TEXARKANA
REGIONAL AIRPORT

Chapter Two

FORECASTS

The definition of demand that may be reasonably expected to occur during the useful life of an airport's key components (e.g., runways, taxiways, terminal buildings, etc.) is an important factor in facility planning. In airport master planning, this involves projecting potential aviation activity in the near-term (1-5 years), intermediate-term (6-10), and long-term (11-20 years). Aviation demand forecasting for Texarkana Regional Airport (TXK) will primarily consider commercial passenger enplanements, aircraft operations, total based aircraft and fleet mix, and operational peak activity periods.

The Federal Aviation Administration (FAA) has oversight responsibility to review and approve forecasts developed in conjunction with airport planning studies. FAA will review individual airport forecasts with the objective of comparing them to its *Terminal Area Forecast* (TAF) for the airport, as well as the *National Plan of Integrated Airport Systems* (NPIAS). Even though the TAF is updated annually, in the past there was almost always a disparity between the TAF and master planning forecasts. This was primarily due to the TAF forecasters' lack of knowledge about local conditions or recent trends. In recent years, however, the FAA improved its forecast model to be a demand-driven forecast for aviation services based on local and national economic conditions, as well as conditions within the aviation industry.

When reviewing an airport's forecast (from a master plan), the FAA will ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. As stated in FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems (NPIAS) and Airports Capital Improvement Plan (ACIP)*, forecasts should be:

- Realistic
- Based on the most recent data available
- Reflective of the current and anticipated future conditions at the airport
- Supported by information in the study, and
- Able to provide adequate justification for airport planning and development

This forecast effort was completed in March 2023, so the base year reflects the 12-month period ending December 2022. For comparison purposes, the FAA *Terminal Area Forecast* published in February 2023 was used. A summary of the TAF for TXK is presented in **Table 2A**. The following sections of this chapter will discuss the process and results of various forecast elements, present a preferred projection for critical aviation activity metrics, and then compare the final, composite forecast to the TAF for reasonableness.

TABLE 2A | 2023 TXK FAA *Terminal Area Forecast*

	2022	2027	2032	2042	CAGR
ENPLANEMENTS					
Air Carrier	0	0	0	0	0.00%
Air Taxi/Commuter	35,068	39,045	41,551	47,049	1.48%
Total Enplanements	35,068	39,045	41,551	47,049	1.48%
ANNUAL OPERATIONS					
Itinerant					
Air Carrier	28	28	28	28	0.00%
Air Taxi/Commuter	5,703	5,961	6,233	6,813	0.89%
General Aviation	12,007	12,187	12,370	12,743	0.30%
Military	841	841	841	841	0.00%
Total Itinerant	***18,579***	***19,017***	***19,472***	***20,425***	***0.47%***
Local					
General Aviation	12,370	14,560	14,655	14,845	0.92%
Military	926	926	926	926	0.00%
Total Local	***13,296***	***15,486***	***15,581***	***15,771***	***0.86%***
Total Operations	**31,875**	**34,503**	**35,053**	**36,196**	**0.64%**
Based Aircraft	52	57	62	72	1.64%
CAGR: Compound Annual Growth Rate					

Source: FAA Terminal Area Forecast, TXK (February 2023)

The forecast process for an airport master plan consists of a series of basic steps that vary in complexity depending on the issues to be addressed and the level of effort required. The steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and documentation and evaluation of the results. FAA Advisory Circular (AC) 150/5070-6C, *Airport Master Plans*, outlines seven standard steps involved in the forecast process, including:

1) **Identify Aviation Activity Measures**: The level and type of aviation activity likely to impact facility needs. For commercial service airports, this typically includes passenger enplanements, commercial operations as well as general aviation activities and based aircraft.
2) **Review Previous Airport Forecasts**: This may include the FAA TAF, state and/or regional system plans, and previous master plans, if applicable.
3) **Gather Data**: Determine what data are required to prepare the forecasts, identify data sources, and collect historical and forecast data.
4) **Select Forecast Methods**: There are several appropriate methodologies and techniques available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modeling, comparison with similar airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgement.
5) **Apply Forecast Methods and Evaluate Results**: Prepare the actual forecasts and evaluate for reasonableness.
6) **Summarize and Document Results**: Provide supporting text and tables, as necessary.

7) **Compare Forecast Results with FAA's TAF**: Enplanements, based aircraft and total operations are considered consistent with the TAF if they meet the following criteria:
   - Forecasts differ by less than 10 percent in the five-year forecast, and 15 percent in the 10-year forecast period, or
   - Forecasts do not affect the timing or scale of an airport project, or
   - Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.5, *Formulation of the NPIAS and ACIP*.

Aviation activity can be affected by many influences on the local, regional, and national levels, making it virtually impossible to predict year-to-year fluctuations of activity over 20 years with any certainty. Therefore, it is important to remember that **forecasts are to serve only as guidelines, and planning must remain flexible enough to respond to a range of unforeseen developments**.

The forecast for this Master Plan will use 2022 as a base year with a planning horizon to 2042.

The following forecast analysis for TXK was produced following these basic guidelines. Existing forecasts are examined and compared against current and historical activity. Historical aviation activity is then examined along with other factors and trends that can affect demand. The intent is to provide an updated set of aviation demand projections for the airport that will permit airport management to make planning adjustments as necessary to maintain a viable, efficient, and cost-effective facility.

AIRPORT SERVICE AREA

The initial step in determining the aviation demand for an airport is to define its generalized service area for various segments of aviation. The service area is defined primarily by evaluating the location of competing airports, their capabilities and services, and their relative attraction and convenience. In determining the aviation demand for an airport, it is necessary to identify the role of the airport, as well as the specific areas of aviation demand the airport is intended to serve. For TXK, the primary roles, as a nonhub primary commercial service airport, are to accommodate commercial passenger airline service, as well as general aviation and military demand in the region. A nonhub primary is a commercial service airport that accounts for less than 0.05 percent of all commercial passenger enplanements but has more than 10,000 annual enplanements. These types of airports are also used by general aviation aircraft and have an average of 98 based aircraft at the airport.

The service area for an airport is the geographic region from which the airport can be expected to attract the largest share of its activity. The definition of the service area can then be used to identify other factors, such as socioeconomic and demographic trends, which influence aviation demand at an airport. Aviation demand will also be impacted by the proximity of competing airports, the surface transportation network, and the strength of commercial airline and/or general aviation services provided at nearby competing airports.

As in any business enterprise, the more attractive the facility is in terms of services and capabilities, the more competitive it will be in the market. If an airport's attractiveness increases in relation to nearby airports, so will the size of its service area. If the facilities and services offered at an airport are adequate and/or competitive, some level of aviation activity may be attracted to the airport from more distant locales.

Moreover, while the size of an airport's service area will vary depending on numerous factors, it is primarily limited by the proximity of other airports providing similar services. This is especially true for commercial services as competition for passengers often shapes an airline's decision to operate in a specific community. As such, an examination of other nearby commercial service airport competitors can provide an understanding of the service area limits at TXK. Currently, there are 11 primary commercial service airports within 200 miles of Texarkana. **Table 2B** presents the passenger enplanement totals from 2021, including TXK.

TABLE 2B | Primary Commercial Service Airports within 200 miles of TXK

Rank	Location	Airport	CY 2021 Enplanements	% of Enplanements	Drive Distance from TXK (mi)
1	Dallas-Fort Worth, TX	Dallas-Fort Worth International	30,005,266	77.9%	197
2	Dallas, TX	Dallas Love Field	6,487,563	16.8%	189
3	Little Rock, AR	Bill and Hillary Clinton National	827,922	2.1%	141
4	Bentonville, AR	Northwest Arkansas National	598,787	1.6%	261
5	Shreveport, LA	Shreveport Regional	246,772	0.6%	80
6	Alexandria, LA	Alexandria International	144,218	0.4%	199
7	Monroe, LA	Monroe Regional	84,693	0.2%	162
8	Fort Smith, AR	Fort Smith Regional	45,369	0.1%	181
9	Tyler, TX	Tyler Pounds Regional	39,943	0.1%	130
10	**Texarkana, AR**	**Texarkana Regional**	**26,888**	**0.1%**	**---**
11	Longview, TX	East Texas Regional	23,942	0.1%	106

Source: DOT CY 2021 Commercial Service Enplanements Data (9/16/2022)

COMPETING COMMERCIAL SERVICE AIRPORTS

The most common criteria in a passenger's selection of an airport are proximity (convenience) and airfare (ticket price); however, several other factors can influence a passenger's decision. Business travelers often prefer expedient travel and may pay higher airfares for that convenience. The business traveler also desires reliable service with the most options possible, such as diverse destinations, frequency of flights, favorable departure or arrival times, etc. Leisure travelers typically make airfare the most important factor for choosing an airline, or a more distant airport. Discount airlines have proven nationwide that leisure passengers, and even some business travelers, will choose airports outside their local area due to low fares.

Another factor is the level of service offered by an airport. Level of service factors that can affect the secondary service area include frequency of service, number of airlines, size and/or type of aircraft, and nonstop destinations available. The biggest factor, however, tends to be airfare. Competition on routes and low-fare airlines are major factors that can draw vacation travelers to drive as much as three hours to a larger airport.

As is the case for many regional airports, including TXK, the surface transportation network provides options for local travelers to use other commercial service airports in the region. The convenience of driving to a larger airport with more airline and non-stop destination options is the largest threat to TXK's ability to grow its commercial airline activity. A summary of other regional primary commercial service airports and current service at TXK is provided in **Table 2C**. Airline service factors for these airports will contribute greatly to whether a passenger will elect to use one of these regional airports instead of TXK.

Of these regional airports, it is more likely that TXK competes more directly with airports that offer more service options with lower average ticket prices and are within a reasonable drive time. Therefore, the primary focus of TXK's regional competition will be on Dallas-Fort Worth International (DFW), Dallas Love (DAL), Clinton National (LIT), and Shreveport Regional (SHV). Each of these airports has a greater number of daily departures, non-stop destinations, and lower average 2021 fares. Both SHV and LIT are within a 2½-hour drive time.

TABLE 2C | Competing Primary Commercial Service Airports

Airport	CY 2021 Enplanements	Airlines	Daily Departures	Non-Stop Destination	2021 Avg. One-Way Ticket	2021 Avg. Yield	Drive Time from TXK
DFW	30,605,266	28	600+	258	$215.50	$0.234	3h
DAL	6,487,563	3	130+	71	$169.92	$0.214	3h
LIT	827,922	6	20+	17	$209.28	$0.228	2h
SHV	246,772	4	10+	7-9	$252.91	$0.267	1h 10m
TXK	26,888	1	2-3	1	$256.89	$0.278	---

SHV is the closest commercial service airport to TXK with service provided by four air carriers, one of which is Allegiant, a low-cost carrier that provides "no frills" service to a variety of destinations, some of which are seasonal and offered at limited times. A study conducted in 2020 found that approximately 2.9 percent of Texarkana passengers will travel to SHV, a concept known as "leakage." Many times, an airport will experience leakage to nearby airports due to higher fares, less travel options, fewer amenities, or a combination of these factors. The study found that approximately 79 percent of Texarkana passengers use airports in Dallas-Fort Worth (DFW or DAL) for their travel needs, followed by 12.6 percent who use TXK, and the remaining 5.4 and 2.9 percent travel to LIT and SHV, respectively. These airports have a higher number of daily departures to non-stop destinations for lower ticket fares. This combination is the primary driver behind the leakage TXK experiences. The addition of new destinations and/or air carrier options to travelers from the Texarkana area could increase the attractiveness of the facility, decrease leakage, and increase annual passenger counts.

SERVICE AREA SUMMARY

Passenger Service Area

With strong regional competition from DFW/DAL, LIT, and SHV, TXK's primary passenger service area is focused on the Texarkana metropolitan statistical area (MSA), which includes the counties of Miller and Little River in Arkansas and Bowie County in Texas. While TXK's average fares were the highest in the region in 2021, SHV, the next nearest competing airport, also has high average fares, which may limit the amount of passenger leakage to that airport. Both DAL, with the region's lowest average fare, and DFW, which has the most travel options, are the most significant regional competition as both offer much broader service options than TXK despite being a three-hour drive. Ultimately, TXK offers quality and convenient commercial service options to the local MSA population. Regionalized airports like TXK generally experience leakage to other, better-served regional hub airports like LIT or SHV. Moreover, the ground transportation network will influence higher leakage, especially for leisure travelers. Based on the factors presented in **Table 2C,** it is unlikely that TXK will attract a high level of passengers from beyond its surrounding population base; therefore, the MSA should be the considered target market, or primary commercial service area, for the development of enplanement forecasts. The primary commercial passenger service area is depicted on **Exhibit 2A**.

Based Aircraft Service Area

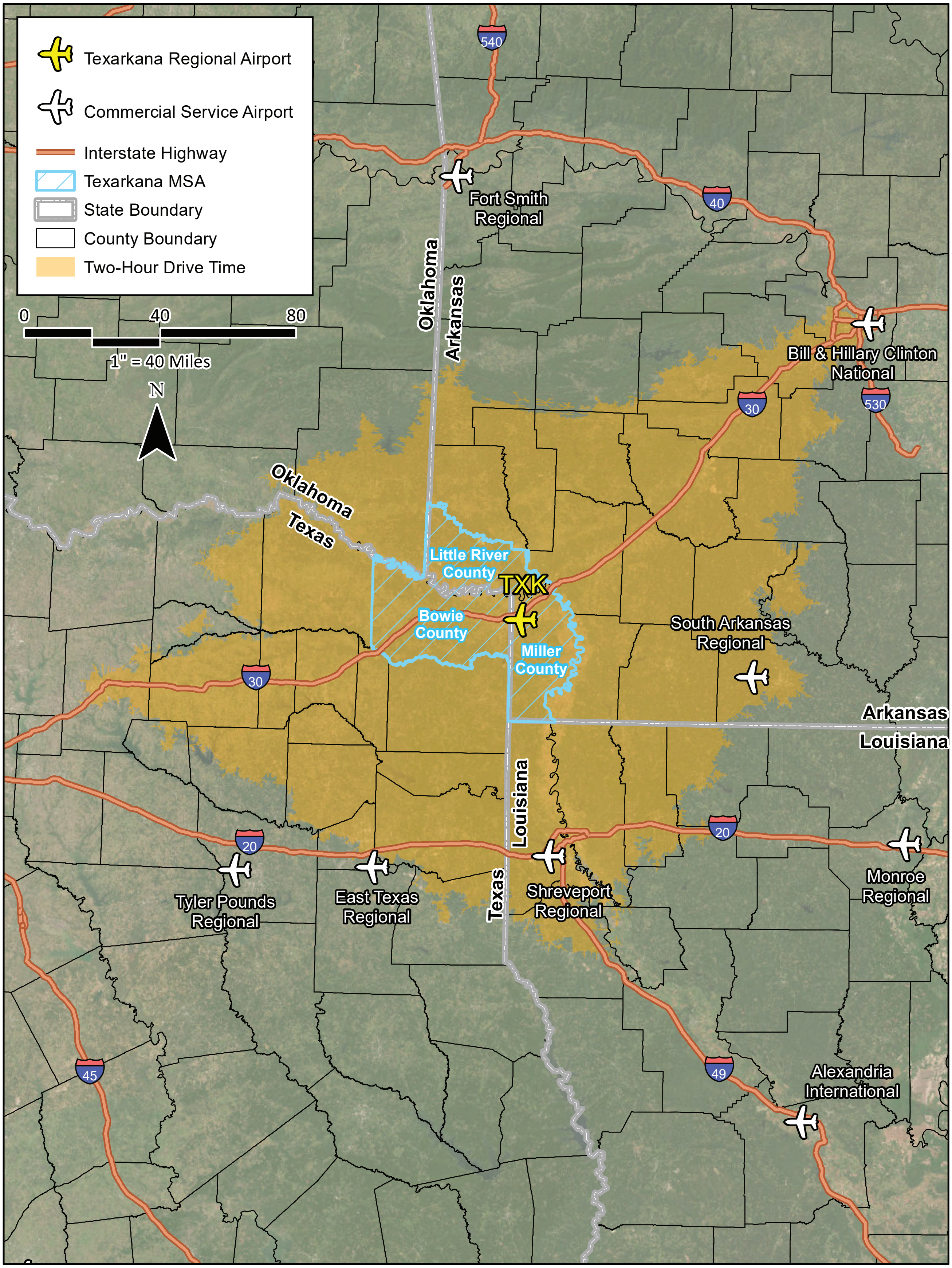
The service area for based aircraft is also dependent upon regional competition and the proximity of aircraft owners to general aviation airport services/facilities. Typically, a based aircraft service area can extend for 30 miles. There are a couple of general aviation airports within this range, including Hope Municipal (M18) to the northeast and Hall-Miller Municipal (ATA) to the southwest; however, both of these airports have substantially fewer based aircraft and annual operations, and Hall-Miller Municipal has a much shorter runway (3,800 feet) than those available at TXK. Hope Municipal does have a 5,501-foot and a 5,301-foot set of runways, which are similar in length to TXK's crosswind runway (5,200 feet). Both airports, however, offer fewer general aviation services when compared to TXK.

Exhibit 2B depicts a 30-minute drive time from TXK and identifies the location of registered aircraft in the region for 2022. Registered aircraft are primarily concentrated within Bowie and Miller counties, then spread out throughout adjacent counties. The only other cluster of registered aircraft in the region surrounds Hall-Miller Municipal Airport, 23 nautical miles to the southwest. Since 2013, the number of registrations within the two counties has decreased from 171 to 129. The drive-time map shows that TXK is easily accessible to most aircraft registrations within Bowie and Miller counties. When considering the accessibility of the airport to the region, as well as TXK's advantage over the other regional general aviation airports with its available facilities and services, it is determined that the primary based aircraft service area shall be defined as Bowie and Miller counties.

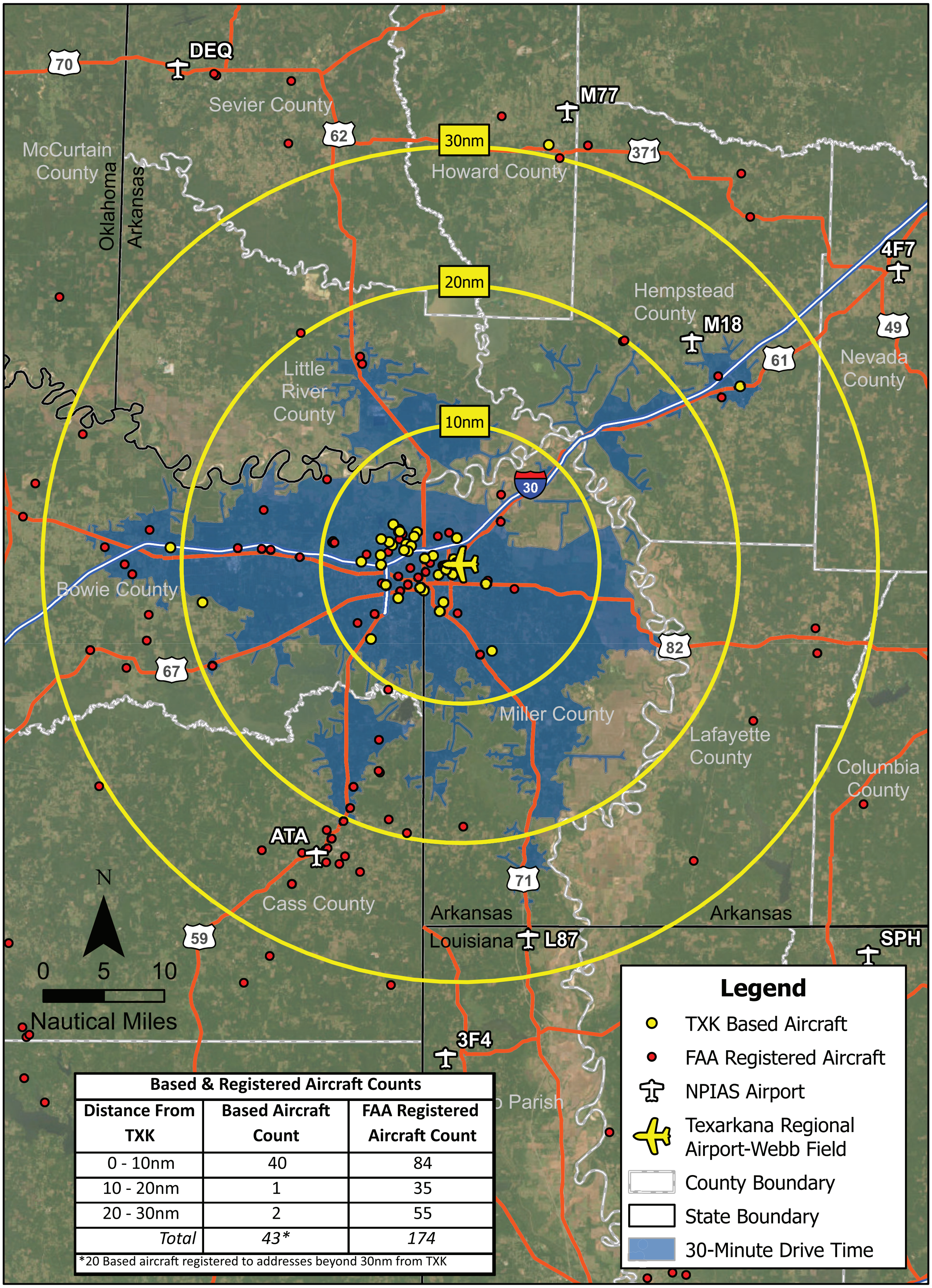
SOCIOECONOMIC TRENDS

Socioeconomic conditions provide an important baseline for preparing aviation demand forecasts. Local socioeconomic variables, such as population, employment, income, and gross regional product (GRP), are indicators for understanding the dynamics of the community and can relate to local trends in aviation activity. Analysis of the demographics of the airport service area will give a more comprehensive understanding of the socioeconomic situations affecting the region that supports TXK.

Exhibit 1D in the previous chapter summarized historical and forecast population, employment, income, and GRP estimates for Texarkana, USA, which is the primary metropolitan area of Texarkana, including Miller County in Arkansas and Bowie County in Texas. However, the forecasts presented in this chapter consider the conditions present in the greater Texarkana MSA. Over the next 20 years, the population of the Texarkana MSA is projected to add approximately 3,500 residents. This equates to a compound annual growth rate (CAGR) of 0.12 percent. Employment is projected to grow at a faster rate (0.61 percent), adding approximately 10,000 jobs over the next 20 years. Total personal Income for the Texarkana MSA is projected to grow at 1.52 percent CAGR and GRP is projected to grow at 1.30 percent CAGR. This data all indicates healthy growth for the MSA that translates to potential growth of aviation-related demand for TXK. **Table 2D** presents the various socioeconomic elements as forecasted through 2024.



Source: ESRI Basemap Imagery (2019)



Based & Registered Aircraft Counts

Distance From TXK	Based Aircraft Count	FAA Registered Aircraft Count
0 - 10nm	40	84
10 - 20nm	1	35
20 - 30nm	2	55
Total	*43**	*174*

*20 Based aircraft registered to addresses beyond 30nm from TXK

TABLE 2D | Socioeconomic Trends of the Texarkana MSA

Element	2022	2027	2032	2042	CAGR
Population	147,527	149,024	150,136	151,049	0.12%
Employment	80,132	83,822	86,292	90,467	0.61%
Personal Income per Capita	$37,603	$40,792	$44,026	$50,852	1.52%
Gross Regional Product ($ billion)	$5.339	$5.747	$6.139	$6.913	1.30%
CAGR: Compound Annual Growth Rate					

Source: Texarkana MSA CEDDS (Woods & Poole, 2022)

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet the budget and planning needs of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the public. The current edition during the preparation of this master plan was *FAA Aerospace Forecast – Fiscal Years 2022-2042*. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets. The following discussion is summarized from the current *FAA Aerospace Forecast*.

Since its deregulation in 1978, the U.S. commercial air carrier industry has been characterized by boom-to-bust cycles. The volatility that was associated with these cycles was thought by many to be a structural feature of an industry that was capital intensive but cash poor. However, the Great Recession of 2007-2009 marked a fundamental change in the operations and finances of U.S. airlines. Since the end of the recession in 2009, U.S. airlines have revamped their business models to minimize losses by lowering operating costs, eliminating unprofitable routes, and grounding older, less fuel-efficient aircraft. To increase operating revenues, carriers initiated new services that customers were willing to purchase and started charging separately for services that were historically bundled in the price of a ticket. The industry experienced an unprecedented period of consolidation with three major mergers in five years. The results of these efforts were impressive: 2019 marked the eleventh consecutive year of profitability for the U.S. airline industry. Prior to the COVID-19 pandemic, there was confidence that the U.S. airlines had finally transformed from a capital intensive, highly cyclical industry to an industry that generates solid returns on capital and sustained profits.

Since the COVID-19 pandemic began in 2020, there have been definite improvements to the aviation industry as the turmoil and uncertainty from the pandemic began to diminish. By the middle of 2021, conditions and the outlook on the industry had brightened considerably. With the arrival of spring, the introduction of vaccines, and the lifting of some local restrictions, leisure travel began rebounding. Favored destinations remained concentrated in outdoor recreation spots, whether beach or mountain, and some locales recorded traffic levels higher than in 2019. The pent-up demand is expected to continue to drive commercial operations back to pre-pandemic levels by 2023. While COVID normalized telecommuting and virtual meetings, which had a dampening effect on some business travel, it remains to be seen if these trends will become the new normal or if business travel will also return to pre-pandemic levels.

ECONOMIC ENVIRONMENT

Fundamentally, aviation demand is driven by economic activity. According to the FAA forecast, the COVID-19 pandemic caused a shrink in U.S. gross domestic product (GDP) in 2020 by 3.5 percent. This was accompanied by a 44.2 percent decrease in passenger enplanements, resulting in a combined operating loss of $32.1 billion for all passenger carriers. General aviation aircraft deliveries fell by 12.4 percent in 2020, general aviation activity fell by 8.0 percent, and the total number of operations at airports with control towers decreased by 16.7 percent compared to 2019.

Despite the largest decline in aviation activity since the jet era began in the late 1950s, the aviation industry has already shown signs of recovery from the COVID-19 pandemic. As of this writing, daily airline passenger enplanements (as measured by TSA screening counts) consistently measure more than double the amount from same-day 2020 numbers; however, passenger counts have yet to consistently return to 2019 levels. The FAA *Forecast* calls for U.S. domestic passenger counts to grow at an average annual rate of 4.9 percent. This includes double-digit growth in 2022 and 2023 as activity climbs out of the low base of 2020. Domestic passengers are forecast to return, on an annual basis, to 2019 levels in 2023.

General aviation (GA) was less affected by the pandemic, as those who could afford private aviation were attracted to the alternative over commercial travel. New student, private, and commercial pilots helped to increase the total number of pilots in 2021, and aircraft deliveries rose from their 2020 levels. The active general aviation fleet is expected to increase slightly (0.1 percent) between 2022 and 2042, while operations at towered airports are forecast to grow 1.5 percent a year over the forecast period.

Although the long-term outlook for both GA and commercial air travel activities is positive, it remains to be seen how the FAA will continue to evaluate and adjust these forecasts as the impacts of the ongoing COVID-19 pandemic, as well as the war in Ukraine, continue.

U.S. TRAVEL DEMAND

Mainline and regional carriers offer domestic and international passenger service between the U.S. and foreign destinations, although regional carrier international service is confined to the border markets in Canada, Mexico, and the Caribbean. Throughout the next few years, the commercial air carrier industry will be focused on recovering from the COVID-19 pandemic. As demand materializes and load factors rise, the focus will shift to adding capacity back and adopting traditional long-term strategies as demand approaches 2019 levels.

The unpredictable travel environment carriers faced the past two years will improve in 2023 and beyond. Key drivers of this more stable period include continued lifting of COVID-19 precautions, the release of pent-up travel demand, and employees returning to offices and, more importantly, becoming comfortable with traveling again. Increasing predictable activity will allow carriers to return capacity to typical markets and reduce their reliance on recreational destinations. Load factors and utilization rates will rise, along with fares. Both enplanement and revenue per mile (RPM) metrics are expected to return to 2019 levels by 2025 and steadily increase through 2042.

The regional air carriers have less leverage with mainline carriers than in the past as contract negotiations have favored the larger carriers' operational and financial bottom lines. As mainline carriers cut service to smaller cities over the past two years, it was the regional air carriers that were most affected. Furthermore, as the mainline carriers reduced costs by offering voluntary retirements to flight crews and filling those positions with personnel from regional carriers, the regional carriers found their pre-pandemic pilot shortage woes exacerbated. As regional carriers recover and activity returns to 2019 levels, some service to smaller communities is expected to return. The regional pilot shortage, however, is expected to continue in the immediate future due to the time required for recruitment and training.

A trend for regionals unaffected by the pandemic is the transition to larger capacity aircraft. As they continue to replace their 50-seat regional jets with more fuel-efficient 70-seat jets, capital costs have increased. This move to the larger aircraft will prove beneficial in the future, however, since their unit costs are lower.

Ancillary revenues, which is income generated by selling products and services beyond airline tickets, continued through the pandemic and was a meaningful source of revenue for air carriers. While change fees, one source of ancillary revenue, was removed as a result of the pandemic, other ancillary revenue such as baggage fees will remain for the foreseeable future.

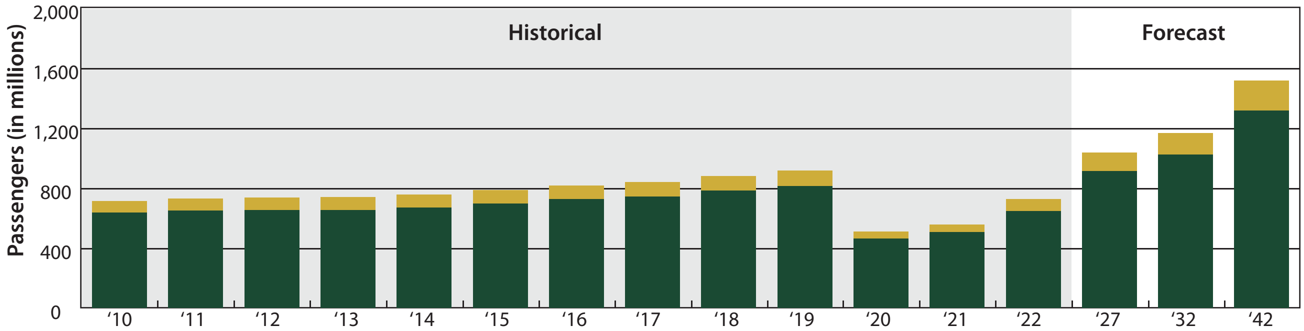
COMMERCIAL AIR CARRIER FORECASTS

U.S. commercial air carriers' total number of domestic departures had risen for the second year in a row in 2019, while available seat miles (ASMs) had risen each of the previous nine years. Due to the pandemic in 2020, both departures and ASM declined sharply, falling 30 percent from the previous year. Enplanements and RPM, which had grown for ten consecutive years, fell by 40 percent in 2020.

The early years of travel recovery will see strong growth rates as activity levels come off a low base but will then return to more typical rates. This rebound to 2019 levels is expected to occur by 2024. Following the recovery period, passenger growth rates are expected to resume with average growth of 2.6 percent through the end of the forecast period. System traffic in revenue passenger miles (RPMs) is projected to increase by 5.7 percent per year between 2022 and 2042. System capacity as measured by ASMs are projected to grow slower than RPM during the recovery period as airlines seek to restore load factors but will eventually grow in line with increasing demand.

The FAA expects U.S. carrier profitability to remain under pressure for several years due to lower demand and competitive fare pressures. Over the long term, the FAA sees a competitive and profitable aviation industry characterized by increasing demand for air travel and airfares growing more slowly than inflation, reflective of a growing U.S. and global economy. **Exhibit 2C** presents the annual historical and forecast enplanement totals for both large air carriers and commuter airlines in the U.S. as forecast by the FAA.

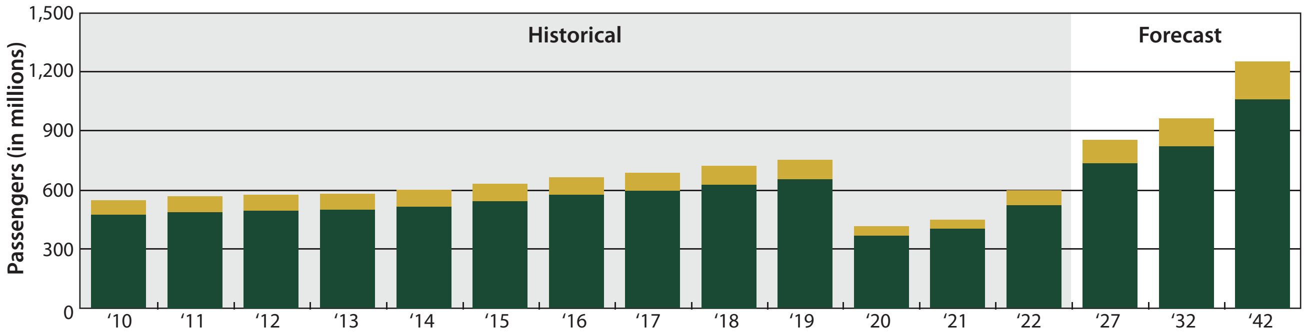
U.S. AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2022	2027	2032	2042	CAGR 2022-2042
Domestic Revenue Enplanements	645	914	1,022	1,318	3.64%
International Revenue Enplanements	81	123	145	198	4.57%
TOTAL	726	1,037	1,167	1,516	3.75%

Note: All figures measured in millions

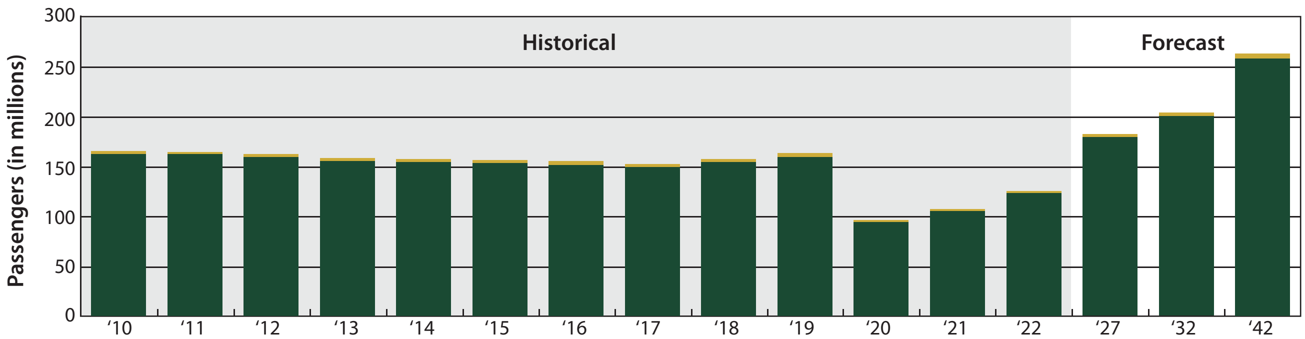
U.S. MAINLINE AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2022	2027	2032	2042	CAGR 2022-2042
Domestic Revenue Enplanements	522	735	822	1,060	3.61%
International Revenue Enplanements	78	120	141	193	4.63%
TOTAL	601	855	963	1,254	3.75%

Note: All figures measured in millions

U.S. REGIONAL AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2022	2027	2032	2042	CAGR 2022-2042
Domestic Revenue Enplanements	123	179	200	258	3.77%
International Revenue Enplanements	2	3	4	5	4.69%
TOTAL	125	182	203	262	3.77%

Note: All figures measured in millions. Totals may not equal due to rounding
CAGR: Compound Annual Growth Rate
Source: FAA Aerospace Forecast - Fiscal Years 2022-2042

COMMERCIAL AIRCRAFT FLEET FORECAST

The number of aircraft in the U.S. commercial fleet is forecast to increase from 6,870 in 2022 to 9,678 in 2042, an average annual growth rate of 1.7 percent. The continued recovery in demand from the pandemic along with long-term post-COVID increases in demand for air travel and air cargo is expected to drive both the passenger and cargo fleets. **Exhibit 2D** presents the FAA commercial aircraft fleet forecast through 2042.

The number of jets in the mainline carrier fleet is forecast to grow from 3,915 to 5,532, a net average of 80 aircraft per year as carriers continue to remove older, less fuel-efficient, narrow body aircraft. The narrow body fleet (including E-series aircraft, as well as A220-series at JetBlue and Delta) is projected to grow 66 aircraft a year as carriers replace the current-technology 737 and A320 family of aircraft with the next generation MAX and Neo families.

The regional carrier fleet is forecast to increase from 2,020 aircraft in 2022 to 2,187 in 2042 as the fleet expands by 0.4 percent per year. This includes the removal of 50-seat regional jets and retirement of older, small turboprop and piston aircraft, while adding larger regional jets (70-90 seats), especially the E-2 family after 2021. By 2030, only a handful of 50-seat regional jets are projected to remain in the fleet. By 2042, the number of jets in the regional carrier fleet is forecasted to be a total of 1,979, up from 1,626 in 2022. Turboprop/piston aircraft in the fleet is forecast to shrink by 47 percent by 2042.

For a non-hub, primary commercial service airport such as TXK, forecasts of commercial airline passenger enplanements and operations, general aviation-based aircraft and operations, and peak activity levels are the most basic indicators of future demand. Future facility requirements, such as improved airfield facilities like runways and taxiways, airline terminal complex component spaces, general aviation hangars, and apron areas, are derived from these projections. The remainder of this chapter will examine differing aviation demand segments based on the airport's service area and other influential factors.

RISKS TO THE FORECAST

While the FAA is confident that its forecasts for aviation demand and activity can be reached, they are dependent on several factors, including the strength of both the national and global economy, security (including the threat of international terrorism), and oil prices. Higher oil prices could lead to further shifts in consumer spending away from aviation, dampening a recovery in air transport demand.

As stated previously, the rapid spread of COVID-19 that began within the United States in early 2020 continues to present a risk without clear historical precedent. It is not known at this point how the virus will continue to affect aviation; while the impacts felt in 2020 continued into the following years, activity levels in 2022 have shown a faster-than-expected return to air travel. However, the overall long-term impacts of the pandemic on the aviation industry will not be understood until the full spread or intensity of the human consequences, as well as the breadth and depth of economic fallout, is known.

Forecasts of national aviation activity as well as local socioeconomic projections indicate an overall long-term growth trend; however, the economy is sure to endure periods of decline and uncertainty. These periods are accounted for in this master plan by tying recommendations to activity levels rather than periods of time. This way the airport sponsor can adjust its capital project needs accordingly based on activity level demands and the prevailing economic climate. This is discussed in greater detail in subsequent chapters.

AIRLINE SERVICE FORECASTS

As previously mentioned, TXK is a primary commercial service airport categorized as a non-hub airport by the FAA. As of March 2023, TXK offered scheduled passenger service provided by American Airlines (operated by SkyWest Airlines) with 3-4 daily non-stop flights to Dallas-Fort Worth International Airport (DFW). SkyWest Airlines operates the Bombardier CRJ-700, a regional jet that can be equipped with 65-70 seats.

To evaluate commercial service potential at TXK and the facilities necessary to properly accommodate present and future airline activity, two basic elements must be forecast: annual enplaned passengers and annual airline operations. Annual enplaned passengers serve as the most basic indicator of demand for commercial passenger service activity. The combination of enplanements and deplanements generally equals the total number of passengers using an airport. The annual number of enplanements is the figure used by the FAA to determine various entitlement funding levels for commercial service airports.

The term "enplanement" refers to a passenger boarding an airline flight. Enplaning passengers are then described in terms of either "originating" or "connecting/transferring." Originating passengers depart a specific airport for a destination or hub airport to connect/transfer to another flight. Connecting/transferring passengers are those who have departed from another location and are using the airport as an intermediate stop. These passengers may disembark their originating flight to wait in the terminal for their next flight or could simply remain on the aircraft at an intermediary stop as a "through" passenger. TXK and similar airports have almost exclusively originating passengers, while larger hubs like those in Dallas-Ft. Worth have a more significant percentage of passengers who are connecting/transferring.

As indicated earlier, an important resource utilized in aviation demand forecasting is the annual FAA aviation forecasts. The most recent available version is the FAA *Aerospace Forecasts – Fiscal Years 2022-2042*, published in June 2022. The FAA forecasts a variety of aviation demand indicators on an annual basis. In the most current edition, fiscal year 2020 is presented as the baseline, with 2021 showing as an estimate and years 2022 through 2042 as projections. Many forecasting elements utilized in this analysis will consider the history and projections presented by the FAA in its annual forecast.

U.S. MAINLINE AIR CARRIER PASSENGER JET AIRCRAFT

	2022	2027	2032	2042	CAGR 2022-2042
Large Narrow Body					
2 Engine	3,429	3,463	3,765	4,748	1.6%
3-4 Engines	0	0	0	0	0.0%
Large Wide Body					
2 Engine	426	503	589	784	3.1%
3-4 Engines	0	0	0	0	0.0%
Total Large Jets	**3,855**	**3,966**	**4,354**	**5,532**	**1.8%**
Total Regional Jets	**60**	**0**	**0**	**0**	**-100.0%**
Total Mainline Passenger Jets	**3,915**	**3,966**	**4,354**	**5,532**	**1.7%**

U.S. REGIONAL AIR CARRIER PASSENGER AIRCRAFT

	2022	2027	2032	2042	CAGR 2022-2042
Non-Jet					
Less than 30 Seats	342	288	233	133	-4.6%
31-40 Seats	3	0	0	0	-100.0%
Over 40 Seats	49	53	60	75	2.2%
Total Non-Jets	**394**	**341**	**293**	**208**	**-3.1%**
Jet					
31-40 Seats	3	2	0	0	-100.0%
Over 40 Seats	1,623	1,550	1,530	1,979	1.0%
Total Jets	**1,626**	**1,552**	**1,530**	**1,979**	**1.0%**
Total Regional Passenger Aircraft	**2,020**	**1,893**	**1,823**	**2,187**	**0.4%**

Total Mainline Passenger Jets

Total Regional Passenger Aircraft

Source: FAA Aerospace Forecast - Fiscal Years 2022-2041

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HISTORICAL AIRLINE PASSENGER ACTIVITY

Historic annual passenger enplanements dating back to 1990 are presented in **Figure 2A**. This data shows that enplanements at TXK regularly rise and fall, with the strongest growth in the seven-year period from 2012 to 2019, where enplanements rose slightly to more than 10,000. Figure 2A also displays the impact and subsequent recovery of the COVID-19 pandemic on enplanements at TXK. Historically, the airport has averaged 35,535 passengers per year since 1990.

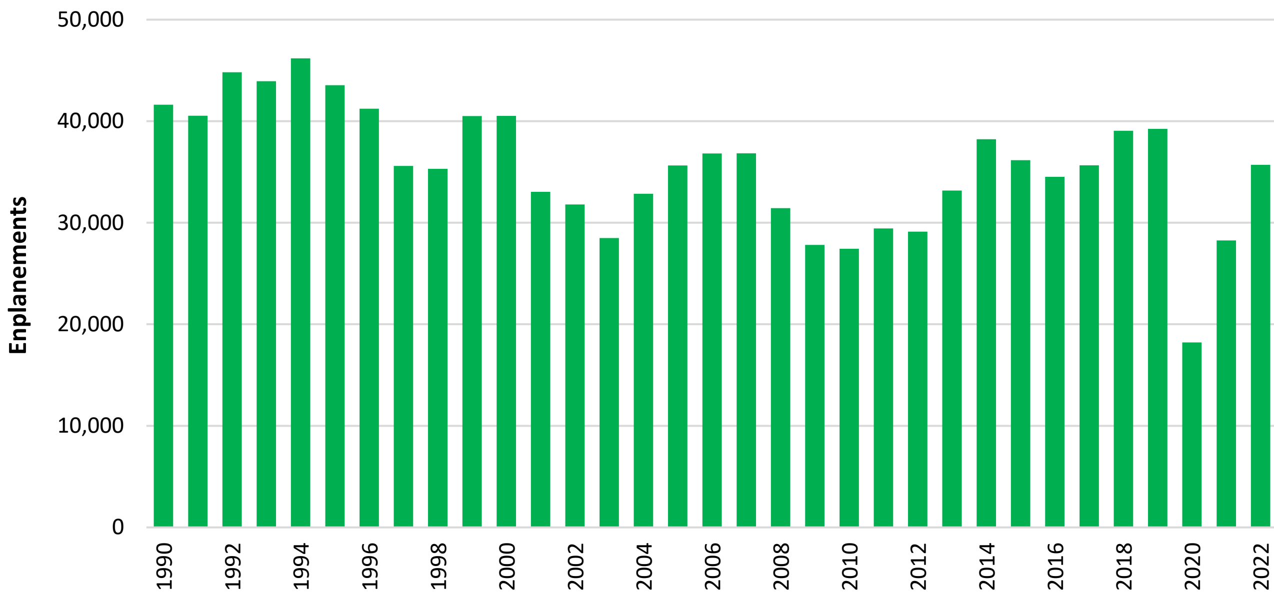


Figure 2A: Historical TXK Passenger Enplanements

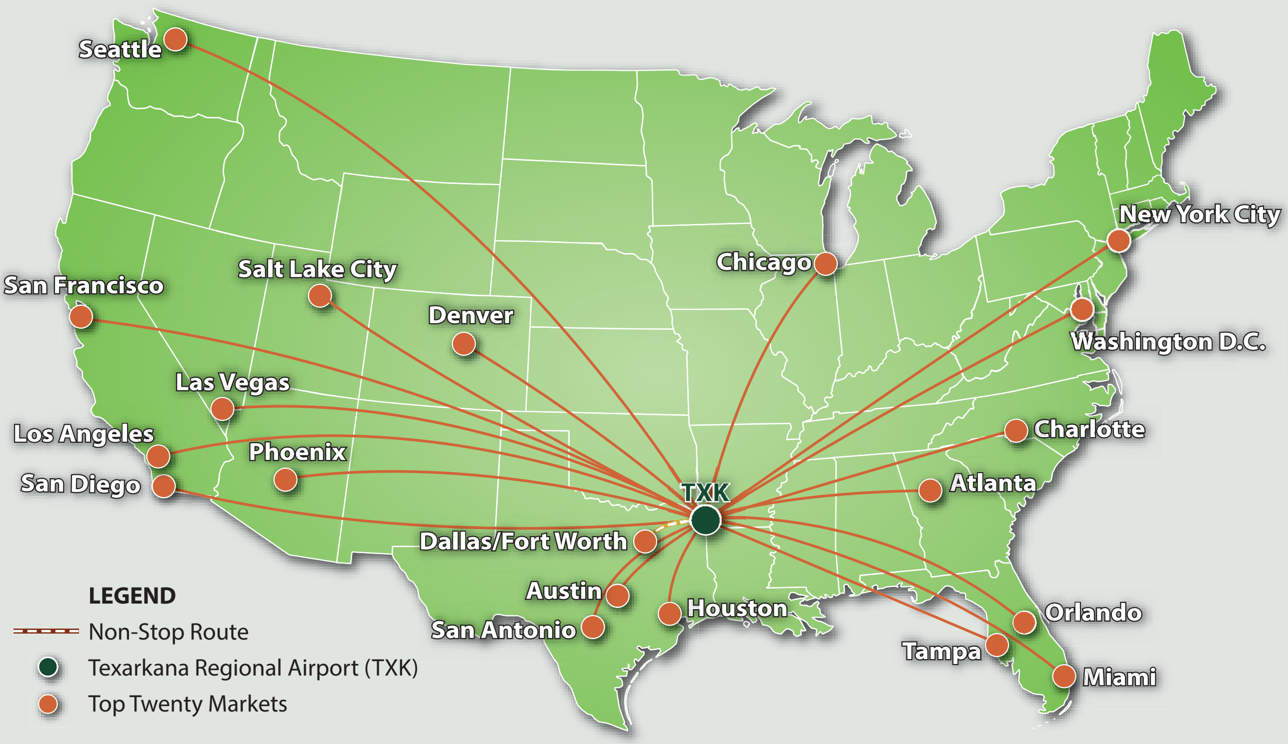
Over the past 20 years, TXK has experienced passenger activity ranging from a period high of 39,239 in 2019 to a low of 18,215 in 2020 during the pandemic. Overall, TXK's 20-year trend is a modest growth rate of 0.58 percent per year. Periods of declining enplanements, such as from 2001-2003 and from 2008-2010, correlate to periods of national economic recessions. A more recent 10-year trend indicates stronger growth (2.06% CAGR); the 5-year growth rate is virtually flat due to the sudden drop and subsequent recovery to pre-pandemic levels and is not considered in the forecast.

Top 25 Domestic Origin and Destination Markets

The U.S. Department of Transportation (DOT) maintains a rolling quarterly survey of 10 percent of all airline tickets sold for each commercial service airport. This Origin & Destination (O&D) Survey provides information on passengers' starting and ending cities and shows the volume of traffic between city pairs.

Information obtained from the domestic O&D Survey provides final destinations for those traveling to/from TXK within the U.S. Destination data is typically useful in examining the strength of the local market to and from other markets. **Exhibit 2E** shows the top 20 markets for 2012, 2017, and 2022 (Oct 2021-Sep 2022). The exhibit also depicts TXK's current non-stop market.

2022 TOP TWENTY MARKETS/NON-STOP SERVICE CITY PAIRS



	2012 Top Twenty Markets		2017 Top Twenty Markets		2021-2022 Top Twenty Markets	
Rank	**Destination**	**Passengers**	**Destination**	**Passengers**	**Destination**	**Passengers**
1	Dallas/Fort Worth	3,280	Los Angeles	3,840	Los Angeles	4,330
2	Los Angeles	2,850	Dallas/Fort Worth	2,990	Orlando	2,490
3	Washington DC	2,610	Washington DC	2,120	Las Vegas	2,270
4	New York City	2,010	Chicago	1,940	Houston	2,150
5	San Francisco	1,640	Orlando	1,940	Washington DC	2,130
6	San Antonio	1,630	San Francisco	1,680	Denver	1,990
7	Chicago	1,580	Atlanta	1,650	Dallas/Fort Worth	1,750
8	Las Vegas	1,440	Denver	1,640	Phoenix	1,680
9	Atlanta	1,270	Charlotte	1,590	New York City	1,650
10	Detroit	1,270	Las Vegas	1,580	San Antonio	1,610
11	Indianapolis	1,140	San Antonio	1,530	San Francisco	1,590
12	Columbus, OH	1,130	Miami	1,510	Miami	1,490
13	Austin	1,120	New York City	1,500	Atlanta	1,380
14	Phoenix	1,110	Phoenix	1,470	San Diego	1,360
15	Boston	1,090	Detroit	1,380	Tampa	1,310
16	Denver	1,030	Philadelphia	1,370	Chicago	1,290
17	Seattle	1,000	Tampa	1,290	Austin	1,270
18	Orlando	950	Austin	1,190	Seattle	1,220
19	San Diego	940	Houston	1,190	Salt Lake City	990
20	Philadelphia	940	Seattle	1,140	Charlotte	990
	Top 20 Total O&D Passengers	**30,030**	**Top 20 Total O&D Passengers**	**34,540**	**Top 20 Total O&D Passengers**	**34,940**
	Total O&D Passengers	**55,080**	**Total O&D Passengers**	**66,930**	**Total O&D Passengers**	**66,550**
	% Top 20/Total O&D Passengers	**54.5%**	**% Top 20/Total O&D Passengers**	**51.6%**	**% Top 20/Total O&D Passengers**	**52.5%**

Non-Stop Service (2022)

- Dallas/Fort Worth

The results of the destination market analysis show that Los Angeles has consistently been in the top two destinations, holding the top spot in both 2017 and 2022. Dallas-Fort Worth was the number one destination in 2012 and second to LA in 2022, then fell to #7 in 2022. This was most likely due to the sudden loss of business travel due to the pandemic as vacation spots in LA, Orlando, and Las Vegas took the top spots. Washington, DC is the only market that has been in the top five destinations in all three periods evaluated. Major cities that are consistently within the top 20 destinations include New York, San Francisco, Chicago, Atlanta, and Phoenix. Denver is also consistently in the top 20 and has been increasing in rank from #16 in 2012, to eighth in 2017, and ending up in sixth in 2022.

On average over these three periods, 52.8 percent of revenue passengers originate from or are destined for one of the top 20 markets. American Airlines at TXK currently offer non-stop service to Dallas-Fort Worth. Many of the remaining top destinations without non-stop service are all within the mainline-carrier networks with connections in Dallas-Ft. Worth. DFW/DAL, LIT, and SHV all offer non-stop service to most of these markets.

Passengers that change flights at an airport are still counted as enplaned passengers at that airport but are not considered as originations unless they do so on a separate ticket itinerary. In those cases, the passenger must check-in again for the new flight. While this statistic can be helpful in differentiating between total revenue enplanements and originations, since TXK is a non-hub airport that offers no connecting flights (Texarkana is an "origin and destination" airport), this is not tracked. **Exhibit 2E** presents the total number of revenue enplanements and the ratio of total enplanements to the top 20 destinations as a way to identify potential new markets for airline service.

ENPLANEMENT FORECASTS

As discussed in this chapter's introduction, the first step involved in updating an airport's forecasts includes reviewing previous forecasts in comparison to actual activity to determine what changes, if any, may be necessary. After that comes the consideration of any new factors that could impact the forecasts, such as changes in the socioeconomic climate or the effects of changes in air carrier services.

Previous Enplanement Forecasts

There are two existing forecasts of enplanement activity at TXK to consider:

- Texarkana Regional Airport, *Airport Master Plan* (2003)
- 2023 FAA *Terminal Area Forecast*

The forecasts from the 2003 Master Plan are 20 years old, during which time there has been two significant national recessions, a global pandemic, as well as restructuring and consolidation in the airline industry. The previous master plan projected enplanement growth at 3.0 percent CAGR through 2025. However, as discussed previously, enplanements have historically averaged 35,535 passengers since 1990 and only a 0.58 percent average annual growth rate since 2002. Therefore, the forecast presented in that master plan will not be considered valid and is only referenced for historical purposes.

The FAA TAF forecast is published annually and is intended to be utilized as a starting point for considering the reasonableness of master plan forecasts. **Table 2E** presents the previous master plan and TAF enplanement forecasts for TXK. Actual historical enplanements for TXK are also presented for comparative purposes.

TABLE 2E | Previous Enplanement Forecasts

Year	2003 Master Plan	2023 FAA TAF	Actual Enplanements
2005	52,000	33,573	35,640
2006	[redacted]	35,930	36,822
2007		35,280	36,832
2008		32,366	31,434
2009		27,530	27,811
2010	60,300	25,259	27,437
2011	[redacted]	28,626	29,438
2012		28,674	29,123
2013		31,214	33,169
2014		36,613	38,214
2015	69,900	35,469	36,155
2016	[redacted]	33,225	34,515
2017		34,574	35,655
2018		36,223	39,051
2019		37,880	39,239
2020	81,000	21,292	18,215
2021	[redacted]	24,440	28,250
2022		35,068	35,699
2023		36,097	[redacted]
2024		37,459	
2025	93,900	38,087	
CAGR	3.00%	0.63%	0.01%

CAGR: Compound Annual Growth Rate

Sources: 2003 Airport Master Plan Update, TXK; 2023 FAA TAF; Airport records

It should be noted, however, that FAA TAF forecasts are based upon the T-100 enplanement data collected by the U.S. Department of Transportation (DOT). This includes revenue passengers only. The enplanement history presented in **Figure 2A** is from airport records. They are collected from monthly landing and enplanement reports provided by each airline operating at TXK. A primary difference is that the airlines also report non-revenue passengers (e.g., flight crews repositioning, free travel earned from frequent flyer programs). These travelers do not pay ticket taxes to DOT, so they are not factored into FAA entitlement grants to TXK. They do, however, pay a passenger facility charge (PFC) to TXK in support of capital improvements and debt service.

Time-Series and Regression Enplanement Forecasts

A variety of time-series extrapolation and regression analyses using multiple variables, including aviation and socioeconomic factors for the Texarkana MSA, were tested in relation to historic TXK enplanement levels. For regression analysis, it is optimal to have an "r^2" value near or above 0.90, which generally represents a strong correlation and greater statistical reliability. Several variables were tested to determine if they might produce more reliable statistical trends. The variables tested were: 1) MSA population; 2) MSA employment; 3) MSA gross regional product (GRP); 4) MSA income; and 5) U.S. regional enplanements. The results of these regression analyses failed to produce an r^2 value greater than 0.50, which indicates weak correlations between the variables and enplanements. As a result, forecasts generated from these regression analyses are not considered reliable and will not be presented in the master plan.

Historic Trend Projections

The simplest approach to developing a projection of enplanements is by applying historic growth trends. As was previously established, TXK enplanements have grown at CAGRs of 0.58 percent and 2.06 percent in the 20- and 10-year periods, respectively. These rates can be applied to the 2022 enplanement numbers to produce trend forecasts. Applying the 20-year growth rate results in enplanement projections of 36,749 in 2027; 37,830 in 2032; and 40,087 by 2042. The 10-year growth rate results in a higher projection: 39,524; 43,760; and 53,641 by 2042. Trend analyses, while telling what has occurred at TXK historically, do not account for projected changes in local or national socioeconomics and aviation activity. Therefore, these types of projections are typically not as reliable as other methods of forecasting.

Travel Propensity Factor

There are a variety of local factors that affect the potential for passengers within an area to travel. A key statistic to consider is the relationship between an airport's enplanement levels to the population it serves. The ratio of enplanements to population is termed the Travel Propensity Factor (TPF).

The TPF is predominantly impacted by the proximity of an airport to other regional airports with higher levels of service or "hub" airports. Regional airports with higher TPF ratios tend to be located farther from hub airports in relatively isolated areas. These airports generally have a service area that extends into adjacent, well-populated regions or have some type of air service advantage that attracts more of those passengers that might otherwise choose to drive to a more distant hub airport. Generally, the higher the TPF, the more likely air travelers are to utilize the local airport for commercial service. **Table 2F** presents a historical review of the TPF for TXK since 2002.

TXK's TPF has averaged 0.222 over the past 20 years, with a high of 0.265 in 2019 to a low of 0.124 in 2020. 13 of the past 20 years have seen a TPF greater than 0.222, including the seven years leading up to the pandemic, as well as 2022. The period between 2008 and 2012 coincides with the national economic recession of the time.

Table 2F presents three enplanement projections based upon the TPF. The first projection maintains the current TPF throughout the forecast period, which results in 36,551 enplanements by 2042. The second projection increases the TPF to its peak period ratio of 0.265 resulting in 40,028 enplanements by 2042. A third projection increases the TPF based upon the maximum change in TPF experienced in the past 20 years, which was a change of 0.081 (2010 to 2019). Applying this maximum change results in 48,940 enplanements by 2042. It should be noted that, while resulting in TXK's lowest TPF, the impact of COVID-19 is not factored into this projection due to its once-in-a-lifetime nature.

TABLE 2F | Travel Propensity Factor Projections

Year	TXK Enplanements	Texarkana MSA Population	Travel Propensity Factor (TPF)
2002	31,791	143,149	0.222
2003	28,492	143,582	0.198
2004	32,854	143,996	0.228
2005	35,640	144,534	0.247
2006	36,822	146,051	0.252
2007	36,832	146,273	0.252
2008	31,434	147,495	0.213
2009	27,811	148,743	0.187
2010	27,437	149,346	0.184
2011	29,438	149,407	0.197
2012	29,123	149,379	0.195
2013	33,169	149,155	0.222
2014	38,214	148,758	0.257
2015	36,155	148,670	0.243
2016	34,515	148,884	0.232
2017	35,655	148,777	0.240
2018	39,051	148,506	0.263
2019	39,239	147,889	0.265
2020	18,215	147,333	0.124
2021	28,250	147,174	0.192
2022	35,699	147,527	0.242
Constant TPF (0.12% CAGR)			
2027	36,061	149,024	0.242
2032	36,330	150,136	0.242
2042	36,551	151,049	0.242
Increasing TPF – Peak Ratio (0.57% CAGR)			
2027	36,919	149,024	0.248
2032	38,058	150,136	0.253
2042	40,028	151,049	0.265
Increasing TPF – Maximum Change (1.57% CAGR)			
2027	39,080	149,024	0.262
2032	42,412	150,136	0.282
2042	48,789	151,049	0.323

CAGR: Compound Annual Growth Rate

Source: Texarkana MSA CEDDS, 2023; Airport records; Coffman Associates analysis

Market Share of U.S. Regional Enplanement Projections

The next forecasting method employed considers TXK's market share of U.S. regional enplanements. National forecasts of regional enplanements are compiled each year by the FAA and consider the state of the economy, fuel prices, and prior year developments. The most recent publication is FAA *Aerospace Forecasts – Fiscal Years 2022-2042*, which provides historical regional enplanement numbers starting in 2010. Like its TPF, TXK's market share of regional airline enplanements were low during the 2008-2012 economic recession but has generally increased since that time to a current share of 0.0290 percent. TXK's peak market share during this period occurred in 2022 at 0.0290 percent, and the average share over this period was 0.0227 percent. Two enplanement forecasts based on TXK's market share of total U.S. regional airline carrier enplanements have been developed and are presented in **Table 2G**.

TABLE 2G | Market Share of U.S. Regional Enplanement Projections

Year	TXK Enplanements	U.S. Regional Enplanements	Enplanement Market Share
2010	27,437	161,704,301	0.0170%
2011	29,438	161,667,577	0.0182%
2012	29,123	158,982,462	0.0183%
2013	33,169	155,443,185	0.0213%
2014	38,214	154,072,704	0.0248%
2015	36,155	152,946,011	0.0236%
2016	34,515	151,460,935	0.0228%
2017	35,655	148,599,874	0.0240%
2018	39,051	153,668,408	0.0254%
2019	39,239	159,008,215	0.0247%
2020	18,215	93,753,729	0.0194%
2021	28,250	105,279,354	0.0268%
2022	35,699	123,163,737	0.0290%
Constant Market Share (3.76% CAGR)			
2027	51,820	178,780,544	0.0290%
2032	57,948	199,925,683	0.0290%
2042	74,745	257,876,080	0.0290%
Increasing Market Share (3.94% CAGR)			
2027	52,273	178,780,544	0.0292%
2032	58,963	199,925,683	0.0295%
2042	77,363	257,876,080	0.0300%

CAGR: Compound Annual Growth Rate

Source: FAA Aerospace Forecast, 2022-2042; Airport records; Coffman Associates analysis

Additional Considerations for Forecasts

As mentioned previously, the forecast efforts within a master plan are comprised of historical analyses and mathematical projections based on past and expected growth rates. A critical element of forecasting, however, is the local conditions and judgement of the forecaster. Therefore, it is wise to consider factors that cannot be quantified that, nonetheless, may have an ultimate impact on master plan forecasts.

One such factor is the new terminal building, still under construction as of this writing and set to open in 2024. A modern terminal with the latest in passenger comfort and security features, as well as room for expanded airline growth, may result in reduced leakage to regional competitors. At this time, it is estimated that TXK retains only roughly 13 percent of airline passengers in the region. Introducing new air service provided by a low-cost carrier could reduce fares at TXK, making the airport more competitive in the region.

In July 2020, an air service development proposal prepared by the Texarkana Regional Airport Authority (TRAA) and AR-TX Regional Economic Development, Inc. (AR-TX REDI) for Allegiant Airlines highlighted the economic strength of the region, the new terminal building, and identified potential routes Allegiant could fulfill. These routes include cities listed in the top 20 destinations discussed previously. Should Allegiant or a similar air carrier begin service with two weekly departures to one of these destinations operating an Airbus A319 (156 seats) at a 90% load factor, this would result in the potential for an additional 14,600 annual enplanements. Adding a second destination could double that to 29,200 passengers per year. While the new service could pull some enplanement numbers from the existing American Airlines flights, the increase would outweigh the loss and result in an overall growth in passenger enplanements at TXK.

Selected Airline Enplanement Forecast

The new enplanement projections prepared for this master plan are summarized in **Table 2H** and charted on **Exhibit 2F**. The table includes the FAA TAF for comparison to the new projections. The various enplanement projections presented above resulted in a broad forecast range—on the high end, the increasing market share of U.S. regional enplanements resulted in 77,363 enplanements and, on the low end, the constant TPF forecast resulted in 36,551 enplanements.

TABLE 2H | Airline Enplanement Forecasts Summary

Projection	2027	2032	2042	CAGR
20-Year Growth Rate	36,749	37,830	40,087	0.58%
10-Year Growth Rate	39,524	43,760	53,641	2.06%
Constant TPF	36,061	36,330	36,551	0.12%
Increasing TPF – Peak Ratio	36,919	38,058	40,028	0.57%
Increasing TPF – Maximum Change	**39,080**	**42,412**	**48,789**	**1.57%**
Constant U.S. Market Share	51,820	57,948	74,745	3.76%
Increasing U.S. Market Share	52,273	58,963	77,363	3.94%
FAA TAF	39,045	41,551	47,049	1.48%

Boldface indicates selected forecast
CAGR: Compound Annual Growth Rate
TPF: Travel Propensity Factor

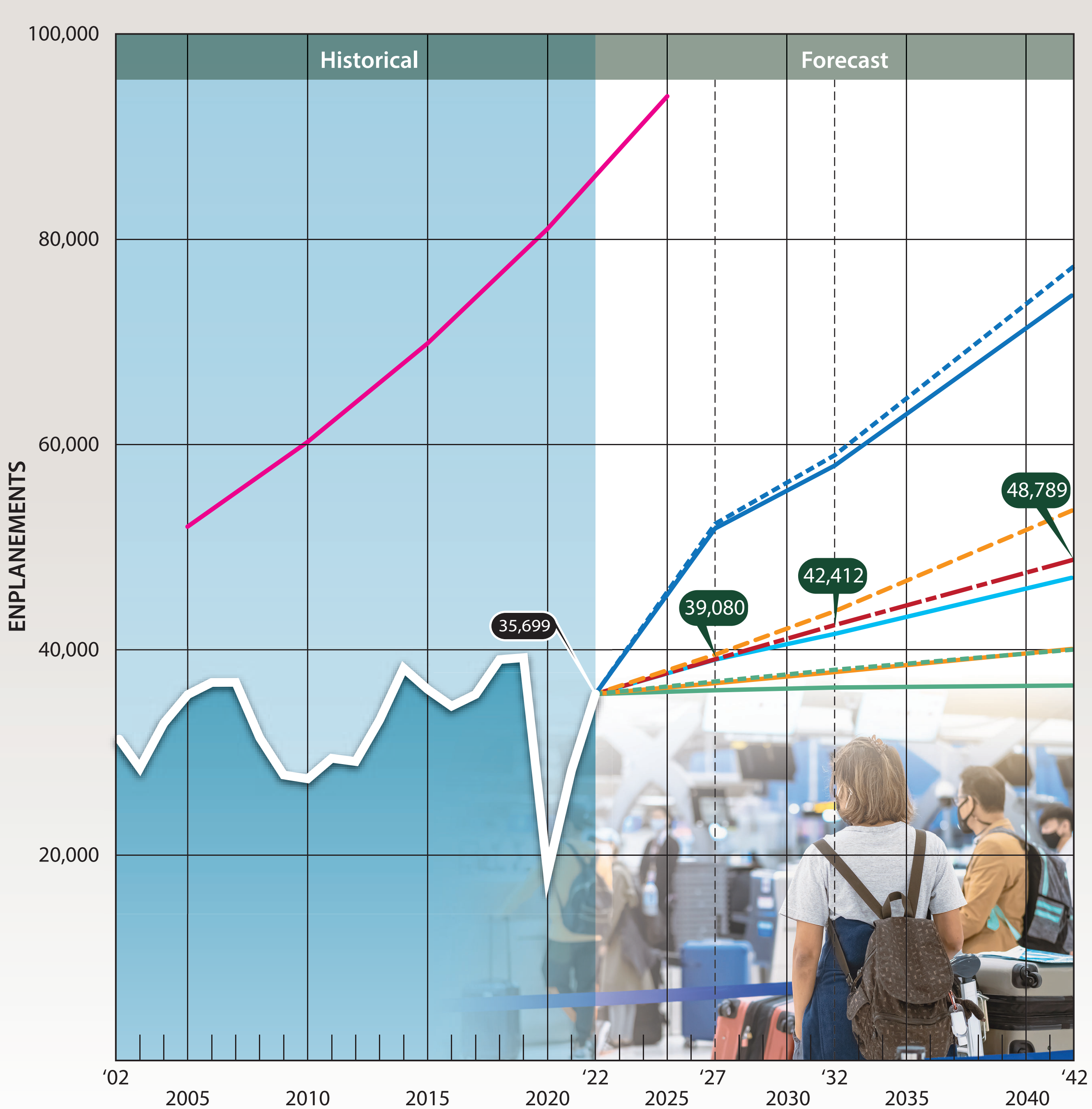
Source: Coffman Associates analysis

Historically, TXK has demonstrated the capability to grow its TPF to a modest degree even over short periods of time and has previously shown the capability to grow its TPF to keep pace or even exceed population growth. Should the MSA continue to grow as projected, this is likely to result in a corresponding growth in enplanements. Therefore, **the increasing TPF – Maximum Change enplanement projection is selected as the master plan forecast**. This projection accounts for the growth in population, employment, and gross regional product (GRP) expected in the Texarkana MSA, as well as the airport's historic trend of a growing TPF. Among the other projections, the selected forecast is not the highest projection but, instead, reflects a modest 1.57 percent CAGR.

AIRLINE FLEET MIX AND OPERATIONS FORECAST

The airline fleet mix defines key parameters in airport planning, including critical aircraft (for pavement design and ramp geometry), terminal complex layout, and maximum stage length capabilities (affecting runway length evaluations). A projection of the airline fleet mix for TXK has been developed by reviewing equipment used by the carriers.

Changes in equipment, airframes, and engines have always had a significant impact on airlines and airport planning. There are many ongoing programs by the manufacturers to improve performance characteristics, especially in fuel efficiency. RJs (regional jets) also became a larger factor as airlines looked for ways to reduce costs. Many airlines replaced larger commercial jets, as well as commuter turboprops, on smaller emerging routes with RJs.



LEGEND

Travel Propensity Factord (TPF) Projections	CAGR
Constant TPF	0.12%
Increasing TPF - Peak Ratio	0.57%
Increasing TPF - Maximum Change (Selected)	*1.57%*

Market Share of Regional Airline Projections	
Constant Market Share	3.76%
Increasing Market Share	3.94%

Historic Trend Projections	CAGR
10-Year Growth Rate	2.06%
20-Year Growth Rate	0.58%

Other Forecasts	
2023 TXK TAF	1.48%
2003 Master Plan	

As a result, commuter airlines are transitioning to advanced turboprop aircraft and RJs to fit their market needs. Many of these aircraft have greater seating capacity, lower operating costs, and are considerably more comfortable for the flying public. The RJs made their initial impact in the 44- to 50-seat range, and eventually became available with as few as 37 seats and as many as 100 seats. This bridged a long-existing gap in seating capacity, making RJs the aircraft of choice at non-hub and small-hub airports.

As the price of fuel rose, however, the 50-seat and smaller RJs have been found to be less cost-effective than their counterparts with more than 60 seats. In fact, higher seat capacity turboprops, such as the Q400 and even ATR-72, have been more cost-effective than a 50-seat jet carrying the same number of passengers. As a result, the 50-seat RJs are no longer in production, and will eventually be eliminated from the national fleet. This will occur over time, however, as some regional carriers will maintain them for some services. Another factor that will slow the transition is codesharing with major airlines that have restrictive scope clauses with pilots' unions that prohibit codesharing on aircraft above a certain seating capacity.

In addition, turboprops that have been the workhorses for the small commuter markets are also no longer in production. In fact, the only commuter turboprops still in production are the ATR 42 in the 40- to 60-seat range, as well as the Q-400 and ATR-72, each with more than 60 seats. Unless there is a new aircraft manufactured in the range of 10 to 39 seats, smaller markets that cannot support the larger turboprops could lose service from anything over nine-seat aircraft.

Table 2J presents the historical airline operational fleet mix for 2018 through 2022, along with the forecast fleet mix. In 2018, 50-seat aircraft, such as the Embraer ERJ-145, conducted the most departures of any aircraft type with 79.2 percent of annual departures. This grouping of aircraft experienced a drop in usage at TXK, reaching 8.7 percent in 2019 before rising again in 2022 to 82.9 percent. Average seats per departure reflect this historic trend, going from 45.25 in 2018 to 44.19 in 2019 and back up to 51.24 in 2022.

TABLE 2J | Scheduled Airline Fleet Mix and Operations Forecast

Fleet Mix - Seating Capacity/Example Aircraft	ACTUAL					FORECAST		
	2018	2019	2020	2021	2022	2027	2032	2042
100+/B737, A319	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
66-100/CRJ-900, ERJ-175	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	35.0%
61-65/CRJ-700	0.3%	0.0%	0.0%	0.0%	15.3%	100.0%	75.0%	65.0%
50-60/ERJ-145, CRJ-200	79.2%	8.7%	17.8%	79.6%	82.9%	0.0%	0.0%	0.0%
30-49/ERJ-135, -140	20.5%	91.3%	82.2%	20.4%	1.7%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Total Seats Available	53,851	54,048	34,275	51,323	59,441	62,010	65,243	69,676
Avg. Seats per Departure	45.25	44.19	44.92	48.83	51.24	65.00	67.75	68.85
Boarding Load Factor	72.5%	72.6%	53.1%	55.0%	60.1%	63.0%	65.0%	70.0%
Enplaned per Departure	32.82	32.08	23.87	26.88	30.78	40.95	44.04	48.20
Annual Enplanements	39,051	39,239	18,215	28,250	35,699	39,080	42,412	48,789
Annual Departures	1,190	1,223	763	1,051	1,160	954	963	1,012
Annual Operations	2,380	2,446	1,526	2,102	2,320	1,908	1,926	2,024
Air Carrier Ops (≥60 seats)	0	0	0	0	386	1,908	1,926	2,024
Commuter/AT Ops (<60 seats)	2,380	2,446	1,526	2,102	1,934	0	0	0

Sources: Airport records, Coffman Associates analysis

As previously discussed, national trends indicate airlines are moving toward larger aircraft with capacities above 60 seats. Beginning in October 2022, American Airlines transitioned from the ERJ-145 to the 65-seat Bombardier CRJ-700. Thus, growth in the larger capacity aircraft is projected to quickly replace departures previously conducted with the smaller ERJ. The long-term projection considers the addition of new routes, higher passenger travel demand, and/or new airline service, all of which may require the use of larger regional jets, such as the CRJ-900 or ERJ-175. While it is possible that the airlines would upgauge to include narrow body airliners, such as the Boeing 737 or Airbus A319/A320 series, both of which have seating capacities above 100, TXK's market share is likely to continue to be served by regional jet aircraft for the foreseeable future. Based on historical load factors at TXK and supported by the FAA's projection of increasing load factors for regional airlines through the planning period, TXK's average seats per departure is projected to increase to 68.85 by 2042.

The boarding load factor (BLF) is defined as the ratio of passengers boarding aircraft compared to the seating capacity of the aircraft. The BLF at TXK has ranged from a recent low of 53.1 percent in 2020 to the five-year high of 72.6 percent in 2019. Historic data suggests that BLF has increased slightly during periods when the airlines reduced available seats and decreased slightly when airlines increased available seats. It is anticipated that, as average seats per departure continue to rise, the BLF will average near 66 percent for the duration of the planning period.

POTENTIAL FOR EXPANDED COMMERCIAL SERVICE

Enplanement growth forecasted above represents the potential of the TXK market. Some of the projected growth will occur organically based on a growing population and employment base whether commercial services are expanded or remain as they are currently. Conversely, some enplanement growth may occur as a result of expanded airline service in the form of new non-stop destinations and/or additional airlines. This section considers the potential of additional service at TXK, including potential markets and carriers.

At present, commercial service options at TXK are provided by American Airlines, offering non-stop service to Dallas-Fort Worth International Airport. Generally, the major airlines have consolidated and are reluctant to add routes/new airports. These carriers tend to favor the trappings of a larger hub airport as they depend upon the ability to link their passengers via the "hub-and-spoke" system. However, TXK is a proven market with the opportunity to attract additional regular scheduled commuter airline "feeder" service. The O&D analysis discussed earlier identified potential new non-stop markets, including Los Angeles, which is a hub for both American and Delta; Chicago, which is a hub for United; or Denver, which is also a hub for United Airlines. United Airlines (operated by US Airways Express) began non-stop service from TXK to George Bush Intercontinental Airport (Houston) in February 2022, but discontinued the service in September 2022. Assuming one new non-stop destination was added utilizing a 76-seat regional jet with one daily departure at 66 percent BLF, this results in a potential annual enplanement increase of 18,300.

Another opportunity is non-traditional and/or low-cost passenger airline options. Non-traditional airlines like Allegiant Airlines utilize an irregular schedule versus a daily departure schedule of the legacy carriers. For example, Allegiant Airlines could serve a market departing Tuesday with a return on Saturday. The possibility of introducing service to/from TXK with Allegiant was mentioned previously. Other low-cost options like Frontier, Spirit, Virgin America, etc., may offer daily departures but very limited schedule options. These non-traditional or low-cost carriers tend to generate a demand from specific users, most commonly leisure travelers desiring low airfares. The users are willing to sacrifice things such as schedule frequency and traditional perks associated with airline reward programs in favor of low fares. Business travelers tend to not use these airlines as they are less reliable and offer fewer connections. Generally, local passenger demand for these airlines is limited when compared to a legacy carrier.

A potential option for TXK based on market opportunities could be Allegiant Airlines, which also currently serves Shreveport, Northwest Arkansas, Tulsa, and Little Rock. Because Allegiant already offers service to other airports in the region, it could be more difficult to attract them to TXK; however, Allegiant offers non-stop service to markets in high demand at TXK, such as Los Angeles, Orlando, and Las Vegas. Some of these routes could start as seasonal offerings, which allow the airline to test and develop the market. Allegiant operated the Airbus A319 (156 seats) or A320 (up to 186 seats) fleet and is notoriously strict in terms of BLF, often leaving markets when BLF drops below 90 percent. Assuming TXK could maintain a BLF of 90 percent for one weekly departure serving a leisure destination, such as Las Vegas or Orlando, utilizing an A319, this flight alone would result in an annual enplanement increase of 7,300.

Frontier Airlines could also be an option, but also currently operates flights out of Oklahoma City, Dallas-Fort Worth, and Little Rock. New market entrants using non-traditional models including “clubs,” “memberships,” and the like are promising alternatives as well. Airlines such as Surf Air, Jet Suite X, and others could become potential carriers for TXK if they survive infancy.

Ultimately, enplanement growth projected for TXK is dependent on several factors, including natural population and employment growth of the service area, upgauging of the fleet mix of commercial aircraft resulting in more available seats, and the potential for new non-stop destinations. Regional competition at Shreveport, Little Rock, and the Dallas-Fort Worth airports, coupled with the ease of accessing these regional airports via surface transportation, limits the potential for significant new service growth. There certainly is, however, potential at TXK for new non-stop destinations served by the existing legacy carrier (American) or new legacy or low-cost carriers. While a new carrier and route could cannibalize enplanements from the other existing routes to some extent, other overwhelming impacts would be the introduction of increased competition, which leads to lower ticket prices, a reduction of passenger leakage to other regional airports, and greater enplanement growth.

NON-SCHEDULED AIR CARRIER/AIR TAXI OPERATIONS

Non-scheduled air carrier/air taxi operations include the air charter operations associated with various for-hire operators. Some operations by aircraft operated under fractional ownership programs are also counted as air taxi operations. Because the scheduled airline operations have been forecast, this section reviews the growth potential for non-scheduled air carrier/air taxi operations.

Air carrier operations include large commercial service aircraft (60 seats or more). Most non-scheduled air carrier activity is conducted by aircraft such as the MD-83, Boeing 737 (all variants up to the 900 model), Boeing 757, Boeing 767, and Airbus 319/320/321. Air taxi operations can include small commercial service (59 seats or less) aircraft operations, as well as general aviation type aircraft for the "on-demand" commercial transport of persons and property in accordance with 14 Code of Federal Regulations (CFR) Part 135 and 14 CFR Part 91, Subchapter K. The FAA forecasts that U.S. total air taxi/commuter operations are forecast to decline by 1.05 percent through 2027, and then increase slightly through the remainder of the forecast period. Overall, U.S. air taxi/commuter operations are forecast to increase by 0.6 percent annually from 2022 through 2042. A summary of scheduled and non-scheduled air carrier/air taxi operations at TXK since 2012 is provided in **Table 2K**.

TABLE 2K | Non-Scheduled Air Carrier/Air Taxi Operations

Year	Non-Scheduled Air Carrier	Non-Scheduled Air Taxi
2012	72	1,933
2013	25	2,027
2014	5	2,220
2015	25	2,337
2016	8	2,424
2017	0	2,674
2018	14	2,371
2019	21	2,532
2020	17	2,315
2021	22	3,092
2022	10	3,427

Source: FAA OPSNET, Coffman Associates analysis

NON-SCHEDULED AIR CARRIER FORECAST

From 2012 to 2022, non-scheduled air carrier operations have averaged approximately 21.9 annual operations. This history indicates that non-scheduled air carrier operations do not constitute a significant number of operations and it is likely that they would remain within this historic range for the duration of the planning period. Therefore, it is reasonable to forecast 25 non-scheduled air carrier operations per year through 2042.

It should be noted that a handful of aviation-focused businesses have recently expressed interest in establishing facilities at TXK. The nature of these specialized aviation service operators (SASOs) could introduce additional operations by larger aircraft, such as the Boeing 777/787 and Airbus A350. Thus, the number of non-scheduled air carrier operations at TXK is expected to increase. With data provided by these businesses, it is estimated that an additional 50 non-scheduled air carrier operations will be added to the existing estimate of 25, resulting in a total forecast of 75 non-scheduled air carrier operations per year through the planning period.

NON-SCHEDULED AIR TAXI/COMMUTER OPERATIONS FORECAST

Since 2012, non-scheduled air taxi operations at TXK have averaged a CAGR of 5.89 percent, from 1,933 operations in 2012 to 3,427 in 2022. Applying this growth rate produces a forecast of 4,563 air taxi operations in 2027; 6,076 in 2032; and 10,772 by 2042.

Two additional forecasts were prepared using different FAA growth rate projections. The first comes from the 2023 TAF for TXK, which forecasts a CAGR of 0.89 percent for air taxi operations at the airport. This produces an estimated 4,094 non-scheduled air taxi/commuter operations by 2042. The FAA's *Aerospace Forecast* expects a more modest annual growth rate of 0.52 percent for these operations; when applied to TXK's 2022 air taxi operations, a forecast emerges resulting in 3,799 operations by 2042. **Table 2L** summarizes the non-scheduled air taxi/commuter operations for TXK.

TABLE 2L | Non-Scheduled Air Taxi/Commuter Operations Forecasts Summary

Projection	2027	2032	2042	CAGR
10-Year Growth Rate	4,563	6,076	10,772	5.89%
FAA TAF Growth Rate	**3,583**	**3,746**	**4,094**	**0.89%**
FAA *Aerospace Forecast* Rate	3,516	3,608	3,799	0.52%

Boldface indicates selected forecast
CAGR: Compound Annual Growth Rate
Source: Coffman Associates analysis

Despite the past few years' sharp rise in non-scheduled air taxi operations, the historical average of these operations at TXK is approximately 2,400 per year. Furthermore, as smaller regional jets are phased out in lieu of larger aircraft, air taxi operations will likely increase at a more modest rate. Therefore, the **FAA TAF growth rate is retained as the selected forecast** for non-scheduled air taxi/commuter operations at TXK. This forecast reflects a reasonable CAGR of 0.89 percent throughout the planning period.

FAA GENERAL AVIATION TRENDS

Similar to the commercial components of the aviation industry, the FAA forecasts elements of general aviation in the *Aviation Forecast*. The following discussion reviews the fleet mix and hours flown for single and multi-engine piston aircraft, turboprops, business jets, piston and turbine helicopters, light sport, experimental, and other aircraft (gliders and balloons) as presented in the current *FAA Aerospace Forecast*.

The FAA forecasts "active aircraft" rather than a total number of aircraft. An active aircraft is one that is flown at least one hour during the year. From 2010 through 2013, the FAA undertook an effort to have all aircraft owners re-register their aircraft, resulting in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category. Therefore, certain elements of this forecast, particularly the registered and based aircraft projections, will use data beginning from 2013 so as to not skew any calculated forecasts.

The long-term outlook for general aviation is promising, as growth at the high-end is offsetting the continued retirement of aging aircraft at the traditional low-end of the segment. The active general aviation fleet is forecast to remain relatively stable between 2022 and 2042. The largest segment of the fleet – fixed-wing piston aircraft – is predicted to shrink over the forecast period due to unfavorable pilot demographics, increasing cost of ownership, the availability of lower-cost alternatives for recreational uses, and new aircraft deliveries not keeping pace with the retirement of aging aircraft. Conversely, turbine aircraft, including helicopters, are projected to grow the most due to steady growth in both U.S. GDP and corporate profits. The total number of GA hours flown is also forecasted to increase by 31.4 percent from 2022 to 2042.

Table 2M shows the primary general aviation demand indicators as forecast by the FAA. Each segment is discussed below.

TABLE 2M | FAA General Aviation Forecast

Demand Indicator	2022	2042	CAGR
General Aviation Fleet			
Total Fixed-Wing Piston	133,815	112,915	-0.85%
Total Fixed-Wing Turbine	26,480	38,455	1.88%
Total Helicopter	9,955	13,530	1.55%
Total Other (experimental, light sport, etc.)	34,340	44,005	1.25%
Total Active Aircraft	**204,590**	**208,905**	**0.10%**
General Aviation Operations			
Local General Aviation	13,731,399	15,767,539	0.69%
Itinerant General Aviation	14,569,014	16,259,605	0.55%
Air Taxi/Commuter	6,284,713	6,966,613	0.52%
Total General Aviation Operations	**34,585,126**	**38,993,757**	**0.60%**

CAGR: Compound Annual Growth Rate
Source: FAA Aerospace Forecast, 2022-2042

GENERAL AVIATION FLEET MIX

For 2022, the FAA estimates there are 133,815 piston-powered fixed-wing aircraft in the national fleet. This number is projected to decline by 0.85 percent annually, resulting in 112,915 by 2042. This includes a decline of 0.9 percent annually for single engine pistons and 0.3 percent for multi-engine pistons.

Total turbine aircraft are forecast to grow at a CAGR of 1.88 percent through 2042. The FAA estimates there are 26,480 fixed-wing turbine-powered aircraft currently in the national fleet. Turbine-powered aircraft include both jet aircraft and turboprops, which are aircraft with propellers that are driven by a turbine engine. Annual growth rates for turboprops and business jets are 0.6 percent and 2.6 percent, respectively, resulting in a total number of fixed-wing turbine aircraft of 38,455 by 2042.

The total number of helicopters, both piston- and turbine-powered, are projected to increase from an estimated 9,955 in 2022 to 13,530 by 2042 (1.55% CAGR). This includes annual growth rates of 0.6 percent and 1.9 percent for piston and turbine helicopters, respectively.

The FAA also forecasts changes in experimental, light sport, and other aircraft (including balloons and gliders). Combined, there are as estimated 34,340 of these aircraft in 2022, which is projected to grow to 44,005 by 2042 (1.25% CAGR).

In all, the total number of active aircraft in the national fleet in 2022 is 204,590. With an annual growth rate of 0.1 percent, the national fleet is expected to rise to 208,905 by 2042.

GENERAL AVIATION OPERATIONS

General aviation operations (GA) are comprised of all non-commercial or non-military operations. Through 2042, total GA operations are projected to grow 0.6 percent annually. Local GA operations are expected to grow from 13.7 million in 2022 to 15.7 million in 2042 (0.69% CAGR), while itinerant GA operations are forecast to grow from 14.5 million in 2022 to 16.2 million in 2042 (0.55% CAGR).

Exhibit 2G presents the historical and forecast U.S. active general aviation aircraft fleet and operations from the FAA *Aerospace Forecast*.

GENERAL AVIATION AIRCRAFT SHIPMENTS AND REVENUE

The 2007-2009 economic recession had a negative impact on general aviation aircraft production, and the industry has been slow to recover. Aircraft manufacturing declined for three straight years from 2008 through 2010. According to the General Aviation Manufacturing Association (GAMA), there is optimism that aircraft manufacturing will stabilize and return to growth, which has not been seen since 2011. **Table 2N** presents historical data related to general aviation aircraft shipments.

TABLE 2N | Annual General Aviation Aircraft Shipments – Manufactured Worldwide and Factory Net Billings

Year	Total	SEP	MEP	TP	Jet	Net Billings ($ million)
2010	2,024	781	108	368	767	19,715
2011	2,120	761	137	526	696	19,042
2012	2,164	817	91	584	672	18,895
2013	2,353	908	122	645	678	23,450
2014	2,454	986	143	603	722	24,499
2015	2,331	946	110	557	718	24,129
2016	2,267	890	129	582	666	21,059
2017	2,325	936	149	563	677	20,201
2018	2,441	952	185	601	703	20,564
2019	2,658	1,111	213	525	809	23,514
2020	2,408	1,164	157	443	644	20,047
2021	2,646	1,261	148	527	710	21,602
2022	2,818	1,366	158	582	712	22,865

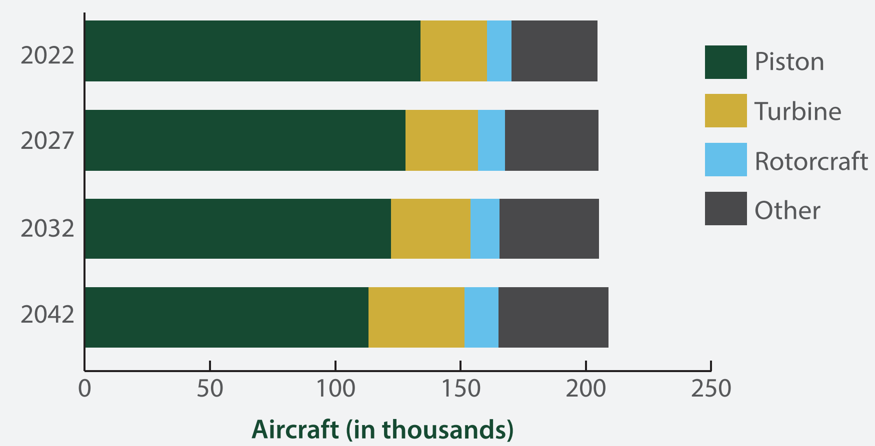
SEP: Single engine piston; MEP: Multi-engine piston; TP: Turboprop

Source: General Aviation Manufacturing Association (GAMA)

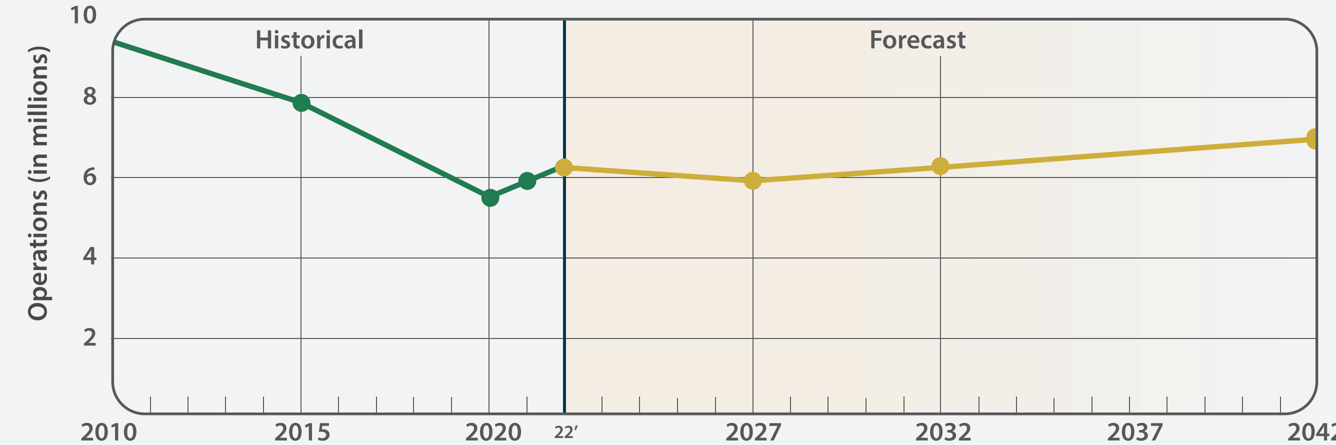
Airplane shipments in 2022, when compared to the previous year, increased in every category. Net billings of airplane deliveries also increased roughly $1.2 billion over 2021 shipments to $22.8 billion total billings in 2022.

Business Jets: General aviation manufacturers' deliveries of business jets increased from 644 to 712 units between 2020 and 2022. A continued expansion of market share resulted in North America taking delivery of 67 percent of the total worldwide business jet deliveries in 2022.

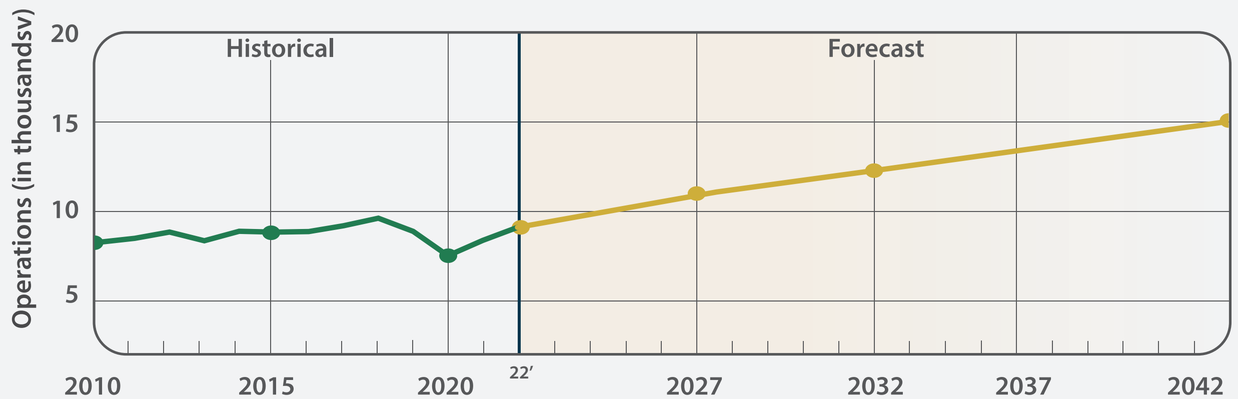
U.S. Active General Aviation Aircraft



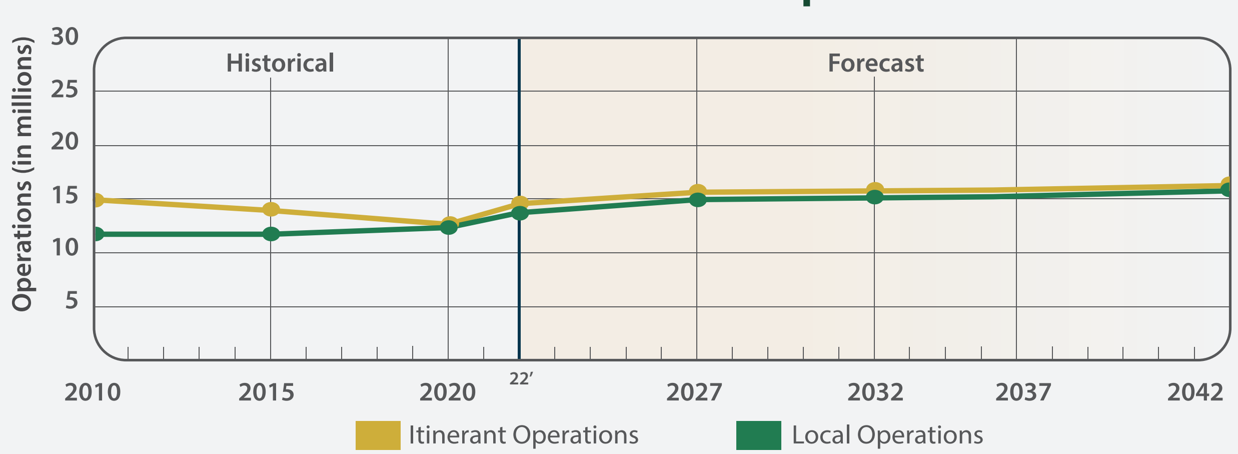
U.S. Air Taxi Operations



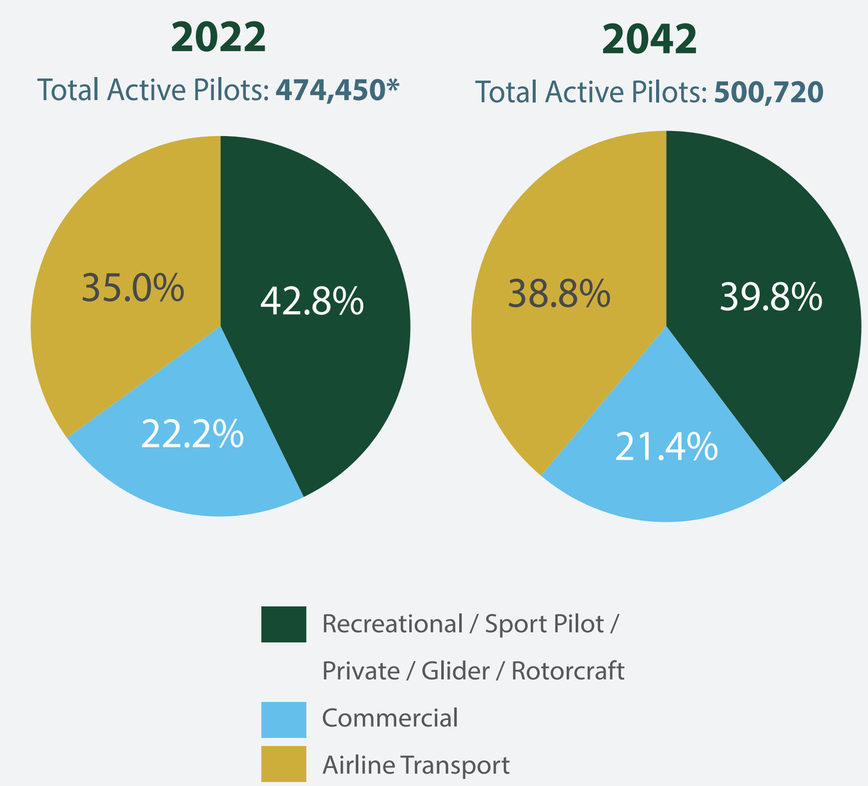
Active General Avaition & Air Taxi Hours Flown



U.S. General Aviation Operations



Active Pilots By Certificate



*Excludes Student Pilot Certificates

Source: FAA Aerospace Forecasts FY2022-2042

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Turboprops: In 2022, a total of 582 turboprop airplanes were delivered to customers around the world, an increase from the 527 that were delivered the year before. Despite still being less than the 10-year delivery average, the turboprop market has been significantly stronger compared to years prior to 2011. Nearly 56 percent of all turboprop deliveries in 2022 went to customers in North America.

Pistons: Single engine piston deliveries increased 8.3 percent, going from 1,261 in 2021 to 1,366 in 2022, while multi-engine piston deliveries increased slightly, from 148 units in 2021 to 158 aircraft in 2022. North American customers accounted for 70 percent of all 1,524 piston aircraft deliveries in 2022.

U.S. PILOT POPULATION

There were 469,062 active pilots certificated by the FAA at the end of 2020. Despite the COVID-19 pandemic, the total number of active pilots in the U.S. increased to an estimated 470,408 in 2021 and is forecast to grow 0.3 percent annually through 2042. The greatest amount of growth is expected in licensed sport pilots (up 2.7 percent annually), followed by helicopter pilots (1.3% CAGR) and airline transport pilots (ATP), which is forecast to increase by 0.8 percent each year through 2042. The total number of active private pilots is expected to decrease at an annual average rate of 0.5 percent, while commercial certificated pilots will grow slightly at 0.1 percent annually through 2042. Starting in 2016, the FAA has suspended forecasting student pilot certificates for the country due to having no expiration date nor a direct correlation between student pilots and private or higher certificates.

BASED AIRCRAFT

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft for the airport, other demand indicators can be projected. The process of developing forecasts of based aircraft begins with an analysis of aircraft ownership in the primary general aviation service area through a review of historical aircraft registrations. An initial forecast of registered aircraft within the general aviation service area (Miller and Bowie Counties) is developed, then used as a data point to arrive at a based aircraft forecast for the airport.

AREA AIRCRAFT OWNERSHIP (REGISTERED AIRCRAFT)

Historic aircraft registrations within Miller and Bowie Counties from 2013 to November 2022 are summarized in **Table 2P**. These figures are derived from the FAA aircraft registration database that categorizes registered aircraft by county based on the zip code of the registered aircraft. Although this information generally provides a correlation to based aircraft, it is not uncommon for some aircraft to be registered in a county but based at an airport outside the county or vice versa. This is illustrated by the fact that there are only seven jets shown to be registered in the GA service area, yet there are 12 based jets at TXK.

TABLE 2P | Registered Aircraft Fleet Mix in Miller and Bowie Counties

Year	SEP	MEP	TP	Jet	Helicopter	Other[1]	Total
2013	117	19	11	11	10	3	171
2014	114	16	9	10	9	3	161
2015	116	18	8	8	9	3	162
2016	116	17	7	9	9	3	161
2017	111	13	5	7	7	4	147
2018	100	11	5	6	7	5	134
2019	88	11	4	7	7	4	121
2020	88	12	3	8	8	3	122
2021	87	11	5	9	7	2	121
2022[2]	91	20	5	7	5	1	129
Compound Annual Growth Rate (CAGR) from 2013 to 2022							-3.08 %

SEP: Single-engine piston; MEP: Multi-engine piston; TP: Turboprop
[1]Other aircraft include balloons, gliders, ultralights, experimental aircraft
[2]2022 data is through 11/30/2022
Source: FAA Aircraft Registry Database

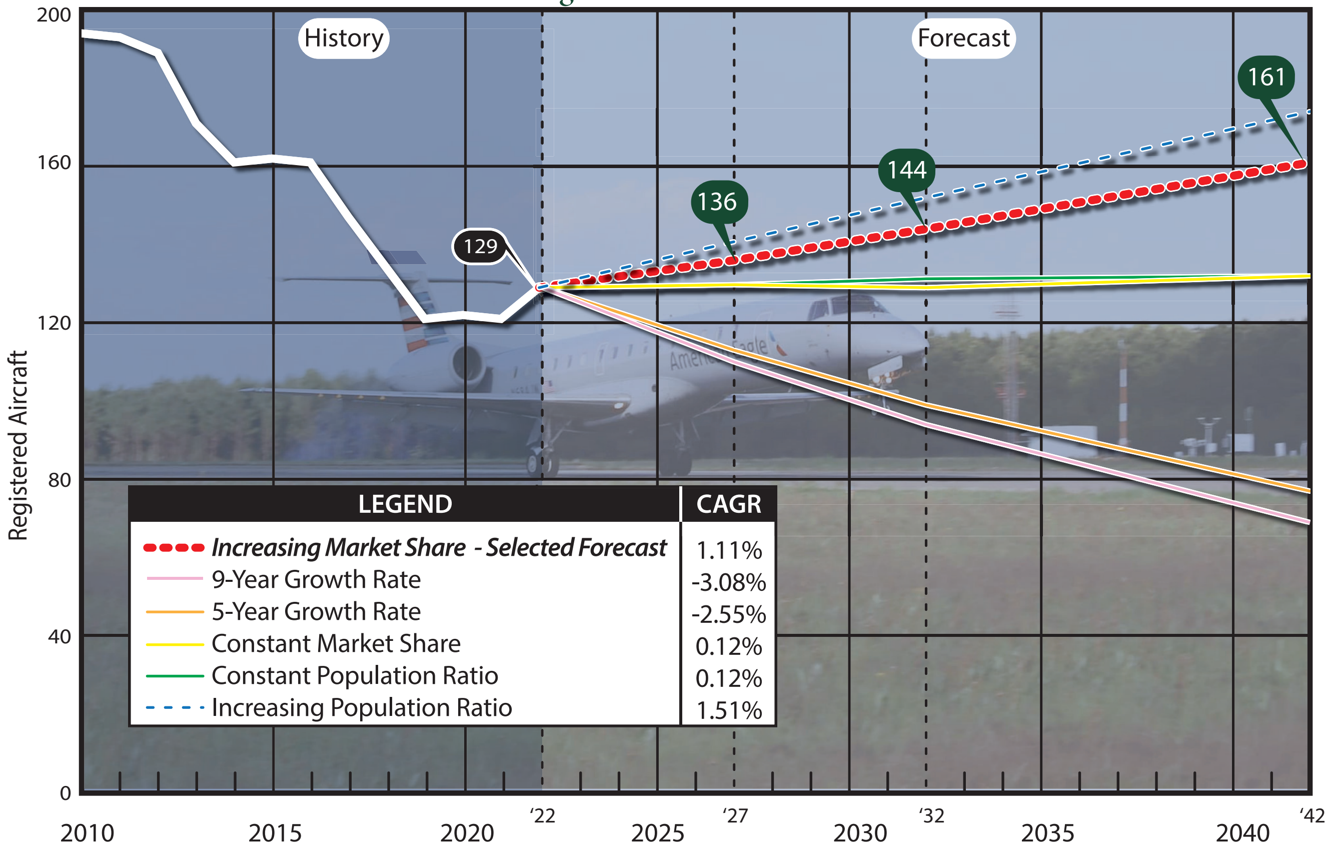
It is important to understand that the nine-year period was chosen due to the FAA's efforts to have aircraft owners re-register their aircraft, a process that was completed from 2010 to 2013. This resulted in an overall decrease in the number of active aircraft, of which the piston category was impacted the most. Over the nine-year period, every type of aircraft registration, with the exception of multi-engine piston registrations, declined. Overall, registered aircraft in Texarkana decreased from 171 aircraft in 2013 (just after the re-registration period) to 129 in 2022, a compound annual growth rate (CAGR) of -3.08%.

With the number of registered aircraft identified, several projections of future registered aircraft are considered. Several regression and time-series analyses were first considered. Because of the declining trend in several variables, including registered aircraft and U.S. active aircraft, regression and time-series analyses did not result in reliable forecasts. As a result, these analytical methods were not considered further.

Exhibit 2H presents six projections of registered aircraft for the Texarkana area. Two projections consider the historic growth rate of registered aircraft in Bowie and Miller Counties. The nine-year CAGR for registered aircraft in the area was -3.08 percent, while the more recent five-year rate was -2.58 percent. Applying these rates to the current number of registered aircraft results in a forecast of 69 and 77 aircraft by 2042, respectively.

The next set of projections considers the counties' market share of registered aircraft to the national active aircraft fleet. In 2022, registered aircraft in the GA service area represented 0.063 percent of the national fleet. By maintaining the current market share constant, registered aircraft are forecast to grow to 132 by 2042 (0.12% CAGR). A second market share projection was prepared that returns the GA service area market share to the average peak level for the past nine years of 0.077 percent by 2042. This increasing market share projection results in 161 aircraft, an CAGR of 1.11 percent.

Registered Aircraft



Based Aircraft

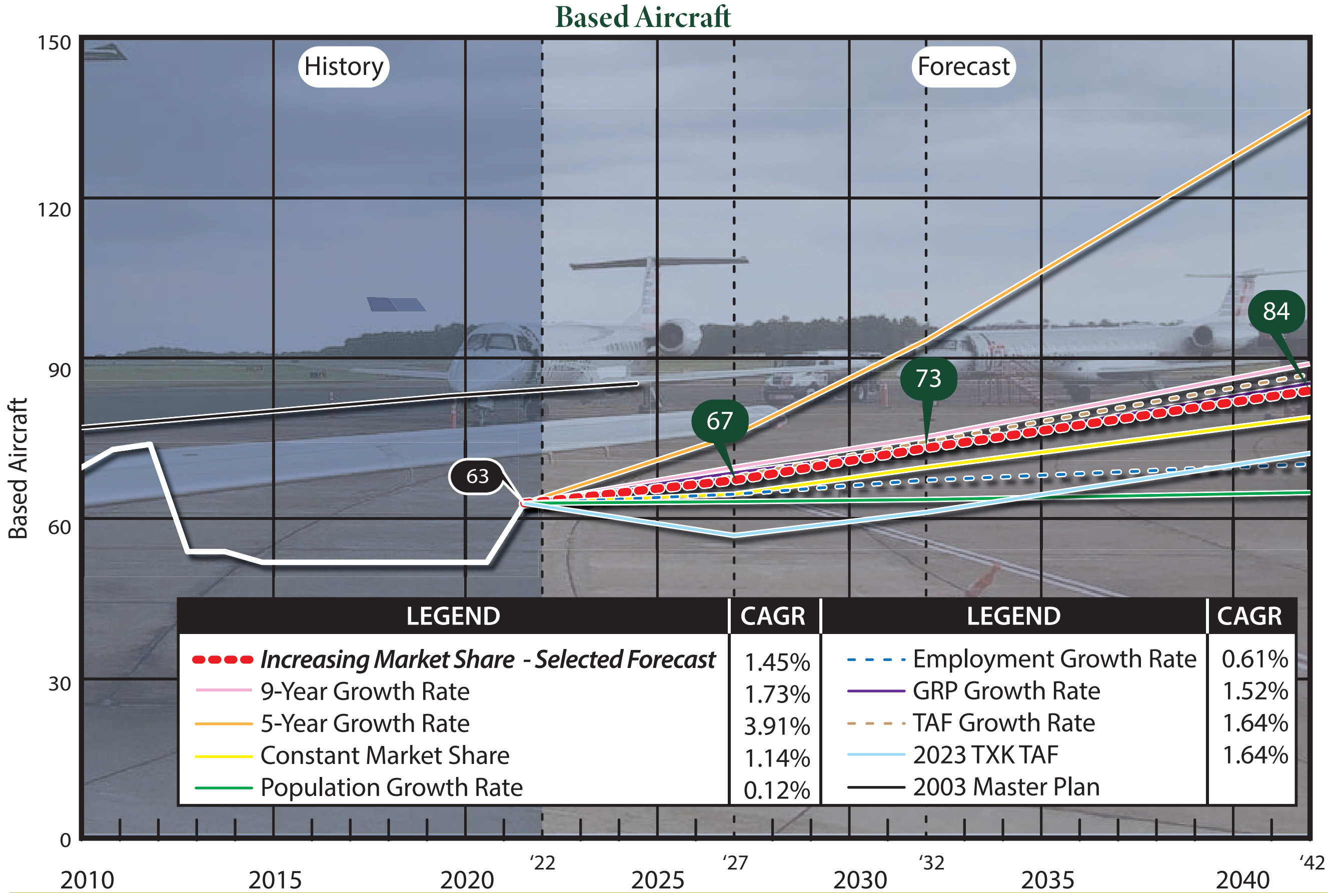


Exhibit 2H
REGISTERED AND BASED AIRCRAFT FORECASTS

Two additional projections were created based on the ratio between population and registered aircraft. In 2022, there were 0.87 registered aircraft per 1,000 people in the Texarkana MSA. By keeping this ratio constant, a forecast emerges that results in a projection of 132 registered aircraft by 2042. A second projection considers the potential for the ratio to return to historic levels as population, personal income, and GRP increase. This increasing ratio projection results in 1.15 aircraft per 1,000 people by 2042 and 174 registered aircraft.

Registered Aircraft Forecast Summary

Table 2Q summarizes the ten registered aircraft forecasts for the Texarkana region. Despite recent declines in registered aircraft in the GA service area, history suggests that the area can maintain a higher registered aircraft count than that of recent years. Paired with the gradual recovery from the pandemic, as well as local population and economic growth, it is likely that the number of registered aircraft will return to higher levels. Therefore, the **increasing market share of U.S. active aircraft forecast**, which results in 161 registered aircraft by 2042, will be carried forward as the selected forecast in the master plan.

TABLE 2Q | Registered Aircraft Forecast Summary

Projection	2027	2032	2042	CAGR
9-Year Growth Rate	110	94	69	-3.08%
5-Year Growth Rate	113	99	77	-2.55%
Constant U.S. Market Share	129	129	132	0.12%
Increasing U.S. Market Share	**136**	**144**	**161**	**1.11%**
Constant Aircraft/Population Ratio	130	131	132	0.12%
Increasing Aircraft/Population Ratio	141	152	174	1.51%

Boldface indicates selected forecast
CAGR: Compound Annual Growth Rate
Source: Coffman Associates analysis

The registered aircraft projection is one data point to be used in the development of a based aircraft forecast. The following section will present several potential based aircraft forecasts, as well as the selected based aircraft forecast, to be utilized in this study.

BASED AIRCRAFT FORECAST

Determining the number of based aircraft at an airport can be a challenging task. Aircraft storage can be somewhat transient in nature, meaning aircraft owners can and do move their aircraft. Some aircraft owners may store their aircraft at an airport for only part of the year. For many years, the FAA did not require based aircraft records; therefore, historical records are often incomplete or non-existent. For this study, a based aircraft history was established using airport records in combination with the FAA TAF. According to airport records, the current based aircraft count stands at 63.

The FAA TAF is an initial forecast source for based aircraft at airports. The 2023 TAF estimated the current based aircraft count at 52, which is forecast to grow to 72 by 2042 for a CAGR of 1.64 percent. The 2023 TAF underestimates the current number of based aircraft by 11 aircraft. Another previously prepared forecast for based aircraft at TXK is the 2003 Master Plan which estimated based aircraft growing to 86 by 2025 at a CAGR of 0.85 percent.

Several new forecasts of based aircraft for TXK have been developed. As with forecasts of registered aircraft, the goal is to develop a planning envelope of reasonable forecasts, then select a 20-year planning forecast for use in this study.

Market Share of Area Registered Aircraft Forecasts

Two market share projections have been prepared for based aircraft at TXK. A constant market share of the selected area registered aircraft forecast established above results in 79 based aircraft by 2042. An increasing market share projection was also prepared, factoring a steady increase in market share, as well as future general aviation facilities at TXK to accommodate additional based aircraft. This forecast resulted in 84 based aircraft by 2042. The market share forecasts, along with the historical based aircraft data from 2013, are summarized in **Table 2R**.

TABLE 2R | Based Aircraft History and Market Share Forecasts

Year	TXK Based Aircraft	GA Service Area Registered Aircraft	Based Aircraft Market Share
2013	54	171	31.6%
2014	54	161	33.5%
2015	52	162	32.1%
2016	52	161	32.3%
2017	52	147	35.4%
2018	52	134	38.8%
2019	52	121	43.0%
2020	52	122	42.6%
2021	52	121	43.0%
2022	63	129	48.8%
Constant Market Share (1.14% CAGR)			
2027	66	136	48.8%
2032	70	144	48.8%
2042	79	161	48.8%
Increasing Market Share (1.45% CAGR)			
2027	67	136	49.6%
2032	73	144	50.4%
2042	84	161	52.0%

Sources: FAA TXK TAF (2023); Airport records; Coffman Associates analysis

Historic Growth Rate Projections

Using the historic growth rates from 2013 to 2022, two more based aircraft forecasts are produced. Since 2013, based aircraft at TXK have grown at an annual rate of 1.73 percent from 54 to 63. Applying this to the current based aircraft count results in an estimated 89 aircraft by 2042. A five-year growth rate forecast was also developed, resulting in 136 based aircraft by 2042 (3.91% CAGR). These forecasts, while beneficial, may not be the most accurate because most of the historical data is derived from the FAA TAF and may not have been the true based aircraft count. Nevertheless, growth projections offer additional points of comparison within the forecast envelope.

Socioeconomic Growth Rate Projections

Based aircraft growth is often related to the population and economic activity of the service area. Therefore, based aircraft projections were prepared using the forecasted growth rates of population, employment, and gross regional product (GRP) for the Texarkana MSA. Through 2042, population in the MSA is expected to grow at a CAGR of 0.12 percent, while employment is projected to grow at 0.61 percent, and GRP is forecasted to grow at 1.52 percent. Applying each of these CAGRs to the current based aircraft count results in a projected based aircraft count for 2042 of 65, 71, and 85, respectively.

FAA TAF Growth Rate Projection

The February 2023 *Terminal Area Forecast* for TXK projects a growth of based aircraft at the airport, from 52 in 2022 to 72 in 2042 (1.64% CAGR). Applying this same expected growth rate to the corrected 63 based aircraft count results in a forecast of 87 based aircraft by 2042.

Based Aircraft Forecast Summary

Table 2S summarizes the eight based aircraft forecasts for TXK. The based aircraft forecast consists of various projections presented above resulting in a broad forecast range. On the high end, the five-year growth rate produces an estimated 136 based aircraft by 2042, while the low end is produced by the population growth forecast with a total based aircraft count of 65 by 2042.

TABLE 2S | TXK Based Aircraft Forecast Summary

Projection	2027	2032	2042	CAGR
Constant Market Share/Registered	66	70	79	1.14%
Increasing Market Share/Registered	**67**	**73**	**84**	**1.45%**
9-Year Growth Rate	69	75	89	1.73%
5-Year Growth Rate	76	92	136	3.91%
Population Growth Rate	63	64	65	0.12%
Employment Growth Rate	65	67	71	0.61%
GRP Growth Rate	68	73	85	1.52%
FAA TAF Growth Rate	68	74	87	1.64%

Boldface indicates selected forecast
CAGR: Compound Annual Growth Rate
GRP: Gross Regional Product

Source: Coffman Associates analysis

After examining each projection, **the increasing market share of area registered aircraft will be carried forward as the selected forecast**. This forecast adds 21 aircraft at TXK over 20 years, accounting for continued growth in population and the economy in the Texarkana MSA that is likely to bring aircraft to TXK. Additionally, the opening of the new passenger terminal creates the potential for redevelopment of the existing terminal for additional GA facilities and/or services, which would support based aircraft growth. Should the region grow as projected and the airport continue its improvements, it is reasonable that based aircraft could grow by 21 units as forecasted through the planning period. **Exhibit 2H** illustrates the based aircraft forecasts.

BASED AIRCRAFT FLEET MIX

The fleet mix of based aircraft is oftentimes more important to airport planning and design than the total number of aircraft. For example, the presence of one or a few large business jets can impact design standards for the runway and taxiway system more than many smaller single engine piston-powered aircraft.

The based aircraft fleet mix forecast for TXK is presented in **Table 2T**. The source for the fleet mix data is airport records. Just over half of the current based aircraft are small single engine piston aircraft; however, TXK has 12 based jets and six based turboprop aircraft. The jets currently based at TXK include five Cessna Citation variants; a Bombardier Challenger 600; an Embraer Praetor 500; a Gulfstream G450 and G500; a Beechcraft Premier I; a Learjet 45; and an Eclipse 500. Forecasts of the based aircraft fleet mix have been developed based on the FAA's projections of the national fleet mix over the same time period and consider the potential for growth in business aviation activity at TXK. The result is an increase in more sophisticated aircraft within the multi-engine turboprop, jet, and helicopter categories, and decreasing percentages for single and multi-engine piston aircraft.

Ultimately, the jet category is the leading growth category, anticipated to grow by five percent over its current share, increasing by eight aircraft over the next 20 years. The turboprop category is also projected to grow by ten aircraft and the helicopter category is projected to grow by three aircraft. The single engine piston category, while decreasing its share, is still projected to account for the most based aircraft, growing by five aircraft by 2042.

TABLE 2T | Based Aircraft Fleet Mix

	EXISTING		FORECAST					
Aircraft Type	**2022**	**%**	**2027**	**%**	**2032**	**%**	**2042**	**%**
Single Engine Piston	33	52%	34	51%	35	48%	38	45%
Multi-Engine Piston	8	13%	7	10%	5	7%	3	4%
Turboprop	6	10%	8	12%	11	15%	16	19%
Jet	12	19%	13	19%	16	22%	20	24%
Helicopter	4	6%	5	7%	6	8%	7	8%
Total Based Aircraft	**63**	**100%**	**67**	**100%**	**73**	**100%**	**84**	**100%**

Sources: Airport records; Coffman Associates analysis

GENERAL AVIATION OPERATIONS

GA operations are classified by the ATCT as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of an airport, or which executes simulated approaches or touch-and-go operations at an airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from an airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are operated on a higher frequency.

ITINERANT OPERATIONS

Table 2U summarizes GA itinerant operations at TXK from 2010 through 2022. This historic data shows that, aside from the three-year period between 2013 and 2015, GA itinerant operations at TXK have not fluctuated significantly, ranging between 10,000 to 12,500 annually. National GA itinerant operations have generally been declining since 2010; however, the FAA forecasts a reversal over the course of the next 20 years. Through 2042, the FAA forecasts a CAGR of 0.55 percent for itinerant GA operations.

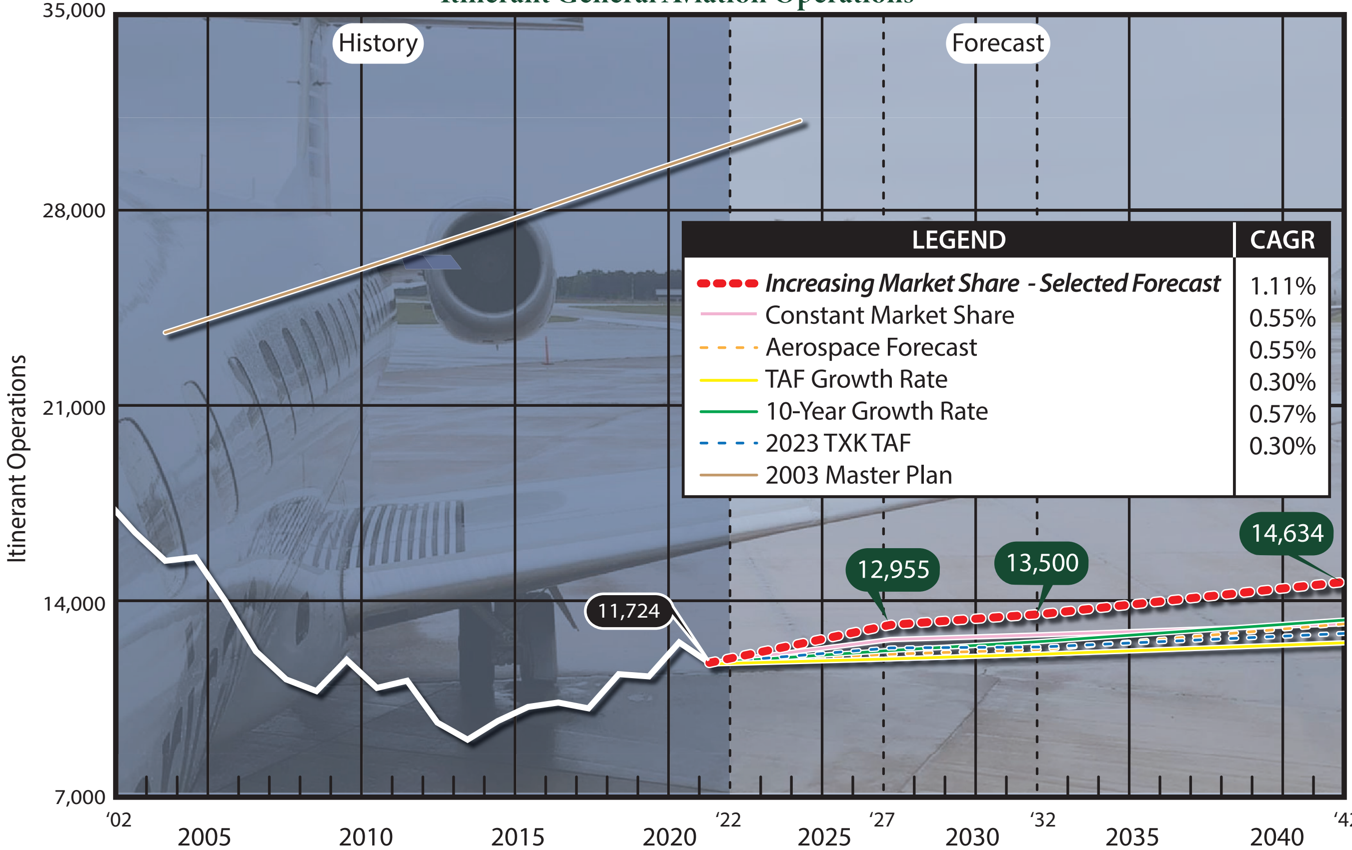
Four forecasts were examined for future itinerant GA operations. The first forecast considers maintaining TXK's market share constant at 0.0805 percent of national itinerant GA operations as forecast by the FAA, which yields 13,084 operations by 2042. An increasing market share forecast considers the potential for TXK to continue its recent increase in market share, resulting in 14,634 GA itinerant operations.

The next two projections consider forecast growth rates produced by the FAA. The first applies the *Aerospace Forecast* growth rate of 0.55 percent, producing an estimates 13,084 itinerant operations by 2042. The 2023 TAF for TXK uses a slightly more conservative growth rate (0.30% CAGR) and results in a forecast of 12,443 operations by 2042.

A final 10-year growth rate of itinerant operations recorded at TXK was prepared. Since 2010, the airport has experienced an average annual increase of 0.57 percent of GA itinerant operations. This rate produces an estimated 13,126 operations by the end of the planning period.

With the FAA expecting GA itinerant operations to return to pre-pandemic levels, as well as the expected growth in employment, business, and GRP in the Texarkana MSA, it is reasonable to consider TXK's market share continuing to increase as recent history has shown. Therefore, **the increasing market share of national itinerant GA operations has been selected as the preferred forecast**. **Exhibit 2J** presents the itinerant general aviation operations envelope as discussed above.

Itinerant General Aviation Operations



Local General Aviation Operations

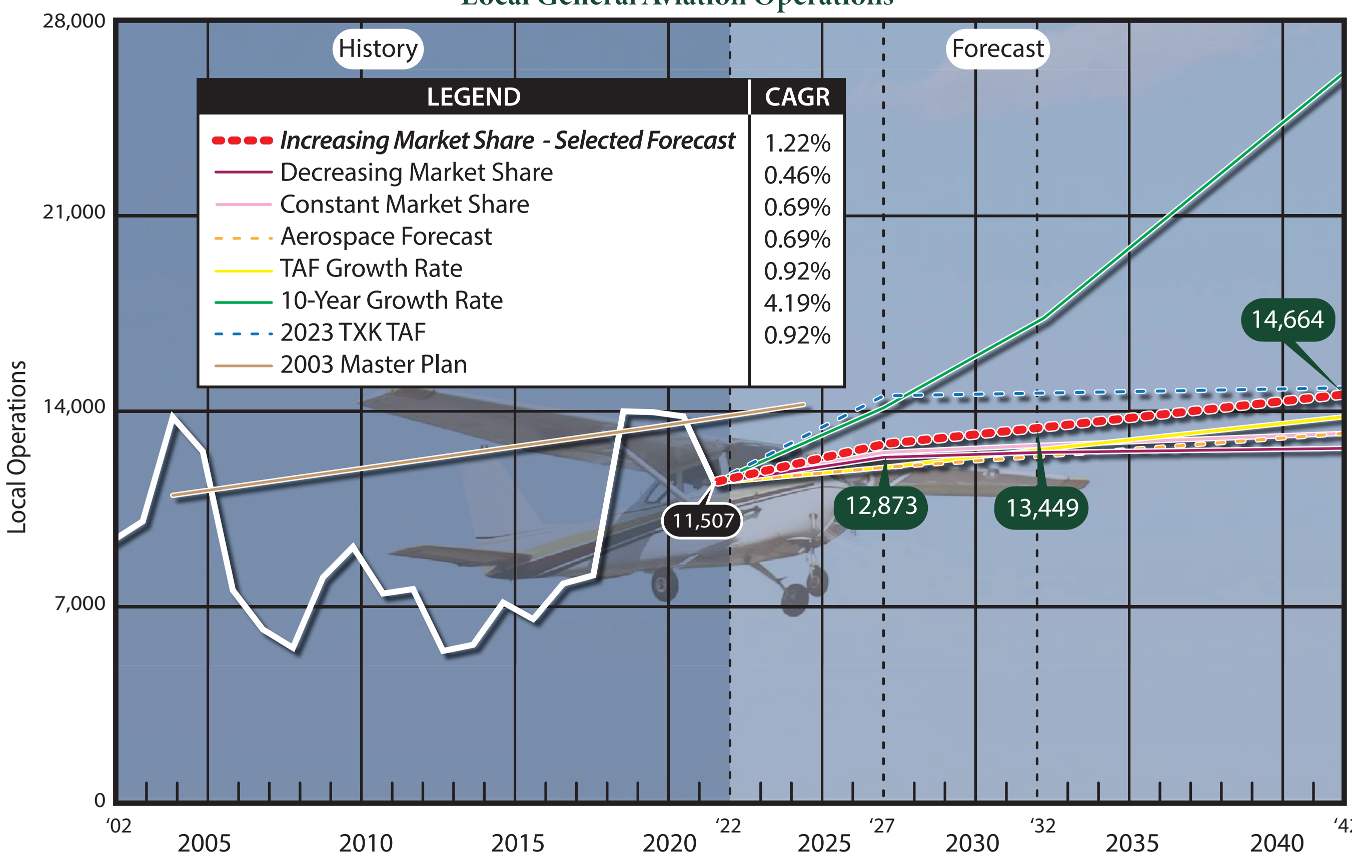


Exhibit 2J
GENERAL AVIATION OPERATIONS FORECASTS

TABLE 2U | General Aviation Itinerant Operations Forecast			
Year	**TXK GA Itinerant Operations**	**U.S. GA Itinerant Operations**	**GA Itinerant Operations Market Share**
2010	11,832	14,863,856	0.0796%
2011	10,821	14,527,903	0.0745%
2012	11,080	14,521,656	0.0763%
2013	9,575	14,117,370	0.0678%
2014	8,961	13,978,993	0.0641%
2015	9,631	13,887,203	0.0694%
2016	10,138	13,905,204	0.0729%
2017	10,295	13,839,151	0.0744%
2018	10,087	14,130,495	0.0714%
2019	11,317	14,244,787	0.0794%
2020	11,236	12,608,003	0.0891%
2021	12,459	13,759,304	0.0905%
2022	11,724	14,569,014	0.0805%
Constant Market Share (0.55% CAGR)			
2027	12,583	15,636,300	0.0805%
2032	12,746	15,838,715	0.0805%
2042	13,084	16,259,605	0.0805%
Increasing Market Share (1.11% CAGR) – SELECTED FORECAST			
2027	12,955	15,636,300	0.0829%
2032	13,500	15,838,715	0.0852%
2042	14,634	16,259,605	0.0900%
FAA *Aerospace Forecast* Growth Rate (0.55% CAGR)			
2027	12,050	15,636,300	0.0771%
2032	12,386	15,838,715	0.0782%
2042	13,084	16,259,605	0.0805%
FAA TAF Growth Rate (0.30% CAGR)			
2027	11,900	15,636,300	0.0761%
2032	12,078	15,838,715	0.0763%
2042	12,443	16,259,605	0.0765%
10-Year Growth Rate (0.57% CAGR)			
2027	12,060	15,636,300	0.0771%
2032	12,405	15,838,715	0.0783%
2042	13,126	16,259,605	0.0807%
CAGR: Compound Annual Growth Rate			

Source: FAA Aerospace Forecast, 2022-2042; FAA OPSNET; Coffman Associates analysis

LOCAL OPERATIONS

A similar methodology from the itinerant operations projections was used to forecast local GA operations. **Table 2V** depicts the history of local operations at TXK and examines its historic market share of GA local operations at towered airports in the United States. Nationwide, local GA operations have remained relatively steady since 2010. Even after the COVID-19 pandemic began, many people took to flight training with a vast amount of time available due to layoffs and work-from-home situations. Thus, contrary to what would have been expected, the last few years have seen an increase in local GA operations, both at TXK and airports across the country. At TXK, however, local operations have varied widely since 2010, ranging from a low of 5,417 in 2013 to a high of 14,006 in 2019. The 10-year CAGR for local GA operations at TXK is 4.19 percent, while the FAA's national projections estimate a modest 0.69 percent annual growth rate through 2042.

In addition to constant and increasing market share forecasts, a decreasing market share projection was also prepared to reflect a return to historic averages; the 20-year average GA local operations is just over 9,000 per year.

TABLE 2V | General Aviation Local Operations Forecast

Year	TXK GA Local Operations	U.S. GA Local Operations	GA Local Operations Market Share
2010	9,145	11,716,274	0.0781%
2011	7,473	11,437,028	0.0653%
2012	7,634	11,608,306	0.0658%
2013	5,417	11,688,355	0.0463%
2014	5,638	11,675,040	0.0483%
2015	7,153	11,691,338	0.0612%
2016	6,556	11,632,612	0.0564%
2017	7,832	11,732,324	0.0668%
2018	8,124	12,354,014	0.0658%
2019	14,006	13,109,215	0.1068%
2020	13,974	12,332,877	0.1133%
2021	13,823	13,441,015	0.1028%
2022	11,507	13,731,399	0.0838%
Constant Market Share (0.69% CAGR)			
2027	12,529	14,950,786	0.0838%
2032	12,750	15,214,104	0.0838%
2042	13,213	15,767,539	0.0838%
Increasing Market Share (1.22% CAGR) – SELECTED FORECAST			
2027	12,873	14,950,786	0.0861%
2032	13,449	15,214,104	0.0884%
2042	14,664	15,767,539	0.0930%
Decreasing Market Share – Return to Average (0.46 % CAGR)			
2027	12,387	14,950,786	0.0829%
2032	12,460	15,214,104	0.0819%
2042	12,614	15,767,539	0.0800%
FAA *Aerospace Forecast* Growth Rate (0.69% CAGR)			
2027	11,912	14,950,786	0.0797%
2032	12,331	15,214,104	0.0810%
2042	13,213	15,767,539	0.0838%
FAA TAF Growth Rate (0.92% CAGR)			
2027	12,044	14,950,786	0.0806%
2032	12,606	15,214,104	0.0829%
2042	13,809	15,767,539	0.0876%
10-Year Growth Rate (4.19% CAGR)			
2027	14,128	14,950,786	0.0945%
2032	17,345	15,214,104	0.1140%
2042	26,145	15,767,539	0.1658%
CAGR: Compound Annual Growth Rate			

Source: FAA Aerospace Forecast, 2022-2042; FAA OPSNET; Coffman Associates analysis

The Texarkana College is in the process of developing an Aviation Mechanics Technology Program with plans to add a professional pilot flight training program at TXK. These new programs, when paired with an overall national increase in local GA operations, support using the increasing market share projection as the selected forecast. Exhibit 2J presents the local GA operations forecasts for TXK.

MILITARY OPERATIONS FORECAST

Military aircraft can and do use civilian airports across the country. With five different military installations within the State of Arkansas, including Little Rock Air Force Base and Ebbing Air National Guard Base in Fort Smith, TXK can and does have activity by military aircraft. However, forecasts of military aircraft activity are inherently difficult due to the national security nature of their operations and the fact that missions can change without notice. Thus, it is typical for the FAA to use a flat line forecast for military operations at airports without a military presence. For TXK, the FAA has established a total of 1,767 military operations per year: 841 itinerant and 926 local. This estimate will carry forward through the planning period of this master plan forecast.

PEAKING CHARACTERISTICS

Many aspects of facility planning relate to levels of peaking activity, or times when an airport is busiest. For example, the appropriate size of passenger facilities can be estimated by determining the number of people that could reasonably be expected to use the facility at a given time. The following definitions apply to peaking planning:

- **Peak Month** – The calendar month when peak aircraft operations occur
- **Design Day** – The average day in the peak month
- **Busy Day** – The busy day of a typical week in the peak month
- **Design Hour** – The peak hour within the design day

It is important to note that only the peak month is an absolute peak within a given year. All other peak periods will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

SCHEDULED AIRLINE PEAKING CHARACTERISTICS

In general, airport capacity and facility needs that are related to specific activity types will generally consider the levels of activity during a peak or design period. Determination of peaking characteristics related to commercial activity is important for the planning and design of the passenger terminal building, as well as associated facilities and services. This analysis is commonly utilized as a basis for determining the appropriate size of the terminal building and the functional areas therein. Terminal building elements include hold rooms, security checkpoints, concessions, restrooms, baggage claim area, etc. The airline peaking characteristics also relate to aircraft gates and apron space.

Table 2W summarizes the peak month enplanements from 2002 through 2022. Looking at the 20-year history of monthly enplanement data, the peak month averaged 10.0 percent of annual enplanements. Peak months for 15 of the past 20 years have been in the late spring/early summer months of May, June, or July; July leads peak activity with eight annual occurrences. The impact of the COVID-19 pandemic is apparent with a peak month of January in 2020 – before the pandemic began – and December in 2021, as restrictions were lifting and air travel was returning to pre-pandemic levels. In 2022, May was the peak month with 11.1 percent of the total number of yearly passengers.

TABLE 2W | Peak Month Enplanements

Year	Total	Monthly Avg.	Monthly Max.	Peak Month	PM % of Year
2002	31,791	2,649	3,118	July	9.8%
2003	28,492	2,374	3,444	November	12.1%
2004	32,854	2,738	3,008	April	9.2%
2005	35,640	2,970	3,304	July	9.3%
2006	36,822	3,069	3,451	July	9.4%
2007	36,832	3,069	3,465	October	9.4%
2008	31,434	2,620	3,261	June	10.4%
2009	27,811	2,318	2,834	June	10.2%
2010	27,437	2,286	2,707	October	9.9%
2011	29,438	2,453	2,831	June	9.6%
2012	29,123	2,427	2,734	June	9.4%
2013	33,169	2,764	3,470	July	10.5%
2014	38,214	3,185	3,643	July	9.5%
2015	36,155	3,013	3,543	July	9.8%
2016	34,515	2,876	3,267	July	9.5%
2017	35,655	2,971	3,265	May	9.2%
2018	39,051	3,254	3,984	May	10.2%
2019	39,239	3,270	3,789	July	9.7%
2020	18,215	1,518	2,286	January	12.6%
2021	28,250	2,354	2,900	December	10.3%
2022	35,699	3,004	3,954	May	11.1%
Average Peak Month				**July**	**10.0%**

Source: Airport records

Table 2Y outlines the peak baseline and forecast peaking characteristics for scheduled airline activity at TXK. Operationally, the peak month for the past 20 years has averaged 10.0 percent of annual operations. The design day is based upon the average day of the peak month, as activity during the peak month tends to be distributed relatively evenly through any given week.

The current enplanement design hour at TXK is equal to the total seats available for a given departure time (65-seat American Airlines CRJ-700) multiplied by the load factor. For TXK, this equates to 39 total passenger seats departing. This equates to roughly 20.0 percent of total daily departure seats, depending on the number of departures in the day. Design hour enplanements are projected to increase as the airline fleet mix transitions to larger aircraft. The 2027 period anticipates the continued departure of a CRJ-700 during the design hour, then an increase in departures paired with a transition to the larger, 76-seat ERJ-175 in 2032 and 2042 with two departures in the same hour.

At origin-and-destination airports such as TXK, the total number of passengers will generally average 90 percent or more of total enplanements. That is, most people who board a flight leaving TXK will return at some point. This is due to the inherent nature of O&D airports that do not have connecting flights. Therefore, for planning purposes, annual total passengers equate to annual enplanements multiplied by two. The 2027 period assumes the current condition carries forward until the 2032 period when changes in fleet mix could result in a 76-seat ERJ-175 getting added to the fleet mix and an additional departure per design hour is added. Additionally, the increasing load factors discussed previously provide for more enplanements per design hour. The result is a projected 88 passengers per design hour in 2032 and 96 by 2042.

TABLE 2Y | Scheduled Airline Peaking Characteristics

	2022	2027	2032	2042
Passenger Enplanements				
Annual	35,699	39,080	42,412	48,789
Peak Month	3,570	3,908	4,241	4,879
Design Day	115	126	137	157
Design Hour	39	41	88	96
Total Passengers (Enplaned and Deplaned)				
Annual	71,398	78,160	84,824	97,578
Peak Month	7,140	7,816	8,482	9,758
Design Day	230	252	274	314
Design Hour	78	82	176	192
Operations				
Annual	2,320	1,908	1,926	2,024
Peak Month	256	195	197	207
Design Day	8	6	6	7
Design Hour	2	2	3	4
Departures				
Design Day	4	3	3	4
Design Hour	1	1	2	2

Source: Coffman Associates analysis

TOTAL OPERATIONS PEAKING

The peaking characteristics of all aircraft operations at TXK are useful in examining the operational capacity of the airfield. Similar methodologies were used to establish the various total operations peaking characteristics as were used for the passenger enplanement peaking characteristics. A busy day is added to aid in capacity planning, which is discussed in detail in Chapter Three. The average peak month for total operations since 2018 is 10.3 percent. The average busy day operations during the average week of the peak month since 2018 was 76.6 percent more than the design day, while design hour operations averaged 5.6 percent of design day operations. Total operations peaking characteristics are summarized in **Table 2Z**.

TABLE 2Z | Total Operations Peaking Characteristics

	2022	2027	2032	2042
Annual Operations	30,745	33,161	34,463	37,258
Peak Month	3,159	3,407	3,541	3,828
Design Day	106	112	116	126
Busy Day	187	198	205	223
Design Hour	6	6	6	7

Source: Coffman Associates analysis

FORECAST COMPARISON TO THE TERMINAL AREA FORECAST

The FAA will review the forecasts presented in this Master Plan for consistency with the current TXK *Terminal Area Forecast*. The local FAA Airport District Office (ADO) or Regional Airports Division (RO) are responsible for forecast approvals. When reviewing a sponsor's forecast, the FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. Forecasts of enplanements, operations, and based aircraft are considered consistent with the TAF if they differ by less than 10 percent in the five-year period and 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used for FAA decision-making. **Table 2AA** presents the direct comparison of the master planning forecasts with the TAF published in February 2023.

TABLE 2AA | Master Plan Forecast Comparison to the FAA's Terminal Area Forecast

	BASE YEAR 2022	FORECAST 2027	2032	2042	CAGR 2022-2042
Passenger Enplanements					
Master Plan Forecast	35,699	39,080	42,412	48,789	1.57%
FAA TAF – 2023	35,068	39,045	41,551	47,049	1.48%
% Difference	1.8%	0.1%	2.1%	3.6%	
Total Operations					
Master Plan Forecast	30,745	33,161	34,463	37,258	0.97%
FAA TAF - 2023	31,875	34,503	35,053	36,196	0.64%
% Difference	3.6%	4.0%	1.7%	2.9%	
Based Aircraft					
Master Plan Forecast	63	67	73	84	1.45%
FAA TAF - 2023	52	57	62	72	1.64%
% Difference	19.1%	16.1%	16.3%	15.4%	
CAGR: Compound annual growth rate					

Sources: FAA TXK TAF (2023); Coffman Associates analysis

The reason the FAA allows this differential is because the TAF forecasts are not meant to replace forecasts developed locally (i.e., in this Master Plan). While the TAF can provide a point of reference for comparison, their purpose is much broader in defining FAA national workload measures.

Passenger enplanements and total operations forecasted for TXK are within FAA's tolerance levels. The based aircraft forecast is outside those tolerance levels, but this is due to the TAF reporting 11 fewer based aircraft in the base year than what has been reported by the airport. If the TAF baseline were adjusted to the current based aircraft count used in the master plan, the forecasts would fall within FAA tolerances.

Exhibit 2K presents a summary of the master plan forecasts.

AIR CARGO ANALYSIS

An element of this master plan included an analysis and review of potentially introducing air cargo service and facilities to TXK. This process was completed by Hubpoint Strategic Advisors, LLC, a subconsultant on the planning team with expertise in air cargo market analyses. The data presented here is the result of their study.

INTRODUCTION TO AIR CARGO FORECASTS

For many U.S. commercial airports, the process of forecasting air cargo for a master plan begins with a review of the airport's historical air cargo operations and tonnage levels. Typically, this data provides an initial understanding of air cargo demand for the airport and its region through a time-series analysis.

	Base Year	Forecast			CAGR
	2022	2027	2032	2042	
ENPLANEMENTS	**35,699**	**39,080**	**42,412**	**48,789**	**1.57%**
ANNUAL OPERATIONS					
Itinerant					
Air Carrier	386	1,983	2,001	2,099	8.84%
Air Taxi	5,361	3,583	3,746	4,094	-1.34%
General Aviation	11,724	12,955	13,500	14,634	1.11%
Military	841	841	841	841	0.00%
Total Itinerant Operations	***18,312***	***19,362***	***20,088***	***21,668***	***0.84%***
Local					
General Aviation	11,507	12,873	13,449	14,664	1.22%
Military	926	926	926	926	0.00%
Total Local Operations	***12,433***	***13,799***	***14,375***	***15,590***	***1.14%***
Total Annual Operations	***30,745***	***33,161***	***34,463***	***37,258***	***0.97%***

CAGR: Compound Annual Growth Rate

	2022	2027	2032	2042
PEAKING				
Enplanements				
Peak Month	3,570	3,908	4,241	4,879
Design Day	115	126	137	157
Design Hour	39	41	88	96
Annual Operations				
Peak Month	3,159	3,407	3,541	3,828
Design Day	106	112	116	126
Busy Day	187	198	205	223
Design Hour	6	6	6	7

FLEET MIX				
Single Engine Piston	33	34	35	38
Multi-Engine Piston	8	7	5	3
Turboprop	6	8	11	16
Jet	12	13	16	20
Helicopter	4	5	6	7
Based Aircraft	***63***	***67***	***73***	***84***

When the air cargo data is available for a sufficient length of time and with enough detail, various forecast modeling techniques can be utilized to produce a baseline forecast.

In the case of the TXK, the available data for air cargo is sparse and inconsistent. For the 20-year period of 2002-2022, only 11 years show cargo tonnage data based on a review of T-100 carrier reports, a regularly publicized set of reports provided by DOT. In those 11 years, only 5 years show cargo tonnage exceeding 2.0 short tons (1.8 metric tons). Further, an analysis of the airlines carrying the TXK cargo over time suggests that much of the activity was anomalous in nature, with no consistent demand profiles. It is likely that many of the TXK operations listed in the T-100 reports are one-time charters used for a specific purpose.

With this situation, the TXK master plan consulting team deemed the existing cargo data unreliable and insufficient for forecasting purposes. However, based on information gathered through primary and secondary research, it is still necessary and important to develop cargo forecasts due to the potential of cargo airlines initiating services at TXK in the future.

ALTERNATIVE APPROACHES TO AIR CARGO FORECASTING

Based on prior experience at other airports, air cargo forecasts for individual airports (especially those that are not major cargo gateway airports) are often best formulated using a service-based approach or a scenario-based approach.

A service-based approach to air cargo forecasts is established under the premise that airports can only realize cargo volumes to the extent that adequate supply of air cargo capacity (from air carriers) is present and available at those airports. In fact, for an airport level forecast, supply of air cargo capacity is just as important as the “demand-pull” created by economic growth and activity. For the service-based approach, estimates of future aircraft operations (both passenger and all-cargo operations) are required to impute air cargo tonnage on those flights. The future aircraft operations are a function of historical operations at the airport as well as any forward-looking information regarding demand and related possible net new operations or anticipated changes in the profile of existing operations. The summation of cargo tonnage via this methodology, along with other assumptions and analyses, produces an airport-level air cargo forecast.

A scenario-based approach to air cargo forecasts is similar to the service-based approach but is particularly useful for airports with little history of air cargo operations and for airports pursuing specific types of air cargo development that have particular profiles from the perspective of airline operations and service patterns. As the name implies, the scenario-based approach relies on the definition of specific cargo-related scenarios at airports (including assumptions of operational details and service development over time) and the cargo volumes associated with those scenarios. While this approach can be seen as somewhat prospective, its value from a planning perspective lies in quantifying possible levels of cargo activity should those types of scenarios come to fruition. From this standpoint, it is important to ensure that the scenarios are as realistic and informed as possible, but for planning purposes, also encompass a wide range of possible cargo air service development environments that could be experienced by an airport during the forecast period.

Notably, both of these approaches to air cargo forecasts have been utilized in master plans for airports over the past 20 years, either as standalone forecasts or to supplement baseline forecasts developed via traditional methods. In each case, the FAA has accepted and approved the forecasts. It is especially important to consider these alternative approaches to cargo forecasting due to the extraordinarily dynamic nature of the air cargo industry. **In recent years, the growth of e-commerce, supply chain disruptions and the increasing importance of alternative cargo airports have led to new services at airports of all types and sizes – including airports that have never had regular cargo services before.**

The consulting team developed multiple scenarios to address a variety of potential situations at TXK, including new cargo air services by FedEx Express, Amazon Air, and a general cargo freighter airline. These three scenarios cover the range of cargo air services currently present in the air cargo industry: an integrated express operation focused on small packages, a dedicated e-commerce operation, and an operation focused on heavy freight and industrial goods.

AIR CARGO FORECAST SCENARIOS

The following sections describe the forecast background, methodology, assumptions, and output for the three defined scenarios of air cargo development at TXK. In each case, the substantive quantitative output relates to annual air cargo tonnage and annual operations by type of aircraft. This data will then be used by the airport planners to determine future cargo facility and infrastructure needs at TXK.

FedEx Scenario

In the Domestic U.S. market, the most common cargo operators at airports are the integrated express carriers FedEx and UPS. Collectively, the two carriers operate at hundreds of U.S. airports utilizing a variety of aircraft ranging from large Boeing 777 and 747 freighters to very small Cessna turboprops flown by partner airlines. Unlike UPS, FedEx's corporate roots are in its air express operation and ground capabilities were added later. As such, FedEx has always been more focused on air cargo and has maintained a larger aircraft fleet and air network.

Although both FedEx and UPS have mature air networks in the U.S., they continually evolve with different fleets, operational profiles, and airports served. FedEx is particularly active at southern U.S. airports, compared to UPS, and FedEx maintains a major hub at Fort Worth Alliance Airport (AFW). Specific to Texarkana, FedEx Express and TXK have had past discussions about air cargo services and a new FedEx Ground location began operations in recent years near the airport. While FedEx Express and FedEx Ground maintain separate operating structures, there have been persistent reports that the two units will be more aligned (and perhaps fully integrated) in the coming years to remove redundancies. Should this alignment occur, airports in proximity to FedEx Ground facilities may benefit.

With this background, the integrated express forecast scenario for TXK was developed based on a prospective FedEx Express service with turboprop aircraft operating from AFW. In addition to operating a variety of large jets at AFW, FedEx operates three types of turboprops at AFW, including the Cessna 208B, ATR-42F, and ATR-72F.

Key assumptions of the FedEx scenario for TXK include:

- Startup in full year 2025, allowing necessary marketing, planning, and operational lead times for successful FedEx launch
- Service operates Monday through Friday with five flights per week at startup in each direction
- Startup aircraft is the Cessna 208B Super Cargomaster, a single engine aircraft commonly used by FedEx in smaller markets
- Upgauging occurs in 2031 to the larger Cessna C408 SkyCourier as FedEx modernizes its feeder fleet and retires the older C208B
- Includes additional annual departures for extra day during leap years (2028, 2032, 2036, 2040)
- Aircraft tonnage capacities are adjusted for lower density of package and e-commerce traffic typically handled by FedEx (using a density of 6 pounds per cubic foot)
- Startup year volumes assumed at 60% of flight capacity, growing to 65% in 2026 and 70% in 2027, then tapering off to generally align with Boeing's long-term estimates for the Domestic U.S. market sourced from the World Air Cargo Forecast
- Startup year growth for 2025-2027 is accelerated to reflect faster initial growth in new market before achieving steady state
- C208B volumes are validated using FedEx AFW pounds per flight averages reported in U.S. DOT T-100 reports
- As of March 2023, FlightRadar24 shows FedEx with seven C408 aircraft currently in service; FedEx reports scheduled deliveries of forty-four new C408s through the end of 2026

From an operations perspective, the FedEx scenario results in the annual combined aircraft departures and arrivals of 522 per year, with operations from 2025 to 2030 being conducted by the Cessna C208B, then transitioning to the Cessna C408 entirely by 2043.

The tonnage forecast for cargo on FedEx flights at TXK is depicted on **Figure 2B**. The figure shows cargo tonnage growing from 310 metric tons in 2025 to 569 metric tons by 2043. During the initial five-year period of operation, growth in air cargo is estimated to be 5.8 percent, slowing to an overall growth rate of 3.4 percent over the planning period.

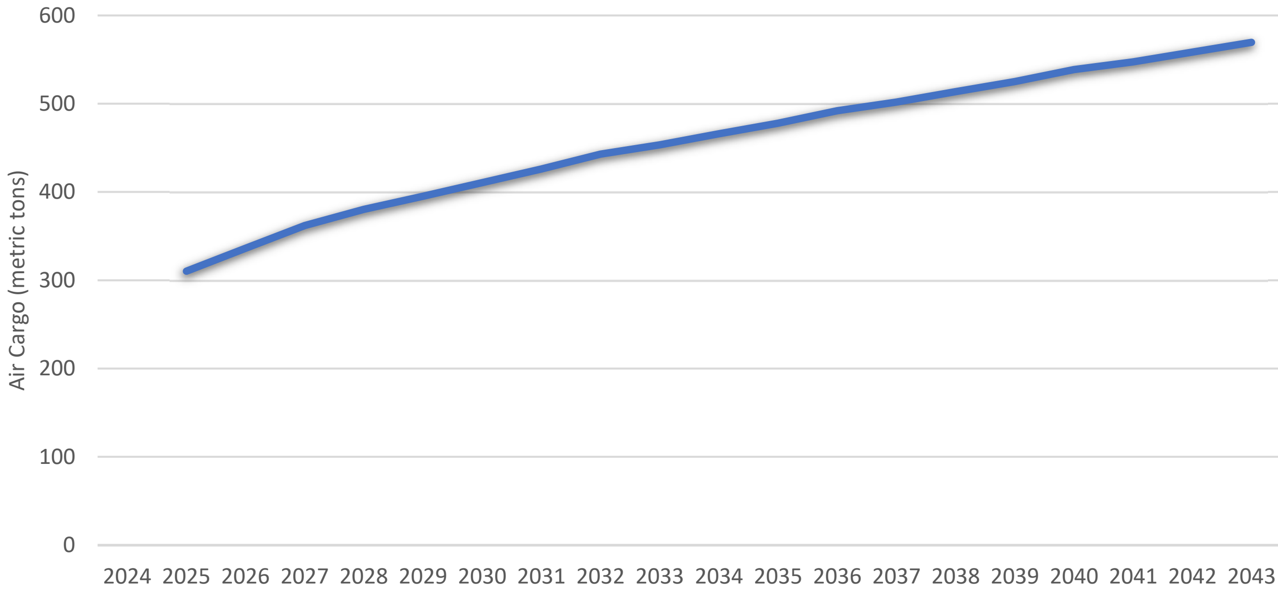


Figure 2B: FedEx Air Cargo Forecast for TXK *(Source: Hubpoint)*

Amazon Air Scenario

The Amazon Air forecast scenario for TXK was developed based on the e-commerce company's continuing expansion at multiple U.S. airports over the last several years using a primarily contracted aircraft fleet. It represents a "what-if" proposition should Amazon Air choose to initiate TXK service which can then be factored into airport planning decisions.

While Amazon Air's initial entry into the U.S. domestic market utilized widebody freighters (767-200F and 767-300F) flying in and out of major distribution hubs, its more recent growth has focused on narrowbody (737-800F) and turboprop (ATR-72F) freighter operations. These aircraft have allowed Amazon Air to expand its geographical reach and economically serve small- and mid-size U.S. market areas. Recent examples of the company's ATR-72F expansion include operations at Des Moines, IA (DSM); Albuquerque, NM (ABQ); Omaha, NE (OMA); Wichita, KS (ICT); and Mobile, AL (BFM). Amazon Air's ATR-72F fleet is currently based at AFW and is operated by Silver Airways.

Even with the recent re-calibration of U.S. e-commerce demand coming off of pandemic highs, the future of e-commerce and the use of air cargo is still very positive. Amazon has invested $1.5 billion in its new hub at Cincinnati/Northern Kentucky International Airport (CVG) and continues to operate and expand its aviation networks not only in the U.S., but in Europe and India as well. At its core, Amazon Air is a true differentiator for Amazon.com, Inc. and there are no signs of a lack of long-term commitment to the airline.

A major criterion for Amazon Air regarding the airports it serves is proximity to one of Amazon's large fulfillment centers. While the presence of a fulfillment center does not guarantee an Amazon Air operation, the lack of a nearby fulfillment center removes an airport from consideration. Currently, the closest large fulfillment center to TXK is in Little Rock which is over 2 hours away by truck. However, in recent years, e-commerce companies have considered Texarkana as a potential site for fulfillment centers and the closest Amazon Air points of service are at AFW and Houston Intercontinental (IAH). Given this situation and the expected continued growth of e-commerce in the U.S., an Amazon Air forecast scenario was developed for TXK.

Key assumptions of the Amazon Air scenario for TXK include:

- A 2029 startup with daily service using an ATR-72F to the AFW hub, resulting in two operations per day (i.e., one arrival and one departure) on six days each week

- Based on intelligence gathered from sources close to Amazon Air, schedule development for ATR-72F airports will likely progress first with additional frequencies and eventually migrate to larger aircraft

- A second daily flight with an ATR-72F commences in 2031 to the AFW hub, for a total of four daily operations on six days each week

- Using a time-series approach, throughout the forecast period Amazon Air annual traffic growth rates run consistently higher than the annual growth rates derived from Boeing's World Air Cargo Forecast for the U.S. Domestic market

- Payload capacity for the ATR-72F is based on analysis Amazon Air's current operations of the aircraft in the U.S.

- As continued volume growth approaches maximum capacity on the ATR-72Fs, Amazon Air upgauges to the larger capacity 737-800F in 2042 with a single daily round trip

From an operations perspective, the Amazon Air scenario results in the annual combined aircraft departures and arrivals of 626 per year for the inaugural period of 2029-2030, with operations increasing to 1,256 annually between 2031 and 2041. These operations are expected to come from the ATR-72F turboprop aircraft. As the transition from the ATR to the Boeing 737-800F occurs in 2042, annual operations would decline back to 626 per year as the larger aircraft would require less operations to carry the same (and more) cargo.

The tonnage forecast for cargo on FedEx flights at TXK is depicted on **Figure 2C**. The figure shows cargo tonnage growing from 1,961 metric tons in 2029 to 6,693 metric tons by 2043. During the initial five-year period of operation, growth in air cargo is projected to be 20.4 percent, then tapering to a more modest growth rate of 9.2 percent through 2043.

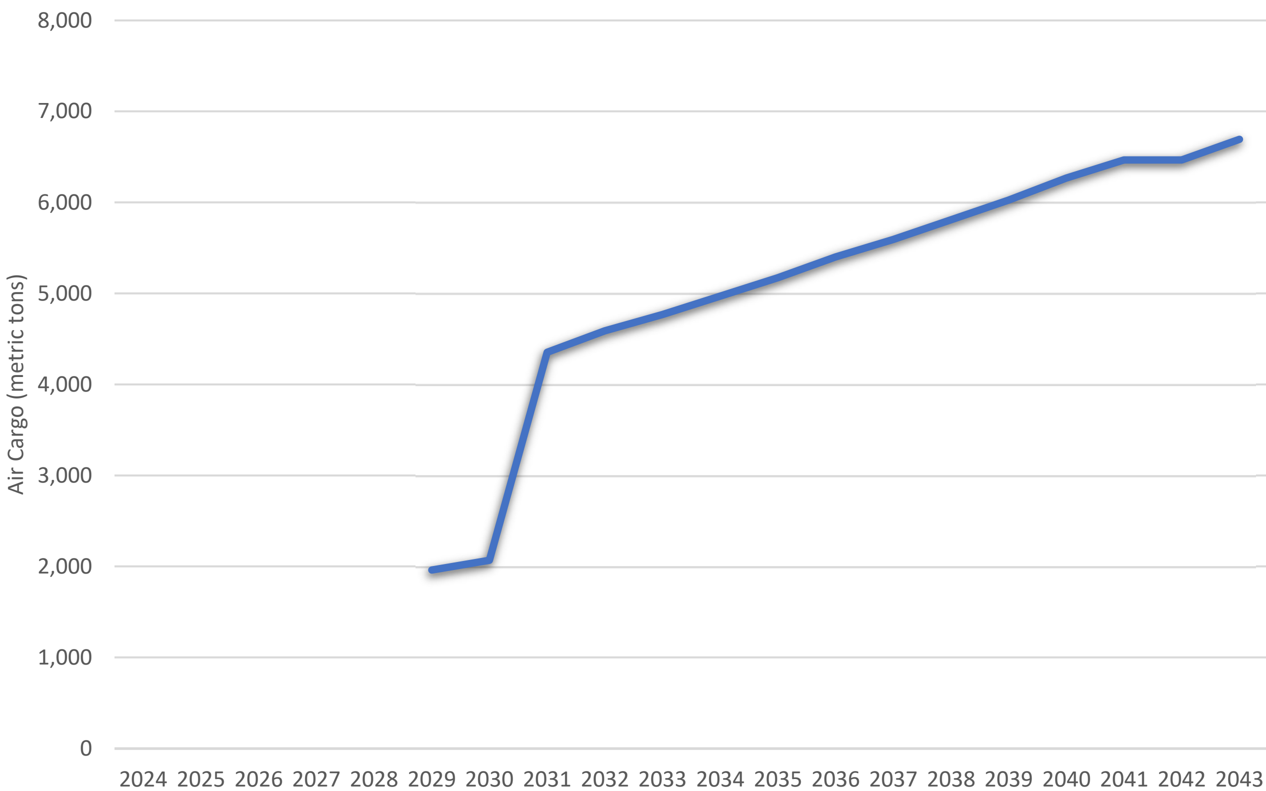


Figure 2C: Amazon Air Cargo Forecast for TXK *(Source: Hubpoint)*

General Cargo Freighter Scenario

A key objective of the Texarkana Regional Economic Development community is the attraction of automotive manufacturing activities. As the auto industry transitions from combustion to electric vehicles, auto manufacturers are actively investing in new facilities in the U.S., particularly in the southern states where there are cost, geographical, and workforce advantages. Major manufacturing and logistics sites around Texarkana have already been designated for industrial purposes and economic developers have experienced sustained interest from various companies considering locations in the region. Auto manufacturers expect that plants can be constructed and operational within 24-36 months of selecting a site.

With regional commitment and investment devoted to attracting specific types of industrial activity to Texarkana, it is prudent to anticipate the associated transportation and logistical requirements. It is well-known that the auto industry generates a multitude of supply chain demands, including air cargo services. Typically, auto manufacturers utilize just-in-time processes to keep inventory carrying costs down and to increase operational efficiencies. In turn, these manufacturing practices lead to the regular use of air cargo to ship parts and components between plants.

To account for the future successful recruitment of an auto manufacturer or similar type of industry to the Texarkana region, an additional cargo forecast scenario for TXK was developed. Industry trends and intelligence gathering suggests the potential initiation of a scheduled, general cargo freighter operation serving the U.S. domestic market and carrying heavy freight. This type of operation would likely serve the freight forwarding community and would not compete directly with integrated express carriers like FedEx or UPS.

Freight forwarders act as middlemen between shippers and transportation service providers to deliver goods to consignees. Whereas FedEx and UPS control their own airlines, forwarders rely on third-party airlines to carry their shipments. In the U.S. market, several cargo airlines (e.g., Kitty Hawk Cargo, BAX Global, Emery Worldwide) once served forwarders' needs for expedited shipping of heavier, bulkier industrial goods, including auto parts and components. However, those airlines ceased operations for a variety of reasons in the early 2000s. Since then, the heavy freight market has largely been served by trucking companies and some smaller charter airlines. With persistent supply chain disruptions, truck driver shortages, and demand for reliable air cargo services, it is anticipated that scheduled general cargo airlines may once again serve the U.S. domestic market. This may be even more likely as U.S. industrial production increases with trends like reshoring and nearshoring and the development of supply chains requiring air transportation of general cargo.

For TXK, the key assumptions of the General Cargo Freighter scenario include:

- A B757-200F operation at TXK which will increase weekly frequencies over the forecast period
- Freighter aircraft will operate on multi-stop itineraries with only a portion of the aircraft allocated to each airport
- A 2025 start of services at TXK with eight seasonal flights; followed by sixteen seasonal flights in 2026; these services are envisioned as part of the pre-production phase of a new plant
- Scheduled services commence in 2027 with two weekly flights, growing to three weekly flights in 2029 and then four weekly flights in 2035
- Estimated TXK aircraft allocations (i.e., the portion of the entire aircraft capacity devoted to TXK) are conservative for the scheduled services - ranging from 20% in 2027 to 50% in 2042

With these assumptions and following a step-wise growth pattern with increasing TXK flight frequencies and successively higher aircraft allocations over time, forecasts of air cargo tonnage and aircraft operations were developed.

In the first years of regular, scheduled service (2027-2028) of the General Cargo Freighter scenario, 208 annual operations are forecast. The forecast then assumes an increase to a maximum of eight weekly operations totaling 416 annual operations between 2035 and 2043. As stated, during the forecast period, it is anticipated that TXK will experience gradual increases in freighter aircraft allocations. Therefore, even as aircraft operations are at fixed levels for multiple years, the tonnage carried can vary.

A tonnage forecast for a General Cargo Freighter service at TXK is depicted below in **Figure 2D**. This shows air cargo tonnage growing from 166 metric tons in 2025 to 5,408 metric tons by 2043. In terms of air cargo tonnage growth, this forecast scenario produces a CAGR of 10.6% for the period 2027-2043, when scheduled air cargo services are assumed to be operating at TXK.

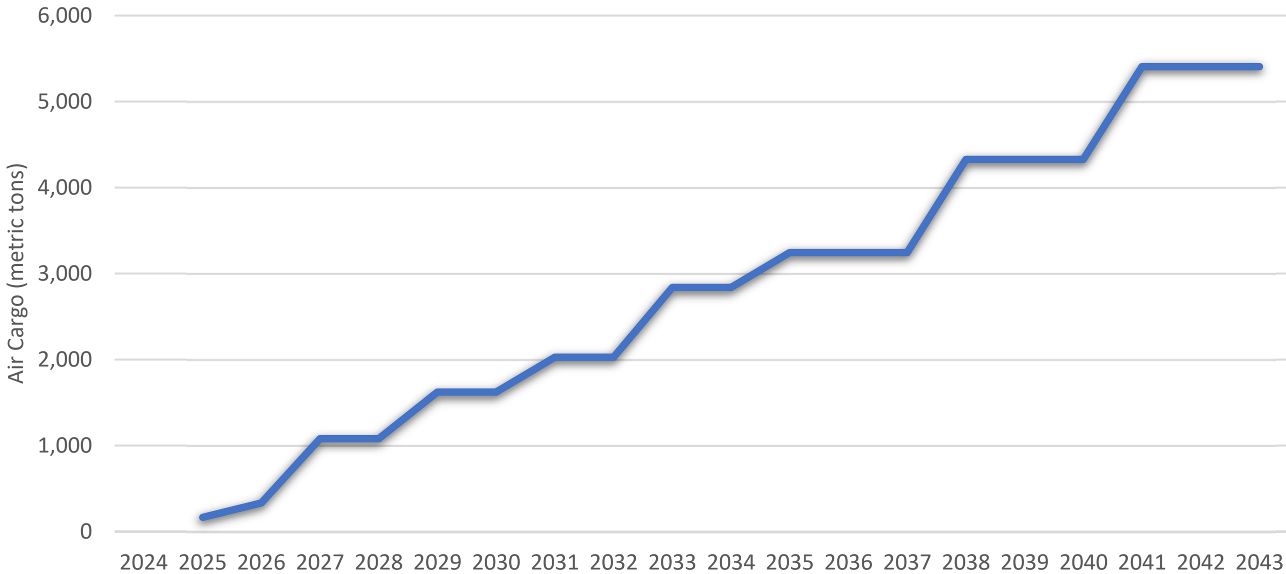


Figure 2D: General Freighter Air Cargo Forecast for TXK *(Source: Hubpoint)*

The General Cargo Freighter scenario results in the forecast aircraft operations shown in **Figure 2E**. In the first years of regular, scheduled service (2027-2028), 208 annual operations are forecast. The forecast assumes a maximum of eight weekly operations, equating to 416 annual operations between 2035 and 2043. As stated, during the forecast period, it is anticipated that TXK will experience gradual increases in freighter aircraft allocations; therefore, even as aircraft operations are at fixed levels for multiple years, the tonnage carried can vary.

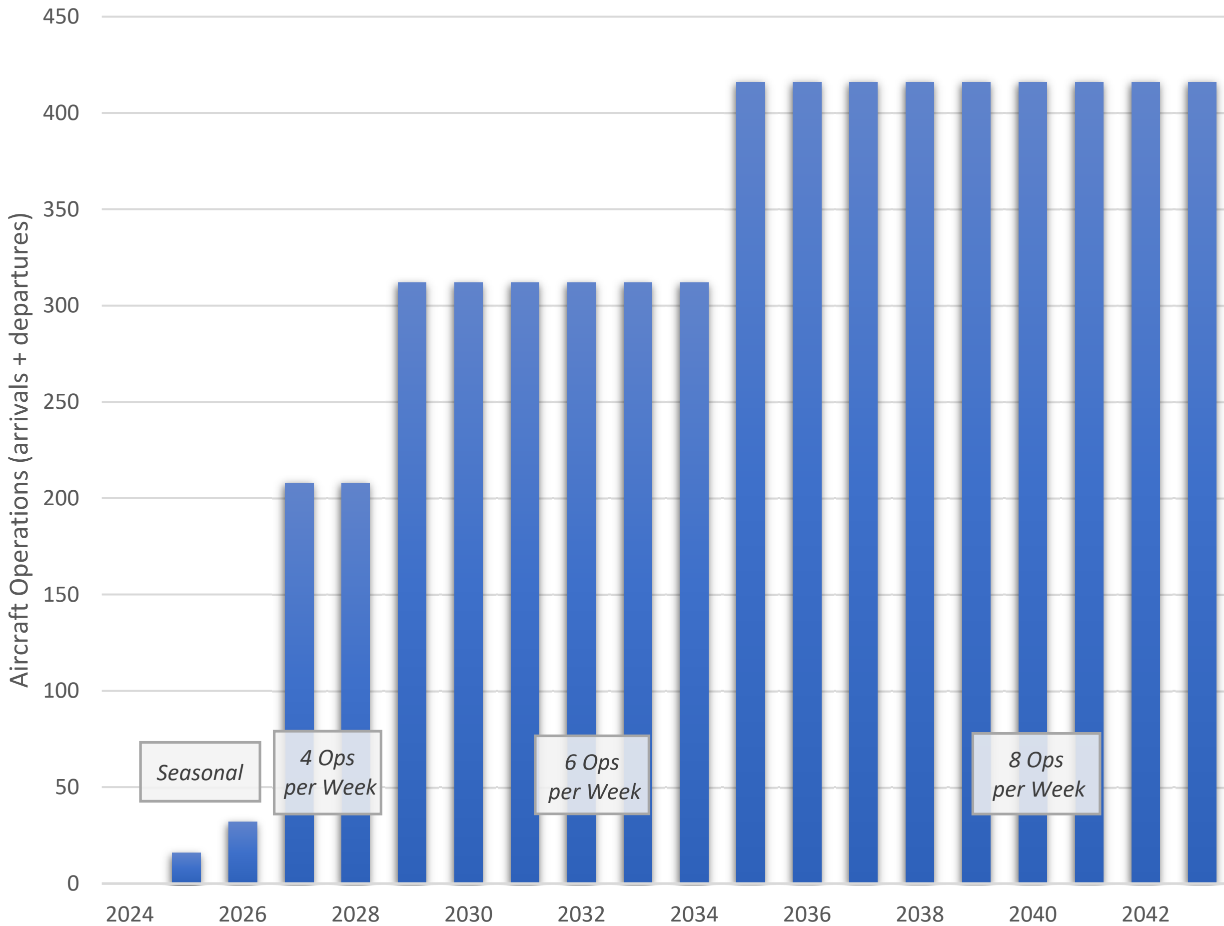


FIGURE 2E: TXK General Cargo Freighter Service – Annual Aircraft Operations Forecast *(Source: Hubpoint)*

AIR CARGO FORECAST SUMMARY

This section examined the feasibility of introducing different types of air cargo operations to TXK. Each of the three presented scenarios offer their own assumptions and challenges that the sponsor will have to evaluate when planning for the airport's future. **Table 2AB** presents a summary of the three described scenarios at various time windows throughout the planning period. It should be noted that, as these are theoretical operations in nature, neither the annual operations nor aircraft types will be factored into the current forecast model. Should one or a combination of these air cargo scenarios develop at TXK, the forecast can be updated to reflect more accurate information.

TABLE 2AB | Air Cargo Forecasts Summary

	2025	2029	2033	2037	2042/2043
Annual Operations					
FedEx Scenario					
Cessna C208B	522	522	0	0	0
Cessna C408	0	0	522	522	522
Amazon Air Scenario					
ATR-72F	[redacted]	626	1,256	1,256	0
Boeing 737-800F	[redacted]	0	0	0	626
General Cargo Freighter Scenario					
Boeing 757-200F	16	312	312	416	416
Air Cargo Tonnage (metric tons)					
FedEx Scenario	310	395	453	502	569
Amazon Air Scenario	[redacted]	1,961	4,768	5,592	6,693
General Cargo Freighter Scenario	166	1,622	2,839	3,245	5,408

Source: Hubpoint Strategic Advisors, LLC

AIRCRAFT AND RUNWAY/AIRPORT CLASSIFICATION

The FAA has established multiple aircraft classification systems that group aircraft based on their design (physical dimensions) and performance (approach speed in landing configuration) characteristics. These classification systems are used to design certain airport elements, such as runways, taxiways, aprons, safety areas, and separation standards, all based on the aircraft expected to use the airport facilities more frequently.

AIRCRAFT CLASSIFICATION

The use of appropriate FAA design standards is generally based on the characteristics of aircraft that commonly use, or are expected to use, the airport. The “critical design aircraft” is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a composite aircraft group representing a collection of aircraft with similar characteristics. The design aircraft is classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). FAA Advisory Circular (AC) 150/5300-13B, *Airport Design*, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 2L**.

Aircraft Approach Category (AAC): A grouping of aircraft based on a reference landing speed (V_{ref}), if specified. If V_{ref} is not specified, 1.3 times the stall speed (V_{so}) at the maximum certified landing weight is used. These numbers are those values as established for an aircraft by the certification authority of the country of registry. The AAC refers to the approach speed of an aircraft in the landing configuration. The higher the approach speed, the more restrictive the design standard. The AAC is depicted by a letter (A though E) and applies to runway and runway-related features, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

AIRCRAFT APPROACH CATEGORY (AAC)

Category	Approach Speed
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

AIRPLANE DESIGN GROUP (ADG)

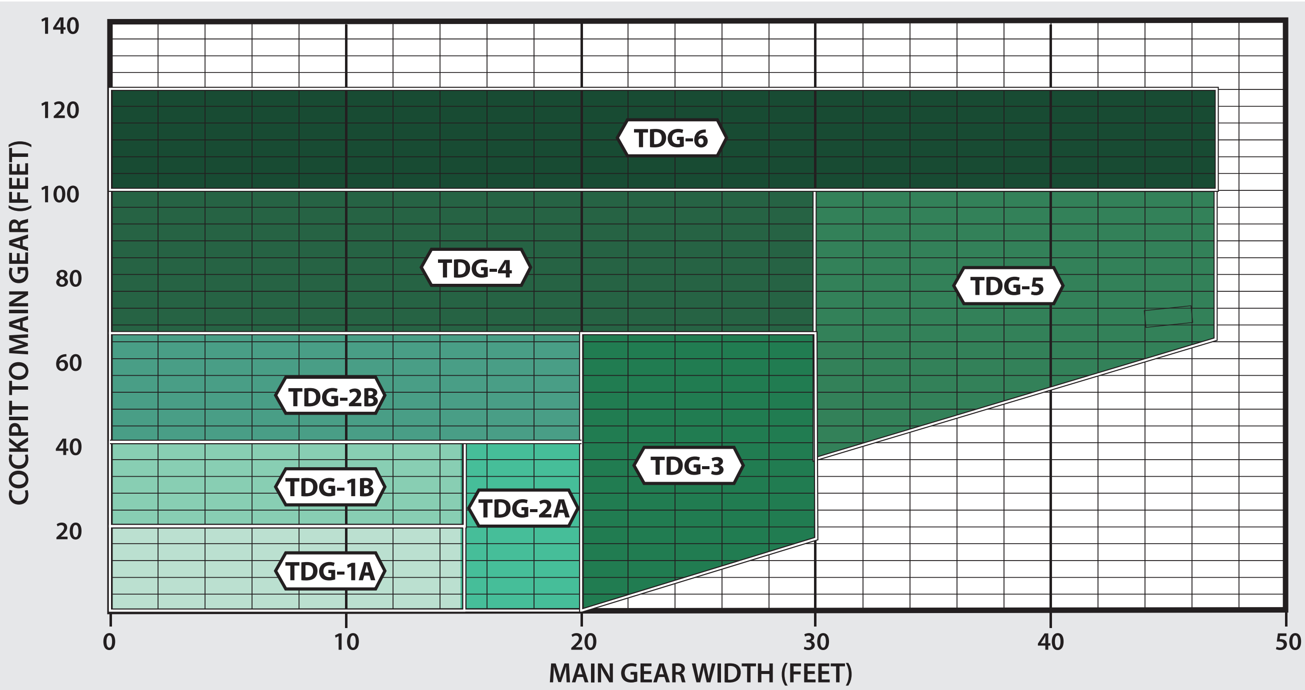
Group #	Tail Height (ft)	Wingspan (ft)
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS

RVR* (ft)	Flight Visibility Category (statute miles)
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

***RVR**: Runway Visual Range

TAXIWAY DESIGN GROUP (TDG)



Source: FAA AC 150/5300-13B, Airport Design

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft relating to the wingspan or tail height of the aircraft. If the wingspan and tail height fall under different design groups, the higher dimension and category (more restrictive) is used. The ADG is used to establish design standards for taxiway safety area (TSA), taxiway object free area (TOFA), taxilane object free area, wingtip clearance, and other separation standards.

Taxiway Design Group (TDG): A classification of aircraft based on dimensions of the airplane undercarriage: the other-to-outer main gear width (MGW) and cockpit-to-main gear (CMG) distance. Several taxiway design elements are determined by the TDG, including the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet design and dimension, and separation standards. It is appropriate for different taxiways at the same airport to be planned and built to different taxiway design standards based on the aircraft expected to use the taxiway. The TDG has an alphanumeric designation (such as 2A) based on the combined dimensions of the MGW and CMG and is derived from a chart found in *Airport Design*.

Exhibit 2M presents the aircraft classification of common aircraft in operation today.

RUNWAY AND AIRPORT CLASSIFICATION

The runway and airport classifications, along with the aircraft classifications defined above, are used to determine the appropriate FAA design standards that the airfield facilities are to be designed and built.

Runway Design Code (RDC): A code signifying the design standards to which a runway is built. The RDC is based on planning development and has no operational component. The AAC, ADG, and runway visual range (RVR) are combined to form the RDC for a certain runway. The RDC provides the information necessary to determine critical design standards. The first two components, the AAC and ADG, are depicted as a letter and Roman numeral as previously defined. The third component refers to the established instrument approach visibility minimums, expressed by RVR values in feet (**Figure 2F**).

RVR	Visibility Minimums
5,000 ft	Not lower than 1-mile
4,000 ft	Lower than 1-mile but not lower than ¾-mile
2,400 ft	Lower than ¾-mile but not lower than ½-mile
1,600 ft	Lower than ½-mile but not lower than ¼-mile
1,200 ft	Lower than ¼-mile

Figure 2F: Runway Visual Range Categories

The RVR values approximate standard visibility minimums of established instrument approach procedures to the runway. Visual-only approaches are designated by "VIS" instead of a numerical value.

Approach Reference Code (APRC): A code signifying the current operational capabilities of a runway and associate parallel taxiway regarding landing operations. The same three components of the RDC make up the APRC: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under meteorological conditions where no special operating procedures are necessary, as opposed to the RDC, which is based on planning development with no operational component. The APRC for a runway is established based on the lowest runway-to-taxiway centerline separation present for each runway.

A-I

Aircraft	TDG
Beech Baron 55	1A
Beech Bonanza	**1A**
Cessna 150, 172	1A
Eclipse 500	1A
Piper Archer, Seneca	1A

B-I

Aircraft	TDG
Beech Baron 58	**1A**
Beech King Air 90	1A
Cessna 421	1A
Cessna Citation CJ1 (525)	1A
Cessna Citation 1(500)	2A
Embraer Phenom 100	1B

A/B-II *12,500 lbs. or less*

Aircraft	TDG
Beech Super King Air 200	**2A**
Cessna 441 Conquest	1A
Cessna Citation CJ2 (525A)	2A
Pilatus PC-12	1A

B-II *over 12,500 lbs.*

Aircraft	TDG
Beech Super King Air 350	2A
Cessna Citation CJ3(525B), V (560)	2A
Cessna Citation Bravo (550)	1A
Cessna Citation CJ4 (525C)	**1B**
Cessna Citation Latitude/Longitude	1B
Embraer Phenom 300	1B
Falcon 10, 20, 50	1B
Falcon 900, 2000	2A
Hawker 800, 800XP, 850XP, 4000	1B
Pilatus PC-24	1B

A/B-III

Aircraft	TDG
Bombardier Dash 8	3
Bombardier Global 5000, 6000, 7000, 8000	**2B**
Falcon 6X, 7X, 8X	2B

C/D-I

Aircraft	TDG
Lear 25, 31, 45, 55, **60**	**1B**
Learjet 35, 36 (D-I)	1B

C/D-II

Aircraft	TDG
Challenger 600/604/ 800/850	1B
Cessna Citation VII, X+	1B
Embraer Legacy 450/500	1B
Gulfstream IV, 350, 450 (D-II)	2A
Gulfstream G200/G280	1B
Lear 70, 75	1B

C/D-III *less than 150,000 lbs.*

Aircraft	TDG
Gulfstream V	2A
Gulfstream G500, 550, 600, **650 (D-III)**	**2B**

C/D-III *over 150,000 lbs.*

Aircraft	TDG
Airbus A319-100, 200	3
Boeing 737 -800, 900, BBJ2 (D-III)	**3**
MD-83, 88 (D-III)	4

C/D-IV

Aircraft	TDG
Airbus A300-100, 200, 600	5
Boeing 757-200	4
Boeing 767-300, **400**	**5**
MD-11	6

D-V

Aircraft	TDG
Airbus A330-200, 300	5
Airbus A340-500, 600	6
Boeing 747-100 - 400	5
Boeing 777-300	6
Boeing 787-8, 9	**5**

TDG: Taxiway Design Group

Note: Aircraft pictured is identified in bold type.

Based on the current runway/taxiway centerline separation distance of 400 feet and available ½-mile visibility minimums to Runway 4-22, Runway 4-22's APRC is D/IV/2400 and D/V/2400. Runway 13-31 has a centerline separation distance of 300 feet at the narrowest and 1-mile visibility minimum instrument approaches, resulting in an APRC of B/III/4000 and D/II/4000.

Departure Reference Code (DPRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway during takeoff operations. The DPRC represents those aircraft that can depart from a runway while any aircraft are present on adjacent taxiways, under meteorological conditions with no special operating conditions. The DPRC is similar to the APRC but is composed of only the AAC and ADG; there is no RVR element to the DPRC. A runway may have more than one DPRC depending on the parallel taxiway separation distance.

Runway 4-22 has a DPRC of D/IV and D/V based on its runway/taxiway centerline separation distance of 400 feet. Runway 13-31 has a DPRC of B/III and D/II based on its 300-foot runway/taxiway centerline separation distance.

Airport Reference Code (ARC): An airport designation that signifies the airport's highest runway design code without the visibility component (RVR). The ARC is used for planning and design purposes only and does not limit the aircraft capable of operating safely at the airport. Airports with one runway will have an ARC that is the same as their runway design code, while airports with multiple runways will have an ARC equal to that of the highest runway design code. **The airport's current Airport Layout Plan (ALP), which was last updated in 2010, identifies the ARC as C-III**.

CRITICAL DESIGN AIRCRAFT

The selection of airport design criteria is based on the aircraft currently using, or expected to use, the airport. The "critical design aircraft" is used to establish the design parameters of the airport. These criteria are typically based on the most demanding aircraft using the airfield facilities on a relatively frequent basis. The critical design aircraft can be a single aircraft or a composite of multiple aircraft that represent a collection of aircraft characteristics. With the selection of multiple aircraft, the most demanding of the aircraft characteristics are used to establish the design criteria of the airport based on the AAC, ADG, and TDG. If the airport contains multiple runways, a critical design aircraft will be identified for each runway.

The primary consideration for a critical design aircraft is to ensure safe operation of the aircraft using the airport. If an aircraft larger than the critical design aircraft were to operate at the airport, it may result in reduced safety margins or unsafe operations. However, airports typically do not establish design criteria based solely on the largest aircraft using the airfield facilities if it operates on an infrequent basis. Certainly, the FAA will not financially support facilities to meet the needs of infrequent aircraft operators.

The critical design aircraft can be defined as **an aircraft conducting <u>at least 500 annual operations</u> at an airport**, excluding touch-and-go operations, or the most regularly scheduled aircraft in commercial service. When planning for future airport facilities, it is extremely important to consider the demands of aircraft operating at the airport in the future. As a result of the separation standards based on the critical aircraft, caution must be exercised to ensure that short-term development does not preclude the long-term needs of the airport. Thus, it is important to strike a balance between the facility needs of aircraft currently operating at the airport and the facility needs of aircraft projected to operate at the airport in the future. Although precautions must be taken to ensure long-term airport development, airports with critical aircraft that do not use the airport facilities on a regular basis are unable to operate economically due to the added development and maintenance expenses.

AIRPORT CRITICAL DESIGN AIRCRAFT

It is important to have an accurate understanding of what type of aircraft operate at the airport, both now and in the future. The type of aircraft using the airport facilities can have a significant impact on several design criteria. Therefore, a review of aircraft activity by type and category can be beneficial in determining future airport design standards that must be met to accommodate certain aircraft.

The Traffic Flow Management System Counts (TFMSC) is a database maintained by the FAA that captures operations by aircraft type at airports. Information is added to the system when pilots file flight plans and/or when flights are detected by radars in the National Airspace System. Due to factors such as VFR operations, limited radar coverage, and incomplete flight plans, the TFMSC data does not account for all aircraft operations at an airport. However, FAA indicates that the TFMSC database does capture more than 95 percent of turboprop and jet operations as operators of these types of aircraft almost always file a flight plan. These aircraft are more restrictive in their applicable airport design standards, and their count by the TFMSC does provide an accurate reflection of their activity at the airport.

Exhibit 2N presents the TFMSC annual aircraft operations at TXK for the 10-year period from 2012 to 2021, as well as the activity for the most recent 12 months through September 2022. **Table 2AC** provides a summary of the total operations by AAC and ADG.

TABLE 2AC | TFMSC Operations Summary For TXK

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[1]
Aircraft Approach Category (AAC)											
A	98	124	268	334	302	362	290	348	352	608	608
B	3,290	3,036	2,502	2,666	2,828	2,670	2,832	3,126	2,124	2,952	3,220
C	2,888	3,082	2,716	2,810	2,860	2,698	3,284	3,224	2,158	2,778	3,188
D	44	50	34	66	140	140	102	122	116	150	182
E	0	0	0	2	0	0	0	0	0	0	0
Total	**6,320**	**6,292**	**5,520**	**5,878**	**6,130**	**5,870**	**6,508**	**6,820**	**4,750**	**6,488**	**7,198**
Airplane Design Group (ADG)											
I	1,556	1,512	1,258	1,384	1,522	1,376	1,730	1,918	1,334	1,712	1,766
II	4,540	4,614	4,072	4,382	4,452	4,392	4,688	4,772	3,278	4,648	5,290
III	76	14	24	28	22	22	10	68	42	76	124
IV	148	152	164	84	134	80	80	62	96	52	18
V	0	0	2	0	0	0	0	0	0	0	0
Total	**6,320**	**6,292**	**5,520**	**5,878**	**6,130**	**5,870**	**6,508**	**6,820**	**4,750**	**6,488**	**7,198**

[1]2022 lists the most recent 12 months of activity: 10/2021 – 11/2022

Source: FAA Traffic Flow Management System Counts (TFMSC)

As can be seen from the table, aircraft in the "C" approach category have consistently exceeded 500 annual operations. With a 10-year average of 2,880 annual operations, AAC C is the primary aircraft type operating regularly at TXK. The primary aircraft that was recorded in this AAC is the Embraer ERJ-135/140/145 regional jet. **Exhibit 2N** shows that, through 2015, a large percentage of operations conducted by AAC C aircraft was done by the Bombardier CRJ 100/200/700 regional jet, most of which would have been conducted with the CRJ-200. Since October 2022, American Airlines transitioned from the 50-seat ERJ-145 to the CRJ-700, which has 65 seats. Therefore, operations recently conducted by the ERJ-series jets will become operations conducted with the CRJ-700. Though they fall within the less restrictive "B" category, **Exhibit 2N** also shows that the Beechcraft King Air 200/300/350 turboprop, as well as the Citation XLS and CJ2/CJ3/CJ4, are the leading general aviation aircraft to operate at TXK.

The airport does experience operations by aircraft in the "D" approach category, but historically has not exceeded the operations threshold for critical aircraft determination. Aircraft in this category include the Boeing 737-800/900 and the Gulfstream V/550. Operations by these types of aircraft averaged only 104 annual operations over the past decade. As mentioned previously, incoming aviation businesses at TXK will increase the number of operations by larger jets, up to and including larger Boeing commercial aircraft, such as the 777 (C/D-V), 787 (C-V), and Airbus A350 (C-V). As a result, it is possible that the airport may transition to a "D" approach category within the 20-year planning horizon.

Activity by aircraft in ADG II averaged 4,466 operations over the past 10 years. This category is also led by the Embraer ERJ-series jet. Aircraft representative of the ADG II group include the based aircraft Cessna Citation-series jets and the King Air 200/300/350 turboprops. As the airport grows and new businesses establish locations on and near the airport, it is very likely that the airport will transition to an ADG III airport by 2042. This includes larger business jets, such as the Bombardier Global series and the Dassault Falcon 7X/8X, larger regional jets, sch as the Embraer EMB-170/175/190, and mainline commercial aircraft, such as the aforementioned Boeing jets. Additionally, with the possibility of introducing air cargo service to TXK, the likelihood of an increase in operations by larger, faster aircraft provides additional support in the future critical design designations. Therefore, ADG III will become the critical design group for planning purposes.

Airport Design Aircraft Summary

The current aircraft approach category (AAC) is "C," and the current airplane design group (ADG) is "II." The most active "C-II" airplane at TXK has been the Embraer ERJ-135/140/145 regional jet but is expected to quickly transition to the Bombardier CRJ-700. The CRJ-700 regional jet has a TDG of "2B." **Therefore, the current airport design aircraft is classified as C-II-2B** and is designated by the Bombardier CRJ-700.

For planning purposes, **the future airport design aircraft is considered to be C-III-3**, represented by the 76-seat Embraer ERJ-175. This reflects the projected increase in passenger enplanements, resulting in larger capacity commercial regional jets. The future design aircraft can be revised if new air cargo and/or SASOs result in an increase in operations by larger, faster business and commercial jets.

ARC	Aircraft	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
A-I	Cessna 206/207/210	0	0	0	0	0	2	2	2	8	2	2
	Cirrus Vision Jet	0	0	0	0	0	0	4	0	20	18	28
	Eclipse 400/500	26	16	34	16	48	140	120	122	146	124	98
	Kodiak Quest	0	4	8	8	4	2	0	4	0	50	22
	Lancair Evolution/Legacy	0	0	0	0	2	2	0	0	0	2	2
	PAC STOL	0	0	0	0	0	0	2	0	0	0	0
	Piper Malibu/Meridian	8	14	24	24	50	22	20	92	78	106	92
	Socata TBM 7/850/900	20	38	30	34	20	24	50	60	46	184	224
	Total	54	72	96	82	124	192	198	280	298	486	468
A-II	Cessna Caravan	8	6	4	16	4	8	28	30	18	32	44
	De Havilland Twin Otter	4	2	6	2	0	0	0	4	0	6	12
	Pilatus PC-12	32	44	160	234	174	162	64	34	36	84	84
	Total	44	52	170	252	178	170	92	68	54	122	140
A-III	De Havilland Dash 7	0	0	2	0	0	0	0	0	0	0	0
	Total	0	0	2	0	0	0	0	0	0	0	0
B-I	Aero Commander 680	0	0	0	0	0	6	0	0	0	0	0
	Beech 99 Airliner	2	0	0	0	2	2	0	0	0	0	0
	Beechjet 400	362	262	222	190	196	132	110	82	22	54	74
	Cessna 425 Corsair	12	6	2	12	10	2	4	0	0	6	4
	Citation CJ1	268	228	214	260	92	90	108	116	78	80	174
	Citation I/SP	68	40	52	54	72	14	12	16	4	56	32
	Citation M2	0	0	0	0	6	0	2	8	4	8	4
	Citation Mustang	26	8	16	20	26	34	14	8	8	6	8
	Falcon 10	2	4	0	4	10	10	4	0	2	0	4
	Hawker 1000	0	0	0	0	0	0	2	0	0	4	0
	Honda Jet	0	0	0	2	0	2	6	6	0	12	26
	King Air 90/100	150	106	170	252	232	142	162	240	118	280	452
	L-39 Albatross	0	0	0	0	0	0	2	0	0	0	2
	Mitsubishi MU-2	10	20	8	14	12	18	16	14	2	10	6
	Phenom 100	6	10	12	4	14	20	30	16	10	22	32
	Piaggio Avanti	10	18	2	4	2	0	4	4	4	0	0
	Piper Cheyenne	262	420	202	82	220	168	440	578	336	288	2
	Premier 1	10	14	36	18	14	112	146	130	158	122	166
	Rockwell Sabre 40/60	4	10	0	0	0	0	0	0	0	0	0
	T-2 Buckeye	2	0	0	0	0	0	0	0	0	0	0
	T-6 Texan	128	82	122	144	200	176	186	154	74	104	64
	Total	1,322	1,228	1,058	1,060	1,108	928	1,248	1,372	820	1,052	1,050
B-II	Aero Commander 690	28	6	12	6	10	18	0	6	4	6	0
	BAe Jetstream	0	0	0	0	0	0	4	0	0	0	0
	Beech 1900	0	0	0	0	0	2	0	0	0	0	0
	Cessna Conquest	20	18	2	8	8	66	12	38	16	8	6
	Challenger 300	44	54	46	76	82	54	48	66	74	120	62
	Citation CJ2/CJ3/CJ4	724	712	498	586	694	666	596	340	216	302	236
	Citation II/SP/Latitude	198	168	142	132	90	66	96	76	40	78	84
	Citation Longitude	0	0	0	0	0	0	0	0	0	2	4
	Citation V/Sovereign	94	56	52	108	154	166	138	118	84	122	126
	Citation X	18	10	10	14	4	0	6	16	12	22	30

ARC	Aircraft	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
B-II cont.	Citation XLS	52	42	32	58	70	56	58	418	342	440	480
	Dornier 328	8	4	6	6	2	20	8	0	4	2	0
	Embraer EMB-110/120	0	0	2	2	2	2	6	4	4	8	4
	Falcon 20/50	18	14	24	20	40	18	18	12	6	12	22
	Falcon 2000	6	4	10	14	14	20	2	2	0	10	8
	Falcon 900	22	4	4	10	6	2	4	2	4	2	2
	Hawker 4000	0	2	2	2	4	0	2	2	0	0	0
	King Air 200/300/350	452	524	404	362	350	324	418	536	404	626	996
	King Air F90	198	138	148	122	128	164	82	52	24	14	4
	Phenom 300	2	2	20	38	34	38	56	26	44	84	74
	Pilatus PC-24	0	0	0	0	0	0	0	0	0	2	4
	Shorts 330/360	6	24	6	2	6	8	8	4	2	2	0
	Shorts Skyvan	0	0	2	0	0	0	0	0	0	0	0
	Swearingen merlin	22	24	8	20	14	42	18	14	10	4	8
	Total	1,912	1,806	1,430	1,586	1,712	1,732	1,580	1,732	1,290	1,866	2,150
B-III	Aerospatiale ATR 42/72	50	0	2	0	0	0	0	0	0	0	0
	Bombardier Global 5000	0	0	0	0	0	0	0	12	4	16	0
	Bombardier Global 7500	0	0	0	0	0	0	0	0	2	0	2
	Bombardier Global Express	0	0	2	0	6	0	0	4	0	8	8
	CASA 235	0	0	0	0	2	0	0	2	4	4	4
	Convair CV Series	0	0	0	2	0	2	0	0	0	0	0
	De Havilland Dash 8 Series	0	0	8	10	0	8	2	2	2	4	4
	Falcon 7X/8X	0	0	0	2	0	0	2	2	2	2	2
	Fokker F-27	6	2	2	6	0	0	0	0	0	0	0
	Total	56	2	14	20	8	10	4	22	14	34	20
C-I	BAe HS 125 Series	2	0	0	0	0	0	0	0	2	0	0
	BAe Systems Hawk	28	20	8	22	20	4	18	6	0	0	4
	Learjet 20 Series	8	6	6	2	0	0	0	0	0	0	0
	Learjet 31	20	12	6	6	14	6	12	14	8	8	14
	Learjet 40 Series	90	106	42	166	208	198	214	188	176	144	192
	Learjet 50 Series	0	6	0	6	8	4	2	0	2	2	0
	Learjet 60 Series	10	28	16	16	14	18	26	42	12	10	18
	T-45 Goshawk	0	0	0	2	0	0	0	0	0	0	0
	Westwind II	0	6	6	4	6	0	6	8	6	4	4
	Total	158	184	84	224	270	230	278	258	206	168	232
C-II	Bombardier CRJ 100/200/700	2	854	18	802	676	8	6	0	0	2	2
	Challenger 600/604	264	222	210	164	128	142	156	156	72	138	152
	Citation III/VI	232	202	180	210	238	150	84	22	34	46	56
	Embraer 500/450 Legacy	0	0	0	0	0	2	4	2	2	32	62
	Embraer ERJ-135/140/145	2034	1412	2022	1274	1284	1964	2384	2416	1526	2088	2508
	Fairchild A-10	4	2	0	0	0	0	0	0	0	0	0
	Gulfstream 100/150	12	4	2	4	4	4	2	30	14	12	18
	Gulfstream 280	0	0	0	0	0	0	96	148	100	132	96
	Gulfstream G-III	8	14	8	14	10	8	20	0	0	0	0
	Hawker 800 (Formerly Bae-125-800)	22	38	24	24	90	86	138	82	68	58	12
	Learjet 70 Series	0	0	0	8	22	24	36	22	34	32	14
	Total	2,578	2,748	2,464	2,500	2,452	2,388	2,926	2,878	1,850	2,540	2,920

Exhibit 2N
HISTORICAL JET AND TURBOPROP OPERATIONS

ARC	Aircraft	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
C-III	Airbus A319/320/321	4	0	0	0	0	0	0	0	0	0	0
	Boeing 737 (200 thru 700 series)	0	0	0	0	0	0	0	14	0	2	2
	Bombardier CRJ 900/1000	0	0	0	0	0	0	0	0	0	0	2
	De Havilland Dash 8 Q-400	0	2	0	0	0	0	0	0	0	0	0
	Embraer EMB 170/175/190	0	0	0	0	4	0	0	10	2	16	14
	Mcdonnell Douglas DC-9	0	2	2	2	0	0	0	2	2	0	0
	Mcdonnell Douglas MD-81/82/87/90	2	0	0	0	0	0	0	0	0	0	0
	P-3 Orion	0	0	0	0	0	0	0	0	2	0	0
	Total	6	4	2	2	4	0	0	26	6	18	18
C-IV	Boeing 707	0	2	0	0	0	0	0	0	0	0	0
	Boeing 757-200	2	0	0	0	0	0	0	0	0	0	0
	Boeing C-17	4	0	0	0	0	0	0	0	0	0	0
	Boeing E-6 Mercury	0	2	2	0	0	0	0	0	0	0	0
	C-130 Hercules	140	142	162	84	134	80	80	62	96	52	18
	Total	146	146	164	84	134	80	80	62	96	52	18
C-V	Boeing 777-200	0	0	2	0	0	0	0	0	0	0	0
	Total	0	0	2	0	0	0	0	0	0	0	0
D-I	F-15 Eagle	2	2	0	0	0	0	0	0	0	0	0
	Learjet 35/36	20	26	20	16	20	26	6	8	10	4	16
	T-38 Talon	0	0	0	0	0	0	0	0	0	2	0
	Total	22	28	20	16	20	26	6	8	10	6	16
D-II	Gulfstream 200	4	2	2	4	10	8	6	0	0	10	12
	Gulfstream 450	2	6	6	40	100	94	84	94	84	110	68
	Total	6	8	8	44	110	102	90	94	84	120	80
D-III	Boeing 737 800/900	2	0	0	0	0	0	0	0	0	0	0
	Gulfstream 500/600	12	8	6	6	10	12	6	20	22	24	86
	Total	14	8	6	6	10	12	6	20	22	24	86
D-IV	Mcdonnell Douglas DC-8/10	2	6	0	0	0	0	0	0	0	0	0
	Total	2	6	0	0	0	0	0	0	0	0	0
E-I	F-16 Falcon/Viper	0	0	0	2	0	0	0	0	0	0	0
	Total	0	0	0	2	0	0	0	0	0	0	0

Source: TFMSC Jan 2012 thru Sept 2022
*2022 covers October 2021 thru September 2022

AIRPORT REFERENCE CODE (ARC) SUMMARY

ARC CODE	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
A-I	54	72	96	82	124	192	198	280	298	486	468
A-II	44	52	170	252	178	170	92	68	54	122	140
A-III	0	0	2	0	0	0	0	0	0	0	0
B-I	1,322	1,228	1,058	1,060	1,108	928	1,248	1,372	820	1,052	1,050
B-II	1,912	1,806	1,430	1,586	1,712	1,732	1,580	1,732	1,290	1,866	2,150
B-III	56	2	14	20	8	10	4	22	14	34	20
C-I	158	184	84	224	270	230	278	258	206	168	232
C-II	2,578	2,748	2,464	2,500	2,452	2,388	2,926	2,878	1,850	2,540	2,920
C-III	6	4	2	2	4	0	0	26	6	18	18
C-IV	146	146	164	84	134	80	80	62	96	52	18
C-V	0	0	2	0	0	0	0	0	0	0	0
D-I	22	28	20	16	20	26	6	8	10	6	16
D-II	6	8	8	44	110	102	90	94	84	120	80
D-III	14	8	6	6	10	12	6	20	22	24	86
D-IV	2	6	0	0	0	0	0	0	0	0	0
E-I	0	0	0	2	0	0	0	0	0	0	0
Total	6,320	6,292	5,520	5,878	6,130	5,870	6,508	6,820	4,750	6,488	7,198

APPROACH CATEGORY

AC	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
A	98	124	268	334	302	362	290	348	352	608	608
B	3,290	3,036	2,502	2,666	2,828	2,670	2,832	3,126	2,124	2,952	3,220
C	2,888	3,082	2,716	2,810	2,860	2,698	3,284	3,224	2,158	2,778	3,188
D	44	50	34	66	140	140	102	122	116	150	182
E	0	0	0	2	0	0	0	0	0	0	0
Total	6,320	6,292	5,520	5,878	6,130	5,870	6,508	6,820	4,750	6,488	7,198

DESIGN GROUP

DG	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
I	1,556	1,512	1,258	1,384	1,522	1,376	1,730	1,918	1,334	1,712	1,766
II	4,540	4,614	4,072	4,382	4,452	4,392	4,688	4,772	3,278	4,648	5,290
III	76	14	24	28	22	22	10	68	42	76	124
IV	148	152	164	84	134	80	80	62	96	52	18
V	0	0	2	0	0	0	0	0	0	0	0
Total	6,320	6,292	5,520	5,878	6,130	5,870	6,508	6,820	4,750	6,488	7,198

RUNWAY DESIGN CODE

The RDC relates to specific FAA design standards that should be met in relation to a runway. The RDC takes into consideration the AAC, ADG, and the RVR of the existing and ultimate conditions at the airport. In most cases, the critical design aircraft will also be the RDC for the primary runway.

Current Runway Design Code

Runway 4-22

Runway 4-22 is the primary runway at TXK and should be designed to accommodate the overall airport design aircraft, which has been identified as C-II-2B, represented by the CRJ-700. The runway is 6,601 feet long, 150 feet wide, and has both precision localizer and non-precision GPS instrument approaches. The lowest visibility minimum available at the airport is ½-mile. Therefore, the current RDC for Runway 4-32 is **C-II-2400**.

Runway 13-31

Runway 13-31 is the airport's crosswind runway and is 5,200 feet long and 100 feet wide. Generally, crosswind runways will have an RDC that coincides with the critical general aviation aircraft of the airport. For TXK, the RDC for Runway 13-31 has been identified as B-II-2B and is represented by the Cessna Citation Excel/XLS business jet (ARC B-II) and the Beechcraft King Air 200/300/350 (TDG 2B). The runway is served only by non-precision instrument approaches, with the lowest visibility minimum of 1-mile available. Therefore, the current RDC for Runway 13-31 is **B-II-5000**.

Future Runway Design Code

Runway 4-22

The master plan forecast anticipates some fleet mix changes for the scheduled airline operators over time, resulting from an increase in passenger enplanements. It is anticipated that the airline will gradually transition from the current 65-seat CRJ-700 to the larger, 76-seat ERJ-175, which is an ARC C-III-3 aircraft. At this time, there are no plans to lower the instrument visibility minimum capabilities of the runway. Therefore, the master plan will consider **the future RDC for Runway 4-22 to be C-III-2400**, represented by the Embraer ERJ-175 regional jet.

Runway 13-31

Runway 13-31 is planned to remain as a secondary or crosswind runway for the duration of the planning period. As such, it will continue to be used primarily by aircraft up to and including medium-sized business jets and turboprop aircraft. Its future critical design aircraft is the same as the existing and falls within ARC B-II. The next chapter will explore options for reducing the current 1-mile instrument approach visibility minimum to ¾-mile. Therefore, the **ultimate RDC for Runway 13-31 is planned to be B-II-4000**.

AIRPORT DESIGN SUMMARY

Each runway at an airport is assigned an RDC. The RDC relates to specific FAA design standards that should be planned in relation to each runway, regardless of whether or not the airport currently meets the appropriate design standards (to be discussed in Chapter Three).

Table 2AD summarizes the design aircraft components to be applied at the two runways at TXK. Besides the RDC, the APRC, DPRC, and TDG discussed previously are also noted for each runway.

TABLE 2AD | Runway Design Parameters

Runway	Critical Design Aircraft	RDC	APRC	DPRC	TDG
Existing Conditions					
4-22	CRJ-700	C-II-2400	D/IV/2400 D/V/2400	D/IV D/V	2B
13-31	Citation Excel/XLS	B-II-5000	B/III/4000 D/II/4000	B/III D/II	2B
Future Conditions					
4-22	ERJ-175	C-III-2400	D/IV/2400 D/V/2400	D/IV D/V	3
13-31	Citation Excel/XLS	B-II-4000	B/III/4000 D/II/4000	B/III D/II	2B

Sources: FAA AC 150/5300-13B, Airport Design; Coffman Associates analysis

SUMMARY

This chapter has outlined the various activity levels by demand indicators that might reasonably be anticipated over the planning period. TXK provided an important and convenient air passenger link to the national airspace system for the residents and businesses of the Texarkana metropolitan area. Socioeconomic growth projected for the Texarkana MSA is anticipated to drive future commercial and general aviation activity growth. Passenger enplanements are forecast to grow from 35,699 in 2022 to 48,789 by 2042. Total airport operations are projected to grow from 30,745 in 2022 to 37,258 by 2042. Based aircraft at TXK are forecasted to grow from 63 in 2022 to 84 by 2042, with the fleet mix transitioning to include additional turbine aircraft.

This chapter also presented various opportunities that may increase various elements of this forecast. These include new specialized aviation businesses, an education institution offering flight training programs, and three different air cargo scenarios. Each of these has the potential to affect total enplanements, aircraft operations, based aircraft counts, and even the critical design aircraft. For example, the cargo study outlined different levels of activity that may occur should air cargo operations begin at TXK, with operations ranging from a few hundred operations per year with smaller and mid-sized turboprop aircraft to more than 400 annual operations with larger Boeing jet aircraft. As one or more of these opportunities materialize at TXK, these forecast elements can be updated to reflect the modified condition.

The next step in the planning process is to assess the capabilities of the existing facilities to determine what upgrades may be necessary to meet future demands. The range of forecasts developed here will be taken forward in the next chapter as planning horizon activity levels that will serve as milestones or activity benchmarks in evaluating facility requirements.