

# 2009 MASTER PLAN UPDATE

for BOISE AIRPORT

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# INTRODUCTION

Boise Airport is owned by the City of Boise, Idaho, and operated by the City of Boise Department of Aviation. The facility plays a vital role in the regional transportation system, not only for accomodating aviation and airline passenger travel, but also for industrial, commercial, and cargo activity.

The Boise Airport Master Plan Update provides a plan for how Boise Airport can grow to meet the long-range air transportation needs for Southwest Idaho. This summary highlights key elements of the plan's recommended development program. The City of Boise will periodically update the plan to verify its compatibility with aviation industry and local community development trends. The time frames for the projects shown in the plan are flexible and demand driven. Projects will be built when needed to meet the requirements of a growing airport and when they are financially self-supporting. All development at Boise Airport is paid for by the users of Boise Airport or by state and federal grants. No local tax dollars are used to finance Boise Airport operations or capital development.



## **BOISE AIRPORT LOCATION MAP**



## **BOISE AIRPORT MARKET AREA**





# THE MASTER PLAN PROCESS

The Federal Aviation Administration (FAA) recommends airport master plans to be updated every five years or as necessary to keep them current. Boise Airport's last master plan update was published in February 2001. Since that study, Boise Airport has completed several major projects and the aviation industry has undergone major changes. As a result, Boise Airport reasoned it was time to update the Airport's master plan.

The Boise Airport Master Plan Update was completed in accordance with FAA guidelines, which include all the required study elements to develop a comprehensive airport plan that meets the aviation demand for a 20-year horizon and is compatible with the surrounding community. The study began in March of 2006 and the aviation activity forecasts were completed in September 2006 and approved by the FAA in March 2007. The final technical analysis for the Master Plan Update was completed in Summer 2008. After review by stakeholders, the final technical report and an Airport Layout Plan (ALP) drawing were presented to the City of Boise Department of Aviation in Spring 2009.



Boise Airport EXECUTIVE SUMMARY 2009 MASTER PLAN UPDATE



# FUTURE DEMAND

Aviation demand forecasts were developed and approved by the FAA for enplaned passengers, air cargo volume, aircraft operations and fleet mix through 2030. They provide the basis for determining facility requirements and for performing the environmental, financial and other analyses necessary to prepare the Boise Airport Master Plan.

The forecasts were prepared in 2006, using 2005 as the base year. The aviation activity projections are based on assumptions about aviation activity in the Boise Market Area and other factors that may affect future aviation demand at Boise Airport:

Actual activity levels may vary from the forecast due to unforeseen events or changes in the operational characteristics of Boise Airport or economic or political uncertainties by the Boise Airport region or the nation. In addition to the baseline forecasts, alternative forecast scenarios were developed to account for potential changes in air service patterns during the planning period, offering a range of forecasts to help guide Boise Airport facility development decisions.

## National aviation industry trends

- Policy goals and objectives of the Airport
- Historical activity levels and trends in air service at the Airport, including comparisons of historical U.S. market shares
- Local socioeconomic and demographic trends, compared with state and national trends



## ENPLANED PASSENGER FORECAST

The forecasting analyses provided multiple growth scenarios based on market share and regression methodologies, which are traditional forecasting models used in aviation planning. From these various growth scenarios, a preferred or "base" enplaned passenger forecast was selected and used for further analysis. Selection of a base passenger projection is critical because the forecasts for operations and peak activity are derived from it, and it justifies the facility requirement assessments and financial planning.

Because the level of airline passenger operations at an airport can change relatively quickly, alternative forecast scenarios were also developed for contingency planning. These provide a quick glance at passenger activity levels that could be expected if circumstances (planned or unplanned) were to change. The alternatives include both high and low trend scenarios. The low trend scenario, or a decline in passenger activity, could result from a prolonged economic downturn or a dramatic and negative shift in the business climate for the Boise area. A larger-than-normal increase could come from strong economic growth over many years, or the introduction of additional low-cost carriers.

The preferred forecast has a compounded annual grow rate of 3.64 percent and projects Boise Airport to reach 3.8 million passenger enplanements by 2030. This projection is supported by a decade of stable, low-cost passenger service from Southwest Airlines, and a positive economic climate for long-term growth.

The enplaned passenger chart includes the preferred ("base") forecast as well as "high" and "low" trend forecast scenarios. The FAA's Terminal Area Forecast through the year 2025 is included for comparison.



## **ENPLANED PASSENGER FORECAST**

# AIR CARGO FORECAST

Air cargo service at Boise Airport is provided by passenger airlines using their aircraft's lower deck, or belly hold, and by the all-cargo airlines using freighter aircraft. Air cargo is divided into two categories: air freight and air mail.

Air freight is projected to grow annually at greater than 4 percent a year for the first 10 years. Beyond that time, the annual growth rate would likely continue between 3 and 4 percent. The slowing of the growth rate would likely result as the Boise air cargo market matures and other modes of transportation become more competitive. Although total freight volume was down for 2005, Boise Airport freight will most likely continue to grow along with the rest of the country. Additionally, Boise Airport may well be strategically positioned to realize larger air freight growth due to congested air cargo facilities and airfields at larger airports in the region as well as lower local operating costs and "all weather" landing systems. Total air freight at Boise Airport is projected to grow from 91,540,638 pounds in 2005 to 233,634,000 pounds in 2030, a compounded annual increase 3.8 percent.

The air mail market has more or less been redefined. Although the volume of air mail at Boise Airport appears to have been dropping significantly since 2001, in reality, most air mail shipments have been moved over to allcargo "freight" operators for security reasons due to the terrorist activities of 2001. Correspondingly, the air freight volumes have increased during the same period. Because of the change in how air mail is now shipped, the air mail volumes for Boise Airport are starting over with new totals. Projecting air mail volumes for the short term will be difficult at best due to potential security changes yet to be defined by the Department of Homeland Security. However, longer term volumes should settle into a typical growth mode when new security measures are in place. Therefore, total air mail volumes are projected to increase from 2,149,265 pounds in 2005 to 4,924,000 pounds in 2030, a compounded annual increase of 3.4 percent.



**AIR CARGO FORECAST** 

Total air freight at Boise Airport is projected to grow at a compounded annual rate of 3.8% from 2005 to 2030.

## AIRCRAFT OPERATIONS FORECAST

**Total aircraft operations** (arrivals and departures) at Boise Airport are forecast to increase from 171,897 in 2005 to 352,696 in 2030, a compounded annual growth rate of 2.9 percent.

**Air carrier aircraft operations** are forecast to increase from 21,978 in 2005 to 42,486 in 2030, an annual compounded growth rate of 2.7 percent during this period. Commuter/air taxi operations are forecast to increase from 32,962 in 2005 to 63,169 in 2030, an annual compounded growth rate of 2.8 percent.

The air carrier aircraft fleet mix is expected to primarily consist of Boeing 737s, Airbus A319s, Airbus A320s, and more fuel efficient Bombardier Q-400 turboprops (or their equivalent). The older Boeing 737-300/400/500s will be retired over time and replaced with newer Boeing 737-700/800/900s. It is expected that Boise Airport will continue to see occasional non-scheduled operations of widebody aircraft. Commuter operations are projected to see a gradual shift from the 37-seat turboprops and 50-seat regional jets to the larger 65-seat regional jets. The fleet is projected to see a growth in 70-seat turboprop aircraft as well as 70- and 80-seat regional jets. It is also projected that the commuter/air taxi fleet will continue to see smaller 10- and 19-seat air taxi service to small seasonal destinations in the Boise area.

**General aviation operations** at Boise Airport are forecast to increase at a faster rate than the national general aviation activity forecast by the FAA. Total general aviation operations are forecast to increase from 87,425 in 2005 to 210,619 in 2030. The largest jump will occur in 2011 when the new air traffic control



## AIRPORT OPERATIONS FORECAST

tower (ATCT) for Boise Airport is projected to open and operations on the military assault strip are included in Boise Airport's annual totals. Currently, operations on this runway (estimated at 47,450 local operations annually) are not controlled by the ATCT and, therefore, not included in the official traffic count.

All-cargo operations are forecast to increase from 7,208 in 2005 to 11,427 in 2030, a compounded annual growth rate of 1.9 percent during this period. All-cargo operators are projected to continue to use widebody Airbus A300 aircraft at Boise Airport.

**Military activity** at Boise Airport will be influenced by U.S. Department of Defense policy, which largely dictates the level of military activity at an airport. Although the number of military operations fluctuated some between 2000 and 2005, there was relatively little change. For planning purposes, it is forecast that military operations at Boise Airport will be held constant at the 2005 level of 13,317. However, aircraft types may vary with mission changes.

Other air taxi operations include for-hire charters, fixed-base operators, and miscellaneous transportation of property by aircraft. Other air taxi operations at Boise Airport are forecast to remain relatively steady, growing from 10,164 operations in 2005 to 11,086 in 2030.

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# FACILITY REQUIREMENTS

The demand/capacity analysis for the Master Plan study indicates that peak hour volume and type of activity forecast through 2030 will require expanding various facilities as well as adding new ones. Airport facilities comprise four key components:

## Airfield

(runways, taxiways, and apron)

- Terminal (ticketing, baggage claim, and gates)
- Ground Transportation Facilities (roads and parking)

## Air Cargo and General Aviation (processing facilities and apron)

The requirements evaluation of the existing airfield showed that the runway system is a primary constraint to long-term growth. Without improvements, operational demand meets the airfield annual service volume (ASV) in 2012. Various airfield improvements including the addition of a parallel runway will provide enough capacity to handle forecast growth through the year 2030. FAA is undertaking further capacity studies at Boise Airport in 2009.

Programmed requirements for passenger terminal facilities were focused on number of aircraft gates and the passenger terminal building. Development is based on three Passenger Activity Levels (PALs) with PAL I (3,000,000 total annual passengers) being met by the current facilities. Based on the preferred forecast of enplaned passengers, PAL 2 (4,500,000 total annual passengers) is projected to occur by 2016, and PAL 3 (6,000,000 total annual passengers) is projected to occur by 2024. The curbfront, however, is considered sufficient throughout the planning horizon.

Additional public parking capacity will be needed as passenger levels grow. Expansion of the parking garage and economy lot will be required. Additional rental car facilities are needed as there are currently an insufficient number of ready lot spaces available. Long-term rental car plans are to relocate operations into the garage (interim solution) and then ultimately to an off-site consolidated facility as demand dictates.

Air cargo facility development will be driven by new cargo security requirements, facility needs, and the need to improve overall operational efficiencies. General aviation development will be driven by the long-term need to separate general aviation operations from large commercial aircraft operations and the desire to develop new facilities along the new runway (9-27).



	Existing	2010	2015	2020	2025	2030	
TERMINAL							
Gates	22	22	23	27	See note #1		
Ticket Area (s.f.)	13,800	14,100	14,400	15,100			
Baggage Area (s.f.)	33,800	35,200	36,600	38,500			
Gate Area (s.f.)	36,600	37,000	37,400	39,600			
AUTO PARKING							
Close-In Parking	2,209	2,541	3,134	3,752	4,494	4,494 415 620 See note #2	
Economy Parking	1,067	270	335	400	415		
Rental Car	296	330	415	505	620		
Employee	653	530	630	735	850		
CARGO BUILDING AREA (S.F.)							
Current Utilization	73,700	91,600	111,900	134,800	160,000	187,300	
Increased Utilization	73,700	38,900	47,500	57,200	67,900	79,500	
GENERAL AVIATION (S.F.)							
T-Hangar Area	72,900	72,900	73,900	75,200	77,200	79,100	
Convential Hangar Area	414,027	413,800	460,000	512,000	564,100	634,600	

<sup>17</sup> Totals interpolated from Boise Airport Passenger Terminal Building – Schematic Design Manual, February 1999.

 $^{2\prime}$  Totals interpolated from Parking Master Plan – Boise Airport, July 2007

# ANNUAL SERVICE VOLUME AND DELAY





# AIRPORT DEVELOPMENT PLAN OVERVIEW

The recommended Airport Development Plan (ADP) shown on pages 10 – 11 represents in conceptual form all development that should be implemented if growth were to occur as forecast. The ADP can be considered a completed conceptual picture of Boise Airport at the end of the 20-year planning period. The ADP represents one vision of how facilities could be developed. Actual development may not mirror that shown on the ADP due to factors such as changing demand, funding availability, or future environmental constraints. However, the ADP serves as a guideline for the future layout of Boise Airport. The ADP was derived on the ability to incrementally achieve the preferred ultimate plan development concept.

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# THE ADP IS COMPRISED OF PROJECTS IN THESE CATEGORIES TO EXPAND OR BUILD NEW FACILITIES:

**Airfield** – These airfield projects will increase airfield capacity and/or operational efficiency: extension of Runway 10R-28L and Taxiway B; development and extension of Runway 9-27 and associated taxiways, including a connecting taxiway; extension of Taxiway F to facilitate expansion of general aviation facilities; new exit taxiways on Runway 10R; and improvements to Taxiway A-6 associated with future terminal expansion.

Air Cargo – The primary air cargo project is developing a new consolidated cargo facility, which would allow for future expansion of cargo operations, and increase airfield efficiency and safety by segregating cargo aircraft from general aviation aircraft.

**General Aviation** – Expansion of the general aviation area on the west side of the airfield will allow for the consolidation of its operations, increasing efficiencies and safety by separating general aviation and non-general aviation operations.

**Ground Transportation** – Primary ground transportation projects include incremental expansion of the parking garage and off-site economy lot, realignment of Orchard Street to accomodate general aviation expansion, and development of a new off-site consolidated rental car facility.

**Support Facilities** – New support facilities include a snow removal equipment facility, a second Airport Rescue and Fire Fighting (ARFF) facility to serve Runway 9-27, relocation of the National Interagency Fire Center (NIFC) to allow for facility consolidation and future expansion, and construction of a new U.S. Customs and Border Protection (CBP) facility.

**Terminal** – Implementation of terminal projects would be triggered by passenger activity levels and include the expansion of Concourse A, relocation of the Idaho Transportation Department Division (ITD) of Aeronautics facility, and expansion of the main terminal building.

# PRIMARY DEVELOPMENT PROJECTS INCLUDE:

### AIRFIELD

- (1) Extension of Runway IOR-28L & Taxiway B
- (2) New Runway IOR exit taxiways
- (3) Taxiway A-6 improvements
- (4) Taxiway F extension
- (5) Runway 9-27 & associated taxiways
- (6) New connecting taxiway
- (7) New heliport & helipads

## AIR CARGO

(8) New consolidated cargo facility

### **GENERAL AVIATION**

9 General aviation area expansion

## **GROUND TRANSPORTATION**

- (10) Econmony lot expansion
- (11) Parking garage expansion
- (12) Orchard street realignment
- (13) New consolidated rental car facility

## SUPPORT FACILITIES

- (14) New snow removal equipment facility
- (15) New (2nd) ARFF station
- (16) New NIFC campus
- (17) New U.S. Customs and Border Protection facility

## TERMINAL

- (18) Concourse A development
- (19) Main terminal expansion
- (20) ITD Division of Aeronautics facility relocation





\* Taxiway G extension is a Runway Safety Action Team (RSAT) recommendation to mitigate potential runway incursions and is not included as part of the Master Plan ADP







# **PROGRAM PHASING**

The ADP project phasing is based on specific demand levels that will trigger implementation of the individual projects. Phasing also involves financial considerations and a logical progression of development that will allow critical projects to be in place to meet demand. The Implementation Plan divides into four five-year phases:

## Phase 1 - 2008 to 2012

- Economy lot expansion
- New snow removal equipment facility
- Parking garage expansion
- Runway 28L and Taxiway B extension
- Runway IOR exit taxiways
- General aviation area expansion
- Taxiway A-6 improvements
- New U.S. CBP facility

## Phase 2 – 2013 to 2017

- Runway 9-27 runway development to 5,900 feet long and 100 feet wide, and associated parallel taxiway development
- New consolidated cargo facility
- · Heliport and helipads
- Concourse A terminal development
- Main terminal expansion

## Phase 3 – 2018 to 2022

- Connecting taxiway from Runway 9-27 to main airfield
- Relocate ITD Department of Aeronautics facility
- Parking garage expansion
- · Off-site consolidated rental car facility
- New ARFF station
- New NIFC campus
- Concourse A expansion

## Phase 4 – 2023 to 2027

- Runway 9-27 runway extension to 8,000 feet long and 150 feet wide, and associated parallel taxiway extension
- Economy lot expansion
- Main terminal expansion

Implementation of the projects in the ADP is phased so that development corresponds with the demand forecasts prepared for this Master Plan Update. Detailed planning, design, and construction are important factors in the phasing process so the airfield, terminal, and landside operations can continue uninterrupted during construction. Monitoring actual activity for comparison with forecast activity is an important part of effective implementation, as changes in activity may affect the ADP and the timing of certain projects. Therefore, it is recommended that the ADP and Implementation Plan be reviewed annually. Airport staff regularly monitors a variety of data at Boise Airport, including, but not limited to, passenger activity levels, aircraft operations, cargo, and other statistics, such as parking and rental car data for parking and storage needs. To assess growth on an annual basis, it is recommended that Boise Airport staff continue to collect this data and compare it with the recommendations in this Master Plan Update.

# FINANCIAL PLAN

The total cost of the projects included in the recommended ADP is approximately \$261 million. A financial plan was developed to determine the financial feasibility of implementing the ADP. Separate from the projects included in the ADP, Boise Airport plans to undertake several additional projects as defined in its Capital Improvement Plan (CIP). For the purposes of this financial analysis, projects included in the ADP were combined with projects included in the existing CIP to develop a total long-term CIP from which to assess the financial feasibility of the ADP.





To assess the feasibility of implementing the recommended ADP, a financial plan was developed to meet these requirements:

- Boise Airport can generate adequate net revenues to cover the local match of the CIP.
- Net revenues are sufficient to meet debt service coverage requirements.
- Airline cost per enplanement (CPE) remains competitive (approximately 50% of the national average).

# Funding remains stable (FAA grants and operating cash flow).

For purposes of the Master Plan financial analysis, a specific implementation schedule was assumed only to demonstrate financial feasibility. The actual implementation schedule for the improvements identified in the Master Plan will be defined by development triggers and demand growth rather than specific calendar years.



The proposed funding strategy for the recommended ADP includes a variety of funding sources, as detailed below. The proposed funding does not include using any local tax dollars. Actual financing strategies used will be determined as implementation approaches.

- Airport Improvement Program (AIP) Grants AIP grants are federal grants funded through the Aviation Trust Fund. AIP entitlement funds are apportioned to airports based on enplaned passengers and are granted for partial funding of eligible projects based on national priorities/ objectives. AIP discretionary funds are those left over after all entitlements have been made. Discretionary funds are available for "set-aside" projects or for true discretionary use, based on national prioritization.
- Passenger Facility Charge (PFC) The FAA allows the collection of PFC fees up to \$4.50 for every enplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA-approved projects that preserve or enhance safety, security, or capacity; reduce noise; or increase air carrier competition. In addition, PFCs may be used to pay debt service on debt used to fund PFC-eligible projects.
- Customer Facility Charge (CFC) Boise Airport collects a CFC of \$1.20 per rental car per transaction day from rental car passengers. These funds must be used for projects that benefit the car rental agencies, such as an off-site consolidated rental car facility.
- Airport Funds (cash) Boise Airport funds are generated from annual cash flow/unrestricted funds, and include revenues remaining after payment of operating and maintenance expenses, debt service requirements, and fulfilling fund deposit requirements.



As implementation of the ADP progresses, Boise Airport staff should assess the financial feasibility of each project included in the ADP. Future considerations regarding the financial feasibility of the ADP include:

- Changes in enplanement/traffic growth
- Availability of AIP funding
- Potential reduction in AIP funding should passenger levels dictate the reclassification of Boise Airport from a small hub to a medium hub (2019)
- Potential increases in the maximum PFC level
- Ability to issue long-term debt in the form of revenue bonds



# ENVIRONMENTAL OVERVIEW

Environmental issues that could result from implementing the ADP were quantitatively or qualitatively assessed to provide an indication of the type of environmental processing that may be required (i.e., approvals, permits or additional studies). Potential impacts associated with such developmen projects typically include consideration of areas exposed to significant level: of aircraft noise, and areas where the ground would be disturbed due to the development projects themselves.

An overview of environmental conditions related to the ADP projects was assessed in relation to the environmental impact categories outlined in FA/ Order 1050.1E, *Policies and Procedures for Considering Environmental Impacts* and typically considered under the National Environmental Policy Act of 1965 (NEPA). Based on the development associated with the recommended ADI projects, the following potential environmental impacts have been preliminarily identified. More specific environmental analyses will be required when individua projects near the development stage and are submitted for environmenta review.

IMPACT CATEGORY	POTENTIAL IMPACT
Air Quality	Temporary construction emissions – <b>New regulations</b>
Compatible Land Use	Adopted policies prevent land use that is incompatible with Boise Airport. Specific impacts would need to be determined through future noise analysis.
Construction Impacts	Construction emissions, road closures/traffic restrictions, runway restrictions.
Fish,Wildlife, and Plants	Potential loss of habitat for wildlife and rare plant species.
Floodplains	Potential encroachment on the Five Mile Creek 100-year floodplain.
Hazardous Materials, Pollution Prevention, and Solid Waste	Increased solid waste generation during construction. No capacity issues with existing landfills. Best management practices would reduce the potential for releases of hazardous materials.
Light Emissions and Visual Impacts	Runway development would result in additional airfield lighting, primarily in areas that are buffered from residential and commercial properties.
Natural Resources and Energy Supply	Planned development/expansion will increase energy consumption at Boise Airport, but not significantly compared with the City of Boise as a whole.
Noise	Detailed analysis as needed through future formal environmental document. Previous studies suggests small increase in area affected by DNL 65 contour, but such increase would occur on airport property. Land use planning to minimize potential impact.
Secondary (Induced) Impacts	Temporary traffic restrictions may affect access to businesses, but impacts would be temporary. No dislocation of non-airport related businesses expected. Airport expansion would likely increase economic activity around Boise Airport.
Socioeconomic Impacts, Environmental Justice, and Chil- dren's Environmental Health and Safety Risks	Airport expansion has been planned to avoid compatible land use and noise issues. Temporary traffic restrictions likely. No non-airport business relocation anticipated.
Water Quality	Storm water pollution prevention practices implemented during construction and stream relocation activities would likely prevent significant impacts to surface water quality.
Wetlands	Best management practices would likely prevent or mitigate any valuable wetland resources that may be found.



