

Appendix D  
**PLANNING ACTIVITY LEVEL 4 FACILITY REQUIREMENTS**  
Colorado Springs Airport

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This appendix summarizes the facility requirements to accommodate the forecast aviation demand associated with Planning Activity Level 4 (PAL 4). PAL 4 is based on the Scenario 1 forecast year 2035, as documented in Appendix C, with the exception of the air cargo demand. The air cargo tonnage and air cargo operations are based on Scenario 2, forecast year 2035, also documented in Appendix C. Table D-1 depicts each of the PALs for reference.

Table D-1  
**SUMMARY OF PLANNING ACTIVITY LEVELS**  
Colorado Springs Airport

	2009	PAL 1	PAL 2	PAL 3	PAL 4
<b>Enplaned passenger</b>					
Mainline	255,950	306,500	392,000	445,200	1,099,500
Regional affiliate	640,977	849,500	1,141,700	1,308,500	1,346,100
Low cost carrier	32,673	59,200	111,200	156,800	162,300
Total	929,600	1,215,200	1,644,900	1,910,500	2,607,900
<b>Passenger airline departures</b>					
Mainline	2,287	2,640	3,310	3,710	9,160
Regional affiliate	13,718	16,100	19,400	20,700	20,610
Low cost carrier	249	500	930	1,310	1,360
Total	16,254	19,240	23,640	25,720	31,130
<b>Air cargo tonnage</b>					
Integrated carrier	11,310	13,770	16,470	18,110	37,860
Regional feeder	116	120	130	130	550
Total	11,426	13,890	16,600	18,240	38,410
<b>Aircraft operations</b>					
Passenger airline					
Mainline	4,574	5,280	6,620	7,420	18,320
Regional affiliate	27,436	32,200	38,800	41,400	41,220
Low cost carrier	498	1,000	1,860	2,620	2,720
Total	32,508	38,480	47,280	51,440	62,260
All-cargo airline	1,652	1,640	1,660	1,660	4,240

Sources: Chapter 3 of the Master Plan Update Technical Report, Table 3-22 (enplaned passengers and passenger airline departures), Table 3-23 (air cargo tonnage), and Table 3-25 (aircraft operations); and Appendix C of the Master Plan Update Technical Report, Table C-1 (PAL4 enplaned passengers and passenger airline departures), Table C-4 (PAL4 air cargo tonnage), Table C-5 (PAL4 passenger aircraft operations), and Table C-6 (PAL4 all-cargo aircraft operations).

## **Rationale for PAL 4 Analysis**

PAL 4 was analyzed to inform airport management as to the implications of a higher level of demand on key facilities. The level of demand presented by PAL 4 is similar to that experienced at the historical peak of activity in 1996, in which the airport served over 2.4 million enplanements. The facility requirements analysis of PAL 4 was focused on the passenger terminal, with some additional analysis of air cargo requirements.

## **Passenger Terminal Results**

Table D-2 summarizes the results of the analysis of the passenger terminal at PAL 4. For reference purposes, PAL 3 is also shown. Notably, the passenger terminal appears to be capable of accommodating PAL 4 activity, albeit at a lower level of service with increased congestion. Numbers highlighted in blue represent those areas where a potential capacity shortfall is expected.

Notably, the ticketing lobby would technically require 6 additional counter positions for PAL 4; however, this requirement is based on a maximum ten-minute wait time. The extra six positions would only be required during peak periods, and therefore, the existing lobby would meet demand, albeit with a slightly longer wait time.

In addition, the security checkpoint would require as many as 12 lanes to meet demand at a ten-minute wait time. To better understand how the security checkpoint would function if it were constrained to a certain number of lanes, an additional model run was completed. The model applied the PAL 4 schedule to a security checkpoint limited to 8 lanes, which resulted in a maximum wait time of 30 minutes, with a queue of 540 passengers requiring about 7,600 square feet of queue space (at a level of service C). Typical wait time throughout the day (outside of the morning departure peak) was less than 10 minutes.

The passenger concourse would require as many as three additional gates to accommodate demand for the PAL 4 flight schedule, as shown in Table D-2. Notably, this assumes continued preferential use of aircraft gates. In addition, the schedule requires 17 remain-overnight parking positions, three more than exist today.

Table D-2  
**SUMMARY OF PASSENGER TERMINAL ANALYSIS**  
 Colorado Springs Airport

	Existing	PAL 3	PAL 4
<b>Demand</b>			
Annual enplaned passengers	929,600	1,910,500	2,607,900
Average day peak month (ADPM) passengers	3,089	6,348	8,665
Peak hour passengers	617	1,269	1,733
<b>Facility requirements</b>			
Terminal processor			
Ticketing check-in positions (ea) (a)(b)	30	29	36
Ticketing lobby queue area (sf) (c)			
Level of service A	7,500	4,800	6,600
Level of service C	7,500	3,800	5,200
Security screening lanes	4	7	11 -12
Security lane maximum queue (passengers)	170	173	282
Security screening queue area (c)			
Level of service A	810	3,400	5,500
Level of service C	810	2,500	4,000
Baggage claim			
Baggage claim circulation area (sf) (d)			
Level of service A	15,500	6,800	7,700
Level of service C	15,500	4,500	5,000
Baggage claim frontage (lf)	600	350	390
Passenger concourse			
Aircraft parking active positions (e)	12	12	15
Remain-overnight aircraft positions	16	15	17

Notes: Blue shading highlights potential functional deficiencies.  
 lf = linear feet; sf = square feet; ea = each

- (a) Check-in positions include agent desks, electronic kiosks, and baggage drop positions.
- (b) Assuming that facilities are dedicated to exclusive use by individual airlines.
- (c) Queue areas based on International Air Transport Association (IATA) levels of service for ticketing and check-in queue: level of service A: 19.4 sf /passenger; level of service C: 14.0 sf/passenger
- (d) Circulation areas based on IATA levels of service for baggage claim area: level of service A: 28.0 sf / passenger; level of service C: 18.3 sf / passenger
- (e) Twelve gates do not include the 4 aircraft parking positions at the east unit terminal.

Source: LeighFisher, November 2010.

## Air Cargo Results

Table D-3 shows the results of the analysis of the air cargo facilities at PAL 4. For air cargo, the more demanding forecast Scenario 2 was analyzed. For reference purposes, PAL 3 is also shown. As shown, PAL 4 would likely require additional space for warehousing of air cargo. In addition, the requirement for aircraft parking rises from 115,000 square feet to 260,000 square feet. While in total there is over 370,000 square feet of aircraft apron in place today, this space is not entirely adjacent to the building warehouse that is currently available. Given the spatial requirements associated with PAL 4, alternatives should be examined to either consolidate air cargo to one contiguous land area or provide for additional space for a second integrated air cargo carrier.

Table D-3  
**AIR CARGO REQUIREMENTS**  
Colorado Springs Airport

	Existing	PAL 3	PAL 4
<b>Demand</b>			
Annual cargo tonnage			
All-cargo	11,426	18,240	38,410
Belly cargo	58	91	75
Total	11,484	18,331	38,485
Annual departures			
Mainline aircraft	491	490	1,000
Feeder aircraft	335	340	1,120
Total	826	830	2,120
Average daily departures			
Mainline aircraft	2	2	4
Feeder aircraft	1	1	4
Total	3	3	8
<b>Facility Requirements</b>			
Belly cargo			
Aircraft apron (a)	15,200	15,200	15,200
Building warehouse (b)	10,300	10,300	10,300
Landside area (c)	39,300	39,300	39,300
All-cargo (Other) (d)			
Aircraft apron (a)	79,400	15,000	160,000
Building warehouse (b)	18,700	1,400	31,600
Landside area (c)	27,500	1,400	31,600
All-cargo (FDX)			
Aircraft apron (a)	292,500	100,000	100,000
Building warehouse (b)	29,900	26,000	26,000
Landside area (c)	63,300	26,000	26,000
Total all-cargo			
Aircraft apron (a)	371,900	115,000	260,000
Building warehouse (b)	48,600	27,400	57,600
Landside area (c)	90,800	27,400	57,600
Total cargo area (acres) (e)	13.8	6.2	11.6

Notes: Blue shading highlights potential functional deficiencies.

- (a) Mainline aircraft assumed to require 50,000 square feet of apron and feeder aircraft, 15,000 square feet.
- (b) A cargo warehouse building utilization of 1.5 square foot per ton was assumed.
- (c) Landside area is considered to be approximately equivalent to building warehouse area required.
- (d) Cargo carriers, other than Fedex, would be accommodated at "Other" all facilities.
- (e) Total cargo area = apron + warehouse + landside areas with a 15% factor applied.

Source: LeighFisher, November 2010.