

Ted Stevens Anchorage International Airport

2014 MASTER PLAN UPDATE

CHAPTER 3 - FORECAST SUMMARY

FINAL
DECEMBER 2014

RS&H

IN ASSOCIATION WITH:

HDR

DOWL HKM

RIM Architects

ATAC



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Prepared for:
Ted Stevens Anchorage International Airport
State of Alaska Department of Transportation & Public Facilities

Prepared by:

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PREFACE

The Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) provides Airport management and the Alaska Department of Transportation & Public Facilities (DOT&PF) with a strategy to develop the Ted Stevens Anchorage International Airport. The intent of the Master Plan Update is to provide guidance that will enable Airport management to strategically position the Airport for the future by maximizing operational efficiency and business effectiveness, as well as by maximizing property availability for aeronautical development through efficient planning. While long-term development is considered in master planning efforts, the typical planning horizon for the Master Plan Update is 20 years.

The Federal Aviation Administration provides guidance for Master Plan development in *FAA Advisory Circular 150 / 5070-6B, Airport Master Plans*. Although not required, the Advisory Circular strongly recommends airports prepare a Master Plan. Funding for the Master Plan Update is provided primarily by the Federal Aviation Administration through an Airport Improvement Program grant.

A comprehensive Master Plan Update was last prepared in 2002 and a partial update was undertaken between 2006 and 2008. This Master Plan Update was initiated in June 2012 and concluded in December 2014. The DOT&PF entered into a contract with the firm RS&H to lead this effort. The Master Plan Update included a robust public and stakeholder involvement program.

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Chapter 3 – Forecast Summary

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Acronyms and Abbreviations

AAAC	Airport Airline Affairs Committee
AAC	Aircraft Approach Category or Alaska Administrative Code
AACC	Anchorage Airport Communications Committee
AAD	Annual Average Day
AADT	Annual Average Daily Traffic
AAGR	Average Annual Growth Rate
AC	Advisory Circular
ACHP	Advisory Council on Historic Preservation
ACMI	Aircraft, Crew, Maintenance, and Insurance
ACMP	Anchorage Coastal Management Plan
ACRP	Airport Cooperative Research Program
ADAPT	Annual Delay and Activity Performance Times
ADEC	Alaska Department of Environmental Conservation
ADF	Aircraft Deicing Fluid
ADF&G	Alaska Department of Fish and Game
ADG	Airplane Design Group
ADNR, OHA	Alaska Department of Natural Resources, Office of History and Archaeology
ADOLWD	Alaska Department of Labor and Workforce Development
AEDC	Alaska Economic Development Corporation
AFSC	Anchorage Fueling and Service Company
AGL	Above Ground Line
AHPA	Alaska Historic Preservation Act
AHRS	Alaska Heritage Resource Survey
AIAS	Alaska International Airport System
AIDEA	Alaska Industrial Development and Export Authority
AIP	Airport Improvement Program
Airport	Ted Stevens Anchorage International Airport
AIT	Advanced Imaging Technology
AMATS	Anchorage Metropolitan Area Transportation Study
ANGB	Air National Guard Base
AOA	Air Operations Area
APDES	Alaska Pollutant Discharge Elimination System
APU	Auxiliary Power Units
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Fire Fighting
AS	Alaska Statute

ASDA	Accelerate-Stop Distance Available
ASDE	Airport Surface Detection Equipment
ASIG	Aircraft Service International Group
ASPM	Aviation System Performance Metrics
ASR	Airport Surveillance Radar
ATCT	Airport Traffic Control Tower
AWMP	Anchorage Wetlands Management Plan
AWWU	Anchorage Water and Wastewater Utility
BAT	Best Available Technology
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
BRAC	Base Realignment and Closure
BRL	Building Restriction Line
CAA	Clean Air Act
CAD	Computer-aided Design
CATS	Compliance Activity Tracking System
CBIS	Checked Baggage Inspection System
CBP	Customs and Border Protection
CBRA	Checked Baggage Resolution Area
CCSF	Certified Cargo Screening Facility
CDS	Consolidated De-Icing Services
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Customer Facility Charge
CFR	Code of Federal Regulations, or Crash / Fire / Rescue
CIP	Capital Improvement Plan
CO	Carbon Monoxide
Coastal Trail	Tony Knowles Coastal Trail
COD	Chemical Oxygen Demand
CONRAC	Consolidated Rental Car Facility
CUPPS	Common Use Passenger Processing Systems
CZMA	Coastal Zone Management Act
DHS	Department of Homeland Security
DME	Distance Measuring Equipment
DNL	Day-night Average Sound Level
DO	Dissolved Oxygen
DOT	U.S. Department of Transportation

DOT&PF	Alaska Department of Transportation and Public Facilities
EAS	Essential Air Service
EDS	Explosive Detection System
EMS	Environmental Management System
EOC	Emergency Operations Center
EQA	Equivalent Aircraft
ETD	Explosive Trace Detection
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FIS	Federal Inspection Service
FMRA	FAA Modernization and Reform Act of 2012
FY	Fiscal Year
GA	General Aviation
GPS	Global Positioning System
GRE	Ground Run-Up Enclosure
GSE	Ground Service Equipment
HLB	Heritage Land Bank
IAS	International Aviation Services, Inc.
IATA	International Air Transport Association
IBC	International Building Code
IFR	Instrument Flight Rules
IFT	International Freight Terminal
ILS	Instrument Landing System
INM	Integrated Noise Model
ISER	Institute of Social and Economic Research (at the University of Alaska Anchorage)
JBER	Joint Base Elmendorf-Richardson
LDA	Landing Distance Available
LOC	Localizer
LOS	Level of Service
LUST	Leaking Underground Storage Tank
Master Plan Update	Ted Stevens Anchorage International Airport Master Plan Update
MEP	Mechanical, Electrical, and Plumbing

MOA	Municipality of Anchorage
MSA	Metropolitan Statistical Area
MSGP	Multi-Sector General Permit
MSL	Mean Sea Level
MTOW	Maximum Takeoff Weight
NAAQS	National Ambient Air Quality Standards
NAC	Northern Air Cargo
NADP	Noise Abatement Departure Profiles
NAMS	Northern Air Maintenance Services
NAVAID	Navigational Aid
NCP	Noise Compatibility Program
NDB	Non-directional Beacon
NEMs	Noise Exposure Maps
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport System
NPL	National Priorities List
NRHP	National Register of Historic Places
O&D	Origin and Destination
O&M	Operations and Maintenance
OAIASS	Optimize AIAS Strategy
OER	Operating Expense Ratio
OFA	Object Free Area
OFZ	Obstacle Free Zone
OSR	On-Screen Resolution
PAL	Planning Activity Level
PAPI	Precision Approach Path Indicator
PCC	Portland Cement Concrete
PCI	Pavement Condition Index
PDARS	Performance Data Analysis and Reporting System
PFC	Passenger Facility Charges
PM-10	Particulate Matter with a Diameter of 10 Microns or Less
PM-2.5	Particulate Matter with a Diameter of 2.5 Microns or Less
QTF	Quick-Turnaround Facility
RCRA	Resource Conservation and Recovery Act

RDC	Runway Design Code
RNAV	Area Navigation
ROFA	Runway Object Free Area
RON	Remain Overnight
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RSIP	Residential Sound Insulation Program
RTR	Remote Transmitter Receiver
SCS	Sterile Corridor System
SHPO	State Historic Preservation Office(r)
SIDA	Security Identification Display Area
SIP	State Implementation Plan
SSCP	Security Screening Checkpoint
STEP	South Terminal Expansion Project
SWPPP	Stormwater Pollution Prevention Plan
TACAN	Tactical Air Navigation
TDG	Taxiway Design Group
TERPS	Terminal Instrument Procedures
TODA	Takeoff Distance Available
TORA	Takeoff Run Available
TRACON	Terminal Radar Approach Control
TSA	Transportation Security Administration
UPS	United Parcel Service
USDA-WS	U.S. Department of Agriculture - Wildlife Services
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USPS	United States Postal Service
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VOCs	Volatile Organic Compounds
VOR	Very High Frequency Omnidirectional Range
WAAS	Wide Area Augmentation Systems
WADP	West Anchorage District Plan
WBI	Whole Body Imaging
WHA	Wildlife Hazard Assessment
WHMP	Wildlife Hazard Management Plan

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CHAPTER 3 FORECAST SUMMARY

SECTION 1 INTRODUCTION

A summary of the aviation demand forecast at Ted Stevens Anchorage International Airport (Airport) is presented in this chapter for the planning horizon (forecast horizons of 2015, 2020, 2025, 2030). The forecast of aviation demand provides a basis for determining the type, size, and timing of aviation development. Consequently, the forecast influences virtually all phases of the planning process.

The *2013 Alaska International Airport System (AIAS) Forecast Technical Report* (AIAS Forecast) was completed in support of the *2013 AIAS Planning Study* (AIAS Planning Study), as part of the AIAS overall strategic planning effort. The AIAS Forecast is used as the basis for the determination of facility requirements for the Ted Stevens Anchorage International Airport Master Plan Update (Master Plan Update) process.

The AIAS Forecast presents both historic and forecasted economic and airport operational data. This planning effort was completed, in part, to determine whether the AIAS airports, which include the Airport, Fairbanks International Airport, and Lake Hood Airport, would experience untenable delays within the 20-year planning horizon.

A summary of existing and forecast passengers, cargo tonnage, based general aviation aircraft, and aircraft operations at the Airport is presented in this chapter.

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SECTION 2 SUMMARY OF AIAS FORECAST

Section 2 summarizes the portions of the forecast that were used for the development of the Ted Stevens International Airport (Airport) Master Plan Update (Master plan Update) facility requirements analysis. The forecast for the passengers, cargo tonnage, passenger aircraft operations, cargo operations, and general aviation operations and based aircraft are presented.

The base year of the Alaska International Airport System (AIAS) Forecast is 2010 while the Airport Master Plan Update base year is 2012. The difference in base years reflects the timing of the 2013 *Alaska International Airport System Planning Study* (AIAS Planning Study) and Airport Master Plan Update projects. The AIAS Planning Study did not include 2012 forecast levels, so interpolation between the data provided was used to develop the Airport Master Plan Update base year aviation activity data.

The Airport air service consists of commercial passenger, air cargo, mail, air taxi and small commercial air service, and general aviation. The Airport also accommodates occasional military flights. Descriptions of the various types of air service provided at the Airport are as follows:

- **Commercial Passenger Service** includes scheduled domestic, regional, charter, and international air carrier transport that is measured by the number of enplaned, deplaned, and transit (connecting) passengers, and operations. The majority of commercial passenger service operations are provided by the major airlines using a large aircraft fleet.
- **Air Cargo / Air Freight and Mail Service** typically includes scheduled commercial domestic and international cargo and mail carrier transport that is measured by enplaned, deplaned, and transit tonnage and operations.
- **Air Taxi and Other Service** includes scheduled or unscheduled, for-hire transport not classified as passenger or cargo transport in the traditional U.S. Department of Transportation (DOT) data sources.
- **General Aviation** includes scheduled or unscheduled civil aircraft operations other than those identified previously as commercial passenger or cargo operations. General aviation operations include some air taxi and charter activity to transport passengers or cargo typically to areas not reachable by scheduled commercial service operations, corporate flights and other business operations, flight training, and personal use by individual pilots. General aviation activity is typically measured by the number of based aircraft and general aviation operations.
- **Military** includes operations by military aircraft that is typically measured by total number of military operations.

2.1 PASSENGER FORECAST

Passenger activity can be categorized by origin and destination of passenger trips and by passenger type. The categories include:

Passengers by origin / destination of passenger trips

- **Domestic Passengers** – Passengers whose trips originate and terminate within the United States
 - **Domestic Intrastate Passengers** – Passengers whose trips originate and terminate within Alaska
 - **Domestic Other U.S. Passengers** – Passengers whose trips originate or terminate in Alaska
- **International Passengers** – Passengers whose trips originate or terminate outside the United States.

Passengers by passenger type

- **Total Passengers** – The total of enplaning, deplaning, and transit passengers
- **Enplaning Passengers** – Passengers whose trips originate at the Airport, plus passengers who transfer from another aircraft
- **Deplaning Passengers** – Passengers whose trips terminate at the Airport
- **Transit Passengers** – Passengers who remain on the aircraft or deplane / enplane the same aircraft as it stops at the Airport
- **Transfer Passengers** – Passengers who transfer or connect at the Airport, deplaning one aircraft and enplaning another
- **Originating Passengers** – Passengers who begin their trip at the Airport
- **Terminating Passengers** – Passengers who end their trip at the Airport

The enplaned passenger forecast for the Airport is presented in Table 3.1.

**Table 3.1
Passenger Forecast by Category**

	Enplaned Passengers			Total
	Domestic ¹	International ²	Air Taxi and Other ³	
2010	2,229,457	31,724	137,331	2,398,512
PAL 1 (2015)	2,360,370	36,874	152,711	2,549,955
PAL 2 (2020)	2,495,425	42,861	165,539	2,703,825
PAL 3 (2025)	2,651,942	49,820	176,159	2,877,921
PAL 4 (2030)	2,850,202	57,908	183,060	3,091,170
	Average Annual Growth Rate (%)			
2010-2030	1.2	3.1	1.4	1.3

Source: 2013 Alaska International Airport System Planning Study, Table 7.1 and Table 10.1.

Notes: PAL = Planning Activity Level.

1 - Assumed to increase at the same rate as domestic outbound passengers from Table 5.5.

2 - Assumed to increase at the same rate as direct international outbound passengers from Table D.17.

3 - Data from Table 7.1.

Total enplaned passengers are forecast to grow at an average annual rate of 1.3% during the planning period (2010 to 2030). Total enplaned and deplaned passengers will each increase from approximately 2.4 million passengers in 2010 to almost 3.1 million passengers at PAL 4. International traffic will grow at over 3 times the rate of domestic and air taxi / other with international traffic almost doubling between 2010 and 2030. However, only about 2.0% of all passengers are international.

Transit passengers have a stopover at the Airport to change planes. Unlike most other U.S. airports, many domestic passengers who stopover at the Airport need to pass through the Security Screening Check Point prior to boarding domestic Federal Aviation Regulations (FAR) Part 121 flights. This is a result of many intra-Alaska airlines operating under FAR Part 135, which exempts these passengers from having to be screened prior to boarding aircraft. Therefore, some domestic transit passengers will need to pass through security at the Airport. The transit passenger forecast is presented in Table 3.2.

Table 3.2
Transit Passenger Forecast by Category

	Transit Passengers			Total
	Domestic ¹	International ²	Air Taxi and Other	
2010	22,891	165,663	15	188,569
PAL 1 (2015)	10,072	18,589	17	28,678
PAL 2 (2020)	10,649	21,607	18	32,274
PAL 3 (2025)	11,316	25,115	19	36,450
PAL 4 (2030)	12,162	29,193	20	41,375
	Average Annual Growth Rate (%)			
2010-2030	-3.1	-8.3	1.4	-7.3

Source: 2013 Alaska International Airport System Planning Study, Table 10.1.

Notes: PAL = Planning Activity Level.

1 - Assumed to increase at the same rate as domestic outbound passengers from Table 5.5. Adjusted for downturn in transit passengers in 2011.

2 - Assumed to increase at the same rate as transit international outbound passengers from Table D.17.

Transit passengers are forecast to decrease over the planning period at an annual average rate of 7.3% between 2010 and 2030. This decrease in transit passengers is primarily due to an increase in non-stop flights and more fuel efficient aircraft that do not require a fuel stop at the Airport.

2.2 AIR CARGO TONNAGE

The Airport is ranked second in the nation for cargo landed weight behind Memphis International Airport and sixth in the world for total cargo weight following airports in Hong Kong, Memphis, Shanghai, Incheon (Seoul), and Dubai¹. Air cargo activity is categorized by origin and destination of cargo trips, cargo operational type, and business services provided. The categories include:

Air Cargo by Origin / Destination of Cargo Trips

- **Intrastate (Intra-Alaska) cargo** – Cargo going to and from other Alaska airports
- **Interstate (United States / International)** – Cargo going to and from the lower 48 states and other countries
 - **Origin-destination interstate cargo** – Cargo going to and from the lower 48 states
 - **Origin-destination international cargo** – Cargo going to and from other countries

¹ Airports Council International World Airport Traffic and Rankings, 2013

Air Cargo by Operational Type

- **Transfer cargo** – Cargo that is unloaded from one airplane and loaded to another airplane – this can be foreign to Alaska, foreign to other U.S., or Alaska to other U.S.
- **Transit cargo** – Cargo that is neither loaded nor unloaded at the Airport, but is carried on aircraft that land at the Airport for refueling or crew relief (also referred to as a technical stop or “gas & go”)

Air Cargo by Business Service

- **Integrated express operators (e.g., FedEx, United Parcel Service [UPS])** – Cargo carriers that operate based on a schedule and have a dedicated fleet of aircraft, trucks, and couriers providing door-to-door delivery. The aircraft used can be wide-body or narrow-body aircraft.
- **All-cargo carriers (e.g., Atlas Air Cargo)** – Cargo carriers that transport goods on a scheduled route from airport to airport typically using wide-body aircraft (e.g., Boeing 747 freighters). These cargo carriers work with on-the-ground freight forwarders.
- **Belly cargo (e.g., Alaska Airlines)** – Scheduled passenger airline operators that transport cargo in the belly of passenger aircraft from airport to airport.
- **Charter cargo carriers (e.g., Desert Air Alaska)** – Cargo carriers offering unscheduled service who transport cargo from airport to airport.

All cargo data presented in this section is presented as United States tons.

2.2.1 INTRA-ALASKA CARGO TONNAGE

Intra-Alaska or intrastate cargo service is provided by carriers such as Lynden Air Cargo, Northern Air Cargo, Arctic Circle Air Service, and Tatonduk Outfitters. The majority of the operations these intra-Alaska cargo carriers make are transfer cargo operations. These transfer cargo operations include cargo off-loaded from one aircraft and loaded onto another aircraft and are recorded as enplaned and deplaned cargo. Intrastate transfer cargo operations are typically transported via narrow-body jets or turboprops.

Intrastate transfer cargo operations are stable or slowly growing. The majority of intra-Alaska transfer cargo consists of bypass mail, where mail is shipped by an air cargo carrier, typically more inexpensively, versus the United States Postal Service. Some air carriers do drop off mail at the on-Airport U.S. Post Office, where that mail is later picked up by other cargo carriers at the Airport for intra-Alaska transport. The intra-Alaska cargo tonnage is presented in Table 3.3.

Table 3.3
Intra-Alaska Cargo Tonnage

	Enplaned	Deplaned	Transit	Total
2010	88,500	21,134	14	109,661
PAL 1 (2015)	97,217	22,701	15	119,948
PAL 2 (2020)	100,195	23,098	15	123,323
PAL 3 (2025)	102,456	23,404	16	125,892
PAL 4 (2030)	104,218	23,666	16	127,916
Average Annual Growth Rate (%)				
2010-2030	0.8	0.6	0.8	0.8

Source: 2013 Alaska International Airport System Planning Study, Table 10.5.

Notes: PAL = Planning Activity Level. Tonnage presented as U.S. or short tons. The total intra-Alaska cargo tonnage is the sum of enplaned, deplaned, and two times the above shown transit tonnage to reflect inbound and outbound cargo.

Intra-Alaska cargo tonnage is expected to increase during the planning period at an annual average rate of 0.8% between 2010 and 2030.

2.2.2 U.S. / INTERNATIONAL CARGO TONNAGE

Before 2007, improved trade relations between North America and Asia along with Alaska's central location allowed United States (Anchorage and the Lower 48 States) / International trips to grow into a dominant aviation activity at the Airport. Although still dominant today, that dominance has been in decline since 2008, due to a combination of factors lead by the global recession. The majority of United States / International cargo trips are for transit cargo via wide body aircraft that utilize the Airport as a fuel stop and to change crews. These aircraft are usually on the ground for no more than an hour. Some carriers, such as FedEx, UPS, and Polar, conduct some cargo transfer operations, where cargo is moved from one aircraft to another; however, activity data is not available. Cargo transfer is generally considered a minority in this category. The United States / International cargo tonnage is presented in Table 3.4.

Table 3.4
United States / International Cargo Tonnage

	Enplaned	Deplaned	Transit	Total
2010	365,766	412,284	2,030,406	4,838,862
PAL 1 (2015)	400,212	451,109	2,199,289	5,249,898
PAL 2 (2020)	525,738	592,600	2,687,503	6,493,344
PAL 3 (2025)	678,461	764,745	3,070,720	7,584,646
PAL 4 (2030)	843,823	950,011	3,441,557	8,675,948
Average Annual Growth Rate (%)				
2010-2030	4.3	4.3	2.7	3.0

Source: 2013 Alaska International Airport System Planning Study, Table 10.5.

Note: PAL = Planning Activity Level. Tonnage presented as U.S. or short tons. The total intra-Alaska cargo tonnage is the sum of enplaned, deplaned, and two times the above shown transit tonnage to reflect inbound and outbound cargo.

United States / International cargo tonnage is forecast to grow from approximately 4.8 million tons annually in 2010 to almost 8.7 million tons annually in 2030. The international cargo forecast assumes that North American markets will continue to rely on manufacturing in Asian markets including China, Taiwan, and other Asian markets that will produce substantial demand for air-cargo shipments and imports to North America from Asia.

North America is a net-import economy producing greater eastbound air-cargo tonnage flows. Westbound air-cargo tonnage flow is less than half that of eastbound flow.

2.2.3 CARGO TONNAGE SUMMARY

The total forecast cargo tonnage is presented in Table 3.5.

**Table 3.5
Cargo Tonnage Summary**

	Total			
	Enplaned	Deplaned	Transit	Total
2010	454,266	433,418	2,030,420	4,948,523
PAL 1 (2015)	497,429	473,810	2,199,304	5,369,846
PAL 2 (2020)	625,933	615,698	2,687,518	6,616,667
PAL 3 (2025)	780,917	788,149	3,070,736	7,710,538
PAL 4 (2030)	947,041	973,677	3,441,573	8,803,864
	Average Annual Growth Rate (%)			
2010-2030	3.7	4.1	2.7	2.9

Source: 2013 Alaska International Airport System Planning Study, Table 10.5.

Note: PAL = Planning Activity Level. Tonnage presented as U.S. or short tons. The total intra-Alaska cargo tonnage is the sum of enplaned, deplaned, and two times the above shown transit tonnage to reflect inbound and outbound cargo.

Total cargo tonnage is expected to grow at a rate of 2.9% from 2010-2030. Total cargo tonnage will increase from over 4.9 million tons in 2010 to over 8.8 million tons in 2030. The largest increase in growth will come from United States / International cargo.

2.3 AIRCRAFT OPERATIONS

This section outlines the aircraft operations forecast. Aircraft operations are divided into five main categories: passenger, cargo, air taxi / other, general aviation, and military. Each of these groups is forecasted at different rates and requires unique facilities. The aircraft operations forecast for the Airport is presented in Table 3.6.

Table 3.6
Aircraft Operations by Category

	Passenger ¹	All-Cargo ¹	Air Taxi and Other ²	General Aviation	Military	Total
2010	93,246	78,830	3,027	36,060	4,401	215,564
PAL 1 (2015)	99,198	82,680	2,700	38,152	2,267	224,997
PAL 2 (2020)	101,540	95,812	2,793	39,863	2,267	242,275
PAL 3 (2025)	106,376	107,262	2,509	43,324	2,267	261,738
PAL 4 (2030)	111,212	118,714	2,036	47,713	2,267	281,942
Average Annual Growth Rate (%)						
2010-2030	0.9	2.1	-2.0	1.4	-3.3	1.4

Source: 2013 Alaska International Airport System Forecast Technical Report (AIAS Forecast; Table 10.12).

Notes: PAL = Planning Activity Level.

1 - Aircraft landings forecasts multiplied by two. Includes some operations classified as air taxi and other in Table 10.3 of the AIAS Forecast.

2 - Total operations less all other categories.

2.3.1 PASSENGER AIRCRAFT OPERATIONS

Annual passenger aircraft operations are forecast to grow at an average annual rate of 0.9% from 93,246 operations in 2010 to 111,212 operations in 2030.

2.3.2 CARGO AIRCRAFT OPERATIONS

Annual all-cargo aircraft operations are forecast to grow at an average annual rate of 2.1% from 78,830 operations in 2010 to 118,714 operations in 2030. The growth in all-cargo operations will primarily be driven by growth in international cargo and Asia-North America trade.

2.3.3 AIR TAXI / OTHER OPERATIONS

The aircraft operations represented in the Air Taxi / Other category are scheduled and non-scheduled charters, and for-hire transport not on a scheduled passenger airline. Annual Air Taxi and other operations are forecast to decrease at an average annual rate of 2.0% from 3,027 operations in 2010 to 2,036 operations in 2030.

2.3.4 GENERAL AVIATION OPERATIONS

General aviation operations consist of corporate, business travel, and leisure travel. These aircraft can range from small single engine piston aircraft to large multi-engine jets. Annual general aviation operations are forecast to grow at an average annual rate of 1.4% from 36,060 operations in 2010 to 47,713 operations in 2030. General aviation operations at the Airport do not include Lake Hood Airport general aviation operations.

2.3.5 MILITARY OPERATIONS

According to the AIAS Planning Study aviation activity forecast, “military operations at the Airport have experienced a significant decline since 2010 as a result of the relocation of the Kulis Air National Guard to Elmendorf Air Force Base completed in February, 2011. Military operations are related to national and international political and institutional factors rather than local economic conditions and are therefore difficult to forecast using traditional approaches. Consequently, military operations are assumed to remain constant at the 2011 level of activity, after an adjustment to net out the impact of Kulis related operations in January of that year.” With this in mind, military operations are forecast to total 2,267 annually through the 20 year planning period.

2.3.6 AIRCRAFT OPERATIONS SUMMARY

Overall, annual aircraft operations are anticipated to grow at an average annual rate of 1.4% from 215,564 in 2010 to 281,942 in 2030. Annual aircraft operations are forecast to grow at about half the rate of historical growth between 1980 and 2007.

2.4 GENERAL AVIATION BASED FORECAST

Based aircraft are those aircraft that are stored at the Airport. Based aircraft require facilities such as hangars and tie downs, while the users need landside access to their aircraft. The AIAS Forecast did not forecast the number of based aircraft. As such, a forecast of the based aircraft at the Airport was determined as part of the Airport Master Plan Update based on Federal Aviation Administration Form 5010 data for the base year. Future based aircraft were determined based on the share of all aircraft operations at the Airport that were jets as reported in the AIAS Forecast. The resulting based aircraft forecast is presented in **Table 3.7**.

**Table 3.7
General Aviation Based Aircraft Forecast**

Year	Single Engine	Multi-Engine	Turboprop	Jet	Airplane Total	Helicopters ¹
2010	10	11	53	10	84	11
2015	10	9	55	15	89	11
2020	9	8	56	19	93	12
2025	10	8	60	23	101	13
2030	11	9	64	28	112	14
Average Annual Growth Rate (%)						
2010-2030	0.7	-1.1	0.9	5.3	1.4	1.3

Source: Federal Aviation Administration Airport 5010; RS&H, 2013.

Note: 1 - Based helicopters to grow based on forecasted general aviation operations growth.

The number of based aircraft is forecast to grow at an average annual rate of 1.4%. Based single and multi-engine piston aircraft are not forecast to grow substantially beyond current levels. Corporate and larger jet general aviation based aircraft are forecast to grow. Business and larger jet general aviation aircraft can be assumed to require hangar storage given that these aircraft are far more expensive than smaller, piston engine general aviation aircraft and require more sophisticated maintenance routines.

2.5 FORECAST VERSUS ACTUAL DATA

The AIAS Forecast was completed in 2012 but used base data from 2010. The AIAS Forecast was used for the Airport Master Plan Update. The base year for the Airport Master Plan Update is 2012 because the inventory of existing facilities for the Airport Master Plan Update was completed in 2012. Therefore, the AIAS Forecast has a base year of 2010 while the Airport Master Plan Update has a base year of 2012.

The AIAS Forecast projects growth to occur steadily over the 20 year forecast period through 2030. However, activity at the Airport continued to decline between 2010 and 2012. The forecast of aviation activity is not intended to predict activity levels for each year within the planning period. The forecast of aviation activity is intended to predict long-range trends based on a series of assumptions which have been methodically presented within the AIAS Forecast. It is reasonable to assume that activity levels will ebb and flow within the 20 year planning period. While activity has continued to decline within the very early years of the planning period, it is not unreasonable to assume that the ongoing economic recovery would result in activity growth that outpaces the forecast in coming years.

Long-range planning, including the preparation of airport master plans, must recognize that short-term fluctuations will occur within the planning period. In spite of the aviation activity decline that has occurred in the early years of the forecast period, the anticipated long-range growth potential remains valid based on the assumptions and details outlined within the AIAS Planning Study and the AIAS Forecast.

The AIAS Forecast will, therefore, be used to establish the facility requirements for the Airport Master Plan Update recognizing that the Airport Master Plan Update seeks to prepare the Airport to safely and efficiently accommodate potential growth during the 20-year planning period. The facility requirements analysis and alternatives evaluation will consider how the Airport can best be prepared to meet forecast growth in aviation activity levels.