Anchorage International Airport Forecast Summary

Alaska International Airport System

October 2012

Ted Stevens Anchorage International Airport
"A World AeroNexus"

This document was prepared by:

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The preparers gratefully acknowledge the contributions of the management and staff of the Alaska International Airport System, Ted Stevens Anchorage International Airport and Fairbanks International Airport, along with the AIAS Airlines Airport Affairs Committee (AAAC).

U. S. Department
of Transportation

**Federal Aviation
Administration**

Alaskan Region

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September 13, 2012

Rebecca J. Cronkhite, Planning Manager
Alaska International Airports System
Department of Transportation & Public Facilities
PO Box 196960
Anchorage, Alaska 99519

Dear Ms. Cronkhite:

Alaska International Airport System (AIAS) Forecast

This letter is in response to your request for the Federal Aviation Administration's (FAA) review of the June 5, 2012, Alaska International Airport System Forecast. This request included the review of the individual forecast summaries for:

- Fairbanks International Airport (FAI) dated June 5, 2012
- Lake Hood Seaplane Base (LHD) dated August 17, 2012
- Ted Stevens Anchorage International Airport (ANC) dated June 5, 2012

We reviewed the AIAS Forecast and individual forecasts for the above airports in consultation with our National Planning & Environmental Division. We understand this document was prepared along with the on-going State System Plan efforts. At this point in time, there is no development expected to require an Environmental Impact Statement or a Benefit Cost Analysis at any of the three airports.

The total operations annual growth rates for the AIAS and individual summary forecasts for the above airports are consistent with the FAA Terminal Area Forecast (TAF). We find adequate justification exists for the forecast baseline figures and hereby approve the AIAS Forecast Summary and individual Summary Forecasts for FAI, LHD and ANC.

We look forward to working with you as you continue to develop the remaining components of the AIAS Plan.

Sincerely,

Gabriel Mahns
Airport Planner
FAA, Alaskan Region

AIAS Airlines Airport Affairs Committee

Ted Stevens Anchorage International Airport – Fairbanks International Airport

July 5, 2012

Mr. Steve Hatter
Deputy Commissioner of Aviation
4111 Aviation Avenue
P.O. Box 196900
Anchorage, AK 99519-6960

Re: AIAS Planning Study Forecasts

Thank you for the opportunity to participate in the development and review of the forecasts for Ted Stevens Anchorage International Airport, Lake Hood Seaplane Base, and Fairbanks International Airport. We appreciate the extensive effort made by the AIAS Planning team to reach out and actively solicit airline participation in the process.

The AIAS (Alaska International Airport System) AAAC (Airlines Airport Affairs Committee) believes these forecasts accurately represent current economic uncertainties and trends and are a reasonable estimate of long term future activity levels. Given uncertainties of forecasts, especially today, we encourage future planning to be based on aviation activity trigger points rather than forecasted dates. We also believe the forecasts will need to be revisited prior to committing to any large capital projects.

Thanks again for partnering with the airlines on the forecasts. We look forward to working with you on the Airport Master Plans.

Best Regards,

Kathy Smith
Co-Chairperson
AIAS Airlines Airport Affairs Committee

Kevin Hoffmann
Co-Chairperson
AIAS Airlines Airport Affairs Committee

cc: AIAS Airlines Airport Affairs Committee

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This report summarizes results of the aviation activity forecasts prepared for the Alaska International Airport System (AIAS) for Ted Stevens Anchorage International Airport (ANC). The AIAS forecasts encompassed the two international airports in the State, ANC and Fairbanks International Airport (FAI) as well as Lake Hood Airport (LHD). The AIAS forecasts are presented in more detail in the Alaska International Airport System Plan Forecast Technical Report.

Forecasts are presented for 2015, 2020, 2025, and 2030. This document first describes the purpose and background of the forecasts. Next, key socioeconomic and aviation industry factors are discussed and recent historical aviation activity at ANC is described. The document continues with projections of passenger and cargo activity, followed by a summary of the aircraft operations forecasts including air taxi, general aviation (GA) and military. The document concludes with a comparison with the Federal Aviation Administration's (FAA) 2011 Terminal Area Forecast (TAF).

1.0. Purpose and Background

The AIAS forecasts have been prepared in support of the AIAS Planning Study, as part of the AIAS' overall strategic planning effort. The purpose of the planning effort is to outline initiatives to strategically position AIAS's standing in the international air cargo and passenger industries, explore the use of incentives and to help maximize use of the System's assets and enhance its long-term financial viability. The forecasts will also support the AIAS Strategic Plan which lays out the mission, vision, and values of the AIAS, and summarizes its operating context, external challenges, opportunities, and strategic initiatives. Finally, the forecasts will be used in the ANC and FAI Master Plan Updates along with the ANC Part 150 Study.

More specifically, the AIAS forecasts are intended to help determine the capacity of the AIAS system in order to: (1) explore options for transferring aviation activity between the two airports to optimize use of existing capacity; and (2) determine trigger points for adding new capacity to the system if needed. To assist in the capacity modeling analysis, the forecasts were used to prepare design day flight schedules for ANC and FAI. The forecasts are baseline forecasts that do not incorporate the impacts of capacity constraints or incentive programs and therefore assume that the AIAS airports will continue in their current roles.

As part of the forecast process, a forecast methodology and a set of forecast assumptions were prepared for review and approval by the State of Alaska and other stakeholders. In addition, a comprehensive survey of the major passenger and cargo carriers serving ANC and FAI was undertaken. These are described in more detail in the AIAS Forecast Technical Report.

2.0. Historical Aviation Activity at ANC

Aviation activity at ANC is comprised of the following subcategories:

- Commercial Passenger Service Activity - Including enplaned, deplaned and transit passengers for domestic air carriers, regional carriers, charter and other carriers, and international carriers;
- Air Freight and Mail Activity - Including enplaned, deplaned, and transit tonnage operations for domestic and international carriers;
- Air Taxi and Other Activity – Including small, for hire operators, and some other commercial operators that are not classified as passenger or cargo operators in the traditional U.S. DOT data sources;
- General Aviation Activity; and
- Military Operations

2.1. Historical Passenger Activity

Passenger activity is organized into three main categories: intrastate; other U.S.; and international. These breakouts recognize the different forces driving activity in each region. Within Alaska, air transportation is a necessity. Many Alaska communities do not have access to other transportation modes such as highway and rail. Air travel to or from rural Alaska is dictated by necessity, so compared to many other regions in the U.S. demand for air transportation within Alaska is relatively price inelastic. Travel between Alaska and the remainder of the U.S. is more discretionary since alternative transportation modes are available. Also, many Lower 48 passengers to Anchorage are tourists who have a range of options for travel destinations. Hence, air travel to the rest of the U.S. and to other countries is much more price-sensitive.

Passenger activity at ANC includes originating, enplaning, deplaning and transit passengers, is discussed in this section. Originating passengers are passengers that begin their air trip at ANC. Enplaning passengers include originating passengers plus those passengers that transfer from another aircraft. Transit passengers either remain on the aircraft or deplane and enplane the same aircraft as it makes a stop at ANC.

In general, domestic enplaning and deplaning passengers at ANC have experienced slow growth in recent years with downturns during economic recessions. More notably, the number of transit passengers has declined significantly. The number of domestic transit passengers has declined significantly as airlines in Alaska, as in the rest of the United States, have sharply reduced their multi-stop and tag end routes. Overall, originations to Other U.S. (Lower 48 destinations) have grown most quickly, originations between ANC and FAI have grown less quickly, and originations to other Alaska airports have shown the least growth.

International enplanements and deplanements at ANC have fluctuated over the past three decades but transit passengers have declined substantially. The main reasons for the decline have been: (1) the introduction of new-generation, long-range aircraft,

especially the Boeing 747-400, which has enabled airlines to fly non-stop between Asia and the Lower 48 United States; and (2) the opening of Russian airspace to Asia-Europe flights.

2.2. Historical Air Cargo Activity

Air cargo at ANC includes the following:

- Intrastate cargo to and from other Alaska airports;
- Origin-destination cargo flows from ANC to and from the Lower 48;
- Origin-destination cargo flows from ANC to and from other countries;
- Transfer cargo – cargo that is unloaded from one airplane and loaded to another airplane - this can be foreign to ANC, foreign to other U.S., or ANC to other U.S; and
- Transit cargo – cargo that is neither loaded nor unloaded at ANC but is carried on aircraft that land at ANC for refueling or crew relief.

Available data sources do not provide an accurate breakout between origin-destination, transfer, and transit cargo; however, when surveyed, cargo operators indicated that origin-destination cargo flows from AIAS airports to and from other countries were minor, accounting for less than 1 percent of the total.

Air freight and air mail were combined into air cargo for this study. ANC combines freight and mail into a single category for reporting. In addition, FedEx, which is the single largest mail contractor in the US, reports mail as freight to the US DOT. Consequently, there is no longer an accurate way to distinguish mail from freight.

Air cargo activity is organized into two main categories, intrastate and other U.S./international. For the purpose of this analysis, non-Alaska U.S. cargo has been combined with international cargo because there is no practical way to separate the two categories. Many U.S. flag carriers commingle international and domestic cargo on the North American leg of their flights. Also, although cargo that clears U.S. Customs in ANC and continues to a U.S. destination is technically domestic, it is international in origin and more subject to the drivers that determine international cargo than domestic cargo.

Intra-Alaska cargo is typically loaded or unloaded at ANC, includes very little transit cargo, is carried on narrow body jets or turboprops, and has been stable or growing slowly. International cargo is mostly transit, with some transfer activity and very little origin-destination activity (as a percentage of all cargo activity) at ANC. Virtually all ANC international cargo is carried on large wide body aircraft over long distances and with tight schedule constraints. In addition, international cargo has historically grown faster than any other aviation category at the ANC.

Intra-Alaska air cargo has been stable or declining slowly in recent years. Since 1997, trends in intrastate cargo have shown year-to-year fluctuations but no discernible long

term trends. Much of intrastate cargo is bypass mail. The bypass mail system allows shippers to deliver pallet loads of at least 1,000 pounds per shipment at a reduced rate directly to an air carrier without transiting a post office. In this respect, bypass mail is very similar to air freight and is often used by shippers as a substitute for air freight. The costs of the bypass mail system to the United States Postal Service (USPS) far exceed revenue so there have been legislative and regulatory attempts to change (or abolish) the program.

International/Other U.S. experienced very rapid growth rates until 2007. International air cargo fell in 2008 and 2009 as a result of the fuel price spike and the recession. Cargo traffic recovered in 2010 but fell again in 2011. The rapid increase in international air cargo at ANC prior to 2007 is attributable to several factors. First, air cargo has grown rapidly worldwide in recent decades, especially in the Asia-North America market, which according to Boeing grew at a 9.0 percent annual rate between 1981 and 2007. This growth was achieved despite the disruptions of the Asian financial crisis in the late 1990s and the 9/11 terrorist attacks. Because of its strategic location along the great circle routes between Asia and North America, ANC was particularly well-suited to take advantage of this growth. In addition, carriers such as FedEx and UPS were increasingly using ANC as a transfer hub to distribute aircraft payloads better along their North American and Asian routes.

Despite the increases in cargo transfers, ANC's single greatest advantage to air cargo carriers has been its location which allows carriers to maximize their trans-Pacific payloads. Otherwise they would have to sacrifice payload for additional fuel needed to fly non-stop between Asia and North America.

2.3. Historical Aircraft Operations

FAA tower statistics include all aircraft operating at an airport, but at a much lower level of detail than most other data sources. As a result, very detailed data are available for large aircraft, but the data for smaller general aviation aircraft are sparse. An additional issue is the breakout of operations at LHD which the FAA combines with ANC when compiling its statistics.

Total annual aircraft operations at ANC have gradually declined from 249,677 in 2000 to 211,646 in 2011. The decline resulted from many factors including the loss of international passenger flights, the increase in average size and load factor of domestic passenger flights, as well as a decline in air taxi, general aviation, and military operations. All-cargo operations increased until 2005, but have since declined.

3.0. Key Forecast Assumptions

Aviation activity forecasts are highly dependent on assumptions about the future economic and operating environment. The ultimate determinants of passenger and air cargo demand are the strength of the economy and the cost and availability of service. Consequently, a clear understanding of local, national, and international economic

forces and trends is important for developing an accurate aviation activity forecast. This is particularly true for Anchorage and Alaska. Due to the State's large size, the remote location of many communities, and the limited road system, aviation assumes a role typically undertaken by highways and rail elsewhere in the country. Thus, a healthy aviation system is vital to the continued growth of the Anchorage and Alaska economies.

3.1. Socioeconomic Assumptions

Three sets of socioeconomic forecasts were considered for use in this study, including:

- Woods & Poole, Complete Economic and Demographic Data Source (CEDDS);
- Alaska Department of Labor and Workforce Development (DOL), Alaska Population Projections: 2010 to 2034; and
- Institute of Social and Economic Research (ISER), Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035.

Woods & Poole (W&P) is an economic forecasting firm that publishes annually updated economic and demographic forecasts for each state, metropolitan area, and county in the United States. Its advantage is that it is a comprehensive and up-to-date source that provides forecasts for all major economic metrics such as population, employment and income. Its disadvantage is that it does not have the insight into Alaska's conditions that local organizations possess.

The Alaska Department of Labor's Population Projections are current, having been published earlier in 2011, and reflect in-depth knowledge of the State. The projections, however, are limited to population and do not include employment or income.

The ISER report contains forecasts of population, employment and income for Alaska, the Municipality of Anchorage and the Matanuska-Susitna Borough, but includes no information for Fairbanks. Its population forecasts are higher than those prepared by either W&P or the Alaska Department of Labor, but despite higher population forecasts its income forecasts are more conservative than W&P.

After discussion with many of the key airport stakeholders, a hybrid socioeconomic forecast was developed for use in this study. The hybrid forecast applied the average of the ISER and W&P per capita income projections to the State DOL population projections to develop an income forecast. The W&P income projections were considered too aggressive by regional economic development experts familiar with Alaska. The ISER projections, on the other hand, have a history of being conservative. Therefore, taking the average of the two forecasts was considered a reasonable compromise. For employment projections, a hybrid approach that applied the per capita employment projections from the W&P forecasts to the State DOL population projections was selected. This approach helps maintain consistency with the population projections, especially with respect to the relative growth rates between Anchorage, Fairbanks and the remainder of Alaska.

There were some concerns that using a 2009/2010 base year during the middle of an economic downturn may negatively bias the projections. However, the large amount of public debt and anticipated reductions in government spending will likely reduce the rate of future economic growth, so the period of rapid recovery experienced after previous downturns is less likely to occur this time.

Much of the cargo traffic at ANC depends primarily on world economic trends rather than local or national trends. Global Insight forecasts of Gross Domestic Product (GDP) by world region, as published in the FAA Aerospace Forecasts: FY 2010-2031 were selected for use in the international cargo forecasts. They are the most recent available forecasts that cover all the regions in question. China, along with Asia/Pacific countries outside of Japan, is anticipated to continue the rapid growth it has experienced in the past. Japan, with its mature economy and aging population, is projected to grow much more slowly.

Both the regional and international economic forecasts assume no new major economic downturn, such as occurred during the depression of the 1930s or the financial crisis of 2008. Local, national and international economies will periodically increase and decrease the pace of growth in accordance with business cycles. However, it is assumed that over the 20-year forecast term the high-growth and low-growth periods will offset each other so that the adjusted economic forecasts will be realized.

3.2. Fuel Costs and Air Fares

Jet fuel prices are an important determinant of aviation demand and were incorporated in both the passenger and cargo forecasts. Jet fuel prices are very sensitive to crude oil prices which have been extremely volatile over the past several years. Several forecasts of jet fuel and crude oil prices were considered. Airlines need to cover their fuel costs, so jet fuel prices have a direct impact on air fares and freight rates as well.

Jet fuel costs, along with other fuel costs, are generally higher in Alaska than elsewhere in the United States for a variety of reasons including higher refining costs, higher transport costs, and the expense of Alaska insurance and spill response costs.

Although hard data are not readily available, anecdotal evidence is that the Alaska fuel price differential has always been a factor, and is expected to remain a factor through the foreseeable future. There are future circumstances that may change the degree to which jet fuel prices in Alaska differ from those elsewhere in the United States, including:

- Current Asian excess jet fuel refining capacity may diminish, reducing the competitive pressure that is restraining Alaska jet fuel prices from increasing even more than is presently the case;
- The Jones Act, which requires that fuel shipped from a U.S. port to Alaska be carried on U.S. flag vessels (which are more expensive than foreign flag

vessels), could be altered, either increasing or decreasing the Alaska jet fuel price differential; and
- Regulatory or tax rate changes within Alaska or the U.S. could alter the current Alaska jet fuel price differential.

Although the above factors will have an influence on Alaska jet fuel prices, the main determinants will continue to be the global demand and supply factors that affect fuel prices throughout the world.

As noted earlier, there is no available data base of average Alaska jet fuel prices that spans the historical period. Likewise, there are no available long-term forecasts for jet fuel prices specific to Alaska. For these reasons, U.S. jet fuel price data was used as a proxy for Alaska jet fuel price data in subsequent analyses.

Between 2000 and 2011, jet fuel prices almost tripled in real terms. Within that term, there were sharp fluctuations as well. Oil prices peaked in mid-2008 and then plummeted during the ensuing financial crisis. By 2011, they had returned to levels close to those in 2008.

After reviewing several alternative jet fuel price forecasts, a compromise projection was developed with the input of those stakeholders that reviewed the forecast assumptions. The selected jet fuel price forecast assumes that fuel prices will grow gradually in real terms to the average of the United States Department of Energy (DOE) Reference and High forecasts by 2015, and then continue to grow at the average of the DOE Reference and High cases thereafter. This assumption incorporates the continuing tendency of fuel prices to track higher than most forecasts but does not completely accept the DOE High forecast which was intended to represent an extreme case.

Estimates of future air fares were based on FAA forecasts of revenue per passenger mile (yield) and average trip distance, with an adjustment that incorporates the selected jet fuel cost projections selected earlier in this section. The fare projections indicate that the historical decline in real airfares will reverse, resulting in future gradual increases, driven by higher fuel prices. Unlike the past, it is unlikely that higher fuel prices will be offset by higher load factors since loads are already close to 100 percent.

3.3. Other Forecast Assumptions

In addition to the economic and fuel price assumptions, additional assumptions below were used to prepare the ANC activity forecasts:

- The Essential Air Service (EAS) program or a similar program will continue to ensure passenger service to rural Alaskan communities. The FAA reauthorization passed in early 2012 retains EAS service to Alaska communities.
- The Bypass Mail program will continue or be replaced by a similar program that will ensure air cargo access to rural Alaskan communities. Discussions with experts on the issue indicate that although changes are coming to the program,

namely increased carrier competition for more efficient service, the Bypass Mail program will continue in some form.

- Cargo Transfer rights at ANC and FAI will continue but there will be no extension of these rights to airports in the Lower 48.
- No nighttime curfews at ANC.
- New environmental regulations and fees will not be so extreme as to significantly constrain air transportation in Alaska.
- Cargo operators will continue to place a priority on payload over range to the same degree that they have in the past.
- In the long run, carriers will select technical stops that minimize total distance flown and fuel burn.
- No technological breakthroughs in other transportation modes, such as ocean shipping, that would significantly change the relative costs of alternative modes.
- Russian and Central Asian airports will continue to accommodate the bulk of Europe-Asia technical stops. Since virtually all Europe-Asia cargo now goes non-stop or through Central Asia, Alaskan airports are not at risk to lose any more traffic from this sector.
- The share of Asia-North America freight carried by sea will continue to increase at historical rates. Ocean-borne Asia-North America cargo has been growing faster than air freight, and this is reflected in the historical statistics used to calculate the Asia-North America air cargo flows. As the ocean-borne share grows larger, its rate of increase will decline so that it will never account for 100 percent of the cargo flows.
- An evolutionary expansion of “Open Skies” agreements.
- No passenger or cargo cabotage (transport of origin-destination passengers or cargo between two domestic points by foreign-flag carrier).
- The FAA will successfully implement any required changes and improvements for the national airspace system to accommodate the unconstrained forecast of aviation demand.
- No major international conflicts will disrupt aviation in the North America - Pacific area. Likewise, no major trade wars or embargoes will restrict the international flow of commerce and travel.
- Security issues related to air travel will continue to evolve as new procedures and technology enhance airport security. Events that may affect traveler confidence in airport security or air travel security cannot be predicted. It is assumed that there will be no terrorist attacks during the forecast period that will affect confidence in the aviation system to the same extent as 9/11. It is also assumed that the Transportation Security Administration (TSA) and associated security costs and requirements will continue through the forecast period.
- TSA cargo inspections will not become as onerous as to drive away tech-stop traffic.
- Although some additional airline consolidation could continue to occur, no attempt is made to predict the individual airlines that would be affected.
- Although volcanic eruptions are likely to occur in Alaska and elsewhere in the North Pacific, they will cause no long term disruptions in air transportation.

- Although some additional airline consolidation may occur, no attempt is made to predict which individual airlines would be affected.

4.0. Passenger Forecasts

Separate forecast approaches were used for the domestic and international forecasts.

4.1. Domestic Passenger Forecasts

Domestic passengers were projected using a bottom-up methodology involving the following steps:

- Identify and project the drivers of passenger activity at ANC;
- Project future ANC domestic passenger originations using regression analysis;
- Allocate ANC originations by market;
- Estimate potential for future non-stop markets based on service thresholds at existing non-stop markets;
- Project future load factors;
- Project future seat departures; and
- Allocate seat departures for each market using the destination market income forecasts.

Domestic passenger originations were projected using regression analysis. Regression analysis is a statistical method of generating an equation (or model) which best explains the historical relationship among selected variables, such as originating passengers and real income. If it is assumed that the model that best explains historical activity will continue to hold into the future, this equation can be used as a forecasting tool. The approach was used to estimate three alternative forecasting equations, one for origin-destination passengers between ANC and FAI, one for originations to the rest of Alaska, and one for originations to the rest of the United States.

Enplaned passengers include originating passengers plus connecting passengers. Based on historical trends and input from airline surveys, connecting passengers as a percent of total passengers were projected to decline as more airlines offer point-to-point service.

The seat departure forecasts for ANC-FAI, other Alaska, and other U.S. flights were estimated by dividing the outbound passenger forecasts by the projected average load factor in each category. Load factors in each category were assumed to increase at the same rate as the FAA projected domestic load factor.

Seat departures to existing non-stop markets were assumed to grow proportionately to originations in those markets, which in turn were projected to grow in proportion to income growth. Candidate markets for new non-stop air carrier service were determined by identifying the current thresholds of originating traffic that justified non-stop service to ANC.

4.2. International Passenger Forecasts

The methodology used to develop the international passenger forecasts was essentially a top-down approach. A top-down approach allows usage of the research and analysis into international travel conducted by the FAA and major aircraft manufacturers such as Boeing and Airbus. These organizations have much greater resources available to investigate and incorporate the factors driving international demand into their forecasts. The selected top-down approach can be summarized as follows:

- Identify forecasts of U.S. international passenger traffic by major region;
- Identify existing international passenger traffic at ANC and determine whether it is enplaning, deplaning, or transit;
- Assess future transit passenger activity based on past trends, distance from origin to destination in existing markets, and developments in aircraft technology;
- Estimate future international outbound and inbound passengers based on international passenger growth rates;
- Develop passenger forecasts by market;
- Estimate future load factors; and
- Project future seat departures by market using the passenger and load factor forecasts.

International forecast growth rates developed by the FAA, Boeing, and Airbus were compared. A consensus forecast growth rate was developed for each region using the average of the forecast indexes from the three organizations. Based on the consensus forecast, Asia – North America markets are expected to continue to grow rapidly. Direct (non-transit) passengers in each region were projected to grow at the same rate as the consensus growth rates adjusted to reflect projected economic growth in the Anchorage metropolitan area.

Historically, international transit passengers through ANC have been declining as more and more international carriers acquire long-haul aircraft capable of flying from Asia to North America without a technical stop. Over the forecast period, it is likely that the introduction of additional long-haul aircraft such as the Boeing 787, coupled with security requirements and competitive pressures from other Asian and U.S. carriers will force remaining transit carriers to operate non-stop. Therefore, the forecast assumes that all regular international passenger transit service will cease by 2015.

It is anticipated that there will be some residual international transit passenger activity, from charter carriers that generally fly older aircraft with less range and from passengers flying on cargo carriers.

Projected seat departures in each region were estimated by dividing the outbound passenger projections by the projected load factor.

4.3. Summary of Passenger Forecasts

Table 1 summarizes the annual passenger forecast for ANC, including domestic and international passengers. The forecasts were prepared using data from the U.S. Department of Transportation which is more detailed than airport data. As a final step, the forecasts were adjusted to match Airport statistics to facilitate comparison with historical data. The differences between the two data sets are minor. The Airport data include non-revenue passengers and also classifies as passenger or cargo counts some operations that the US DOT classifies as non-scheduled air taxi. As shown, total ANC passengers are projected to increase at about 1.0 percent per year. The growth rate is lower than it would be otherwise because of the loss of the international transit passengers.

Table 1

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Reconciled to Airport Statistics

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	2,229,457	31,724	137,331	22,891	165,663	15	2,389,694	197,387	2,587,081
2015	2,360,370	36,874	152,711	10,072	18,589	17	2,523,170	55,463	2,578,633
2020	2,495,425	42,861	165,539	10,649	21,607	18	2,671,631	64,468	2,736,099
2025	2,651,942	49,820	176,159	11,316	25,115	19	2,839,436	74,935	2,914,371
2030	2,850,202	57,908	183,060	12,162	29,193	20	3,045,444	87,101	3,132,545
				Average Annual Growth Rate					
2010-2030	1.2%	3.1%	1.4%	-3.1%	-8.3%	1.4%	1.2%	-4.0%	1.0%

Source: Table 10.1 in AIAS Forecast Technical Report.

4.4. Passenger Aircraft Operation Forecasts

The domestic and international annual seat departure projections developed in earlier parts of this section were translated into projections of scheduled aircraft flights for each market using a set of assumptions regarding airline strategies and available equipment. The assumptions listed below, are based on interviews and surveys, published aircraft orders, industry publications, and professional experience:

- No radical changes in airline strategy for how to serve and compete in markets. The current pattern of airline dominance at other airport gateways, hubs and non-hubs will remain substantially in place.
- No significant low-cost carrier penetration because of the small size, high operational cost and strong seasonality in Alaska markets.

- As projected by the FAA and Boeing, airlines will continue to emphasize frequency when adding service to meet demand so domestic service will be provided principally by narrow-body aircraft.
- Alaska Airlines will continue to use the B-737 family of aircraft as the mainstay of its fleet. Consistent with their published fleet plans, the Boeing 737-800 will be the principal growth aircraft in the near future.
- Smaller Alaska markets will continue to be served primarily by turboprop aircraft, because of the high cost, low cargo capacity, and runway requirements of regional jet aircraft.
- Older aircraft will be gradually phased out as their operational lives expire.
- Airlines' future fleet additions will be consistent with current announced fleet expansion plans and existing acquisitions.
- Over the next 20 years, successors to current narrow-body aircraft such as the Boeing 737 MAX and Airbus A320neo will be introduced. These aircraft are still in the planning and design stage and therefore their technical characteristics are as yet undefined. It is anticipated, however, that they will incorporate many of the innovations developed for the Boeing 787 and Airbus 350XWB.
- As the international air carriers changes from transit to enplaned/deplaned traffic, it is anticipated that they will switch to the smaller wide-body aircraft which are more suited to the anticipated demand for enplaned/deplaned traffic.
- No supersonic, hypersonic, or tilt-rotor aircraft because of poor operating economies and potential noise impacts.

Using the above assumptions for guidance, air service scenarios were developed for each market in each forecast year. The scenarios were developed so that the selected aircraft types and frequencies in combination matched the annual seat departure projections for that market. Factors considered in each market included historical service patterns, current dominant carriers, aircraft in place and on order, length of haul, and announced plans of current carriers and new entrants. The air service scenarios for each market were summarized to generate forecasts of annual aircraft operations and fleet mix. The annual operations forecasts are summarized later in this document and the fleet mix forecasts are provided in the AIAS Forecast Technical Report.

5.0. Cargo Forecasts

Separate forecast approaches were used for the intrastate and international/other U.S. forecasts.

5.1. Intrastate Tonnage Forecasts

The intrastate cargo tonnage forecast incorporated the following steps:

- Identify and project the drivers of intrastate activity at ANC;
- Project future ANC inbound and outbound intrastate cargo using regression analysis;
- Allocate tonnage projections to passenger carriers and all-cargo carriers.

- Project future load factors;
- Project future required air cargo carrier capacity; and
- Allocate cargo capacity for each market.

Separate forecasts were prepared for air cargo tonnage from ANC to FAI and from ANC to the remainder of Alaska. ANC to FAI tonnage was estimated using regression analysis (as were the domestic passenger forecasts). The results indicated that air cargo flows between ANC and FAI will continue to decline as the price of fuel rises. This is a reasonable result since it is a short haul market that competes with trucking. As the cost of fuel increases, trucks – which burn less fuel per ton-mile - become relatively more cost effective.

Regression analysis was used to estimate cargo tonnage from ANC to the remainder of Alaska. In contrast to ANC to FAI tonnage, some moderate growth is expected. As noted earlier, Alaska's economy is especially dependent on air transportation for the shipment of goods. Since most goods to these communities are already shipped by air, the traditional source of air cargo growth — an increase in market share at the expense of other modes such as truck and rail — is not possible. In addition, the decline in the oil industry will limit increases in demand while, in the long term, the reduced availability of older aircraft traditionally used in intrastate Alaska may constrain service. These factors constrain the growth of intrastate air cargo. However, the continuation of the subsidized bypass mail program will help sustain demand for intrastate air freight.

The national trend has been for the belly cargo share of air freight to decline as integrated carriers have gained market share and passenger carriers have increasingly emphasized quick turnaround times and high passenger load factors, which reduce their ability to transport air freight. Total belly cargo is expected to decline in the ANC-FAI market, and increase but not as quickly as the all-cargo carrier tonnage in markets to the rest of Alaska.

Future required all-cargo lift capacity was estimated by dividing outbound all-cargo tonnage by the estimated load factor. Capacity requirements were calculated using outbound cargo since outbound load factors are much higher. Inbound freighter load factors are much lower than outbound load factors and therefore do not materially affect capacity requirements. However, since outbound freighter aircraft ultimately must return to ANC, inbound freighter capacity is equal to outbound capacity.

5.2. International/Other U.S. Cargo Tonnage Forecast

The international and other U.S. cargo tonnage forecast for ANC is presented in this section.

Prior to discussing the details of the air freight forecasts, it is useful to examine the flow of worldwide air cargo and the role that AIAS airports perform in facilitating that flow. Aircraft carrying air cargo from Asia to North America can take a variety of routings.

They can go non-stop, although even the new Boeing 747 or 777 freighters cannot carry enough fuel on most routes without sacrificing payload. Second, aircraft can make technical stops for refueling at intermediate points, such as ANC or an alternative airport. To save fuel and time, aircraft that do not need to enplane or off-load cargo will usually try to minimize the distance flown. Cargo that is neither loaded nor off-loaded is transit cargo.

Some cargo aircraft currently landing at ANC transfer cargo to and from other aircraft allowing carriers to ship air cargo between Asian and North American markets which generate insufficient traffic to justify a direct route. A transfer operation requires coordinated schedules and adequate on-airport facilities for the transfer operations.

Airline routing and operating decisions over the next twenty years, coupled with facility investments made by ANC and competing airports, will determine the share of this air cargo flow that:

- goes non-stop;
- becomes transit cargo at an AIAS airport or a competing airport; or
- is transferred at an AIAS airport or a competing airport.

These factors will largely determine the amount and type of international air cargo activity at ANC.

Another characteristic of the Asia-North America market is that it is directionally unbalanced. Asian countries export much more to the United States (measured in both weight and value) than they import. As a result, eastbound cargo tonnage flows – from Asia to North America – are approximately twice westbound flows. Consequently, aircraft flying eastbound tend to have very full (and profitable) loads while they fly light (and unprofitable) loads going westbound. Carriers have adopted a variety of strategies to optimize profitability, including:

- Overflying Alaska to save the time and expense of en route tech stops, since with reduced payload they can carry more fuel;
- Reducing rates on westbound routes to help increase demand; and
- Flying eastbound round-the-world itineraries to avoid the money-losing North America to Asia route.

These factors have had, and will continue to have, an impact on the extent and character of cargo activity at ANC.

The approach used to project international/other U.S. air cargo involved the following steps:

- Estimate future Asia-North America air cargo flows;
- Estimate the all-cargo carrier share of these flows;

- Identify and assess the factors that affect the share of international air cargo that will pass through Alaska, including imbalances between eastbound and westbound trade flows, location and distance of markets, competition from other potential technical stops, and existing and projected aircraft technical capabilities;
- Project future international westbound and eastbound Asia-North America air cargo tonnage at ANC;
- Estimate the increment of air cargo tonnage on North American legs of eastbound and westbound flows;
- Estimate international and other U.S. belly cargo tonnage;
- Allocate tonnage projections to passenger carriers and all-cargo carriers; and
- Estimate all-cargo aircraft capacity required to serve the international and domestic increments of eastbound and westbound air cargo flows.

For the purposes of this analysis, international air cargo is defined as any shipment whose ultimate origin or destination is outside of the U.S. Therefore, an inbound shipment that arrives from Asia, clears Customs at ANC, and then continues to the lower 48, is still considered international air cargo; even though the shipment is technically domestic freight on the Alaska – Lower 48 segment, it is still subject to the same forces and trends that govern international trade and air cargo.

Since most international cargo at AIAS airports is en route between Asia and North America, it is heavily dependent on air cargo flows between these regions. Forecasts of these cargo flows developed by the FAA, aircraft manufacturers such as Boeing and Airbus, and other organizations such as Seabury, OAG, Air Cargo World, and IATA were compared. Collectively, these forecasts project world air cargo to grow at 5.6 percent per year, and Asia/Pacific cargo to grow at 6.8 percent per year.

Many of these forecasts, such as the FAA's, Boeing's, and Airbus', have a history of being overly aggressive. Others do not project far enough into the future or do not provide the level of detail necessary for this analysis. Accordingly, an independent forecast of Asia - North America air cargo tonnage was prepared for this study.

Regression analysis was used to prepare a forecasting equation for eastbound air cargo flows. The variables that were most statistically significant were U.S. GDP, the cost of jet fuel, and variables representing the financial crisis, the recession, and seasonal factors. The variables that were most significant for westbound cargo were East Pacific GDP, jet fuel prices, and variables for the financial crisis and seasonal factors.

Although full year data for 2011 are not yet available, clearly there has been another downturn in the air cargo market, especially in the Asia-Pacific region. IATA estimates that Asia/Pacific cargo tonnage fell about 6.4 percent between 2010 and 2011. Since Asia/North America cargo flows would be growing from a lower base than originally anticipated, cargo tonnage projections were adjusted to account for this downturn.

The approach used to estimate North Pacific belly cargo is similar to the approach used to estimate intrastate belly cargo. Passenger carriers flying the Asia-North America

routes fly wide-body aircraft, and foreign flag passenger carriers are generally more aggressive in pursuing air cargo than U.S. flag passenger carriers. Therefore, in contrast to domestic belly cargo, international belly cargo is expected to slightly increase its share of total Asia-North American air cargo tonnage.
The amount of future international cargo that flows through AIAS airports will depend on the need and desirability of ANC or FAI as a technical stop for the carriers engaged in this traffic. In addition to adequate facilities, the desirability of Alaska as a technical stop will depend on four principal factors: (1) shifts in geographic location of demand; (2) potential competition from other technical stops; (3) continued improvements in aircraft technology which will allow longer flights at full payloads; and (4) opportunities for transferring cargo at Alaska (cross-loading) not available elsewhere. Each of these four factors was considered in the ANC cargo forecast.

China, the fastest growing economy in Asia, is located farther from North America than Japan, Asia's slowest growing economy. Therefore, an increasing percentage of Asia-North America air cargo will need to be transported a greater distance – a factor that would increase the number of flights which require a technical stop.

From a great-circle distance standpoint, Khabarovsk-Novy Airport (KHV) in Russia and Chitose Airport (CTS) in Japan could potentially compete for technical stops on Asia-North America routes. However, it is assumed that environmental concerns and the nighttime curfew will prevent CTS from providing significant competition. It is also assumed that institutional and political concerns will prevent KHV from becoming a major competitor. As the average range of freighter aircraft increases, it is anticipated that Seoul (ICN) in South Korea will be better able to compete for technical stop and transfer traffic between Southeast Asia and the west coast of North America.

The range of freighter aircraft has increased as newer models have become available. The Boeing 747-200F, which has been the mainstay of the long haul freighter fleet, has a range of 3,800 statute miles with a full payload. The MD-11F and 747-400F can fly 4,100 and 5,100 statute miles, respectively, with a full payload. The new Boeing 747-800 will have the same maximum range as the Boeing 747-400 (5,100 statute miles). The standard version of the Boeing 777 freighter has a range of 5,600 miles and the FedEx version has a range of 7,000 statute miles but with a lower maximum payload. The freighter version of the Airbus A380, if built, will have a range of 6,400 miles with maximum payload.

Transfer cargo is defined as cargo that is off-loaded from one aircraft and loaded onto another aircraft in Alaska. It is assumed that the air carriers identified as performing significant international cargo transfer activity at AIAS airports will maintain their current market share of Asia-North America cargo tonnage. Based on the air cargo surveys and interviews, three carriers – FedEx, UPS, and Polar for DHL, have significant transfer operations in Alaska. Their share of Alaska non-intrastate tonnage currently accounts for 28% of eastbound tonnage and 30% of westbound tonnage based on U.S. DOT T-100 statistics. It is assumed that these air carriers will continue to handle the same percentage of Asia-North America cargo in Alaska as they did in 2010.

The future Alaska share of technical stop traffic – cargo not being transferred at an Alaska airport – will depend on the interaction of the three previously discussed factors, changes in the geographic origin of traffic, competition from other airports, and increases in aircraft range. To examine these effects, a model was developed to estimate the suitability and competitiveness of Alaska airports as these factors change.

It was assumed that the pattern of trade-offs between range and payload that currently exists among Asia-North America carriers will continue into the future. This essentially means that the percentage of aircraft overflying their range at maximum payload will remain the same over the forecast period. Since average aircraft range will increase as air carriers transition to a more modern fleet, this will occasion more non-stop flights and more overflying of Alaskan airports. There will be short term fluctuations during the forecast period. During periods of slow economic growth, load factors will likely decline resulting in more flights exceeding range at maximum payload. The reverse will likely occur during periods of rapid economic growth.

As the average aircraft range increases, not only do the opportunities to fly non-stop increase, but the number of potential technical stops, such as ICN, that can be used without sacrificing payload on either segment, also increases. These tradeoffs were calculated for all major market pairs for each forecast year to estimate the amount of technical stop traffic that the Alaska airports can be expected to retain.

ANC and FAI currently capture about 77 percent of non-transfer eastbound freighter flows between Asia and North America. By 2030, based on the factors enumerated above, this percentage is projected to decline to about 55 percent. As a result, total eastbound cargo flowing through AIAS airports is expected to increase from about 1.7 million tons to 3.1 million tons, an average annual increase of 3.1 percent.

ANC and FAI currently capture about 63 percent of non-transfer westbound freighter cargo. By 2030, as average aircraft range increases, this percentage is projected to decline to about 39 percent. Based on this decline in traffic share, AIAS total westbound cargo is expected to increase from 0.7 million tons to 1.3 million tons, an average annual increase of 2.7 percent.

A separate cargo tonnage forecast for the additional increment of Alaska – Lower 48 cargo tonnage on the eastbound and westbound legs was prepared. Since this traffic is primarily domestic, it was assumed to increase at the same rate as the FAA/Boeing/Airbus consensus forecast for domestic cargo growth. Inbound tonnage is greater than outbound tonnage because many basic commodities not produced in Alaska must be imported from the Lower 48. Most of Alaska's exports to the Lower 48, such as lumber, have high weight to value ratios and are more suitable for waterborne shipping.

Consistent with the belly cargo assumptions used to estimate the passenger carrier portion of total Asia-North America flows, it was assumed that international belly cargo

tonnage would change at the same rate as international passengers. Total international belly cargo at ANC is projected to decrease as a result of the anticipated decrease in international transit passengers.

Required international air cargo capacity was estimated using the same approach used for intrastate cargo. The projections of freighter tonnage were divided by estimated load factor to arrive at estimates of required lift capacity. Because eastbound load factors are already very high, no further increases were assumed. Based on historical rates, load factors on westbound routes are projected to increase by almost 1.0 percent per year. Note that these load factor increases do not apply to all North Pacific air cargo flights but rather reflect the air carrier strategies of concentrating westbound cargo on aircraft making a technical stop in Alaska so other aircraft can fly non-stop with very light payloads.

5.3. Cargo Tonnage Summary

Table 2 summarizes the cargo tonnage forecasts for ANC. Note that these forecasts are baseline forecasts and do not take into account the potential impact of capacity constraints or incentive programs to divert traffic between ANC and FAI.

Table 2

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Reconciled to Airport Statistics

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	88,500	21,134	14	109,661	365,766	412,284	2,030,406	4,838,862	454,266	433,418	2,030,420	4,948,523
2015	97,217	22,701	15	119,948	400,212	451,109	2,199,289	5,249,898	497,429	473,810	2,199,304	5,369,846
2020	100,195	23,098	15	123,323	525,738	592,600	2,687,503	6,493,344	625,933	615,698	2,687,518	6,616,667
2025	102,456	23,404	16	125,892	678,461	764,745	3,070,720	7,584,646	780,917	788,149	3,070,736	7,710,538
2030	104,218	23,666	16	127,916	842,823	950,011	3,441,557	8,675,948	947,041	973,677	3,441,573	8,803,864
					Average Annual Growth Rate							
2010-2030	0.8%	0.6%	0.8%	0.8%	4.3%	4.3%	2.7%	3.0%	3.7%	4.1%	2.7%	2.9%

Source: Table 10.5 in AIAS Forecast Technical Report.

5.4. All-Cargo Aircraft Departure Forecasts

The domestic and international annual cargo capacity projections were translated into projections of all-cargo aircraft flights for each market using a set of assumptions regarding airline strategies and available equipment. Cargo traffic is much more directional than passenger traffic and therefore there is much less market symmetry between eastbound and westbound flights. For example, the number of all-cargo flights arriving at ANC from Asia is significantly greater than the number of flights departing to

Asia. Likewise, the number of all-cargo flights arriving at ANC from the Lower 48 is significantly less than the number of flights departing to the Lower 48. Consequently, separate estimates were prepared for international aircraft arrivals and departures. Based on the interviews and surveys, published aircraft orders, industry publications, and professional experience, detailed air service assumptions were developed, as listed below:

General All-Cargo Assumptions

- New aircraft types over the forecast period will be based on the fleet acquisition plans of the cargo carriers serving North America, Asia, and Europe.
- There will be no new aircraft with capabilities beyond those currently in the planning or development stages.
- Since the forecast is unconstrained, the fleet mix projections are not limited by the existing number or length of runways or airfield configuration.
- No supersonic, hypersonic, or tilt-rotor aircraft are projected because of poor operating economies.

Intrastate All-Cargo Aircraft Operations

- As they approach the end of their useful economic life, heavy duty piston aircraft most useful for this segment such as the DC-6 and C-46 will be retired. Older 737 aircraft will be used for markets with the runway capability to accommodate them. Smaller turboprops (Dash-8s and Saabs) will be used for markets with shorter runway capabilities.
- Increased numbers of ATR-42 and ATR-72 turboprop aircraft will be introduced into the intrastate cargo market.
- Beech KingAir and QueenAir aircraft will see increased use in the smaller intrastate markets.
- Consistent with Boeing projections and findings from the airline interviews, more Boeing 737 freighters will be introduced as replacement narrow-body air cargo aircraft.

International/Other U.S. All Cargo Aircraft Operations

- 747-100 and –200 will be replaced by Boeing 747-400s.
- Some narrow body and small wide body aircraft will be used to serve the Russian and Canadian markets.
- FedEx, China Southern, and Korean will fly significant numbers of 777 freighters they have on order through ANC.
- Korean, Nippon Cargo, and Atlas/Polar will fly significant numbers of 747-8 freighters they have on order through ANC.
- Carriers with a history of buying Boeing aircraft will add 747-400ERFs and 747-8s to their fleets in the long term.

- Most long term growth will consist of Boeing 747-400 passenger conversions, and new Boeing 747-8 and 777 freighters. Longer-term, additional cargo aircraft growth will be from Boeing 777 passenger conversions.
- By 2030, freighter variants of the Airbus A350 and A380 will enter service.
- Freighter operators will have the financial means to acquire replacement aircraft as their existing aircraft reach the end of their useful economic lives.

Using the above assumptions, air service scenarios were developed for each market in each forecast year. The scenarios were developed so that the selected aircraft types and frequencies in combination matched the annual cargo capacity projections for that market. Factors considered in each market included historical service patterns, current dominant carriers, aircraft in place and on order, length of haul, and announced plans of current carriers and new entrants. The air service scenarios were summarized to generate forecasts of all-cargo aircraft departures, operations and fleet mix. The annual operations forecasts are summarized later in this document and the fleet mix forecasts are provided in the AIAS Forecast Technical Report.

6.0. Other Activity Forecasts

In addition to passenger and cargo activity, ANC forecasts were prepared for three other categories: air taxi and other, general aviation, and military.

6.1. Air Taxi and Other

For the purpose of this analysis, the air taxi and other category includes both traditional “for hire” air taxi and also non-commercial charter activity such as the flights operated by BP Exploration and Conoco-Phillips. These operators do not file data with the US DOT and therefore were treated separately from the passenger and air cargo forecasts.

Conoco Phillips shuttle flights to the North Slope account for the majority of air taxi and other passengers at ANC. Through 2007, this passenger activity varied from year to year but with little discernible long-term trend. At ANC this passenger traffic dropped off sharply in 2008, followed by a strong rebound in 2009, 2010 and 2011. These operations serve mainly the intrastate market and are driven mainly by oil and natural gas exploration and development. The ANC air taxi and other passenger forecast was therefore based on a regression equation in which air taxi and other passengers are a function of crude oil prices.

Although historical data for air taxi and other aircraft operations are sparse, there appears to have been little change in the aircraft used by this segment in recent years. In addition, there are no published plans for major changes in aircraft types among the air taxi operators at ANC. Consequently, air taxi and other operations were assumed to increase at the same rate as air taxi and other passengers at ANC.

6.2. General Aviation Forecasts

General aviation is an important component of aviation in Alaska. Nationally, personal and recreational general aviation has been in decline while corporate and business-related general aviation has been increasing. Both categories suffered declines during the fuel spike and recession of 2008 and 2009, but have experienced a partial recovery in 2010 and 2011.

General aviation operations at ANC and LHD were initially projected in combination since recent breakouts of activity between the two airports are unavailable. The forecast was based on a market share analysis of U.S. general aviation activity, measured by general aviation hours flown. The change in the historical ratio of ANC/LHD general aviation operations to U.S. general aviation hours flown was calculated, and this change in the ratio was projected to continue in the future. As a share of U.S. general aviation and air taxi hours flown, general aviation operations at these two airports have experienced a slight decline. Since the Anchorage metropolitan area economy is projected to grow less quickly than the U.S. economy in the future it is reasonable to assume that going forward this decline in share will continue.

Two conflicting factors will affect the future split of general aviation operations between ANC and LHD. The LHD share of general aviation activity has grown over the past ten years, suggesting that the LHD share of general aviation will continue to increase at the expense of ANC. However, jets and sophisticated turboprops represent the fastest growing component of general aviation, and most of these aircraft are unable to use the facilities at LHD suggesting that ANC general aviation will grow faster than LHD general aviation. As a compromise between these countervailing factors, it was assumed that the percentage split between ANC and LHD general aviation operations will remain constant at 2010 levels.

6.3. Military Forecasts

Military operations at ANC 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 were 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.

7.0. Forecast Summary

Table 3 summarizes the aircraft operations forecasts for ANC. Comparisons with the FAA's Terminal Area Forecast (TAF) are also provided. These baseline forecasts are unconstrained and assume that there will be adequate airfield, terminal, and cargo facilities to accommodate projected traffic. The impact of constraints on aviation activity will be addressed later in the AIAS study.

Total aircraft operations are projected to increase from 215,564 in 2010 to 281,942 by 2030, an average annual increase of 1.4 percent. All-cargo aircraft operations represent the fastest growing category while military operations show the greatest reduction as a result of the Kulis relocation.

Table 3

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	93,246	78,830	3,027	36,060	4,401	215,564
2015	99,198	82,680	2,700	38,152	2,267	224,997
2020	101,540	95,812	2,793	39,863	2,267	242,275
2025	106,376	107,262	2,509	43,324	2,267	261,738
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: Table 10.12 in AIAS Forecast Technical Report.

A graphic summary of the passenger enplanement, cargo tonnage, and aircraft operations forecasts for ANC is presented in Exhibit 1.

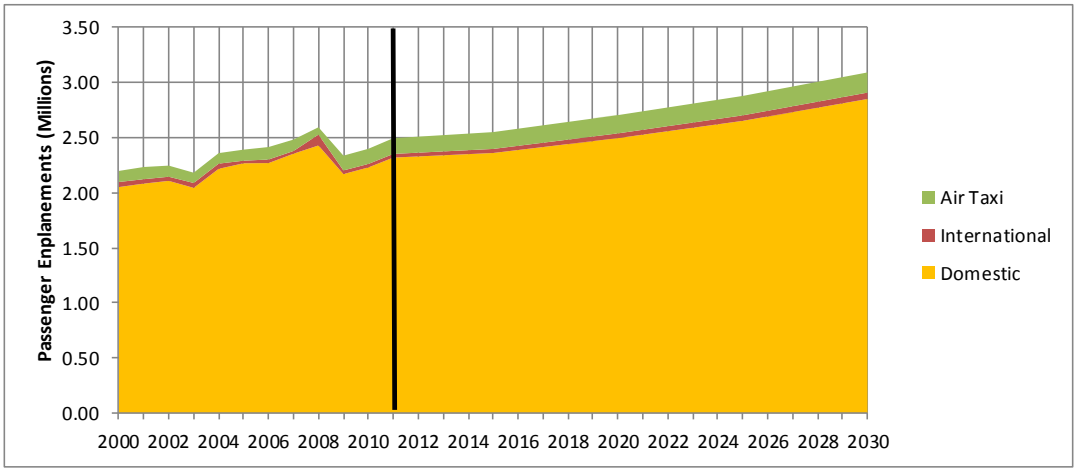
7.1. Forecast Comparisons

Table 4 compares the ANC forecast with the TAF. Comparisons are provided for three different categories: passenger enplanements, commercial aircraft operations, and total aircraft operations. The base year TAF ANC enplanement totals are slightly lower than the AIAS totals because the TAF totals exclude non-revenue passengers. The growth rate of the AIAS ANC passenger forecast (1.3 percent) is lower than the TAF growth rate (1.8 percent) and thus the TAF totals are higher by the end of the forecast period. The AIAS growth rate is lower than the TAF growth rate because of more conservative economic growth and fuel cost assumptions. These differences notwithstanding, the two passenger forecasts are very similar and differ by less than 6 percent throughout the forecast period.

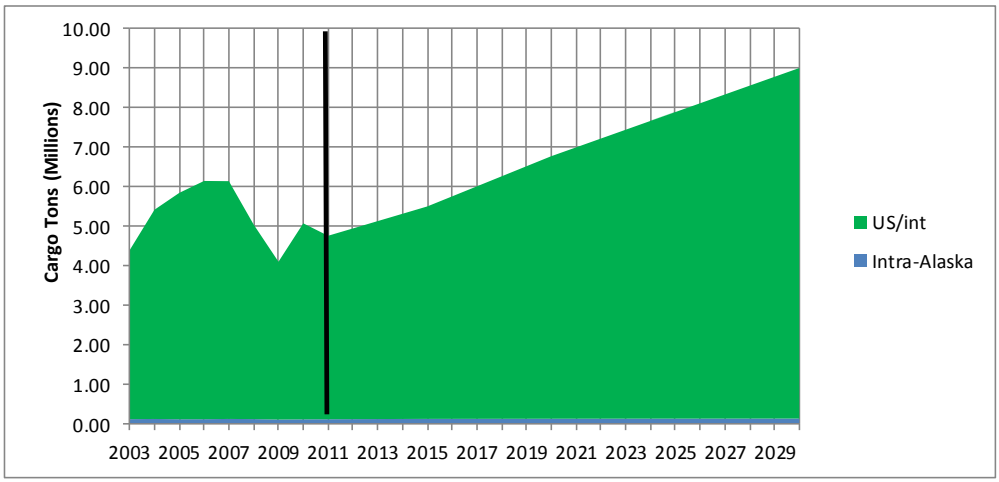
Exhibit 1

Summary of Projected Activity: ANCHORAGE INTERNATIONAL AIRPORT

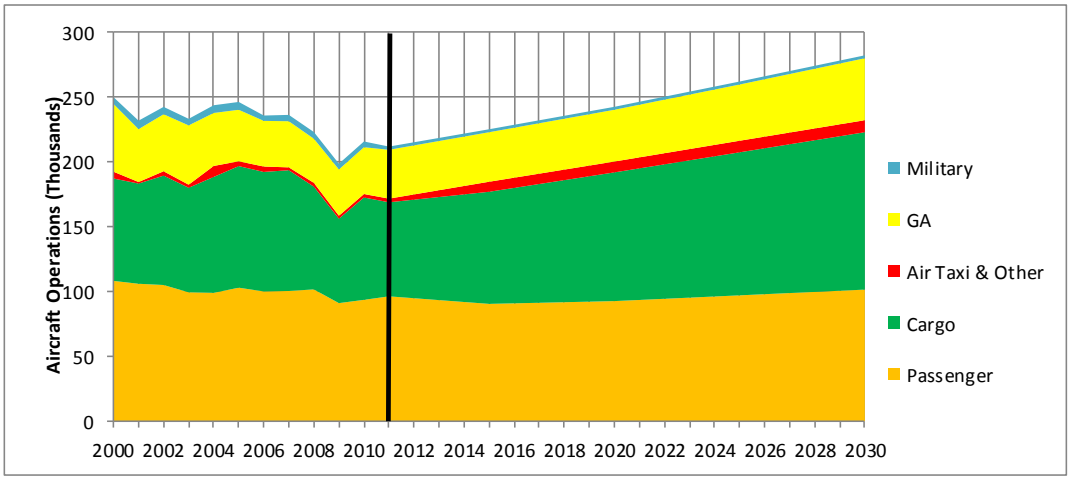
Passenger Enplanements



Inbound and Outbound Cargo Tonnage



Aircraft Operations



Source: Exhibit 10.1 in AIAS Forecast Technical Report.

Table 4

Comparison with FAA Terminal Area Forecast
Anchorage and Lake Hood

Category and Year	AIAS Forecast	TAF	Percent Difference
	Passenger Enplanements		
2010	2,261,181	2,171,982	4.1%
2015	2,397,244	2,321,116	3.3%
2020	2,538,286	2,547,479	-0.4%
2025	2,701,762	2,802,763	-3.6%
2030	2,908,110	3,084,842	-5.7%
	Average Annual Growth Rate		
2010-2030	1.3%	1.8%	
	Commercial Operations		
2010	189,389	187,169	1.2%
2015	199,693	203,215	-1.7%
2020	215,938	223,639	-3.4%
2025	233,311	247,236	-5.6%
2030	250,864	274,680	-8.7%
	Average Annual Growth Rate		
2010-2030	1.4%	1.9%	
	Total Operations		
2010	272,036	274,778	-1.0%
2015	290,646	287,646	1.0%
2020	310,359	307,735	0.9%
2025	333,260	332,880	0.1%
2030	360,021	360,290	-0.1%
	Average Annual Growth Rate		
2010-2030	1.4%	1.4%	

Source: Table 10.14 in AIAS Forecast Technical Report.

The FAA's TAF combines ANC and LHD operations. Therefore, the AIAS forecasts of ANC and LHD operations were combined for the purposes of comparison. Commercial operations include passenger, cargo, and air taxi and other operations. In the TAF, these correspond to the air carrier and air taxi classifications. The AIAS forecast growth rate for commercial operations at ANC (1.4 percent) is lower than the TAF growth rate (1.9 percent) resulting in an AIAS commercial operations forecast that is almost 9.0 percent lower than the TAF by 2030.

The AIAS and TAF growth rates for total operations at ANC are almost identical - the total operations forecasts in 2030 are within 1.0 percent of each other. The lower AIAS projected growth in commercial operations is offset by higher projected growth in general aviation operations.

According to the FAA, forecasts are considered to be consistent with the TAF if they differ by less than 10 percent within the five-year forecast period, and by less than 15 percent within the ten-year forecast period. The AIAS forecast for ANC meets these criteria.

7.2. Conclusion

The above demand forecasts are subject to political, economic and technological factors that are difficult to predict. Therefore, the forecasts should be monitored and compared to actual activity to identify any material deviations. Also, the addition of new airport capacity should be tied to trigger levels to ensure that facilities are phased to come on line when needed and not too soon or too late. Finally, it should be reemphasized that these forecasts represent unconstrained demand. Therefore, if physical, financial, political, or environmental obstacles prevent the implementation of capacity required to accommodate this demand, actual activity levels may be lower than anticipated in these forecasts.