SAN ANGELO REGIONAL AIRPORT

AIRPORT MASTER PLAN

CHAPTER 2 - FORECASTS

centurion PLANNING AND DESIGN

INTRODUCTION

The Aviation Forecasts chapter of this Airport Master Plan analyzes current and future airport activity at the San Angelo Regional Airport (SJT). Forecasting provides a general idea of the magnitude of growth, as well as fluctuations in activity anticipated over a 20-year forecast period. They assist the Airport in determining existing and planned future facility needs based on airport activity level estimates and projections. Forecasts attempt to develop a realistic estimate of future changes; however, when conditions dramatically change, forecasts should be reviewed and updated. Forecasts developed for an Airport Master Plan are important to adequately plan, size, and sequence development of future facilities to meet future projected growth. Development at airports, however, is demand-based from actual numbers rather than forecasts.

To thoroughly analyze and develop a probable aviation forecast, a technical review has been completed using several methods to help quantify the potential aviation activity over the next 20 years. The forecasts for this Airport Master Plan study were prepared by the project team members including Centurion Planning & Design, Landrum and Brown, and C & S Companies.

FORECAST RATIONALE

Forecasting the demand for airport services is a critical step in the development of an airport. It allows an airport to examine its ability to satisfy the needs of the aircraft and people it serves, and to determine the approximate timing of necessary improvements by projecting airport user activity levels.

Forecasts developed for airport master plans and/or federal grants must be approved by the Federal Aviation Administration (FAA). The SJT Master Plan Aviation Activity Forecast was approved on May 24, 2020. It is the FAA's policy, listed in Advisory Circular 150/5070-6B, *Airport Master Plans*, that FAA approval of forecasts at non-hub airports with commercial service should be consistent with the Terminal Area Forecasts (TAF). Master plan forecasts for operations, based aircraft and enplanements are consistent with the TAF if they meet the following criteria:

1. Forecasts differ from the TAF by less than 10% in the five-year forecast and by less than 15% in the 10-year period, or
2. Forecasts do not affect the timing or scale of an airport project, or
3. Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems*.

The Airport Master Plan Advisory Circular also acknowledges that locally prepared forecast may contain a more detailed analysis of local economic conditions or development that is not considered when preparing the TAF. The TAF model used for this report is from the 2018 FAA TAF available in January 2018, also factored into this report is the Airports FAA Form 5010-1, *Airport Master Record*,

population and income data for the Metropolitan Statistical Area. This is the latest data available when the forecasting effort began for this airport master plan.

Finally, FAA Order 5090.3C states forecasts should be:

1. Realistic
2. Based on the latest available data
3. Reflect the current conditions at the airport
4. Supported by information in the study

Provide an adequate justification for the airport planning and development

Forecast Executive Summary

The following pages contain a great deal of analysis, information, and forecast methodology descriptions. To ease review of the materials we have provided a brief executive summary below

Summary of Commercial Aviation Forecast Findings

Passenger enplanements at the San Angelo Regional Airport (SJT) are forecasted to grow at a compounded annual growth rate (CAGR) of 1.2% over the coming 20 years

- In line with forecasted economic & population growth
- Resulting in 76,136 enplaned passengers by 2037
- Within 4.3% of the TAF (within 2.1% of 10-year forecast and 1.1% of 5-year forecast)

Growth will be driven by larger aircraft as number of operations are not forecasted to change significantly

- As seat capacity will grow at a 1.2% CAGR through 2037 – indicating flat load factors
- Current SJT 50-seat regional jet flying will evolve to all 76-seat jet flying by 2037
- This is in line with expected industry trends

While not reflected in the forecast information above, it has been determined there is potential for the reintroduction of a second airline at SJT

- Current American Airlines results are persuasive - good profitability & high load factors
- Demand exists, as 50% of traffic base "leaks" to other regional airports
- Should a second airline be introduced, forecast modeling estimates enplaned passenger volume could be as high as 101,192 by 2037
- United (UA) service to Houston (IAH) is compelling as UA plans to grow capacity 6% per year over the next 3 years, mostly with ERJ aircraft – this aircraft is a good fit for IAH-SJT service. Currently Houston ranks as the number 6 market served for people flying out of San Angelo. The drive distance from San Angelo to Houston further strengthens the case for new service by UA.

Summary of General Aviation Forecast Findings

General Aviation operations are expected to grow moderately over the next 20 years

- Itinerant operations expected to grow at 0.7% CAGR over next 20 years from 22,199 to 25,522.
- Local operations are forecasted to grow at a CAGR of 1.3% from 12,951 to 16,669.
- These forecasts are in line with planned economic growth but vary from the general aviation operations forecasted within the FAA TAF.

Combined with commercial operations, total SJT operations are expected to grow

- 0.8% CAGR by 2022, 0.6% by 2027 and 0.5% by 2037.
- These forecasts are in line with planned economic growth but vary slightly from the FAA TAF.

SJT Based Aircraft are forecasted to grow at 0.7% CAGR over the next 20 years

- 0.7% CAGR over 5-year and 10-year periods.
- Increasing from 176 based aircraft in 2017 to 202 by 2037.
- Varies slightly from the projected based aircraft on the FAA TAF

While the preferred general aviation operations forecast varies from the TAF general aviation operations forecasts, airports are often influenced by fluctuations in demographic and socioeconomic factors within their surrounding communities. Although modest, increases in population for the San Angelo MSA, combined with steady increases in employment and per capita income in the same MSA, have the potential to increase the Airport's general aviation activity.

For the purposes of this report, the data as reported on the current 5010 for the 12-month period ending December 31, 2018, served as the baseline data. While TAF uses a forecasted data, the information in the 5010 can be confirmed, and as described in detail later in the report, can account for the slight variation between the recommended forecasts and the TAF forecasts.

Economic Base for Air Traffic

Air travel demand is typically correlated with a region's demographic and economic characteristics. The economic strength of the Air Service Area has a major impact on the aviation activity at the Airport. The next sections review current economic trends and conditions in the Airport's Air Service Area and present data indicative of the Air Service Area's capability to generate growing demand for air transportation throughout the forecast period.

Socio-Economic Trends

Data for population, income, and gross regional product for the Air Service Area are discussed below. Parallel data for the United States and the State of Texas is shown to provide a basis of comparison to trends in the Air Service Area. Where available, historical data will be presented for the 2007-2017 period, which is representative of a longer-term trend and the most recent 10 years of historical data available. Where available, forecast data will be presented through 2037, so as to be consistent with air traffic forecasts presented later in this chapter.

Historical and Forecast Population

Population is a significant source of demand for air travel. **Table 2A** includes 2007 and 2017 population data and provides population trends in the Air Service Area, Texas and the U.S. during this period. Forecasts through 2037 are also included. Data in **Table 2A** below shows that between 2007 and 2017, the population in the Air Service Area increased from 107,774 to 120,712, or 12.0% (1.1% CAGR). During the same period, U.S. population increased by 9.4% (0.9% CAGR), while Texas grew 18.6% (1.7% CAGR).

TABLE 2A
Historical and Forecast Population (2007-2037)

	Historical Population		Forecast Population	Percent Change	CAGR[1/]	
Area	2007	2017	2037	2007-17	2007-2017	2017-2037
Air Service Area	**107,774**	**120,712**	**137,402**	**12.0%**	**1.1%**	**0.7%**
Texas	23,831,000	28,274,000	38,102,000	18.6%	1.7%	1.5%
United States	298,217,999	326,128,000	374,137,000	9.4%	0.9%	0.7%

Note:
1/ Compound annual growth rate.
Source: Woods & Poole Economics, U.S. Census Bureau

Population growth data are based on estimates of the Air Service Area's birth rate, death rate, and net in-migration. The forecast population increase in the Air Service Area for the period 2017 to 2037 reflects a CAGR of 0.7% and is comparable to the U.S. rate during the same period (0.7%), although less than ½ of Texas. The increase in new residents in the Air Service Area, approximates 1,000 between 2017 and 2037, is expected to generate additional demand for air service.

Household Income

As described in **Table 2B**, the average household income for the air service area was $97,866 in 2017 and is forecast to grow to $120,137 by 2037, or a 22.8% increase (1.03% CAGR). During this same time span, the U.S.' average household income is forecasted to increase from $113,991 to $145,160, or 27.3% (1.22% CAGR).

TABLE 2B
Median Household Income and Income Distribution (2017-2037)

	Air Service Area	Texas	United States
2016 Median Household	$42,855	$57,051	$59,039
2017 Average Household	$97,866	$116,535	$113,991
2037 Average Household	$120,137	$150,935	$145,160

		Household Income Distribution %	
2017 Household Income	**Air Service Area**	**Texas**	**United States**
Less than $19,999	23.0%	19.2%	18.5%
$20,000 to $44,999	30.7%	26.2%	24.9%
$45,000 - $74,999	22.8%	22.6%	23.0%
$75,000 - $99,999	11.6%	12.0%	12.6%
$100,000 - $199,999	11.8%	16.0%	16.7%
$200,000 or more	2.0%	4.1%	4.3%
Total	**100.0%**		**100.0%**
2037 Household Income			
Less than $20,000	17.0%	13.1%	12.7%
$20,000 to $45,000	22.8%	18.3%	17.6%
$45,000 - $75,000	27.9%	22.7%	22.7%
$75,000 - $99,999	16.0%	16.6%	17.3%
$100,000 - $199,999	16.4%	23.2%	23.7%
$200,000 or more	2.8%	6.0%	6.0%
Total	**100.0%**		**100.0%**

1/ Amounts are shown in current dollars
Source: Woods & Poole Economics

The percentage of higher income households, defined as those earning $100,000 or more annually, within the Air Service Area is another key indicator of potential demand for air travel services. In 2017, approximately 6,300 Air Service Area households had an income of $100,000 or more. This is equal to approximately 13.8% of all Air Service Area households. According to Consumer Expenditure Survey data from the U.S. Bureau of Labor Statistics, 54% of airline fare expenditures are made by households with annual incomes of $100,000 or more. Data in **Table 2C** on the following page shows that between 2017 and 2037, the Air Service Area will gain an additional 3,572 households with annual income greater than $100,000.

TABLE 2C
Households with Income of $100,000 and Above (2017-2037)

	Air Service Area	Texas	United States
Total Households			
2017 estimate	46,544	10,211,000	127,019,027
2037 forecast	51,417	13,244,000	146,739,258
Increase in households	12.6%	29.7%	15.5%
CAGR 2017-2037[1/]	0.5%	1.3%	0.7%
Households with Income of $100,000 and Above[2/]			
2017 estimate	6,300	1,842,000	26,673,996
2037 forecast	9,872	3,736,000	43,581,560
Increase in households with income of $100,000 and	56.7%	102.8%	63.4%
CAGR 2017-2037	2.3%	3.6%	2.5%
% of Households with Income of $100,000 and Above[2/]			
2017 estimate	13.8%	18.4%	21.0%
2037 forecast	19.2%	28.5%	29.7%

Notes:
1/ Compound annual growth rate.
2/ In current dollars.
Source: Woods & Poole Economics

Gross Regional Product / Gross Domestic Product

Gross domestic product (national level) and gross regional product (state- and county-level) are measures of the value of all final goods and services produced within a geographic area. These measures are general indicators of the economic health of a geographic area and, consequently, of the area's potential demand for air transportation services. **Table 2D** shows the CAGR for the Air Service Area's gross regional product and gross domestic product for the U.S. **Table 2D** indicates that gross regional product for the Air Service Area increased at a CAGR of 0.6% between 2007 and 2017, which was below the U.S. CAGR of 1.5%.

Forecasts for 2037 in **Table 2D** show that gross regional product for the Air Service Area is forecast to increase at a CAGR of 1.4%, which is below the forecasted CAGR of the U.S. of 1.7% between 2017 and 2037.

TABLE 2D
Historical and Forecast Per Capita Gross Regional and Gross Domestic Product (2017-2037)

Gross Regional & Gross Domestic Product Growth			
CAGR[1/]	Air Service Area	Texas	U.S.
2007-2017	0.6%	2.1%	1.5%
2017-2037	1.4%	2.3%	1.7%

Note:
1/ Compound annual growth rate.
Source: Woods & Poole Economics, Inc; in 2009 dollars

Labor Market Trends

Civilian labor force data, unemployment rates, and employment for the Air Service Area are discussed below and are presented in **Table 2E**. Parallel data for the U.S. is also shown to provide a basis of comparison for trends in the Air Service Area.

TABLE 2E
Historical and Forecast Non-Farm Payrolls and Unemployment Rate (2000-2017)

NON-FARM PAYROLLS			UNEMPLOYMENT RATE		
Year	Air Service Area	United States	Year	Air Service Area	United States
2000	44,900	158,439	2000	3.9%	4.0%
2001	45,400	158,510	2001	3.8%	4.7%
2002	45,100	156,779	2002	4.8%	5.8%
2003	44,600	156,413	2003	5.1%	6.0%
2004	44,100	158,124	2004	4.7%	5.5%
2005	44,500	160,850	2005	4.3%	5.1%
2006	45,400	163,748	2006	4.1%	4.6%
2007	45,800	165,596	2007	3.6%	4.6%
2008	45,600	164,688	2008	4.1%	5.8%
2009	44,600	157,560	2009	6.3%	9.3%
2010	45,100	156,423	2010	6.5%	9.6%
2011	45,600	158,329	2011	6.2%	8.9%
2012	46,800	161,004	2012	5.3%	8.1%
2013	47,900	163,655	2013	5.1%	7.4%
2014	48,900	166,724	2014	4.0%	6.2%
2015	49,400	170,175	2015	4.1%	5.3%
2016	48,800	173,166	2016	4.5%	4.9%
2017	48,900	175,949	2017	3.7%	4.4%
CAGR[2/]					
2000 – 2017	0.5%	0.6%			

Source: Bureau of Labor Statistics, U.S. Department of Labor; U.S. non-farm payrolls in 000s

2007 – 2017 Non-Farm Payrolls and Unemployment Rate

Table 2E includes annual civilian labor force and unemployment data from 2000 through 2017 for the Air Service Area, and the U.S. Data in **Table 2E** show that between 2000 and 2017, the Air Service Area labor force grew about 8.9% or at a CAGR of 0.5%. At the same time, the U.S. increased from 158 million to 176 million, or a CAGR of 0.6%.

Regional Economic Overview

San Angelo Regional Airport (SJT) is the primary commercial service airport serving the area of south-central Texas. It is in the Concho Valley, a region of central Texas. San Angelo is home to Angelo State University, historic landmark Fort Concho, and Goodfellow Air Force Base

Economic development officials in the Air Service Area underscore the importance of the Airport's links to destinations in the U.S. and around the world. Because access to domestic and international markets is a major factor in the site selection process, the Airport plays a significant role in attracting new businesses and the expansion of existing enterprises in the Air Service Area.

As part of the economic discussion, it must be pointed out that San Angelo sits on the eastern edge of the Permian Basin, where the shale boom has elevated oil and gas production, or output in millions of barrels of oil and gas, to levels experienced in the middle east and other oil producing countries. Midland, Texas, located 112 miles to the west, is experiencing exponential growth as a result of this oil and gas exploration and development. San Angelo is experiencing spillover growth. Many companies in the city are servicing the shale oil boom west of here while enjoying what industry leaders say is enhanced quality of life. As commercial flights get full it is not uncommon to see people fly into San Angelo before heading further west.

Major Employers

Major employers in the Air Service Area for which employment data are available are shown in **Table 2F**. These firms represent a variety of industries including: Defense (Goodfellow Air Force Base), government, education and healthcare.

TABLE 2F
Major Air Service Area Employers

Company	Approximate Employees
Goodfellow Air Force Base	2,688
Shannon Health System	2,467
San Angelo ISD	2,069
Angelo State University	1,455
City of San Angelo	909
San Angelo Community Medical Center	865
San Angelo State Supported Living Center	861
Tom Green County	764
Verizon, Inc.	645
Ethicon (Johnson & Johnson)	618

Source: https://livability.com/tx/san-angelo/business/san-angelo-tx-top-employers

Economic Outlook

As has been illustrated earlier in this chapter, the San Angelo economy is typically slower growing as compared to U.S. averages. Population and economic forecasts for the Air Service Area are shown in **Table 2G** and are also compared to the U.S. As illustrated, the population, employment, total personal income, and total gross regional product are expected to have relatively lower growth rates in the Air Service Area as compared to the U.S. This continues trends that have been noted previously.

This indicates that the ongoing capacity of the Air Service Area to continue to generate demand for air travel services during the forecast period will continue, albeit at slower rates of growth as compared to the U.S.

TABLE 2G
Passenger Demand Forecast Variables (2017-2037)

	2017	2037	CAGR
Air Service Area Population	120,712	137,402	0.7%
U.S. Population (000s)	298,217	326,128	0.7%
Air Service Area Total Employment	74,325	90,245	1.0%
U.S. Total Employment	184,227,000	210,105,000	1.5%
Air Service Area Total Personal Income ($ billion)	$4.7	$6.5	1.6%
U.S. Total Personal Income ($ billion)	$15,104.2	$18,982.7	2.6%
Air Service Area Per Capita Personal Income	$39,175	$46,978	0.9%
U.S. Per Capita Personal Income	$46,974	$53,841	1.5%
Air Service Area Gross Regional Product ($ billion)	$4.3	$5.7	1.4%
U.S. Gross Domestic Product ($ billion)	$17,839.3	$22,003.7	2.1%

Source: Woods & Poole Economics, Inc., Data Profiles for MSA, state, and U.S.

COMMERCIAL PASSENGER INDUSTRY AVIATION TRENDS

The trends presented in this section are intended to provide a framework for better understanding past and future trends at SJT. It will also establish a basis for estimating how aviation activity may be expected to grow and change in the future. This frame of reference is essential when identifying potential activity scenarios for the airport.

Long-Term History (1978-2008)

Since de-regulation in 1978, through 2008, the U.S. airline industry cumulatively lost approximately 40 billion dollars. This was primarily a function of overcapacity in the industry, where the supply of seats was greater than demand. The result was that airlines had to price airline seats below cost. **Exhibits 2A**

and **2B** illustrate: 1) the widening gap between the supply of seats and demand that took place during this time period, and 2) the resulting decline in airline price (yield).

After roughly thirty (30) years of overcapacity, the airline industry had amassed massive financial losses, numerous airlines had gone out of business or merged, and airline balance sheets consisted of heavy debt levels. These financial results had been generated despite the fact that one of the primary cost inputs (oil prices) had been fairly tame during this time period, typically ranging from about $20-$50 per barrel. There were two primary beneficiaries from the aforementioned excess capacity: airports and the traveling public, who benefited from relatively low air fares. The effect was elevated, but unsustainable passenger volumes.

During this time period, passenger volumes across the U.S. increased at a Compounded Annual Growth Rate (CAGR) of 2.65% (2008 vs 1978, source: A4A).

EXHIBIT 2A

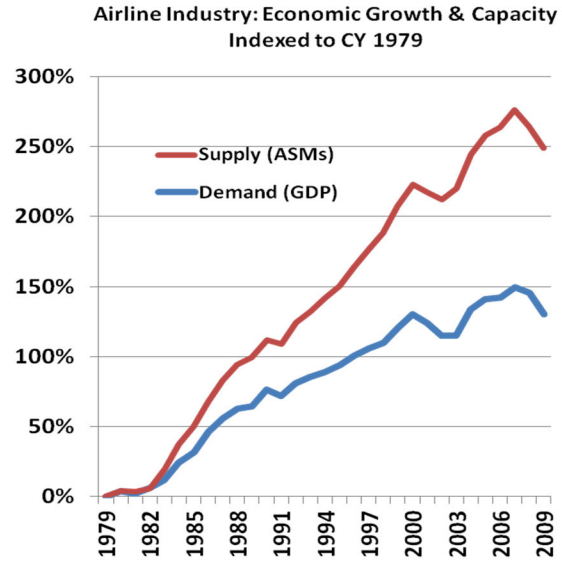
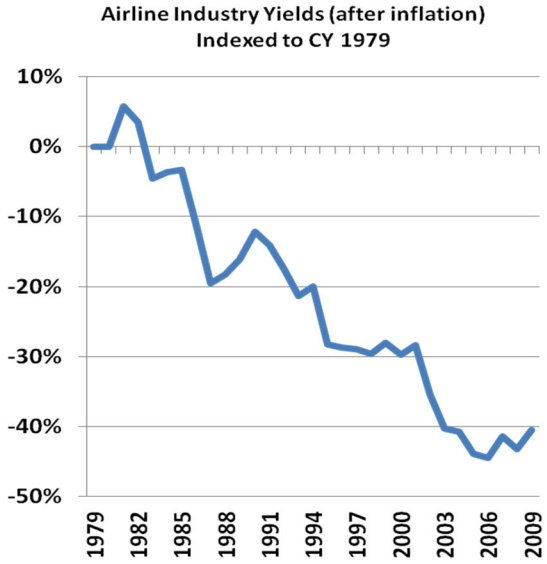


EXHIBIT 2B

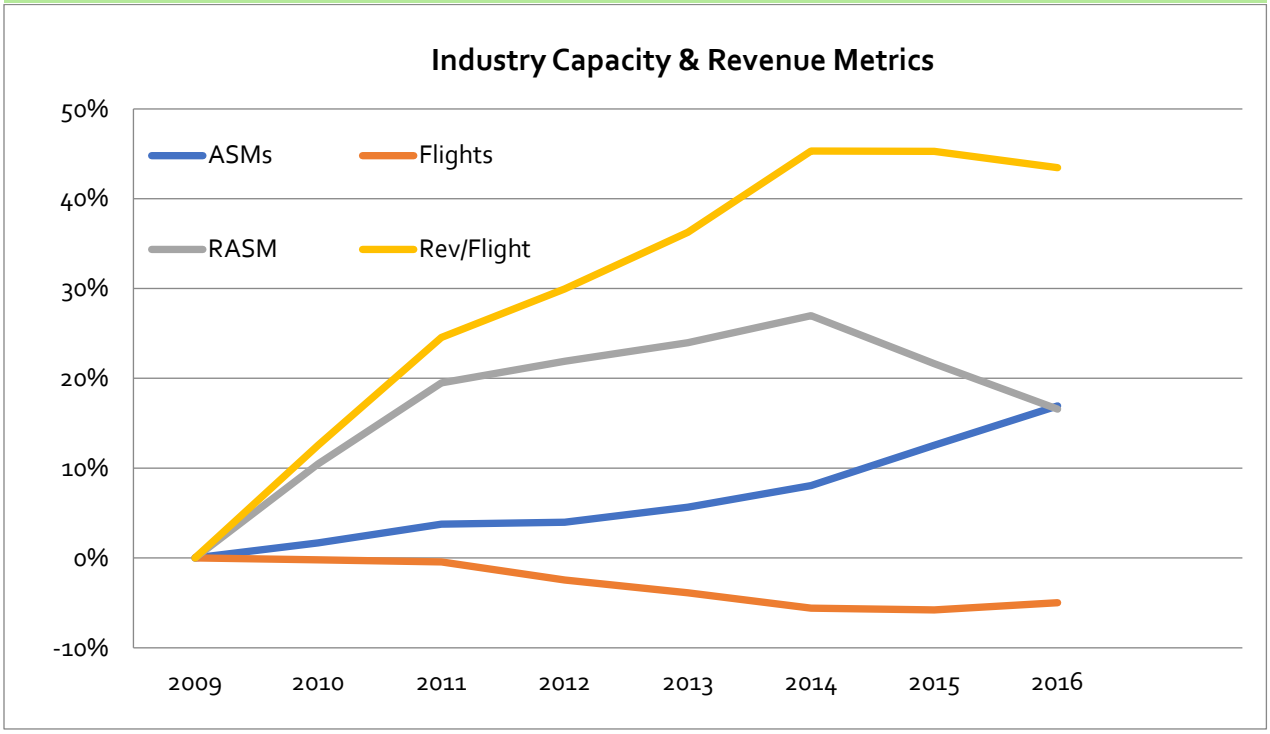


Beginning in 2007, oil prices spiked, eventually peaking at around $150/barrel and a subsequent, severe economic recession. The airline industry's very survival depended upon a significant transformation. The key component would be to sharply reduce capacity, particularly with regard to fuel inefficient aircraft fleets such as 50-seat regional jets. The airlines began to reduce seat capacity in 2008 as fuel prices spiked and the economic recession worsened.

Airline Industry Transformation (2009 – Today)

Exhibit 2C illustrates what has occurred since 2009: airlines cut flight capacity and revenues improved sharply. Revenue increases were driven by higher yields (prices), marginally higher load factors and ancillary fees. Airlines have also benefited from sharply lower oil prices. The result was that a habitually unprofitable industry has become quite profitable, recording the most profitable years in industry history over the past four years, with 2017 generating comparable results to recent history.

EXHIBIT 2C
Industry Capacity and Key Revenue Metrics



** Source: Air Transport Association (A4A)*

The biggest changes came at the largest network airlines (Delta, United & American), where the financial results had historically been the worst. These airlines drastically cut capacity, primarily in the form of eliminating the most unprofitable fleet types, focusing upon improved profitability. At the same time, Ultra Low Cost Commercial Carriers (ULCCs) such as Allegiant, who had been profitable over time, continued to grow significantly while at the same time generating consistent profitability. (Refer to **Table 2H**)

The effects of these changes and its effect upon smaller communities has been vast. Since the oil price spike and subsequent U.S. recession in the late 2000s, the three major network airlines that serve relatively smaller markets (Delta, United and American) have generally reduced seat capacity. Most of the capacity growth across the U.S. has generally come from niche airlines who primarily serve certain areas of the country (JetBlue, Alaska) or ULCCs who primarily cater to leisure travelers, flying to popular vacation spots (Allegiant, Spirit, Frontier).

The one positive during this time period was that ULCC Allegiant was growing significantly into smaller markets, backfilling for some of the lost service from network airlines. Still, the Allegiant Airlines service was limited to vacation travelers, flying to popular vacation spots, where lost network airline service would have allowed for travel to pretty much any market in the world.

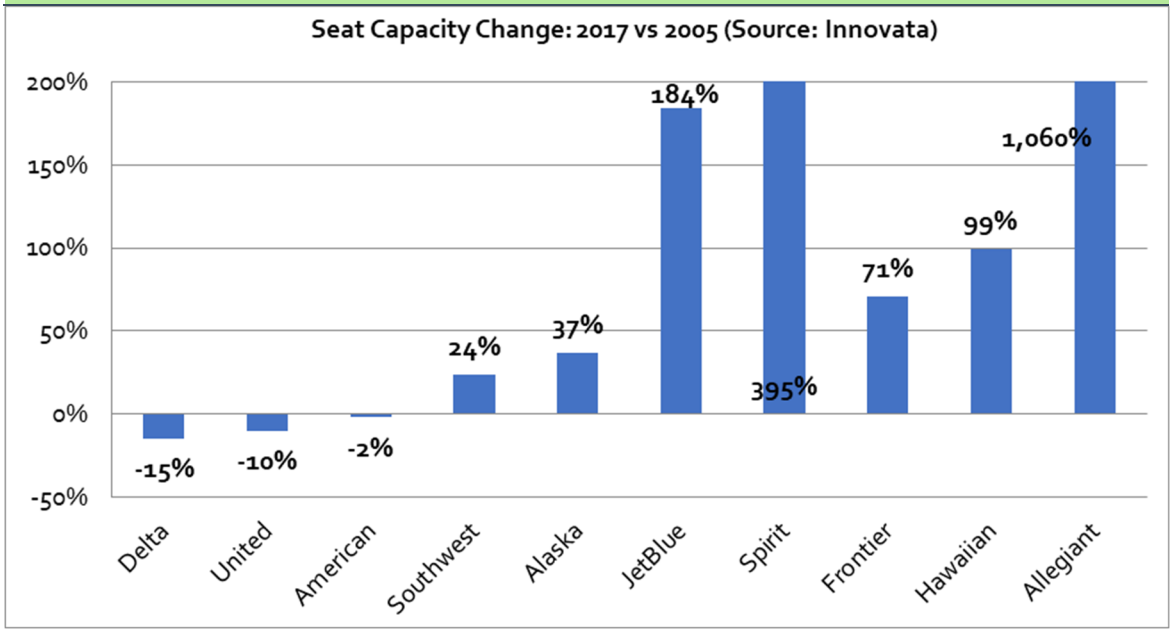
TABLE 2H
Industry Profitability for 9 Publicly Traded Airlines

Calendar Years 2014 - 2017

	Pre-Tax: 2014 (millions)			Pre-Tax: 2015 (millions)			Pre-Tax: 2016 (millions)			Pre-Tax: 2017 (millions)		
Airline	Rev	P&L	Margin	Rev	P&L	Margin	Rev	P&L	Margin	Rev	P&L	Margin
Delta	$40,362	$4,500	11.1%	$40,704	$7,802	19.2%	$39,639	$6,952	17.5%	$41,244	$6,114	14.8%
Southwest	$18,605	$1,816	9.8%	$19,820	$4,116	20.8%	$20,425	$3,760	18.4%	$21,171	$3,515	16.6%
United	$38,901	$2,373	6.1%	$37,864	$5,166	13.6%	$36,556	$4,338	11.9%	$37,736	$3,498	9.3%
American	$42,650	$4,249	10.0%	$40,990	$6,204	15.1%	$40,180	$5,284	13.2%	$42,207	$4,058	9.6%
jetBlue	$5,817	$515	8.9%	$6,416	$1,216	19.0%	$6,632	$1,312	19.8%	$7,015	$1,000	14.3%
Alaska	$5,368	$962	17.9%	$5,598	$1,298	23.2%	$5,931	$1,349	22.7%	$7,933	$1,260	15.9%
Allegiant	$1,137	$157	13.8%	$1,262	$372	29.5%	$1,363	$371	27.2%	$1,504	$227	15.1%
Spirit	$1,932	$355	18.4%	$2,141	$509	23.8%	$2,322	$444	19.1%	$2,648	$389	14.7%
Total	$154,772	$14,927	9.6%	$154,795	$26,683	17.2%	$153,048	$23,810	15.6%	$161,458	$20,061	12.4%

Exhibit 2D illustrates just how disproportionate capacity changes have been by carrier type. It should be noted that the four largest airlines in aggregate (Delta, United, American and Southwest) control approximately 83% of industry seat capacity.

EXHIBIT 2D
Departing Seat Capacity Change (% Change, 2017 vs 2005)



While major airlines have constrained capacity, the effect has been disproportionate across the U.S. For example, Delta Air Lines, over the past twelve years, has reduced seat capacity approximately 12% across their system. Still, Delta has increased seat capacity significantly on the U.S. West Coast, where Delta's Seattle seat capacity is up well over 100% and Los Angeles' is up approximately 100%. In general, airlines are putting capacity where economic growth is the most vibrant and this is on the U.S. Coasts – particularly the West Coast. United, American and Southwest are also focusing the majority of their capacity growth currently in this region of the U.S. – with an emphasis in California.

As the industry transformation has taken place, one of the major effects upon the industry is the increased gauge (larger aircraft) and longer stage length (nonstop flight miles). Part of this effect is occurring because of the sharp reduction in 50-seat regional jet flying that was noted earlier. This flying is then, in many cases, being replaced with 76-seat regional jet aircraft, flying less frequency than was flown with the 50-seat aircraft.

As an example, for many markets across the U.S. over the past few years it is not uncommon that frequency has been reduced from 2 or 3 daily 50-seat regional jet departures, and replaced with 1-2 daily 76-seat jet departures, resulting in less frequency, more seats per departure and similar-to-less overall seat capacity levels.

As depicted on **Exhibits 2E** and **2F**, on flights of less than 600 miles, industry flights are down by 16.4% since 2009, while flights in the 600 to 1,000 mile range are up 0.2% and for flights greater than 1,000 miles, flights actually increased 23.3%. Carriers are typically using larger aircraft to fly longer distances. When specifically looking at 50-seat regional jet departures (CRJ & ERJ aircraft), scheduled flights have declined 41% since 2009 and 53% since peaking in 2005.

EXHIBIT 2E
Industry Capacity Trends by Flight Miles

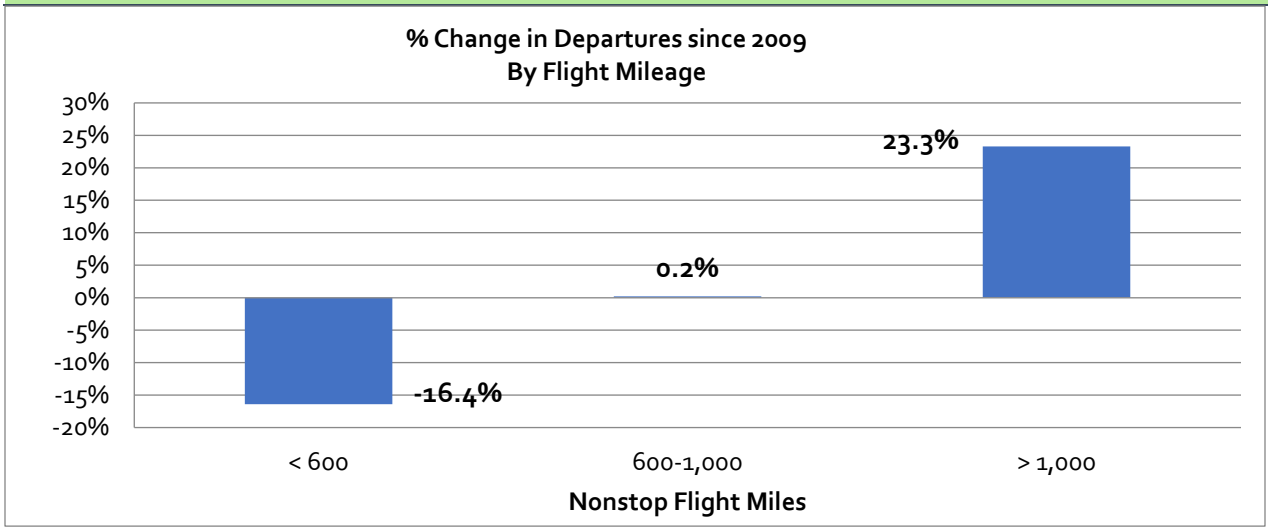
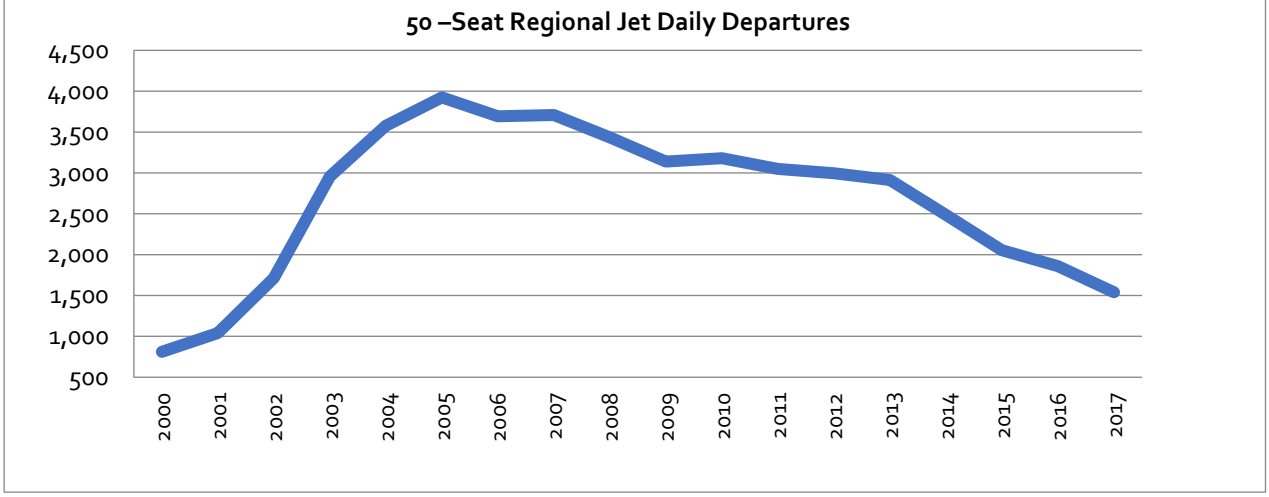
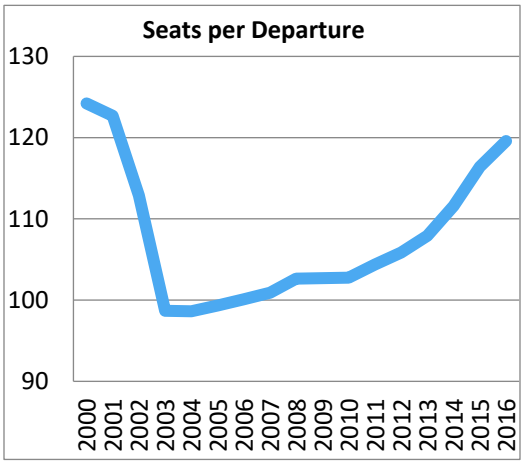


EXHIBIT 2F
Industry Capacity Trends by Daily Departures



Tied in part to the analysis above, as the industry transformation has taken place, one of the major effects upon the industry is the increased gauge (larger aircraft) and longer stage length (nonstop flight miles). Part of this effect is occurring because of the sharp reduction in 50-seat regional jet flying that was noted earlier, but also the trend of larger aircraft being flown by mainline carriers.

The chart to the right illustrates gauge declining during the surge in CRJ/ERJ flying from 2000-05, when seats per depart declined from about 120 to less than 100. Since then, seats per departure have increased back to 120 and further growth appears likely.



Consolidation

The transformation of the U.S. airline industry had its origins in 2007 with the spike in oil prices to $150/barrel and the subsequent U.S. economic recession that began in 2008. For its very survival, major U.S. airlines had to change quickly, and they did.

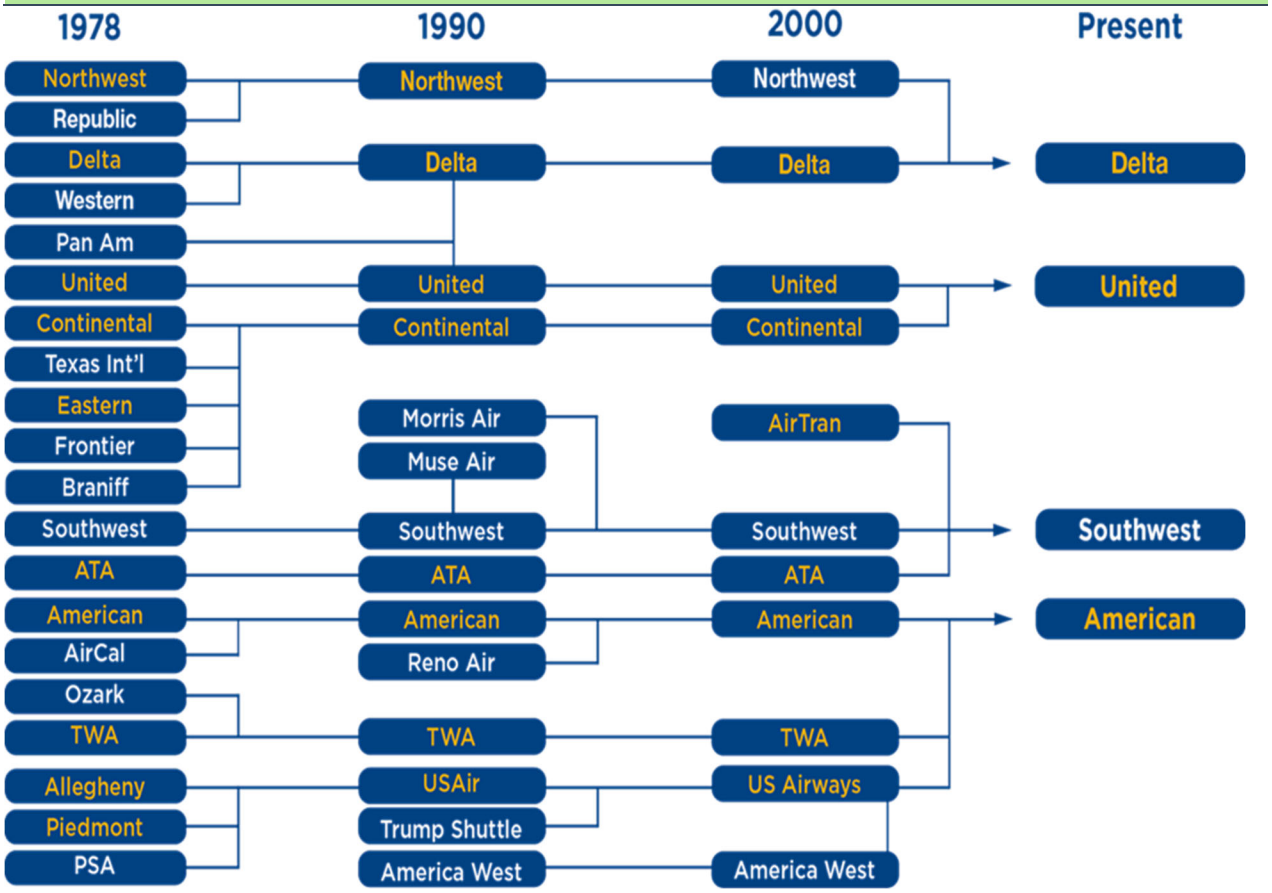
A major part of the industry's transformation has been a continuing consolidation of the industry. The evolution of the industry is shown below in **Exhibit 2G**. Today, the four largest airlines control 83% of industry seats. This consolidation will in large part work to ensure that airline capacity discipline that has been so prevalent over the past few years, will likely work in a similar fashion going forward.

A key consideration is that the airlines highlighted in yellow (Delta, United and American) are major network airlines offering connecting service to large and smaller markets across the U.S., while Southwest Airlines, highlighted in white, focuses upon carrying point-point traffic typically in the largest markets in the U.S. Hence, consolidation has had a more adverse effect upon smaller communities as opposed to larger markets, as noted earlier.

In summary, the U.S. airline industry lost approximately $40 billion during the approximate 30-year period following de-regulation in 1978. These operating losses were largely driven by excess seat capacity which resulted in pricing (yield) that was below airlines cost.

Since 2010, a transformation took place, when airlines drastically reduced seat capacity, mostly in the form of reduced regional jet flying, to the point where prices (yields) increased to the level where airlines were profitable. In addition, airlines were able to add ancillary fees that were another form of a price increase. In addition, carrier Load Factors have also trended higher, from the mid-70% range (in the 1990s) to roughly 85% today. The past three years have been the most profitable in industry history, with industry operating margins averaging close to 15% on an annual basis.

EXHIBIT 2G
Network Airlines from De-regulation through Today



The Future

Going forward, the future will likely look very much like the recent past. There are likely to be four primary trends driving the U.S. airline industry air service trends:

1. **Limited network airline capacity growth (American, Delta, United, Southwest).** In addition, where growth does occur, it will be focused in areas of faster economic growth (east/west coast and international). In general, airlines target overall capacity growth closely to U.S. GDP growth. Hence, system capacity growth is typically in the 2% range for large, network airlines.
2. **Relatively faster growth by ULCCs (Allegiant, Spirit, Frontier).** These airlines will continue growing much faster, although likely a bit slower than recent 10%-20% annual growth rates. In addition, while Allegiant has a large presence in smaller airports, going forward, Allegiant will focus their growth in relatively larger markets, a trend that started in 2014. Finally, expect this sector to start growing faster into international markets, particularly to the Caribbean and Mexico.
3. **Trend of larger aircraft.** This trend has been firmly in place since the end of the recession and will likely continue. While taking place across entire carrier fleets, smaller markets will

experience this trend primarily in the form of less 50-seat regional jet flying and more 76-seat jet flying. In addition, over time, more 100-115 seat aircraft flying could enter the mix (in the form of Bombardier C-series and 717 aircraft). Bombardier, the largest manufacturer of regional jets in the world, expects larger regional jet aircraft (64-90 seats) to more than double, from 3,300 aircraft in 2016 to 6,950 by 2036. In addition, they expect aircraft in the 90-150 seat range to grow from 3,600 aircraft in 2016 to 7,300 aircraft. In total, Bombardier forecasts that aircraft in the 60-to 150-seat segment to double (worldwide) by 2036. Finally, Bombardier expects the small regional jet segment (<= 50 seats) to shrink from 2,500 aircraft in 2016 to only 390 by 2036. Furthermore, regionally, most of these remaining 50-seat aircraft are expected to be operated in 3rd world countries, primarily in the continent of Africa. This forecast is consistent with other aircraft manufacturers, including Boeing, Airbus and Embraer.

4. **Larger airports will continue to outpace smaller airports.** This has been occurring since the end of the latest U.S. recession and will likely continue. Larger metropolitan areas, particularly those on the east/west coast are generating higher economic growth that is translating into additional air travel demand.

FAA Forecast Summary: 2017 – 2037

Over the next 20 years, large airports will continue to grow faster than their smaller counterparts in the United States. As shown in **Table 2I**, the FAA is forecasting that the number of larger regional jets will increase, while most of the smaller regional jets will be retired from the fleet. The following is a summary of the main points outlined in the FAA Aerospace Forecasts 2017-2037:

- Enplanements are forecast to increase 2.2% in 2017. For the remaining 20 years of the forecast period, enplanements are forecasted to grow at an average annual rate of 1.69%.
- U.S. GDP CAGR of 2.1% from 2017-2037.
- Baseline Available Seat Miles forecast of a 2.1% CAGR from 2017-2037, while departures are forecasted at a 1.9% CAGR during this same time period.
- Baseline nominal yields are forecast to grow at a 2.1% CAGR (essentially flat when considering inflation forecasts). Ancillary revenue growth is expected to continue.

TABLE 2I
U.S. Historic and Forecasted Enplaned Passengers

Fiscal Year	Enplaned Passengers	Fiscal Year	Enplaned Passengers
HISTORIC		FORECAST[2]	
2000	641,200	2017	742,000
2001	625,000	2018	762,000
2002	626,800	2019	783,000
2003	574,500	2020	794,000
2004	628,500	2021	805,000
2005	669,500	2022	815,000
2006	668,400	2023	826,000
2007	690,100	2024	838,000
2008	680,700	2025	851,000
2009	630,800	2026	863,000
2010	635,200	2027	877,000
2011	650,100	2028	892,000
2012	653,800	2029	907,000
2013	654,300	2030	921,000
2014	669,000	2031	937,000
2015	696,000	2032	953,000
2016	726,000	2033	968,000
CAGR[1] 2000-2016	**0.73%**	2034	985,000
		2035	1,002,000
[1] CAGR = Compounded annual growth rate		2036	1,019,000
[2] FAA Aerospace Forecast (2017-2037)		2037	1,037,000
Passenger Figures are in 000s		**CAGR[1] 2017-2037**	**1.69%**
		CAGR[1] 2000-2037	**1.27%**

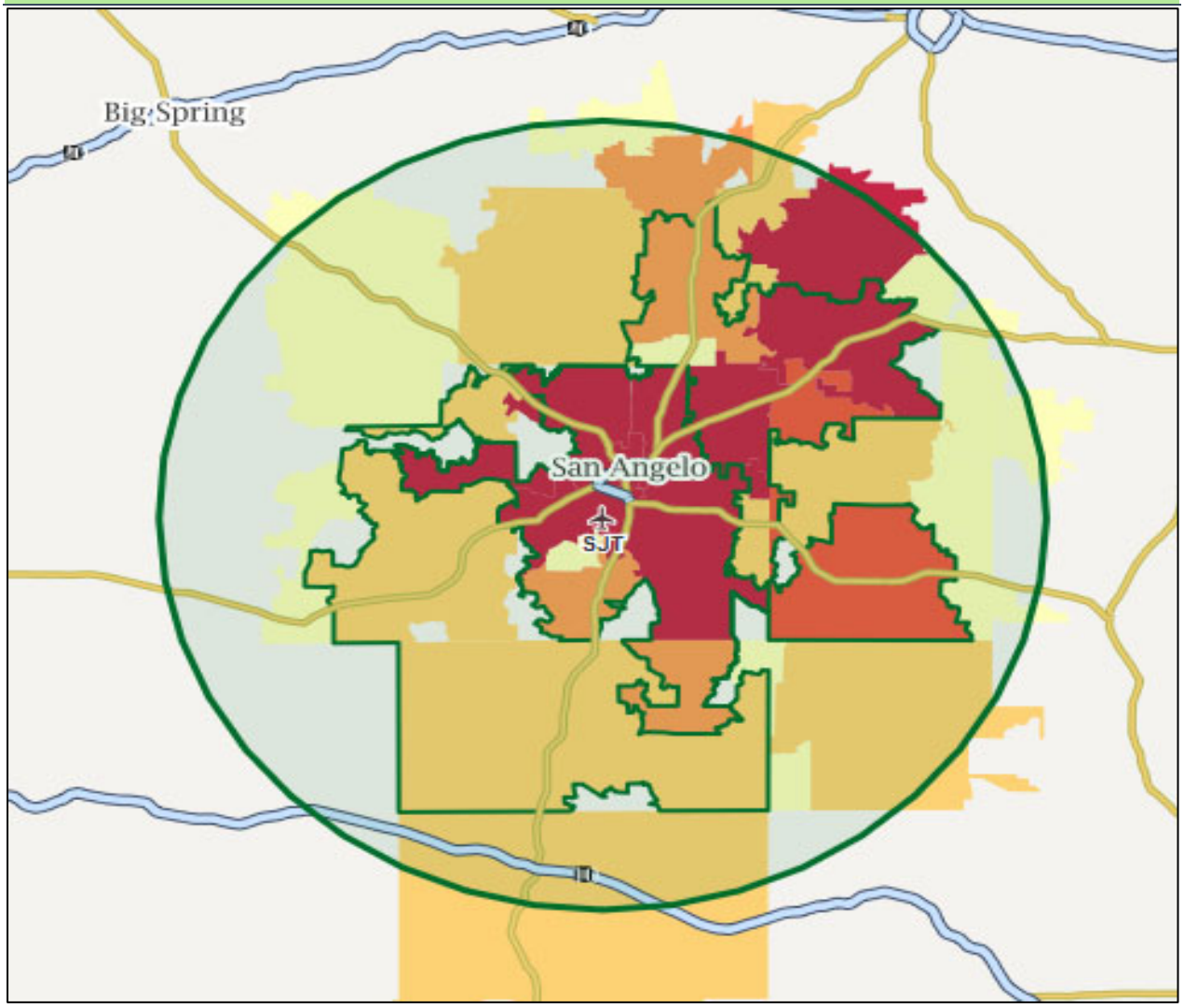
AIR SERVICE AND TRAFFIC ANALYSIS

This section evaluates and describes the current state of air service at the Airport, analyzes historical trends in air traffic, and identifies key factors that generally affect demand for air travel.

Regional Role and Catchment Area Analysis Overview

San Angelo Regional Airport (SJT) is the primary commercial service airport serving the area of south-central Texas. This area is known as the Concho Valley and makes up the San Angelo Metropolitan Statistical Area. The Airport is a point of air access for the region, including being a center for healthcare, education and is home to a key military base.

EXHIBIT 2H
Air Service Area



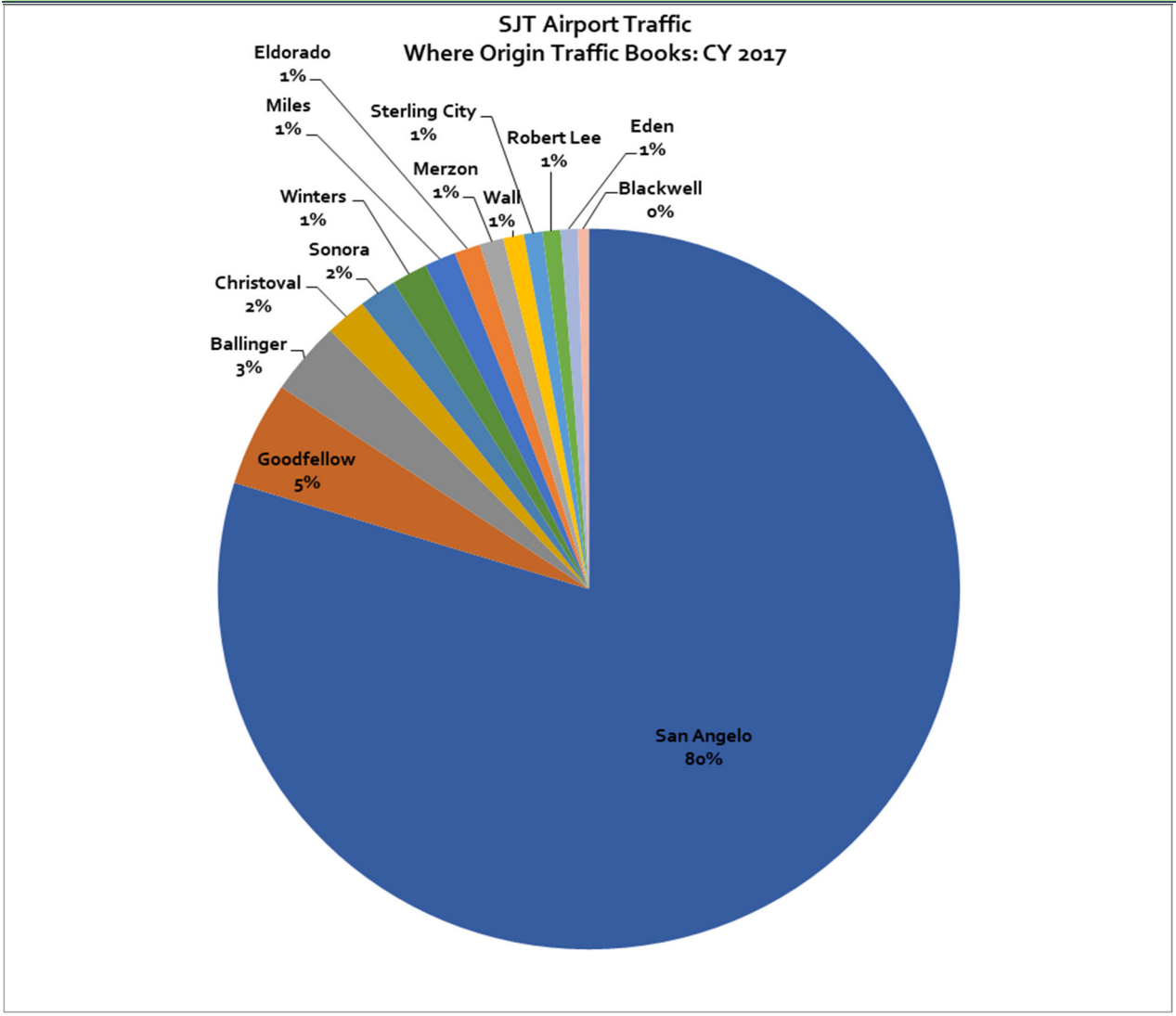
Source: Diio Mi, Catchment Mapper for SJT, 60 miles

There are approximately 137,013 people that reside within 60 miles of SJT (SJT Catchment Area depicted on **Exhibit 2H**). While SJT is the closest commercial airport to this population base, there is significant competition in the region. These airports offer significantly more nonstop air service, and typically at much lower air fares. This includes a variety of low fare carrier service. Specifically, these airports include Austin International Airport (AUS - 212-mile drive), San Antonio International Airport (SAT – 212 mile drive) and Dallas-Fort Worth International/Dallas Love Field Airports (DFW – 261 mile drive DAL – 282 mile drive).

Exhibit 2I illustrates where SJT's origin traffic comes from. As can be seen, 80% of traffic comes from San Angelo. The remaining 20% comes from communities in the region. In general, SJT can capture

traffic from throughout the region, due to the combination of SJT's marketing to this traffic base and the convenience of SJT.

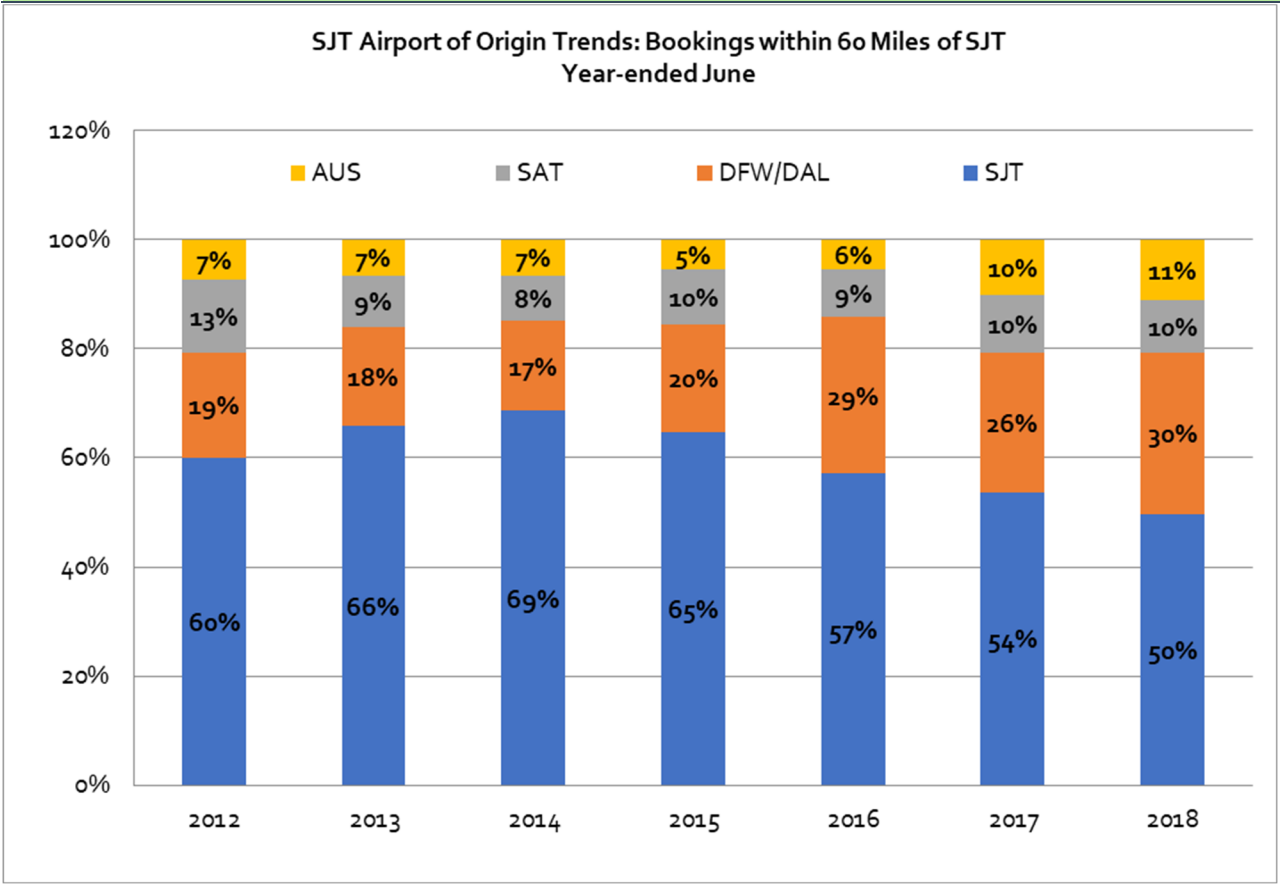
EXHIBIT 2I
U.S. Historic and Forecasted Emplaned Passengers



** Source: Agency Reporting Corporation (ARC). Year-ending June.*

Exhibit 2J illustrates SJT "leakage" trends. This graph shows the airport of origin for bookings within 60 miles of SJT. From 2011 to 2014 (year-ending June), SJT's retention of regional bookings was slowly increasing, going from 60% in 2012 to a peak of 69% in 2014. During this time period, SJT enplaned passengers and load factors were increasing sharply (the SJT load factor increased from 62% in 2011 to 76% in 2014). This was also during a time period that some of the larger regional airports experienced moderate capacity growth.

EXHIBIT 2J
Airport of Origin Trends: Passengers Booked from the SJT Catchment Area



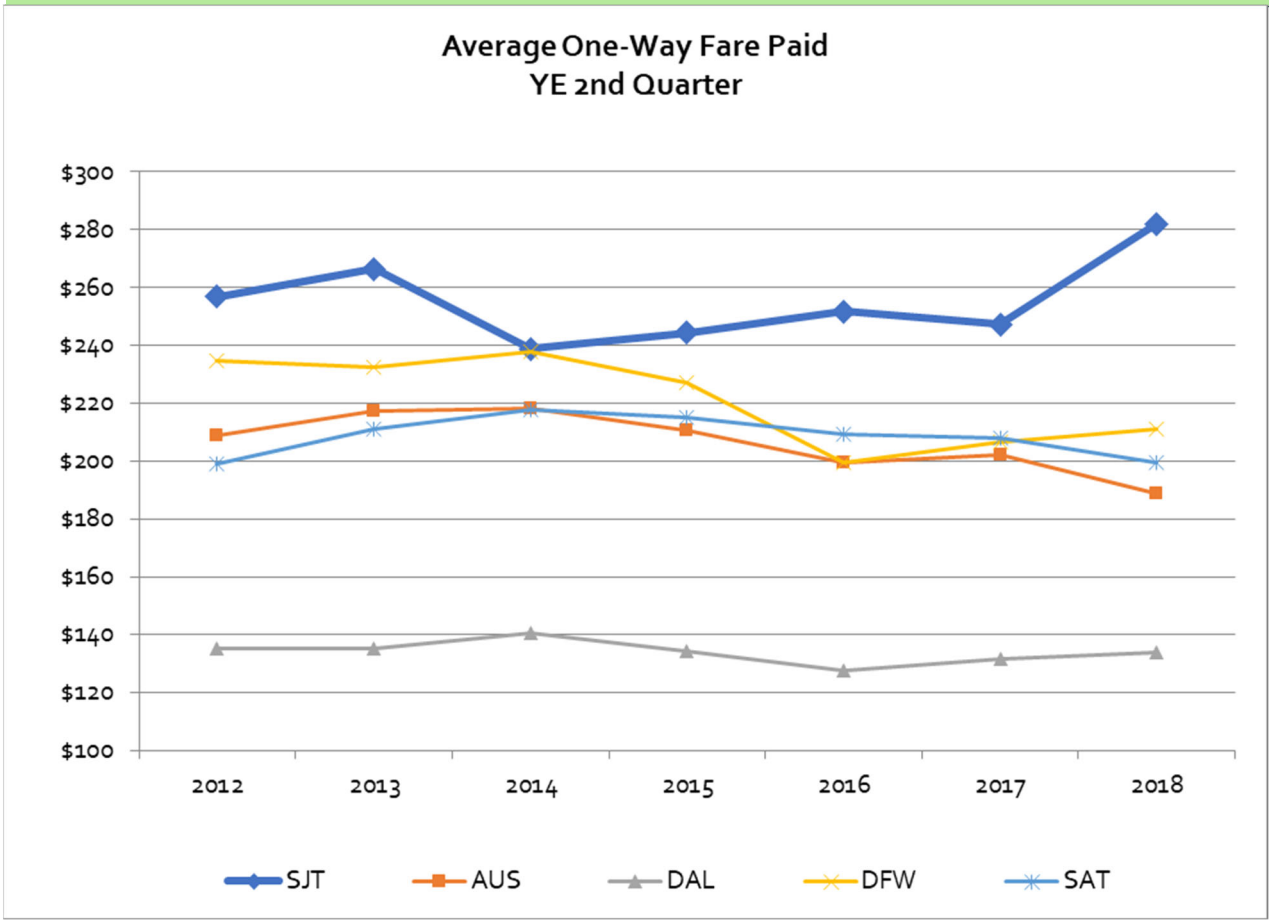
** Source: Agency Reporting Corporation (ARC). Year-ending June.*

Since 2014, SJT has experienced worsening "leakage", reduced seat capacity and declining traffic. This trend has been driven by three factors: 1) Expiration of the Wright Amendment in October 2014 resulted in significant capacity increases at Dallas Love Field (DAL). This in turn resulted in sharp fare declines at DFW and DAL. 2) ULCCs have added service from DFW, SAT and AUS during this time. In particular, Spirit and Frontier Airlines have added service, putting further downside pressure on fares. 3) SJT has experienced moderate air service declines over the past two years.

The key effect of the changes noted in the prior paragraph was the increasing disparity between SJT and larger, regional airport's air fares. As illustrated in **Exhibit 2K** paid air fares at aforementioned, larger airports started to decline subsequent to 2015, while SJT air fares started to increase, with much of SJT air fare increase taking place over the past 12 months.

For year-end 2018, the average paid (net of taxes/fees) one-way fare at SJT was $280, while fares at DFW, SAT and AUS ranged from $190-$210, equivalent to 25%+ differences. DAL fares were even lower. These fare disparities explain much of recent SJT leakage trends.

EXHIBIT 2K
Average One-Way Fare Paid: SJT vs DAL, DFW, AUS and SAT



** Source: DOT Report DB1B (via Diio)*

It should be noted that these fare differences are likely conservative. Published air fare differences are typically much greater (relative to what is purchased), as consumers will not purchase air fares where the disparities are the greatest and/or published SJT air fares are extremely high. When this occurs, "spoilage" takes place, as consumers will not purchase these air fares.

Air Service at the Airport

The following sections will evaluate current air service capacity and operating performance for the primary passenger airlines serving the Airport. Airline performance will be evaluated from an economic perspective, or evaluating carrier revenue, yield and load factor results. The Airport's overall O&D market will also be assessed at the market level, comparing current performance with prior.

Historically, SJT has had commercial air service to both Houston (IAH) on Continental Express and DFW on American Eagle (and for a time on Delta Air Lines). The service to IAH operated from 2000 to 2009. This service was operated with a variety of turboprop aircraft. Delta operated DFW service from 1993 to 1997. The American Eagle service to DFW has operated from 1993 to today.

Since 2012, American has exclusively offered jet service from SJT, primarily in form of ERJ 140/145 and CRJ 200 aircraft, although during much of 2017 (May-December), American offered service on dual cabin, 65-seat CRJ-700 aircraft. In fact, during the months of June 2017 through September, American offered exclusive service on this aircraft type. During this time, American load factors on these larger aircraft were good, typically operating in the 80% range.

Exhibit 2L illustrates SJT load factors by month during 2017 through July 2018. In general, AA has generated strong loads from SJT during this time, including when the CRJ-700 aircraft was utilized. On a relative basis, for all American flying at their DFW hub during the month of July 2018, SJT ranked #41 (of 153 markets with at least 1 daily round-trip departure), ranking in the top 1/3 of AA flying. Based upon load factors, it would appear that SJT is in line for additional capacity from AA. But load factors only tell half of the story.

In addition, **Exhibit 2M** illustrates annual load factor trends at SJT, in addition to Abilene (ABI) and Midland-Odessa (MAF). As shown, load factors have improved sharply at SJT, going from approximately 70% in 2012 to about 82% in 2018. ABI has improved even more, although load factors have been similar over the past three years. MAF has experienced load factor deterioration over the past few years, likely due to declining oil prices and its effect upon the oil industry.

EXHIBIT 2L
SJT Load Factor by Month 2017-2018 and Year (2012-2018)

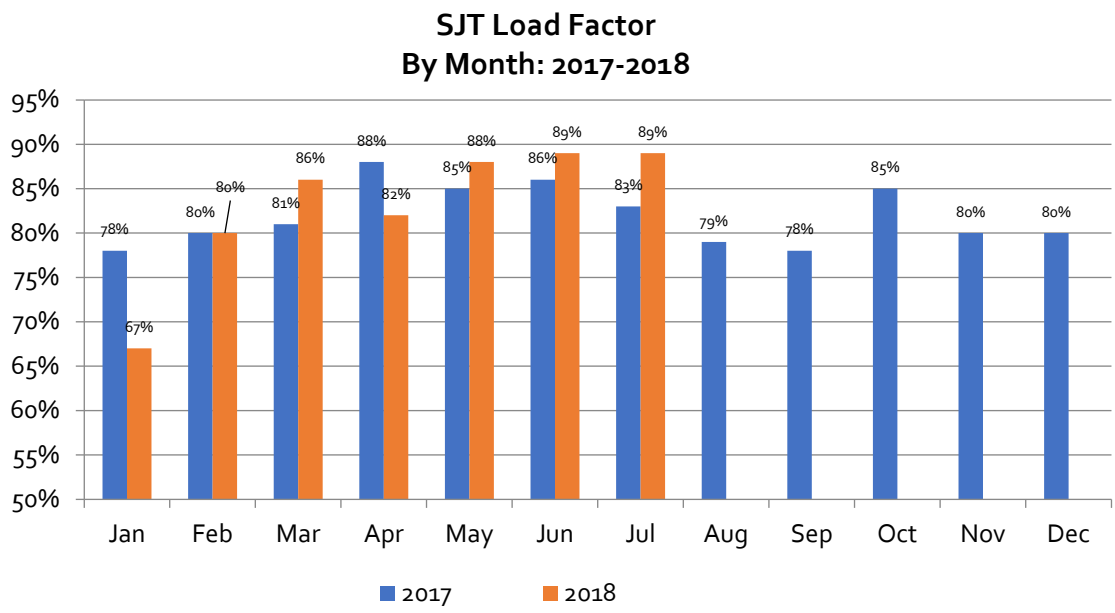


EXHIBIT 2M
SJT Load Factor by Year (2018-2018) including ABI and MAF

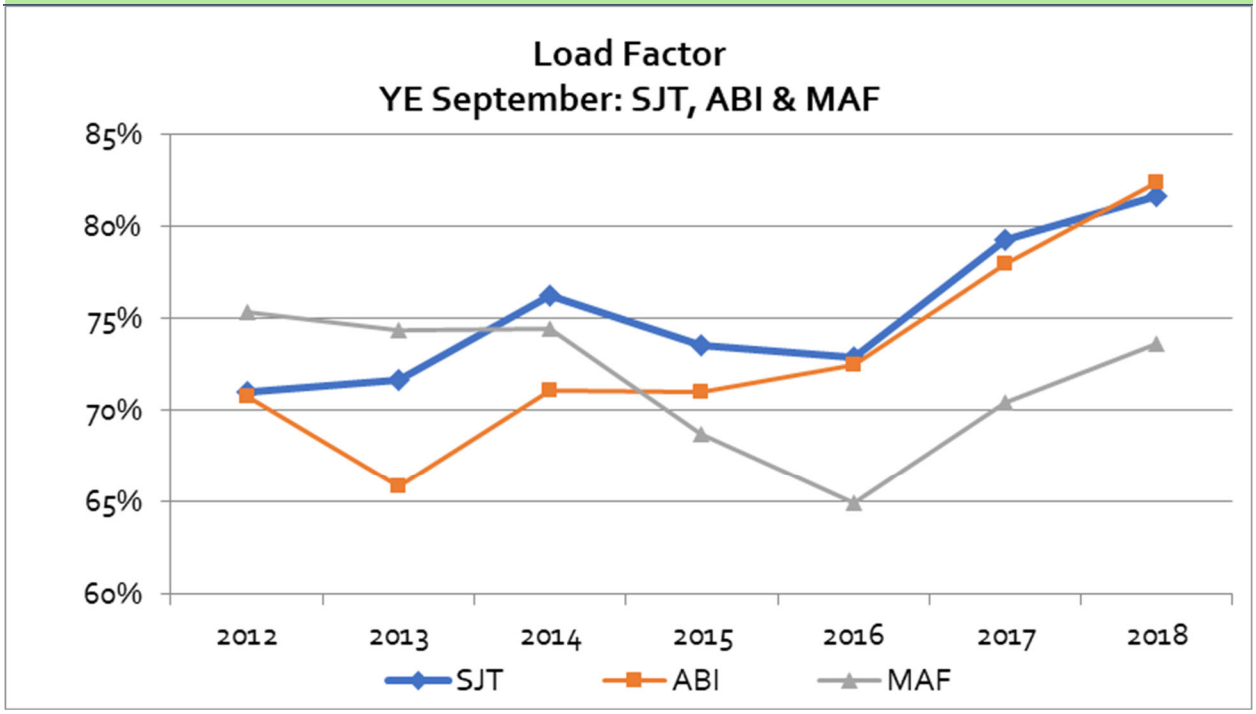
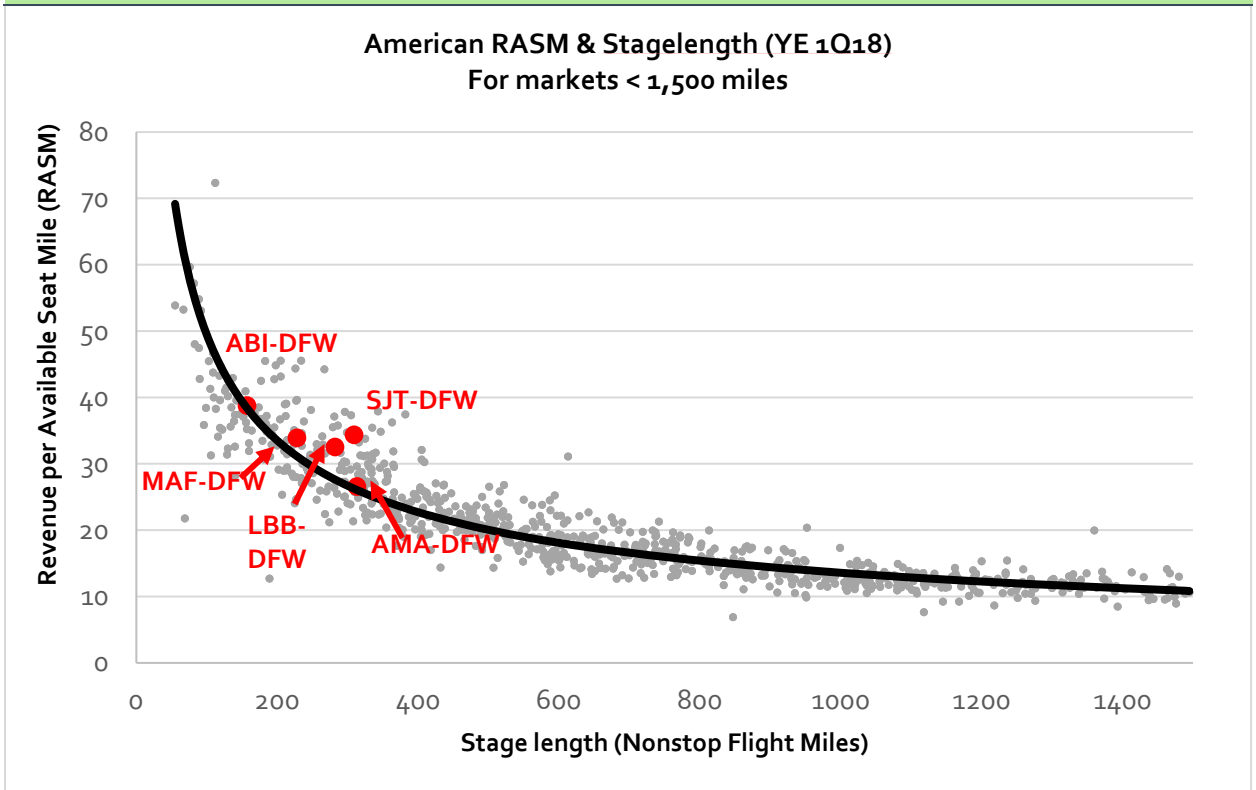


Exhibit 2N illustrates all AA non-stop markets illustrated by gray dots (under 1,500 miles). It shows the RASM and nonstop flight mileage per market. The downward sloping curve is representative of the average mileage-adjusted RASM (proxy for average profitability). The curvature is also representative of an airline's cost curve. As illustrated, AA's SJT service is generating a mileage-adjusted RASM above system averages, indicative of average profitability. In other words, profitability is strong, as our current load factors. This would seem to affirm that SJT is likely in line for capacity increases – either in the form of additional gauge (most likely) or additional frequency.

In addition, AA results to other regional markets of Lubbock (LBB), Amarillo (AMA), ABI and MAF are also illustrated. As shown, SJT-DFW RASMs are moderately higher than at these other regional airports. The two strongest routes appear to be SJT-DFW and LBB-DFW, while MAF-DFW is comparable, and ABI and AMA are right at (mileage-adjusted) system averages. All routes appear profitable for AA.

EXHIBIT 2N
Mileage-Adjusted Revenue Per Available Seat Mile (RASM)



** Source: Diio (BTS Reports DB1A & T100); Less than 1,500 miles*

In addition, by comparing carrier results at SJT for the most recently available period (YE 1Q18) versus results earlier this decade (2012), it can be seen that American Airlines (AA) is generating much better revenues than during this earlier time period. This can be seen in **Table 2J** below. Hence, SJT air service exhibited the same tendencies as the rest of the U.S.: reduced capacity, higher revenue (via improved load factors and yields) and subsequently much more profitable/stable air service.

TABLE 2J
Key AA Revenue Metrics at the Airport and Regional Airports (CY 2017 vs CY 2012)

Airline	RASM 2017 (cents)	RASM 2012 (cents)	% Change	Load Factor 2017	Load Factor 2012	Change (pts.)	Yield 2017 (cents)	Yield 2012 (cents)	% Change
SJT - DFW	33.3	31.5	5.7%	80.3%	74.6%	5.7	41.4	42.3	(2.1%)
AMA – DFW	25.9	25.9	(0.2%)	72.1%	81.9%	(9.8)	35.9	31.6	13.4%
ABI – DFW	36.4	34.1	6.5%	79.7%	68.8%	11.0	45.6	49.6	(8.1%)
LBB – DFW	30.7	29.5	4.0%	77.4%	85.8%	(8.5)	39.7	34.4	15.4%
MAF - DFW	31.8	28.1	13.2%	76.3%	82.1%	(5.7)	41.7	34.3	21.7%

Source: Diio, US DOT Reports DB1A and T100; note that results include merged airline results

O&D Market

Table 2K below presents the Airport's Top 25 Origination and Destination (O&D) markets, including passenger activity and the average one-way fare paid (net of taxes/fees). The table also presents daily departures and daily non-stop seats for each market. In addition, further below in **Table 2L**, % changes in demand are shown in each of SJT's top 25 O&D markets over the past 10 years.

TABLE 2K
Top 25 O&D Markets: Year-Ended 1st Quarter 2018

Rank	Market	Miles	Avg. Daily O&D Pass.	Avg. Fare
1	Dallas	228	13.3	179
2	LA Basin[1]	1,039	5.4	254
3	Las Vegas	904	4.8	243
4	Wash, D.C.[4]	1,411	4.5	310
5	New York[3]	1,613	4.4	275
6	Houston[5]	327	4.1	217
7	Denver	631	3.9	232
8	Atlanta	950	3.7	241
9	Orlando	1,166	3.5	259
10	Chicago	1,010	3.3	243
11	San Diego	983	3.0	242
12	Charlotte	1,161	2.9	264
13	SF Bay Area[2]	1,306	2.9	254
14	Baltimore	1,445	2.8	263
15	Seattle	1,600	2.4	272
16	Miami-FLL[6]	1,285	2.3	274
17	Phoenix	688	2.2	240
18	Nashville	859	2.0	246
19	Philadelphia	1,531	2.0	268
20	St. Louis	767	1.9	225
21	Madison	1,017	1.8	340
22	Minneapolis	1,013	1.8	241
23	Boston	1,789	1.8	274
24	Portland	1,540	1.7	312
25	Tampa	1,104	1.7	242
Total/Average for all Markets		**1,525**	**151.1**	**280**

[1] Includes LAX, ONT, SNA, and BUR
[2] Includes OAK, SFO, and SJC
[3] Includes LGA, JFK, and EWR
[4] Includes DCA and IAD
[5] Includes IAH and HOU
[6] Includes MIA and FLL
Source: Diio; US DOT Report DB1A

TABLE 2L
Top 25 O&D Markets - Year Ended 1st Quarter 2018 vs Year Ended 1st Quarter 2008

Rank	Market	Daily O&D Pass. Change	Avg. Fare Change	Change in Revenue
1	Dallas	(50%)	107%	5%
2	LA Basin[1]	(12%)	18%	4%
3	Las Vegas	(23%)	38%	7%
4	Wash, D.C.[4]	1%	42%	44%
5	New York[3]	(30%)	33%	(8%)
6	Houston[5]	(41%)	74%	3%
7	Denver	(2%)	18%	15%
8	Atlanta	2%	26%	30%
9	Orlando	(12%)	43%	27%
10	Chicago	(10%)	40%	26%
11	San Diego	28%	32%	69%
12	Charlotte	190%	24%	259%
13	SF Bay Area[2]	(13%)	13%	(1%)
14	Baltimore	(28%)	24%	(11%)
15	Seattle	(21%)	24%	(1%)
16	Miami-FLL[6]	6%	63%	73%
17	Phoenix	(12%)	18%	4%
18	Nashville	(24%)	47%	12%
19	Philadelphia	(25%)	45%	9%
20	St. Louis	(26%)	41%	5%
21	Madison	758%	54%	1220%
22	Minneapolis	(25%)	36%	2%
23	Boston	10%	9%	20%
24	Portland	22%	34%	63%
25	Tampa	(39%)	30%	(21%)
	Total	**(14%)**	**40%**	**20%**

[1] Includes LAX, ONT, SNA, and BUR
[2] Includes OAK, SFO, and SJC
[3] Includes LGA, JFK, and EWR
[4] Includes DCA and IAD
[5] Include IAH and HOU
[6] Includes MIA and FLL
Source: Diio; US DOT Report DB1A

Over the past 10 years, like most of the U.S. (particularly for smaller airports), SJT has experienced a significant increase in air fares (40%), with a moderate decline in air traffic (-14%), resulting in sharp revenue growth of 20%. In other words, a very positive trend for AA.

Overall, given the positive revenue/fare trends and relatively strong RASM in conjunction with high load factors currently in place at SJT should result in positive seat capacity trends going forward.

Air Traffic Activity Trends

This section will analyze historical trends in air traffic activity at the Airport. It will also discuss the primary factors affecting these trends.

Enplaned Passengers

Table 2M presents historical enplaned passenger trends at the Airport between CY 2000 and CY 2016, including an estimate of CY 2017. It also presents enplaned passenger activity for overall U.S. domestic activity on a federal fiscal year basis (years ending September 30) for 2000 through 2016 and presents the Airport's share of overall U.S. activity.

Since 2000, SJT enplaned passengers grew at a CAGR of 1.7%, which was generally in line with economic growth during this time-period. But this growth has been volatile. From 2000-02, traffic declined by a CAGR of 4.7%. This was during the post-09/11 time-period, with the traffic decline driven by Continental Express temporarily eliminating service to their IAH hub. During this same time period, American Eagle kept service relatively consistent at 5-6 daily trips to their DFW hub on 34-seat SF3 aircraft. From 2002 until 2008, SJT experienced a strong CAGR of 8.7%. Most of this growth took place in 2004, as Continental Express re-entered the SJT market. In addition, during this same time period, American's traffic increased almost 25%, increasing from approximately 36,500 enplaned passengers in 2003 to over 54,000 in 2008. During this period, American's load factor also increased from 56% to almost 75%. From 2008-10, SJT enplaned passenger activity declined at a CAGR of 6.4%. This was during a time of a significant U.S. economic recession, with the vast majority of U.S. airports experiencing declining passenger volumes. Tied to this, Continental Express exited the market in 2009. During this same time period, American increased seat capacity in response to Continental exiting the market, although traffic didn't keep pace and load factors fell to 51% in 2010.

Since 2010, enplaned passenger activity has increased by almost 6.9% or at a 0.96% CAGR. During this time, American steadily reduced seat capacity, or over 25% during the 7-year time-period. The result was that American's 2010 load factor of 51% has improved to 80% in 2017.

To summarize SJT's current air service situation, SJT is currently positioned better for future air service growth than likely anytime over the past 25+ years. This is due to: 1) Load factor increases from the 50s earlier this decade to the mid-80s currently. In other words, planes are full. Once load factors begin ranging from 85%-90%, carriers look at adding more capacity; 2) Mileage-adjusted RASMs are well above both system averages and other regional airports – indicative of relative profitability and 3) Finally, there is more demand than is currently flying out of SJT, due to significant leakage to other regional airports.

TABLE 2M
Historical Enplaned Passenger Trends at the Airport and U.S.

Fiscal Year	Air Carrier	Air Taxi & Commuter	Enplaned Passengers	% Change	Federal Fiscal Year	U.S. Domestic Enplaned Passengers (000s)	% Change	Airport Share of U.S. Domestic
2000	262	44,067	44,329	-	2000	641,200	-	0.057%
2001	541	48,599	49,140	10.9%	2001	625,000	(2.5%)	0.053%
2002	627	37,745	38,372	(21.9%)	2002	626,800	0.3%	0.045%
2003	1,713	40,975	42,688	11.2%	2003	574,500	(8.3%)	0.050%
2004	1,216	59,010	60,226	41.1%	2004	628,500	9.1%	0.048%
2005	1,907	61,878	63,785	5.9%	2005	669,500	6.5%	0.047%
2006	1,688	66,518	68,206	6.9%	2006	668,400	(0.2%)	0.046%
2007	1,693	68,045	69,738	2.2%	2007	690,100	3.2%	0.044%
2008	2,070	66,560	68,630	(1.6%)	2008	680,700	(1.4%)	0.043%
2009	2,430	57,885	60,315	(12.1%)	2009	630,800	(7.3%)	0.040%
2010	2,451	53,774	56,225	(6.8%)	2010	635,200	0.7%	0.036%
2011	2,469	52,835	55,304	(1.6%)	2011	650,100	2.3%	0.040%
2012	2,403	54,247	56,650	2.4%	2012	653,800	0.6%	0.042%
2013	2,108	58,019	60,127	6.1%	2013	654,300	0.1%	0.042%
2014	1,296	64,018	65,314	8.6%	2014	669,000	2.2%	0.045%
2015	1,963	62,938	64,901	(0.6%)	2015	696,000	4.0%	0.044%
2016	1,787	58,229	60,016	(7.5%)	2016	726,000	4.3%	0.040%
2017E	1,368	58,727	60,095	0.1%	2017E	742,000	2.2%	0.033%

CAGR[1]		CAGR[1]	
2000-17	1.7%	2000-17	0.8%
2000-02	(4.7%)	2000-02	(0.8%)
2002-08	8.7%	2002-08	1.2%
2008-10	(6.4%)	2008-10	(2.3%)
2010-15	2.4%	2010-15	1.5%
2015-17	(2.5%)	2015-17	2.2%

[1] CAGR = Compounded annual growth rate; Source: FAA TAF
Source: FAA Aerospace Forecasts

Commercial Aircraft Operations

As illustrated in **Table 2N**, passenger aircraft operations at SJT have declined by approximately 36% since 2000, as noted in Table 2BB. American exclusively flew 34-seat SF3 turboprop aircraft through 2002, then began to incorporate ERJ-135/140/145 regional jet aircraft beginning in 2003, steadily increasing the usage of that aircraft until turboprops were completely phased out beginning in 2013. As a part of this, from 2008 until 2012, American flew a heavier mix of 66-seat ATR turboprop aircraft.

Finally, as noted earlier, American incorporated more CRJ-700 aircraft in 2017 (May-December), although in 2018 they are again completely relying on ERJ-135/140/145 aircraft.

Continental Express operated 34-seat Embraer 120 turboprop aircraft at SJT from 2000-2002, until they eliminated service at SJT in the post-9/11 environment. Subsequently, Continental re-entered the SJT market in 2004, this time operating a mix of ERJ-135/145 regional jet aircraft, EMB-120 turboprop and SF3 turboprop aircraft, until they exited the market at the depths of the U.S. recession in 2009.

TABLE 2N
Historical Commercial Aircraft Operations at the Airport

Fiscal Year	Air Carrier	Air Taxi & Commuter	Total	% Change
2000	18	9236	9254	-
2001	16	9225	9241	(0.1%)
2002	20	6689	6709	(27.4%)
2003	78	6903	6981	4.1%
2004	198	7997	8195	17.4%
2005	1749	6027	7776	(5.1%)
2006	1332	6262	7594	(2.3%)
2007	396	7584	7980	5.1%
2008	1352	7890	9242	15.8%
2009	5596	5806	11402	23.4%
2010	6597	5571	12168	6.7%
2011	5052	5285	10337	(15.0%)
2012	4784	5923	10707	3.6%
2013	5390	6681	12071	12.7%
2014	5793	7161	12954	7.3%
2015	5787	5775	11562	(10.7%)
2016	3645	4306	7951	(31.2%)
2017E	2269	3676	5945	(25.2%)

** Source: June 2018 SJT Terminal Area Forecast (TAF). Air Carrier: 60 seats or greater, Commuter <60 seats*

Aircraft Fleet Mix: Passenger Aircraft Operations

Scheduled departure data was further analyzed for operational trends over the past seven years in **Table 2O**. As noted previously, there has been a shift toward larger aircraft in the industry, particularly with regard to the large reduction in 50-seat flying across the industry in favor of larger 64-76 seat regional jets.

These trends have been slower in coming to SJT, although these trends began to occur in 2017, with the significant increase in larger regional jet flying. As noted earlier, these trends occurred during the May-December 2017 time period, as American added CRJ-700 flying into the market.

TABLE 2O
Historical Operation by Aircraft Type

Seating Capacity	2012	2013	2014	2015	2016	2017
COMMUTER						
< 40 Seats	0.6%	1.1%	-	-	-	-
40-60 Seats	89.0%	98.9%	100.0%	100.0%	100.0%	45.2%
AIR CARRIER						
61-99 Seats	10.3%	-	-	-	-	54.8%
100-120 Seats	-	-	-	-	-	-
121-150 Seats	-	-	-	-	-	-
151+ Seats	-	-	-	-	-	-

Source: BTS Report T-100 for 2011-16; 2017 was based upon published airline schedules (source: Innovata)

PASSENGER AIR TRAFFIC ACTIVITY FORECASTS

Landrum and Brown has reviewed past activity and related forecasts for the San Angelo Regional Airport (SJT). The upcoming section will forecast SJT enplaned passenger activity for the 5, 10 and 20-year time periods. This is described in the sections below. Subsequent to this, a forecast pertaining to Passenger Aircraft Operations, including by aircraft type will take place.

2018 Forecast Review

A short-term review and forecast was performed to assess the SJT forecast for Calendar Year 2018. Through July 2018, enplaned passenger activity is down 6.1%, on a similar seat capacity decline. Based upon published airline schedules, seat capacity for the full year is expected to decline about 8%. This is due to downgraded aircraft from CRJ-700 to smaller ERJ regional jets. Due to this, we are estimating 2018 enplaned passengers of 55,450, or an 8% decline year over year.

Long-term Forecast Review

The long-term forecast at San Angelo will be done for 5, 10 and 20-year time periods, using 2017 as the baseline. The enplaned passenger forecast below, will be done using a variety of forecast methodologies: 1) Historical Trends, 2) FAA Forecasts, 3) SJT market shares of industry projections and 4) Regression analysis of the Air Service Area's economic metrics.

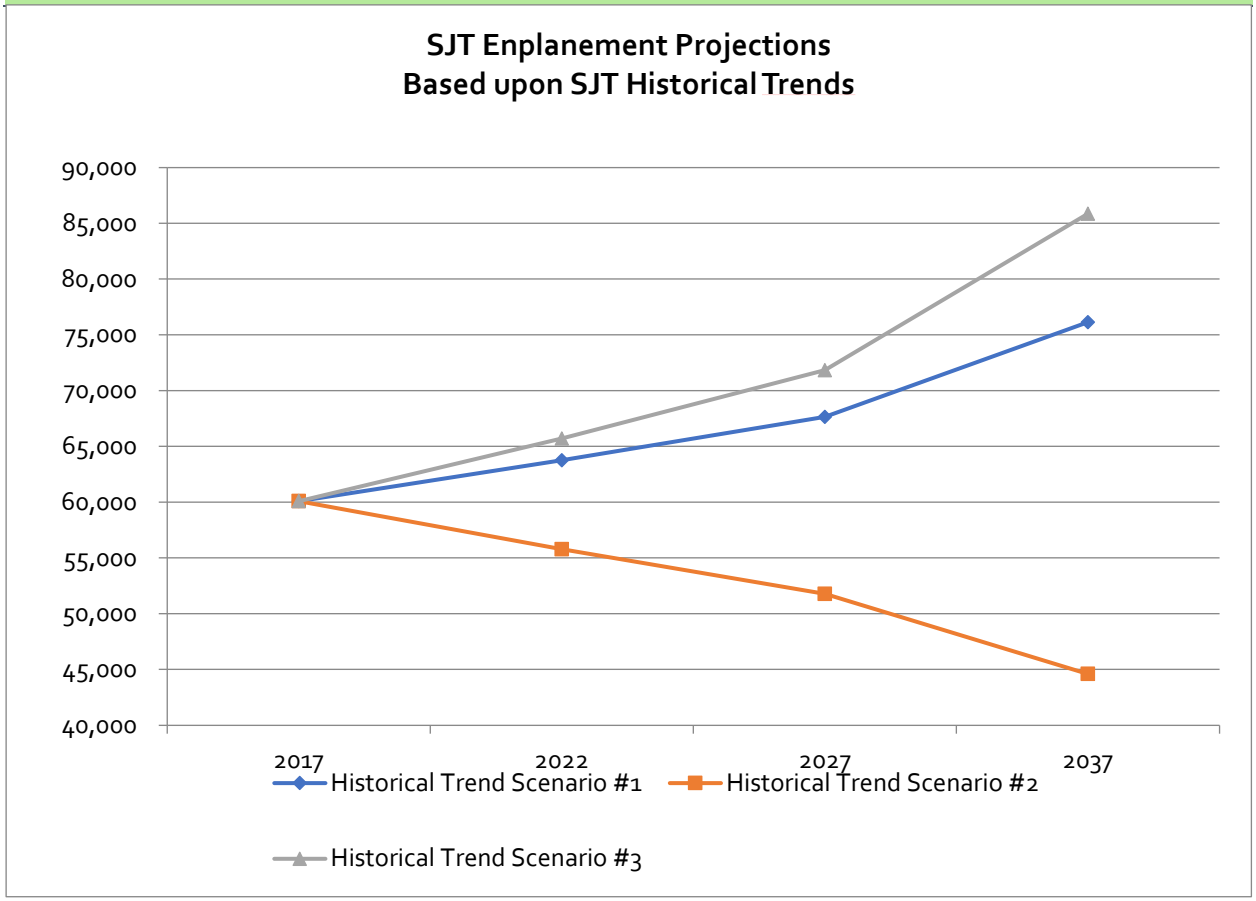
Historical Trend Analysis

Three historical trends have been considered for future projections:

1. **Short-term trend**: The first historical trend emulates the past five years (2012-2017) at SJT, using 2017 enplaned passengers as the baseline. The past five years were a time-period when the area saw moderate economic growth after the significant recession in the late 2000s. The CAGR in enplaned passenger traffic during this five-year time period was 1.19%. This is Scenario #1.
2. **10-Year Trend**: The second trend uses data from the ten-year period of 2007-2017, reflecting a CAGR of (-1.48%). This time period incorporated the significant recession and subsequent economic climb back. This projection will serve as the basis for Historical Trend Scenario #2.
3. **20-year Trend**: The third historical trend uses a 20-year period of historical data (1997-2017) and reflects a CAGR of 1.8%. This projection will be the basis for Historical Trend Scenario #3.

Exhibit 2O illustrates the results of applying these trends to the baseline 2017 result of 60,095 passenger enplanements.

EXHIBIT 2O
SJT Enplanement Projections Based on Historical Trends



Source: Landrum and Brown Analysis

FAA Forecast Sources and Scenarios

The FAA presents aviation activity forecasts in several different sources, including the following two sources to be utilized in this forecast analysis:

FAA Aerospace Forecasts

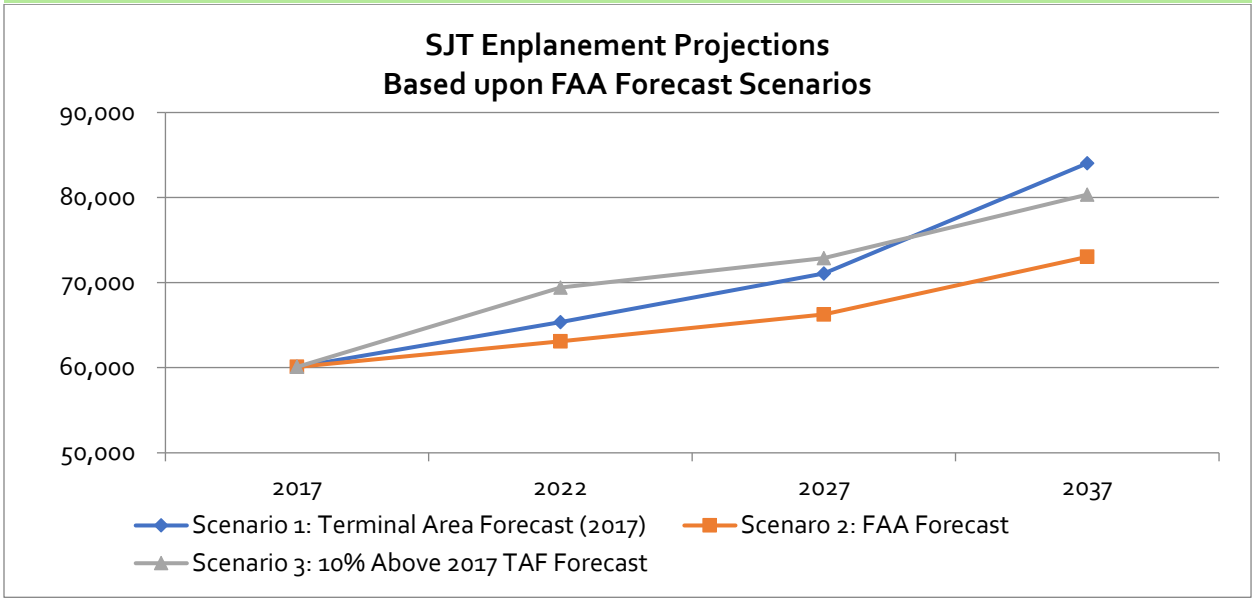
This document provides growth projections for the entire aviation industry in fiscal years, as described earlier. In this document, the FAA predicts that annual total enplanements for U.S. domestic air carriers will increase at a CAGR of approximately 1.69% annually between 2017 and 2037. This growth rate, applied to CY 2017 baseline SJT enplanements, will serve as the basis for FAA Forecast Scenario #1.

2017 FAA Terminal Area Forecast (TAF)

The TAF utilizes national growth trends, coupled with historical local growth trends, to develop airport-specific activity forecasts on a fiscal year basis (October-September). The most recent TAF enplanement projections include a compound growth rate of approximately 0.98% annually for SJT between 2017 and 2037. This will serve as the basis for Forecast Scenario #2.

Exhibit 2P illustrates the results of applying these scenarios based upon FAA Forecast documentation to the 2017 level of 60,095 enplanements. The figure also depicts an enplanement level at 10% above the TAF for the first five years of the forecast period, typically viewed by the FAA as the level of variation from the TAF that is deemed acceptable before additional justification is required to support higher forecasted activity levels.

EXHIBIT 2P
SJT Enplanement Projections Based on FAA Forecast Scenarios



Source: Landrum and Brown Analysis

Market Share Analysis

Market share analysis for airports can provide a valid benchmark from which to access future activity. This approach compares activity at a specific airport with a larger aviation market, such as total U.S. domestic enplanements, to develop a ratio of activity.

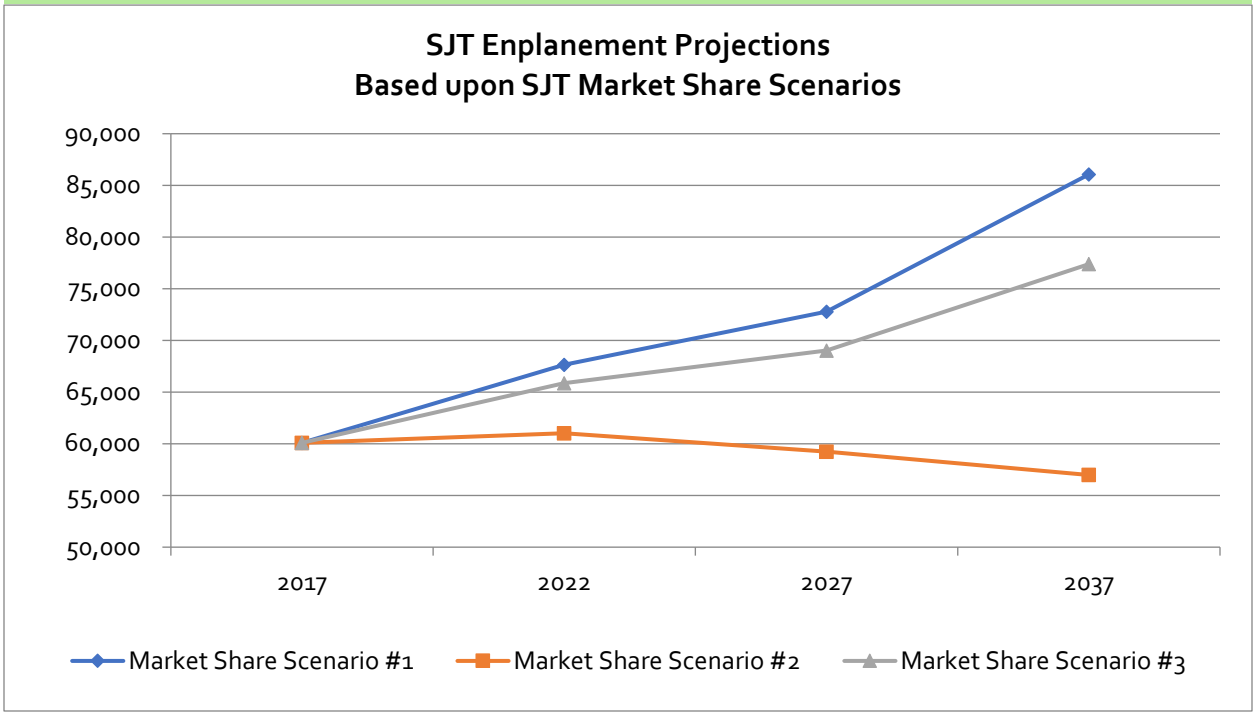
Applied to historical national enplanements as reported in the FAA Terminal Area Forecast (TAF), SJT's annual market share between 2000 and 2016 ranged between a low of 0.0061% of national enplanements in 2002 to a high of 0.0102% of national enplanements in 2006. **Table 2P** illustrates SJT's historical market share of national enplanements between 2000 and 2016. Projections of future enplanement activity based upon market share analysis were conducted using the following scenarios. Results are depicted on **Exhibit 2O**:

1. Constant Market Share: SJT market share will remain constant at 2016 estimated level of 0.0083% of national enplanements through 2037 (using FAA's TAF Forecast of national enplaned passengers). This projection will serve as the basis for Market Share Scenario #1.
2. Market Share Change I: SJT market share will change at the CAGR experienced between 2006-2016 (CAGR of -2.04%) through 2037, starting with the 2016 share of 0.0083% and then declining at the -2.04% rate. This projection will serve as the basis for Market Share Scenario #2.
3. Market Share Change II: SJT market share will change at the CAGR experienced between 2009-2015 (CAGR of -0.53%) through 2037, starting with the 2016 share of 0.0083% and then declining at the -0.53% rate. This projection will serve as the basis for Market Share Scenario #3.

TABLE 2P
Historical Market Share

Fiscal Year	Enplaned Passengers	U.S. Domestic Enplaned Passengers (000s)	Airport Share of U.S. Domestic
2000	44,329	641,200	0.0069%
2001	49,140	625000	0.0079%
2002	38,372	626800	0.0061%
2003	42,688	574500	0.0074%
2004	60,226	628,500	0.0096%
2005	63,785	669,500	0.0095%
2006	68,206	668,400	0.0102%
2007	69,738	690,100	0.0101%
2008	68,630	680,700	0.0101%
2009	60,315	630,800	0.0096%
2010	56,225	635,200	0.0089%
2011	55,304	650,100	0.0085%
2012	56,650	653,800	0.0087%
2013	60,127	654,300	0.0092%
2014	65,314	669,000	0.0098%
2015	64,901	696,000	0.0093%
2016	60,016	726,000	0.0083%

EXHIBIT 2O
SJT Enplanement Projections Based on Market Share Scenarios



Source: Landrum and Brown Analysis

Regression Analysis Projections

Regression analysis, which projects values for a dependent variable on the basis of establishing a statistical relationship between one or more other independent variables, was utilized to determine if a statistically reliable relationship exists between historical passenger enplanements at SJT (dependent variable) and several local socioeconomic indicators (independent variable(s)). The socioeconomic indicators that were evaluated as independent variables in the projection of future passenger enplanements at SJT include MSA population, per capita personal income, total earnings, gross regional product, retail sales, median household income and non-farm payrolls. Finally, a multiple-regression analysis was performed combining all seven independent variables.

The statistical reliability of projections made to the dependent variable through a regression analysis is evaluated using the coefficient of determination, or R-squared value. Technically, the R-squared value explains the relative accuracy of the association between the dependent and independent variables. An R-squared value of 1.0 indicates a perfect correlation between variables; R-square values of less than 0.70 typically indicate that there is less correlation. An R-squared value of 0.90 is generally used as a threshold to depict a high level of statistical reliability. None of the studied socioeconomic factors studied resulted in an R-squared greater than 0.25, indicating little correlation between

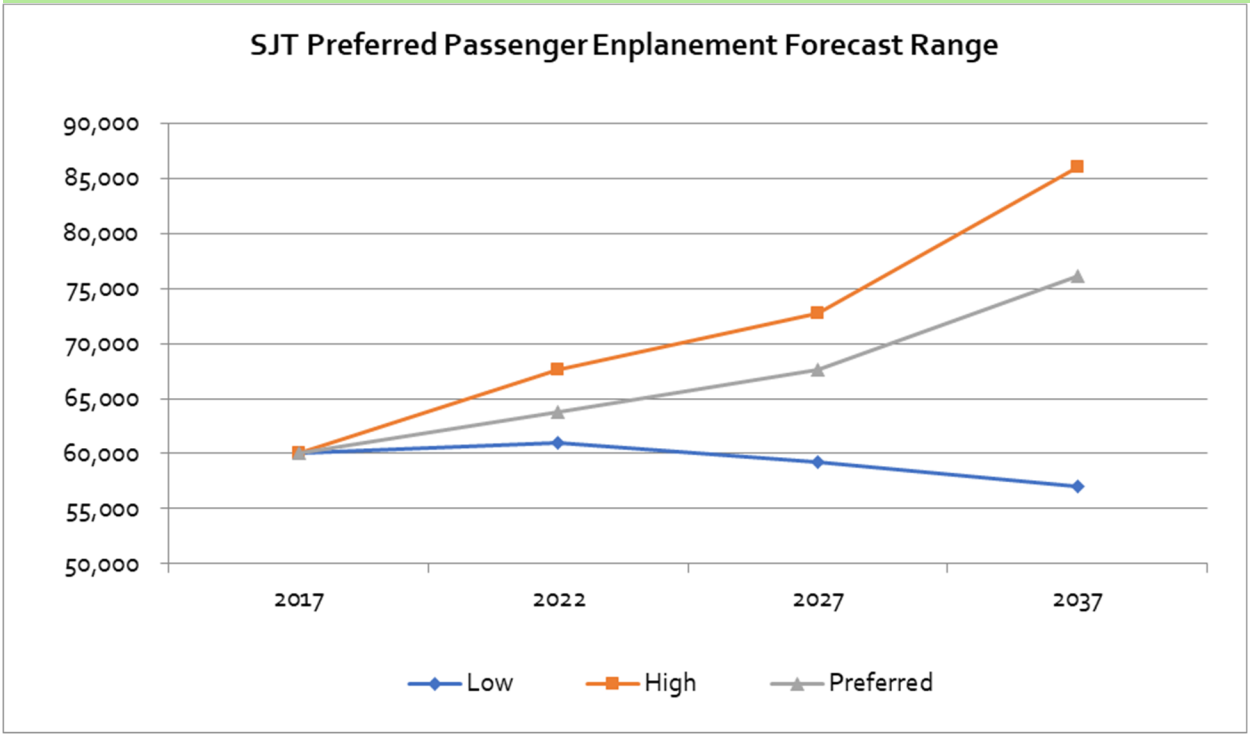
historical enplaned passenger volume and socioeconomic factors. Hence, these should not be considered reasonably reliable for planning/forecasting purposes.

Typically, there is greater correlation between key socioeconomic factors and air travel demand. In this case, there could be greater travel demand over time and hence greater correlation between economic growth and enplaned passenger volume, but it is being masked by ongoing increases in SJT's "leakage" to other regional airports, as was illustrated earlier.

Selection of the Preferred Forecast Range

The preceding sections have presented enplanement projections from several analytical sources. From these sources, a range of potential future enplanement activity can be established. Those are shown below in **Exhibit 2P**.

EXHIBIT 2P
SJT Load Factor by Month 2017-2018 and Year (2012-2018)



Source: Landrum and Brown Analysis

For the 20-year forecast period, the preferred forecast CAGR is 1.19%. This compares to the FAA's U.S. CAGR of 1.69% over this same time-period and is slightly above the latest TAF CAGR of 0.98% during this same time-period.

The preferred forecast for 5 years is 63,758 enplaned passengers as compared to the TAF of 63,092. The preferred 10-year forecast is for 67,643 enplaned passengers versus the TAF of 66,242 (2.1% difference)

The preferred forecast is for 76,136 enplaned passengers for 2037, which is 4.1% greater than the TAF of 73,029.

Alternative, Unconstrained Enplaned Passenger Forecast

The above forecasts are considered the most likely as it pertains to the Master Plan Forecast. These forecasts assume that AA remains the sole commercial passenger airline at SJT. Furthermore, this forecast assumes that additional passenger growth will be accommodated through larger aircraft over time (as will be seen in the next section).

An additional "unconstrained" passenger forecast is being put forth for alternative facility requirements. The rationale for this alternative is the following:

1. Strong, estimated AA profitability serving SJT today (noted by high mileage-adjusted RASM).
2. High load factors, more recently nearing 90%. This level typically indicates the need for more capacity.
3. High, worsening leakage. This indicates that additional demand exists in the market.
4. United (UA) growth, focused upon the 50-seat regional jet. Tied to this, UA has indicated an approximate 6% capacity growth over the next 3 years.

Furthermore, at 321 miles, the IAH-SJT route is optimal distance for a feeder market operated by a CRJ/ERJ aircraft. Finally, UA (CO) has operated at SJT before and knows the region well.

Table 2Q on the next page summarizes potential enplaned passenger activity if UA entered the market. This table essentially estimates traffic based upon SJT's retention of booked traffic (see **Exhibit 2J**). Currently, SJT is retaining 50% of booked traffic. In 2016, SJT retained 57% of booked traffic, while SJT retained 60% in 2012 and 69% in 2014. The table illustrates what SJT enplaned passenger volumes would be at these historical retention rates. As illustrated, SJT enplaned passenger volume would increase from 60,095 today to 68,508 (57% retention), to 72,114 (60% retention) to 82,931 (2014 retention). Tied to these estimates, we have shown what traffic potential could be at 1% annual growth (a bit lower than earlier rate of growth, but in line with forecasted economic growth). Below the line, estimates have been done for both American (AA) and United (UA) at different sensitivities. Given AA's long presence in the market, they would likely garner a premium share – 60% has been assumed. Assuming 75% load factors, it is estimated that AA would operate 3x-4x daily ERJ service. This would not happen immediately, but over the course of 1-2 years. United could initially support 2 times daily ERJ service to its IAH hub, operating at a 75% load factor.

If UA entered the market, it is highly likely that air fares would come down. This would primarily be due to additional (discounted) seat inventory being made available. This in turn would likely reduce

leakage, which is the foundation of this forecast. While fares would come down in the range of 15%-20%, they would still be at healthy enough levels to drive airline profitability.

TABLE 2Q
Alternative, Unconstrained Forecast (2nd Airline)

	Retention Sensitivities			
	Today	2016	2012	2014
Booked Passengers	120,190	120,190	120,190	120,190
% Retention	50%	57%	60%	69%
Enplaned Passengers	60,095	68,508	72,114	82,931
2022		72,003	75,793	87,161
2027		75,676	79,659	91,608
2037		83,593	87,993	101,192
AA - Today				
Share	60%	60%	60%	60%
Enplaned Passengers	36,057	41,105	43,268	49,759
Load Factor	75%	75%	75%	75%
Departing Seats	48,076	54,807	57,691	66,345
Daily Departs	2.6	3.0	3.2	3.6
UA - Today				
Share	40%	40%	40%	40%
Enplaned Passengers	24,038	27,403	28,846	33,172
Load Factor	75%	75%	75%	75%
Departing Seats	32,051	36,538	38,461	44,230
Daily Departs	1.8	2.0	2.1	2.4

Source: Landrum and Brown Analysis

PASSENGER AIRCRAFT OPERATIONS & FLEET MIX FORECAST

Below are forecasts as it pertains to passenger aircraft operations and fleet mix. This forecast was done at a macro-level and ties to earlier enplaned passenger forecast. It follows expected industry trends, of fewer 50-seat regional jet flying and increased larger RJ flying (64-76 seat jets).

Airline Fleet Mix

The type of passenger service aircraft that utilize the airport defines the operations needed to serve the forecasted enplanements. Flight schedules for calendar years 2016-2018 were reviewed to develop an annual schedule and current aircraft fleet mix. Projected fleet mix is developed based on known industry trends. The eventual phase-out of the 50-seat regional jet is significant to the overall fleet mix at SJT as this has historically been the workhorse for SJT. 52% of operated flights in 2017 were on this type of aircraft and 100% of scheduled operations in many of prior years. This transition is detailed in **Table 2R.**

TABLE 2R
SJT Passengers Seat Projections (2017-2037)

Seating	2017	2022	2027	2037
Less Than 40 Seats	-	-	-	-
40-60 Seats	52.4%	58.3%	32.4%	-
61-99 Seats	47.6%	41.7%	67.6%	100.0%
100-120 Seats	-	-	-	-
121-150 Seats	-	-	-	-
151+ Seats	-	-	-	-

Source: Published Flight Schedules (Innovata) for 2017; Landrum and Brown analysis

Table 2S shows aircraft detail (aircraft operations and operating seats) from 2017 through 2037. As indicated earlier, there will be an overall trend toward larger aircraft, less operations and moderate overall seat capacity growth during the forecast period.

The 50-seat Embraer regional jets are assumed to be partially phased out by 2027 and entirely phased out by 2037. While Canadair CRJ-700/900 (or comparable 76-seat jet) will backfill most of these reductions, it will not be a one for one trade off. The net result will be less operations from these aircraft types but at increased overall seat capacity levels as compared to today when much more 50-seat regional jet frequency exists.

The key operations assumptions are that 58% of 2022 operations will be on 50-seat regional jets, with 21% on 65-seat CRJ-700s and 21% on 76-seat CRJ-900. By 2027, 32% of operations will be on 50-seat regional jets, 25% on CRJ-700s and 43% on CRJ-900s. By 2037, it is assumed that all operations will be on CRJ-900 aircrafts. It is assumed that load factors will run at 80%, which is in line with current results. It is assumed that any additional demand will be managed by airlines through higher fares.

The key operations assumptions are that 58% of 2022 operations will be on 50-seat regional jets, with 21% on 65-seat CRJ-700s and 21% on 76-seat CRJ-900. By 2027, 32% of operations will be on 50-seat regional jets, 25% on CRJ-700s and 43% on CRJ-900s. By 2037, it is assumed that all operations will be on CRJ-900 aircrafts. It is assumed that load factors will run at 80%, which is in line with current results. It is assumed that any additional demand will be managed by airlines through higher fares.

TABLE 2S
SJT Passengers Per Departure

Seating Capacity	2017	2022	2027	2037
Regional (<60 seats)				
Average Seats Per Departure	48.6	50.0	50.0	-
Average Load Factor	80.0%	80.0%	80.0%	-
Enplanements Per Departure	38.8	40.0	40.0	-
Air Carrier (60+ seats)				
Average Seats Per Departure	65.0	70.0	72.0	76.0
Average Load Factor	80.4%	80.0%	80.0%	80.0%
Enplanements Per Departure	52.3	56.0	57.6	60.8
Total				
Average Seats Per Departure	56.4	58.4	64.8	76.0
Average Load Factor	80.6%	80.0%	80.0%	80.0%
Enplanements Per Departure	48.2	46.7	51.9	60.8

Source: Landrum and Brown Analysis, Diio (2017)

Passenger Airline Operations

Passenger airline operations are determined from average enplanements per departure from the fleet mix determinations. An operation is considered an aircraft departure or an arrival. **Table 2T** summarizes forecast airline operations.

TABLE 2T
SJT Passenger Airline Operations

Metric	2017	2022	2027	2037
Departures				
Regional (≤ 60 Seats)	654	797	423	-
Air Carrier (> 60 Seats)	593	569	881	1,252
Operations				
Regional (≤ 60 Seats)	1,308	1,594	846	-
Air Carrier (> 60 Seats)	1,186	1,137	1,763	2,504
Total Operations	**2,494**	**2,731**	**2,608**	**2,504**

Source: Landrum and Brown Analysis, Diio (2017)

Summary

A summary of the preferred passenger aviation forecasts are provided in **Table 2U**. As noted earlier, it is expected that operations will drop, as larger aircraft replace 50-seat regional jets. Seat capacity is forecasted to grow moderately over the next 20 years, with higher passenger loads on larger jets and higher load factors.

TABLE 2U
Preferred Passenger Airline Forecasts Summary

ENPLANED PASSENGERS	2017	2022	2027	2037
Regional (≤ 60 Seats)	27,037	31,879	16,911	-
Air Carrier (> 60 Seats)	33.058	31,879	50,732	76,136
Total Enplaned Passengers	**60,095**	**63,757**	**67,642**	**76,136**
Avg. Seats/Departure	56.4	58.4	64.8	76.0
Avg. Load Factor	80.6%	80.0%	80.0%	80.0%
OPERATIONS	2017	2022	2027	2037
Regional (≤ 60 Seats)	1,308	1,594	846	-
Air Carrier (> 60 Seats)	1,186	1,137	1,763	2,504
Total Operations	**2,494**	**2,731**	**2,608**	**2,504**

Source: Landrum and Brown Analysis

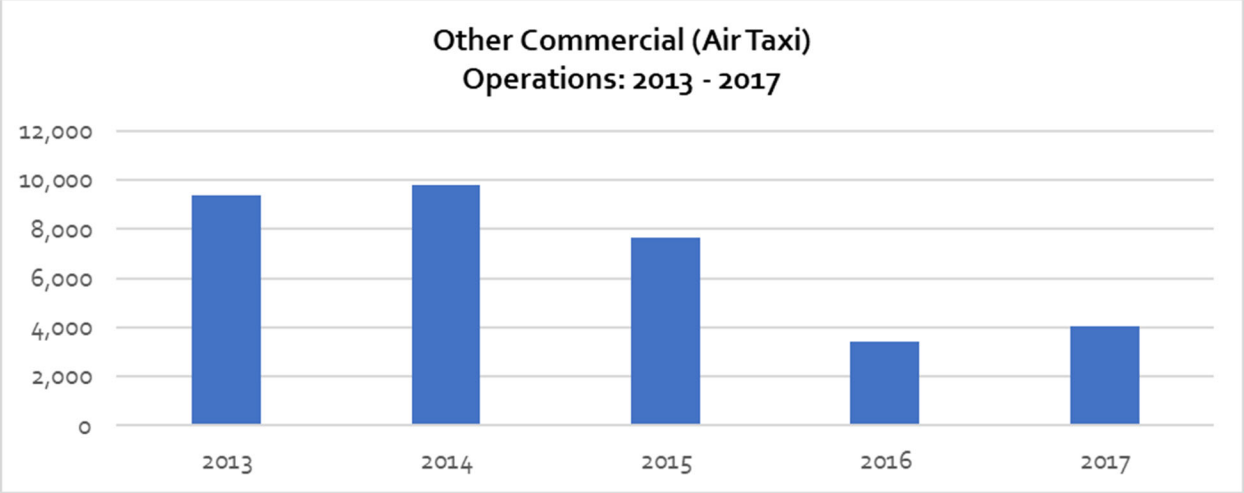
Other Commercial Activity (Non-Passenger Air Taxi)

Operations

Air taxi annual operations are illustrated below in **Exhibit 2Q**. An Air Taxi is a smaller commercial aircraft which makes short flights on demand, usual propeller driven or a helicopter. This compares to commercial passenger air service, which is regularly scheduled and typically on much larger aircraft.

Air taxi operations declined steadily sharply from 2013 through 2016, then increased in 2017. The Airport historically generates good Air Taxi demand, in part driven by the demand from the oil & gas industry, in addition to the regional healthcare industry. Declining Air Taxi operations is a general industry trend, although this is also likely being driven by recent trends in the oil & gas industry. For forecast purposes, it is assumed that more moderate declines will take place through 2022 (as compared to declines experienced over the past 5 years), with small, incremental increases forecasted to take place during the remainder of the forecast period.

EXHIBIT 2Q
Other Commercial (Non-Passenger Air Taxi) Operations



Source: San Angelo Regional Airport 5010 Air Traffic Record, BTS Report T100 (Diio)

Commercial Forecast Summary

In summary, SJT commercial activity is going to be driven by a small reduction in total operations, but the average aircraft size is going to increase significantly, with overall seat capacity increasing moderately, but well below forecasted U.S. levels. It is also expected that higher passenger loads (on larger aircraft) will take place with increases in enplaned passengers per departure.

A summary of the commercial aviation forecasts is shown in **Table 2V**.

TABLE 2V
Commercial Forecast Summary

	Metric	2017	2022	2027	2037
Enplanements	Air Carrier	33.058	31,879	50,732	76,136
	Commuter/Regional	27,037	31,879	16,911	-
	Total Enplanements	**60,095**	**63,757**	**67,642**	**76,136**
Operations	Air Carrier	1,186	1,137	1,763	2,504
	Commuter/Regional	1,308	1,594	846	-
	Air Cargo	n/a	n/a	n/a	n/a
	Air Taxi	4,044	3,500	3,600	3,900
	Total Commercial Operations	6,538	6,231	6,208	6,404
Total	Avg. Seats/Operation	56.4	58.4	64.8	76.0
	Average Load Factor	80.6%	80.0%	80.0%	80.0%

Source: Landrum and Brown Analysis

In addition, as a part of the figures above, include charter operations at SJT. For 2017, this included 3 departing flights. The providers and the operating aircraft were: Swift Air (737-400), Sun Country (737-700 & 800) and Elite Airways (CRJ-700). These were casino charters that operated at load factors in the 90%+ range.

Based Aircraft Forecast

Introduction

The preceding sections focused heavily on the commercial service forecasts for SJT. The steady growth of enplaned passengers and use of larger regional jet aircraft within the planning horizon exemplifies the City's need to continue to plan for future enhancements to the facilities directly related to air service operations, such as the terminal building, landside parking and access, and apron space, just to name a few. However, the commercial service forecasts only partially represent the forecasted facility needs for the airport as a whole. As such, another helpful forecast for airports to consider is the based aircraft forecast.

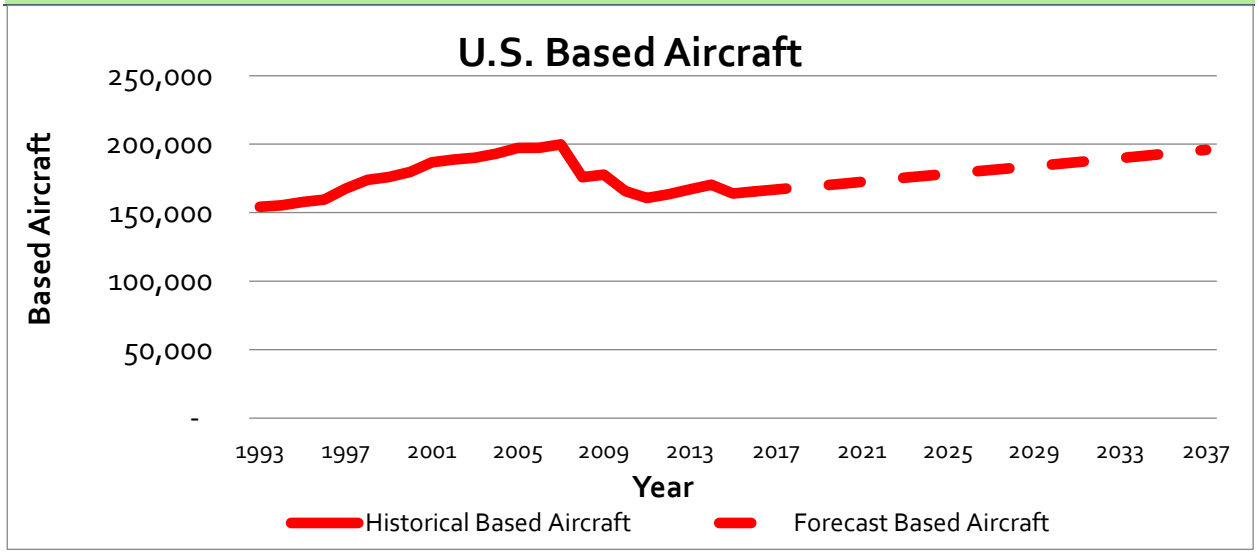
The FAA's definition of a based aircraft is an aircraft that is operational and airworthy, which is based at a specific facility for a majority of the year. Based aircraft can include any airworthy type of aircraft,

such as gliders or ultralights; however, the FAA is mainly interested in an airport's based aircraft of the following types: single-engine piston, multi-engine piston, jet (including turboprop), and helicopters, or SMJH as sometimes referred to by the FAA. A based aircraft forecast is used to estimate the amount and types of aircraft an airport can expect to regularly use all components of the airfield, and therefore are an important aspect of planning for future development at the airport. For example, based aircraft can drive the need for hangars, additional parking apron, and even design standards of the airfield. Development of the based aircraft forecast for SJT includes the review of historical, existing, and forecasted data from the FAA and airport management records. For context, a brief discussion on based aircraft trends at the national level is also provided.

Based Aircraft at the National Level

On the national level, the *FAA Aerospace Forecast* provides an overview of aviation industry trends and expected growth rates for commercial passenger carrier, cargo carrier, and GA activity segments. National growth rates in enplanements, operations, fleet growth and mix for commercial fleets, and the GA fleet are provided over a 20-year forecast period. Using the published report for fiscal years 2017-2037 to align with SJT's baseline year of 2017, the *FAA Aerospace Forecast* indicates based aircraft at U.S. airports hit a 15-year low in 2011 after highs were achieved in 2007. The economic recession has been attributed with the decline in the number of based aircraft, which fell nearly 20 percent between 2007 and 2011. Since the economic recovery from that time period, national forecasts show a modest growth rate in based aircraft of 0.8 percent annually over the next 20 years. The gradual increase in based aircraft nationally beginning in the early 1990s, as well as the periods of decline, followed by a return to conservative growth is illustrated in **Exhibit 2R**. It has been inferred by aviation industry leaders and forecasters that the most recent economic recession demonstrates the new sensitivity-based aircraft have with the overall national economy.

EXHIBIT 2R
U.S. Based Aircraft

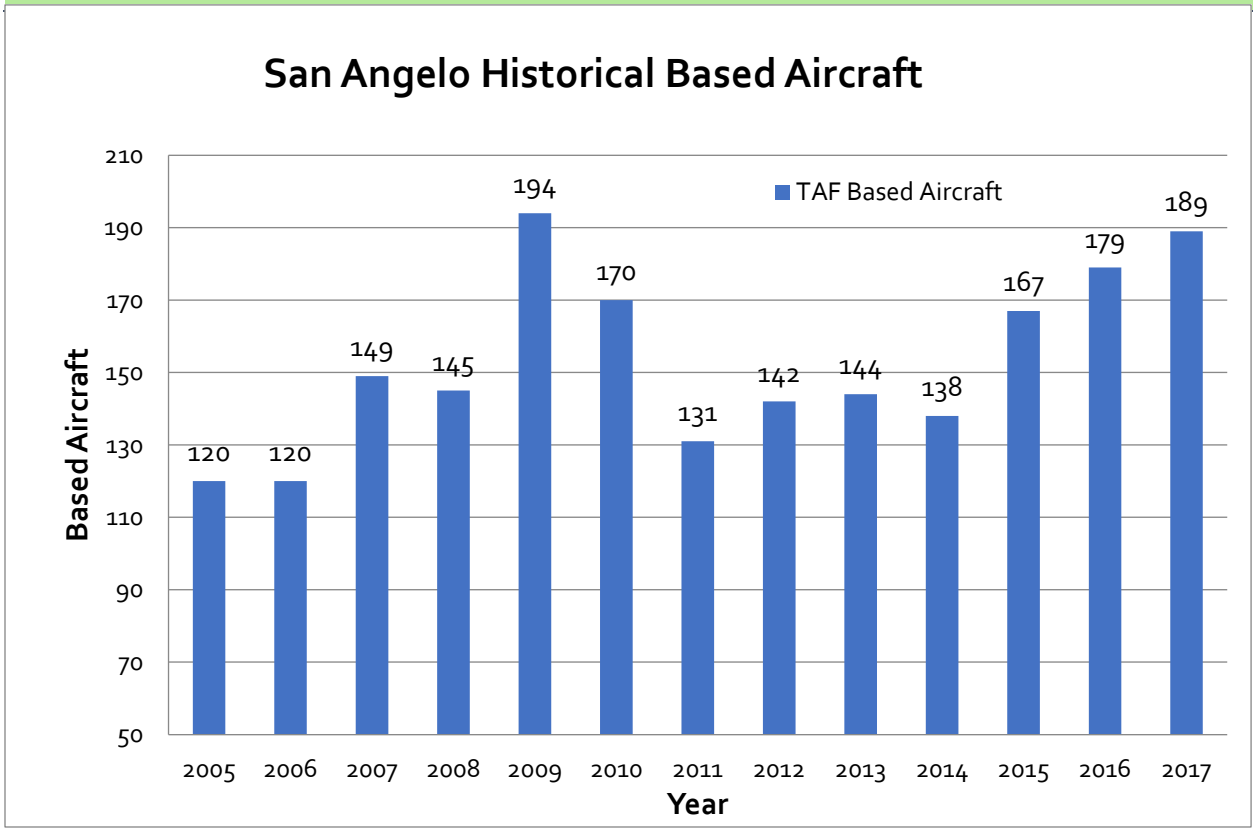


Source: *FAA Aerospace Forecast: Fiscal Years 2017-2037*

Based Aircraft at San Angelo Regional Airport (SJT)

Prior to determining the forecasted based aircraft at SJT within the 20-year planning horizon, a review of historical and existing based aircraft data was necessary. Evaluating historical trends at an airport can be useful when projecting future aviation activity levels by providing insight as to what may be expected. Sources examined for the historical and existing based aircraft figures included the FAA *Terminal Area Forecast* (TAF) and the FAA Form 5010-1, *Airport Master Record* (5010). The TAF is considered the official forecast of aviation activity for U.S. airports, and is often used for planning and budgeting for the implementation of capital projects. It also is a reference for historical data, as it is updated on an annual basis. Based aircraft at SJT from the last twelve years according to the most current TAF are depicted in **Exhibit 2S**. Furthermore, the TAF indicates 189 total based aircraft at SJT in 2017. Periods of steady growth followed by periods of decline seem to closely mirror that of the historical trends of based aircraft at the national level as described above.

EXHIBIT 2S
San Angelo Historical Based Aircraft



Source: FAA Terminal Area Forecast, retrieved January 2019

As previously described in Chapter One – *Inventory*, the Airport's existing based aircraft count for the 12-month period ending December 31, 2017, according to the most recent 5010 dated February 2019, indicates 176 aircraft are based at SJT. A slight discrepancy between what is reported on the TAF versus what is reported on the 5010 is not uncommon. The TAF is a forecasting tool where the FAA uses a unique mathematical formula for each individual airport. It takes into consideration local and national economic conditions, as well as conditions within the aviation industry.[1] On the contrary, data on the 5010 reflects the most current information available about the airport and its facilities, including based aircraft, as required by the FAA. Based aircraft data contained on the 5010 usually comes directly from the airport manager or other designated airport employee. Thus, for the purpose of the based aircraft forecasts within the 2017-2037 planning period contained within this report, the existing total based aircraft, including the fleet mix of aircraft found at the Airport, will reflect the numbers reported on the current 5010; these numbers are believed to reflect the most accurate and current data available.

[1] U.S. Government Accountability Office, *Report to Congressional Committees: Aviation Forecasting – FAA Should Implement Additional Risk-Management Practices in Forecasting Aviation Activity*, March 2016, retrieved February 2019 from https://www.gao.gov/assets/680/675873.pdf.

SJT Based Aircraft Forecast Methodologies and Analysis

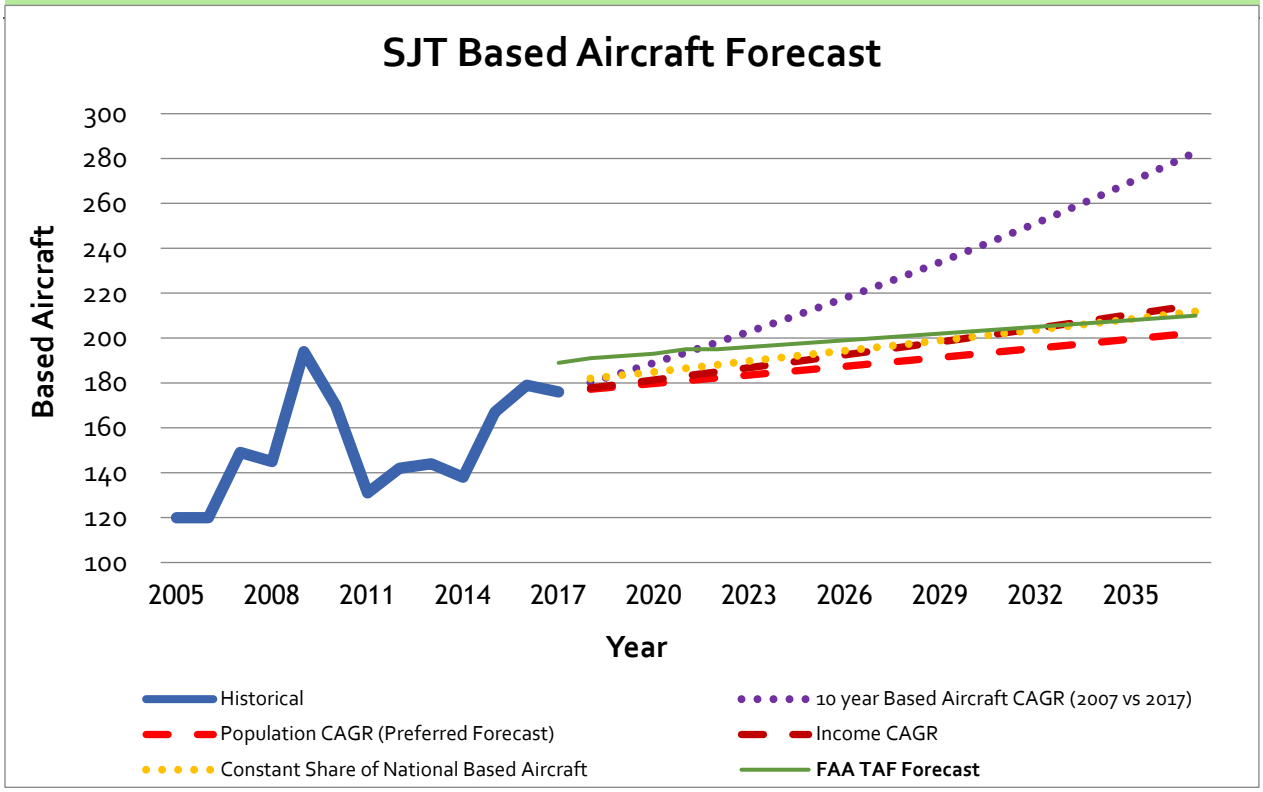
Typical forecast methodologies used to predict based aircraft at airports include time series (trend), regression, and market share analyses. These methods incorporate data from the FAA TAF and Aerospace Forecasts, airport management records, as well as other demographic and socioeconomic data. The specific forecasting methods applied to estimate based aircraft at SJT for the next 20 years included the following:

1) Population CAGR (Metropolitan Statistical Area)
2) 10-year SJT based aircraft CAGR
3) Income CAGR (Metropolitan Statistical Area)
4) SJT's constant share of the national based aircraft forecast

The outcomes produced by the forecasting methodologies listed above are illustrated in **Exhibit 2T.** For comparative purposes, the historical and forecasted FAA TAF based aircraft are also included; the 2017 TAF published for SJT reports 189 based aircraft in 2017, growing to 210 based aircraft by 2037. This represents a CAGR of approximately 0.53 percent.

The population growth model for the San Angelo metropolitan statistical area (MSA) was chosen as the preferred based aircraft forecast. As previously mentioned, airports are often influenced by fluctuations in demographic and socioeconomic factors within their surrounding communities. Although modest, increases in population for the San Angelo MSA, combined with steady increases in employment and per capita income in the same MSA, have the potential to increase the Airport's aviation activity. The logic being that with these increases, there will be an increase in the population that may use general aviation aircraft for recreational or business purposes, and therefore be inclined to either base an aircraft or fly to/from the Airport (or both) on a regular basis.

EXHIBIT 2T
San Angelo Based Aircraft Forecast Methods



Source: FAA Terminal Area Forecast, retrieved January 2019; Landrum and Brown analysis, January 2019

Although this forecast is 3.8 percent below the FAA TAF forecast for the same period, in this instance, population growth is likely the best indicator of changes in based aircraft at SJT within the 20-year planning horizon (when using the 5010 based aircraft data as the baseline) because it is consistent with forecasted economic growth in the region. The San Angelo MSA population is forecasted to increase at a CAGR of 0.7 percent throughout the 20-year period. Thus, applying the same growth rate of 0.7 percent to SJT's existing based aircraft (according to FAA Form 5010-1) results in an estimated 202 based aircraft by 2037. The biggest difference between these forecasts is the 2017 baseline data used, i.e. 176 based aircraft (5010) versus 189 based aircraft (TAF). The results using the population growth CAGR as the preferred forecast for based aircraft at SJT in the planning horizon is depicted in **Table 2W**.

TABLE 2W
Based Aircraft Forecast

Metric	2017	2022	2027	2037	*CAGR*
Total Based Aircraft	176[1]	182	189	202	*0.7%*

Note. Existing based aircraft baseline data taken from FAA Form 5010-1, Airport Master Record, for the 12-month period ending December 31, 2017.

Source: Landrum and Brown analysis, February 2019

SJT Based Aircraft Fleet Mix

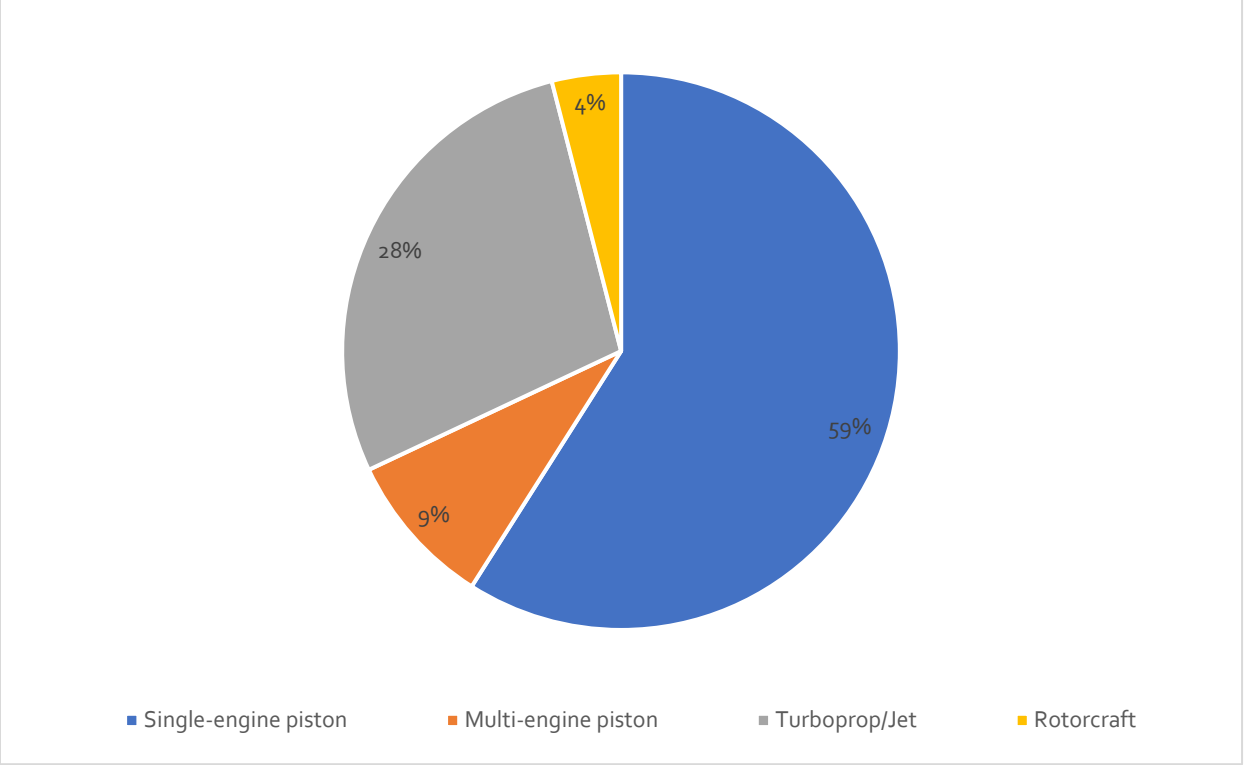
The estimate of based aircraft over the 20-year planning horizon at an airport can be further broken down into an aircraft fleet mix, or the types of aircraft, expected to be based at the airport during this time period. The existing breakdown of the types of aircraft based at the airport is reviewed, and then typically the preferred based aircraft forecast growth rate is applied to the forecasted based aircraft within each planning period, which in turn determines the forecasted fleet mix of based aircraft at the airport. The results of the based aircraft fleet mix are then utilized to determine if the airport's existing facilities will be able to meet the forecasted demand. This will be addressed in the subsequent facility requirements portion of the report.

The existing fleet mix data as reported on the most recent 5010 for the 12-month period ending December 31, 2017, and as described in Chapter One – *Inventory*, is the basis for the future fleet mix. **Exhibit 2U** displays the breakdown of the existing aircraft fleet mix as a percentage of total based aircraft found at SJT today.

Again, for context, the FAA *Aerospace Forecast, Fiscal Years (FY) 2017-2037*, includes the following fleet mix projections at the national level:

- Fixed-wing piston powered aircraft are projected to decline at an average annual rate of 0.8 percent.
- Turbine-powered propeller (turboprop) and rotorcraft fleets are projected to increase at an average annual rate of 1.9 percent.
- Turbine jet aircraft are projected to increase at an average annual rate of 2.3 percent.

EXHIBIT 2U
Existing Fleet Mix



Source: FAA Form 5010-1, Airport Master Record, for the 12-month period ending December 31, 2017

Presently, single-engine piston aircraft and turboprop/jet aircraft comprise the majority of the based aircraft fleet mix at SJT. Multi-engine piston aircraft and rotorcraft round out the mix to a lesser extent. Although the national forecast predicts a decline in single- and multi-engine piston aircraft, it is anticipated that these aircraft types could increase by modest amounts based on historical flight training and recreational activities at SJT. Furthermore, the Airport has already anticipated a potential increase in the number of based turboprop and corporate jet that could be based at the facility in the future.

Both FBOs, as well as airport management, have been approached in recent months by several individuals/companies expressing interest in basing their turboprop or jet at SJT. For example, one business currently bases their aircraft fleet (three jets and four turboprops) at an airport in Midland, Texas, located approximately 120 miles northwest of SJT. This particular company is very interested in relocating its aircraft fleet should a hangar that could accommodate their aircraft become available. The specific facility needs as it relates to projected future demand is discussed in greater detail within Chapter 3, *Demand Capacity and Facility Requirements,* in which the projected turboprop/jet aircraft will play more of a significant role in determining the ultimate facility needs of SJT. Additionally, the

next section, *General Aviation Annual Operations Forecast*, provides a more in-depth analysis of the potential jet activity likely to occur at the Airport within the next 20 years. Thus, the 0.7 percent CAGR applied to the existing based turboprop and jet aircraft to determine future aircraft of the same type may be somewhat conservative; however, as described above, the population growth rate is typically a reliable predictor of based aircraft at airports. Based on the outcomes of the preferred based aircraft forecast, **Table 2X** presents the based aircraft fleet mix for SJT over the next 20-year planning horizon.

TABLE 2X
Based Aircraft Fleet Mix Forecast

Year	Single-engine Piston	Multi-engine Piston	Turboprop/Jet	Rotorcraft	*Total*
2017 (Existing baseline)	103	16	50	7	*176*
2022	107	17	52	7	*182*
2027	110	17	54	8	*189*
2037	118	18	57	8	*202*

Notes. Existing based aircraft baseline data taken from FAA Form 5010 -1, Airport Master Record, for the 12-month period ending December 31, 2017.

Aircraft within the "Military" category as listed on the 5010 have been incorpor ated into SJT's existing fleet mix because they do not fit into the traditional military aircraft category in this instance; these aircraft belong to the U.S. Customs and Bo rder Protection (CBP) who currently lease a facility at the airport. The CBP's flee t consists of five single-engine, four turboprops, and one jet.

Source: C&S Engineers, Inc. analysis, February 2019

General Aviation Annual Operations Forecasts

Introduction

To paint the complete forecasting picture for SJT, general aviation annual operations were also developed for the 20-year planning period. General aviation operations include all aircraft operations other than the commercial service and air taxi operations described at the onset of this chapter, as well as military operations. Furthermore, these operations can be broken into either itinerant or local operations.

Like the based aircraft forecast, general aviation operations forecasts provide airports with information that can be useful for future development planning. Development of the based aircraft forecast for SJT includes the review of historical, existing, and forecasted data from the FAA and airport management

records. For context, a brief discussion on general aviation operational trends at the national level is also provided.

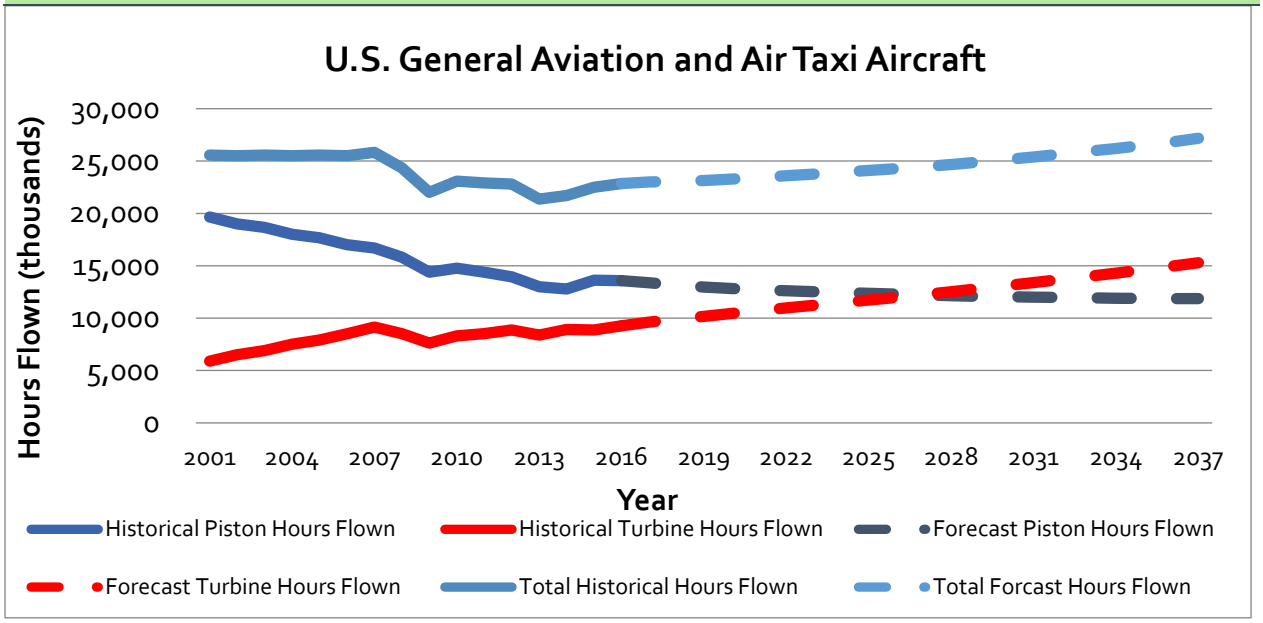
General Aviation Operations at the National Level

Again, review of the FAA *Aerospace Forecast, Fiscal Years (FY) 2017-2037,* reports the number of general aviation (GA) and air taxi (AT) hours flown nationally has decreased by 11 percent since 2001. According to the report, this decline can be attributed to the economic downturn of the early 2000s, the recession of the late 2000s, and increasing operating costs driven by fuel prices. Total GA and AT hours have been steadily increasing since 2012, and ultimately could reach slightly just above the flight hours flown in 2001 by 2037.

Within the overall GA and AT activity category, piston-powered and turbine-powered aircraft have seen a reversal in their activity starting in 2001. Since this time, there has been increased demand for the use of turbine-powered aircraft, and as such, active turbine hours have increased steadily since 2001 (with the exception of the economic recession years from 2008-2011). These aircraft include turboprop and turbojet aircraft primarily used for corporate business travel. More corporate and business operators, large and small, are using GA aircraft for their transportation needs to save time and reduces costs. The number of turbine aircraft hours flown has increased an average of 3.1 percent annually. Helicopters, which are also used by corporations, have also seen steady increases in hours flown. Conversely, the number of piston-powered aircraft hours flown has decreased 0.89 percent annually. Although these types of aircraft still comprise the majority of general aviation aircraft in the U.S., they are used primarily for recreational and flight training purposes. According to the *Aerospace Forecast*, decreases can be attributed to higher ownership costs, increased fuel prices, economic downturn, and a decreasing pilot population. Multi-engine piston aircraft have particularly seen a reduction with decreases of 2.0 percent annually. These aircraft types are being replaced by newer, more efficient turboprop aircraft for business travel.

The trend of strong growth in corporate aircraft, and steady or decreased use of piston aircraft, is expected to continue over the planning period. This forecast may fluctuate with new unleaded fuel engines potentially reducing the cost of flying. The number of turbine aircraft hours flown (including rotorcraft) is expected to increase 2.4 percent annually. The largest segment of the turbine aircraft increase in flight hours will be attributed to jet aircraft, particularly the larger corporate GA aircraft types; hours flown are anticipated to increase at 3 percent annually. Piston aircraft hours flown are expected to decrease at a rate of 0.8 percent annually (similar to the fleet reduction rate). Again, this decrease can be attributed in part to upgrades to newer turbine-powered aircraft types, but also in part due to the increased cost of flying and activity sensitivity to economic conditions. The historical and projected general aviation and air taxi active hours flown at the national level are depicted in **Exhibit 2V**.

EXHIBIT 2V
U.S. General Aviation and Air Taxi Hours Flown

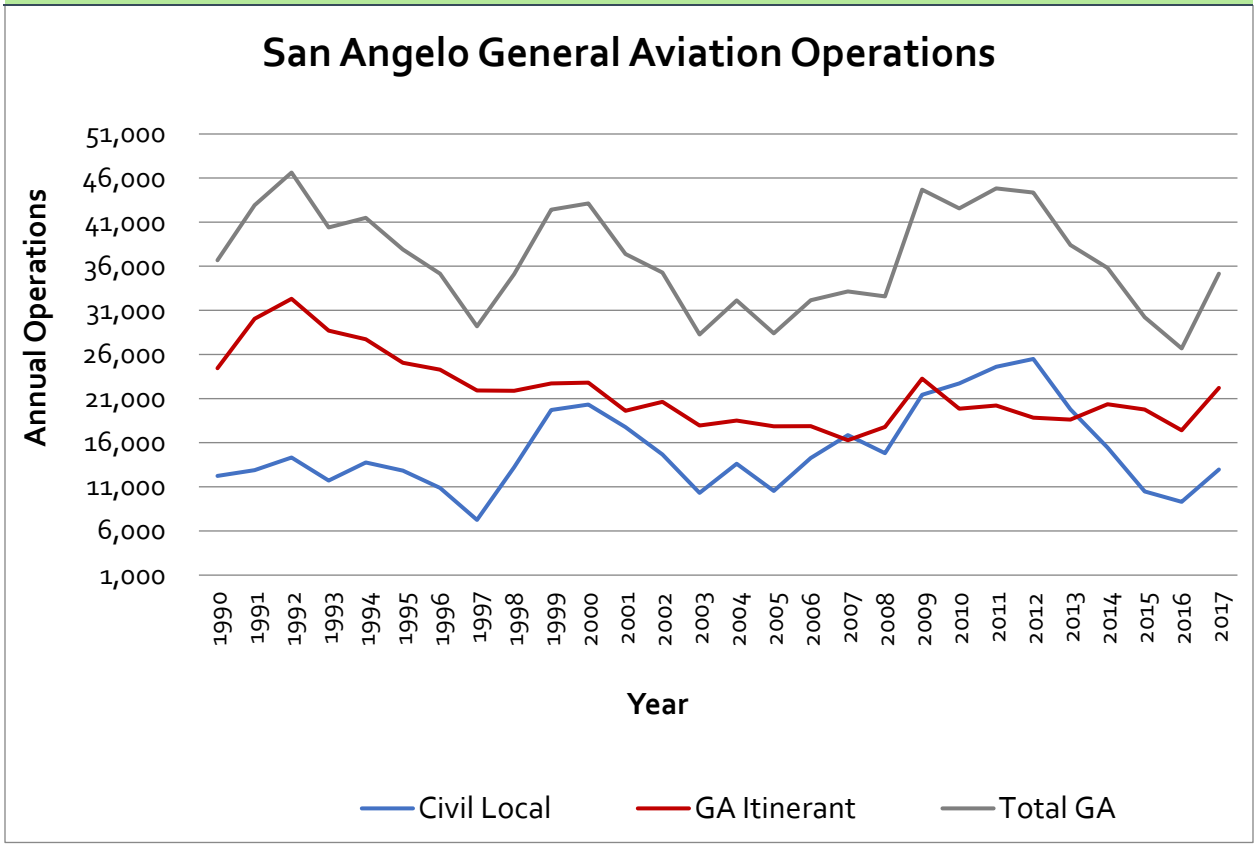


Source: FAA Aerospace Forecast: Fiscal Years 2017-2037

General Aviation Annual Operations at SJT

As previously mentioned in the preceding sections, many factors have the potential to affect general aviation activity at airports, most notably those related to local and regional socioeconomic and demographic factors. Furthermore, GA activities at an airport vary depending on its pilot base, geographic location, and services offered, just to name a few. SJT is no exception to this generality, as the Airport has experienced fluctuations in its overall GA operations, with an overall long-term moderate decline over the past 27 years. Most notably, SJT's GA operations have fallen acutely since 2012, with the sharp decline in the civil local operations category driving the majority of this reduction. Airport management indicates that flight training at the Airport decreased greatly around this time, which may account for the drop in the local operations. Historical operations for SJT from 1990-2017 are illustrated in **Exhibit 2W**.

EXHIBIT 2W
SJT Historical General Aviation Operations (1990-2017)



Sources: FAA SJT TAF (2017-2037) for years 1990-2015; San Angelo Regional Airport records for years 2016 & 2017

For the purposes of generating general aviation operations forecasts for SJT within the 20-year planning horizon, the local and itinerant operations data as reported on the current 5010 for the 12-month period ending December 31, 2017, served as the 2017 baseline data. This data reports 12,951 local and 22,199 itinerant operations performed at the Airport, totaling 35,150 annual GA operations in 2017.

SJT General Aviation Operations Forecast Methodologies and Analysis

Local (Civil) Operations Forecast

A local operation is defined as operations that are performed by aircraft that remain within the local traffic pattern. These operations typically include practice landings, touch-and-go's, practice approaches and maneuvering in the local area. Civil local operations are usually conducted by recreational and flight training aircraft.

SJT is unique in that a large number of military local operations are performed at the Airport each year due to its proximity to several military bases in the area. A more detailed discussion of projected

military operations, both local and itinerant, is provided in a subsequent portion of this chapter. As such, the general aviation local forecasts only include operations within the civil category.

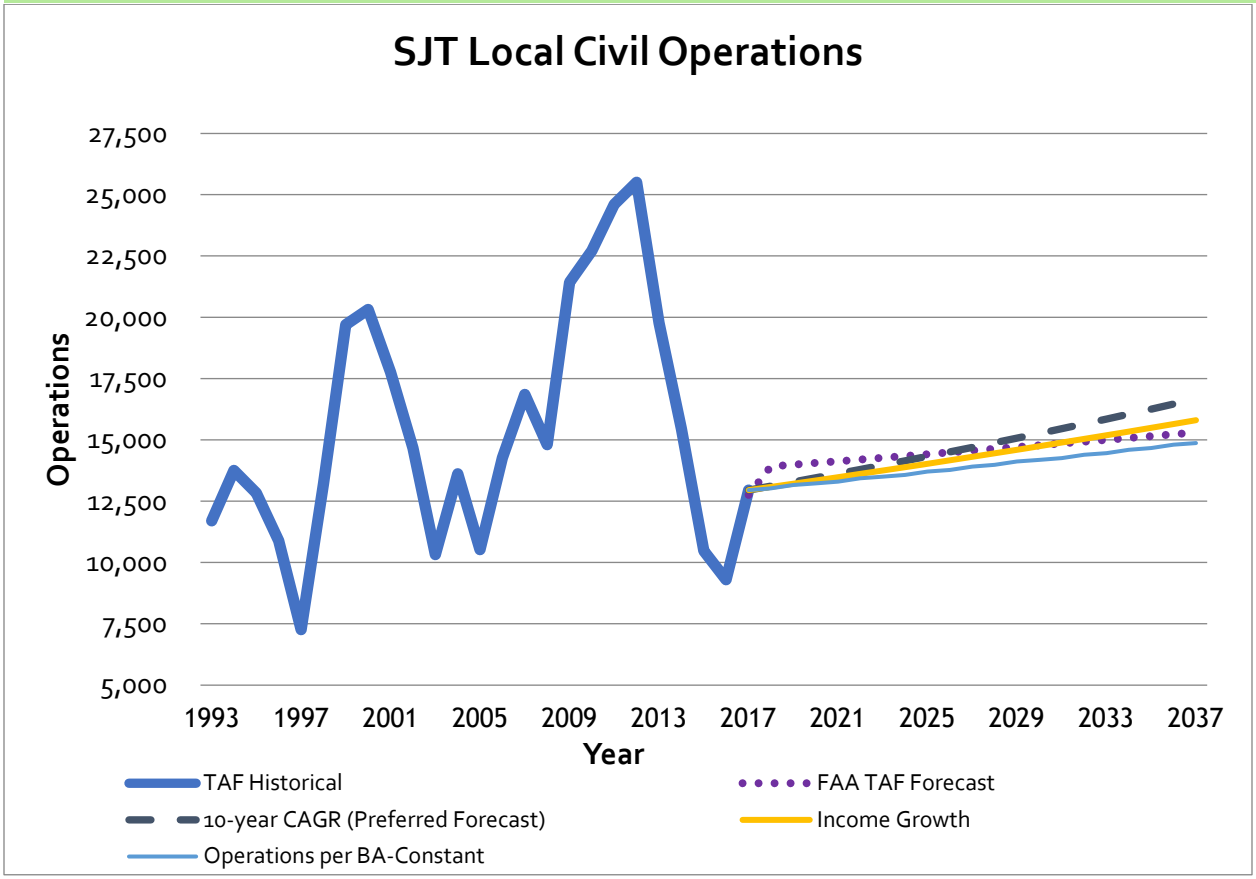
According to the January 2017 FAA TAF, local civil operations at SJT have varied, but generally increased slightly upward until 2012. Since 2012, local civil operations have declined from approximately 26,000 in 2012 to about 9,600 in 2016, but with a subsequent increase to almost 13,000 in 2017. As noted above, the decrease in local operations is most likely attributed to a decrease in flight training originating at the Airport. The estimate of total local civil operations for 2017 according to the TAF are 12,756.

The specific forecasting methods applied to estimate local civil operations at SJT for the next 20 years included the following:

1) Operations per Based Aircraft (OPBA)
2) Local Operations 10-year CAGR (2014 vs 2004) (trend analysis)
3) 20-year income CAGR (income trend analysis)

Each of these methodologies took into account a longer-term perspective that reflected different economic scenarios, as opposed to a shorter-term period that would not be as reflective of longer-term trends. Based on the analysis of these methodologies, the preferred forecast method is identified as the Local Operations 10-year CAGR forecast. This forecast assumes that SJT is at a similar point in the economic cycle and grows to the mid-range of prior year's results. It is believed that this time 10-year time period is a good reflection of longer-term trends. Consequently, this forecast projects that local civil operations will increase at a rate of 1.3 percent per year. This ultimately results in a forecast of 16,669 local civil operations by 2037. The historical and forecasted FAA TAF local operations, as well as the various forecast method projections, are illustrated on **Exhibit 2X**.

EXHIBIT 2X
SJT GA Local Civil Operations Forecast Summary



Sources: FAA SJT TAF (2017-2037) for years 1993-2015; FAA Form 5010-1, Airport Master Record, 2017; Landrum and Brown analysis, January 2019

Intinerant Operations Forecast

An itinerant operation is defined as a landing or departure from an airport. GA itinerant operations are conducted by all types of aircraft. Again, there are several categories of itinerant operations that the FAA records; itinerant operations by air carrier, air taxi, and commuter aircraft were captured within the commercial service forecast section, and itinerant military operations are also included in a subsequent section. The forecast presented here only reflects itinerant operations projections for GA aircraft at SJT.

According to the January 2017 TAF, GA itinerant operations at SJT declined sharply from 1993 to 2008, peaking at 28,704 operations in 1993, and bottoming at 16,284 in 2007. Operations then shot up in 2009, to 23,253 operations, and then declined and subsequently stabilized in the years thereafter, typically ranging from roughly 17,000 to 23,000 annual operations. Likewise, the TAF estimates a total of 18,621 itinerant GA operations in 2017. Airport management believes the increases in itinerant operations at SJT within the last two years have largely been the result of the increase in corporate

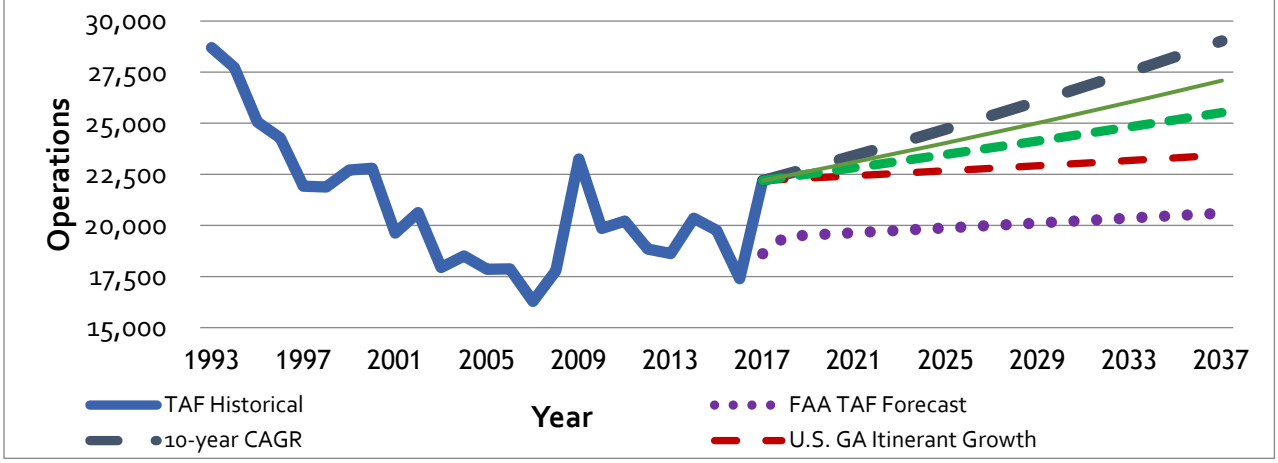
and business activity related to the shale oil boom in the region, as well as an increase in the local manufacturing interests, as described in the *Regional Economic Overview* section of this chapter.

The specific forecasting methods applied to estimate itinerant operations at SJT for the next 20 years included the following:

1) Itinerant Operations 10-year CAGR (2017 vs 2007)
2) U.S. GA Itinerant Growth
3) Population Growth (Metropolitan Statistical Area)
4) Income Growth (Metropolitan Statistical Area)

Based on the analysis of these methodologies, the preferred forecast method is identified as the Population Growth of SJT's surrounding area, which assumes a 0.7 percent CAGR. Similar to the based aircraft forecast, this forecast method is believed to be the best indicator of future GA itinerant activity at the Airport. Entities such as Angelo State University, Goodfellow Air Force Base, and growth in nearby cities such as Midland due to the oil and gas industry, all serve as a constant source of potential population increase in the area. And again, the logic being that some percentage of this population is likely to use local airports, not only for commercial service purposes, but for GA ones as well. This forecast method ultimately results in a forecast of 25,522 GA itinerant operations by 2037. The historical and forecasted FAA TAF itinerant operations, as well as the various forecast method projections, are illustrated on **Exhibit 2Y**.

EXHIBIT 2Y
SJT GA Itinerant Operations Forecast Summary



Note. Forecast method projections are based on the 2017 operations as reported on FAA Form 5010-1, not as reported on the FAA TAF which differs for 2017. Sources: FAA SJT TAF (2017-2037); FAA Form 5010-1, Airport Master Record, 2017; Landrum and Brown analysis, January 2019

General Aviation Operations Forecasts Summary

It is important to note that like the based aircraft forecast, the 2017 baseline TAF figures differ slightly from the FAA Form 5010-1 figures for annual GA operations. In fact, the 2017 baseline data for the Form 5010-1 is approximately 12 percent higher than the TAF. Using the 5010 figure as the baseline therefore ultimately produces higher estimates of GA operations in each of the planning years (2022, 2027, and 2037). By 2037, the difference between the FAA TAF estimate of GA operations and preferred forecasts operations is approximately 18 percent. Furthermore, the CAGR based on the preferred forecast projections is slightly higher at approximately one percent, versus the FAA TAF CAGR of 0.7 percent over the 20-year planning period. A summary of the local civil and itinerant GA operations forecasts for SJT are shown in **Table 2Y**.

TABLE 2Y
General Aviation Operations Forecast Summary

Metric	2017	2022	2027	2037	*CAGR*
Local Operations	12,951	13,795	14,693	16,669	*1.3%*
Itinerant Operations	22,199	22,987	23,803	25,522	*0.7%*
Total Operations	**35,150**	**36,782**	**38,496**	**42,191**	*1.0%*
Local Share	37%	38%	38%	40%	-
Itinerant Share	63%	62%	62%	60%	-

Source: Landrum and Brown analysis, January 2019

BUSINESS JET OPERATIONS

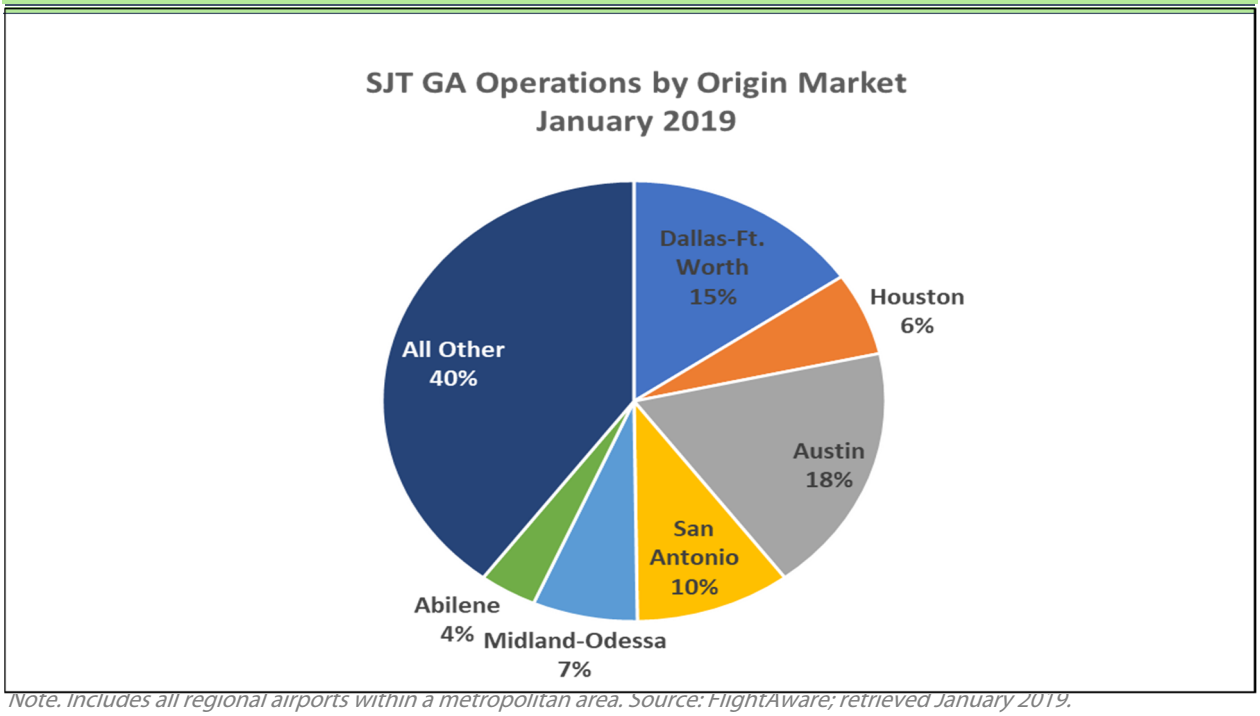
Introduction

As mentioned previously within the based aircraft forecast and fleet mix sections, demand exists today from corporate businesses within the region wanting to base their turbine-powered aircraft at the Airport, which supports the based aircraft fleet mix projections for an increase in these types of aircraft at the facility within the 20-year planning period. Furthermore, the GA operations forecasts predicts a steady increase in GA itinerant operations, whose greatest contributors to activity are likely the business jet operators. This is of interest to the Airport from a planning perspective because typically jet aircraft are the largest and most demanding aircraft to use the airfield, and therefore airport facilities should be developed to accommodate the aircraft, both based and transient. As such, it is prudent to review the existing types of business jet aircraft using SJT today, in conjunction with a business jet forecast sensitivity analysis, in order to determine the future business jet types and activity at SJT within the 20-year planning horizon.

Business Jet Activity at SJT Today

The increase in business jet operations at SJT within the last six years is believed to be a result of several key industries within the region; this includes the oil and gas, healthcare, manufacturing, and education industries. To gain a better understanding of where the business jet operations are originating from, data from the software program FlightAware[2] was obtained and analyzed for the month of January 2019 for all GA operations. Review of this data indicates that almost all activity originated from the state of Texas, and specifically from four major markets – Dallas-Ft. Worth, Houston, Austin, and San Antonio, as well as a handful of smaller markets within the state. According to the FlightAware software, there were 460 GA operations at SJT in the month of January 2019, of which 30 (approximately 7 percent) were conducted by business jets. **Exhibit 2Z** illustrates the results of the FlightAware analysis. Knowing that the majority of GA operations, and in turn business jet operations, originate within the state of Texas as a direct result of the oil and gas and other industries noted above, it is reasonable to infer that as long as these industries continue to grow within the state, SJT is likely to continue to see an increase in GA operations, and more specifically, business jet operations.

EXHIBIT 2Z
SJT GA Operations by Origin Market



Note. Includes all regional airports within a metropolitan area. Source: FlightAware; retrieved January 2019.

Chapter One – *Inventory*, noted that SJT has a federal contract ATCT. The ATCT personnel track all operations into and out of SJT on a daily basis, and in turn this data is reported to the FAA. This data is

[2] FlightAware is a global aviation software and data services company based in Houston, Texas. The company operates a website and mobile application which offers free flight tracking of both private and commercial aircraft in the United States, Canada, Australia, and New Zealand.

available in report format from the FAA on their website. The two most helpful reports published by the FAA that include an airport's operational activity is the Air Traffic Activity Data System (ATADS) and the Traffic Flow Management System Counts (TFMSC). The ATADS will provide a count of all operations at an airport with an ATCT but will only provide limited information on the aircraft itself, such as engine-type. The TFMSC provides a great deal of information about each aircraft performing an operation, such as its aircraft approach category (AAC) and aircraft design group (ADG); however, it only provides data for aircraft that file an Instrument Flight Rules (IFR) flight plan to or from an airport, and thus represent only a small percentage of the airport's total operations. However, because the data provides the aircraft's make and model, and other information such as the AAC (A-E) and ADG (I-VI), it is useful data for planning purposes to use in determining the common types of aircraft that utilize the Airport and how often.

A review of SJT's TFMSC data shows business jet operations have grown from 962 in CY 2012 to 1,258 in CY 2018. This represents 30.8 percent growth over the six-year period, or a CAGR of 4.6 percent. The business jet share of GA operations has increased from 2.2 percent in 2012 to 3.6 percent in 2017. **Exhibit 2AA** depicts the growth of business jet operations at SJT from the years 2012-2018.

EXHIBIT 2AA
SJT Historical Business Jet Operations

Source: FAA Traffic Flow Management System Counts (TFMSC), 2012-2018, retrieved January 2019.

Further review of the TFMSC data for the 2012-2018 time period provided a listing of the types of business jets categorized by their AAC and ADG, and their total operations within each year that operated into or out of SJT within the last six years. As illustrated in **Table 2Z**, the data shows that the majority of jet aircraft that frequent SJT belong within the B-I/II and C-I/II ARC categories. These types of aircraft are classified as small and mid-size jets, with operating ranges between 2,000 – 4,000 miles depending on configuration and payload. Of the various types of jets operating at SJT, the most

prevalent are: the Cessna Citation family of jets including the Sovereign, Bravo, Encore, Excel/XLS, and the III/VI/VII series; the Learjet family of jets including the Lear 35, 45, and 60; the Bombardier Challenger family of jets including the 300 and 600/601/604 series; and finally, the Embraer Phenom 100 and 300, and the British Aerospace Hawker 800. This data will be helpful in determining the future facility needs at SJT, such as hangar and apron space requirements, and is discussed further in the following chapter, *Demand Capacity and Facility Requirements.*

TABLE 2Z
Jet Operations by Airport Reference Code (2012-2018)

ARC	2012	2013	2014	2015	2016	2017	2018
A-I	97	62	94	62	72	67	59
B-I	281	389	307	294	299	459	533
B-II	286	369	514	584	407	441	427
B-III	0	0	2	2	2	8	6
C-I	130	130	123	115	112	126	98
C-II	143	100	108	94	113	92	125
C-III	10	8	6	2	6	8	0
D-II	15	8	18	8	6	18	10
D-III	0	0	6	0	0	2	0
D-IV	0	1	0	0	0	0	0
Total	**962**	**1,067**	**1,178**	**1,161**	**1,017**	**1,221**	**1,258**

Source: FAA TFMSC (2012-2018), retrieved January 2019; compiled by Centurion Planning and Design, LLC, February 2019.

In addition to the types of business jets expected to use SJT, the level of operations business jets might contribute within the 20-year planning horizon is estimated. To do this, a forecast sensitivity of the business jet activity at the Airport was conducted. The use of three growth rates provided the results of this forecast; these growth rates include business jets growing at the same one percent rate as GA operations (as determined in the preferred GA operations forecast), at a 50 percent faster rate (1.5 percent), or at twice a faster growth rate (2.0 percent). These rates are in line with the one percent economic growth expected in the region, as well as the expected growth of the U.S. gross domestic product (GDP) as a whole (between 2-3 percent). A good assumption is that business jets will grow in line with GDP or at a 50 percent premium. The results of the business jet sensitivity forecast is displayed in **Table 2AA**.

TABLE 2AA
Business Jet Operations: Forecast Sensitivity Summary

Forecast	2017	2022	2027	2037	*CAGR*
1% CAGR Growth	1,221	1,283	1,349	1,490	*1.0%*
1.5% CAGR Growth	1,221	1,315	1,417	1,645	*1.5%*
2.0% CAGR Growth	1,221	1,348	1,488	1,814	*2.0%*

Source: FAA TFMSC (2017), retrieved January 2019; Landrum and Brown analysis, February 2019.

Results of the analysis indicate that SJT may experience a conservative increase in business jet operations with the 20-year planning period. However, business jet activity is expected to slow as compared to recent growth experienced since 2012. It should be noted that almost all of business jet growth took place from 2012 to 2014. Activity has been relatively flat since 2014 (CAGR has been 1.6 percent since 2014, which is much closer to regional economic growth). The slight increase in jet operations expected at SJT within the 20-year planning horizon may also influence the facility requirements for these aircraft, which again is discussed in greater detail in the next chapter.

The increase in business jet activity, reports from operators at SJT, and the local industry and economy may indicate the potential for one or more based jet aircraft within the planning horizon and will be considered further in this Master Plan.

MILITARY OPERATIONS

Proposed Forecast

Military missions are difficult to predict but there are signs of at least some growth in the near-term. The U.S. Customs and Border Protection (CBP) bases 4 UAVs at the airport. The CBP recently went through a MOA process with the ATCT prior to beginning operations. They are in the process of making things more "permanent" by installing various communication equipment and leasing additional office space for employees at SJT. Their operational success has led to additional inquiries by the U.S. Army regarding the potential use of the airport UAV training. SJT is very unique in its ability to accommodate these unique users in a growing industry.

According to FAA Form 5010-1, 2017 military operations totaled 42,442. An observation from the review of the 5010 data provided by airport management for the years 2016-2018 showed that from June-August of 2017, the military operations were much higher than what was recorded for those same months in 2016 and 2018. A number of reasons could have led to the increased operations that summer, but ultimately one may infer that the military operations recorded for the summer of 2017 were somewhat atypical at SJT, and contributed to a high amount of total annual military operations for 2017. In order to reflect the typical annual military operations that occur at SJT as accurately as possible, an average of the total annual military operations for the three-year period occurred in order to represent the 2017 baseline. This resulted in 36,377 total operations. This differs only slightly versus

the SJT TAF, which shows 37,059 military operations for 2017 (13,302 itinerant and 23,757 local). These operations consist of training aircraft primarily out of three, regionally located Air Force Bases. The types of military aircraft using the airport ranges from T-1's, T-6's, and T-38's to C-130's. The aircraft frequent the airport daily, as weather permits, with the T-1's being the most prevalent training from around 9 am to 4 pm.

SJT provides a favorable training environment for continued military operations due to its uncrowded airspace, number and types of instrument approaches, and weather conditions. Based upon these factors, as well as the historical use of the airport, a forecast of 5 percent growth over the next five years is considered reasonable, increasing military operations to 38,196. Subsequently we assume that military operations will stay flat at 38,196 through 2037.

Critical Design Aircraft

The critical design aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. FAA defines regular use as 500 annual operations.

While in 2018 the workhorse fleet type at SJT are 50-seaters (primarily ERJ 140/145 aircraft), these aircraft will slowly be retired and replaced with larger CRJ-700 and CRJ-900 aircraft. By 2037, the primary aircraft will be the CRJ-900 aircraft. This is in line with industry trends. **Table 2BB** presents the critical aircraft.

TABLE 2BB
Critical Design Aircraft

				Operations			
Period	**Aircraft**	**MTOW**	**ARC**	**2017**	**2022**	**2027**	**2037**
Existing	CRJ-700	75,000	C-II	1,185	613	650	-
Mid & Long-Term	CRJ-900	85,000	C-III	-	524	1,113	2,504

Source: Landrum and Brown Analysis
MTOW = Maximum Takeoff Weight (pounds), ARC = FAA Airport Reference Code, TDG = FAA Taxiway Design Group

Annual Instrument Approaches

Annual instrument approaches (AIAs) are defined as an approach to an airport conducted in actual instrument meteorological conditions. For purposes of this definition, an approach initiated when the observed visibility is less than 3 miles, or the cloud ceiling is less than the decision altitude over the final approach fix is considered an instrument approach. AIA figures for SJT are no longer tracked by the local Air Traffic Control Tower but are a required element to an FAA forecast.

To determine AIAs, the number of itinerant operations are totaled from earlier estimates and compared to annual operations. Approximately 73% of all SJT itinerant flight operations are conducted under instrument flight rules (IFR) according to FAA records. A review of local weather

conditions found that 15% of these operations are conducted in actual instrument conditions for an instrument approach.

TABLE 2CC
Annual Instrument Approach Forecast

Metric	2017	2022	2027	2037	CAGR
Annual Operations	78,065	81,209	82,901	86,791	*0.52%*
Itinerant Operations*	28,737	29,218	30,012	31,926	*0.53%*
% IFR Itinerant Operations	73%	73%	73%	73%	*0.0%*
IFR Itinerant Operations	20,978	21,329	21,909	23,306	*0.52%*
IFR Approaches	10,489	10,665	10,954	11,653	*0.52%*
Instrument Approach Weather	15%			-	
Annual Instrument Approaches	**1,573**	**1,600**	**1,643**	**1,748**	***0.52%***
AIA as % of Itinerant	**5.5%**	**5.5%**	**5.5%**	**5.5%**	***0.0%***

Source: National Climatic Data Center, FAA Air Traffic Activity Data System (ATADS), Landrum and Brown Analysis
** Does not include military operations*

As shown in **Table 2CC**, total AIAs for SJT are forecast to increase from 1,573 currently to an estimated 1,748 at the end of the planning period.

FORECAST SUMMARY

As described in this chapter, many factors must be considered when developing a recommended forecast for an airport. The TAF prepared by the FAA considers national trends and growth factors, and the local and regional economic and income statistics also play a large factor. The City of San Angelo and the surrounding region is unique, generally responding slower than the national economy yet also experiencing an economic impact of the local oil and gas industry. While the commercial aviation activity for the Airport is generally expected to be consistent with the TAF, the general aviation operations and based aircraft forecasts are closely tied with historic trends and the most up to date conditions observed at the Airport and in the local economy. A summary of the preferred forecasts for SJT as presented within this Airport Master Plan are illustrated in **Table 2DD**.

With a discrepancy between the data listed in the TAF and 5010, for purposes of this report and to ensure accuracy, the 5010 data was validated and used. While the data in the TAF is based on national forecasts, the information in the 5010 is supplied and verified by the Airport. As outlined in this report, using the 5010 data as the 2017 baseline resulted in only slight variations from the TAF forecasts and the SJT preferred operations and based aircraft forecasts.

The FAA template to compare the proposed forecasts to the 2017 published FAA Terminal Area Forecast follow in **Table 2EE**.

TABLE 2DD
Airport Master Plan Forecast Summary

San Angelo Regional Airport: Master Plan Forecast

					CAGR*		
	2017	2022	2027	2037	2022	2027	2037
Passenger Enplanements							
Air Carrier	33,058	31,879	50,732	76,136	-0.7%	4.4%	4.3%
Commuter	27,037	31,879	16,911	-	3.3%	-4.6%	-
Total	60,095	63,758	67,643	76,136	1.2%	1.2%	1.2%
Operations							
Itinerant							
Air Carrier	1,186	1,137	1,763	2,504	-0.8%	4.0%	3.8%
Commuter	1,308	1,594	846	-	4.0%	-4.3%	-
Air Cargo	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Air Taxi	4,044	3,500	3,600	3,900	-2.8%	-1.2%	-0.2%
Total Commercial	6,538	6,231	6,209	6,404	-1.0%	-0.5%	-0.1%
General Aviation	22,199	22,987	23,803	25,522	0.7%	0.7%	0.7%
Total Itinerant	28,737	29,218	30,012	31,926	0.3%	0.4%	0.5%
Local							
General Aviation	12,951	13,795	14,693	16,669	1.3%	1.3%	1.3%
Military	36,377	38,196	38,196	38,196	1.0%	0.5%	0.2%
Total Operations	78,065	81,209	82,901	86,791	0.8%	0.6%	0.5%
Annual Instrument Approaches	1,573	1,600	1,643	1,748	0.3%	0.4%	0.5%
Peak Hour Operations	5	4	4	4	-2.3%	-1.2%	-0.6%
Enplaned Air Freight (Tons)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Based Aircraft	176	182	189	202	0.7%	0.7%	0.7%
Operational Factors							
Average Aircraft Size							
Air Carrier	65	70	72	76	1.5%	1.0%	0.8%
Commuter	49	50	50	-	0.6%	0.3%	-
Total	56	58	65	76	0.8%	1.5%	1.5%
Enplaned Load Factor							
Air Carrier	80.4%	80.0%	80.0%	80.0%	-0.1%	0.0%	0.0%
Commuter	80.0%	80.0%	80.0%	-	0.0%	0.0%	-
Total	80.6%	80.3%	80.0%	80.0%	-0.1%	-0.1%	0.0%
GA operations per based aircraft	200	202	204	209	0.2%	0.2%	0.2%

Source: FAA Form 5010-1, Airport Master Record, 2017; Landrum and Brown analysis, January 2019

TABLE 2EE
Airport Master Plan Forecast Comparison to FAA TAF

San Angelo Regional Airport (SJT)
Airport Planning versus FAA TAF Forecast

	Year	Airport Forecast	2017 FAA Terminal Area Forecast (TAF)	AF/TAF % Difference
Passenger Enplanements				
Base Yr.	2017	60,095	60,095	0.0%
Base Yr. + 5 Years	2022	63,758	63,092	1.1%
Base Yr. + 10 Years	2027	67,643	66,242	2.1%
Base Yr. + 20 Years	2037	76,136	73,029	4.3%
Total Operations				
Base Yr.	2017	78,065	74,381	5.0%
Base Yr. + 5 Years	2022	81,209	77,002	5.5%
Base Yr. + 10 Years	2027	82,901	77,760	6.6%
Base Yr. + 20 Years	2037	86,791	79,315	9.4%
Based Aircraft				
Base Yr.	2017	176	189	-6.9%
Base Yr. + 5 Years	2022	182	195	-6.7%
Base Yr. + 10 Years	2027	189	200	-5.5%
Base Yr. + 20 Years	2037	202	210	-3.8%

Source: FAA SJT TAF (2017-2037); Landrum and Brown analysis, January 2019