

Airport Master Plan

Rapid City Regional Airport

October 2015 - FAA Submittal



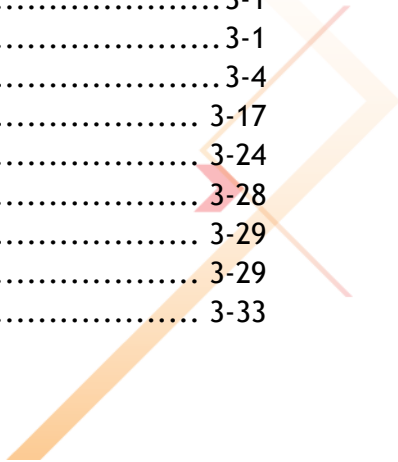
Table of Contents

- Executive Summary i
 - Scope & Timeline i
 - Forecasts i
 - Preferred Alternative iii
 - Implementation Plan/Funding iv

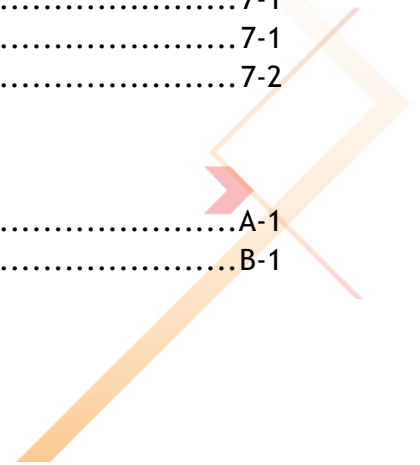
- Chapter 1: Introduction 1-1
 - Purpose and Scope 1-1
 - Airport Master Plan Format 1-2
 - Background 1-2
 - Planning Considerations 1-4
 - Planning Objectives 1-7
 - Master Plan Process 1-9
 - Study Documentation and Approvals 1-10
 - Public Involvement 1-11
 - Conclusion 1-12

- Chapter 2: Existing Conditions 2-1
 - Background 2-1
 - Existing Facilities 2-9
 - Land Use Compatibility 2-18
 - Environmental Overview 2-21
 - Conclusion 2-21

- Chapter 3: Forecasts 3-1
 - Introduction 3-1
 - Forecast Rationale 3-1
 - Commercial Aviation Forecasts 3-4
 - Based Aircraft Forecasts 3-17
 - General Aviation Operations Forecasts 3-24
 - Military Operations 3-28
 - Annual Instrument Approaches 3-29
 - Peak Activity 3-29
 - Forecast Summary 3-33



Chapter 4: Facility Requirements	4-1
Introduction	4-1
Planning Activity Levels	4-1
Airside Facilities	4-2
Passenger Terminal.....	4-44
Air Cargo	4-60
General Aviation	4-62
Landside Facilities.....	4-67
Support Facilities	4-73
Other	4-77
Summary	4-79
Chapter 5: Alternatives Analysis	5-1
Introduction	5-1
Evaluation Process.....	5-1
Development Considerations.....	5-2
Airfield Development Alternatives	5-2
Passenger Terminal Alternatives	5-14
General Aviation & Other Development Alternatives	5-23
Landside Development Alternatives	5-42
Support Facility Alternatives.....	5-43
Preferred Development Strategy	5-46
Chapter 6: Implementation Plan	6-1
Introduction	6-1
Considerations	6-1
Implementation Summary	6-3
Implementation Process	6-3
Project Phasing & Descriptions	6-4
Financial Overview	6-7
Capital Improvement Plan.....	6-11
Chapter 7: Airport Layout Plan	7-1
Drawings	7-1
Electronic Airport Layout Plan (eALP)	7-1
Aeronautical Survey and Aerial Imagery	7-2
Appendices	
Appendix A - Glossary of Terms	A-1
Appendix B - Master Plan Process	B-1



Airport Master Plan Update
Rapid City Regional Airport (RAP)

Appendix C - Public InvolvementC-1
Appendix D - Airport ClassificationD-1
Appendix E - Airport Funding E-1
Appendix F - Airport Background F-1
Appendix G - Airfield Pavements G-1
Appendix H - Airfield Design H-1
Appendix I - General Aviation & Other Users I-1
Appendix J - Support Facilities J-1
Appendix K - Navigational AidsK-1
Appendix L - Airspace and Instrument ApproachesL-1
Appendix O - Land Use Compatibility..... O-1
Appendix P - Environmental Overview P-1
Appendix T - Terminal FacilitiesT-1
Appendix U - Solid Waste Management Plan..... U-1



Executive Summary

Scope & Timeline

The 2014 Rapid City Regional Airport Master Plan Update was prepared for the City of Rapid City in accordance with Federal Aviation Administration (FAA) standards and in consultation with the Airport Board, Staff, Tenants and Community Representatives. The development plans determined from this update provide the basis for projects to be considered in 5, 10, 20 years and beyond.



The project addressed all elements of the airport to meet projected demand. The following items were specific focus areas for this 2014 Airport Master Plan:

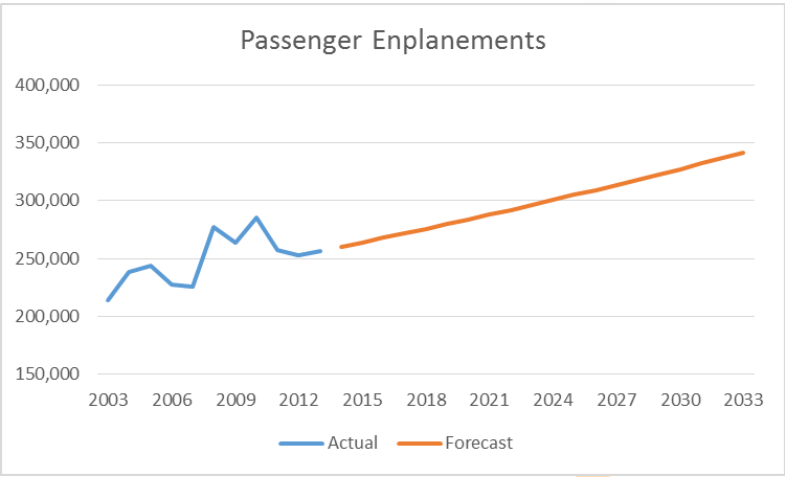
- Identify expansion areas for General Aviation
- Identify new Cargo area
- Determine Ultimate Runway Length
- Review Passenger Terminal size, inline baggage screening needs and deicing area
- Identify needs of USFS
- Identify location for ATCT

Kick-Off	March 2014
Existing Conditions	July 2014
Forecasts	September 2014
Alternatives	May 2015
Electronic ALP	August 2015

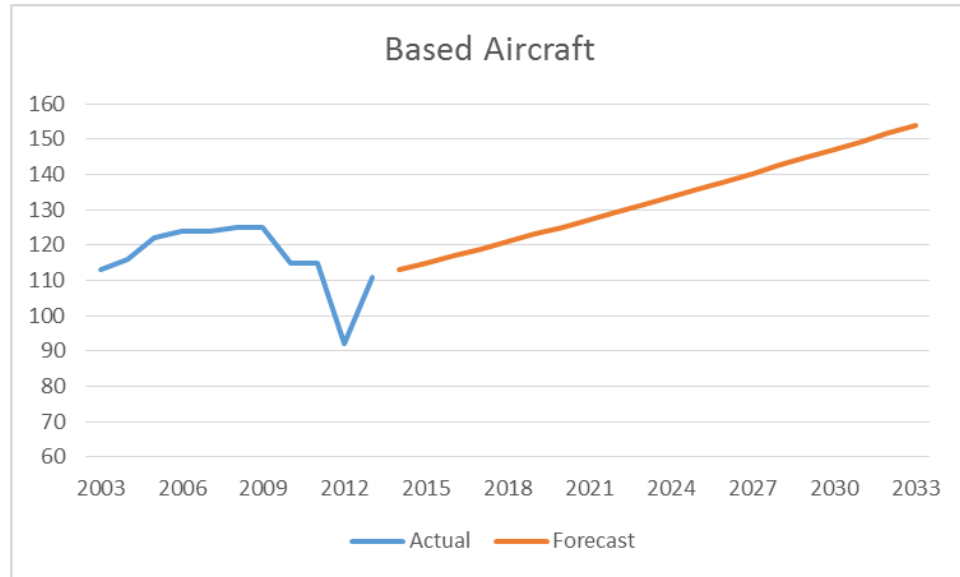
Forecasts

At the same time that existing facilities at the airport were examined a second effort was undertaken to determine what the demand would be for each type of aviation activity at Rapid City Regional Airport through the 20 year planning period. There are three key measures: 1) *passenger enplanements* which drive airline terminal capacity, 2) *based aircraft* which drive aircraft storage capacity and 3) *airport operations* which drive airfield capacity.

Passenger Enplanements, on an annual basis, have shown steady growth with periodic short term ups and downs. Enplanements are forecast to increase at a rate equivalent to the Rapid City MSA Employment growth. This 1.44% CAGR can easily be accommodated in the existing airline terminal.

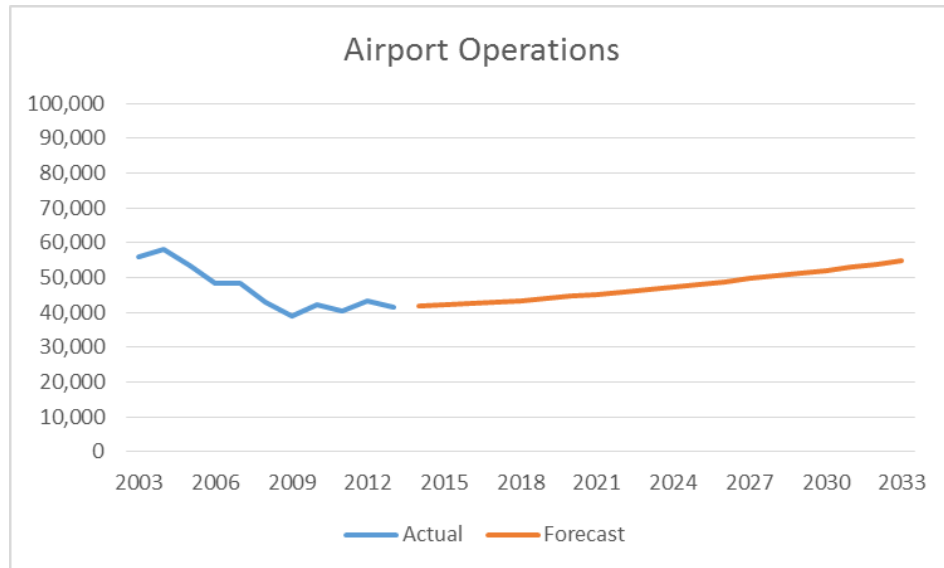


Historical Based Aircraft numbers at Rapid City are reflective of various errors in data collection prevalent across the country until approximately 2009. The errors were not extraordinary but tending to show slightly more based aircraft than when strictly using



the FAA criteria for counting. In 2009, the FAA began a multi-year process of confirming based aircraft and with the exception of a local data collection error in 2012, Rapid City had around 111 based aircraft which had plateaued due to lack of hangar space. If hangar space requirements are met, the based aircraft are forecast to rise at a 1.66% CAGR consistent with an increasing share of the Rapid City MSA population.

Airport Operations which are an aggregate of airlines, military, and general aviation, have declined somewhat particularly in the area of general aviation. This change is consistent in many parts of the country and a slow steady growth of

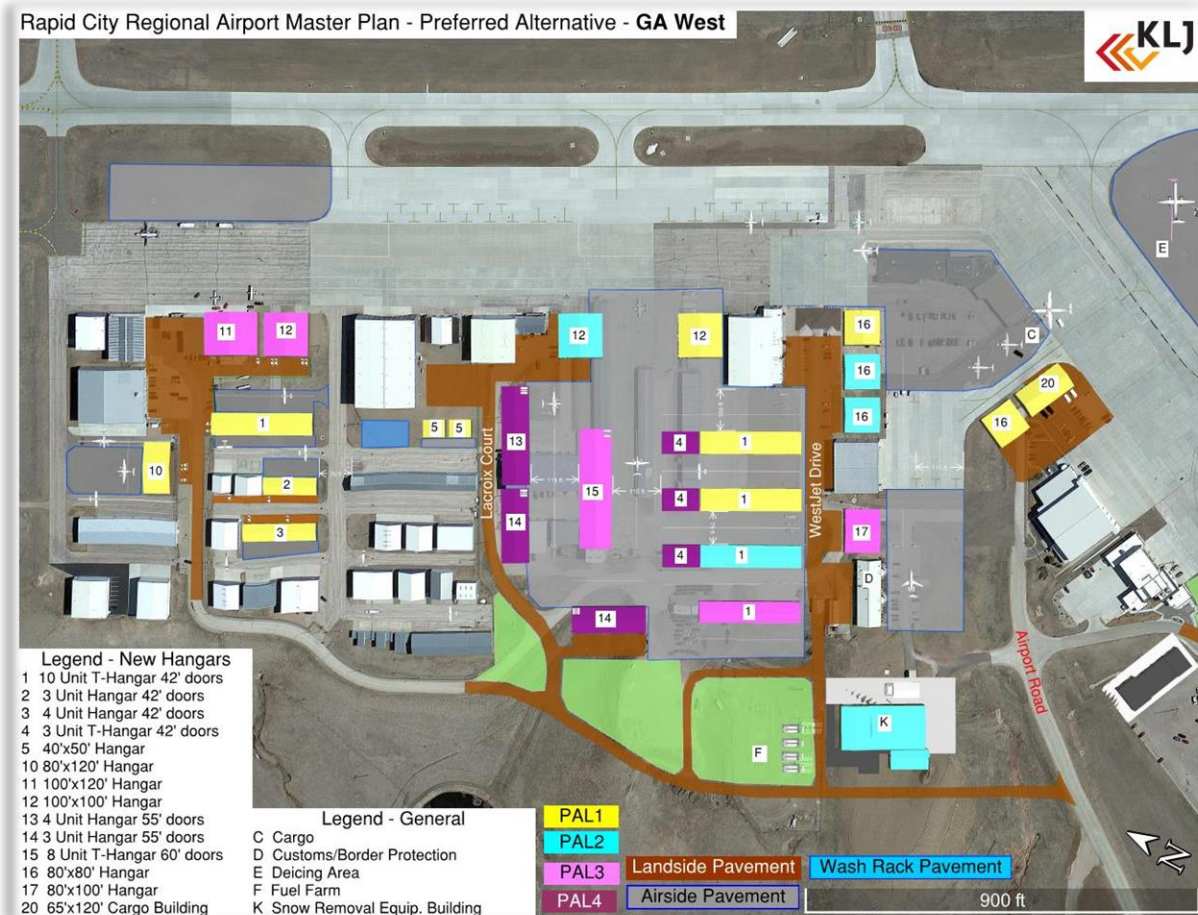


1.41% CAGR is expected when all areas of airline, military and general aviation operations are combined. For Rapid City this level of airport activity can be readily accommodated within the existing airfield with no substantial capacity improvements.

Preferred Alternative

There were six different concepts refined down to three alternatives for the airport to consider in selecting a preferred alternative. The preferred alternative was selected based on a layout that best met the demand for facilities in all aspects of aviation. Key elements of the preferred alternative were:

- New Cargo location
- New General Aviation Road alignment to accommodate hangar development
- Relocate Snow Removal Equipment facility to accommodate hangar development
- Hangar Development based on demand
- New Aircraft Deicing Pads
- Inline Baggage Screening System
- Parking expansion for public use and rental car storage
- Relocate ATCT to improve visibility from the tower
- Realign Long View Road to accommodate Precision Approach to Runway 14
- Precision Instrument Approach for Runway 14
- USFS expansion to south from current Air Tanker Base
- SDARNG expansion within existing leasehold
- Parallel taxiway on east side of Runway 14-32



Implementation Plan/Funding

The following table provides a timeline for the projects in the preferred development plan.

	Near-Term 0-5 Years PAL 1	Mid-Term 6-10 Years PAL 2	Long-Term 11-20 Years PAL 3 & 4	Ultimate 20+ Years Beyond PAL 4
Airfield	<ul style="list-style-type: none"> • Replace PAPIs • Remove Taxiway B between the Apron and Taxiway A 	<ul style="list-style-type: none"> • Realign Long View Road outside of Runway 14 RPZ • Precision Instrument Approach for Runway 14 • Replace ATCT 	<ul style="list-style-type: none"> • Add 25' paved shoulders for Runway 14-32 • Expand Blast Pad for Runway 32 to 200' x 200' 	<ul style="list-style-type: none"> • Construct East Parallel Taxiway for Runway 14-32
Passenger Terminal	<ul style="list-style-type: none"> • Add inline Baggage Screening • Add new Baggage Makeup Area • Deicing Apron Phase I (1 position) 	<ul style="list-style-type: none"> • Expand terminal apron to square off corners 	<ul style="list-style-type: none"> • Deicing Apron Phase II (2 positions) 	
General Aviation & Other	<ul style="list-style-type: none"> • Add 3 10-unit T-Hangars • Add 3 conventional hangars • Add 9 small box hangars • Add Cargo Building and Cargo Hangar • USFS Phase I 	<ul style="list-style-type: none"> • Expand Apron on North end by 7,000 square yards • Add 1 10-unit T-Hangar • Add 2 Conventional Hangars • SDARNG Readiness Center • USFS Phase II 	<ul style="list-style-type: none"> • Add 1 10-unit T-Hangar • Add 3 3-unit T-Hangars • Add 3 Conventional Hangars • Add 1 8-unit Exec T-Hgr • Add 10 small box hangars • USFS Phase III 	<p><u>East Side</u></p> <ul style="list-style-type: none"> • Add 22,500 square yards of apron • Add 5 Conventional Hangars • Add 3 10-unit T-Hangars • Add 8 small box hangars
Landside	<ul style="list-style-type: none"> • Public Parking Lot Entry/Exit Shelters 	<ul style="list-style-type: none"> • Realign Road for Rental car lot (for Terminal Apron expansion) • Pave Additional public parking • Add storage lot for rental cars 	<ul style="list-style-type: none"> • Site work for non-aeronautical area 	
Support	<ul style="list-style-type: none"> • New General Aviation Road 	<ul style="list-style-type: none"> • Relocate Maintenance and SRE facilities • Sanitary Sewer connection 	<ul style="list-style-type: none"> • Prepare CBP facility 	



Cost Estimates for Preferred Alternative (000's)					
Area	Description	Paving	Buildings	Other	Total
West General Aviation	Hangars & Associated Paving	4,557.3	14,580.9		19,138.2
East General Aviation	Hangars, Paving & Utilities	3,902.5	6,476.2	1,807.7	12,186.4
East Taxiway	Paving	21,435.5			21,435.5
Terminal	Deicing Area; Apron Paving; & Parking	5,057.5	138.0	828.0	6,023.5
Cargo/CBP	Apron Paving, Fill and Buildings	569.0	1,495.0		2,064.0
USFS	Paving and Associated Fill	3,268.5		1,442.0	4,710.5
ATCT	Building and Associated Paving	63.0	3,450.0		3,513.0
SRE Building	Building and Associated Paving	521.3	8,964.5		9,485.8
Roads	New Roads in GA Areas & Realign Long View	2,730.1		1,841.0	4,571.1
Total		\$42,104.7	\$35,104.6	\$5,918.7	\$83,128.0

Sources of Funding -- The development needs at the airport will make use several different funding sources for different elements of projects. Following is a description of those funding sources and potential uses:

- Airport Improvement Program (AIP) - from the FAA and used for eligible portions of airport projects which improve safety, capacity or preserve justified facilities. Funding is up to 90%.
- SD Aeronautics - from the SD DOT and used for 4-6% of the cost of an AIP Eligible project.
- Transportation Security Administration (TSA) - from the TSA and used for the eligible portion of the inline baggage screening system where bags are conveyed through the screening area.
- Other Federal Funds - the USFS and SDARNG are expected to pay for the improvements necessary for their facilities. AIP funds may not be used for these as there is a prohibition on using AIP to fund other federally used facilities.
- Passenger Facility Charge - authorized by the FAA for eligible portions of projects and funded from a \$4.50 per passenger charge. Mostly dedicated at this time to repayment of the airline terminal remodeling.
- Customer Facility Charge - a charge to rental car customers used for improvements to rental car facilities. Mostly dedicated at this time to repayment of the Car Rental Quick Turn facility.
- Airport Revenues - all sources of airport funding which can be used for capital improvements. For the master plan this is expected to be the match for AIP projects, the ineligible portions of any projects, and the construction of small hangars for renting to aircraft owners.
- Private Funding - individuals and companies finance projects at airports in exchange for a leasehold interest in airport property. For the master plan this private funding is anticipated for large hangars which are typically unique to a business interest. The leasehold interest provided by the airport should be equivalent to the level of investment and its typical amortization.