

1.0 TULSA INTERNATIONAL AIRPORT

1.1 Airport Overview

Tulsa International Airport (TUL or the Airport) offers non-stop service to 17 cities. The Airport has six scheduled carriers: Allegiant, American, Delta, Southwest, and United. In 2016, there were 105,024 operations—an average of 288 commercial, general aviation, and military activity flights per day—and over 1.36 million enplaned passengers. Air cargo traffic, in terms of landed cargo aircraft weight, has remained steady at TUL for the past 10 years. Air cargo carriers include FedEx Express and UPS; in addition, Southwest, American Airlines (AA), United, and the US Postal Service all have cargo facilities on the Airport.

1.2 Administration

The State of Oklahoma establishes Airport Public Trusts for municipalities and counties, which operate like airport authorities elsewhere. Formed in 1967, the Tulsa Airports Improvement Trust (the Trust) operates TUL and R. L. Jones, Jr. Airport. Led by a management staff of eight industry professionals, a staff of more than 140 people have built a self-sustaining airport system. In 2016, the Trust had an operating budget of \$36.5 million.

Covering 4,360 acres, Tulsa International Airport has three runways; four runway ends have precision instrument approaches. There are six Fixed Base Operators that offer a range of services including oxygen, aircraft parking, aircraft rental, and flight training.

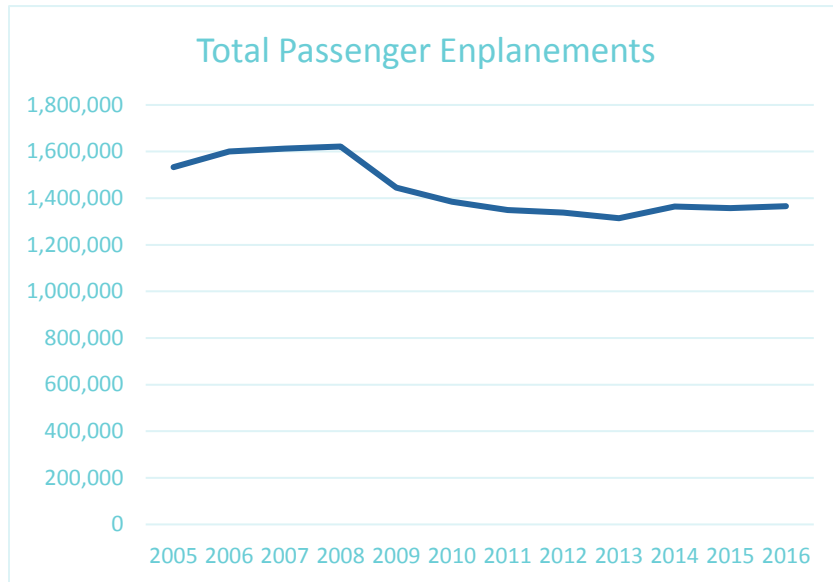
With 15 Capital Improvement Projects planned for Fiscal Years 2018 through 2022, TUL will spend more than \$86 million in coming years. Terminal building rehabilitation will upgrade the fire suppression system, reduce unscheduled maintenance on utilities by improving utility racks, replace aging escalators, and replace the terminal's roof. The terminal building rehabilitation will cost \$11.5 million with 85% of the funding from the Airport's collection of passenger facility charges (PFCs). Other projects include taxiway reconstruction and runway safety area improvement.

1.3 Activity

Over the past 10 years, operations and enplanements at TUL declined, particularly after the 2008 Recession. Freight activity has remained steady. Trends in passengers and activity that the Airport experienced over the past 10 years are fairly consistent with many commercial airports that are similar in size. To address years of financial losses, commercial carriers cut flight frequencies and reduced the number of seats serving most markets, resulting in higher passenger load factors. In today's airline operating environment, fewer flights carry more passengers, and empty seats on commercial flights are almost nonexistent.

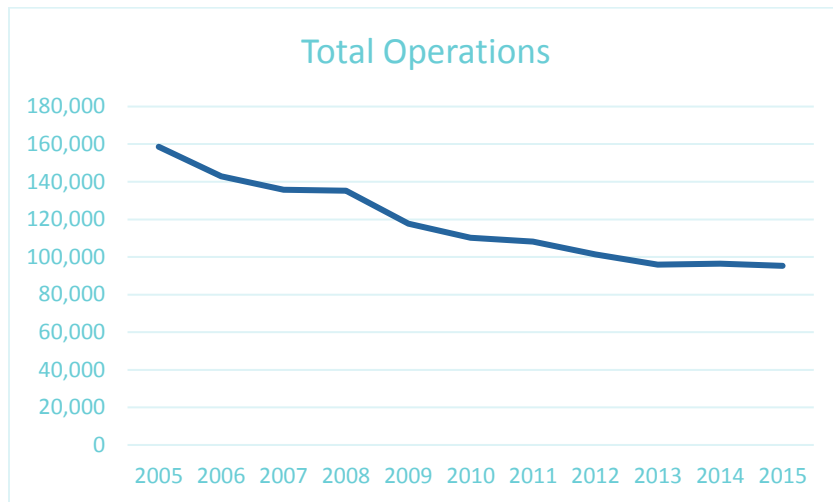
General aviation activity also declined over the past 10 years, primarily as a result of higher operating costs and declining numbers of pilots. As shown in **Figure 1-1**, **Figure 1-2**, and **Figure 1-3**, operations and enplanement activity has stabilized.

FIGURE 1-1 – TUL TOTAL PASSENGER ENPLANEMENTS



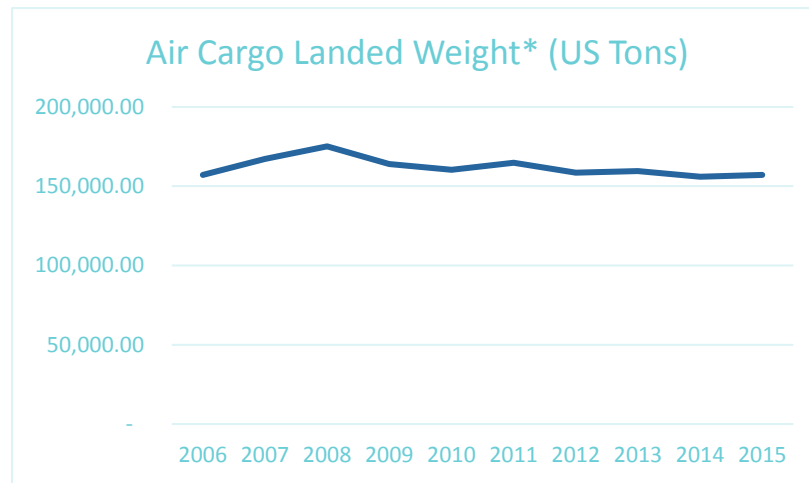
Source: Airport records, FAA Terminal Area Forecast

FIGURE 1-2 – TUL TOTAL OPERATIONS



Source: Airport records, FAA Terminal Area Forecast

FIGURE 1-3 – TUL AIR CARGO LANDED WEIGHT* (US TONS)



Source: FAA Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports.

*Includes weight of aircraft, fuel, and cargo

1.4 Tulsa Market Area Overview

Tulsa is the second largest city in Oklahoma with a Metropolitan Statistical Area (MSA) population of approximately 969,225. Tulsa’s economy is largely composed of the following industries: aerospace, aerospace manufacturing, and aviation; healthcare; energy; machinery and electrical equipment manufacturing; and transportation, distribution, and logistics. Tulsa’s aviation industry contributes to the global aerospace industry with over 280 companies.

Tulsa is home to American Airlines’ largest maintenance facility, NORDAM (a notable manufacturer of aviation equipment), Spartan College of Aeronautics and Technology, and the University of Tulsa. These companies and educational institutions are key factors in attracting and retaining young professionals and skilled workers to ensure continued economic growth. Tulsa’s cost of doing business remains 15% lower than the national average; this is attributed to Tulsa’s lower rental/real estate costs, lower energy costs, and lower taxes, all of which make the city an economically desirable location for industries to relocate and expand.

1.5 Employers and Key Tenants

1.5.1 Oklahoma Air National Guard’s 138th Fighter Wing

The Oklahoma Air National Guard’s (ANG) 138th Fighter Wing is located on the northeast corner of the Airport. The 138th is responsible for maintaining combat readiness for its fleet of F-16 jets. The federal mission of the 138th Fighter Wing is to maintain combat forces ready for mobilization, deployment, and employment as needed to support national security objectives. Additionally, its stated mission is to support the governor of Oklahoma with units organized, equipped, and trained in the protection of life and property, and preservation of peace, order, and public safety under competent orders of authority.

After conversion to the F-16, the 138th Fighter Wing participated in Operation Provide Comfort and Operation Northern Watch enforcing the No-Fly Zone in Northern Iraq. The laser targeting pod system for precision guided monitoring has been incorporated into the unit’s mission. The Oklahoma Aeronautics Commission (OAC) Aviation and Aerospace Economic Impact study estimated that military units based at TUL contribute over \$66.5 million in direct economic impact each year to the state’s economy.

1.5.2 American Airlines Maintenance and Engineering Center

AA's Maintenance and Engineering (M&E) Center provides just over 5,200 jobs to the Tulsa area, and is located just south of the ANG base on TUL. It is the primary maintenance base for AA's fleet of MD-80, B737, B757, and B767 aircraft. Services include light aircraft maintenance to heavy "C" checks, teardowns, overhauls, and engine rebuilds. The M&E Center has support shops for cabin-related items, avionics, wheels, engine test cells, and brakes. The Center's campus is a massive operation with 22 buildings on the main base and 3.3 million square feet of hangar and shop space stretching across 33 acres.

Some 5,200 people, approximately five percent of AA's 100,000-person workforce, work around the clock in three shifts at the Center. AA does not consider its M&E Center a Maintenance Repair Operations (MRO) base since the Center is dedicated exclusively to the AA fleet and does not contract MRO support with other carriers. In 2014, AA reported that its Tulsa M&E Center had accomplished 756 aircraft visits, worked on 94,632 components, manufactured 52,311 parts, performed overhaul and maintenance on 322 engines, and completed 146 full heavy overhauls and 64 landing gear overhauls. On average, two aircraft complete their inspections at the Center every day.

1.5.3 Navistar International/IC Bus Plant

The IC Bus plant is at the old Air Force Plant 3 at TUL, where B-24s were assembled during World War II. The facility is in a one-million-square-foot building that includes a school bus assembly line that is half a mile long. Each day, up to 75 buses roll out of the plant, assembled by the plant's 1,200 employees. It is the largest non-aviation business on an Oklahoma airport. Because this is a non-aviation tenant, the economic impacts for this particular business were not included in this economic impact study.

1.5.4 The Tulsa Air and Space Museum and Planetarium

The Tulsa Air and Space Museum and Planetarium is located on the northwest side of the field. Among other things, the museum offers a summer camp that emphasizes education in the science, technology, engineering, and mathematics (STEM) fields. The museum displays aircraft such as the Spartan C-2 which was built in Tulsa during the 1930s, the Rockwell Ranger 2000, and other locally-built planes. The Tulsa Air and Space Museum & Planetarium also boasts a state-of-the-art planetarium with a 50-foot-diameter dome, the second of its kind in the world.

1.6 Economic Impact

The OAC, in partnership with the FAA and TUL, undertook a study to estimate the annual economic impacts of 109 public airports in Oklahoma. Annual economic impacts for TUL were estimated as part of the study. Details of the study can be obtained on the Commission's website: oac.ok.gov

1.6.1 Summary of Study Results

OAC's Aviation and Aerospace Economic Impact Study measured economic impacts associated with three key contributors: 109 public general aviation and commercial airports, off-airport employers engaged in aviation/aerospace activities, and military aviation. Total annual statewide economic impacts for each of these three groups are shown in

Table 1-1.

TABLE 1-1 – TOTAL ANNUAL STATEWIDE ECONOMIC IMPACTS

	Employment	Payroll	Spending	Economic Activity
All 109 Study Airports	74,002	\$3.6 B	\$7.0 B	\$10.6B
Off-Airport Aviation/Aerospace Employers	58,958	\$3.4B	\$10.5B	\$13.9B
Military Aviation	72,648	\$4.7B	\$14.6B	\$19.3B

The following summary of the study approach provides an overview of the process used to estimate economic impacts and highlights specific annual economic impacts for Tulsa International Airport.

1.6.2 Approach to Estimating Economic Impacts

Economic impact studies, such as OAC’s, reflect a “snapshot” of conditions that exist at the time the study is conducted. The aviation industry is dynamic and constantly changing, and economic impacts fluctuate with change. TUL’s annual economic impacts were estimated using four measures: employment, payroll, spending, and economic activity. Annual economic activity is the sum of annual payroll and spending.

For each of the impact measures (employment, payroll, spending, and economic activity), the first step in the process was to collect direct impacts. Direct impacts were collected through face-to-face and phone interviews, as well as through a variety of surveys.

IMPLAN, an FAA-recognized input/output econometric model, was used to estimate indirect and induced impacts. As direct impacts from employment, payroll, and spending categories enter the state’s economy, direct impacts re-circulate, generating additional indirect and induced impacts through a multiplier effect. Direct impacts, added to indirect and induced impacts, equal total annual economic impacts for the measures considered in OAC’s research project.

1.6.3 Annual Economic Impacts for Tulsa International Airport

Annual economic impacts were estimated for the following five categories:

- Airport management
- Airport tenants
- Spending for capital projects
- Spending from visitors arriving on general aviation aircraft
- Spending from visitors arriving on scheduled commercial airline flights

The following sections provide information on total annual economic impacts in each of these five categories for Tulsa International Airport.

Total Annual Economic Impacts from Airport Management

Airport management includes categories such as administration, maintenance, human resources, grants administration/finance, properties, legal services, security, and other. In this study, for employment in all impact categories, part-time and seasonal jobs were converted to full-time equivalent jobs. This conversion was accomplished by considering either the number of hours worked or the annual compensation for the less than full-time positions.

Table 1-2 shows all annual impacts identified for the airport management function at TUL. Annual economic activity represents total annual airport spending for goods and services to operate the Airport plus annual payroll. Indirect and induced impacts were estimated using the IMPLAN model.

TABLE 1-2 – TUL TOTAL ANNUAL ECONOMIC IMPACTS - AIRPORT MANAGEMENT

	Direct	Indirect/Induced	Total
Employment	133	79	212
Payroll	\$6,899,840	\$4,104,016	\$11,003,856
Spending	\$11,288,960	\$14,249,513	\$25,538,473
Economic Activity	\$18,188,800	\$18,353,529	\$36,542,329

Total Annual Economic Impacts from Airport Tenants

The Airport has a wide range of on-airport, aviation-related tenants. Examples of the Airport’s aviation-related tenants include, but are not limited to, aircraft maintenance, aircraft charter and rental, commercial airlines, concessionaires, maintenance and repair shops, flight instructors, emergency medical operators, and state and federal entities. Some tenants employ only one or two individuals, while others, such as the American Airlines M&E Center, employ thousands.

As part of the OAC study, each Airport tenant was contacted to secure information on their activities; this information was used to estimate the annual economic impact of each tenant. Total annual economic impacts for all tenants operating at TUL are shown in **Table 1-3**.

TABLE 1-3 – TUL TOTAL ANNUAL ECONOMIC IMPACTS - AIRPORT TENANTS

	Direct	Indirect/Induced	Total
Employment	10,485	15,034	25,519
Payroll	\$694,358,059	\$825,794,110	\$1,520,152,169
Spending	\$1,676,908,513	\$1,387,957,742	\$3,064,866,254
Economic Activity	\$2,371,266,572	\$2,213,751,852	\$4,585,018,424

Total Annual Economic Impacts from Capital Investment

Each year, the Airport undertakes various capital improvement projects through federal, airport, and private investment. These projects range from minor investments needed to accomplish runway maintenance to significant investment to improve runways and terminal buildings. When goods, materials, and services are purchased to implement capital projects, this spending supports employment and the associated payroll.

Economic impacts in this category have the propensity to change, as capital investment spending often varies significantly year-to-year. The Airport might complete a major project and then not undertake a project of similar magnitude for several years. If the economic impact snapshot takes place in a time of high capital investment, economic impacts will be higher than in a period when more limited investment occurs.

To account for changes in annual capital investment, the OAC study considered the Airport’s average annual capital spending for the past five years; five-year average annual spending was used to estimate economic impacts in this category. After establishing the Airport’s average annual capital investment, the IMPLAN model provided ratios for estimating employment and associated payroll supported by average annual capital investment. The Airport’s annual impacts in this category are shown in **Table 1-4**.

TABLE 1-4 – TUL TOTAL ANNUAL ECONOMIC IMPACTS - CAPITAL INVESTMENT

	Direct	Indirect/Induced	Total
Employment	384	323	707
Payroll	\$14,825,602	\$15,018,554	\$29,844,156
Spending	\$47,625,961	\$39,050,217	\$86,676,178
Economic Activity	\$62,451,563	\$54,068,771	\$116,520,334

Total Annual Economic Impacts from General Aviation Visitor Spending

This study estimates that approximately 439,600 visitors to Oklahoma arrive each year on general aviation aircraft; approximately 67,158 of these general aviation visitors arrive via Tulsa International Airport. This estimate of annual general aviation visitors was derived from information supplied by the Airport, FBOs, AOPA, and OAC. Visitors come to Tulsa for many reasons, including business or personal/leisure travel, which includes visits with friends and family. Many visitors travel on general aviation aircraft for sporting events, including the teams themselves.

For the OAC study, surveys were distributed to visitors who arrive on general aviation aircraft. General aviation visitors to the Tulsa metropolitan area stay longer and spend more than their counterparts visiting other areas of the state. Study surveys also confirmed that many visitors who arrive on general aviation aircraft stay only for the day or even a few hours. These shorter trips limit spending associated with visitors, but day trips are often vital to a company’s ability to ensure efficient business travel.

For those visitors who stay overnight, most have expenditures for lodging, food, ground transportation, entertainment, and retail purchases. Visitor spending helps support many jobs in the hospitality industry and the payroll associated with these jobs. Once annual general aviation visitor spending is estimated, the IMPLAN model provides information for estimating the number of jobs and the payroll the spending supports. TUL’s annual economic impacts from general aviation visitor spending are shown in **Table 1-5**.

TABLE 1-5 – TUL TOTAL ANNUAL ECONOMIC IMPACTS - GENERAL AVIATION VISITOR SPENDING

	Direct	Indirect/Induced	Total
Employment	364	130	494
Payroll	\$8,063,947	\$5,759,540	\$13,823,487
Spending	\$22,491,259	\$11,367,330	\$33,858,589
Economic Activity	\$30,555,206	\$17,126,870	\$47,682,076

Total Annual Economic Impacts from Commercial Visitor Spending

Airport records indicate that TUL had a total of 1.37 million boarding passengers or enplanements in 2016. The U.S. Department of Transportation (USDOT) collects information for all commercial airports that indicates which portion of an airport’s enplanements are related to residents versus visitors; this information was used in this study. Based on Airport and USDOT data, it is estimated that more than 578,000 of the Airport’s 2016 enplanements were visitors to Oklahoma.

In the fall of 2016, with the help of Airport volunteers, passenger intercept surveys were conducted for the OAC study to support estimates of commercial visitor spending for TUL; approximately 370 completed surveys were collected through Airport volunteer interviews. The surveys sought information on length of stay and spending in various categories. The surveys determined that for visitors arriving at TUL on a commercial airline,

the average length of stay was 4.5 days. For each visitor trip, average spending in all categories was estimated at \$1,080.

Spending by category, per visitor, was estimated as follows:

- Lodging – 39%
- Food – 20%
- Ground Transportation – 16%
- Entertainment – 13%
- Retail – 9%
- Other – 3%

The IMPLAN model was used to identify jobs and payroll in hospitality, entertainment, and retail industries supported by spending associated with visitors who arrive on a commercial airline flight. **Table 1-6** shows total estimated annual economic impacts associated with the Airport’s commercial airline visitors.

TABLE 1-6 – TUL TOTAL ANNUAL ECONOMIC IMPACTS - COMMERCIAL VISITOR SPENDING

	Direct	Indirect/Induced	Total
Employment	7,003	2,596	9,599
Payroll	\$157,474,090	\$115,506,477	\$272,980,567
Spending	\$467,221,048	\$213,311,458	\$680,532,506
Economic Activity	\$624,695,138	\$328,817,935	\$953,513,073

Summary of the Airport’s Total Annual Economic Impacts

The Airport has economic impacts associated with the following categories: airport management, airport tenants, capital investment, general aviation visitor spending, and/or commercial visitor spending. **Table 1-2, Table 1-3, Table 1-4, Table 1-5, and Table 1-6** show TUL’s total annual economic impacts for all five impact categories, indicating the portion of each impact that is attributable to a direct impact or to an indirect/induced impact. When direct and indirect/induced impacts for all categories are considered, the Airport supports:

- A total of 36,531 jobs
- Annual payroll of \$1.8 billion
- Annual spending estimated at \$3.9 billion
- Total annual economic activity (payroll plus spending) estimated at \$5.7 billion

Annual Tax Revenues from Airport Supported Activities

As documented in the OAC study, airports throughout the state contribute significantly to state and local tax revenues. For all airports in Oklahoma, this impact is estimated at \$497.8 million. TUL and activities it supports are important contributors to tax revenues. Aviation-related tax revenues are associated with sales tax events and state income tax payments. Taxable events are related to the following:

- When visitors come by air, they pay sales tax on their spending for lodging, food, rental cars, entertainment, and retail purchases.
- The Airport and its tenants have annual purchases for supplies to operate their businesses; some of these annual purchases contribute to sales tax revenues.

- When capital improvement projects are implemented, purchases made for materials needed for construction are subject to a sales tax.
- The Airport supports a total of 18,369 direct jobs. Each year, these employees spend a portion of their income on items subject to sales tax.
- The direct jobs supported by the Airport pay state income tax.

When these taxable events are considered, it is estimated that TUL and activities it supports contribute almost \$260 million in annual tax revenues—this estimate is based only on direct impacts estimated in the OAC study.

Economic Impacts from Off-Airport Aviation & Aerospace Employers in Tulsa Metropolitan Statistical Area

Following World War II, Oklahoma emerged as a center for aviation activity. Since that time, Oklahoma has continued its upward trajectory, attracting the nation’s most sophisticated aviation/aerospace developers, maintainers, and suppliers. As part of the OAC study, additional research was undertaken to identify other aviation and aerospace employers in Oklahoma who are not located at an airport.

Impacts presented in this section are associated with aviation and aerospace companies that operate in the Tulsa MSA but are not located at TUL—these impacts are in addition to those identified previously. Research conducted as part of this study indicates that there are 286 businesses in the Tulsa MSA engaged in some facet of aviation or aerospace as their core or primary business. These aviation and aerospace businesses have a significant economic impact on the Tulsa MSA, as summarized in **Table 1-7**.

TABLE 1-7 – TOTAL TULSA MSA ANNUAL ECONOMIC IMPACTS - OFF-AIRPORT AVIATION/AEROSPACE BUSINESSES

	Direct	Indirect/Induced	Total
Employment	10,110	12,276	22,386
Payroll	\$603,895,947	\$646,697,462	\$1,250,593,409
Spending	\$3,279,756,947	\$1,341,732,110	\$4,621,489,057
Economic Activity	\$3,883,652,894	\$1,988,429,572	\$5,872,082,466

Summary of On- and Off-Airport Annual Economic Impacts

The OAC study concluded that when the Airport’s impacts from airport management, airport tenants, CIP investment, general aviation visitor spending, commercial visitor spending, and off-airport aviation and aerospace employers in the MSA are combined, total annual economic impacts for the Tulsa International Airport and Richard Lloyd Jones Jr Airport are as follows:

- 59,802 Jobs
- \$3.1 billion in annual payroll
- \$8.6 billion in annual spending
- \$11.7 billion in economic activity

These estimates include all direct, indirect, and induced economic impacts identified in the OAC study. The study has clearly shown that all facets of aviation and aerospace supported by Tulsa International Airport and Richard Lloyd Jones Jr Airport are significant contributors to Oklahoma’s economy. Combined, all categories examined in this study are contributing \$11.7 billion each year to the state and local economy.