports it is suggested that each airport have a restaurant. A restaurant is important for both business and leisure travelers using commercial service for air travel. Restaurants also serve as a destination or point of interest drawing users to the airport. At Business and Intermediate Airports, it is suggested that each airport have vending services available to airport users. These services typically include beverages and small snacks. Food is not an objective for all Local Airports. The food objectives are shown in **Table 5-21**.

Table 5-21
Food Objective

Classification	Food Objective
Commercial Service Airports	Restaurant Suggested
Business Airports	Vending Machines Suggested
Intermediate Airports	Vending Machines Suggested
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

5.10.1 System Performance – Food Objective

Since it is suggested and not essential that Commercial Service, Business and Intermediate Airports have food available for airport users, this objective is not analyzed in the system performance.

5.11 Fuel

It is essential that Commercial Service and Business Airports offer both Jet A and 100LL fuel to airport users. Jet A fuel is important to these two classifications of airports because commercial aircraft and a large majority of the business aircraft frequently using these airports require Jet A fuel. Smaller general aviation aircraft often use 100LL fuel. Fuel services and facilities at an airport, especially when owned by the airport sponsor, add to the economic viability of an airport.

The fuel objective for each classification is presented in **Table 5-22**.

Table 5-22
Fuel Objective

Classification	Objective
Commercial Service Airports	Jet A & 100LL
Business Airports	Jet A & 100LL
Intermediate Airports	100LL
Local Paved Airports	Fuel Suggested
Local Non-Paved Airports	Not an Objective

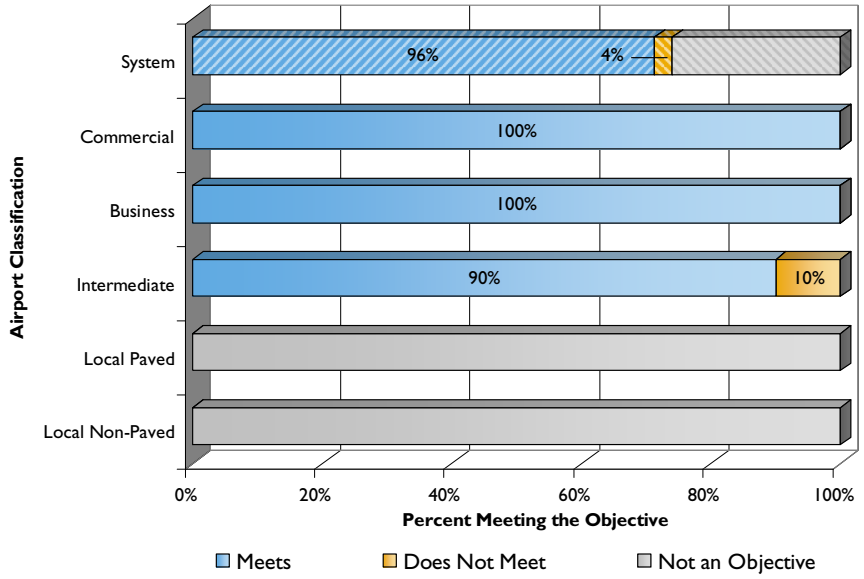
5.11.1 System Performance – Fuel

Only one airport, an Intermediate Airport, does not meet the objective and is shown in **Table 5-23**. Ninety-six percent of the airports meet the fuel objective. System performance of this objective is shown in **Chart 5-9**.

Table 5-23
Fuel Objective - Airports Not Meeting Objective

Airport	Existing Fueling	Fuel Needed to Meet Objective
Wheatland	None	100LL

Chart 5-9
Fuel Objective - System Performance



5.12 Ground Transportation

Adequate ground transportation is necessary to connect the flying community with the city or region the airport serves. Adequate ground transportation can be accomplished with on-airport car rental facilities, an airport courtesy car or a combination thereof.

Ground transportation objectives are presented in **Table 5-24.**

Table 5-24
Ground Transportation Objective

Classification	Objective
Commercial Service Airports	On-Airport Car Rental Facilities
Business Airports	Courtesy Car
Intermediate Airports	Courtesy Car
Local Paved Airports	Suggested
Local Non-Paved Airports	Not an Objective

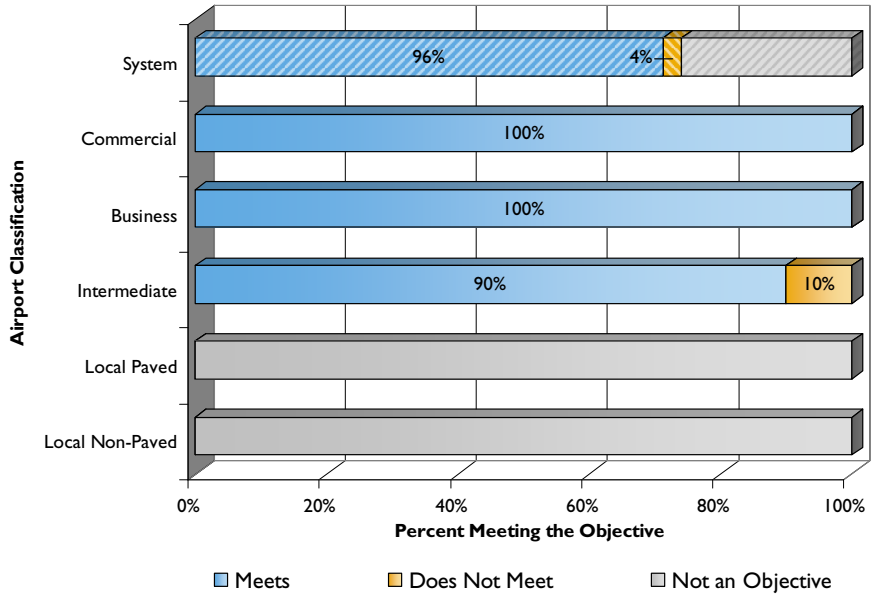
5.12.1 System Performance – Ground Transportation

Ninety-six percent of airports meet the ground transportation objective. One Intermediate Airport had no ground transportation available to airport users and does not meet the objective. The one airport not meeting the objective is listed in **Table 5-25** and system performance of the objective is shown in **Chart 5-10**.

Table 5-25
Ground Transportation Objective - Airports Not Meeting Objective

Airport	Existing Ground Transportation	Ground Transportation Needed to Meet Objective
Wheatland	None	Courtesy Car

Chart 5-10
Ground Transportation Objective - System Performance



5.13 Hangars

Hangars provide shelter for aircraft. Many Wyoming aircraft owners desire to hangar their aircraft due to the severe winter weather experienced in the region. Hangars are also desirable for transient pilots who prefer to hangar their aircraft during overnight stays. Having hangars available aids in attracting transient pilots and corporate travelers and are generally seen as attractants for pilots and business when selecting which airport to frequent or base their aircraft. **Table 5-26** describes the hangar objectives by airport classification.

Table 5-26
Hangar Objective

Classification	Objective
Commercial Service Airports	100% of Based Aircraft
Business Airports	100% of Based Aircraft
Intermediate Airports	75% of Based Aircraft
Local Paved Airports	50% of Based Aircraft
Local Non-Paved Airports	50% of Based Aircraft

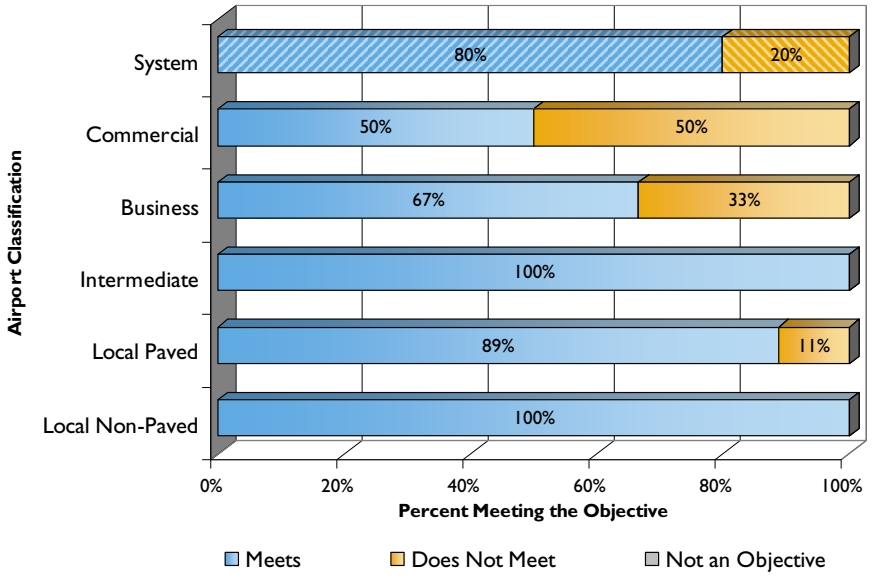
5.13.1 System Performance - Hangar

Individual airports not meeting the objective are listed in **Table 5-27**. Eighty percent of airports meet the hangar objective as shown in **Chart 5-11**.

Table 5-27
Hangar Objective - Airports Not Meeting Objective

Airport	Existing Based Aircraft in Hangars	Percent of Based Aircraft in Hangars Needed to Meet Objective
Cheyenne	50% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Cody	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Riverton	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Rocks Springs	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Sheridan	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Greybull	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Pinedale	75% of Based Aircraft in Hangars	100% of Based Aircraft in Hangars
Lusk	Unknown	50% of Based Aircraft in Hangars

Chart 5-11
Hangar Objective - System Performance



5.14 Lighted Hangar Area

It is important to have safe and secure airports for airport users and the general public. Lighted hangar areas help to provide this safe and secure environment. In addition, lighted hangar areas can also result in lower insurance premiums for based aircraft and hangar owners. Lighted hangar areas can be achieved through exterior lights above hangar doors or through light posts installed throughout a hangar area. It is essential that Commercial Service and Business Airports have lighted hangar areas. It is suggested that Intermediate Airports have lighted hangar areas. A lighted hangar area is not an objective for Local Airports.

The lighted hangar area objective by classification is presented in **Table 5-28**.

Table 5-28
Lighted Hangar Area Objective

Classification	Objective
Commercial Service Airports	Lighted Hangar Area
Business Airports	Lighted Hangar Area
Intermediate Airports	Suggested
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

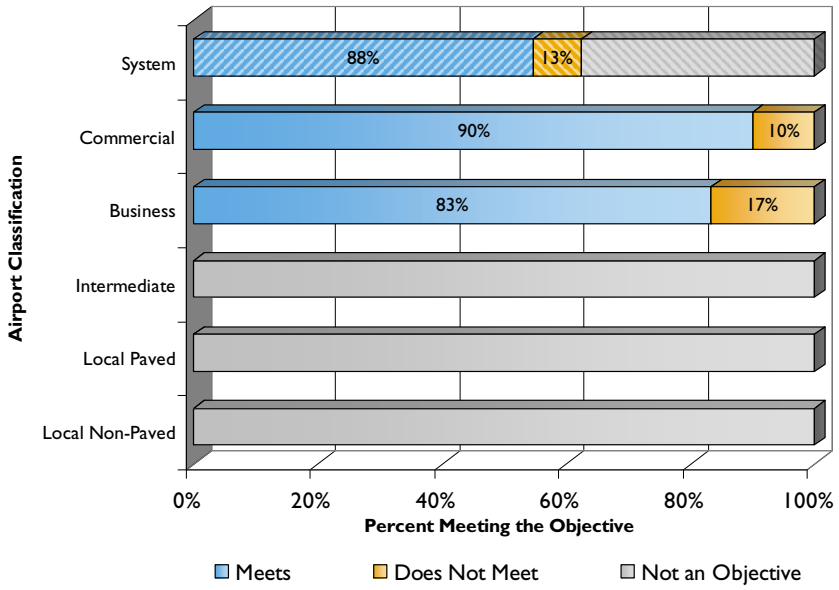
5.14.1 System Performance – Lighted Hangar Area

Two airports (one Commercial Service and one Business) do not meet the objective and are listed in **Table 5-29**. Eighty-eight percent of airports meet the lighted hangar area objective. **Chart 5-12** portrays the system performance of this objective.

Table 5-29
Lighted Hangar Area Objective - Airports Not Meeting Objective

Airport	Existing Lighting	Facility Needed to Meet Objective
Cheyenne	No Lighting	Add Lighting
Saratoga	No Lighting	Add Lighting

Chart 5-12
Lighted Hangar Area Objective - System Performance



5.15 Land Use Protection Plan

A Land Use Protection Plan is a local ordinance controlling the height of structures and objects of natural growth and otherwise regulating the use of the property within the vicinity of the airport through the removal and control of such hazards. Airport hazards endanger the lives and property of users and property or occupants of the land in the airport vicinity. In addition, the hazard can reduce the size of the area available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment.

It is essential that all airports in the system with paved runways have a Land Use Protection Plan on record with Aeronautics as shown in **Table 5-30**.

Table 5-30
Land Use Protection Plan Objective

Classification	Objective
Commercial Service Airports	On record with Aeronautics
Business Airports	On record with Aeronautics
Intermediate Airports	On record with Aeronautics
Local Paved Airports	On record with Aeronautics
Local Non-Paved Airports	Not an Objective

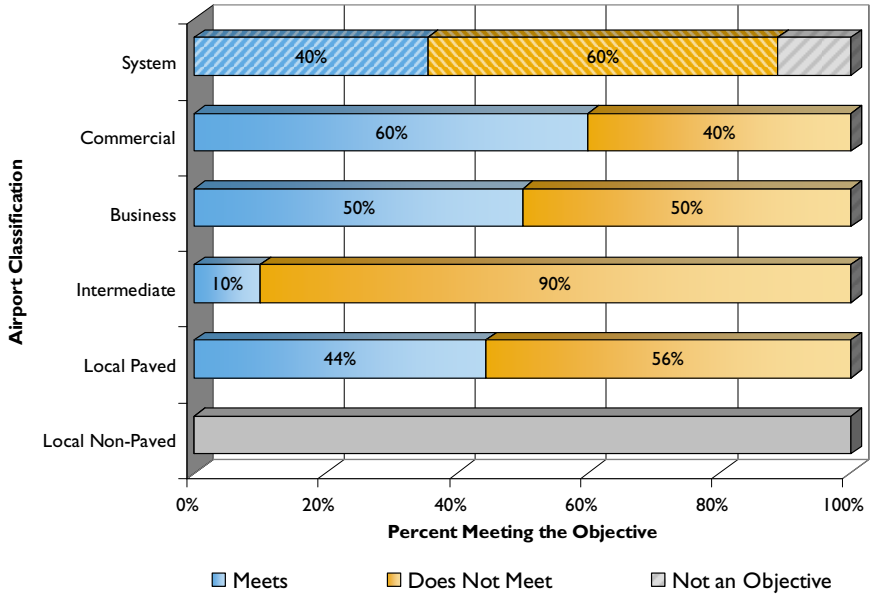
5.15.1 System Performance – Land Use Protection Plan

Airports not meeting the objective are listed in **Table 5-31**. Forty percent of the airports meet the Land Use Protection Plan objective as shown in **Chart 5-13**.

Table 5-31
Land Use Protection Plan Objective - Airports Not Meeting Objective

Airport	Existing	Plan Needed to Meet Objective
Casper	None	Complete Plan and File with Aeronautics
Jackson	None	Complete Plan and File with Aeronautics
Laramie	None	Complete Plan and File with Aeronautics
Worland	None	Complete Plan and File with Aeronautics
Greybull	None	Complete Plan and File with Aeronautics
Pinedale	None	Complete Plan and File with Aeronautics
Saratoga	None	Complete Plan and File with Aeronautics
Big Piney	None	Complete Plan and File with Aeronautics
Buffalo	None	Complete Plan and File with Aeronautics
Guernsey	None	Complete Plan and File with Aeronautics
Lander	None	Complete Plan and File with Aeronautics
Newcastle	None	Complete Plan and File with Aeronautics
Powell	None	Complete Plan and File with Aeronautics
Rawlins	None	Complete Plan and File with Aeronautics
Torrington	None	Complete Plan and File with Aeronautics
Wheatland	None	Complete Plan and File with Aeronautics
Cowley	None	Complete Plan and File with Aeronautics
Dixon	None	Complete Plan and File with Aeronautics
Fort Bridger	None	Complete Plan and File with Aeronautics
Lusk	None	Complete Plan and File with Aeronautics
Thermopolis	None	Complete Plan and File with Aeronautics

Chart 5-13
Land Use Protection Plan Objective - System Performance



5.16 Legislative Liaison

A legislative liaison is someone who monitors legislative proceedings and lobbies on behalf of the airport and the airport issues impacting all airports in the Wyoming system. In many cases, the airport manager is designated the legislative liaison while at other airports the sponsor may designate another individual. It is important to designate an individual as an airport's legislative liaison in order to have someone who can contact legislators when legislation or actions which impact airports and aviation are under consideration. It is also important that the legislative liaison for each airport is on record with Aeronautics.

The legislative liaison objectives by classification are shown in **Table 5-32**.

Table 5-32
Legislative Liaison Objective

Classification	Objective
Commercial Service Airports	Legislative Liaison
Business Airports	Legislative Liaison
Intermediate Airports	Suggested
Local Paved Airports	Suggested
Local Non-Paved Airports	Not an Objective

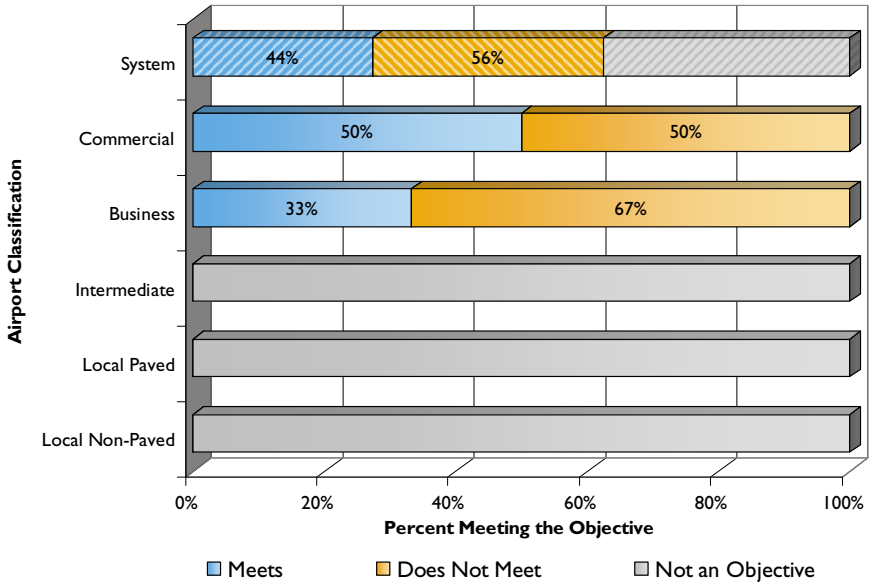
5.16.1 System Performance – Legislative Liaison

Table 5-33 shows the airports not meeting this objective. As shown in **Chart 5-14**, 44% of airports meet the legislative liaison objective.

Table 5-33
Legislative Liaison Objective - Airports Not Meeting Objective

Airport	Existing	Designation Needed to Meet Objective
Cody	No Legislative Liaison	Designate a Legislative Liaison
Riverton	No Legislative Liaison	Designate a Legislative Liaison
Rock Springs	No Legislative Liaison	Designate a Legislative Liaison
Sheridan	No Legislative Liaison	Designate a Legislative Liaison
Worland	No Legislative Liaison	Designate a Legislative Liaison
Afton	No Legislative Liaison	Designate a Legislative Liaison
Evanston	No Legislative Liaison	Designate a Legislative Liaison
Greybull	No Legislative Liaison	Designate a Legislative Liaison
Saratoga	No Legislative Liaison	Designate a Legislative Liaison

Chart 5-14
Legislative Liaison - System Performance



5.17 Aircraft Maintenance

Aircraft Maintenance is most often offered by FBOs located on the airport who perform major or minor airframe and/or powerplant services. The availability of this service to the flying community aids in attracting pilots to the airport thereby adding to the economic viability of the airport.

The aircraft maintenance objective for each classification is shown in **Table 5-34**.

Table 5-34
Aircraft Maintenance Objective

Classification	Objective
Commercial Service Airports	Major Airframe & Powerplant
Business Airports	Major Airframe & Powerplant
Intermediate Airports	Minor Airframe & Powerplant
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

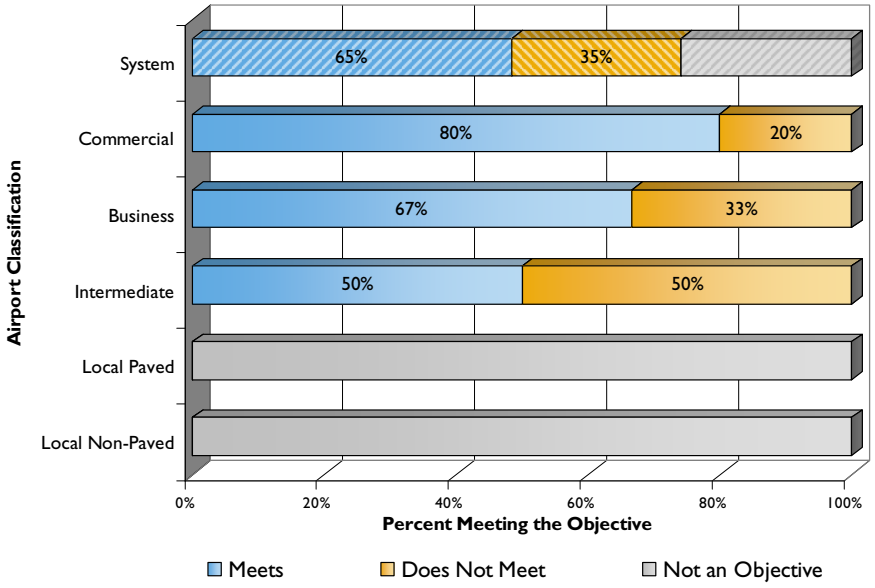
5.17.1 System Performance – Aircraft Maintenance

The airports not meeting the objective are shown in **Table 5-35**. Sixty-five percent of airports meet the aircraft maintenance objective as shown in **Chart 5-15**.

Table 5-35
Aircraft Maintenance Objective - Airports Not Meeting Objective

Airport	Existing	Service Needed to Meet Objective
Laramie	Minor Airframe	Major Airframe & Powerplant
Rock Springs	None	Major Airframe & Powerplant
Evanston	Minor Airframe & Powerplant	Major Airframe & Powerplant
Saratoga	Minor Airframe &Powerplant	Major Airframe & Powerplant
Big Piney	None	Minor Airframe & Powerplant
Guernsey	None	Minor Airframe & Powerplant
Kemmerer	None	Minor Airframe & Powerplant
Newcastle	None	Minor Airframe & Powerplant
Wheatland	None	Minor Airframe & Powerplant

Chart 5-15
Aircraft Maintenance Objective - System Performance



5.18 Airport Manager

It is essential that all Commercial Service, Business, Intermediate and Local Paved Airports have an airport manager, or someone designated by the sponsor to conduct airport manager duties. Generally, an airport manager oversees daily operation of the airport, acts as a liaison with city officials, oversees airport development projects, manages relations with airport users, promotes the airport, and is the sponsor representative to the FAA and Aeronautics.

The objectives for airport manager by classification are shown in **Table 5-36**.

Table 5-36
Airport Manager Objective

Classification	Objective
Commercial Service Airports	Airport Manager
Business Airports	Airport Manager
Intermediate Airports	Airport Manager
Local Paved Airports	Airport Manager
Local Non-Paved Airports	Suggested

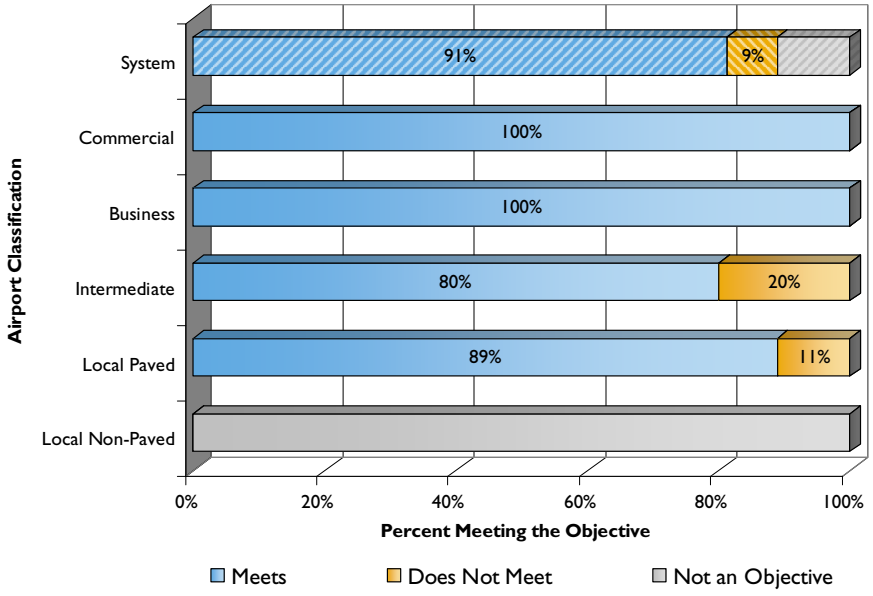
5.18.1 System Performance – Airport Manager

Table 5-37 lists the airports not meeting the airport manager objective. As shown in **Chart 5-16**, all Commercial Service and Business Airports in the system meet the airport manager objective. Two Intermediate and one Local Airports do not meet the objective.

Table 5-37
Airport Manager Objective - Airports Not Meeting Objective

Airport	Existing	Designation Needed to Meet Objective
Guernsey	No Airport Manager	Designate an Airport Manager
Wheatland	No Airport Manager	Designate an Airport Manager
Dixon	No Airport Manager	Designate an Airport Manager

Chart 5-16
Airport Manager Objective - System Performance



5.19 Airport Master Plan

Airport Master Plans are important tools for evaluating the existing facilities at an airport, forecasting future demand, evaluating existing facilities against demand, planning for future upgrades to the facility, studying project alternatives, estimating future investments and a general analysis of potential environmental impacts. Master Plans are the most accurate forecast of airport demand and facility needs and serve as a valuable tool in developing an airport's Capital Improvement Plan (CIP).

The Airport Master Plan objective for each classification is shown in **Table 5-38**.

Table 5-38
Airport Master Plan Objective

Classification	Objective
Commercial Service Airports	Less than 10 years old and on record with Aeronautics
Business Airports	Less than 10 years old and on record with Aeronautics
Intermediate Airports	Less than 10 years old and on record with Aeronautics
Local Paved Airports	Less than 15 years old and on record with Aeronautics Suggested
Local Non-Paved Airports	Less than 15 years old and on record with Aeronautics Suggested

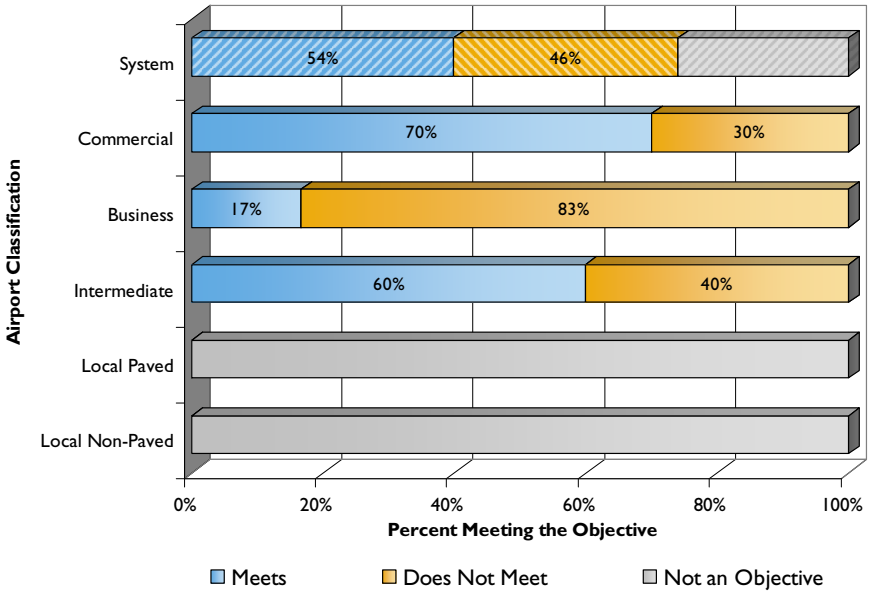
5.19.1 System Performance – Airport Master Plan

Airports not meeting the Airport Master Plan objective are shown in **Table 5-39**. Fifty-four percent of the airports in the system meet the Airport Master Plan objective as shown in **Chart 5-17**. Six of the airports not meeting the objective currently have a Master Plan update in progress.

Table 5-39
Airport Master Plan Objective - Airports Not Meeting Objective

Airport	Existing	Plan Needed to Meet Objective
Jackson	MP Greater than 10 years old*	Update MP
Laramie	MP Greater than 10 years old*	Update MP
Sheridan	MP Greater than 10 years old	Update MP
Afton	MP Greater than 10 years old	Update MP
Douglas	MP Greater than 10 years old	Update MP
Evanston	MP Greater than 10 years old*	Update MP
Pinedale	MP Greater than 10 years old*	Update MP
Saratoga	MP Greater than 10 years old	Update MP
Guernsey	MP Not on record with Aeronautics*	Provide Aeronautics with approved MP
Lander	MP Greater than 10 years old*	Update MP
Torrington	MP Greater than 10 years old	Update MP
Wheatland	MP Greater than 10 years old	Update MP
Note: *MP update in progress		

Chart 5-17
Airport Master Plan Objective - System Performance



5.20 Minimum Standards

Minimum standards establish standards for commercial operators that must be met as a condition of the right to conduct aeronautical activity on an airport. According to FAA AC 150/5190A, minimum standards should relate primarily to the public interest and should be designed to protect airport users from irresponsible, unsafe or inadequate service. Proper standards also discourage unqualified commercial operators from operating at an airport. The right for an operator to offer services and goods to airport users can be conditioned on the operator's ability to meet the outlined standards.

Table 5-40 shows the Minimum Standards objectives for each classification.

Table 5-40
Minimum Standards Objective

Classification	Objective
Commercial Service Airports	On record with Aeronautics
Business Airports	On record with Aeronautics
Intermediate Airports	On record with Aeronautics
Local Paved Airports	Suggested
Local Non-Paved Airports	Not an Objective

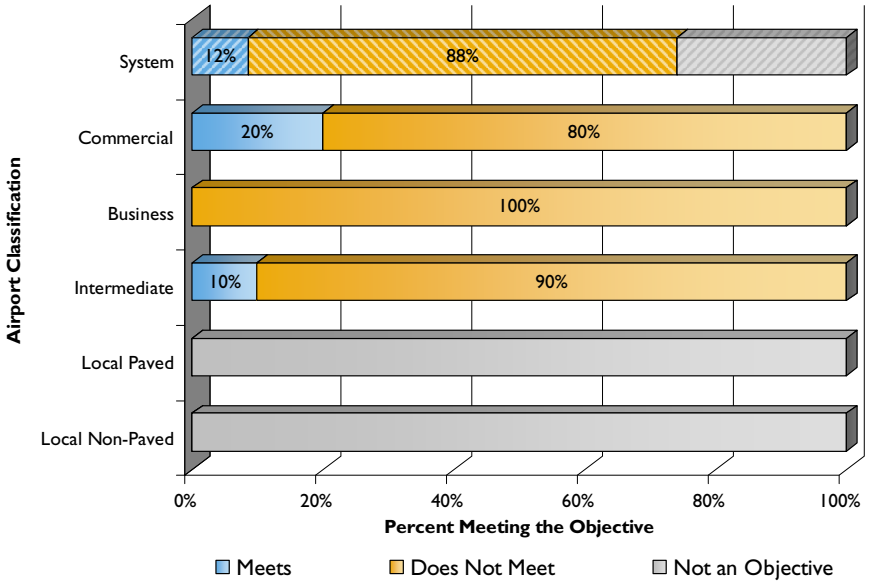
5.20.1 System Performance – Minimum Standards

Individual airports not meeting the objective are shown in **Table 5-41**. Twelve percent of airports meet the minimum standards objective. System performance of this objective is shown in **Chart 5-18**.

Table 5-41
Minimum Standards Objective - Airports Not Meeting Objective

Airport	Existing	Task Needed to Meet Objective
Casper	Not on File with Aeronautics	Create Standards and File with Aeronautics
Cody	Not on File with Aeronautics	Create Standards and File with Aeronautics
Gillette	Not on File with Aeronautics	Create Standards and File with Aeronautics
Jackson	Not on File with Aeronautics	Create Standards and File with Aeronautics
Riverton	Not on File with Aeronautics	Create Standards and File with Aeronautics
Rock Springs	Not on File with Aeronautics	Create Standards and File with Aeronautics
Sheridan	Not on File with Aeronautics	Create Standards and File with Aeronautics
Worland	Not on File with Aeronautics	Create Standards and File with Aeronautics
Afton	Not on File with Aeronautics	Create Standards and File with Aeronautics
Douglas	Not on File with Aeronautics	Create Standards and File with Aeronautics
Evanston	Not on File with Aeronautics	Create Standards and File with Aeronautics
Greybull	Not on File with Aeronautics	Create Standards and File with Aeronautics
Pinedale	Not on File with Aeronautics	Create Standards and File with Aeronautics
Saratoga	Not on File with Aeronautics	Create Standards and File with Aeronautics
Big Piney	Not on File with Aeronautics	Create Standards and File with Aeronautics
Buffalo	Not on File with Aeronautics	Create Standards and File with Aeronautics
Guernsey	Not on File with Aeronautics	Create Standards and File with Aeronautics
Kemmerer	Not on File with Aeronautics	Create Standards and File with Aeronautics
Lander	Not on File with Aeronautics	Create Standards and File with Aeronautics
Newcastle	Not on File with Aeronautics	Create Standards and File with Aeronautics
Powell	Not on File with Aeronautics	Create Standards and File with Aeronautics
Rawlins	Not on File with Aeronautics	Create Standards and File with Aeronautics
Wheatland	Not on File with Aeronautics	Create Standards and File with Aeronautics

Chart 5-18
Minimum Standards Objective - System Performance



5.21 Noise Contour Map

Noise contour maps depict the noise impacts of airport operations on both airport and surrounding property. These maps show the DNL (Day-Night average sound level) contours at an airport. DNL is the standard used by the FAA for measuring noise on and around an airport. It represents an average sound level over a 24-hour period of time with a penalty for noise which occurs between 10:00 pm and 7:00 am. Airports use noise contour maps to identify and evaluate areas that warrant noise control actions. Generally, the noise contour map is updated and included as part of an ALP update.

The objectives for noise contour maps are shown in **Table 5-42**.

Table 5-42
Noise Contour Map Objective

Classification	Objective
Commercial Service Airports	Less than 10 years old and on record with Aeronautics
Business Airports	Less than 10 years old and on record with Aeronautics
Intermediate Airports	Less than 10 years old and on record with Aeronautics
Local Paved Airports	Suggested
Local Non-Paved Airports	Not an Objective

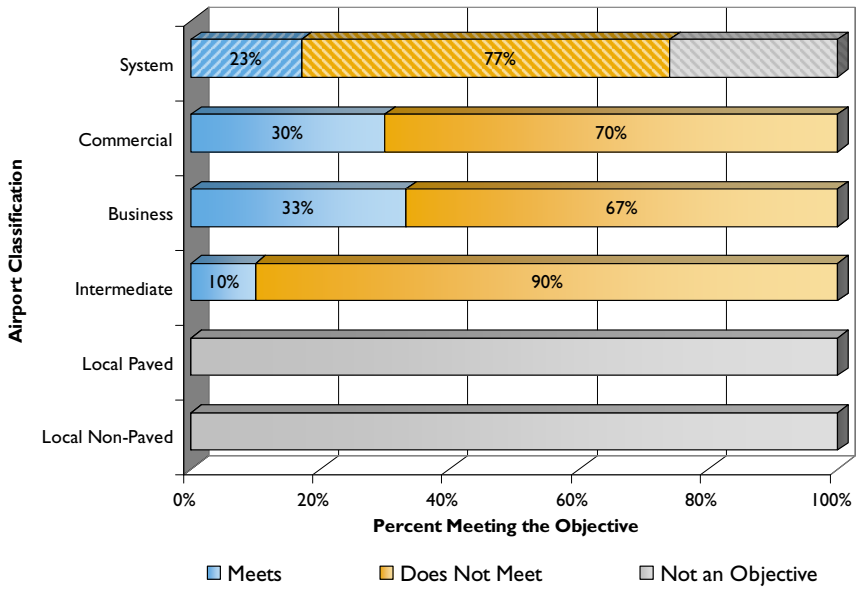
5.21.1 System Performance – Noise Contour Map

Individual airports not meeting the objective are shown in **Table 5-43**. Twenty-three percent of airports meet the Noise Contour Map objective as shown in **Chart 5-19**.

Table 5-43
Noise Contour Map Objective - Airports Not Meeting Objective

Airport	Existing	Map Needed to Meet Objective
Cheyenne	Map greater than 10 years old	Update Map
Cody	Map greater than 10 years old and not on file with Aeronautics	Update Map and File with Aeronautics
Gillette	Noise map date unknown	Update Map
Laramie	Noise map date unknown	Update Map
Rock Springs	No Noise Map	Create Map
Sheridan	Noise map date unknown	Update Map
Worland	No Noise Map	Create Map
Evanston	Map greater than 10 years old	Update Map
Greybull	No Noise Map	Create Map and File with Aeronautics
Pinedale	No Noise Map	Create Map and File with Aeronautics
Saratoga	Map greater than 10 years old	Update Map
Buffalo	No Noise Map	Create Map and File with Aeronautics
Guernsey	No Noise Map	Create Map and File with Aeronautics
Kemmerer	No Noise Map	Create Map and File with Aeronautics
Lander	No Noise Map	Create Map and File with Aeronautics
Newcastle	No Noise Map	Create Map and File with Aeronautics
Powell	No Noise Map	Create Map and File with Aeronautics
Rawlins	No Noise Map	Create Map and File with Aeronautics
Torrington	Noise map date unknown	Update Map
Wheatland	No Noise Map	Create Map and File with Aeronautics

Chart 5-19
Noise Contour Map Objective - System Performance



5.22 Pavement Management Plan

A Pavement Management Plan is a joint effort between an airport, their consultant, the FAA, and Aeronautics. The plan is typically developed by Aeronautics and takes into account Pavement Condition Inspections (three year cycle), engineering judgment, historical information, and input from the FAA, the airport, and the airport's consultant. The Corp of Engineer's Paver program is utilized in developing the plan. A Pavement Management Plan is developed based on a 5-year projection for maintenance and a 10-year projection for rehabilitation and reconstruction. It is re-evaluated every three years after the PCI inspection. Once concurrence is obtained and the plan signed by the sponsor, each plan is incorporated into the Capital Improvement Program by the state and the FAA. It is essential that all Commercial Service, Business and Intermediate Airports have a Pavement Management Plan on record with Aeronautics while it is suggested for Local Airports.

Table 5-44 shows the Pavement Management Plan Objective for each classification.

Table 5-44
Pavement Management Plan Objective

Classification	Objective
Commercial Service Airports	On record with Aeronautics
Business Airports	On record with Aeronautics
Intermediate Airports	On record with Aeronautics
Local Paved Airports	On record with Aeronautics
Local Non-Paved Airports	Not an Objective

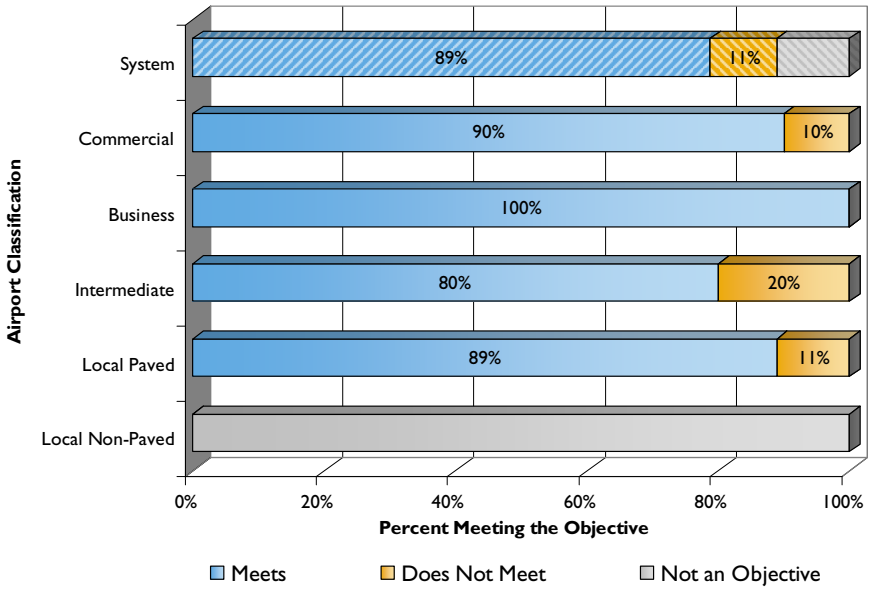
5.22.1 System Performance - Pavement Management Plan

As shown in **Table 5-45**, all but four airports in the system meet this objective by classification. System performance is shown graphically in **Chart 5-20**.

Table 5-45
Pavement Management Plan - Airports Not Meeting Objective

Airport	Existing	Plan Needed to Meet Objective
Jackson	Not on record	Sign and return plan to Aeronautics
Guernsey	Not on record	Sign and return plan to Aeronautics
Wheatland	Not on record	Sign and return plan to Aeronautics
Hulett	Not on record	Sign and return plan to Aeronautics

Chart 5-20
Pavement Management Plan Objective - System Performance



5.23 Public Telephone

It is essential that all Commercial Service, Business, Intermediate and Local Paved Airports in the system have 24-hour telephone access available to airport users. A telephone is suggested at Local Non-Paved Airports. Telephones are important in emergency situations, especially at night when airports are most often unattended. While some airports throughout the country are seeing a decrease in the demand for public telephones, limited cellular telephone coverage at and around many of the Wyoming airports makes a public telephone essential. The telephone objective for each classification is shown in **Table 5-46**.

Table 5-46
Public Telephone Objective

Classification	Objective
Commercial Service Airports	24-hour Public Telephone
Business Airports	24-hour Public Telephone
Intermediate Airports	24-hour Public Telephone
Local Paved Airports	24-hour Public Telephone
Local Non-Paved Airports	Public Telephone Suggested

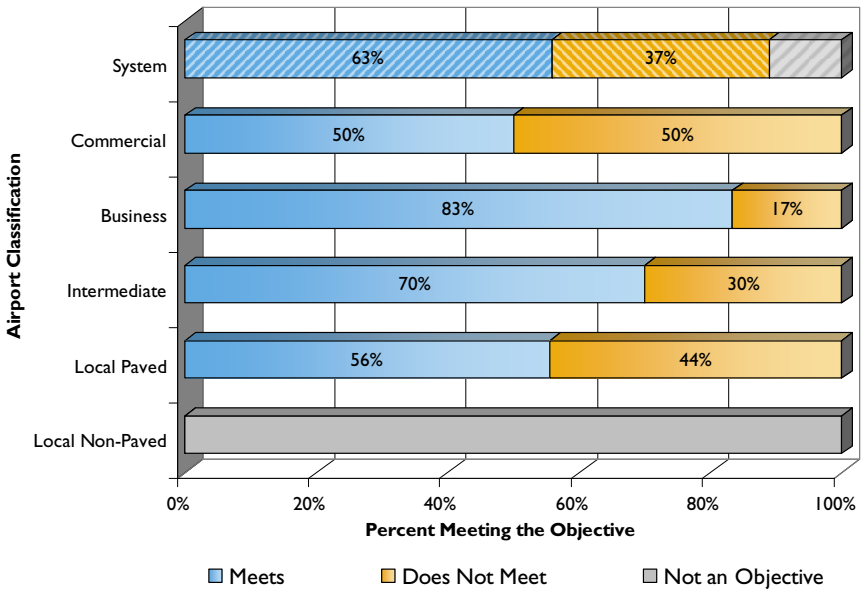
5.23.1 System Performance – Public Telephone

Table 5-47 lists the individual airports which do not meet the objective. All Commercial Service and Business Airports not meeting the objective have telephones available; however, they are not available 24-hours. The phone may be available in the commercial service terminal or in a general aviation facility. One Intermediate and many of the Local Airports have no telephone service available to airport users. Sixty-three percent of airports in the system meet the telephone objective as shown in **Chart 5-21**.

Table 5-47
Public Telephone Objective - Airports Not Meeting Objective

Airport	Existing Terminal Deficiency	Facility or Service Needed to Meet Objective
Casper	Phone not 24-Hour	24-hour Telephone
Cody	Phone not 24-Hour	24-hour Telephone
Laramie	Phone not 24-Hour	24-hour Telephone
Riverton	Phone not 24-Hour	24-hour Telephone
Worland	Phone not 24-Hour	24-hour Telephone
Evanston	Phone not 24-Hour	24-hour Telephone
Buffalo	Phone not 24-Hour	24-hour Telephone
Lander	Phone not 24-Hour	24-hour Telephone
Rawlins	No Public Phone	24-hour Telephone
Cokeville	No Public Phone	24-hour Telephone
Dixon	No Public Phone	24-hour Telephone
Lusk	Phone not 24-Hour	24-hour Telephone
Thermopolis	Phone not 24-Hour	24-hour Telephone

Chart 5-21
Public Telephone Objective - System Performance



5.24 Pilot Lounge and Planning Room

Pilot lounges and planning rooms provide an area for both transient and based pilots to rest, plan flights and evaluate weather conditions. Often, pilot lounges and planning rooms can be combined in one dual-purpose room. It is essential that Commercial Service and Business Airports have a pilot lounge or planning room, and it is suggested that Intermediate and Local Paved Airports have a pilot lounge or planning room. For Local Non-Paved Airports, a pilot lounge and planning room is not an objective. The pilot lounge and planning room objective for each classification is shown in **Table 5-48**.

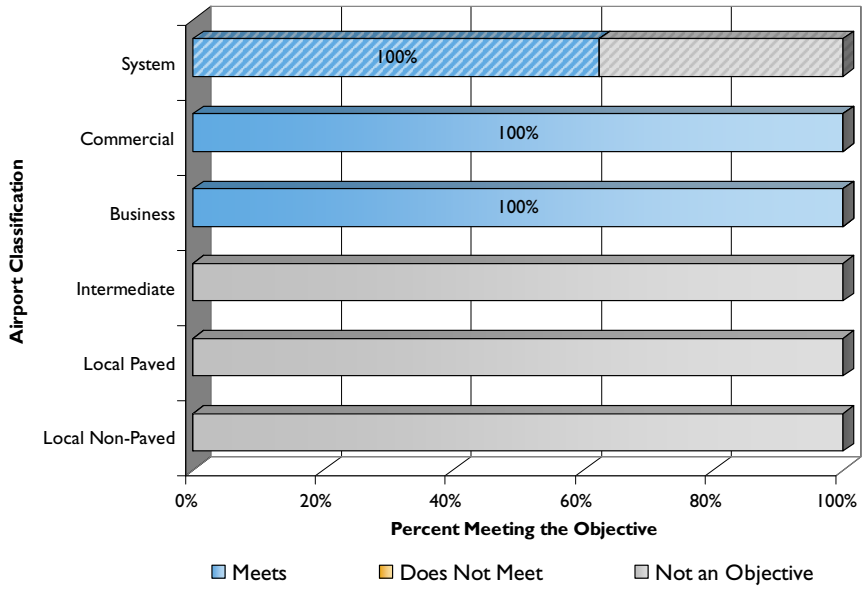
Table 5-48
Pilot Lounge/Planning Room Objective

Classification	Objective
Commercial Service Airports	Pilot Lounge/Planning Room
Business Airports	Pilot Lounge/Planning Room
Intermediate Airports	Pilot Lounge/Planning Room Suggested
Local Paved Airports	Pilot Lounge/Planning Room Suggested
Local Non-Paved	Not an Objective

5.24.1 System Performance – Pilot Lounge/Planning Room

All airports in the system meet the objective for pilot lounge and planning room. System performance of this objective is shown in **Chart 5-22**.

Chart 5-22
Pilot Lounge/Planning Room Objective - System Performance



5.25 Public Restrooms

It is essential that each Commercial Service, Business and Intermediate Airport in the system have a public restroom available 24-hours to airport users. A restroom provides a location for airport users to take shelter and use restroom facilities. For Local Paved and Local Non-Paved Airports, restrooms are suggested. **Table 5-49** lists the public restroom objective.

Table 5-49
Public Restroom Objective

Classification	Objective
Commercial Service Airports	24-hour Restrooms
Business Airports	24-hour Restrooms
Intermediate Airports	24-hour Restrooms
Local Airports	Restrooms Suggested
Local Non-Paved Airports	Restrooms Suggested

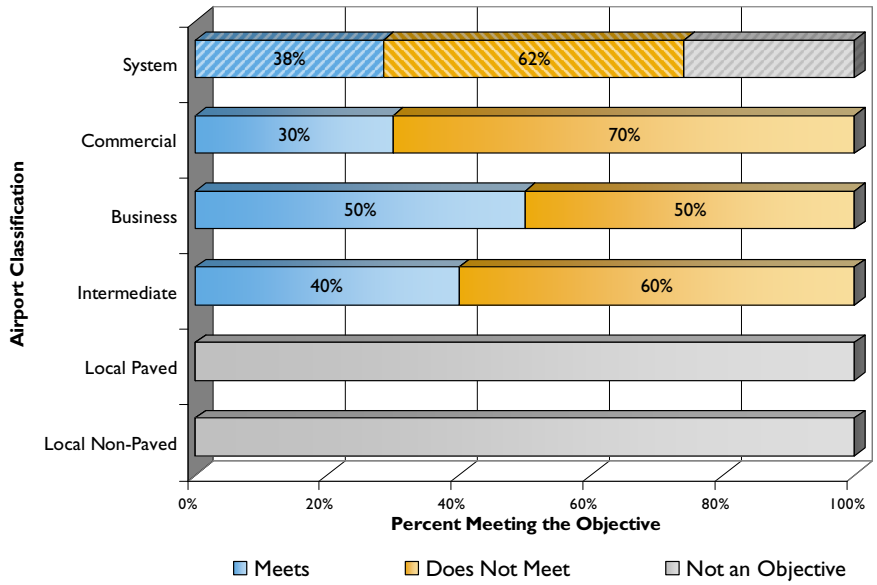
5.25.1 System Performance – Public Restroom Objective

Airports not meeting this objective are shown in **Table 5-50.** Thirty-eight percent of the airports in the system do not meet the restroom objective as shown in **Chart 5-23.** It is important to note that all airports not meeting this objective have restrooms available during daytime or business hours but not on a 24-hours basis.

Table 5-50
Public Restroom Objective - Airports Not Meeting Objective

Airport	Existing Terminal Deficiency	Facility or Service Needed to Meet Objective
Casper	Restrooms not 24-Hour	24-hour Restrooms
Gillette	Restrooms not 24-Hour	24-hour Restrooms
Laramie	Restrooms not 24-Hour	24-hour Restrooms
Riverton	Restrooms not 24-Hour	24-hour Restrooms
Rock Springs	Restrooms not 24-Hour	24-hour Restrooms
Sheridan	Restrooms not 24-Hour	24-hour Restrooms
Worland	Restrooms not 24-Hour	24-hour Restrooms
Evanston	Restrooms not 24-Hour	24-hour Restrooms
Greybull	Restrooms not 24-Hour	24-hour Restrooms
Saratoga	Restrooms not 24-Hour	24-hour Restrooms
Buffalo	Restrooms not 24-Hour	24-hour Restrooms
Kemmerer	Restrooms not 24-Hour	24-hour Restrooms
Lander	Restrooms not 24-Hour	24-hour Restrooms
Powell	Restrooms not 24-Hour	24-hour Restrooms
Rawlins	Restrooms not 24-Hour	24-hour Restrooms
Wheatland	Restrooms not 24-Hour	24-hour Restrooms

Chart 5-23
Pubic Restroom Objective - System Performance



5.26 Primary Runway Length

The length of an airport's runway is a determining factor in the type of aircraft that can operate at a particular airport. Many factors including runway gradient, mean maximum temperature, relative humidity and airport elevation determine the required runway length. FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*, outlines runway length requirements for different aircraft family groupings taking into account these varying factors.

It is important to note that other varying factors such as aircraft takeoff weight and engine performance can affect the required runway length for an individual aircraft. Larger aircraft can require a longer runway to operate at full capacity. These aircraft may be able to operate on shorter runway lengths if they compensate by reducing the takeoff weight by carrying less fuel, passengers and/or cargo. This can have economic consequences for an airline and can result in a passenger being "bumped" from a flight. General aviation aircraft are also affected by runway length; local businesses and airport users may not be able to utilize an airport and its benefits to the full potential.

The aircraft flight manual of the critical aircraft at each airport should be consulted to evaluate the required runway length in the local master planning process.

5.26.1 Commercial Service and Business Airports

The runway length objective for Commercial Service and Business Airports is a runway length to accommodate 75% of large aircraft at 60% useful load. Large aircraft are defined as aircraft with maximum certified takeoff weight of more than 12,500 pounds. **Table 5-51** lists a sampling of popular aircraft types in use today that comprise "75% of large aircraft".

Table 5-51
Sampling of 75% of Large Aircraft

Aircraft	Max Takeoff Weight (lbs)	Notes
Bombardier Challenger	21,591	Jet
Cessna Citation X	16,011	Jet
Cessna 680 Citation Sovereign	13,600	Jet
Learjet 40	21,000	Jet
Learjet 45	21,500	Jet
Dassault Falcon 900	48,300	Jet
Gulfstream IV	33,800	Jet
Raytheon Hawker 400	16,300	Jet
Raytheon Hawker 800XP	28,000	Jet
Embraer Brasilia	26,433	Turboprop
CRJ 200	47,450	Jet

Source: FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*, Bombardier.com, Cessna.com, Hawkerbeechcraft.com, Jane's All the World's Aircraft (2004-2005)

Runway length performance curves from FAA AC 150/5325-4B *Runway Length Requirements for Airport Design* for 75% of large aircraft at 60% useful load were used to compute the required runway length for each Commercial Service and Business Airport taking into consideration their respective elevations, mean maximum daily temperature and runway gradient. According to AC 150/5325-4B, paragraph 302, the recommended runway length for small airplanes at airports with elevations above 5,000 feet mean sea level (MSL) *may* be greater than the runway length criteria for aircraft over 12,500 pounds due to aircraft performance at high altitude airports. At these airports, if the small aircraft runway length is greater, this length must govern runway length calculations. Therefore, runway length requirements for 95% of small aircraft were also calculated for each Commercial Service and Business Airport. The greater of these lengths was used for airports at elevations over 5,000 feet MSL.

The "useful load" of an aircraft consists of the maximum allowable gross weight minus the operating empty weight. The useful load consists of fuel, passengers and cargo. These runway lengths have been calculated with the aircraft operating at 60% useful load.

5.26.2 Intermediate Airports

The runway length objective used for Intermediate Airports is a length that serves 95% of small aircraft. Small aircraft are defined as aircraft weighing 12,500 pounds or less maximum certified takeoff weight. According to AC 150/5325-4B, airports that are intended to serve

medium sized population communities with diverse airport usage should have a runway length that is able to serve 95% of small aircraft. **Table 5-52** lists a sampling of popular aircraft types that comprise 95% of small aircraft. This runway length was calculated for each individual Intermediate Airport taking into consideration individual airport elevation, mean maximum daily temperature, and the runway gradient.

Table 5-52
Sampling of 95% of Small Airplanes

Aircraft	Max Takeoff Weight (lbs)	Notes
Beech Barron B58	5,500	Twin Engine
Beech Bonanza	3,650	Single Engine
Beech King Air 200	11,800	Twin Engine
Beechcraft Premier 1A	12,500	Jet
Cessna 172 Skyhawk	2,450	Single Engine
Cessna 182 Skylane	3,100	Single Engine
Cessna 206 Stationair	3,600	Single Engine
Cessna 208 Caravan	8,000	Turboprop
Cessna 400 Series	8,600	Twin Engine
Cessna Citation CJ1	10,700	Jet
Cessna Citation CJ2	12,500	Jet
Cirrus SR20 and SR22	3,400	Single Engine
Citation Mustang	8,645	Jet
DHC-1 Beaver	5,100	Single Engine
DHC-6-300 Twin Otter	12,500	Twin Engine
Pilatus PC-12	10,450	Turboprop
Piper Arrow	2,750	Single Engine
Piper Cheyenne	9,000	Twin Engine
Piper Navajo	6,200	Twin Engine
Piper Saratoga	3,600	Single Engine
Piper Seminole	3,800	Twin Engine
Piper Seneca	4,750	Twin Engine

Source: Hawkerbeechcraft.com, Airlines.net, Cessna.com, Cirrusdesign.com, Pilatuis-aircraft.com, Newpiper.com

5.26.3 Local Airports

The runway length objective for all Local Airports is to maintain the existing runway length(s).

5.26.3.1 System Performance – Primary Runway Length

Runway extensions can require a great deal of planning, land use protection, property acquisition, environmental analysis, cost and time. Shorter runway extensions (less than 500 feet) are, in many cases, not constructed because it is often not a cost-effective airport improvement. Conditions specific to each airport may preclude any extension of a runway, warrant a shorter runway extension, or demand a length in excess of the runway length

objective. Factors such as financing, terrain, and public opposition may also prevent an airport from meeting their runway length objective. More detailed analysis of runway length requirements, runway extension cost/benefit analysis and feasibility should be further analyzed through the local master planning process and the aircraft flight manual of the critical aircraft at each airport should be consulted to evaluate the actual required runway length.

Table 5-53 summarizes the runway length objective for each airport classification.

Table 5-53
Primary Runway Length Objective

Classification	Runway Length Objective
Commercial Service Airports	75% of Large Aircraft at 60% Useful Load
Business Airports	75% of Large Aircraft at 60% Useful Load
Intermediate Airports	95% of Small Aircraft
Local Paved Airports	Maintain Existing Length
Local Non-Paved Airports	Maintain Existing Length

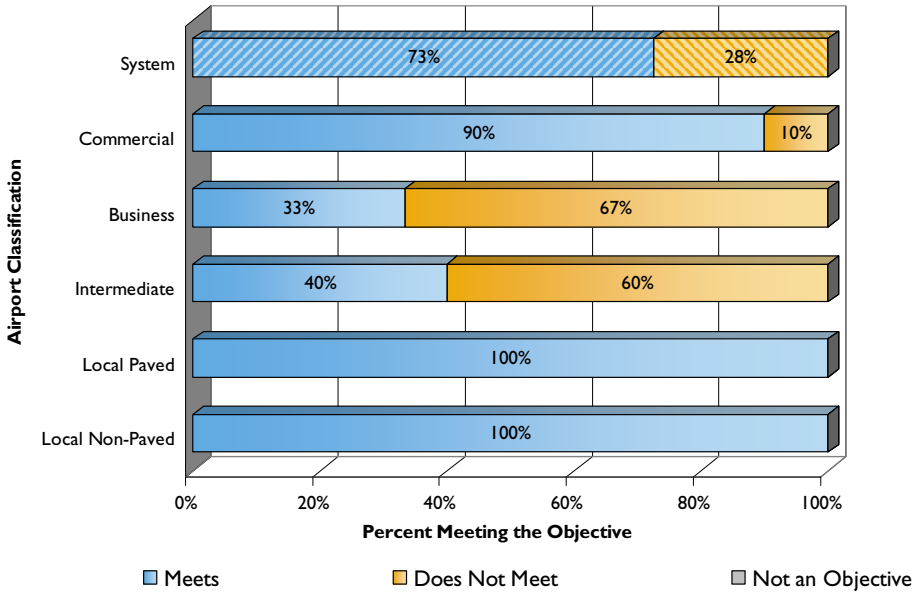
Eleven airports (one Commercial, four Business and six Intermediate) do not meet the minimum runway length objective and they are shown in **Table 5-54**. Seventy-three percent of the airports in the system meet the runway length objective as shown in **Chart 5-24**. In addition, the planned runway lengths for these airports taken from an approved airport layout plan are also shown in this table.

Table 5-54
Primary Runway Length Objective - Airports Not Meeting Objective

Airport	Runway Length (Feet)		
	Existing	Planned [1]	Objective
Jackson	6,300	6,300	7,600
Afton [2]	7,023	7,023	7,300
Douglas [2]	6,532	9,000	6,700
Evanston	7,300	9,000	8,400
Saratoga [2]	8,800	8,800	9,000
Big Piney	6,803	8,250	8,200
Guernsey [2]	5,491	5,500	5,600
Kemmerer [2]	8,208	8,700	8,500
Lander	5,000	5,005	6,900
Newcastle [2]	4,800	5,300	5,100
Rawlins	7,008	8,150	8,200

Notes: [1] From Approved Airport Layout Plans
[2] Objective Runway Length within 500 feet of Existing Runway Length

Chart 5-24
Primary Runway Length Objective - System Performance



5.27 Primary Runway Edge Lighting

The type of runway edge lighting installed is linked to the type of instrument approach and the desired visibility minimums; it is also a requirement for night operations. Runway edge lighting is named based on the intensity of the light and includes; High (HIRL), Medium (MIRL), and Low Intensity Runway Lights (LIRL).

FAA requires HIRL installations at FAR Part 139 airports with a precision approach and HIRL is typically combined with precision instrument installations. Airports with Runway Visibility Range (RVR) equipment, MALSR, and centerline and touchdown zone lights can achieve lower visibility minimum. Using this combination of equipment, a lower visibility minimum can usually be achieved. HIRL combined only with a precision approach provides for greater visibility of the runway environment and also allows for future upgrades to achieve lower visibility minimums.

Airports with a precision approach, MALSR and MIRL can achieve visibility minimums as low as ½ mile. No additional equipment is required. MIRL can also be installed at locations with a non-precision instrument approach. MIRL and LIRL are typically installed at locations with a non-precision instrument approach and/or night operations.

Runway edge markers are used to delineate and mark the edge of the runway surface at non-paved airports.

The objectives by classification for runway edge lighting are presented in **Table 5-55**.

Table 5-55
Primary Runway Edge Lighting Objective

Classification	Objective
Commercial Service Airports	HIRL
Business Airports	MIRL
Intermediate Airports	MIRL
Local Paved Airports	MIRL
Local Non-Paved Airports	Runway Edge Markers

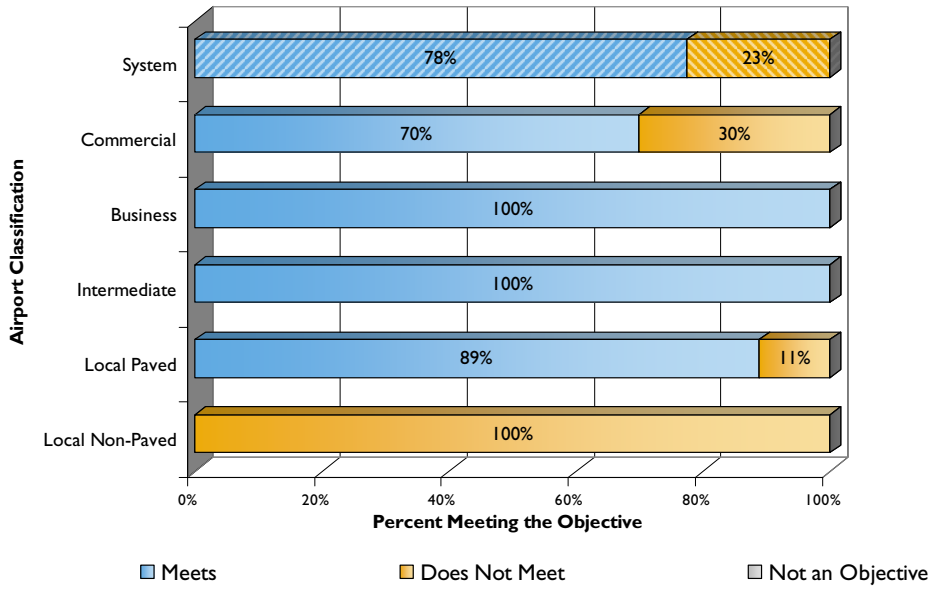
5.27.1 System Performance – Primary Runway Edge Lighting

Nine airports (three Commercial Service and six Local) do not meet the primary runway edge lighting objective as shown in **Table 5-56**. Seventy-eight percent of airports in the system meet the primary runway lighting objective. **Chart 5-25** shows the system performance of the primary runway lighting objective.

Table 5-56
Primary Runway Edge Lighting Objective - Airports Not Meeting Objective

Airport	Existing Runway Lighting	Runway Lighting Objective
Cody	MIRL	HIRL
Laramie	MIRL	HIRL
Worland	MIRL	HIRL
Cokeville	None	MIRL
Glendo (non-paved)	None	Runway Edge Markers
Green River (non-paved)	None	Runway Edge Markers
Medicine Bow (non-paved)	None	Runway Edge Markers
Shoshoni (non-paved)	None	Runway Edge Markers
Upton (non-paved)	None	Runway Edge Markers

Chart 5-25
Primary Runway Edge Lighting Objective - System Performance



5.28 Runway Protection Zone Ownership

Federal Aviation Administration guidance states that control over the RPZ is preferably exercised through acquisition of property interest in the RPZ. Ownership of all existing RPZs is also an objective of Aeronautics. This ownership can be accomplished through acquisition of fee or easement to the ground of the RPZ so the sponsor is able to protect and have complete control over this area of land. Complete control is necessary to be able to remove obstructions and prevent undesired land uses in the RPZ.

It is recognized that not every sponsor is able to have control over the entire RPZ due to special circumstances. However, every effort should be made to control this area through fee or easement to the ground acquisition.

The RPZ ownership objective for each classification is shown in **Table 5-57**.

Table 5-57
Runway Protection Zone Ownership Objective

Classification	Objective
Commercial Service Airports	Fee or easement ownership of all existing RPZ
Business Airports	Fee or easement ownership of all existing RPZ
Intermediate Airports	Fee or easement ownership of all existing RPZ
Local Paved Airports	Suggested
Local Non-Paved Airports	Suggested

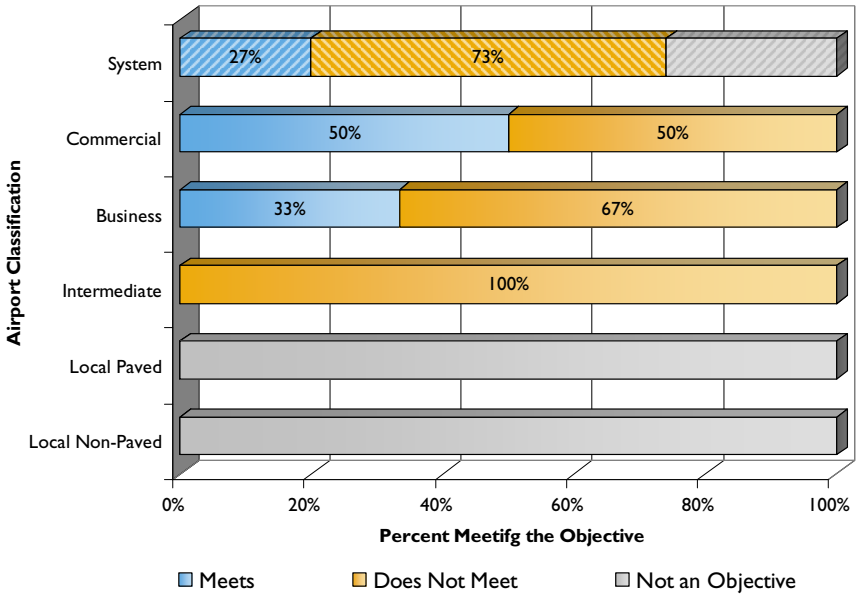
5.28.1 System Performance – Runway Protection Zone Ownership

Each airport not meeting the objective is listed in **Table 5-58**. Twenty-seven percent of airports meet the RPZ ownership objective. System performance of this objective is shown in **Chart 5-26**.

Table 5-58
Runway Protection Zone Ownership Objective - Airports Not Meeting Objective

Airport	Existing	Needed to Meet Objective
Cheyenne	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Jackson	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Riverton	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Sheridan	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Worland	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Douglas	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Greybull	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Pinedale	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Saratoga	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Big Piney	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Buffalo	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Guernsey	RPZ ownership unknown	Purchase all in Fee or Easement to the Ground
Kemmerer	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Lander	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Newcastle	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Powell	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Rawlins	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Torrington	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground
Wheatland	All Not Owned in Fee or Easement	Purchase all in Fee or Easement to the Ground

Chart 5-26
Runway Protection Zone Objective - System Performance



5.29 Runway Safety Areas

The RSA is an area surrounding the runway prepared in such a way to support aircraft and reduce the risk of damage should the aircraft veer from the runway surface during landing, takeoff or taxi. The area should be also be clear of obstructions and properly graded. The RSA is a function of the ARC, airplane design group and the visibility minimums that can be achieved by the type of installed instrument approach. The objective for each classification of airport, with the exception of Local Non-Paved Airports, is that each paved runway meets standard FAA requirements.

Table 5-59 summarizes the runway safety area objective for each airport classification.

Table 5-59
Runway Safety Area Objective

Classification	RSA Objective
Commercial Service Airports	Standard RSA on all paved runways
Business Airports	Standard RSA on all paved runways
Intermediate Airports	Standard RSA on all paved runways
Local Paved Airports	Standard RSA on all paved runways
Local Non-Paved	Not an Objective

5.29.1 System Performance – Runway Safety Area

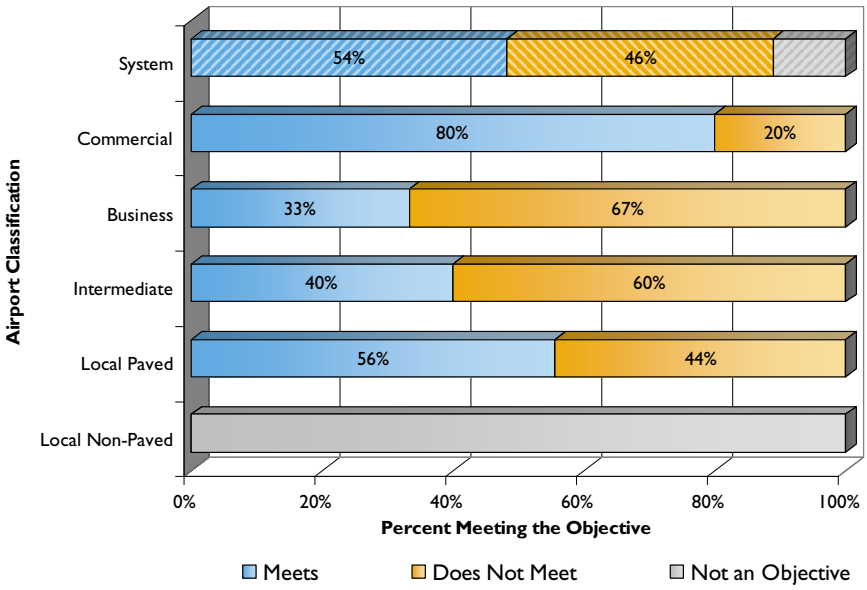
Airports not meeting the RSA objective and the actions needed to meet the objective are shown in **Table 5-60**. Fifty-four percent of the system airports meet the RSA objective as shown in **Chart 5-27**.

Table 5-60
Runway Safety Area Objective - Airports Not Meeting Objective

Airport	Runway	Existing Deficiency	RSA Objective	Action Needed to Meet Objective
Gillette	16/34	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Riverton	10/28	Infrangible antenna in RSA	Standard RSA on all paved runways	Relocate antenna
Afton	16/34	Pond in RSA	Standard RSA on all paved runways	Remove pond
Greybull	15/33	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Pinedale	11/29	Numerous gopher holes	Standard RSA on all paved runways	Relocate gophers, fill holes
Saratoga	05/23	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Guernsey	14/32	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Kemmerer	04/22	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Lander	03/21	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Newcastle	13/31	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Rawlins	10/28	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Torrington	10/28 02/20	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Cokeville	15/33	Non-standard grade and fence in RSA	Standard RSA on all paved runways	Grade to standards. Remove obstructions
Hulett	13/31	Non-standard grade	Standard RSA on all paved runways	Grade to standards
Lusk	10/28	Obstruction in RSA	Standard RSA on all paved runways	Remove obstruction
Thermopolis	01/19	Non-standard grade	Standard RSA on all paved runways	Grade to standards

Source: 2007 WYDOT Aeronautics Design Standards Documents

Chart 5-27
Runway Safety Area Objective - System Performance



5.30 Primary Runway Strength

5.30.1 Runway and Pavement Types

Adequate airport pavement is required to provide the necessary support of the loads imposed by aircraft or vehicles normally traversing the pavement. In general, pavement strength is obtained through a combination of base materials and pavement courses including: sub-base, base and surface material. The desired pavement strengths can be obtained through either asphalt concrete pavement (asphalt) or portland cement concrete (concrete). Generally, asphalt pavements are less expensive but have a shorter useful life and require more annual maintenance than concrete. However, the frequency and type of use, type of soil, type of sub-base, mix of asphalt/concrete, weather conditions, moisture content and maintenance, can all play a large role in the length of useful life of any pavement.

Pavement strength at individual airports should be determined by the existing or ultimate critical aircraft using or forecast to use that facility. Occasionally, a fuel truck, snow plow or other large maintenance vehicle may require more pavement strength than the critical aircraft. As with the runway length and width objectives, the pavement strength objectives determined are minimum requirements.

In addition to the paved runways discussed above, airports may also have unpaved runways. Unpaved runways generally function in the role of a secondary or crosswind runway although some airports use an unpaved surface as a primary runway. These runways are typically used seasonally and by smaller aircraft; as such, there is no pavement strength objective associated with unpaved runways. Spring brings thawing and higher moisture content generally providing an unsuitable surface to support an aircraft. Summer months are the time these types of runways see much higher use.

5.30.2 Aircraft Gear Configuration

The type and configuration of landing gear of an aircraft need to be considered when determining pavement strength. Examples of landing gear configurations include Dual-Tandum, Dual, and Single wheel configurations. Generally, larger, heavier aircraft have dual-tandum or dual landing gear configurations. These wider configurations help to support the weight of the aircraft as well as spread the loads imposed on the pavements over a larger surface area.

The pavement strength and wheel configuration associated with each classification of airport is indicated in the following sections.

5.30.3 Commercial Service Airports

Commercial Service Airports are generally intended to accommodate commercial airline activity and support business aircraft. However, because they are designed to accommodate larger aircraft, it follows that this design will also be able to accommodate less demanding aircraft. Occasional use by larger aircraft is also possible on a case by case basis. Therefore, the Commercial Service Airports are able to accommodate the largest percentage of aircraft, large, medium or small. Typically, the commercial service aircraft have greater operational demands than those of business aircraft. If the commercial service aircraft demands are met, most if not all of the business aircraft demands should also be met. To determine the pavements strength objective for Commercial Service Airports, a review of the commercial service aircraft currently using the Commercial Service Airports was conducted and is presented in **Table 5-61**.

Table 5-61
2008 Existing Commercial Service Aircraft Operating in Wyoming

Aircraft Identifier	Description	Maximum Takeoff Weight (lbs.)	Wheel Configuration
BE1	Beech 1900D	16,950	DWG
CRJ	CRJ 200	47,450	DWG
CRJ7 [1]	CRJ 700	72,750	DWG
DH2	Dash 8-200	36,300	DWG
EM2	Embraer Brasilia	26,433	DWG
B757 [1]	Boeing 757	255,000	DWG
A319 [1]	Airbus 319	141,100	DWG
Notes: DWG – Dual Wheel Gear configuration [1] Used only at Jackson Hole for seasonal service			

Source: Official Airline Guide, Boeing (www.boeing.com), *Jane's All the World's Aircraft* (2004-2005)

It was determined that the minimum pavement strength of 55,000 pounds Dual Wheel Gear be the pavement strength objective for Commercial Service Airports. This pavement strength accommodates the existing regularly scheduled airline service operating in Wyoming as well as business aircraft use which is the main intended use of this classification of airport. Demand at these airports is not anticipated to change dramatically in the future which would dictate use of larger/heavier aircraft. If changes to the airline fleet occur, this pavement strength should accommodate these changes.

5.30.4 Business Airports

The minimum pavement strength of 30,000 pounds single wheel gear was determined for Business Airports. This pavement strength accommodates aircraft expected to use Business Airports in Wyoming including small to medium business jets and turboprop aircraft.

5.30.5 Intermediate Airports

The pavement strength objective for Intermediate Airports is 20,000 pounds single wheel gear. This pavement strength accommodates aircraft which commonly use Intermediate airports including single engine, turboprop and small jet aircraft.

5.30.6 Local Airports

It was determined that the pavement strength objective for Local Paved Airports is 12,500 pounds single wheel gear. This pavement strength accommodates small aircraft expected to use Local Airports. For Local Non-Paved Airports pavement strength is not an objective.

5.30.7 Paved Runway Strength Objective

It is important that airports perform maintenance such as crack sealing on their existing pavement and maintain existing pavement strength and usability.

The pavement strength objective by airport classification is summarized in **Table 5-62.**

Table 5-62
Paved Runway Strength Objective

Classification	Paved Runway Strength Objective (lbs.)
Commercial Service Airports	55,000 DWG
Business Airports	30,000 SWG
Intermediate Airports	20,000 SWG
Local Paved Airports	12,500 SWG
Local Non-Paved Airports	Not an Objective
Note: SWG – Single Wheel Gear, DWG – Dual Wheel Gear	

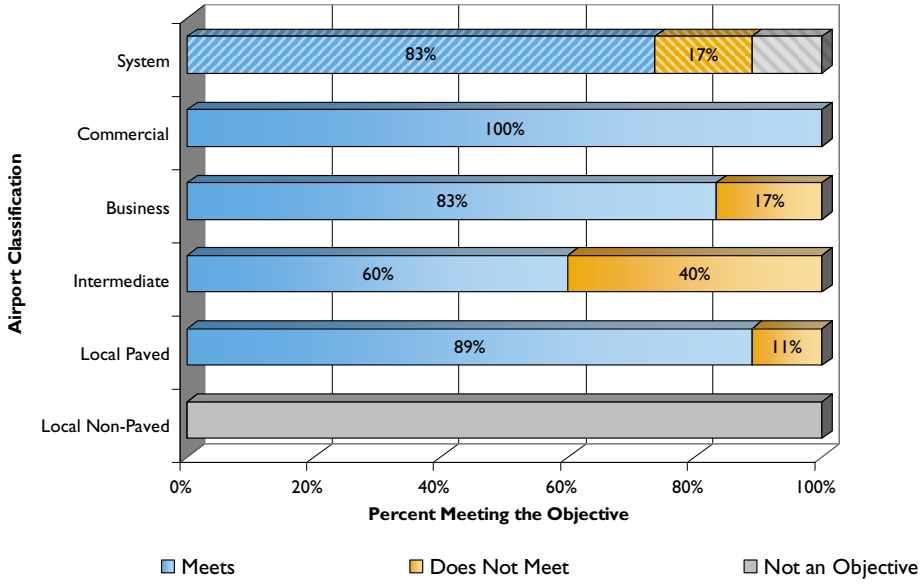
5.30.7.1 System Performance – Runway Strength

A total of six airports (one Business, four Intermediate and one Local) in the system do not meet the minimum runway strength objective for the primary runway at the airport as shown in **Table 5-63**. Eighty-three percent of the airports meet the runway strength objective as shown in **Chart 5-28.**

Table 5-63
Paved Runway Strength Objective - Airports Not Meeting Objective

Airport	Existing Strength	Strength Objective
Afton	24,000 SWG	30,000 SWG
Buffalo	12,500 SWG	20,000 SWG
Kemmerer	18,000 SWG	20,000 SWG
Powell	15,000 SWG	20,000 SWG
Wheatland	15,000 SWG	20,000 SWG
Cokeville	10,000 SWG	12,500 SWG

Chart 5-28
Paved Runway Strength Objective - System Performance



5.31 Primary Runway Width

The runway width objectives coincide with the ARC objectives. The runway width is designed to accommodate aircraft in the respective ARC considering operations in a low visibility environment.

Table 5-64 summarizes the runway width objectives for each airport classification.

Table 5-64
Primary Runway Width Objective

Classification	Runway Width Objective (Feet)
Commercial Service Airports	100
Business Airports	100
Intermediate Airports	75
Local Paved Airports	75
Local Non-Paved Airports	Maintain Existing Width
Note: Width coincides with ARC Objective. AC 150/5300-13 Change 12, *Airport Design*	

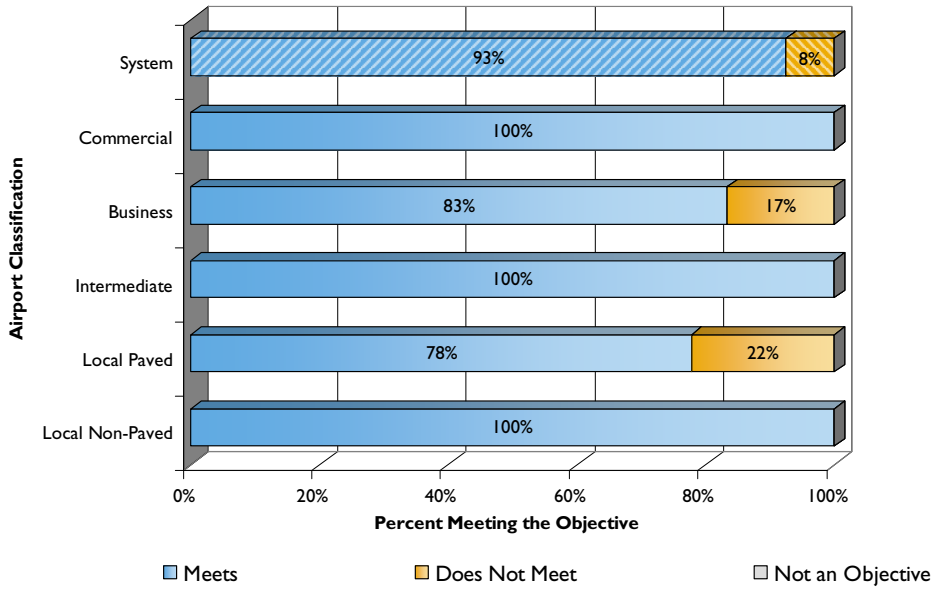
5.31.1 System Performance – Primary Runway Width

One Business Airport and two Local Airports do not meet the minimum primary runway width objective and are shown in **Table 5-65**. Ninety-three percent of the airports meet the primary runway width objective as shown in **Chart 5-29**.

Table 5-65
Primary Runway Width Objective - Airports Not Meeting Objective

Airport	Existing Width (Feet)	Width Objective (Feet)
Afton	75	100
Cokeville	60	75
Dubois	60	75

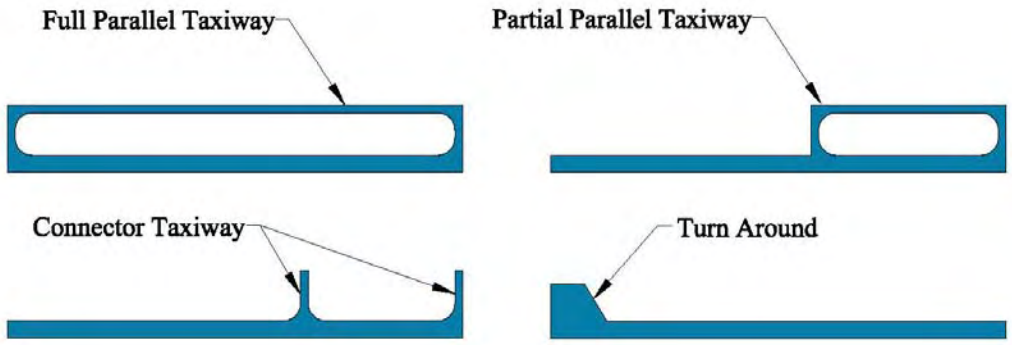
Chart 5-29
Primary Runway Width Objective - System Performance



5.32 Taxiway Type and Width

Taxiways are used by pilots to transition aircraft on the ground from one part of the airport to another. Each runway is accessed by means of some type of taxiway or taxiway system. At larger Commercial Service Airports, a taxiway system can be extensive whereas at smaller airports, a single taxiway may simply provide a short connection of the terminal area to the runway environment. Taxiways are either a full length parallel taxiway to the runway it serves, partial parallel, or a connector taxiway. In addition, turn-around pads are typically located at the runway ends between the runway and taxiway and are used by pilots to perform "run-ups" prior to takeoff. They are also used as a staging area when another aircraft is landing or taking off. Taxiway width is dictated by the ARC established for the airport. **Figure 5-1** shows examples of each taxiway type.

Figure 5-1 – Taxiway Types



It is essential that both Commercial Service and Business Airports have a full length parallel taxiway. For Intermediate Airports, it is essential to have a partial parallel, connector and/or a turn around at the end of the runway. Any one, or a combination of these types, is desired for Intermediate Airports. The objective for all Local Airports (paved and non-paved) is to maintain the existing taxiway facilities. **Table 5-66** shows the minimum facility objectives for taxiways by classification.

Table 5-66
Taxiway Type and Width Objective

	Airport Classification				
	Commercial Service	Business	Intermediate	Local Paved	Local Non-Paved
Type	Full Length Parallel	Full Length Parallel	Partial Parallel, Connector and/or turn around	Maintain Existing Taxiways (s)	Maintain Existing Taxiways (s)
Width	35 feet	35 feet	35 feet	Maintain Existing Taxiway(s)	Maintain Existing Taxiway(s)

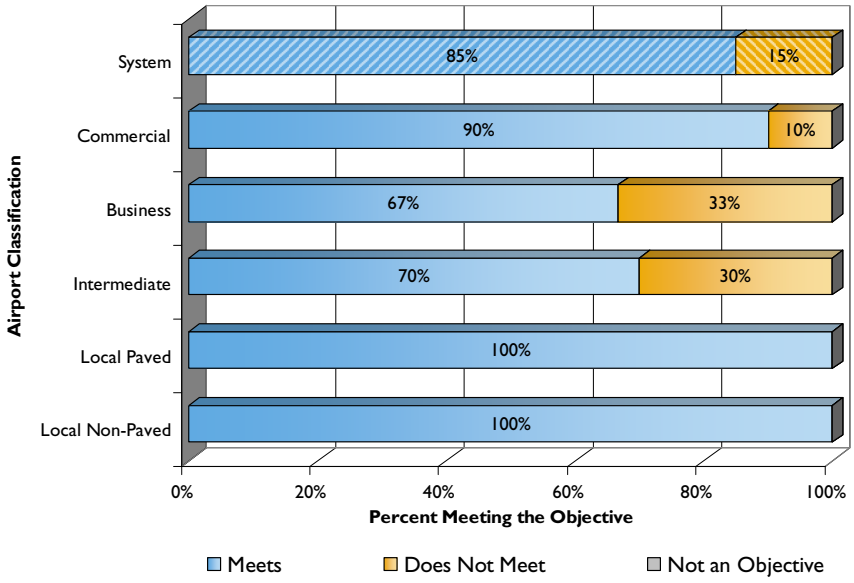
5.32.1 System Performance – Taxiway Type and Width

Airports not meeting the taxiway type and/or width objective are shown in **Table 5-67**. Eighty-five percent of the airports in the system meet the taxiway type and width objectives. System performance of taxiway type and width is found in **Chart 5-30.**

Table 5-67
Taxiway Type and Width Objective - Airports Not Meeting Objective

Airport	Existing Taxiway Deficiency	Taxiway Needed to Meet Objective
Laramie	Partial Parallel	Full Parallel
Afton	Partial Parallel	Full Parallel
Greybull	Partial Parallel	Full Parallel
Guernsey	Partial Parallel – 30’ width	Partial Parallel – 35’ width
Kemmerer	Connector – 21’ width	Partial Parallel, Connector and/or turn around – 35’ width
Torrington	Parallel – 30’ width	Partial Parallel – 35’ width

Chart 5-30
Taxiway Type and Width Objective - System Performance



5.33 Taxiway Lighting

Taxiway lighting is a function of the type of approach at the facility. If there is a precision or non-precision instrument approach, Medium Intensity Taxiway Lighting (MITL) is the standard design. If the approach is visual, Low Intensity Taxiway Light (LITL) can be installed. However, installation of reflective markers is a more common practice and a more economical option for visual runways. It is desired that airports install MITL on taxiways when the runway is also paved and lighted. At airports with night operations but no LITL or MITL, reflectors are often installed along the pavement edge. Airports without runway and taxiway lighting or reflectors are available for daytime operations only.

Table 5-68 shows the taxiway lighting objective by classification.

Table 5-68
Taxiway Lighting Objective

Classification	Objective
Commercial Service Airports	MITL
Business Airports	MITL
Intermediate Airports	MITL
Local Paved Airports	Reflectors (MITL Suggested)
Local Non-Paved Airports	Not an Objective

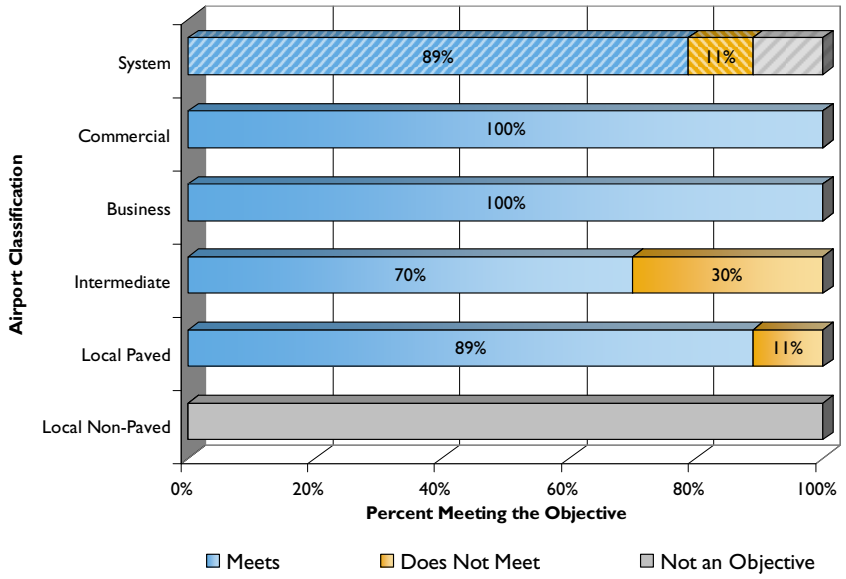
5.33.1 System Performance – Taxiway Lighting

Airports not meeting the taxiway lighting objective are shown in **Table 5-69**. Eighty-nine percent of the airports in the system meet the taxiway lighting objective as shown in **Chart 5-31.**

Table 5-69
Taxiway Lighting Objective - Airport Not Meeting Objective

Airport	Existing Taxiway Deficiency	Taxiway Needed to Meet Objective
Lander	Reflectors	MITL
Powell	Reflectors	MITL
Torrington	Reflectors/MITL	MITL
Cokeville	None	Reflectors (MITL Suggested)

Chart 5-31
Taxiway Lighting Objective - System Performance



5.34 Terminal Building

An objective of the Wyoming Aviation System is to provide an integrated system of airports with similar facilities. Commercial Service Airports have much greater needs than any of the other airports in the system due to airline service facility needs, passenger needs, etc. Terminal buildings at general aviation airports provide shelter for pilots and passengers during inclement weather and provide space for flight planning, business meetings, etc. The type of facility, amenities, size, etc., should be determined through the local master planning process.

Table 5-70 summarizes the terminal building objective.

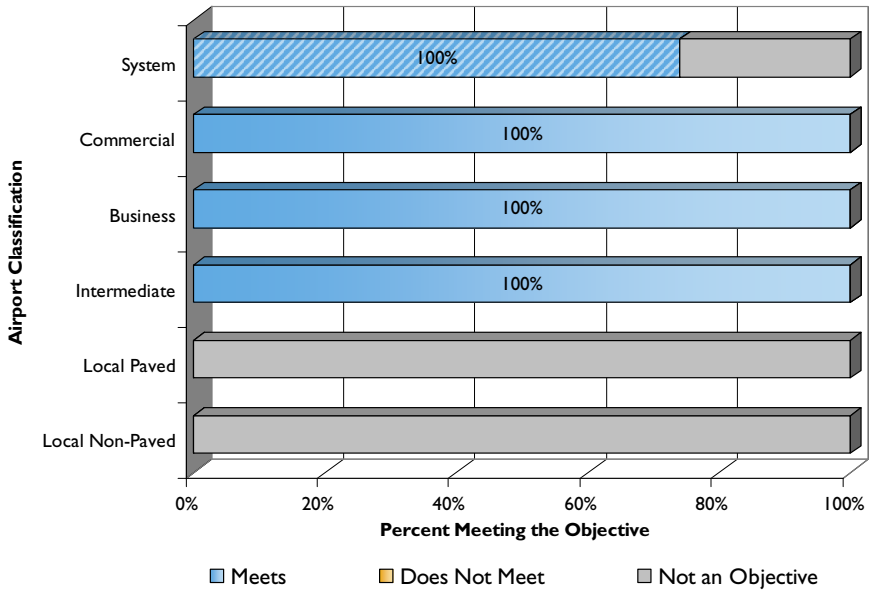
Table 5-70
Terminal Building Objective

Classification	Terminal Building Objective
Commercial Service Airports	Terminal Building
Business Airports	Terminal Building
Intermediate Airports	Terminal Building
Local Paved Airports	Not an Objective
Local Non-Paved Airports	Not an Objective

5.34.1 System Performance – Terminal Building

As shown in **Chart 5-32,** all airports in the system meet the terminal building objective.

Chart 5-32
Terminal Building Objective - System Performance



5.35 Visual Aids

5.35.1 Other Visual Aids

Other visual aids include: Runway End Identifier Lights (REIL), PAPI, VASI, Beacons and Wind Cones. These types of equipment all provide visual guidance to pilots. REIL identify the runway threshold, PAPI and VASI provide visual approach path guidance to the runway threshold, Beacons visually aid pilots in locating an airport from a distance, and Wind Cones help a pilot determine wind direction and velocity to aid in identifying the preferred runway for landing or takeoff.

REIL consist of two flashing lights located near the threshold of a runway and are used for early identification of the runway environment and threshold. When a runway has an approach lighting system installed to a runway end, the REIL is not required and would be considered redundant. However, when a non-precision approach is used and no approach lighting system is in place, it is essential to have REIL installed on both runway ends.

PAPI and VASI consist of two to four box systems and provide color coded signals to the approaching pilot. The purpose of the PAPI and VASI is to provide visual approach slope guidance to the runway of intended use. The PAPI system has generally replaced the VASI system for new installations. PAPIs should be installed even if there is a precision or non-precision approach and at airports with significant terrain issues.

The airport beacon is used by pilots operating under VFR conditions as a means to visually identify an airport from a distance. Once the pilot has located the airport and is in the vicinity, typically the pilot flies over the airport and observes a wind indicator such as a wind cone to note the direction of the wind and the velocity. This aids the pilot in selecting the correct runway for landing and/or takeoff. The wind indicator can also be lighted to aid pilots conducting night operations.

The objectives for other visual aids are listed in **Table 5-71**.

Table 5-71
Other Visual Aids Objective

	Airport Classification				
	Commercial Service	**Business**	**Intermediate**	**Local Paved**	**Local Non-Paved**
Other Visual Aids [1]	REIL (Both Ends)	REIL (Both Ends)	REIL (Both Ends)	REIL – One End (Both Ends Suggested)	Not an Objective
	PAPI or VASI (Both Ends)	PAPI or VASI (Both Ends)	PAPI or VASI (Both Ends)	PAPI or VASI (Both Ends)	Not an Objective
	Beacon	Beacon	Beacon	Beacon	Not an Objective
	Lighted Wind Cone	Lighted Wind Cone	Lighted Wind Cone	Lighted Wind Cone	Wind Cone

Note: [1] When runway has ALS installed, opposite end should have REIL. REIL should not be installed on approach end with ALS.

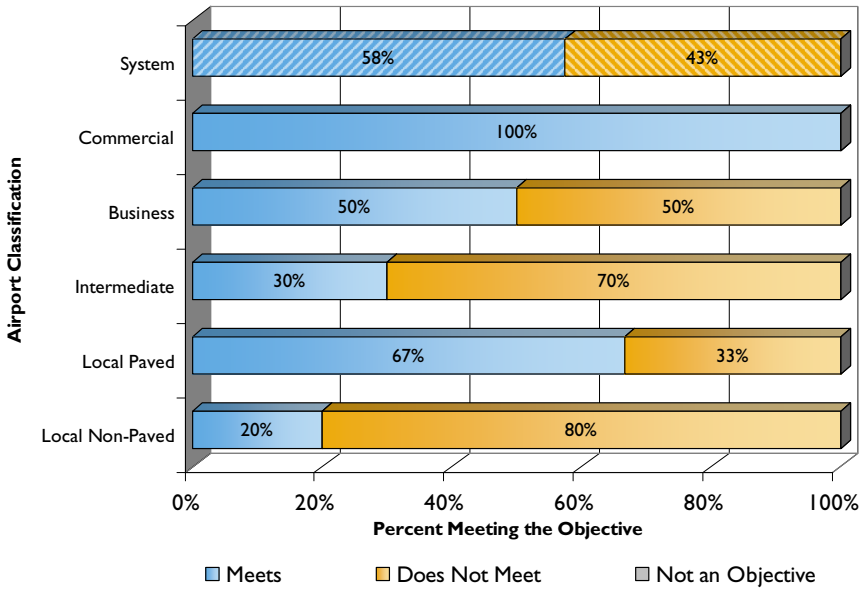
5.35.1.1 System Performance – Other Visual Aids

Table 5-72 shows the airports not meeting the visual aid objective and also identifies what item is needed to meet the objective. All other visual aid components not shown meet the objective. Fifty-eight percent of the airports in the system meet all visual aid objectives. System performance of this objective is shown in **Chart 5-33**.

Table 5-72
Visual Aids Objective - Airports Not Meeting Objective

Airport	Existing Visual Aids Deficiency	Visual Aid Needed to Meet Objective
Douglas	REIL – one runway end	REIL – both runway ends
Pinedale	REIL – one runway end	REIL – both runway ends
Saratoga	REIL & PAPI – one runway end	REIL & PAPI – both runway ends
Buffalo	REIL – one runway end	REIL – both runway ends
Guernsey	No REIL	REIL – both runway ends
Lander	No REIL	REIL – both runway ends
Powell	REIL – one runway end	REIL – both runway ends
Rawlins	REIL – one runway end	REIL – both runway ends
Torrington	REIL – one runway end	REIL – both runway ends
Wheatland	No REIL	REIL – both runway ends
Cokeville	No REIL or PAPI	REIL & PAPI – one runway end
Dubois	No REIL	REIL – one runway end
Green River (non-paved)	No Wind Cone	Wind Cone
Medicine Bow (non-paved)	No Wind Cone	Wind Cone
Shoshoni (non-paved)	No Wind Cone	Wind Cone
Thermopolis	No REIL or PAPI	REIL & PAPI – one runway end
Upton (non-paved)	No Wind Cone	Wind Cone

Chart 5-33
Visual Aids Objective - System Performance



5.36 Weather Reporting Facilities

AWOS and ASOS are weather stations located on airports which provide weather information to pilots. These weather reporting facilities broadcast over a radio frequency in order to be available to pilots operating on and in the vicinity of an airport.

Weather reporting facilities objectives are presented in **Table 5-73**.

Table 5-73
Weather Reporting Facilities Objective

Classification	Objective
Commercial Service Airports	AWOS or ASOS
Business Airports	AWOS or ASOS
Intermediate Airports	AWOS or ASOS
Local Paved Airports	AWOS or ASOS
Local Non-Paved Airports	Not an Objective

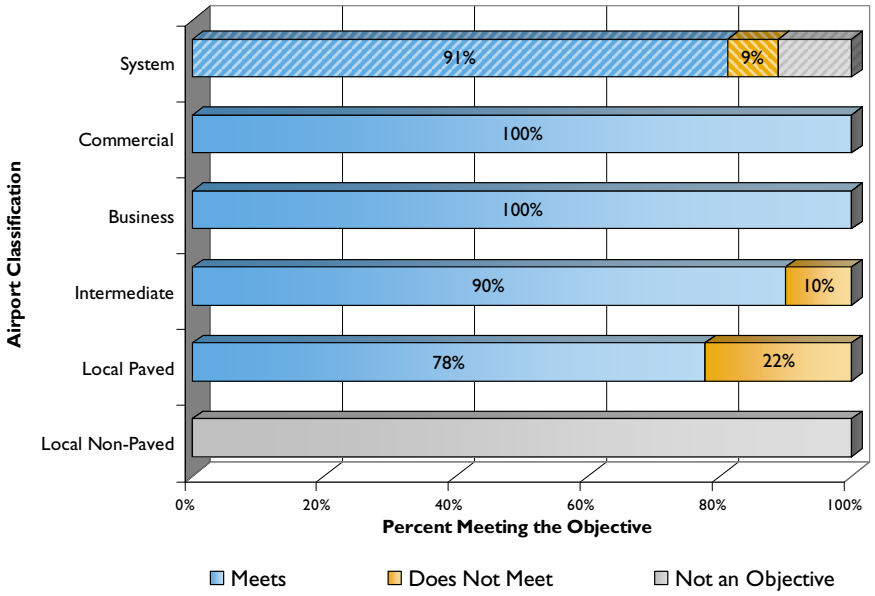
5.36.1 System Performance – Weather Reporting Facilities

Ninety-one percent of airports meet the weather reporting objective. The three airports not meeting the objective are shown in **Table 5-74** and system performance is shown in **Chart 5-34**.

Table 5-74
Weather Reporting Facilities Objective - Airports Not Meeting Objective

Airport	Existing Weather Reporting Facility	Weather Facility Needed to Meet Objective
Wheatland	None	AWOS or ASOS
Cokeville	None	AWOS or ASOS
Thermopolis	None	AWOS or ASOS

Chart 5-34
Weather Reporting Facilities Objective - System Performance



5.37 Wind Coverage

The minimum recommended wind coverage for an airport is ninety-five percent95%. This can be accomplished on a single runway or through a combination of runways. Generally, if an airport has two or more runways, it more than likely meets the 95% coverage. Wind data collected at the specific airport site is the most reliable data. As stated in **Chapter 3,** the 95% coverage is computed on the basis of the crosswind not exceeding 10.5 knots for ARC A-I and B-I, 13 knots for ARC A-II and B-II, 16 knots for ARC A-III, B-III, and C-I through D-III, and 20 knots for ARC A-IV through D-VI. If an airport has only one runway and does not meet 95% wind coverage for the airport's respective ARC, then crosswind runway alternatives should be considered. If an airport has more than one runway, the wind coverage

of each runway should be combined. If 95% is obtained through a combination of runways, no additional runways should be required.

The objectives for wind coverage by classification of airport are as shown in **Table 5-75**. For clarification purposes, the ARC objectives are also shown.

Table 5-75
Wind Coverage Objective

Airport	ARC	Wind Coverage Objective
Commercial Service Airport	C-II	95% at 16 knots
Business Airport	C-II	95% at 16 knots
Intermediate Airport	B-II	95% at 13 knots
Local Paved Airport	B-II	95% at 13 knots Suggested
Local Non-Paved Airport	A-II	95% at 13 knots Suggested

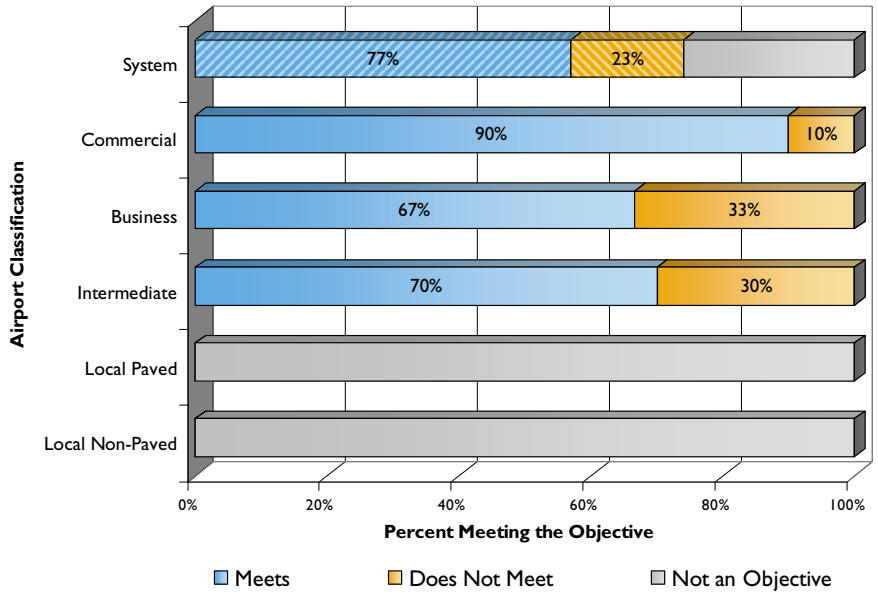
5.37.1 System Performance – Wind Coverage

Airports not meeting the wind coverage objectives are shown in **Table 5-76**. Seventy-seven percent of the airports in the system meet the wind coverage objective as shown in **Chart 5-35**.

Table 5-76
Wind Coverage Objective - Airports Not Meeting Objective

Airport	Existing Wind Coverage	Potential Solutions to Meet Objective
Jackson	Unknown	Obtain Wind Data – 95% Coverage
Pinedale	Unknown	Obtain Wind Data – 95% Coverage
Saratoga	Unknown	Obtain Wind Data – 95% Coverage
Guernsey	Unknown	Obtain Wind Data – 95% Coverage
Torrington	Unknown	Obtain Wind Data – 95% Coverage
Wheatland	93.83% at 13 knots	Obtain wind data at airport site, reorient runway or construct crosswind runway

Chart 5-35
Wind Coverage Objective - System Performance



5.38 Combined System Performance

The following charts show how the Wyoming Aviation System is performing related to the facility, service and administration objectives that have been set for each classification of airport. The charts are organized by system performance, Commercial Service Airport performance, Business Airport performance, Intermediate Airport performance, and Local Paved and Local Non-Paved Airport performance. When a specific category was not an objective for all airports, only those airports where the objective applied were considered in the system performance.

Chart 5-36
Overall System Performance

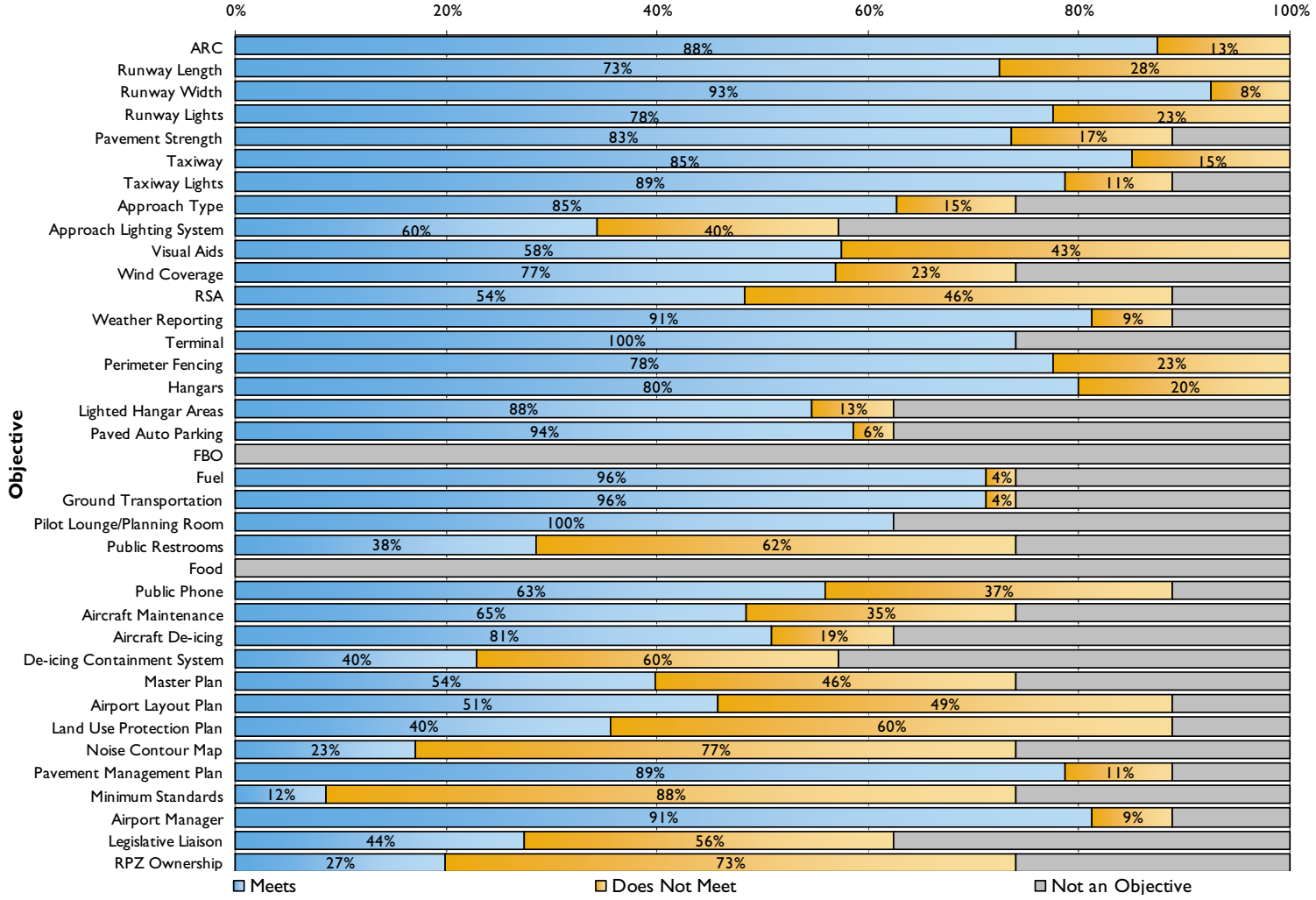


Chart 5-37
Commercial Service Airports Performance

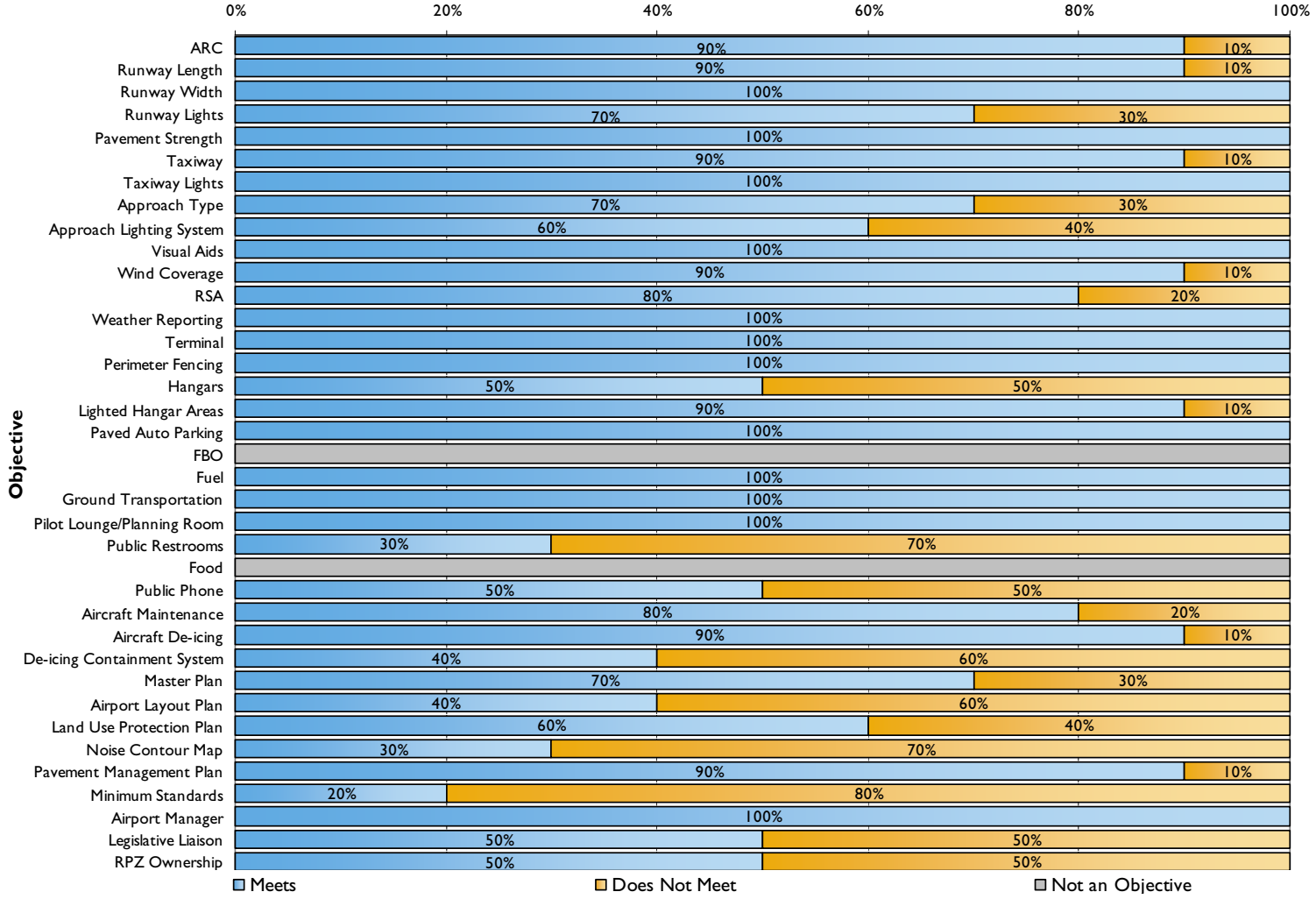


Chart 5-38
Business Airports Performance

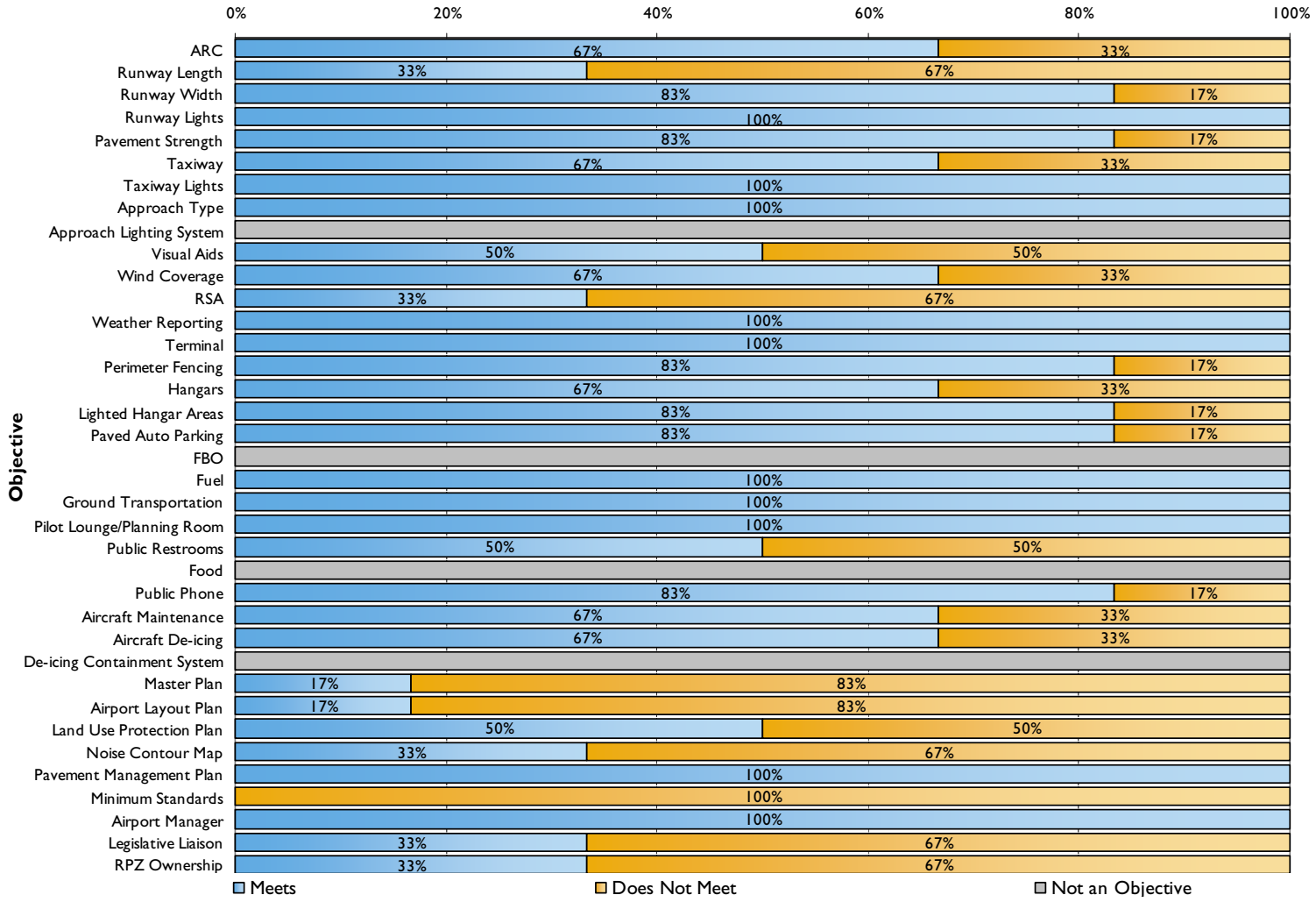


Chart 5-39
Intermediate Airports Performance

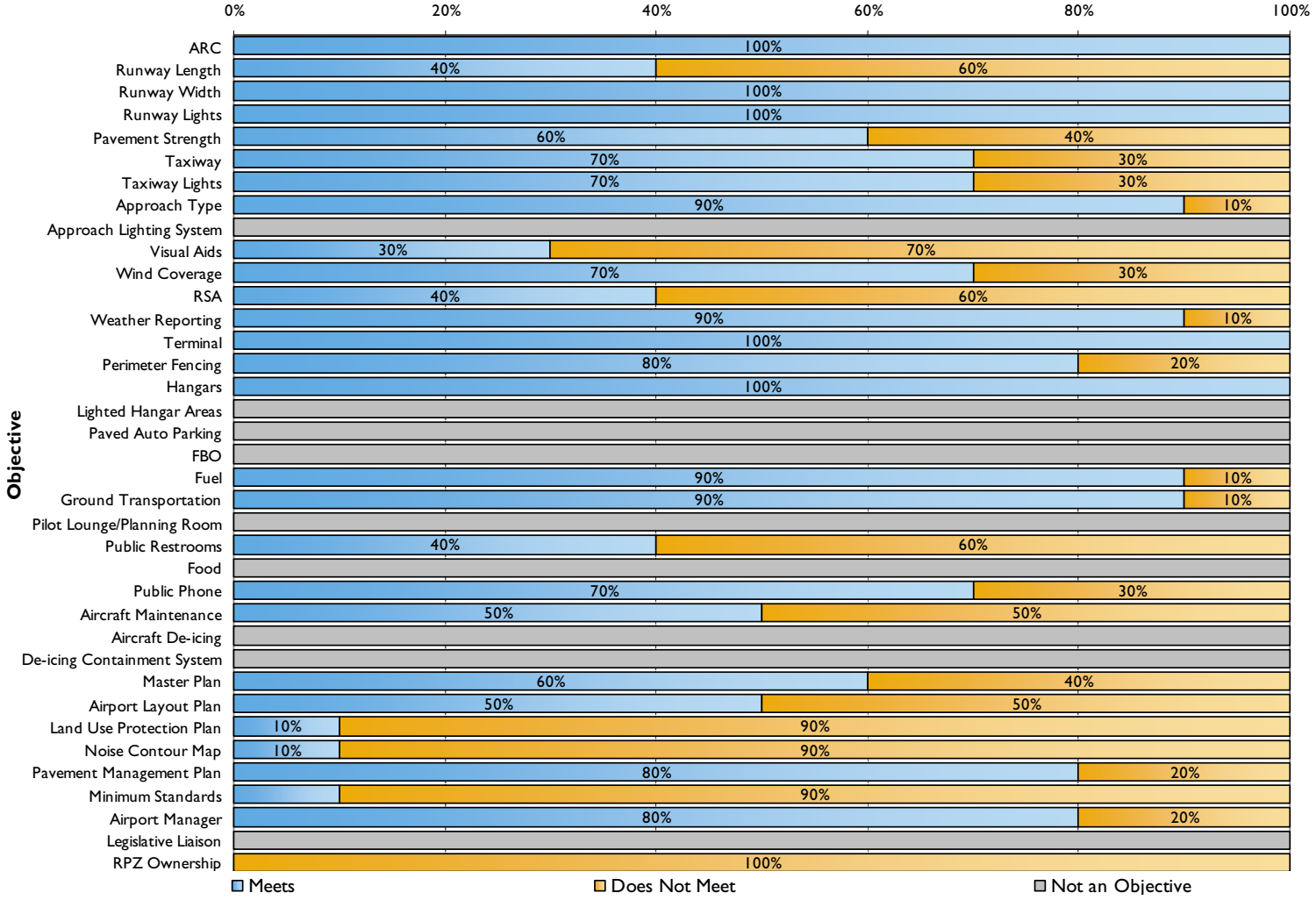


Chart 5-40
Local Paved Airports Performance

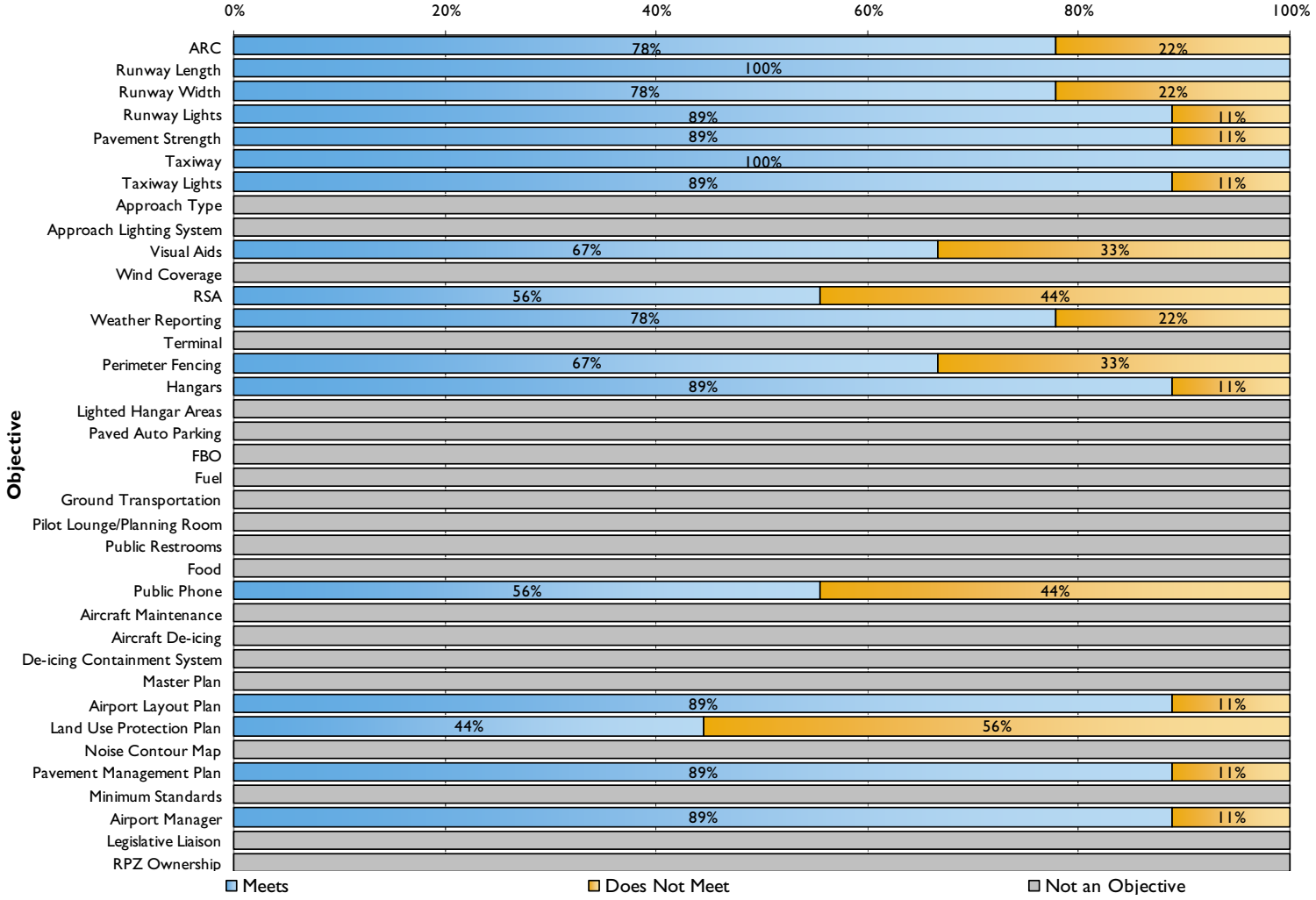


Chart 5-41
Local Non-Paved Airports Performance