



## Chapter Three – Aviation Demand Forecasts

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### 3 | Section 1 – Introduction of Aviation Demand Forecasts

Estimating future growth and aviation demand at the Tracy Airport (TKC) is a crucial element in the master planning process to ensure reasonable allocation of future resources. The TKC air traffic forecast developed in this section is consistent with the Federal Aviation Administration Advisory Circular 150/5070-6B and guidance paper entitled “Forecasting Aviation Activity by Airport.” The forecast was developed using prior traffic estimates, existing historic and forecast aviation data, and interviews with airport users, airport management, and other parties knowledgeable of aviation activities at the Tracy Airport (TKC). In addition, demographic and economic trends for the Tracy, Lyon County, and Southwest Minnesota areas were examined through interviews and published sources and used to develop this forecast. Sources interviewed for this report often provided information based on their knowledge, expertise, and judgment. Judgment of the forecaster was also used to develop the air traffic forecast.

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For the Tracy Airport, specific national, regional, and local data was examined and then combined with previous and current forecasts.

### 3 | Section 2 – Local Data

#### 3.2.1 TKC Aircraft Operations

The FAA has categorized the Tracy Airport as a “Basic General Aviation Airport”. The FAA breaks out all General Aviation Airports into four recently developed sub-categories. These are National, Regional, Local, and Basic, based on the individual airport’s specific role and activity levels. Figure 3-1 describes these General Aviation sub-categories.

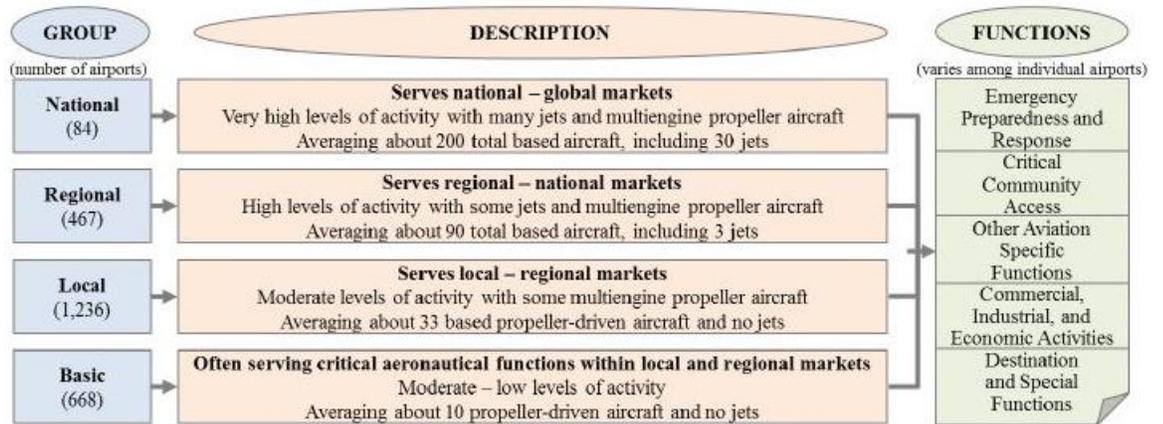


Figure 3-1: General Aviation Airport Categories; Source: FAA “ASSET” Report

The Tracy Airport has no air traffic control tower and no scheduled commercial passenger operations. Initial data about aircraft operations at TKC was obtained from interviews with management, users, and others knowledgeable about traffic at TKC. Traffic estimates developed from these local sources were supplemented by and corroborated with other available data such as published current and historical airport traffic data developed by FAA for TKC and the region. In addition, historic airport fuel sales, regional and local economic trends, and other data were considered in developing base year traffic estimates and forecasting those estimates 20 years into the future.

Figure 3-2 below shows the most current FAA 5010 Airport Master Record information available for TKC for aircraft operations and based aircraft.

Based Aircraft	Number
Single Engine:	10
Multi Engine:	0
Jet:	0
All Other:	0
<b>Total</b>	<b>10</b>
Operations	
Air Carrier/Air Taxi:	0
General Aviation - Local:	730
General Aviation - Itinerant:	2,310
Military:	0
<b>Total</b>	<b>3,040</b>



Figure 3-2: Based Aircraft and Operations at Tracy Airport; Source: FAA Airport Master Record (Form 5010) for TKC, 2016 (Note: Operations estimates are for the 12 months ending 06/30/2016)

The FAA develops Terminal Area Forecasts (TAF) for all certified airports, estimating and forecasting numbers of based aircraft, operations by type of traffic, and passenger enplanements. In general, TAF data for small airports is only as reliable as what is reported. We were unable to confirm the source and veracity of these

TAF estimates (especially the pre-2000 estimates for operations), although interviews with current and past airport management and long-time airport users indicate that TKC traffic was generally greater in the past. Historic TAF estimates of TKC aircraft operations and based aircraft are presented in Figure 3-3.

Years	Local GA Operations	Total Operations	Based Aircraft
1991-1993	7,700	9,720	10
1994-1996	7,700	9,700	6 to 7
1997-1999	9,925 to 10,420	12,125	6 to 7
2000-2004	3,307	4,040	6 to 7
2005-2016	730	3,040	6 to 10

Figure 3-3: TAF Estimates of TKC Historical Aircraft Operations and Based Aircraft; Source: FAA Terminal Area Forecasts

### 3.2.2 Base Year Traffic Estimates

The type of air traffic using TKC includes local and visiting (itinerant) General Aviation (GA) flights, crop-spraying operations, medivac services, and occasional charter flights. No scheduled commercial or military traffic uses TKC.

Local GA traffic consists of recreational flying with single engine aircraft such as single-engine Pipers and Cessnas. In addition, one Tracy resident is seeking certification for a flight school at TKC.

While the FAA Airport Master Record and Terminal Area Forecast for TKC report 10 based aircraft in 2017, FAA’s National Based Aircraft Inventory indicates 12 aircraft currently based in TKC. This national database is considered the authoritative source. Base year (2017) local GA traffic estimated for this report is from 12 based aircraft performing an average 120 annual operations per aircraft.

Itinerant GA traffic consists of visiting traffic that is not considered scheduled commercial or military. This includes recreational traffic, crop-spraying operations, medivac operations, and occasional business and charter traffic.

- Recreational itinerant GA traffic is from visiting recreational flyers generally in single-engine aircraft, including those attending a two-day fly-in in the fall.
- Crop-spraying operations bring a lot of traffic to TKC in summer, peaking in late summer. Aircraft used for these operations include Air Tractors (series 400 to 800) and Thrush Commanders. An estimate of crop-spraying flights at TKC in 2017 is 6,100 operations between June and September, with most of the traffic occurring between mid-July and the end of August.
- Medivac operations occur year around to service the Stanford Tracy Clinic and the Avera Regional Medical Center in Marshall. Aircraft used are mainly EC-145 helicopters. When weather precludes helicopter use, KingAir 200 aircraft are used. Medivac traffic in 2017 is estimated at 80 operations.

- Occasional charter and business traffic includes charters using KingAir 200 and KingAir 90 aircraft to bring medical professional to and from the Sanford Tracy Clinic (about 2 flights per month for an estimated 48 operations in 2017). Regional businesses travel to TKC with business-owned aircraft, which are generally single-engine.

Figure 3-4 presents base year estimates for 2017 at TKC.

Based Aircraft	
Single-Engine	12
Twin-Engine	0
Helicopter	0
<b>Total Based Aircraft</b>	<b>12</b>
Operations	
General Aviation Local	1,440
General Aviation Itinerant	6,338
<b>Total Aircraft Operations Forecast</b>	<b>7,778</b>
Instrument Operations	86

Figure 3-4: 2017 Base Year Traffic Estimates at TKC;  
Source: Bollig Engineering Team, April 2018

While the Local GA Operations estimates are similar to estimates in the FAA TAF for TKC, the Itinerant GA Operations in this estimate are substantially higher. The activity fueling that large increase in Itinerant GA Operations is crop-spraying activity at TKC. There are currently two companies providing crop-spraying services in the surrounding area, and while neither is based at TKC, they are quite active at TKC during the summer season, using 4 or more aircraft each performing 10 to 14 flights per day in peak season (late July through end of August). Of the Itinerant GA Operations presented here, 6,100 are from crop-spraying activities. These services can fluctuate somewhat from year to year with farm activities and finances, weather, and other factors, but this estimate represents the activity that occurred in 2017.

### 3.2.3 Based Aircraft

The 2017 base year estimate for aircraft based at Tracy is 12. All based aircraft are privately-owned for recreational purposes. This estimate matches the based aircraft estimate in the FAA’s National Based Aircraft Inventory data for TKC.

### 3.2.4 Aircraft Operations Versus Based Aircraft

The ratio of aircraft operations in relation to the total number of based aircraft is sometimes used to determine the reasonableness of forecast aircraft operations estimates at an airport. FAA Order 5090.3C, *Field Formation of the National Plan of Integrated Airport Systems (NPIAS)*, Chapter 3, Section 3-2(c) describes general guidelines that help to identify reasonable ratios of based aircraft versus operations for forecast purposes. General FAA guidelines suggest reasonable mediums of 250

The 2017 base year estimate for aircraft based at Tracy is 12.

operations per based aircraft for rural general aviation airports with little itinerant traffic and 350 operations per based aircraft for busier general aviation airports with more itinerant traffic. These “rule of thumb” ratios should be augmented with information from local representatives regarding the type and use of aircraft based at the facility, typical itinerant traffic and other local concerns.

Figure 3-5 below compares total operations per based aircraft for the Great Lakes Region, Minnesota, and TKC from the FAA TAF, the Minnesota State Aviation System Plan (MSASP), and the results of this report. Total operations per based aircraft for TKC are higher than the rule of thumb, described above, in both the Minnesota State Aviation System Plan (2015) and base year estimates (2017) developed for this forecast. It is uncertain whether the FAA TAF data considers changes in agriculture that could impact small rural airports such as TKC. Summer operations for crop-spraying and seeding create many operations on an airport and can quickly inflate the operations per based aircraft metric at airports with few based aircraft. Base year estimates for this TKC forecast indicate 120 local GA operations per based aircraft, and 648 total operations per based aircraft for 2017. The high number of GA operations per based aircraft can be directly attributed to crop-spraying and seeding activity in the Tracy area.

Area	Source	Year	Based Aircraft	Total Operations	Operations per Based Aircraft
Great Lakes Area	FAA Terminal Area Forecasts	2017	28,538	14,909,497	522
Minnesota	FAA Terminal Area Forecasts	2017	4,462	2,024,166	454
Tracy	FAA Terminal Area Forecasts	2017	10	3,040	304
Minnesota	MN Aviation System Plan	2015	5,500	1,870,000	340
Tracy	MN Aviation System Plan	2015	7	3,169	453
Tracy	Bollig Engineering Team	2017	12	7,778	648

Figure 3-5: Comparison of Total Operations per Based Aircraft

### 3.2.5 Hangar Availability at TKC

The lack of availability of hangar space at an airport can constrict short term growth. Demand-fueled growth will continue when hangars and other facilities are added to meet the demand. TKC has hangar space for about 10 aircraft and is generally fully utilized. The airport does not currently have a wait list for hangar space, but they do get inquiries about space, and a vacancy is generally filled quickly. In addition to inquiries from GA pilots, interest in basing an operation with three aircraft has been expressed by a commercial crop-spraying operation.

Two aircraft are currently stored in the airport’s conventional hangar. The existing t-hangar, which holds eight aircraft, was built in the 1950’s and is in poor condition. The airport plans to replace it with a new t-hangar with storage capacity for ten aircraft in the next few years and anticipates that the improved condition and increased capacity of the new hangar will attract additional based aircraft.

In addition to inquiries from GA pilots, interest in basing an operation with three aircraft has been expressed by a commercial crop-spraying operation.



A review of registered aircraft records shows 67 aircraft registered to residents of Lyon County. While there are competing airports in Lyon County, such as the Marshall Airport (46 of these aircraft are registered to Marshall residents), these records indicate a nearby source of potential TKC tenants.

### 3.2.6 Fuel Sales

Fuel sales are another indirect indicator that can help to determine historical trends in activity at an airport. Fuel sales are influenced by many factors, including the price of fuel, changes in airport regulations, and other conditions. However, changes in amount of fuel sold at an airport can be a general indicator of activity at that airport.

Only 100LL aircraft fuel is sold at TKC, and aircraft needing Jet A fuel must make arrangements for a fuel truck to come to the airport or must go elsewhere to fill up. Aircraft using TKC requiring Jet A fuel are mainly turbine helicopters and crop-spraying aircraft. Fuel sales data as shown in Figure 3-6 below indicated an annual average growth in 110LL fuel sales of about 50%. Tracy airport management has discouraged users from keeping individual fuel tanks at the airport over the past few years, and this change may also have created more demand for on-airport fuel sales during the period reported below.

Year	Avg. Price per Gallon	Number of Gallons	Change from Prior Year
2013	\$5.95	548	
2014	\$5.93	676	23.4%
2015	\$5.65	1,223	80.9%
2016	\$5.50	1,015	-17.0%
2017	\$4.76	2,167	113.5%



Figure 3-6: Fuel Sales at TKC – 2013 to 2017; Source: City of Tracy, 2018

### 3.2.7 IFR Flight Information In and Out of TKC (Traffic Flow Management System Counts)

TKC has limited GPS instrument approach procedures (IAPs) to allow instrument flight in and out of the airport, however a few aircraft do use that procedure to land there. The following information comes from all instrument flight plans filed with the FAA that originated from or terminated at TKC during 2017. This information was obtained through a private source that utilizes the FAA Traffic Flow Management System Counts (TFMSC). Traffic Flow Management System Counts are designed to provide information on traffic counts by airport and includes various data about the types of aircraft, point of departure or arrival, N-numbers, owners and other various data. It captures data for flights that fly under Instrument Flight Rules (IFR) and are captured by the FAA’s enroute computers. VFR and some non-enroute IFR traffic is excluded. TFMSC source data are created when pilots file flight plans and/or when flights are detected by the National Airspace System (NAS), usually via RADAR.

**Tracy Airport IFR Flight activity summary for 2017:**

- 86 IFR flight plans were filed to or from Tracy between January 2017 and January 2018.
- The majority of IFR flights originated or terminated in Minnesota or South Dakota. Other states included:
  - North Dakota;
  - Wyoming; and
  - Nebraska.
- In 2017, the majority of aircraft using IFR flights at Tracy were KingAir 90, 200, and 350 (41 operations) and single engine aircraft (25 operations). These flights are by medivac, charter, and locally based aircraft. Crop-spraying is done on Visual Flight Rules.

**3.2.8 TKC Aircraft Fleet Mix**

To determine the types of aircraft operating in and out of Tracy Airport, interviews were conducted with airport management and users. Augmenting this information was the collection of all IFR data from the last year for all IFR flights originating or ending at Tracy Airport.

The clear majority of aircraft currently operating in and out of TKC are of the single engine, piston powered type. IFR records indicate aircraft such as Beech A36, Cessna 172, Piper Cherokee and Cheyenne, Cirrus 22, Maule, and KingAir 90 and 200 frequent the airport. Except for the KingAirs and the Piper Cheyenne, those flying IFR into TKC are all single engine aircraft.

Aircraft based at TKC are all single-engine aircraft and include Piper PA 22 (Tri-Pacer), Piper PA28 (Cherokee), Beech Bonanza K35, Stinson Voyager 108, Cessna 172, Mooney, and experimental aircraft. Other single engine piston aircraft that have been observed or known to frequent TKC include agricultural aircraft, such as Air Tractors (400 through 800 series), and Thrush Commanders. In addition to KingAir 200s, regional medivac services use EC-145 helicopters. The vast majority of aircraft use at TKC is by aircraft that fall within or below the FAA Airport Design Group (ADG) B-II category.

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**3 | Section 3 – Regional Data****3.3.1 Great Lakes Region FAA TAF Stats**

As a requirement of the FAA's NPIAS program, TAF statistics for all NPIAS airports in the United States are projected forward, not only from a local level, but regional and national level as well. The current FAA TAF numbers for past and forecast based aircraft within the Great Lakes Region can be seen in Figure 3-7 below. The FAA forecasts a modest 0.60% average annual overall growth rate for based aircraft throughout the Great Lakes Region for the next 25 years. This growth rate varies from airport to airport given local factors, such as flight schools or charter

operations, however, as a gross estimate of based aircraft growth rate on a local level without obvious influential anomalies, it is useful.

Fiscal Year	Local Operations		Total Operations		Based Aircraft		
	Great Lakes	Minnesota	Great Lakes	Minnesota	Great Lakes	Minnesota	TKC
2013	6,484,992	839,835	15,305,524	2,006,777	27,262	4,105	7
2014	6,319,944	820,805	14,927,525	1,968,898	27,572	4,199	9
2015	6,311,914	832,608	14,849,262	2,002,373	27,027	4,306	9
2016	6,257,193	837,467	14,868,182	2,009,428	28,392	4,472	10
<b>Forecast</b>							
2017	6,290,244	847,621	14,909,497	2,024,166	28,538	4,462	10
2018	6,320,622	853,255	15,020,100	2,036,438	28,733	4,480	10
2019	6,341,131	857,685	15,068,505	2,046,194	28,914	4,496	10
2020	6,362,370	862,084	15,104,858	2,054,200	29,106	4,510	10
2025	6,464,909	884,927	15,334,817	2,101,538	30,035	4,589	10
2030	6,573,495	908,660	15,794,599	2,176,535	30,933	4,674	10
2035	6,690,332	933,862	16,281,130	2,255,031	31,851	4,758	10
2040	6,817,009	961,464	16,803,421	2,339,660	32,785	4,850	10
2045	6,954,045	991,248	17,363,055	2,430,153	33,718	4,933	10
<b>Average Annual Growth Rate:</b>							
<b>Historic</b>							
2013 to 2017	-0.75%	0.24%	-0.65%	0.22%	1.18%	2.12%	9.92%
<b>Forecasted</b>							
2017 to 2045	0.36%	0.56%	0.55%	0.66%	0.60%	0.36%	0.00%
<b>All</b>							
2013 to 2045	0.22%	0.52%	0.40%	0.60%	0.67%	0.58%	1.24%

Figure 3-7: Great Lakes Region and Minnesota Operations and Based Aircraft Forecast, 2013-2045; Source: FAA, Terminal Area Forecast Data, 2018

The FAA’s TAF also predicts total airport operations by region as well. This statistic has the same fundamental limitations when overlaying it onto a local forecast as does the based aircraft TAF forecasts, but as a rule, it is less susceptible to non-specific influences than the based aircraft forecast since based aircraft numbers are more dependent upon local airport influences than total operation numbers are. The exception is the case of an additional on-field flight school or similar business being developed. The FAA TAF anticipates a 0.55% average annual overall growth rate in the total airport operations within the Great Lakes Region for the next 25 years (see Figure 3-7).

Similar to the regional Great Lakes FAA TAF statistics, the FAA TAF also breaks out the same type of data for each of the states. Extrapolating the FAA TAF forecasts for GA local and itinerant operations for Minnesota throughout the forecast period, an average annual increase of 0.66% is forecast for total statewide aircraft operations. Utilizing the statewide based aircraft data in the same format, an average annual growth rate of 0.36% is forecast.

### 3.3.3 Minnesota State Aviation System Plan Studies

The State of Minnesota produced an exhaustive statewide aviation system plan that was last updated in 2013. Although much of the data gathered and used within the original study is nearly 5 years old, it is still very relevant as there have been no major economic or industry shifts in the recent years that would have tremendously skewed existing data. The Forecast element of the study covered within Chapter 3 and the accompanying Appendix “C” highlighted several industry-related topics and forecasts which are relevant to the Tracy Master Plan. The methodologies that were used to generate the forecasts within the Minnesota State Aviation System Plan are similar to those employed within this Tracy forecasting chapter. The methods



utilize several bottom-up, top-down, and individual airport circumstances to augment trending data. A summary of the State of Minnesota estimates for both based aircraft and operations can be found in Figure 3-8 below. Comparative estimates of the difference between the forecast average annual growth rate of the FAA TAF forecasts and the State of Minnesota System Plan forecasts are relatively minimal, and the two sets of data complement one another, lending to their overall validity. The State of Minnesota average based aircraft growth rate over the majority of the forecast period is 1.0%, while the operations growth rate is estimated at 1.6%. In addition to this data, the Minnesota System Plan further broke out airport operations estimates by class of aircraft. In particular, single engine piston aircraft were estimated to grow at a slower overall rate than other class of aircraft over the forecast period, at 0.8%. This estimate is much more in tune with the type of operations exhibited at the Tracy Airport.

GA Based Aircraft and Operations		
Year	Based Aircraft	Operations
2010	5,100	1,743,000
2015	5,500	1,870,000
2020	5,700	1,978,000
2030	6,100	2,388,000
Average Annual Growth Rate		
2010-2015	1.4%	1.4%
2010-2020	1.1%	1.3%
2010-2030	1.0%	1.6%

Figure 3-8: State of Minnesota Based Aircraft and Operations Forecasts  
 Source: Minnesota State Aviation System Plan, 2013

The Minnesota System Plan also provided some forecast data for individual GA airports as well. The results for the based aircraft forecasts that were published in the system plan can be found in Figure 3-9 below. The results of the aircraft operations forecast can be found in Figure 3-10. Estimates of based aircraft and aircraft operations for the Minnesota System Plan utilized existing 5010 data at the time of the report. As explained earlier in this forecast, the 5010 data for both operations and based aircraft was re-evaluated as part of this forecasting effort. The Minnesota System Plan utilized the lower operations numbers that were found for the short period in the 5010 Master Records for Tracy from 2011 to 2014. This is actually fortunate, because those numbers reflected much more accurately the actual estimated number of operations at that time. In reference to the based aircraft however, the data used within the Minnesota System Plan was quite different from what the actual number of based aircraft was, and currently is. The primary reason for this disparity is that the based aircraft information recorded as part of the 5010 Master Record for Tracy (which was the primary source of inventory data used in reference to Tracy in the system plan) was different from the much more accurate FAA basedaircraft.com data. This is not a reflection of erroneous data collection from the system plan, but primarily because the FAA basedaircraft.com data was most likely not even available at that time.

Airport Name	2015 As Reported	2020 Estimated	2030 Estimated
Tracy	7	8	8

Note: Numbers based on a generic growth rate of between .001% and .015%  
 Figure 3-9: Minnesota State Aviation System Plan Based Aircraft Forecasts for TKC;  
 Source: Minnesota State Aviation System Plan, 2013

Airport Name	2015 As Reported	2020 Estimated	2030 Estimated
Tracy	3,169	3,248	3,951

Note: Numbers based on a generic growth rate of between .006% and .015%  
 Figure 3-10: Minnesota State Aviation System Plan Aircraft Operations Forecasts for TKC  
 Source: Minnesota State Aviation System Plan, 2013

### 3.3.4 Regional Demographic and Socioeconomic Influences

The US census estimates the 2017 population of Minnesota 5,576,606 people, and Lyon County in particular at 25,831 with a median household income in 2016 of about \$52,000. There are approximately 10,300 households in Lyon County in 2016. As a northern mid-western state, Minnesota’s population and economic workforce has similarities with both the more agriculturally based surrounding states, such as North Dakota, and with some of the more historically manufacturing based states, such as Michigan. Lyon County and Tracy, however, are much more influenced by the agricultural market trends, like its immediately adjacent geographic neighbors within and outside Minnesota.

Figure 3-11 below shows the recent changes in real gross domestic product by state and region throughout the US since 2014. As can be seen from the graphic, Minnesota shows a recent GDP increase of 1.4%. This present increase is relatively

stable and healthy. Volatile markets can be exemplified by looking at the stats for nearby North Dakota, which showed a recent increase of 6.3%, due to the Bakken oil boom, which has most assuredly cooled off by now, and is most likely in GDP recession.

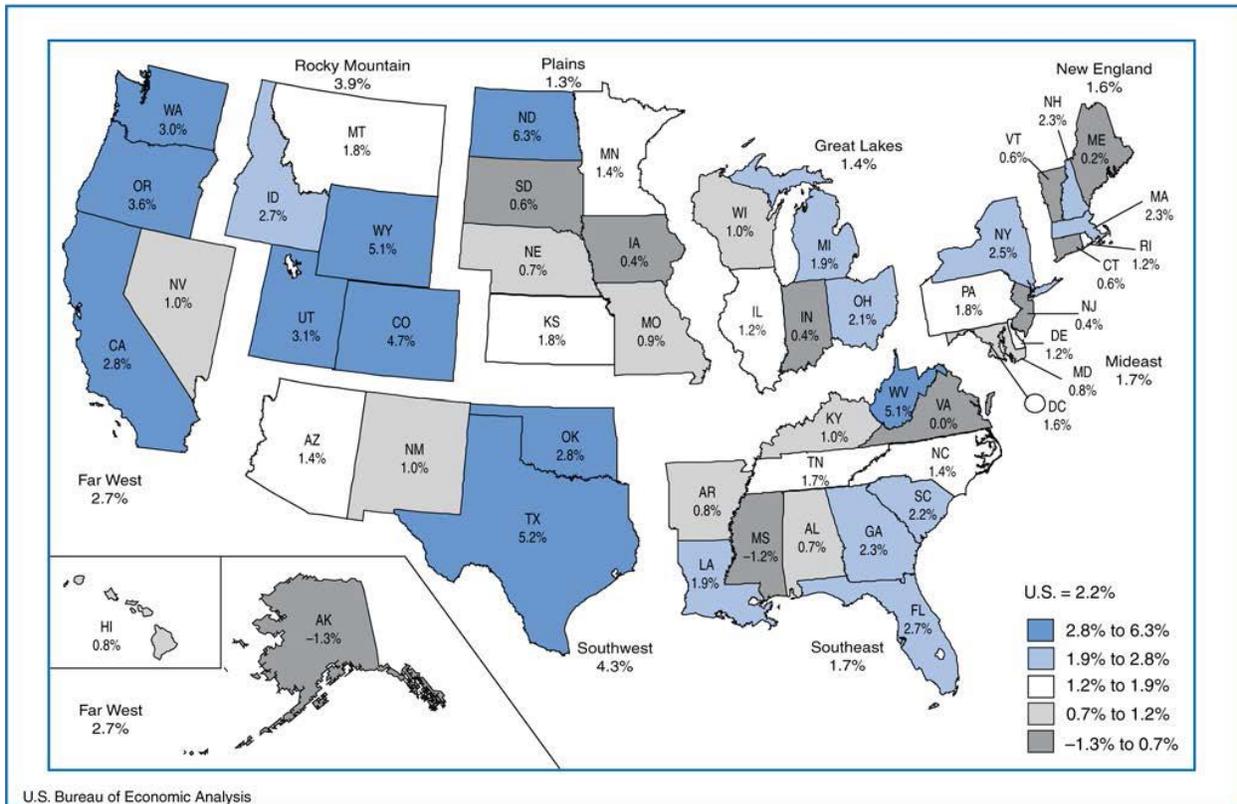


Figure 3-11: Percent Change in Real Gross Domestic Product by State, 2014

State, regional, and county historical and forecast average annual employment trends can also be useful when melding realistic expectations for overall impacts to operations at a facility like Tracy Airport. Comparative historical data over a recent 10-year span between Lyon County and the State of Minnesota can be seen in Figure 3-12 below. This data suggests that Lyon County is losing jobs, in contrast to job growth in the state as a whole. Forecasts of employment change in Lyon County continue a negative trend.

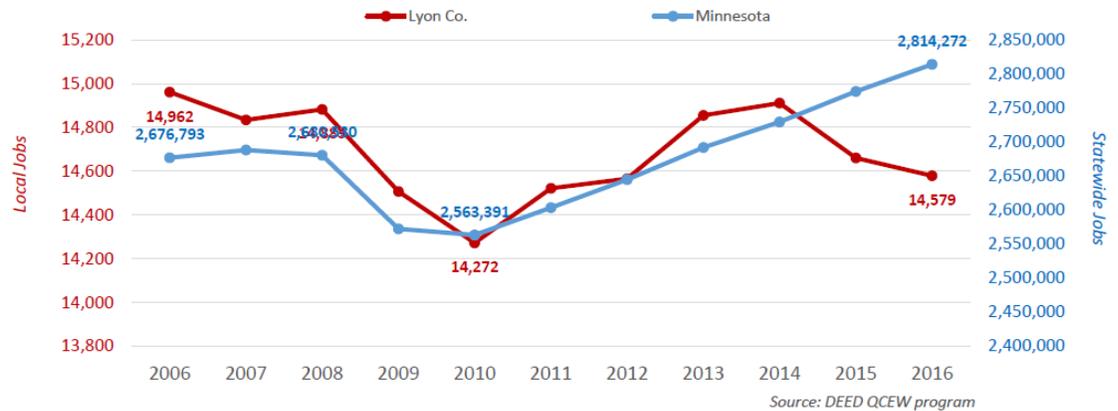


Figure 3-12: Industry Employment Statistics – Statewide and Lyon County, 2006-2016; Source: Minnesota Department of Employment and Economic Development, 2018

### 3 | Section 4 – National Data and Trends

#### 3.4.1 Factors Influencing the Industry

An important part of developing trends for statistical purposes is analyzing relevant issues from a national perspective, and then applying them, if warranted, to the regional and local perspective. One of the most reliable and important tools for this purpose is the information collected and analyzed by the FAA as part of its FAA Aerospace Forecast (2018-2038), and the NPIAS-driven TAF reports.



The Aerospace Forecast report clearly states that the U.S. is still recovering well from the most serious economic downturn since WWII, and the slowest expansion in recent history. There is no indication that the U.S. economy will backslide, and all indications are that aviation will continue to grow. The recent sharp decline in oil prices is acting as a catalyst for moderate aviation industry growth.

The report states that oil prices rose to about \$51/barrel in 2018 and are forecast to rise to around \$100 per barrel by 2030 and rise to \$119/barrel by 2038. The forecasted growth for general aviation in the United States predicts that the GA fleet will remain stable (see Figure 3-13) and GA hours flown projected to increase an average of 0.8%/year (see Figure 3-14).

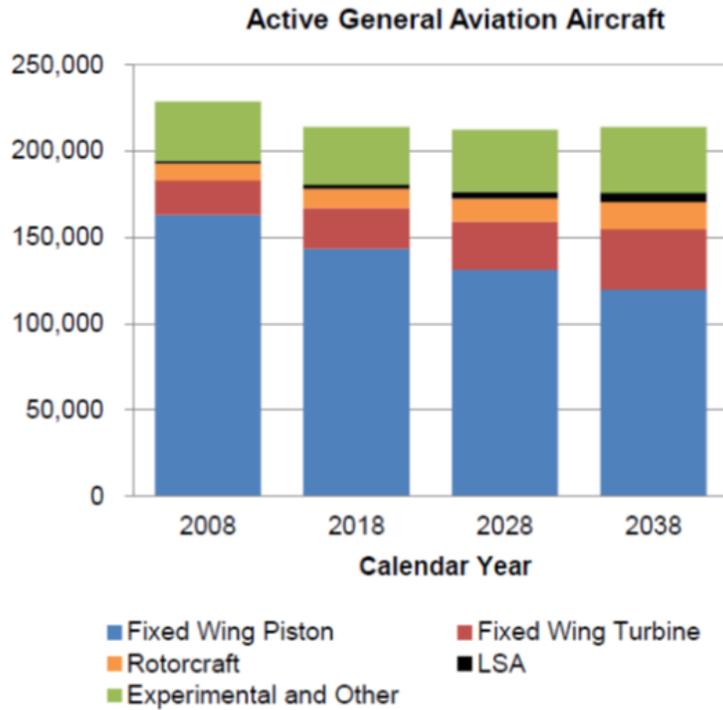


Figure 3-13: United States Aerospace Forecast - Active GA Fleet Estimates;  
Source: FAA Aerospace Forecast – 2018 to 2038

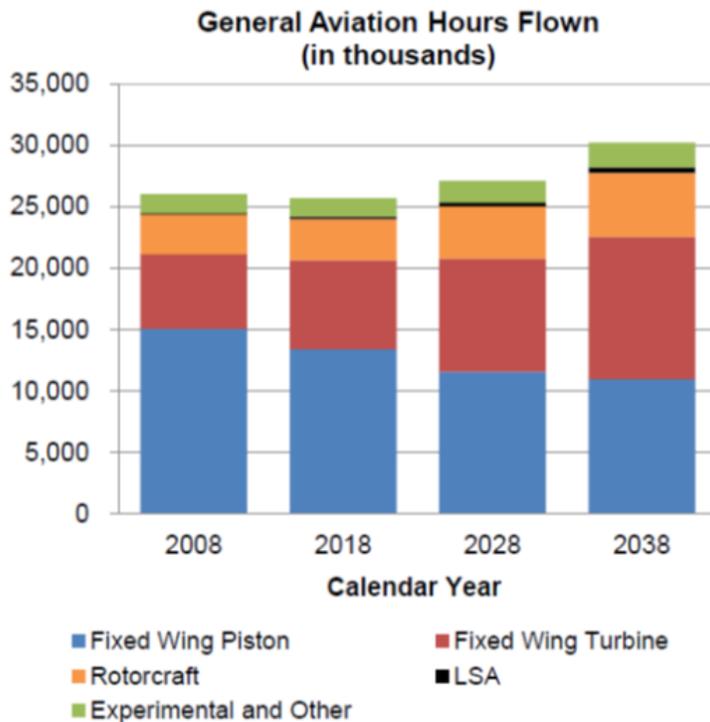


Figure 3-14: United States Aerospace Forecast - GA Hours Flown;  
Source: FAA Aerospace Forecast – 2018 to 2038

Another metric which can have a lesser impact upon GA activity levels at airports such as Tracy is the trend of numbers of active pilots (see Figure 3-15). The industry is forecasting a slight decrease in active GA pilots over the period forecast, but a robust increase in the numbers of airline transport pilots. This is due to the airline pilot shortage that the US is currently experiencing. Active sport pilots are expected to increase about 3.3% over the forecast period. When combining all the statistics, the relevancy to the Tracy Airport forecasts is that the industry trends in pilot numbers will likely have no detrimental effect on positive growth at Tracy.

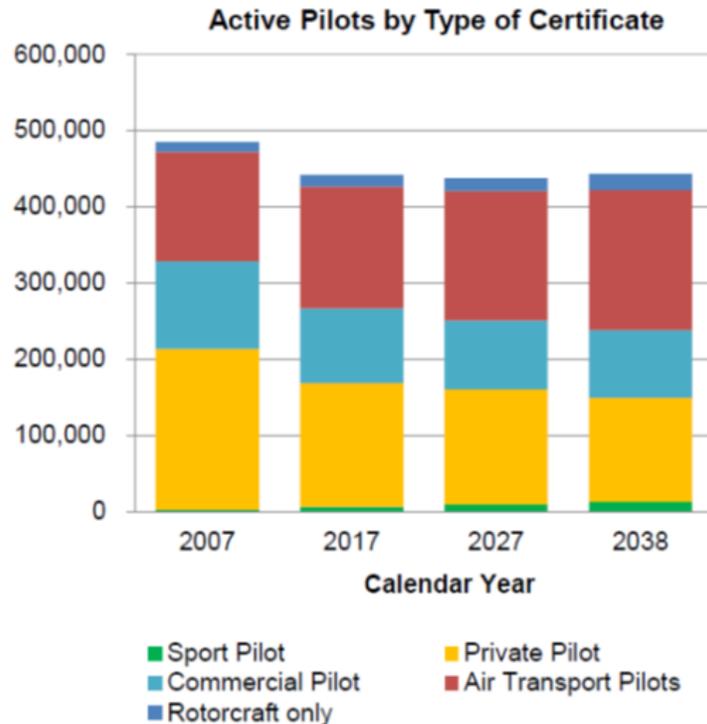


Figure 3-15: United States Aerospace Forecasts for Active Pilots;  
Source: FAA Aerospace Forecast – 2018 to 2038

### 3.4.2 National FAA TAF Stats



The latest FAA TAF forecasts some interesting data for the U.S. Total operations at all airports are expected to rise 0.8%. Itinerant GA operations are forecast to increase by 0.3% nationwide, with local GA operations expected to increase by 0.4%. Based aircraft are forecast to increase by 0.8% nationwide.

### 3 | Section 5 – Other Local and Regional Factors

When forecasting future operations and based aircraft at GA airports, it is important to examine other potential influences and desires that could affect overall development. Some of the items to consider may have unquantifiable metrics, while others may factor directly into the forecasting formula. The smaller the airport, the larger the potential impact on traffic of these local and regional factors. At Tracy in particular, there are two specific issues that need to be taken into consideration when developing air traffic forecasts.

#### 3.5.1 Desires of Airport Management and Local Community

In discussions with airport management and interested local parties, and after reviewing records of recent TKC airport planning meetings, it is evident that strong efforts are underway to attract additional based aircraft, business interests and air traffic to TKC. Future CIP plans for TKC include increasing the quality and number of available hangar parking, improving hangar access, and extending the runway. The current master planning process will likely recommend other improvements that will positively impact air traffic at TKC.

#### 3.5.2 Corn and Crop Futures

With the regional economy heavily dependent of agriculture, changes to that sector can strongly influence demand for air traffic at TKC. Crop prices (especially corn) is an important factor in the health of agriculture in the area. Corn prices can fluctuate rather volatily, and recent years have seen them near \$8.00/bushel, but more recent prices have seen them as low as \$2.60/bushel. Many farmers consider \$2.80/bushel a common “break even” harvest price. While it is difficult to predict commodities’ future markets in the best of times, recent uncertainty about possible tariffs on corn, soy beans and other crops make it near impossible to forecast the future of agriculture in SW Minnesota and Lyon County. Figure 3-16 below shows historic corn price fluctuations.



Figure 3-16: Corn Price Fluctuations, 1970 to 2015

The largest proportion of air traffic at TKC is from crop-spraying and seeding activities - about 85% of total operations in 2017. Two companies currently provide these services in the Lyon County area using TKC, although they do not base their aircraft at the airport. Discussions with these companies indicate that TKC is desirable because it has easy access, low traffic, is in good condition, and is close to many of their clients in the region. One of those companies is based at a private air strip not far from TKC and would consider basing at TKC if there was available hangar space and if Jet A fuel were available at the airport. Regardless of changes in agriculture due to potential tariff changes, some crop-spraying and seeding activity would continue in Lyon County and the region. It is likely that this type of traffic would grow at TKC with appropriate improvements to the facilities there.

### 3 | Section 6 – Existing TKC Forecasts

#### 3.6.1 FAA TAF for TKC

The FAA’s official forecast for TKC, and for all other airports as well, is provided by the annual FAA Terminal Area Forecast (TAF). FAA TAF information has been utilized in several previous sections of this forecast chapter.

The FAA usually forecasts future aircraft operations numbers for smaller GA airports in the TAF by simply repeating the same existing operations numbers over the forecast period, or “flat line forecasting”. This repetition is due to the level of uncertainty with the estimated operations and based aircraft numbers gathered during the 5010 Inspection process. It is also due to the overwhelming work that would be required by FAA staff to provide individual and independent forecasts for each and every small airport. This is also the reason why the FAA TAF for Tracy appears to show no growth. (See Section 3.3.1 for additional information regarding the TKC TAF).

The FAA TAF and the associated annual summary report provide forecasts for multiple levels, from nationwide to region and down to the individual airport level. The types of operations that the TAF forecasts for individual airports depends upon the complexity of the airport, with large commercial service airports having more complex and reliable data, and smaller GA airports having less. For the Tracy Airport, the TAF historical and forecast aircraft operations and based aircraft can be seen in the following Figure 3-17.

Fiscal Year	Itinerant GA Operations	Local GA Operations	Total Operations	Based Aircraft
2010	2,310	730	3,040	6
2011	2,310	730	3,040	6
2012	2,310	730	3,040	6
2013	2,310	730	3,040	7
2014	2,310	730	3,040	9
2015	2,310	730	3,040	9

Fiscal Year	Itinerant GA Operations	Local GA Operations	Total Operations	Based Aircraft
2016	2,310	730	3,040	10
2017*	2,310	730	3,040	10
2018*	2,310	730	3,040	10
2019*	2,310	730	3,040	10
2020*	2,310	730	3,040	10
2025*	2,310	730	3,040	10
2030*	2,310	730	3,040	10
2035*	2,310	730	3,040	10
2040*	2,310	730	3,040	10
2045*	2,310	730	3,040	10

\*Indicates forecasted information.

Figure 3-17: FAA TAF Historical and Forecast Air Traffic at TKC;

Source: FAA Terminal Area Forecasts, 2018

### 3 | Section 7 – Forecasting Methodology

This air traffic forecast was developed according to the FAA AC 150/5070-6B, the current guidance at the time this report was written. That guidance suggests that indicators dealing with local and national aviation factors as well as socioeconomic factors be considered in forecast development. In addition, professional judgment must be employed in the application of forecast methodologies. The following table presents several annual growth rates and trends that were previously discussed in this chapter and were considered in developing the TKC forecast.

Existing Forecasted Aviation Data			
Area	Indicator	Source	Average Annual Growth
State	Minnesota aircraft operations forecast average (All Aircraft) (2010-2030)	MN State Aviation System Plan	1.60%
State	Minnesota aircraft operations forecast average (Single Engine Piston) (2010-2030)	MN State Aviation System Plan	0.80%
Local	Tracy Airport aircraft operations forecast average (2010-2030)	MN State Aviation System Plan	1.50%
State	Minnesota based aircraft forecast average (2010-2030)	MN State Aviation System Plan	1.00%
Local	Tracy Airport based aircraft forecast average (2010-2030)	MN State Aviation System Plan	0.71%
National	GA hours flown forecast (2018-2038)	FAA Aerospace Forecast	0.80%

Existing Forecasted Aviation Data			
Area	Indicator	Source	Average Annual Growth
Regional Minnesota	SW Minnesota Employment Projections (2014-2024)	MN Dept of Employment and Economic Development	1.00%
Regional	Average GDP Increase - State of Minnesota, 2014	US Dept of Commerce	1.40%
Local	Lyon County Population Growth - 2000-2016	MN Dept of Employment and Economic Development	1.10%
Local	Lyon County Population Projections - (2020-2040)	MN Dept of Employment and Economic Development	-2.50%

Figure 3-18: Specific Indicators Used in Consideration for TKC Forecasts

### 3 | Section 8 – TKC Forecasts

The growth rates for air traffic activity suggested by indicators in Figure 3-18 above seem reasonable at first perspective. However, it may not be appropriate to fully weight the negative indicator for future population change in Lyon County when considering information obtained from recent interviews with TKC management and users. Recent local efforts to increase growth at the airport, including potential basing at TKC of a certified flight school and a commercial crop-spraying operation, tends toward a more positive growth rate for air traffic activity at TKC.

The data from Figure 3-18 most relevant and reasonable to use in the TKC forecast are the aircraft operations forecast growth rate for TKC (1.5%), and the TKC based aircraft forecast growth rate (0.71%) from the 2012 Minnesota State Aviation System Plan. These are the growth rates used for this forecast.

Local operations are estimated to increase dramatically at TKC within the next 5 years... Therefore, short-term growth (2022) has been increased to 16 based aircraft and 7,019 local GA aircraft operations.

Air traffic forecasts are generally unconstrained and indicate growth in demand, regardless of whether facilities are or will be available to meet that demand. This allows for planning of facilities to accommodate future aviation demand. Interviews undertaken for this forecast revealed demand for, and potential basing of commercial and flight instruction operations once TKC facilities can accommodate them. Local operations are estimated to increase dramatically due to a crop spraying business being based at TKC within the next 5 years, accounting for about 5,400 additional local operations per year. Itinerant operations are expected to drop by a similar amount in 2022 to account for the shift of some crop-spraying operations from itinerant to local. Therefore, short-term growth (2022) of based aircraft and corresponding local GA aircraft operations has been increased to 16 based aircraft and 7,019 local operations respectively.

Figure 3-19 shows the forecasts developed within this master plan over the short, intermediate, and long-term periods. A comparison of the FAA's current TAF forecasts with this Master Plan forecast is also shown. Substantial deviation from the FAA's TAF is noticeable; however, the explanations for these differences are straightforward.

As discussed earlier, TAF current year data for small airports is often estimated without detailed investigation into actual airport activities. The research and investigation for this report into actual aircraft operations at TKC reveals far more itinerant GA activity than reported in TAF, mainly from crop-spraying and seeding activities. In addition, FAA often uses a flat line forecast for small airports as they have at TKC.

Tracy Airport Master Plan Based Aircraft Forecasts				
	Base Year (2017)	Short Term Forecast (2022)	Intermediate Term Forecast (2027)	Long Term Forecast (2037)
Single	12	16	17	18
Twin	0	0	0	0
Helicopter	0	0	0	0
<b>Total Based Aircraft Forecast</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>18</b>
FAA TAF Based Aircraft forecast	10	10	10	10
<b>% Difference Between Forecast and TAF</b>	<b>20%</b>	<b>60%</b>	<b>66%</b>	<b>78%</b>

Tracy Airport Master Plan Aircraft Operations Forecasts				
	Base Year (2017)	Short Term Forecast (2022)	Intermediate Term Forecast (2027)	Long Term Forecast (2037)
GA Local	1,440	7,019	7,561	8,775
GA Itinerant	6,338	1,361	1,466	1,701
<b>Total Aircraft Operations Forecast</b>	<b>7,778</b>	<b>8,379</b>	<b>9,027</b>	<b>10,476</b>
Current TAF Aircraft Operations	3,040	3,040	3,040	3,040
<b>% Difference Between Forecast and TAF</b>	<b>156%</b>	<b>176%</b>	<b>197%</b>	<b>245%</b>

Tracy Airport Instrument Approach Procedures Forecasts				
	Base Year (2017)	Short Term Forecast (2022)	Intermediate Term Forecast (2027)	Long Term Forecast (2037)
<b>Total Aircraft Operations Forecast</b>	<b>86</b>	<b>93</b>	<b>100</b>	<b>116</b>

Figure 3-19: TKC Aviation Forecasts Through 2037; Source: Bollig Engineering Team, April 2018

### 3 | Section 9 – Critical Aircraft

The Tracy Airport currently has an Airport Reference Code (ARC) of B-II. Most of the operations at TKC are from crop-spraying aircraft such as Air Tractors (Series 400 to 800), which are classified as ARC A-II. The aircraft currently based at TKC are fixed-wing, single-engine aircraft such as the Piper PA28 and Stinson Voyager 108 (ARC A-I). However, Beechcraft KingAir 90 and 200 models (B-II, Small) frequent TKC providing medivac and charter service to the area. In 2017, it was estimated these larger aircraft had 56 operations at Tracy Airport. While current and forecasted activity by these category B-II aircraft is not sufficient to require the higher ARC designation, keeping that ARC designation at B-II (Small) will keep opportunities open for airport development.

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The “ultimate” future Critical Aircraft for the Tracy Airport Master Plan can be described as a generic B-II (Small) category aircraft...represented by the Beechcraft KingAir.

Due to the factors identified within this forecast, and the identified future needs of the airport and its continued growth and identification as an important local GA airport, the “ultimate” future Critical Aircraft for the Tracy Airport Master Plan can be described as a generic B-II (Small) category aircraft, with a wingspan of less than 79 feet, an approach speed of less than 121 knots, and a weight of less than 12,500 pounds. Filling this representation for a Critical Aircraft for the Tracy Airport would be the Beechcraft KingAir.



*Beechcraft KingAir E90; Source: Wikimedia Commons*