CHAPTER 3: AVIATION ACTIVITY FORECASTS

3.1 INTRODUCTION

For the TIA Master Plan Update, a forecast of aviation activity, completed in December 2011, was developed for the period between 2011 and 2030 and was approved by the FAA in July 2012. The forecast projects air carrier passenger enplanements and air carrier, general aviation and military aircraft operations throughout the forecast horizon. For the TIA Master Plan Update forecast of aviation demand, the baseline forecast used is the FAA Terminal Area Forecast (TAF). This baseline forecast is accompanied by high and low scenario forecasts for sensitivity purposes. Additionally, average week day of the peak month (AWDPM) data, representative of a typical day from which forecasting and facility requirements are based upon, were used to develop design day schedules. Design day schedules are presented for the baseline scenario, which depict airline activity in detail including destination markets, carriers, equipment types, and seats along with additional pertinent information for the forecast years of 2015, 2020, 2025 and 2030.

3.1.1 Overall Industry Context

The aviation environment remains challenging. Commercial aviation continues a lengthy process of evolution, changing the way airports relate to their airlines and communities. It has staggered between a series of periodic crises and has not yet emerged from the cyclical economic events of the past several years including a spike in the price of oil and a weak revenue / yield environment. New and increased federal mandated screening measures have also further eroded the airlines' operational reliability and the overall passenger experience. However, after a decade of multi-billion-dollar losses, U.S. airlines appear to be turning a corner. By grounding planes and eliminating flights, airlines have cut costs and pushed fares higher. As the global economy rebounds, travel demand has risen, pushing load factors to record levels. Profit margins for the major U.S. airlines are at their highest levels since 2002 and the Air Transport Association (ATA) has forecast earnings at over $5.0 billion in 2011 and $5.6 billion in 2012.

From 2000 through 2009, U.S. airlines lost about $60 billion and eliminated 160,000 jobs, according to the ATA. During that tumultuous decade, airlines were hit with a series of events beyond their control: two recessions, the September 11th attacks, an avian flu outbreak and rising fuel costs.

The industry was profitable in 2000, 2006 and 2007, during cyclical economic peaks. Those growth years, however, were masking the industry's underlying problems including high operational costs and an over-supply of capacity. During 2008 and 2009, airlines lost a combined $23 billion. During that same time period, the airlines began aggressive cost-cutting plans aimed at fixing many of their systematic problems which kept them unprofitable. Some of the cost-cutting measures they adopted to return to profitability included:

- **Eliminating money-losing flights:** With a recovery in travel demand, airlines raised ticket prices for the smaller supply of seats which consequently raised yields.
- **Grounding older, less fuel efficient airplanes:** The major U.S. airlines, plus freight delivery companies such as FedEx and UPS, used 11.4 billion gallons of jet fuel in the first 3 quarters of 2010. This jet fuel volume was down 11.4 percent from the same period a year earlier. The price

of a gallon of jet fuel jumped 20 percent year-over-year, but overall fuel spending rose just 6 percent.

- **Adding ancillary fees:** In the first 3 quarters of 2010, airlines collected more than $4.3 billion from fees for checking baggage and changing tickets. This is up 13.5 percent from the comparable period in 2009.
- **Consolidating:** Delta Air Lines purchased Northwest Airlines in 2008 and United Airlines and Continental Airlines agreed to merge in 2009. These larger mergers left four network carriers operating from hub airports down from six. In the low-cost sector, Southwest Airlines purchased AirTran Airways in 2010. Collectively, these changes put upward pressure on air fares. **Table 3-1** summarizes the airline mergers since 2008.

As a result of the above cost-cutting measures, the 3rd quarter of 2010 recorded one of the best financial results for the U.S. commercial airline industry since 1978. According to Airline Forecasts, the airlines achieved a net profit margin of 7.7 percent, the highest in 32 years. Fares in the U.S. rose 14 percent from 2009 to 2010 and load factors were on average above 80 percent. Ancillary fees became a large revenue producer for the air carriers on fees that were once included as part of ticket prices.

Quarterly earnings statements in the 4th quarter of 2010 and 2010 annual results indicated a rebound. For the full year 2010, Delta Air Lines recorded $1.4 billion, United Continental Holdings recorded $160 million (including the results of its two operating subsidiaries, United Airlines and Continental Airlines), JetBlue Airways recorded $97 million and Southwest Airlines recorded $459 million in profit.

The economy is expected to grow faster in 2011 and 2012 than it did in 2010 and should consequently give commercial aviation a lift according to the ATA. There are, however, some challenges on the horizon; the largest being higher fuel prices. With oil priced at approximately $105 a barrel, the highest it's been since 2008, this could temper industry-wide profit margins in 2011. However, with their aggressive cost-cutting initiatives, many believe the airlines could record profits this year even beyond the $100 per barrel levels already being registered.

Another factor that will determine how long the industry's profitability lasts is how individual airlines manage growth. The airlines have so far been cautious about adding more flights as travel demand picks up. In the past, they added flights and brought back grounded aircraft too quickly, leading to an excess of seats and falling airfares.

Table 3-1: Airline Mergers – 2008 to Present

Merging Carriers	HQs	Value ($ billions)	Background	TIA Daily Departures	Destinations from TIA
UNITED Continental Airlines	Chicago	$3.2	On August 27, 2010, the U.S. Department of Justice approved the merger of United and Continental. Shareholders of both companies approved the deal on September 17, 2010. The transaction was completed on October 1, 2010. Both carriers will begin to merge operations in 2011 and a single operating certificate from the FAA is expected by 2012.	14	San Francisco, Denver, Los Angeles, Houston
DELTA nwa	Atlanta	$17.7	On September 26, 2008, shareholders announced they had approved the merger of Delta and Northwest. After a six-month investigation, government economists concluded the merger would likely drive down costs for consumers without curbing competition. On October 29, 2008, the United States Department of Justice approved the merger.	6	Atlanta, Salt Lake City, Minneapolis-St. Paul
SOUTHWEST AIRLINES AirTran AIRWAYS	Dallas	n/a	On November 9, 2010, Southwest and AirTran received a request for additional information from the Antitrust Division of the U.S. Department of Justice. The action is referred to as a "second request." Both companies are in the process of gathering information to respond to the second request and will continue to work cooperatively with the DOJ as it reviews the transaction.	19	Albuquerque, Las Vegas, Los Angeles, Denver, San Diego, Chicago Midway

Source: HNTB Analysis

3.1.2 Air Cargo Industry

Since airline deregulation, air cargo has expanded at or about twice the rate of passenger activity. A robust growth spurt in the early 2000's, driven mostly by e-business and e-commerce, helped sustain a large expansion by cargo integrators, most notably FedEx and UPS. Starting with the rise in fuel prices in 2008 and the recession of 2009, worldwide freight traffic plummeted, forcing cargo airlines and integrators to park and/or retire a large number of freighters. Many older, less fuel-efficient models, such as the Boeing 747-200F aircraft, are unlikely to return to service. The rapid recovery of the market means the surplus in global capacity will narrow to 1 percent this year according to the International Air Transport Association (IATA). Lufthansa Cargo forecasts a 5 percent capacity shortage by 2014. Within North America, the U.S. domestic market is forecast to grow at an annual average rate of 3.5 percent until 2019 measured in Revenue Ton Kilometers (RTKs) according to the Boeing World Air Cargo Forecast 2010-2011.

3.1.3 General Aviation Industry

General aviation is facing a crucial time of decision. Airline travelers are increasingly frustrated with higher fees, more hassle and less service with no other viable options. The corporate sector has seen major hits in the last two years with many companies reducing or eliminating their flight departments. In the world of flight training, flight schools and instructors struggle to attract new business and retain them. A long-range analysis, however, considers the bigger picture which sees growth in fractional ownership plans due to new, lower cost technology in the corporate general aviation arena. The leisure general aviation market, however, will continue to struggle.

3.1.4 Military Activity

Military activity at commercial airports has experienced a slow decline in the past 25 years. Air National Guard units around the country, including at TIA, comprise the bulk of military activity at commercial airports. Since the beginning of the recent military engagements, deployment activity in these units has increased slightly. At TIA, the Arizona National Guard has a base. However, their number of annual operations is capped for the foreseeable future.

3.2 DATA COLLECTION

3.2.1 Sources of Data

The forecast of aviation activity for the TIA Master Plan Update relied on a wide range of information about TIA, the aviation industry, and the U.S. economy. Data was obtained from the following sources:

- **FAA Airport Planning Office (APO), Terminal Area Forecasts, 2010-2030** – An online database created and published by the APO, Forecasts and Performance Analysis Division, defined as the "official" FAA forecasts. The data is published annually in late December and presents a set of unconstrained airport specific forecasts divided into air carrier, commuter & air taxi, general aviation and military enplanements and operations. The TIA Master Plan Update forecast uses the TAF as a baseline.

- **FAA Aerospace Forecasts, Fiscal Years 2011 – 2031** – This document is published annually and predicts the growth rates of the various segments of aerospace activity based on worldwide economic trends. The TIA Master Plan Update Forecast of Aviation Activity utilizes average US commercial air carrier and regional carrier load factors from this document to help calibrate the design day schedules.
- **FAA Operations & Performance Data, The Operations Network (OPSNET) 2010** – The FAA provides an online database designed to publish airport operations on a daily basis as counted by control towers. Data from this database is used for the TIA Master Plan Update Forecast of Aviation Activity in determining an annualization factor based on the airport's average week day of the peak month.
- **Woods & Poole, 2010-2030** – This document provides socio-economic data including population, per capita income, employment and earnings. The data provided is used primarily in the TIA Master Plan Update Forecast of Aviation Activity to gauge if the growth published by the TAF is consistent with that of the region's population and income. Additionally, the data is utilized to forecast TIA's enplanement activity via regression analysis to test the assumptions and results as published by the APO, Forecasts and Performance Analysis Division, in the 2010 TAF.
- **Official Airline Guide (OAG)** – The OAG provides a present-day schedule for operating and code-share carriers at TIA containing fields including equipment, seats, frequency and other pertaining information by destination market. This data is used in the TIA Master Plan Update Forecast of Aviation Activity as the baseline for the design day schedules, providing the basis by which all other future schedules were built upon.
- **U.S. Department of Transportation (DOT) Schedule T-100** – This data provided historical load factor and capacity by air carrier at TIA. These measures provide important clues into how air carriers may sustain, expand or reduce air service in select airport destination markets from TIA going forward.
- **Internet** – The internet contains a wealth of information relating to the Tucson Air Trade Area including large employers, population trends and tourism activity. Carefully selected information was utilized and checked twice (two or more internet sources had to publish the same information) before inclusion in the TIA Master Plan Forecast of Aviation Activity.
- **Airport Statistics** – Data from the TIA website (Media Center, Statistics) was analyzed and compared to FAA statistics for good measure.

3.3 FORECAST ASSUMPTIONS

3.3.1 Factors Affecting Aviation Demand

Aviation was affected by the recent recession and general slow-down of the U.S. economy. Throughout this period, travel demand fell sharply, forcing airlines to review their cost structures, passengers to modify the way they travel, and airports to adapt. Having turned a corner, 2011 has brought an economic rebound signaled by short-term indicators. Given these and other positive industry metrics, commercial aviation growth is forecast to maintain a healthy level of growth throughout the forecast period at TIA.

A number of assumptions were considered when analyzing the TAF figures along with other tangible sources related to the long-term growth of the Tucson region.

The Economy[12]

It is expected that commercial aviation will continue with minimal change in the near term, with a return to growth over the long term. However, the level of activity during the TIA Master Plan Update timeframe is not expected to return to levels published in previous FAA forecasts. The most significant factor preventing recovery to prior forecast levels is the shock to the economy from the 2008 to 2009 recession period. This recession led to an erosion of wealth, double-digit unemployment, declining corporate travel budgets and close-fisted consumers, all of which contributed to a softening of demand for air travel. After four straight quarters of decline, however, the U.S. economy resumed growth in the third quarter of 2009, albeit driven by government stimulus packages that are winding down. Following previous downturns (e.g. the recessions in 1991 and 2001), carriers stimulated passenger demand by reducing fares sharply. The industry's initial response to the current economic downturn was to modestly cut fares and to better match supply (seats) and demand (passengers). It quickly became apparent that dramatic (not modest) cuts in fares would be the only way to stimulate passenger demand and carriers responded with multiple sales throughout the year. In addition, to help minimize losses, carriers also reduced flying to hold the line on costs. With no evidence of pent up demand, it is not anticipated that a return to previously forecasted passenger levels will occur even when recovery takes hold.

Airline Activity

It is expected that higher fuel prices might temporarily stall the ongoing recovery in the airline industry in 2011. Nevertheless, airlines will be able to pass on the higher cost to customers in the form of increased fares due to tight capacity. Industry consolidation and various ancillary revenues will boost profitability and cost performance of most air carriers going forward. It is anticipated that ancillary revenue streams will continue helping the airline industry gain ground in 2011 and additional fees will be created, supplemented by existing baggage, reservation change, pet travel, and food and beverage fees already in place. Technology upgrades and system automation for various activities such as airline reservation system, flight operations system, website, maintenance and in-flight entertainment systems will enable companies to perform better, lower their costs and enhance customer service. Overall, it is expected that the airlines will post strong growth in the upcoming years. However, near-term risks remain. These include volatile fuel prices, security concerns, economic weakness, government regulation, unionization, airport infrastructure constraints and safety concerns.

Regional Jets

It is expect that a trend towards larger regional jets will continue while most of the smaller regional jets will be retired from the U.S. airline fleet throughout the forecast horizon. While demand for 70- to 90-seat aircraft continues to increase, it is expected that the number of 50-seat regional jets in service will fall, increasing the average regional aircraft size in 2010. Given a production halt of 50-seat regional jets by major manufacturers such as Embraer and Bombardier and the average age of these aircraft (Embraer 145/140/135 and Canadair CRJ-200s) slowly increasing throughout the forecast horizon, the average increase in regional jet size will continue.

[12] U.S. Federal Aviation Administration, FAA Aerospace Forecast, Fiscal Years 2010 - 2030

New Aircraft

With the introduction of Group VI aircraft in the last 2 years along with new and fuel-efficient Group IV and V airplanes throughout the forecast horizon, there will be a large number of new aircraft taking flight, particularly in the next 10-year period. These aircraft include the 555-seat Airbus A380 (Group VI), the 250- to 290-seat Boeing 787 (Group V) and the 315-seat Airbus A350 XWB (Group V). Most of these aircraft to date have been sold to foreign flag carriers. In the U.S., American Airlines, United Airlines (including Continental Airlines) and Delta Air Lines have orders for 110 Boeing 787-8 and 787-9 aircraft along with 208 options. US Airways, United Airlines and Hawaiian Airlines have orders for 53 Airbus A350-800 and A350-900 aircraft along with 56 options. It is unclear how United Airlines' merger with Continental Airlines will affect the Airbus order. Given that U.S. airlines have pledged the mission of these aircraft to be long-haul, point-to-point services to international destinations, these aircraft will have no impact on the TIA long-range forecast.

A new group of narrowbody aircraft is also in development and may be entering service as soon as 2013. The Bombardier C-Series will seat between 110 and 130 passengers and in the U.S., Republic Airways has already committed to purchase 40 aircraft. Airbus will introduce a new version of its A320 aircraft with a New Engine Option (NEO). Named the A320neo, this airplane will have improvements in fuel burn, maintenance costs and gain additional range. First delivery is scheduled for 2016, and in the U.S. market, Virgin America has ordered 30 aircraft. In late 2011, Southwest Airlines became the launch customer for the new Boeing 737 MAX aircraft, which will offer improved fuel efficiency and lower operating costs compared to current B737 models. The B737 MAX is scheduled to begin service in the year 2017. These new next generation narrowbody aircraft types will serve TIA within the long-range forecast horizon, however, will not increase the passenger forecast as they are not expected to have an increase in the number of seats and will replace rather than add existing types in the market.

Airline Yield[13]

In spite of record capacity cutbacks triggered by a steep drop in demand, carriers lost pricing power during 2009, with nominal yield falling 8.9 percent (down 8.6 percent in real terms) according to the ATA. According to the FAA, despite continued capacity reductions, lackluster demand will keep fares in check in 2010, resulting in a modest increase in nominal yield of 3.9 percent (2.5 percent in real terms). For the entire forecast period, increases in nominal yields are projected to grow at a rate of 1.1 percent a year, while in real terms they are projected to decline an average of 0.8 percent a year. The decline in real yields over the forecast period assumes competition between carriers and convergence of cost structures between network carriers and their low-cost counterparts. The convergence arises from gains in productivity as network carriers retire fuel-inefficient aircraft and hold the line on labor costs while low-cost carriers contend with aging fleets, maturing work forces and unionization.

[13] U.S. Federal Aviation Administration, FAA Aerospace Forecast, Fiscal Years 2010 - 2030

Airport Security

It is assumed that passenger confidence in enhanced security will return as numerous issues pertaining to X-ray technology linked to privacy and enhanced pat-downs that many passengers considered intrusive, abates. Additionally, it is assumed that the TSA will continue to be the agency responsible for airport passenger screening in favor of a private program throughout the forecast horizon.

Fuel Costs

The level of oil prices are determinants in the supply of and demand for air travel and have a direct impact on the profitability of the industry. Oil prices are assumed to remain high by historical standards. Oil prices rise as the world economy recovers from the recession, but are kept in check as technological improvements act as a counterbalance to rising prices. According to the FAA, the refiners acquisition cost of oil will almost double between 2009 and 2030, rising from $54 to $104 per barrel.

3.4 TUCSON AIR TRADE AREA

The primary geographic area served by an airport is generally referred to as the "Air Trade Area". For purposes of this report, the Air Trade Area is the Tucson Metropolitan Statistical Area as defined by the U.S. Census Bureau which includes the counties of Pima and Santa Cruz. Cities within these counties include Tucson, Oro Valley, Green Valley, Patagonia, Three Points, Sells, San Luis, Pisinimo, Santa Rosa, Marana, Catalina and Nogales. A map of the Tucson Air Trade Area is shown in **Figure 3-1**.

TIA is the largest and most important airport in the Tucson Air Trade Area. Despite the Tucson Air Trade Area only being comprised of two counties, the Airport does service passengers from additional counties including Pinal, Cochis and Graham.

3.4.1 Socio-Economic Base

The Pima Association of Governments estimated in July 2009 that the counties' population totaled 1,018,012. Arizona is the nation's seventh-youngest state, and the median age in the City of Tucson is 33.2 years old and in Pima County is 37.14 years old, according to the 2008 U.S. Census Bureau's American Community Survey. There are more than 489,600 people in Tucson's civilian labor force. It is estimated there are more than 1,200 high-tech businesses employing 50,000 people, and growth in the high-tech and "clean" manufacturing continues. This represents just one of the trends that will positively affect the Tucson region's workforce by educating current inhabitants and training an influx of new young, educated workers.

Table 3-2 shows historic and forecast population, employment, and income data obtained from Woods & Poole Economics, Inc., an independent, non-partisan economic research organization. Sources of data utilized by Woods & Poole include the U.S. Department of Labor and the U.S. Department of Commerce.

[14] 2008 American Community Survey

Master Plan Update

HNTB TUCSON INTERNATIONAL AIRPORT

TUCSON AIR TRADE AREA

Table 3-2: Tucson Air Trade Area Statistics

	Calendar Year	Population	Employment	Personal Income ($2005)
Historical	2000	848,521	440,660	$23,481,779,000
	2001	865,694	439,795	$23,969,069,000
	2002	886,063	439,405	$24,253,379,000
	2003	903,320	446,987	$24,876,941,000
	2004	924,205	465,660	$26,572,496,000
	2005	948,965	480,384	$28,574,003,000
	2006	975,476	502,232	$30,461,563,000
	2007	996,593	516,729	$31,366,293,000
	2008	1,009,832	520,444	$31,535,511,000
Forecast	2009	1,020,200	519,527	$31,181,663,000
	2010	1,038,344	520,332	$30,947,100,000
	2011	1,056,472	534,145	$31,933,167,000
	2012	1,074,716	542,233	$32,874,671,000
	2013	1,093,059	550,439	$33,840,510,000
	2014	1,111,516	558,768	$34,831,015,000
	2015	1,130,037	567,226	$35,846,877,000
	2020	1,223,638	611,459	$41,326,348,000
	2025	1,318,500	659,111	$47,530,898,000
	2030	1,413,685	710,430	$54,506,165,000
	2035	1,508,947	765,677	$62,309,561,000
	2040	1,604,666	825,133	$70,999,852,000
Average Annual Compound Growth Rates (AACGR)				
Historical	2000 - 2004	2.2%	1.4%	3.1%
	2005 - 2009	1.8%	2.0%	2.2%
Forecast	2010 - 2015	1.7%	1.7%	3.0%
	2015 - 2020	1.6%	1.5%	2.9%
	2020 - 2025	1.5%	1.5%	2.8%
	2025 - 2030	1.4%	1.5%	2.8%
	2030 - 2035	1.3%	1.5%	2.7%
	2035 - 2040	1.2%	1.5%	2.6%
	2010 - 2040	1.5%	1.5%	2.8%

Source: Woods & Poole Economics, Inc.

3.4.2 Economic Development

High quality and attractively priced air services have a vital role in regional development. Despite the growth of electronic communications, U.S. businesses still rely on face-to-face contact. Economy-wide cost pressures have made businesses cost sensitive and reluctant to finance long and circuitous employee travel. Tourists seek to spend as much time as possible at their destination and pay as little as possible. They usually have a wide choice of places to visit. Both the business traveler and the tourist seek economical and high quality air travel and communities lacking this asset will be at a competitive disadvantage.

3.4.3 Arizona Economic Impact

Over 35 million travelers visited Arizona in 2009 spending more than $16 billion[15]. Spending by travelers in 2009 directly generated:

- $2.4 billion in local, state and federal tax revenues,
- 157,000 travel industry-related direct primary jobs, and
- 290,000 travel industry-related secondary employment.

Travel industry earnings are spread through the entire state exerting a stabilizing and diversifying effect on Arizona's economy. Although Arizona experienced a 10.2 percent decline in travel spending from 2008, this was an expected decline. This industry has been challenged by many of today's current issues such as the condition of the national economy, the negative perception of hosting business meetings or conventions at resorts and the stigma of public amalgamation such as brought forth by the H1N1 virus. Furthermore, in comparison to travel to the U.S., the worldwide recession had a profound effect on the travel industry. A number of factors have been especially important with response to the Arizona travel industry:

- Arizona (as well as other western states) is more dependent on air travel than other regions of the country. The contraction of capacity by the air carriers has reduced travel to Arizona.
- The economic recession and housing crash have been more severe in Arizona than in other regions of the country.
- The contraction in visitation and related economic impacts began to affect Arizona earlier than the U.S. in general. The decline in employment in the state has consequently been greater, as changes in employment typically lag consumer spending and business revenue.

3.4.4 Tucson Business Community

The Tucson region boasts a diverse cross-section of businesses including a world-class travel and tourism industry, a resurging mining sector and a growing clean manufacturing presence. Tucson is the home to major military installations, prominent companies in the high tech and aerospace industries and major medical and research facilities. The University of Arizona, ranked among the top 20 public research

[15] Arizona Office of Tourism

universities nationwide, is located in Tucson as well as one of the largest community colleges in the nation, Pima Community College.

In 2010, the University of Arizona was one of the largest public sector employers with 10,363 employees. The University is an integral part of the local economy and receives almost a half billion dollars in research grants each year. The remaining large employers represent a balanced mix of health care, retail trade, education, government and military entities. **Table 3-3** lists the top employers in the Tucson Air Trade Area.

Table 3-3: 2010 Top Employers in Southern Arizona

No.	Employer	Number of Employees	No.	Employer	Number of Employees
1	Raytheon Missile Systems	12,140	1	University of Arizona	10,363
2	Wal-Mart Stores Inc	7,192	2	State of Arizona	8,708
3	Carondelet Health Network	4,566	3	Davis-Monthan Air Force Base	7,755
4	Freeport-McMoRan Copper & Gold	3,997	4	Tucson Unified School District	7,012
5	University Medical Center Corp	3,542	5	U.S. Army Intelligence Center	6,236
6	Fry's Food Stores	3,109	6	Pima County	6,235
7	TMC HealthCare	3,050	7	City of Tucson	5,399
8	Corrections Corp. of America	2,512	8	Tohono O'odham Nation	4,353
9	Citi Group	2,500	9	U.S. Border Patrol	3,530
10	University Physicians Healthcare	2,219	10	Pinal County	2,455
11	Asarco LLC	2,125			
12	Southern Arizona VA Health Care	2,117			
13	Target Stores Inc	1,900			
14	Bashas' Inc	1,900			
15	Afni Inc	1,893			
16	Safeway Inc	1,685			
17	Northwest Medical Center	1,658			
18	Walgreens	1,511			
19	APAC Customer Service	1,475			
20	IBM	1,400			
21	TEP/UniSource Energy	1,226			
22	Circle K Stores	1,180			
23	Long Realty	1,150			
24	Home Depot	1,100			
25	Eurofresh Inc	1,009			

Source: Pima Association of Governments

3.4.5 Tucson Tourism Industry

Tourism is another major industry in Tucson, bringing in $2 billion-per-year and over 3.5 million visitors annually due to Tucson's numerous resorts, hotels, and attractions. One of the major annual attractions is the Tucson Gem and Mineral Show and other associated events, all held generally in the first two weeks of February. These associated shows (such as gems, jewelry, beads, and fossils) are held throughout Tucson with 43 different locations in 2010. This makes Tucson the largest venue in the world for such a show.

During the past three years, investment commitments to downtown Tucson have reached more than half a billion dollars and resulted in new construction and renovations aimed to highlight Tucson's urban appeal against its desert backdrop. The tourist season in Tucson lasts from October to May, when so-called "snowbirds" flock southwestward from less hospitable climates. Snowbirds are attracted by Tucson's mild winters and contribute to the local economy. They often purchase second homes in Tucson and nearby areas, contributing significantly to the property tax base.

La Fiesta de los Vaqueros Rodeo celebrates the Southwest's rustic traditions with a nine-day event centered on the Tucson Rodeo, one of the top 20 professional rodeos in North America. Additionally, major golf championships- are often held in Tucson. In 2008, the *Accenture Match Play Golf Championship* brought in an estimated $100 million to the Tucson area and produced $1.5 million for state charities. Over the past decade, Tucson has become home to some of the world's finest spa resorts. These include Canyon Ranch and the Miraval, Life in Balance Resort & Spa, both of which were voted among the "World's Best Destination Spas" by the readers of Travel + Leisure. Other resorts are undergoing renovations and expanding their services to keep up with the area's growing popularity.

Tourism from Mexico also helped Tucson by providing $968.7 million in direct economic benefit in 2008. Tourists from Mexico come to purchase goods that are not readily available in their country.

3.5 TUCSON AIR SERVICE MARKET

3.5.1 Origin- Destination Passengers

The top 25 origin-destination (O&D) markets at TIA are mainly comprised of cities served on a non-stop basis. TIA recorded a total of 3.3 million O&D annual passengers from the 4th quarter of 2009 until the 3rd quarter of 2010. Some large O&D markets, however, are not served non-stop and could potentially be viewed as air service targets for the airport, namely Portland, Boston, Sacramento, Philadelphia and the New York City region. **Table 3-4** lists TIA's Top 25 O&D markets.

Table 3-4: 2010 Top 25 Origin-Destination Markets, 4th Quarter 2009 thru 3rd Quarter 2010

Rank	Market	Airport Code	O&D[1] Passengers
1	Los Angeles	LAX	243,420
2	Denver	DEN	195,290
3	Las Vegas	LAS	194,310
4	San Diego	SAN	155,280
5	Seattle/Tacoma	SEA	118,860
6	Chicago O'Hare	ORD	111,150
7	Dallas/Ft. Worth	DFW	87,330
8	Minneapolis/St. Paul	MSP	77,750
9	Washington Reagan National	DCA	71,810
10	San Francisco	SFO	63,760
11	Chicago Midway	MDW	61,800
12	Salt Lake City	SLC	61,040
13	Albuquerque	ABQ	60,390
14	Oakland	OAK	60,330
15	Portland	PDX	58,950
16	Boston	BOS	57,600
17	New York LaGuardia	LGA	53,490
18	Detroit	DTW	53,400
19	Philadelphia	PHL	51,320
20	San Jose	SJC	50,710
21	Atlanta	ATL	47,770
22	Baltimore/Washington	BWI	46,930
23	Sacramento	SMF	42,940
24	Washington Dulles	IAD	42,930
25	Newark	EWR	41,430
	All Other Markets		1,217,300
	Total Origin-Destination Passengers		**3,327,290**

Source: DOT 10% Ticket Sample Survey
Notes: [1] O&D = Origin and Destination

3.5.2 Average Fares and Load Factors

Table 3-5 lists historical average fares, yield (measure of average fare paid per mile) and load factors (occupancy). **Table 3-5** also lists how O&D traffic has fluctuated in the same time period. TIA's average fare in 2009 was $148.70 down 5.7 percent from the previous year due to downturn of the US economy. For the same time period, the average fare of PHX was $132.84, or 10.7 percent less that at TIA. Given the fierce competition between US Airways and Southwest at PHX, what ensues are highly diluted fares that stimulate the market and continue to generate passenger leakage from the Tucson Air Trade Area. Notwithstanding this complex air service region, TIA's load factors remain high achieving levels between 76 percent and 82 percent between 2004 and 2009. These high load factor levels are a testament to the region's recent economic growth and resiliency during the current economic downturn.

Table 3-5: Historical Origin-Destination Passengers, Average Fares, Yield and Load Factors

Calendar Year	O&D[1] Passengers	Average Fares ($)	Yield (cents)	Load Factors (%)
2000	3,276,180	$142.17	12.7	69%
2001	3,219,590	$130.10	11.5	69%
2002	3,143,510	$126.86	10.9	66%
2003	3,142,200	$129.30	11.1	74%
2004	3,421,880	$129.90	11.0	78%
2005	3,758,620	$134.69	11.2	81%
2006	3,840,740	$147.35	12.1	82%
2007	3,977,940	$147.34	12.1	78%
2008	3,786,550	$157.71	13.0	78%
2009	3,282,650	$148.70	12.1	82%
2010 Estimate	3,344,992	$158.22	12.7	76%

Source: DOT 10% Ticket Sample Survey; T-100
Notes: [1] O&D = Origin and Destination

3.5.3 Fleet Mix

The current fleet mix at TIA according to the published OAG schedule for a peak schedule in March is comprised mainly of narrowbody aircraft. The average number of departing seats per aircraft is 107 and the largest number of departures is performed by the Bombardier CRJ-200 at 19 percent of total operations. It is assumed that the fleet mix at TIA will not change substantially throughout the forecast horizon. However, departing seats per aircraft will likely rise as 50-seat regional jets are phased out. Narrowbody aircraft technology has allowed smaller airplanes to fly longer distances at substantial fuel savings. In the case of TIA, narrowbodies dominating the airport's fleet mix such as the Airbus A319/A320 and the Boeing 737-700/800 have sufficient range to serve any U.S. destination including Anchorage, Alaska and Honolulu, Hawaii. These airplanes have the right size and flight economics to continue comprising the bulk of TIA's fleet. Widebodies, on the other hand, are too large to economically serve TIA's market mix. Widebodies in the U.S. domestic market are limited in number and usually connect airline hubs in large origin-destination markets such as Chicago, Illinois to Los Angeles, California at peak hours. These types of aircraft are not assumed to be part of TIA's fleet mix throughout the forecast horizon. **Table 3-6** shows the 2011 peak month average week day fleet mix at TIA.

Table 3-6: 2011 Peak Month Average Week Day Fleet Mix

Aircraft Type	Aircraft Code	Number of Seats	Daily Departures from TIA	Percent of Departures (%)
Airbus A319	319	136	4	6.3%
Airbus A320	320	148	3	4.8%
Boeing 737-300	733	137	7	11.1%
Boeing 737-500	735	122	2	3.2%
Boeing 737-700	73G	137	10	15.9%
Boeing 737-800	73H	160	1	1.6%
Canadair CRJ-200	CRJ	50	12	19.0%
Canadair CRJ-700	CR7	66	3	4.8%
Canadair CRJ-900	CR9	86	9	14.3%
Douglas MD-80	M80	136	6	9.5%
Douglas MD-83	M83	136	4	6.3%
Embraer 145	ERJ	50	2	3.2%

Source: Official Airline Guide

3.6 FORECAST METHODOLOGY AND RESULTS

After analyzing market metrics, the Tucson Air Trade Area, and taking into consideration factors affecting aviation demand as described in this document, the TAF was used as the selected forecast for TIA's Master Plan Update. The FAA develops and employs the TAF as its sole source of aviation activity forecasts for internal planning purposes. The FAA, however, is open to the verification and validation of the TAF via independent forecast exercises prepared with the use of the latest aviation activity, demographic and socio-economic data available. This justification process is not meant to be contrary to the efforts of the FAA, but to help validate the FAA's conclusions via independent analysis performed on the airport operator's behalf.

A detailed forecast validation exercise was performed to test the enplanement forecast of the TIA's TAF using multi-step approach to test and verify the FAA's conclusion. The first was an econometric approach (top-down) to test the FAA's long-term growth rates via statistical equations designed to predict future enplaned passenger activity levels. The second was an air service approach (bottom-up) where future airline design day schedules were constructed using empirical knowledge of the markets served from the TIA to predict future airline activity based on reasonable air service assumptions calibrated using FAA airline metrics.

For air carrier operations, the design day schedules were utilized to tally the number of annual movements at the TIA based on a peak month average week day. They were then annualized and compared to the TAF figures for the benchmark years of 2015, 2020, 2025 and 2030. The difference in movements from the design day schedules compared to the TAF was in the range of 30 to 32 percent. This difference could be accounted by the fact that TAF operations include air taxi and air cargo/integrator movements. The design day schedules include only passenger air carrier activity which account for approximately 70 percent of commercial movements at TIA.

'Other Operations', as referenced in the TIA Forecast of Aviation Activity tables, include general aviation and military activity at TIA. TIA handles a combination of local and itinerant general aviation aircraft as

well as tactical, strategic and helicopter operations conducted by the military. The approach to general aviation activity included analyzing historical figures for the different types of aircraft used in the FAA's categorization including single and multi-engine piston, turbo-prop, jet, rotorcraft and experimental aircraft types. Each of these types has different growth profiles. However, at the aggregate level, the FAA predicts low growth levels for the general aviation sector in the long-term.

3.6.1 Econometric Approach (Top Down)

An aggregate regression model was constructed to test the TAF volumes through an independent exercise. The results of the aggregate regression equation tested the TAF projections and confirmed that the growth rates as projected by the FAA were deemed reasonable in support of the TIA Master Plan Update. This "top-down" approach is supported by the FAA which uses a macro-demand allocation model to develop the TAF and is in-favor of independent verification at the micro-level.

Aggregate Regression Equation

Air transportation demand is derived from the demographic and economic profile of a region. O&D passengers are those passengers who arrive at or depart from an airport; they do not change aircraft at the subject airport. The total number of O&D passengers is a reflection of a region's attractiveness as a place in which to live, visit, work, and conduct business. The majority of TIA's passengers are considered O&D since the airport does not have an airline tenant which utilizes the facility as a transfer hub. Roughly 93 to 95 percent of TIA's air traffic is considered local or O&D traffic and the remainder considered transfer traffic via Southwest Airlines and between/among other carriers.

The TAF forecast growth figures were tested using a methodology that has been successfully used and accepted by most major airports and the FAA – linear regression. The methodology involves collecting and analyzing historical data and uses standard statistical techniques to identify relationships between elements of historical information, which can then be used to project future activity.

Historical enplanement data (the independent variable) was paired against socio-economic and fare data (the independent variables) to establish a statistical relationship between the demographic and economic variables and the demand for air travel. With this mathematical relationship (the regression equation) established, the forecast of demographic variables and airline yield were used to project future levels of enplanements.

Econometric Approach Results

A series of regressions were run to test the long-term growth rates of the FAA as published in their 2010 TAF report for TIA. For this independent analysis, TIA enplanements were used as the dependent variable and population, employment, average air fares on a cents per mile basis (yield) and personal income as the independent variables. The results of the regression equations confirmed that the TAF is in-line with the independent projections. **Table 3-7** summarizes the statistical outputs of the selected regressions.

Table 3-7: Summary of Regression Equation Outputs

Selected Regression	**Regression 1**	**Regression 2**	**Regression 3**	**Regression 4**
Independent Variable (s)	Personal Income	Population / Personal Income	Employment / Personal Income (with logarithm)	Population / Employment / Yield / Personal Income
Multiple R	0.878	0.879	0.914	0.929
R Square	0.772	0.773	0.835	0.862
Adjusted R Square	0.759	0.747	0.816	0.836
Intercept Coeff	721281.4	1094135.0	-1.72084	645271.8
2009–2030 AACGR	2.6%	2.7%	2.1%	1.4%

Source: HNTB Analysis

3.6.2 Air Service Approach (Bottom-Up)

After confirming TAF passenger growth rates via an econometric approach, airport-specific design day schedules were developed for passenger airlines at TIA. The flight schedules were prepared for future years and were designed to be a further test of the TAF's validity in predicting future enplanements and operations at TIA. Airline planners frequently forecast their future activity through a bottom-up exercise which looks at flight activity based on fleet mix, load factors, market growth and competitive assumptions. The approach and methodology for each forecast component is outlined below.

Airline Enplanements and Operations Forecasts

A peak month average week day schedule was obtained from the OAG. Looking at an average day in the peak month gives planners a good indication of what the operational conditions would be at TIA during the busiest season of the year and using this as a baseline allows for a more accurate picture when planning for future facilities. This baseline schedule was then calibrated by applying FAA published load factors and further annualized to reflect near actual annual volumes. Using this baseline schedule and air service principles, current industry outlook reports and future aircraft orders, future design day schedules were constructed for 2015, 2020, 2025 and 2030. All the changes made in future schedules were documented for discussion purposes and to allow for further revisions and calibration.

Adding Frequencies

Insofar as air carriers add and drop city pairs and frequencies, a similar exercise was performed building on the baseline schedule. By analyzing air service trends, new flights were added to markets at the appropriate time of day where demand warranted. For example, in 2015 it would serve to reason that Southwest Airlines would add a departure from TIA to its mid-Atlantic focus city at Baltimore/Washington International Airport (BWI). Therefore, the 2015 schedule reflects this increased service at an average mainline load factor. This exercise was repeated (and tested) for all future schedules. This "bottom-up" approach using principals of air service as guidelines for increased scheduled activity also provides considerable detail including specific aircraft types and engine types if required for environmental analysis.

Change in Profile

If there was a good reason to believe a particular city pair would not likely be sustainable in the future or that an existing carrier would serve a new destination, these changes were made and documented. Additionally, through the many mergers and acquisitions which have occurred in the past years, carrier names and their regional affiliates were changed to reflect new identities and their fleets conformed based on present intelligence. An example is the change from all Continental Airlines and Continental Express designations to United Airlines and United Express.

Change of Gauge

In consulting airline fleet mix and fleet orders/options, certain city pairs served by certain carriers would increase (or decrease) the size of deployed aircraft. For example, the Boeing 737-800 as a replacement aircraft for earlier models has considerably more seat capacity (depending on carrier and configuration). Given the long-term nature of the forecast and current aging aircraft types in the fleets of carriers such as Southwest Airlines (Boeing 737-300) and American Airlines (Douglas MD-80), change of gauge assumptions were made based on new aircraft currently being operated and on-order from manufacturers.

New Entrants

Over the forecast horizon, select new entrants were included based on the growth of existing US and Canadian carriers and TIA's present travel profile as a large and growing tourist destination. The successful commencement and aggressive growth of carriers such as JetBlue Airways, WestJet and VivaAerobus in the past decade were observed and taken into account when preparing TIA's design day schedules. There is sound reason to assume that these (or equivalent) carriers will commence service at TIA given their expansion plans, traveler profiles, fleet acquisition plans and trends of the current markets they serve or are planning to serve.

Bottom-Up Approach Results

The design day schedules confirmed TAF enplanements and passed the test of "reasonableness" in light of the FAA's long-term passenger assumptions at the TIA. By adding flights to a peak month average weekday schedule and applying FAA forecast load factors to airline capacity, a near perfect match with TAF enplanements was observed given a conservative addition of markets and airlines to TIA.

Qualitative Approach

The TAF forecasts and the resulting design day schedules were reviewed. Assumptions were identified, incorporated into the design day schedules and used to calibrate the model by applying FAA load factors as published in their latest FAA Aerospace Forecast for Fiscal Year 2011 to Fiscal Year 2031.

Assumptions include the following:

- Southwest Airlines starting service to Dallas Love Field twice daily after the repeal of the Wright Amendment in the 2015 design day schedule.
- JetBlue starting service to New York JFK once daily in the 2015 design day schedule flying during daylight hours.
- Southwest Airlines starting service to Baltimore/Washington International Airport once daily in the 2015 design day schedule.
- Delta Air Lines starting service to Detroit Metropolitan Airport twice daily utilizing 70-seat Regional Jets in the 2015 design day schedule.
- WestJet starting services to Vancouver twice per week in the 2015 design day schedule and twice per week to Calgary in the 2020 design day schedule.
- Alaska Airlines starting service to Portland, Oregon, in the 2015 design day schedule on a seasonal basis
- VivaAerobus starting service to Guadalajara once daily in the 2015 design day schedule.
- US Airways starting service to Charlotte, North Carolina, twice daily in the 2025 design day schedule.
- United Airlines starting service to Washington Dulles in the 2025 design day schedule on a seasonal basis.

3.6.3 Forecast Results

Baseline Forecast

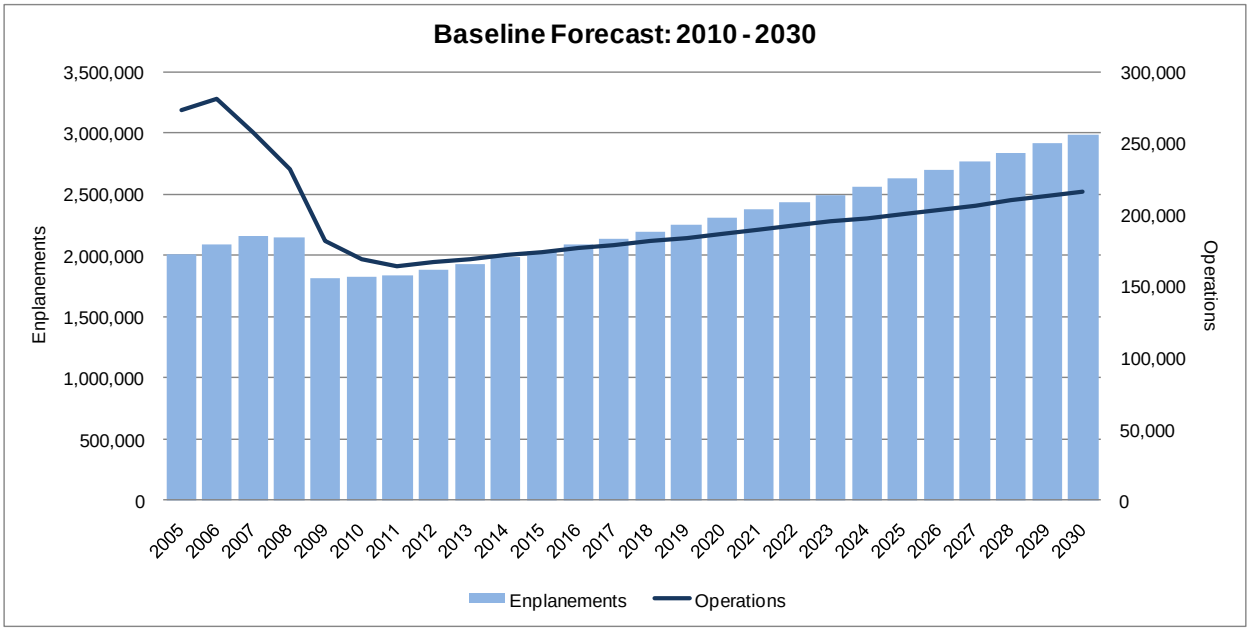
As shown in **Table 3-8** as well as **Figure 3-2**, the baseline forecast for TIA has air carrier enplaned passengers projected to increase from 1.8 million in 2010 to just shy of 3.0 million in 2030 at an average annual compound growth rate of 2.5 percent. The forecast assumes an increase in Gross Domestic Product (GDP) output and a general economic recovery starting in 2011 keeping TIA's growth rate steady throughout the forecast horizon. Air carrier operations are projected to grow at an average annual compound growth rate of 2.1 percent, general aviation at a rate of 1.0 percent, military with capped movements at a rate of 0.0 percent for a total operations growth of 1.2 percent throughout the forecast horizon.

Table 3-8: Forecast of Aviation Activity - Baseline

	Calendar Year	Enplanements Air Carrier	Operations Air Carrier	Other Operations GA	Other Operations Military	Total Operations
Historical	2000	1,781,018	58,767	153,304	47,835	**259,906**
	2001	1,805,655	59,275	155,614	43,142	**258,031**
	2002	1,651,267	59,491	157,996	48,246	**265,733**
	2003	1,708,236	53,644	162,483	46,444	**262,571**
	2004	1,815,504	55,453	141,593	47,836	**244,882**
	2005	2,009,608	71,026	158,026	43,682	**272,734**
	2006	2,087,544	74,003	164,343	43,032	**281,378**
	2007	2,157,125	71,414	154,408	31,705	**257,527**
	2008	2,146,141	73,565	129,526	28,303	**231,394**
	2009	1,808,043	57,505	94,471	29,413	**181,389**
Forecast	2010	1,822,212	58,535	79,363	30,695	**168,593**
	2011	1,835,352	58,665	74,833	30,695	**164,193**
	2012	1,882,833	59,954	75,841	30,695	**166,490**
	2013	1,931,556	61,269	76,864	30,695	**168,828**
	2014	1,981,561	62,613	77,902	30,695	**171,210**
	2015	2,032,876	63,987	78,954	30,695	**173,636**
	2020	2,310,385	71,325	84,447	30,695	**186,467**
	2025	2,626,321	79,502	90,342	30,695	**200,539**
	2030	2,986,074	88,618	96,675	30,695	**215,988**
Average Annual Compound Growth Rates (AACGR)						
Historical	2000 - 2004	0.5%	-1.4%	-2.0%	0.0%	-1.5%
	2005 - 2009	-2.6%	-5.1%	-12.1%	-9.4%	-9.7%
Forecast	2010 - 2015	2.2%	1.8%	-0.1%	0.0%	0.6%
	2015 - 2020	2.6%	2.2%	1.4%	0.0%	1.4%
	2020 - 2025	2.6%	2.2%	1.4%	0.0%	1.5%
	2025 - 2030	2.6%	2.2%	1.4%	0.0%	1.5%
	2010 - 2030	2.5%	2.1%	1.0%	0.0%	1.2%

Source: FAA validated by HNTB

Figure 3-2: Forecast of Aviation Activity - Baseline



Source: HNTB Analysis

Forecast Scenarios

For the purposes of the TIA Master Plan Update, high and low forecast scenarios were prepared for sensitivity analysis purposes and to illustrate the variance of aviation activity from the baseline throughout the forecast horizon. **Table 3-9** and **Table 3-10** as well as **Figure 3-3** and **Figure 3-4** show the TIA's high and low forecasts, respectively. The high forecast enplaned passenger figure varies by 19.1 percent in 2030 and total operations vary by 9.7 percent in the same year. The low forecast enplaned passenger figure varies by 19.8 percent and total operations by 8.0 percent in 2030.

In the high forecast, enplaned passengers are projected to grow from 1.8 million in 2010 to 3.7 million in 2030 at an average annual compound rate of 3.6 percent. Air carrier operations are projected to grow at an average annual compound growth rate of 3.2 percent, general aviation at a rate of 1.1 percent, military with capped movements at a rate of 0.0 percent for a total operations growth of 1.8 percent throughout the forecast horizon.

In the low forecast, enplaned passengers are projected to grow from 1.8 million in 2010 to 2.5 million in 2030 at an average annual compound rate of 1.6 percent. Air carrier operations are projected to grow at an average annual compound growth rate of 1.2 percent, general aviation at a rate of 0.9 percent, military with capped movements at a rate of 0.0 percent for a total operations growth of 0.9 percent throughout the forecast horizon.

Table 3-9: Forecast of Aviation Activity - High

	Calendar Year	Enplanements Air Carrier	Operations Air Carrier	Other Operations GA	Other Operations Military	Total Operations
Historical	2000	1,781,018	58,767	153,304	47,835	**259,906**
	2001	1,805,655	59,275	155,614	43,142	**258,031**
	2002	1,651,267	59,491	157,996	48,246	**265,733**
	2003	1,708,236	53,644	162,483	46,444	**262,571**
	2004	1,815,504	55,453	141,593	47,836	**244,882**
	2005	2,009,608	71,026	158,026	43,682	**272,734**
	2006	2,087,544	74,003	164,343	43,032	**281,378**
	2007	2,157,125	71,414	154,408	31,705	**257,527**
	2008	2,146,141	73,565	129,526	28,303	**231,394**
	2009	1,808,043	57,505	94,471	29,413	**181,389**
Forecast	2010	1,822,212	58,535	79,363	30,695	**168,593**
	2011	1,835,332	58,664	74,839	30,695	**164,199**
	2012	1,883,051	59,961	75,812	30,695	**166,468**
	2013	1,937,659	61,463	76,798	30,695	**168,955**
	2014	1,999,664	63,185	77,873	30,695	**171,753**
	2015	2,069,652	65,145	79,041	30,695	**174,881**
	2020	2,493,918	76,991	85,150	30,695	**192,836**
	2025	3,034,232	91,850	91,730	30,695	**214,275**
	2030	3,691,608	109,556	98,820	30,695	**239,071**
Average Annual Compound Growth Rates (AACGR)						
Historical	2000 - 2004	0.5%	-1.4%	-2.0%	0.0%	-1.5%
	2005 - 2009	-2.6%	-5.1%	-12.1%	-9.4%	-9.7%
Forecast	2010 - 2015	2.4%	1.9%	-0.5%	0.0%	0.5%
	2015 - 2020	3.7%	3.3%	1.5%	0.0%	1.9%
	2020 - 2025	4.0%	3.6%	1.5%	0.0%	2.1%
	2025 - 2030	4.0%	3.6%	1.5%	0.0%	2.2%
	2010 - 2030	3.6%	3.2%	1.1%	0.0%	1.8%

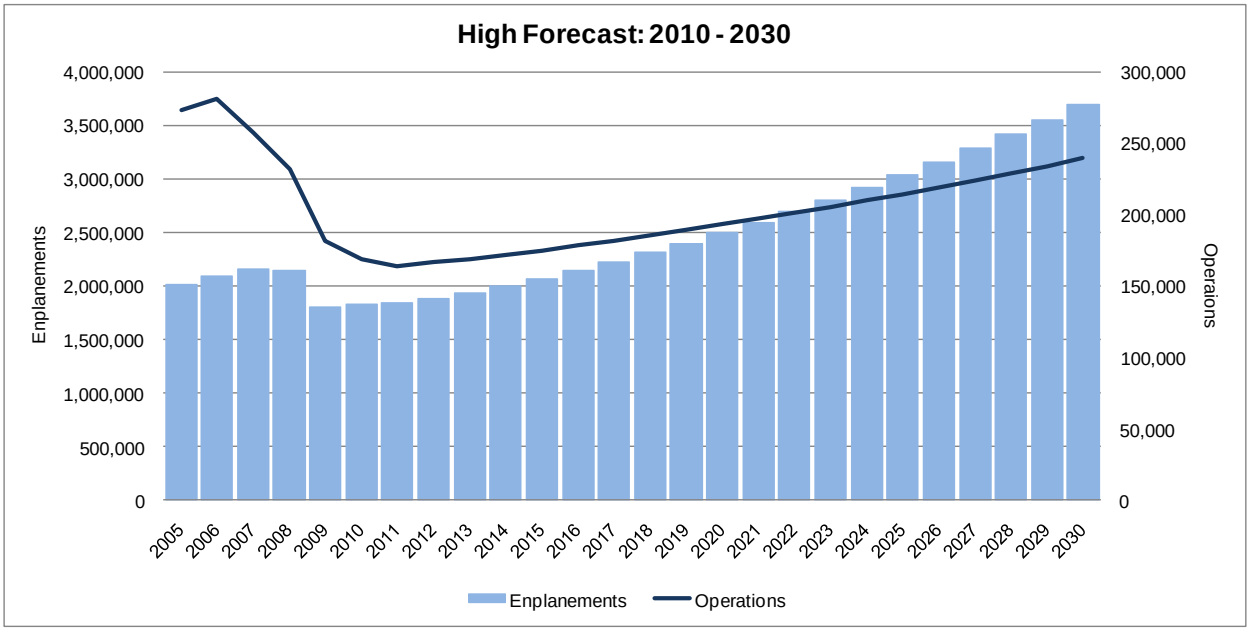
Source: FAA validated by HNTB Corporation

Table 3-10: Forecast of Aviation Activity - Low

	Calendar Year	Enplanements Air Carrier	Operations Air Carrier	Other Operations GA	Other Operations Military	Total Operations
Historical	2000	1,781,018	58,767	153,304	47,835	**259,906**
	2001	1,805,655	59,275	155,614	43,142	**258,031**
	2002	1,651,267	59,491	157,996	48,246	**265,733**
	2003	1,708,236	53,644	162,483	46,444	**262,571**
	2004	1,815,504	55,453	141,593	47,836	**244,882**
	2005	2,009,608	71,026	158,026	43,682	**272,734**
	2006	2,087,544	74,003	164,343	43,032	**281,378**
	2007	2,157,125	71,414	154,408	31,705	**257,527**
	2008	2,146,141	73,565	129,526	28,303	**231,394**
	2009	1,808,043	57,505	94,471	29,413	**181,389**
Forecast	2010	1,822,212	58,535	79,363	30,695	**168,593**
	2011	1,835,332	58,664	74,839	30,695	**164,199**
	2012	1,853,685	59,026	75,588	30,695	**165,309**
	2013	1,875,929	59,505	76,495	30,695	**166,694**
	2014	1,904,068	60,164	77,489	30,695	**168,349**
	2015	1,936,438	60,951	78,497	30,695	**170,143**
	2020	2,106,727	65,038	83,733	30,695	**179,466**
	2025	2,291,992	69,381	89,319	30,695	**189,396**
	2030	2,493,548	74,001	95,278	30,695	**199,974**
Average Annual Compound Growth Rates (AACGR)						
Historical	2000 - 2004	0.5%	-1.4%	-2.0%	0.0%	-1.5%
	2005 - 2009	-2.6%	-5.1%	-12.1%	-9.4%	-9.7%
Forecast	2010 - 2015	1.1%	0.7%	-0.6%	0.0%	0.0%
	2015 - 2020	1.7%	1.3%	1.3%	0.0%	1.1%
	2020 - 2025	1.7%	1.3%	1.3%	0.0%	1.1%
	2025 - 2030	1.7%	1.3%	1.3%	0.0%	1.1%
	2010 - 2030	1.6%	1.2%	0.9%	0.0%	0.9%

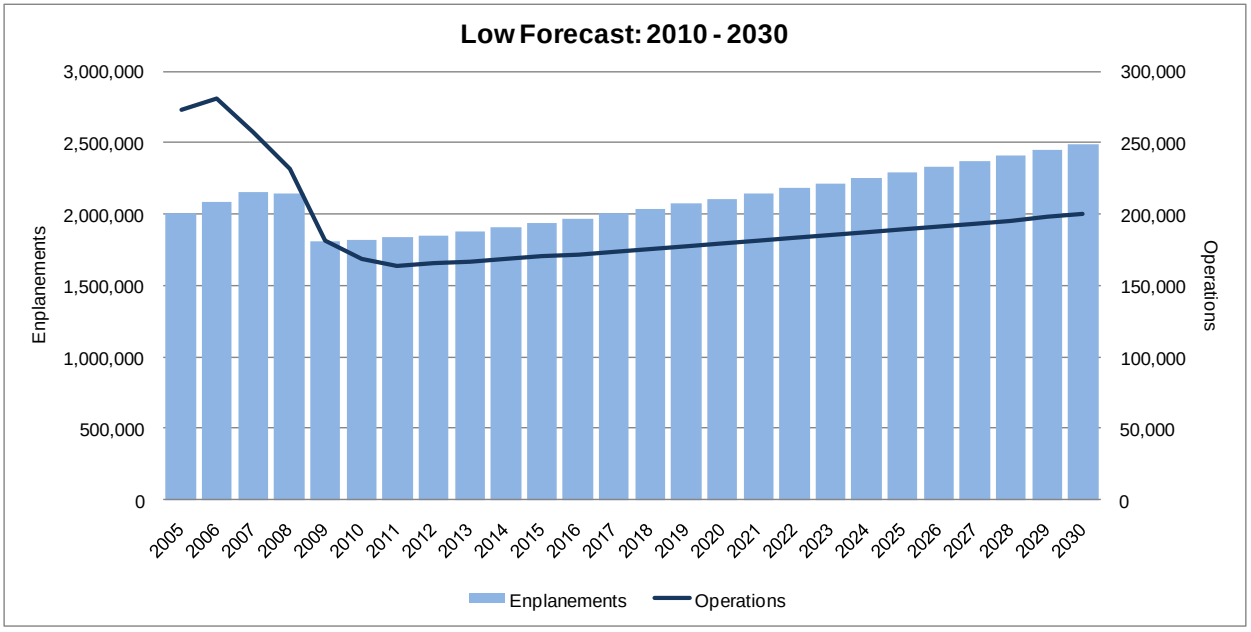
Source: FAA validated by HNTB

Figure 3-3: Forecast of Aviation Activity - High



Source: HNTB Analysis

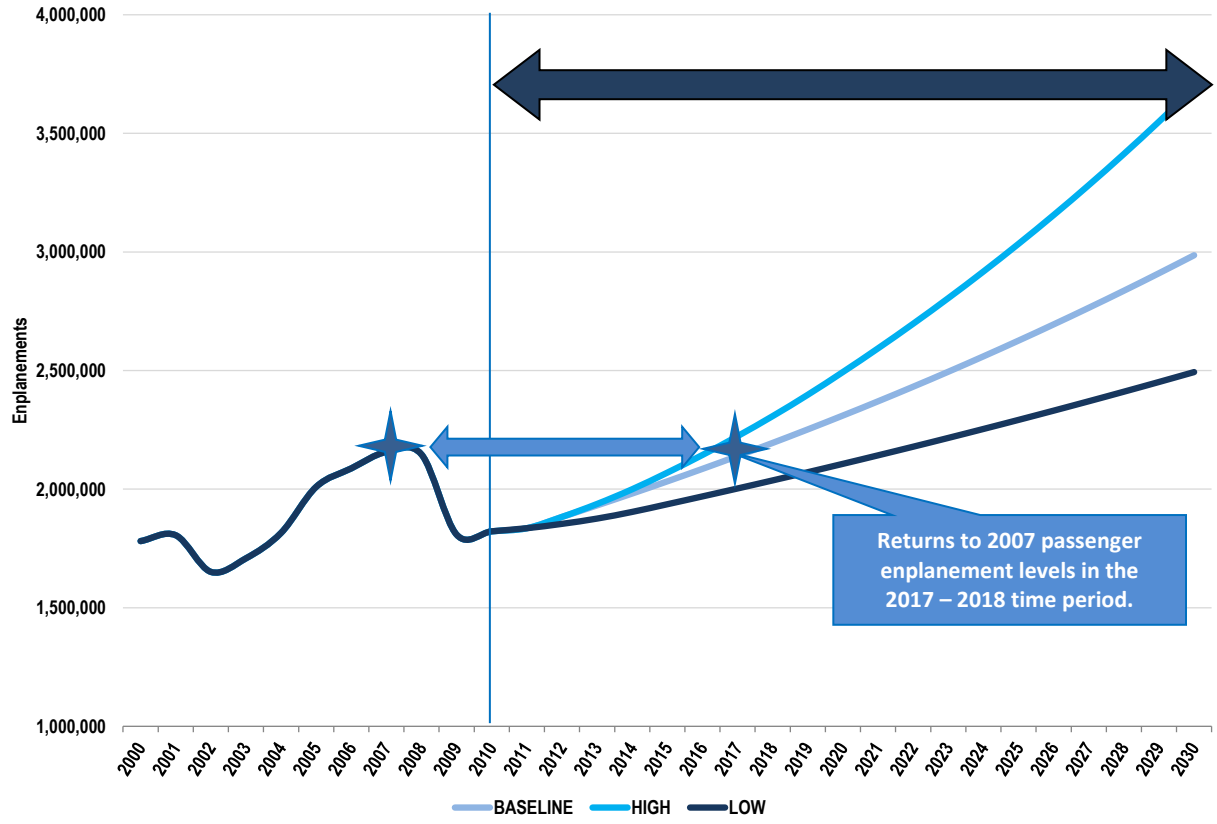
Figure 3-4: Forecast of Aviation Activity - Low



Source: HNTB Analysis

In summary, **Figure 3-5** combines enplaned passenger figure for the baseline, high, and low forecasts. Based on the growth rates, as projected in the baseline forecast, enplanements at TIA return to their 2007 high in the time period between 2017 and 2018.

Figure 3-5: Forecast of Aviation Activity, Enplaned Passengers – Baseline, High and Low



Source: HNTB Analysis