3 Forecast of Aviation Activity

Forecasts of future levels of aviation activity are the basis for making decisions in airport planning. A comprehensive forecast includes elements of socioeconomics, demographics, geography, and external factors. Kotzebue's location and history have placed it as the hub for goods and services throughout the Northwest Arctic Borough. Its location at the confluence of three major rivers and ocean portage make it an ideal transfer point for ocean shipping, inland shipping, and air transport. The vast majority of income comes from employment related to the public sector, including work with the city of Kotzebue, the Northwest Arctic Borough (NWAB) and NWAB School District, and the Maniilaq Association. Subsistence activities continue to be an integral part of the residents' lifestyle. Mining for minerals at the Alaska Red Dog Mine (which has its own airport) provides a substantial boost to the economy (*Northwest Arctic Borough, nwabor.org*).

Base passenger enplanements at Kotzebue Airport (OTZ) reported to the Federal Aviation Administration (FAA) for the year 2013 were 61,274. With a median 0.9% annual increase, enplanements could reach 73,299 by 2033. Similarly, operations at OTZ could increase from 48,819 to 58,204.

The methodology used for the Kotzebue Airport enplanement and air traffic forecasts is based on the process recommended in FAA AC 150/5070-6B, *Airport Master Plans,* and in *Forecasting Aviation Activity by Airport* (FAA, 2001). These documents provide national guidance for the development of airport master plans and have been used since enactment of the Airport and Airways Development Act of 1970. Recommended steps include:

- Identify aviation activity measures
- Review previous airport forecasts
- Gather data
- Select forecast methods
- Apply forecast methods and evaluate results
- Compare forecast results with FAA's Terminal Area Forecasts
- Obtain approval of the forecasts

This forecast is laid out according to these steps.

3.1 Step 1 – Identify Aviation Activity Parameters and Measures to Forecast

The level and type of aviation activity anticipated at an airport, as well as the nature of the planning to be done, determine the factors to be forecast. Generally, the most important activities for airfield planning are aircraft operations and the fleet mix, since these define the runway and taxiway

requirements. Plans for general aviation (GA) airports require forecasts of aircraft operations and based aircraft to define runway, taxiway, and aircraft parking requirements. Airports with commercial service require forecasts of aircraft operations, fleet mix, and passenger enplanements. Enplanement numbers are particularly important, since they determine the size of important elements of airport infrastructure such as parking facilities and access roads. Also, a large increase in passengers could trigger a change in future fleet mix through increased operations or larger aircraft. Kotzebue Airport is primarily a commercial service airport with considerable GA activity.

Practical considerations dictate the level of detail and effort that should go into an airport planning forecast (FAA, 2001). The aircraft fleet in use at Kotzebue comprises commercial passenger and passenger-cargo combination jets and turboprop aircraft**,** commercial cargo aircraft, single- and twin-engine GA aircraft, and corporate jets. Commercial operations, passenger enplanements, mail, and cargo have historically made up a significant percentage of the annual aviation activity. Other activities include military operations, regional search and rescue, touch-and-go operations, and other general aviation activities. The forecast for Kotzebue will focus on:

- Passenger Enplanements: Air carrier, commuter/air taxi
- Aircraft Operations: Air carrier, commuter, general aviation, military
- Based Aircraft: Single- and multi-engine
- Air Cargo: Freight and mail

3.2 Step 2 – Collect and Review Previous Airport Forecasts

Relevant forecasts for Kotzebue and the surrounding area are summarized below. These include the FAA Terminal Area Forecast (TAF), the Alaska Aviation System Plan (AASP), the 1998 Kotzebue Airport Master Plan, the National Plan of Integrated Airport Systems, and the 1993 Northwest Arctic Borough Comprehensive Plan.

3.2.1 Federal Aviation Administration Terminal Area Forecast

Table 3-1 – FAA Terminal Area Forecast (2013), Kotzebue Airport

Passenger Enplanements			Itinerant Operations			Local Operations		
Air Carrier	Commuter	Total	Air Carrier	Commuter / Air Taxi	GA	Military	Civil	Total Operations
30,295	33,831	**64,126**	2,000	20,000	30,000	1,000	7,000	**60,000**

The FAA TAF for Kotzebue Airport is summarized in Table 3-1. The TAF projects activity for airports across the nation, including passenger enplanements, aircraft operations, and based aircraft for major uses of the airport (air carriers, air taxi and commuters, general aviation, and military). In Alaska, however, the TAF is not updated often and the data provided are not always accurate for non-towered airports. Nevertheless, the FAA guidance requires comparison of the

Airport Master Plan (AMP) forecast with that of the TAF as part of the forecast approval process.

The FAA also maintains historic passenger and cargo data in the Air Carrier Activity Information System (ACAIS), a database that contains revenue passenger boarding and all-cargo data as reported by the airlines. Table 3-2 compares historic TAF estimates with actual enplanements in Kotzebue from the ACAIS to illustrate the differences between these two databases.

Table 3-2 – Passenger Enplanements (2004-2013), Kotzebue Airport

Year	TAF	ACAIS	Difference (ACAIS – TAF)
2004	58,719	58,999	**280**
2005	58,217	58,140	**-77**
2006	60,411	63,417	**3,006**
2007	64,424	64,717	**293**
2008	65,444	66,322	**878**
2009	58,350	57,472	**-878**
2010	59,446	62,177	**2,731**
2011	63,133	62,738	**-395**
2012	62,628	63,032	**404**
2013	64,126	61,274	**-2,852**

Source: FAA and USDOT, RITA

3.2.2 Alaska Aviation System Plan

The AASP is a component of ADOT&PF's Statewide Transportation Plan. The AASP forecasts (June 2011) contain enplanements, cargo, operations, and based aircraft for 2015, 2020, and 2030. These forecasts are presented in Table 3-3.

Table 3-3 – Alaska Aviation System Forecast, Kotzebue Airport

Measure of Activity	2008 (base)	2015	2020	2030
Enplanements	64,944	70,144	74,055	82,429
Cargo Tonnage	20,650	22,403	23,662	26,338
Critical Aircraft	737-200	737-200	737-200	737-200
Aircraft Operations				
Commercial Operations	28,642	29,592	31,256	37,276
General Aviation	37,000	38,228	40,377	48,156
Based Aircraft - Single Engine	40	42	44	49
Based Aircraft - Multi Engine	12	13	13	14
Based Aircraft – Jet	0	0	0	0
Based Helicopter	0	0	0	0
Military Operations	1,000	1,038	1,089	1,300
Total Aircraft Operations	**66,694**	**68,913**	**72,779**	**86,795**

3.2.3 Kotzebue Airport Master Plan Update (1998)

In 1998, ADOT&PF updated the Kotzebue Airport Master Plan. This update forecast aircraft operations and passenger enplanements as summarized below.

Table 3-4 – 1998 Kotzebue Airport Master Plan Update Aviation Forecast

	1995 (base)	2003	2008	2018
Enplanements	50,905	66,534	74,183	84,200
Cargo (tons)	21,673	26,394	29,867	38,287
Commercial Operations	20,000	23,660	25,850	28,670
GA Operations	30,000	36,800	40,900	49,250
Military Operations	1,000	1,000	1,000	1,000

3.2.4 National Plan of Integrated Airport Systems (NPIAS)

The NPIAS presents a five-year forecast of enplaned passengers and based aircraft. The current NPIAS forecast for Kotzebue (for the years 2013 to 2017, using 2011 as the base year) is presented in Table 3-5.

Table 3-5 – NPIAS Forecast Year 2013

Parameter	Qty.
Passenger Enplanements	66,322
Based Aircraft	52

3.2.5 *Northwest Alaska Transportation Plan* (2004)

The *Northwest Alaska Transportation Plan* was a multi-year effort to define and select a blueprint for the region's long-term transportation future. The plan is one of several regional multi-modal transportation plans that are part of the Statewide Transportation Plan.

Table 3-6 – *Northwest Alaska Transportation Plan* Enplanement Forecast for Kotzebue

Year	2005	2010	2015	2020	2025
Enplanements	63,935	67,821	71,913	75,633	78,924

3.3 Step 3 – Gather Data

FAA requires master plan forecasts to incorporate the number of aircraft operations for various categories of aircraft. Passenger enplanement, cargo, mail, and freight data are also required, and the governing AC specifies that population, employment rates, and socio-economic factors be included, as any of these can also affect the forecast.

Air traffic operations at Kotzebue Airport are not recorded on site because there is no air traffic control tower. Historical air traffic data for Kotzebue were collected from:

- FAA TAF
- NPIAS
- AASP
- FAA's *Airport Master Record* Form 5010
- U.S. Department of Transportation (USDOT) Bureau of Transportation Statistics
- *Northwest Alaska Transportation Plan*

3.3.1 Historic Aviation Activity

The composition of aviation activity at OTZ has increased only slightly since the 1998 airport master plan. Enplanements have grown more slowly than projected by both the Kotzebue Airport Master Plan (1998) and the *Northwest Alaska Transportation Plan* (2004).

Over the last 10 years, Alaska Airlines has provided the greatest number of enplanements, while Bering Air Inc. and Hageland Aviation Service (now part of Ravn Alaska[1]) provided the greatest number of passenger flights. Over the same period, Bering Air Inc., and Arctic Transportation shipped the most freight and mail by weight, while Bering Air Inc. and Hageland Aviation Service provided the greatest number of flights carrying freight and mail.

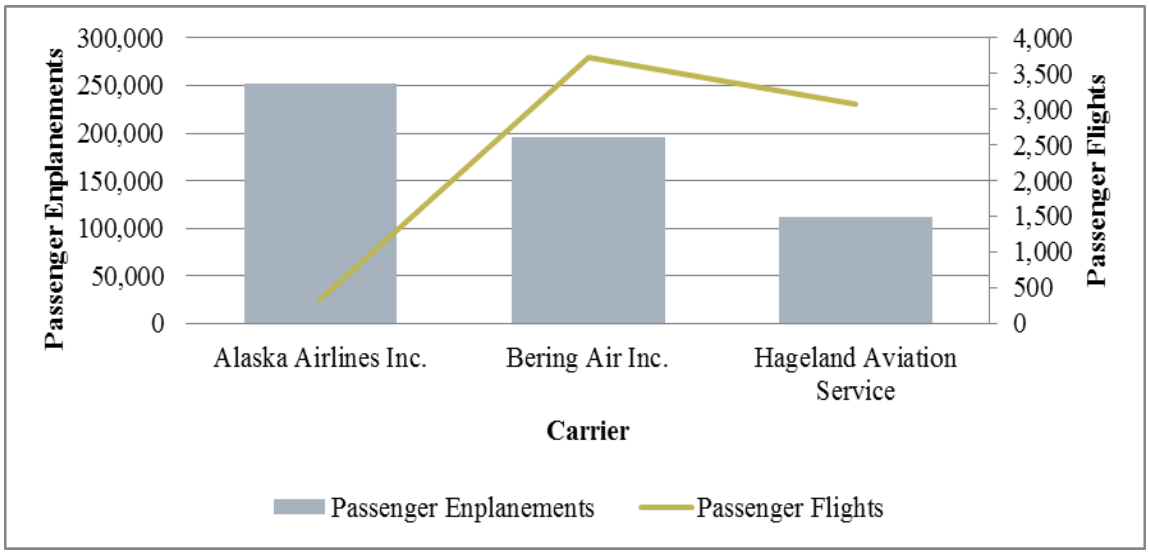

Figure 3-1 – Passenger Enplanements and Passenger Flights, 2004-2013

[1] Between 2005 and 2010, a series of mergers consolidated five regional airlines—Cape Smythe Air, Frontier Flying Service, Hageland Aviation, Era Aviation, and Arctic Circle Air—into a single company, now doing business as Ravn Alaska. The parent company still operates aircraft under the Hageland, Era, and Frontier names and reports their data on the Form 41 Schedule T-100 as individual carriers.

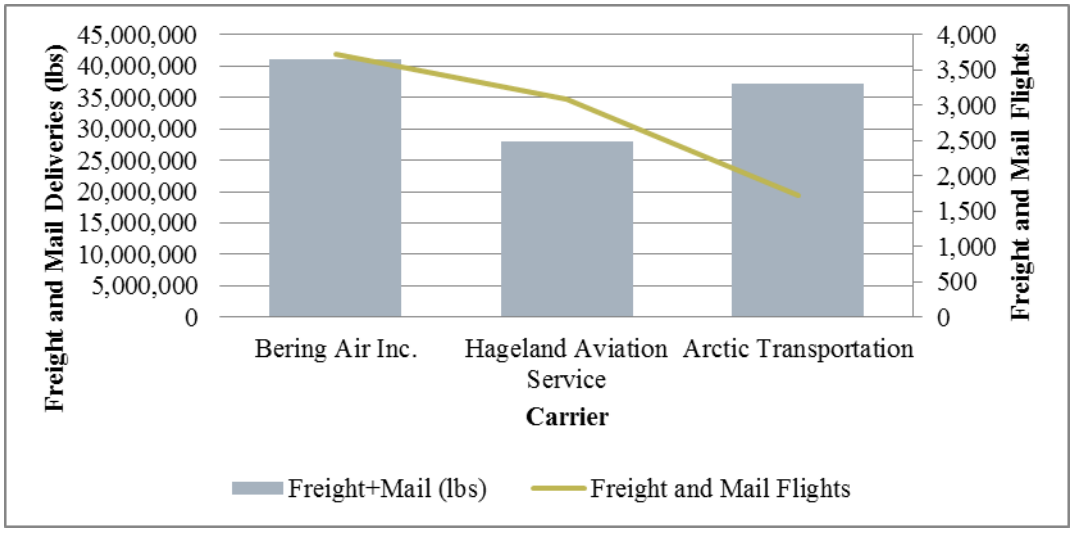

Figure 3-2 – Freight & Mail Deliveries and Freight & Mail Flights, 2004-2013

Historic passenger and cargo data are maintained by the FAA in the ACAIS, a database that contains revenue passenger boarding and all-cargo data. The USDOT is the main source of enplanement statistics for this database, collecting information from air carriers and commuters on Form 41 Schedule T-100. The USDOT Bureau of Transportation Statistics Research and Innovative Technology Administration (RITA) distribute these data through an online, query-able database.

3.3.2 Aircraft Operations

Table 3-7 contains aircraft operations forecast data for Kotzebue Airport from 2003 to 2012 as reported in the TAF.

Table 3-7 – TAF Historic Aircraft Operations (2003-2013), Kotzebue Airport

Year	Itinerant Operations				Local Operations		Total Operations
	Air Carrier	Air Taxi	GA	Military	GA	Military	
2003	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2004	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2005	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2006	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2007	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2008	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2009	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2010	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2011	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2012	2,000	20,000	30,000	1,000	7,000	0	**60,000**
2013	2,000	20,000	30,000	1,000	7,000	0	**60,000**

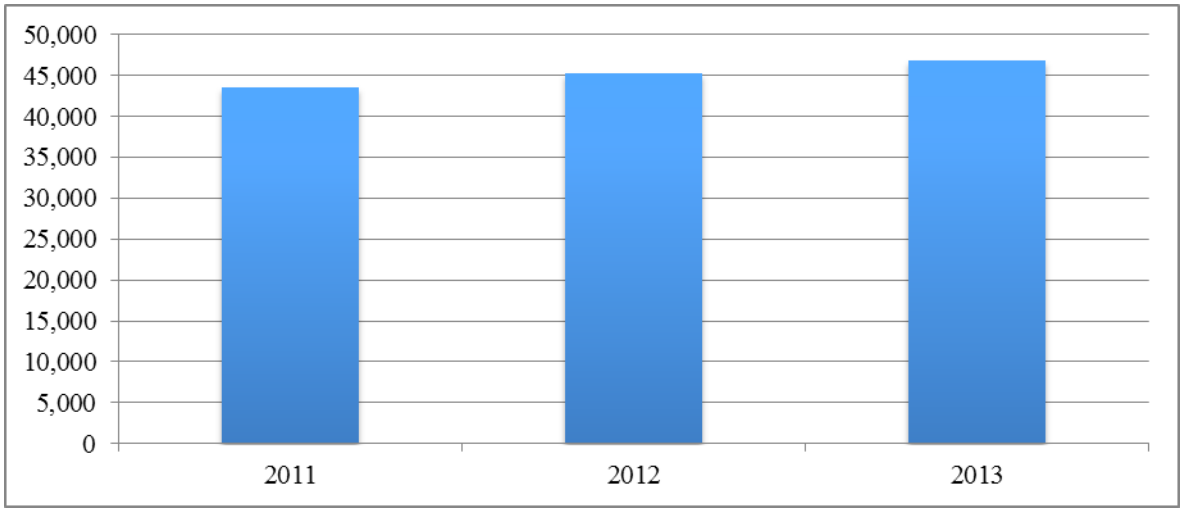

Figure 3-3 – Number of Aircraft Advisories Issued by Kotzebue FSS, 2011-2013
Source: FAA, 2014

In the absence of control tower records, the numbers of Airport Advisories issued by the Kotzebue FSS for the past three years were collected (Figure 3-1). Airport Advisories are generally requested by pilots before take-off and landing and thus can serve as an estimate of airport operations. Airport Advisories are not a complete count of operations, however, as pilots are not obligated to request one and they are only issued during FSS open hours. In Kotzebue, the FSS is open from 7:00 a.m. until 12:00 a.m.

The FAA's Form 5010, *Airport Master Record*, also estimates aircraft operations at Kotzebue Airport. Table 3-8 lists the operations estimated on the latest Form 5010 (dated July 24, 2014; last inspection date January 1, 2013).

Table 3-8 - Kotzebue Master Record (Form 5010) Operations

Operation Type	Total Operations
Air Carrier	2,000
Air Taxi	20,000
GA Local	7,000
GA Itinerant	30,000
Military	1,000
Total Operations	**60,000**

3.3.3 Fleet Mix and Based Aircraft

Table 3-9 lists the fleet of aircraft, by commercial carrier or agency that landed at Kotzebue Airport at least once during 2013 (RITA, 2014).

Table 3-9 - Current Fleet Mix Using Kotzebue Airport

Carrier	Aircraft	
Alaska Airlines Inc.	Boeing 737-400	Boeing 737-700/700LR
Alaska Central Express	Beech 1900 A/B/C/D	
Arctic Transportation	Casa/Nurtanio C212 Aviocar Pilatus PC-12	Cessna C206/207/209/210 Stationair
Bering Air Inc.	Beech 1900 A/B/C/D Casa/Nurtanio C212 Aviocar Piper PA-31 (Navajo)/T-1020 Bell 500	Beech 200 Super Kingair Cessna 208 Caravan Robinson R44
Ravn Alaska	Beech 1900 A/B/C/D Cessna 208 Caravan De Havilland DHC8-100 Dash-8 Shorts 330	Cessna 206 Stationair Cessna 406 Caravan II Piper PA-31 (Navajo)/T-1020
Lynden Air Cargo	Lockheed L100-30/L-382E	
Northern Air Cargo, Inc.	Boeing 737-100/200	Boeing 737-300
Tatonduk Outfitters, Ltd.	McDonnell Douglas DC-6A	McDonnell Douglas DC-9-30
Warbelows Air Ventures	Piper PA-31 (Navajo)/T-1020	
Wright Air Service	Beech Bonanza Piper PA-31 (Navajo)/T-1020	Helio H-250/295/395

The TAF identifies the number of based aircraft at Kotzebue at a consistent 52 aircraft every year over the past decade (see Table 3-10). The FAA's Form 5010, *Airport Master Record*, indicates a slightly lower number of 43 based aircraft in 2013.

Table 3-10 - Terminal Area Forecast Based Aircraft, 2004-2013

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Aircraft	52	52	52	52	52	52	52	52	52	52

3.3.4 Passengers

Passenger traffic at Kotzebue Airport has been trending upwards over the last 10 years, growing at a compound annual rate of approximately 0.5% (Figure 3-4). There was a notable dip in 2009, associated with the economic downturn. A general upward trend in passenger traffic has continued since the early 1990s, with 2008 seeing an all-time high of 66,322 enplanements.

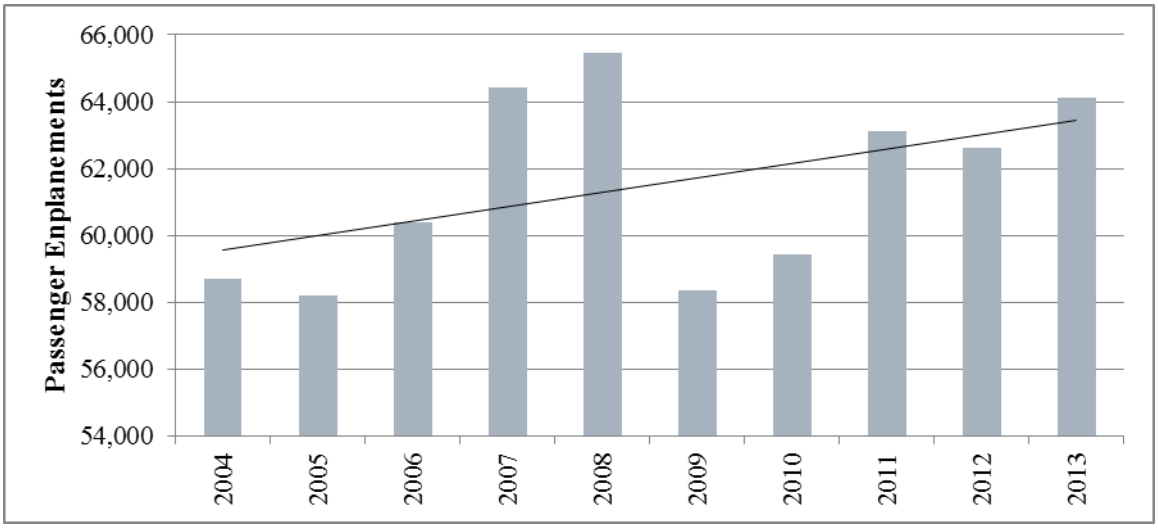

Figure 3-4 – Historic OTZ Passenger Enplanements, 2004-2013
Source: RITA, 2014

Air carriers and air taxis currently providing scheduled passenger service to/from Kotzebue include:

- Alaska Airlines
- Bering Air Inc.
- Ravn Alaska

Figure 3-5 shows the breakdown of passenger enplanements by carrier. Since 2004, Kotzebue has seen an increase in passenger enplanements but a consolidation of passenger service to three primary carriers. Alaska Airlines accounts for the majority of scheduled passenger enplanements at OTZ, with 29,579 in 2013. Bering Air Inc. carries the next most passengers, with 18,073 enplanements in 2013, and Ravn Alaska follows with 13,339 enplanements in 2013.

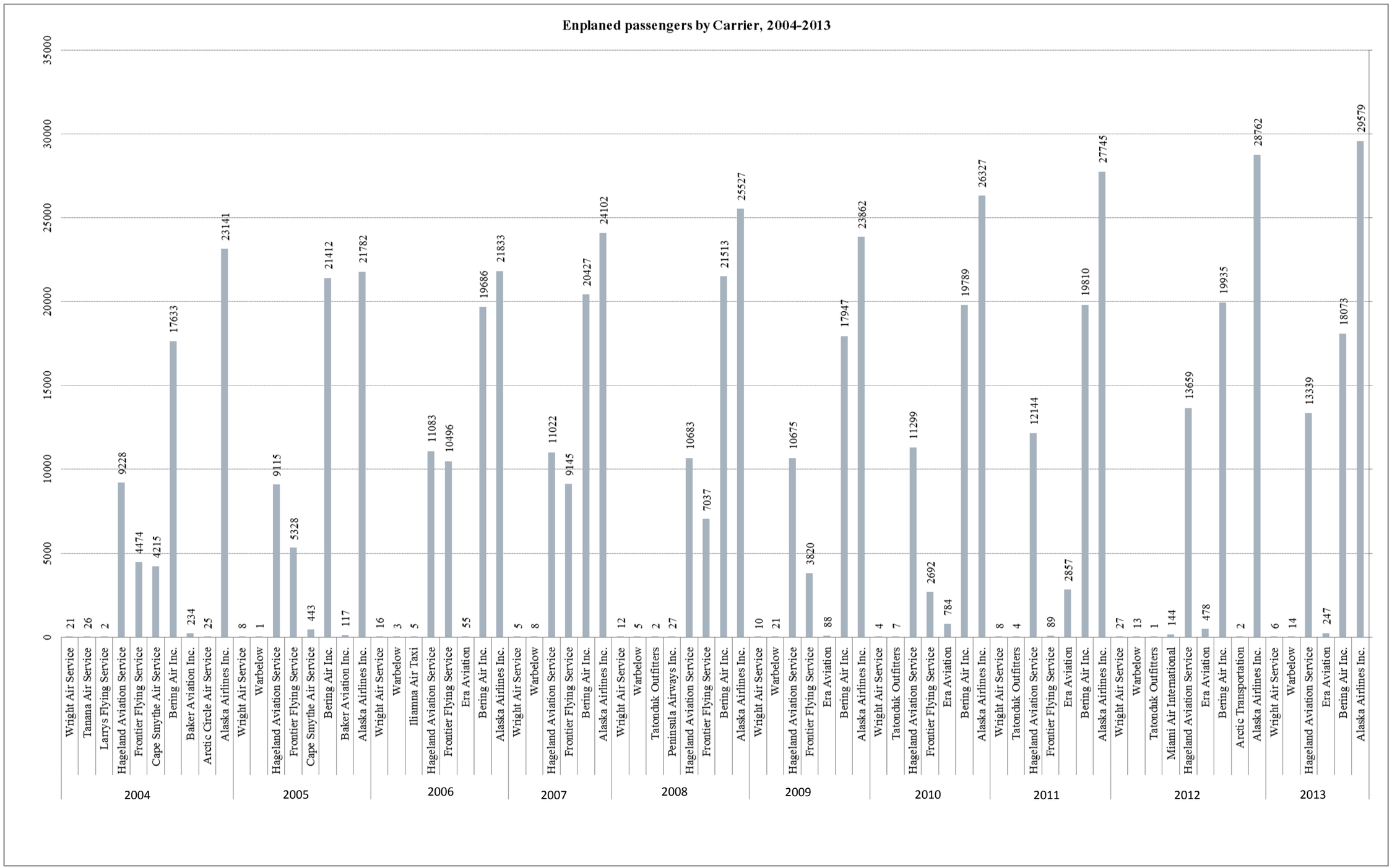

Figure 3-5 - Enplaned Passengers by Carrier, 2004-2013
Source: ACAIS

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3.3.5 Freight and Mail

Air transportation of freight and mail to rural Alaska is critical to the sustainability of communities that are not connected to the road system. Coastal communities such as Kotzebue can receive barge shipments during the ice-free months, but rely on air service to deliver goods year 'round.

The introduction of the bypass mail program in 1985 allowed rural Alaskans to send and receive First Class mail at Fourth Class rates. Delivery of mail by air at these favorable rates has facilitated the flow of goods to rural Alaska.

Figure 3-6 shows the historic mail volumes passing through OTZ from 2004 to 2013. Mail volumes have been consistent during this time, with approximately 15 million pounds deplaned and 10 million pounds enplaned at OTZ.

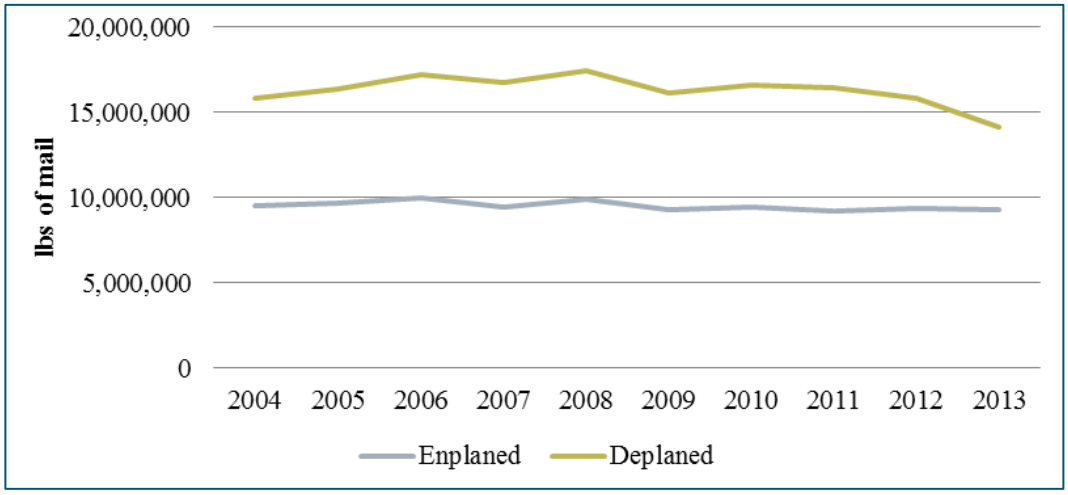

Figure 3-6 – OTZ Mail Volumes, 2004-2013
Source: RITA, 2014

Figure 3-7 outlines the historic freight volumes passing through OTZ. The 10-year trend for freight shows an approximate 27,000-pound net increase in freight deplaned at OTZ and an approximate 1.8 million pound increase in freight enplaned at OTZ.

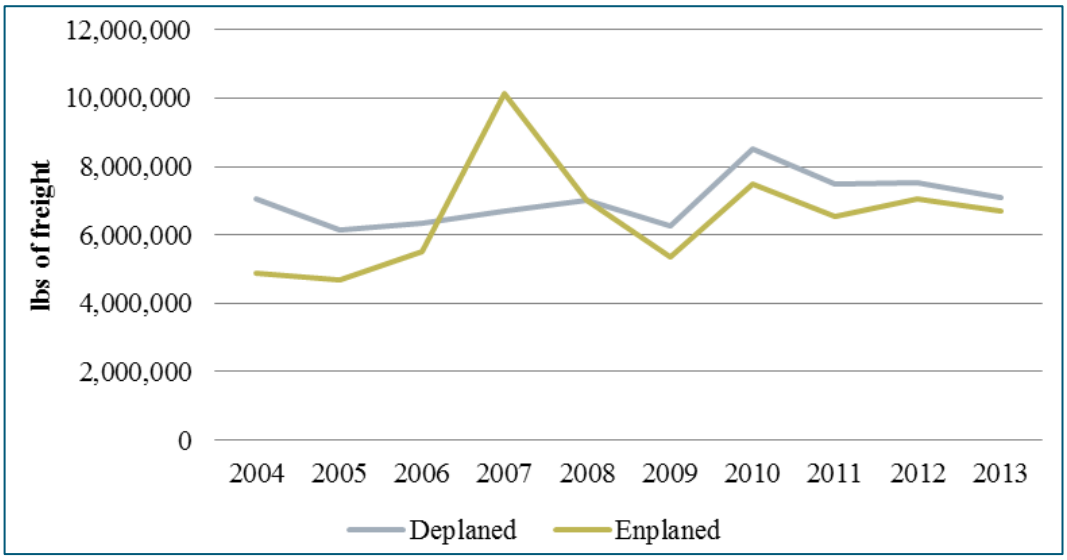

Figure 3-7 – OTZ Freight Volumes, 2004-2013
Source: RITA, 2014

As at other Alaska hub airports, freight and mail destined for outlying communities are transported to Kotzebue on larger jet aircraft and then transferred to smaller commuter aircraft for distribution to these communities. This is clear in the breakdown of carriers transporting inbound versus outbound freight and mail (Figure 3-8; see Table 3-9 for a summary of the aircraft types each carrier uses).

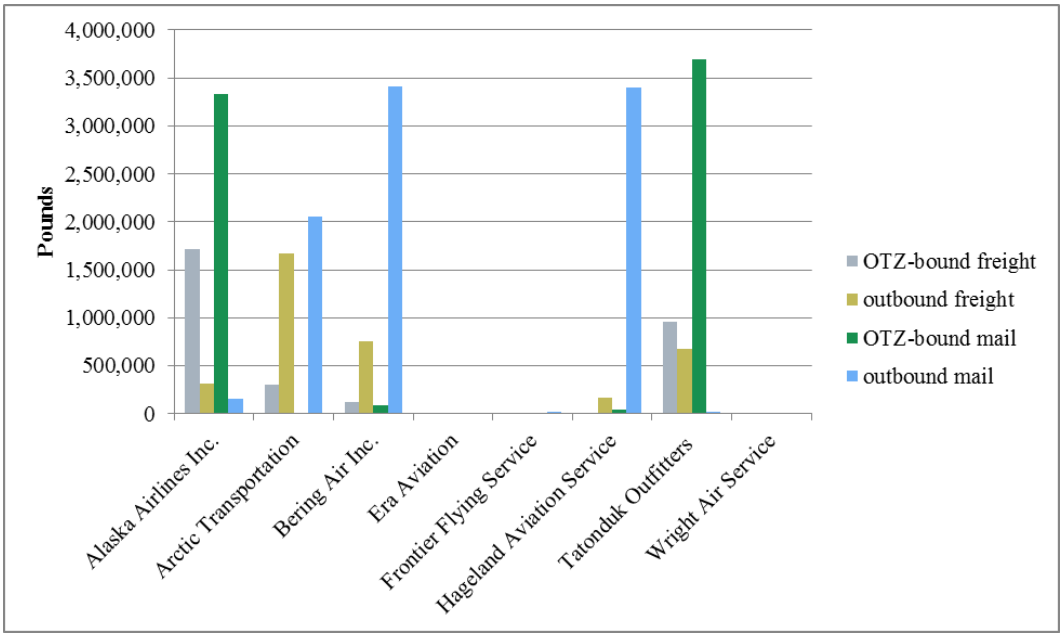

Figure 3-8 – Inbound vs. Outbound Mail and Freight by Carrier, 2013
Source: RITA, 2014

As shown in Figure 3-8, Bering Air Inc., Hageland Aviation, and Arctic Transportation deliver the majority of outbound mail to the surrounding communities, while Arctic Transportation, Bering Air Inc., and Tatonduk Outfitters carry the bulk of the outbound freight. Conversely, Alaska Airlines and Tatonduk Outfitters carry nearly all of the freight and mail to Kotzebue.

3.3.6 Air Traffic Data Collected for this Master Plan

The project team contacted ADOT&PF and reviewed flight schedules at Kotzebue Airport to supplement and validate published aircraft operation data. The resulting estimate of operations is presented in Table 3-11 below for comparison with the air traffic activity as reported by the FAA TAF, FAA 5010 Master Record, *Northwest Alaska Transportation Plan*, AASP, 1998 *Kotzebue Airport Master Plan*, and NPIAS. Northern Air Cargo (NAC) and Everts Air both reported higher than average unscheduled flights in 2013.

Table 3-11 - Estimate of Aircraft Operations Based on Schedules and Contacts, 2013

Operator	Service	Scheduled Operations		Actual Operations
		Frequency	Annual	
Alaska Airlines	Air Carrier	26/week	2,704	1,936
Bering Air Inc.	Commuter	151/week	15,704	15,704
Northern Air Cargo	Air Cargo	6/week	624	774
Everts Air[2]	Air Cargo	5/week	520	632
Ravn Alaska[3]	Commuter	141/week	14,664	14,664
Military	Military Transient	---	---	1,000
Part 91 Transient	GA	---	---	11,400
Part 91 Local	GA	---	---	2,709

3.3.7 Air Traffic Base-Year Summary

Table 3-12 presents a comparison of estimated base year (2013) aviation activity at Kotzebue Airport. The table includes data or estimates from the various sources identified in this report.

Table 3-12 – Historical and Forecast Air Traffic Data for Base Year 2013 Kotzebue Airport

	Forecast Year	Based Aircraft	Enplanements	Total Operations
1998 *Kotzebue Airport Master Plan*	2008	107	74,183	80,640
2004 *Northwest Alaska Transportation Plan*	2010	NA	67,821	—
AASP	2008	52	64,944	66,642
FAA TAF	2013	52	64,126	60,000
NPIAS	2013	52	66,322	—
FAA ACAIS	2013	NA	61,274	—
Form 5010	2013	43	—	60,000
PDC Estimate	2013 (base)	43	61,274 (actual)	48,819 (actual)

3.4 Step 4 – Select Forecast Methods

While there are several acceptable techniques and procedures for forecasting aviation activity at a specific airport, most forecasts utilize basic statistical techniques such as linear regression, exponential smoothing, or share analysis. To determine which method is most appropriate, it is important to look at the factors affecting aviation demand. The following discussion is an overview of the factors affecting aviation demand at Kotzebue and the forecast method applied.

[2] Formerly Tatonduk Outfitters
[3] Formerly Era Alaska and Hageland Aviation

3.4.1 Economic Trends Affecting the Kotzebue Airport

This section discusses economic trends affecting the Kotzebue Airport and provides a population forecast based on anticipated economic activity.

3.4.1.1 Natural Resource Development

Employment characteristics of a region or city can significantly affect the generation of air traffic. Employment opportunities drive population increases that in turn increase demand for travel. Employment activities in the NWAB have historically been closely tied to natural resource development. The Red Dog Mine has historically provided a substantial portion of the NWAB's wage and salary payroll. Although the Red Dog Mine has its own airport, regional commuter air traffic has increased as a result of its employment. Increases in natural resource development could affect the economy substantially, increasing overall demand for air travel into, out of, and throughout the region.

As of 2008, onshore and offshore oil drilling opportunities were being explored in the Hope Basin and the Selawik Basin, located offshore from the Borough in the Kotzebue Sound and the Bering Strait (2008, *Kotzebue Airport Master Plan Relocation Feasibility Study*, PDC).

However, as demonstrated in Figure 3-9, Alaska's offshore oil exploration and development opportunities are currently limited to the Beaufort and Chukchi seas and Cook Inlet. These limitations are part of the national Oil and Gas Leasing Program for 2012-2017 (Bureau of Ocean and Energy Management, 2014).

In 2008, Cominco Inc, operator of the Red Dog Mine, was working jointly with the state Division of Geological and Geophysical Surveys and the federal Department of Energy to examine the feasibility of producing gas contained in shale beds for use in powering mining and milling operations. However, no significant developments have occurred yet.

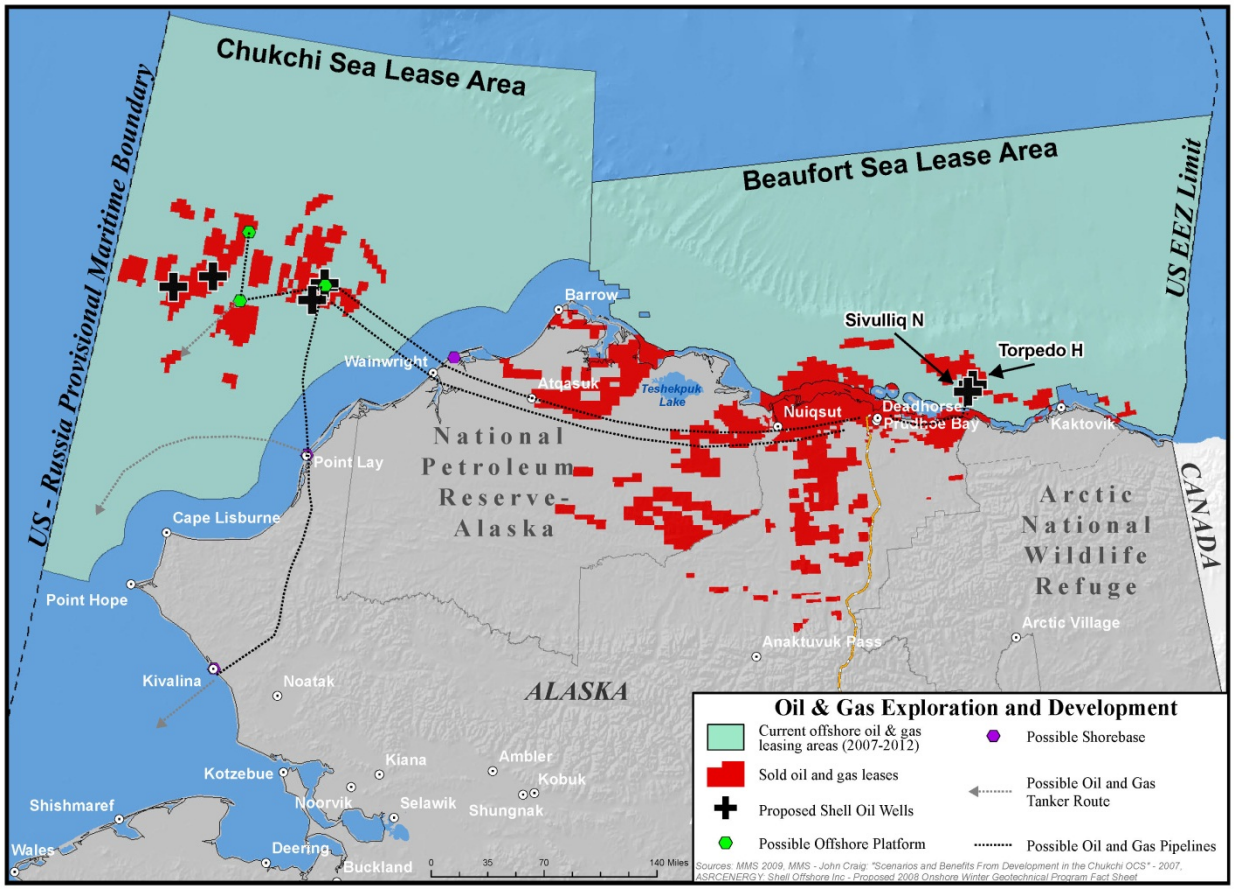

Figure 3-9 – U.S. Oil & Gas Exploration and Development Locations
Source: Shell Offshore, Inc.

Commercial fishing may have an increasing impact on the local economy. The quality of the salmon runs has improved markedly since the early 2000s. Opportunities for catching and processing have also improved. After the fishing industry nearly died in the early 2000s, a cooperative effort with the Bering Sea Fishermen's Association resulted in the opening of a fish processing operation in Kotzebue in 2004. The price per pound of Chum Salmon has also been rising with the renewed demand of the three buyers in the region: Great Pacific Seafoods, Maniilaq Services LLC, and Copper River Seafoods, who just started buying in the region in 2014. With about 80 permit holders, Kotzebue fishermen are expected to bring in about $3 million this year alone. Compared with the $7,572 produced by the fishery in 2002, the fisheries stand to make a substantial impact on the local economy (*Alaska Dispatch News*: August 23, 2014).

NAC has flown cargo and fish for the region's fisheries consistently over the last 55 years. The company reported flying 900 tons of fish from Kotzebue in 2013. 2014 has already seen that number triple, with over 2,700 tons of fish flown from Kotzebue by September. A representative from NAC explained that the company expected the recent boom in the fisheries to continue for at least the next couple of years.

3.4.1.2 Tourism

With more than 3,000 residents, Kotzebue is the largest community in the region and is the center of government and commerce in the Northwest Arctic Borough. The primary tourism assets of the Borough include its national parklands, Native culture, adventure and ecotourism opportunities, as well as its "north of the Arctic Circle" allure.

More than half of all the land within the region is federally owned and protected as parks, preserves, and wildlife refuges. The federal lands include the Noatak National Preserve, Cape Krusenstern National Monument, Kobuk Valley National Park and the Selawik National Wildlife Refuge. Additionally, the Bering Land Bridge National Preserve and the Gates of the Arctic National Park and Preserve are accessible from communities within the Borough. These public lands offer visitors unparalleled opportunities for wildlife viewing, kayaking, rafting, sport fishing and camping and feature a variety of unique archaeological sites. The National Park Service reports a recent surge of visitors to the national parks. From 2000 to 2010, visitors to the federal lands described above climbed from 6,929 to 11,584 annual visitors. In 2012, over 88,000 visitors came to these federal lands. That number dropped slightly in 2013 to 54,649, still well above the historic trend.

3.4.2 Kotzebue Population Forecast

This section looks at a demographic-based population projection for 2012–2037.

The Alaska Department of Labor & Workforce Development (ADOL&WD) prepares population forecasts at the borough or census area level. The current forecast for the NWAB, covering the years of 2012 through 2037, is shown in Figure 3-10. This projection is based on births, deaths, and migrations, and does not account for economic factors.

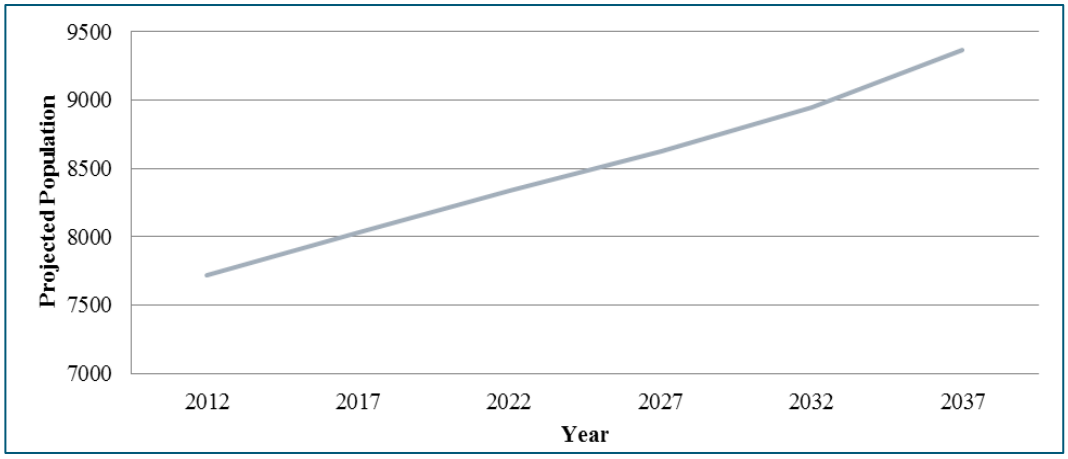

Figure 3-10 – Projected Population of the Northwest Arctic Borough, ADOL&WD, 2012-2037
Source: ADOL&WD (2013a)

Figure 3-11 shows the population trends of Kotzebue over the last 30 years, and projects out the next 30 years based on a continuation of the trend seen over the last 10-, 20-, and 30-year periods.

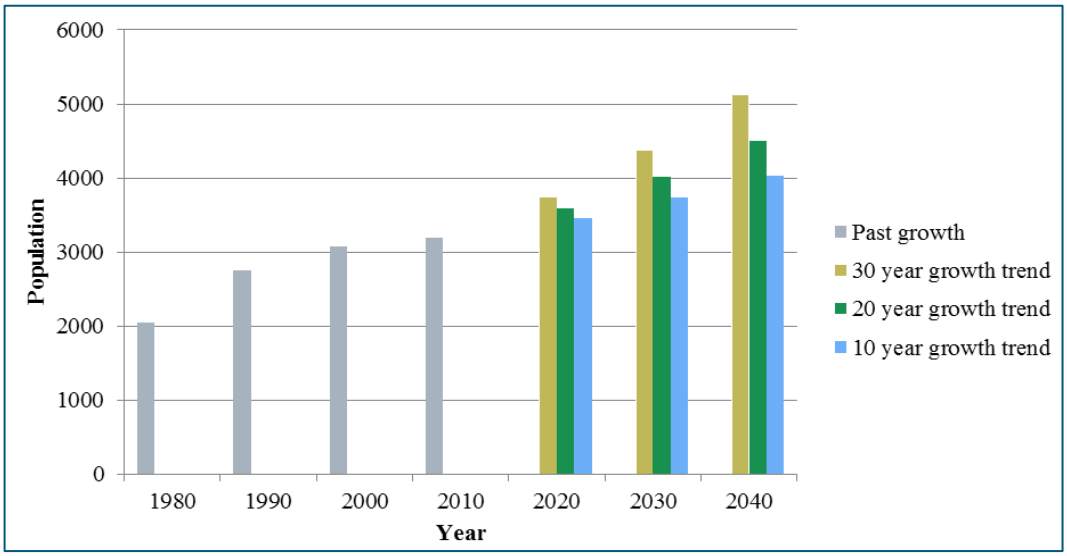

Figure 3-11 – Population of Kotzebue Projected from Growth Trends over 10, 20, and 30 Years
Source: DCRA (2013)

Projecting future growth based on the DCRA data yields an annual population growth rate that could range anywhere from 0.45% to 1.5% per year.

In June 2014, the Alaska Department of Labor and Workforce Development (DOL&WD) estimated that the population of the NWAB would grow an average of 0.8% per year for the next 30 years. This projection takes into account a number of demographic and economic factors, such as the aging baby boomer population.

3.4.3 Forecast Method

Many factors and considerations must go into developing a forecast for passenger enplanements, aircraft operations, and cargo shipments. A realistic forecast of future aviation activity at the Kotzebue airport must consider the impacts of natural resource development, economic growth, tourism, and other factors.

Growths in the fisheries and tourism—particularly at the national parks—have been identified as factors which could have a substantial impact on the economy. The following three figures illustrate the historical trend in populations and enplanements, fisheries, and visitors to the region's national parks and preserves.

Figure 3-12 compares population growth in the NWAB with enplanement trends, Figure 3-13 illustrates the trend in tons of fish shipped from Kotzebue, and Figure 3-14 illustrates the growth in the number of visitors to national parks within the NWAB.

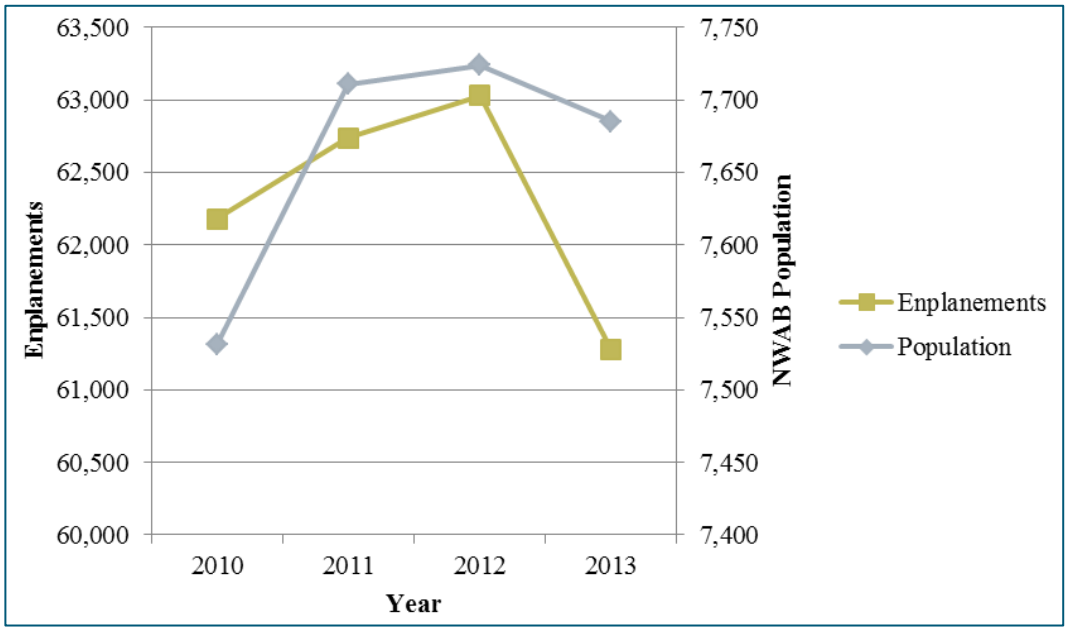

Figure 3-12 – Historical Trends in NWAB Population and Enplanements
Source: U.S. Census

Population in the NWAB trended upwards from 2010 – 2012, with a slight dip in 2013. Enplanements followed this trend with a slightly larger dip in 2013. The steeper drop in enplanements may have been affected by the slight dip in National Park visitors to the area that year. Schedule changes with the recent merger of Era, Frontier, and Hageland Aviation, and the reduction in Alaska Airlines flights to Kotzebue, may have also played a part.

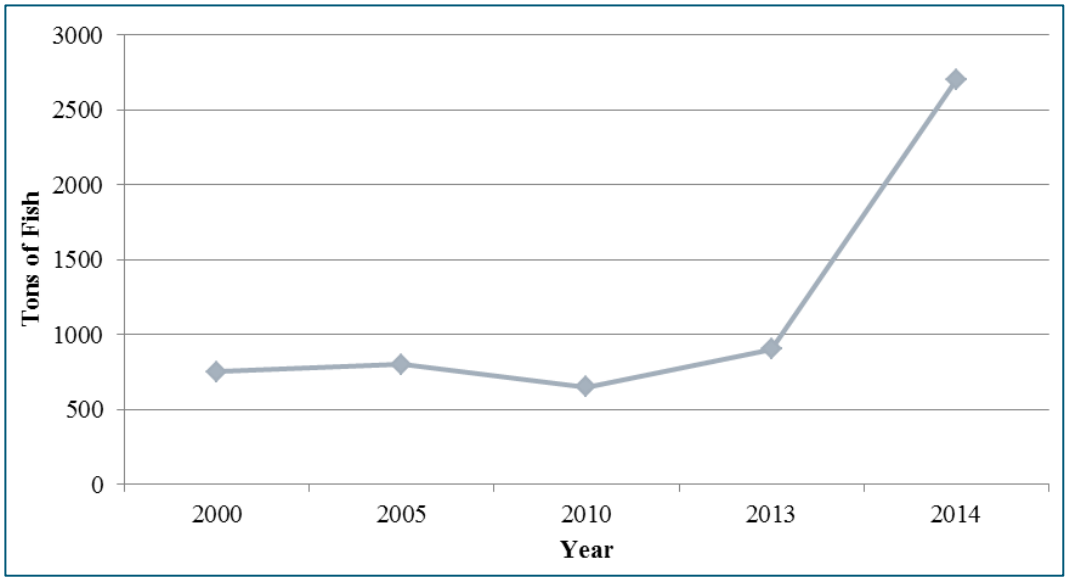

Figure 3-13 – Historical Trend in Tons of Fish Flown from OTZ
Source: Alaska Department of Fish and Game

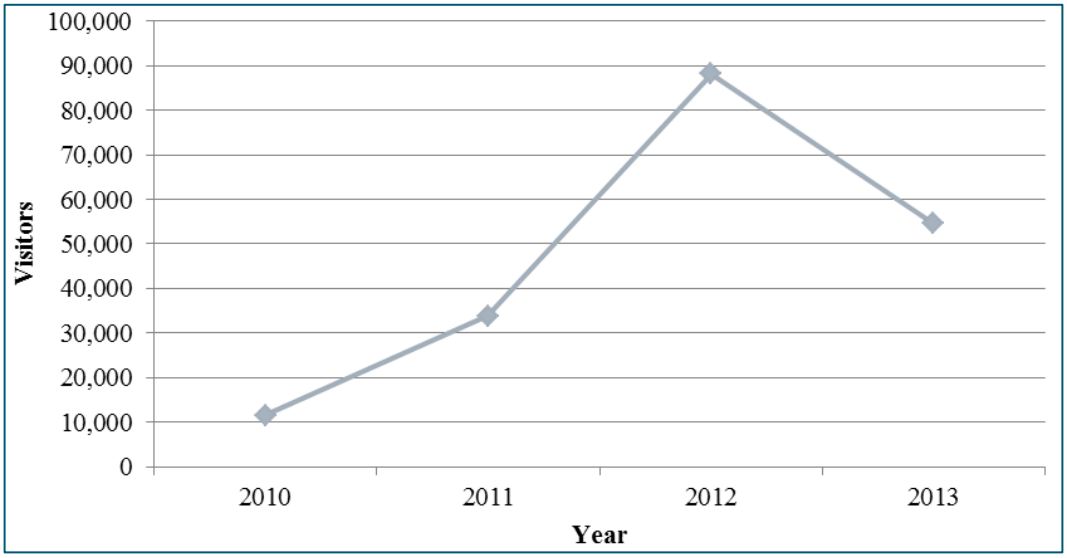

Figure 3-14 – Historical Trend in NWAB Park Visitors
Source: Integrated Resource Management Applications

While growth in the fishing industry may continue to have a substantial impact on the economy, it is unlikely that it will directly contribute to a substantial increase in flight operations or enplanements. Northern Air Cargo reported that while the weight of fish shipped from Kotzebue increased from 750 tons in the year 2000 to over 2,700 tons in 2014, the number of landings they made in Kotzebue has only increased from 307 in 2000 to 344 in 2014.

Growth in tourism to federally owned lands within the NWAB may also continue to affect Kotzebue's economy. However, while the number of visitors to the region's National Parks and Preserves has seen a major uptick over the last four years, the overall number of enplanements has actually decreased since 2011, indicating that a large number of these visitors may be coming from within the region itself.

It is more likely that any major increase in flight operations and enplanements will result from population growth, general economic trends, demographics, and migration than from the fisheries or tourism industry alone.

Based on the data collected from the DCRA, the DOL&WD, and the analysis of the fisheries and tourism industries, it is estimated that enplanements, flight operations, and aviation activity will grow at a rate of 0.9% per year over the next 20 years. This figure falls right in between the numbers collected from the DCRA and the DOL&WD above, and accounts for population, economic, migration, and industry growth factors.

3.5 Steps 5 & 6 – Apply Forecast Methods, Evaluate Results, and Summarize

This section applies the forecast method described above to develop air traffic forecasts for passenger enplanements, cargo, and aircraft operations for Kotzebue Airport for the next 20 years. Figure 3-15 shows the historical and forecast passenger enplanements for Kotzebue Airport. The most likely forecast is presented, as well as the Terminal Area Forecast (for comparison per FAA guidance, *Forecasting Aviation Activity by Airport*).

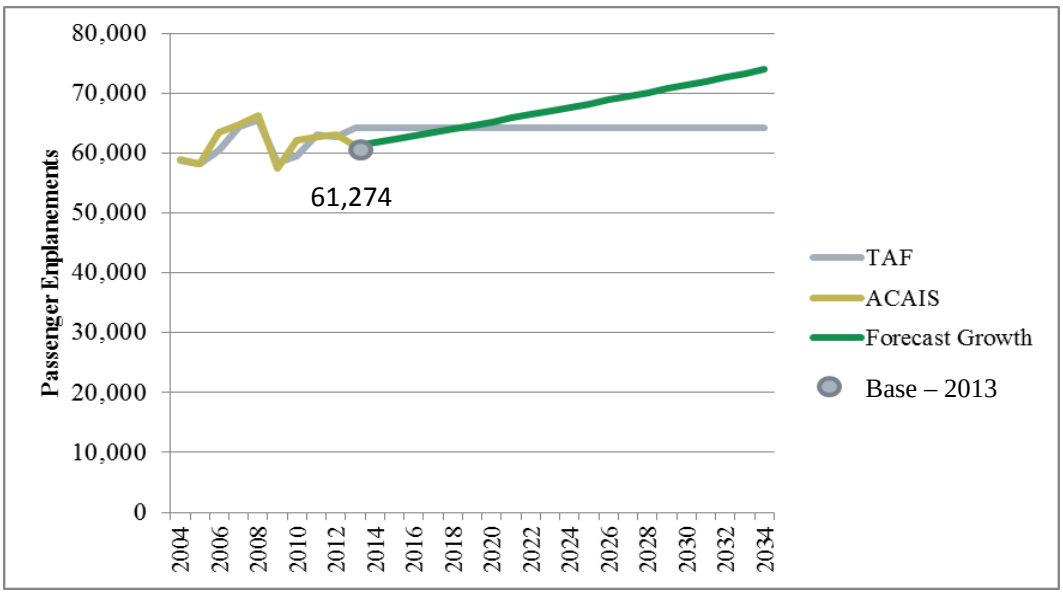

Figure 3-15 – Historic and Forecast Passenger Enplanements

Figure 3-16 shows historic and forecast cargo volumes (enplaned and deplaned) for Kotzebue Airport. Cargo includes freight and mail.

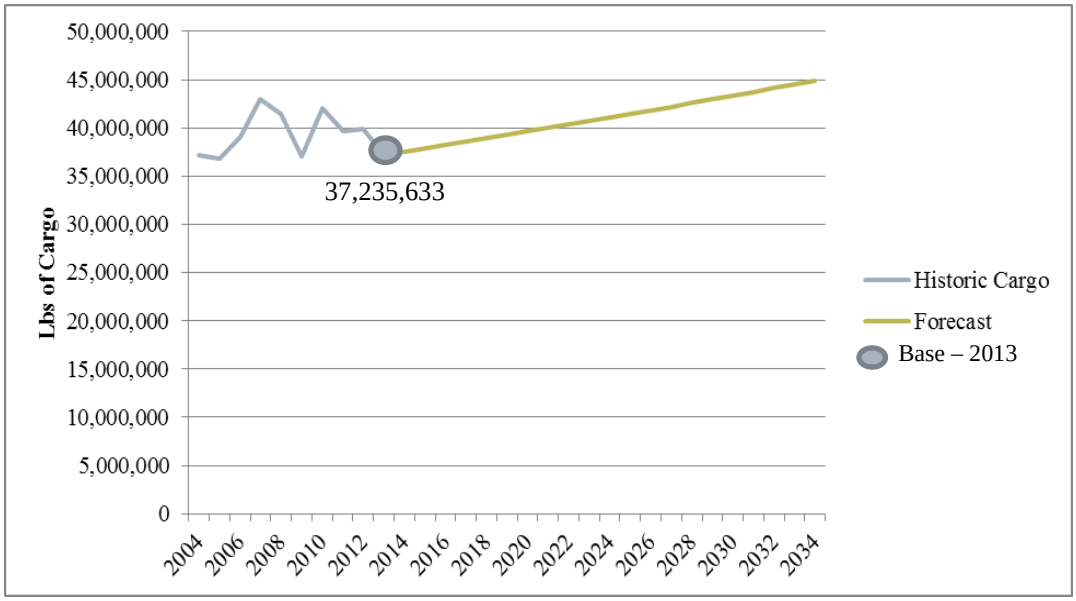

Figure 3-16 – Historic and Forecast Cargo Volumes

Figure 3-17 shows the forecasts of aircraft operations, as well as the Terminal Area Forecast. The TAF is not updated for OTZ and does not reflect actual conditions.

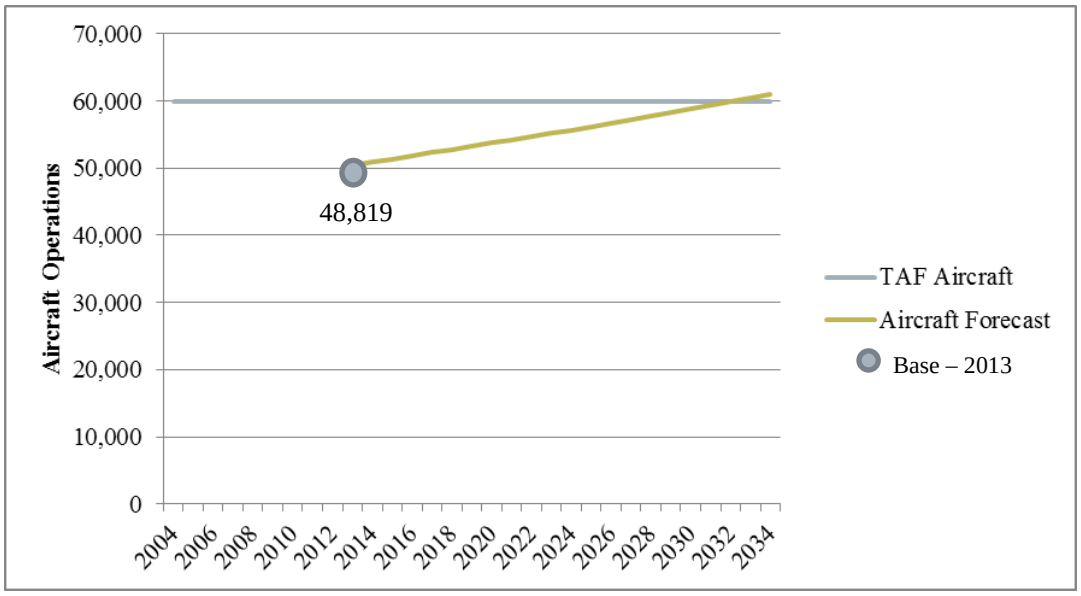

Figure 3-17 – Aircraft Operations Forecast and Historic TAF Operations

3.6 Step 7 – Compare Airport Planning Forecast Results with TAF

Table 3-13 compares the updated air traffic forecast for Kotzebue Airport (using the forecast growth rate of 0.9%) to the FAA TAF.

As mentioned previously, the TAF for OTZ is not updated often and does not reflect actual conditions at the airport. The forecast of GA operations developed for this master plan is based on discussions with FSS staff and tenants at OTZ, as well as consideration of the current number of tie-down tenants. Commercial operations are based on discussions with air taxis, air carriers, and air cargo carriers, as well as review of their published schedules.

Table 3-13 - TAF/Airport Planning Forecast Comparison

	Year	Airport Forecast (AF)	TAF	AF/TAF % Difference
Enplanements				
Passenger Enplanements	2013	61,274	62,628	-2%
	2018	64,081	64,126	0%
	2023	67,018	64,126	5%
	2033	73,299	64,126	14%
Operations				
Commercial Operations	2013	33,710	22,000	53%
	2018	35,253	22,000	60%
	2023	36,871	22,000	68%
	2033	40,326	22,000	83%
Military Operations[4]	2013	1,000	1,000	0%
	2018	1,000	1,000	0%
	2023	1,000	1,000	0%
	2033	1,000	1,000	0%
GA Operations (Local + Itinerant)	2013	14,109	37,000	-62%
	2018	14,755	37,000	-60%
	2023	15,431	37,000	-58%
	2033	16,878	37,000	-54%
Total Operations	**2013**	**48,819**	**60,000**	**-19%**
	2018	**51,008**	**60,000**	**-15%**
	2023	**53,303**	**60,000**	**-11%**
	2033	**58,204**	**60,000**	**-3%**

[4] Military operations have been consistently at this level for the last 25 years, and there does not seem to be any correlation between overall population or economic growth and growth in military flights at Kotzebue Airport.

3.7 Step 8 – Obtain FAA Approval

FAA AC 150/5070-6B provides guidance on airport master plans. The chapter on aviation forecasts concludes that forecasts must be:

- Realistic
- Based on the latest available data
- Reflect the current conditions at the airport
- Supported by information in the study
- Provide an adequate justification for the airport planning and development

FAA AC 150/5070-7, *The Airport System Planning Process*, recommends that aviation forecasters use their professional judgment in determining what is reasonable. PDC believes that this forecast represents a realistic outlook of aviation demand at Kotzebue Airport.

Table 3-14 - OTZ Aviation Forecast

	Base Year: 2013					Avg. Annual Compound Growth Rates			
	Base Yr.	+1 Yr.	+5 Yrs.	+10 Yrs.	+15 Yrs.	+1 Yr.	+5 Yrs.	+10 Yrs.	+15 Yrs.
Passenger Enplanements									
Air Carrier	29,579	29,845	30,934	32,352	33,834	0.9	0.9	0.9	0.9
Commuter	31,890	33,147	34,666	36,254	36,254	0.9	0.9	0.9	0.9
Total Enplanements	**61,274**	**61,826**	**64,081**	**67,018**	**70,088**	**0.9**	**0.9**	**0.9**	**0.9**
Operations									
Itinerant									
Commercial									
Air Carrier	*1,936*	*1,953*	*2,024*	*2,118*	*2,215*	*0.9*	*0.9*	*0.9*	*0.9*
Commuter/ Air Taxi	*30,368*	*30,641*	*31,759*	*33,215*	*34,736*	*0.9*	*0.9*	*0.9*	*0.9*
All-Cargo Carriers	*1,406*	*1,419*	*1,470*	*1,538*	*1,608*	*0.9*	*0.9*	*0.9*	*0.9*
Total Commercial	33,710	34,012	35,253	36,871	38,559	0.9	0.9	0.9	0.9
General Aviation	11,400	11,503	11,922	12,469	13,040	0.9	0.9	0.9	0.9
Military	1,000	1,000	1,000	1,000	1,000	0	0	0	0
Local									
General Aviation	2,709	2,733	2,833	2,963	3,099	0.9	0.9	0.9	0.9
Military	0	0	0	0	0	0	0	0	0
Total Operations	**48,819**	**49,249**	**51,008**	**53,303**	**55,698**	**0.9**	**0.9**	**0.9**	**0.9**
Based Aircraft									
Single Engine (Non-Jet)	37	37	39	41	42	0	5	5	2.4
Multi-Engine (Non-Jet)	6	6	6	7	7	0	0	17	0
Jet Engine	0	0	0	0	0	0	0	0	0
Helicopter	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
Total Based Aircraft	**43**	**43**	**45**	**48**	**49**	**0**	**5**	**7**	**2**

3.8 References

Alaska Department of Labor & Workforce Development (ADOL&WD). 2014a. Alaska Population Projections 2010 to 2035, by Borough/Census Area. Available at http://laborstats.alaska.gov/pop/projected/data/BCAProjections.xls. Accessed September 15, 2014.

Alaska Department of Labor & Workforce Development (ADOL&WD). 2014b. Population Estimates, Population 2012-2037. Available at http://laborstats.alaska.gov/pop/estimates/data/TotalPopulationBCA.xls. Accessed September 15, 2014.

Integrated Resource Management Applications (IRMA). 2014.c National Park Service Visitor Use Statistics Annual Park Recreation Visitation Graphs (1904 – Last Calendar Year) Available at https://irma.nps.gov/Stats/. Accessed September 25, 2014.

2014 *Kotzebue Sound Salmon Fisheries Management Plan* (May 2014), Jim Menard, Alaska Department of Fish and Game (AKDFG), Divisions of Sport Fish and Commercial Fisheries

Alaska Department of Community and Regional Affairs, 2014d, 2010 Population and housing Characteristics, Census Population History. Accessed at http://commerce.alaska.gov/cra/DCRAExternal/community/Details/8aa56b8f-c01a-44a4-8f66-cbac5c6f2f4e. Accessed September 25, 2014

Bureau of Ocean Energy Management, 2014e, 2012-2017 OCS Oil and Gas Leasing Program, Accessed at http://www.boem.gov/Five-Year-Program-2012-2017/ Accessed September 20, 2014

Northern Air Cargo. 2014. Personal communication with Manager of Statistics & Air Carrier Reporting. September 29, 2014

Kotzebue Airport Master Plan Relocation Feasibility Study (January 2008), PDC Inc. Engineers, Prepared for State of Alaska, Department of Transportation & Public Facilities

U.S. Census, American Community Survey 5-year estimates and Summary Files, Accessed at: http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t Accessed September 15, 2014