Forecast Technical Report

Alaska International Airport System

May 2013

Alaska International Airport System
PLANNING STUDY

HNTB

DOWL HKM

This document was prepared by:

HNTB Corporation
2900 South Quincy St.
Arlington, VA 22042

As subcontractor to:

DOWL HKM
4041 B. Street
Anchorage, Alaska 99503

for the Alaska Department of Transportation and Public Facilities, with a grant from the Federal Aviation Administration.

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

222 W. 7th Avenue #14
Anchorage, Alaska
99513-7587

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

Kevin Hoffmann

Kathy Smith	Kevin Hoffmann
Co-Chairperson	Co-Chairperson
AIAS Airlines Airport Affairs Committee	AIAS Airlines Airport Affairs Committee

cc: AIAS Airlines Airport Affairs Committee

TABLE OF CONTENTS **Page**

LIST OF TABLES **Page**

LIST OF EXHIBITS **Page**

LIST OF APPENDICES

ALASKA INTERNATIONAL AIRPORT SYSTEM PLAN
Forecast Technical Report

This report summarizes the approach, assumptions and results of the aviation activity forecasts prepared for the Alaska International Airport System (AIAS). The AIAS includes the two major international airports serving the State of Alaska, Ted Stevens Anchorage International Airport (ANC) and Fairbanks International Airport (FAI). Forecasts for Lake Hood Airport (LHD), encompassing both the seaplane base and the strip, are included because of its close proximity and interaction with ANC.

Forecasts are presented for 2015, 2020, 2025, and 2030. The forecasts for near term (through 2015), intermediate term (2020) and long term (2030) are carried forth in more detail to facilitate follow-on capacity analysis. The document first describes the purpose and background of the forecasts. Next, a description of key socioeconomic and aviation industry factors is provided, along with an examination of historical aviation activity within the AIAS. The document continues with detailed projections of passenger and cargo activity, followed by forecasts of other activity categories, 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) and a set of alternative forecast scenarios. In addition, the document is supported by several technical appendices, Appendix A through Appendix L.

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 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 are 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 baseline forecasts do not incorporate the impacts of capacity constraints or incentive programs and therefore assume that the AIAS airports will continue in their current roles. The impact of capacity constraints is addressed in one of the scenarios in Section 11.

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 below.

1.1. Forecast Methodology

After review and comment by the State and other stakeholders, the AIAS forecast methodology was set forth in Technical Memorandum #1: Final Recommended Methodology for Preparing Aviation Demand Forecast for the AIAS Plan finalized on August 5, 2011. A draft version of this memorandum was submitted to the State, airlines, FAA, and their representatives for review and approval and the final memorandum incorporated the comments that were received.

This technical memorandum describes the proposed baseline forecast approach for each of the main activity categories, including air cargo, passenger, air taxi, general aviation, and military. It also provides the methodology for preparing the design day flight schedules and recommended forecast scenarios. In addition, the memorandum included a detailed description of the deliverables that will be provided as part of the forecast effort, and how they relate to concurrent planning initiatives at ANC, FAI, and LHD.

Relevant portions of the forecast methodology memorandum have been incorporated within the individual sections of this document and the memorandum is also included in its entirety as Appendix J.

1.2. Survey of Air Carriers

A survey of passenger and cargo carriers was performed in the late summer and fall of 2011. The effort included separate surveys for passenger and all-cargo carriers. Surveys were first mailed out to carriers with follow-up phone calls and e-mails to encourage response.

Key findings from the cargo surveys are summarized in the Anchorage Cargo Carrier Summary dated January 2, 2012. The all-cargo carriers that were surveyed are broadly classified as:

- Intrastate: e.g., Northern Air Cargo with 100% locally originating domestic cargo;
- Intercontinental Tech Stop (“Gas & Go”): e.g., Evergreen, with no or only nominal deplaned and/or enplaned cargo; and
- Intercontinental Hubbing: e.g., FedEx and UPS with virtually all cargo deplaned and re-enplaned at ANC.

The survey was intended to be completed independently by recipients, as well as to be used in phone interviews. The advantage of the latter was to ask follow-up questions and to gather meaningful intelligence that may not have been elicited by the written survey questions.

With repeated requests, response rates were relatively high (exceeding 50% of contacts) for the surveys but fewer were willing to participate in interviews despite the consultants' assurances that the two would not be wholly redundant.

Although the consultants explained to survey respondents the requirements of a twenty-year forecast, the latter generally were not comfortable in providing projections given recent air cargo history. For example, the last decade, a period in which growth was projected to exceed the capacity of several traditional U.S. gateways, instead found those airports with less annual air cargo in 2010 than they tallied a decade earlier. The late 2011 cargo downturn caused individual transpacific carriers and even institutions such as IATA to revise their forecasts for the remainder of the calendar year. As a result, carriers were uniformly non-responsive when asked for long-term forecasts. Only a few would even give thoughtful responses to the five year forecast while others simply suggested using the Boeing forecasts.

Although the carriers were mostly unable to provide forecasts of future tonnage at AIAS airports, they provided useful information on future fleet mix, insights into current facility and operational issues, and the relative advantages and disadvantages of operating at ANC vs. FAI.

1.3. Forecast Assumptions

Following some initial forecast analysis and receipt of the majority of the surveys, a set of forecast assumptions was prepared for review and approval by the State and selected stakeholders. The assumptions are fully described in the AIAS Recommended Forecast Assumptions, dated December 19, 2011 and attached as Appendix K.

The forecast assumptions were used as inputs to the aviation forecasts elsewhere in this document and to provide a context for forecast preparation. The assumptions were reviewed by the AIAS Planning Study consulting team, by the airlines, and by representatives of the State, ANC and FAI, and comments and recommendations were incorporated. The purpose of the assumptions was to provide a reasonable assessment of the key forecast trends and parameters necessary to generate activity forecasts. In many instances, multiple outcomes for these trends and parameters are possible. Therefore, up to four forecast scenarios will be prepared later in the study to address the impact of potential variations in these factors.

The input assumptions should not be confused with the aviation activity forecasts. The forecasts are the output of a process in which input assumptions are incorporated in a methodology/approach that generates the aviation forecast numbers. The specific assumptions and methodologies used to develop the forecasts have been incorporated into this document in the sections where they are most relevant.

2.0. Socioeconomic Background and Projections

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, Fairbanks, 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, Fairbanks, and Alaska economies.

Historical data on population, employment, and income in the primary study area are presented in Tables A.1 through A.4 of Appendix A and discussed in this section. The Anchorage Metropolitan Statistical Area (MSA) which contains the Municipality of Anchorage and the Matanuska-Susitna Borough, and the Fairbanks MSA which includes the Fairbanks North Star Borough, were selected as the primary service areas for this study. Data for the remainder of Alaska and the United States as a whole are also provided.

The principal source of historical data for the two MSAs, the State of Alaska, and the United States was the U.S. Department of Commerce's Bureau of Economic Analysis (BEA).

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.

2.1. Population

Table A.1 in Appendix A shows historical population for the two MSAs, the rest of Alaska, and the United States. As shown in the table, the population of the Anchorage MSA grew at an average annual rate of 1.8 percent between 1990 and 2010, from 267,762 to 380,821, while the Fairbanks MSA grow at about 1.1 percent per year over the same time. Growth has been slowest in the more rural parts of Alaska, outside the two metropolitan areas. Many of these areas have been subject to significant outmigration as younger members of the population move to more urban areas to seek out better employment.

Table 2.1 presents the three available alternative population forecasts. The State DOL population projections are recommended for use in this study. They are very similar to W&P for the Anchorage and Fairbanks metropolitan areas but appear to better reflect the ongoing outmigration from more rural areas of Alaska.

The selected forecasts project a continuation of historical trends but at a slower pace as the average age of the population increases and fewer people are of child-bearing age. As shown, population in the Anchorage metropolitan area is projected to increase by 1.3 percent per year, compared to 0.6 percent for Fairbanks, and 0.9 percent for the United States. The remainder of Alaska is expected to achieve very little growth, about 0.1 percent per year.

None of the above forecasts are sufficiently current to incorporate the recently announced potential force structure changes at Eielson Air Force Base near Fairbanks, which may result in a reduction in personnel, as well as associated population and employment.

2.2. Employment

Table A.2 in Appendix A presents historical employment for Anchorage, Fairbanks, the rest of Alaska, and the United States. Historically, employment has grown more rapidly than population. Over the 1990-2009 period, the average annual growth rate for employment in Anchorage and Fairbanks has exceeded that of the United States. Major employers in the area are oil and gas production, tourism, mining, timber and agriculture.

Table 2.2 presents three alternative employment forecasts. For employment projections, a hybrid approach that applies 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.

Table 2.1

Population Forecasts

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Population - Woods & Poole Growth Rates (c)				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	408,153	99,475	244,831	752,459	324,651,258
2020	436,137	101,576	254,539	792,252	340,525,647
2025	464,520	103,801	264,531	832,852	356,743,721
2030	492,970	106,060	274,586	873,616	373,032,487
	Average Annual Growth Rate				
2010-2030	1.3%	0.4%	0.8%	1.0%	0.9%
	Forecast Population - ISER Growth Rates (d)				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	397,046	n/a	n/a	732,815	n/a
2020	446,134	n/a	n/a	805,134	n/a
2025	503,593	n/a	n/a	887,800	n/a
2030	529,222	n/a	n/a	925,666	n/a
	Average Annual Growth Rate				
2010-2030	1.7%	n/a	n/a	1.3%	n/a
	Forecast Population - Alaska Department of Labor Growth Rates (e) (Selected)				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	406,494	100,936	232,856	740,286	n/a
2020	434,793	104,420	237,423	776,636	n/a
2025	464,530	107,860	240,273	812,663	n/a
2030	494,289	110,926	241,816	847,031	n/a
	Average Annual Growth Rate				
2010-2030	1.3%	0.6%	0.1%	0.9%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.
(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data from Table A.1.
(d) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data from Table A.1.
(e) Growth rates from Alaska Department of Labor and Workforce Development, Alaska Population Projections: 2010 to 2034, February 2011, applied to 2010 base year data from Table A.1

Sources: As noted and HNTB analysis.

Table 2.2

Employment Forecasts

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Employment - Woods & Poole Growth Rates (c)				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	254,095	62,248	165,264	481,607	186,666,486
2020	271,698	64,471	174,152	510,321	197,543,985
2025	290,377	66,671	183,211	540,259	208,942,117
2030	310,202	68,842	192,414	571,458	220,876,780
	Average Annual Growth Rate				
2010-2030	1.4%	0.8%	1.1%	1.2%	1.2%
	Forecast Employment - ISER Growth Rates (d)				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	245,486	n/a	n/a	469,097	n/a
2020	267,435	n/a	n/a	507,758	n/a
2025	294,643	n/a	n/a	552,694	n/a
2030	305,062	n/a	n/a	568,685	n/a
	Average Annual Growth Rate				
2010-2030	1.3%	n/a	n/a	1.2%	n/a
	Forecast Employment - W&P Per Capita Employment Applied to State DOL Population Forecasts (e) (Selected)				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	253,062	63,162	157,181	473,816	n/a
2020	270,861	66,276	162,441	500,262	n/a
2025	290,383	69,278	166,410	527,163	n/a
2030	311,032	72,000	169,451	554,068	n/a
	Average Annual Growth Rate				
2010-2030	1.4%	1.0%	0.5%	1.1%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough. 2010 data estimated based on State growth rates.
(b) Includes Fairbanks North Star Borough. 2010 data estimated based on State growth rates.
(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data from Table A.2.
(d) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data from Table A.2.
(e) Woods Poole employment to population ratios applied to Alaska Department of Labor Population Projections from Table 2.1

Sources: As noted and HNTB analysis.

Future employment is projected to grow less rapidly than in the past for several reasons. First, as the average age of the population increases, more people retire and therefore drop out of the labor force. Second, because of a current glut in natural gas supplies within the United States, the incentive for further natural gas development, at least in the short term, is reduced. Finally, the Federal government, which is a major employer in Alaska, is under strong pressure to reduce spending, which will likely result in reduced employment in that sector.

In contrast to the last 40 years in which basic (oil, timber, etc.) and infrastructure (pipeline construction, etc.) industries were the primary drivers of the State economy, future employment growth is projected to occur mostly in support industries such as trade, finance, and services. Basic and infrastructure industrial activity tends to be in rural areas, and support industries in urban areas. Hence, future employment in Anchorage and Fairbanks is projected to grow faster than in the remainder of the State.

Tables A.3 and A.4 in Appendix A show historical annual real total and per capita personal income (in 2010 dollars) for Anchorage, Fairbanks, the rest of Alaska, and the United States. Total personal income in the Anchorage and Fairbanks MSAs grew slightly faster than in the United States between 1990 and 2009. Trends in historical income have been similar to those in employment. When employment has grown quickly, income has grown quickly. In slower periods, such as the mid-1990s, real income has grown much more slowly.

Between 1990 and 2009, real per capita income in the Anchorage and Fairbanks metropolitan areas alternately declined and rose, along with the fortunes of the oil industry. Although per capita income in Anchorage, Fairbanks, and elsewhere in Alaska is still higher than the remainder of the United States, the difference has diminished over the past two decades.

Table 2.3 shows income projections for Anchorage, Fairbanks, the remainder of Alaska, and the United States. A hybrid approach, similar to that used for employment, was selected for income. This involved applying the average of the ISER and W&P per capita income projections (Table 2.4) to the State DOL population projections. 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.

Consistent with the population and employment projections, the adjusted income forecasts project Anchorage and Fairbanks income to continue to grow but not as quickly as in the past. As shown in Table 2.3, Anchorage and Fairbanks metropolitan income is projected to grow less quickly than in the United States, in part because of reduced stimulus from natural gas development and Federal expenditures.

Table 2.3

Personal Income Forecasts (000's of 2010 Dollars)

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Personal Income - Woods & Poole Growth Rates (c)				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	20,338,576	4,409,055	10,451,367	35,198,998	13,784,200,170
2020	22,860,645	4,809,248	11,634,589	39,304,482	15,370,164,702
2025	25,705,975	5,249,237	12,962,420	43,917,632	17,160,616,229
2030	28,902,443	5,729,258	14,441,824	49,073,525	19,171,547,604
	Average Annual Growth Rate				
2010-2030	2.4%	1.8%	2.1%	2.2%	2.2%
	Forecast Personal Income - ISER Growth Rates (d)				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	18,865,136	n/a	n/a	32,797,457	n/a
2020	20,723,881	n/a	n/a	35,934,516	n/a
2025	23,037,113	n/a	n/a	39,740,632	n/a
2030	24,127,426	n/a	n/a	41,569,161	n/a
	Average Annual Growth Rate				
2010-2030	1.5%	n/a	n/a	1.4%	n/a
	Forecast Personal Income - W&P/ISER Average Per Capita Income Forecasts Applied to State DOL Population Forecasts (e) (Selected)				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	19,784,976	4,310,016	9,785,701	33,880,693	n/a
2020	21,493,632	4,616,619	10,485,927	36,596,178	n/a
2025	23,478,342	4,942,573	11,194,237	39,615,152	n/a
2030	25,757,296	5,274,351	11,777,375	42,809,022	n/a
	Average Annual Growth Rate				
2010-2030	1.8%	1.4%	1.1%	1.5%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough. 2010 data estimated based on State growth rates.

(b) Includes Fairbanks North Star Borough. 2010 data estimated based on State growth rates.

(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data from Table A.5.

(d) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data from Table A.3.

(e) Average of Woods & Poole and ISER per capital income projections (Table 2.4) applied to Alaska Department of Labor Population Projections from Table 2.1. Rest of Alaska calculated by subtracting Anchorage and Fairbanks MSA totals from State totals.

Sources: As noted and HNTB analysis.

Table 2.4 shows projected real per capita income for Anchorage, Fairbanks, the rest of Alaska, and the United States. Like income, per capita income is projected to grow more slowly in Alaska than elsewhere in the U.S. As a result by 2030 average per capita income in Fairbanks is projected to be slightly lower than in the U.S. and higher by a much smaller margin in Anchorage.

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.

2.3. Global Economic Forecasts

Much of the cargo traffic at the AIAS airports 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, and shown in Table 2.5 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.

Table 2.4

Per Capita Personal Income Forecasts (2010 Dollars)

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Per Capita Personal Income - Woods & Poole Growth Rates (c)				
2009	47,039	39,588	40,893	44,003	39,537
2010	47,482	41,078	40,204	44,205	39,945
2015	49,831	44,323	42,688	46,779	42,458
2020	52,416	47,346	45,708	49,611	45,137
2025	55,339	50,570	49,002	52,732	48,103
2030	58,629	54,019	52,595	56,173	51,394
	Average Annual Growth Rate				
2010-2030	1.1%	1.4%	1.4%	1.2%	1.3%
	Forecast Per Capita Personal Income - ISER Growth Rates (d)				
2009	47,039	39,588	40,893	44,003	39,537
2010	47,482	41,078	40,204	44,205	39,945
2015	47,514	n/a	n/a	44,755	n/a
2020	46,452	n/a	n/a	44,632	n/a
2025	45,745	n/a	n/a	44,763	n/a
2030	45,590	n/a	n/a	44,907	n/a
	Average Annual Growth Rate				
2010-2030	-0.2%	n/a	n/a	0.1%	n/a
	Forecast Per Capita Personal Income - Average of Woods & Poole and ISER Growth Rates (e) (Selected)				
2009	47,039	39,588	40,893	44,003	39,537
2010	47,482	41,078	40,204	44,205	39,945
2015	48,672	42,700	42,025	45,767	n/a
2020	49,434	44,212	44,166	47,121	n/a
2025	50,542	45,824	46,590	48,747	n/a
2030	52,110	47,548	48,704	50,540	n/a
	Average Annual Growth Rate				
2010-2030	0.5%	0.7%	1.0%	0.7%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough. 2010 data estimated based on State growth rates.

(b) Includes Fairbanks North Star Borough. 2010 data estimated based on State growth rates.

(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data from Table A.4.

(d) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data from Table A.4.

(e) Average of ISER and Woods&Poole per capita income for Anchorage and Alaska. Fairbanks estimated as average between Woods & Poole forecast and flat growth. Rest of Alaska estimated as Rest of Alaska income divided by Rest of Alaska population.

Sources: As noted and HNTB analysis.

Table 2.5

GDP Forecast by Region (millions of 2005 US Dollars)

		Asia/Pacific			
Year	**United States**	**Total**	**China**	**Japan**	**Other Asia/Pacific**
2010	13,088.0	13,768.1	3,829.1	4,575.3	5,363.7
2015	15,155.3	17,658.4	5,768.4	4,984.4	6,905.6
2020	17,346.7	22,301.4	8,338.3	5,183.8	8,779.3
2025	19,898.9	27,681.1	11,544.7	5,276.0	10,860.4
2030	22,569.7	34,006.2	15,336.5	5,364.4	13,305.3
		Average Annual Growth Rate			
2010-2030	2.8%	4.6%	7.2%	0.8%	4.6%

Source: Global Insight, as published in FAA Aerospace Forecasts: 2011-2031, March 2011.

3.0. Fuel Costs and Air Fares

Jet fuel prices are an important determinant of aviation demand and will be 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.

3.1. Oil and Jet Fuel Prices

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. According to the AirNav Fuel Price Report, in April 2012, fixed base operator (FBO) jet fuel prices at Alaska were 6 percent higher than elsewhere in the United States. Commercial airlines have their own fueling arrangements so their costs vary from the FBO costs, but the airlines indicate that the Alaska fuel price differential is still a factor for them.

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 will be used as a proxy for Alaska jet fuel price data in subsequent analyses. As long as the relationship between Alaska and U.S. jet fuel prices remains approximately the same, this will not affect the forecasts. The Alaska jet fuel cost differential is incorporated into the historical relationships used to develop the forecast equations and is therefore automatically carried forward into the forecasts.

There is significant uncertainty associated with future jet fuel prices, due to local, national, and global factors. Therefore, high and low fuel price forecast scenarios will be prepared that show the impact on aviation activity levels resulting from changes in the baseline fuel assumptions.

Table 3.1 shows the volatile history of U.S. jet fuel prices over the last ten years. 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.

Table 3.1

Historical Average Jet Fuel Prices

	Jet Fuel Price (per gallon)	
Year	Nominal	2010 Dollars
2000	$0.85	$1.05
2001	$0.73	$0.88
2002	$0.69	$0.82
2003	$0.82	$0.97
2004	$1.15	$1.31
2005	$1.72	$1.90
2006	$1.92	$2.08
2007	$2.13	$2.24
2008	$2.96	$3.01
2009	$1.66	$1.69
2010	$2.15	$2.15
2011	$2.94	$2.87

Sources: U.S.Department of Energy Spot Prices for U.S. Oil and Petroleum Products and HNTB analysis.

Table 3.2 presents alternative scenarios for future crude oil and jet fuel prices. The United States Department of Energy (DOE) and the FAA provide specific forecasts of jet fuel prices. In general, the DOE projects oil and jet fuel prices to increase gradually in their Reference case and much more rapidly in their High Oil Price scenario. The FAA's estimate anticipates a gradual increase through 2015 and then a decline. In their forecast for Anchorage and Alaska, ISER assumed a cost of $95.00 per barrel in 2009 prices ($96.69 in 2010 dollars) throughout the forecast period. As of this writing, crude oil and jet fuel prices have been tracking higher than most forecasts had indicated. As of September, 2011, actual jet fuel prices were close to the DOE high forecast, whereas as of November 11, 2011, spot crude oil prices were $98.18 per barrel, higher than the FAA or base DOE forecasts and close to the ISER 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 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.

Table 3.2

Comparison of Fuel and Oil Price Projections (2010 Dollars)

	Jet Fuel Costs per Gallon (per gallon)				Crude Oil Prices (per barrel)			
Year	Actual (a)	DOE Reference Case (b)	DOE High Oil Price (c)	Recommended (d)	FAA Refiners' Acquisition Cost (e)	DOE Baseline (f)	DOE High (f)	ISER (g)
2008	$2.96				$102.95	$93.44	$93.44	
2009	$1.66				$55.62	$59.04	$59.04	
2010	$2.15				$74.11	$74.86	$74.86	$96.69
2011	$2.94	$2.28	$3.06	$2.94	$73.57	$80.32	$103.99	$96.69
2012		$2.44	$3.47	$3.01	$79.49	$80.65	$120.24	$96.69
2013		$2.49	$3.70	$3.09	$81.65	$82.87	$128.22	$96.69
2014		$2.53	$3.81	$3.16	$82.85	$85.07	$133.73	$96.69
2015		$2.57	$3.89	$3.23	$84.38	$86.83	$136.84	$96.69
2020		$2.97	$4.35	$3.66	$80.77	$98.65	$160.60	$96.69
2025		$3.18	$4.78	$3.98	$74.22	$107.40	$175.09	$96.69
2030		$3.33	$5.04	$4.19	$75.91	$112.38	$185.03	$96.69
				Average Annual Growth Rate				
2010-2030		0.6%	2.7%	1.8%	0.2%	1.7%	2.9%	0.0%

(a) U.S. Department of Energy, Annual Energy Outlook 2011, 2011 data as of September, from Air Transport Association.
(b) U.S. Department of Energy, Annual Energy Outlook 2011, Reference Case.
(c) U.S. Department of Energy, Annual Energy Outlook 2011, High Oil Price.
(d) Average of DOE Reference and High Cases. 2012 through 2014 interpolated from 2011 level.
(e) FAA Aerospace Forecasts: Fiscal Years 2011-2031. Prices converted to constant dollars. Fiscal Year.
(f) S. Department of Energy, Annual Energy Outlook 2011, Reference and High Cases.
(g) Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009. Converted to 2010 prices.

Sources: As noted and HNTB analysis.

It is assumed that ANC, FAI, and the airlines will continue to take whatever measures are necessary and install whatever facilities are required to avoid a recurrence of past fuel availability issues and to ensure that jet fuel is available to the carriers at market rates.

The possibility that fuel availability may constrain growth in airport activity, and the measures that ANC and FAI can take to ensure fuel availability, will be addressed in more detail in the incentives study as part of the strategic plan to be prepared after the forecast.

3.2. Average Air Fares

Locally originating passenger activity is sensitive to local economic factors such as population, employment, and income, and also to airline factors such as air carrier service and fares. Therefore, the critical assumptions for this analysis include the use of both the growth rates identified in Section 2 for socioeconomic data and on assumptions regarding future yield (revenue per passenger mile) and fare levels.

Tables B.1 and B.2 show the history of the real cost of average air fares at ANC and FAI since 1990. Over the long term, average fares at ANC, FAI, and the United States have declined markedly in real terms. Historically, these declines have been sustained by increases in airline efficiency, reduced labor costs, and increased load factors which have allowed aircraft operating costs to be distributed over more passengers.

Although average air fares to the rest of Alaska are similar for ANC and FAI, passengers at ANC have consistently enjoyed lower air fares to the Lower 48 than passengers at FAI. Tables B.3 and B.4 show average yield (revenue per passenger mile) for the two airports. The data show that, even when adjusted for the increased distance between FAI and the Lower 48, ANC passengers enjoy a price advantage.

Table B.5 provides the FAA forecasts of yields and fares. An estimate of FAA fares was derived by multiplying the FAA forecasts of average yield and average trip distance. Since the FAA provides separate forecasts for mainline and regional carriers, these were weighted by FAA-forecasted enplanements to generate combined mainline-regional carrier fare projections. As shown in the Table, the FAA projects yield to continue to decline but, because of increasing trip distance, average U.S. fares are projected to decrease at a slower rate.

As noted earlier, the FAA forecasts are based on an optimistic outlook for jet fuel prices (see Table 3.2). Table B.6 presents an adjustment to FAA yield projections that incorporates the jet fuel cost projections selected earlier in this section. These adjusted yield projections were used to prepare average fare projections for ANC and FAI shown in Table 3.3. The fare projections indicate that the historical decline in real air fares 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.

The projections in Table 3.3 represent average air fares, and assume that fuel and other operating costs will prevent fares from sinking significantly below these levels and that airline competition will prevent them from rising significantly above these levels. In reality, there will be short term fluctuations in fare levels in response to airline marketing and operational initiatives. In addition, the averages listed above will encompass a broad array of air fares, ranging from advance purchase economy class fares to last minute purchase business class fares.

Table 3.3

Projected Domestic ANC and FAI Fares (2010 dollars)

				ANC Outbound Fares (dollars)			FAI Outbound Fares (dollars)		
Year	FAA Adjusted Yield (cents) (a)	FAA Average Trip Length (b)	FAA Fare (dollars) (c)	To Fairbanks	To Rest of Alaska	To Other U.S.	To Anchorage	To Rest of Alaska	To Other U.S.
				Base Case					
2008	14.58	873.5	$127.40	$117.37	$151.92	$285.55	$116.34	$141.77	$340.43
2009	12.24	869.7	$106.42	$118.11	$148.59	$278.94	$117.30	$140.62	$349.73
2010	12.95	874.9	$113.30	$119.78	$148.17	$269.83	$120.43	$143.73	$347.03
2015	14.39	902.5	$129.84	$137.26	$169.79	$309.21	$138.01	$164.71	$397.67
2020	14.61	930.0	$135.90	$143.67	$177.72	$323.65	$144.45	$172.40	$416.24
2025	14.81	956.4	$141.61	$149.70	$185.18	$337.23	$150.51	$179.64	$433.71
2030	14.40	983.6	$141.60	$149.70	$185.18	$337.23	$150.51	$179.63	$433.70

(a) Table B.6.
(b) Table B.5.
(c) FAA yield multiplied by average trip length.
(d) Assumed to increase at same rate as adjusted FAA U.S. yield forecast.
(e) Assumed to increase at same rate as adjusted FAA U.S. fare forecast.

Sources: As noted and HNTB analysis.

4.0. Historical Aviation Activity at AIAS Airports

This section discusses historical aviation activity at AIAS airports including a discussion of the data sources. Aviation activity 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.

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.

Air cargo at the AIAS airports includes the following:

- Intrastate cargo to and from other Alaska airports;
- Origin-destination cargo flows from AIAS airports to and from the Lower 48;
- Origin-destination cargo flows from AIAS airports to and from other countries;
- 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; and
- Transit cargo – cargo that is neither loaded nor unloaded at AIAS airports but is carried on aircraft that land at AIAS airports 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.

The two main sources of information on historical and current aviation activity at the AIAS airports are the airports themselves and the U.S. Department of Transportation (US DOT). Each source has advantages and shortcomings.

Airport records have historically been more inclusive for passenger activity. Until 2003, the US DOT data missed many of the smaller intra-state carriers. In addition, the US DOT data provide inbound and outbound passenger counts but with no breakout of enplaned, deplaned, and transit passengers. Unlike the US DOT data, the Airport data include both non-revenue and revenue passengers. Unlike the Airports' data, The US DOT data have the advantage of providing market-by-market breakouts of passengers. In addition, some carriers fail to provide complete data with the Airport on a consistent basis. For example, in 2005 an international carrier did not file any enplaned or deplaned passenger data to the Airport, even though they had done so in previous years and continued to provide service to ANC in 2005. Likewise, another international carrier filed no transit passenger information in 2005, despite having done so in previous years. Both carriers filed passenger data with the US DOT in 2005.

There are similar gaps in the cargo data. The international carriers, in particular, have not been consistent in the way they report transit and transfer cargo activity. True transit cargo is cargo that remains on the aircraft without being off-loaded and is primarily carried by aircraft that use ANC as a technical stop to refuel and change crews. Some airlines record transfer cargo (cargo that is off-loaded from one aircraft and loaded onto another aircraft) as enplaned and deplaned cargo, whereas others report it as transit cargo. Comparisons of historical transit cargo data with all-cargo aircraft landed weight statistics suggest that true transit cargo has been under reported in the past, although the airlines have made progress in reducing this problem. Gaps also exist in the US DOT data. Until 2003, many of the carriers, including most of the U.S. flag all-cargo carriers, did not file cargo tonnage or aircraft operations data.

As is the case with passengers, gaps remain in the cargo data airlines provide to the Airports. For example, some carriers do not report transit cargo, while others appear to report transit cargo twice, both on the inbound and outbound legs. Other carriers report significantly more cargo tonnage to the U.S. DOT than to the Airports. Further confusion occurs when one carrier contracts the services of another carrier to carry cargo. In these instances, one carrier may report activity to the Airports while the other carrier reports activity to the US DOT.

In general, the Airport passenger and cargo data show more consistency over time, especially for domestic operations. Since 2003, the US DOT data appear to be more comprehensive with breakouts on a market basis. Consequently, the US DOT T100 data are used for the analyses that require market-by-market detail.

4.1. Historical Passenger Activity

The recent history of passenger activity at ANC and FAI, including originating, enplaning, deplaning and transit passengers, is discussed in this section. Originating passengers are passengers that begin their air trip at ANC or FAI. 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 or FAI.

Table 4.1 summarizes historical enplaning, deplaning, and transit passengers at ANC. More detailed breakouts of these data are provided in Tables C.1 through C.3 in Appendix C. The data in the appendices are organized by domestic commercial carrier, "for hire" air taxi, and international. This information was compiled according to airline. Some airlines, such as Northwest (now Delta) and Alaska Airlines, have provided both domestic and international service over the historical period; however, since most of their service was domestic their passengers were included in the domestic category.

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.

Domestic air taxi and other enplanements and deplanements have experienced year-to-year fluctuations with a sharp decline during the 2008 financial crisis and a relatively strong recovery since then.

Table 4.1

Historical Passengers at ANC

Year	Enplanements	Deplanements	Transit
2000	2,197,814	2,191,771	630,325
2001	2,233,338	2,215,578	531,390
2002	2,245,866	2,246,701	473,805
2003	2,181,498	2,186,533	342,968
2004	2,359,321	2,337,708	356,704
2005	2,390,869	2,389,569	296,465
2006	2,414,481	2,371,453	237,270
2007	2,481,943	2,450,269	379,560
2008	2,593,736	2,522,428	232,073
2009	2,336,379	2,342,060	173,256
2010	2,398,512	2,390,912	188,569
2011 (a)	2,494,786	2,486,881	112,032
Average Annual Growth Rate			
2000-2011	1.2%	1.2%	-14.5%

(a) Interpolated from first 10 months.

Sources: Tables C.1, C.2 and C.3.

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.

Table 4.2 shows the recent history of passenger enplaning, deplaning, and transit passengers at FAI, and Tables C.4 through C.6 in Appendix C show the same data in more detail. Like ANC, FAI has experienced gradual growth in recent years with a brief decline during the 2008-2009 recession. In contrast to ANC, transit passengers at FAI have increased.

Tables C.7 and C.8 in Appendix C present outbound passenger originations for ANC and FAI organized by intra-AIAS traffic, traffic to other Alaska airports, and traffic to other U.S. airports. The trends over the past twenty years are similar at both ANC and FAI. 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.

Table 4.2

Historical Passengers at FAI

Year	Enplanements	Deplanements	Transit
2000	403,565	404,997	48,236
2001	407,975	411,568	49,487
2002	409,626	420,856	48,015
2003	417,959	423,834	46,742
2004	455,821	463,477	45,982
2005	457,621	462,522	50,019
2006	449,558	458,104	48,106
2007	465,380	489,474	45,910
2008	473,413	486,993	46,264
2009	446,332	464,290	48,487
2010	458,167	464,401	54,970
2011 (a)	460,542	466,808	60,440
Average Annual Growth Rate			
2000-2011	0.5%	0.4%	4.7%

(a) Interpolated from first 10 months.

Sources: Tables C.4, C.5 and C.6.

Domestic Portion of International Journey (DPIJ) passengers are presented in Tables C.9 and C.10. DPIJ counts consist of the domestic leg of an itinerary that includes an international origin or destination. At airports like ANC or FAI, which are not major international passenger gateways, these are essentially international originations passing through another gateway. Note that the growth rates for DPIJs at both ANC and FAI are much greater than the domestic growth rates.

4.2. Historical Air Cargo Activity

This section discusses historical cargo activity at ANC and FAI. For the purpose of this analysis, air freight and air mail have been combined into air cargo. The AIAS airports combine 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. All tonnages in this analysis are presented in short tons (2000 pounds per ton).

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 or FAI, 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 or FAI. 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 AIAS airports.

4.2.1. Historical Air Cargo at ANC

Table 4.3 shows historical air cargo tonnage at ANC, with separate totals based on Airport data and US DOT T100 data. Tables C.11 through C.14 in Appendix C provide a more detailed breakout. As noted earlier, airlines have been inconsistent in how they have reported data, so some of the statistics, especially in early years may not be completely accurate. Nevertheless, some trends are evident.

Table 4.3

Historical Total Air Cargo: ANC
(Freight and Mail Tons)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)	T-100 Inbound	T-100 Outbound	T-100 Total
1980	77,943	51,795	n/a	n/a	n/a	n/a	n/a
1981	78,534	47,901	n/a	n/a	n/a	n/a	n/a
1982	93,240	59,672	n/a	n/a	n/a	n/a	n/a
1983	90,697	59,162	n/a	n/a	n/a	n/a	n/a
1984	95,893	65,070	n/a	n/a	n/a	n/a	n/a
1985	93,863	67,343	n/a	n/a	n/a	n/a	n/a
1986	99,046	70,411	n/a	n/a	n/a	n/a	n/a
1987	91,444	58,748	n/a	n/a	n/a	n/a	n/a
1988	89,189	53,263	171,454	485,359	n/a	n/a	n/a
1989	96,212	58,244	350,508	855,471	n/a	n/a	n/a
1990	104,952	67,718	395,883	964,435	n/a	n/a	n/a
1991	120,394	80,978	437,909	1,077,189	n/a	n/a	n/a
1992	126,375	83,354	460,476	1,130,681	n/a	n/a	n/a
1993	108,021	71,680	493,757	1,167,214	n/a	n/a	n/a
1994	103,996	76,852	619,202	1,419,252	n/a	n/a	n/a
1995	112,725	80,574	796,527	1,786,352	n/a	n/a	n/a
1996	116,858	85,275	1,078,601	2,359,333	n/a	n/a	n/a
1997	125,259	86,509	1,212,040	2,635,846	n/a	n/a	n/a
1998	200,862	167,236	1,166,327	2,700,752	n/a	n/a	n/a
1999	301,057	260,478	1,443,641	3,448,815	n/a	n/a	n/a
2000	315,369	274,739	1,484,623	3,559,354	n/a	n/a	n/a
2001	323,431	281,619	1,308,468	3,221,985	n/a	n/a	n/a
2002	328,773	285,717	1,620,620	3,855,730	n/a	n/a	n/a
2003	315,789	294,956	1,701,883	4,014,510	121,902	4,275,027	4,396,929
2004	322,010	281,516	2,034,954	4,673,433	126,504	5,291,805	5,418,309
2005	394,952	366,315	2,187,444	5,136,154	119,489	5,725,748	5,845,237
2006	400,177	368,990	2,327,003	5,423,173	120,769	6,026,503	6,147,272
2007	405,683	385,777	2,254,432	5,300,324	127,366	6,014,148	6,141,514
2008	404,395	358,797	1,824,376	4,411,944	123,384	4,920,447	5,043,831
2009	342,021	311,631	1,481,925	3,617,501	112,522	3,991,447	4,103,969
2010	454,266	433,418	2,030,420	4,948,523	117,643	4,957,503	5,075,146
2011	440,578	400,606	1,954,018	4,749,220	n/a	n/a	n/a
Average Annual Growth Rate							
1980-2011	5.7%	6.8%	n/a	n/a	n/a	n/a	n/a
2003-2010	5.3%	5.7%	2.6%	3.0%	-0.5%	2.1%	2.1%

(a) Enplaned plus deplaned plus transit cargo times 2 (inbound and outbound).

Sources: Tables C.11 through C.14, Anchorage International Airport, Monthly Statistics by Carrier, and HNTB analysis.

First, intra-Alaska air cargo has been stable or declining slowly in recent years. Table C.11 shows intrastate air cargo at ANC as compiled from Airport statistics. Since 1997, trends in intrastate cargo have been similar to intrastate passenger trends with 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.

Table C.12 presents air cargo on carriers that ship primarily to and from non-Alaska domestic points. The table shows only a portion of ANC – U.S. flows since much of this traffic is carried by integrated carriers such as FedEx and UPS which commingle domestic and international cargo. Air cargo to the Lower 48 appears to have been declining, but this may be due to a loss in market share to the integrated carriers.

International air cargo reported to the Airport is detailed in Table C.13. U.S. Flag carriers such as FedEx and UPS, which carry mostly international air cargo, are included in this table. Therefore the numbers include some domestic cargo. Very rapid growth rates were evident until 2007. Although much of this growth was real, some may be the result of improved air carrier reporting. Consequently the growth rates are somewhat overstated. 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.

International air cargo at ANC achieved an additional impetus in the late 1990s with the US DOT Alaska Cargo Transfer Initiative, which grants the following privileges to foreign-flag carriers:

- On-line cargo transfers among a foreign flag carrier's aircraft at ANC and FAI;
- Change of gauge operations, provided the aircraft are continuing in the same direction;
- Commingling of U.S. and non-U.S. cargo on the same flight;
- Interline cargo transfers between U.S. and foreign-flag carriers; and
- Interline cargo transfers between different foreign-flag carriers.

The first cargo transfer initiative established ANC as a potential transfer hub for a number of new carriers.

Additional transfer authority was provided as part of the 2003 FAA Reauthorization Bill. Under the legislation, foreign flag carriers were given the right to transfer cargo to other foreign flag carriers at ANC provided the carriers have a code-share agreement, a blocked space agreement, a term arrangement with a U.S. flag carrier operating to or from Alaska, or are carrying cargo on an air carrier waybill of a U.S. flag carrier operating to or from Alaska.

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.

4.2.2. Historical Air Cargo at FAI

Table 4.4 summarizes the available air cargo data at FAI, and Tables C.15 through C.18 provide a more detailed breakdown. In general, air cargo at FAI has declined in recent years with different causes affecting different sectors.

Table C.15 shows the recent history of intra-Alaska cargo to and from FAI. Historically, FAI has been a staging point for air cargo flights to the North Slope. Recently, however, it has lost some of this traffic to airports farther north and therefore experienced a decline in enplaned cargo.

Table C.16 shows FAI air cargo to and from the Lower 48. These flows consist mostly of belly cargo on Alaska, Delta, and Frontier passenger flights.

Table 4.4

Historical Total Air Cargo: FAI
(Freight and Mail Tons)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)	T-100 Intra-Alaska	T-100 US/Int.	T-100 Total
2000	27,421	6,777	128,009	290,216	n/a	n/a	n/a
2001	24,444	6,350	130,239	291,272	n/a	n/a	n/a
2002	27,053	7,267	134,010	302,340	n/a	n/a	n/a
2003	26,402	8,576	99,584	234,146	32,462	120,237	152,699
2004	29,983	8,900	86,794	212,471	33,841	113,752	147,593
2005	30,166	6,740	74,303	185,512	31,263	92,702	123,965
2006	25,842	5,496	18,011	67,361	25,270	18,805	44,075
2007	20,595	5,599	4,352	34,897	20,112	3,409	23,521
2008	17,361	5,423	6,939	36,661	21,224	11,302	32,526
2009	18,436	6,705	9,462	44,063	17,793	8,422	26,215
2010	16,958	4,954	8,240	38,391	18,441	11,424	29,865
2011	16,289	4,232	2,119	24,759	n/a	n/a	n/a
Average Annual Growth Rate							
2001-2011	-4.6%	-4.2%	-31.1%	-20.0%			
2003-2010					-7.8%	-28.6%	-20.8%

(a) Enplaned plus deplaned plus transit cargo times 2 (inbound and outbound).

Sources: Tables C.15 through C.18.

Until 2005, FAI served as a technical stop for a large number of flights between Europe and Japan/Korea. As long as Russian air space was off-limits to European cargo carriers, FAI enjoyed a significant great circle distance advantage over all other airports, including ANC, on these routes. Once cargo carriers were allowed to overfly Russian airspace, FAI lost the advantage and the traffic.

4.3. Historical Aircraft Operations

This section discusses historical operations at the two AIAS airports and LHD. Multiple data sources were evaluated, including airport landing reports, US DOT T100 data, and FAA Tower statistics. Airport landing reports capture data on all aircraft required to pay a landing fee, i.e., those with a certificated maximum gross takeoff weight of 12,500 pounds or more. US DOT T100 data are filed by commercial aircraft operators such as passenger and cargo carriers. The T100 data also include segment origin and destination data. Unlike other data sources, FAA tower statistics include all aircraft operating at an airport, but at a much lower level of detail. 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.

Table 4.5 presents the recent history of aircraft operations at ANC and LHD. Total annual aircraft operations at ANC 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, and the decline in air taxi, general aviation, and military operations. All-cargo operations increased until 2005, but have since declined.

Information on operations at the Lake Hood seaplane base, located adjacent to ANC, is limited. Until 2007, the Airport analyzed tower counts to provide a breakout of activity between the two airports. LHD operations since 2007 are estimated based on the 2007 breakout of activity. Operations at LHD have declined slightly over the period. In 2010, there were 59,214 air taxi and GA aircraft operations estimated at Lake Hood. ANC and Lake Hood accounted for a combined total of 273,303 aircraft operations in 2010.

US DOT T100 data for 2010 operations are included in the table for comparison purposes. Some operators, such as Alaska Airlines, fly both passenger and all-cargo flights and it is not possible to distinguish between the two types using airport data. Thus the T100 data provide a clearer indication of the distribution of aircraft operations between the categories.

Table 4.5

Historical Aircraft Operations: ANC and LHD

Calendar	Passenger (a)			Air		Itinerant (d)		Local (d)		
Year	Domestic	Interna-tional	Subtotal Passenger	Cargo (b)	Other (c)	GA	Military	GA	Military	Total (d)
Anchorage International Airport Operations										
2000	103,580	4,630	108,210	78,854	5,213	51,941	5,154	249	56	249,677
2001	102,096	3,904	106,000	77,176	1,186	40,538	6,522	176	13	231,611
2002	100,894	4,140	105,034	84,248	3,336	43,720	5,640	216	29	242,223
2003	96,588	2,838	99,426	80,518	2,355	45,501	5,028	181	8	233,017
2004	96,242	2,786	99,028	89,252	8,455	40,594	5,939	208	8	243,484
2005	99,464	3,520	102,984	93,640	3,696	39,477	6,000	208	14	246,019
2006	98,724	1,384	100,108	92,020	4,155	34,939	4,116	225	-	235,563
2007	99,358	1,088	100,446	92,986	2,209	35,359	4,843	166	56	236,065
2008	101,240	424	101,664	79,112	2,933	33,857	5,105	159	14	222,844
2009	90,672	420	91,092	65,014	2,280	35,455	4,385	230	-	198,456
2010	93,246	376	93,622	78,830	2,651	35,874	4,401	186	-	215,564
2011 (e)	*95,841*	*471*	*96,312*	*72,435*	*2,810*	37,450	2,401	182	56	211,646
Lake Hood Operations (d)										
2000	-	-	-	-	14,765	42,417	-	8,063	-	65,245
2001	-	-	-	-	15,272	46,711	-	5,700	-	67,683
2002	-	-	-	-	14,516	45,508	-	6,989	-	67,013
2003	-	-	-	-	13,218	39,278	-	5,858	-	58,354
2004	-	-	-	-	15,395	43,935	-	6,736	-	66,066
2005	-	-	-	-	19,921	42,852	-	6,729	-	69,502
2006	-	-	-	-	22,394	37,926	-	7,225	-	67,545
2007	-	-	-	-	20,124	38,382	-	5,346	-	63,852
2008	-	-	-	-	15,810	36,752	-	5,119	-	57,681
2009	-	-	-	-	12,291	38,486	-	7,399	-	58,176
2010	-	-	-	-	14,286	38,941	-	5,987	-	59,214
2011 (e)	-	-	-	-	*15,141*	*40,651*	-	*5,865*	-	*61,657*
Anchorage International Airport and Lake Hood Operations										
2000	103,580	4,630	108,210	78,854	19,978	94,358	5,154	8,312	56	314,922
2001	102,096	3,904	106,000	77,176	16,458	87,249	6,522	5,884	13	299,294
2002	100,894	4,140	105,034	84,248	17,852	89,228	5,640	7,205	29	309,236
2003	96,588	2,838	99,426	80,518	15,573	84,779	5,028	6,039	8	291,371
2004	96,242	2,786	99,028	89,252	23,850	84,529	5,939	6,946	8	309,550
2005	99,464	3,520	102,984	93,640	23,617	82,329	6,000	6,895	14	315,521
2006	98,724	1,384	100,108	92,020	26,549	72,865	4,116	7,450	-	303,108
2007	99,358	1,088	100,446	92,986	22,333	73,741	4,843	5,512	56	299,917
2008	101,240	424	101,664	79,112	18,743	70,609	5,105	5,278	14	280,525
2009	90,672	420	91,092	65,014	14,571	73,941	4,385	7,629	-	256,632
2010	93,246	376	93,622	78,830	16,937	74,815	4,401	6,173	-	274,778
2011 (e)	*95,841*	*471*	*96,312*	*72,435*	*17,951*	78,101	2,401	6,047	56	273,303
Operations Based on T100 Data - Anchorage International Airport (f)										
2010	85,557	986	86,543	81,612	6,948	35,874	4,401	186	-	215,564

(a) HNTB compilation of ANC aircraft landings data.
(b) HNTB compilation of ANC aircraft landings data.
(c) Undetermined operations. Difference between FAA counts of Air Carrier and Air Taxi operations and ANC counts of commercial (passenger and freight) operations.
(d) Anchorage International Airport, Comparative Statistical Report, FAA ATCT counts, and HNTB analysis.
(e) Commercial operations extrapolated from data through October 2011.
(f) Commercial operations from US DOT T100 data base. General aviation and military operations from Anchorage International Airport, Comparative Statistical Report.

Sources: As noted and HNTB analysis.

Table 4.6 provides historical aircraft operations data for FAI. Tower statistics on air carrier and air taxi operations are included to provide more detail on activity prior to 2006. Operations at FAI declined from 2000 to 2007, and have since increased. The decline in the early part of the last decade resulted from lost international all-cargo activity and a reduction in general aviation operations. The subsequent increase has resulted from a recovery in general aviation activity and a growth in military operations. In 2011, there were 121,145 operations at FAI, compared to 138,615 operations in 2000.

Table 4.6

Historical Aircraft Operations: FAI

Calendar	Passenger (a)			Air		Air	Air	Itinerant (d)		Local (d)		
Year	Domestic	Interna-tional	Subtotal Passenger	Cargo (b)	Other (c)	Carrier (d)	Taxi (d)	GA	Military	GA	Military	Total (d)
Fairbanks International Airport Operations												
2000 (e)	33,696	-	33,696	16,524	n/a	17,754	21,856	49,616	1,641	46,505	1,243	138,615
2001 (e)	34,286	32	34,318	19,504	n/a	18,266	21,092	56,004	1,210	36,581	152	133,305
2002	35,430	44	35,474	18,700	3,561	18,190	39,545	40,175	1,330	40,162	73	139,475
2003	40,106	38	40,144	16,092	3,233	16,629	42,840	32,891	1,527	42,517	52	136,456
2004	43,332	44	43,376	13,298	2,223	15,738	43,159	27,353	1,917	33,952	76	122,195
2005	40,696	46	40,742	11,532	3,986	15,287	40,973	26,774	1,187	28,367	172	112,760
2006	39,230	70	39,300	9,238	4,045	12,630	39,953	28,303	1,523	27,993	114	110,516
2007	40,090	78	40,168	7,008	3,381	11,568	38,989	28,058	1,346	29,176	149	109,286
2008	42,434	82	42,516	5,954	3,642	11,645	40,467	31,020	1,384	30,793	405	115,714
2009	39,560	86	39,646	5,696	3,391	10,314	38,419	37,772	1,360	33,157	415	121,437
2010	40,422	74	40,496	5,062	2,603	10,948	37,213	38,425	2,235	32,674	486	121,981
2011 (f)	41,687	63	41,750	4,227	2,588	10,887	37,678	36,605	2,572	33,145	258	121,145
Operations Based on T100 Data - Fairbanks International Airport (g)												
2010	36,277	219	36,496	3,337	8,328			38,425	2,235	32,674	486	121,981

(a) HNTB compilation of FAI aircraft landings data.
(b) HNTB compilation of FAI aircraft landings data.
(c) Undetermined operations. Difference between FAA counts of Air Carrier and Air Taxi operations and FAI counts of commercial (passenger and freight) operations.
(d) FAA ATCT counts, and HNTB analysis.
(e) ATCT counts appear to have classified some commerical activity as GA during 2000 and 2001.
(f) Commercial operations extrapolated from data through October 2011.
(g) Commercial operations from US DOT T100 data base. General aviation and military operations from FAA ATCT counts.

Sources: As noted and HNTB analysis.

5.0. Passenger Forecasts

This section presents the assumptions, approach, and results of the passenger activity forecasts for the AIAS airports.

5.1. Passenger Forecast Assumptions

The passenger forecasts are based on several key assumptions that were developed from information collected from the interviews and surveys, discussions with Airport staff, and industry knowledge and publications. This section describes the general passenger forecast assumptions that were applied in this forecast. More detailed assumptions specific to a particular activity category are described in the sections pertaining to those categories. The following forecast assumptions were used in preparing the passenger forecasts:

- 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 described in Section 2 will be realized.
- The economies of domestic destination markets outside of Alaska will grow in accordance with the W&P CEDDS forecasts which contain projections by metropolitan area for the entire United States. Growth in markets within Alaska will be in accordance with the socioeconomic projections in Section 2.
- Based on ISER's Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035 document, tourism employment will return to 2008 levels by 2014, and grow at 3.0 percent per year thereafter, gradually tapering to 1.5 percent per year. Visitors on cruise ships grew rapidly from the early 1990s through 2007, but fell significantly in 2008 because of the economic downturn and the head tax. Cruise traffic has since experienced a moderate recovery but discussions with industry representatives indicate that the head tax, hotel and attraction capacity, and access constraints will reduce the rate of future growth.
- Fuel prices and average air fares will grow in accordance with the projections in Section 3.
- 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.
- No nighttime curfews at ANC or FAI.
- New environmental regulations and fees will not be so extreme as to significantly constrain air transportation in Alaska.
- 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.
- Although some additional airline consolidation could continue to occur, no attempt is made to predict the individual airlines that would be affected.

5.2. Domestic Passenger Forecast

This section describes the domestic passenger forecasts for ANC and FAI including data sources, the methodology for the passenger originations forecast, and the approach used to determine growth by market. This section also includes a discussion of the projections of enplanements and connections, load factors and seat departures. The methodology and assumptions used to estimate the type of air service that would accommodate projected passenger activity are also described.

5.2.1. Methodology and Data Sources

Following is a summary of the bottom-up methodology used in the domestic passenger forecasts for the intra-AIAS, intrastate, and other U.S. markets:

- Identify and project the drivers of passenger activity at the AIAS airports;
- Project future ANC and FAI domestic passenger originations using regression analysis;
- Allocate ANC and FAI 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.

The methodology will be described in greater detail in subsequent sections of this report.

The following data sources were used in the analysis:

- Historical and projected information on population, employment, and real income by market from Woods & Poole and ISER (see Section 2);
- The US DOT OD1A domestic O&D data base for yield (airline revenue per passenger mile) and distance and historical originating traffic on a market-by-market basis;
- The US DOT T100 data base to obtain outbound passenger data on a market-by-market basis;
- Official Airline Guide (OAG) information on scheduled operations to determine existing scheduled service and historical non-stop service;
- The OAG, JP Fleet Airline-Fleets International, and individual airline websites to determine aircraft seat configurations for each airline; and
- Airline interviews and surveys, JP Fleet Airline-Fleets International, individual airline websites, and other industry publications to identify information on airline fleet orders.

5.2.2. Domestic Passenger Originations 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. Using historical (1990-2009) data, alternative passenger origination forecasting models were tested. The potential driving factors tested included socioeconomic variables, aviation industry variables, and instrument variables (also called dummy variables). The socioeconomic variables included population, employment, income, and per capita income for the Anchorage and Fairbanks MSAs, the State of Alaska, and the United States. The aviation industry variables included ANC and FAI fares to intrastate and other U.S. markets. Instrument variables representing the Gulf War, the 1998 Asian financial crisis, the impact of 9/11, US DOT data collection issues in 2002, and the 2008/2009 financial crisis were also tested in both linear and logarithmic model formulations.

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.

Table D.1 in Appendix D presents the forecast equation and originations forecasts for traffic between ANC and FAI. The model that produced the best results, from both a theoretical and statistical standpoint, was a logarithmic formulation which specified per capita originations as a function of combined Anchorage and Fairbanks employment and average air fares between the two markets.

The employment variable represents the size of the market, and the fare variable represents the cost of the service. Since the forecasting model has a logarithmic formulation, each of the exponents associated with the input variables is an elasticity[1]. With small changes in the input variables, the forecasting model can be interpreted as indicating that every 1.0 percent increase in employment will increase originations by 0.791 percent and that each 1.0 percent increase in fares will decrease originations by approximately 0.708 percent. Based on the equation and the employment and fare projections O&D traffic between ANC and FAI is projected to increase by about 0.8 percent per year.

Table D.2 in Appendix D presents the originations forecasts to the remainder of Alaska. In this instance, the equation with the strongest statistical results estimated per capita originations as a function of per capita income in the remainder of Alaska and an instrument variable that distinguished ANC from FAI. As shown, originations to the rest of Alaska are projected to increase at 1.2 percent per year for both airports.

Table D.3 in Appendix D presents the originations forecasts to the Lower 48. The equation with the strongest statistical results estimated originations as a function of income in the United States, income in the airport's metropolitan area, average air fares, and an instrument variable that distinguished ANC from FAI. In this forecast, originations are projected to increase 1.3 percent per year for ANC and 1.1 percent per year for FAI. ANC has a slightly higher originations growth rate because income in the Anchorage metropolitan area is projected to grow slightly faster than in the Fairbanks metropolitan area.

Table 5.1 summarizes the domestic originating passenger forecast for ANC and Table 5.2 summarizes the forecast for FAI.

5.2.3. Domestic Outbound Passenger Forecasts

This section presents the forecasts of domestic outbound passengers. Passengers are classified as outbound passengers in the US DOT's T100 data base. They differ slightly from enplanements in that they exclude non-revenue passengers and include outgoing transit passengers. Outbound passengers were projected for the same three categories used for originations. Outbound passengers are the sum of originating passengers, DPIJ passengers, and connecting/transit passengers.

Table D.4 provides the forecast of DPIJ passengers for the two AIAS airports. DPIJs were projected to grow at the same rate as originations with an adjustment for faster international growth based on the relative difference between the FAA's domestic and international passenger enplanement projections.

[1] Elasticity is the ratio of the percentage change of one variable (passengers for example) to the percentage change in another variable (air fares for example). Generally, an elastic variable is one which responds a lot to small changes in other variables. Similarly, an inelastic variable describes one which does not change much in response to changes in other variables.

Table 5.1

Summary of ANC Domestic Originations Forecast

	Outbound Originations from ANC			
Year	To Fairbanks	To Rest of Alaska	To Other U.S.	Total
2010	119,910	429,810	1,087,500	1,637,220
2015	127,673	478,520	1,115,419	1,721,613
2020	130,031	504,660	1,189,988	1,824,679
2025	132,924	529,600	1,276,220	1,938,744
2030	139,709	549,319	1,398,756	2,087,784
	Average Annual Growth Rate			
2010-2030	0.8%	1.2%	1.3%	1.2%

Sources: Tables D.1, D.2, and D.3

Table 5.2

Summary of FAI Domestic Originations Forecast

	Outbound Originations from FAI			
Year	To Anchorage	To Rest of Alaska	To Other U.S.	Total
2010	121,910	70,120	191,010	383,040
2015	129,803	78,067	194,341	402,210
2020	132,200	82,331	205,986	420,517
2025	135,141	86,400	218,872	440,414
2030	142,039	89,617	236,842	468,498
	Average Annual Growth Rate			
2010-2030	0.8%	1.2%	1.1%	1.0%

Sources: Tables D.1, D.2, and D.3

Tables D.5 and D.6 present the forecasts of connecting passengers between ANC and FAI. There are two types of connecting passengers on the ANC-FAI segment, those who connect at ANC and those who connect at FAI. For example, an outbound passenger going from ANC to FAI can be:

a) A true originating passenger beginning his or her trip at ANC and ending it at FAI;
b) A passenger who deplanes at ANC from another origin and then boards a flight to FAI (connecting passenger at ANC and terminating passenger at FAI); or
c) A passenger who originates at ANC and then connects/transits at FAI before continuing to his or her final destination (beyond originating passenger at ANC and connecting passenger at FAI).

Based on historical trends and input from airline surveys, connecting passengers as a percent of total passengers are projected to decline as more airlines offer point-to-point service. The calculations in Tables D.5 and D.6 project these trends to continue, and therefore connecting passengers at both ends of the ANC-FAI segment are projected to decline.

The calculations for the forecast of connecting passengers to other Alaska airports are shown in Tables D.7 and D.8. The source of these passengers is outstate Alaska (the parts of Alaska other than Anchorage or Fairbanks), so it is reasonable to assume that connecting passengers from these points should be related to total passengers at outstate Alaska airports. Therefore, the forecast equation from the Alaska Aviation System Plan Forecasts (published June 2011), updated with more recent socioeconomic forecasts, was used to estimate total outstate Alaska passenger growth. Connections from other Alaska airports, through ANC and FAI, were assumed to increase at the same rate as total outstate passengers.

Table D.9 shows the estimate of passengers from the Lower 48 connecting through ANC or FAI. It is very unlikely that a passenger from the Lower 48 would connect to another point in the Lower 48 through ANC or FAI; therefore it was assumed that all passengers connecting from the Lower 48 would be connecting to an outstate Alaska airport. As shown in Table D.9, intra-Alaska connections were assumed to increase at a rate consistent with internal Alaska growth, namely intrastate Alaska originations, and the remainder were assumed to be connections from outstate Alaska airports to the Lower 48.

The results of the originating passenger, DPIJ, and connecting passenger forecasts were combined to produce forecasts of domestic outbound passengers for ANC and FAI as shown in Tables D.10 and D.11. The forecasts are summarized in Tables 5.3 and 5.4.

Table 5.3

Forecast of Anchorage Domestic Outbound Passengers by Category

Year	To Fairbanks	To Rest of Alaska	To Other U.S.	Total Outbound Passengers
2010	244,545	561,496	1,339,045	2,145,086
2015	238,184	631,147	1,401,713	2,271,045
2020	223,632	671,395	1,505,962	2,400,989
2025	212,497	710,173	1,628,912	2,551,582
2030	209,262	741,063	1,792,015	2,742,340
	Average Annual Growth Rate			
2010-2030	-0.8%	1.4%	1.5%	1.2%

Sources: Tables 5.1, D.5, D.6, D.9 and D.10.

Table 5.4

Forecast of Fairbanks Domestic Outbound Passengers by Category

Year	To Anchorage	To Rest of Alaska	To Other U.S.	Total Outbound Passengers
2010	218,887	92,181	159,809	470,877
2015	215,790	108,446	174,457	498,693
2020	205,030	119,362	198,696	523,088
2025	197,056	129,593	224,314	550,963
2030	196,157	137,599	254,412	588,168
	Average Annual Growth Rate			
2010-2030	-0.5%	2.0%	2.4%	1.1%

Sources: Tables 5.2, D.5, D.6, D.9 and D.11.

As shown, the number of outbound passengers during the forecast period are projected to grow from 2.1 to 2.7 million at ANC, and from 0.5 million to 0.6 million at FAI.

5.2.4. Seat Departure Forecast

The seat departure forecasts for intra-AIAS, 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. The seat departure calculations for ANC and FAI are shown in Tables D.12 and D.13.

One of the end products of this forecast is a set of detailed future schedules for use in airfield planning and simulation. Market-by-market seat departure forecasts are required to develop the market-by-market operations forecasts for the schedules. Historically, some markets have been increasing their market share of ANC and FAI originations and seat departures at the expense of other markets. In some instances this has resulted from stronger economies, higher population growth or greater tourist interest. Outside of Alaska, Seattle is losing market share to other cities as Alaska Airlines expands its network and new airlines provide additional service to ANC and FAI.

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 as projected by Woods & Poole. 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 or FAI. Thresholds are lower for nearby markets than more distant markets because service can be offered with smaller aircraft and because there is less competition from connecting hubs between the two markets. In addition, non-stop thresholds are lower for airports that serve as airline hubs because an additional increment of connecting passenger traffic can sustain the service. Originating passengers are projected to grow at most markets during the forecast period. At some of the larger markets without nonstop service, it is expected that this growth would eventually cause originating traffic to exceed the threshold that would result in the introduction of non-stop service.

Using this approach, it was estimated that Newark, Las Vegas, and Spokane would gain new non-stop seasonal service to ANC by the end of the forecast term. Likewise, it was estimated that FAI would gain non-stop service to Portland, Phoenix and Chicago. Should passenger growth be faster than anticipated, the non-stop thresholds for additional markets could be achieved prior to the end of the forecast period. Seat departure projections by non-stop Lower 48 market, including anticipated new markets, are shown in Tables D.14 and D.15.

5.3. International Passenger Forecast

This section discusses the international passenger forecasts for ANC and FAI, including assumptions, methodologies, and results.

5.3.1. Methodology, Assumptions, and Data Sources

The methodology used to develop the international passenger forecasts was essentially a top-down approach. The approach used to estimate domestic passenger traffic was not suitable for the international passenger forecast for several reasons. First, O&D data for passengers flying their entire itinerary on foreign-flag carriers is not available so the historical record is incomplete. Second, many of the international markets are still being developed, so insufficient historical data exist from which to establish trends. Finally, past international service has been constrained or enhanced by physical factors such as distance and aircraft range, and political factors such as bilateral agreements. These constraints tend to obscure the relationship between traditional drivers of demand, such as income and yield, and international passenger traffic.

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.

The methodology will be described in greater detail in subsequent sections of this report.

The following data sources were used in the analysis:

- FAA, Boeing, and Airbus international projections;
- US DOT International Schedule T-100 data base;
- OAG information on scheduled operations to identify existing scheduled service;
- The OAG, individual airline websites, and JP Airline-Fleets International guide to determine aircraft seat configurations for each airline; and
- JP Airline-Fleets International, other industry publications, and individual airline websites to gather information on airline fleet orders.

5.3.2. Forecasts by International Region

Table D.16 in Appendix D presents a comparison of international forecast growth rates developed by the FAA, Boeing, and Airbus. 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.

5.3.3. International Transit Passenger Forecasts

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. As of this writing, EVA Airways, flying from Taipei to New York, is the only scheduled international passenger carrier using an AIAS airport (ANC) as 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 EVA Airways to operate its Taipei – New York service 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.

5.3.4. Non-Transit International Passengers

In contrast to international transit passengers, international enplaned and deplaned passengers are projected to continue to increase. Direct (non-transit) passengers in each region were projected to grow at the same rate as the consensus growth rates developed in Table D.16 adjusted to reflect projected economic growth in the Anchorage and Fairbanks metropolitan areas. Forecasts of international outbound passenger forecasts for ANC and FAI are presented in Tables D.17 and D.18.

5.3.5. Seat Departure Forecast

Tables D.19 and D.20 present the international seat departure forecasts for ANC and FAI. Projected seat departures in each region were estimated by dividing the outbound passenger projections by the projected load factor.

5.4. Peak Passenger Activity

Passenger activity at the AIAS airports is very seasonal, and the degree of seasonality differs by category. Intra-Alaska passengers at ANC and FAI are driven mostly by work-related and personal travel peak during the summer but are fairly well distributed throughout the year. Passenger traffic to the Lower 48 has a strong tourist component, and therefore exhibits a much more pronounced summer peak, with July accounting for about 15 percent of annual enplanements at both ANC and FAI. Seasonality is most pronounced with non-transit international passengers, where August – the peak month for international passengers - accounts for more than a quarter of annual activity at both ANC and FAI.

In addition to seasonal variations, passenger activity varies by day of the week. Seat departures during weekdays are approximately 3 percent above average at ANC and about 6 percent above average at FAI.

An accurate assessment of peaking characteristics is important because airport facility requirements are driven by loads during busy periods (and not annual averages).

Tables D.21 through D.23 present the projected monthly distribution of outbound passengers for each passenger category at ANC. In addition, an estimate of average busy day (weekday) passengers is presented for each month. Table D.24 provides a passenger summary that also includes peak 60-minute passenger enplanements, deplanements, and total movements derived from the design day flight schedules. Tables D.25 through D.28 present the same projections for FAI.

5.5. Passenger Forecast Summary

Tables 5.5 and 5.6 summarize the annual outbound passenger forecasts for ANC and FAI, including domestic and international passengers. 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. The average growth rate for FAI outbound passengers is projected to be about 1.2 percent per year.

Table 5.5

Forecast of Anchorage Outbound Passengers by Category

	Domestic (a)					
Year	To Fairbanks	To Rest of Alaska	To Other U.S.	Total Domestic	International (b)	Total
2010	244,545	561,496	1,339,045	2,145,086	154,325	2,299,411
2015	238,184	631,147	1,401,713	2,271,045	34,992	2,306,037
2020	223,632	671,395	1,505,962	2,400,989	40,588	2,441,576
2025	212,497	710,173	1,628,912	2,551,582	47,123	2,598,705
2030	209,262	741,063	1,792,015	2,742,340	54,763	2,797,103
	Average Annual Growth Rate					
2010-2030	-0.8%	1.4%	1.5%	1.2%	-5.0%	1.0%

(a) Table 5.3.
(b) Table D.17.

Sources: As noted and HNTB analysis.

Table 5.6

Forecast of Fairbanks Outbound Passengers by Category

	Domestic (a)					
Year	To Anchorage	To Rest of Alaska	To Other U.S.	Total Domestic	International (b)	Total
2010	218,887	92,181	159,809	470,877	10,088	480,965
2015	215,790	108,446	174,457	498,693	11,484	510,177
2020	205,030	119,362	198,696	523,088	13,081	536,169
2025	197,056	129,593	224,314	550,963	14,908	565,871
2030	196,157	137,599	254,412	588,168	17,001	605,170
	Average Annual Growth Rate					
2010-2030	-0.5%	2.0%	2.4%	1.1%	2.6%	1.2%

(a) Table 5.4.
(b) Table D.18.

Sources: As noted and HNTB analysis.

5.6. Passenger Aircraft Operations Projections

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.

5.6.1. Passenger Aircraft Operation Assumptions

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.
- Because of their small size and low growth, little increase in the average size of aircraft serving the smaller intrastate markets.
- 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 departures and fleet mix.

Passenger aircraft departure projections by aircraft type at ANC for the intrastate, other U.S. and international categories are shown in Tables D.29, D.30, and D.31. Tables D.32, D.33, and D.34 provide the same forecast data for FAI.

5.6.2. Peak Passenger Aircraft Operations

The monthly and weekly distributions of passenger aircraft operations are similar, but somewhat less pronounced, to the distribution for passengers. Tables D.35 through D.38 show projected monthly and average busy day passenger aircraft departures by category for ANC. Tables D.39 through D.42 provide the same forecast data for FAI.

5.6.3. Summary of Passenger Aircraft Operations

Tables 5.7 and 5.8 summarize the annual passenger aircraft departures forecasts for the two AIAS airports. Annual passenger aircraft departures at ANC are projected to increase from 43,265 in 2010 to 50,792 by 2030, an average annual increase of 0.8 percent. At FAI, annual passenger aircraft departures are projected to increase from 18,299 in 2010 to 23,362 by 2030, for an average annual increase of 1.2 percent.

Table 5.7

Summary of Annual Passenger Aircraft Departures Forecast
Anchorage

Year	Intrastate	Other U.S.	International	Total
2010	31,884	10,589	792	43,265
2015	34,176	10,826	250	45,252
2020	34,645	11,401	282	46,328
2025	35,726	12,498	317	48,540
2030	36,806	13,594	352	50,752
	Average Annual Growth Rate			
2010-2030	0.7%	1.3%	-4.0%	0.8%

Sources: Tables D.29, D.30 and D.31.

Table 5.8

Summary of Annual Passenger Aircraft Departures Forecast
Fairbanks

Year	Intrastate	Other U.S.	International	Total
2010	16,860	1,321	118	18,299
2015	18,399	1,389	126	19,914
2020	19,292	1,577	106	20,975
2025	20,237	1,798	117	22,152
2030	21,182	2,019	128	23,329
	Average Annual Growth Rate			
2010-2030	1.1%	2.1%	0.4%	1.2%

Sources: Tables D.32, D.33 and D.34.

6.0. Cargo

This section includes a discussion of the forecasts of air cargo demand at the AIAS airports. The survey results and principal assumptions guiding the forecasts are discussed first, followed by descriptions of the intrastate and international air cargo forecasts, and the forecasts of cargo tonnage, all-cargo aircraft operations, and peak activity.

6.1. Survey/Interview Summary

As noted in Section 1.2, the major cargo carriers using the AIAS airports were surveyed and interviewed regarding expected future activity, trends in the industry, and their airport concerns and requirements. Since the vast majority of international and intercontinental operators currently use ANC, most responses pertained to ANC. Survey findings from other studies, such as the Alaska Aviation System Plan study and the previous ANC Master Plan Update are also included when pertinent. Some of the key findings include:

Forecast cargo activity

- Given current cargo demand volatility, the carriers were very reluctant to offer prognostications much beyond the first quarter of 2012, and even those were uncertain.

Intermodal operations

- Most intrastate cargo is transported via ship or road to ANC from which it begins the air portion of its journey.
- No intercontinental intermodal activity currently occurs at ANC or FAI, and none is foreseen.
- ANC and FAI local O&D international freight is a very small component of total air cargo flows for the international carriers.

Forecast aircraft operations

- As with cargo tonnage, forecasts of aircraft operations by type are uncertain.
- Load factors are generally proprietary, but some carriers disclosed numbers in the 90% plus range; in some instances air carriers exceed their capacity by volume before they exceed their capacity by weight which skews load factor data which are traditionally determined by weight.
- A wide range of “peak” months were reported, but generally the traditional fall run-up-to-the-holidays peak season has moderated.
- Frequencies are insufficient to ascertain a meaningful peak hour for each individual carrier (intercontinental hubbing carriers aside).

- For express carriers, westbound flights tend to arrive early in the morning and depart between 9:30 and 11:00 am. Eastbound flights arrive between 11:00 am and 1:30 pm and then depart mid-afternoon.
- Although there is some interest in the freighter version of the Airbus 380, no carriers indicated plans to pursue the aircraft in the near future.
- Some carriers charter aircraft from other countries to circumvent bilateral restrictions.
- Many intrastate carriers rely on large, aging piston and turboprop aircraft that can use the short runways at many of Alaska's smaller airports. There appears to be no viable replacement aircraft of similar size at affordable prices, a source of uncertainty for these carriers.
- Operators of larger aircraft in the intrastate market are closely tied to the North Slope economy.
- Major infrastructure projects such as the proposed Alaska gas pipeline pose a challenge for the cargo carriers in that they would be faced with the prospect of ramping up to achieve short-term gains while later dealing with excess capacity, or abandoning existing customers to take advantage of the new opportunities.
- Significant nighttime operations will continue.

Estimated required parking positions

- Intrastate and intercontinental hubbing carriers have their own ramps that meet their current and foreseen parking position needs.
- Intercontinental gas-and-go (tech. stop) carriers neither need nor expect dedicated parking positions.

Technical stop requirements

- Because of its geographic location, ANC and FAI are ideally suited to allow carriers to maximize Asia – North America payload.
- Currently, there are a limited number of westbound overflights from the U.S. west coast to Asia. This may increase in the future with longer range aircraft.
- Carriers expect to continue to need to make technical stops, for refueling and crew changes.
- Some westbound flights overfly Alaska in the summer because of lower payloads but still need an en route stop in winter because of headwinds.
- Carriers sometimes consolidate cargo on westbound flights to reduce load factors on other flights that can then fly non-stop.
- Eastbound cargo operations are extremely time sensitive for express carriers, especially when Daylight Savings Time is in effect in North America (most Asian countries do not use Daylight Savings Time), which narrows the available time window for sort operations.
- Asian airport slots tend to be fixed and therefore impose a constraint on air cargo.

- Deicing is a widespread complaint, specifically cost, service, frequency and ensuing delays.
- Winter weather in general is also a concern because of its impact on schedule integrity.
- There are no substantive Air Traffic Control (ATC) related delays at ANC or FAI.
- Respondents could not conceive of an incentive package that would lure them to FAI, but did not appear to have given much thought to the matter.

Adequacy of current facilities at Alaska International Airports for current and foreseen needs

- The carriers are generally very satisfied with ANC (“it works”).
- Some carriers expressed a desire for better deicing capability at ANC.
- Some carriers were especially complimentary about current airport management at ANC and FAI.

6.2. Cargo Forecast Assumptions

The critical assumptions that were used to guide the air cargo forecasts were developed from information collected from the interviews and surveys, discussions with Airport staff, and industry knowledge and publications. They include assumptions on the socioeconomic environment, the political and trade environment, the air cargo industry, technological development, and airport development and operations. As noted in Section 1, the main assumptions were reviewed by the State and key stakeholders.

Key assumptions are as follows:

- 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 described in Section 2 will be realized.
- The economies of U.S. and Asia/Pacific markets will grow in accordance with the GDP forecasts provided in Table 2.5.
- Fuel prices will increase in accordance with the projections in Section 3.
- No nighttime curfews at ANC or FAI.
- New environmental regulations and fees will not be so extreme as to significantly constrain air transportation in Alaska.
- 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.
- 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 passenger or cargo cabotage.
- 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.
- The FAA and non-U.S. air traffic control organizations will successfully implement changes and improvements in ATC procedures and technology to accommodate the unconstrained forecast of aviation demand.
- No major international conflicts will disrupt aviation in the North America – Pacific region. Likewise, no major trade wars or embargoes will restrict the flow of international commerce and travel.
- Security issues related to air transportation will continue to evolve as new procedures and technology enhance airport security. 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 may occur, no attempt is made to predict which individual airlines would be affected.

6.3. Intra-state Cargo Tonnage Forecast

The intra-state cargo tonnage forecast for the AIAS airports is presented in this section. The section begins with an overview of the intrastate market, describes the methodology for projecting cargo tonnage, provides a breakdown of tonnage between all-cargo carriers and passenger carriers (belly cargo) and concludes with an estimate of required aircraft cargo capacity.

6.3.1. Background

Exhibit 6.1 and Table E.1 in Appendix E show the major inbound and outbound intrastate cargo flows at ANC in 2010. Passengers usually fly round trip and therefore outbound passenger counts generally match inbound passenger counts. In contrast, air cargo usually travels one way, resulting in imbalances between inbound and outbound cargo. This is especially true in the intra-Alaska market, where ANC outbound air cargo tonnage is more than threefold inbound air cargo. ANC is a vital lifeline to many small Alaska communities that have no year round access to transportation other than by air. Hence, outbound air cargo flows are very large. These communities export relatively little to ANC and the outside world and therefore inbound cargo flows are much smaller.

As shown in Exhibit 6.1, there has been a slight downward trend in air cargo tonnage over the past seven years. There has been no major change in market share, although over time some communities such as Kotzebue have increased their tonnages to ANC.

Even though Fairbanks is Alaska's second largest metropolitan area, it ranks only fifth in terms of outbound cargo flows (behind Bethel, Nome, Kotzebue, and Dillingham). Unlike the other communities, Fairbanks has highway access to Anchorage. Therefore, many of the products that would go by air to the less accessible communities can go by truck to Fairbanks. Kodiak is the largest inbound cargo market for ANC, followed by Fairbanks, Kotzebue, and Bethel.

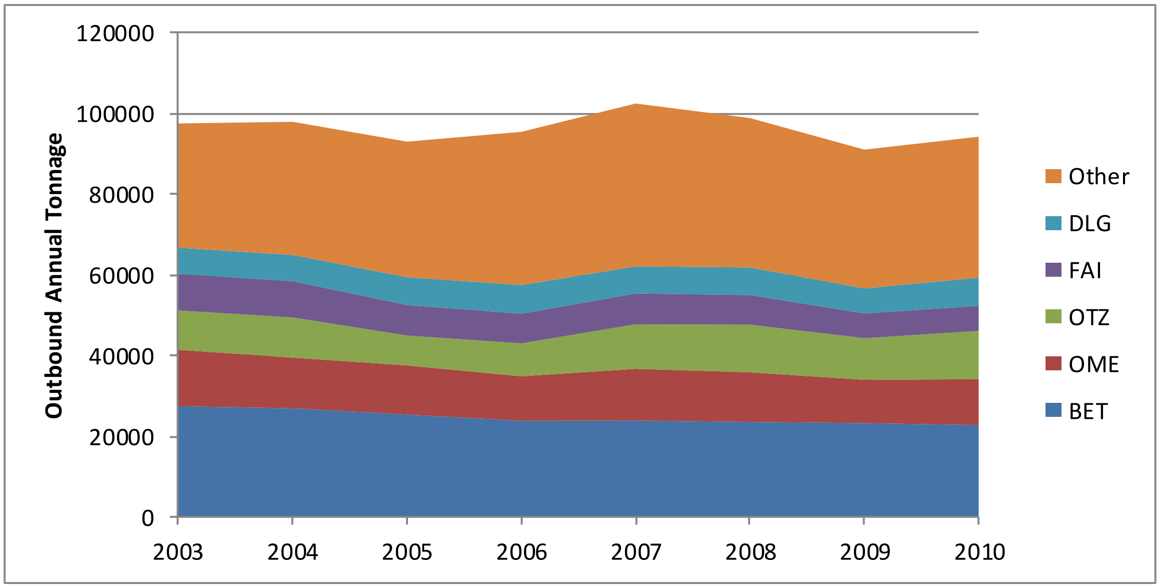
Table E.2 and Exhibit 6.2 show inbound and outbound intra-state air cargo tonnages at FAI, broken out by major market. For FAI, the major outbound market is ANC, followed by Barrow (BRW) and Deadhorse (SCC). ANC is the only inbound market of consequence for FAI, accounting for more than 90 percent of inbound intra-state tonnage.

As shown in Exhibit 6.2, there was a major decline in outbound cargo from FAI between 2005 and 2007, principally because much of the outbound air cargo to Deadhorse now generally moves by truck.

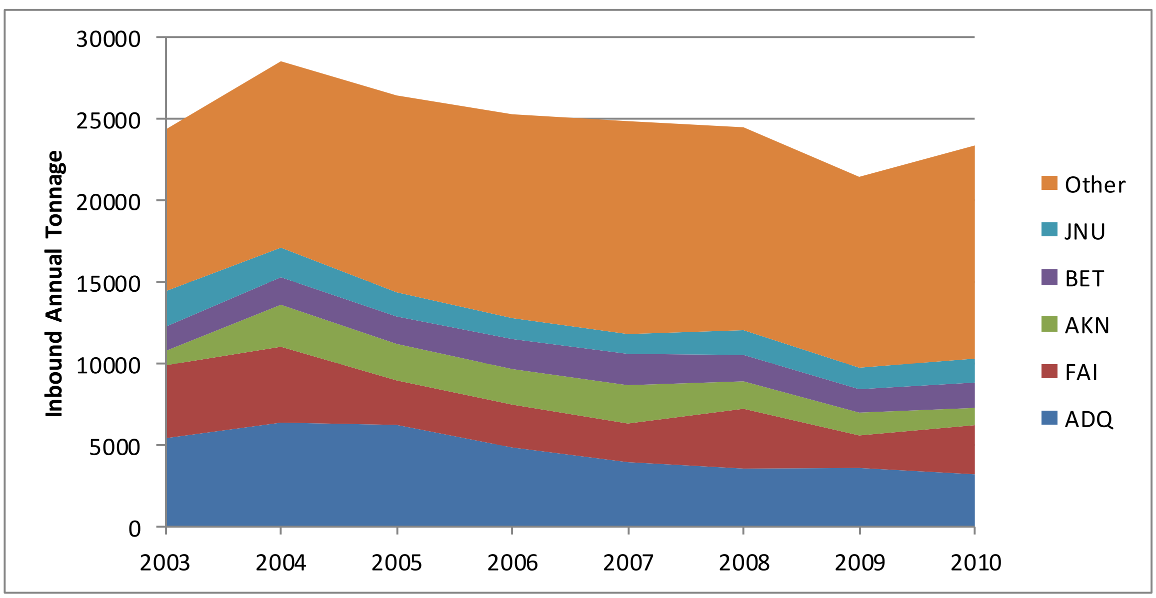
Exhibit 6.1

ANC Historical Intra-State Air Cargo Flows

Outbound



Inbound

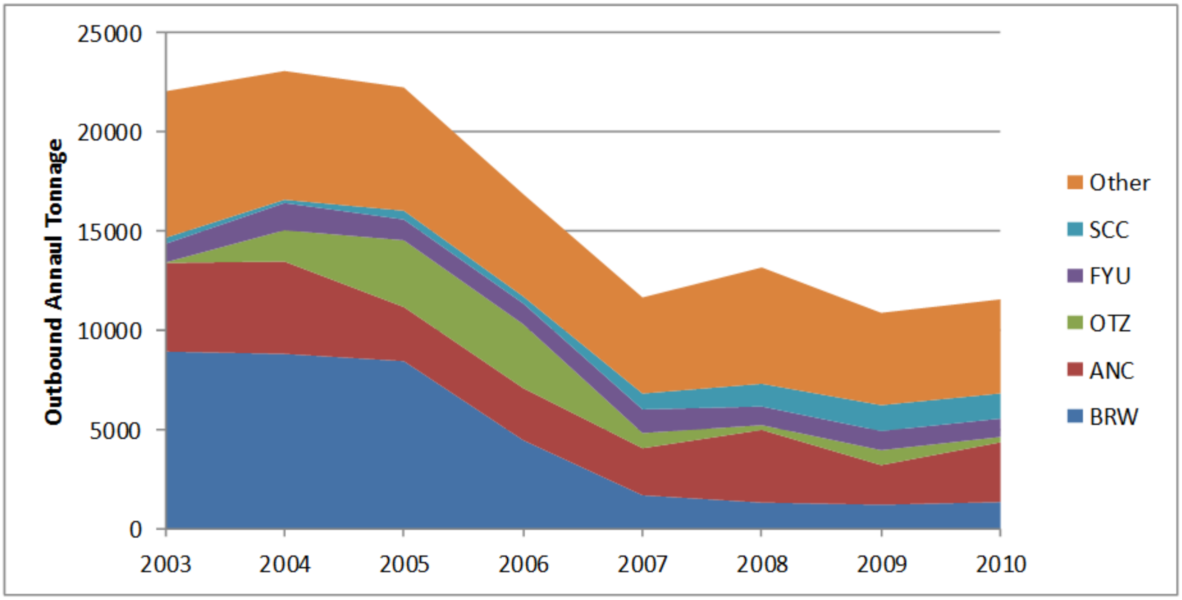


Sources: USDOT T-100 database and HNTB analysis.

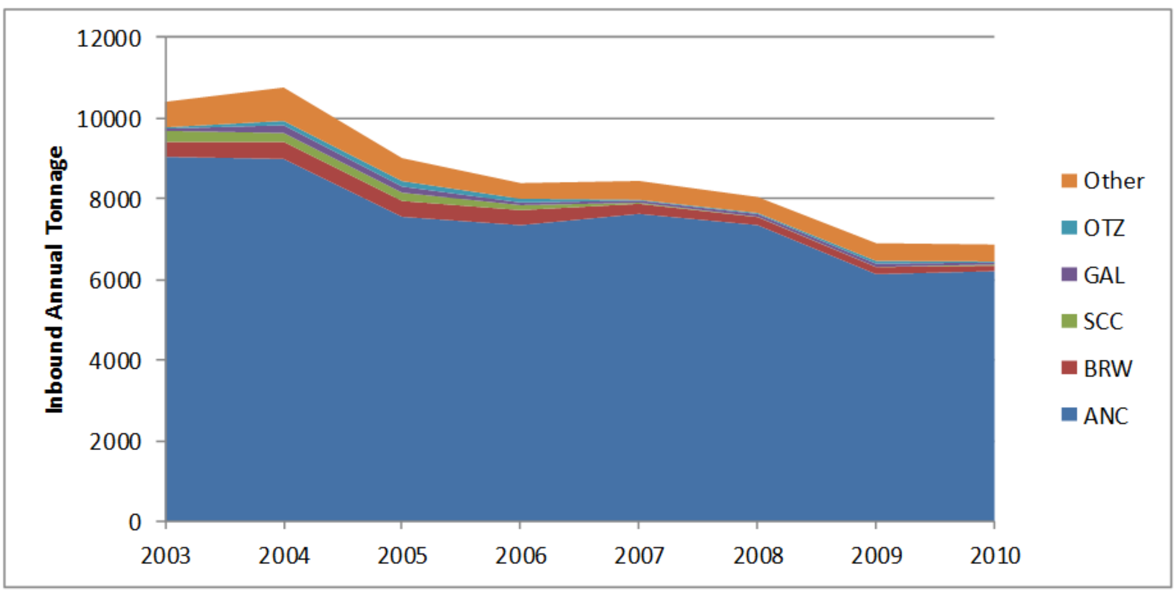
Exhibit 6.2

FAI Historical Intra-State Air Cargo Flows

Outbound



Inbound



Sources: USDOT T-100 database and HNTB analysis.

6.3.2. Cargo Tonnage Forecasts

Following is a summary of the methodology used in the intrastate air cargo forecasts:

- Identify and project the drivers of intrastate activity at the AIAS airports;
- Project future ANC and FAI 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.

The methodology will be described in greater detail in subsequent sections of this report.

The following data sources were used in the analysis:

- The US DOT T-100 data base to obtain cargo tonnage and operations data on a market-by-market basis;
- JP Fleet Airline-Fleets International and individual airline websites for aircraft types and configurations for each airline; and
- Airline interviews and surveys, JP Fleet Airline-Fleets International, individual airline websites, and other industry publications for information on airline fleet orders

Table E.3 in Appendix E presents the forecast of air cargo tonnage between ANC and FAI. The forecast equation was estimated using regression analysis (as were the domestic passenger forecasts). The variables that were most statistically significant included the cost of jet fuel, an instrument variable for the 2008-2009 recession, and an instrument variable to distinguish between outbound and inbound cargo.

The results indicate 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.

Table E.4 in Appendix E shows the forecast of inbound and outbound cargo from the AIAS airports to the remainder of Alaska. Again, regression analysis was used to estimate a forecasting equation for this portion of the market. In this instance, employment in the remainder of Alaska was the most significant variable for outbound cargo, along with an instrument variable to distinguish FAI. Inbound cargo was most closely related to outbound cargo. The equation suggests that at outlying communities, many of which do not have road access, demand is less sensitive to fuel prices and more sensitive to economic factors. Inbound cargo to ANC or FAI from these communities is much less than outbound cargo and probably insufficient to sustain air service on its own and thus primarily dependent on capacity available on the return flights generated by outbound cargo.

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.

6.3.3. Belly and Combi- Cargo Tonnage Forecasts

The majority of intrastate air cargo at ANC and FAI is transported by air freight specialists such as Lynden Air Cargo, Northern Air Cargo, Arctic Circle Air Service, and Tatonduk Outfitters. Alaska Airlines, which operates several combi aircraft, is the only passenger carrier that accounts for more than 5 percent of the intrastate cargo market. 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.

The FAA does not publish a specific cargo load factor forecast. However, the FAA projects passenger Available Seat Miles (ASMs) to increase much faster than Revenue Ton Miles (RTMs) on passenger carriers, it can be inferred that the FAA anticipates passenger carrier cargo load factors will continue to decline relative to passenger load factors. The relationship between FAA-projected RTMs and ASMs was applied to the forecast of domestic seat departures to prepare forecasts of intrastate belly and main-deck combi- cargo for ANC and FAI.

Table E.5 shows the calculation of the belly cargo share of ANC-FAI inbound and outbound cargo tonnage. As shown, total belly and combi- cargo is expected to decline in both directions, consistent with the projected decline in total cargo. Tables E.6 and E.7 show the calculations of the all-cargo and belly cargo split for ANC and FAI to the remainder of Alaska. In those markets, belly and combi- cargo is expected to increase but not as quickly as the all-cargo carrier segment of the market.

6.3.4. Intrastate All Cargo Tonnage and Capacity

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.

Projected load factor and required outbound freighter capacity for ANC are presented in Table E.8 in Appendix E. ANC is maintaining cargo load factors in excess of 80 percent to markets in the remainder of Alaska; that is unlikely to go any higher. Meanwhile, cost pressures, especially fuel, will likely cause operators to FAI to reduce capacity until load factors matched those to the rest of Alaska.

Table E.9 shows the calculations for load factor and required outbound freighter capacity for FAI. Outbound capacity from FAI to ANC, i.e., inbound capacity from ANC's perspective, was assumed to change at the same rate as ANC outbound capacity (Table E.9) since air carriers need to complete the return leg of ANC-FAI trips. In this instance, load factor was calculated as a function of cargo tonnage and capacity. The load factor from FAI to the remainder of Alaska was assumed to remain constant.

The capacity requirements were used to estimate intrastate freighter aircraft operations (see Section 6.6 for more detail).

6.3.5. Summary of Intrastate Cargo Tonnage Forecasts

Tables 6.1 and 6.2 summarize the intrastate cargo tonnage forecasts for ANC and FAI. At ANC, combined all-cargo and belly inbound and outbound tonnage is projected to increase from 117,680 tons in 2010 to 137,228 tons in 2030, an average annual increase of 0.8 percent. The belly cargo share is expected to decline slightly and the all-cargo share is expected to increase slightly. At FAI, intrastate cargo is expected to remain roughly constant, with a slight increase in the all-cargo share and a slight decrease in the belly cargo share. FAI intrastate cargo is projected to grow more slowly than ANC intrastate cargo because ANC comprises a very large share of FAI's market, and this particular segment is expected to experience losses to trucking.

Table 6.1

Forecast Anchorage Intrastate Cargo Tonnage
Inbound and Outbound (Tons)

	Intra-Alaska Total			Intra-Alaska Belly			Intra-Alaska All-Cargo Carrier		
Year	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
2010	23,406	94,274	117,680	7,650	20,471	28,121	15,956	73,803	89,759
2015	25,141	103,561	128,701	8,272	22,148	30,420	16,868	81,413	98,281
2020	25,580	106,733	132,313	7,935	21,253	29,187	17,645	85,480	103,126
2025	25,920	109,141	135,061	7,776	20,833	28,609	18,144	88,308	106,452
2030	26,209	111,018	137,228	7,455	19,976	27,431	18,754	91,042	109,796
Average Annual Growth Rate									
2010-2030	0.6%	0.8%	0.8%	-0.1%	-0.1%	-0.1%	0.8%	1.1%	1.0%

Sources: Tables E.3 and E.4.

Table 6.2

Forecast Fairbanks Intrastate Cargo Tonnage
Inbound and Outbound (Tons)

Year	Intra-Alaska Total			Intra-Alaska Belly			Intra-Alaska All-Cargo Carrier		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
2010	6,886	11,592	18,478	3,133	6,722	9,855	3,753	5,070	8,823
2015	7,521	11,732	19,253	3,059	7,540	10,599	4,463	4,192	8,654
2020	7,177	11,707	18,885	2,685	7,442	10,127	4,492	4,266	8,757
2025	6,925	11,697	18,621	2,441	7,459	9,900	4,484	4,238	8,721
2030	6,760	11,718	18,477	2,249	7,262	9,512	4,510	4,455	8,965
				Average Annual Growth Rate					
2010-2030	-0.1%	0.1%	0.0%	-1.6%	0.4%	-0.2%	0.9%	-0.6%	0.1%

Sources: Tables E.3 and E.5.

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

The international and other U.S. cargo tonnage forecast for the AIAS airports is presented in this section. The section begins with an overview of the Asia-North America market, describes the methodology for projecting cargo tonnage, provides a breakdown of tonnage between all-cargo carriers and passenger carriers (belly cargo) and concludes with an estimate of required aircraft cargo capacity.

6.4.1. Background

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, FAI 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.

According to the airline surveys a very small amount of enplaned or deplaned air cargo actually begins or ends the air portion of its trip in Alaska. This is considered either originating or terminating air cargo. Air cargo transferred to or from another mode, such as truck or ship, is also counted as originating or terminating air cargo. Some deplaned air cargo is shipped to outlying Alaskan communities, for which air transportation is the only means of access to the outside world. The AIAS airports have little control over air cargo volumes flying between Asia and North America. However, 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 and FAI.

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:

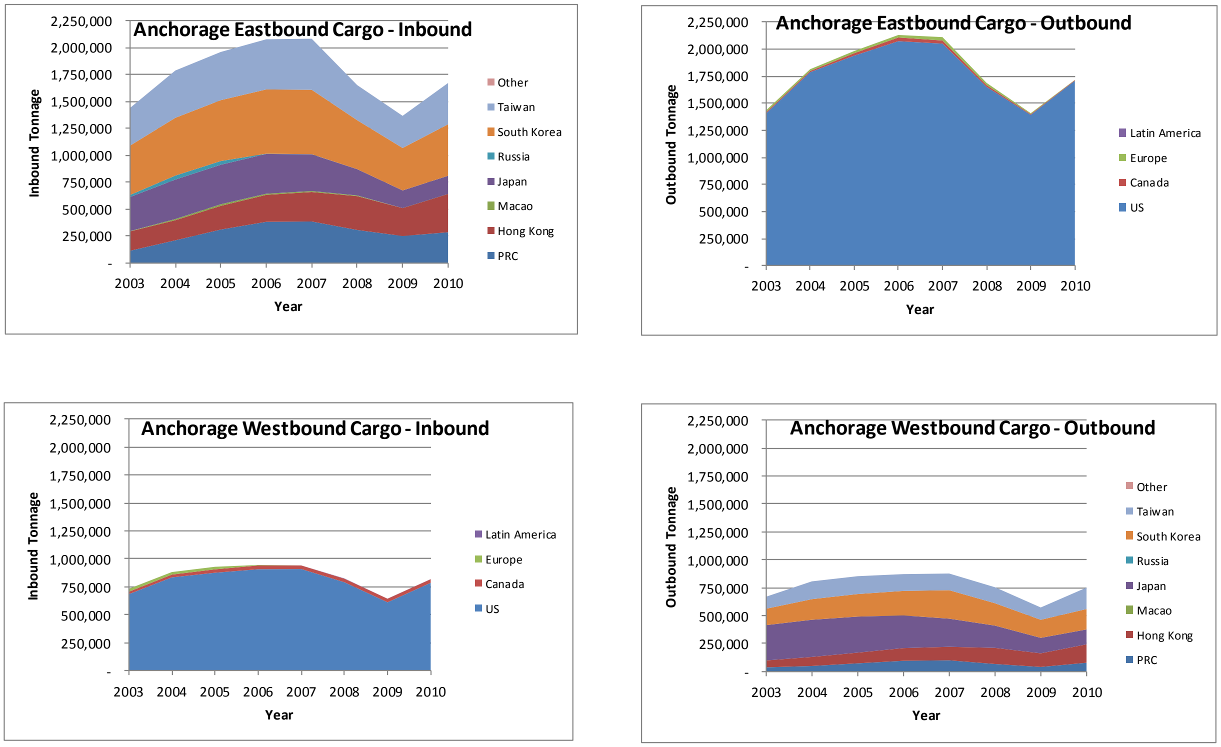
- Overflying Alaska to save the time and expense of en route tech stops, since with reduced payload they can carry more fuel;
- Reducing rates on westbound routes to help increase demand; and
- Flying eastbound round-the-world itineraries to avoid the money-losing North America to Asia route.

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

Exhibit 6.3 graphically depicts the eastbound and westbound air cargo flows at ANC, broken out by country of flight origin and destination from 2003 through 2010. Since most of the tonnage neither originates nor terminates in Alaska, outbound flows are very similar to the inbound flows on both the eastbound and westbound routes. As shown on the charts, eastbound growth was very rapid until 2007, at which time the fuel price spike, financial crisis and ensuing recession resulted in a major downturn. There was a partial recovery in 2010. Westbound tonnages show a pattern similar to eastbound tonnages, but the upturns and downturns have been less pronounced. South Korea, Taiwan, and Hong Kong are the principal points of origin for the non-stop cargo flows going to ANC. However, in many instances these origins are consolidation points for goods that are manufactured in China or elsewhere in Southeast Asia. The growth in cargo from China and the decline in cargo from Japan is noteworthy. Almost all eastbound cargo is destined for the United States. Westbound destinations are similar to eastbound origins, but the tonnages are less. Again, Japan is showing a significant decline.

Exhibit 6.3

Anchorage International/Other U.S. Air Cargo Flows



Sources: USDOT T-100 database and HNTB analysis.

Table E.10 describes 2010 eastbound air cargo traffic flows at ANC in more detail. This is traffic that originates in Asia, transits or transfers at ANC, and then continues to its final destination, usually to North America but in some cases to Europe. A small amount of this cargo also originates in Asia and terminates in ANC or originates in ANC and terminates in North America or Europe. Outbound cargo flows exceed inbound flows by about 43,000 tons, indicating that cargo originating at ANC or elsewhere in Alaska exceeds Asian cargo terminating at ANC by at least 43,000 tons. The eastbound cargo flows passing through ANC are immense, accounting for over 1.6 million tons in 2010. The primary points of origin (in terms of the non-stop air leg) are Seoul (28.6 percent), Taipei (23.0 percent), Hong Kong (21.3 percent), Shanghai (13.8 percent) and Tokyo (5.7 percent). The primary U.S. destinations are Chicago (22.0 percent), Los Angeles (14.7 percent), and New York (13.7 percent).

Table E.11 shows westbound air cargo traffic flows through ANC in 2010. As noted earlier, westbound flows are slightly less than half of eastbound flows. Air cargo coming from North America to ANC exceeds air cargo going from ANC to Asia by about 67,000 tons, indicating that air cargo originating in North America and terminating at ANC is much greater than air cargo originating at ANC and terminating in Asia. The primary points of origin are Chicago (24.2 percent), New York (14.5 percent), and Louisville (8.7

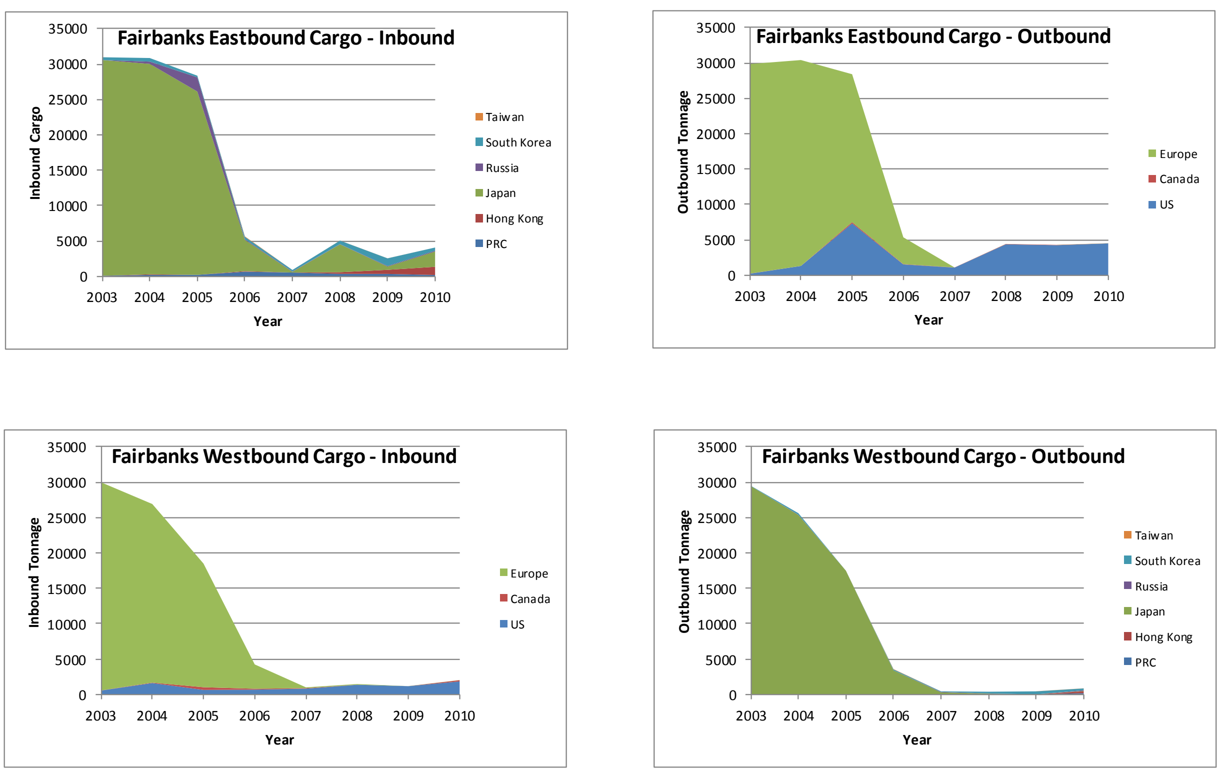
percent). The chief destinations are Taipei (25.6 percent), Seoul (24.3 percent), Hong Kong (21.9 percent), and Tokyo (11.9 percent).

Exhibit 6.4 depicts eastbound and westbound international and other U.S. cargo tonnages flowing through FAI. FAI's experience has been different than ANC. FAI was principally a technical stop for air cargo operations between Europe and Asia. These diverted to routes across Russia once Russian airspace was opened. Through 2005, eastbound flows were primarily from Japan to Europe and westbound flows were from Europe to Japan. Unlike Asia-North America flows, eastbound and westbound flows were fairly well-balanced. Since 2005, these flows have diminished significantly.

Tables E.12 and E.13 show 2010 eastbound and westbound air cargo flows at FAI. The principal eastbound origins were Nagoya, Japan (49.6 percent), Hong Kong (28.5 percent), and Seoul (11.0 percent) going primarily to Chicago (62.4 percent). Primary westbound origins were Chicago (27.5 percent) and Seattle (18.0 percent) going to Hong Kong (31.6 percent), Seoul (24.0 percent), and Shanghai (20.3 percent).

Exhibit 6.4

Fairbanks International/Other U.S. Air Cargo Flows



Sources: USDOT T-100 database and HNTB analysis.

Exhibit 6.5 shows how the AIAS share of eastbound and westbound cargo flows has changed in the recent past. In the exhibit, Other All-Cargo includes both overflights and non-Alaska tech stops. In general, AIAS eastbound and westbound air cargo flows have tracked similarly to total cargo flows but in both cases the AIAS share of traffic has declined slightly.

Table E.14 shows the ANC and FAI shares of total eastbound Asia-North America traffic in 2010. As shown, 67 percent of total eastbound Asia – North America air cargo flows through AIAS airports, including 82.6 percent of all freighter cargo. Only 0.3 percent of belly cargo passes through AIAS airports. There is a direct relationship between distance and Alaska's share of the traffic flow. ANC and FAI account for only 36 percent of the share of air cargo from Japan, but more than 80 percent of the share from Hong Kong and Taiwan.

Table E.15 shows the ANC and FAI shares of westbound North America – Asia traffic. AIAS airports have a smaller share of westbound flows than eastbound flows (58 percent westbound vs. 67 percent eastbound) including 70 percent of all-cargo carrier flows, suggesting that there is more overflying on the westbound legs. Again, AIAS airports have a larger share of traffic to more distant markets such as Hong Kong (88 percent) and Taiwan (73 percent) than closer markets such as Japan (39 percent).

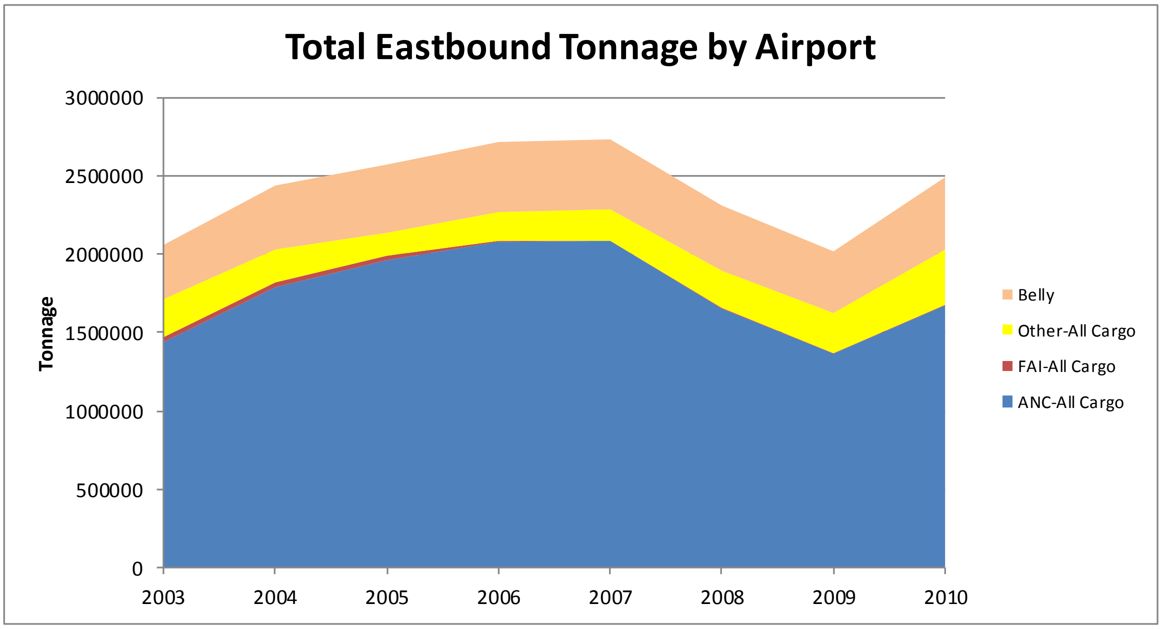
6.4.2. Cargo Tonnage Forecasts

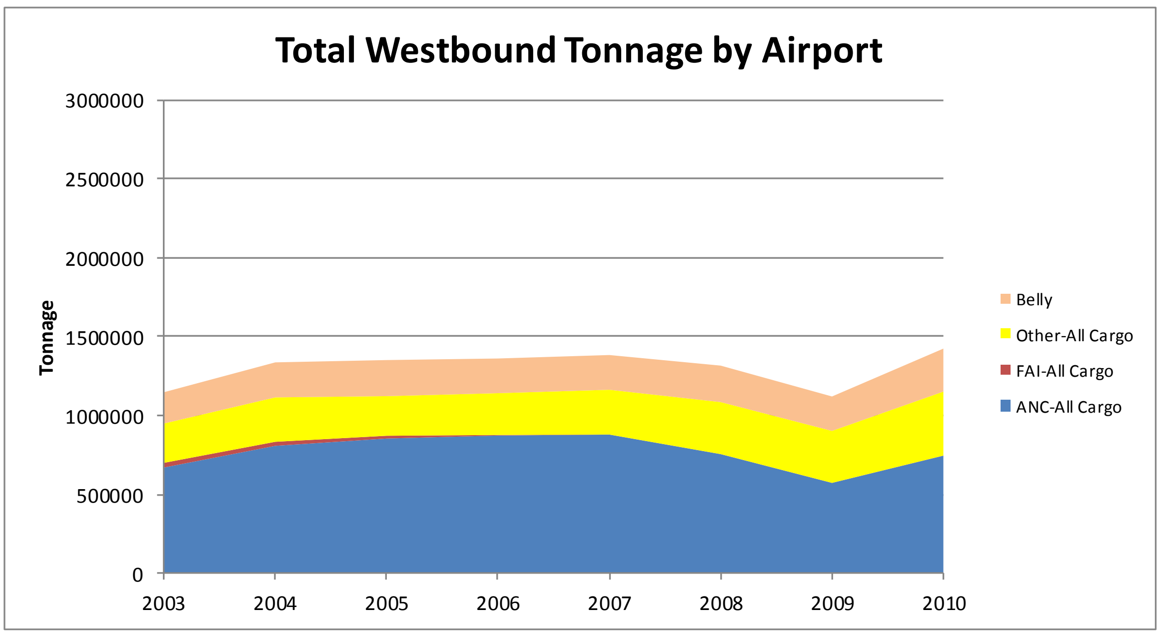
The approach used to project international/other U.S. air cargo involved the following steps:

- 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 the AIAS airports, 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 AIAS airports;
- 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.

Exhibit 6.5

Historical Alaska Share of Eastbound and Westbound Air Cargo Tonnage





Sources: USDOT T-100 database and HNTB analysis.

The data sources were similar to those used for the intrastate forecast and included the Airports, the U.S. DOT's Schedule T-100 statistics, the FAA, Boeing, Airbus, and other industry publications.

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. Table E.16 presents the forecasts of the growth rates in these trade flows calculated as an average of industry forecasts prepared over the past two years by the FAA, aircraft manufacturers such as Boeing and Airbus, and other organizations such as Seabury, OAG, Air Cargo World, and IATA. 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. Since the U.S. DOT T100 data base only began to include all major carriers in 2003, the estimate was prepared on a quarterly basis to include enough observations to generate a sufficiently strong statistical relationship. In addition, some of the variables, such as fuel prices and the financial crisis, showed significant quarterly variation that was masked by annual averages. The variables that were most statistically significant were U.S. GDP, the cost of jet fuel, and instrument variables for the financial crisis, the recession, and seasonal factors.

The GDP and fuel price variables were selected because: (a) they showed a statistical correlation with Asia-North America cargo flows; and (b) historical and projected data were available on a year-by-year basis. Other variables such as commodity composition, value to weight ratios, and individual country exports are undoubtedly also relevant, but the year-by-year historical and forecast detail necessary to include them in the forecast equation is not available. Table E.17 shows the details of the equation and the forecast of eastbound cargo tonnage.

The forecast of total westbound cargo tonnage is presented in Table E.18. In this instance, the most significant variables were East Pacific GDP, jet fuel prices, and instrument variables for the financial crisis and seasonal factors.

The eastbound tonnage forecast projects an average annual increase of 5.4 percent whereas the westbound tonnage forecast projects an average annual increase of 4.4 percent. Given the large imbalance that already exists between eastbound and westbound flows, a further increase in this imbalance was considered untenable. It is likely that cargo carriers would need to raise their rates on eastbound routes to cover their losses on westbound routes and thereby depress eastbound demand. On westbound routes they would likely offer low rates to fill aircraft. Therefore, it was assumed that these two factors would balance out and both eastbound and westbound cargo flows would increase at the average of the calculated rates.

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. Table 6.3 shows the forecast of North Pacific air cargo tonnage that reflects both the rebalancing of eastbound and westbound growth rates and an adjustment for the 2011 downturn.

Table 6.3 indicates an average annual growth rate of 4.9 percent, measured from 2011, or 4.3 percent, measured from 2010. The 4.9 percent forecast growth rate for the region is lower than the Boeing and Airbus forecasts. However, given the very slow growth of the last decade and the uncertainty expressed by the cargo survey respondents, it is believed that the 4.9 percent forecast is more realistic.

Using the historical relationship to estimate future Asia/North America air cargo flows assumes that the ocean-borne share will continue to increase as it has in the past, a trend which is reflected in the estimated annual growth rate for air cargo flows.

Table E.19 shows the calculation of total Asia/North America belly cargo. The approach is similar to the approach used to estimate intrastate belly cargo with the exception that FAA projections of international activity are used instead of projections of domestic activity. 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.

Table 6.3

Forecast of North Pacific Air Cargo Flows (tons)

	Unadjusted Indexes				Projected Tonnage		
Year	Eastbound (a)	Westbound (b)	Average (c)	Adjustment for 2011 Downturn (d)	Eastbound (e)	Westbound (e)	Total
2010	1.000	1.000	1.000	1.000	2,489,512	1,286,633	3,776,145
2011	1.063	1.048	1.056	0.936	2,330,183	1,204,288	3,534,471
2015	1.316	1.239	1.278	1.133	2,820,314	1,457,598	4,277,912
2020	1.759	1.565	1.662	1.474	3,668,906	1,896,169	5,565,075
2025	2.293	1.953	2.123	1.882	4,686,490	2,422,078	7,108,568
2030	2.863	2.383	2.623	2.326	5,791,398	2,993,118	8,784,516
			Average Annual Growth Rate				
2010-2030	5.4%	4.4%	4.9%	4.3%	4.3%	4.3%	4.3%
2011-2030	5.4%	4.4%	4.9%	4.9%	4.9%	4.9%	4.9%

(a) Table E.17.
(b) Table E.18.
(c) Average of eastbound and westbound indexes.
(d) 2011 downturn based on IATA estimate of reduction in Asia-North America air cargo flows between 2010 and 2011. Growth assumed to resume at projected rates from 2011 base.
(e) Projected tonnage adjusted for 2011 downturn.

Sources: As noted and HNTB analysis.

Tables E.20 and E.21 show total projected eastbound and westbound air cargo flows broken out by country. Tonnage to or from each country was assumed to increase at the same rate as their GDP growth and then adjusted to sum to the total. A close relationship between air cargo tonnage and GDP was already identified from the equations used to estimate North Pacific cargo flows. If no specific GDP forecast was available for an individual country, it was assumed to grow at the same rate as the rest of Asia (excluding China and Japan). The forecasts for each country were adjusted proportionately upwards or downwards to match the total Asia-North America forecast.

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 ANC or FAI 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 is considered in turn below.

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. Table E.22 in Appendix E shows the range characteristics of long haul freighter aircraft in operation or under development.

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 AIAS share of technical stop traffic – cargo not being transferred at an AIAS 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 AIAS airports as these factors change.

As an input to this model, estimates of the average range of the North Pacific all-cargo carrier fleet were required. In addition to the survey information, data on planned aircraft purchases and retirements were collected for each of the cargo carriers serving the North Pacific cargo market. Purchase and retirement plans extend only for a few years. For the longer term most of the growth is anticipated to consist of Boeing 747-

400 passenger conversions, and Boeing 747-8 and 777 freighters. Longer term additional aircraft growth is anticipated from Boeing 777 passenger conversions. By 2030, it is anticipated that freighter variants of the Airbus A350 and A380 will enter service in the North Pacific. Tables E.23 and E.24 show the projected fleet mix for North Pacific cargo carriers over the forecast period and the resulting average range for several different payload scenarios.

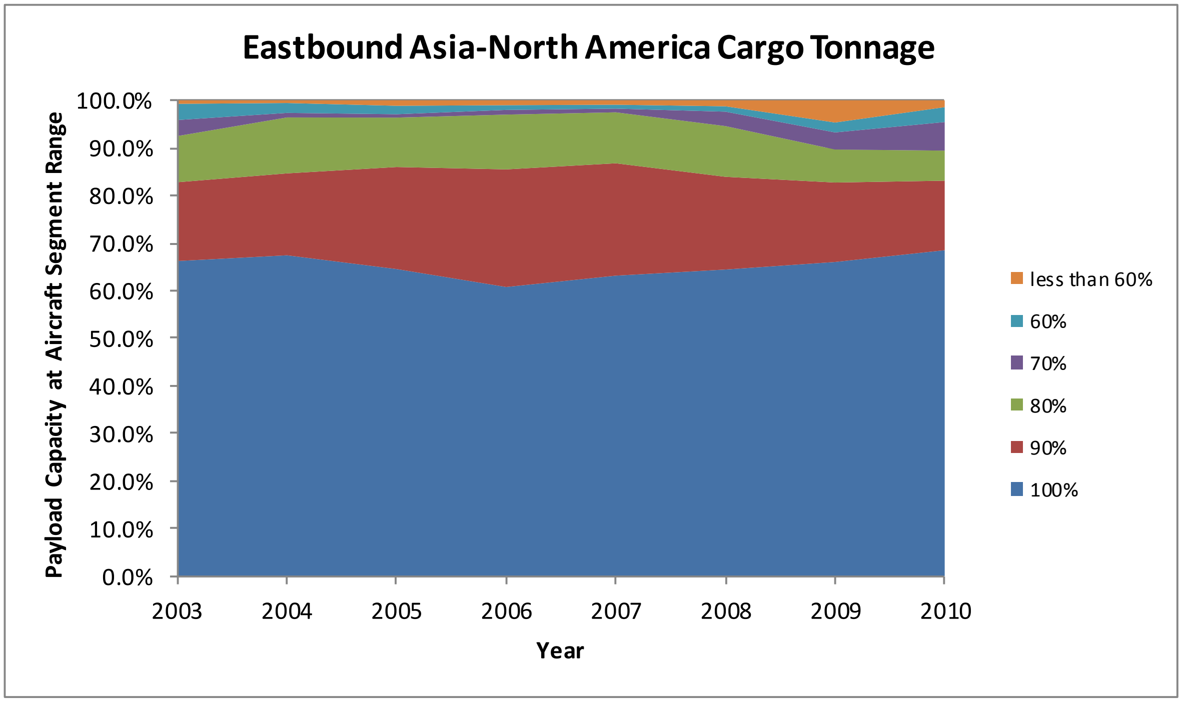
Another factor is the extent to which carriers will trade payload for additional range. Exhibit 6.6 shows the pattern of trade-offs between payload and range in the North Pacific between 2003 and 2010. The graphic shows that on eastbound routes, approximately 70 percent of flights operate on routes where aircraft can carry a full 100 percent payload. More than 80 percent of flights operate on routes where the aircraft can carry at least 90 percent of its maximum payload capacity. Only a small percentage of aircraft operate on routes where they cannot carry more than 60 percent of their maximum payload. On westbound routes, less than 60 percent of flights are flown on routes where aircraft can carry a full 100 percent payload. The westbound graphic suggests that carriers are increasingly taking advantage of the lower loads to do more overflying.

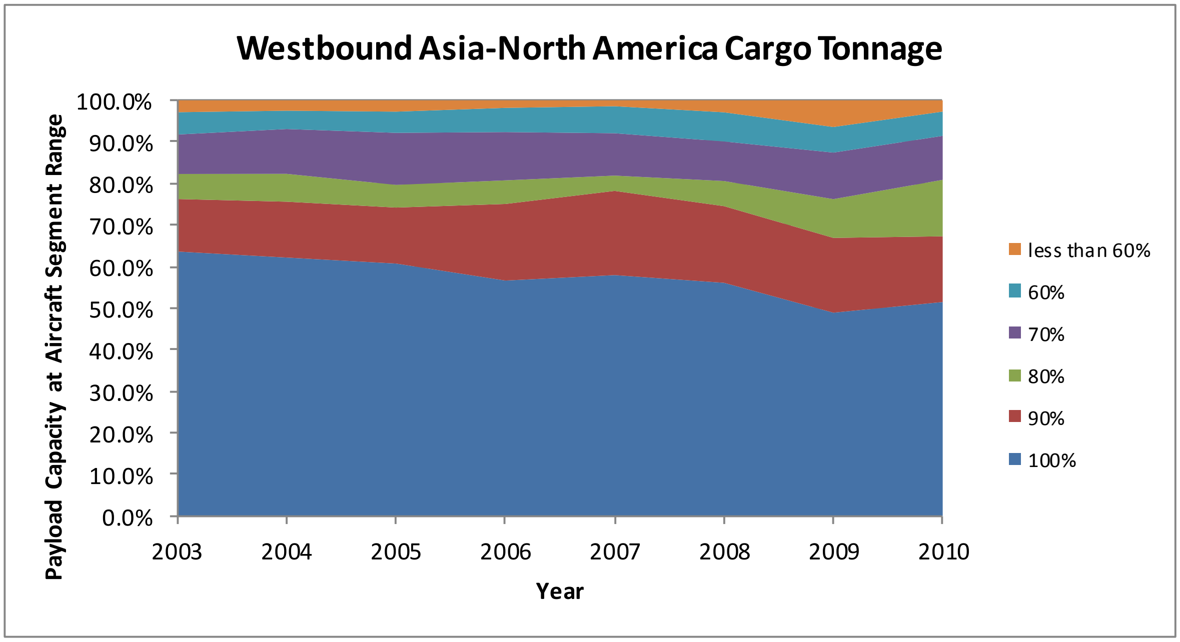
It was assumed that the pattern of trade-offs between range and payload that currently exists among Asia-North America carriers will continue into the future. Based on these data, as of 2010 approximately 35 percent of eastbound Asia-North Pacific air cargo was flown on segments that exceeded the range at maximum payload for the aircraft carrying the cargo. On westbound routes, approximately 43 percent of cargo was flown on segments that exceeded the range at maximum payload for the aircraft.

The assumption essentially states that the percentage of aircraft overflying their range at maximum payload is assumed to 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.

Exhibit 6.6

Distribution of Air Cargo Tonnage by Usable Payload Capacity on Segment





Sources: USDOT T-100 database and HNTB analysis.

The Seoul (ICN) to Los Angeles (LAX) route is a good example of the threat of overflying Alaska. The non-stop distance is 5,994 miles (see Table E.25). Based on the data in Table E.23, the average aircraft in the current fleet has a maximum load factor of 80 percent at that range and would therefore need to sacrifice about 20 percent of its eastbound payload capacity to fly ICN-LAX non-stop. Based on the data in Exhibit 6.6, approximately 90 percent of current operators are unwilling to make that trade-off on eastbound routes. By 2030, based on the fleet mix projection in Table E.23, the average aircraft would need to sacrifice less than 10 percent of its payload to fly that route. Again, based on the data in Exhibit 6.6, about 80 percent of operators would still be unwilling to make that trade-off. Therefore, the tonnage on the ICN-LAX route flying non-stop would be expected to double.

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 AIAS airports can be expected to retain.

Table E.26 presents the estimate of AIAS airports' future share of eastbound North Pacific air cargo tonnage. ANC and FAI currently capture about 77 percent of non-transfer 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.

Table E.27 shows the estimate of the AIAS airports' future share of westbound North Pacific air cargo tonnage. 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.

As noted earlier, domestic air cargo traveling between AIAS airports and markets in the Lower 48 is often commingled with international air cargo, especially on U.S. flag carriers. As noted earlier in this section, the North American leg of both eastbound and westbound cargo flows show more tonnage than the Asian leg, and this excess in tonnage provides an estimate of domestic cargo flows between AIAS airports and non-Alaskan U.S. points. The surveys of the cargo carriers serving ANC indicated that there was very little originating or terminating international air cargo at the Airport. Therefore, the additional cargo tonnage on the North American legs of eastbound and westbound cargo flows appear to be a reasonable albeit conservative estimate of domestic air cargo flows between ANC and the Lower 48.

Table E.28 provides a forecast of the additional increment of Alaska – Lower 48 cargo tonnage on the eastbound and westbound legs. Since this traffic is primarily domestic, it was assumed to increase at the same rate as the consensus for domestic cargo growth from Table E.16. 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.

Table 6.4 provides the forecast of AIAS international/other U.S. freighter cargo, including the eastbound and westbound international flows combined with the estimated flows to and from the Lower 48 from Table E.28. Also provided is an estimate of the breakout of these tonnages between ANC and FAI. Note that this is a baseline forecast, which does not address either the potential of capacity constraints at ANC, or incentive programs, to divert additional cargo tonnage to FAI.

6.4.3. Belly Cargo Forecast

The freighter cargo projections above were calculated as a share of overall freighter cargo flows between Asia and North America and therefore did not include cargo on passenger carriers. 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. Tables E.29 and E.30 provide the belly cargo forecasts for international and other U.S. cargo for ANC and FAI. Total international belly cargo at ANC is projected to decrease as a result of the anticipated decrease in international transit passengers.

6.4.4. International and Other U.S. All-Cargo Carrier Capacity

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. Table E.31 in Appendix E shows the required lift capacity calculations for eastbound cargo from Asia to ANC. Because eastbound load factors are already very high, no further increases were assumed. Table E.32 shows the load factor and required lift capacity calculations for westbound cargo from North America to Asia. Based on historical rates, load factors on these 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.

The lift capacity requirements for FAI eastbound and westbound cargo are shown in Tables E.33 and E.34.

Table 6.4

Forecast of Asia/North Pacific and Other U.S. All-Cargo Carrier Tonnage
ANC and FAI

Year	Eastbound (a) Inbound	Eastbound (a) Outbound	Westbound (b) Inbound	Westbound (b) Outbound	Total Inbound	Total Outbound
Total AIAS						
2010	1,675,231	1,710,097	808,663	749,076	2,483,894	2,459,173
2015	1,804,299	1,844,914	891,568	822,154	2,695,866	2,667,068
2020	2,359,133	2,406,447	974,334	893,474	3,333,468	3,299,921
2025	2,756,884	2,812,000	1,184,473	1,090,277	3,941,356	3,902,277
2030	3,067,541	3,131,747	1,386,674	1,276,945	4,454,216	4,408,692
Average Annual Growth Rate						
2010-2030	3.1%	3.1%	2.7%	2.7%	3.0%	3.0%
Baseline ANC Share (c)						
2010	1,671,159	1,705,686	807,025	748,243	2,478,184	2,453,929
2015	1,799,913	1,840,156	889,762	821,240	2,689,675	2,661,396
2020	2,353,399	2,400,240	972,361	892,480	3,325,760	3,292,720
2025	2,706,742	2,761,955	1,178,114	1,084,003	3,884,856	3,845,957
2030	3,060,085	3,123,669	1,383,866	1,275,525	4,443,951	4,399,194
Average Annual Growth Rate						
2010-2030	3.1%	3.1%	2.7%	2.7%	3.0%	3.0%
Baseline FAI Share (c)						
2010	4,072	4,411	1,638	833	5,710	5,244
2015	4,386	4,759	1,806	914	6,192	5,673
2020	5,734	6,207	1,974	994	7,708	7,201
2025	6,595	7,143	2,392	1,207	8,987	8,350
2030	7,456	8,078	2,809	1,420	10,265	9,498
Average Annual Growth Rate						
2010-2030	3.1%	3.1%	2.7%	2.7%	3.0%	3.0%

(a) Inbound from Table E.26. Outbound also includes intracontinental tonnage from Table E.28.
(b) Outbound from Table E.27. Inbound also includes intracontinental tonnage from Table E.28.
(c) ANC and FAI assumed to maintain existing (2010) share under baseline scenario.

Sources: As noted and HNTB analysis.

6.4.5. International/Other U.S. Air Cargo Summary

Tables 6.5 and 6.6 summarize the total international/other U.S. cargo tonnage forecasts for ANC and FAI. At ANC, combined inbound and outbound all-cargo and belly cargo is expected to grow from 4.9 million tons in 2010 to 8.8 million tons in 2030, an average annual increase of 3.0 percent. At FAI, these tonnages are projected to increase at 3.0 percent per year from 10,954 in 2010 to 19,763 in 2030.

Table 6.5

Forecast Anchorage International and Other U.S. Cargo Tonnage
Inbound and Outbound (Tons)

	International/U.S. Total (a)			International/U.S. Belly (b)			International/U.S. All-Cargo (c)		
Year	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
2010	2,490,713	2,466,790	4,957,503	12,529	12,861	25,390	2,478,184	2,453,929	4,932,113
2015	2,701,374	2,672,219	5,373,593	11,699	10,823	22,522	2,689,675	2,661,396	5,351,071
2020	3,337,311	3,303,463	6,640,774	11,551	10,743	22,294	3,325,760	3,292,720	6,618,480
2025	3,896,599	3,856,919	7,753,518	11,743	10,962	22,706	3,884,856	3,845,957	7,730,813
2030	4,455,921	4,410,405	8,866,326	11,970	11,211	23,181	4,443,951	4,399,194	8,843,145
	Average Annual Growth Rate								
2010-2030	3.0%	2.9%	2.9%	-0.2%	-0.7%	-0.5%	3.0%	3.0%	3.0%

(a) Sun of All-Cargo and Belly cargo tonnage.
(b) Table E.33.
(c) Table 6.4.

Sources: As noted and HNTB analysis.

Table 6.6

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Inbound and Outbound (Tons)

	International/U.S. Total (a)			International/U.S. Belly (b)			International/U.S. All-Cargo (c)		
Year	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
2010	6,075	5,349	11,424	365	105	470	5,710	5,244	10,954
2015	6,583	5,786	12,369	391	113	504	6,192	5,673	11,865
2020	8,115	7,319	15,435	407	118	526	7,708	7,201	14,909
2025	9,417	8,475	17,892	431	126	556	8,987	8,350	17,336
2030	10,716	9,630	20,346	451	132	583	10,265	9,498	19,763
	Average Annual Growth Rate								
2010-2030	2.9%	3.0%	2.9%	1.1%	1.1%	1.1%	3.0%	3.0%	3.0%

(a) Sun of All-Cargo and Belly cargo tonnage.
(b) Table E.34.
(c) Table 6.4.

Sources: As noted and HNTB analysis.

6.5. All-Cargo Aircraft Departure Forecasts

The domestic and international annual cargo capacity projections developed in Tables E.8, E.9, E.31, E.32, E.33 and E.34 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 AIAS airports from Asia is significantly greater than the number of flights departing to Asia. Likewise, the number of all-cargo flights arriving at AIAS airports 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.

Tables E.35 and E.36 summarize intra-Alaska all-cargo aircraft departures for ANC and FAI. By the end of the forecast period the ANC intrastate cargo fleet is expected to comprise mostly 737-400s, Cessna 208s, Beech 1900s, and ATRs. At FAI, intrastate all cargo aircraft are projected to include Cessna 208s, Beech 1900s and ATRs.

Tables E.37 and E.38 provide fleet mix projections for international/other U.S. all-cargo aircraft departures at ANC and FAI. The international all-cargo fleet is projected to consist almost entirely of large wide body aircraft, and the Boeing 747-400 is expected to account for the plurality of operations throughout the period. Design Group VI aircraft (Boeing 747-800 and Airbus A380) are forecast to account for about 17 percent of international all-cargo departures at ANC by 2030.

Tables 6.7 and 6.8 summarize all-cargo aircraft departures for ANC and FAI. Total all-cargo aircraft departures at ANC are projected to increase from 41,042 in 2010 to 60,598 in 2030, an average annual increase of 2.0 percent. At FAI, all-cargo aircraft departures are projected to increase from 1,659 in 2010 to 2,622 in 2030, an average annual increase of 2.3 percent. Although cargo tonnage is projected to grow faster at ANC than FAI, cargo operations are projected to grow faster at FAI than ANC because of the difference in the fleet mix forecasts for the two airports. At ANC, the average freighter size is expected to gradually increase, resulting in aircraft operations growth less than cargo tonnage growth. At FAI, however, many of the cargo operators use large old piston aircraft to fly to bush markets. The runways at many of these destinations are not capable of accommodating jet aircraft. Therefore, once older piston aircraft such as the DC-6 are cycled out of the fleet they will be replaced by smaller aircraft such as the Embraer 120 or Cessna 208. Consequently, at FAI the average freighter size is projected to gradually decrease, resulting in freighter aircraft operations growing faster than cargo tonnage.

Table 6.7

Summary of All-Cargo Aircraft Departures Forecast
Anchorage

Year	Intrastate (a)	International and Other U.S. (b)	Total
2010	10,615	30,427	41,042
2015	11,429	31,745	43,174
2020	12,119	37,438	49,557
2025	12,612	42,466	55,078
2030	13,105	47,493	60,598
Average Annual Growth Rate			
2010-2030	1.1%	2.3%	2.0%

(a) Table.E.35
(b) Table E.37.

Sources: As noted and HNTB analysis.

Table 6.8

Summary of All-Cargo Aircraft Departures Forecast
Fairbanks

Year	Intrastate (a)	International and Other U.S. (b)	Total
2010	1,602	57	1,659
2015	1,813	61	1,874
2020	2,139	74	2,213
2025	2,333	85	2,418
2030	2,526	96	2,622
Average Annual Growth Rate			
2010-2030	2.3%	2.6%	2.3%

(a) Table.E.36
(b) Table E.38.

Sources: As noted and HNTB analysis.

6.6. All-Cargo Peaking Forecast

All-cargo aircraft operations activity at the AIAS airports tends to be less seasonal than passenger activity. Intrastate cargo operations at ANC and FAI have seasonal patterns similar to intrastate passenger operations, i.e., noticeable but not extreme. International cargo operations are fairly well distributed throughout the year but experience a peak in October prior to the holiday season.

In addition to seasonal variations, cargo activity varies by day of the week. Intrastate all-cargo operations are much more frequent during weekdays than weekends. International all-cargo operations have a similar distribution but their operations tend to lag the Asian work week. Therefore, international cargo operations tend to be high from Tuesday through Saturday and low on Sundays and Mondays.

Tables E.39 and E.40 present the projected monthly distribution of all-cargo aircraft operations for each cargo category at ANC. In addition, an estimate of average busy day aircraft departures is presented for each month. Table E.41 provides a summary along with peak 60-minute projections derived from the design day flight schedules. Tables E.42 through E.44 present the same projections for FAI.

7.0. Air Taxi and Other Activity Forecasts

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 T100 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 and FAI. Through 2007, this passenger activity varied from year to year but with little discernible long-term trend (see Tables C.1, C.2 and C.3). 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.

Table F.1 in Appendix F shows the ANC forecast of air taxi and other passenger enplanements. The forecast is based on a regression equation in which air taxi and other passengers are a function of crude oil prices, lagged three years. Although oil exploration and development stimulate travel to the North Slope, there appears to be a three year lag before high oil prices stimulate further development. The FAI data were insufficient to develop a regression model, so FAI air taxi and other passenger enplanements were assumed to grow at the same rate as ANC air taxi and other passenger enplanements. This is reasonable since the same operator, Conoco Phillips, accounts for the majority of these passengers at both airports. Tables 7.1 and 7.2 provide the forecasts of enplaned, deplaned, and transit air taxi and other passengers for ANC and FAI.

Tables 7.3 and 7.4 provide the forecasts of air taxi and other aircraft operations for ANC and FAI. Although historical data for these 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 and FAI. Consequently, air taxi and other operations were assumed to increase at the same rate as air taxi and other passengers at ANC and FAI.

A number of the smaller for hire air taxi operations occur at LHD as well as ANC and FAI. Air taxi and other operations at LHD use smaller aircraft and typically support recreational activities such as fishing and hunting expeditions unrelated to oil exploration. These operations were assumed to grow at the same rate as LHD general aviation operations (see Section 8). Table 7.5 provides the forecast of LHD air taxi and other operations.

Table 7.1

Air Taxi and Other Passenger Forecast
Anchorage

	Air Taxi and Other Passengers (b)		
Year	**Enplaned**	**Deplaned**	**Transit**
2010 (b)	137,331	136,050	15
2015	152,711	151,286	17
2020	165,539	163,994	18
2025	176,159	174,516	19
2030	183,060	181,353	20
Average Annual Growth Rate			
2010-2030	1.4%	1.4%	1.4%

(a) Enplanements from Table F.1. Deplanements and transit passengers assumed to grow at same rate as enplaned passengers.
(b) Base year data from Tables C.1 through C.3.

Sources: As noted and HNTB analysis.

Table 7.2

Air Taxi and Other Passenger Forecast
Fairbanks

		FAI Air Taxi and Other Passengers (b)		
Year	**ANC Air Taxi Enplanements (a)**	**Enplaned**	**Deplaned**	**Transit**
2010	137,331	6,439	6,528	15,088
2015	152,711	7,160	7,259	16,778
2020	165,539	7,762	7,869	18,187
2025	176,159	8,260	8,374	19,354
2030	183,060	8,583	8,702	20,112
Average Annual Growth Rate				
2010-2030	1.4%	1.4%	1.4%	1.4%

(a) Table 7.1.
(b) Air taxi passengers assumed to increase at same rate as ANC air taxi enplanements since both are primarily related to the oil exploration industry.

Sources: As noted and HNTB analysis.

Table 7.3

Air Taxi and Other Aircraft Operations Forecast
Anchorage

Year	Enplaned Passengers (a)	Aircraft Operations (b)
2010	137,331	6,948
2015	152,711	7,726
2020	165,539	8,375
2025	176,159	8,912
2030	183,060	9,262
	Average Annual Growth Rate	
2010-2030	1.4%	1.4%

(a) Table 7.1.
(b) Base year data from Table 4.5. Assumed to increase at same rate as air taxi and other passengers.

Sources: As noted and HNTB analysis.

Table 7.4

Air Taxi and Other Aircraft Operations Forecast
Fairbanks

Year	Enplaned Passengers (a)	Aircraft Operations (b)
2010	6,439	8,328
2015	7,160	9,261
2020	7,762	10,039
2025	8,260	10,683
2030	8,583	11,101
	Average Annual Growth Rate	
2010-2030	1.4%	1.4%

(a) Table 7.2.
(b) Base year data from Table 4.6. Assumed to increase at same rate

Sources: As noted and HNTB analysis.

Table 7.5

Air Taxi and Other Aircraft Operations Forecast
Lake Hood

Year	LHD GA Operations (a)	LHD Air Taxi Operations (b)
2010	44,928	14,286
2015	47,534	15,115
2020	49,667	15,793
2025	53,978	17,164
2030	59,446	18,902
	Average Annual Growth Rate	
2010-2030	1.4%	1.4%

(a) Table 8.1.
(b) Base year operations from Table 4.5. Assumed to increase at same rate as LHD GA operations.

Sources: As noted and HNTB analysis.

Forecast operations by general aircraft type at ANC, FAI, and LHD are shown in Tables F.2, F.3 and F.4 in Appendix F. Base year operations by type were estimated from the FAA's ETMSC data base for instrument operations and from based aircraft counts for non-instrument operations. Operations in each aircraft category were assumed to grow at the same rate as FAA forecast of air taxi and general aviation hours flown in that category. The results were then adjusted on a prorated basis to sum to the original forecast of air taxi and other aircraft operations. In general, jet operations are projected to increase, while other categories are projected to increase more slowly or decrease.

Forecasts of air taxi and other operations by month, average busy day, and peak 60-minutes, for each of the three airports are shown in Tables F.5, F.6, and F.7. These operations experience significant seasonal peaks, especially in late summer. The peaking is most extreme at LHD because cold weather conditions limit demand for winter seaplane operations.

8.0. General Aviation Forecasts

General aviation is an important component of aviation in Alaska accounting for 16 percent of operations at ANC, almost 60 percent of operations at FAI, and 76 percent of operations at LHD. 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 at ANC, FAI, and LHD has experienced trends similar to national trends in recent years. Since 2000, general aviation operations have declined at all three airports, but there has been a partial recovery since 2008.

The forecast of general aviation operations at ANC and LHD is presented in Table 8.1. It is 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 (see Section 2) 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.

Table 8.1

Forecast of General Aviation Aircraft Operations
Anchorage and Lake Hood

Year	US Hours Flown (a)	Aircraft Operations (b) ANC	LHD	Total	Ratio (c)
2000	30,102,000	52,190	50,480	102,670	0.0034
2001	29,132,999	40,714	52,411	93,125	0.0032
2002	27,040,100	43,936	52,497	96,433	0.0036
2003	27,329,430	45,682	45,136	90,818	0.0033
2004	28,125,896	40,802	50,671	91,473	0.0033
2005	26,982,383	39,685	49,581	89,266	0.0033
2006	27,705,164	35,164	45,151	80,315	0.0029
2007	27,851,982	35,525	43,728	79,253	0.0028
2008	26,009,375	34,016	41,871	75,887	0.0029
2009	23,771,000	35,685	45,885	81,570	0.0034
2010	24,051,000	36,060	44,928	80,988	0.0034
2015	26,398,000	38,152	47,534	85,686	0.0032
2020	28,614,000	39,863	49,667	89,530	0.0031
2025	32,261,000	43,324	53,978	97,302	0.0030
2030	36,858,000	47,713	59,446	107,159	0.0029
		Average Annual Growth Rate			
2010-2030	2.2%	1.4%	1.4%	1.4%	-0.7%

(a) FAA Aerospace Forecast: FY 2011-2031.
(b) Historical data from Table 4.5. Combined (ANC+LHD) operations estimated by multiplying FAA forecast of hours flown by ratio of (ANC+LHD) operations to hours flown. Split between ANC and LHD assumed to remain constant. See text for additional details.
(c) Ratio of ANC+LHD operations to U.S. Hours Flown. Assumed to change at historical rates.

Sources: As noted and HNTB analysis.

Table 8.2 presents the forecast of general aviation operations at FAI. The forecast approach was the same as that used for ANC and LHD. The historical share of national general aviation activity occurring at FAI has declined slightly faster than the ANC/LHD share and this is reflected in the forecast – a reasonable expectation in that the Fairbanks metropolitan area economy is expected to grow slightly slower than the Anchorage metropolitan area economy. The ANC, FAI, and LHD forecasts are unconstrained, assuming that the airfield, ramp and hangar facilities to accommodate projected general aviation activity will be available. If they are not, general aviation activity will move elsewhere.

Table 8.2

Forecast of General Aviation Aircraft Operations
Fairbanks

Year	US Hours Flown (a)	Total (b)	Ratio (c)
2000	30,102,000	96,121	0.0032
2001	29,132,999	92,585	0.0032
2002	27,040,100	80,337	0.0030
2003	27,329,430	75,408	0.0028
2004	28,125,896	61,305	0.0022
2005	26,982,383	55,141	0.0020
2006	27,705,164	56,296	0.0020
2007	27,851,982	57,234	0.0021
2008	26,009,375	61,813	0.0024
2009	23,771,000	70,929	0.0030
2010	24,051,000	71,099	0.0030
2015	26,398,000	74,456	0.0028
2020	28,614,000	77,003	0.0027
2025	32,261,000	82,834	0.0026
2030	36,858,000	90,295	0.0024
	Average Annual Growth Rate		
2010-2030	2.2%	1.2%	-0.9%

(a) FAA Aerospace Forecast: FY 2011-2031.

(b) Historical data from Table 4.6. Future operations estimated by multiplying FAA forecast of hours flown by ratio of operations to hours flown. See text for additional details.

(c) Ratio of ANC+LHD operations to U.S. Hours Flown. Assumed to change at historical rates.

Sources: As noted and HNTB analysis.

Forecast general aviation operations by aircraft category at ANC, FAI, and LHD are shown in Tables G.1, G.2 and G.3 in Appendix G. Base year operations by type were estimated from the FAA's ETMSC data base for instrument operations and from based aircraft counts for non-instrument operations. Operations in each aircraft category were assumed to grow at the same rate as FAA forecast of air taxi and general aviation hours flown in that category. The results were then adjusted on a prorated basis to sum to the original forecast of general aviation aircraft operations.

Tables G.4, G.5, and G.6 show forecasts of general aviation operations by month, average busy day, and peak 60-minutes for each of the three airports. As with air taxi operations, there is an intense summer peak, especially for LHD and FAI float plane operations.

9.0. Military Forecasts

Tables 9.1 and 9.2 present the forecasts of military aircraft operations at ANC and FAI. 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 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.

Table 9.1

Military Aircraft Operations
Anchorage

Year	Operations (a)
2000	5,210
2001	6,535
2002	5,669
2003	5,036
2004	5,947
2005	6,014
2006	4,116
2007	4,899
2008	5,119
2009	4,385
2010	4,401
2011	2,457
2015	2,267
2020	2,267
2025	2,267
2030	2,267

(a) Historical data from Table 4.5. Assumed to remain constant at 2011 levels with adjustment for departure of Kulis National Guard.

Sources: As noted and HNTB analysis.

The military operations forecast for FAI (Table 9.2) also assumes activity will remain constant at the 2011 level of activity. This assumption is consistent with FAA forecasts of national military activity. However, future national defense actions could increase or decrease future military operations at ANC or FAI.

Table 9.2

Military Aircraft Operations
Fairbanks

Year	Operations (a)
2000	2,884
2001	1,362
2002	1,403
2003	1,579
2004	1,993
2005	1,359
2006	1,637
2007	1,495
2008	1,789
2009	1,775
2010	2,721
2015	2,830
2020	2,830
2025	2,830
2030	2,830

(a) Historical data from Table 4.6. Assumed to remain constant in the future.

Sources: As noted and HNTB analysis.

Forecast military operations by aircraft category at ANC and FAI are shown in Tables H.1 and H.2 in Appendix H. Base year operations by type were estimated from the FAA's ETMSC data base for instrument operations and from based aircraft counts for non-instrument operations. Consistent with the rest of the military operations forecast, operations in each aircraft category were assumed to remain constant.

Tables H.3 and H.4 show forecasts of military aircraft operations by month, average busy day, and peak 60-minutes for ANC and FAI. Summer peaks are evident in this category, but not as pronounced as the peaks associated with general aviation.

10.0. Forecast Summary

This section summarizes the passenger, cargo, and aircraft operations forecasts for ANC, FAI, and LHD. 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 in Section 11.

10.1. Passenger Forecast Summary

Table 10.1 summarizes the demand forecast of annual passenger activity at ANC. The summary includes domestic, international, and air taxi and other passengers, and has been adjusted to match Airport passenger counts that include non-revenue passengers. Total annual enplaned passengers are projected to increase from 2.4 million in 2010 to over 3.1 million by 2030. Consistent with historical trends, total transit passengers are projected to decrease significantly between 2010 and 2030. Combined enplaned and transit passengers, which correspond to outbound passengers in the forecasts in Section 5, are projected to increase 1.0 percent per year during the forecast period.

Table 10.1

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

	Enplaned			Transit			Enplaned plus Transit (f)		
Year	Domestic (a)	International (b)	Air Taxi and Other (c)	Domestic (d)	International (e)	Air Taxi and Other (c)	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%

(a) Assumed to increase at same rate as domestic outbound passengers from Table 5.5.
(b) Assumed to increase at same rate as direct international outbound passengers from Table D.17.
(c) Table 7.1.
(d) Assumed to increase at same rate as domestic outbound passengers from Table 5.5. Adjusted for downturn in transit passengers in 2011.
(e) Assumed to increase at same rate as transit international outbound passengers from Table D.17.
(f) Air taxi and other included with domestic.

Sources: As noted and HNTB analysis.

Table 10.2 summarizes the passenger forecast for FAI. As with ANC, the projections have been adjusted to match Airport counts of traffic. Compared to ANC, domestic enplanements are projected to grow at a slightly lower rate because of slightly lower anticipated economic growth. On the other hand, international enplanements are projected to grow slightly faster, reflecting a greater mix of overseas and Canadian passengers at FAI. Total passenger traffic is projected to grow 1.2 percent per year, slightly faster than ANC since FAI is not expected to experience a sharp reduction in international transit passengers.

Table 10.2

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

	Enplaned			Transit			Enplaned plus Transit (f)		
Year	Domestic (a)	International (b)	Air Taxi and Other (c)	Domestic (d)	International (e)	Air Taxi and Other (c)	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	479,153	6,492	7,160	39,091	3,382	16,778	542,182	9,874	552,056
2020	502,592	7,395	7,762	41,004	3,852	18,187	569,545	11,247	580,792
2025	529,375	8,428	8,260	43,189	4,391	19,354	600,178	12,819	612,997
2030	565,123	9,611	8,583	46,105	5,007	20,112	639,923	14,618	654,541
				Average Annual Growth Rate					
2010-2030	1.1%	2.6%	1.4%	1.1%	2.6%	1.4%	1.1%	2.6%	1.2%

(a) Assumed to increase at same rate as domestic outbound passengers from Table 5.6.
(b) Assumed to increase at same rate as direct international outbound passengers from Table D.18.
(c) Table 7.2.
(d) Assumed to increase at same rate as domestic outbound passengers from Table 5.6.
(e) Assumed to increase at same rate as transit international outbound passengers from Table D.18.
(f) Air taxi and other included with domestic.

Sources: As noted and HNTB analysis.

Tables 10.3 and 10.4 present the forecasts of passenger aircraft landings for ANC and FAI adjusted to reflect airport landing counts. The airport landing counts include some smaller operators that do not file T100 data with the U.S. DOT; further these smaller carriers which operate both passenger and all-cargo flights do not provide a breakdown between passenger and cargo operations. Therefore the distribution of operations between passenger and cargo carriers is slightly different from those presented in Sections 5 and 6.

As shown in Table 10.3, total passenger landings are projected to increase 0.9 percent per year at ANC, slightly less than growth in passenger enplanements. The international growth rate is deceptive because EVA transit flights are included with the cargo landings, and therefore the base numbers are lower than they should be[2].

Table 10.4 shows the forecast of total passenger aircraft landings for FAI. The domestic landings growth rate at FAI is higher than at ANC because many of the operators fly small aircraft, and have no announced plans to replace them with larger aircraft.

[2] China Airlines operated transit passenger operations at ANC in 2010, further skewing the base year number, but they have since ceased these operations.

Table 10.3

Summary of ANC Passenger Aircraft Landings
Reconciled to Airport Statistics (a)

Year	Domestic (b)	International (b)	Total
2010	46,623	187	46,810
2015	49,399	200	49,599
2020	50,545	225	50,770
2025	52,935	253	53,188
2030	55,325	281	55,606
Average Annual Growth Rate			
2010-2030	0.9%	2.1%	0.9%

(a) For some carriers it was not possible to distinguish cargo aircraft operations from passenger aircraft operations in the Airport data. For the purpose of this table, those operations were assigned to the category accounting for the majority of the carriers operations.
(b) Assumed to increase at same rate as domestic and international passenger aircraft departures from Table 5.7.

Sources: As noted and HNTB analysis.

Table 10.4

Summary of FAI Passenger Aircraft Landings
Reconciled to Airport Statistics (a)

Year	Domestic (b)	International (b)	Total
2010	20,211	37	20,248
2015	21,997	40	22,037
2020	23,199	33	23,232
2025	24,495	37	24,532
2030	25,792	40	25,832
Average Annual Growth Rate			
2010-2030	1.2%	0.4%	1.2%

(a) For some carriers it was not possible to distinguish cargo aircraft operations from passenger aircraft operations in the Airport data. For the purpose of this table, those operations were assigned to the category accounting for the majority of the carriers operations.
(b) Assumed to increase at same rate as domestic and international

Sources: As noted and HNTB analysis.

10.2. Cargo Forecast Summary

Tables 10.5 and 10.6 summarize the air cargo tonnage demand forecasts for ANC and FAI. The air cargo projections have been reorganized to correspond to the categories used by the Airport in its accounting: enplaning, deplaning and transit cargo. International/U.S. enplaning and deplaning air cargo tonnage was assumed to increase at the same rate as transfer (cross-loaded) cargo from the forecasts in Table E.26. As shown, total air cargo tonnage at ANC is projected to increase 2.9 percent per year, with most of the increase due to by international air cargo. Total air cargo tonnage at FAI is projected to grow 1.3 percent per year, primarily because international cargo accounts for a smaller share of total FAI freight.

Table 10.5

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

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned (a)	Deplaned (a)	Transit (b)	Total	Enplaned (c)	Deplaned (c)	Transit (d)	Total (e)	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%

(a) Assumed to increase at same rate as intra-Alaska tonnage forecasts from Table 6.1.
(b) Assumed to increase at average of enplaned and deplaned tonnage.
(c) Assumed to increase at same rate as transfer cargo from Table E.26.
(d) Assumed to increase at same rate as total less enplaned and deplaned and divided by two.
(e) Assumed to increase at same rate as total international cargo from Table 6.5.

Sources: As noted and HNTB analysis.

Table 10.6

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

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned (a)	Deplaned (a)	Transit (b)	Total	Enplaned (c)	Deplaned (c)	Transit (d)	Total (e)	Enplaned	Deplaned	Transit	Total (a)
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	17,088	5,243	1,684	25,699	81	168	7,173	14,595	17,169	5,411	8,857	40,294
2020	17,053	5,003	1,652	25,360	106	220	9,007	18,339	17,159	5,223	10,659	43,699
2025	17,037	4,827	1,629	25,122	137	284	10,452	21,325	17,174	5,111	12,081	46,447
2030	17,067	4,712	1,616	25,011	170	353	11,894	24,310	17,237	5,065	13,510	49,321
					Average Annual Growth Rate							
2010-2030	0.1%	-0.1%	0.0%	0.0%	4.3%	4.3%	3.0%	3.0%	0.1%	0.1%	2.5%	1.3%

(a) Assumed to increase at same rate as intra-Alaska tonnage forecasts from Table 6.2.
(b) Assumed to increase at average of enplaned and deplaned tonnage.
(c) Assumed to increase at same rate as transfer cargo from Table E.26.
(d) Assumed to increase at same rate as total less enplaned and deplaned and divided by two.
(e) Assumed to increase at same rate as total international cargo from Table 6.6.

Sources: As noted and HNTB analysis.

The forecasts of cargo aircraft landings for ANC and FAI are presented in Tables 10.7 and 10.8. Total cargo aircraft landings at ANC are projected to increase 2.1 percent per year, less than total cargo tonnage, reflecting an average increase in aircraft size among all-cargo operators. Conversely, cargo landings at FAI are projected to increase at 2.3 percent per year, reflecting the replacement of old aircraft such as the DC-6 by newer smaller turboprops.

Table 10.7

Summary of ANC Cargo Aircraft Landings
Reconciled to Airport Statistics (a)

Year	Domestic (b)	International (b)	Total
2010	6,620	32,792	39,412
2015	7,128	34,212	41,340
2020	7,558	40,348	47,906
2025	7,865	45,766	53,631
2030	8,173	51,184	59,357
Average Annual Growth Rate			
2010-2030	1.1%	2.3%	2.1%

(a) For some carriers it was not possible to distinguish cargo aircraft operations from passenger aircraft operations in the Airport data. For the purpose of this table, those operations were assigned to the category accounting for the majority of the carriers operations.
(b) Assumed to increase at same rate as all-cargo aircraft departures from Table 6.7.

Sources: As noted and HNTB analysis.

Table 10.8

Summary of FAI Cargo Aircraft Landings
Reconciled to Airport Statistics (a)

Year	Domestic (b)	International (b)	Total
2010	2,398	133	2,531
2015	2,714	142	2,856
2020	3,202	173	3,375
2025	3,491	198	3,689
2030	3,781	224	4,005
Average Annual Growth Rate			
2010-2030	2.3%	2.6%	2.3%

(a) For some carriers it was not possible to distinguish cargo aircraft operations from passenger aircraft operations in the Airport data. For the purpose of this table, those operations were assigned to the category accounting for the majority of the carriers operations.
(b) Assumed to increase at same rate as all-cargo aircraft departures from

Sources: As noted and HNTB analysis.

10.3. Aircraft Operations Forecast Summary

The demand forecasts of annual aircraft operations at ANC, FAI, and LHD are summarized in Tables 10.9, 10.10, and 10.11.

At ANC, 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.

Total aircraft operations at FAI are projected to increase from 121,981 in 2010 to 156,128 in 2030, an average annual increase of 1.2 percent. Like ANC, all-cargo operations are the fastest growing category and military is the slowest growing category.

Table 10.9

Summary of Aircraft Operations Forecast
Anchorage

Year	Passenger (a)	All-Cargo (a)	Air Taxi and Other	General Aviation	Military	Total
2010	86,543	81,612	6,948	36,060	4,401	215,564
2015	90,504	86,348	7,726	38,152	2,267	224,997
2020	92,656	99,114	8,375	39,863	2,267	242,275
2025	97,080	110,155	8,912	43,324	2,267	261,738
2030	101,504	121,196	9,262	47,713	2,267	281,942
Average Annual Growth Rate						
2010-2030	0.8%	2.0%	1.4%	1.4%	-3.3%	1.4%

(a) Aircraft departure forecasts multiplied by two.

Sources: Tables 5.7, 6.7, 7.3, 8.1, and 9.1.

Table 10.10

Summary of Aircraft Operations Forecast
Fairbanks

Year	Passenger (a)	All-Cargo (a)	Air Taxi and Other	General Aviation	Military	Total
2010	36,496	3,337	8,328	71,099	2,721	121,981
2015	39,828	3,748	9,261	74,456	2,830	130,123
2020	41,950	4,426	10,039	77,003	2,830	136,248
2025	44,304	4,835	10,683	82,834	2,830	145,486
2030	46,658	5,244	11,101	90,295	2,830	156,128
Average Annual Growth Rate						
2010-2030	1.2%	2.3%	1.4%	1.2%	0.2%	1.2%

(a) Aircraft departure forecasts multiplied by two.

Sources: Tables 5.8, 6.8, 7.4, 8.2, and 9.2.

Table 10.11 summarizes the LHD forecast of aircraft operations. Estimated aircraft operations at Lake Hood are projected to increase from 59,214 in 2010 to 78,348 in 2030, an average annual increase of 1.4 percent.

Tables 10.12 and 10.13 are similar to Tables 10.9 and 10.10 with the exception that the operations forecasts are reconciled to the airports' landing statistics. Since the airport landing reports capture some operators missed by the US DOT T100 data, the effective difference is that some of the air taxi and other operations are reclassified as all-cargo or passenger aircraft operations. Total forecast operations remain the same in both sets of data.

Tables I.1, I.2, and I.3 summarize the peak operations forecasts for ANC, FAI, and LHD. The tables include projected monthly, average busy and peak 60-minute forecasts for total operations at the three airports.

Graphic summaries of passenger enplanement, cargo tonnage, and aircraft operations forecasts for ANC, FAI, and LHD are presented in Exhibits 10.1, 10.2, and 10.3.

Table 10.11

Summary of Aircraft Operations Forecast
Lake Hood

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	15,115	47,534	-	62,649
2020	-	-	15,793	49,667	-	65,460
2025	-	-	17,164	53,978	-	71,142
2030	-	-	18,902	59,446	-	78,348
Average Annual Growth Rate						
2010-2030	-	-	1.4%	1.4%	-	1.4%

Sources: Tables 7.5 and 8.1.

Table 10.12

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Anchorage

Year	Passenger (a)	All-Cargo (a)	Air Taxi and Other (b)	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%

(a) Aircraft landings forecasts multiplied by two. Includes some operations classified as air taxi and other in Table 10.3.
(b) Total operations less all other categories

Sources: Tables 8.1, 9.1, 10.3, 10.7 and HNTB analysis.

Table 10.13

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Fairbanks

Year	Passenger (a)	All-Cargo (a)	Air Taxi and Other (b)	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	44,074	5,712	3,051	74,456	2,830	130,123
2020	46,464	6,750	3,201	77,003	2,830	136,248
2025	49,064	7,378	3,380	82,834	2,830	145,486
2030	51,664	8,010	3,329	90,295	2,830	156,128
			Average Annual Growth Rate			
2010-2030	1.2%	2.3%	1.2%	1.2%	0.2%	1.2%

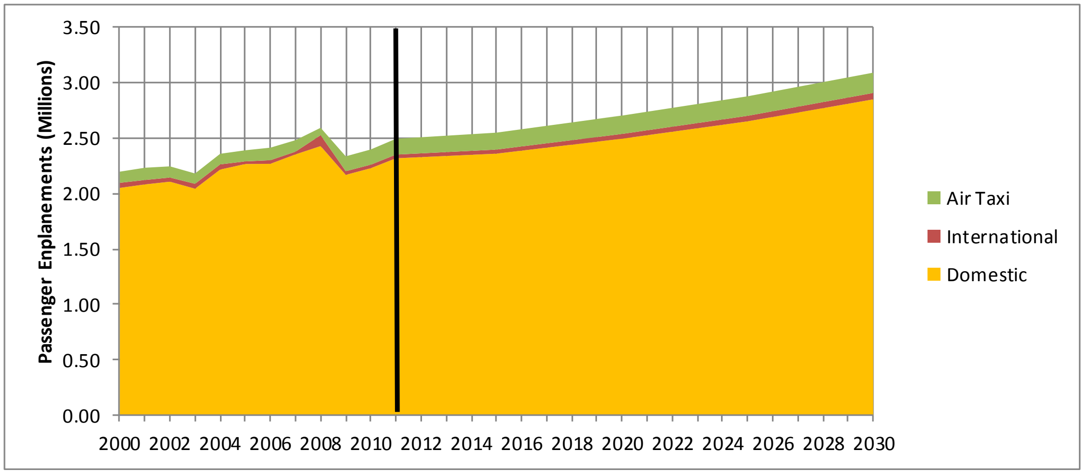
(a) Aircraft landings forecasts multiplied by two. Includes some operations classified as air taxi and other in Table 10.10.
(b) Total operations less all other categories

Sources: Tables 8.2, 9.2, 10.4, 10.8 and HNTB analysis.

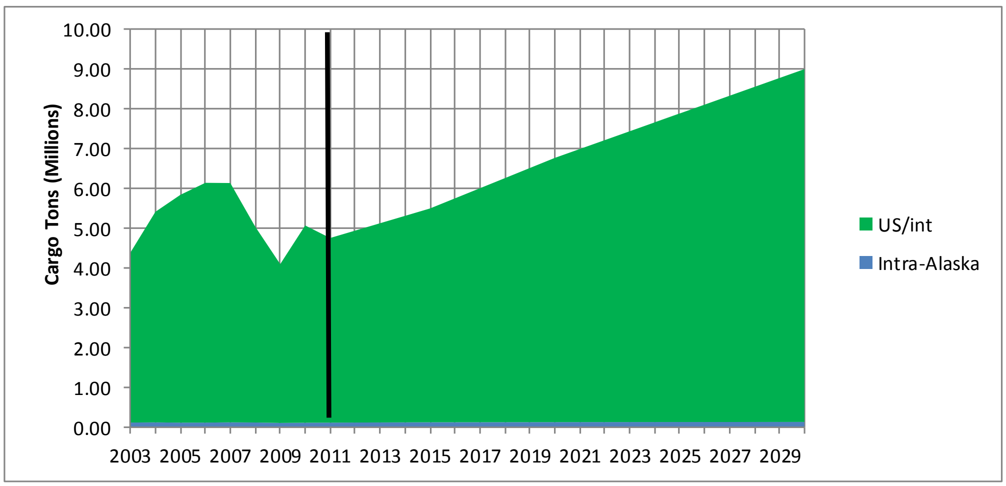
Exhibit 10.1

Summary of Projected ANC Activity

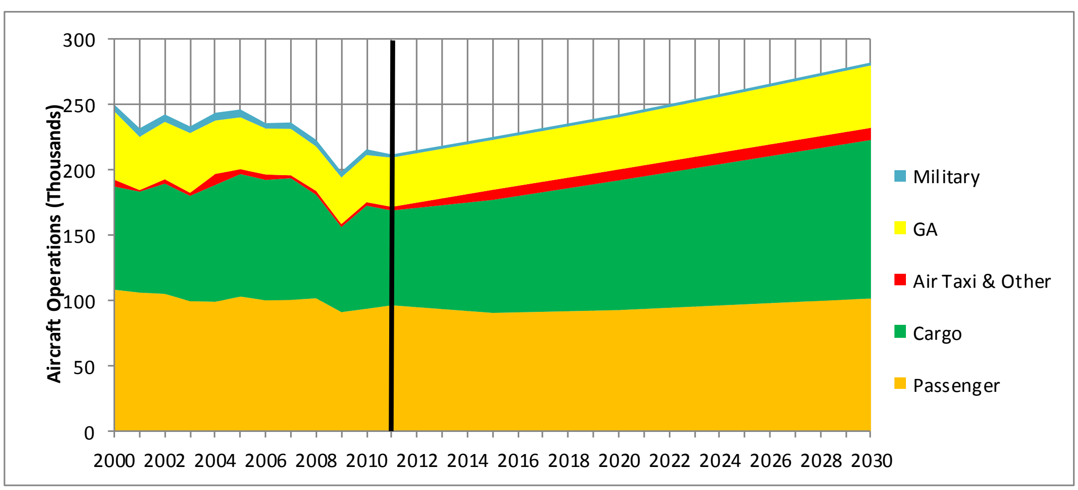
Passenger Enplanements



Inbound and Outbound Cargo Tonnage



Aircraft Operations

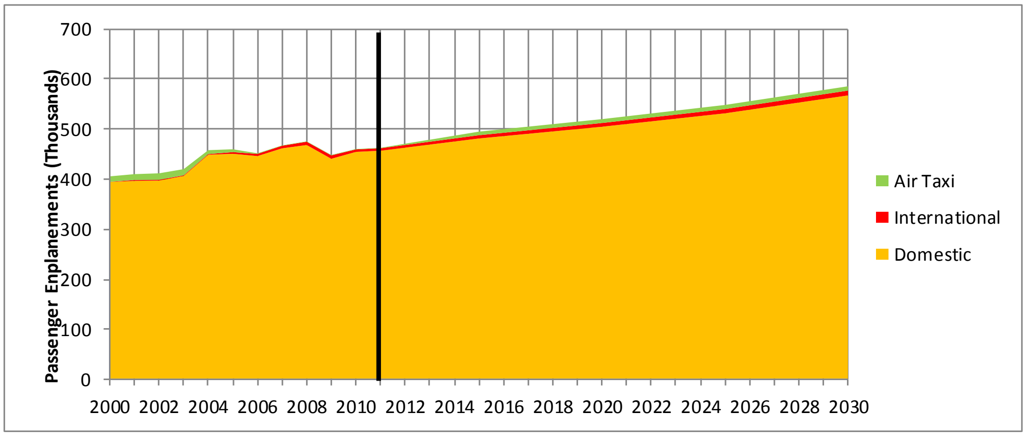


Source: HNTB analysis.

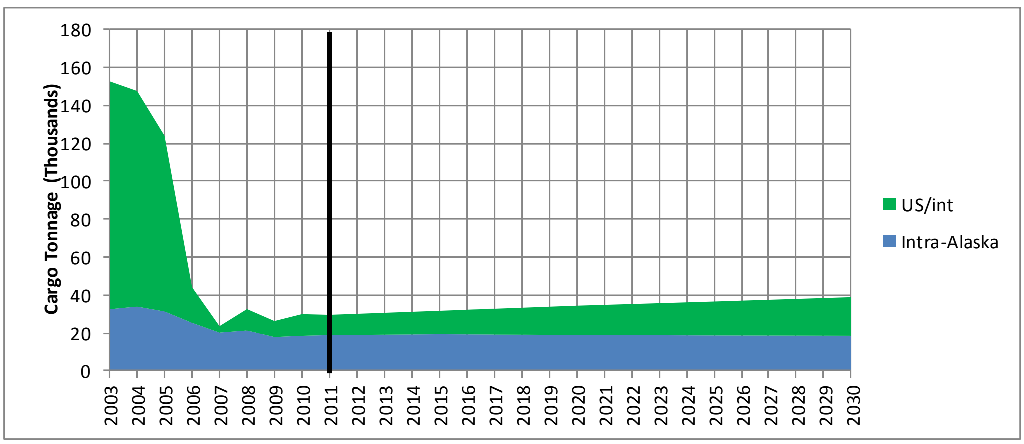
Exhibit 10.2

Summary of Projected FAI Activity

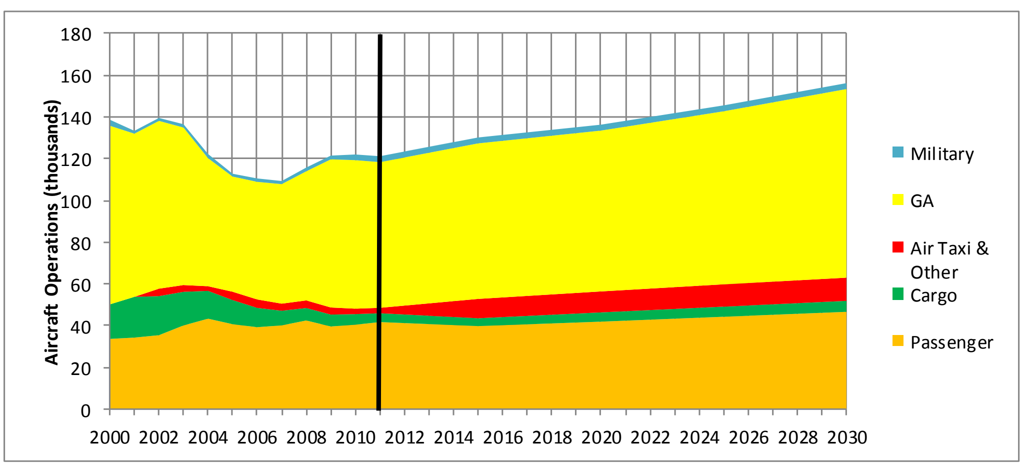
Passenger Enplanements



Inbound and Outbound Cargo Tonnage



Aircraft Operations

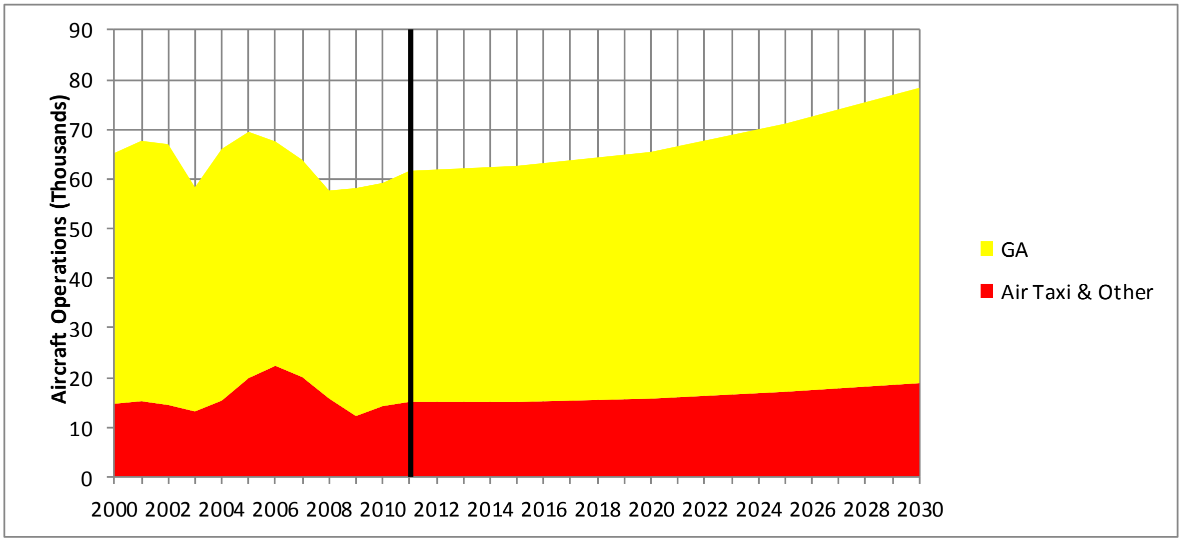


Source: HNTB analysis.

Exhibit 10.3

Summary of Projected LHD Activity

Aircraft Operations



Source: HNTB analysis.

10.4. Forecast Comparisons

Table 10.14 compares the ANC AIAS 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.

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.

Table 10.14

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%	

Sources: Tables 10.1, 10.9 and 10.11, FAA 2011 Terminal Area Forecast and HNTB analysis.

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.

Table 10.15 provides a comparison of the AIAS forecast for FAI with the TAF. As shown, the AIAS passenger enplanement forecast is much more conservative (1.2 percent average annual growth rate) than the TAF (2.1 percent average annual growth rate). Again, this is because of the more conservative economic growth and fuel cost assumptions.

The AIAS and TAF commercial operations forecasts for FAI are very similar. As a result, the 2030 projections are within 1.0 percent of each other in this category.

The AIAS forecasts higher total operations growth (1.2 percent per year) than the TAF (0.5 percent per year) primarily because of a higher general aviation aircraft operations forecast. Therefore, by the end of the forecast period, the AIAS operations forecast for FAI exceeds the TAF by more than 14 percent.

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 forecasts for ANC and FAI meet these criteria.

10.5. Conclusion

The above baseline 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.

Table 10.15

Comparison with FAA Terminal Area Forecast
Fairbanks

Category and Year	AIAS Forecast	TAF	Percent Difference
Passenger Enplanements			
2010	458,130	431,734	6.1%
2015	485,645	476,418	1.9%
2020	509,987	530,794	-3.9%
2025	537,803	591,467	-9.1%
2030	574,734	659,179	-12.8%
Average Annual Growth Rate			
2010-2030	1.1%	2.1%	
Commercial Operations			
2010	48,161	48,043	0.2%
2015	52,837	51,031	3.5%
2020	56,415	54,603	3.3%
2025	59,822	58,436	2.4%
2030	63,003	62,550	0.7%
Average Annual Growth Rate			
2010-2030	1.4%	1.3%	
Total Operations			
2010	121,981	123,844	-1.5%
2015	130,123	122,025	6.6%
2020	136,248	126,412	7.8%
2025	145,486	131,068	11.0%
2030	156,128	136,016	14.8%
Average Annual Growth Rate			
2010-2030	1.2%	0.5%	

Sources: Tables 10.2 and 10.10, FAA 2011 Terminal Area Forecast and HNTB analysis.

11.0. Forecast Scenarios

The assumptions used in developing the forecasts are likely to vary over the forecast period, and the variations could be material. One way to explore the impact of these variations is to develop alternative scenarios in which the impact on the forecast of a variation in a critical assumption is evaluated. The baseline case forecast provides the basis for determining what additional facilities or policies will be required to manage capacity at the AIAS airports through 2030. The AIAS must be able to respond to a range of contingencies that could occur, taking into account political and economic changes, technological changes, and changes in the policies of individual airlines. The recommended development program must be flexible enough to accommodate these contingencies.

To address these potential changes, seven alternative forecast scenarios were selected with the assistance of DOT&PF staff and the airlines. Much of the background information used to develop the scenarios is provided in previous chapters. The seven scenarios differ from the FAA-approved baseline forecast and include:

- Scenario 1 - No-Action
- Scenario 2 - High Fuel Price
- Scenario 3 - High Economic Growth/Increased International Air Cargo
- Scenario 4 - Star Burst
- Scenario 5 - Low Fuel Price
- Scenario 6 - Updated Base Year
- Scenario 7 – Flat Growth

The alternative scenario forecasts for passenger enplanements, cargo tonnage and aircraft operations at ANC, FAI, and LHD are detailed in Appendix L. Tables L.1 through L.8 in the appendix provide the baseline forecasts for comparison.

11.1. Scenario 1 – No Action

The No Action Scenario assumes no airfield, parking, or terminal expansion at ANC, FAI, or LHD, and no policy initiatives to transfer traffic between the two AIAS airports.

Based on the capacity analysis, airlines will begin to adjust operations to manage delay when unconstrained forecast exceeds 258,000 annual operations estimated to occur around 2024. The focus of the analysis was on the afternoon peak (1400-1700) when demand is anticipated to exceed throughput capacity for several hours after 2025. Airlines will react differently to delay, depending on the cost of delay to their operations and their options for managing the delay. The following assumptions were made for individual categories:

- Integrated carrier flights that were at risk of missing a sort (those departing after 1600) were assumed to be redirected to another hub in Northeast Asia or the Western U.S., or to become overflights.
- Tech stop operators during this time period were assumed to overfly Alaska if the payload penalty was minimal. Otherwise, they were assumed to shift operations to FAI to the extent possible with current FAI ramp area.
- Aircraft serving local demand (passenger, intra-state cargo, and GA) were assumed to adjust schedules to minimize operations during the peak period.

Tables L.9 through L.16 present the No Action forecast results. Note that although the annual capacity of ANC is estimated at 258,000 operations, growth can continue afterwards during off-peak periods, but at a slower pace than under the baseline forecast.

11.2. Scenario 2 – High Fuel Price

The High Fuel Price Scenario assumes the U.S. Department of Energy's high fuel price scenario occurs. Under the High Fuel Price Scenario, jet fuel prices would be higher than under the baseline case as shown below:

Year	Baseline	High
2011	\$2.94/gal.	\$2.94/gal.
2015	\$3.23/gal.	\$3.89/gal.
2020	\$3.66/gal.	\$4.35/gal.
2025	\$3.98/gal.	\$4.78/gal.
2030	\$4.19/gal.	\$5.04/gal.

To remain financially viable, air carriers would need to pass on higher fuel prices through higher air fares and cargo rates, thereby lowering demand.

In addition, based on DOE analysis, each \$10/barrel increase in crude oil prices is assumed to lower Gross Domestic Product (GDP) and income levels by 0.7%.[3] This reduced economic growth would also lower demand.

Tables L.17 through L.24 show the combined negative impacts of higher costs of air travel and lower economic growth resulting from the High Fuel Price Scenario.

11.3. Scenario 3 – High Economic Growth/Increased International Air Cargo

The High Economic Growth/Increased International Air Cargo Scenario assumes that the State, U.S., and world economy will grow more rapidly than currently expected. Income and GDP growth rates would correspond to those in the FAA's optimistic

[3] U.S. Energy Information Administration, Economic Effects of High Oil Prices, 2006.

economic and aviation activity forecasts as published in the FAA Aerospace Forecast: Fiscal Years 2011-2031. This scenario also uses the average Boeing/Airbus Asia/North America air cargo forecast growth rates as the basis for the international air cargo forecasts, resulting in higher cargo tonnage and operation forecasts for ANC and FAI. Consistent with these forecasts, GDP and income levels are assumed to grow 0.5% per year faster than under the Baseline Forecast after 2012 and total Asia/North America air cargo is assumed to grow at an average of 6.9 percent per year.

As shown in Tables L.25 through L.32, higher economic growth and income levels would significantly increase demand for passenger travel and air cargo.

11.4. Scenario 4 – Starburst

The Starburst Scenario assumes major transfer operations at Alaska international airports resulting in large aircraft coming in from Asia and off-loading cargo to a many smaller aircraft flying to a multitude of North American markets. The scenario assumes that airlines take extensive advantage of the Stevens Act to transfer cargo at ANC. An example would a shipment that currently flies on an aircraft that departs from Shanghai, takes on fuel at ANC, arrives at Chicago O'Hare and is then trucked back to its final destination at Minneapolis. Under this scenario, the shipment would still fly on an aircraft departing from Shanghai and arriving at ANC. However, at ANC the shipment would be transferred to a smaller aircraft flying directly to Minneapolis, thereby eliminating the cost of the truck back-haul.

Specifically, the scenario assumes:

- Integrated carriers such as FedEx and UPS would continue their current operations.
- Carriers accounting for 50 percent of the tech stop cargo would opt to take advantage of the transfer rights at ANC and FAI.
- The fleet mix on Asia-Alaska segments (747/777/MD11) is assumed to be the same as under the Baseline Forecast because of the long distances involved.
- Cargo on Alaska/Lower 48 segments is assumed to be transferred to smaller aircraft (Boeing 757/767). No Boeing 737 classic aircraft are assumed because of their limited range.
- The Scenario assumed to be halfway implemented by 2015, and fully implemented by 2020.

The result would be that less Asia/North America cargo would be lost to overflying than under the Baseline Forecast, and that there would be many more aircraft operations by smaller aircraft. Tables L.33 through L.40 provide the details of this forecast scenario.

11.5. Scenario 5 – Low Fuel Price

The Low Fuel Price Scenario is the reverse of the High Fuel Price Scenario and assumes the U.S. Department of Energy's low fuel price scenario occurs. Under the Low Fuel Price Scenario, jet fuel prices would be lower than under the baseline case as shown below:

Year	Baseline	Low
2011	$2.94/gal.	$2.94/gal.
2015	$3.23/gal.	$1.60/gal.
2020	$3.66/gal.	$1.58/gal.
2025	$3.98/gal.	$1.55/gal.
2030	$4.19/gal.	$1.55/gal.

The relationship between oil prices and GDP identified in Scenario 2 is also assumed to apply in this scenario and, therefore, each $10/barrel decrease in crude oil prices is expected to increase GDP and income levels by 0.7%.

As a result of competition, air carriers are assumed to pass on lower fuel prices through lower air fares and cargo rates. The combination of lower air travel costs and a stronger economy would be expected to significantly increase aviation activity at ANC and FAI. Tables L.41 through L.48 provide the details for this scenario.

11.6. Scenario 6 – Updated Base Year

The updated base year scenario is based on the recognition that current activity, especially air cargo activity, is tracking below interpolated forecast levels. Therefore, this scenario uses the best available estimate of current activity levels and applies the baseline forecast growth rates to the estimated current activity levels. Specifically, the following assumptions are applied in the scenario:

- 2012 annual passenger, cargo and aircraft operation levels were estimated by extrapolating from January – September data;
- 2013 levels were assumed to be the same as 2012 because of anticipated constraints on economic growth (U.S. uncertainty on fiscal policy, slowing Asian economies, continuing Euro crisis); and
- Growth was assumed to resume after 2013, at the same rates as in the Baseline Forecast.

When compared to the Baseline Forecast, the Updated Base Year Scenario generates lower projections for ANC, very similar projections for FAI, and higher activity projections for LHD. Tables L.49 through L.56 provide the details for Scenario 6.

11.7. Scenario 7 – Flat Growth

Discussions with the airlines during the review of the forecasts indicated that, in addition to the adverse impacts of the slow economy and high fuel cost, there is an ongoing change in air carrier business models that may further constrain growth. It is too soon to discern the details of these potential business model changes, so a quantifiable analysis of their impacts on the forecast is not possible. As an alternative, a flat growth scenario was developed.

The Flat Growth Scenario uses the Scenario 6 – Updated Base Year assumptions for 2012 and 2013, and then assumes all passenger, cargo and aircraft operations activity remains constant at 2013 levels. Tables L.57 through L.64 provide the details for this scenario.

11.8. Forecast Scenario Comparison

This section provides a comparison of the baseline and scenario forecasts for ANC, FAI, and LHD.

The alternative passenger enplanement forecasts are presented in Tables 11.1, 11.2 and 11.3 and in Exhibit 11.1. The Low Fuel Cost case (Scenario 5) generates the highest enplanement forecast for all three airports, because of the combined impacts of lower travel costs and a stronger economy resulting from the reduced fuel costs. As would be expected, the High Economic Growth forecast (Scenario 3) is also higher than the Baseline case. The Updated Base Year forecast is higher than the Baseline forecast for both FAI and LHD because passenger enplanements have tracked above the forecast between 2010 and 2012.

The High Fuel Cost (Scenario 2) passenger enplanement forecast is lower than the Baseline forecast for all three airports as a result of higher transportation costs and lower economic growth. The Flat Forecast (Scenario 7) is the lowest of all the scenarios for both ANC and FAI. However, for LHD it compares well with the Baseline forecast because of the actual growth that has occurred since 2010.

The Starburst forecast (Scenario 4) is the same as the Baseline forecast because the assumptions for this scenario are not expected to have any measurable impact on passenger enplanements. The No-Action (Scenario 1) enplanement forecast is also the same as the Baseline forecast, because it is expected that passenger carriers would be able to accommodate demand with schedule adjustments through 2030. At some point after 2030, however, the continued growth in passenger demand coupled with no increases in airport capacity at ANC would result in a divergence between the Baseline and No-Action passenger forecasts at ANC.

Table 11.1

ANCHORAGE INTERNATIONAL AIRPORT
Comparison of Total Enplanement Forecasts by Scenario

Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	2,398,512	2,398,512	2,398,512	2,398,512	2,398,512	2,398,512	2,398,512	2,398,512
2015	2,549,955	2,549,955	2,469,895	2,584,692	2,549,955	2,788,564	2,527,433	2,467,701
2020	2,703,825	2,703,825	2,632,951	2,802,667	2,703,825	2,979,175	2,679,469	2,467,701
2025	2,877,921	2,877,921	2,795,022	2,993,539	2,877,921	3,213,936	2,851,937	2,467,701
2030	3,091,170	3,091,170	2,993,637	3,263,775	3,091,170	3,498,695	3,063,903	2,467,701
				Average Annual Growth Rate				
2010-2030	1.3%	1.3%	1.1%	1.6%	1.3%	1.9%	1.2%	0.1%

Sources: Tables L.1, L.9, L.17, L.25, L.33, L.41, L.49, and L.57.

Table 11.2

FAIRBANKS INTERNATIONAL AIRPORT
Comparison of Total Enplanement Forecasts by Scenario

Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	464,569	464,569	464,569	464,569	464,569	464,569	464,569	464,569
2015	492,805	492,805	474,409	499,460	492,805	548,815	493,422	482,081
2020	517,749	517,749	498,706	536,525	517,749	590,438	518,491	482,081
2025	546,063	546,063	524,115	570,131	546,063	633,730	546,929	482,081
2030	583,317	583,317	558,257	619,115	583,317	687,233	584,294	482,081
				Average Annual Growth Rate				
2010-2030	1.1%	1.1%	0.9%	1.4%	1.1%	2.0%	1.2%	0.2%

Sources: Tables L.4, L.12, L.20, L.28, L.36, L.44, L.52, and L.60.

Table 11.3

Lake Hood Airport
Comparison of Total Enplanement Forecasts by Scenario

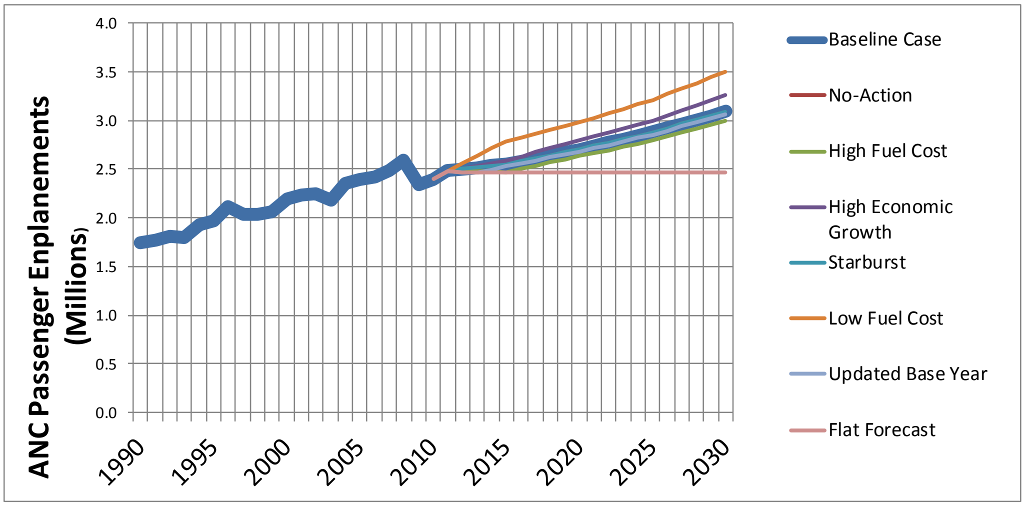
Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	19,789	19,789	19,789	19,789	19,789	19,789	19,789	19,789
2015	20,937	20,937	19,626	21,253	20,937	25,302	27,720	27,112
2020	21,876	21,876	20,307	22,767	21,876	28,048	28,963	27,112
2025	23,776	23,776	22,016	25,367	23,776	31,365	31,478	27,112
2030	26,183	26,183	24,173	28,643	26,183	35,174	34,666	27,112
Average Annual Growth Rate								
2010-2030	1.4%	1.4%	1.0%	1.9%	1.4%	2.9%	2.8%	1.6%

Sources: Tables L.7, L.15, L.23, L.31, L.39, L.47, L.55, and L.63.

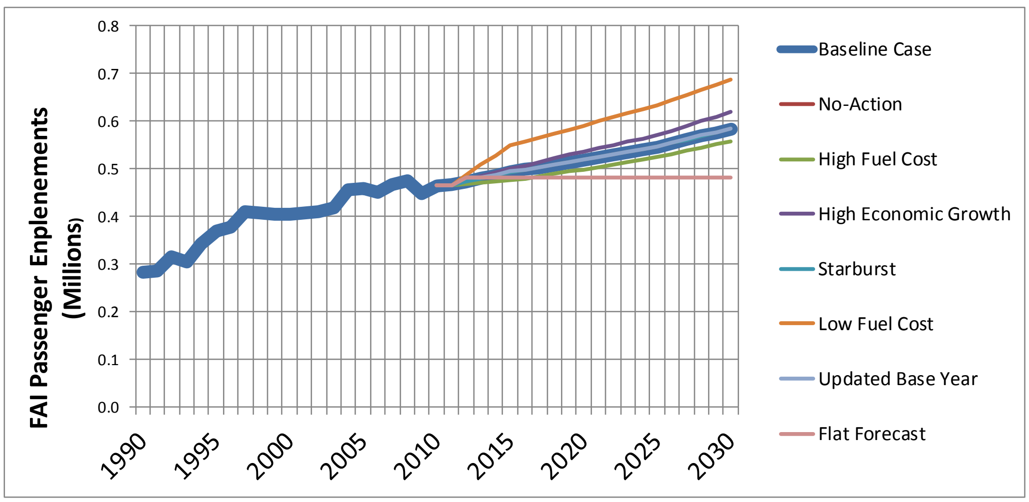
Exhibit 11.1

Summary of Forecast Scenarios: Passenger Enplanements

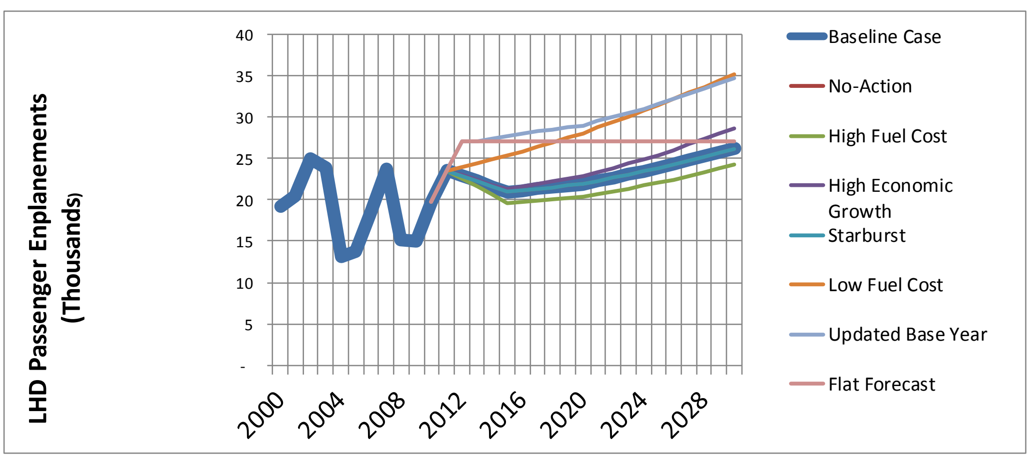
Anchorage International Airport



Fairbanks International Airport



Lake Hood Airport



Sources: Tables 11.1, 11.2 and 11.3.

Tables 11.4 and 11.5, and Exhibit 11.2 compare the cargo tonnage forecasts for the Baseline case and the scenarios for ANC and FAI. The High Economic Growth forecast (Scenario 3) shows the highest growth rate for ANC since it also incorporates the aggressive Boeing and Airbus international air cargo projections. The Low Fuel Cost forecast (Scenario 5) is also higher than the Baseline forecast because of lower transport costs coupled with higher economic growth under this scenario. In addition, the Starburst forecast (Scenario 4) is higher than the Baseline forecast because less cargo would be lost to overlying. For FAI, the No-Action forecast (Scenario 1) is the highest of all the scenarios because of the diverted cargo resulting from capacity constraints at ANC.

Table 11.4

ANCHORAGE INTERNATIONAL AIRPORT
Comparison of Total Air Cargo Tonnage Forecasts by Scenario

Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	4,948,523	4,948,523	4,948,523	4,948,523	4,948,523	4,948,523	4,948,523	4,948,523
2015	5,369,846	5,369,846	4,991,721	5,807,047	5,397,119	6,256,865	4,703,359	4,555,384
2020	6,616,667	6,616,667	6,185,912	7,757,741	6,845,453	7,841,063	5,796,344	4,555,384
2025	7,710,538	7,657,545	7,250,492	10,407,175	8,433,232	9,066,024	6,766,079	4,555,384
2030	8,803,864	8,261,857	8,314,611	13,056,266	10,020,466	10,290,214	7,738,197	4,555,384
				Average Annual Growth Rate				
2010-2030	2.9%	2.6%	2.6%	5.0%	3.6%	3.7%	2.3%	-0.4%

Sources: Tables L.2, L.10, L.18, L.26, L.34, L.42, L.50, and L.58.

Table 11.5

FAIRBANKS INTERNATIONAL AIRPORT
Comparison of Total Air Cargo Tonnage Forecasts by Scenario

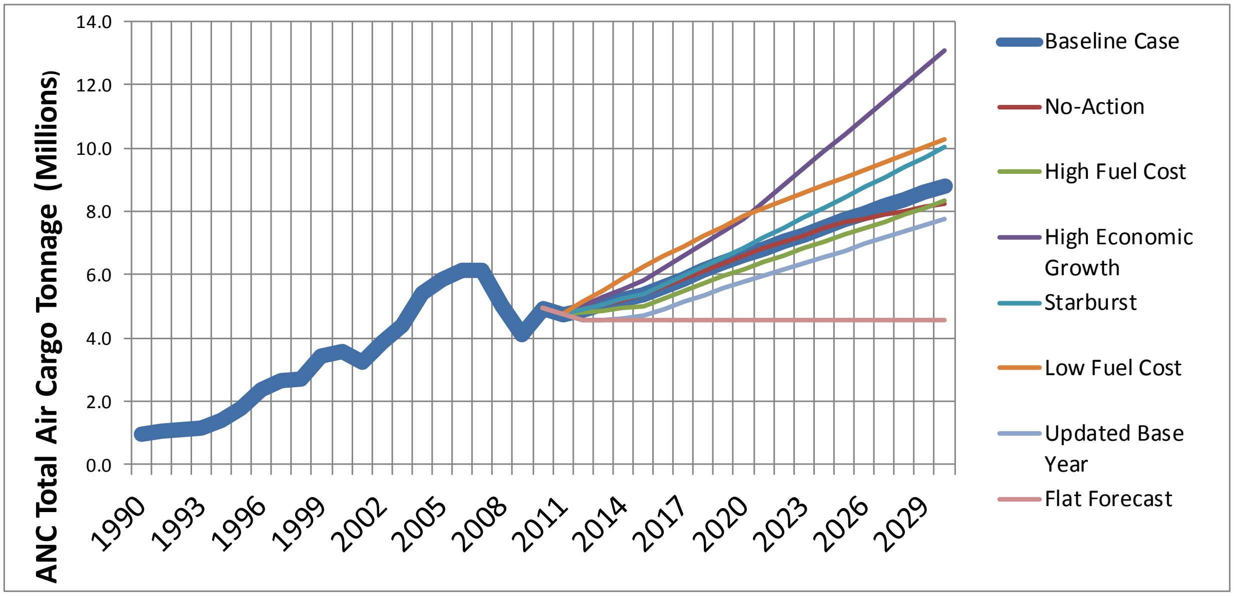
Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	38,391	38,391	38,391	38,391	38,391	38,391	38,391	38,391
2015	40,294	40,294	37,826	41,768	40,381	46,249	28,664	28,314
2020	43,699	43,699	41,010	47,645	44,206	51,616	29,095	28,314
2025	46,447	46,447	43,445	55,244	48,356	55,462	29,576	28,314
2030	49,321	199,588	46,124	62,998	52,632	59,122	30,188	28,314
				Average Annual Growth Rate				
2010-2030	1.3%	8.6%	0.9%	2.5%	1.6%	2.2%	-1.2%	-1.5%

Sources: Tables L.5, L.13, L.21, L.29, L.37, L.45, L.53, and L.61.

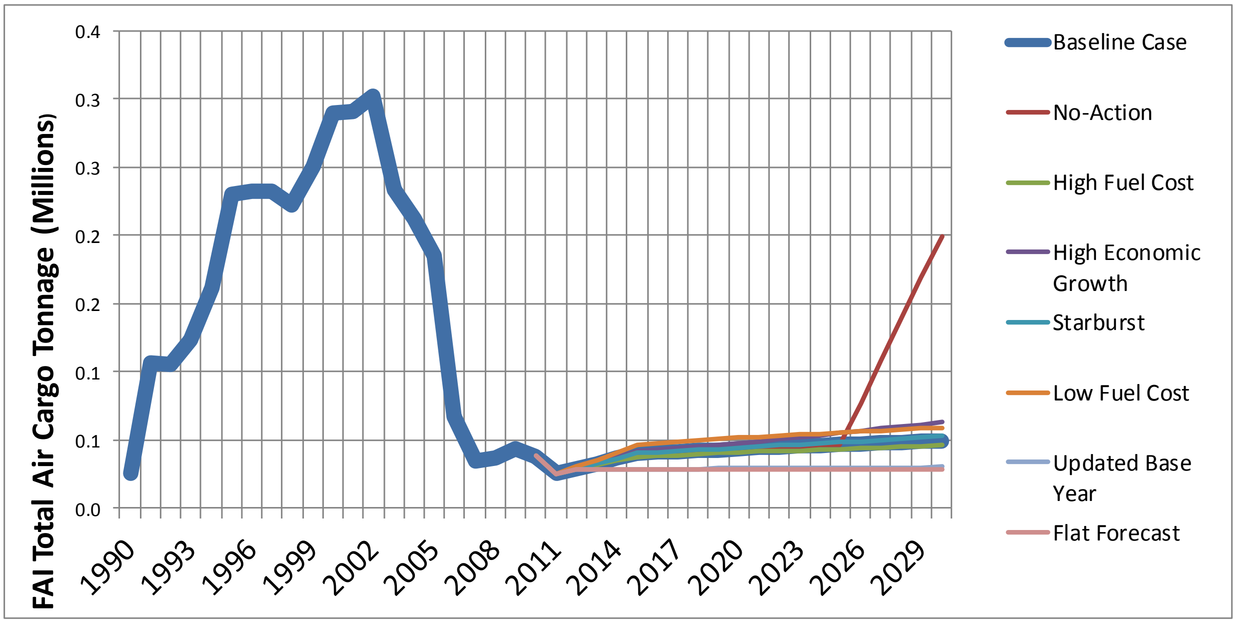
Exhibit 11.2

Summary of Forecast Scenarios: Air Cargo Tonnage

Anchorage International Airport



Fairbanks International Airport



Sources: Tables 11.4 and 11.5.

Unlike FAI, the No-Action Forecast for ANC is lower than the Baseline because of the increase in overflights and diversions resulting from airfield capacity constraints. The higher transportation costs and lower economic growth resulting from the High Fuel Cost Forecast (Scenario 2) cause this scenario to be lower than the baseline for both ANC and FAI. The Updated Base Year forecast is also lower than the Baseline forecast for both airports because of the downturn in air cargo between 2010 and 2012. Finally, the Flat Forecast is the lowest of all the scenarios because no growth is assumed after the 2010-2012 air cargo downturn.

Aircraft operation forecasts for the Baseline and the seven scenarios are presented in Tables 11.6, 11.7, and 11.8, and in Exhibit 11.3. For ANC, the Starburst forecast (Scenario 4) generates the greatest number of operations since on many routes larger aircraft would be replaced by greater numbers of smaller aircraft. The High Economic Growth (Scenario 3) and Low Fuel Cost (Scenario 5) forecasts of operations are also higher than the Baseline, consistent with the passenger and cargo forecasts. At ANC, the No-Action (Scenario 1), High Fuel Cost (Scenario 2), Updated Base Year (Scenario 6), and Flat Forecast (Scenario 7) are all lower than the Baseline.

With the exception of the No-Action Scenario, all the forecast scenarios are unconstrained. However, Exhibit 11.3 shows that most of the forecast scenarios would reach the ANC airfield capacity constraint (258,000 annual operations) sometime within the forecast period. For the Low Fuel Cost Scenario it would be 2016, for the Starburst Scenario it would be 2018, for the High Economic Growth Scenario it would be 2020, for the High Fuel Cost Scenario it would be 2017, and for the Updated Base Year Scenario it would be 2029. Therefore, with the exception of the Flat Forecast, none of the forecast scenarios could be fully realized without capacity improvements or initiatives to transfer demand from ANC to FAI.

At FAI, the Low Fuel Cost forecast (Scenario 5) would generate the greatest number of operations since GA, which accounts for the majority of operations at the Airport, is very sensitive to fuel prices. In addition, the High Economic Growth forecast (Scenario 3) and No-Action forecast (Scenario 1) would be expected to generate more operations at FAI than the Baseline forecast. Although the effects of the Starburst Scenario would mostly affect ANC, the increased number of operations at ANC would increase the number of unscheduled diversions to FAI, and thereby increase FAI operations slightly. The High Fuel Cost forecast (Scenario 2), Updated Base Year forecast (Scenario 6) and Flat Forecast (Scenario 7) are lower than the Baseline forecast at FAI.

At LHD, the Low Fuel Cost forecast (Scenario 5) generates the greatest number of operations among all the scenarios, followed by the High Economic Growth (Scenario 3) and Updated Base Year (Scenario 6) forecasts. The High Fuel Cost (Scenario 2) and Flat Forecast (Scenario 7) generate the fewest operations.

Table 11.6

ANCHORAGE INTERNATIONAL AIRPORT
Comparison of Total Aircraft Operations Forecasts by Scenario

Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	215,564	215,564	215,564	215,564	215,564	215,564	215,564	215,564
2015	224,997	224,997	214,313	232,168	237,867	254,777	210,168	205,914
2020	242,275	242,275	231,401	260,670	278,993	279,842	226,077	205,914
2025	261,738	261,145	249,884	300,413	311,653	305,392	244,034	205,914
2030	281,942	276,008	268,924	341,196	345,054	331,916	262,690	205,914
				Average Annual Growth Rate				
2010-2030	1.4%	1.2%	1.1%	2.3%	2.4%	2.2%	1.0%	-0.2%

Sources: Tables L.3, L.11, L.19, L.27, L.35, L.43, L.51, and L.59.

Table 11.7

FAIRBANKS INTERNATIONAL AIRPORT
Comparison of Total Aircraft Operations Forecasts by Scenario

Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	121,981	121,981	121,981	121,981	121,981	121,981	121,981	121,981
2015	130,123	130,123	123,530	131,602	130,123	151,288	128,793	125,715
2020	136,248	136,248	129,595	140,355	136,252	163,218	134,829	125,715
2025	145,486	145,486	137,958	152,247	145,501	178,772	144,086	125,715
2030	156,128	157,315	147,440	166,062	156,154	195,889	154,946	125,715
				Average Annual Growth Rate				
2010-2030	1.2%	1.3%	1.0%	1.6%	1.2%	2.4%	1.2%	0.2%

Sources: Tables L.6, L.14, L.22, L.30, L.38, L.46, L.54, and L.62.

Table 11.8

LAKE HOOD AIRPORT
Comparison of Total Aircraft Operations Forecasts by Scenario

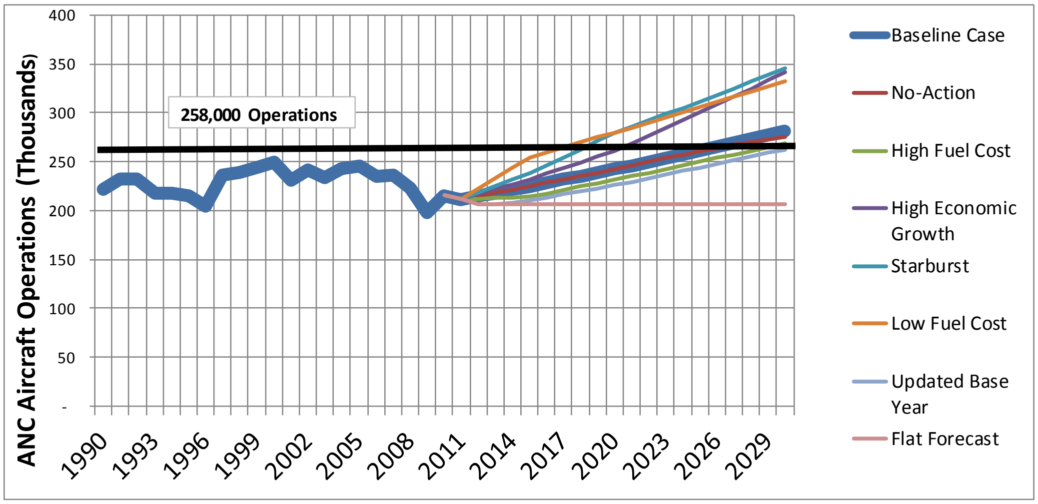
Year	Baseline Case	Scenario 1 No-Action	Scenario 2 High Fuel Cost	Scenario 3 High Economic Growth	Scenario 4 Starburst	Scenario 5 Low Fuel Cost	Scenario 6 Updated Base Year	Scenario 7 Flat Forecast
2010	59,214	59,214	59,214	59,214	59,214	59,214	59,214	59,214
2015	62,649	62,649	58,725	63,594	62,649	75,710	66,444	64,987
2020	65,460	65,460	60,765	68,125	65,460	83,927	69,425	64,987
2025	71,142	71,142	65,879	75,907	71,142	93,852	75,451	64,987
2030	78,348	78,348	72,333	85,708	78,348	105,250	83,094	64,987
				Average Annual Growth Rate				
2010-2030	1.4%	1.4%	1.0%	1.9%	1.4%	2.9%	1.7%	0.5%

Sources: Tables L.8, L.16, L.24, L.32, L.40, L.48, L.56, and L.64.

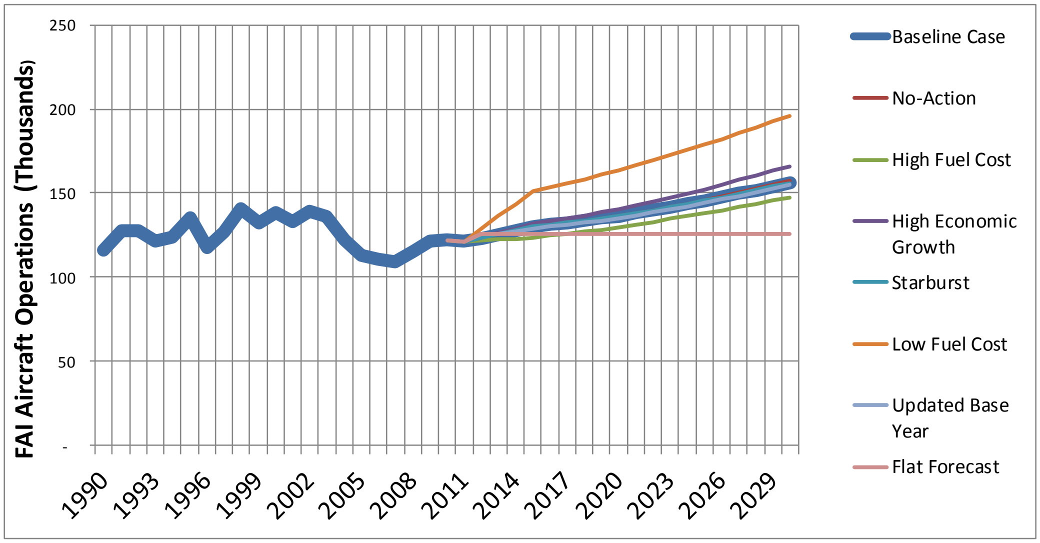
Exhibit 11.3

Summary of Forecast Scenarios: Total Aircraft Operations

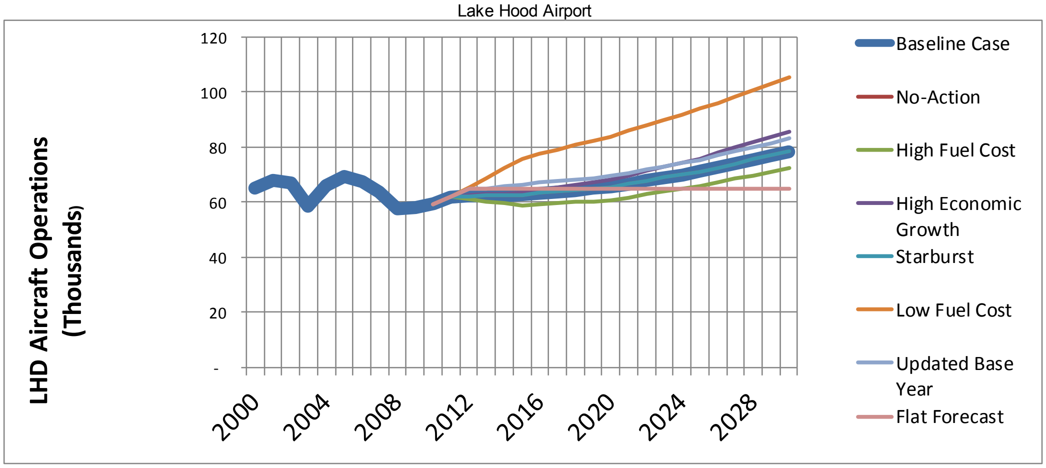
Anchorage International Airport



Fairbanks International Airport



Lake Hood Airport



Sources: Tables 11.6, 11.7 and 11.8.

APPENDIX A

SOCIOECONOMIC DATA

Table A.1

Historical Population

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
1990	267,762	78,067	207,461	553,290	249,622,814
1991	277,407	80,479	212,307	570,193	252,980,941
1992	290,307	82,506	215,923	588,736	256,514,224
1993	296,514	82,979	219,939	599,432	259,918,588
1994	300,188	83,512	219,608	603,308	263,125,821
1995	301,878	81,941	220,593	604,412	266,278,393
1996	302,606	82,880	223,083	608,569	269,394,284
1997	306,480	82,483	224,005	612,968	272,646,925
1998	312,895	83,299	223,738	619,932	275,854,104
1999	317,172	83,390	224,217	624,779	279,040,168
2000	320,434	82,769	224,760	627,963	282,162,411
2001	325,839	85,233	222,642	633,714	284,968,955
2002	332,703	87,329	222,305	642,337	287,625,193
2003	339,131	89,198	220,085	648,414	290,107,933
2004	346,057	92,301	220,928	659,286	292,805,298
2005	351,851	94,451	220,644	666,946	295,516,599
2006	359,341	94,803	221,158	675,302	298,379,912
2007	360,908	97,952	221,440	680,300	301,231,207
2008	365,790	98,351	223,314	687,455	304,093,966
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
			Average Annual Growth Rate		
1990-2010	1.8%	1.1%	0.6%	1.3%	1.1%

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census.

Table A.2

Historical Employment

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
1990	166,969	43,739	128,216	338,924	138,330,900
1991	172,470	44,917	129,769	347,156	137,612,800
1992	173,979	45,630	131,155	350,764	138,166,100
1993	177,780	46,493	133,888	358,161	140,774,400
1994	181,242	46,423	135,679	363,344	144,196,600
1995	182,105	46,681	136,297	365,083	147,915,800
1996	183,521	47,330	138,244	369,095	151,056,200
1997	187,455	48,611	138,432	374,498	154,541,200
1998	192,985	49,347	138,696	381,028	158,481,200
1999	193,932	49,326	137,974	381,232	161,531,300
2000	199,134	50,734	142,499	392,367	165,370,800
2001	204,791	52,639	143,822	401,252	165,510,200
2002	207,475	53,307	144,373	405,155	165,063,100
2003	211,076	53,781	143,645	408,502	166,019,500
2004	215,687	55,109	146,362	417,158	169,026,700
2005	220,332	56,422	148,249	425,003	172,551,400
2006	225,894	57,994	150,516	434,404	176,124,600
2007	229,771	59,293	153,161	442,225	179,899,700
2008	231,920	59,109	154,617	445,646	179,643,900
2009	232,587	58,761	153,300	444,648	174,199,800
2010				447,843	173,752,400
		Average Annual Growth Rate			
1990-2009	1.8%	1.6%	0.9%	1.4%	1.2%

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the

Table A.3

Historical Personal Income (000's of 2010 dollars)

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
1990	10,154,241	2,360,564	6,729,197	19,244,001	7,437,148,872
1991	10,375,881	2,401,962	6,784,047	19,561,889	7,448,397,949
1992	10,767,096	2,506,205	6,869,318	20,142,619	7,699,961,008
1993	11,144,575	2,548,566	7,028,340	20,721,481	7,849,642,877
1994	11,384,018	2,528,878	7,111,685	21,024,582	8,117,748,464
1995	11,317,269	2,569,450	7,205,123	21,091,842	8,385,376,720
1996	11,368,331	2,580,492	7,158,914	21,107,737	8,723,722,900
1997	11,806,668	2,645,499	7,229,816	21,681,983	9,096,724,210
1998	12,300,756	2,740,253	7,276,213	22,317,223	9,687,260,414
1999	12,516,935	2,774,949	7,314,116	22,606,000	10,024,031,536
2000	13,053,671	2,910,395	7,735,816	23,699,882	10,583,048,732
2001	13,981,633	2,946,851	7,881,996	24,810,480	10,778,373,855
2002	14,517,879	3,064,133	7,937,668	25,519,681	10,844,015,269
2003	14,597,507	3,106,382	7,913,282	25,617,171	10,997,658,181
2004	15,156,606	3,197,976	8,039,241	26,393,823	11,359,105,801
2005	15,699,297	3,388,066	8,265,446	27,352,809	11,640,836,459
2006	16,395,895	3,576,572	8,479,272	28,451,739	12,175,793,209
2007	16,970,483	3,750,948	8,881,590	29,603,021	12,533,723,021
2008	17,870,494	3,963,907	9,577,472	31,411,873	12,699,504,035
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010				31,561,749	12,357,113,000
			Average Annual Growth Rate		
1990-2009	2.9%	2.7%	1.7%	2.5%	2.6%

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census.

Table A.4

Historical Per Capita Personal Income (2010 dollars)

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
1990	37,923	30,238	32,436	34,781	29,794
1991	37,403	29,846	31,954	34,307	29,443
1992	37,089	30,376	31,814	34,213	30,018
1993	37,585	30,713	31,956	34,569	30,200
1994	37,923	30,282	32,384	34,849	30,851
1995	37,490	31,357	32,663	34,896	31,491
1996	37,568	31,135	32,091	34,684	32,383
1997	38,523	32,073	32,275	35,372	33,364
1998	39,313	32,897	32,521	35,999	35,117
1999	39,464	33,277	32,621	36,182	35,923
2000	40,737	35,163	34,418	37,741	37,507
2001	42,910	34,574	35,402	39,151	37,823
2002	43,636	35,087	35,706	39,729	37,702
2003	43,044	34,826	35,956	39,507	37,909
2004	43,798	34,647	36,389	40,034	38,794
2005	44,619	35,871	37,461	41,012	39,391
2006	45,628	37,726	38,340	42,132	40,806
2007	47,022	38,294	40,108	43,515	41,608
2008	48,855	40,304	42,888	45,693	41,762
2009	47,039	39,588	40,893	44,003	39,537
2010				44,205	39,945
			Average Annual Growth Rate		
1990-2009	1.1%	1.4%	1.2%	1.2%	1.5%

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census.

APPENDIX B

DETAILED FUEL COST AND FARE PROJECTIONS

Table B.1

Historical Average Domestic Fares at ANC (2010 $)

	Average Fares for Outbound Originations from ANC			
Year	**To Fairbanks**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	148.83	217.03	388.89	307.89
1991	140.99	205.84	358.04	287.74
1992	133.32	184.46	299.32	247.93
1993	126.29	178.72	301.30	247.88
1994	104.33	166.90	291.88	239.22
1995	110.19	161.31	291.76	236.22
1996	79.93	176.78	268.43	223.03
1997	101.08	157.40	253.74	211.32
1998 (a)	115.43	193.17	273.73	236.71
1999	113.51	159.54	262.86	221.12
2000	116.93	159.80	272.18	229.00
2001	121.92	152.75	263.44	221.83
2002	125.37	174.69	246.20	220.37
2003	128.51	155.27	249.23	214.50
2004	123.12	142.95	240.95	206.97
2005	124.75	142.99	232.31	202.59
2006	129.76	146.75	262.36	223.67
2007	125.33	148.53	267.00	225.27
2008	117.37	151.92	285.55	234.49
2009	118.11	148.59	278.94	232.80
2010	119.78	148.17	269.83	226.90
	Average Annual Growth Rate			
1990-2000	-2.4%	-3.0%	-3.5%	-2.9%
2000-2010	0.2%	-0.8%	-0.1%	-0.1%
1990-2010	-1.1%	-1.9%	-1.8%	-1.5%

(a) 1998 data to rest of Alaska suspected to be in error.

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table B.2

Historical Average Domestic Fares at FAI (2010 $)

	Average Fares for Outbound Originations from FAI			
Year	To Anchorage	To Rest of Alaska	To Other U.S.	Total
1990	146.27	247.89	448.45	290.09
1991	138.88	278.55	398.75	278.18
1992	136.18	208.76	348.35	242.95
1993	125.55	202.08	340.47	233.50
1994	104.29	199.49	350.10	230.91
1995	109.73	182.33	351.39	234.30
1996	78.70	183.25	344.72	200.43
1997	100.89	170.35	318.46	204.49
1998 (a)	115.32	383.57	338.35	264.69
1999	113.06	163.26	340.17	221.38
2000	116.88	166.04	339.61	227.39
2001	120.76	161.53	338.94	225.16
2002	125.33	174.28	313.30	219.96
2003	128.26	154.51	327.89	227.60
2004	123.30	144.97	328.53	223.81
2005	124.35	143.08	313.17	221.83
2006	129.89	143.06	338.97	233.63
2007	123.55	141.71	329.45	229.60
2008	116.34	141.77	340.43	230.20
2009	117.30	140.62	349.73	238.12
2010	120.43	143.73	347.03	237.69
	Average Annual Growth Rate			
1990-2000	-2.2%	-3.9%	-2.7%	-2.4%
2000-2010	0.3%	-1.4%	0.2%	0.4%
1990-2010	-1.0%	-2.7%	-1.3%	-1.0%

(a) 1998 data to rest of Alaska suspected to be in error.

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table B.3

Historical Average Domestic Revenue per Passenger Mile at ANC (2010 cents)

	Average Yields for Outbound Originations from ANC			
Year	**To Fairbanks**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	57.11	59.70	15.39	19.61
1991	54.08	57.93	14.01	17.96
1992	51.09	49.99	12.40	15.93
1993	48.44	51.81	12.12	15.31
1994	39.99	45.18	11.95	14.54
1995	42.24	48.96	11.95	14.78
1996	30.74	51.45	11.18	14.07
1997	38.89	45.23	10.48	13.16
1998 (a)	44.32	54.55	11.05	14.24
1999	43.62	44.69	10.35	12.80
2000	44.91	45.30	10.62	12.92
2001	46.74	42.63	10.07	12.26
2002	48.14	41.39	9.27	11.21
2003	49.30	41.91	9.47	11.67
2004	47.25	38.42	9.10	10.96
2005	47.89	38.52	8.71	10.50
2006	49.76	39.67	9.72	11.55
2007	48.13	38.11	9.88	11.79
2008	44.98	37.07	10.57	12.61
2009	45.39	38.61	10.39	12.25
2010	46.00	37.87	9.96	11.80
	Average Annual Growth Rate			
1990-2000	-2.4%	-2.7%	-3.6%	-4.1%
2000-2010	0.2%	-1.8%	-0.6%	-0.9%
1990-2010	-1.1%	-2.3%	-2.2%	-2.5%

(a) 1998 data to rest of Alaska suspected to be in error.

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table B.4

Historical Average Domestic Revenue per Passenger Mile at FAI (2010 cents)

	Average Yields for Outbound Originations from FAI			
Year	**To Fairbanks**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	56.19	60.32	16.99	23.54
1991	53.19	68.47	15.01	21.34
1992	52.24	50.31	13.72	19.23
1993	48.16	50.76	13.19	18.26
1994	39.99	46.11	13.50	17.56
1995	42.10	48.10	13.51	17.40
1996	30.21	46.87	14.15	17.72
1997	38.76	44.08	13.10	17.13
1998 (a)	44.32	101.52	13.46	20.94
1999	43.36	43.36	13.40	17.44
2000	44.91	41.87	13.38	17.18
2001	46.37	41.98	13.08	17.09
2002	48.14	39.01	12.20	16.19
2003	49.30	40.05	12.25	15.94
2004	47.25	37.17	12.12	15.57
2005	47.78	36.20	11.46	14.61
2006	49.86	36.92	12.26	15.60
2007	47.39	35.90	11.85	14.89
2008	44.57	36.80	12.25	15.23
2009	44.99	35.72	12.68	15.49
2010	46.20	36.69	12.53	15.48
	Average Annual Growth Rate			
1990-2000	-2.2%	-3.6%	-2.4%	-3.1%
2000-2010	0.3%	-1.3%	-0.6%	-1.0%
1990-2010	-1.0%	-2.5%	-1.5%	-2.1%

(a) 1998 data to rest of Alaska suspected to be in error.

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table B.5

Summary National FAA Forecasts of Yields and Estimated Fares
(2010 Prices)

	FAA Forecasts (a)											
	US Yield			US Trip Length			US Average Fare (c)			US Enplanements		
Year	Mainline	Regional	Average (b)	Mainline	Regional	Average (b)	Mainline	Regional	Average (d)	Mainline	Regional	Total
2005	12.87	22.10	13.89	974.1	434.7	856.1	$125.37	$96.07	$118.96	523.1	146.4	669.5
2006	13.40	21.55	14.36	995.5	450.4	871.4	$133.40	$97.06	$125.12	516.2	152.2	668.4
2007	13.18	21.09	14.11	992.7	451.5	870.2	$130.84	$95.22	$122.78	533.9	156.2	690.1
2008	13.30	21.55	14.32	999.4	460.8	873.5	$132.92	$99.30	$125.06	521.6	159.1	680.7
2009	12.16	17.57	12.85	1,003.0	456.9	869.7	$121.96	$80.28	111.79	476.8	154.0	630.8
2010	12.57	15.95	13.03	1,015.1	464.3	874.9	$127.60	$74.06	$113.97	473.6	161.7	635.3
2011	12.82	16.25	13.29	1,020.8	468.2	879.5	$130.87	$76.08	$116.86	486.8	167.2	654.0
2012	12.99	16.46	13.47	1,025.9	476.6	885.5	$133.26	$78.45	$119.25	502.5	172.6	675.1
2013	12.87	16.31	13.35	1,031.0	484.9	891.0	$132.69	$79.09	$118.95	520.8	179.5	700.3
2014	12.76	16.17	13.24	1,036.2	493.1	896.7	$132.22	$79.73	$118.74	539.7	186.5	726.2
2015	12.65	16.02	13.13	1,041.4	501.5	902.5	$131.74	$80.34	$118.51	558.9	193.6	752.5
2020	12.10	15.32	12.59	1,067.7	539.0	930.0	$129.19	$82.57	$117.05	640.6	225.7	866.3
2025	11.57	14.66	12.06	1,094.6	572.5	956.4	$126.65	$83.93	$115.34	710.3	255.7	966.0
2030	11.07	14.02	11.55	1,122.3	600.9	983.6	$124.24	$84.25	$113.60	785.8	284.9	1,070.7

(a) FAA forecast data from FAA Aerospace Forecasts: Fiscal Years 2011-2031.
(b) Average weighted by number of enplanements in each category.
(c) Estimated by multiplying yield by trip length.
(d) Average weighted by number of enplanements in each category.
(e) Extrapolated.

Sources: As noted and HNTB analysis.

Table B.6

Impact of Jet Fuel Prices on Cost of Air Travel

	Crude Oil Costs (2010 dollars/barrel)			Jet Fuel Costs (cents per gallon)			Jet Fuel Costs per Revenue Passenger Mile (cents) (c)					
Year	Recommended Forecast (a)	FAA Forecast (a)	Difference (percent)	Recommended Forecast (a)	FAA Jet Fuel Cost (b)	Difference (percent)	Recommended Forecast (c)	Implicit FAA Jet Fuel Cost	Difference	Difference Adjusted for Fuel Efficiency (d)	FAA Undajusted Yield (e)	FAA Adjusted Yield (f)
2008	93.44	102.9	10.2%	3.12	2.97	-4.7%	5.71	5.44	0.27	0.27	14.32	14.58
2009	59.04	55.6	-5.8%	1.70	2.06	21.2%	2.95	3.57	-0.62	-0.62	12.85	12.24
2010	74.86	74.1	-1.0%	2.15	2.19	2.0%	3.88	3.95	-0.08	-0.08	13.03	12.95
2011	96.69	73.6	-23.9%	2.94	2.20	-25.2%	5.31	3.97	1.34	1.32	13.29	14.61
2012	96.69	79.5	-17.8%	3.01	2.34	-22.3%	5.44	4.22	1.21	1.19	13.47	14.66
2013	96.69	81.7	-15.6%	3.09	2.42	-21.6%	5.57	4.37	1.20	1.17	13.35	14.52
2014	96.69	82.9	-14.3%	3.16	2.46	-22.1%	5.70	4.44	1.26	1.21	13.24	14.45
2015	96.69	84.4	-12.7%	3.23	2.50	-22.6%	5.83	4.51	1.32	1.26	13.13	14.39
2020	98.65	80.8	-18.1%	3.66	2.42	-33.9%	6.61	4.37	2.24	2.03	12.59	14.61
2025	107.40	74.2	-30.9%	3.98	2.21	-44.5%	7.18	3.99	3.19	2.75	12.06	14.81
2030	112.38	75.9	-32.5%	4.19	2.26	-46.0%	7.56	4.08	3.48	2.85	11.55	14.40
						Average Annual Growth Rate						
2010-2030	2.1%	0.1%	19.0%	3.4%	0.2%		3.4%	0.2%	#NUM!		-0.6%	0.5%

(a) Table 3.2.
(b) FAA Aerospace Forecasts: Fiscal Years 2011-2031
(c) Jet fuel costs per passenger mile for 2008 through 2010 from MIT Global Airline Industry Program, Airline Data Project. Assumed to increase at same rate as recommended jet fuel cost forecast.
(d) Difference in jet fuel costs per passenger mile adjusted downward based on estimated 1 percent per year increase in fuel efficiency.
(e) Table B.5.
(f) Unadjusted FAA yield forecast with differcence in jet fuel cost per RPM adjusted for fuel efficiency added.

Souces: As noted and HNTB analysis.

APPENDIX C

DETAILED HISTORICAL AIRPORT ACTIVITY DATA

Table C.1

Historical Passenger Enplanements: ANC

	Domestic				
Year	Commercial Carrier	Air Taxi	Total Domestic	International	Total
1980	n/a	n/a	1,006,869	25,971	1,032,840
1981 (a)	n/a	n/a	n/a	n/a	1,073,088
1982	n/a	n/a	1,232,079	27,430	1,259,509
1983	n/a	n/a	1,288,591	25,215	1,313,806
1984	n/a	n/a	1,399,899	27,078	1,426,977
1985	n/a	n/a	1,475,304	27,188	1,502,492
1986	n/a	n/a	1,406,358	29,195	1,435,553
1987	n/a	n/a	1,321,690	31,520	1,353,210
1988	n/a	n/a	1,367,204	35,681	1,402,885
1989	n/a	n/a	1,483,879	39,602	1,523,481
1990	n/a	n/a	1,692,059	52,119	1,744,178
1991	n/a	n/a	1,721,898	47,070	1,768,968
1992	n/a	n/a	1,778,105	32,055	1,810,160
1993	n/a	n/a	1,763,725	30,064	1,793,789
1994	n/a	n/a	1,908,632	25,862	1,934,494
1995	n/a	n/a	1,938,669	27,451	1,966,120
1996	n/a	n/a	2,081,148	38,139	2,119,287
1997	1,996,528	104,844	2,101,372	35,338	2,136,710
1998	1,998,934	112,116	2,111,050	35,895	2,146,945
1999	2,022,179	89,157	2,111,336	42,746	2,154,082
2000	2,051,217	100,523	2,151,740	46,074	2,197,814
2001	2,082,953	110,590	2,193,543	39,795	2,233,338
2002	2,107,609	101,010	2,208,619	37,247	2,245,866
2003	2,044,037	92,976	2,137,013	44,485	2,181,498
2004	2,216,883	95,507	2,312,390	46,931	2,359,321
2005	2,267,304	100,261	2,367,565	23,304	2,390,869
2006	2,268,963	113,270	2,382,233	32,248	2,414,481
2007	2,354,010	103,509	2,457,519	24,424	2,481,943
2008	2,428,719	66,600	2,495,319	98,417	2,593,736
2009	2,168,957	134,314	2,303,271	33,108	2,336,379
2010	2,229,457	137,331	2,366,788	31,724	2,398,512
2011 (b)	2,318,946	142,843	2,461,789	32,997	2,494,786
			Average Annual Growth Rate		
1980-2011	n/a	n/a	2.9%	0.8%	2.9%
2000-2011	1.1%	3.2%	1.2%	-3.0%	1.2%

(a) Fiscal year.
(b) Extrapolated from first 10 months.

Sources: Airports Council International, Worldwide Airport Traffic Report for 1980-1089, TAMS Needs Assessment Report for 1990-1995, HNTB compilation of AIA data for 1996 through 2011..

Table C.2

Historical Passenger Deplanements: ANC

	Domestic				
Year	**Commercial Carrier**	**Air Taxi**	**Total Domestic**	**International**	**Total**
1997	2,001,973	103,358	2,105,331	37,532	2,142,863
1998	1,981,493	112,594	2,094,087	34,584	2,128,671
1999	2,012,787	90,507	2,103,294	41,938	2,145,232
2000	2,046,760	99,552	2,146,312	45,459	2,191,771
2001	2,066,482	110,818	2,177,300	38,278	2,215,578
2002	2,112,847	101,570	2,214,417	32,284	2,246,701
2003	2,044,728	96,078	2,140,806	45,727	2,186,533
2004	2,192,225	94,706	2,286,931	50,777	2,337,708
2005	2,255,822	99,801	2,355,623	33,946	2,389,569
2006	2,229,028	112,604	2,341,632	29,821	2,371,453
2007	2,325,546	100,634	2,426,180	24,089	2,450,269
2008	2,418,751	67,438	2,486,189	36,239	2,522,428
2009	2,159,323	145,620	2,304,943	37,117	2,342,060
2010	2,221,047	136,050	2,357,097	33,815	2,390,912
2011	2,310,198	141,511	2,451,709	35,172	2,486,881
			Average Annual Growth Rate		
2000-2011	1.1%	3.2%	1.2%	-2.3%	1.2%

(a) Interpolated from first 10 months.

Sources: HNTB compilation of AIA data for 1997 to 2011.

Table C.3

Historical Transit Passengers: ANC

Year	Domestic: Commercial Carrier	Domestic: Air Taxi	Domestic: Total Domestic	International	Total
1980	n/a	n/a	n/a	n/a	1,377,181
1981 (a)	n/a	n/a	n/a	n/a	1,456,894
1982	n/a	n/a	n/a	n/a	1,440,894
1983	n/a	n/a	n/a	n/a	1,394,756
1984	n/a	n/a	n/a	n/a	1,468,271
1985	n/a	n/a	n/a	n/a	1,624,399
1986	n/a	n/a	n/a	n/a	1,594,862
1987	n/a	n/a	n/a	n/a	1,659,699
1988	n/a	n/a	n/a	n/a	1,546,309
1989	n/a	n/a	n/a	n/a	1,535,365
1990	n/a	n/a	124,677	1,232,770	1,357,447
1991	n/a	n/a	142,655	641,475	784,130
1992	n/a	n/a	201,756	517,290	719,046
1993	n/a	n/a	183,415	346,017	529,432
1994	n/a	n/a	201,066	370,891	571,957
1995	n/a	n/a	182,497	454,502	636,999
1996	n/a	n/a	148,105	596,942	745,047
1997	179,625	9,672	189,297	602,526	791,823
1998	184,046	-	184,046	531,061	715,107
1999	166,357	17	166,374	517,040	683,414
2000	150,546	119	150,665	479,660	630,325
2001	139,069	-	139,069	392,321	531,390
2002	96,339	85	96,424	377,381	473,805
2003	91,782	-	91,782	251,186	342,968
2004	91,376	53	91,429	265,275	356,704
2005	75,099	202	75,301	221,164	296,465
2006	80,259	30	80,289	156,981	237,270
2007	61,105	197	61,302	318,258	379,560
2008	18,194	298	18,492	213,581	232,073
2009	16,381	108	16,489	156,767	173,256
2010	22,891	15	22,906	165,663	188,569
2011	13,600	9	13,609	98,423	112,032
Average Annual Growth Rate					
1980-2011	n/a	n/a	n/a	n/a n/a	-7.8%
2000-2011	-19.6%	-20.9%	-19.6%	-13.4%	-14.5%

(a) Fiscal year.
(b) Interpolated from first 10 months.

Sources: Airports Council International, Worldwide Airport Traffic Report for 1980-1089, TAMS Needs Assessment Report for 1990-1995, HNTB compilation of AIA data for 1996 through 2011..

Table C.4

Historical Passenger Enplanements: FAI

	Domestic				
Year	**Commercial Carrier**	**Air Taxi**	**Total Domestic**	**International**	**Total**
2000	392,397	10,900	403,297	268	403,565
2001	394,472	11,737	406,209	1,766	407,975
2002	395,114	13,000	408,114	1,512	409,626
2003	404,353	12,357	416,710	1,249	417,959
2004	446,756	7,738	454,494	1,327	455,821
2005	448,595	5,743	454,338	3,283	457,621
2006	444,034	1,246	445,280	4,278	449,558
2007	459,554	797	460,351	5,029	465,380
2008	466,111	780	466,891	6,522	473,413
2009	438,636	986	439,622	6,710	446,332
2010	452,427	902	453,329	4,838	458,167
2011	454,772	907	455,679	4,863	460,542
		Average Annual Growth Rate			
2000-2011	1.4%	-20.2%	1.1%	30.1%	1.2%

(a) Interpolated from first 10 months.

Sources: HNTB compilation of FAI data..

Table C.5

Historical Passenger Deplanements: FAI

Year	Domestic			International	Total
	Commercial Carrier	Air Taxi	Total Domestic		
2000	394,119	10,630	404,749	248	404,997
2001	399,522	10,898	410,420	1,148	411,568
2002	408,431	11,145	419,576	1,280	420,856
2003	412,079	10,620	422,699	1,135	423,834
2004	454,610	7,268	461,878	1,599	463,477
2005	453,984	5,455	459,439	3,083	462,522
2006	452,882	944	453,826	4,278	458,104
2007	483,625	820	484,445	5,029	489,474
2008	479,732	739	480,471	6,522	486,993
2009	456,683	897	457,580	6,710	464,290
2010	458,660	903	459,563	4,838	464,401
2011 (a)	461,037	908	461,945	4,863	466,808
		Average Annual Growth Rate			
2000-2011	1.4%	-20.0%	1.2%	31.1%	1.3%

(a) Interpolated from first 10 months.

Sources: HNTB compilation of FAI data..

Table C.6

Historical Passenger Transit Passengers: FAI

Year	Domestic			International	Total
	Commercial Carrier	Air Taxi	Total Domestic		
2000	35,506	12,640	48,146	90	48,236
2001	34,347	13,060	47,407	2,080	49,487
2002	32,433	13,399	45,832	2,183	48,015
2003	32,386	11,947	44,333	2,409	46,742
2004	29,863	13,490	43,353	2,629	45,982
2005	32,630	14,956	47,586	2,433	50,019
2006	31,758	13,928	45,686	2,420	48,106
2007	30,770	12,599	43,369	2,541	45,910
2008	34,369	9,439	43,808	2,456	46,264
2009	33,225	13,139	46,364	2,123	48,487
2010	36,911	15,088	51,999	2,971	54,970
2011 (a)	40,584	16,589	57,173	3,267	60,440
		Average Annual Growth Rate			
2000-2011	1.2%	2.5%	1.6%	38.6%	2.1%

(a) Interpolated from first 10 months.

Sources: HNTB compilation of FAI data..

Table C.7

Historical Domestic Origin and Destination Traffic at ANC

	Outbound Originations from ANC			
Year	**To Fairbanks**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	92,260	392,750	621,770	1,106,780
1991	87,470	419,490	671,260	1,178,220
1992	93,400	444,940	757,960	1,296,300
1993	102,050	416,300	771,300	1,289,650
1994	112,660	403,770	843,150	1,359,580
1995	107,070	468,760	875,070	1,450,900
1996	148,110	450,310	925,720	1,524,140
1997	132,570	456,710	924,920	1,514,200
1998	119,720	433,970	902,640	1,456,330
1999	115,800	423,570	923,500	1,462,870
2000	114,590	411,910	957,240	1,483,740
2001	118,530	413,710	971,480	1,503,720
2002	122,230	313,150	1,003,360	1,438,740
2003	117,380	391,640	958,620	1,467,640
2004	128,900	392,680	1,057,760	1,579,340
2005	119,380	393,850	1,102,280	1,615,510
2006	125,890	406,940	1,114,750	1,647,580
2007	124,120	451,390	1,127,360	1,702,870
2008	132,450	509,790	1,128,060	1,770,300
2009	114,710	410,420	1,034,270	1,559,400
2010	119,910	429,810	1,087,500	1,637,220
	Average Annual Growth Rate			
1990-2000	2.2%	0.5%	4.4%	3.0%
2000-2010	0.5%	0.4%	1.3%	1.0%
1990-2010	1.3%	0.5%	2.8%	2.0%

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table C.8

Historical Domestic Origin and Destination Traffic at FAI

	Outbound Originations from FAI			
Year	**To Anchorage**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	93,940	64,390	102,470	260,800
1991	98,250	56,720	113,340	268,310
1992	100,350	66,920	123,380	290,650
1993	103,540	61,480	122,560	287,580
1994	114,230	63,790	138,160	316,180
1995	109,240	66,160	145,570	320,970
1996	155,480	61,410	138,480	355,370
1997	140,300	61,910	146,080	348,290
1998	126,080	66,410	148,470	340,960
1999	123,460	67,010	145,350	335,820
2000	121,980	62,520	154,310	338,810
2001	125,770	64,360	151,410	341,540
2002	123,680	49,190	149,470	322,340
2003	118,690	61,960	162,710	343,360
2004	129,600	67,120	174,920	371,640
2005	119,030	63,540	181,830	364,400
2006	125,500	68,590	182,570	376,660
2007	124,410	71,930	195,470	391,810
2008	131,970	69,150	191,820	392,940
2009	117,360	65,610	184,350	367,320
2010	121,910	70,120	191,010	383,040
	Average Annual Growth Rate			
1990-2000	2.6%	-0.3%	4.2%	2.7%
2000-2010	0.0%	1.2%	2.2%	1.2%
1990-2010	1.3%	0.4%	3.2%	1.9%

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table C.9

Historical Domestic Portion of International Travel (DPIJ) at ANC

	Outbound Originations from ANC			
Year	**To Fairbanks**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	460	1,190	34,170	35,820
1991	400	700	36,490	37,590
1992	670	430	52,300	53,400
1993	710	600	61,840	63,150
1994	380	530	56,010	56,920
1995	450	250	43,740	44,440
1996	480	350	62,190	63,020
1997	510	380	66,530	67,420
1998	1,070	1,460	71,280	73,810
1999	1,690	1,070	82,060	84,820
2000	1,020	740	88,760	90,520
2001	1,450	1,020	104,900	107,370
2002	1,230	1,160	104,810	107,200
2003	1,250	1,360	105,300	107,910
2004	1,740	2,240	120,470	124,450
2005	1,590	2,520	119,020	123,130
2006	1,370	1,430	121,340	124,140
2007	1,010	2,010	126,690	129,710
2008	1,230	1,680	123,460	126,370
2009	930	1,320	109,580	111,830
2010	790	1,070	100,570	102,430
	Average Annual Growth Rate			
1990-2000	8.3%	-4.6%	10.0%	9.7%
2000-2010	-2.5%	3.8%	1.3%	1.2%
1990-2010	2.7%	-0.5%	5.5%	5.4%

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table C.10

Historical Domestic Portion of International Travel (DPIJ) at FAI

	Outbound Originations from FAI			
Year	**To Anchorage**	**To Rest of Alaska**	**To Other U.S.**	**Total**
1990	400	20	3,680	4,100
1991	390	20	3,860	4,270
1992	540	10	5,200	5,750
1993	600	-	7,870	8,470
1994	510	70	6,080	6,660
1995	320	40	4,960	5,320
1996	510	30	6,240	6,780
1997	640	30	9,330	10,000
1998	1,800	50	12,090	13,940
1999	1,420	10	14,310	15,740
2000	1,090	30	15,850	16,970
2001	1,430	10	18,800	20,240
2002	1,170	20	17,580	18,770
2003	1,140	-	17,910	19,050
2004	1,010	10	23,820	24,840
2005	1,540	20	25,050	26,610
2006	940	30	24,130	25,100
2007	790	20	28,750	29,560
2008	2,110	-	28,300	30,410
2009	1,070	-	28,260	29,330
2010	660	30	25,660	26,350
	Average Annual Growth Rate			
1990-2000	10.5%	4.1%	15.7%	15.3%
2000-2010	-4.9%	0.0%	4.9%	4.5%
1990-2010	2.5%	2.0%	10.2%	9.7%

Source: USDOT OD1A Origin-Destination Survey as compiled by DataBase Products, Inc. and HNTB analysis.

Table C.11

Historical Estimated Intra-Alaska Air Cargo: ANC
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
1997	93,460	26,865	790	121,905
1998	96,188	33,090	1,890	133,059
1999	97,905	25,732	748	125,132
2000	100,389	25,286	1,054	127,784
2001	99,188	24,813	615	125,230
2002	100,080	22,456	3,278	129,091
2003	97,942	22,883	271	121,367
2004	96,572	26,125	269	123,234
2005	91,671	25,609	187	117,654
2006	94,976	23,771	235	119,218
2007	101,094	24,045	774	126,688
2008	97,305	22,244	36	119,622
2009	87,823	22,568	16	110,422
2010	88,500	21,134	14	109,661
2011	93,046	24,858	11	117,926
Average Annual Growth Rate				
1997-2005	-0.2%	-0.6%	-16.5%	-0.4%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.12

Historical Estimated Non-Alaska Domestic Air Cargo: ANC
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
1997	8,482	13,992	633	23,740
1998	8,120	11,181	1,084	21,469
1999	8,838	13,423	258	22,778
2000	12,253	17,047	224	29,749
2001	10,529	14,120	187	25,024
2002	9,877	11,455	510	22,353
2003	9,269	13,787	126	23,308
2004	9,992	12,212	125	22,454
2005	9,670	11,260	81	21,092
2006	7,806	9,438	168	17,581
2007	12,111	11,316	77	23,581
2008	10,791	10,954	30	21,805
2009	6,862	7,164	6	14,038
2010	7,795	8,295	26	16,143
2011	8,178	7,336	5	15,524
Average Annual Growth Rate				
1997-2005	1.7%	-2.7%	-22.7%	-1.5%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.13

Historical Estimated International Air Cargo: ANC
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
1997	23,317	45,652	1,210,617	2,490,202
1998	96,554	122,965	1,163,353	2,546,224
1999	194,314	221,323	1,442,635	3,300,905
2000	202,726	232,406	1,483,345	3,401,821
2001	213,714	242,687	1,307,666	3,071,732
2002	218,817	251,806	1,616,832	3,704,286
2003	208,579	258,286	1,701,485	3,869,835
2004	215,446	243,179	2,034,560	4,527,745
2005	293,611	329,447	2,187,176	4,997,409
2006	297,395	335,781	2,326,599	5,286,375
2007	292,478	350,416	2,253,581	5,150,055
2008	296,299	325,599	1,824,310	4,270,517
2009	247,336	281,899	1,481,903	3,493,041
2010	357,972	403,989	2,030,380	4,822,719
2011	339,354	368,412	1,954,002	4,615,770
Average Annual Growth Rate				
1997-2005	37.3%	28.0%	7.7%	9.1%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.14

Historical Total Air Cargo: ANC
Freight and Mail Tons (US DOT Statistics)

	Outbound			Inbound			Total		
Year	Alaska	U.S./Int.	Total	Alaska	U.S./Int.	Total	Alaska	U.S./Int.	Total
2003	97,544	2,103,437	2,200,981	24,358	2,171,590	2,195,948	121,902	4,275,027	4,396,929
2004	97,950	2,620,946	2,718,896	28,554	2,670,859	2,699,413	126,504	5,291,805	5,418,309
2005	93,030	2,835,426	2,928,456	26,459	2,890,322	2,916,781	119,489	5,725,748	5,845,237
2006	95,464	3,002,297	3,097,761	25,305	3,024,206	3,049,511	120,769	6,026,503	6,147,272
2007	102,483	2,988,318	3,090,801	24,883	3,025,830	3,050,713	127,366	6,014,148	6,141,514
2008	98,879	2,441,892	2,540,771	24,505	2,478,555	2,503,060	123,384	4,920,447	5,043,831
2009	91,055	1,980,767	2,071,822	21,467	2,010,680	2,032,147	112,522	3,991,447	4,103,969
2010	94,253	2,466,790	2,561,043	23,390	2,490,713	2,514,103	117,643	4,957,503	5,075,146
				Average Annual Growth					
2003-2010	-0.5%	2.3%	2.2%	-0.6%	2.0%	2.0%	-0.5%	2.1%	2.1%

Source: USDOT T100 statistics as compiled by DataBase Products, Inc.

Table C.15

Historical Estimated Intra-Alaska Air Cargo: FAI
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
2000	27,098	5,946	969	34,982
2001	24,146	6,099	1,178	32,601
2002	26,939	7,126	1,214	36,493
2003	26,335	8,474	1,116	37,041
2004	29,903	8,720	1,061	40,745
2005	30,075	6,616	1,210	39,111
2006	25,295	5,375	1,002	32,675
2007	20,562	5,495	1,431	28,918
2008	17,280	5,291	1,828	26,226
2009	17,209	3,856	1,660	24,385
2010	16,885	4,800	1,616	24,917
2011	15,923	3,418	1,622	22,585
Average Annual Growth Rate				
2000-2011	-4.7%	-4.9%	4.8%	-3.9%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.16

Historical Estimated Non-Alaska Domestic Air Cargo: FAI
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
2000	298	697	17	1,029
2001	92	137	22	273
2002	43	39	23	128
2003	52	38	21	132
2004	60	37	18	133
2005	69	31	19	138
2006	44	99	42	227
2007	34	104	74	285
2008	38	132	118	406
2009	40	104	124	392
2010	43	133	123	423
2011	23	108	124	378
		Average Annual Growth Rate		
2000-2011	-20.8%	-15.6%	19.8%	-8.7%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.17

Historical Estimated International Air Cargo: FAI
(Freight and Mail)

Year	Enplaned Cargo	Deplaned Cargo	Transit Cargo	Total Cargo (a)
2000	25	134	127,023	254,205
2001	206	114	129,039	258,398
2002	71	102	132,773	265,719
2003	15	64	98,447	196,973
2004	20	143	85,715	171,593
2005	22	93	73,074	146,263
2006	503	23	16,967	34,459
2007	-	-	2,847	5,694
2008	43	0	4,993	10,029
2009	1,187	2,745	7,677	19,286
2010	30	20	6,500	13,051
2011	342	707	373	1,796
Average Annual Growth Rate				
2000-2011	26.9%	16.3%	-41.1%	-36.3%

(a) Enplaned plus deplaned plus (transit times 2).

Sources: State of Alaska statistics as compiled by HNTB.

Table C.18

Historical Total Air Cargo: FAI
Freight and Mail Tons (US DOT Statistics)

Year	Outbound			Inbound			Total		
	Alaska	U.S./Int.	Total	Alaska	U.S./Int.	Total	Alaska	U.S./Int.	Total
2003	22,058	59,310	81,368	10,404	60,927	71,331	32,462	120,237	152,699
2004	23,083	56,003	79,086	10,758	57,749	68,507	33,841	113,752	147,593
2005	22,255	45,866	68,121	9,008	46,836	55,844	31,263	92,702	123,965
2006	16,882	8,925	25,807	8,388	9,880	18,268	25,270	18,805	44,075
2007	11,669	1,515	13,184	8,443	1,894	10,337	20,112	3,409	23,521
2008	13,180	4,785	17,965	8,044	6,517	14,561	21,224	11,302	32,526
2009	10,894	4,711	15,605	6,899	3,711	10,610	17,793	8,422	26,215
2010	11,576	5,341	16,917	6,865	6,083	12,948	18,441	11,424	29,865
Average Annual Growth									
2003-2010	-8.8%	-29.1%	-20.1%	-5.8%	-28.0%	-21.6%	-7.8%	-28.6%	-20.8%

Source: USDOT T100 statistics as compiled by DataBase Products, Inc.

APPENDIX D

ADDITIONAL PASSENGER PROJECTIONS

Table D.1

Forecast of Domestic Originating Passengers
Between ANC and FAI

Year	Employment (a) Anchorage	Fairbanks	Total	Fares (b) ANC to FAI	FAI to ANC	Originations from (c) ANC	FAI	Total
2010	234,258	59,183	293,441	$ 119.78	$ 120.43	119,910	121,910	241,820
2015	253,062	63,162	316,224	$ 137.26	$ 138.01	127,673	129,803	257,476
2020	270,861	66,276	337,137	$ 143.67	$ 144.45	130,031	132,200	262,230
2025	290,383	69,278	359,661	$ 149.70	$ 150.51	132,924	135,141	268,066
2030	311,032	72,000	383,032	$ 149.70	$ 150.51	139,709	142,039	281,748
Average Annual Growth Rate								
2010-2030	1.4%	1.0%	1.3%	1.1%	1.1%	0.8%	0.8%	0.8%

(a) Table 2,2.
(b) Table 3.3.
(c) Calculated using forecast equation presented below:

ORIG = (10^2.277) * (CMEMP^.791) * (FAF^-.708) * REC

where:
ORIG = originations
CMEMP = Combined Anchorage and Fairbanks metropolitan employmnet.
FAF = Average fare between ANC and FAI (in 2010 prices).
REC = Instrument variable equal to (10^-.065) during 2008-2009 recession and 1 in all other years.

R-squared = .878
Adjusted R-Squared = .867
F-statistic = 86.04

T-statistics		
	Intercept=	5.47
	CMEMP =	10.53
	FAF =	-12.60
	REC =	-4.23

Soueces: As noted and HNTB analysis.

Table D.2

Forecast of Domestic Originating Passengers
To Rest of Alaska

Year	Rest of Alaska Population (a)	Rest of Alaska PCI (b)	Fares to Rest of Alaska (c) ANC	Fares to Rest of Alaska (c) FAI	Originations to Rest of Alaska (d) ANC	Originations to Rest of Alaska (d) FAI	Originations to Rest of Alaska (d) Total
2010	235,583	40,204	$ 148.17	$ 143.73	429,810	70,120	499,930
2015	232,856	42,025	$ 169.79	$ 164.71	478,520	78,067	556,587
2020	237,423	44,166	$ 177.72	$ 172.40	504,660	82,331	586,991
2025	240,273	46,590	$ 185.18	$ 179.64	529,600	86,400	616,000
2030	241,816	48,704	$ 185.18	$ 179.63	549,319	89,617	638,935
			Average Annual Growth Rate				
2010-2030	0.1%	1.0%	1.1%	1.1%	1.2%	1.2%	1.2%

(a) Table 2.1.
(b) Table 2.4.
(c) Table 3.3.
(d) Estimated by multiplying population by per capita originations calculated using the formula below:

ORIGAK = (10^-2.781) * (AKPCI^.679) * FAI * 911 * REC

where:
- ORIGAK= Originations to the rest of Alaska.
- AKPCI= Rest of Alaska per capita income.
- FAI= Instrument variable equal to (10^-.818) for FAI originations and 1 for ANC originations.
- 911= Instrument variable equal to (10^-.043) during and after 911 attacks and 1 at other times.
- REC = Instrument variable equal to (10^-.039) during the 2008-2009 recession.

R-squared = .997
Adjusted R-Squared = ..997
F-statistic = 2494.46

T-statistics		
	Intercept=	-2.772
	AKPCI=	3.056
	FAI=	-99.838
	911=	-2.480
	REC =	-1.943

Sources: As noted and HNTB analysis.

Table D.3

Forecast of Domestic Originating Passengers
To Lower 48

Year	Income (a)			Fares to Lower 48 (b)		Originations to Rest of U.S. (c)		
	U.S.	Anchorage	Fairbanks	ANC	FAI	ANC	FAI	Total
2010	12,357,113,000	18,081,969	4,008,406	$ 269.83	$ 347.03	1,087,500	191,010	1,278,510
2015	13,784,200,170	19,784,976	4,310,016	$ 309.21	$ 397.67	1,115,419	194,341	1,309,760
2020	15,370,164,702	21,493,632	4,616,619	$ 323.65	$ 416.24	1,189,988	205,986	1,395,974
2025	17,160,616,229	23,478,342	4,942,573	$ 337.23	$ 433.71	1,276,220	218,872	1,495,092
2030	19,171,547,604	25,757,296	5,274,351	$ 337.23	$ 433.70	1,398,756	236,842	1,635,598
	Average Annual Growth Rate							
2010-2030	2.2%	1.8%	1.4%	1.1%	1.1%	1.3%	1.1%	1.2%

(a) Table 2.3.
(b) Table 3.3.
(c)Estimated using following forecast equation:

ORIGUS = (10^-.565) * (MINC^.462) * (USINC^.441) * (FUS^-.473) * FAI * 911

where:	ORIGUS =	Originations to the rest of U.S.
	MINC=	metropolitan income
	USINC =	US Income
	FUS=	Fares to Lower 48
	FAI=	Instrument variable for FAI
	911=	Instrument variable for 911 attacks and associated security restrictions.

R-squared = .998
Adjusted R-Squared = ..997
F-statistic = 3086.70

T-statistics	Intercept=	-0.543
	MINC=	2.617
	USINC =	2.667
	FUS=	-4.795
	FAI=	-3.727
	911=	-2.138

Sources: As noted and HNTB analysis.

Table D.4

Forecast of Domestic Portion of International Journey (DPIJ) Passengers

	ANC		FAI		FAA Enplanement Forecast (millions) (d)		
Year	Originations (a)	DPIJ (b)	Originations (c)	DPIJ (b)	Domestic	International	Ratio (e)
2010	1,637,220	102,430	383,040	26,350	635.3	77.4	0.122
2015	1,721,613	117,369	402,210	30,150	752.5	99.9	0.133
2020	1,824,679	134,338	420,517	34,042	866.3	124.2	0.143
2025	1,938,744	158,098	440,414	39,490	966.0	153.4	0.159
2030	2,087,784	187,949	468,498	46,374	1070.7	187.7	0.175
			Average Annual Growth Rate				
2010-2030	1.2%	3.1%	1.0%	2.9%			

(a) Table 5.1.
(b) Assumed to increase at same rate as originations adjusted by FAA ratio of international to domestic enplanements.
(c) Table 5.2.
(d) FAA Aerospace Forecast: FY 2011-2031.
(e) Ratio of international to domestic enplanements.

Sources: As noted and HNTB analysis.

Table D.5

Projected Connecting Passengers From ANC to FAI

Year	Outbound Passengers (a)	Originations (ANC to FAI) (b)	Passengers less Originations (c)	Ratio (d)	Beyond Originations (e)	Connections (f)
2003	254,780	117,380	137,400	1.171		
2004	279,760	128,900	150,860	1.170		
2005	266,073	119,380	146,693	1.229		
2006	262,857	125,890	136,967	1.088		
2007	271,191	124,120	147,071	1.185		
2008	264,198	132,450	131,748	0.995		
2009	239,289	114,710	124,579	1.086		
2010	244,545	119,910	124,635	1.039	16,413	108,222
2015		127,673	110,511	0.866	14,553	95,958
2020		130,031	93,601	0.720	12,326	81,275
2025		132,924	79,573	0.599	10,479	69,094
2030		139,709	69,553	0.498	9,159	60,394
			Average Annual Growth Rate			
2010-2030		0.8%	-2.9%	-3.6%	-2.9%	-2.9%

(a) USDOT T100 data base.
(b) Table C.7.
(c) Originations subtracted from outbound passengers.
(d) Ratio of passengers less originations to originations. Assumed to continue to change at historical rates.
(e) Passengers originating at ANC going to destination beyond FAI. Growth relative to originations assumed to decline at same rate as Ratio (d).
(f) Passengers connecting at ANC to go on to FAI. Growth relative to originations assumed to decline at same rate as Ratio (d).

Sources: As noted and HNTB analysis.

Table D.6

Projected Connecting Passengers From FAI to ANC

Year	Outbound Passengers (a)	Originations (FAI to ANC) (b)	Passengers less Originations (c)	Ratio (d)	Beyond Originations (e)	Connections (f)
2003	244,666	118,690	125,976	1.061		
2004	270,979	129,600	141,379	1.091		
2005	259,102	119,030	140,072	1.177		
2006	261,503	125,500	136,003	1.084		
2007	248,786	124,410	124,376	1.000		
2008	237,643	131,970	105,673	0.801		
2009	214,164	117,360	96,804	0.825		
2010	218,887	121,910	96,977	0.795	84,207	12,770
2015		129,803	85,987	0.662	74,664	11,323
2020		132,200	72,830	0.551	63,239	9,591
2025		135,141	61,915	0.458	53,762	8,153
2030		142,039	54,118	0.381	46,991	7,127
			Average Annual Growth Rate			
2010-2030		0.8%	-2.9%	-3.6%	-2.9%	-2.9%

(a) USDOT T100 data base.
(b) Table C.8.
(c) Originations subtracted from outbound passengers.
(d) Ratio of passengers less originations to originations. Assumed to continue to change at historical rates.
(e) Passengers originating at FAI going to destination beyond ANC. Growth relative to originations assumed to decline at same rate as Ratio (d).

(f) Passengers connecting at FAI to go on to ANC. Growth relative to originations assumed to decline at same rate as Ratio (d).

Sources: As noted and HNTB analysis.

Table D.7

Projected Total Outbound Passengers from Rest of Alaska

Year	Population (a)	Per Capita Income (b)	Per Capita Passengers (c)	Outbound Passengers (d)
2010	235,583	40,204	9.57	2,253,604
2015	232,856	42,025	10.89	2,536,204
2020	237,423	44,166	11.40	2,707,295
2025	240,273	46,590	11.98	2,878,288
2030	241,816	48,704	12.48	3,017,884
		Average Annual Growth Rate		
2010-2030	0.1%	1.0%	1.3%	1.5%

(a) Table 2.1.
(b) Table 2.4.
(c) Per capita passengers assumed to as a function of per capita income based on forecast equation from Alaska Aviation System Plan study,
(d) Population multiplied by per capita passengers.

Sources: As noted and HNTB analysis.

Table D.8

Estimated Baseline Alaska Connecting Passengers Through ANC and FAI

	Outbound Passengers					
		Originations		Connections through (d)		
Year	Total Out-State (a)	to ANC (b)	to FAI (c)	ANC	FAI	Other (e)
2010	2,253,604	429,810	70,120	148,099	44,673	1,560,902
2015	2,536,204	478,520	78,067	167,180	50,428	1,762,009
2020	2,707,295	504,660	82,331	179,061	54,012	1,887,231
2025	2,878,288	529,600	86,400	191,052	57,629	2,013,607
2030	3,017,884	549,319	89,617	200,904	60,601	2,117,443
	Average Annual Growth Rate					
	1.5%	1.2%	1.2%	1.5%	1.5%	1.5%

(a) Table D.7.
(b) Table 5.1.
(c) Table 5.2.
(d) Assumed to increase at same rate as out-state passengers less originations to ANC and FAI.
(e) Out-state passengers not going to ANC or FAI.

Sources: As noted and HNTB analysis.

Table D.9

Estimated Baseline Other US Connecting Passengers Through ANC and FAI

	Outbound Passengers						
	Originations		Connections through (c)		Total Out-state Connections through ANC and FAI (d)	Alaska to Alaska Share (e)	Alaska to Other US Share (f)
Year	**to ANC (a)**	**to FAI (b)**	**ANC**	**FAI**			
2010	1,087,500	191,010	149,115	4,044	192,772	39,612	153,159
2015	1,115,419	194,341	168,925	4,582	217,608	44,102	173,507
2020	1,189,988	205,986	181,636	4,926	233,073	46,511	186,563
2025	1,276,220	218,872	194,594	5,278	248,681	48,809	199,872
2030	1,398,756	236,842	205,310	5,568	261,505	50,627	210,878
	Average Annual Growth Rate						
	1.3%	1.1%	1.6%	1.6%	1.5%	1.2%	1.6%

(a) Table 5.1.
(b) Table 5.2.
(c) Assumed to increase at same rate as Alaska to other US share of connections.
(d) Table D.8.
(e) Assumed to increase at same rate as originations to ANC and FAI.
(f) Total out-state connections throug ANC and FAI less Alaska to Alaska share of connections.

Sources: As noted and HNTB analysis.

Table D.10

Forecast of Anchorage Outbound Passengers

Year	Originations (a)	DPIJ (b)	FAI Connections (c)	Outstate Connections (d)	Lower 48 Connections (e)	Total Connections	Total Outbound Passengers (f)
2010	1,637,220	102,430	108,222	148,099	149,115	405,436	2,145,086
2015	1,721,613	117,369	95,958	167,180	168,925	432,063	2,271,045
2020	1,824,679	134,338	81,275	179,061	181,636	441,972	2,400,989
2025	1,938,744	158,098	69,094	191,052	194,594	454,740	2,551,582
2030	2,087,784	187,949	60,394	200,904	205,310	466,607	2,742,340
			Average Annual Growth Rate				
2010-20:	1.2%	3.1%	-2.9%	1.5%	1.6%	0.7%	1.2%

(a) Table 5.1.
(b) Table D.4.
(c) Table D.5.
(d) Table D.8.
(e) Table D.9.
(f) Originations plus DPIJ plus total connections.

Sources: As noted and HNTB analysis.

Table D.11

Forecast of Fairbanks Outbound Passengers

Year	Originations (a)	DPIJ (b)	ANC Connections	Outstate Connections (d)	Lower 48 Connections (e)	Total Connections	Total Outbound Passengers (f)
2010	383,040	26,350	12,770	44,673	4,044	61,487	470,877
2015	402,210	30,150	11,323	50,428	4,582	66,333	498,693
2020	420,517	34,042	9,591	54,012	4,926	68,529	523,088
2025	440,414	39,490	8,153	57,629	5,278	71,060	550,963
2030	468,498	46,374	7,127	60,601	5,568	73,296	588,168
			Average Annual Growth Rate				
2010-2030	1.0%	2.9%	-2.9%	1.5%	1.6%	0.9%	1.1%

(a) Table 5.2.
(b) Table D.4.
(c) Table D.6.
(d) Table D.8.
(e) Table D.9.
(f) Originations plus DPIJ plus total connections.

Sources: As noted and HNTB analysis.

Table D.12

Forecast of Anchorage Domestic Outbound Seat Departures by Category

Year	To Fairbanks Outbound Passengers (a)	To Fairbanks Load Factor (b)	To Fairbanks Seat Departures (c)	To Rest of Alaska Outbound Passengers (a)	To Rest of Alaska Load Factor (b)	To Rest of Alaska Seat Departures (c)	To Other U.S. Outbound Passengers (a)	To Other U.S. Load Factor (b)	To Other U.S. Seat Departures (c)	FAA Load Factor (d)
2010	244,545	62.5%	391,359	561,496	52.2%	1,075,784	1,339,045	80.3%	1,667,186	82.7%
2015	238,184	63.6%	374,390	631,147	53.1%	1,187,689	1,401,713	81.8%	1,714,120	84.2%
2020	223,632	64.2%	348,207	671,395	53.6%	1,251,535	1,505,962	82.6%	1,824,271	85.0%
2025	212,497	64.5%	329,706	710,173	53.8%	1,319,165	1,628,912	82.8%	1,966,268	85.3%
2030	209,262	64.6%	323,927	741,063	54.0%	1,373,325	1,792,015	83.0%	2,158,091	85.5%
Average Annual Growth Rate										
2010-2030	-0.8%	0.2%	-0.9%	1.4%	0.2%	1.2%	1.5%	0.2%	1.3%	0.2%

(a) Table 5.3.
(b) Assumed to increase at same rate as FAA projected load factor.
(c) Outbound passengers divided by load factor.
(d) FAA Aerospace Forecasts: FY 2011 -2031.

Sources: As noted and HNTB analysis.

Table D.13

Forecast of Fairbanks Domestic Outbound Seat Departures by Category

Year	To Anchorage Outbound Passengers (a)	To Anchorage Load Factor (b)	To Anchorage Seat Departures (c)	To Rest of Alaska Outbound Passengers (a)	To Rest of Alaska Load Factor (b)	To Rest of Alaska Seat Departures (c)	To Other U.S. Outbound Passengers (a)	To Other U.S. Load Factor (b)	To Other U.S. Seat Departures (c)	FAA Load Factor (d)
2010	218,887	62.8%	348,800	92,181	43.5%	212,016	159,809	77.8%	205,475	82.7%
2015	215,790	63.9%	337,739	108,446	44.3%	244,981	174,457	79.2%	220,314	84.2%
2020	205,030	64.5%	317,877	119,362	44.7%	267,103	198,696	79.9%	248,562	85.0%
2025	197,056	64.7%	304,441	129,593	44.8%	288,977	224,314	80.2%	279,622	85.3%
2030	196,157	64.9%	302,343	137,599	45.0%	306,113	254,412	80.4%	316,399	85.5%
				Average Annual Growth Rate						
2010-2030	-0.5%	0.2%	-0.7%	2.0%	0.2%	1.9%	2.4%	0.2%	2.2%	0.2%

(a) Table 5.4.
(b) Assumed to increase at same rate as FAA projected load factor.
(c) Outbound passengers divided by load factor.
(d) FAA Aerospace Forecasts: FY 2011 -2031.

Sources: As noted and HNTB analysis.

Table D.14

Projected Anchorage Seat Departures by Other US Market

	Market	Annual Seat Departures			
		2010	2015	2020	2030
	Existing				
Atlanta, GA: Hartsfield-Jackson	ATL	21,918	22,316	24,119	29,128
Chicago, IL: O Hare	ORD	112,395	110,224	114,824	129,657
Dallas/Ft.Worth, TX: Dallas/Ft Worth International	DFW	26,502	27,338	29,916	36,903
Denver, CO: Denver International	DEN	48,893	49,731	53,648	64,936
Detroit, MI: Detroit Metro Wayne County	DTW	12,868	12,392	12,718	13,953
Honolulu, HI: Honolulu International	HNL	40,384	39,414	40,843	45,522
Houston, TX: Houston Intercontinental	IAH	25,156	25,883	28,122	34,439
Kahului, HI: Kahului Airport	OGG	9,900	10,042	10,892	13,256
Los Angeles, CA: Los Angeles International	LAX	28,206	27,984	29,521	34,142
Minneapolis/St. Paul, MN: Minneapolis St Paul International	MSP	151,637	151,210	160,186	186,456
Philadelphia, PA: Philadelphia International	PHL	17,248	16,920	17,658	20,003
Phoenix, AZ: Sky Harbor International	PHX	49,982	50,631	54,621	65,777
Portland, OR: Portland International	PDX	102,002	101,982	108,411	127,168
Salt Lake City, UT: Salt Lake International	SLC	84,160	85,495	92,351	111,765
San Francisco, CA: International	SFO	28,323	27,918	29,204	33,211
Seattle, WA: Seattle/Tacoma International	SEA	905,600	908,549	968,139	1,139,740
	New (since 2010)				
Long Beach	LGB		13,179	13,903	16,079
Newark	EWR		16,839	17,441	19,472
Las Vegas	LAS		14,058	15,607	19,910
Spokane	GEG				14,047
Other		2,012	2,015	2,147	2,527
Total (a)		1,667,186	1,714,120	1,824,271	2,158,091

(a) Table D.12.

Sources: As noted and HNTB analysis.

Table D.15

Projected Fairbanks Seat Departures by Other U.S. Market

Market	Code	Annual Seat Departures 2010	2015	2020	2030
	Existing				
Denver, CO: Denver International	DEN	9,112	8,904	10,179	12,923
Minneapolis/St. Paul, MN: Minneapolis St Paul International	MSP	33,707	32,294	36,254	44,260
Salt Lake City, UT: Salt Lake International	SLC	8,480	8,277	9,472	12,025
Seattle, WA: Seattle/Tacoma International	SEA	153,422	147,882	166,985	206,184
	New (since 2010)				
Chicago, IL: O Hare	ORD		8,613	9,507	11,261
Phoenix, AZ: Sky Harbor International	PHX		-	-	9,832
Portland, OR: Portland International	PDX		13,612	15,334	18,866
Other		754	732	831	1,048
Total (a)		205,475	220,314	248,562	316,399

(a) Table D.13.

Sources: As noted and HNTB analysis.

Table D.16

International Passenger Forecasts by Region

	FAA (a)	Airbus (b)	Boeing (c)	Average (d)	Adjusted for (e) ANC	Adjusted for (e) FAI
Domestic	2.5%	2.4%	2.3%	2.4%	1.9%	1.5%
Pacific	5.0%	5.1%	5.3%	5.1%	4.1%	3.2%
Asia-US		4.8%				
Japan-US		3.8%				
PR China-US		6.6%	6.8%			
North America-SE Asia			6.4%			
North America-NE Asia			2.7%			
Canada-US	3.4%	3.3%	2.3%	3.0%	2.4%	1.9%
Europe-US	3.9%	3.9%	3.6%	3.8%	3.1%	2.4%

(a) FAA Aerospace Forecasts: FY 2011-2031,
(b) Airbus, Global Market Forecast: 2011-2030.
(c) Boeing, Current Market Outlook: 2011-2030
(d) Average of available forecasts.
(e) Adjusted for ratio of projected income growth between Anchorage and U.S. and Fairbanks and U.S. from Table 2.3.

Sources: As noted and HNTB analysis.

Table D.17

Outbound International Passengers - Anchorage

Year	Direct (a)			Transit (b)		Total
	Canada	Asia	Europe	To Asia	To US	
2010	12,814	5,764	11,618	94,153	29,976	154,325
2015	14,435	7,052	13,504	-	-	34,992
2020	16,262	8,629	15,697	-	-	40,588
2025	18,320	10,558	18,245	-	-	47,123
2030	20,638	12,918	21,207	-	-	54,763
Average Annual Growth Rate (c)						
2010-2030	2.4%	4.1%	3.1%			-5.0%

(a) Assumed to grow at average annual growth rate.
(b) International transit passengers assumed to overfly ANC by 2015.
(c) Table D.16.

Sources: As noted and HNTB analysis.

Table D.18

Outbound International Passengers - Fairbanks

Year	Direct (a)			Transit		Total
	Canada	Asia	Europe	To Asia	To US	
2010	1,624	4,121	4,343	-	-	10,088
2015	1,781	4,821	4,881	-	-	11,484
2020	1,954	5,640	5,487	-	-	13,081
2025	2,143	6,598	6,167	-	-	14,908
2030	2,351	7,719	6,931	-	-	17,001
	Average Annual Growth Rate (b)					
2010-2030	1.9%	3.2%	2.4%			2.6%

(a) Assumed to grow at average annual growth rate.
(b) Table D.16.

Sources: As noted and HNTB analysis.

Table D.19

Forecast of Anchorage International Non-Transit Outbound Seat Departures by Category

	To Canada				To Asia				To Europe				
Year	**Outbound Passengers (a)**	**FAA Load Factor (b)**	**Load Factor (c)**	**Seat Departures (d)**	**Outbound Passengers (a)**	**FAA Load Factor (e)**	**Load Factor (c)**	**Seat Departures (d)**	**Outbound Passengers (a)**	**FAA Load Factor (f)**	**Load Factor (c)**	**Seat Departures (d)**	**Total Seat Departures**
2010	12,814	82.7%	78.0%	16,430	5,764	84.1%	73.9%	7,802	11,618	82.9%	79.9%	14,534	38,766
2015	14,435	84.2%	79.4%	18,179	7,052	84.9%	74.6%	9,456	13,504	82.7%	79.7%	16,934	44,569
2020	16,262	85.0%	80.2%	20,286	8,629	85.1%	74.8%	11,543	15,697	82.9%	79.9%	19,636	51,465
2025	18,320	85.3%	80.4%	22,773	10,558	85.4%	75.0%	14,073	18,245	83.2%	80.2%	22,742	59,588
2030	20,638	85.5%	80.6%	25,594	12,918	85.6%	75.2%	17,179	21,207	83.4%	80.4%	26,371	69,144
					Average Annual Growth Rate								
2010-2030	2.4%		0.2%	2.2%	4.1%		0.1%	4.0%	3.1%		0.0%	3.0%	2.9%

(a) Table D.17
(b) FAA Aerospace Forecasts: FY 2011 -2031. Canada.
(c) Assumed to increase at same rate as FAA projected load factor.
(d) Outbound passengers divided by load factor.
(e) FAA Aerospace Forecasts: FY 2011 -2031. Pacific.
(f) FAA Aerospace Forecasts: FY 2011 -2031. Atlantic.

Sources: As noted and HNTB analysis.

Table D.20

Forecast of Fairbanks International Outbound Seat Departures

Year	Outbound Passengers (a)	FAA Load Factor (b)	Load Factor (c)	Seat Departures (d)
2010	10,088	82.2%	68.4%	14,747
2015	11,484	82.8%	68.9%	16,666
2020	13,081	82.9%	69.0%	18,960
2025	14,908	83.1%	69.2%	21,557
2030	17,001	83.2%	69.2%	24,554
Average Annual Growth Rate				
2010-2030	2.6%	0.1%	0.1%	2.6%

(a) Table D.18.
(b) FAA Aerospace Forecasts: FY 2011 -2031.
(c) Assumed to increase at same rate as FAA projected load factor.
(d) Outbound passengers divided by load factor.

Sources: As noted and HNTB analysis.

Table D.21

Peak Intra-Alaska Outbound Passengers
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.073	0.064	0.080	0.072	0.085	0.106	0.102	0.104	0.080	0.083	0.074	0.078	1.000
						Monthly (c)							
2010	59,021	51,508	64,106	57,666	68,448	85,244	82,026	84,084	64,334	67,300	59,401	62,903	806,041
2015	63,655	55,552	69,140	62,194	73,823	91,937	88,467	90,686	69,386	72,585	64,065	67,842	869,332
2020	65,536	57,194	71,184	64,032	76,005	94,655	91,082	93,367	71,437	74,730	65,958	69,847	895,026
2025	67,561	58,961	73,382	66,010	78,352	97,578	93,895	96,250	73,643	77,038	67,996	72,004	922,670
2030	69,586	60,728	75,582	67,988	80,701	100,503	96,709	99,135	75,851	79,347	70,034	74,162	950,325
						Average Busy Day (d)							**Maximum**
2010	1,967	1,900	2,136	1,986	2,281	2,935	2,733	2,802	2,215	2,243	2,045	2,096	2,935
2015	2,121	2,050	2,304	2,142	2,460	3,166	2,948	3,022	2,389	2,419	2,206	2,261	3,166
2020	2,184	2,110	2,372	2,205	2,533	3,259	3,035	3,111	2,460	2,490	2,271	2,328	3,259
2025	2,251	2,175	2,445	2,273	2,611	3,360	3,129	3,207	2,536	2,567	2,341	2,399	3,360
2030	2,319	2,240	2,519	2,341	2,689	3,461	3,223	3,304	2,612	2,644	2,412	2,471	3,461

(a) Table D.12.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Monthly distribution of passengers assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.22

Peak Other U.S. Outbound Passengers
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.053	0.046	0.063	0.056	0.077	0.112	0.154	0.144	0.094	0.068	0.062	0.071	1.000
						Monthly (c)							
2010	71,025	61,543	84,453	75,468	103,300	149,733	206,153	193,166	125,463	91,033	83,097	94,611	1,339,045
2015	74,349	64,423	88,406	79,000	108,135	156,741	215,801	202,206	131,335	95,293	86,985	99,039	1,401,713
2020	79,878	69,214	94,981	84,876	116,177	168,398	231,851	217,244	141,103	102,381	93,455	106,404	1,505,962
2025	86,400	74,865	102,735	91,805	125,662	182,147	250,779	234,981	152,623	110,739	101,085	115,092	1,628,912
2030	95,051	82,361	113,022	100,997	138,245	200,385	275,890	258,509	167,905	121,827	111,206	126,616	1,792,015
						Average Busy Day (d)							**Maximum**
2010	2,367	2,271	2,814	2,599	3,442	5,156	6,870	6,437	4,320	3,034	2,861	3,153	6,870
2015	2,478	2,377	2,946	2,720	3,603	5,397	7,191	6,738	4,522	3,176	2,995	3,300	7,191
2020	2,662	2,554	3,165	2,923	3,871	5,799	7,726	7,239	4,859	3,412	3,218	3,546	7,726
2025	2,879	2,762	3,424	3,161	4,188	6,272	8,357	7,830	5,255	3,690	3,481	3,835	8,357
2030	3,167	3,039	3,766	3,478	4,607	6,900	9,194	8,614	5,782	4,060	3,829	4,219	9,194

(a) Table D.12.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Monthly distribution of passengers assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.23

Peak International Outbound Passengers
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (w/ Transit) (b)	0.087	0.069	0.085	0.062	0.092	0.109	0.084	0.139	0.083	0.070	0.054	0.067	1.000
Distribution (w/o Transit) (c)	0.012	0.000	0.020	0.028	0.096	0.173	0.229	0.284	0.112	0.031	0.001	0.015	1.000
						Monthly (d)							
2010	13,392	10,572	13,043	9,577	14,252	16,843	12,904	21,438	12,863	10,783	8,361	10,294	154,325
2015	415	-	706	979	3,369	6,061	7,998	9,937	3,915	1,073	28	510	34,992
2020	481	-	819	1,136	3,908	7,031	9,277	11,526	4,541	1,245	32	591	40,588
2025	559	-	951	1,319	4,537	8,163	10,771	13,382	5,272	1,445	37	687	47,123
2030	649	-	1,105	1,533	5,273	9,486	12,517	15,552	6,127	1,680	44	798	54,763
						Average Busy Day (e)							**Maximum**
2010	446	390	435	330	475	580	430	714	443	359	288	343	714
2015	14	-	24	34	112	209	267	331	135	36	1	17	331
2020	16	-	27	39	130	242	309	384	156	41	1	20	384
2025	19	-	32	45	151	281	359	446	182	48	1	23	446
2030	22	-	37	53	176	327	417	518	211	56	1	27	518

(a) Table D.12.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Distribution excludes passengers on transit flights.
(d) Monthly distribution of passengers assumed to change to non-transit distribution by 2015.
(e) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.24

Summary Peak Outbound Passengers
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	143,437	123,623	161,603	142,711	186,001	251,821	301,083	298,687	202,661	169,117	150,858	167,808	2,299,411
2015	138,419	119,975	158,252	142,173	185,327	254,740	312,266	302,829	204,636	168,951	151,078	167,390	2,306,037
2020	145,896	126,409	166,983	150,043	196,090	270,084	332,209	322,137	217,081	178,356	159,445	176,843	2,441,576
2025	154,519	133,826	177,068	159,133	208,552	287,888	355,445	344,613	231,538	189,223	169,118	187,782	2,598,705
2030	165,286	143,089	189,708	170,518	224,218	310,374	385,116	373,196	249,883	202,854	181,283	201,576	2,797,103
													Maximum
						Average Busy Day							
2010	4,780	4,561	5,385	4,914	6,198	8,671	10,033	9,953	6,979	5,636	5,195	5,592	10,033
2015	4,613	4,426	5,274	4,896	6,176	8,772	10,406	10,091	7,047	5,630	5,202	5,578	10,406
2020	4,862	4,664	5,564	5,167	6,534	9,300	11,070	10,735	7,475	5,943	5,490	5,893	11,070
2025	5,149	4,937	5,901	5,480	6,950	9,913	11,845	11,484	7,973	6,306	5,823	6,258	11,845
2030	5,508	5,279	6,322	5,872	7,472	10,688	12,833	12,436	8,605	6,760	6,242	6,717	12,833
						Peak 60 Minute Enplanements							
2010	480	458	541	493	622	870	1,007	999	700	566	521	561	1,007
2015 (a)	440	422	503	467	589	837	993	963	672	537	496	532	993
2020	440	422	504	468	591	842	1,002	971	676	538	497	533	1,002
2025 (a)	453	435	520	483	612	873	1,043	1,011	702	555	513	551	1,043
2030	472	452	541	503	640	915	1,099	1,065	737	579	535	575	1,099
						Peak 60 Minute Deplanements							
2010	509	485	573	523	659	922	1,067	1,059	742	600	553	595	1,067
2015 (a)	491	471	561	521	657	934	1,108	1,074	750	599	554	594	1,108
2020	518	497	593	550	696	990	1,179	1,143	796	633	585	628	1,179
2025 (a)	538	516	616	572	726	1,036	1,237	1,200	833	659	608	654	1,237
2030	564	541	648	601	765	1,095	1,315	1,274	881	692	639	688	1,315

(a) Interpolated.

Sources: Tables D.21, D.22, and D.23 and design day flight schedules.

Table D.25

Peak Intra-Alaska Outbound Passengers
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.066	0.067	0.082	0.071	0.078	0.094	0.094	0.095	0.093	0.090	0.076	0.093	1.000
						Monthly (c)							
2010	20,643	20,917	25,608	22,141	24,219	29,092	29,217	29,691	29,080	27,944	23,539	28,977	311,068
2015	21,517	21,803	26,693	23,079	25,245	30,323	30,453	30,947	30,311	29,126	24,536	30,203	324,236
2020	21,528	21,813	26,705	23,090	25,257	30,338	30,468	30,962	30,325	29,140	24,548	30,218	324,392
2025	21,677	21,965	26,891	23,250	25,433	30,549	30,680	31,178	30,536	29,343	24,719	30,428	326,649
2030	22,149	22,443	27,476	23,756	25,986	31,213	31,348	31,856	31,201	29,982	25,256	31,090	333,757
						Average Busy Day (d)							**Maximum**
2010	705	791	874	781	827	1,026	998	1,014	1,026	954	831	989	1,026
2015	735	824	911	814	862	1,070	1,040	1,057	1,069	995	866	1,031	1,070
2020	735	825	912	815	862	1,070	1,040	1,057	1,070	995	866	1,032	1,070
2025	740	830	918	820	868	1,078	1,048	1,065	1,077	1,002	872	1,039	1,078
2030	756	848	938	838	887	1,101	1,070	1,088	1,101	1,024	891	1,062	1,101

(a) Table D.13.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Monthly distribution of passengers assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.26

Peak Other U.S. Outbound Passengers
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.054	0.048	0.060	0.051	0.087	0.134	0.156	0.148	0.094	0.058	0.052	0.058	1.000
						Monthly (c)							
2010	8,626	7,747	9,521	8,211	13,906	21,368	24,887	23,714	15,024	9,192	8,289	9,324	159,809
2015	9,417	8,457	10,394	8,964	15,181	23,327	27,168	25,888	16,401	10,035	9,049	10,179	174,457
2020	10,725	9,632	11,838	10,209	17,290	26,568	30,943	29,485	18,680	11,429	10,306	11,593	198,696
2025	12,108	10,874	13,364	11,525	19,519	29,993	34,932	33,286	21,088	12,902	11,635	13,088	224,314
2030	13,732	12,333	15,157	13,072	22,138	34,017	39,619	37,752	23,918	14,633	13,196	14,844	254,412
						Average Busy Day (d)							**Maximum**
2010	295	293	325	290	475	754	850	810	530	314	292	318	850
2015	322	320	355	316	518	823	928	884	579	343	319	348	928
2020	366	364	404	360	590	937	1,057	1,007	659	390	364	396	1,057
2025	413	411	456	407	666	1,058	1,193	1,137	744	441	411	447	1,193
2030	469	466	518	461	756	1,200	1,353	1,289	844	500	466	507	1,353

(a) Table D.13.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Monthly distribution of passengers assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.27

Peak International Outbound Passengers
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.034	0.136	0.089	0.000	0.019	0.070	0.159	0.270	0.223	0.000	0.000	0.000	1.000
						Monthly (c)							
2010	344	1,374	897	-	196	707	1,599	2,723	2,248	-	-	-	10,088
2015	392	1,564	1,021	-	223	805	1,820	3,100	2,559	-	-	-	- 11,484
2020	446	1,782	1,163	-	254	917	2,073	3,531	2,915	-	-	-	- 13,081
2025	508	2,031	1,326	-	290	1,045	2,363	4,024	3,322	-	-	-	- 14,908
2030	580	2,316	1,512	-	330	1,192	2,695	4,589	3,789	-	-	-	- 17,001
						Average Busy Day (d)							**Maximum**
2010	12	52	31	-	7	25	55	93	79	-	-	-	93
2015	13	59	35	-	8	28	62	106	90	-	-	-	106
2020	15	67	40	-	9	32	71	121	103	-	-	-	121
2025	17	77	45	-	10	37	81	137	117	-	-	-	137
2030	20	88	52	-	11	42	92	157	134	-	-	-	157

(a) Table D.13.
(b) Distribution based on 2010 monthly distribution of passengers from US DOT T100 data.
(c) Monthly distribution of passengers assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily seat distribution data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.28

Peak Total Outbound Passengers
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	29,613	30,038	36,026	30,352	38,321	51,167	55,703	56,128	46,352	37,136	31,828	38,301	480,965
2015	31,326	31,824	38,107	32,042	40,648	54,454	59,442	59,935	49,271	39,161	33,585	40,382	510,177
2020	32,699	33,227	39,706	33,299	42,801	57,822	63,484	63,978	51,920	40,569	34,854	41,811	536,169
2025	34,294	34,870	41,581	34,776	45,241	61,586	67,975	68,488	54,947	42,245	36,353	43,515	565,871
2030	36,461	37,092	44,145	36,828	48,454	66,422	73,662	74,197	58,907	44,615	38,452	45,934	605,170
													Maximum
						Average Busy Day							
2010	1,011	1,136	1,230	1,071	1,308	1,805	1,902	1,916	1,635	1,268	1,123	1,308	1,916
2015	1,070	1,203	1,301	1,131	1,388	1,921	2,030	2,046	1,738	1,337	1,185	1,379	2,046
2020	1,116	1,256	1,356	1,175	1,461	2,040	2,168	2,184	1,832	1,385	1,230	1,428	2,184
2025	1,171	1,318	1,420	1,227	1,545	2,173	2,321	2,338	1,939	1,442	1,283	1,486	2,338
2030	1,245	1,402	1,507	1,299	1,654	2,344	2,515	2,533	2,078	1,523	1,357	1,568	2,533
						Peak 60 Minute Enplanements							
2010	182	204	221	192	235	324	342	344	294	228	202	235	344
2015 (a)	178	201	217	188	231	320	338	341	290	223	198	230	341
2020	172	193	209	181	225	314	333	336	282	213	189	220	336
2025 (b)	177	199	214	185	233	328	350	353	292	218	193	224	353
2030 (b)	184	207	223	192	244	346	372	374	307	225	200	232	374
						Peak 60 Minute Deplanements							
2010	184	207	224	195	238	328	346	349	297	231	204	238	349
2015 (a)	201	226	244	212	261	361	381	384	327	251	223	259	384
2020	216	244	263	228	283	396	420	424	355	269	238	277	424
2025 (b)	223	250	270	233	294	413	441	444	368	274	244	282	444
2030 (b)	232	261	281	242	308	436	468	472	387	284	253	292	472

(a) Interpolated.
(b) Extrapolated.

Sources: Tables D.25, D.26, and D.27 and design day flight schedules.

Table D.29

Intra-Alaska Passenger Aircraft Departures by Type: ANC

	2009	2010	2015	2020	2030
AIRBUS A321					
BEECH 1900 A/B/C	6,565	6,711	7,815	10,107	12,462
BEECH 200 KINGAIR	327	1,064	892	5	
BEECH BARON B-55		4			
BOEING 737-400	6,503	6,587	3,932	2,665	2,588
BOEING 737-700/LR	60	179	1,504	1,255	984
BOEING 737-800	760	691	1,757	2,770	3,276
BOEING 737-900	74	108	217	366	390
BOEING 737-900ER					
BOEING 757-200	4				
BOMBARDIER LJET45		1			
BRITT-NORMAN BN2/A	2	5			
CASA 212		1			
CESSNA 206/207/209	12	4			
CESSNA 208	4,255	3,944	4,245	3,733	3,374
CESSNA 406	2	1			
DEHAV DHC8-100 -8	5,390	5,252	5,683	5,791	5,892
EMBRAER EMB-120 BRAS	4	9			
EMBRAER-145	1				
FAIRCHILD METRO 23	241	51			
PILATUS PC-12	743	740	1,148	1,205	1,670
PIPER PA-31/T-1020	592	846	736	648	671
PIPER PA-31T	43	40			
PIPER PA-32	18	4			
PIPER PA-34/39	11	6			
PIPER T-1040	1				
Q400				291	1,063
SAAB-FAIRCHD 340/A	1,171	44			
SAAB-FAIRCHD 340/B	4,392	5,566	6,247	5,809	4,436
SWEARINGEN METRO 3	110	26			
Grand Total	**31281**	**31884**	**34176**	**34645**	**36806**

Source: HNTB analysis. See text for details.

Table D.30

Other U.S. Passenger Aircraft Departures by Type: ANC

	2009	2010	2015	2020	2030
AIRB A320-100/200	100	221	428	494	376
AIRBUS A319	422	461	253	145	187
AIRBUS A321		4		60	60
AIRBUS A321 neo				99	112
AIRBUS A330-200	2				
AIRBUS A330-300	1				
BOEING 737-100/200	1	1			
BOEING 737-400	1,188	1,555	520		365
BOEING 737-700/LR	199	656	365	520	1,092
BOEING 737-800	5,020	4,476	6,361	6,991	7,880
BOEING 737-900	1,325	1,025	1,099	1,357	1,500
BOEING 737-900ER			412	1,146	1,689
BOEING 747-200/300	1				
BOEING 747-400	1	3	1		
BOEING 757-200	1,260	1,463	1,002	250	
BOEING 757-300	543	630	290	290	290
BOEING 767-200/ER	4				
BOEING 767-300/ER	91	85	79	35	27
BOEING 777-200/ER	2	2	2	3	4
CITATION III 650/550	1	1			
DOUGLAS DC-10-30	1				
FAIRCHILD METRO 23	8		4		
GULFSTREAM G-IV	1				
GULFSTREAM V/ G-V	1				
MCDONNELL D MD-11					
SAAB-FAIRCHD 340/B		5	10	11	12
SWEARINGEN METRO 3		1			
Grand Total	**10,172**	**10,589**	**10,826**	**11,401**	**13,594**

Source: HNTB analysis. See text for details.

Table D.31

International Passenger Aircraft Departures by Type: ANC

	2009	2010	2015	2020	2030
AIRB A320-100/200	1				
AIRBUS A319	68	95	90	90	90
AIRBUS A330-200	1				
AIRBUS A330-300	4	-			
BAE-748		3			
BEECH 1900 A/B/C	2	1			
BOEING 737-100/200		1			
BOEING 737-200C	-	4	2		
BOEING 737-700/LR		1	50	66	5
BOEING 737-800	3	2	3	4	87
BOEING 747-400	379	364	14	14	14
BOEING 757-200	3	-			
BOEING 757-300	1				
BOEING 767-300/ER	53	57	64	76	103
BOEING 777-200/ER	183	216	12	15	25
BOEING 777-300ER	1	2	1	2	3
BOEING 787-800			2	6	16
CANADAIR RJ-100/ER		6	3		
DEHAV DHC8-100 -8		2	2	2	2
DOUGLAS DC-10-30	1				
EMBRAER 190	55	28			
GULFSTREAM G-IV	1				
GULFSTREAM V/ G-V	1	2	2	2	2
MCDONNELL D MD-11	2	2			
SAAB-FAIRCHD 340/B		5	5	5	5
SWEARINGEN METRO 3		1			
Grand Total	**759**	**792**	**250**	**282**	**352**

Source: HNTB analysis. See text for details.

Table D.32

Intra-Alaska Passenger Aircraft Departures by Type: FAI

	2009	2010	2015	2020	2030
AIRBUS A321		1			
BEECH 1900 A/B/C	2,923	2,544	3,695	4,682	6,516
BEECH 200 KINGAIR	5	2			
BEECH 35/36	58	60	5		
BOEING 737-400	2,140	2,240	1,305	625	678
BOEING 737-700/LR	27	137	230	90	19
BOEING 737-800	733	593	909	1,566	1,594
BOEING 737-900	73	99	462	365	365
CESSNA 172 SKYHAWK	40	22	20	15	10
CESSNA 180		1			
CESSNA 185A/B/C	1				
CESSNA 206/207/209	796	756	552	393	200
CESSNA 208	3,061	3,710	4,470	5,084	6,325
CESSNA C-402/402A	21				
DEHAV DHC8-100 -8	1,049	1,214	852	826	744
DOUGLAS DC-6A	4				
EMBRAER EMB-120 BRAS	10	6			
FAIRCHILD METRO 23		1			
HELIO H250/295/395	55	48	15	10	
PILATUS PC-12		1			
PIPER PA-31/T-1020	5,240	5,009	5,190	4,861	4,005
PIPER PA-31T	223	204	49	55	61
PIPER PA-32	234	177	645	720	665
PIPER PA-34/39	5	3			
SAAB-FAIRCHD 340/B	5	-			
SHORTS 330		31			
SWEARINGEN METRO 3	1	1			
Grand Total	**16,704**	**16,860**	**18,399**	**19,292**	**21,182**

Source: HNTB analysis. See text for details.

Table D.33

Other U.S. Passenger Aircraft Departures by Type: FAI

	2009	2010	2015	2020	2030
AIRB A320-100/200	1				16
AIRBUS A319		67	66	75	76
BOEING 737-100/200	10	4			
BOEING 737-400	96	214			
BOEING 737-700/LR	7	97	170	298	411
BOEING 737-800	416	338	571	459	681
BOEING 737-900	453	418	400	543	589
BOEING 737-900ER				202	246
BOEING 757-200	192	183	182		
EMBRAER-145	1				
FAIRCHILD METRO 23	1				
Grand Total	**1,177**	**1,321**	**1,389**	**1,577**	**2,019**

Source: HNTB analysis. See text for details.

Table D.34

International Passenger Aircraft Departures by Type: FAI

	2009	2010	2015	2020	2030
BAE-748	51	74	75		
BEECH 1900 A/B/C	3	2	2	2	2
BOEING 737-200C	0	2	2	1	
BOEING 747-400	20	11	11	11	11
BOEING 767-300/ER	17	27	32	35	45
BOEING 777-200/ER		1	1	1	3
BOEING 787-800			3	4	15
DEHAV DHC8-100 -8	2				
FAIRCHILD METRO 23		1			
Q400				52	52
Grand Total	**93**	**118**	**126**	**106**	**128**

Source: HNTB analysis. See text for details.

Table D.35

Peak Intra-Alaska Passenger Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.078	0.070	0.078	0.076	0.082	0.094	0.100	0.099	0.086	0.080	0.076	0.079	1.000
						Monthly (c)							
2010	2,487	2,245	2,500	2,438	2,604	3,013	3,203	3,147	2,747	2,558	2,433	2,508	31,884
2015	2,666	2,407	2,680	2,613	2,792	3,229	3,433	3,373	2,944	2,742	2,608	2,689	34,176
2020	2,702	2,440	2,717	2,649	2,830	3,274	3,480	3,419	2,985	2,779	2,644	2,726	34,645
2025	2,787	2,516	2,802	2,732	2,918	3,376	3,589	3,526	3,078	2,866	2,727	2,811	35,726
2030	2,871	2,592	2,886	2,814	3,006	3,478	3,697	3,633	3,171	2,953	2,809	2,896	36,806
						Average Busy Day (d)							**Maximum**
2010	83	83	84	84	87	104	107	105	95	86	84	84	107
2015	89	89	90	90	93	112	115	113	102	92	90	90	115
2020	90	90	91	92	95	113	116	114	103	93	91	91	116
2025	93	93	94	94	98	117	120	118	106	96	94	94	120
2030	96	96	96	97	100	120	124	121	110	99	97	97	124

(a) Table 5.7
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.36

Peak Other U.S. Passenger Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.059	0.053	0.063	0.059	0.085	0.125	0.139	0.133	0.087	0.071	0.061	0.065	1.000
						Monthly (c)							
2010	628	560	662	624	901	1,321	1,470	1,410	918	755	647	693	10,589
2015	642	572	677	638	921	1,350	1,503	1,442	938	772	661	709	10,826
2020	676	603	713	672	970	1,422	1,582	1,518	988	813	696	747	11,401
2025	742	661	781	736	1,064	1,559	1,735	1,664	1,083	891	763	818	12,498
2030	807	719	850	801	1,157	1,696	1,887	1,811	1,178	970	830	890	13,594
						Average Busy Day (d)							**Maximum**
2010	21	21	22	22	30	46	49	47	32	25	22	23	49
2015	21	21	23	22	31	47	50	48	32	26	23	24	50
2020	23	22	24	23	32	49	53	51	34	27	24	25	53
2025	25	24	26	25	36	54	58	56	37	30	26	27	58
2030	27	27	28	28	39	59	63	61	41	32	29	30	63

(a) Table 5.7
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.37

Peak International Passenger Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.055	0.044	0.063	0.049	0.098	0.139	0.118	0.171	0.094	0.058	0.055	0.057	1.000
	0.007	0.002	0.026	0.015	0.113	0.189	0.215	0.250	0.107	0.026	0.024	0.026	1.000
						Monthly (c)							
2010	43	35	50	39	78	110	93	136	75	46	43	45	792
2015	2	1	7	4	28	47	54	63	27	7	6	7	250
2020	2	1	7	4	32	53	61	71	30	7	7	7	282
2025	2	1	8	5	36	60	68	79	34	8	8	8	317
2030	2	1	9	5	40	67	76	88	37	9	8	9	352
													Maximum
						Average Busy Day (d)							
2010	1	1	2	1	3	4	3	5	3	2	1	2	5
2015	0	0	0	0	1	2	2	2	1	0	0	0	2
2020	0	0	0	0	1	2	2	2	1	0	0	0	2
2025	0	0	0	0	1	2	2	3	1	0	0	0	3
2030	0	0	0	0	1	2	3	3	1	0	0	0	3

(a) Table 5.7
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.38

Peak Total Passenger Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	3,159	2,840	3,212	3,100	3,583	4,444	4,766	4,693	3,739	3,359	3,124	3,247	43,265
2015	3,310	2,980	3,363	3,255	3,741	4,627	4,989	4,877	3,909	3,520	3,276	3,404	45,252
2020	3,381	3,043	3,437	3,325	3,832	4,749	5,123	5,008	4,003	3,600	3,347	3,480	46,328
2025	3,530	3,177	3,591	3,473	4,018	4,995	5,391	5,270	4,195	3,766	3,498	3,637	48,540
2030	3,680	3,311	3,745	3,621	4,203	5,240	5,660	5,531	4,386	3,932	3,648	3,795	50,752
						Average Busy Day							Maximum
2010	106	105	107	107	120	153	159	157	129	112	108	109	159
2015	111	110	112	112	125	160	167	163	135	118	113	114	167
2020	113	113	115	115	128	164	171	167	138	120	116	116	171
2025	118	118	120	120	134	173	180	176	145	126	121	122	180
2030	123	123	125	125	140	181	189	185	152	131	126	127	189
						Peak 60 Minute Departures							
2010	9	9	9	9	11	13	14	14	11	10	9	10	14
2015 (a)	10	10	10	10	11	14	15	15	12	11	10	10	15
2020	11	11	11	11	12	15	16	16	13	11	11	11	16
2025 (a)	11	11	12	12	13	17	17	17	14	12	12	12	17
2030	12	12	13	13	14	18	19	18	15	13	13	13	19
						Peak 60 Minute Arrivals							
2010	11	11	11	11	12	15	16	16	13	11	11	11	16
2015 (a)	11	11	11	11	12	15	16	16	13	11	11	11	16
2020	11	11	11	11	12	15	16	16	13	11	11	11	16
2025 (a)	11	11	12	12	13	17	17	17	14	12	12	12	17
2030	12	12	13	13	14	18	19	18	15	13	13	13	19
						Peak 60 Minute Operations							
2010	19	19	19	19	21	27	28	28	23	20	19	19	28
2015 (a)	18	18	19	19	21	26	27	27	22	19	19	19	27
2020	17	17	17	17	19	25	26	25	21	18	18	18	26
2025 (a)	18	18	19	19	21	27	28	27	22	20	19	19	28
2030	19	19	20	20	22	29	30	29	24	21	20	20	30

(a) Interpolated.

Sources: Tables D.35, D.36, and D.37.

Table D.39

Peak Intra-Alaska Passenger Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.072	0.071	0.085	0.081	0.083	0.094	0.095	0.099	0.088	0.086	0.071	0.075	1.000
						Monthly (c)							
2010	1,213	1,196	1,433	1,359	1,394	1,590	1,609	1,665	1,486	1,449	1,197	1,269	16,860
2015	1,324	1,305	1,564	1,483	1,522	1,735	1,756	1,817	1,621	1,581	1,306	1,384	18,399
2020	1,388	1,368	1,640	1,555	1,596	1,819	1,842	1,905	1,700	1,657	1,369	1,452	19,292
2025	1,456	1,435	1,721	1,632	1,674	1,908	1,932	1,998	1,783	1,739	1,437	1,523	20,237
2030	1,524	1,502	1,801	1,708	1,752	1,998	2,022	2,091	1,866	1,820	1,504	1,594	21,182
						Average Busy Day (d)							**Maximum**
2010	43	47	51	50	50	59	57	59	55	52	44	45	59
2015	47	51	56	55	54	64	63	65	60	56	48	49	65
2020	49	54	58	57	57	67	66	68	63	59	50	52	68
2025	52	57	61	60	60	70	69	71	66	62	53	54	71
2030	54	59	64	63	62	74	72	74	69	65	55	57	74

(a) Table 5.8
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.40

Peak Other U.S. Passenger Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.050	0.042	0.060	0.050	0.099	0.146	0.170	0.158	0.086	0.047	0.045	0.047	1.000
						Monthly (c)							
2010	66	56	79	66	131	193	225	209	114	62	59	62	1,321
2015	70	59	83	69	137	203	236	220	120	65	62	65	1,389
2020	79	67	95	79	156	230	268	250	136	74	70	74	1,577
2025	90	76	108	90	178	262	306	285	155	84	80	84	1,798
2030	101	85	121	101	200	295	343	320	174	94	90	94	2,019
													Maximum
						Average Busy Day (d)							
2010	2	2	3	2	5	7	8	7	4	2	2	2	8
2015	2	2	3	3	5	7	8	8	4	2	2	2	8
2020	3	3	3	3	6	8	10	9	5	3	3	3	10
2025	3	3	4	3	6	10	11	10	6	3	3	3	11
2030	4	3	4	4	7	11	12	11	6	3	3	3	12

(a) Table 5.8
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.41

Peak International Passenger Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.009	0.050	0.037	0.000	0.009	0.119	0.338	0.315	0.110	0.000	0.000	0.014	1.000
						Monthly (c)							
2010	1	6	4	-	1	14	40	37	13	-	-	2	118
2015	1	6	5	-	1	15	43	40	14	-	-	2	126
2020	1	5	4	-	1	13	36	33	12	-	-	1	106
2025	1	6	4	-	1	14	40	37	13	-	-	2	- 117
2030	1	6	5	-	1	15	43	40	14	-	-	2	128
													Maximum
						Average Busy Day (d)							
2010	0	0	0	-	0	1	1	1	0	-	-	0	1
2015	0	0	0	-	0	1	2	1	1	-	-	0	2
2020	0	0	0	-	0	0	1	1	0	-	-	0	1
2025	0	0	0	-	0	1	1	1	0	-	-	0	1
2030	0	0	0	-	0	1	2	1	1	-	-	0	2

(a) Table 5.8
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiests days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table D.42

Peak Total Passenger Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	1,281	1,258	1,517	1,425	1,526	1,797	1,874	1,911	1,613	1,510	1,256	1,332	18,299
2015	1,395	1,370	1,652	1,553	1,660	1,953	2,035	2,076	1,755	1,646	1,368	1,451	19,914
2020	1,468	1,440	1,739	1,634	1,752	2,062	2,146	2,188	1,848	1,731	1,440	1,527	20,975
2025	1,548	1,517	1,833	1,721	1,852	2,185	2,277	2,320	1,951	1,823	1,517	1,608	22,152
2030	1,627	1,594	1,927	1,808	1,953	2,307	2,409	2,452	2,055	1,914	1,594	1,690	23,329
						Average Busy Day							**Maximum**
2010	46	50	54	52	54	66	67	68	59	54	46	47	68
2015	50	54	59	57	59	72	72	74	65	59	50	52	74
2020	52	57	62	60	62	76	76	78	68	62	53	54	78
2025	55	60	65	63	66	80	81	83	72	65	56	57	83
2030	58	63	69	67	70	85	86	87	76	68	59	60	87
						Peak 60 Minute Departures							
2010	12	13	14	13	14	17	17	17	15	14	12	12	17
2015 (a)	10	11	12	12	12	15	15	16	14	12	11	11	16
2020	9	9	10	10	10	13	13	13	11	10	9	9	13
2025 (b)	9	10	11	10	11	13	13	13	12	11	9	9	13
2030 (b)	9	10	11	11	11	14	14	14	12	11	9	10	14
						Peak 60 Minute Arrivals							
2010	8	8	9	9	9	11	11	12	10	9	8	8	12
2015 (a)	7	8	9	8	9	11	11	11	10	9	7	8	11
2020	7	7	8	8	8	10	10	10	9	8	7	7	10
2025 (b)	7	8	8	8	8	10	10	10	9	8	7	7	10
2030 (b)	7	8	8	8	9	10	11	11	9	8	7	7	11
						Peak 60 Minute Operations							
2010	12	14	15	14	15	18	18	19	16	15	13	13	19
2015 (a)	12	13	14	14	14	17	17	18	15	14	12	12	18
2020	11	12	13	12	13	16	16	16	14	13	11	11	16
2025 (b)	11	12	13	13	13	16	16	17	14	13	11	12	17
2030 (b)	11	12	14	13	14	17	17	17	15	13	12	12	17

(a) Interpolated.
(b) Extrapolated.

Sources: Tables D.39, D.40, and D.41.

APPENDIX E

ADDITIONAL AIR CARGO PROJECTIONS

Table E.1

ANC Intra-Alaska Air Cargo Flows (in Tons): 2010 (a)

Inbound				Outbound			
Market		**Tonnage**	**Percent**	**Market**		**Tonnage**	**Percent**
Kodiak, AK: Kodiak	ADQ	3,225	13.8%	Bethel, AK: Bethel Airport	BET	22,813	24.2%
Fairbanks, AK: Fairbanks International	FAI	3,030	12.9%	Nome, AK: Nome Airport	OME	11,350	12.0%
King Salmon, AK: King Salmon Airport	AKN	1,056	4.5%	Kotzebue, AK: Ralph Wien Memori	OTZ	11,974	12.7%
Bethel, AK: Bethel Airport	BET	1,555	6.6%	Fairbanks, AK: Fairbanks Internati	FAI	6,227	6.6%
Juneau, AK: Juneau	JNU	1,468	6.3%	Dillingham, AK: Dillingham Airport	DLG	6,972	7.4%
Kotzebue, AK: Ralph Wien Memorial	OTZ	2,038	8.7%	Juneau, AK: Juneau	JNU	2,976	3.2%
Nome, AK: Nome Airport	OME	1,029	4.4%	King Salmon, AK: King Salmon Air	AKN	3,478	3.7%
Cordova, AK: Mile 13 Field	CDV	1,436	6.1%	Unalakleet, AK: Unalakleet Airport	UNK	3,285	3.5%
Dutch Harbor, AK: Dutch Harbor Airport	DUT	555	2.4%	Aniak, AK: Aniak Airport	ANI	3,664	3.9%
Dillingham, AK: Dillingham Airport	DLG	732	3.1%	Kodiak, AK: Kodiak	ADQ	1,990	2.1%
Kenai, AK: Kenai Municipal	ENA	648	2.8%	Emmonak, AK: Emmonak Alas.	EMK	2,244	2.4%
Anchorage, AK: Anchorage Internationa	ANC	206	0.9%	St. Mary s, AK: St Marys	KSM	2,366	2.5%
Unalakleet, AK: Unalakleet Airport	UNK	714	3.1%	Iliamna, AK: Iliamna Roadhouse	ILI	1,334	1.4%
Cold Bay, AK: Cold Bay Airport	CDB	551	2.4%	Deadhorse, AK: Deadhorse Airport	SCC	1,532	1.6%
Emmonak, AK: Emmonak Alas.	EMK	464	2.0%	Red Dog, AK: Red Dog Mine	RDB	2,027	2.2%
Iliamna, AK: Iliamna Roadhouse	ILI	312	1.3%	Mcgrath, AK: Mc Grath	MCG	1,298	1.4%
Sandpoint, AK: Sand Point	SDP	552	2.4%	Barrow, AK: Wiley Post/Will Roger	BRW	1,663	1.8%
Deadhorse, AK: Deadhorse Airport	SCC	289	1.2%	Cold Bay, AK: Cold Bay Airport	CDB	892	0.9%
Red Dog, AK: Red Dog Mine	RDB	340	1.5%	Kenai, AK: Kenai Municipal	ENA	582	0.6%
Barrow, AK: Wiley Post/Will Rogers Me	BRW	553	2.4%	Cordova, AK: Mile 13 Field	CDV	909	1.0%
Other	Other	2,653	11.3%	Other		4,698	5.0%
Total		23,406	100.0%	Total		94,274	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.2

FAI Intra-Alaska Air Cargo Flows (in Tons): 2010 (a)

Inbound					Outbound			
Market		**Tonnage**	**Percent**		**Market**		**Tonnage**	**Percent**
Anchorage, AK: Anchorage Internationa	ANC	6,227	90.4%		Barrow, AK: Wiley Post/Will Roger	BRW	1,358	11.7%
Barrow, AK: Wiley Post/Will Rogers Me	BRW	137	2.0%		Anchorage, AK: Anchorage Interna	ANC	3,030	26.1%
Deadhorse, AK: Deadhorse Airport	SCC	26	0.4%		Kotzebue, AK: Ralph Wien Memor	OTZ	268	2.3%
Galena, AK: Galena Airport	GAL	51	0.7%		Fort Yukon, AK: Fort Yukon Airpor	FYU	927	8.0%
Kotzebue, AK: Ralph Wien Memorial	OTZ	25	0.4%		Deadhorse, AK: Deadhorse Airpor	SCC	1,264	10.9%
Barter Island, AK: Barter Island Dew St	BTI	16	0.2%		Galena, AK: Galena Airport	GAL	561	4.8%
Fort Yukon, AK: Fort Yukon Airport	FYU	39	0.6%		Anaktuvuk Pass, AK: Anaktuvuk P	AKP	530	4.6%
Anaktuvuk Pass, AK: Anaktuvuk Pass /	AKP	17	0.2%		Tanana, AK: Ralph M Calhoun Me	TAL	261	2.3%
Arctic Village, AK: Wien Arctic Village	ARC	4	0.1%		Allakaket, AK: Allakaket Airport	AET	216	1.9%
Allakaket, AK: Allakaket Airport	AET	7	0.1%		Arctic Village, AK: Wien Arctic Villa	ARC	244	2.1%
Venetie, AK: Venetie Airport	VEE	8	0.1%		Venetie, AK: Venetie Airport	VEE	361	3.1%
Alpine, AK: Alpine Air Strip	DQH	-	0.0%		Barter Island, AK: Barter Island De	BTI	121	1.0%
Nome, AK: Nome Airport	OME	2	0.0%		Nome, AK: Nome Airport	OME	30	0.3%
Tanana, AK: Ralph M Calhoun Meml	TAL	14	0.2%		Ruby, AK: Ruby Airport	RBY	217	1.9%
Point Lay, AK: Point Lay Dew Station	PIZ	-	0.0%		Hughes, AK: Hughes Airport	HUS	229	2.0%
Stevens Village, AK: Stevens Village Ai	SVS	108	1.6%		Huslia, AK: Huslia Airport	HSL	188	1.6%
Umiat, AK: Umiat Airport	UMT	6	0.1%		Bettles, AK: Bettles Airport	BTT	91	0.8%
Dahl Creek, AK: Dahl Creek Airport	DCK	1	0.0%		Beaver, AK: Beaver Airport	WBQ	64	0.6%
Hughes, AK: Hughes Airport	HUS	1	0.0%		Eagle, AK: Eagle Airport	EAA	116	1.0%
Bettles, AK: Bettles Airport	BET	3	0.0%		Stevens Village, AK: Stevens Villa	SVS	362	3.1%
Other		194	2.8%		Other		1,154	10.0%
Total		6,886	100.0%		Total		11,592	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.3

Forecast Air Cargo Tonnage Between ANC and FAI

Year	Jet Fuel Price (a)	Air Cargo Tonnage (b)	
		ANC to FAI	FAI to ANC
2010	2.15	6,227	3,030
2015	3.23	6,827	2,325
2020	3.66	6,459	1,956
2025	3.98	6,188	1,685
2030	4.19	6,008	1,506
Average Annual Growth Rate			
2010-2030	3.4%	-0.2%	-3.4%

(a) Table 3.2
(b) Estimated using following equation:

OUTCGO = 5088.8 + (JFUEL * -9.5) + FAI + REC

where:	OUTCGO =	Outbound Cargo tonnage
	JFUEL=	Average price of jet fuel in 2005 dollars.
	REC=	Instrument variable equal to -1833.7 during 2008-2009 recession and 0 in other years.
	FAI=	Instrument variable equal to 4502.3 for outbount cargo tonnage from ANC to FAI and 0 in other years.

R-Squared =		0.947
Adjusted R-Squared =		0.931
F-statistic =		59.79
T-statistics	Intercept=	8.24
	JFUEL=	-2.93
	REC=	-3.58
	FAI=	12.66

Sources: As noted and HNTB analysis.

Table E.4

Forecast Intra-state Air Cargo Tonnage for ANC and FAI

Year	Rest of Alaska Employment	ANC Outbound (b)	ANC Inbound (c)	ANC Total	FAI Outbound (b)	FAI Inbound (c)	FAI Total
2010	154,402	88,047	20,376	108,423	8,562	659	9,221
2015	157,181	96,733	22,816	119,549	9,407	694	10,101
2020	162,441	100,274	23,624	123,898	9,751	719	10,470
2025	166,410	102,953	24,235	127,188	10,012	737	10,749
2030	169,451	105,010	24,703	129,713	10,212	751	10,963
Average Annual Growth Rate							
2010-2030	0.5%	0.9%	1.0%	0.9%	0.9%	0.7%	0.9%

(a) Table 2.2.
(b) Outbound tonnage estimated using following equation:

AKOUTCGO = (10^-.699) * (AKEMP ^ 1.092) * FAI * REC * TAT2

where: AKOUTCGO = Outbound cargo tonnage to the rest of Alaska.
AKEMP= Employment in the rest of Alaska
FAI = Instrument variable equal to (10^-.699) for FAI
REC = Instrument variable equal to (10^-.0324) during 2008-2009 recession and 1 during other years.
TAT2 = Instrument variable equal to (10^-.315) during post-2006 reduction in Tatondocs air service and 1 in other years.

R-Squared =		0.999
Adjusted R-Squared =		0.999
F-statistic =		2619.2
T-statistics	Intercept=	-0.26
	AKEMP=	2.11
	FAI =	-56.33
	REC =	-2.53
	TAT2 =	-18.54

(c) Inbound tonnage estimated using following equation:

AKINCGO = (10^-.453) * (AKOUTCGO^.968) * FAI

where: AKINCGO = Inbound cargo tonnage from the rest of Alaska.
AKOUTCGO = Outbound cargo tonnage to the rest of Alaska.
FAI = Instrument variable equal to (10^-.508) for FAI

R-Squared =		0.997
Adjusted R-Squared =		0.996
F-statistic =		1582.9
T-statistics	Intercept=	-0.781
	AKOUTCGO =	8.262
	FAI =	5.094

Sources: As noted and HNTB analysis.

Table E.5

Forecast Air Cargo Tonnage Between ANC and FAI
Belly vs. All-Cargo

	ANC to FAI			FAI to ANC			FAA US Domestic Forecast (d)			Passenger Forecast	
Year	**Total (a)**	**Belly (b)**	**All-Cargo (c)**	**Total (a)**	**Belly (b)**	**All-Cargo (c)**	**Passenger RTMs**	**Passenger RPMs**	**Ratio**	**ANC to FAI (e)**	**FAI to ANC (f)**
2010	6,227	2,795	3,432	3,030	1,073	2,157	1,622.70	680.1	2.39	244,545	218,887
2015	6,827	2,669	4,158	2,325	1,025	1,300	1,911.80	817.3	2.34	238,184	215,790
2020	6,459	2,293	4,166	1,956	880	1,076	2,062.00	963.4	2.14	223,632	205,030
2025	6,188	2,041	4,146	1,685	784	902	2,209.30	1,101.60	2.01	212,497	197,056
2030	6,008	1,858	4,151	1,506	713	793	2,344.20	1,265.00	1.85	209,262	196,157
						Average Annual Growth Rate					
2010-2030	-0.2%	-2.0%	1.0%	-3.4%	-2.0%	-4.9%	1.9%	3.2%	-1.3%	-0.8%	-0.5%

(a) Table E.3.
(b) Projected to increase at same rate as FAA ratio of passenger carrier revenue ton miles (RTMs) to passenger carrier revenue passenger miles (RPMs).
(c) Total tonnage less belly tonnage.
(d) FAA Aerospace Forecasts: FY 2011-2031.
(e) Table 5.3.
(f) Table 5.4.

Sources: As noted and HNTB analysis.

Table E.6

Forecast Air Cargo Tonnage Between ANC and Rest of Alaska
Belly vs. All-Cargo

Year	ANC Outbound Total (a)	ANC Outbound Belly (b)	ANC Outbound All-Cargo (c)	ANC Inbound Total (a)	ANC Inbound Belly (b)	ANC Inbound All-Cargo (c)	FAA US Domestic Forecast (d) Passenger RTMs	FAA US Domestic Forecast (d) Passenger RPMs	FAA US Domestic Forecast (d) Ratio	ANC Outbound Passengers (e)
2010	88,047	17,676	70,371	20,376	6,577	13,799	1,622.70	680.1	2.39	561,496
2015	96,733	19,479	77,254	22,816	7,248	15,568	1,911.80	817.3	2.34	631,147
2020	100,274	18,960	81,315	23,624	7,055	16,569	2,062.00	963.4	2.14	671,395
2025	102,953	18,792	84,162	24,235	6,992	17,243	2,209.30	1,101.60	2.01	710,173
2030	105,010	18,119	86,891	24,703	6,742	17,962	2,344.20	1,265.00	1.85	741,063
Average Annual Growth Rate										
2010-2030	0.9%	0.1%	1.1%	1.0%	0.1%	1.3%	1.9%	3.2%	-1.3%	1.4%

(a) Table E.4.
(b) Projected to increase at same rate as FAA ratio of passenger carrier revenue ton miles (RTMs) to passenger carrier revenue passenger miles (RPMs).
(c) Total tonnage less belly tonnage.
(d) FAA Aerospace Forecasts: FY 2011-2031.
(e) Table D.12.

Sources: As noted and HNTB analysis.

Table E.7

Forecast Air Cargo Tonnage Between FAI and Rest of Alaska
Belly vs. All-Cargo

Year	FAI Outbound Total (a)	FAI Outbound Belly (b)	FAI Outbound All-Cargo (c)	FAI Inbound Total (a)	FAI Inbound Belly (b)	FAI Inbound All-Cargo (c)	FAA US Domestic Forecast (d) Passenger RTMs	FAA US Domestic Forecast (d) Passenger RPMs	FAA US Domestic Forecast (d) Ratio	FAI Outbound Passengers (e)
2010	8,562	5,649	2,913	659	338	321	1,622.70	680.1	2.39	92,181
2015	9,407	6,515	2,891	694	390	304	1,911.80	817.3	2.34	108,446
2020	9,751	6,562	3,189	719	393	326	2,062.00	963.4	2.14	119,362
2025	10,012	6,675	3,336	737	399	338	2,209.30	1101.6	2.01	129,593
2030	10,212	6,549	3,662	751	392	359	2,344.20	1265.0	1.85	137,599
Average Annual Growth Rate										
2010-2030	0.9%	0.7%	1.2%	0.7%	0.7%	0.6%	1.9%	3.2%	-1.3%	2.0%

(a) Table E.4.
(b) Projected to increase at same rate as FAA ratio of passenger carrier revenue ton miles (RTMs) to passenger carrier revenue passenger miles (RPMs).
(c) Total tonnage less belly tonnage.
(d) FAA Aerospace Forecasts: FY 2011-2031.
(e) Table D.13.

Sources: As noted and HNTB analysis.

Table E.8

Forecast ANC Intrastate Air Cargo Aircraft Capacity Requirements

	ANC Outbound to FAI			ANC Outbound to rest of Alaska		
Year	**Total All-Cargo Tonnage (a)**	**Load Factor (b)**	**Required Capacity (c)**	**Total All-Cargo Tonnage (d)**	**Load Factor (e)**	**Required Capacity (c)**
2010	3,432	67.5%	5,083	70,371	80.5%	87,380
2015	4,158	80.5%	4,158	77,254	80.5%	95,927
2020	4,166	80.5%	4,165	81,315	80.5%	100,969
2025	4,146	80.5%	4,145	84,162	80.5%	104,504
2030	4,151	80.5%	4,150	86,891	80.5%	107,893
			Average Annual Growth Rate			
2010-2030	1.0%	0.9%	-1.0%	1.1%	0.0%	1.1%

(a) Table E.5.
(b) Assumed to converge to same load factor as to rest of Alaska.
(c) All-cargo tonnage divided by load factor.
(d) Table E.6.
(e) Assumed to remain constant.

Sources: As noted and HNTB analysis.

Table E.9

Forecast FAI Intrastate Air Cargo Aircraft Capacity Requirements

	FAI Outbound to ANC			FAI Outbound to rest of Alaska		
Year	**Total All-Cargo Tonnage (a)**	**Load Factor (b)**	**Required Capacity (c)**	**Total All-Cargo Tonnage (d)**	**Load Factor (e)**	**Required Capacity (f)**
2010	2,157	28.3%	7,626	2,913	69.6%	4,187
2015	1,300	20.9%	6,237	2,891	69.6%	4,156
2020	1,076	17.2%	6,248	3,189	69.6%	4,584
2025	902	14.5%	6,218	3,336	69.6%	4,795
2030	793	12.7%	6,225	3,662	69.6%	5,264
			Average Annual Growth Rate			
2010-2030	-4.9%	-3.9%	-1.0%	1.2%	0.0%	1.2%

(a) Table E.5.
(b) All-cargo tonnage divided by required capacity.
(c) Assumed to increase at same rate as outbound required capacity.
(d) Table E.7.
(e) Assumed to remain constant.
(f) All-cargo tonnage divided by load factor.

Sources: As noted and HNTB analysis.

Table E.10

Eastbound Air Cargo Flows through ANC: 2010 (a)
Passenger and All-Cargo

Inbound

Market	Tonnage	Percent
People's Republic of China		
Guangzhou, China: Guangzhou Airport	17,657	1.1%
Nanjing, China: Nanjing Airport	22,809	1.4%
Shanghai, China: Pu Dong	231,566	13.8%
Shenzhen, China: Shenzhen Airport	12,448	0.7%
Other PRC	547	0.0%
Hong Kong Intl Airport	356,210	21.3%
Macau- Macau --	-	0.0%
Japan		
Nagoya, Japan: Nagoya Airport	39,510	2.4%
Osaka, Japan: Kansai International	34,071	2.0%
Tokyo, Japan: Narita	95,015	5.7%
Other Japan	-	0.0%
Russia		
Khabarovsk- Russia	245	0.0%
Other Russia	4	0.0%
South Korea		
Incheon Intl Apt- Seoul --	478,290	28.6%
Other South Korea	114	0.0%
Taiwan		
Chiang Kai Shek Intl Arpt --	384,049	23.0%
Other Taiwan	-	0.0%
Other	80	0.0%
Total	1,672,615	100.0%

Outbound

Market	Tonnage	Percent
U.S. (Non-Alaska)		
Los Angeles, CA: Los Angeles Internatio	251,890	14.7%
Oakland, CA: Metropolitan Oakland Inter	21,206	1.2%
Ontario/San Bernardino, CA: Ontario Inte	28,443	1.7%
Miami, FL: Miami International	76,637	4.5%
Atlanta, GA: Hartsfield-Jackson	124,541	7.3%
Chicago, IL: O Hare	376,817	22.0%
Rockford, IL: Greater Rockford	9,625	0.6%
Indianapolis, IN: Indianapolis Internationa	31,196	1.8%
Louisville, KY: Standiford Field	178,964	10.4%
New York, NY: Kennedy International	235,495	13.7%
Newark, NJ: Newark Liberty Internationa	21,379	1.2%
Columbus, OH: Rickenbacker Internatior	11,673	0.7%
Covington, KY: Cincinnati/ Northern Ken	80,529	4.7%
Memphis, TN: Memphis International	88,351	5.1%
Dallas/Ft.Worth, TX: Dallas/Ft Worth Inte	130,083	7.6%
Dallas/Ft.Worth, TX: Fort Worth Alliance	5,222	0.3%
Seattle, WA: Seattle/Tacoma Internation	7,303	0.4%
Other U.S.	28,009	1.6%
Canada		
Toronto, Canada: Pearson International	5,883	0.3%
Other Canada	80	0.0%
Europe		
Other Europe	2,121	0.1%
Latin America		
Other Latin America	116	0.0%
Total	1,715,563	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.11

Westbound Air Cargo Flows through ANC: 2010 (a)

Inbound				Outbound		
Market	**Tonnage**	**Percent**		**Market**	**Tonnage**	**Percent**
U.S. (Non-Alaska)				**People's Republic of China**		
Los Angeles, CA: Los Angeles Internat	53,113	6.5%		Beijing, China: Beijing Capital	40,530	5.4%
Oakland, CA: Metropolitan Oakland Int	22,737	2.8%		Shanghai, China: Pu Dong	35,850	4.8%
Ontario/San Bernardino, CA: Ontario In	12,774	1.6%		Other PRC	1,539	0.2%
San Francisco, CA: International	13,810	1.7%				
Miami, FL: Miami International	13,646	1.7%		Hong Kong Intl Airport	164,806	21.9%
Atlanta, GA: Hartsfield-Jackson	32,987	4.0%				
Chicago, IL: O Hare	197,963	24.2%		**Japan**		
Rockford, IL: Greater Rockford	11,553	1.4%		Osaka, Japan: Kansai Internationa	39,254	5.2%
Indianapolis, IN: Indianapolis Internatio	15,514	1.9%		Tokyo, Japan: Narita	89,270	11.9%
Louisville, KY: Standiford Field	71,387	8.7%		Other Japan	4,689	0.6%
New York, NY: Kennedy International	118,765	14.5%				
Newark, NJ: Newark Liberty Internation	36,700	4.5%		**South Korea**		
Covington, KY: Cincinnati/ Northern Ke	33,782	4.1%		Seoul, Republic of Korea: Incheon	182,415	24.3%
Memphis, TN: Memphis International	51,802	6.3%		Other South Korea	440	0.1%
Dallas/Ft.Worth, TX: Dallas/Ft Worth In	45,914	5.6%				
Houston, TX: Houston Intercontinental	19,013	2.3%		**Taiwan**		
Seattle, WA: Seattle/Tacoma Internatio	25,531	3.1%		Taipei, Chinese Taipei: Chiang Ka	192,286	25.6%
Other U.S.	8,568	1.0%		Other Taiwan	9	0.0%
Canada				Other Asia	139	0.0%
Calgary, Canada: Calgary International	5,172	0.6%				
Vancouver, Canada: VancouverInterna	7,607	0.9%				
Toronto, Canada: Pearson Internationa	18,368	2.2%				
Other Canada	1,319	0.2%				
Europe						
Other Europe	73	0.0%				
Latin America						
Other Latin America	-	0.0%				
Total	818,098	100.0%		**Total**	751,227	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.12

Eastbound Air Cargo Flows through FAI: 2010 (a)

Inbound			Outbound		
Market	**Tonnage**	**Percent**	**Market**	**Tonnage**	**Percent**
People's Republic of China			**U.S. (Non-Alaska)**		
Shanghai, China: Pu Dong	177	4.3%	Los Angeles, CA: Los Angeles Internatio	312	6.9%
Other PRC	10	0.2%	Miami, FL: Miami International	112	2.5%
			Chicago, IL: O Hare	2,808	62.4%
Hong Kong Intl Airport	1,162	28.5%	New York, NY: Kennedy International	423	9.4%
			Covington, KY: Cincinnati/ Northern Ken	213	4.7%
Japan			Memphis, TN: Memphis International	228	5.1%
Nagoya, Japan: Nagoya Airport	2,019	49.6%	Other U.S.	392	8.7%
Osaka, Japan: Kansai International	143	3.5%			
Other Japan	-	0.0%	**Canada**		
			Other Canada	12	0.3%
Russia					
Khabarovsk, Russia (Asian): Novyy	112	2.8%	**Europe**		
			Other Europe	-	0.0%
South Korea					
Seoul, Republic of Korea: Incheon International	449	11.0%			
Total	4,072	100.0%	**Total**	4,500	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.13

Westbound Air Cargo Flows through FAI: 2010 (a)

Inbound Market	Tonnage	Percent	Outbound Market	Tonnage	Percent
U.S. (Non-Alaska)			**People's Republic of China**		
Los Angeles, CA: Los Angeles Internat	118	5.9%	Shanghai, China: Pu Dong	171	20.3%
Oakland, CA: Metropolitan Oakland Int	122	6.1%	Other PRC	-	0.0%
Chicago, IL: O Hare	553	27.5%			
New York, NY: Kennedy International	163	8.1%	Hong Kong Intl Airport	266	31.6%
Covington, KY: Cincinnati/ Northern Ke	107	5.3%			
Houston, TX: Houston Intercontinental	104	5.2%	**Japan**		
Seattle, WA: Seattle/Tacoma Internatio	362	18.0%	Other Japan	48	5.7%
Other U.S.	300	14.9%			
			Russia		
Canada			Other Russia	96	11.4%
Other Canada	182	9.1%			
			South Korea		
Europe			Seoul, Republic of Korea: Incheon	202	24.0%
Other Europe	-	0.0%	Other South Korea	58	6.9%
Latin America					
Other Latin America	-	0.0%			
Total	2,011	100.0%	**Total**	841	100.0%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.14

Anchorage and Fairbanks Share of Eastbound Asia - United States Cargo Flows (in Tons) in 2010

	United States			Anchorage			Fairbanks			Anchorage Percent			Fairbanks Percent		
Market	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**
People's Republic of China															
Beijing, China: Beijing Capital Total	-	40,610	40,610	-	6	6	-	-	-	-	0.0%	0.0%	-	0.0%	0.0%
Guangzhou, China: Guangzhou Airport	17,659	2,362	20,021	17,649	8	17,657	10	-	10	99.9%	0.3%	88.2%	0.1%	0.0%	0.0%
Nanjing, China: Nanjing Airport Total	22,809	-	22,809	22,809	-	22,809	-	-	-	100.0%	-	100.0%	0.0%	-	0.0%
Shanghai, China: Pu Dong Total	357,573	29,128	386,701	231,555	11	231,566	177	-	177	64.8%	0.0%	59.9%	0.0%	0.0%	0.0%
Shenzhen, China: Shenzhen Airport	15,368	-	15,368	12,448	-	12,448	-	-	-	81.0%	-	81.0%	0.0%	-	0.0%
Other PRC	601	-	601	541	-	541	-	-	-	90.0%	-	90.0%	0.0%	-	0.0%
Total PRC	414,010	72,100	486,110	285,002	25	285,027	187	-	187	68.8%	0.0%	58.6%	0.0%	0.0%	0.0%
Hong Kong Intl Airport	395,669	40,257	435,926	356,153	57	356,210	1,162	-	1,162	90.0%	0.1%	81.7%	0.3%	0.0%	0.3%
Japan															
Nagoya, Japan: Nagoya Airport Total	42,040	4,656	46,696	39,505	5	39,510	2,019	-	2,019	94.0%	0.1%	84.6%	4.8%	0.0%	4.3%
Osaka, Japan: Kansai International Tot	84,079	11,475	95,554	34,071	-	34,071	143	-	143	40.5%	0.0%	35.7%	0.2%	0.0%	0.1%
Tokyo, Japan: Narita Total	120,270	202,663	322,933	94,988	27	95,015	-	-	-	79.0%	0.0%	29.4%	0.0%	0.0%	0.0%
Other Japan	340	1,783	2,123	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Japan	246,729	220,577	467,306	168,564	32	168,596	2,162	-	2,162	68.3%	0.0%	36.1%	0.9%	0.0%	0.5%
Russia															
Total Russia - Far East	361	1	362	249	-	249	112	-	112	69.0%	0.0%	68.8%	31.0%	0.0%	30.9%
South Korea															
Incheon Intl Apt- Seoul --	535,778	63,477	599,255	478,290	-	478,290	449	-	449	89.3%	0.0%	79.8%	0.1%	0.0%	0.1%
Other South Korea	163	15	178	114	-	114	-	-	-	-	-	-	0.0%	0.0%	0.0%
Total Korea	535,941	63,492	599,433	478,404	-	478,404	449	-	449	89.3%	0.0%	79.8%	0.1%	0.0%	0.1%
Taiwan															
Chiang Kai Shek Intl Arpt --	435,329	42,192	477,521	382,707	1,342	384,049	-	-	-	87.9%	3.2%	80.4%	0.0%	0.0%	0.0%
Other Taiwan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Taiwan	435,329	42,192	477,521	382,707	1,342	384,049	-	-	-	87.9%	3.2%	80.4%	0.0%	0.0%	0.0%
Other Asia/Oceania	490	22,364	22,854	80	-	80	-	-	-	16.3%	0.0%	0.4%	0.0%	0.0%	0.0%
Total	2,028,529	460,983	2,489,512	1,671,159	1,456	1,672,615	4,072	-	4,072	82.4%	0.3%	67.2%	0.2%	0.0%	0.2%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.15

Anchorage and Fairbanks Share of Westbound Asia - United States Cargo Flows (in Tons) in 2010

	United States			Anchorage			Fairbanks			Anchorage Percent			Fairbanks Percent		
Market	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**	**Freighter**	**Belly**	**Total**
People's Republic of China															
Beijing, China: Beijing Capital Total	72,549	18,553	91,102	40,525	5	40,530	-	-	-	55.9%	0.0%	44.5%	0.0%	0.0%	0.0%
Shanghai, China: Pu Dong Total	55,911	15,823	71,734	35,840	10	35,850	171	-	171	64.1%	0.1%	50.0%	0.3%	0.0%	0.2%
Other PRC	3,158	534	3,692	1,539	-	1,539	-	-	-	48.7%	-	41.7%	0.0%	-	0.0%
Total PRC	131,618	34,910	166,528	77,904	15	77,919	171	-	171	59.2%	0.0%	46.8%	0.1%	0.0%	0.1%
Hong Kong Intl Airport	169,814	15,654	185,468	164,806	-	164,806	266	-	266	97.1%	0.0%	88.9%	0.2%	0.0%	0.1%
Japan															
Osaka, Japan: Kansai International Tot	52,060	5,204	57,264	39,254	-	39,254	40	-	40	75.4%	0.0%	68.5%	0.1%	0.0%	0.1%
Tokyo, Japan: Narita Total	159,396	117,799	277,195	89,207	63	89,270	-	8	8	56.0%	0.1%	32.2%	0.0%	0.0%	0.0%
Other Japan	6,031	2,208	8,239	4,689	-	4,689	-	-	-	77.7%	0.0%	56.9%	0.0%	0.0%	0.0%
Total Japan	217,487	125,211	342,698	133,150	63	133,213	40	8	48	61.2%	0.1%	38.9%	0.0%	0.0%	0.0%
Russia															
Total Russia - Far East	233	6	239	108	-	108	-	-	-	46.4%	0.0%	45.2%	0.0%	0.0%	0.0%
South Korea															
Incheon Intl Apt- Seoul --	296,233	19,245	315,478	182,415	-	182,415	202	-	202	61.6%	0.0%	57.8%	0.1%	0.0%	0.1%
Other South Korea	1,185	-	1,185	440	-	440	58	-	58	-	-	-	4.9%	-	4.9%
Total Korea	297,418	19,245	316,663	182,855	-	182,855	260	-	260	61.5%	0.0%	57.7%	0.1%	0.0%	0.1%
Taiwan															
Chiang Kai Shek Intl Arpt --	242,319	21,212	263,531	189,380	2,906	192,286	-	-	-	78.2%	13.7%	73.0%	0.0%	0.0%	0.0%
Other Taiwan	9	-	9	9	-	9	-	-	-	-	-	-	-	-	-
Total Taiwan	242,328	21,212	263,540	189,389	2,906	192,295	-	-	-	78.2%	13.7%	73.0%	0.0%	0.0%	0.0%
Other Asia/Oceania	1,085	10,412	11,497	31	-	31	96	-	96	2.9%	0.0%	0.3%	8.8%	0.0%	0.8%
Total	1,059,983	226,650	1,286,633	748,243	2,984	751,227	833	8	841	70.6%	1.3%	58.4%	0.1%	0.0%	0.1%

(a) Includes air freight and air mail.

Sources: USDOT T-100 database and HNTB analysis.

Table E.16

Air Cargo Growth Rate Assumptions

	FAA (a)	Boeing (b)	Seabury (c)	OAG (d)	Air Cargo World (e)	IATA (f)	Airbus (g)	Average (h)
World		5.9%	5.7%	5.3%		5.0%	5.9%	5.6%
US Domestic	2.9%	2.9%			3.5%			3.1%
US International	5.9%							5.9%
US to Canada		5.8%						5.8%
Asia to North America		6.6%			7.0%			6.8%
North America to Asia		6.8%			7.0%			6.9%
Asia to Europe		6.5%						6.5%
Europe to Asia		6.7%						6.7%
Europe to North America		4.4%						4.4%
North America to Europe		3.9%						3.9%

(a) FAA Aerospace Forecasts, Fiscal Years 2011-2031.
(b) Boeing, World Air Cargo Forecast, 2010-2011.
(c) Seabury Aviation/Aerospace, May 2010 The Outlook for Freight Transport (through 2014)
(d) OAG Global Air Freight Forecast, 2010.
(e) Air Cargo World, forecast through 2021, October 31, 2011.
(f) IATA, through 2014 as reported in Airport Busiiness, March 2nd 2011.
(g) Airbus, Global Market Forecast: 2010-2029.
(h) Average of forecast growth rates.

Sources: As noted and HNTB analysis.

Table E.17

Estimate of Total Eastbound Air Cargo Tonnage

Year	Total (a)	Forecast by Quarter (b) 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	U.S, GDP (c)	Jet fuel (d)	Index (e)
2010	2,489,512	543,278	684,275	629,225	632,734	13088.0	2.149	1.000
2015	3,277,294	747,096	808,658	845,483	876,057	15155.3	3.231	1.316
2020	4,378,466	1,022,389	1,083,951	1,120,776	1,151,350	17346.7	3.662	1.759
2025	5,707,332	1,354,605	1,416,168	1,452,993	1,483,567	19898.9	3.979	2.293
2030	7,128,609	1,709,924	1,771,487	1,808,312	1,838,886	22569.7	4.189	2.863
			Average Annual Growth Rate					
2010-2030	5.4%	5.9%	4.9%	5.4%	5.5%	2.8%	3.4%	5.4%

(a) Sum of results for each quarter.
(b) Tonnage for each quarter calculated using following equation:

ETONS = -934493.7 + (138.0 *USGDP) + (-69605.9 * JFUEL) + REC + FIN + QTR1 + QTR2 + QTR3 + IRAQ + INV

where		
	ETONS =	Eastbound Air Cargo Tonnage
	USGDP=	US Gross Domestic Product (billions of dollars)
	JFuel =	Price of Jet Fuel in 2005 prices.
	REC =	Instrument variable equal to -77627.5 during the 2008-2009 recession
	FIN=	Instrument variable equal to -109156.3 during financial liquidity crisis in last half of 2008.
	QTR1=	Instrument variable equal to -128961.5 representing first quarter
	QTR2=	Instrument variable equal to -67399.0 representing second quarter
	QTR3=	Instrument variable equal to -30574.0 representing third quarter
	IRAQ=	Instrument variable equal to -88253.5 during initial part of Iraq war in 2003.
	INVEN=	Instrument variable equal to 95554 during inventory readjustment in early 2010.

R-Squared =		0.959
Adjusted R-Squared =		0.943
F-statistic =		57.8
T-statistics	Intercept=	-4.664
	USGDP=	8.129
	JFuel =	-5.579
	REC =	-6.298
	FinDUM=	-7.086
	Qtr1 Dum=	-11.664
	Qtr2 Dum=	-5.939
	Qtr3 Dum=	-2.865
	IRAQDUM=	-5.342
	INVEN=	3.787

(c) Table 2.5.
(d) Table 3.2.
(e) Total cargo growth where 2010 is indexed to equal 1.00.

Sources: As noted and HNTB analysis.

Table E.18

Estimate of Total Westbound Air Cargo Tonnage

Year	Total (a)	Westbound Cargo (b) 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	EP GDP (c)	Eastbound Cargo (d) 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Index (e)
2010	1,286,633	285,087	337,446	330,089	334,011	13768.1	543,278	684,275	629,225	632,734	1.000
2015	1,593,618	373,036	404,924	411,805	403,854	17658.4	747,096	808,658	845,483	876,057	1.239
2020	2,013,639	478,041	509,929	516,810	508,859	22301.4	1,022,389	1,083,951	1,120,776	1,151,350	1.565
2025	2,512,962	602,872	634,760	641,641	633,690	27681.1	1,354,605	1,416,168	1,452,993	1,483,567	1.953
2030	3,066,311	741,209	773,097	779,978	772,027	34006.2	1,709,924	1,771,487	1,808,312	1,838,886	2.383
						Average Annual Growth Rate					
2010-2030	4.4%	4.9%	4.2%	4.4%	4.3%	4.6%	5.9%	4.9%	5.4%	5.5%	4.4%

(a) Sum of results for each quarter.
(b) Tonnage for each quarter calculated using following equation:

WTONS = 45346 + (8.4 * EPGDP) + (.239 * ETONS) + FIN + QTR2 + QTR3

where:
- WTONS= Westbound Air Cargo Tonnage
- EPGDP= East Pacific Gross Domestic Product
- FIN = Instrument variable equal to -27809.6 during financial liquidity crisis in last half of 2008.
- QTR2 = Instrument variable equal to 17177 representing second quarter
- QTR2 = Instrument variable equal to 15257.5 representing third quarter
- ETONS = Eastbound Air Cargo Tonnage

(c) Table 2.5.
(d) Table E.17.
(e) Total cargo growth where 2010 is indexed to equal 1.00.

Sources: As noted and HNTB analysis.

Table E.19

Forecast of North Pacific All-Cargo vs. Belly Cargo Tonnage

	FAA Forecast (a)				Tonnage		
Year	International RPMs	International Passenger RTMs	Ratio (b)	Passengers (c)	All-Cargo (d)	Belly (e)	Total (f)
				Eastbound			
2010	229.6	7112.6	30.98	11,381,130	2,028,529	460,983	2,489,512
2015	303.9	9557.1	31.45	14,610,264	2,219,560	600,754	2,820,314
2020	386.9	11882.9	30.71	18,755,589	2,915,728	753,178	3,668,906
2025	489.2	14355.0	29.34	24,077,056	3,762,721	923,769	4,686,490
2030	613.5	16958.9	27.64	30,908,366	4,674,272	1,117,126	5,791,398
				Average Annual Growth Rate			
2010-2030				5.1%	4.3%	4.5%	4.3%
				Westbound			
2010	229.6	7112.6	30.98	11,189,179	1,059,983	226,650	1,286,633
2015	303.9	9557.1	31.45	14,363,851	1,162,227	295,371	1,457,598
2020	386.9	11882.9	30.71	18,439,263	1,525,857	370,312	1,896,169
2025	489.2	14355.0	29.34	23,670,979	1,967,892	454,186	2,422,078
2030	613.5	16958.9	27.64	30,387,074	2,443,864	549,254	2,993,118
				Average Annual Growth Rate			
2010-2030				5.1%	4.3%	4.5%	4.3%

(a) FAA Aerospace Forecast: FY 2011-2031.
(b) Ratio of Revenue Passenger Miles (RPMs) to Revenue Ton Miles (RTMs) on passenger carriers.
(c) 2010 North Pacific passengers from T100 data. Assumed to growth at Pacific passenger growth rate from Table D.16.
(d)Total cargo less belly cargo.
(e) Base year data from Table E.14 assumed to increase at same rate as passengers multiplied by ratio of RTMs to RPMs.
(f) Table 6.4.

Sources: As noted and HNTB analysis.

Table E.20

Projected Total Eastbound All-Cargo Tonnage By Region (a)

Year	Total (b)	Japan	S. Korea	PRC	Hong Kong	Taiwan	Russia	Other
2010	2,028,529	246,729	535,941	414,010	395,669	435,329	361	490
2015	2,219,560	224,836	577,174	521,702	426,110	468,821	389	528
2020	2,915,728	238,332	747,906	768,645	552,156	607,501	504	684
2025	3,762,721	248,835	949,085	1,091,700	700,681	770,913	639	868
2030	4,674,272	253,196	1,163,623	1,451,361	859,068	945,176	784	1,064
			Average Annual Growth					
2010-2030	4.3%	0.1%	4.0%	6.5%	4.0%	4.0%	4.0%	4.0%
			Growth Index					
2010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2015	1.094	0.911	1.077	1.260	1.077	1.077	1.077	1.077
2020	1.437	0.966	1.395	1.857	1.395	1.395	1.395	1.395
2025	1.855	1.009	1.771	2.637	1.771	1.771	1.771	1.771
2030	2.304	1.026	2.171	3.506	2.171	2.171	2.171	2.171

(a) Cargo tonnage in each region projected to grow at corresponding GDP growth rate (Table 2.5) and then adjusted proportionately to match tonnage forecast.
(b) Table E.19.

Sources: As noted and HNTB analysis.

Table E.21

Projected Total Westbound All-Cargo Tonnage By Region (a)

Year	Total (b)	Japan	S. Korea	PRC	Hong Kong	Taiwan	Russia	Other
2010	1,059,983	217,487	297,418	131,618	169,814	242,328	233	1,085
2015	1,162,227	203,911	329,548	170,643	188,159	268,506	258	1,202
2020	1,525,857	221,615	437,824	257,770	249,980	356,727	343	1,597
2025	1,967,892	236,481	567,840	374,179	324,215	462,661	445	2,072
2030	2,443,864	244,808	708,301	506,099	404,412	577,105	555	2,584
				Average Annual Growth				
2010-2030	4.3%	0.6%	4.4%	7.0%	4.4%	4.4%	4.4%	4.4%
				Growth Index				
2010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2015	1.096	0.938	1.108	1.297	1.108	1.108	1.108	1.108
2020	1.440	1.019	1.472	1.958	1.472	1.472	1.472	1.472
2025	1.857	1.087	1.909	2.843	1.909	1.909	1.909	1.909
2030	2.306	1.126	2.382	3.845	2.382	2.382	2.382	2.382

(a) Cargo tonnage in each region projected to grow at corresponding GDP growth rate (Table 2.5) and then adjusted
(b) Table E.19.

Sources: As noted and HNTB analysis.

Table E.22

Freighter Aircraft Range and Capacity

Aircraft Type	Cargo Capacity (short tons)	Range (statute miles) at			Westbound Range (adjusted for headwinds) at (a)		
		100% Payload	80% Payload	60% Payload	100% Payload	80% Payload	60% Payload
Freighters							
MD-11	100.0	4100	5500	7000	3800	5100	6500
767-300ER	59.0	3700	4900	6200	3400	4600	5800
747-100	101.0	3300	4400	5400	3100	4100	5000
747-200	121.0	4100	5300	6400	3800	4900	6000
747-200SF	119.0	3600	4700	5900	3300	4400	5500
777F	115.0	5600	7100	9000	5200	6600	8400
747-400ER	124.0	5700	7100	7800	5300	6600	7300
747-400 (GE)	124.0	5100	6400	7800	4700	6000	7300
747-400 (PW)	124.0	5100	6400	7800	4700	6000	7300
747-400 (RR)	124.0	5100	6300	7700	4700	5900	7200
747-800F	148.0	5100	6600	8300	4700	6100	7700
A330-200F	70.0	4600	n/a	n/a	4300	n/a	n/a
A350-900F	99.0	5700	n/a	n/a	5300	n/a	n/a
A380-800F	165.0	6400	7900	9500	6000	7300	8800
Passenger Aircraft							
747-800 Intercontinental	35.0	7100			6600		
747-400	35.0	6400			6000		
A380-800	35.0	7600			7100		
777-200	21.2	6000			5600		
777-200ER	21.2	8900			8300		
777-200LR	21.2	10800			10000		
777-300	28.3	6800			6300		
777-300ER	28.3	9100			8500		
A340-600	22.0	8600			8000		
A350-900	25.0	9300			8600		

(a) HNTB estimate based on manufacturer technical specifications and differences in scheduled flight times between Eastbound and Westbound flights.

Sources: Boeing and Airbus manufacturer specifications and air carrier aircraft purchase press releases.

Table E.23

Historical and Projected Average Range Capabilities of North Pacific All-Cargo Aircraft - Eastbound

	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2030
Historical and Projected Fleet Mix Distribution (a)											
M11	0.276	0.266	0.267	0.284	0.259	0.244	0.205	0.208	0.150	0.099	0.020
B741	0.040	0.024	0.025	0.008	0.009	0.001	0.000	0.001	0.000	0.000	0.000
B742	0.338	0.323	0.354	0.352	0.322	0.224	0.222	0.144	0.064	0.020	0.000
B744	0.345	0.386	0.354	0.356	0.410	0.532	0.572	0.604	0.501	0.404	0.127
B777	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.134	0.267	0.457
B748	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.209	0.304
A380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.092
Range at 100 Percent Payload (b)											
M11	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100
B741	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
B742	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100
B744	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100
B777	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600
B748	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100
A380	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400
Weighted Average	4413	4467	4433	4450	4503	4631	4672	4766	4954	5114	5428
Range at 90 Percent Payload (b)											
M11	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
B741	3850	3850	3850	3850	3850	3850	3850	3850	3850	3850	3850
B742	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700
B744	5750	5750	5750	5750	5750	5750	5750	5750	5750	5750	5750
B777	6350	6350	6350	6350	6350	6350	6350	6350	6350	6350	6350
B748	5850	5850	5850	5850	5850	5850	5850	5850	5850	5850	5850
A380	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150
Weighted Average	5056	5111	5077	5096	5149	5282	5321	5423	5636	5816	6164
Range at 80 Percent Payload (b)											
M11	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500
B741	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400
B742	5300	5300	5300	5300	5300	5300	5300	5300	5300	5300	5300
B744	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400
B777	7100	7100	7100	7100	7100	7100	7100	7100	7100	7100	7100
B748	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
A380	7900	7900	7900	7900	7900	7900	7900	7900	7900	7900	7900
Weighted Average	5699	5756	5720	5742	5795	5933	5971	6080	6319	6517	6901
Range at 70 Percent Payload (b)											
M11	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250
B741	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900
B742	5850	5850	5850	5850	5850	5850	5850	5850	5850	5850	5850
B744	7100	7100	7100	7100	7100	7100	7100	7100	7100	7100	7100
B777	8050	8050	8050	8050	8050	8050	8050	8050	8050	8050	8050
B748	7450	7450	7450	7450	7450	7450	7450	7450	7450	7450	7450
A380	8700	8700	8700	8700	8700	8700	8700	8700	8700	8700	8700
Weighted Average	6354	6416	6375	6402	6458	6612	6647	6779	7073	7318	7771
Range at 60 Percent Payload (b)											
M11	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
B741	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
B742	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400	6400
B744	7800	7800	7800	7800	7800	7800	7800	7800	7800	7800	7800
B777	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
B748	7450	7450	7450	7450	7450	7450	7450	7450	7450	7450	7450
A380	8700	8700	8700	8700	8700	8700	8700	8700	8700	8700	8700
Weighted Average	7009	7076	7030	7062	7121	7290	7324	7478	7698	7940	8309

(a) USDOT T100 data for historical fleet mix. HNTB analysis for future fleet mix (see text for details).
(b) Table E.20 and HNTB analysis.

Sources: As noted and HNTB analysis.

Table E.24

Historical and Projected Average Range Capabilities of North Pacific All-Cargo Aircraft - Westbound

	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2030
					Historical and Projected Fleet Mix Distribution (a)						
M11	0.313	0.301	0.302	0.310	0.289	0.262	0.236	0.212	0.150	0.099	0.020
B741	0.033	0.012	0.011	0.003	0.006	0.000	0.000	0.000	0.000	0.000	0.000
B742	0.367	0.342	0.364	0.366	0.359	0.243	0.221	0.132	0.064	0.020	0.000
B744	0.287	0.346	0.323	0.320	0.346	0.494	0.543	0.599	0.501	0.404	0.127
B777	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.134	0.267	0.457
B748	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.209	0.304
A380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.092
					Range at 100 Percent Payload (b)						
M11	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800
B741	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100
B742	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800
B744	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700
B777	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200
B748	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700
A380	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Weighted Average	4035	4103	4083	4086	4108	4245	4289	4419	4575	4726	5030
					Range at 90 Percent Payload (b)						
M11	4450	4450	4450	4450	4450	4450	4450	4450	4450	4450	4450
B741	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
B742	4350	4350	4350	4350	4350	4350	4350	4350	4350	4350	4350
B744	5350	5350	5350	5350	5350	5350	5350	5350	5350	5350	5350
B777	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
B748	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
A380	6650	6650	6650	6650	6650	6650	6650	6650	6650	6650	6650
Weighted Average	4644	4717	4695	4699	4721	4870	4917	5059	5233	5398	5718
					Range at 80 Percent Payload (b)						
M11	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100	5100
B741	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100
B742	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900
B744	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
B777	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
B748	6100	6100	6100	6100	6100	6100	6100	6100	6100	6100	6100
A380	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300
Weighted Average	5252	5331	5307	5312	5334	5496	5544	5698	5891	6070	6406
					Range at 70 Percent Payload (b)						
M11	5800	5800	5800	5800	5800	5800	5800	5800	5800	5800	5800
B741	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550
B742	5450	5450	5450	5450	5450	5450	5450	5450	5450	5450	5450
B744	6650	6650	6650	6650	6650	6650	6650	6650	6650	6650	6650
B777	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
B748	6900	6900	6900	6900	6900	6900	6900	6900	6900	6900	6900
A380	8050	8050	8050	8050	8050	8050	8050	8050	8050	8050	8050
Weighted Average	5875	5960	5934	5940	5962	6135	6184	6360	6598	6821	7226
					Range at 60 Percent Payload (b)						
M11	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500
B741	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
B742	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
B744	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300
B777	8400	8400	8400	8400	8400	8400	8400	8400	8400	8400	8400
B748	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700
A380	8800	8800	8800	8800	8800	8800	8800	8800	8800	8800	8800
Weighted Average	6497	6588	6560	6569	6589	6773	6824	7022	7305	7572	8046

(a) USDOT T100 data for historical fleet mix. HNTB analysis for future fleet mix (see text for details).
(b) Table E.20 and HNTB analysis.

Sources: As noted and HNTB analysis.

Table E.25

Distance Matrix between Major Asian and North American Air Cargo Markets

	ANC	FAI	ICN	KHV	CTS	LAX	OAK	ONT	MIA	ATL	CHI	IND	SDF	JFK	EWR	CMH	CVG	MEM	DFW	SEA	YYZ	YVR	MEX
Anchorage (ANC)		261	3798	2929	3011	2345	2016	2360	4004	3417	2846	3020	3122	3385	3370	3119	3110	3153	3043	1448	3032	1330	3779
Fairbanks (FAI)	261		3798	2920	3050	2465	2145	2474	3965	3372	2785	2962	3067	3277	3263	3046	3048	3127	3056	1533	2934	1408	3839
Incheon Intl Apt- Seoul -- (ICN)	3798	3798		881	885	5994	5660	6022	7747	7152	6551	6729	6838	6906	6896	6786	6807	6923	6841	5216	6612	5108	7528
Khabarovsk- Russia (KHV)	2929	2920	881		507	5176	4840	5201	6866	6271	5671	5848	5957	6043	6033	5908	5928	6043	5969	4361	5741	4249	6687
Chitose - Japan (CTS)	3011	3050	885	507		5129	4798	5159	7011	6420	5834	6011	6117	6279	6267	6091	6097	6164	6038	4390	5955	4288	6674
Vancouver (YVR)	1330	1408	5108	4249	4288	1081	793	1083	2801	2248	1764	1916	1999	2449	2429	2059	2014	1944	1754	127	2085		2449
Seattle (SEA)	1448	1533	5216	4361	4390	954	672	956	2724	2182	1721	1866	1945	2421	2402	2016	1964	1871	1660		2060	127	2332
Beijing - China (PEK)	3961	3918	562	1087	1312	6251	5913	6273	7771	7185	6579	6753	6864	6837	6831	6785	6823	6993	6971	5407	6578	5291	7739
Guangzhou- China CAN)	5036	5023	1245	2107	2103	7231	6899	7260	8929	8340	7734	7910	8020	8002	7996	7947	7981	8133	8076	6460	7744	6351	8771
Nanjing- China (NKG)	4368	4356	585	1439	1463	6579	6245	6607	8278	7685	7081	7257	7367	7385	7378	7303	7332	7471	7408	5794	7111	5684	8111
Shanghai- China (PVG)	4308	4308	510	1390	1356	6485	6152	6514	8253	7659	7057	7234	7343	7392	7384	7287	7312	7433	7351	5722	7107	5615	8025
Shenzhen- China (SZX)	5064	5055	1269	2137	2118	7247	6916	7277	8970	8379	7774	7950	8060	8050	8043	7990	8023	8169	8106	6485	7789	6377	8790
Hong Kong Intl Airport (HKG)	5081	5072	1284	2154	2131	7260	6929	7290	8990	8399	7793	7970	8080	8072	8065	8010	8043	8188	8123	6500	7810	6392	8804
Kansai Intl Airport (KIX)	3679	3722	535	973	673	5742	5416	5774	7682	7092	6507	6684	6789	6946	6934	6764	6770	6833	6695	5040	6626	4942	7294
Nagoya- Japan (NGO)	3603	3651	606	947	606	5653	5327	5685	7607	7018	6436	6612	6717	6885	6873	6694	6699	6756	6613	4956	6561	4859	7205
Narita Airport (NRT)	3434	3492	783	920	489	5451	5127	5484	7436	6850	6274	6450	6553	6745	6732	6538	6538	6582	6427	4769	6415	4674	7004
Chiang Kai Shek Intl Arpt (TPE)	4680	4693	907	1786	1685	6799	6471	6830	8651	8056	7457	7634	7743	7808	7799	7693	7714	7821	7718	6074	7519	5971	8350
Singapore (SIN)	6665	6660	2867	3741	3681	8770	8450	8804	10542	9963	9357	9531	9641	9537	9535	9552	9597	9770	9708	8070	9323	7967	10321
Manila - Phillipines (MNL)	5313	5350	1616	2480	2303	7305	6991	7341	9314	8722	8131	8309	8416	8520	8511	8379	8392	8466	8320	6661	8220	6567	8851
Bangkok - Thailand (BKK)	6016	5974	2277	3102	3152	8270	7934	8296	9715	9158	8561	8729	8839	8677	8675	8730	8786	9007	9020	7459	8483	7344	9789
Kuala Lumpur - Malaysia (KUL)	6654	6637	2859	3725	3694	8808	8483	8841	10463	9896	9294	9465	9575	9431	9430	9475	9526	9724	9692	8074	9234	7967	10361
Ho Chi Minh - Viet Nam (SGN)	6005	5992	2209	3076	3046	8169	7840	8200	9871	9288	8682	8856	8967	8890	8886	8881	8924	9095	9046	7424	8660	7317	9718
Jakarta - Indonesia (CGK)	7031	7052	3259	4141	4020	8985	8685	9024	11003	10410	9806	9983	10093	10054	10050	10025	10057	10179	10046	8387	9817	8293	10488
Delhi - India (DEL)	5711	5560	2896	3339	3671	8013	7702	8017	8404	7985	7483	7613	7708	7318	7324	7542	7633	7975	8186	7061	7246	6934	9120
Mumbai - India (BOM)	6416	6263	3451	3984	4275	8709	8402	8711	8860	8510	8054	8169	8255	7799	7807	8077	8177	8542	8794	7755	7775	7629	9727

Source: Great Circle Mapper and HNTB analysis.

Table E.26

Forecast of Alaska Share of North Pacific Air Cargo Flows: Eastbound Inbound

Year	Total (a)	Transfer at Alaska (b)	Non-Transfer (Tech. Stop): Non-Transfer Total (c)	Non-Transfer (Tech. Stop): Alaska (d)	Non-Transfer (Tech. Stop): Alaska Percent (e)	Total Alaska (f)
2010	2,028,529	464,335	1,564,194	1,210,896	77.4%	1,675,231
2015	2,219,560	508,062	1,711,498	1,296,236	75.7%	1,804,299
2020	2,915,728	667,417	2,248,311	1,691,716	75.2%	2,359,133
2025	3,762,721	861,296	2,901,426	1,895,588	65.3%	2,756,884
2030	4,674,272	1,069,952	3,604,320	1,997,590	55.4%	3,067,541
Average Annual Growth Rate						
2010-2030	4.3%	4.3%	4.3%	2.5%	-1.7%	3.1%

(a) Table E.19.

(b) Alaska share of Eastbound tonnage accounted for by carriers that undertake transfer operations at Alaska (Fedex, UPS and Polar). Assumed to increase at same rate as total tonnage.
(c) Total less tonnage transferred at Alaska.
(d) Total multiplied by Alaska percentage.
(e) Share of non-transfer air cargo assumed to decline as average range of aircraft increases. See text for additional details.
(f) Sum of Alaska transfer and Alaska non-transfer cargo.

Sources: As noted and HNTB analysis.

Table E.27

Forecast of Alaska Share of North Pacific Air Cargo Flows: Westbound Outbound

Year	Total (a)	Transfer at Alaska (b)	Non-Transfer (Tech. Stop) Non-Transfer Total (c)	Non-Transfer (Tech. Stop) Alaska (d)	Non-Transfer (Tech. Stop) Alaska Percent (e)	Total Alaska (f)
2010	1,059,983	225,726	834,257	523,350	62.7%	749,076
2015	1,162,227	247,499	914,728	574,655	62.8%	822,154
2020	1,525,857	324,935	1,200,922	568,539	47.3%	893,474
2025	1,967,892	419,067	1,548,824	671,209	43.3%	1,090,277
2030	2,443,864	520,427	1,923,437	756,518	39.3%	1,276,945
Average Annual Growth Rate						
	4.3%	4.3%	4.3%	1.9%	-2.3%	2.7%

(a) Table E.19.
(b) Alaska share of Eastbound tonnage accounted for by carriers that undertake transfer operations at Alaska (Fedex, UPS and Polar). Assumed to increase at same rate as total tonnage.
(c) Total less tonnage transferred at Alaska.
(d) Total multiplied by Alaska percentage.
(e) Share of non-transfer air cargo assumed to decline as average range of aircraft increases. See text for additional details.
(f) Sum of Alaska transfer and Alaska non-transfer cargo.

Sources: As noted and HNTB analysis.

Table E.28

Net Intra-Continental Air Cargo Between Alaska and Lower 48
(tons)

Year	Outbound (a) (East)	Inbound (a) (West)
2010	34,866	59,587
2015	40,616	69,414
2020	47,314	80,861
2025	55,117	94,196
2030	64,206	109,730
Average Annual Growth Rate		
2010-2030	3.1%	3.1%

(a) Assumed to increase at average annual domestic growth rate from Table E.17.

Sources: As noted and HNTB analysis.

Table E.29

Projected International and Other US Belly Cargo
ANC

Year	FAA International Forecast (a) Passenger RPMs	Passenger RTMs	Ratio (b)	Outbound International Passengers (c)	Belly Cargo Tonnage To/From Asia (d) Inbound	Outbound	FAA US Domestic Forecast (a) Passenger RPMs	Passenger RTMs	Ratio (b)	Outbound US Passengers (c)	Belly Cargo Tonnage To/From Lower 48 (d) Inbound	Outbound	Total Inbound	Total Outbound
2010	229.6	7112.6	30.98	154,325	1,456	2,984	680.1	1,622.70	2.39	1,339,045	11,073	9,877	12,529	12,861
2015	303.9	9557.1	31.45	34,992	335	687	817.3	1,911.80	2.34	1,401,713	11,364	10,136	11,699	10,823
2020	386.9	11882.9	30.71	40,588	380	778	963.4	2,062.00	2.14	1,505,962	11,171	9,965	11,551	10,743
2025	489.2	14355.0	29.34	47,123	421	863	1,101.60	2,209.30	2.01	1,628,912	11,322	10,099	11,743	10,962
2030	613.5	16958.9	27.64	54,763	461	945	1,265.00	2,344.20	1.85	1,792,015	11,509	10,266	11,970	11,211
Average Annual Growth Rate														
2010-2030	5.0%	4.4%	-0.6%	-5.0%	-5.6%	-5.6%	1.9%	3.2%	-1.3%	1.5%	0.2%	0.2%	-0.2%	-0.7%

(a) FAA Aerospace Forecast: FY 2011-2031.
(b) Ratio of Revenue Passenger Miles (RPMs) to Revenue Ton Miles (RTMs) on passenger carriers.
(c) Table 5.5.
(d) Base year data from USDOT T100. Assumed to increase at same rate as passengers multiplied by ratio of RTMs to RPMs.

Sources: As noted and HNTB analysis.

Table E.30

Projected International and Other US Belly Cargo
FAI

	FAA International Forecast (a)			Outbound	Belly Cargo Tonnage To/From Asia (d)		FAA US Domestic Forecast (a)			Outbound	Belly Cargo Tonnage To/From Lower 48 (d)		Total	
Year	Passenger RPMs	Passenger RTMs	Ratio (b)	International Passengers (c)	Inbound	Outbound	Passenger RPMs	Passenger RTMs	Ratio (b)	US Passengers (c)	Inbound	Outbound	Inbound	Outbound
2010	229.6	7112.6	30.98	10,088	-	8	1,622.70	680.1	2.39	159,809	365	97	365	105
2015	303.9	9557.1	31.45	11,484	-	9	1,911.80	817.3	2.34	174,457	391	104	391	113
2020	386.9	11882.9	30.71	13,081	-	10	2,062.00	963.4	2.14	198,696	407	108	407	118
2025	489.2	14355.0	29.34	14,908	-	11	2,209.30	1,101.60	2.01	224,314	431	114	431	126
2030	613.5	16958.9	27.64	17,001	-	12	2,344.20	1,265.00	1.85	254,412	451	120	451	132
							Average Annual Growth Rate							
2010-2030	5.0%	4.4%	-0.6%	2.6%		2.1%	1.9%	3.2%	-1.3%	2.4%	1.1%	1.1%	1.1%	1.1%

(a) FAA Aerospace Forecast: FY 2011-2031.
(b) Ratio of Revenue Passenger Miles (RPMs) to Revenue Ton Miles (RTMs) on passenger carriers.
(c) Table 5.6.
(d) Base year data from USDOT T100. Assumed to increase at same rate as passengers multiplied by ratio of RTMs to RPMs.

Sources: As noted and HNTB analysis.

Table E.31

Eastbound Cargo Aircraft Capacity Requirement
Anchorage

	Inbound			Outbound		
Year	**Tonnage (a)**	**Load Factor (b)**	**Required Capacity (c)**	**Tonnage (a)**	**Load Factor (d)**	**Required Capacity (c)**
2010	1,671,159	83.7%	1,996,626	1,705,686	82.7%	2,063,069
2015	1,799,913	83.4%	2,158,421	1,840,156	82.7%	2,225,714
2020	2,353,399	83.4%	2,823,483	2,400,240	82.7%	2,903,150
2025	2,706,742	83.3%	3,250,797	2,761,955	82.7%	3,340,652
2030	3,060,085	83.2%	3,678,682	3,123,669	82.7%	3,778,155
			Average Annual Growth Rate			
2010-2030	3.1%	0.0%	3.1%	3.1%	0.0%	3.1%

(a) Table 6.4.

(b) Assumed to remain constant with slight adjustment to ensure total inbound and outbound capacity remain the same.
(c) Tonnage divided by load factor.
(d) Assumed to remain constant.

Sources: As noted and HNTB analysis.

Table E.32

Westbound Cargo Aircraft Capacity Requirement
Anchorage

Year	Inbound Tonnage (a)	Inbound Load Factor (b)	Inbound Required Capacity (c)	Outbound Tonnage (a)	Outbound Load Factor (d)	Outbound Required Capacity (c)
2010	807,025	55.4%	1,457,983	748,243	53.2%	1,405,880
2015	889,762	57.7%	1,542,727	821,240	55.7%	1,475,434
2020	972,361	60.3%	1,612,844	892,480	58.2%	1,533,177
2025	1,178,114	63.0%	1,870,463	1,084,003	60.9%	1,780,608
2030	1,383,866	65.8%	2,102,889	1,275,525	63.7%	2,003,416
Average Annual Growth Rate						
2010-2030	2.7%	0.9%	1.8%	2.7%	0.9%	1.8%

(a) Table 6.4.
(b) Assumed to increase at historical rate (0.9% per year) with slight adjustment to ensure total inbound and outbound capacity remain the same.
(c) Tonnage divided by load factor.
(d) Assumed to increase at historical rate (0.9% per year).

Sources: As noted and HNTB analysis.

Table E.33

Eastbound Cargo Capacity Requirement
Fairbanks

Year	Inbound			Outbound		
	Tonnage (a)	**Load Factor (b)**	**Required Capacity (c)**	**Tonnage (a)**	**Load Factor (b)**	**Required Capacity (c)**
2010	4,072	84.7%	4,806	4,411	90.6%	4,866
2015	4,386	84.7%	5,177	4,759	90.6%	5,250
2020	5,734	84.7%	6,768	6,207	90.6%	6,847
2025	6,595	84.7%	7,784	7,143	90.6%	7,879
2030	7,456	84.7%	8,800	8,078	90.6%	8,911
	Average Annual Growth Rate					
2010-2030	3.1%	0.0%	3.1%	3.1%	0.0%	3.1%

(a) Table 6.4.
(b) Assumed to remain constant.
(c) Tonnage divided by load factor.

Sources: As noted and HNTB analysis.

Table E.34

Westbound Cargo Capacity Requirement
Fairbanks

	Inbound			Outbound		
Year	Tonnage (a)	Load Factor (b)	Required Capacity (c)	Tonnage (a)	Load Factor (b)	Required Capacity (c)
2010	1,638	42.9%	3,817	833	39.0%	2,138
2015	1,806	44.9%	4,024	914	40.7%	2,243
2020	1,974	46.9%	4,206	994	42.6%	2,333
2025	2,392	49.1%	4,872	1,207	44.6%	2,708
2030	2,809	51.3%	5,472	1,420	46.6%	3,047
		Average Annual Growth Rate				
2010-2030	2.7%	0.9%	1.8%	2.7%	0.9%	1.8%

(a) Table 6.4.
(b) Assumed to increase at historical rate (0.9% per year).
(c) Tonnage divided by load factor.

Sources: As noted and HNTB analysis.

Table E.35

Intra-Alaska All-Cargo Aircraft Departures by Type: ANC

	2009	2010	2015	2020	2030
AEROSP ATR-42	61				
AEROSP ATR-72	185	249	415	603	701
ANTONOV 124		1	1	1	1
BEECH 18	509	521	264	80	
BEECH 1900 A/B/C	2,853	2,786	3,054	3,211	3,937
BOEING 737-100/200	2,011	1,881	1,626	919	171
BOEING 737-300		74	778	2,155	4,254
BOEING 737-400	387	395	409	409	409
BOEING 747-200/300	-	1	1	1	1
BOEING 747-400	6	4	4	4	4
CASA 212	-	14	9	5	
CESSNA 208	1,019	1,033	1,179	1,235	1,313
CURTISS C46 SERIES	226	234	161	107	
DOUGLAS DC-6A	1,383	1,509	1,441	959	
DOUGLAS DC-9			30	50	
EMBRAER EMB-120 BRAS	390	433	782	1,078	980
FAIRCHILD METRO 23	109	63			
LOCKHEED L100-30	594	553	553	553	553
PIPER PA-31/T-1020	-	5	5	5	5
PIPER PA-32	1				
SAAB-FAIRCHD 340/A	73	402	717	744	776
SAAB-FAIRCHD 340/B	-	77			
SHORTS 330	2	1			
SWEARINGEN METRO 3	523	379			
Grand Total	**10,332**	**10,615**	**11,429**	**12,119**	**13,105**

Source: HNTB analysis. See text for details.

Table E.36

Intra-Alaska All-Cargo Aircraft Departures by Type: FAI

	2009	2010	2015	2020	2030
AEROSP ATR-42	61		210	300	364
AEROSP ATR-72	181	244	245	245	245
ANTONOV 124					
BEECH 18	250	252	150	50	
BEECH 1900 A/B/C	425	196	217	297	399
BEECH 35/36	3	1			
BOEING 737-100/200	62	10	6	4	
BOEING 737-300			11	70	184
BOEING 747-200/300	4	4			
BOEING 747-400	1	5	1	1	1
BOEING B777-F		2			
CASA 212	1	-			
CESSNA 206/207/209	14	16	12	8	
CESSNA 208	235	344	479	759	1,113
CESSNA C-402/402A	208	-	14	25	30
CURTISS C46 SERIES	26	19	11	1	
DOUGLAS DC-6A	223	186	160	110	
EMBRAER EMB-120 BRAS	7	8	10	20	
HELIO H250/295/395	2				
LOCKHEED L100-30	18	27	27	27	27
MCDONNELL D MD-11		9	3	3	3
PIPER PA-31/T-1020	14	27	21	21	21
PIPER PA-32	75	105	104	104	104
SAAB-FAIRCHD 340/A		2			
SHORTS 330	198	145	132	94	35
Grand Total	**2,008**	**1,602**	**1,813**	**2,139**	**2,526**

Source: HNTB analysis. See text for details.

Table E.37

International and Other U.S. All-Cargo Aircraft Departures by Type: ANC

	2009	2010	2015	2020	2030
AEROSP ATR-72	1				
AIRBUS A380-800F					708
ANTONOV 124	8	9	9	9	9
ANTONOV 225		1	1	1	1
BEECH 18	1				
BEECH 1900 A/B/C	1				
BOEING 727-100		1			
BOEING 737-400	4	1	1	1	
BOEING 747-100	52	211	71		
BOEING 747-200/300	3,545	2,970	970	544	103
BOEING 747-400	13,991	17,490	16,823	19,084	20,284
BOEING 747-800			2,344	4,479	7,664
BOEING 757-200	34				
BOEING 767-200/ER		1			
BOEING 767-300/ER	1,275	1,478	862	1,453	1,919
BOEING 777-200/ER	45	620	1,833	4,553	13,915
DOUGLAS DC-10-10	24	35	10		
DOUGLAS DC-10-30	139	117	109		
DOUGLAS DC-10-30CF		6			
DOUGLAS DC-8-63F	-	3			
DOUGLAS DC-8-71		1			
DOUGLAS DC-8-73	-	5			
DOUGLAS DC-8-73F		1			
DOUGLAS DC-9-30	1				
ILYUSHIN 76/TD		3			
LOCKHEED L100-30	2	15	15	15	14
MCDONNELL D MD-11	5,951	7,458	8,697	7,299	2,876
SWEARINGEN METRO 3		1			
Grand Total	**25,074**	**30,427**	**31,745**	**37,438**	**47,493**

Source: HNTB analysis. See text for details.

Table E.38

International and Other U.S. All-Cargo Aircraft Departures by Type: FAI

	2009	2010	2015	2020	2030
ANTONOV 124	1	4	4	4	4
ANTONOV 225		1	1	1	1
BOEING 747-100	3	5	3		
BOEING 747-200/300	26	28	25	10	
BOEING 747-400	10	17	26	55	87
BOEING 767-300/ER	2				
DOUGLAS DC-10-30	2				
LOCKHEED L100-30	3				
MCDONNELL D MD-11	4	2	2	4	4
Grand Total	**51**	**57**	**61**	**74**	**96**

Source: HNTB analysis. See text for details.

Table E.39

Peak Intra-Alaska All-Cargo Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.070	0.069	0.077	0.080	0.087	0.100	0.098	0.097	0.085	0.081	0.074	0.081	1.000
						Monthly (c)							
2010	745	731	818	851	928	1,059	1,042	1,026	907	858	788	861	10,615
2015	802	787	881	916	999	1,140	1,122	1,105	977	924	849	927	11,429
2020	851	835	934	972	1,059	1,209	1,190	1,171	1,036	979	900	983	12,119
2025	885	869	972	1,011	1,102	1,258	1,238	1,219	1,078	1,019	937	1,023	12,612
2030	920	903	1,010	1,051	1,145	1,307	1,287	1,267	1,120	1,059	973	1,063	13,105
						Average Busy Day (d)							**Maximum**
2010	26	29	29	31	33	39	37	36	33	30	29	30	39
2015	28	31	31	33	35	42	40	39	36	33	31	33	42
2020	30	33	33	35	37	44	42	41	38	35	33	35	44
2025	31	34	34	37	39	46	44	43	39	36	34	36	46
2030	32	35	36	38	40	48	45	45	41	37	35	37	48

(a) Table 6.7.
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table E.40

Peak Other U.S. and International All-Cargo Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.068	0.063	0.078	0.085	0.086	0.087	0.089	0.089	0.089	0.096	0.089	0.082	1.000
						Monthly (c)							
2010	2,072	1,925	2,366	2,579	2,629	2,634	2,699	2,702	2,719	2,909	2,704	2,491	30,427
2015	2,161	2,008	2,468	2,690	2,743	2,748	2,816	2,819	2,837	3,035	2,821	2,599	31,745
2020	2,549	2,368	2,911	3,173	3,235	3,241	3,321	3,324	3,346	3,579	3,327	3,065	37,438
2025	2,891	2,686	3,301	3,599	3,669	3,676	3,767	3,771	3,795	4,060	3,774	3,476	42,466
2030	3,234	3,004	3,692	4,025	4,103	4,111	4,213	4,217	4,244	4,540	4,221	3,888	47,493
						Average Busy Day (d)							**Maximum**
2010	73	75	83	94	93	96	95	95	99	103	99	88	103
2015	76	78	87	98	97	100	99	99	103	107	103	92	107
2020	90	92	103	116	114	118	117	117	122	126	121	108	126
2025	102	105	116	131	129	134	133	133	138	143	137	123	143
2030	114	117	130	147	145	150	149	149	155	160	154	137	160

(a) Table 6.7.
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table E.41

Peak Total All-Cargo Aircraft Departures
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	2,817	2,656	3,184	3,430	3,557	3,693	3,741	3,728	3,627	3,767	3,492	3,352	41,042
2015	2,964	2,795	3,349	3,607	3,742	3,888	3,938	3,923	3,814	3,958	3,670	3,526	43,174
2020	3,400	3,203	3,845	4,145	4,294	4,450	4,511	4,495	4,382	4,558	4,227	4,048	49,557
2025	3,777	3,555	4,274	4,610	4,771	4,934	5,005	4,989	4,873	5,079	4,711	4,500	55,078
2030	4,154	3,907	4,702	5,076	5,249	5,418	5,500	5,483	5,365	5,599	5,194	4,951	60,598
													Maximum
						Average Busy Day							
2010	99	104	112	125	125	135	132	131	132	133	127	118	135
2015	104	109	118	131	132	142	139	138	139	140	134	124	142
2020	120	125	136	151	151	162	159	158	160	161	154	143	162
2025	133	139	151	168	168	180	176	176	178	179	172	159	180
2030	146	152	166	185	185	197	194	193	195	197	189	175	197
						Peak 60 Minute Aircraft Departures							
2010	15	16	17	19	19	20	20	20	20	20	19	18	20
2015 (a)	14	15	16	18	18	20	19	19	19	19	19	17	20
2020	15	16	17	19	19	20	20	20	20	20	19	18	20
2025 (a)	17	18	20	22	22	23	23	23	23	23	22	21	23
2030	20	20	22	25	25	26	26	26	26	26	25	23	26
						Peak 60 Minute Aircraft Arrivals							
2010	15	16	17	19	19	20	20	20	20	20	19	18	20
2015 (a)	15	16	17	19	20	21	21	20	21	21	20	18	21
2020	17	18	20	22	22	23	23	23	23	23	22	21	23
2025 (a)	20	20	22	25	25	26	26	26	26	26	25	23	26
2030	22	23	25	28	28	30	29	29	29	30	28	26	30
						Peak 60 Minute Aircraft Operations							
2010	21	22	24	27	27	29	28	28	28	28	27	25	29
2015 (a)	22	23	25	28	28	30	29	29	29	29	28	26	30
2020	25	26	28	31	31	34	33	33	33	33	32	30	34
2025 (a)	28	29	32	36	36	38	37	37	38	38	36	34	38
2030	32	33	36	40	40	43	42	42	42	43	41	38	43

(a) Interpolated.

Sources: Tables E.39 and E.40 and design day flight schedules.

Table E.42

Peak Intra-Alaska All-Cargo Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.071	0.072	0.079	0.085	0.091	0.104	0.101	0.087	0.087	0.074	0.072	0.077	1.000
						Monthly (c)							
2010	113	116	126	136	145	167	161	139	139	118	116	123	1,602
2015	128	131	143	154	165	189	183	157	158	134	131	140	1,813
2020	151	155	169	182	194	223	215	185	186	158	155	165	2,139
2025	165	169	184	199	212	244	235	202	203	172	169	180	2,333
2030	179	183	199	215	229	264	254	219	220	187	183	195	2,526
													Maximum
						Average Busy Day (d)							
2010	5	6	6	6	6	8	7	6	6	5	5	5	8
2015	6	6	6	7	7	9	8	7	7	6	6	6	9
2020	7	7	7	8	8	10	9	8	8	7	7	7	10
2025	7	8	8	9	9	11	10	9	9	8	8	8	11
2030	8	9	9	10	10	12	11	10	10	8	8	8	12

(a) Table 6.8.
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table E.43

Peak Other U.S. and International All-Cargo Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.046	0.000	0.015	0.008	0.015	0.092	0.000	0.031	0.715	0.023	0.038	0.015	1.000
						Monthly (c)							
2010	3	-	1	0	1	5	-	2	41	1	2	1	57
2015	3	-	1	0	1	6	-	2	44	1	2	1	61
2020	3	-	1	1	1	7	-	2	53	2	3	1	74
2025	4	-	1	1	1	8	-	3	61	2	3	1	85
2030	4	-	1	1	1	9	-	3	69	2	4	1	96
													Maximum
						Average Busy Day (d)							
2010	0	-	0	0	0	0	-	0	2	0	0	0	2
2015	0	-	0	0	0	0	-	0	2	0	0	0	2
2020	0	-	0	0	0	0	-	0	2	0	0	0	2
2025	0	-	0	0	0	0	-	0	3	0	0	0	3
2030	0	-	0	0	0	0	-	0	3	0	0	0	3

(a) Table 6.8.
(b) Distribution based on 2010 monthly distribution of aircraft departures from US DOT T100 data.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily aircraft operation data from FAA's ETMSC data base.

Sources: As noted and HNTB analysis.

Table E.44

Peak Total All-Cargo Aircraft Departures
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	116	116	127	137	146	173	161	141	180	120	118	124	1,659
2015	131	131	144	155	165	195	183	159	201	135	134	141	1,874
2020	155	155	170	183	195	230	215	188	239	160	158	166	2,213
2025	169	169	185	199	213	251	235	205	264	174	172	181	2,418
2030	183	183	201	216	231	273	254	222	288	189	186	196	2,622
													Maximum
						Average Busy Day							
2010	5	6	6	6	6	8	7	6	8	5	5	5	8
2015	6	6	6	7	7	9	8	7	9	6	6	6	9
2020	7	7	7	8	9	10	9	8	11	7	7	7	11
2025	7	8	8	9	9	11	10	9	12	8	8	8	12
2030	8	9	9	10	10	12	11	10	13	8	8	9	13
						Peak 60 Minute Aircraft Departures							
2010	2	2	2	2	2	3	2	2	3	2	2	2	3
2015 (a)	2	2	2	2	2	3	2	2	3	2	2	2	3
2020	2	2	2	2	2	3	2	2	3	2	2	2	3
2025 (b)	2	2	2	2	2	3	3	2	3	2	2	2	3
2030 (b)	2	2	2	2	3	3	3	2	3	2	2	2	3
						Peak 60 Minute Aircraft Arrivals							
2010	2	2	2	2	3	3	3	2	3	2	2	2	3
2015 (a)	2	2	2	2	2	3	3	2	3	2	2	2	3
2020	2	2	2	2	2	3	2	2	3	2	2	2	3
2025 (b)	2	2	2	2	2	3	3	2	3	2	2	2	3
2030 (b)	2	2	2	2	3	3	3	2	3	2	2	2	3
						Peak 60 Minute Aircraft Operations							
2010	3	3	3	3	3	4	4	3	4	3	3	3	4
2015 (a)	3	3	3	3	3	4	4	3	4	3	3	3	4
2020	3	3	3	3	3	4	4	3	4	3	3	3	4
2025 (b)	3	3	3	3	3	4	4	3	4	3	3	3	4
2030 (b)	3	3	3	4	4	5	4	4	5	3	3	3	5

(a) Interpolated.
(b) Extrapolated.

Sources: Tables E.42 and E.43 and design day schedules.

APPENDIX F

ADDITIONAL AIR TAXI AND OTHER PROJECTIONS

Table F.1

Forecast of Air Taxi Passenger Enplanements at ANC

Year	Crude Oil Prices (a) Base	High	Average	Average Lagged 3 Years	Air Taxi Enplanements (b)
2010	74.86	74.86	74.86	44.96	137,331
2015	86.83	136.84	111.84	100.45	152,711
2020	98.65	160.60	129.63	118.95	165,539
2025	107.40	175.09	141.25	134.27	176,159
2030	112.38	185.03	148.71	144.23	183,060
	Average Annual Growth Rate				
2010-2030	2.1%	4.6%	3.5%	6.0%	1.4%

(a) Table 3.2.
(b) Estimated using following formula:

ATENP = 83085.83 + (693.165*OILLAG) + FIN

where: ATENP = Air Taxi Enplanements
OILLAG = Average crude oil prices lagged three years.
FIN = Instrument variable equal to -56530 in 2008 and 0 in all other years.

R-squared = .791
Adjusted R-squared = .739
F-statistic = 15.14
T-statistics:

Intercept=	10.87
OILLAG =	3.71
FIN =	-5.10

Sources: As noted and HNTB analysis.

Table F.2

Air Taxi and Other Aircraft Operations Forecast by Aircraft Type (a)
Anchorage

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	3	61	3,034	3,850	6,948
2015	2	47	2,748	4,929	7,726
2020	2	40	2,658	5,675	8,375
2025	2	36	2,569	6,305	8,912
2030	2	34	2,428	6,798	9,262
Average Annual Growth Rate					
2010-2030	-2.0%	-2.9%	-1.1%	2.9%	1.4%

(a) Base year distribution from FAA ETMSC data base. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 7.3.

Sources: As noted and HNTB analysis.

Table F.3

Air Taxi and Other Aircraft Operations Forecast by Aircraft Type (a)
Fairbanks

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	3,889	2,040	1,339	1,060	8,328
2015	3,987	1,992	1,549	1,733	9,261
2020	4,160	1,937	1,690	2,252	10,039
2025	4,403	1,868	1,743	2,669	10,683
2030	4,558	1,809	1,724	3,010	11,101
		Average Annual Growth Rate			
2010-2030	0.8%	-0.6%	1.3%	5.4%	1.4%

(a) Base year distribution from FAA ETMSC data base and based aircraft counts for air taxi operators. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 7.4.

Sources: As noted and HNTB analysis.

Table F.4

Air Taxi and Other Aircraft Operations Forecast by Aircraft Type (a)
Lake Hood

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	13,899	352	35	-	14,286
2015	14,718	355	42	-	15,115
2020	15,401	346	46	-	15,793
2025	16,771	344	49	-	17,164
2030	18,497	354	51	-	18,902
		Average Annual Growth Rate			
2010-2030	1.4%	0.0%	1.9%		1.4%

(a) Base year distribution estimated from based aircraft counts. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 7.5.

Sources: As noted and HNTB analysis.

Table F.5

Peak Air Taxi and Other Aircraft Operations
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.049	0.040	0.071	0.068	0.106	0.099	0.122	0.141	0.083	0.060	0.103	0.058	1.000
						Monthly (c)							
2010	342	278	493	471	736	686	850	978	575	418	718	403	6,948
2015	380	309	549	523	819	762	945	1,088	640	465	799	448	7,726
2020	412	335	595	567	888	826	1,024	1,179	693	504	866	486	8,375
2025	439	356	633	604	945	879	1,090	1,255	738	536	921	517	8,912
2030	456	370	658	627	982	914	1,133	1,304	767	557	958	537	9,262
						Average Busy Day (d)							**Maximum**
2010	12	11	17	17	26	25	29	34	21	14	26	14	34
2015	13	12	19	19	28	27	33	38	23	16	29	16	38
2020	14	13	21	20	31	30	35	41	25	17	31	17	41
2025	15	14	22	22	33	31	38	43	26	19	33	18	43
2030	16	14	23	22	34	33	39	45	27	19	34	19	45
						Peak 60 Minute Aircraft Departures							
2010	1	1	1	1	2	2	2	3	2	1	2	1	3
2015 (e)	1	1	2	2	2	2	3	3	2	1	2	1	3
2020	1	1	2	2	3	3	3	4	2	2	3	2	4
2025 (e)	2	1	2	2	3	3	4	4	3	2	3	2	4
2030	2	1	2	2	4	3	4	5	3	2	4	2	5
						Peak 60 Minute Aircraft Arrivals							
2010	1	1	1	1	2	2	2	3	2	1	2	1	3
2015 (e)	1	1	2	2	3	2	3	3	2	1	3	1	3
2020	1	1	2	2	3	3	3	4	2	2	3	2	4
2025 (e)	1	1	2	2	3	3	3	4	2	2	3	2	4
2030	1	1	2	2	3	3	3	4	2	2	3	1	4
						Peak 60 Minute Aircraft Operations							
2010	1	1	2	2	3	3	4	4	2	2	3	2	4
2015 (e)	2	2	3	3	4	4	5	5	3	2	4	2	5
2020	2	2	3	3	5	5	6	6	4	3	5	3	6
2025 (e)	2	2	3	3	5	5	6	7	4	3	5	3	7
2030	2	2	4	4	5	5	6	7	4	3	5	3	7

(a) Table 7.3.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts, US DOT T100 data, and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base.
(e) Interpolated.

Sources: As noted, design day flight schedules, and HNTB analysis.

Table F.6

Peak Air Taxi and Other Aircraft Operations
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.058	0.048	0.056	0.093	0.085	0.094	0.098	0.129	0.137	0.069	0.057	0.076	1.000
						Monthly (c)							
2010	481	402	468	772	710	780	816	1,075	1,143	575	471	635	8,328
2015	535	447	520	858	790	867	907	1,195	1,271	639	524	706	9,261
2020	580	485	564	931	856	940	984	1,296	1,378	693	568	765	10,039
2025	617	516	600	990	911	1,001	1,047	1,379	1,466	738	604	815	10,683
2030	641	536	624	1,029	946	1,040	1,088	1,433	1,524	766	628	846	11,101
						Average Busy Day (d)							**Maximum**
2010	16	15	16	27	24	28	28	37	40	20	17	22	40
2015	18	17	18	30	27	31	31	41	45	22	19	24	45
2020	20	18	19	33	29	33	34	44	49	24	20	26	49
2025	21	20	21	35	31	35	36	47	52	25	21	28	52
2030	22	20	21	36	32	37	37	49	54	26	22	29	54
						Peak 60 Minute Aircraft Departures							
2010	1	1	1	2	2	2	2	3	3	2	1	2	3
2015 (e)	1	1	1	2	2	2	2	3	3	2	1	2	3
2020	1	1	1	2	2	2	3	3	4	2	2	2	4
2025 (f)	2	1	2	3	2	3	3	4	4	2	2	2	4
2030 (f)	2	2	2	3	2	3	3	4	4	2	2	2	4
						Peak 60 Minute Aircraft Arrivals							
2010	1	1	1	2	2	3	3	3	4	2	2	2	4
2015 (e)	2	2	2	3	3	3	3	4	4	2	2	2	4
2020	2	2	2	3	3	3	3	4	5	2	2	3	5
2025 (f)	2	2	2	4	3	4	4	5	5	3	2	3	5
2030 (f)	2	2	2	4	3	4	4	5	5	3	2	3	5
						Peak 60 Minute Aircraft Operations							
2010	2	2	2	4	4	4	4	5	6	3	2	3	6
2015 (e)	3	3	3	4	4	5	5	6	7	3	3	4	7
2020	3	3	3	5	4	5	5	7	7	4	3	4	7
2025 (f)	3	3	3	5	5	5	5	7	8	4	3	4	8
2030 (f)	3	3	3	5	5	6	6	7	8	4	3	4	8

(a) Table 7.4.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts, US DOT T100 data, and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base.
(e) Interpolated.
(f) Extrapolated.

Sources: As noted, design day flight schedules, and HNTB analysis.

Table F.7

Peak Air Taxi and Other Aircraft Operations
Lake Hood

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.013	0.016	0.036	0.033	0.045	0.174	0.237	0.233	0.107	0.062	0.027	0.017	1.000
						Monthly (c)							
2010	181	233	517	468	650	2,481	3,379	3,328	1,531	886	384	248	14,286
2015	192	247	547	496	687	2,625	3,575	3,521	1,620	938	406	263	15,115
2020	200	258	571	518	718	2,743	3,736	3,679	1,692	980	424	274	15,793
2025	217	280	621	563	780	2,981	4,060	3,998	1,839	1,065	461	298	17,164
2030	240	309	684	620	860	3,283	4,471	4,403	2,025	1,172	508	328	18,902
													Maximum
						Average Busy Day (d)							
2010	6	9	18	17	23	89	117	115	55	31	14	9	117
2015	7	9	19	18	24	94	124	122	58	32	15	9	124
2020	7	10	20	19	25	98	129	127	61	34	15	10	129
2025	8	11	22	20	27	107	141	139	66	37	17	10	141
2030	8	12	24	22	30	118	155	153	73	41	18	11	155
						Peak 60 Minute Aircraft Departures (e)							
2010	0	1	1	1	2	7	9	9	4	2	1	1	9
2015	1	1	1	1	2	7	10	9	4	2	1	1	10
2020	1	1	2	1	2	8	10	10	5	3	1	1	10
2025	1	1	2	2	2	8	11	11	5	3	1	1	11
2030	1	1	2	2	2	9	12	12	6	3	1	1	12
						Peak 60 Minute Aircraft Arrivals (e)							
2010	1	1	1	1	2	7	10	10	5	3	1	1	10
2015	1	1	2	1	2	8	10	10	5	3	1	1	10
2020	1	1	2	2	2	8	11	11	5	3	1	1	11
2025	1	1	2	2	2	9	12	12	5	3	1	1	12
2030	1	1	2	2	2	10	13	13	6	3	2	1	13
						Peak 60 Minute Aircraft Operations (e)							
2010	1	1	2	2	3	11	14	14	7	4	2	1	14
2015	1	1	2	2	3	11	15	15	7	4	2	1	15
2020	1	1	2	2	3	12	16	15	7	4	2	1	16
2025	1	1	3	2	3	13	17	17	8	4	2	1	17
2030	1	1	3	3	4	14	19	18	9	5	2	1	19

(a) Table 7.5..
(b) Distribution based on 2007 monthly distribution of aircraft departures from Anchorage International Airport, and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in base year.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base of combined ANC and LHD GA operations.
(e) Peak 60-minute as a percent of average busy day assumed to be the same as ANC.

Sources: As noted, design day flight schedules, and HNTB analysis.

APPENDIX G

ADDITIONAL GENERAL AVIATION PROJECTIONS

Table G.1

General Aircraft Operations Forecast by Aircraft Type (a)
Anchorage

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	4,442	4,524	22,618	4,476	36,060
2015	4,094	3,970	23,511	6,577	38,152
2020	4,021	3,634	24,162	8,046	39,863
2025	4,368	3,599	25,569	9,788	43,324
2030	4,866	3,750	27,215	11,882	47,713
Average Annual Growth Rate					
2010-2030	0.5%	-0.9%	0.9%	5.0%	1.4%

(a) Base year distribution estimated from FAA ETMSC data base for jets and based aircraft distribution for other categories. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 8.1..

Sources: As noted and HNTB analysis.

Table G.2

General Aviation Aircraft Operations Forecast by Aircraft Type (a)
Fairbanks

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	67,002	2,154	975	968	71,099
2015	69,581	2,130	1,142	1,603	74,456
2020	71,671	2,045	1,231	2,056	77,003
2025	77,065	2,004	1,289	2,476	82,834
2030	83,971	2,042	1,342	2,940	90,295
		Average Annual Growth Rate			
2010-2030	1.1%	-0.3%	1.6%	5.7%	1.2%

(a) Base year distribution estimated from FAA ETMSC data base for jets and based aircraft distribution for other categories. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 8.2..

Sources: As noted and HNTB analysis.

Table G.3

General Aircraft Operations Forecast by Aircraft Type (a)
Lake Hood

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Total (b)
2010	43,710	1,107	111	-	44,928
2015	46,285	1,116	133	-	47,534
2020	48,433	1,089	145	-	49,667
2025	52,743	1,081	154	-	53,978
2030	58,169	1,115	162	-	59,446
Average Annual Growth Rate					
2010-2030	1.4%	0.0%	1.9%		1.4%

(a) Base year distribution estimated from based aircraft distribution for all categories. Assumed to increase at same rate as FAA projection of hours flown for each category and then adjusted proportionately to sum to total.
(b) Table 8.1..

Sources: As noted and HNTB analysis.

Table G.4

Peak General Aviation Aircraft Operations
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.063	0.056	0.079	0.087	0.127	0.109	0.122	0.128	0.039	0.100	0.043	0.047	1.000
						Monthly (c)							
2010	2,266	2,021	2,858	3,122	4,596	3,935	4,395	4,627	1,418	3,613	1,533	1,677	36,060
2015	2,397	2,139	3,024	3,303	4,862	4,164	4,650	4,895	1,500	3,823	1,622	1,774	38,152
2020	2,505	2,235	3,159	3,451	5,080	4,351	4,858	5,115	1,567	3,994	1,694	1,854	39,863
2025	2,722	2,429	3,434	3,751	5,521	4,728	5,280	5,559	1,703	4,341	1,841	2,015	43,324
2030	2,998	2,675	3,782	4,131	6,081	5,207	5,815	6,122	1,876	4,781	2,028	2,219	47,713
													Maximum
						Average Busy Day (d)							
2010	75	74	95	107	152	135	146	153	49	120	53	56	153
2015	79	79	100	113	161	143	154	162	51	127	56	59	162
2020	83	82	105	118	168	149	161	170	54	132	58	61	170
2025	90	89	114	129	183	162	175	184	58	144	63	67	184
2030	99	98	125	142	202	178	193	203	64	159	69	74	203
						Peak 60 Minute Aircraft Departures							
2010	5	5	6	7	10	9	10	10	3	8	4	4	10
2015 (e)	5	5	7	8	11	10	10	11	3	9	4	4	11
2020	6	6	7	8	11	10	11	12	4	9	4	4	12
2025 (e)	6	6	7	8	12	11	11	12	4	9	4	4	12
2030	6	6	8	9	13	11	12	13	4	10	4	5	13
						Peak 60 Minute Aircraft Arrivals							
2010	6	6	8	9	13	12	13	13	4	10	5	5	13
2015 (e)	7	7	9	10	14	13	14	15	5	11	5	5	15
2020	8	8	10	11	16	14	15	16	5	12	5	6	16
2025 (e)	8	8	10	12	17	15	16	17	5	13	6	6	17
2030	9	9	11	13	18	16	17	18	6	14	6	7	18
						Peak 60 Minute Aircraft Operations							
2010	8	8	11	12	17	15	16	17	5	13	6	6	17
2015 (e)	9	9	11	13	18	16	17	18	6	14	6	7	18
2020	9	9	12	13	19	17	18	19	6	15	6	7	19
2025 (e)	10	10	13	14	20	18	19	20	6	16	7	7	20
2030	11	11	14	15	22	20	21	22	7	17	8	8	22

(a) Table 8.1.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base.
(e) Interpolated.

Sources: As noted, design day flight schedules, and HNTB analysis.

Table G.5

Peak General Aviation Aircraft Operations
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.024	0.037	0.057	0.082	0.136	0.144	0.135	0.142	0.126	0.067	0.030	0.019	1.000
						Monthly (c)							
2010	1,738	2,642	4,067	5,838	9,665	10,228	9,601	10,088	8,953	4,770	2,161	1,348	71,099
2015	1,820	2,767	4,259	6,114	10,121	10,711	10,054	10,564	9,376	4,995	2,263	1,412	74,456
2020	1,882	2,861	4,405	6,323	10,468	11,077	10,398	10,926	9,696	5,166	2,340	1,460	77,003
2025	2,025	3,078	4,738	6,802	11,260	11,916	11,186	11,753	10,431	5,557	2,518	1,570	82,834
2030	2,207	3,355	5,165	7,414	12,274	12,989	12,193	12,812	11,370	6,058	2,744	1,712	90,295
													Maximum
						Average Busy Day (d)							
2010	61	102	142	210	337	369	335	352	323	166	78	47	369
2015	63	107	149	220	353	386	351	368	338	174	82	49	386
2020	66	110	154	228	365	399	363	381	349	180	84	51	399
2025	71	119	165	245	393	429	390	410	376	194	91	55	429
2030	77	130	180	267	428	468	425	447	410	211	99	60	468
						Peak 60 Minute Aircraft Departures							
2010	4	7	10	14	23	25	23	24	22	11	5	3	25
2015 (e)	4	7	10	15	24	26	24	25	23	12	5	3	26
2020	4	7	10	15	24	26	24	25	23	12	6	3	26
2025 (f)	5	8	11	16	25	27	25	26	24	12	6	3	27
2030 (f)	5	8	11	17	27	29	26	28	25	13	6	4	29
						Peak 60 Minute Aircraft Arrivals							
2010	4	6	9	13	21	23	21	22	20	10	5	3	23
2015 (e)	4	7	9	14	22	24	22	23	21	11	5	3	24
2020	4	7	9	14	22	24	22	23	21	11	5	3	24
2025 (f)	4	7	10	14	23	25	23	24	22	11	5	3	25
2030 (f)	4	7	10	15	25	27	25	26	24	12	6	3	27
						Peak 60 Minute Aircraft Operations							
2010	7	12	17	25	39	43	39	41	38	19	9	5	43
2015 (e)	7	12	17	25	40	44	40	42	39	20	9	6	44
2020	7	12	17	26	41	45	41	43	39	20	9	6	45
2025 (f)	8	13	18	27	43	47	43	45	42	21	10	6	47
2030 (f)	8	14	20	29	46	51	46	48	44	23	11	6	51

(a) Table 8.2.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base.
(e) Interpolated.
(f) Extrapolated.

Sources: As noted, design day flight schedules, and HNTB analysis.

Table G.6

Peak General Aviation Aircraft Operations
Lake Hood

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.023	0.030	0.051	0.056	0.124	0.168	0.157	0.151	0.148	0.056	0.016	0.018	1.000
Monthly (c)													
2010	1,027	1,341	2,309	2,525	5,581	7,567	7,071	6,794	6,654	2,523	714	821	44,928
2015	1,087	1,418	2,443	2,672	5,905	8,005	7,481	7,188	7,040	2,669	756	869	47,534
2020	1,136	1,482	2,552	2,791	6,170	8,365	7,817	7,511	7,356	2,789	790	908	49,667
2025	1,234	1,611	2,774	3,034	6,706	9,091	8,496	8,163	7,994	3,031	858	987	53,978
2030	1,359	1,774	3,055	3,341	7,385	10,012	9,356	8,990	8,804	3,338	945	1,086	59,446
													Maximum
Average Busy Day (d)													
2010	34	49	77	87	185	259	234	225	228	84	24	27	259
2015	36	52	81	92	196	274	248	238	241	89	26	29	274
2020	38	54	85	96	205	287	259	249	252	92	27	30	287
2025	41	59	92	104	222	311	282	271	274	100	29	33	311
2030	45	65	101	114	245	343	310	298	302	111	32	36	343
Peak 60 Minute Aircraft Departures													
2010	2	3	5	6	13	18	16	15	15	6	2	2	18
2015	2	4	5	6	13	19	17	16	16	6	2	2	19
2020	3	4	6	6	14	19	18	17	17	6	2	2	19
2025	3	4	6	7	14	20	18	18	18	7	2	2	20
2030	3	4	6	7	15	21	19	19	19	7	2	2	21
Peak 60 Minute Aircraft Arrivals													
2010	3	4	7	7	16	22	20	19	20	7	2	2	22
2015	3	5	7	8	18	25	22	21	22	8	2	3	25
2020	3	5	8	9	19	27	24	23	23	9	3	3	27
2025	4	5	8	9	20	28	26	25	25	9	3	3	28
2030	4	6	9	10	22	30	27	26	27	10	3	3	30
Peak 60 Minute Aircraft Operations													
2010	4	5	9	10	21	29	26	25	25	9	3	3	29
2015	4	6	9	10	22	30	28	26	27	10	3	3	30
2020	4	6	9	11	23	32	29	28	28	10	3	3	32
2025	5	7	10	11	25	34	31	30	30	11	3	4	34
2030	5	7	11	13	27	38	34	33	33	12	4	4	38

(a) Table 8.1.
(b) Distribution based on 2007 monthly distribution of aircraft departures from Anchorage International Airport, and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily GA aircraft operation data from FAA's ETMSC data base.
(e) Peak 60-minute as a percent of average busy day assumed to be the same as ANC.

Sources: As noted, design day flight schedules, and HNTB analysis.

APPENDIX H

ADDITIONAL MILITARY PROJECTIONS

Table H.1

Military Aircraft Operations Forecast by Aircraft Type (a)
Anchorage

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Helicopter	Total (b)
2010	13	6	2,792	1,342	248	4,401
2015	7	3	1,438	691	128	2,267
2020	7	3	1,438	691	128	2,267
2025	7	3	1,438	691	128	2,267
2030	7	3	1,438	691	128	2,267
			Average Annual Growth Rate			
2010-2030	-3.0%	-3.4%	-3.3%	-3.3%	-3.3%	-3.3%

(a) Base year data based on FAA ETMSC counts. Distribution among aircraft types assumed to remain constant in the future.
(b) Table 9.1.

Sources: As noted and HNTB analysis.

Table H.2

Military Aircraft Operations Forecast by Aircraft Type (a)
Fairbanks

Year	Single Engine Piston	Mutli-Engine Piston	Turboprop	Jet	Helicopter	Total (b)
2010	8	57	1,263	1,393	219	2,721
2015	8	59	1,314	1,449	227	2,830
2020	8	59	1,314	1,449	227	2,830
2025	8	59	1,314	1,449	227	2,830
2030	8	59	1,314	1,449	227	2,830
			Average Annual Growth Rate			
2010-2030	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%

(a) Base year data based on FAA ETMSC counts. Distribution among aircraft types assumed to remain constant in the future.
(b) Table 9.2.

Sources: As noted and HNTB analysis.

Table H.3

Peak Military Aircraft Operations
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.067	0.069	0.086	0.090	0.092	0.108	0.080	0.096	0.090	0.079	0.072	0.070	1.000
Monthly (c)													
2010	295	305	380	396	405	476	354	423	396	346	316	309	4,401
2015	152	157	196	204	209	245	182	218	204	178	163	159	2,267
2020	152	157	196	204	209	245	182	218	204	178	163	159	2,267
2025	152	157	196	204	209	245	182	218	204	178	163	159	2,267
2030	152	157	196	204	209	245	182	218	204	178	163	159	2,267
Average Busy Day (d)													**Maximum**
2010	12	13	15	16	16	19	14	17	16	14	13	12	19
2015	6	7	8	8	8	10	7	9	8	7	7	6	10
2020	6	7	8	8	8	10	7	9	8	7	7	6	10
2025	6	7	8	8	8	10	7	9	8	7	7	6	10
2030	6	7	8	8	8	10	7	9	8	7	7	6	10
Peak 60 Minute Aircraft Departures													
2010	3	3	4	4	4	5	3	4	4	3	3	3	5
2015 (e)	2	2	3	3	3	3	2	3	3	2	2	2	3
2020	2	2	3	3	3	3	2	3	3	2	2	2	3
2025 (f)	2	2	3	3	3	3	2	3	3	2	2	2	3
2030	2	2	3	3	3	3	2	3	3	2	2	2	3
Peak 60 Minute Aircraft Arrivals													
2010	3	3	4	4	4	5	3	4	4	3	3	3	5
2015 (e)	2	2	3	3	3	3	2	3	3	2	2	2	3
2020	2	2	3	3	3	3	2	3	3	2	2	2	3
2025 (f)	2	2	3	3	3	3	2	3	3	2	2	2	3
2030	2	2	3	3	3	3	2	3	3	2	2	2	3
Peak 60 Minute Aircraft Operations													
2010	6	7	7	8	8	10	7	8	8	7	6	6	10
2015 (e)	4	5	5	5	5	7	5	6	5	5	4	4	7
2020	4	5	5	5	5	7	5	6	5	5	4	4	7
2025 (f)	4	5	5	5	5	7	5	6	5	5	4	4	7
2030	4	5	5	5	5	7	5	6	5	5	4	4	7

(a) Table 9.1.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily military aircraft operation data from FAA's ETMSC data base.
(e) Assumed to be the same as 2020.
(f) Interpolated.

Sources: As noted, design day flight schedules, and HNTB analysis.

Table H.4

Peak Military Aircraft Operations
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total (a)
Distribution (b)	0.053	0.096	0.094	0.089	0.091	0.121	0.068	0.075	0.078	0.079	0.077	0.080	1.000
						Monthly (c)							
2010	144	260	257	242	247	330	185	204	211	215	209	217	2,721
2015	150	270	267	252	257	343	192	212	219	224	217	226	2,830
2020	150	270	267	252	257	343	192	212	219	224	217	226	2,830
2025	150	270	267	252	257	343	192	212	219	224	217	226	2,830
2030	150	270	267	252	257	343	192	212	219	224	217	226	2,830
						Average Busy Day (d)							**Maximum**
2010	6	12	11	10	10	14	8	8	9	9	9	9	14
2015	6	12	11	11	11	15	8	9	9	9	9	9	15
2020	6	12	11	11	11	15	8	9	9	9	9	9	15
2025	6	12	11	11	11	15	8	9	9	9	9	9	15
2030	6	12	11	11	11	15	8	9	9	9	9	9	15
						Peak 60 Minute Aircraft Departures							
2010	1	3	3	3	3	4	2	2	2	2	2	2	4
2015 (e)	2	4	3	3	3	5	2	3	3	3	3	3	5
2020	2	5	4	4	4	5	3	3	4	3	3	3	5
2025 (e)	2	5	4	4	4	5	3	3	4	3	3	3	5
2030 (e)	2	5	4	4	4	5	3	3	4	3	3	3	5
						Peak 60 Minute Aircraft Arrivals							
2010	1	2	2	2	2	2	1	1	2	1	1	1	2
2015 (e)	1	3	2	2	2	3	2	2	2	2	2	2	3
2020	2	3	3	3	3	4	2	2	2	2	2	2	4
2025 (e)	2	3	3	3	3	4	2	2	2	2	2	2	4
2030 (e)	2	3	3	3	3	4	2	2	2	2	2	2	4
						Peak 60 Minute Aircraft Operations							
2010	2	5	4	4	4	6	3	4	4	4	4	4	6
2015 (e)	3	6	6	6	6	8	4	5	5	5	5	5	8
2020	4	8	7	7	7	9	5	5	6	6	6	6	9
2025 (e)	4	8	7	7	7	9	5	5	6	6	6	6	9
2030 (e)	4	8	7	7	7	9	5	5	6	6	6	6	9

(a) Table 9.2.
(b) Distribution based on 2010 monthly distribution of aircraft departures from ATCT traffic counts and HNTB analysis.
(c) Monthly distribution of departures assumed to remain as in 2010.
(d) Adjusted to represent average of five busiest days of the week based on daily military aircraft operation data from FAA's ETMSC data base.
(e) Assumed to be the same as 2020.

Sources: As noted, design day flight schedules, and HNTB analysis.

APPENDIX I

ADDITIONAL SUMMARY FORECAST PROJECTIONS

Table I.1

Peak Total Aircraft Operations
Anchorage

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	14,825	13,570	16,487	17,017	19,969	21,318	22,582	22,803	17,076	18,596	15,766	15,555	215,564
2015	15,476	14,154	17,193	17,754	20,855	22,201	23,632	23,802	17,790	19,423	16,474	16,242	224,997
2020	16,630	15,219	18,513	19,162	22,428	23,820	25,333	25,519	19,234	20,993	17,872	17,554	242,275
2025	17,926	16,406	19,992	20,725	24,252	25,710	27,346	27,549	20,781	22,744	19,342	18,965	261,738
2030	19,272	17,638	21,530	22,355	26,174	27,683	29,449	29,673	22,349	24,577	20,832	20,408	281,942
													Maximum
						Average Busy Day							
2010	508	516	566	604	684	755	771	780	608	638	561	535	780
2015	529	536	588	628	712	783	805	811	630	664	584	557	811
2020	569	577	634	678	766	841	864	871	683	719	635	603	871
2025	614	622	685	734	829	908	933	940	738	779	687	651	940
2030	660	669	738	792	895	978	1,005	1,013	794	842	741	701	1,013
						Peak 60 Minute Aircraft Departures							
2010	22	22	24	26	30	33	33	34	26	28	24	23	34
2015	23	23	25	27	31	34	35	35	27	29	25	24	35
2020	24	25	27	29	33	36	37	37	29	31	27	26	37
2025	27	28	30	33	37	40	41	42	33	35	31	29	42
2030	30	31	34	36	41	45	46	46	36	39	34	32	46
						Peak 60 Minute Aircraft Arrivals							
2010	26	26	29	31	35	39	40	40	31	33	29	27	40
2015	25	26	28	30	34	37	38	39	30	32	28	27	39
2020	25	25	28	30	34	37	38	38	30	32	28	27	38
2025	28	28	31	33	38	41	42	43	34	35	31	30	43
2030	31	31	35	37	42	46	47	47	37	39	35	33	47
						Peak 60 Minute Aircraft Operations							
2010	39	40	43	46	53	58	59	60	47	49	43	41	60
2015	41	41	45	49	55	61	62	63	49	51	45	43	63
2020	44	45	49	53	60	66	67	68	53	56	49	47	68
2025	49	49	54	58	66	72	74	75	59	62	55	52	75
2030	53	54	60	64	72	79	81	82	64	68	60	57	82

Sources: Tables D.38, E.41, F.4, G.4 and H.3, design day flight schedules and HNTB analysis.

Table I.2

Peak Total Aircraft Operations
Fairbanks

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
Monthly													
2,010	5,151	6,044	8,073	9,969	13,960	15,269	14,660	15,458	13,895	8,813	5,583	5,106	121,981
2,015	5,557	6,487	8,639	10,638	14,819	16,217	15,590	16,443	14,779	9,420	6,007	5,527	130,123
2,020	5,859	6,806	9,053	11,138	15,475	16,945	16,297	17,185	15,467	9,865	6,320	5,836	136,248
2,025	6,225	7,236	9,642	11,884	16,559	18,132	17,449	18,393	16,547	10,513	6,716	6,189	145,486
2,030	6,618	7,715	10,311	12,743	17,844	19,533	18,800	19,804	17,800	11,254	7,150	6,556	156,128
Average Busy Day													**Maximum**
2,010	184	240	288	365	493	558	518	545	507	313	207	183	558
2,015	199	257	308	390	523	593	551	580	540	334	222	198	593
2,020	210	270	323	408	547	620	576	606	565	350	234	210	620
2,025	223	287	344	436	585	663	617	649	605	373	249	222	663
2,030	237	306	367	467	630	714	664	699	650	400	264	235	714
Peak 60 Minute Aircraft Departures													
2010	11	15	18	23	31	35	32	34	32	19	13	11	35
2015	12	15	18	23	31	35	32	34	32	20	13	12	35
2020	12	15	18	22	30	34	32	33	31	19	13	11	34
2025	12	15	18	23	31	35	33	35	32	20	13	12	35
2030	12	16	19	24	33	37	35	37	34	21	14	12	37
Peak 60 Minute Aircraft Arrivals													
2010	9	12	15	19	25	28	26	28	26	16	11	9	28
2015	10	13	16	20	26	30	28	29	27	17	11	10	30
2020	10	13	16	20	27	31	29	30	28	17	12	10	31
2025	11	14	17	21	28	32	30	32	29	18	12	11	32
2030	11	15	17	22	30	34	32	33	31	19	13	11	34
Peak 60 Minute Aircraft Operations													
2010	17	22	26	33	45	51	47	49	46	28	19	17	51
2015	18	23	27	34	46	52	49	51	48	30	20	18	52
2020	18	23	28	35	47	54	50	52	49	30	20	18	54
2025	19	24	29	37	49	56	52	55	51	31	21	19	56
2030	20	25	30	38	52	59	55	58	54	33	22	19	59

Sources: Table D.42, E.44, F.5, G.5 and H.4, design day flight schedules and HNTB analysis.

Table I.3

Peak Total Aircraft Operations
Lake Hood

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
						Monthly							
2010	1,208	1,574	2,826	2,994	6,231	10,048	10,450	10,122	8,185	3,409	1,098	1,069	59,214
2015	1,278	1,665	2,990	3,167	6,592	10,631	11,057	10,709	8,660	3,607	1,162	1,131	62,649
2020	1,336	1,740	3,124	3,309	6,888	11,108	11,553	11,190	9,048	3,769	1,214	1,182	65,460
2025	1,452	1,891	3,395	3,597	7,486	12,072	12,556	12,161	9,834	4,096	1,319	1,285	71,142
2030	1,599	2,082	3,739	3,961	8,244	13,295	13,827	13,393	10,830	4,511	1,453	1,415	78,348
													Maximum
						Average Busy Day							
2010	40	58	94	103	208	348	352	341	283	114	38	36	352
2015	43	62	100	109	220	368	372	360	299	121	40	38	372
2020	45	64	104	114	229	385	389	377	313	126	42	40	389
2025	48	70	113	124	249	418	422	409	340	137	46	43	422
2030	53	77	125	137	275	461	465	451	374	151	51	47	465
						Peak 60 Minute Aircraft Departures							
2010	2	4	6	6	13	21	21	21	17	7	2	2	21
2015	3	4	6	6	13	22	22	21	18	7	2	2	22
2020	3	4	6	6	13	22	22	21	18	7	2	2	22
2025	3	4	6	7	14	23	23	22	18	7	2	2	23
2030	3	4	7	7	14	24	24	24	20	8	3	2	24
						Peak 60 Minute Aircraft Arrivals							
2010	3	4	7	7	15	25	25	24	20	8	3	3	25
2015	3	5	8	8	17	28	29	28	23	9	3	3	29
2020	4	5	9	9	19	32	32	31	26	10	3	3	32
2025	4	6	9	10	20	34	34	33	27	11	4	3	34
2030	4	6	10	11	21	36	36	35	29	12	4	4	36
						Peak 60 Minute Aircraft Operations							
2010	4	6	9	10	21	34	35	34	28	11	4	4	35
2015	4	6	10	11	22	37	38	36	30	12	4	4	38
2020	5	7	11	12	24	40	40	39	32	13	4	4	40
2025	5	7	12	13	25	42	43	42	35	14	5	4	43
2030	5	8	12	14	27	46	47	45	37	15	5	5	47

Sources: Table F.6, and G.6, design day flight schedules and HNTB analysis.

APPENDIX J

FORECAST METHODOLOGY

Appendix J

Technical Memorandum #1:

Final Recommended Methodology for Preparing Aviation Demand Forecast for the AIAS Plan

1. Background and Introduction

The purpose of this memorandum is to describe the proposed aviation demand forecast methodology for the Alaska International Airport System (AIAS) Plan. The AIAS consists of two international airports, Fairbanks International Airport (FAI) and Ted Stevens Anchorage International Airport (ANC) including Lake Hood Airport (LHD). The primary purpose of the AIAS Plan is to provide clear guidance for optimizing the use of AIAS infrastructure, conduct forecasting, and identify capacity constraints and trigger points for capacity improvements. In addition, the planning process will evaluate airport business composition, market conditions, and fiscal challenges, to provide guidance for optimizing AIAS efficiency and opportunity for economic development.

This memorandum presents the methodology to be used in developing aviation demand forecasts for the subject airports. A draft version of this memorandum was submitted to the State, airlines, FAA, and their representatives for review and approval. This final memorandum incorporates the comments that were received.

This technical memorandum will first describe the proposed baseline forecast approach for each of the main activity categories, including air cargo, passenger, air taxi, general aviation, and military. The suggested methodology for preparing the design day flight schedules will then be detailed. Recommended forecast scenarios will then be described. The memorandum will conclude with a detailed description of the deliverables that will be provided as part of the forecast effort, and how they relate to concurrent planning initiatives at ANC, FAI, and LHD.

2. Annual Forecasts

This section provides the recommended processes for forecasting annual activity for air cargo, passenger, air taxi, general aviation, and military activity, including associated aircraft operations.

2.1. Air Cargo Forecasts

For the purposes of the forecast, air cargo will be organized into two main categories, international, and intra-state.

2.1.1. International Air Cargo

International air cargo consists of air cargo which has its origin or destination outside the United States. Most of this cargo originates in Asia, stops in Alaska, and then goes on to the "lower 48". Some of this cargo flows in the reverse direction, originating in the "lower 48", stopping in Alaska, and then going on to Asia. A small portion of this cargo has its ultimate origin or destination within the State of Alaska.

A top down approach is recommended for the forecast of international cargo tonnage. The following steps are envisioned:

a) *Estimate future air cargo flows by region*. The focus of this effort will be to estimate Asia-North America flows, although Asia-Europe, Europe-North America, and Asia-South America will also be examined. A statistical regression equation relating regional cargo flows to gross domestic product (GDP) in the United States and Asian countries, along with the price of fuel and variables representing historical disruptive factors such as the financial crisis and natural disasters will be prepared. The results of the regression forecast will be compared with the results of the air carrier survey and forecasts from Boeing, Airbus, the FAA, and other industry experts. The consulting team will then either select a blend of the available forecasts, or choose the forecast that appears most reasonable and defensible as well as seeking guidance from the State's air cargo consultant experts.
b) *Convert cargo flows to tonnages*. Most regional cargo forecasts are expressed in revenue ton miles (RTMs) or Revenue Ton Kilometers (RTKs). As the key Asian manufacturing centers have moved from Japan and Korea to China and Southeast Asia, the average length of haul has increased, since the new manufacturing centers are further away from North America. Historical trends in the ratio of RTMs to tonnage will be used to convert the future RTM projections to tonnage projections
c) *Estimate share of cargo moving on passenger aircraft*. Industry forecasts of international passenger traffic, especially in the Asia-North America region will be used, in conjunction with an assessment of the future passenger aircraft fleet, to identify the share of international air cargo that would move in the bellies of passenger aircraft. Since virtually all these passenger aircraft are capable of flying non-stop between Asia and North America without a payload penalty, it is unlikely that much of this traffic will use Alaska airports. The share of air cargo moving on all-cargo aircraft will equal total air cargo less the share moving on passenger aircraft.
d) *Estimate share of all-cargo tonnage that would require a technical stop*. Based on results of the air carrier surveys, published information on aircraft orders, and

industry forecasts, the aircraft fleet likely to be serving the Pacific region will be assessed. For each of these aircraft types, USDOT T-100 data will be used to calculate the percentage of these aircraft that currently fly routes lengthy enough to incur a payload penalty. It is anticipated that the results will be different for westbound routes which typically have lower load factors, than for eastbound routes. Results from the air carrier surveys will be used to assess whether the share of aircraft flying routes that would incur payload penalties will change in the future. The estimated future fleet mix, in conjunction with the future percentage of aircraft incurring a payload penalty aircraft type, will be evaluated for each major route, to estimate the percentage of all-cargo tonnage that would need a technical stop on each route.

e) *Estimate share of cargo requiring a technical stop that would use Alaska airports.* The share of cargo requiring a technical stop will be analyzed to identify the major airports that could serve as a technical stop, based on the criteria that each segment of the route could be served without incurring a payload penalty and minimizing the circuity of the route. This share would represent the future international air cargo tonnage forecast for the Alaska International Airport System.

f) *Distribute cargo between integrated carriers and non-integrated carriers.* The results of the airline survey, historical trends, and industry forecasts will be used to allocate Alaska international air cargo between integrated (FedEx, UPS, etc.) and non-integrated carriers.

g) *Estimate load factor.* The results of the air carrier survey, along with historical trends, will be used to estimate future air cargo load factor. The calculation will be performed separately for eastbound and westbound traffic.

h) *Convert cargo tonnage to aircraft operations by type.* The Alaska international all cargo tonnage forecast will be divided by the load factor forecast to estimate required available ton capacity on each route. The available ton capacity will be allocated among airlines and aircraft types for each route while taking the following factors into account:

   - Results of airline survey
   - Current carriers and aircraft serving the route
   - Individual aircraft tonnage capacity
   - Aircraft on order by carriers

   Annual aircraft frequencies on each route will be estimated so that the cumulative cargo capacity of the aircraft estimated for the route will be equal to the required available ton capacity for that route.

i) *Prepare baseline allocation of international cargo tonnage and operations among Alaska international airports.* The results of the airline survey, the circuity analysis (step e), and current service patterns will be used to provide a baseline allocation of international air cargo activity among the Alaska international airports. The effect of capacity constraints and incentives will be evaluated in subsequent tasks.

2.1.2. Intrastate Air Cargo

Intrastate air cargo consists of air cargo between the two Alaska international airports and the remaining Alaska airport system. Two forecast approaches for intrastate air cargo tonnage will be evaluated, a top-down approach based on a share of U.S. domestic air cargo, and a bottom-up approach based on a regression analysis of local economic and cost factors.

a) *Top down approach*. The top-down approach can be briefly summarized as follows:

- Identify forecast of U.S. domestic air cargo flows (FAA forecast).
- Calculate the historical change in the Alaska share of U.S. domestic cargo and use that trend to project future changes in share, if any.
- Apply the future change in share to the FAA domestic forecast of air cargo to identify future AIAS intrastate air cargo tonnage.

b) *Bottom up approach*.

- Prepare a statistical regression equation relating enplaned and deplaned intrastate air cargo at the two AIAS airports to state and metropolitan income and population, fuel costs, and other industry factors.
- Incorporate economic forecasts from the Institute of Social and Economic Research (ISER) and other organizations, along with fuel cost forecasts from the U.S. Department of Energy into the forecast equation to estimate a bottom-up forecast of intrastate air cargo.

The results of the top-down and bottom-up forecasts will be compared. The consulting team will then either select a blend of the two forecasts, or choose the forecast that appears most reasonable and defensible. Note that local factors are incorporated into the top-down approach, since historical changes in share are usually attributable to differences in relative demand between the local regions and the nation.

The results of the airline survey and current service patterns will be used to provide a baseline allocation of intrastate air cargo activity among the AIAS airports. The effect of capacity constraints and incentives will be evaluated in subsequent tasks.

The passenger fleet mix forecasts will be used to evaluate the future available belly capacity at each of the two airports. Historical trends in passenger carrier cargo load factors will be used to estimate future belly load factors, which will in turn be used to estimate total intrastate belly cargo tonnage. The difference between total intrastate air cargo tonnage and belly cargo tonnage will be the air cargo tonnage moving on all-cargo aircraft.

Future intrastate all-cargo load factors will be estimated separately for inbound and outbound cargo based on historical trends. The intrastate all cargo tonnage forecast will be divided by the load factor forecasts to estimate required available ton capacity on each major intrastate route. The available ton capacity will be allocated among airlines and aircraft types for each route while taking the following factors into account:

- Results of airline survey
- Current carriers and aircraft serving the route
- Individual aircraft tonnage capacity
- Aircraft on order by carriers

Annual aircraft frequencies on each route will be estimated so that the cumulative cargo capacity of the aircraft estimated for the route will be equal to the required available ton capacity for that route.

2.2. Passenger Forecasts

Passenger forecasts will be prepared for two main categories, international and domestic.

2.2.1. International Passenger

International passenger service at Alaska is driven by either transit traffic or origin-destination (O&D) demand.

As the range of passenger aircraft has increased, technical stops at Alaska airports by passenger aircraft have declined to near zero operations. Any remaining passenger technical stops will be examined, and the aircraft on order by the incumbent service providers will be examined to determine whether their range characteristics will enable them to overfly Alaska.

Historical international O&D demand at ANC and FAI will be collected and trends in the major markets will be identified to determine whether they will grow sufficiently to warrant new non-stop service to Alaska. Operations and fleet mix associated with international passenger traffic will be based on the existing fleets and fleet plans of the airlines serving existing international markets and those identified as candidates for new non-stop service.

The baseline allocation of international passenger activity among the two AIAS airports will be based on current service patterns and the distribution of O&D traffic among the Anchorage and Fairbanks metropolitan areas.

2.2.2. Domestic Passenger

The domestic passenger category includes passenger traffic going to and from the AIAS airports to domestic points within and outside of Alaska. The following methodology is recommended for the forecasts:

a) Project future AIAS domestic passenger originations using regression analysis with regional income and average air fares as independent variables. Based on previous experience, different regression equations may be required for intrastate and out-of-state O&D traffic.
b) Allocate AIAS originations by destination market.
c) Prepare baseline allocation of AIAS originations among the two AIAS airports based on originating passenger geographic proximity to one of the two airports.
d) Prepare matrix of potential AIAS connecting passengers. This will show O&D passenger flow between non-AIAS Alaska commercial airports and domestic airports outside of Alaska.
e) Perform initial allocation of connecting passengers between ANC and FAI based on minimizing circuity time (e.g. which airport serves a given connecting passenger better based on total travel distance).
f) Screen each U.S. destination market to determine whether combined O&D and connecting traffic is sufficient to sustain non-stop service to either ANC or FAI.
g) Reallocate connecting traffic among the two AIAS airports if it is determined that one of them cannot support non-stop service to that market based on the screening in the previous step. The reallocation may also be influenced by airline survey results, if they indicate a logistical preference for one of the airports.
h) The result will be a baseline forecast of O&D and connecting passenger traffic to each AIAS airport broken out by market. The effect of capacity constraints and incentives will be evaluated in subsequent tasks.

A forecast of domestic passenger carrier aircraft operations will be derived from the domestic passenger forecast using the following steps:

a) Project load factor for each market using FAA growth rates in conjunction with the results of the airline surveys.
b) Project seat departures for each market by dividing the passenger by the load factor forecasts.
c) Estimate the most probable manner in which airlines would accommodate the seat departure forecast in terms of aircraft type and frequency of service. The analysis will take into account the results of the airline survey, current carriers and aircraft serving the route, Individual aircraft seat capacity, and aircraft on order by carriers. Annual aircraft frequencies on each route will be estimated so that the cumulative seat departures of the aircraft estimated for the market will be equal to the required seat departures for that market.

2.3. Air Taxi and General Aviation

Air taxi operations consist of for-hire flights that do not fly according to a published schedule. For the purpose of this analysis they will be treated separately from scheduled commuter flights. Since air taxi and general aviation (GA) operations share many characteristics they will be projected using the same general approach. Air taxi and GA forecasts will be prepared for ANC, FAI, and LHD. A key step in the process will be accurately identifying the historical split of operations between ANC and LHD.

As is the case with intrastate air cargo, two forecast approaches be evaluated for GA and air taxi, a top-down approach based on a share of U.S. GA activity, and a bottom-up approach based on a regression analysis of local economic and cost factors.

The top-down approach is similar to the approach used for the Alaska Aviation System Plan and can be briefly summarized as follows:

a) Identify forecast of U.S. GA and air taxi hours flown (FAA forecast).
b) Calculate the historical change in the Alaska share of U.S. GA and air taxi hours flown and use that trend to project future changes in share, if any.
c) Apply the future change in share to the FAA forecast of GA and air taxi hours flown to identify future AIAS GA and air taxi activity.

The bottom-up approach would involve the following steps:

a) Prepare a statistical regression equation relating GA and air taxi operations at ANC, FAI, and LHD to state and metropolitan income and population, fuel costs, and other industry factors.
b) Incorporate economic forecasts from the Institute of Social and Economic Research (ISER) and other organizations, along with fuel cost forecasts from the U.S. Department of Energy into the forecast equation to estimate a bottom-up forecast of GA and air taxi operations.

The results of the top-down and bottom-up forecasts will be compared. The consulting team will then either select a blend of the two forecasts, or choose the forecast that appears most reasonable and defensible. The effect of capacity constraints and incentives will be evaluated in subsequent tasks.

2.4. Military

The military missions at ANC and FAI will be surveyed to assess any changes in status that may affect military operations at the two AIAS airports. In particular, updated information on the effects of the relocation of the Kulis Air National Guard from ANC to Elmendorf Air Force Base will be requested. That information, in conjunction with FAA forecasts of military activity, will be used to develop an estimate of future military operations at the two AIAS airports.

3. Design Day Flight Schedules

The design day flight schedules will be a key input to the capacity analysis. They will be prepared for an average weekday in the peak month for the base year (2011), 2020 and 2030 for ANC and for the base year (2011) and 2020 for FAI. Note that the base year for the design day flight schedules (2011) will differ from the base year for the annual forecasts (2010). In both instances, the intent is to use the most up-to-date data available. Data from 2010 will be used to calculate the relationships between peak day and annual activity for future design day flight schedules. The flight schedules will include gate/parking position assignment, airline, aircraft type, arrival and departure time, enplaning/deplaning passengers, and originating/terminating passengers. Cargo, passenger, air taxi, GA, and military operations will be included.

The following approaches are recommended for preparing the design day flight schedules:

- An OAG schedule for a weekday in July 2011, coupled with Flight Explorer data and available airport data will be used as the initial source of flight times and operations detail for the 2011 schedules, and for existing flights in the 2020 and 2030 schedules.
- The operations by route forecasts in the cargo analysis and the operations by market forecasts in the passenger analysis will be the sources for flight frequency by airline and aircraft type for each market for the future flight schedules.

Flight times for new flights will be estimated using the following approach:

- Incorporate any input provided in the airline surveys regarding anticipated changes in schedule patterns.
- Avoid wing-tip to wing-tip flying in a given market.
- Schedule take-off and landing times at Alaska to be compatible with hours of operation and curfews at both the origin and destination markets.
- Schedule new flights for integrated cargo carriers to be compatible with the sort operations at their hubs.
- Schedule new flights for passenger carriers to be consistent with their existing connecting bank structure at their hub airports.
- Use existing hourly distribution of operations for air taxi, GA, and military as a guide for estimating new flight times.

Aircraft turnarounds (determination of which arriving flights becomes which departing flight) will be estimated by identifying current turnaround times (by carrier and aircraft type) and using these times as a guide for estimating future turnaround times.

The following assumptions are proposed for assigning parking positions and gates within the design day flight schedules:

- A minimum 15-minute buffer is recommended between an aircraft departure and the next aircraft arrival at each parking position or gate.
- Passenger flights that overnight or have extended dwell times are assumed to be towed off or on their gate as necessary. Assumed dwell times for these aircraft will be 45 minutes for mainline aircraft and 30 minutes for regional aircraft.
- Flights will be initially assigned to parking positions/gates to maximize utilization given the above constraints. Once parking/gate requirements are determined the flights will be redistributed among the required gates to provide for a more balanced operation for the SIMMOD analysis.

4. Scenarios

Up to four forecasts scenarios will be prepared in addition to the baseline forecast. The forecast scenarios will include annual cargo tonnage, annual O&D and connecting passengers, and annual operations by category for the AIAS system, ANC, FAI, and LHD.

Recommended scenarios include:

a) *No-Action Scenario.* This scenario assumes no airfield, parking, or terminal expansion at ANC, FAI, or LHD. This forecast scenario will be performed after the demand/capacity analysis has been completed.
b) *High Fuel Price Scenario*. This scenario assumes the U.S. Department of Energy's high fuel price scenario occurs. The impact of higher fuel costs would likely decrease cargo, passenger, and GA activity, and this scenario will estimate the changes in these activity categories for the three airports.
c) *High Economic Growth Scenario*. This scenario assumes that the State, U.S., and world economy will grow more rapidly than currently expected. Income and GDP growth rates would correspond to those in the FAA's optimistic economic and aviation activity forecasts as published in the <u>FAA Aerospace Forecast: Fiscal Years 2011-2031</u>.
d) *Increased Aircraft Range Scenario*. This scenario assumes that the next generation of all-cargo aircraft will provide substantial increases in range without incurring payload penalties. The expected result would be more overflying of Alaska and fewer technical stops.

Other potential scenarios could include lower than expected economic growth, disruptions in Asia-North America trade flows resulting from political instability, trade wars, or major volcanic eruptions, changes in the air cargo fleet mix, or changes in integrated carrier sorting practices.

The State DOT&PF will determine the scenarios that are ultimately selected for analysis.

5. Deliverables

The deliverables of this forecast effort are intended to serve the needs of the AIAS study, and the upcoming Master Plan Updates for ANC and FAI, as well as the upcoming Part 150 Study for ANC. The following matrix details the forecast deliverables for 2010, 2015, 2020, and 2030.

Forecast Item	AIAS System	ANC	FAI	LHD
Annual International Cargo Tonnage Forecast	√	√	√	
Annual Intrastate Cargo Tonnage Forecast	√	√	√	
Annual Cargo Operations by Airline, Aircraft Type, and Market	√	√	√	
Annual International Passenger O&D and Enplanement Forecast by Market	√	√	√	
Annual Domestic Passenger O&D and Enplanement Forecast by Market	√	√	√	
Annual Passenger Operations by Airline, Aircraft Type, and Market	√	√	√	
Annual Air Taxi Operations by Type	√	√	√	√
Annual GA Operations by Type	√	√	√	√
Annual Military Operations by Type	√	√	√	√
Monthly Distribution of Operations by Category (Cargo, Passenger, etc.)	√	√	√	√
Monthly Distribution of Passengers	√	√	√	
Average Weekday Peak Month Operations by Category (Cargo, Passenger, etc.)	√	√	√	√
Average Weekday Peak Month Passengers	√	√	√	
Peak Hour Operations by Category	√	√	√	√
Peak Hour Passengers	√	√	√	
TAF Comparison	√	√*	√	√*

*ANC and LHD will be combined for TAF comparison to match FAA accounting practices. The latest available TAF and the FAA comparison tables in “Forecast Aviation Activity by airport will be used in the comparisons.

The following matrix details the forecast information resulting from the design day flight schedules that will be prepared for ANC for 2011, 2020, and 2030 and for FAI for 2011 and 2020. As explained in Section 3, the base year for the design day flight schedule will differ from the base year for the annual forecasts.

Forecast Item	ANC	FAI
Design Day Flight Schedule	√	√
Hourly Distribution of Operations by Category	√	√
Hourly Distribution of Passengers by Category	√	√
Day/Night/Stage Length Split of Operations by Aircraft Type	√	

A detailed technical report will document the assumptions and methodology used for the AIAS forecasts including ANC, FAI, and LHD. The technical report will be complemented by summary reports specific to each airport, which will provide synopses of the approach along with the forecast results pertaining to the airport. The technical report will be made available in electronic form to all interested parties receiving the summary reports.

Forecast Item	AIAS System	ANC	FAI	LHD
Technical Report	√			
Summary Reports		√	√	√

APPENDIX K

FORECAST ASSUMPTIONS

APPENDIX K

ALASKA INTERNATIONAL AIRPORT SYSTEM PLAN
Recommended Forecast Assumptions
December 19, 2011

Forecast Assumptions – Purpose

The recommended forecast assumptions will be used as inputs to the aviation forecasts and to provide a context within which the forecasts will be prepared. Some of these assumptions may need to be amended as new information becomes available.

The assumptions were reviewed by the AIAS consulting team, by the airlines, and by representatives of the State, and Anchorage and Fairbanks International Airports and comments and recommendations have been incorporated. The purpose of the assumptions is to provide a reasonable assessment of the key forecast trends and parameters necessary to generate activity forecasts. In many instances, multiple outcomes for these trends and parameters are possible. Therefore, up to four forecast scenarios will be prepared to address the impact of potential variations in these factors.

The input assumptions should not be confused with the aviation activity forecasts. The forecasts will be the output of a process in which input assumptions are incorporated into a methodology/approach that generates the aviation forecast numbers. The assumptions and methodologies used to develop the forecasts will also be documented in the report. The recommended forecast input assumptions are presented below.

Socioeconomic Forecasts

Three sets of socioeconomic forecasts, described in Tables 1, 2, and 3, 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 economic and demographic forecasts for each state, metropolitan area, and county in the United States updated every year. 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.

Table 1

Alternative Population Forecasts

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Population - Woods & Poole Growth Rates (a)				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	408,153	99,475	244,831	752,459	324,651,258
2020	436,137	101,576	254,539	792,252	340,525,647
2025	464,520	103,801	264,531	832,852	356,743,721
2030	492,970	106,060	274,586	873,616	373,032,487
	Average Annual Growth Rate				
2010-2030	1.3%	0.4%	0.8%	1.0%	0.9%
	Forecast Population - Alaska Department of Labor Growth Rates (b) RECOMMENDED				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	406,494	100,936	232,856	740,286	n/a
2020	434,793	104,420	237,423	776,636	n/a
2025	464,530	107,860	240,273	812,663	n/a
2030	494,289	110,926	241,816	847,031	n/a
	Average Annual Growth Rate				
2010-2030	1.3%	0.6%	0.1%	0.9%	n/a
	Forecast Population - ISER Growth Rates (c)				
2009	374,553	98,660	225,682	698,895	306,771,529
2010	380,821	97,581	235,583	713,985	309,349,689
2015	397,046	n/a	n/a	732,815	n/a
2020	446,134	n/a	n/a	805,134	n/a
2025	503,593	n/a	n/a	887,800	n/a
2030	529,222	n/a	n/a	925,666	n/a
	Average Annual Growth Rate				
2010-2030	1.7%	n/a	n/a	1.3%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough.
(b) Includes Fairbanks North Star Borough.
(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data.
(d) Growth rates from Alaska Department of Labor and Workforce Development, Alaska Population Projections: 2010 to 2034, February 2011, applied to 2010 base year data.

(e) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data.

Sources: As noted and HNTB analysis.

Table 2

Alternative Employment Forecasts

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Employment - Woods & Poole Growth Rates (a)				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	254,095	62,248	165,264	481,607	186,666,486
2020	271,698	64,471	174,152	510,321	197,543,985
2025	290,377	66,671	183,211	540,259	208,942,117
2030	310,202	68,842	192,414	571,458	220,876,780
	Average Annual Growth Rate				
2010-2030	1.4%	0.8%	1.1%	1.2%	1.2%
	Forecast Employment - W&P Per Capita Employment Applied to State DOL Population Forecast (b) RECOMMENDED				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	253,062	63,162	157,181	473,816	n/a
2020	270,861	66,276	162,441	500,262	n/a
2025	290,383	69,278	166,410	527,163	n/a
2030	311,032	72,000	169,451	554,068	n/a
	Average Annual Growth Rate				
2010-2030	1.4%	1.0%	0.5%	1.1%	n/a
	Forecast Employment - ISER Growth Rates (c)				
2009	232,587	58,761	153,300	444,648	174,199,800
2010	234,258	59,183	154,402	447,843	173,752,400
2015	245,486	n/a	n/a	469,097	n/a
2020	267,435	n/a	n/a	507,758	n/a
2025	294,643	n/a	n/a	552,694	n/a
2030	305,062	n/a	n/a	568,685	n/a
	Average Annual Growth Rate				
2010-2030	1.3%	n/a	n/a	1.2%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough. 2010 data estimated based on State growth rates.
(b) Includes Fairbanks North Star Borough. 2010 data estimated based on State growth rates.
(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data.
(d) Woods Poole employment to population ratios applied to Alaska Department of Labor Population Projections from Table 1
(e) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data.

Sources: As noted and HNTB analysis.

Table 3

Alternative Personal Income Forecasts (000's of 2010 Dollars)

Year	Anchorage MSA (a)	Fairbanks MSA (b)	Rest of Alaska	Alaska Total	United States
	Forecast Personal Income - Woods & Poole Growth Rates (c)				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	20,338,576	4,409,055	10,451,367	35,198,998	13,784,200,170
2020	22,860,645	4,809,248	11,634,589	39,304,482	15,370,164,702
2025	25,705,975	5,249,237	12,962,420	43,917,632	17,160,616,229
2030	28,902,443	5,729,258	14,441,824	49,073,525	19,171,547,604
	Average Annual Growth Rate				
2010-2030	2.4%	1.8%	2.1%	2.2%	2.2%
	Forecast Personal Income - ISER Growth Rates (d)				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	18,865,136	n/a	n/a	32,797,457	n/a
2020	20,723,881	n/a	n/a	35,934,516	n/a
2025	23,037,113	n/a	n/a	39,740,632	n/a
2030	24,127,426	n/a	n/a	41,569,161	n/a
	Average Annual Growth Rate				
2010-2030	1.5%	n/a	n/a	1.4%	n/a
	Forecast Personal Income - W&P/ISER Average Per Capita Income Applied to State DOL Population Forecast (e) RECOMMENDED				
2009	17,618,778	3,905,726	9,228,754	30,753,258	12,128,904,455
2010	18,081,969	4,008,406	9,471,374	31,561,749	12,357,113,000
2015	19,784,976	4,310,016	9,785,701	33,880,693	n/a
2020	21,493,632	4,616,619	10,485,927	36,596,178	n/a
2025	23,478,342	4,942,573	11,194,237	39,615,152	n/a
2030	25,757,296	5,274,351	11,777,375	42,809,022	n/a
	Average Annual Growth Rate				
2010-2030	1.8%	1.4%	1.1%	1.5%	n/a

(a) Includes Municipality of Anchorage and Matanuska-Susitna Borough. 2010 data estimated based on State growth rates.

(b) Includes Fairbanks North Star Borough. 2010 data estimated based on State growth rates.

(c) Growth rates from Woods & Poole, Complete Economic and Demographic Data Source (CEDDS) applied to 2010 base year data from Table A.5.

(d) Growth rates from Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009, applied to 2010 base year data from Table 1.

(e) Average of Woods & Poole and ISER per capital income projections applied to Alaska Department of Labor Population Projections from Table 1. Rest of Alaska calculated by subtracting Anchorage and Fairbanks MSA totals from State totals.

Sources: As noted and HNTB analysis.

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 Anchorage Municipality 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 State Department of Labor, but its income forecasts are more conservative than W&P, despite the higher population forecasts.

The State DOL population projections are recommended for use in this study. They are very similar to W&P for the Anchorage and Fairbanks metropolitan areas but appear to better reflect the ongoing out-migration in more rural parts of Alaska.

For employment projections, a hybrid approach that applies the per capita employment projections from the W&P forecasts to the State DOL population projections is recommended. 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.

A similar hybrid approach is recommended for income. This involves applying the average of the ISER and W&P per capita income projections to the State DOL population projections. 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 is considered a reasonable compromise.

There are some concerns that using a 2009/2010 base year during the middle of an economic downturn may bias the projections in a negative way. 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 in other business cycles is less likely to occur this time.

The W&P CEDDS forecasts, which contain projections by metropolitan area for the entire United States, are recommended for use in distributing the market-by-market passenger forecasts for the remainder of the United States.

Global Insight forecasts of Gross Domestic Product (GDP) by world region, as published in the FAA Aerospace Forecasts: FY 2010-2031, as shown in Table 4 are recommended for use in the international forecasts. They are the most recent available forecasts that cover all the regions in question.

Table 4

GDP Forecast by Region (millions of 2005 US Dollars)

Year	United States	Asia/Pacific Total	China	Japan	Other Asia/Pacific
2010	13,088.0	13,768.1	3,829.1	4,575.3	5,363.7
2015	15,155.3	17,658.4	5,768.4	4,984.4	6,905.6
2020	17,346.7	22,301.4	8,338.3	5,183.8	8,779.3
2025	19,898.9	27,681.1	11,544.7	5,276.0	10,860.4
2030	22,569.7	34,006.2	15,336.5	5,364.4	13,305.3
Average Annual Growth Rate					
2010-2030	2.8%	4.6%	7.2%	0.8%	4.6%

Source: Global Insight, as published in FAA Aerospace Forecasts: 2011-2031, March 2011.

Fuel and Other Air Carrier Operating Costs

Jet fuel prices are an important determinant of aviation demand and will be incorporated in both the passenger and cargo forecasts. Jet fuel prices are very sensitive to crude oil prices which have extremely volatile over the past several years. Several forecasts of jet fuel and crude oil prices were considered (see Table 5). Actual jet fuel prices (through September 2011) are shown for comparison.

The United States Department of Energy (DOE) provides specific forecasts on jet fuel prices, but most other sources provide forecasts of crude oil prices only. In general, the DOE projects oil and jet fuel prices to increase gradually in their Reference case and much more rapidly in their High Oil Price scenario. The FAA's estimate of crude prices anticipates a gradual increase through 2015 and then a decline. In their forecast for Anchorage and Alaska, ISER assumed a cost of $95.00 per barrel in 2009 prices ($96.69 in 2010 prices) throughout the forecast period. As of this writing, crude oil and jet fuel prices have been tracking higher than most forecasts had indicated. As of September 2011, actual jet fuel prices were close to the DOE high forecast, whereas as of November 11, 2011, spot crude oil prices were $98.18 per barrel, higher than the FAA or base DOE forecasts and close to the ISER forecasts.

Table 5

Comparison of Fuel and Oil Price Projections (2010 Prices)

	Jet Fuel Costs per Gallon				Crude Oil Prices (per barrel)		
Year	Actual (a)	DOE Reference Case (b)	DOE High Oil Price (c)	Recommended (d)	FAA Refiners' Acquisition Cost (e)	DOE Imported Crude Oil Cost (f)	ISER (g)
2008	3.12				102.95	93.44	
2009	1.70				55.62	59.04	
2010	2.15				74.11	74.86	96.69
2011	2.94	2.28	3.06	2.94	73.57	80.32	96.69
2012		2.44	3.47	3.01	79.49	80.65	96.69
2013		2.49	3.70	3.09	81.65	82.87	96.69
2014		2.53	3.81	3.16	82.85	85.07	96.69
2015		2.57	3.89	3.23	84.38	86.83	96.69
2020		2.97	4.35	3.66	80.77	98.65	96.69
2025		3.18	4.78	3.98	74.22	107.40	96.69
2030		3.33	5.04	4.19	75.91	112.38	96.69
				Average Annual Growth Rate			
2010-2030		0.6%	2.7%	1.8%	0.2%	1.7%	0.0%

(a) U.S. Department of Energy, Annual Energy Outlook 2011, 2011 data as of September, from Air Transport Association.
(b) U.S. Department of Energy, Annual Energy Outlook 2011, Reference Case.
(c) U.S. Department of Energy, Annual Energy Outlook 2011, High Oil Price.
(d) Average of DOE Reference and High Cases. 2012 through 2014 interpolated from 2011 level.
(e) FAA Aerospace Forecasts: Fiscal Years 2011-2031. Prices converted to constant dollars. Fiscal Year.
(f).S. Department of Energy, Annual Energy Outlook 2011, Reference Case.
(g) Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035, by Institute of Social and Economic Research and Northern Economics, December 2009. Converted to 2010 prices.

Sources: As noted and HNTB analysis.

The recommended fuel price forecast assumes that fuel prices grow gradually in real terms to the average of the DOE Reference and High forecasts to 2015, and then continues 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.

Fuel Availability

It is assumed that ANC, FAI, and the airlines will continue to take whatever measures are necessary and install whatever facilities are required to avoid the fuel availability issues of the past and to ensure that jet fuel is available to the carriers at market rates.

The possibility that fuel availability may constrain growth in airport activity and the measures that ANC and FAI can take to ensure fuel availability, will be addressed in more detail during the incentives study as part of the strategic plan that will be undertaken after the forecast.

Asia/North America Air Cargo Flows

Based on an econometric forecast equation relating Asia/North America air cargo flows from the U.S. DOT's T100 data base to regional GDP and fuel prices it is estimated that total Asia/North America air cargo flows (going through Alaska, through other airports, or nonstop) will increase at an average of 4.9 percent per year. This growth rate assumes the recommended GDP and fuel price forecasts (Tables 4 and 5). If GDP is higher than the recommended forecast the Asia/North America air cargo flow forecast will also be higher. If fuel prices are higher than the recommended forecast, the Asia/North America air cargo flow forecast will be lower. The analysis is focused on Eastbound and Westbound trans-continental cargo flows, so it is not affected by domestic/international cargo designations which can vary by carrier and data source.

The GDP and fuel price variables were selected because a) they showed a statistical correlation with Asia/North America cargo flows and b) historical and projected data were available on a year-by-year basis. Other variables such as commodity composition, value to weight rations, and individual country exports are no doubt also relevant, but the year-by-year historical and forecast detail necessary to include them in the forecast equation is not available.

The 4.9 percent forecast growth rate for the region is lower than the forecasts published by Boeing or Airbus. However, given the very slow growth of the last decade and the uncertainty expressed by the cargo survey respondents, it is believed that the 4.9 percent forecast is more realistic.

Note that a 4.9 percent growth in Asia/North America trade flows will not automatically translate to 4.9 percent growth for the Alaska international airports. The share of this traffic growth captured by Alaska airports will depend on the degree of overflying and diversion to other airports.

Competition from Ocean-Borne Freight

It is assumed that the share of Asia-North America freight carried by sea will continue to increase at historical rates. The ocean-borne share of Asia/North America cargo has been growing faster than the air carrier share, and this is reflected in the historical statistics used to calculate the Asia/North America air cargo flows. Using the historical relationship to estimate future Asia/North America air cargo flows implicitly assumes that the ocean-borne share will continue to increase as it has in the past. This is reflected in the 4.9 percent estimated annual growth rate for 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

Competition from Belly Cargo

Newer passenger aircraft such as the Boeing 777-300 have substantial belly cargo capacity. The FAA accounts for this in their national forecast by projecting international belly cargo to grow at a faster rate than international passengers. This factor will be incorporated into the forecast, resulting in a slight loss of future market share from all-cargo carriers to passenger carriers on Asia/North America flights.

Range/Payload Trade-Off

It is assumed that the pattern of trade-offs between range and payload that currently exists among Asia/North America carriers will continue into the future. Based on an analysis of USDOT T100 data, as of 2010 approximately 35 percent of Eastbound Asia/North Pacific air cargo was flown on segments that exceeded the range at maximum payload for the aircraft carrying the cargo. On Westbound routes, approximately 43 percent of cargo was flown on segments that exceeded the range at maximum payload for the aircraft.

The assumption essentially states that the percentage of aircraft overflying their range at maximum payload is assumed to remain the same over the forecast period. Since average aircraft range will increase as air carriers transition to a more modern fleet, this will mean more non-stop flights and more overflying of Alaska 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.

Transfer Cargo

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 Alaska international 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, were identified as having significant transfer operations in Alaska. Their share of Alaska non-intrastate tonnage accounts for 28% of eastbound tonnage and 30% of westbound tonnage based on USDOT T-100 statistics. It is assumed that these air carriers will continue to process the same percentage of their Asia/North America cargo at Alaska as they did in 2010.

Future Regulatory Environment

Recommended regulatory assumptions are as follows:

- Evolutionary expansion of "Open Skies" agreements
- Continuation of Cargo Transfer rights at ANC and FAI but no extension of these rights to airports in the "Lower 48."
- No passenger or cargo cabotage
- Continuation of the Bypass Mail program in its current form or a similar program that will ensure air cargo access to out-state communities in Alaska. 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.
- Continuation of the Essential Air Service (EAS) program or similar program that will ensure passenger service to out-state communities in Alaska. Current versions of the proposed changes to the EAS program retain service to Alaska communities.
- No nighttime curfews at ANC or FAI.
- New environmental regulations and fees will not be so extreme as to significantly constrain air transportation at Alaska.
- TSA cargo inspections won't become as onerous as to drive away tech-stop traffic.

Growth in Tourism and Cruise Industry

Visitors on cruise ships grew rapidly from the early 1990s through 2007, but fell significantly in 2008 because of the economic downturn and the head tax. Cruise traffic has since undergone a moderate recovery but discussions with industry representatives indicate that the head tax, hotel and attraction capacity, and access constraints will reduce the rate of growth in the future. ISER projects that tourism employment will return to 2008 levels by 2014, and grow at 3.0 percent per year thereafter, gradually tapering to 1.5 percent per year, in their <u>Economic and Demographic Projections for Alaska and Greater Anchorage 2010-2035</u> document

Long-Term Developments in Aircraft Design

Aircraft fleet projections will rely heavily on the air carrier survey results and published aircraft orders. The following general assumptions are recommended for use where necessary:

- *Mainline passenger aircraft*. Based on airline input this will be mostly 737-family aircraft. Some wide-body traffic is anticipated from Asian markets, but most new wide-body aircraft will have the range capability to overfly Alaska.

- *Freighter aircraft*. Most of the growth is anticipated to consist of Boeing 747-400 passenger conversions, Boeing 747-800 aircraft and Boeing 777 freighters. Longer-term additional aircraft growth is anticipated from Boeing 777 passenger conversions. By 2030, it is anticipated that some freighter versions of the Airbus A350 and A380 will enter service in the market
- *Intra-Alaska aircraft.* The heavy-duty turboprop aircraft most useful for this segment are no longer being built. Older 737 aircraft are assumed for those markets with the runway capability to accommodate them. Smaller turboprops (Dash-8s and Saabs) are assumed for those markets with shorter runway capabilities.

Competing Airports

The recommended assumption is that 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, Alaska airports are not at risk at losing any more traffic from this sector.

From a great-circle distance standpoint, Khabarovsk-Novy Airport (KHV) in Russia and Chitose Airport (CTS) in Japan would have the potential to 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 being 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 North American West Coast.

Volcanic Activity

Although episodic events, such as the Mt. Redoubt eruption in 2009, are inevitable, it is assumed that no eruptions will be so intense as to cause carriers to permanently shift flights away from Alaska and the Asia/North America great circle route.

Maximum Acceptable Delay

Based on interviews with the cargo carriers during the previous master plan effort at ANC, the threshold delay (average delay during peak periods in IFR conditions that will cause a carrier to reduce or eliminate its operations at ANC) is recommended to be as follows:

- Express cargo carriers with sort hubs – ranging from 5 minutes for Eastbound flights during daylight savings time to 30 minutes for other flights;
- Time definite cargo carriers – 30 minutes

- Scheduled passenger carriers. Based on industry standards, a 15-minute *average annual delay* is recommended to be the threshold delay for passenger carriers.

Air Carrier Reaction to Potential Constraints at ANC

Based on interviews with the carriers the following assumed reactions are anticipated.

- *All-cargo carriers.* Because of restrictions imposed by airport slots and sort operations, integrators have limited flexibility to change schedules in response to congestion. If delays exceed acceptable limits, it is assumed they would take a weight penalty and overfly ANC or seek another technical stop even if it is more expensive.
- *Passenger carriers.* Will adjust schedules to the extent possible given windows of operation and connecting opportunities at origin/destination airports. Passengers from the Lower-48 to FAI will be routed directly and bypass ANC.
- *Intra-Alaska carriers*. Will adjust schedules to the extent possible given windows of operation and connecting opportunities at origin/destination airports.

Definition of Average Weekday Peak Month

A weekday in July/August is recommended for the average weekday peak month (AWDPM). June through August are all busy months at ANC, but July and August appear to have slightly more heavy operations while June tends to have more GA activity. The later part of the week also tends to be busier than the early part of the week.

Suggested Scenarios

The current study allows for up to four forecast scenarios to be selected by the State in consultation with stakeholders. Some potential scenarios include:

a) *No-Action Scenario.* This scenario assumes no airfield, parking, or terminal expansion at ANC, FAI, or LHD. This forecast scenario will be performed after the demand/capacity analysis has been completed.
b) *High Fuel Price Scenario*. This scenario assumes the U.S. Department of Energy's high fuel price scenario occurs. The impact of higher fuel costs would likely decrease cargo, passenger, and GA activity, and this scenario will estimate the changes in these activity categories for the three airports.
c) *High Economic Growth Scenario*. This scenario assumes that the State, U.S., and world economy will grow more rapidly than currently expected. Income and GDP growth rates would correspond to those in the FAA's

optimistic economic and aviation activity forecasts as published in the FAA Aerospace Forecast: Fiscal Years 2011-2031.

d) *Increased Aircraft Range Scenario*. This scenario assumes that a new generation of all-cargo aircraft (post A380/777F) will provide substantial increases in range without incurring payload penalties. The expected result would be more overflying of Alaska and fewer technical stops.
e) *Complete Elimination of the Bypass Mail or EAS programs*. This scenario assumes more radical changes than currently envisioned in the two programs, leading to a complete elimination of service subsidies to Alaska communities.
f) *Star Burst Scenario*. This scenario assumes major transfer operations at Alaska international airports resulting in large aircraft coming in from Asia and off-loading cargo to a many smaller aircraft flying to a multitude of North American markets. Under this scenario, the same amount of cargo tonnage as in the baseline forecast will lead to many more aircraft operations.
g) *Significant expansion of North Slope Oil and Gas Development*. This would result in substantial increases in passenger and cargo activity to the North Slope, much of which would go through either ANC or FAI.

Other potential scenarios could include lower than expected economic growth, disruptions in Asia-North America trade flows resulting from political instability, trade wars, or major volcanic eruptions, changes in the air cargo fleet mix, or changes in integrated carrier sorting practices.

General

Some key study elements will occur after the preparation of the baseline forecasts. Some of these elements include:

- Trigger points which will identify the activity levels that should trigger key phases of airfield or other capacity improvements, including EIS, design, and construction. Trigger points will be defined after the capacity analysis is complete.
- Potential incentive programs to attract aviation activity from ANC to FAI, and the likely resulting changes in forecast activity at the two airports. This will occur during the strategic analysis piece of this study.

APPENDIX L

DETAILED FORECAST SCENARIOS

Table L.1

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Baseline Case

	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: HNTB analysis.

Table L.2

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Baseline Case

	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: HNTB analysis.

Table L.3

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Baseline Case

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: HNTB analysis.

Table L.4

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Baseline Case

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	479,153	6,492	7,160	39,091	3,382	16,778	542,182	9,874	552,056
2020	502,592	7,395	7,762	41,004	3,852	18,187	569,545	11,247	580,792
2025	529,375	8,428	8,260	43,189	4,391	19,354	600,178	12,819	612,997
2030	565,123	9,611	8,583	46,105	5,007	20,112	639,923	14,618	654,541
				Average Annual Growth Rate					
2010-2030	1.1%	2.6%	1.4%	1.1%	2.6%	1.4%	1.1%	2.6%	1.2%

Source: HNTB analysis.

Table L.5

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Baseline Case

Year	Intra-Alaska				International/U.S.				Total			
	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	17,088	5,243	1,684	25,699	81	168	7,173	14,595	17,169	5,411	8,857	40,294
2020	17,053	5,003	1,652	25,360	106	220	9,007	18,339	17,159	5,223	10,659	43,699
2025	17,037	4,827	1,629	25,122	137	284	10,452	21,325	17,174	5,111	12,081	46,447
2030	17,067	4,712	1,616	25,011	170	353	11,894	24,310	17,237	5,065	13,510	49,321
Average Annual Growth Rate												
2010-2030	0.1%	-0.1%	0.0%	0.0%	4.3%	4.3%	3.0%	3.0%	0.1%	0.1%	2.5%	1.3%

Source: HNTB analysis.

Table L.6

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Baseline Case

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	44,074	5,712	3,051	74,456	2,830	130,123
2020	46,464	6,750	3,201	77,003	2,830	136,248
2025	49,064	7,378	3,380	82,834	2,830	145,486
2030	51,664	8,010	3,329	90,295	2,830	156,128
Average Annual Growth Rate						
2010-2030	1.2%	2.3%	1.2%	1.2%	0.2%	1.2%

Source: HNTB analysis.

Table L.7

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Baseline Case

Year	Enplanements: Historical (a)	Enplanements: Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		20,937	15,115
2020		21,876	15,793
2025		23,776	17,164
2030		26,183	18,902
Average Annual Growth Rate			
2010-2030		1.4%	1.4%

(a) FAA ACAIS database.
(b) Projected to increase at same rate as air taxi operations.
(c) Table 10.11 in AIAS Forecast Technical Report.

Source: HNTB analysis.

Table L.8

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Baseline Case

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	15,115	47,534	-	62,649
2020	-	-	15,793	49,667	-	65,460
2025	-	-	17,164	53,978	-	71,142
2030	-	-	18,902	59,446	-	78,348
Average Annual Growth Rate						
2010-2030	-	-	1.4%	1.4%	-	1.4%

Source: HNTB analysis.

Table L.9

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 1: No Action

	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: HNTB analysis.

Table L.10

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 1: No Action

	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	3,044,224	7,531,653	780,917	788,149	3,044,240	7,657,545
2030	104,218	23,666	16	127,916	842,823	950,011	3,170,554	8,133,941	947,041	973,677	3,170,570	8,261,857
						Average Annual Growth Rate						
2010-2030	0.8%	0.6%	0.8%	0.8%	4.3%	4.3%	2.3%	2.6%	3.7%	4.1%	2.3%	2.6%

Source: HNTB analysis.

Table L.11

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 1: No Action

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	106,622	2,556	43,324	2,267	261,145
2030	111,212	112,320	2,496	47,713	2,267	276,008
			Average Annual Growth Rate			
2010-2030	0.9%	1.8%	-1.0%	1.4%	-3.3%	1.2%

Source: HNTB analysis.

Table L.12

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 1: No Action

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	479,153	6,492	7,160	39,091	3,382	16,778	542,182	9,874	552,056
2020	502,592	7,395	7,762	41,004	3,852	18,187	569,545	11,247	580,792
2025	529,375	8,428	8,260	43,189	4,391	19,354	600,178	12,819	612,997
2030	565,123	9,611	8,583	46,105	5,007	20,112	639,923	14,618	654,541
				Average Annual Growth Rate					
2010-2030	1.1%	2.6%	1.4%	1.1%	2.6%	1.4%	1.1%	2.6%	1.2%

Source: HNTB analysis.

Table L.13

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 1: No Action

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	17,088	5,243	1,684	25,699	81	168	7,173	14,595	17,169	5,411	8,857	40,294
2020	17,053	5,003	1,652	25,360	106	220	9,007	18,339	17,159	5,223	10,659	43,699
2025	17,037	4,827	1,629	25,122	137	284	10,452	21,325	17,174	5,111	12,081	46,447
2030	17,067	4,712	1,616	25,011	170	353	87,027	174,577	17,237	5,065	88,643	199,588
Average Annual Growth Rate												
2010-2030	0.1%	-0.1%	0.0%	0.0%	4.3%	4.3%	13.7%	13.7%	0.1%	0.1%	12.6%	8.6%

Source: HNTB analysis.

Table L.14

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 1: No Action

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	44,074	5,712	3,051	74,456	2,830	130,123
2020	46,464	6,750	3,201	77,003	2,830	136,248
2025	49,064	7,378	3,380	82,834	2,830	145,486
2030	51,664	9,197	3,329	90,295	2,830	157,315
Average Annual Growth Rate						
2010-2030	1.2%	3.0%	1.2%	1.2%	0.2%	1.3%

Source: HNTB analysis.

Table L.15

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 1: No Action

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		20,937	15,115
2020		21,876	15,793
2025		23,776	17,164
2030		26,183	18,902
Average Annual Growth Rate			
2010-2030		1.4%	1.4%

Source: HNTB analysis.

Table L.16

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 1: No Action

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	15,115	47,534	-	62,649
2020	-	-	15,793	49,667	-	65,460
2025	-	-	17,164	53,978	-	71,142
2030	-	-	18,902	59,446	-	78,348
			Average Annual Growth Rate			
2010-2030	-	-	1.4%	1.4%	-	1.4%

Source: HNTB analysis.

Table L.17

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 2: High Fuel Costs

	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	2,281,542	35,642	152,711	9,736	17,968	17	2,444,006	53,610	2,497,616
2020	2,408,381	40,044	184,526	10,277	20,187	20	2,603,204	60,231	2,663,435
2025	2,551,607	44,989	198,426	10,888	22,680	22	2,760,943	67,669	2,828,612
2030	2,735,884	50,545	207,208	11,675	25,481	23	2,954,790	76,026	3,030,816
				Average Annual Growth Rate					
2010-2030	1.0%	2.4%	2.1%	-3.3%	-8.9%	2.2%	1.1%	-4.7%	0.8%

Source: HNTB analysis.

Table L.18

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 2: High Fuel Costs

Year	Intra-Alaska				International/U.S.				Total			
	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	96,685	22,189	15	118,904	370,744	417,894	2,042,090	4,872,817	467,429	440,083	2,042,105	4,991,721
2020	99,643	22,566	15	122,239	490,143	552,478	2,510,526	6,063,673	589,786	575,044	2,510,541	6,185,912
2025	101,815	22,788	16	124,635	635,795	716,654	2,886,704	7,125,857	737,610	739,442	2,886,720	7,250,492
2030	103,532	23,006	16	126,570	794,313	895,332	3,249,198	8,188,041	897,845	918,338	3,249,214	8,314,611
Average Annual Growth Rate												
2010-2030	0.8%	0.4%	0.8%	0.7%	4.0%	4.0%	2.4%	2.7%	3.5%	3.8%	2.4%	2.6%

Source: HNTB analysis.

Table L.19

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast
Scenario 2: High Fuel Costs

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	95,288	77,652	3,344	35,762	2,267	214,313
2020	97,316	90,356	4,458	37,004	2,267	231,401
2025	101,524	101,588	4,387	40,118	2,267	249,884
2030	105,728	112,802	4,078	44,049	2,267	268,924
		Average Annual Growth Rate				
2010-2030	0.6%	1.8%	1.5%	1.0%	-3.3%	1.1%

Source: HNTB analysis.

Table L.20

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 2: High Fuel Costs

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	460,985	6,264	7,160	37,609	3,263	16,778	522,532	9,527	532,059
2020	483,172	6,882	8,652	39,419	3,585	20,273	551,516	10,467	561,983
2025	507,248	7,563	9,304	41,384	3,940	21,800	579,736	11,503	591,239
2030	540,228	8,314	9,715	44,074	4,331	22,765	616,782	12,645	629,427
				Average Annual Growth Rate					
2010-2030	0.9%	1.9%	2.1%	0.9%	1.9%	2.1%	0.9%	1.9%	1.0%

Source: HNTB analysis.

Table L.21

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 2: High Fuel Costs

Year	Intra-Alaska				International/U.S.				Total			
	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	16,262	4,848	1,585	24,280	75	155	6,658	13,546	16,337	5,003	8,243	37,826
2020	16,195	4,593	1,549	23,886	99	205	8,410	17,124	16,294	4,798	9,959	41,010
2025	16,043	4,351	1,509	23,412	128	266	9,820	20,033	16,171	4,617	11,329	43,445
2030	16,003	4,203	1,488	23,182	160	333	11,225	22,942	16,163	4,536	12,713	46,124
Average Annual Growth Rate												
2010-2030	-0.3%	-0.7%	-0.4%	-0.4%	4.0%	4.0%	2.7%	2.7%	-0.2%	-0.4%	2.2%	0.9%

Source: HNTB analysis.

Table L.22

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 2: High Fuel Costs

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	42,362	5,132	3,413	69,793	2,830	123,530
2020	44,450	6,048	4,786	71,481	2,830	129,595
2025	46,654	6,472	5,296	76,706	2,830	137,958
2030	48,856	6,976	5,416	83,362	2,830	147,440
Average Annual Growth Rate						
2010-2030	0.9%	1.6%	3.7%	0.8%	0.2%	1.0%

Source: HNTB analysis.

Table L.23

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 2: High Fuel Costs

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		19,626	14,168
2020		20,307	14,660
2025		22,016	15,894
2030		24,173	17,451
	Average Annual Growth Rate		
2010-2030		1.0%	1.0%

Source: HNTB analysis.

Table L.24

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 2: High Fuel Costs

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	14,168	44,557	-	58,725
2020	-	-	14,660	46,105	-	60,765
2025	-	-	15,894	49,985	-	65,879
2030	-	-	17,451	54,882	-	72,333
Average Annual Growth Rate						
2010-2030	-	-	1.0%	1.0%	-	1.0%

Source: HNTB analysis.

Table L.25

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 3: High Economic Growth

	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	2,393,683	38,298	152,711	10,214	19,307	17	2,556,625	57,605	2,614,230
2020	2,590,894	46,234	165,539	11,056	23,308	18	2,767,507	69,542	2,837,049
2025	2,761,565	55,815	176,159	11,784	28,138	19	2,949,527	83,953	3,033,480
2030	3,013,333	67,382	183,060	12,859	33,969	20	3,209,272	101,351	3,310,623
				Average Annual Growth Rate					
2010-2030	1.5%	3.8%	1.4%	-2.8%	-7.6%	1.4%	1.5%	-3.3%	1.2%

Source: HNTB analysis.

Table L.26

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 3: High Economic Growth

	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	98,714	23,029	15	121,773	434,235	489,460	2,380,790	5,685,274	532,949	512,489	2,380,805	5,807,047
2020	104,388	24,017	16	128,437	619,846	698,676	3,155,391	7,629,304	724,234	722,693	3,155,407	7,757,741
2025	109,548	24,957	17	134,539	885,881	998,545	4,194,105	10,272,636	995,429	1,023,502	4,194,122	10,407,175
2030	114,374	25,887	18	140,297	1,264,391	1,425,192	5,113,193	12,915,969	1,378,765	1,451,079	5,113,211	13,056,266
					Average Annual Growth Rate							
2010-2030	1.3%	1.0%	1.3%	1.2%	6.4%	6.4%	4.7%	5.0%	5.7%	6.2%	4.7%	5.0%

Source: HNTB analysis.

Table L.27

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 3: High Economic Growth

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	99,733	88,075	3,366	38,727	2,267	232,168
2020	103,649	109,619	3,649	41,486	2,267	260,670
2025	109,151	138,886	3,883	46,226	2,267	300,413
2030	115,052	167,648	4,035	52,194	2,267	341,196
			Average Annual Growth Rate			
2010-2030	1.1%	3.8%	1.4%	1.9%	-3.3%	2.3%

Source: HNTB analysis.

Table L.28

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 3: High Economic Growth

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	485,528	6,772	7,160	39,612	3,528	16,778	549,078	10,300	559,378
2020	520,714	8,049	7,762	42,482	4,193	18,187	589,145	12,242	601,387
2025	552,294	9,577	8,260	45,059	4,989	19,354	624,967	14,566	639,533
2030	599,126	11,406	8,583	48,879	5,942	20,112	676,700	17,348	694,048
				Average Annual Growth Rate					
2010-2030	1.4%	3.5%	1.4%	1.4%	3.5%	1.4%	1.4%	3.5%	1.5%

Source: HNTB analysis.

Table L.29

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 3: High Economic Growth

Year	Intra-Alaska				International/U.S.				Total			
	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	17,314	5,251	1,698	25,961	87	182	7,769	15,807	17,401	5,433	9,467	41,768
2020	17,685	5,025	1,692	26,094	125	260	10,583	21,551	17,810	5,285	12,275	47,645
2025	18,107	4,864	1,698	26,367	178	371	14,164	28,877	18,285	5,235	15,862	55,244
2030	18,600	4,764	1,715	26,794	255	530	17,710	36,204	18,855	5,294	19,425	62,998
Average Annual Growth Rate												
2010-2030	0.5%	0.0%	0.3%	0.4%	6.4%	6.4%	5.0%	5.1%	0.5%	0.3%	4.4%	2.5%

Source: HNTB analysis.

Table L.30

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 3: High Economic Growth

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	44,486	5,696	3,011	75,579	2,830	131,602
2020	47,584	6,714	3,089	80,138	2,830	140,355
2025	50,246	7,728	3,060	88,383	2,830	152,247
2030	52,908	8,580	2,967	98,777	2,830	166,062
Average Annual Growth Rate						
2010-2030	1.3%	2.7%	0.7%	1.7%	0.2%	1.6%

Source: HNTB analysis.

Table L.31

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 3: High Economic Growth

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		21,253	15,343
2020		22,767	16,436
2025		25,367	18,313
2030		28,643	20,678
	Average Annual Growth Rate		
2010-2030		1.9%	1.9%

Source: HNTB analysis.

Table L.32

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 3: High Economic Growth

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	15,343	48,251	-	63,594
2020	-	-	16,436	51,689	-	68,125
2025	-	-	18,313	57,594	-	75,907
2030	-	-	20,678	65,030	-	85,708
Average Annual Growth Rate						
2010-2030	-	-	1.9%	1.9%	-	1.9%

Source: HNTB analysis.

Table L.33

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 4: Starburst Operation

	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: HNTB analysis.

Table L.34

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 4: Starburst Operation

	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	2,212,925	5,277,171	497,429	473,810	2,212,940	5,397,119
2020	100,195	23,098	15	123,323	525,738	592,600	2,801,896	6,722,130	625,933	615,698	2,801,911	6,845,453
2025	102,456	23,404	16	125,892	678,461	764,745	3,432,067	8,307,340	780,917	788,149	3,432,083	8,433,232
2030	104,218	23,666	16	127,916	842,823	950,011	4,049,858	9,892,550	947,041	973,677	4,049,874	10,020,466
					Average Annual Growth Rate							
2010-2030	0.8%	0.6%	0.8%	0.8%	4.3%	4.3%	3.5%	3.6%	3.7%	4.1%	3.5%	3.6%

Source: HNTB analysis.

Table L.35

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 4: Starburst Operation

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	98,353	95,729	3,366	38,152	2,267	237,867
2020	99,950	133,264	3,649	39,863	2,267	278,993
2025	104,236	157,943	3,883	43,324	2,267	311,653
2030	108,634	182,404	4,035	47,713	2,267	345,054
Average Annual Growth Rate						
2010-2030	0.8%	4.3%	1.4%	1.4%	-3.3%	2.4%

Source: HNTB analysis.

Table L.36

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 4: Starburst Operation

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	479,153	6,492	7,160	39,091	3,382	16,778	542,182	9,874	552,056
2020	502,592	7,395	7,762	41,004	3,852	18,187	569,545	11,247	580,792
2025	529,375	8,428	8,260	43,189	4,391	19,354	600,178	12,819	612,997
2030	565,123	9,611	8,583	46,105	5,007	20,112	639,923	14,618	654,541
				Average Annual Growth Rate					
2010-2030	1.1%	2.6%	1.4%	1.1%	2.6%	1.4%	1.1%	2.6%	1.2%

Source: HNTB analysis.

Table L.37

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 4: Starburst Operation

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	17,088	5,243	1,684	25,699	81	168	7,217	14,682	17,169	5,411	8,901	40,381
2020	17,053	5,003	1,652	25,360	106	220	9,260	18,846	17,159	5,223	10,912	44,206
2025	17,037	4,827	1,629	25,122	137	284	11,407	23,234	17,174	5,111	13,036	48,356
2030	17,067	4,712	1,616	25,011	170	353	13,549	27,621	17,237	5,065	15,165	52,632
						Average Annual Growth Rate						
2010-2030	0.1%	-0.1%	0.0%	0.0%	4.3%	4.3%	3.6%	3.7%	0.1%	0.1%	3.1%	1.6%

Source: HNTB analysis.

Table L.38

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 4: Starburst Operation

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	44,074	5,712	3,051	74,456	2,830	130,123
2020	46,464	6,758	3,197	77,003	2,830	136,252
2025	49,064	7,416	3,357	82,834	2,830	145,501
2030	51,664	8,070	3,295	90,295	2,830	156,154
			Average Annual Growth Rate			
2010-2030	1.2%	2.4%	1.2%	1.2%	0.2%	1.2%

Source: HNTB analysis.

Table L.39

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 4: Starburst Operation

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		20,937	15,115
2020		21,876	15,793
2025		23,776	17,164
2030		26,183	18,902
	Average Annual Growth Rate		
2010-2030		1.4%	1.4%

Source: HNTB analysis.

Table L.40

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 4: Starburst Operation

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	15,115	47,534	-	62,649
2020	-	-	15,793	49,667	-	65,460
2025	-	-	17,164	53,978	-	71,142
2030	-	-	18,902	59,446	-	78,348
Average Annual Growth Rate						
2010-2030	-	-	1.4%	1.4%	-	1.4%

Source: HNTB analysis.

Table L.41

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 5: Low Fuel Costs

	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	2,593,671	42,182	152,711	11,068	21,265	17	2,757,467	63,447	2,820,914
2020	2,807,827	56,088	115,260	11,982	28,275	13	2,935,082	84,363	3,019,445
2025	3,026,775	74,578	112,583	12,916	37,597	12	3,152,286	112,175	3,264,461
2030	3,288,112	99,163	111,420	14,031	49,991	12	3,413,575	149,154	3,562,729
				Average Annual Growth Rate					
2010-2030	2.0%	5.9%	-1.0%	-2.4%	-5.8%	-1.1%	1.8%	-1.4%	1.6%

Source: HNTB analysis.

Table L.42

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 5: Low Fuel Costs

	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	98,528	23,961	15	122,519	469,329	529,017	2,568,000	6,134,346	567,857	552,978	2,568,015	6,256,865
2020	101,870	24,708	16	126,610	626,900	706,627	3,190,463	7,714,453	728,770	731,335	3,190,479	7,841,063
2025	104,409	25,284	16	129,725	805,575	908,026	3,611,349	8,936,299	909,984	933,310	3,611,365	9,066,024
2030	106,334	25,701	17	132,069	990,192	1,116,122	4,025,916	10,158,145	1,096,526	1,141,823	4,025,933	10,290,214
					Average Annual Growth Rate							
2010-2030	0.9%	1.0%	1.1%	0.9%	5.1%	5.1%	3.5%	3.8%	4.5%	5.0%	3.5%	3.7%

Source: HNTB analysis.

Table L.43

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast
Scenario 5: Low Fuel Costs

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	109,682	93,356	3,366	46,106	2,267	254,777
2020	114,840	109,086	2,540	51,109	2,267	279,842
2025	122,403	121,088	2,482	57,153	2,267	305,392
2030	129,990	133,109	2,456	64,095	2,267	331,916
		Average Annual Growth Rate				
2010-2030	1.7%	2.7%	-1.0%	2.9%	-3.3%	2.2%

Source: HNTB analysis.

Table L.44

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 5: Low Fuel Costs

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2015	534,099	7,556	7,160	43,574	3,936	16,778	601,611	11,492	613,103
2020	574,997	10,037	5,404	46,911	5,229	12,663	639,975	15,266	655,241
2025	615,081	13,370	5,279	50,181	6,965	12,369	682,910	20,335	703,245
2030	664,152	17,857	5,224	54,184	9,302	12,241	735,801	27,159	762,960
				Average Annual Growth Rate					
2010-2030	1.9%	5.9%	-1.0%	1.9%	5.9%	-1.0%	1.8%	5.9%	1.9%

Source: HNTB analysis.

Table L.45

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 5: Low Fuel Costs

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2015	19,122	6,216	1,928	29,194	95	197	8,382	17,055	19,217	6,413	10,310	46,249
2020	19,650	6,247	1,964	29,825	126	263	10,701	21,791	19,776	6,510	12,665	51,616
2025	20,069	6,278	1,993	30,333	162	338	12,315	25,129	20,231	6,616	14,308	55,462
2030	20,351	6,284	2,010	30,655	199	415	13,927	28,467	20,550	6,699	15,937	59,122
Average Annual Growth Rate												
2010-2030	0.9%	1.4%	1.1%	1.0%	5.1%	5.1%	3.8%	3.8%	1.0%	1.5%	3.4%	2.2%

Source: HNTB analysis.

Table L.46

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 5: Low Fuel Costs

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2015	48,608	6,976	2,895	89,979	2,830	151,288
2020	51,151	8,325	2,184	98,727	2,830	163,218
2025	55,140	9,392	2,134	109,276	2,830	178,772
2030	59,347	10,302	2,112	121,298	2,830	195,889
Average Annual Growth Rate						
2010-2030	1.9%	3.6%	-1.0%	2.7%	0.2%	2.4%

Source: HNTB analysis.

Table L.47

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 5: Low Fuel Costs

	Enplanements		
Year	**Historical (a)**	**Projected (b)**	**Air Taxi Operations (c)**
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2015		25,302	18,266
2020		28,048	20,248
2025		31,365	22,643
2030		35,174	25,393
Average Annual Growth Rate			
2010-2030		2.9%	2.9%

(a) FAA ACAIS database.
(b) Projected to increase at same rate as air taxi operations.
(c) Table 10.11 in AIAS Forecast Technical Report.

Source: HNTB analysis.

Table L.48

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 5: Low Fuel Costs

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2015	-	-	18,266	57,444	-	75,710
2020	-	-	20,248	63,679	-	83,927
2025	-	-	22,643	71,209	-	93,852
2030	-	-	25,393	79,857	-	105,250
Average Annual Growth Rate						
2010-2030	-	-	2.9%	2.9%	-	2.9%

Source: HNTB analysis.

Table L.49

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 6: Updated Base Year

	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
2011	2,308,161	34,518	140,141	8,935	105,547	16	2,457,253	140,065	2,597,318
2012	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2013	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2015	2,356,370	36,243	134,820	4,763	13,756	8	2,495,961	49,999	2,545,960
2020	2,491,197	42,127	146,145	5,036	15,990	9	2,642,387	58,117	2,700,504
2025	2,647,448	48,967	155,522	5,351	18,586	9	2,808,330	67,553	2,875,883
2030	2,845,372	56,917	161,614	5,751	21,604	10	3,012,747	78,521	3,091,268
				Average Annual Growth Rate					
2010-2030	1.2%	3.0%	0.8%	-6.7%	-9.7%	-2.0%	1.2%	-4.5%	0.9%

Source: HNTB analysis.

Table L.50

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 6: Updated Base Year

	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
2011	94,659	23,342	9	118,018	356,501	388,878	1,940,519	4,626,416	451,159	412,219	1,940,528	4,744,434
2012	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2013	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2015	104,999	32,990	20	138,029	398,422	427,954	1,869,477	4,565,330	503,421	460,944	1,869,497	4,703,359
2020	108,215	33,567	20	141,822	523,386	562,182	2,284,477	5,654,522	631,601	595,749	2,284,497	5,796,344
2025	110,657	34,011	21	144,710	675,426	725,491	2,610,226	6,621,369	786,083	759,502	2,610,247	6,766,079
2030	112,561	34,392	21	146,995	839,052	901,248	2,925,451	7,591,202	951,613	935,640	2,925,472	7,738,197
					Average Annual Growth Rate							
2010-2030	1.2%	2.5%	2.1%	1.5%	4.2%	4.0%	1.8%	2.3%	3.8%	3.9%	1.8%	2.3%

Source: HNTB analysis.

Table L.51

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 6: Updated Base Year

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
2011	92,558	75,704	3,223	37,467	2,457	211,409
2012	88,487	73,542	3,719	38,071	2,095	205,914
2013	88,487	73,542	3,719	38,071	2,095	205,914
2015	90,663	74,938	3,547	38,925	2,095	210,168
2020	92,803	86,840	3,669	40,670	2,095	226,077
2025	97,223	97,218	3,296	44,202	2,095	244,034
2030	101,643	107,598	2,675	48,679	2,095	262,690
			Average Annual Growth Rate			
2010-2030	0.4%	1.6%	-0.6%	1.5%	-3.6%	1.0%

Source: HNTB analysis.

Table L.52

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 6: Updated Base Year

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2011	455,168	6,331	4,679	42,539	1,626	15,361	517,747	7,957	525,704
2012	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2013	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2015	478,292	7,273	7,857	44,840	1,663	14,460	545,449	8,936	554,385
2020	501,689	8,284	8,518	47,034	1,894	15,674	572,915	10,178	583,093
2025	528,424	9,441	9,064	49,540	2,159	16,680	603,708	11,600	615,308
2030	564,108	10,767	9,419	52,885	2,462	17,333	643,745	13,229	656,974
				Average Annual Growth Rate					
2010-2030	1.1%	3.2%	1.9%	1.8%	-0.9%	0.7%	1.2%	2.1%	1.2%

Source: HNTB analysis.

Table L.53

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 6: Updated Base Year

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2011	16,368	3,451	1,691	23,201	317	715	450	1,932	16,685	4,166	2,141	25,133
2012	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2013	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2015	18,940	3,504	1,826	26,096	682	136	875	2,568	19,622	3,640	2,701	28,664
2020	18,901	3,344	1,792	25,829	892	178	1,098	3,266	19,793	3,522	2,890	29,095
2025	18,884	3,226	1,767	25,644	1,153	229	1,275	3,932	20,037	3,455	3,042	29,576
2030	18,917	3,149	1,753	25,572	1,431	285	1,450	4,616	20,348	3,434	3,203	30,188
					Average Annual Growth Rate							
2010-2030	0.6%	-2.1%	0.4%	0.1%	16.0%	3.1%	-7.3%	-5.2%	0.9%	-1.8%	-4.6%	-1.2%

Source: HNTB analysis.

Table L.54

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 6: Updated Base Year

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2011	41,360	5,952	1,253	69,750	2,830	121,145
2012	38,611	5,862	1,434	76,956	2,852	125,715
2013	38,611	5,862	1,434	76,956	2,852	125,715
2015	39,907	6,142	1,523	78,369	2,852	128,793
2020	42,071	7,258	1,598	81,050	2,852	134,829
2025	44,425	7,933	1,688	87,188	2,852	144,086
2030	46,779	8,612	1,662	95,041	2,852	154,946
		Average Annual Growth Rate				
2010-2030	0.7%	2.7%	-2.2%	1.5%	0.2%	1.2%

Source: HNTB analysis.

Table L.55

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 6: Updated Base Year

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2011		23,497	15,213
2012		27,112	17,554
2013		27,112	17,554
2015		27,720	17,947
2020		28,963	18,752
2025		31,478	20,380
2030		34,666	22,444
	Average Annual Growth Rate		
2010-2030		2.8%	2.3%

Source: HNTB analysis.

Table L.56

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 6: Updated Base Year

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2011			15,213	46,681	-	61,894
2012			17,554	47,433		64,987
2013			17,554	47,433		64,987
2015	-	-	17,947	48,497	-	66,444
2020	-	-	18,752	50,673	-	69,425
2025	-	-	20,380	55,071	-	75,451
2030	-	-	22,444	60,650	-	83,094
Average Annual Growth Rate						
2010-2030	-	-	2.3%	1.5%	-	1.7%

Source: HNTB analysis.

Table L.57

ANCHORAGE INTERNATIONAL AIRPORT

Forecast of Anchorage Enplaned and Transit Passengers by Category
Scenario 7: Flat Forecast

	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
2011	2,308,161	34,518	140,141	8,935	105,547	16	2,457,253	140,065	2,597,318
2012	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2013	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2015	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2020	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2025	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
2030	2,304,094	34,218	129,389	7,188	57,292	8	2,440,679	91,510	2,532,189
				Average Annual Growth Rate					
2010-2030	0.2%	0.4%	-0.3%	-5.6%	-5.2%	-3.1%	0.1%	-3.8%	-0.1%

Source: HNTB analysis.

Table L.58

ANCHORAGE INTERNATIONAL AIRPORT

Forecast Anchorage International and Other U.S. Cargo Tonnage
Scenario 7: Flat Forecast

	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
2011	94,659	23,342	9	118,018	356,501	388,878	1,940,519	4,626,416	451,159	412,219	1,940,528	4,744,434
2012	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2013	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2015	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2020	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2025	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
2030	101,233	32,079	19	133,350	384,705	413,221	1,812,054	4,422,034	485,938	445,300	1,812,073	4,555,384
						Average Annual Growth Rate						
2010-2030	0.7%	2.1%	1.6%	1.0%	0.3%	0.0%	-0.6%	-0.4%	0.3%	0.1%	-0.6%	-0.4%

Source: HNTB analysis.

Table L.59

ANCHORAGE INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 7: Flat Forecast

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
2011	92,558	75,704	3,223	37,467	2,457	211,409
2012	88,487	73,542	3,719	38,071	2,095	205,914
2013	88,487	73,542	3,719	38,071	2,095	205,914
2015	88,487	73,542	3,719	38,071	2,095	205,914
2020	88,487	73,542	3,719	38,071	2,095	205,914
2025	88,487	73,542	3,719	38,071	2,095	205,914
2030	88,487	73,542	3,719	38,071	2,095	205,914
			Average Annual Growth Rate			
2010-2030	-0.3%	-0.3%	1.0%	0.3%	-3.6%	-0.2%

Source: HNTB analysis.

Table L.60

FAIRBANKS INTERNATIONAL AIRPORT

Forecast of Fairbanks Enplaned and Transit Passengers by Category
Scenario 7: Flat Forecast

	Enplaned			Transit			Enplaned plus Transit		
Year	Domestic	International	Air Taxi and Other	Domestic	International	Air Taxi and Other	Domestic	International	Total
2010	452,427	5,703	6,439	36,911	2,971	15,088	510,865	8,674	519,539
2011	455,168	6,331	4,679	42,539	1,626	15,361	517,747	7,957	525,704
2012	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2013	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2015	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2020	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2025	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
2030	467,621	6,919	7,541	43,840	1,582	13,877	532,878	8,501	541,379
				Average Annual Growth Rate					
2010-2030	0.2%	1.0%	0.8%	0.9%	-3.1%	-0.4%	0.2%	-0.1%	0.2%

Source: HNTB analysis.

Table L.61

FAIRBANKS INTERNATIONAL AIRPORT

Forecast Fairbanks International and Other U.S. Cargo Tonnage
Scenario 7: Flat Forecast

	Intra-Alaska				International/U.S.				Total			
Year	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total	Enplaned	Deplaned	Transit	Total
2010	16,885	4,800	1,616	24,917	74	153	6,624	13,474	16,958	4,954	8,240	38,391
2011	16,368	3,451	1,691	23,201	317	715	450	1,932	16,685	4,166	2,141	25,133
2012	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2013	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2015	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2020	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2025	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
2030	18,850	3,386	1,797	25,830	657	131	848	2,484	19,507	3,517	2,645	28,314
Average Annual Growth Rate												
2010-2030	0.6%	-1.7%	0.5%	0.2%	11.6%	-0.8%	-9.8%	-8.1%	0.7%	-1.7%	-5.5%	-1.5%

Source: HNTB analysis.

Table L.62

FAIRBANKS INTERNATIONAL AIRPORT

Summary of Aircraft Operations Forecast Reconciled to Airport Statistics
Scenario 7: Flat Forecast

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	40,496	5,062	2,603	71,099	2,721	121,981
2011	41,360	5,952	1,253	69,750	2,830	121,145
2012	38,611	5,862	1,434	76,956	2,852	125,715
2013	38,611	5,862	1,434	76,956	2,852	125,715
2015	38,611	5,862	1,434	76,956	2,852	125,715
2020	38,611	5,862	1,434	76,956	2,852	125,715
2025	38,611	5,862	1,434	76,956	2,852	125,715
2030	38,611	5,862	1,434	76,956	2,852	125,715
Average Annual Growth Rate						
2010-2030	-0.2%	0.7%	-2.9%	0.4%	0.2%	0.2%

Source: HNTB analysis.

Table L.63

LAKE HOOD AIRPORT

Air Taxi Enplanement Forecasts
Scenario 7: Flat Forecast

	Enplanements		
Year	Historical (a)	Projected (b)	Air Taxi Operations (c)
2000	19,127		
2001	20,363		
2002	24,900		
2003	23,831		
2004	13,040		
2005	13,727		
2006	18,540		
2007	23,647		
2008	15,184		
2009	15,018		
2010	19,789	19,789	14,286
2011		23,497	15,213
2012		27,112	17,554
2013		27,112	17,554
2015		27,112	17,554
2020		27,112	17,554
2025		27,112	17,554
2030		27,112	17,554
Average Annual Growth Rate			
2010-2030		1.6%	1.0%

(a) FAA ACAIS database.
(b) Projected to increase at same rate as air taxi operations.
(c) Table 10.11 in AIAS Forecast Technical Report.

Source: HNTB analysis.

Table L.64

LAKE HOOD AIRPORT

Summary of Aircraft Operations Forecast
Scenario 7: Flat Forecast

Year	Passenger	All-Cargo	Air Taxi and Other	General Aviation	Military	Total
2010	-	-	14,286	44,928	-	59,214
2011			15,213	46,681	-	61,894
2012			17,554	47,433		64,987
2013			17,554	47,433		64,987
2015	-	-	17,554	47,433	-	64,987
2020	-	-	17,554	47,433	-	64,987
2025	-	-	17,554	47,433	-	64,987
2030	-	-	17,554	47,433	-	64,987
Average Annual Growth Rate						
2010-2030	-	-	1.0%	0.3%	-	0.5%

Source: HNTB analysis.