Chapter 2
Forecasts

Projections of aviation demand will be vital in determining the future needs of the airport. Over the past several decades, the aviation industry has experienced several system shocks, including the Great Recession of 2008-2009, various mergers and acquisitions, transitions in the aircraft fleet mix, and the COVID-19 pandemic of 2020-2021. Despite all the turmoil in the aviation industry over the years, Scottsdale Airport (SDL) has maintained and grown its reputation as one of the most significant general aviation airports in the country. While it is impossible to predict future system shocks, these events typically even out over time. This chapter presents new aviation demand forecasts for Scottsdale Airport.

The Federal Aviation Administration (FAA) has oversight responsibility to review and approve aviation forecasts developed in conjunction with airport planning studies. In addition, aviation activity forecasts may be an important input to future analysis associated with planned airport development.

The FAA is responsible for the review and approval of airport forecasts developed for planning and design, project justification, *National Environmental Policy Act* (NEPA) environmental reviews, benefit-cost analyses (BCAs), and Part 150 noise compatibility planning (NCP). When reviewing a sponsor's forecast, the FAA must ensure the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. Guidance for the development of FAA-approved aviation demand forecasts is provided in the following publications:

- FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems (NPIAS) and Airports Capital Improvement Plan (ACIP)*
- FAA Memorandum: *Forecast Review and Approval Instructions* (dated August 12, 2024)
- FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*
- FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*

According to FAA Order 5090.5, forecasts should be:

- Realistic;
- Objective in their reasoning;
- Based on the latest available data;
- Reflective of current conditions at the airport (as a baseline);
- Supported by information in the study; and
- Able to provide adequate justification for airport planning and development.

The forecasting process for an airport master plan involves 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 AC 150/5070-6B, *Airport Master Plans*, outlines seven standard steps involved in the forecast process:

1. **Identify Aviation Activity Measures**: Determine the levels and types of aviation activities likely to impact facility needs. For general aviation, these typically include based aircraft and operations.

2. **Review Previous Airport Forecasts**: Sources may include the FAA *Terminal Area Forecast*, state or regional system plans, and previous master plans.

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**: Several appropriate methodologies and techniques are available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modeling, comparison with other airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgment.

5. **Apply Forecast Methods and Evaluate Results**: Prepare the actual forecasts and evaluate them for reasonableness.

6. **Summarize and Document Results**: Provide supporting text and tables, as necessary.

7. **Compare Forecast Results with the FAA TAF**: Based aircraft and total operations forecasts are considered consistent with the TAF if they meet one of the following criteria:

    - The forecasts differ by less than 10 percent in the five-year forecast period and less than 15 percent in the 10-year forecast period;

    - The forecasts do not affect the timing or scale of an airport project; or

    - The forecasts do not affect the role of the airport, as defined in the current version of FAA Order 5090.5, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) and the Airports Capital Improvement Plan (ACIP)*.

If the master plan forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the forecasts submitted, adjustment to the TAF, or both. It should be noted that the FAA's forecast approval is limited to the 10-year outlook period unless a longer period is specifically needed for environmental analyses or a benefit-cost analysis.

The forecasts must also include an analysis of the current critical aircraft, which is the aircraft or family of characteristically similar aircraft that accounts for at least 500 annual operations at the airport, as well as the future critical aircraft. FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, is referenced when conducting the critical aircraft analysis.

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 certainty; therefore, it is important to remember that forecasts are intended to serve only as guidelines, and planning must remain flexible enough to respond to a range of unforeseen developments.

The following forecast analysis for the airport was produced following these basic guidelines. Existing forecasts are examined and compared against current and historical activity. The 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 enable airport management to make planning adjustments, as necessary, to maintain a viable, efficient, and cost-effective facility.

These aviation demand forecasts were prepared in February 2025. The base year is the full calendar year of 2024 and projections are made for a 20-year period through 2044.

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for large air carriers, air taxi, general aviation, and FAA workload measures. The forecasts are prepared to meet the budget and planning needs of the FAA and provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was prepared was *FAA Aerospace Forecasts – Fiscal Years (FY) 2024-2044*. The FAA primarily uses the economic performance of the United States (U.S.) 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 *FAA Aerospace Forecasts – FY 2024-2044*.

From 2009, following the Great Recession, until 2020, with the onset of the COVID-19 pandemic, the airline industry experienced a period of relative stability. The COVID-19 pandemic brought a rapid and cataclysmic end to those boom years for the airlines. By 2023, travelers were ready to return to normal and passenger enplanements (boardings) across the country rebounded. By 2024, many commercial service airports were experiencing record passenger levels, surpassing the 2019 highs.

Recovery of the general aviation sector from the impact of the COVID-19 crisis was faster than for the airlines. Private aviation became attractive as the COVID-19 pandemic raged. While there has been some observed decline in general aviation activity in 2024, much of the growth experienced in 2020 and 2021 has remained. The FAA is currently observing the highest number of people pursuing aviation and becoming student pilots in the past three decades, along with the greatest increase in private pilot certifications since 1995.

ECONOMIC ENVIRONMENT

Aviation activity tends to track closely with the state of the economy and the FAA uses economic indicators as a basis for its national forecasts. According to the FAA forecast, the annual gross domestic product (GDP) of the U.S. is expected to increase by 1.7 percent over the next 20 years. U.S. carriers posted profits in 2023, and the FAA expects carriers to remain profitable over the next few years as demand rises, despite higher fares, which offset the raised labor and fuel costs. As yields stabilize and carriers return to levels of capacity consistent with their fixed costs and shed excess debt, consistent profitability should continue. Over the long term, a competitive and profitable aviation industry is anticipated, characterized by increasing demand for air travel and airfares growing more slowly than overall inflation, reflecting growing U.S. and global economies.

Prior to the COVID-19 pandemic, the U.S. economy was recovering from the most serious economic downturn and slow recovery since the Great Depression. Demand for aviation is fundamentally driven by economic activity; as economic growth picks up, so does growth in aviation activity. Overall, the FAA forecast calls for annual passenger growth over the next 20 years to average 2.5 percent. Oil prices surged to $93 per barrel in 2022, largely due to the Russian invasion of Ukraine, after averaging $55 per barrel over the five-year period from 2016 to 2021. Prices are forecasted to remain consistent over the next few years before climbing slowly to reach $107 per barrel by 2044.

FAA GENERAL AVIATION FORECASTS

The long-term outlook for general aviation is promising, as growth at the high end of the segment offsets continuing retirements at the traditional low end. The active general aviation fleet is forecasted to remain relatively stable, increasing by just 0.4 percent between 2024 and 2044. While steady growth in GDP and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet, fixed-wing piston aircraft, continues to shrink over the forecast period.

The FAA forecasts the fleet mix and hours flown for single-engine piston aircraft; multi-engine piston aircraft; turboprops; business jets; piston and turbine helicopters; and light sport, experimental, and other aircraft (e.g., gliders and balloons). The FAA forecasts active aircraft, not total aircraft; an active aircraft is one that is flown at least one hour during the year. **Table 2A** shows the primary general aviation demand indicators, as forecasted by the FAA.

TABLE 2A | FAA General Aviation Forecasts

Demand Indicator	2024	2044	CAGR
OPERATIONS (thousands)			
General Aviation Itinerant	15,125	16,569	0.46%
General Aviation Local	15,900	17,571	0.50%
Air Taxi	6,476	7,490	0.73%
Total Operations:	**37,501**	**41,630**	**0.52%**
FLEET MIX			
Single-Engine Piston	124,965	119,930	-0.21%
Multi-Engine Piston	11,520	10,860	-0.29%
Turboprops	10,860	13,255	1.00%
Jets	17,045	28,325	2.57%
Helicopters	10,090	14,025	1.66%
Other (experimental, Light Sport, etc.)	35,380	42,580	0.93%
Total General Aviation Fleet:	**209,860**	**228,975**	**0.44%**
CAGR = compound annual growth rate			

Source: FAA Aerospace Forecasts – FY 2024-20244

General Aviation Fleet Mix

For 2024, the FAA estimates there are 136,485 piston-powered fixed-wing aircraft in the national fleet. That number is forecasted to decline by 0.2 percent by 2044, resulting in 130,790 aircraft. This includes a decline of 0.2 percent in single-engine piston aircraft and a decline of 0.3 percent in multi-engine piston aircraft.

Total turbine aircraft are forecasted to grow at an annual rate of 2.0 percent through 2044. The FAA estimates there are 27,905 turbine-powered fixed-wing aircraft in the national fleet in 2024 and there will be 41,580 by 2044. Turboprops are forecasted to grow by 1.0 percent annually, while business jets are projected to grow by 2.6 percent annually through 2044.

Total helicopters are projected to grow by 1.7 percent annually in the forecast period. There are an estimated 10,090 total helicopters in the national fleet in 2024, and that number is expected to grow to a total of 14,025 by 2044. This includes annual growth rates of 0.8 percent for piston helicopters and 2.0 percent for turbine helicopters.

The FAA also forecasts experimental aircraft, light sport aircraft (LSA), and others. Combined, there are an estimated 31,100 other aircraft in 2024, which are forecasted to grow to 37,810 by 2044 at an annual growth rate of 1.0 percent.

General Aviation and Air Taxi Operations

The FAA also forecasts total operations based on activity at airport traffic control towers across the United States. Operations are categorized as air carrier, air taxi/commuter, general aviation, and military. While the fleet size remains relatively level, the number of general aviation operations at towered airports is projected to increase from 31.0 million in 2024 to 34.1 million in 2044, with an average increase of 0.5 percent per year as growth in turbine, rotorcraft, and experimental hours offsets a decline in fixed-wing piston hours. This includes annual growth rates of 0.5 percent for local general aviation operations and 0.5 percent for itinerant general aviation operations.

The FAA also forecasts air taxi operations, which are operations utilized in a for-hire capacity. Air taxi operations include commercial aircraft with fewer than 60 seats, charters, fractional ownership operations, air ambulances, and some small air cargo operations. The FAA estimates that air taxi operations will increase over the next 20 years at an annual growth rate of 0.73 percent. **Exhibit 2A** presents the historical and forecasted U.S. active general aviation aircraft and operations.

General Aviation Aircraft Shipments and Revenue

On an annual basis, the General Aviation Manufacturers Association (GAMA) publishes an aviation industry outlook that documents past and current trends and provides an assessment of the future condition of the general aviation industry. **Table 2B** presents historical data related to general aviation aircraft shipments.

TABLE 2B | Annual General Aviation Airplane Shipments – Manufactured Worldwide

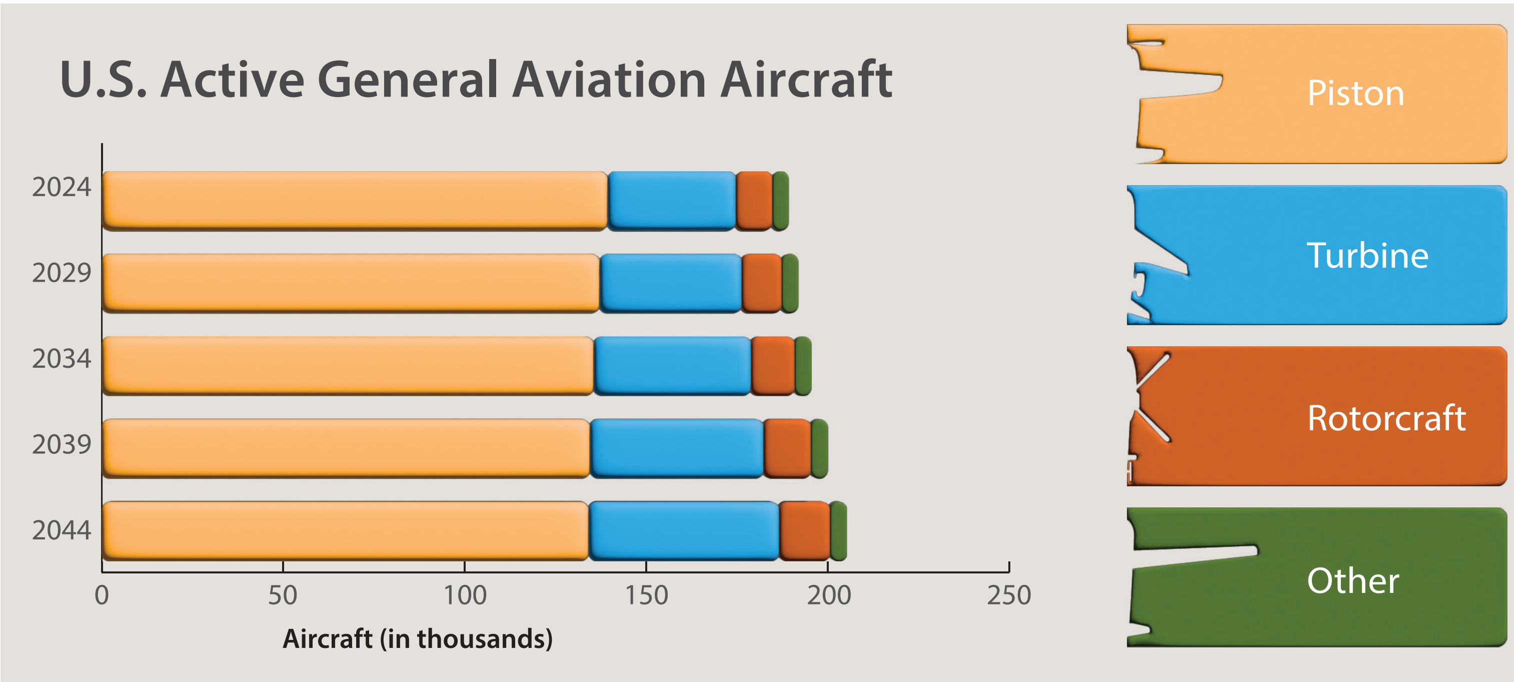
Year	Helo	SEP	MEP	TP	J	Total	Net Billings ($ million)
2012	1,186	817	91	584	672	2,164	$22,934
2013	1,446	908	122	645	678	2,353	$30,296
2014	1,148	986	143	603	722	2,454	$31,079
2015	1,090	946	110	557	718	2,331	$29,413
2016	917	890	129	582	667	2,268	$25,146
2017	968	936	149	563	676	2,324	$24,321
2018	1,035	952	185	601	703	2,441	$24,776
2019	877	1,111	213	525	809	2,658	$27,342
2020	709	1,164	157	443	644	2,408	$23,447
2021	860	1,261	148	527	710	2,646	$25,769
2022	932	1,361	158	582	712	2,813	$27,385
2023	1,020	1,508	174	638	730	3,050	$28,304

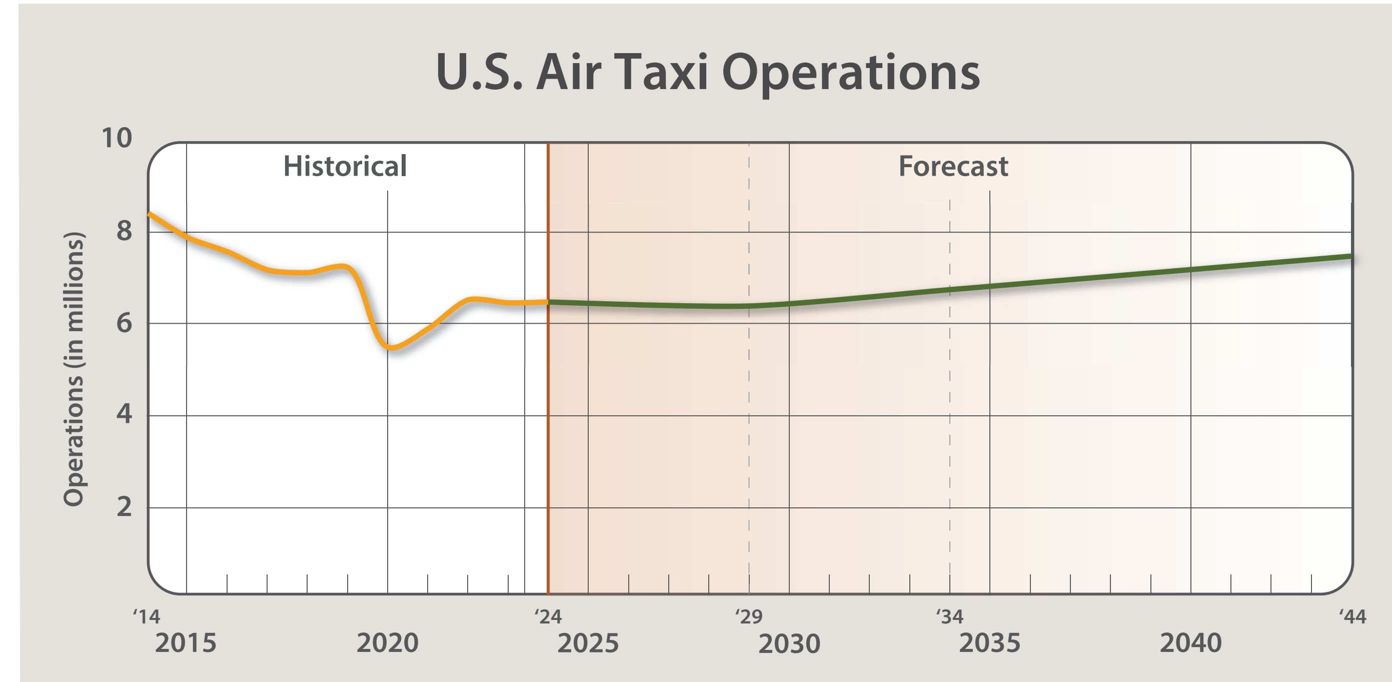
Helo = helicopter
J = jet
MEP = multi-engine piston
SEP = single-engine piston
TP = turboprop

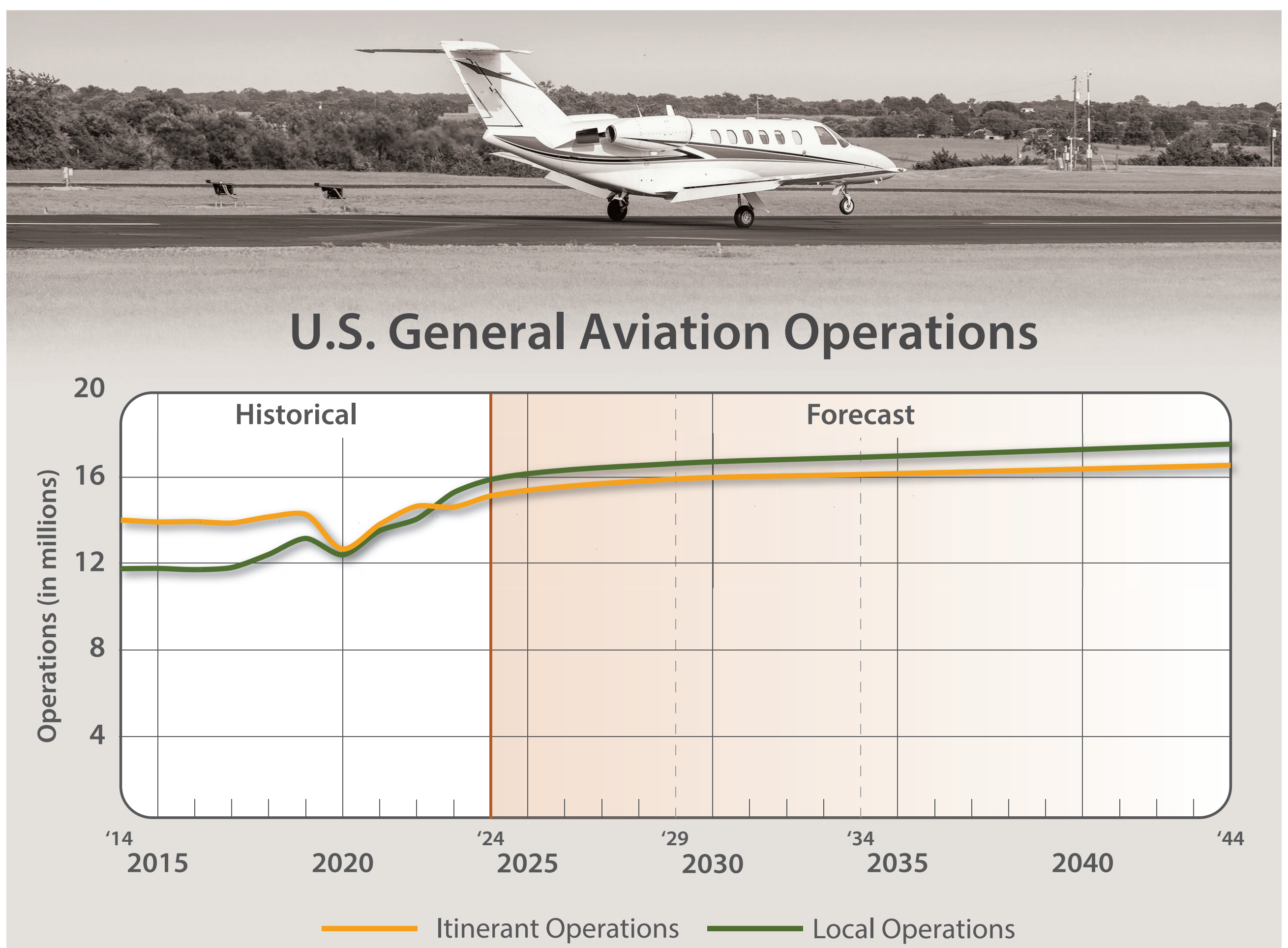
Source: GAMA, 2023 Statbook

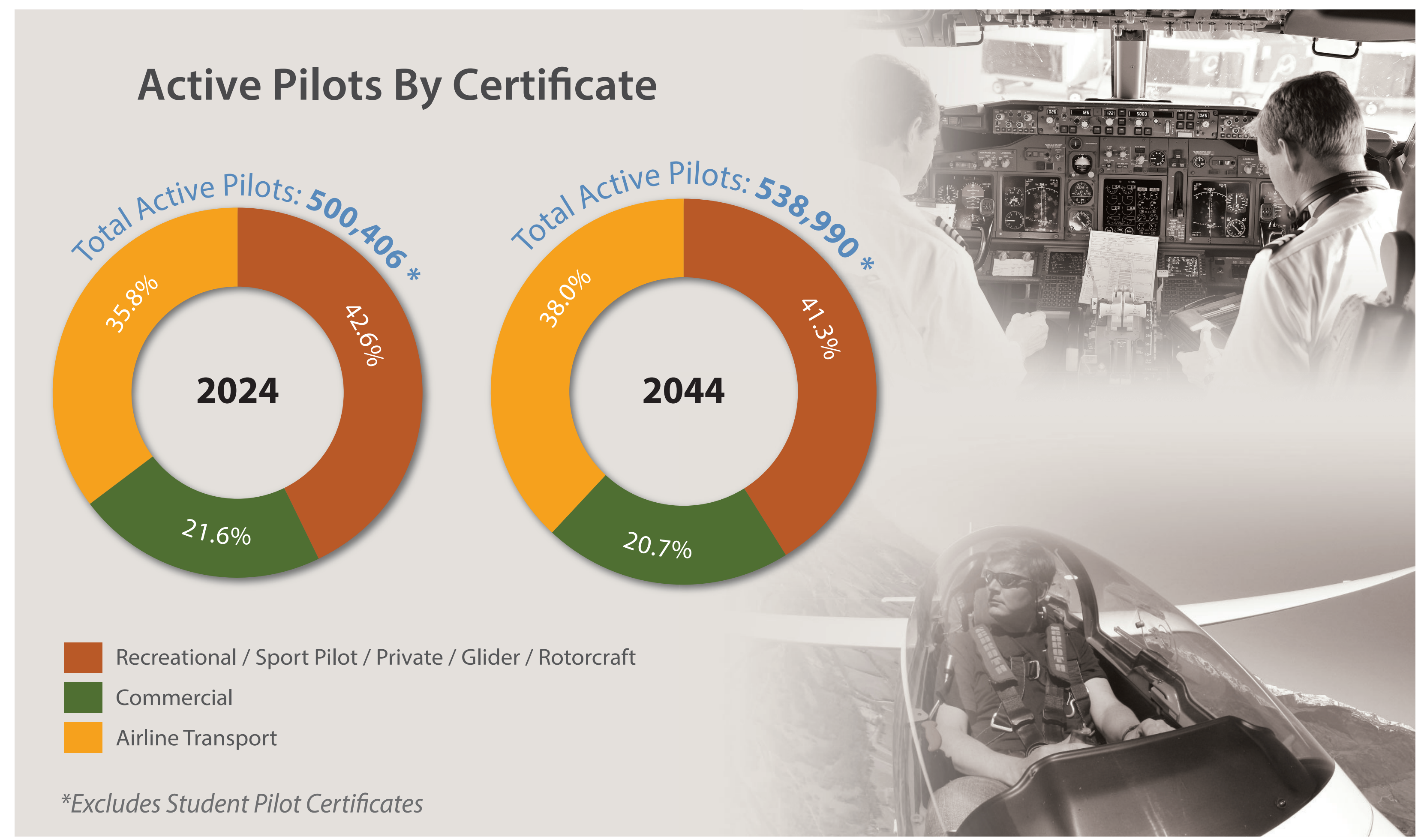
Worldwide shipments of general aviation airplanes increased in 2023. A total of 3,050 units were delivered around the globe, compared to 2,813 units in 2022: the third year in a row to experience an increase after the drop during 2020, when 2,408 units were delivered. Worldwide general aviation billings were highest in 2014. In 2023, an increase in new aircraft shipments generated more than $28.3 billion, compared to $27.4 billion in the previous year. North America continues to be the largest market for general aviation aircraft and leads in the manufacturing of piston, turboprop, and jet aircraft. Europe is the second largest market, while Latin America follows Europe closely in the turboprop market.

- *Business Jets* | Business jet deliveries increased from 712 units in 2022 to 730 units in 2023. The North America market accounted for 74.9 percent of business jet deliveries, which is a 7.3 percent increase in market share compared to 2022.









Source: FAA Aerospace Forecasts FY2024-2044

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- *Turboprops* | Turboprop shipments increased from 582 in 2022 to 638 in 2023. North America's market share of turboprop aircraft decreased by 2.1 percent in the last year. The Europe, Middle East, and Africa market shares increased, while the Asia-Pacific and Latin America market shares decreased.

- *Pistons* | In 2023, piston airplane shipments increased to 1,682 units from 1,519 units in the prior year. North America's market share of piston aircraft deliveries rose 7.2 percent from the year 2022. The Europe, Latin America, Middle East, and Africa regions experienced a positive rate in market shares during the past year, while the Asia-Pacific market saw a decline.

- *Helicopters* | This category includes both piston- and turbine-engine helicopters. New helicopter deliveries reached above 1,000 in 2023, which was the first time since 2018.

U.S. PILOT POPULATION

There were 490,470 active pilots certificated by the FAA at the end of 2023 and 500,406 active pilots are projected in 2024. All pilot categories, except private and recreational-only certificates, are expected to continue to increase for the forecast length. Excluding student pilots, the number of active pilots is projected to increase by about 38,584 (up 0.4 percent annually) between 2024 and 2044.

The airline transport pilot (ATP) category is forecasted to increase by 25,800 (up 0.7 percent annually). Sport pilots are predicted to increase by 2.4 percent, commercial pilots should remain steady over the forecast period, and private pilot certificates are projected to decrease at an average annual rate of 0.1 percent through 2044. The FAA has currently suspended the student pilot forecast.

UNMANNED AIRCRAFT SYSTEMS (UAS)

UAS, which are commonly referred to as drones, have been experiencing healthy growth in the U.S. and around the world over the past few years. According to *FAA Aerospace Forecasts – FY 2024-2044*:

> "*A drone consists of a remotely piloted aircraft and its associated elements – including the control station and the associated communication links – that are required for the safe and efficient operation in the national airspace system (NAS). The introduction of drones in the NAS has opened up numerous possibilities, especially from a commercial perspective. This has also brought challenges including drones' safe and secure integration into the NAS. Despite these challenges, the drone sector holds enormous promise; potential uses range from individuals flying solely for recreational purposes to large companies delivering commercial packages and delivering medical supplies. Public service uses, such as conducting search and rescue support missions following natural disasters, are proving promising as well*."

On December 21, 2015, the FAA launched an online registration system for recreational/model small drones. This system requires all drones that weigh more than 0.55 pounds (or 250 grams) and fewer than 55 pounds (or 25 kilograms) to be registered. The registration system captures the number of registered pilots but does not capture individual drone aircraft; nevertheless, the registration information provides a basic understanding of the growth in drone activity, from which the FAA has made a growth forecast for the next five years.

Trends in Recreational/Model Aircraft

Through an examination of the drone aircraft registrations and renewals, the FAA estimated that there were as many as 1,776,800 small drones in the national fleet in 2023. FAA developed three forecasts (low range, base range, and high range), which are presented in **Table 2C**. By 2028, the FAA forecasts nearly two million small drones in its high range forecast.

TABLE 2C | Total Recreational/Model Fleet

Fiscal Year	Low Range*	Base Range**	High Range**
2023	557,300	1,776,800	1,776,800
FORECAST			
2024	555,700	1,826,400	1,830,800
2025	583,200	1,847,000	1,867,400
2026	609,200	1,867,300	1,891,300
2027	621,300	1,878,700	1,907,500
2028	628,800	1,883,000	1,920,800
CAGR	**2.44%**	**1.17%**	**1.57%**

CAGR = compound annual growth rate
*Effective/active fleet counts combined with multiplicity of aircraft ownership
**New registration counts combined with multiplicity of aircraft ownership
Source: FAA Aerospace Forecasts – FY 2024-2044

Trends in Commercial/Non-Model UAS Aircraft

Online registration for commercial/non-model small drones went into effect on April 1, 2016. These are commercial drones that weigh less than 55 pounds. Unlike recreational/model ownership, each aircraft must be individually registered. Registrations of commercial/non-model UAS aircraft have been increasing every year, according to the FAA. **Table 2D** shows the FAA forecast for this category of UAS. It is estimated that there were up to 960,000 commercial/non-model UAS in 2023, which is expected to increase to 1,176,000 by 2028 in the high range forecast.

TABLE 2D | Total Commercial/Non-Model Fleet

Fiscal Year	Low Range*	Base Range**	High Range**
2023	361,000	842,000	960,000
FORECAST			
2024	369,000	951,000	960,000
2025	371,000	1,032,000	1,050,000
2026	372,000	1,083,000	1,113,000
2027	373,000	1,110,000	1,152,000
2028	374,000	1,122,000	1,176,000
CAGR	**0.71%**	**5.91%**	**4.14%**

CAGR = compound annual growth rate
*Effective/active fleet counts
**New registration counts based fleet counts
Source: FAA Aerospace Forecasts – FY 2024-2044

Trends in Large UAS

Drones that weigh 55 pounds (large UAS) or more cannot be operated as recreational remote-piloted aircraft. They are registered with the FAA using the existing aircraft registration system. Large UAS require a Section 49 United States Code (USC) § 44807 exemption or a public aircraft operator (PAO) certification. These drones are also required to have tail numbers. At present, most large drones are flown by government entities, but commercial operators have steadily increased; most new large drone operators are active in agricultural spraying operations. The FAA estimates there were 2,311 large drones operating in the NAS in 2023. By 2028, FAA forecasts that 24,000 commercial large drones will be operating.

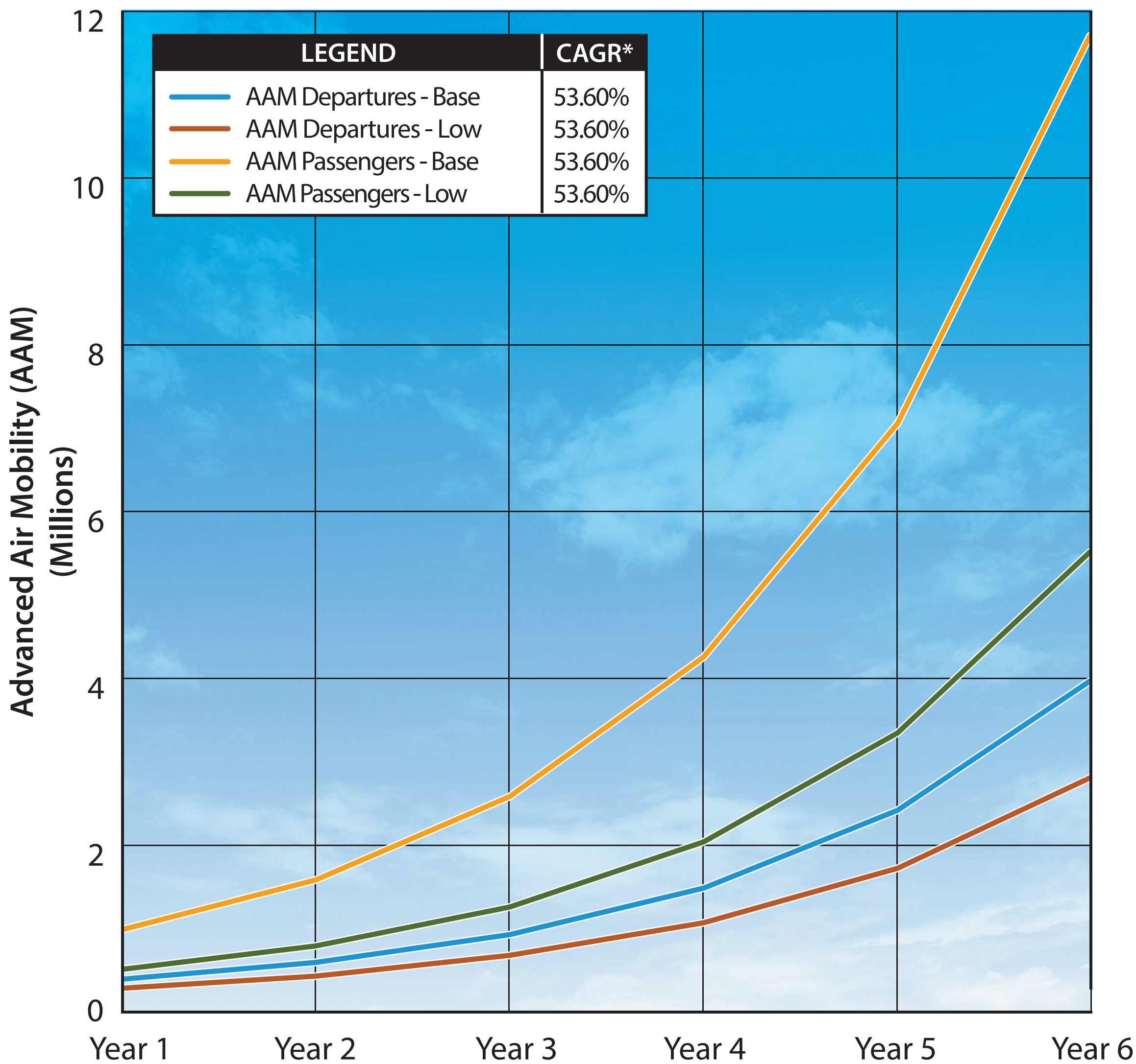
Advanced Air Mobility (AAM)

The AAM segment encompasses piloted electric vertical takeoff and landing (eVTOL) vehicles with progressively remote-piloted or automated control options. AAM is defined as "a safe and efficient system for air passenger and cargo transportation, inclusive of small package delivery and other urban drone services, which support a mix of onboard/ground-piloted and increasingly autonomous operations." Urban air mobility (UAM), a subset of the larger AAM category, is envisioned as a transportation system that is likely to use piloted and progressively automated aircraft to move passengers and cargo at lower altitudes within urban and suburban environments.

AAM technology presents considerable opportunities for economic growth over the coming decades. Despite many regulatory and technological issues and given the fact that AAM services have not yet begun in the U.S., the FAA provides a general projection of departures and passengers, as outlined on **Exhibit 2B**.

The FAA forecasts indicate that package delivery is likely to experience economic growth over the next decade. On the other hand, passenger service promises larger markets for AAM services, but safety challenges, infrastructure, public acceptance, and evolving technology may slow full integration in the short term; nevertheless, flight testing continues and numerous commercial companies are conducting test flights. An example is the advancements Joby Aviation has made with its eVTOL aircraft, which is expected to receive FAA certification in 2025 or 2026. Currently, this aircraft can fly over 150 miles on one battery charge and can carry four passengers.

One of the potential challenges of eVTOL entering the marketplace is infrastructure. A system of vertiports for AAM services appears to be the preferred method of operation. Joby Aviation and Archer have partnered with REEF Technology, a parking garage operator, with the goal of using parking garage rooftops as vertiports. Other options may include establishing vertiports at existing airports. Because AAM aircraft operate in a manner similar to helicopters, it is anticipated that initial AAM operations will follow existing helicopters' operations and traffic patterns. If demand grows significantly, formal vertiports may be necessary to more efficiently separate air traffic and increase the safety of operations.



ADVANCED AIR MOBILITY (AAM) FORECASTS

Fiscal Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	CAGR
AAM Departures							
Base	295,530	494,637	827,887	1,385,657	2,319,213	3,881,730	53.60%
Low*	206,871	346,246	579,521	969,960	1,623,449	2,717,211	53.60%
AAM Passengers**							
Base	886,590	1,483,911	2,483,661	4,156,971	6,957,639	11,645,190	53.60%
Low	413,742	692,492	1,159,042	1,939,920	3,246,898	5,434,422	53.60%

CAGR: Compound annual growth rate

*Base (risk-adjusted potential) is based on linear interpolation of ASSURE forecasts; Low forecast is 30% lower than base forecasts.

**Estimate of 3 passengers per departure in base range scenario and passengers per departure in the low range scenario.

Source: FAA Aerospace Forecasts FY 2024-2044

RISKS TO THE FORECAST

While the FAA is confident its forecasts for aviation demand and activity can be reached, they are dependent on several factors, including the strength of the global economy, security (including the threat of international terrorism), the changing geopolitical landscape, and oil prices. Higher oil prices could lead to further shifts in consumer spending away from aviation, dampening a recovery in air transport demand. The COVID-19 pandemic introduced a new risk, and although the industry has rebounded, the threat of future global health emergencies and potential economic fallout remains.

FORECASTING APPROACH

The development of aviation forecasts goes through both analytical and judgmental processes. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth; however, the judgment of the forecast analyst, based on professional experience, knowledge of the aviation industry, and assessment of the local situation, is important in the selection of the preferred forecast. The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Frequently considered methodologies include trend line/time series projections, correlation/regression analysis, and market share analysis.

Trend line/time series projections are probably the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical data and then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in a similar manner as in the past. As broad as this assumption may be, the trend line projection serves as a reliable benchmark for comparing other projections.

Correlation analysis provides a measure of the direct relationship between two separate sets of historical data. If there is a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

Regression analysis measures statistical relationships between dependent and independent variables, yielding a correlation coefficient. The correlation coefficient (Pearson's r) measures association between the changes in the dependent variable and the independent variable(s). The higher the r^2 value (coefficient determination), the more reliable the forecast is. Low r^2 values may be used with the understanding that the predictive reliability is reduced.

Market share analysis involves a historical review of the airport activity as a percentage, or share, of a larger regional, state, or national aviation market. A historical market share trend is determined, providing an expected market share for the future. These shares are then multiplied by the forecasts of the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections but can provide a useful check on the validity of other forecasting techniques.

Forecasts will age, and the further one is from the base year, the less reliable a forecast may become, particularly due to changing local and national conditions; nevertheless, the study includes a 20-year forecast of aviation demand. Facility and financial planning usually require at least a 10-year view because it often takes more than five years to complete a major facility development program; however, it is important to use forecasts that do not overestimate revenue-generating capabilities or understate the demand for facilities necessary to meet public (user) needs.

Future facility requirements (e.g., terminal complex component spaces, general aviation hangars, and apron areas) are derived from projections of various aviation demand indicators. Using a broad spectrum of local, regional, and national socioeconomic and aviation information and analyzing the most current aviation trends, forecasts are presented for the following aviation demand indicators:

- General Aviation
  - Based Aircraft
  - Based Aircraft Fleet Mix
  - General Aviation Operations
  - Air Taxi and Military Operations
- Charter Activity
  - Charter Enplanements
  - Charter Operations
- Peaking Characteristics
  - Operations Peaks
- Critical Aircraft Determination
  - Airport Critical Aircraft
  - Runway Design Code

RECENT COMPARISON FORECASTS

Part of the process of developing master plan forecasts is to review any aviation demand forecasts that have been developed recently. The following section discusses these recent forecasts for the airport.

FAA TERMINAL AREA FORECAST (TAF)

On an annual basis, the FAA publishes the *Terminal Area Forecast* (TAF) for each airport included in the *National Plan of Integrated Airport Systems* (NPIAS). The TAF is a generalized forecast of airport activity used by the FAA for internal planning purposes. It is available to airports and consultants to use as a baseline projection and is an important point of comparison while developing local forecasts.

Table 2E presents the 2024 TAF for the airport (published in January 2025). Itinerant general aviation operations are projected to increase by 0.60 percent annually, while local general aviation operations are projected to increase by 2.05 percent annually. Air taxi (charter) operations are projected to increase by 4.10 percent annually. Total operations are projected to increase by 2.47 percent annually. Based aircraft are projected to grow by 1.00 percent annually, increasing from 340 to 415 within the next 20 years. Charter passengers are projected to increase 1.37 percent annually.

TABLE 2E | 2024 FAA Terminal Area Forecast

Parameter	2024	2029	2034	2044	CAGR
ANNUAL OPERATIONS					
Itinerant Operations					
Air Taxi (Charter)	63,600	77,761	95,060	142,061	4.10%
General Aviation	66,668	74,054	74,425	75,172	0.60%
Military	365	365	365	365	0.00%
Total Itinerant Operations:	**130,633**	**152,180**	**169,850**	**217,598**	**2.58%**
Local Operations					
General Aviation	38,572	55,379	56,213	57,918	2.05%
Military	2	2	2	2	0.00%
Total Local Operations:	**38,574**	**55,381**	**56,215**	**57,920**	**2.05%**
TOTAL ANNUAL OPERATIONS:	**169,207**	**207,561**	**226,065**	**275,518**	**2.47%**
BASED AIRCRAFT					
Based Aircraft	340	355	375	415	1.00%
TOTAL BASED AIRCRAFT:	**340**	**355**	**375**	**415**	**1.00%**
ENPLANEMENTS					
Air Taxi (Charter)	27,323	35,904	35,904	35,904	1.37%
TOTAL ENPLANEMENTS:	**27,323**	**35,904**	**35,904**	**35,904**	**1.37%**
CAGR = compound annual growth rate					

Source: FAA Terminal Area Forecast, January 2025

MASTER PLAN FORECASTS 2015

As noted, the previous master plan for the airport was finalized in 2015 and had a base forecast year of 2012. Generally, forecasts that are this old are not relevant to a new forecasting effort. They are presented in **Table 2F** to memorialize what those forecasts were at the time.

TABLE 2F | 2015 Master Plan Forecasts

Parameter	2012 Baseline	2022	2032	CAGR
ANNUAL OPERATIONS				
Itinerant Operations				
Air Taxi	15,258	16,590	18,900	1.08%
General Aviation	74,255	82,950	94,500	1.21%
Military	638	630	630	-0.06%
Total Itinerant Operations:	**90,151**	**100,170**	**114,030**	**1.18%**
Local Operations				
Local	63,246	70,350	78,750	1.10%
Total Local Operations:	**63,246**	**70,350**	**78,750**	**1.10%**
TOTAL ANNUAL OPERATIONS:	**153,397**	**170,520**	**192,780**	**1.15%**
BASED AIRCRAFT				
Based Aircraft	368	430	500	1.54%
TOTAL BASED AIRCRAFT:	**368**	**430**	**500**	**1.54%**

Source: 2015 Master Plan (2012 base year)

The biggest change to the operational fleet mix since the previous master plan is a dramatic increase in air taxi operations from approximately 15,000 in 2012 to nearly 64,000 in 2024, according to the TAF.

BACKGROUND DATA

To evaluate aviation demand at SDL and the facilities necessary to properly accommodate present and future activity, two basic elements must be forecasted: based aircraft and operations. General aviation airports with at least 2,500 enplanements (passengers boarding an aircraft who have paid a fare) also need to project future enplanements. At general aviation airports, these enplanements are typically passengers boarding charter flights.

SOCIOECONOMIC TRENDS

Local and regional forecasts of key socioeconomic variables, such as population, employment, and income, provide an indication of the potential for growth in aviation activities at an airport. In 2024, the base year for these forecasts, there were an estimated 4.6 million residents of Maricopa County. This is projected to grow to 5.9 million by 2044, for an annual growth rate of 1.22 percent. Employment is projected to grow annually at 1.65 percent, while income growth is projected at 1.36 percent through 2024. **Table 2G** summarizes socioeconomic history and projections for Maricopa County, Arizona.

TABLE 2G | Socioeconomic Data

Year	STATE OF ARIZONA			MARICOPA COUNTY		
	Population	Employment	Income	Population	Employment	Income
2015	6,716,074	3,547,646	$40,932	4,106,807	2,439,527	$44,129
2016	6,803,119	3,644,792	$41,831	4,176,050	2,517,630	$45,074
2017	6,880,741	3,740,745	$43,202	4,232,574	2,597,415	$46,390
2018	6,970,505	3,854,741	$44,348	4,293,298	2,690,527	$47,791
2019	7,070,808	3,929,946	$46,072	4,364,459	2,756,810	$49,834
2020	7,186,683	3,920,031	$49,777	4,445,059	2,755,090	$53,484
2021	7,272,487	4,086,801	$51,707	4,499,438	2,884,525	$55,911
2022	7,365,684	4,287,594	$50,318	4,555,833	3,038,704	$54,635
2023	7,431,344	4,369,756	$51,789	4,585,871	3,106,741	$56,955
2024	7,525,596	4,439,367	$52,498	4,649,484	3,163,334	$57,729
CAGR 2015-2024	**1.14%**	**2.27%**	**2.52%**	**1.25%**	**2.63%**	**2.72%**
FORECAST						
2029	8,005,347	4,807,177	$56,200	4,970,672	3,465,843	$61,810
2034	8,495,073	5,181,872	$60,146	5,292,885	3,773,389	$66,178
2044	9,497,220	5,943,662	$68,671	5,929,280	4,391,689	$75,691
CAGR 2024-2044	**1.17%**	**1.47%**	**1.35%**	**1.22%**	**1.65%**	**1.36%**

CAGR = compound annual growth rate

Source: Woods & Poole, Complete Economic and Demographic Data Source (CEDDS), 2024

The Maricopa Association of Governments (MAG) is the metropolitan planning organization (MPO) that includes Scottsdale. MPOs are policy boards that include representatives from local governments and transportation agencies. The MAG is responsible for regional short- and long-term transportation planning for the region. To facilitate its planning efforts, the MAG also projects certain socioeconomic data. The MAG projections were reviewed in comparison to the data presented in **Table 2G**.

For a period from 2020-2040, the MAG projected an annual population increase of 1.68 percent for Maricopa County and a 1.43 percent increase for employment. The MAG does not develop projections of income.

GENERALIZED 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 determined primarily by evaluating the locations of competing airports and their capabilities, services, and 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. Scottsdale Airport is classified as a national general aviation (GA) reliever airport within the NPIAS, which makes it one of the most important general aviation airports in the country. This category of airports is intended to serve the full range of the general aviation fleet, including the largest business jets, and SDL is intended to be an alternate airport for general aviation operators to relieve congestion at Phoenix Sky Harbor International Airport.

General aviation includes all segments of the aviation industry, except commercial air carriers and the military. GA is the largest component of the national aviation system and includes activities such as pilot training, recreational flying, and the use of sophisticated turboprop and jet aircraft for business and corporate use.

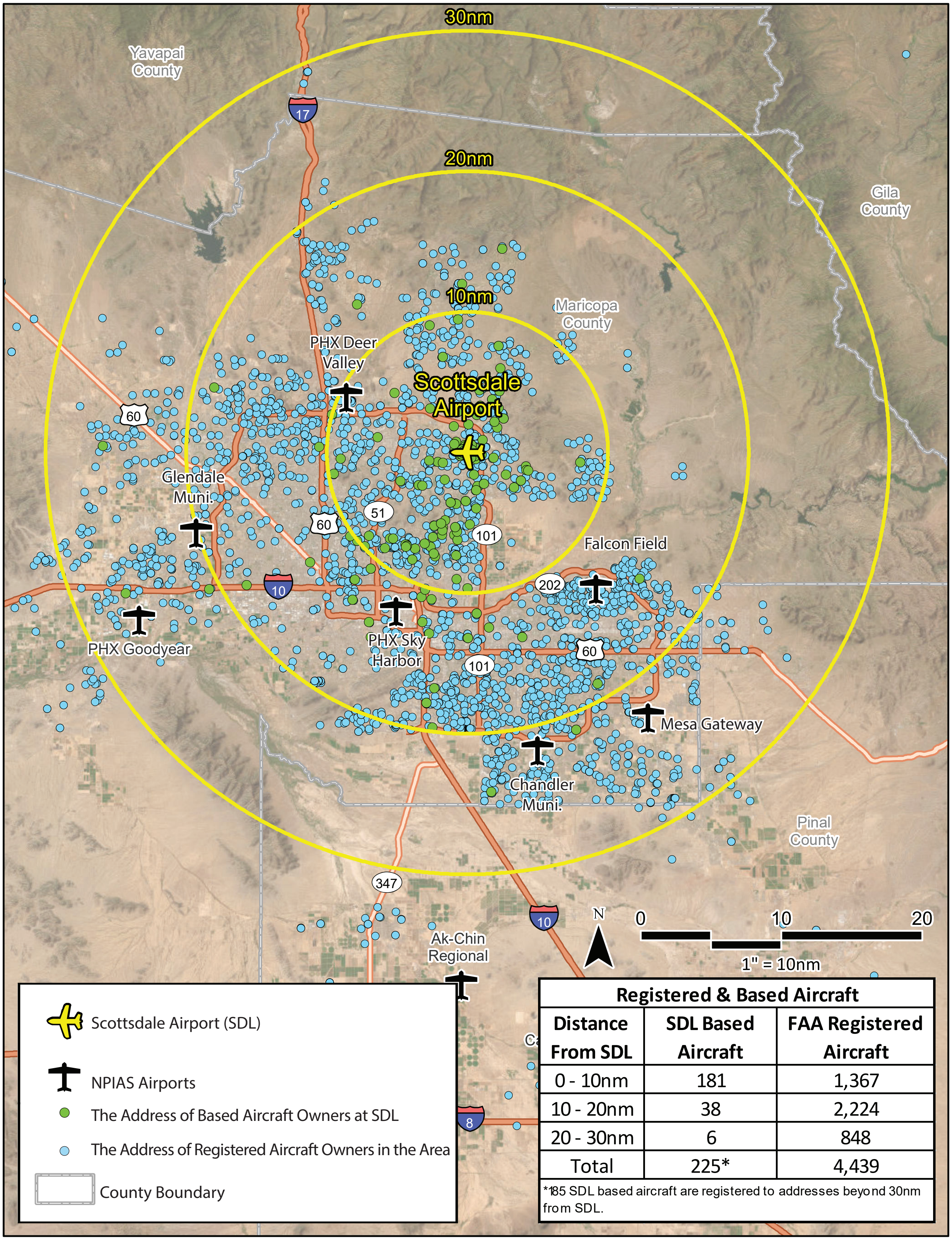
The service area for an airport is a geographical region from which an airport can be expected to attract the largest share of its activity. The definition of the service area can then be used to identify other factors (such as socioeconomic and demographic trends) that influence aviation demand at the airport. Aviation demand is impacted by the proximity of competing airports, the surface transportation network, and the strength of general aviation services provided by the airport and 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 its facilities and services are adequate and/or competitive, some level of aviation activity might be attracted to the airport from more distant locales.

Often, a primary consideration of aircraft owners/operators when choosing where to base their aircraft is the convenience of an airport relative to their homes or places of work. As a general rule, an airport's service area can extend up to and beyond 30 miles. The proximity and level of general aviation services are a defining factor when describing the general aviation service area. A description of nearby airports was previously completed in Chapter One, as presented in Exhibit 1C.

An effective method of defining an airport's service area is to examine the number of registered aircraft owners in proximity to the airport. As previously mentioned, aircraft owners typically choose to base their aircraft at airports near their homes or businesses. **Exhibit 2C** shows all registered general aviation aircraft in the region, based on the zip codes of the aircraft registrations. The exhibit also shows the zip code locations of registered aircraft that are based at SDL.

Of those aircraft based at the airport that are registered to local addresses, the vast majority are within 10 miles of the airport; however, SDL is unusual in that approximately 35 percent of aircraft based at the airport (129 aircraft) are registered to out-of-state addresses, including five registered in Canada. This is a clear indication that SDL offers certain amenities that aircraft owners desire, which may include the level of fixed base operator (FBO) services or proximity to vacation or winter homes. It can also be a function of a business decision to register an aircraft out-of-state for tax purposes or because a corporation's headquarters is in another state. For example, there are 34 SDL based aircraft registered in in Delaware,



Registered & Based Aircraft

Distance From SDL	SDL Based Aircraft	FAA Registered Aircraft
0 - 10nm	181	1,367
10 - 20nm	38	2,224
20 - 30nm	6	848
Total	225*	4,439

*185 SDL based aircraft are registered to addresses beyond 30nm from SDL.

Exhibit 2C
BASED AIRCRAFT LOCATION

a state known for advantageous tax policies for businesses. **Table 2H** summarizes the registration locations for aircraft based at SDL. This table lists all in the basedaircraft.com inventory, several of which are not officially validated by FAA.

For the purposes of this study, the service area is defined as Maricopa County for two primary reasons: (1) most aircraft registrations are within 30 miles of SDL and are in the county, and (2) it is more practicable to assess future aviation demand as a function of countywide data, which is readily available.

TABLE 2H | SDL Based Aircraft Registration Location

Distance from SDL/State	# Based at SDL
10 nm	181
10-20 nm	38
20-30 nm	6
Other Arizona	11
Delaware	34
Oregon	22
Texas	20
Utah	14
Montana	11
Florida	8
CO, VA	5
NC, NE	4
AK, ID, KS, NV	3
CA, IN, MN, NY, PA, WA, WY	2
AR, GA, IL, KY, MA, MI, ND, NJ, RI, SC, SD, TN	1
Canada	5
nm = nautical miles	

Source: National Based Aircraft Inventory database (basedaircraft.com)

GENERAL AVIATON FORECASTS

Forecasts of based aircraft and operations are an important measure for airports to consider when planning future facility needs. Many models used in airport planning use these data as a base input data point. As previously described, several forecasting techniques are employed to develop multiple forecasts. These forecasts will effectively create a planning envelope from which a single selected forecast will be identified and used to determine facility requirements. It is preferred to select a single forecast among the several developed; however, it is also acceptable to blend multiple forecasts to arrive at a selected forecast. It is also common to identify high-, medium-, and low-range scenarios that fall within the planning envelope, but a single forecast must ultimately be selected. The following subsections present the analysis for the forecast.

General aviation encompasses all portions of civil aviation, except commercial service and military operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity at SDL, certain elements of this activity must be forecasted. These indicators of general aviation demand include based aircraft, aircraft fleet mix, and annual operations.

BASED AIRCRAFT FORECAST

The number of aircraft based at general aviation airports is the most basic indicator of demand. The numbers and types of aircraft based at an airport may influence the need for hangars and other facilities, as well as the applicable airport design standards. The applicable design standards may include separation distances and object-clearing surfaces. The addition of numerous small aircraft may have no effect on design standards, while the addition of a few larger business jets can have a substantial impact on applicable design standards.

As of December 30, 2024, there were more than 400 aircraft based at the airport (on airport and off airport property combined); however, the validated based aircraft count from the FAA's National Based Aircraft Inventory database is 333. It is the validated based aircraft count that must serve as the baseline figure for the forecasting effort, as required by the FAA. The fleet mix includes 115 single-engine aircraft, 10 multi-engine piston aircraft, 11 turboprops, 157 business jets, and 40 helicopters. It should be noted that in the facility requirements evaluation to follow, within this master plan, the total number of based aircraft as reported by the airport will be used to evaluate airside and landside facility needs.

The process of developing forecasts of based aircraft begins with an analysis of aircraft ownership in the service area (Maricopa County) through a review of historical aircraft registrations and a projection thereof. Once a registered aircraft projection is developed, it can then be used as one input when developing the based aircraft forecasts.

Registered Aircraft Projections

Aircraft ownership trends for the primary service area will influence the based aircraft trends for an airport. For general aviation activity, the primary service area is Maricopa County. In 2024, there were 4,508 aircraft registered in the county, as shown on **Table 2J**. This is the highest number of registered aircraft since 2012. The last six years have shown an increasing trend in registered aircraft. Not all aircraft registered in one county will be based at an airport in that county. Typically, the number of aircraft registered in a particular county but based at more distant airports will balance out with the number of aircraft owners who registered their aircraft elsewhere but base their aircraft at a subject airport.

TABLE 2J | Maricopa County Registered Aircraft

Year	Single-Engine Piston	Multi-Engine Piston	Helicopters	Turboprop	Jets	Other[1]	Total
2012	3,381	391	321	147	310	415	4,965
2013	2,975	337	266	130	341	332	4,381
2014	2,914	330	252	134	198	317	4,145
2015	2,947	314	242	125	222	329	4,179
2016	3,019	316	245	145	251	399	4,375
2017	3,006	302	250	139	261	398	4,356
2018	2,824	254	231	153	273	360	4,095
2019	2,831	253	216	139	304	337	4,080
2020	2,856	249	202	135	308	349	4,099
2021	2,874	258	220	145	330	354	4,181
2022	2,860	250	233	151	326	359	4,179
2023	3,010	255	273	145	301	359	4,343
2024	3,101	270	290	171	308	368	4,508

[1]Other = gliders, kit planes, sport aircraft, balloons, UAV, electric aircraft, etc.

Source: FAA aircraft registration database

Seven different forecasts of registered aircraft in Maricopa County have been developed. The first considers the FAA's national forecast of active general aviation aircraft, which projects an increase of 0.44 percent annually through 2024. By applying this growth rate to the base year figure of 4,508 registered aircraft, a forecast emerges that results in 4,922 registered aircraft by 2044.

Three growth rate forecasts of registered aircraft were then developed utilizing the projected increases in population (1.22 percent), employment (1.65 percent), and income (1.36 percent) for Maricopa County. These and the other forecasts are summarized in **Table 2K**.

The next forecast utilized the regression model to project 10 years of registered aircraft data into the future plan years. This regression resulted in a very low r^2 value of 0.07, which indicates low statistical reliability. The calculated future registered aircraft projection results in nearly zero growth over the next 20 years, which is the opposite of the trend over the last six years.

TABLE 2K | Maricopa County Registered Aircraft Forecasts

Projection	2024	2029	2034	2044	CAGR 2024-2044
FAA Forecast Growth Rate for Active Aircraft	4,508	4,608	4,710	4,922	0.44%
Population Growth Rate	4,508	4,790	5,089	5,745	1.22%
Employment Growth Rate	4,508	4,892	5,310	6,254	1.65%
Income Growth Rate	4,508	4,823	5,130	5,906	1.36%
Regression 2015-2024 Time Series	4,508	4,362	4,427	4,556	0.05%
Statewide TAF Growth Rate in Based Aircraft	4,508	4,871	5,263	6,144	1.56%
SDL TAF Growth Rate in Based Aircraft	4,508	4,738	4,980	5,501	1.00%
Selected Forecast	**4,508**	**4,738**	**4,980**	**5,501**	**1.00%**

The next forecast applies the annual growth rate of based aircraft in the state, as projected in the statewide TAF. The TAF projects that total based aircraft in the state will increase by 1.56 percent annually. By applying this growth rate to Maricopa County registered aircraft, a forecast emerges that results in 6,144 registered aircraft in the county by 2024.

Finally, the TAF for the airport projects that based aircraft will increase by 1.0 percent annually through 2024. When this growth rate is applied to the current level of registered aircraft in the county, a forecast results for the planning years. This forecast results in 5,501 registered aircraft in the county by 2024.

The collection of these seven registered aircraft forecasts forms a planning envelope with a high and low range. For forecasting purposes, a specific forecast must be selected. A review of the history of registered aircraft in Maricopa County shows that registered aircraft have declined since 2012; however, they have increased (or remained level) year-over-year for each of the past six years. From 2022 to 2024, a total of 164 and 165 new registered aircraft were added each year, respectively; therefore, the growth is happening now in Maricopa County, so the forecast that falls near the middle of the planning envelope is the selected forecast. This forecast acknowledges the recent growth trend while tempering longer-range growth. This is the forecast that applies the based aircraft growth rate from the airport TAF.

Exhibit 2D shows the seven different registered aircraft forecasts for Maricopa County and the selected forecast for use in subsequent based aircraft analyses.

Based Aircraft Projections

A series of based aircraft forecasts are presented in an effort to create a planning envelope of reasonable forecasts. From this envelope, a single forecast will be selected. That forecast of based aircraft will then be used in subsequent analyses to determine facility needs, such as hangar space and aircraft parking apron needs.

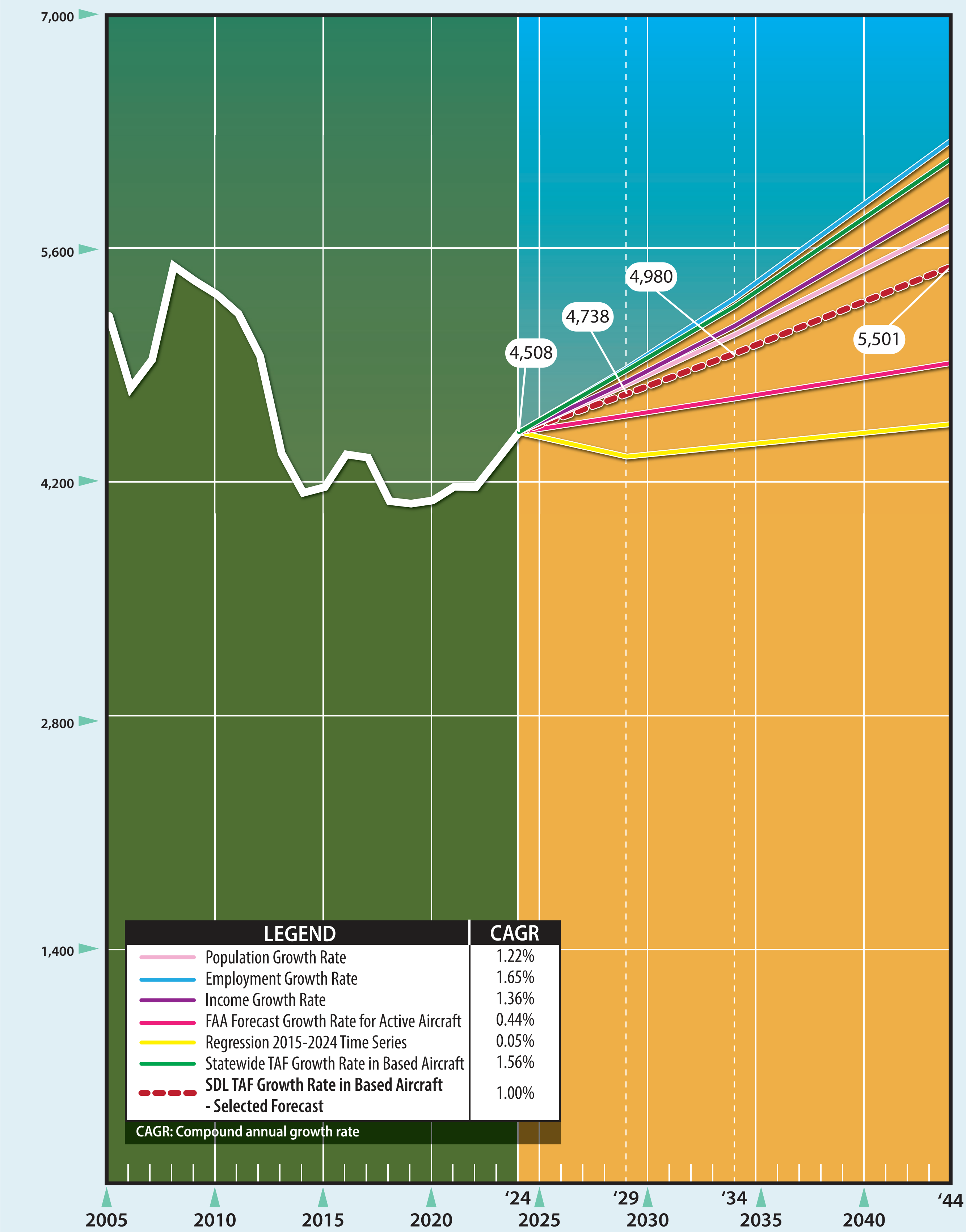


Exhibit 2D - MARICOPA COUNTY REGISTERED AIRCRAFT FORECASTS

Forecasts in Relation to County Registered Aircraft

With 333 validated aircraft currently based at the airport, 7.39 percent of county aircraft registrations are based at SDL (in aggregate). Two based aircraft forecasts were developed utilizing the registered aircraft projection as a data input. These are presented in **Table 2L**.

TABLE 2L | Based Aircraft Forecasts as a Function of Registered Aircraft

Year	Maricopa County Registered Aircraft	Based Aircraft	Market Share
2015	4,179	330	7.90%
2016	4,375	320	7.31%
2017	4,356	374	8.59%
2018	4,095	378	9.23%
2019	4,080	349	8.55%
2020	4,099	356	8.69%
2021	4,181	356	8.51%
2022	4,179	356	8.52%
2023	4,343	364	8.38%
2024	4,508	333	7.39%
Constant Share Projection (CAGR = 1.00%)			
2029	4,738	350	7.39%
2034	4,980	368	7.39%
2044	5,501	406	7.39%
Increasing Market Share Projection (CAGR = 2.14%)			
2029	4,738	367	7.75%
2034	4,980	423	8.50%
2044	5,501	509	9.25%
Statewide TAF Growth Rate (CAGR = 1.56%)			
2029	4,738	360	7.60%
2034	4,980	389	7.81%
2044	5,501	454	8.25%
SDL TAF (CAGR = 1.11%)			
2029	4,738	355	7.49%
2034	4,980	375	7.53%
2044	5,501	415	7.54%

CAGR = compound annual growth rate
TAF = Terminal Area Forecast

The first forecast considers the airport maintaining its 7.39 percent share of county registered aircraft through the 20-year planning period. This results in an annual growth rate of 1.00 percent and a long-term total of 406 based aircraft.

The second forecast considers the possibility of the airport capturing an increasing portion of county registered aircraft. By the long-range time period, this forecast assumes the airport will capture 9.25 percent of county registered aircraft, which is nearly the same as the previous high of 9.23 percent, which was achieved in 2018. This forecast results in an annual growth rate of 2.14 percent and a long-range based aircraft number of 509.

The table also includes two additional forecasts, which are based on the statewide and airport-specific *Terminal Area Forecasts*. These are included as a check of reasonableness. The first utilizes the statewide TAF growth rate of 1.56 percent applied to based aircraft at SDL, which results in a long-term forecast of 454 based aircraft. The last column, which shows the percentage of based aircraft compared to registered aircraft in the county, is the check on reasonableness. This forecast is reasonable, as it falls within the historical average ratio of based aircraft to registered aircraft.

The last forecast is the airport TAF forecast, which has an annual growth rate of 1.11 percent and a long-term forecast of 415 based aircraft. The calculated ratio of based aircraft to registered aircraft is also reasonable for the TAF.

Regression Forecasts

Regression analysis is often a preferred method of forecasting aviation activity because of the statistical nature of the regression model; however, when the historical data associated with the dependent variable (based aircraft) are not consistent, regression models can become less reliable. Over the last 10 years, the TAF data indicate that only three new aircraft have based at the airport. This data set has the effect of severely smoothing the results so that small or no growth results.

Four single-variable regressions were run, the results of which are documented in **Table 2M**. All of the regressions resulted in very low r^2 values, which is an indicator of low statistical reliability. Each regression also resulted in similar projections of based aircraft. These results are a function of the regression model, in which historical based aircraft have been somewhat stagnant and population, employment, and income show steady growth in the future; thus, the based aircraft regressions for these socioeconomic indicators are very similar. The detailed regression models run are included in **Appendix B**.

TABLE 2M | Regression Analysis Based Aircraft Forecasts

Independent Variable	r^2 Value	Dependent Variable (Based Aircraft)				CAGR 2024-2044
		2024	2029	2034	2044	
Year (Time Series)	0.03	333	362	368	379	0.65%
Population	0.04	333	363	369	381	0.68%
Employment	0.03	333	361	365	374	0.58%
Income	0.03	333	358	361	367	0.48%

Forecasts as a Function of the National General Aviation Aircraft Fleet

Utilizing the FAA national forecast for active general aviation aircraft in comparison to based aircraft at SDL, forecasts of future based aircraft can be developed. Two such forecasts are presented in **Table 2N**.

TABLE 2N | Based Aircraft Forecasts as a Function of National Fleet Forecasts

Year	FAA Active Aircraft Forecast[1]	Based Aircraft	Market Share
2015	210,031	330	0.15712%
2016	211,794	320	0.15109%
2017	211,757	374	0.17662%
2018	211,749	378	0.17851%
2019	210,981	349	0.16542%
2020	204,140	356	0.17439%
2021	209,194	356	0.17018%
2022	209,540	356	0.16990%
2023	209,730	364	0.17356%
2024	210,105	333	0.15849%
Constant Share Projection (CAGR = 0.43%)			
2029	213,370	338	0.15849%
2034	217,685	345	0.15849%
2044	228,975	363	0.15849%
Increasing Market Share Projection (CAGR = 1.35%)			
2029	213,370	341	0.16000%
2034	217,685	370	0.17000%
2044	228,975	435	0.19000%
CAGR = compound annual growth rate			

Source: [1]FAA Aerospace Forecasts – FY 2024-2044

The first forecast considers the airport's market share of national active aircraft, which was 0.17356 percent in 2024. By maintaining this percentage constant through the planning years, a forecast emerges that results in an annual growth rate of 0.43 percent and a long-term total of 363 based aircraft.

The second forecast utilizing the national active aircraft forecast from the FAA considers an increasing market share for SDL. Over the last 10 years, the airport's market share has ranged between 0.15 and 0.18 percent. The increasing market share forecast considers a long-term market share of 0.19 percent, which results in an annual growth rate of 1.35 percent and 435 based aircraft by 2044.

Based Aircraft Forecasts as a Function of Socioeconomic Data

Socioeconomic data for a region an airport serves can be a key indicator of aviation demand; therefore, several forecasts have been developed that take into consideration projections for population, employment, and income.

Table 2P presents two projections of based aircraft in relation to projected population growth in Maricopa County. In 2024, the 333 aircraft based at the airport represented 0.07162 aircraft per 1,000 residents. The first projection maintains this ratio into the future years, which results in a based aircraft forecast. By 2044, this forecast predicts 425 based aircraft and an annual growth rate of 1.22 percent.

TABLE 2P | Based Aircraft Forecasts as a Function of Population

Year	Maricopa Population[1]	Based Aircraft	Aircraft per 1,000 Residents
2015	4,106,807	330	0.08035
2016	4,176,050	320	0.07663
2017	4,232,574	374	0.08836
2018	4,293,298	378	0.08804
2019	4,364,459	349	0.07996
2020	4,445,059	356	0.08009
2021	4,499,438	356	0.07912
2022	4,555,833	356	0.07814
2023	4,585,871	364	0.07937
2024	4,649,484	333	0.07162
Constant Share of Population Ratio Projection (CAGR = 1.22%)			
2029	4,970,672	356	0.07162
2034	5,292,885	379	0.07162
2044	5,929,280	425	0.07162
Increasing Share of the 10-Year Average Aircraft per 1,000 Residents (CAGR = 1.80%)			
2029	4,970,672	367	0.07376
2034	5,292,885	402	0.07590
2044	5,929,280	475	0.08017
CAGR = compound annual growth rate			

Source: [1]Woods & Poole, CEDDS

The second population-based forecast uses the 10-year average of the number of based aircraft per 1,000 residents and sets that ratio for the long-term planning timeframe. The short- and intermediate-term timeframes are a mathematical function between the high and low ratios. This forecast results in 475 based aircraft by 2044 and an annual growth rate of 1.80 percent.

Table 2Q presents two projections of based aircraft in relation to projected employment growth in Maricopa County. In 2024, the 333 aircraft based at the airport represented 0.10527 aircraft per 1,000 jobs. The first projection maintains this ratio into the future years, which results in a based aircraft forecast. By 2044, this forecast predicts 462 based aircraft and an annual growth rate of 1.65 percent.

The second employment-based forecast uses the 10-year average of the number of based aircraft per 1,000 jobs and sets that ratio for the long-term planning timeframe. The short- and intermediate-term timeframes are a mathematical function between the high and low ratios. This forecast results in 556 based aircraft by 2044 and an annual growth rate of 2.59 percent.

TABLE 2Q | Based Aircraft Forecasts as a Function of Employment

Year	Maricopa Employment[1]	Based Aircraft	Aircraft per 1,000 Jobs
2015	2,439,527	330	0.13527
2016	2,517,630	320	0.12710
2017	2,597,415	374	0.14399
2018	2,690,527	378	0.14049
2019	2,756,810	349	0.12660
2020	2,755,090	356	0.12922
2021	2,884,525	356	0.12342
2022	3,038,704	356	0.11716
2023	3,106,741	364	0.11716
2024	3,163,334	333	0.10527
Constant Share Projection (CAGR = 1.65%)			
2029	3,465,843	365	0.10527
2034	3,773,389	397	0.10527
2044	4,391,689	462	0.10527
Increasing Share to the 10-Year Average of Aircraft per 1,000 Jobs (CAGR = 2.59%)			
2029	3,465,843	383	0.11059
2034	3,773,389	437	0.11592
2044	4,391,689	556	0.12657
CAGR = compound annual growth rate			

Source: [1]Woods & Poole, CEDDS

Table 2R presents two projections of based aircraft in relation to projected income growth in Maricopa County. In 2024, the 333 aircraft based at the airport represented 5.76833 aircraft per $1,000 in income. The first projection maintains this ratio into the future years, which results in a based aircraft forecast. By 2044, this forecast predicts 437 based aircraft with an annual growth rate of 1.36 percent.

The second employment-based forecast uses the 10-year average of the number of based aircraft per $1,000 in income and sets that ratio for the long-term planning timeframe. The short- and intermediate-term timeframes are a mathematical function between the high and low ratios. This forecast results in 524 based aircraft by 2044 and an annual growth rate of 2.29 percent.

TABLE 2R | Based Aircraft Forecasts as a Function of Income

Year	Maricopa Income	Based Aircraft	Aircraft per $1,000 of Income
2015	44,129	330	7.47808
2016	45,074	320	7.09944
2017	46,390	374	8.06208
2018	47,791	378	7.90944
2019	49,834	349	7.00325
2020	53,484	356	6.65620
2021	55,911	356	6.36726
2022	54,635	356	6.51597
2023	56,955	364	6.39101
2024	57,729	333	5.76833
Constant Share Projection (CAGR = 1.36%)			
2029	61,810	357	5.76833
2034	66,178	382	5.76833
2044	75,691	437	5.76833
Increasing Share to the 10-Year Average Aircraft per $1,000 of Income (CAGR = 2.29%)			
2029	61,810	374	6.05752
2034	66,178	420	6.34672
2044	75,691	524	6.92511
CAGR = compound annual growth rate			

Source: Woods & Poole, CEDDS

Based Aircraft Forecast Summary

A multitude of forecasts have been developed for based aircraft at SDL. Each forecast is summarized in **Table 2S**, in which they are listed in order from lowest to highest growth rate.

TABLE 2S | Based Aircraft Forecast Summary

Method	2024	2029	2034	2044	CAGR
Market Share of U.S. Active Aircraft (Constant)	333	338	345	363	0.43%
Regression 10-Year Income	333	358	361	367	0.48%
Regression 10-Year Trend Line	333	362	368	379	0.65%
Regression 10-Year Employment	333	361	365	374	0.58%
Regression 10-Year Population	333	363	369	381	0.68%
Market Share of Registered Aircraft (Constant)	333	350	368	406	1.00%
SDL FAA Terminal Area Forecast (TAF)	333	355	375	415	1.11%
Market Share of Population to Based Aircraft (Constant)	333	356	379	425	1.22%
Market Share of U.S. Active Aircraft (Increasing)	333	341	370	435	1.35%
Market Share of Income (Constant)	333	357	382	437	1.36%
Statewide TAF Growth Rate for Based Aircraft	333	360	389	454	1.56%
Market Share of Employment (Constant) – SELECTED FORECAST	**333**	**365**	**397**	**462**	**1.65%**
Market Share of Population to Based Aircraft (10-Year Average)	333	367	402	475	1.80%
Market Share of Registered Aircraft (Increasing)	333	367	423	509	2.14%
Market Share of Income (10-Year Average)	333	374	420	524	2.29%
Market Share of Employment (10-Year Average)	333	383	437	556	2.59%
CAGR = compound annual growth rate					

Source: Coffman Associates analysis

It is the responsibility of the forecast analyst to select a single forecast for use in facility planning. The long-term forecast of based aircraft ranges from a low of 363 to a high of 556. The airport expects to experience continued hangar development and redevelopment to accommodate increasing demand. A selected mid-range forecast would be appropriate for planning purposes; therefore, **the selected based aircraft planning forecast is the constant market share of employment forecast**.

The forecast of based aircraft for SDL is an unconstrained forecast, which means no constraints have been placed on the results based on hangar or aircraft apron availability. The unconstrained forecast can only be realized if facility development to accommodate the new based aircraft is able to keep up with demand.

The following is the recommended based aircraft forecast to be carried forward for planning purposes:

- 2024 – 333 based aircraft
- 2029 – 365 based aircraft
- 2034 – 397 based aircraft
- 2044 – 462 based aircraft

Exhibit 2E graphically presents the planning envelope created by the multiple based aircraft forecasts developed, as well as the selected forecast.

BASED AIRCRAFT FLEET MIX

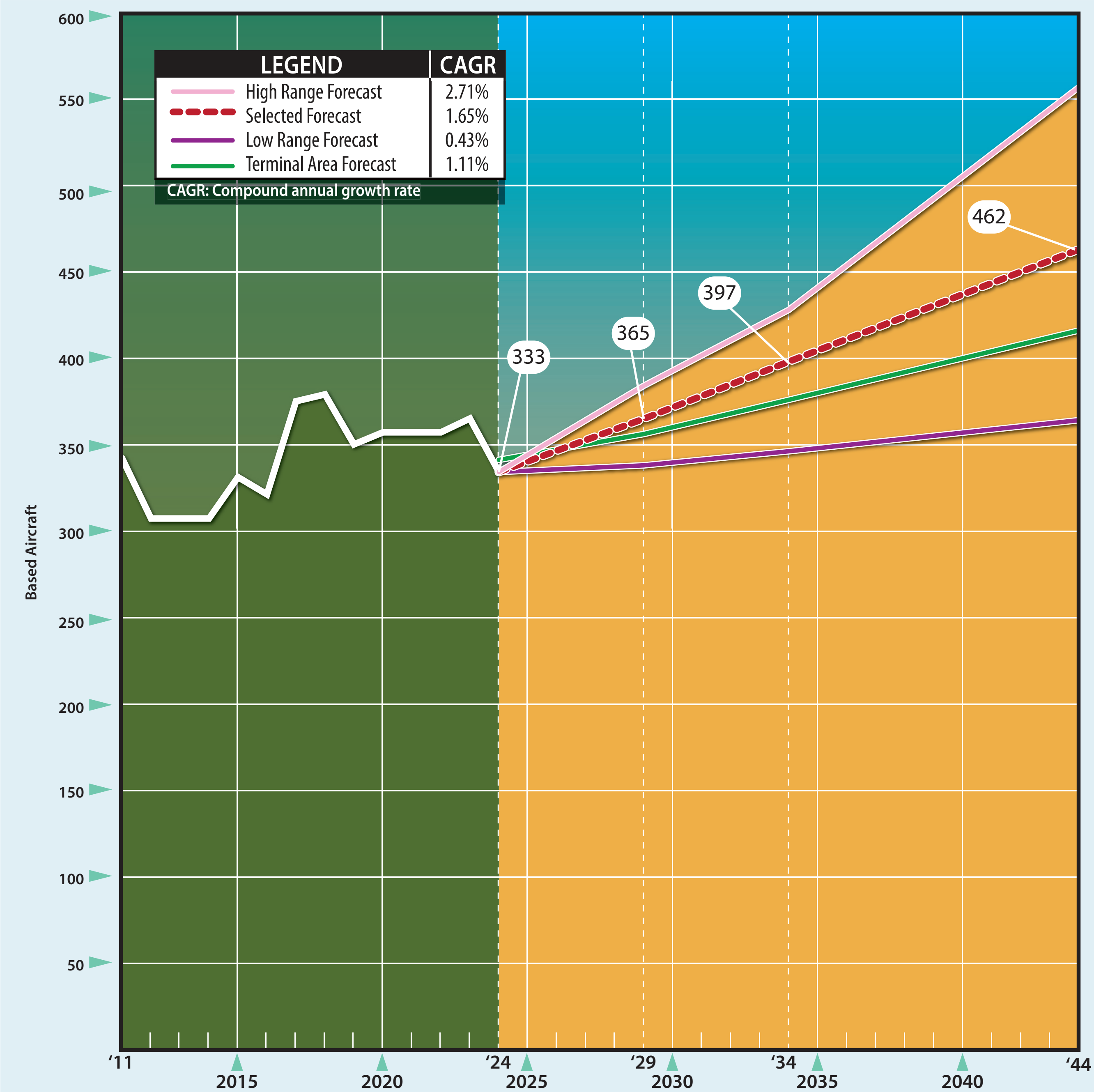
The fleet mix of based aircraft is often more important to airport planning and design than the total number of aircraft. For example, the presence of one or a few large business jets can impact design standards for the runway and taxiway system more than a large number of smaller single-engine piston-powered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

The based aircraft fleet mix forecast for SDL is presented in **Table 2T** and at the bottom of **Exhibit 2E**. This forecast has been developed based on local aircraft type usage and national trends, as presented in the FAA *Aerospace Forecasts – FY 2024-2044*. The FAA expects business jets will continue to be the fastest growing general aviation aircraft type in the future. SDL is well-positioned to accommodate more business jets; nevertheless, smaller piston-powered aircraft will continue to have a significant presence.

TABLE 2T | Based Aircraft Fleet Mix

Aircraft Type	EXISTING		FORECAST					
	2024	%	2029	%	2034	%	2044	%
Single-Engine Piston	115	34.5%	121	33.2%	130	32.7%	145	31.4%
Multi-Engine Piston	10	3.0%	10	2.7%	10	2.5%	10	2.2%
Turboprop	11	3.3%	18	4.9%	24	6.0%	35	7.6%
Jet	157	47.1%	171	46.8%	183	46.1%	212	45.9%
Helicopter	40	12.0%	45	12.3%	50	12.6%	60	13.0%
Totals:	**333**	**100.0%**	**365**	**100.0%**	**397**	**100.0%**	**462**	**100.0%**

Source: basedaircraft.com; forecast is Coffman Associates analysis of local and national trends



	EXISTING		FORECAST					
Aircraft Type	**2024**	**%**	**2029**	**%**	**2034**	**%**	**2044**	**%**
Single Engine Piston	115	34.5%	121	33.2%	130	32.7%	145	31.4%
Multi-Engine Piston	10	3.0%	10	2.7%	10	2.5%	10	2.2%
Turboprop	11	3.3%	18	4.9%	24	6.0%	35	7.6%
Jet	157	47.1%	171	46.8%	183	46.1%	212	45.9%
Helicopter	40	12.0%	45	12.3%	50	12.6%	60	13.0%
Totals	**333**	**100.0%**	**365**	**100.0%**	**397**	**100.0%**	**462**	**100.0%**

Exhibit 2E
BASED AIRCRAFT FORECAST

GENERAL AVIATION OPERATIONS

Operations at SDL are classified as general aviation, air taxi, or military. General aviation operations include a wide range of activities, from recreational use and flight training to business and corporate uses. Air taxi operations are those conducted by aircraft operating under Title 14 Code of Federal Regulations (CFR) Part 135, otherwise known as for-hire or on-demand activity. Military operations are those conducted by various branches of the U.S. military.

General aviation operations are classified by the airport traffic control tower (ATCT) as either local or itinerant. A local operation is a takeoff or landing performed by an aircraft that operates within sight of an airport or executes simulated approaches or touch-and-go operations at an airport. Itinerant operations are those performed by aircraft with specific origins or destinations away from an airport. Generally, local operations are characterized by training operations. Itinerant operations tend to increase with business and commercial use because business aircraft are typically operated at a higher frequency.

Table 2U summarizes the itinerant and local general aviation operations at the airport since 2015. As of 2024, itinerant general aviation operations represent 64.6 percent of total general aviation operations at SDL and local general aviation operations represent 35.4 percent of the total.

TABLE 2U | Historical General Aviation Operations

Year	Itinerant	% of Total	Local	% of Total	Total	Year Over Year Percent Change +/-
2015	77,281	58.8%	54,158	41.2%	131,439	N/A
2016	83,950	59.0%	58,270	41.0%	142,220	8.2%
2017	93,124	61.1%	59,368	38.9%	152,492	7.2%
2018	87,810	58.5%	62,245	41.5%	150,055	-1.6%
2019	89,634	52.9%	79,743	47.1%	169,377	12.9%
2020	87,161	50.6%	85,160	49.4%	172,321	1.7%
2021	78,906	61.7%	48,880	38.3%	127,786	-25.8%
2022	84,200	67.6%	40,298	32.4%	124,498	-2.6%
2023	74,486	62.2%	45,204	37.8%	119,690	-3.9%
2024	64,608	64.6%	35,478	35.4%	100,086	-16.4%

Source: OPSNET FAA database of SDL tower counts

Each classification of operation will be forecasted individually and then combined to arrive at a total operations forecast.

Itinerant General Aviation Operations Forecast

Itinerant general aviation operations are conducted by pilots who are operating to or from the airport and are not within the traffic pattern. Several forecasts for itinerant general aviation operations have been developed, the collection of which will form the planning envelope. The planning envelope represents the high and low range of potential future itinerant general aviation activity. A single forecast will be selected for use in future facility needs analysis.

Regression Analysis

The first set of forecasts utilizes the statistical regression model. The first set of regressions utilizes time as the independent variable. This type of regression analysis is also referred to as time series analysis. Multiple time series regressions were run with itinerant general aviation operations as the dependent variable. At least 10 years of historical data is preferred.

Three total time series regressions were run. The first used 10 years of data, the second used 15 years, and the third used 25 years. The results of these time series regressions are presented in **Table 2V**, and the analytical data and regression model are included in **Appendix B**. Because of the variable nature of historical itinerant general aviation operations, the time series regressions returned r^2 values that indicate low statistical reliability. Only the 15-year time series regression returned a forecast that seems reasonable; however, this regression also returned the lowest r^2 value.

TABLE 2V | Regression Analysis – Itinerant GA Operations

Independent Variable	r^2 Value	Dependent Variable (Itinerant GA Ops)				CAGR 2024-2044
		2024	2029	2034	2044	
Time Series (2015-2024)	0.30	64,608	67,485	59,785	44,385	-1.86%
Time Series (2010-2024)	0.05	64,608	84,112	86,251	90,527	1.70%
Time Series (2000-2024)	0.54	64,608	60,487	51,137	32,437	-3.39%
Population (2015-2024)	0.27	64,608	68,484	60,908	45,945	-1.69%

An additional regression was run that utilized 10 years of population data for Maricopa County. This regression also has low statistical reliability and resulted in a negative growth curve. None of these regressions are considered reliable and none will be the selected forecast for itinerant general aviation operations.

Market Share Analysis

Several market share forecasts for itinerant general aviation operations have been developed and are presented in **Table 2W**. The market share forecasts consider the airport's share of national itinerant general aviation operations as projected by the FAA in *Aerospace Forecasts – FY 2024-2044*. The table also includes the ratio of itinerant general aviation operations to the number of aircraft based at the airport. Both of these variables are used to not only develop specific forecasts, but also to serve as a check on the reasonableness of the forecast, showing future ratios in comparison to historical ratios.

The first market share forecast maintains the airport's 2024 market share of national itinerant general aviation operations (0.4272 percent) through the future plan years. This forecast results in moderate growth in itinerant general aviation operations at SDL and an annual growth rate of 0.46 percent.

The TAF for the airport, as developed by FAA headquarters, is shown in the table so it can be compared against other forecasts. The relationship of the TAF to U.S. itinerant general aviation operations and to operations per based aircraft can be examined for reasonableness.

The next forecast applies the TAF annual growth rate (0.60 percent) to the number of itinerant general aviation operations in 2024, creating a projection of future operations.

TABLE 2W | General Aviation Itinerant Operations Forecast

Year	SDL GA Itinerant Operations[1]	U.S. GA Itinerant Operations[2] (thousands)	Market Share of National GA Itinerant Operations
2015	77,281	13,887	0.5565%
2016	83,950	13,905	0.6037%
2017	93,124	13,839	0.6729%
2018	87,810	14,130	0.6214%
2019	89,634	14,245	0.6292%
2020	87,161	12,608	0.6913%
2021	78,906	13,775	0.5728%
2022	84,200	14,635	0.5753%
2023	74,486	14,591	0.5105%
2024	64,608	15,125	0.4272%
Constant Market Share of 2024 Share of U.S. Itinerant Operations (CAGR = 0.46%)			
2029	68,018	15,924	0.4272%
2034	68,913	16,133	0.4272%
2044	70,773	16,569	0.4272%
SDL Terminal Area Forecast (CAGR = 0.76%)			
2029	74,054	15,924	0.2900%
2034	74,425	16,133	0.3000%
2044	75,172	16,569	0.3200%
2024 FAA TAF Projection Growth Rate (CAGR = 0.60%)			
2029	66,570	15,924	0.4181%
2034	68,591	16,133	0.4252%
2044	72,819	16,569	0.4395%
Increasing Market Share of U.S. Itinerant Operations (CAGR = 1.65%) – SELECTED FORECAST			
2029	70,812	15,924	0.4447%
2034	77,019	16,133	0.4774%
2044	89,636	16,569	0.5410%
CAGR = compound annual growth rate from 2024 to 2044			

Sources: [1]Historical data from ATCT records, as reported to the FAA; [2]FAA Aerospace Forecasts – FY 2024-2044

The last market share forecast considers the airport capturing an increasing percent of national itinerant general aviation operations. In 2017, the airport experienced more than 93,000 itinerant general aviation operations. This forecast results in a long-term total of 89,636 itinerant general aviation operations and an annual growth rate of 1.65 percent.

Selected Itinerant General Aviation Operations Forecast

Exhibit 2F graphically shows the market share forecasts and the most reasonable of the regression forecasts. The collection of forecasts forms the planning envelope. The increasing market share of U.S. itinerant general aviation operations is the selected forecast. This forecast was selected because in the recent past, the airport has experienced more than 90,000 annual itinerant general aviation operations, so it is reasonable to believe they can return to those levels. The selected forecast also falls within the mid-range of the planning envelope; therefore, it will be used for subsequent facility planning.

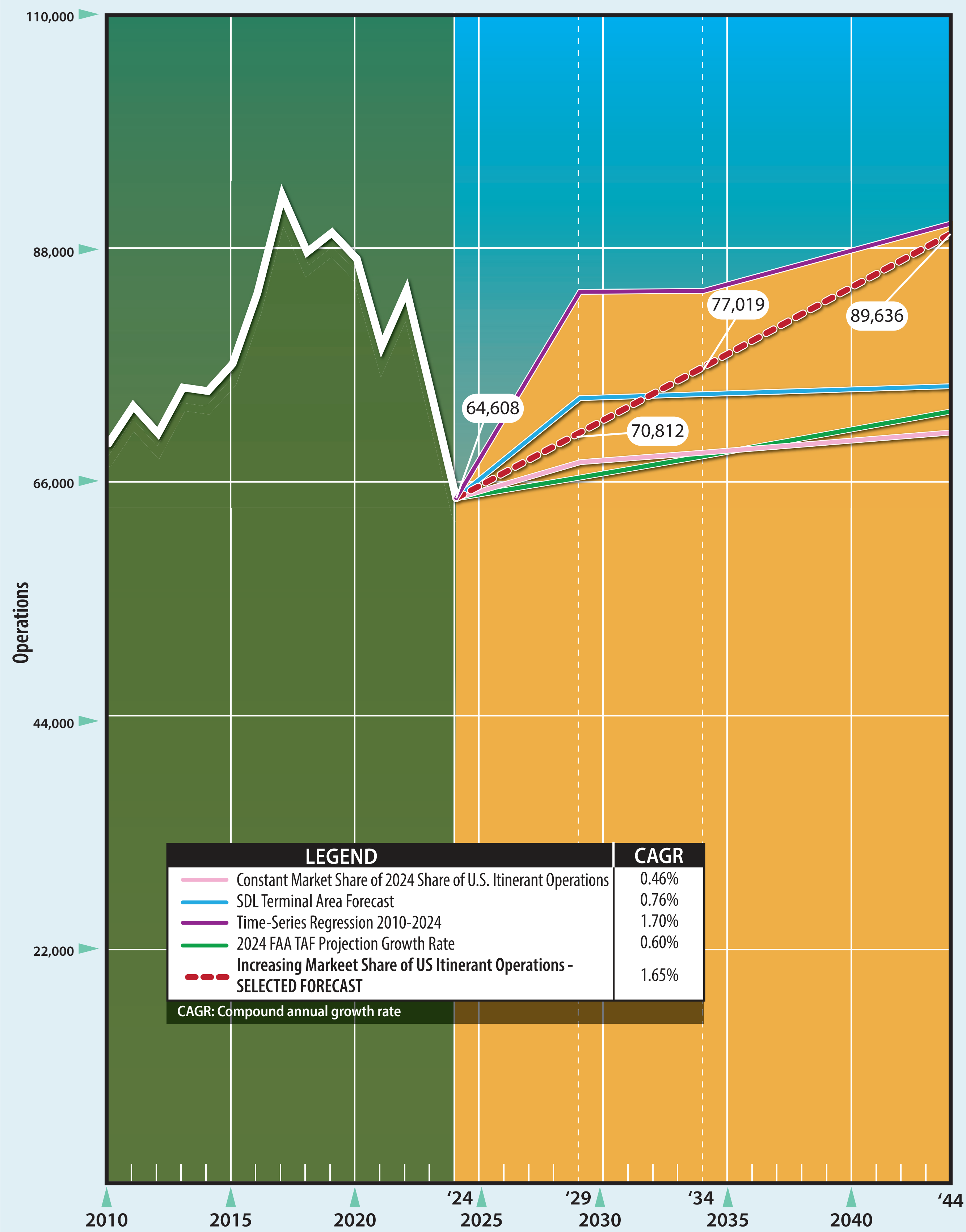


Exhibit 2F - ITINERANT GENERAL AVIATION OPERATIONS FORECASTS

Local General Aviation Operations Forecast

Local general aviation operations are conducted by pilots operating within the airport's traffic pattern and/or conducting training operations. Several forecasts for local general aviation operations have been developed, the collection of which will form the planning envelope. The planning envelope represents the high and low range of potential future local general aviation activities. A single forecast will be selected for use in future facility needs analysis.

Regression Analysis

The first set of forecasts utilizes the statistical regression model with time as the independent variable. This type of regression analysis is also referred to as time series analysis. Two time series regressions were run with local general aviation operations as the dependent variable. The first considered 10 years of data and the second considered 15 years of data.

The results of these time series regressions are presented in **Table 2Y**, and the analytical data and regression model are included in **Appendix B**. Because of the variable nature of historical local general aviation operations, the time series regressions returned r^2 values that indicate low statistical reliability.

TABLE 2Y | Regression Analysis – Local GA Operations

Independent Variable	r^2 Value	Dependent Variable (Local GA Operations)				CAGR 2024-2044
		2024	2029	2034	2044	
Time Series (2015-2024)	0.20	35,478	34,448	22,642	-971	N/A
Time Series (2010-2024)	0.03	35,478	50,262	47,730	42,664	0.93%
Population (2015-2024)	0.17	35,478	36,370	24,971	2,458	-12.50%

A third single-variable regression utilizing historical and projected population growth in Maricopa County was also run. This regression also had a low r^2 value and resulted in a declining trend in local general aviation operations to less than 3,000 annual operations. Only the 2010-2024 time series regression appears reasonable; however, even this regression shows a large, short-term increase in local general aviation operations followed by a declining trend in subsequent timeframes. As a result of the low statistical reliability of the regression forecasts, these are not considered further.

Market Share Analysis

Several market share forecasts for local general aviation operations have been developed and are presented in **Table 2Z**. The market share forecasts consider the airport's share of national local general aviation operations as projected by the FAA in *Aerospace Forecasts – FY 2024-2044*. The table also includes the ratio of local general aviation operations to the number of aircraft based at the airport. Both variables are used to not only develop specific forecasts, but also to serve as a check on the reasonableness of other forecasts by showing future ratios in comparison to historical ratios.

The first market share forecast maintains the airport's 2024 ratio of national local general aviation operations (0.2231 percent) through the future plan years. This forecast results in moderate growth in local general aviation operations at SDL and an annual growth rate of 0.50 percent.

TABLE 2Z | General Aviation Local Operations Forecast

Year	SDL GA Local Operations[1]	US GA Local Operations[2] (thousands)	Market Share Local Operations
2015	54,158	11,691	0.4632%
2016	58,270	11,633	0.5009%
2017	59,368	11,732	0.5060%
2018	62,245	12,354	0.5038%
2019	79,743	13,109	0.6083%
2020	85,160	12,333	0.6905%
2021	48,880	13,479	0.3626%
2022	40,298	14,029	0.2872%
2023	45,204	15,282	0.2958%
2024	35,478	15,900	0.2231%
Constant Market Share of 2024 Share of U.S. Local Operations (CAGR = 0.50%)			
2029	37,163	16,655	0.2231%
2034	37,821	16,950	0.2231%
2044	39,205	17,571	0.2231%
Increasing Market Share of U.S. Local Operations (CAGR = 3.73%)			
2029	43,304	16,655	0.2600%
2034	54,242	16,950	0.3200%
2044	73,798	17,571	0.4200%
SDL Terminal Area Forecast (CAGR = 2.48%)			
2029	55,379	16,655	0.3325%
2034	56,213	16,950	0.3316%
2044	57,918	17,571	0.3296%
2024 FAA TAF Projection Growth Rate (CAGR = 2.05%) – SELECTED FORECAST			
2029	39,267	16,655	0.2358%
2034	43,460	16,950	0.2564%
2044	53,238	17,571	0.3030%
CAGR = compound annual growth rate from 2024 to 2044			

Sources: [1]Historical data from ATCT records, as reported to FAA; [2]FAA Aerospace Forecasts – FY 2024-2044

The next market share forecast considers the airport capturing a higher percentage of national local general aviation operations. As recently as 2020, the airport captured 0.69 percent of national local general aviation operations. This increasing market share reflects an increase to 0.42 percent. While this is still well below recent levels, it also reflects the fact that local general aviation operations have been decreasing overall at SDL.

The TAF for the airport, as developed by FAA headquarters, is shown in the table so it can be compared against other forecasts. The relationship of the TAF to U.S. local general aviation operations and to operations per based aircraft can be examined for reasonableness.

The last forecast applies the TAF annual growth rate (2.05 percent) to the number of local general aviation operations in 2024, creating a projection of future operations.

Selected Local General Aviation Operations Forecast

Exhibit 2G graphically shows the local general aviation operations forecasts and the selected forecast. The collection of forecasts forms the planning envelope. The selected forecast falls within the mid-range of the planning envelope and will be used for subsequent facility planning. The selected forecast reflects a modest but reasonable increase in local general aviation operations.

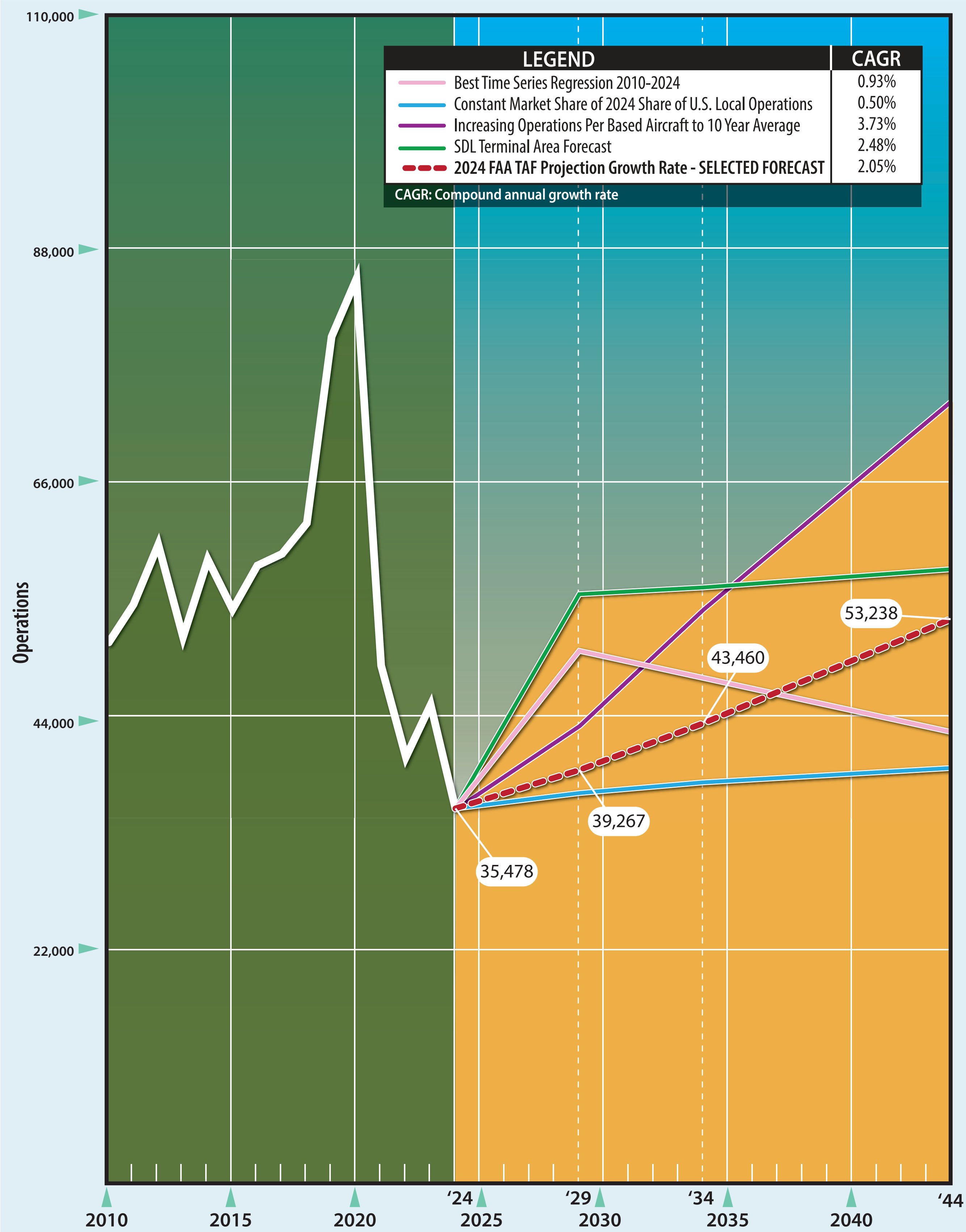


Exhibit 2G
LOCAL GENERAL AVIATION OPERATIONS FORECAST

Air Taxi Operations Forecast

Air taxi operations are those with authority to provide on-demand transportation of persons or property via aircraft with fewer than 60 passenger seats. At SDL, the air taxi category encompasses most charter, fractional, aerial tour, and air ambulance aircraft.

Regression Analysis

The first set of air taxi forecasts is comprised of three time series forecasts that utilize the regression model with air taxi operations as the dependent variable. The first forecast considers 10 years of data, the second considers 15 years of data, and the third considers historical data back to the year 2000.

The results of these time series regressions are presented in **Table 2AA**, and the analytical data and regression model are included in **Appendix B**.

TABLE 2AA | Regression Analysis – Air Taxi Operations

Independent Variable	r^2 Value	Dependent Variable (Air Taxi Operations)				CAGR 2024-2044
		2024	2029	2034	2044	
Time Series (2015-2024)	0.84	66,178	86,477	115,884	174,699	4.97%
Time Series (2010-2024)	0.68	66,178	63,986	80,194	112,611	2.69%
Time Series (2000-2024)	0.56	66,178	45,717	53,501	69,070	0.21%
Population (2015-2024)	0.80	66,178	85,002	115,234	174,945	4.98%
Population (2010-2024)	0.66	66,178	63,204	79,912	112,910	2.71%

The time series regression that considered 10 years of data resulted in an r^2 value of 0.84, which indicates moderate statistical reliability. This forecast results in an aggressive annual growth rate of 4.97 percent and nearly 175,000 air taxi operations by 2044.

The second time series forecast considered 15 years of historical data and resulted in an r^2 value of 0.68, which is lower than preferred. This forecast results in an annual growth rate in air taxi operations of 2.69 percent and a total of 69,070 operations by 2044.

The third time series regression considers 25 years of historical data. Typically, large historical data sets have the effect of smoothing the projections so that spikes in the data or recent trends are more subdued. Such is the case with this projection, as air taxi operations decline significantly in the first five years and then begin to increase in the 10- and 20-year timeframes. This forecast results in a low r^2 value of 0.21, which indicates low statistical reliability.

Two more single-variable regressions were run utilizing population as the independent variable. The first considered 10 years of population data and resulted in an r^2 value of 0.80. This r^2 value is lower than is generally considered statistically reliable and results in an annual growth rate of 4.98 percent and nearly 175,000 air taxi operations by 2044.

A second regression that considered 15 years of data was also run. As expected with a larger data set, the result was to moderate the projected growth in air taxi operations. This forecast of air taxi operations had an r^2 value of 0.66, indicating moderate to low statistical reliability, and resulted in 112,910 operations by 2044.

Market Share Analysis

Several market share forecasts for air taxi operations were developed and are presented in **Table 2BB**. The market share forecasts consider the airport's share of national air taxi operations as projected by the FAA in *Aerospace Forecasts – FY 2024-2044*. The table also includes the TAF projection of air taxi operations and the application of the TAF growth rate to the 2024 air taxi operations figure to project future activity levels.

TABLE 2BB | Air Taxi Operations Forecast

Year	SDL Total Air Taxi Operations[1]	U.S. ATCT Air Taxi Operations[2] (thousands)	SDL Percent
2015	15,362	7,895	0.1946%
2016	15,404	7,580	0.2032%
2017	15,000	7,180	0.2089%
2018	15,304	7,126	0.2148%
2019	16,513	7,234	0.2283%
2020	23,150	5,472	0.4231%
2021	35,805	5,885	0.6084%
2022	47,734	6,522	0.7319%
2023	55,587	6,456	0.8610%
2024	66,178	6,476	1.0219%
Constant Market Share of US Air Taxi Operations (CAGR = 0.73%)			
2029	65,261	6,386	1.0219%
2034	68,960	6,748	1.0219%
2044	76,543	7,490	1.0219%
Increasing Market Share of US Air Taxi Operations (CAGR = 4.81%)			
2029	78,470	6,386	1.2288%
2034	96,876	6,748	1.4356%
2044	169,498	7,490	2.2630%
2024 Terminal Area Forecast (CAGR = 3.89%)			
2029	77,761	6,386	1.2177%
2034	95,060	6,748	1.4087%
2044	142,061	7,490	1.8967%
2024 FAA TAF[3] Growth Rate Projection (CAGR = 4.10%) – SELECTED FORECAST			
2029	80,903	6,386	1.2669%
2034	98,906	6,748	1.4657%
2044	147,818	7,490	1.9735%
CAGR = compound annual growth rate (2024-2044)			

Sources: [1]Historical data from ATCT records, as reported to the FAA; [2]FAA Aerospace Forecasts – FY 2024-2044; [3]2024 Terminal Area Forecast, published January 2025

The first market share forecast maintains the airport's 2024 ratio of air taxi operations (1.0219 percent) to national air taxi operations and extends that ratio through the future plan years. This forecast results in moderate growth in air taxi operations at SDL and an annual growth rate of 0.73 percent.

The next market share forecast considers an increasing ratio of SDL air taxi operations to the national forecast for air taxi operations. Over the past 10 years, this ratio has been increasing. This forecast considers the growth rate percentage over the last 10 years and applies it to the 20-year projection. This forecast results in an annual growth rate of 4.81 percent and 169,498 air taxi operations by 2044.

The TAF forecast of air taxi operations for the airport, as developed by FAA headquarters, is shown in the table so it can be compared against other forecasts. The relationship of the TAF to U.S. air taxi operations can be examined for reasonableness in comparison to historical trends. The TAF forecast has an annual growth rate of 3.89 percent and a 2044 total of 142,061 air taxi operations. It should be noted that the growth rate for this forecast includes the actual 2024 air taxi operations as counted by the ATCT.

The last forecast uses the TAF annual growth rate of 4.10 percent. This growth rate is slightly higher than the previous TAF-related forecast because the TAF air taxi number for 2024 was lower than the actual number of air taxi operations. When applying the TAF growth rate, 147,818 total air taxi operations are anticipated by 2044.

Selected Air Taxi Operations Forecast

According to the FAA TAF, air taxi operations at SDL are projected to increase significantly over the next 20 years. Air taxi activity in recent years would support such a forecast. When the COVID-19 pandemic started, commercial activity plummeted but general aviation activity increased; the air taxi segment increased precipitously. In 2019, SDL experienced 16,513 air taxi operations. In each subsequent year, air taxi operations have increased, and by 2024, there were 66,178 air taxi operations, which is a 301 percent increase (26.03 percent annually) over these six years.

Over this same timeframe, facility development at the airport has primarily been to accommodate growth in the air taxi segment. Most of the new hangars constructed, both on the airport and in the airpark, are larger conventional hangars, which typically house larger aircraft that are normally utilized in an air taxi capacity. In addition, several new entrants in the air taxi class have begun operations at the airport, including JSX, which offers public charter air taxi service, and NetJets, which utilizes SDL as a national base and has a new hangar/office/apron complex.

The collection of air taxi forecasts creates a planning envelope that represents the high and low range. For planning purposes, a single forecast is selected for use in subsequent facility requirements analysis. The selected forecast is the one that applies the TAF growth rate of 4.10 percent to the 2024 air taxi operations figure and extends that growth rate through the plan years. This forecast was selected because it is consistent with the trend over the last six years and reflects the changing dynamic of activity at the airport toward a greater percentage of air taxi operations as compared to general aviation operations. **Exhibit 2H** graphically shows the air taxi forecasts and the selected forecast.

Military Operations

Military aircraft can (and do) utilize civilian airports across the country. Scottsdale Airport experiences activity by military aircraft. Forecasts of military activity are inherently difficult because of the national security nature of military activity and the fact that military missions can change without notice; thus, it is typical for the FAA to utilize a flat line number for military operations in the TAF. At Scottsdale Airport, the FAA TAF projects 365 annual itinerant military operations and two annual local military operations for each year of the 20-year planning horizon. These estimates for military operations will be carried forward in this master plan. **Table 2CC** summarizes the history of military operations at SDL and shows the operations estimated in the future from the TAF.

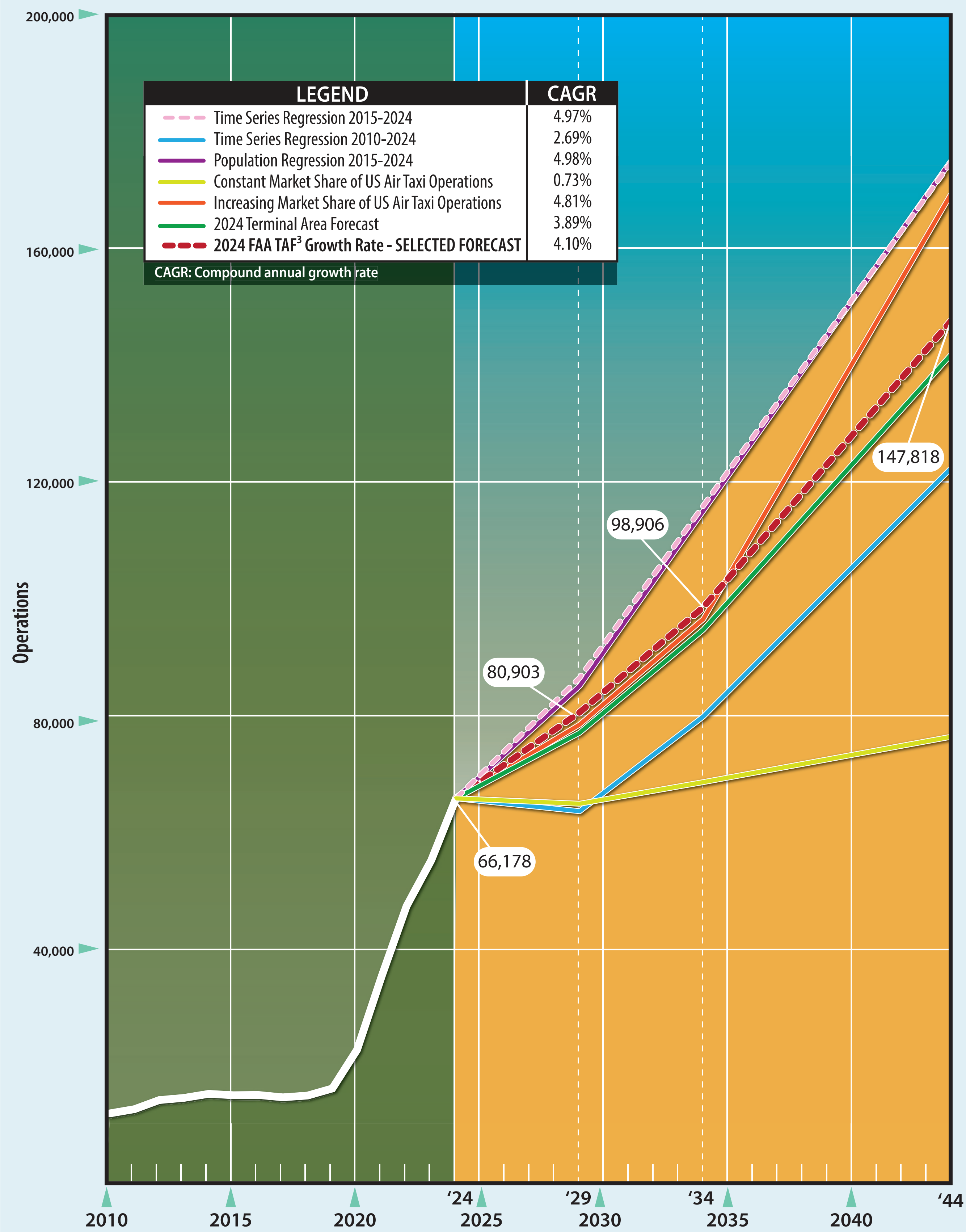


Exhibit 2H
AIR TAXI OPERATIONS FORECAST

TABLE 2CC | Military Operations Forecast

Year	Military Itinerant	Military Local	Total
2015	824	128	952
2016	593	78	671
2017	577	62	639
2018	731	101	832
2019	606	18	624
2020	316	65	381
2021	436	24	460
2022	481	34	515
2023	541	8	549
2024	320	4	324
Military Operations Forecast (CAGR = 0.0%)			
2029	365	2	367
2034	365	2	367
2044	365	2	367

Sources: FAA Terminal Area Forecast (TAF); history from FAA OPSNET

Total Operations Forecast Summary

Each operational element has been individually forecasted. **Table 2DD** presents a summary of the operations forecast to be utilized in this master plan. Air taxi operations are projected to account for an increasing portion of total operations over time, ultimately representing more than 50 percent of total operations by 2044.

TABLE 2DD | Total Operations Forecast

Year	ITINERANT OPERATIONS				LOCAL OPERATIONS			TOTAL OPERATIONS
	Air Taxi	GA	MIL	Subtotal	GA	MIL	Subtotal	
2024	66,178	64,608	320	131,106	35,478	4	35,482	166,588
2029	80,903	70,812	365	152,080	39,267	2	39,269	191,349
2034	98,906	77,019	365	176,290	43,460	2	43,462	219,752
2044	147,818	89,636	365	237,819	53,238	2	53,240	291,059
CAGR 2024-2044	**4.10%**	**1.65%**	**N/A**	**3.02%**	**2.05%**	**N/A**	**2.05%**	**2.83%**

CAGR = compound annual growth rate

OPERATIONS PEAKING FORECAST

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

- Peak month – the month within the calendar year when peak aircraft operations occur
- Design day – the average day in the peak month
- Design hour – the average peak hour within the design day of a typical week in the peak month

Peak Month | The peak month is an absolute peak within a given year. In 2024, the peak month for operations was April, during which there were 15,627 operations, which represented 9.38 percent of annual operations. All other peak periods will be exceeded at various times during the year. The peak period forecasts represent reasonable planning standards that can be applied without overbuilding or being too restrictive. The method for forecasting the peak operational parameters was to first determine the peak parameters for the base year of 2024, utilizing ATCT records. From this analysis, appropriate factors can be applied to the forecast years.

Design Day | The design day was determined by dividing peak month operations by the number of days in the month. There are 30 days in April; therefore, the design day is 521 operations.

Design Hour | The design hour is determined through an examination of the hourly operations of the peak days of the peak month. Hourly operational data for April 2024 was utilized for this analysis. **Table 2EE** presents the hourly operations total, as counted by the ATCT, for April 2024. The design hour is calculated by averaging the peak hour of the peak day of each week of the peak month (67, 65, 73, and 65, the average of which equals 68).

TABLE 2EE | Design Hour Operations Determination

Time	Thursday 4/4/24	Thursday 4/11/24	Thursday 4/18/24	Wednesday 4/24/24
12-1 a.m.	4	5	0	6
1-2 a.m.	0	0	0	0
2-3 a.m.	0	0	0	0
3-4 a.m.	0	0	0	0
4-5 a.m.	0	0	3	3
5-6 a.m.	2	2	1	0
6-7 a.m.	7	21	5	8
7-8 a.m.	15	20	22	32
8-9 a.m.	44	35	20	32
9-10 a.m.	43	64	70	43
10-11 a.m.	55	61	67	56
11-12 a.m.	57	43	38	56
12-1 p.m.	53	***65***	57	61
1-2 p.m.	42	38	46	45
2-3 p.m.	53	40	49	55
3-4 p.m.	63	47	***73***	49
4-5 p.m.	***67***	57	59	***65***
5-6 p.m.	39	33	53	31
6-7 p.m.	26	25	25	32
7-8 p.m.	33	17	17	12
8-9 p.m.	0	4	20	***9***
9-10 p.m.	0	0	12	6
10-11 p.m.	0	3	4	0
11-12 p.m.	0	0	0	2
Total:	**603**	**580**	**641**	**603**
Peak Hour %:	**11.11%**	**11.21%**	**11.39%**	**10.78%**

Design Hour is the average of 67, 65, 73, 65 = 68
Note: Peak Hour is ***bold italicized***.
Source: Hourly operations count for April 2024

Table 2FF summarizes the key peaking operations parameters. A calculation factor was determined for each peaking parameter based on 2024 ATCT operations counts. That factor was then applied to the five-year, 10-year, and 20-year planning horizons. The operational peak month for 2024 was April, with 15,627 operations, which represented 9.38 percent of annual operations. The design day is 521 operations, which is 3.3 percent of the peak month. The design hour of 68 is 13.0 percent of the design day.

TABLE 2FF | Peak Operations Forecast

Peaking Parameter	Factor	2024	2029	2034	2044
Annual Operations	100% of tower count	166,588	191,349	219,752	291,059
Peak Month	9.38% of annual operations	15,627	18,599	21,360	28,291
Design Day	3.3% of peak month	521	620	712	943
Design Hour	13.0% of design day	68	85	98	129

OPERATIONS BY FLEET MIX

Developing an understanding of the operational fleet mix, including the approximate volume of operations by aircraft type, is utilized in airfield capacity analysis, fuel storage capacity analysis, and pavement utilization determination. The approximate numbers of operations by certain aircraft types are available from the FAA Traffic Flow Management System Counts (TFMSC) database. This database captures flight plans filed to and from airports. Not all flights are required to file flight plans, so this database does not capture all activity; however, the FAA indicates that the capture rate is better than 95 percent for turboprops and jets. **Table 2GG** presents the historical TFMSC operations data for jets and turboprops.

TABLE 2GG | Historical Jet and Turboprop Operations at SDL

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jets	32,684	34,172	36,250	37,204	39,194	40,844	54,610	59,020	53,746	57,668
Turboprops	5,878	6,374	6,390	5,952	5,870	5,968	6,984	7,658	6,780	6,192

Source: SDL TFMSC 2015-2024 (data normalized annually)

By identifying the number of operations by turboprops and jets, it is possible to deduce an estimate of operations by remaining aircraft types. In addition, experience at other airports has shown that general operational estimates can be made by multiplying the number of based aircraft by utilization factors. Multi-engine piston aircraft are estimated to account for 200 annual operations. Turboprops are estimated to account for 350 annual operations and helicopters are estimated to account for 400 annual operations. Turboprops and helicopters typically have higher utilization rates than piston aircraft. It should be noted that these operational estimates account for all operations by each aircraft type, not just those based at an airport. **Table 2HH** presents the operational fleet mix forecast estimate for the airport.

TABLE 2HH | Fleet Mix Operations Forecast

	2024	2029	2034	2044
Local Operations				
Single-Engine Piston	24,682	27,469	30,662	38,440
Multi-Engine Piston	800	800	800	800
Helicopter	10,000	11,000	12,000	14,000
Total Local Operations:	**35,482**	**39,269**	**43,462**	**53,240**
Itinerant Operations				
Single-Engine Piston	60,046	63,162	67,860	75,690
Multi-Engine Piston	1,200	1,200	1,200	1,200
Turboprop	6,192	12,915	15,877	22,639
Jet	57,668	67,803	83,353	128,290
Helicopters	6,000	7,000	8,000	10,000
Total Itinerant Operations:	**131,106**	**152,080**	**176,290**	**237,819**
TOTAL OPERATIONS:	**166,588**	**191,349**	**219,752**	**291,059**

Source: Coffman Associates analysis

ANNUAL INSTRUMENT APPROACHES

Forecasts of annual instrument approaches (AIAs) provide guidance in determining an airport's requirements for navigational aid facilities. An instrument approach is defined as "an approach to an airport with intent to land by an aircraft in accordance with an instrument flight rules (IFR) flight plan, when visibility is less than three miles and/or when the cloud ceiling is at or below the minimum initial approach altitude." Typically, no local operations occur during inclement weather conditions; therefore, the AIA analysis focuses on itinerant operations.

The number of AIAs was calculated for the planning period by first identifying 50 percent of itinerant operations (arrivals only). The FAA's OPSNET database was then consulted to determine the total number of arrivals using an instrument approach procedure (32,261). The last step in estimating AIAs is to estimate what portion of operations under IFR are in IFR conditions (less than three-mile visibility and less than 1,000-foot cloud ceiling height). According to the National Weather Service, Scottsdale annually experiences sunny days, on average. It is estimated that three percent of those non-sunny days would occur in IFR conditions; therefore, estimated AIAs are three percent of arrivals conducted by those on IFR flight plans. The AIA projection is presented in **Table 2JJ**.

TABLE 2JJ | Annual Instrument Approach (AIA) Forecast

	2024	2029	2034	2044
Total Itinerant Operations	131,106	152,080	176,290	237,819
Total Instrument Operations[1]	64,521	74,843	86,757	117,038
Instrument Flight Rule (IFR) Arrivals	32,261	37,421	43,379	58,519
AIAs (3%):	**968**	**1,123**	**1,301**	**1,756**

Source: [1]2024 from FAA OPSNET

CHARTER ENPLANEMENT FORECAST

Paying passengers boarding charter flights are considered enplanements by the FAA. Total enplanements can be an important metric for airports, as airports that exceed 10,000 enplanements are entitled to at least $1.3 million in capital improvement funding from the FAA via the Airport Improvement Program (AIP). A forecast of charter passenger enplanements is necessary so airports can effectively plan for capital improvements and the funding thereof.

Scottsdale Airport has frequent charter service operations. Charter operators are certified under Title 14 CFR Part 135 to offer non-scheduled charter and air taxi flights. SDL has a variety of operators including NetJets, Flexjet, JSX, and many others. **Scottsdale Airport, as a general aviation airport, is not nor is it planned to offer scheduled passenger service like commercial service airports. Passenger enplanement activity is limited to charter operations only.**

The FAA asks that Part 135 operators voluntarily submit their annual revenue passenger enplanement data on FAA Form 1800-31, *Airport Activity Survey*. Charter operators can easily submit their passenger enplanement data via the FAA Airports External Portal (AEP), which is accessible at aep.airports.faa.gov.

For calendar year 2024, there were 43,765 reported passenger enplanements. This was the first year SDL exceeded the 10,000-enplanement threshold. The other charter operators had enplanements; however, these were not reported to the FAA. The airport has requested that all charter operators begin to report their enplanement figures annually. Therefore, the actual 2024 enplanement figure is likely more than has been reported.

PUBLIC CHARTER ENPLANEMENT FORECAST

At the most basic level, an enplanement forecast can be developed based on the flight schedule, number of available seats, and the board loading factor (BLF). The BLF is the percentage of available seats that are filled. This data is only available from JSX currently; therefore, the enplanement forecast is developed from these inputs. However, the final enplanement forecast is assumed to include all the charter operators at SDL.

In 2024, there were 1,996 departures by JSX. Each aircraft can hold up to 30 passengers. Therefore, there were 59,880 seats available, and 43,765 were filled, for a BLF of 73.09 percent. **Table 2LL** presents multiple enplanement forecasts based on the BLF under four different scenarios.

TABLE 2LL | BLF Enplanements Forecasts

	Current Schedule[1]		Add 3 Destinations with 1 Daily Flight		Add 6 Destinations with 1 Daily Flight		Add 6 Destinations and More Flights to Current Destinations	
BLF Percent	Annual Seats Available	Enp.	Annual Seats Available	Enp.	Annual Seats Available	Enp.	Annual Seats Available	Enp.
70% BLF	126,360	88,452	159,120	111,384	191,880	134,316	324,480	227,136
73% BLF		92,243		116,158		140,072		236,870
80% BLF		101,088		127,296		153,504		259,584
90% BLF		113,724		143,208		172,692		292,032

BLF = board loading factor
Enp. = enplanements

Source: [1]Based on March 2-9, 2025, JSX flight schedule

Scenario 1 | The first scenario assumes the flight schedule for the first week of March 2025 is repeated every week in the year. This would result in a total of 126,360 available seats. Four BLF enplanement forecasts are shown in the table. Under this scenario, the range of potential annual enplanements is from a low of 88,452 to a high of 113,724 enplanements.

Scenario 2 | The second scenario considers the possibility of adding three new destinations with one daily departure to each new destination. When adding these new departures to the current schedule, a total of 159,120 seats would be available. This enplanement forecast ranges from a low of 111,384 to a high of 143,208 enplanements.

Scenario 3 | The third scenario considers the addition of six new destinations with one daily departure. When adding these new departures to the current schedule, a total of 191,880 seats would be available. This enplanement forecast ranges from a low of 134,316 to a high of 172,692 enplanements.

Scenario 4 | The fourth scenario considers the addition of six new destinations with two daily departures and additional flights to existing destinations. This scenario would offer a total of 324,480 available seats. This enplanement forecast ranges from a low of 227,136 to a high of 292,032 enplanements.

SELECTED CHARTER ENPLANEMENT FORECAST

Developing an enplanement forecast is challenging when there is only one year of records and, thus, no trend on which to rely. What is known is that in 2024, 43,765 enplanements were reported at SDL, 1,996 departures in 30-seat aircraft occurred, and a BLF of 73.09 percent was realized with those departures. Charter activity is expected to continue to grow at SDL. For example, JSX increased the number of destinations served during the first 12 months of operations, and JSX management has indicated intentions to offer additional destinations and add additional flights to current destinations. NetJets has expanded its operations at the airport by way of a new hangar/office/apron complex. Flexjet is in the permitting process to build a terminal/hangar facility with underground vehicle parking.

A range of potential enplanement forecasts has been presented. The low range assumes no changes to the current schedule and a BLF of 70 percent, which is lower than experienced in 2024. The high range includes the addition of six new destinations, with two daily departures to each destination and additional flights to existing destinations by charter operators. For planning purposes, the selected forecast generally uses the BLF of 73 percent under each scenario as follows:

- 2024 – 43,765 enplanements
- 2029 – 92,243 enplanements (Scenario 1)
- 2034 – 140,072 enplanements (Scenario 3)
- 2044 – 236,870 enplanements (Scenario 4)

Exhibit 2J shows the high- and low-range public charter enplanement forecasts, as well as the selected forecast. Although the enplanement forecast envelope was developed based on JSX activity, the selected forecast is assumed to include enplanements generated by all charter and fractional operators at the airport, including JSX, NetJets, Flexjet, and others.

FORECAST SUMMARY

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2K** presents a summary of the aviation demand forecasts prepared in this chapter. The base year for these forecasts is 2024 with a 20-year planning horizon to 2044. Several forecasts for each aviation demand indicator were developed to create a range of reasonable forecasts, from which a single forecast was selected for use in this master plan.

Air taxi operations, which include charter operations, fractional operations, air ambulance operations, and other for-hire activities, are projected to increase from 66,178 in 2024 to 147,818 by 2024, for an annual growth rate of 4.10 percent. This growth rate for air taxi operations is the same as the rate projected by the FAA in the TAF.

Itinerant general aviation operations have remained fairly steady over the last 10 years, while local general aviation operations have declined. Both categories of general aviation operations are projected to increase over the next 20 years, albeit at a slower rate than air taxi operations.

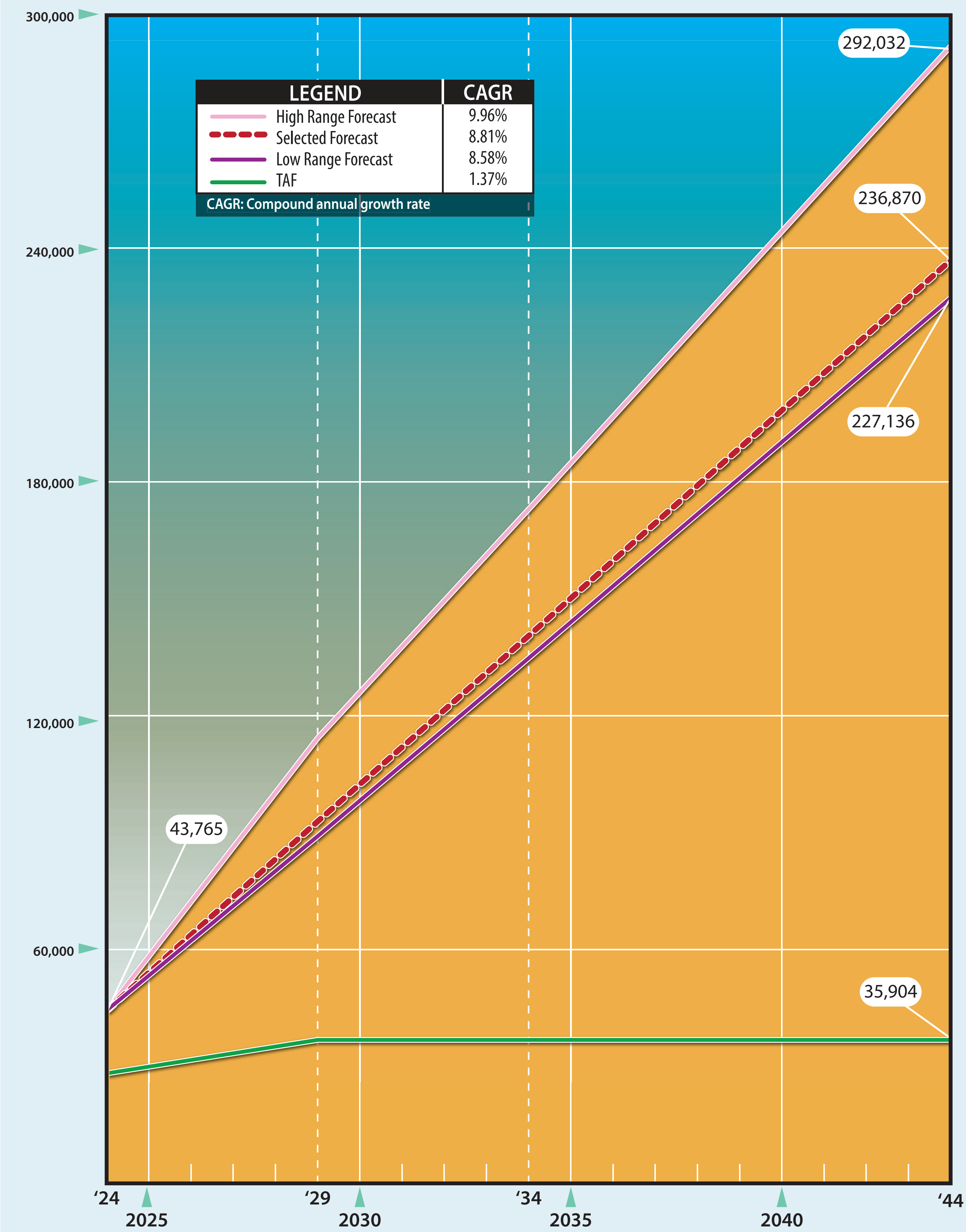


Exhibit 2J
PUBLIC CHARTER ENPLANEMENT FORECAST

	BASE	FORECAST			CAGR
	2024	2029	2034	2044	2024-2044
ANNUAL OPERATIONS					
Air Taxi/Charter Operations (Itinerant)					
Air Taxi	66,178	80,903	98,906	147,818	4.10%
Total Air Taxi/Charter Operations	*66,178*	*80,903*	*98,906*	*147,818*	*4.10%*
General Aviation Operations					
Itinerant	64,608	70,812	77,019	89,636	1.65%
Local	35,478	39,267	43,460	53,238	2.05%
Total General Aviation Operations	*100,086*	*110,079*	*120,479*	*142,874*	*1.80%*
Military Operations					
Itinerant	320	365	365	365	0.66%
Local	4	2	2	2	-3.41%
Total Military Operations	*324*	*367*	*367*	*367*	*0.63%*
Total Itinerant Operations	*131,106*	*152,080*	*176,290*	*237,819*	*3.02%*
Total Local Operations	*35,482*	*39,269*	*43,462*	*53,240*	*2.05%*
TOTAL ANNUAL OPERATIONS	**166,588**	**191,349**	**219,752**	**291,059**	**2.83%**
ENPLANEMENTS					
Charter Enplanements	43,765	92,243	140,072	236,870	8.81%
BASED AIRCRAFT					
Single Engine Piston	115	121	130	145	1.17%
Multi-Engine Piston	10	10	10	10	0.00%
Turboprop	11	18	24	35	5.96%
Jet	157	171	183	212	1.51%
Helicopter	40	45	50	60	2.05%
TOTAL BASED AIRCRAFT	**333**	**365**	**397**	**462**	**1.65%**

PEAKING ACTIVITY PROJECTIONS	2024	2029	2034	2044
Annual Operations	166,588	191,349	219,752	291,059
Peak Month	15,627	18,599	21,360	28,291
Design Day	521	620	712	943
Design Hour	68	85	98	129

Exhibit 2K
FORECAST SUMMARY

Total operations are projected to increase from 166,588 in 2024 to 291,059 in 2044, for an annual growth rate of 2.83 percent. By 2044, air taxi operations are projected to surpass combined general aviation operations and represent more than 50 percent of total operations.

The FAA requests that air taxi operators report their passenger enplanement counts annually. In 2024, the air taxi operators reported 43,765 passenger enplanements. Future passenger enplanements are projected to reach 236,870 by 2044.

Based aircraft are forecasted to increase from approximately 333 in 2024 to 462 by 2044, for an annual growth rate of 1.65 percent.

Projections of aviation demand will be influenced by unforeseen factors and events in the future. In the recent past, factors such as terrorist attacks, economic recession, and the COVID-19 pandemic have impacted aviation demand; nevertheless, the forecasts developed for this planning effort are considered reasonable for planning purposes. The FAA will review and (if acceptable) approve these forecasts for planning purposes.

FORECAST COMPARISON TO THE FAA TAF

When reviewing airport master plan forecasts, the FAA compares them to the most recent TAF for consistency. To be consistent with the TAF, the master plan forecasts should differ by 10 percent or less in the first five years and 15 percent or less in the 10-year timeframe. If the forecasts are not consistent with these parameters, further discussion with the local FAA Airports District Office (ADO) will be required. Ultimately, the forecasts may be forwarded to FAA headquarters in Washington, D.C., for further review. Deviation from these thresholds will require specific local documentation.

Table 2MM presents a comparison of the master plan forecasts and the FAA TAF (published in January 2025) for commercial operations (air taxi), total operations, charter enplanements, and based aircraft. The percentage difference is the absolute value of the difference between the two numbers divided by the average of the two numbers. The base year was established as calendar year 2024.

TABLE 2MM | Forecast Comparison to the 2024 FAA Terminal Area Forecast (TAF)

	2024	2029	2034	2044	CAGR 2024-2044
Commercial Operations (Air Taxi)					
Master Plan Forecast	66,178	80,903	98,906	147,818	4.10%
FAA TAF 2024[1]	63,600	77,761	95,060	142,061	4.10%
% Difference:	**4.0%**	**4.0%**	**4.0%**	**4.0%**	–
Total Operations					
Master Plan Forecast	166,588	191,349	219,752	291,059	2.83%
FAA TAF 2024[1]	169,207	207,561	226,065	275,518	2.47%
% Difference:	**1.6%**	**8.1%**	**2.8%**	**5.5%**	–
Charter Passenger Enplanements					
Master Plan Forecast	43,765	92,243	140,072	236,870	8.81%
FAA TAF 2024[1]	27,323	35,904	35,904	35,904	1.37%
% Difference:	**46.3%**	**87.9%**	**118.4%**	**147.3%**	–
Based Aircraft					
Master Plan Forecast	333	365	397	462	1.65%
FAA TAF 2024[1]	340	355	375	415	1.00%
% Difference:	**2.1%**	**2.7%**	**5.8%**	**10.8%**	–

CAGR = compound annual growth rate

Source: [1]Terminal Area Forecast, published January 2025

Charter/Air Taxi Operations | The 2024 TAF (published in January 2025) estimated 63,600 commercial operations (Air Taxi) for 2024. According to tower operational counts, there were 66,178 actual air taxi operations in 2024. The commercial operations (Air Taxi) forecasts are within TAF tolerances.

Total Operations | The total operations forecast is within the TAF tolerance of 10 percent in the five-year term and 15 percent in the 10-year term.

Charter Passenger Enplanements | In 2024, the airport documented 43,765 total charter passenger enplanements. The TAF enplanement number of 27,323 is below the actual number of enplanements. The TAF estimates a total of 35,904 charter enplanements by 2044, a total that has already been exceeded by 2024 enplanements; therefore, the charter enplanement forecast is not within TAF tolerance because the TAF is not reflective of current (2024) activity levels and does not take into consideration future plans for more destinations and more flights to current destinations.

Based Aircraft | The based aircraft forecast is within the TAF tolerance of 10 percent in the five-year term and 15 percent in the 10-year term.

AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed in landing configuration) and design characteristics (wingspan and landing gear configuration). These classification systems are used to determine the appropriate airport design standards for specific airport elements, such as runways, taxiways, taxilanes, and aprons.

AIRCRAFT CLASSIFICATION

The selection of appropriate FAA design standards for the development and location of airport facilities is primarily based on the characteristics of the aircraft that currently use or are expected to use an airport. The critical aircraft is used to define the design parameters for an airport and may be a single aircraft type or a composite aircraft that represents a collection of aircraft with similar characteristics. The critical aircraft is classified by three parameters: aircraft approach category (AAC), airplane design group (ADG), and taxiway design group (TDG). FAA 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) | The AAC is a grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or if V_{REF} is not specified, 1.3 times stall speed (V_{SO}) at the maximum certificated landing weight. V_{REF}, V_{SO}, and the maximum certificated landing weight are values established for the aircraft by the certification authority of the country of registry.

The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed, the more restrictive the applicable design standards will be. The AAC, depicted by a letter (A through E), relates to aircraft approach speed (operational characteristics). The AAC generally applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

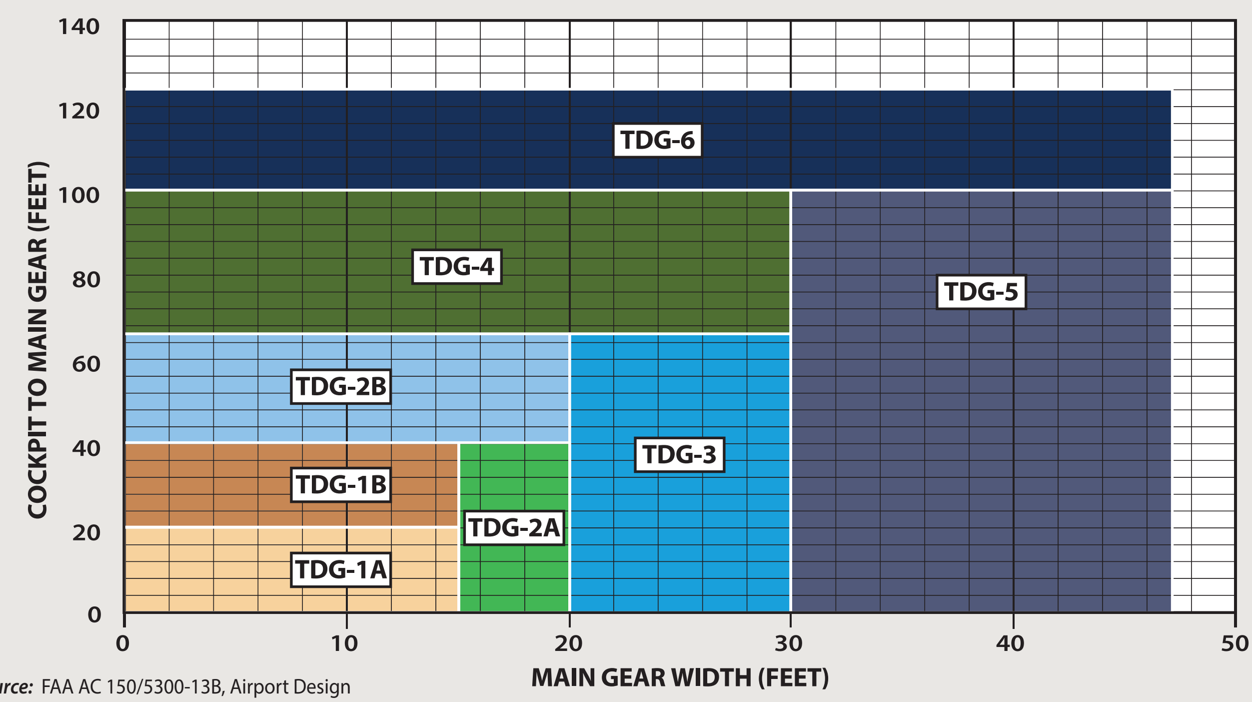
AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

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

Exhibit 2L
AIRCRAFT CLASSIFICATION PARAMETERS

Airplane Design Group (ADG) | The ADG, depicted by a Roman numeral (I through VI), is a classification of aircraft that relates to aircraft wingspan or tail height (physical characteristics). When the aircraft wingspan and tail height fall within different groups, the higher group is used. The ADG influences design standards for taxiway safety area (TSA), taxiway object free (TOFA), taxilane object free area, apron wingtip clearance, and various separation distances.

Taxiway Design Group (TDG) | The TDG is a classification of airplanes based on outer-to-outer main gear width (MGW) and cockpit-to-main gear (CMG) distance. The TDG relates to the undercarriage dimensions of the design aircraft. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiways/taxilanes. Other taxiway elements, such as the taxiway safety area (TSA), taxiway/taxilane object free area (TOFA), taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/ taxilane wingtip clearances, are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards based on expected use.

Exhibit 2M summarizes the classifications of the most common aircraft in operation today. Generally, recreational and business piston and turboprop aircraft will fall in AAC A and B and ADG I and II. Business jets typically fall in ACC B and C, while the larger commercial aircraft will fall in AAC C and D.

AIRPORT AND RUNWAY CLASSIFICATION

Along with the previously defined aircraft classifications, airport and runway classifications are used to determine the appropriate FAA design standards to which the airfield facilities should be designed and built.

Runway Design Code (RDC) | The RDC is a code that signifies the design standards to which the runway should be built. The RDC is based on planned development and has no operational component.

The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain applicable design standards. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the available instrument approach visibility minimums, expressed by RVR values in feet of 1,200 (⅛-mile), 1,600 (¼-mile), 2,400 (½-mile), 4,000 (¾-mile), and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. The third component is labeled “VIS” for runways that are designed for visual approach use only.

Approach Reference Code (APRC) | The APRC is a code that signifies the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations. The APRC has the same three components as the RDC: AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under particular meteorological conditions in which no special operating procedures are necessary, unlike the RDC, which is based on planned development and has no operational component. The APRC for a runway is established based on the minimum runway-to-taxiway centerline separation.

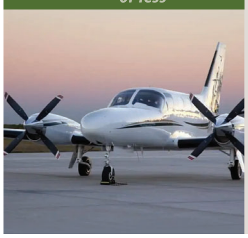
A-I

Aircraft	TDG
• Beech Bonanza	1A
• **Cessna 150**, 172	**1A**
• Piper Comanche, Seneca	1A

B-I

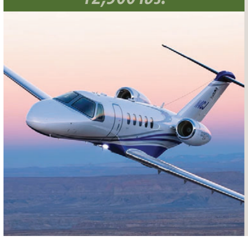
Aircraft	TDG
• Eclipse 500	1A
• Beech Baron 55/58	1A
• **Beech King Air 100**	**1A**
• Cessna 421	2A
• Cessna Citation M2 (525)	1A
• Cessna Citation 1(500)	1A
• Embraer Phenom 100	1A

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



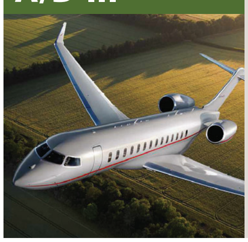
Aircraft	TDG
• Beech Super King Air 200	2A
• Beech King Air 90	1A
• **Cessna 441 Conquest**	**1A**
• Cessna Citation CJ2	2A
• Pilatus PC-12	2

B-II *over 12,500 lbs.*



Aircraft	TDG
• Beech Super King Air 350	2A
• Cessna Citation CJ3(525B)	2A
• **Cessna Citation CJ4 (525C)**	**1B**
• Cessna Citation Latitude	1B
• Embraer Phenom 300	1B
• Falcon 20	1B
• Pilatus PC-24	2A

A/B-III



Aircraft	TDG
• Bombardier Dash 8	3
• **Bombardier Global 7500**	**2B**
• Falcon 7X, 8X	2A

C/D-I

Aircraft	TDG
• **Lear** 35, 40, **45**, 55, 60XR	**1B**
• F-16	1A

C/D-II

Aircraft	TDG
• Challenger 600/604	1B
• Cessna Citation III, VI,VII, X	1B
• Embraer Legacy 135/140	2B
• **Gulfstream IV** (D-II)	**2A**
• Gulfstream G280	1B
• Lear 70, 75	1B
• Falcon 50, 900, 2000	2A
• Hawker 800XP, 4000	1B

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

Aircraft	TDG
• Gulfstream V	2B
• Gulfstream 550, 600, 650	**2B**
• **Global 5000**, 6000	2B

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

Aircraft	TDG
• Airbus A319, A320, A321	3
• **Boeing 737-800**, 900	3
• MD-83, 88	4

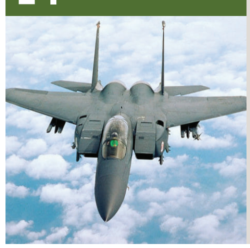
C/D-IV

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

C/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**

E-I



Aircraft	TDG
• **F-15**	**1B**

Note: Aircraft pictured is identified in bold type.

Departure Reference Code (DPRC) | The DPRC is a code that signifies the current operational capabilities of a runway and associated parallel taxiway with regard to takeoff operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operating conditions. The DPRC is similar to the APRC but has two components: ACC and ADG. A runway may have more than one DPRC, depending on the parallel taxiway separation distance.

Airport Reference Code (ARC) | The ARC is an airport designation that signifies the airport's highest RDC minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at an airport. The current airport layout plan (ALP) for the airport, which will be updated as part of this planning effort, identifies an ARC of D-II currently and in the future.

CRITICAL AIRCRAFT

The selection of appropriate FAA design standards for the development and location of airport facilities is primarily based on the characteristics of the aircraft that currently use or are expected to use an airport. The critical aircraft is used to define the design parameters for an airport and may be a single aircraft type or a composite aircraft that represents a collection of aircraft classified by the three parameters: AAC, ADG, and TDG. In the case of an airport with multiple runways, a design aircraft is selected for each runway.

The first consideration is the safe operation of aircraft that are likely to use an airport. Any operation of an aircraft that exceeds the design criteria of an airport may result in either an unsafe operation or a decreased safety margin; however, it is not the usual practice to base the design of an airport on an aircraft that infrequently uses the airport.

FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, provides guidance for determining the critical aircraft for the airport and each runway. **The critical aircraft is defined as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that makes regular use of the airport. Regular use is 500 annual operations, excluding touch-and-go operations.** Planning for future aircraft use is of particular importance because the design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure short-term development does not preclude the reasonable long-range potential needs of the airport.

According to FAA AC 150/5300-13B, *Airport Design*, "airport designs based only on existing aircraft can severely limit the ability to expand the airport to meet future requirements for larger, more demanding aircraft. Airport designs that are based on large aircraft never likely to be served by the airport are not economical." Selection of the current and future critical aircraft must be realistic in nature and supported by current data and realistic projections.

AIRPORT CRITICAL AIRCRAFT

The critical aircraft is the aircraft (or family of aircraft with similar design characteristics) that accounts for 500 or more annual operations.

The FAA maintains the TFMSC database, which documents certain aircraft operations at airports. Information is added to the TFMSC database when pilots file flight plans and/or when flights are detected by the National Airspace System, usually via radar. It includes documentation of commercial traffic (air taxi), general aviation, and military aircraft. Due to factors such as incomplete flight plans, limited radar coverage, and VFR operations, TFMSC data do not account for all aircraft activity at an airport by a given aircraft type; therefore, there are likely more operations at an airport than are captured by this methodology. The FAA indicates that the capture rate for turboprops and jets is better than 95 percent because operators of these types of sophisticated aircraft generally file flight plans. TFMSC data are available for activity at the airport and were utilized in this analysis.

Exhibit 2N presents the TFMSC annual activity for jets and turboprops from 2015 through 2024. Aircraft in AAC D accounted for 3,862 operations in 2024 and have averaged 3,121 over the last 10 years. There are very few operations by aircraft in AAC E; therefore, the critical AAC for the airport is identified as AAC D.

Aircraft in ADG III accounted for 3,638 operations in 2024. There were no operations by aircraft with wider wingspans at the airport. The number of operations by aircraft in ADG III have been increasing since 2020; therefore, the first two elements of the critical aircraft classification are D-III, as it is documented that there are more than 500 annual operations by D-III aircraft.

The third element of the critical aircraft classification is the TDG. An examination of the TFMSC database shows specific aircraft types that have been cross-referenced with the FAA's aircraft characteristics database (faa.gov/airports/engineering/aircraft_char_database). The critical aircraft TDG is 2B, which accounted for more than 7,600 operations in 2024. Aircraft with a TDG of 3 have never exceeded the 500 operations threshold at Scottsdale Airport.

The current critical aircraft for the airport is D-III-2B. A representative aircraft with a TDG of 2B is the Gulfstream V. This aircraft has a maximum take-off weight of 90,500 pounds. It should be noted that there are business jets in the B-III-2B and D-III-2B category that have a maximum takeoff weight above 100,000 pounds, which exceeds the current weight limitation for the runway at SDL.

Future Critical Aircraft

Section 2.3 of FAA AC 150/5000-17 outlines a specific approach to projecting a future critical aircraft. According to the AC:

> *"The forecast, as submitted to FAA by the airport sponsor, must include a projection of the number of operations by the future critical aircraft for the planning horizon year (i.e., typically not more than 20 years from the base year). Proper diligence and awareness of aircraft fleet trends is needed when establishing the future critical aircraft, particularly in cases where the future RDC may change due to an aircraft type with greater requirements (i.e., runway or airfield geometry). Caution is warranted when a change in the critical aircraft is identified in the long-term forecast*

Exhibit 2N
HISTORICAL JET AND TURBOPROP OPERATIONS

ARC	Aircraft	TDG	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A-I	B36T - Allison 36 Turbine Bonanza	1A	10	6	0	0	6	0	2	2	0	0
	B60T - Beechcraft 60 Royal Turbine Duke	No Data	0	2	2	2	4	2	0	6	0	0
	EPIC - Dynasty	No Data	12	10	12	12	14	16	42	62	60	54
	EVOT - Lancair Evolution Turbine	2A	4	14	2	12	6	0	12	12	16	12
	KODI - Quest Kodiak	1A	12	14	4	2	4	8	32	44	20	0
	LNP4 - Lancair Propjet four-seat	1A	0	0	0	0	2	0	0	0	0	4
	P46T - Piper Malibu Meridian	1A	336	480	578	370	338	464	348	278	208	142
	SF50 - Cirrus Vision SF50	1A	0	0	22	64	226	492	682	838	786	1,042
	TBM1 - Socata TBM	No Data	0	2	0	0	0	0	0	0	0	0
	TBM7 - Socata TBM-7	1A	126	92	104	66	102	80	60	40	22	48
	TBM8 - Socata TBM-850	1A	292	388	408	402	310	280	326	344	278	288
	TBM9 - Socata TBM	1A	0	58	88	184	314	336	380	398	428	558
	TMB8 - SOCATA TBM 700	1A	0	0	2	0	0	0	0	0	0	0
	Total		**792**	**1,066**	**1,222**	**1,114**	**1,326**	**1,678**	**1,884**	**2,024**	**1,818**	**2,148**
A-II	C208 - Cessna 208 Caravan	1A	30	20	20	52	46	16	30	20	10	6
	C212 - CASA Aviocar	1A	4	0	0	0	0	0	0	0	0	0
	DHC6 - DeHavilland Twin Otter	1A	0	0	0	0	0	0	2	0	0	0
	PC12 - Pilatus PC-12	2	1,412	1,618	1,664	1,730	1,756	1,744	2,130	2,416	2,566	2,756
	PC6T - Pilatus PC-6	No Data	0	0	0	0	0	0	0	0	0	2
	PC7 - Pilatus PC-7	No Data	2	0	4	0	0	0	0	0	0	0
	Total		**1,448**	**1,638**	**1,688**	**1,782**	**1,802**	**1,760**	**2,162**	**2,436**	**2,576**	**2,764**
A-III	DHC7 - De Havilland DHC-7	3	0	0	0	4	2	4	2	0	0	0
	Total		**0**	**0**	**0**	**4**	**2**	**4**	**2**	**0**	**0**	**0**
B-I	AC69 - Jet Prop /Gulfstream	2A	2	0	0	0	0	0	0	0	0	0
	AC90 - Gulfstream Commander	2A	254	228	182	132	114	118	168	52	52	22
	BE10 - Beech King Air 100 A/B	1A	24	22	28	24	26	16	10	18	14	6
	BE40 - Raytheon/Beech Beechjet 400/T-1	1A	1,270	1,340	1,338	1,112	928	1,018	1,352	1,262	1,092	1,116
	BE90 - Beech King Air 90	1A	0	4	0	0	0	0	0	0	0	0
	BE9L - Beech King Air 90	1A	506	428	336	224	298	246	296	354	252	234
	C25M - Cessna Citation M2	1A	0	72	230	154	222	294	372	452	332	596
	C425 - Cessna 425 Corsair	2A	88	74	48	40	34	34	34	36	40	22
	C500 - Cessna 500/Citation I	1A	34	56	22	24	12	6	30	34	4	2
	C501 - Cessna I/SP	1A	128	160	114	66	46	62	82	92	72	22
	C510 - Cessna Citation Mustang	1A	824	648	512	664	528	652	716	520	438	420
	C525 - Cessna CitationJet/CJ1	1A	1,202	1,304	1,614	1,396	1,588	1,416	1,620	1,304	978	498
	C526 - Cessna 526 CitationJet	1A	0	2	0	0	0	0	2	0	0	0
	E50P - Embraer Phenom 100	1A	838	788	854	834	766	248	360	546	298	184
	EA50 - Eclipse 500	1A	486	270	364	538	506	778	902	734	456	318
	FA10 - Dassault Falcon/Mystère 10	No Data	58	48	24	50	52	40	82	94	66	52
	HDJT - HONDA HA-420 HondaJet	2A	0	18	128	126	160	116	238	550	476	458
	L29 - Aero L-29 Delfin	No Data	0	0	0	0	0	0	0	0	0	2
	L29B - Lockheed L-1329 Jetstar 731	1B	26	8	2	0	0	0	0	0	0	0
	LJ31 - Bombardier Learjet 31/A/B	1A	262	268	202	166	168	110	124	176	124	124
	MU2 - Mitsubishi Marquise/Solitaire	1A	32	30	26	24	22	20	22	48	42	32
	MU30 - Mitsubishi MU300/ Diamond I	1A	4	18	6	2	2	0	0	0	6	18
	PAY1 - Piper Cheyenne 1	2A	6	0	6	4	18	12	2	0	0	2
	PAY2 - Piper Cheyenne 2	2A	24	20	8	14	10	0	4	10	20	14
	PAY3 - Piper PA-42-720 Cheyenne 3	2A	4	14	4	4	6	2	6	2	2	4
	PAY4 - Piper Cheyenne 400	2A	20	4	2	0	0	0	4	0	0	2
	PRM1 - Raytheon Premier 1/390 Premier 1	1A	632	766	724	924	1,988	2,258	2,576	2,424	1,510	1,448
	SJ30 - Swearingen SJ-30	No Data	0	2	0	0	0	0	0	0	0	0
	T33 - Canadair CL-30 Silver Star	No Data	0	0	0	0	0	2	0	0	0	0
	TEX2 - Raytheon Texan 2	1A	48	62	48	96	40	42	74	106	74	52
	Total		**6,772**	**6,654**	**6,822**	**6,618**	**7,534**	**7,490**	**9,076**	**8,814**	**6,348**	**5,648**
B-II	AC80 - Aero Commander Turbo 680	1A	16	2	0	0	0	0	0	0	0	0
	B190 - Beech 1900/C-12J	2A	0	0	0	12	4	2	8	2	2	0
	B350 - Beech Super King Air 350	2A	524	732	1,070	1,038	926	916	1,150	1,318	884	418
	BE20 - Beech 200 Super King	2A	1,050	1,028	876	754	726	822	916	1,058	896	852
	BE30 - Raytheon 300 Super King Air	2A	316	448	286	272	196	206	258	300	206	132
	BE9T - Beech F90 King Air	2A	164	162	138	142	94	60	28	22	34	10
B-II cont.	C25A - Cessna Citation CJ2	2A	568	648	688	754	608	584	914	1,052	602	484
	C25B - Cessna Citation CJ3	2A	820	1,280	1,806	1,600	1,580	1,750	2,212	2,458	2,592	2,644
	C25C - Cessna Citation CJ4	1B	574	628	706	738	608	610	828	1,024	716	858
	C441 - Cessna Conquest	1A	174	250	230	168	186	184	164	120	182	94
	C550 - Cessna Citation II/Bravo	2A	984	1,150	1,050	786	454	380	458	388	258	252
	C551 - Cessna Citation II/SP	1A	10	40	36	20	44	36	24	24	26	22
	C55B - Cessna Citation Bravo	3	0	0	0	14	18	66	142	160	148	122
	C560 - Cessna Citation V/Ultra/Encore	2A	1,436	1,378	1,244	918	1,024	1,170	1,502	1,496	1,114	1,036
	C56X - Cessna Excel/XLS	1B	2,360	2,596	2,818	3,130	3,008	3,052	4,472	5,054	4,036	3,780
	C680 - Cessna Citation Sovereign	1B	832	930	1,062	964	1,030	810	1,358	1,444	1,106	900
	C68A - Cessna Citation Latitude	1B	0	6	314	872	1,612	1,806	2,576	3,130	3,366	4,344
	D328 - Dornier 328 Series	1B	20	2	6	0	2	2	6	0	12	10
	E120 - Embraer Brasilia EMB 120	3	0	0	0	0	0	2	0	0	0	0
	E545 - Embraer EMB-545 Legacy 450	1B	0	10	180	276	396	580	852	934	1,100	1,074
	E550 - Embraer Legacy 500	1B	24	138	130	146	176	166	166	238	300	454
	E55P - Embraer Phenom 300	1B	1,164	1,396	1,642	1,876	2,010	2,786	3,692	3,656	3,816	4,212
	FA20 - Dassault Falcon/Mystère 20	2A	390	126	112	102	102	94	72	100	72	26
	J328 - Fairchild Dornier 328 Jet	1B	6	2	0	8	6	4	6	10	4	4
	PC24 - Pilatus PC-24	2A	0	0	0	0	76	136	122	186	166	170
	SC7 - Short Skyvan SC7	1A	2	0	0	0	0	0	0	0	0	0
	SH33 - Shorts 330	2A	0	2	0	0	0	0	0	0	0	0
	SW2 - Swearingen Merlin 2	2A	0	0	2	0	0	0	0	0	0	0
	SW3 - Fairchild Swearingen SA-226T/TB Merlin 3	2A	214	102	134	122	154	136	240	280	232	104
	SW4 - Swearingen Merlin 4/4A Metro2	3	14	2	8	2	4	18	4	6	2	14
	Total		**11,662**	**13,058**	**14,538**	**14,714**	**15,044**	**16,378**	**22,170**	**24,460**	**21,872**	**22,016**
B-III	C2 - Grumman C-2 Greyhound	No Data	2	0	0	0	0	0	0	2	0	4
	DA7X - Dassault Falcoln 7x	2A	16	18	4	0	0	0	0	0	0	0
	DH8C - Dash 8/DHC8-300	3	0	0	0	0	4	2	2	6	0	0
	E2 - Grumman TE-2 Hawkeye	No Data	0	0	0	0	0	2	4	0	0	0
	FA7X - Dassault Falcon F7X	2A	236	258	282	304	374	308	452	524	502	538
	FA8X - Dassault Falcon 8X	2A	0	0	0	70	84	70	118	90	88	84
	GL7T - Bombardier Global 7500	2B	0	0	0	0	0	0	0	2	2	0
	Total		**254**	**276**	**286**	**374**	**462**	**382**	**576**	**624**	**592**	**626**
B-IV	C130 - Lockheed 130 Hercules	2B	0	0	0	0	0	0	0	0	0	2
	C30J - C-130J Hercules ; Lockheed	2B	0	0	2	0	0	0	0	0	2	0
	Total		**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
C-I	F18 - Boeing FA-18 Hornet	1B	22	8	2	0	2	0	4	0	2	2
	F18H - F/A 18 Hornet	1B	0	2	22	12	16	12	20	2	18	4
	F18S - F18 Hornet	1B	0	0	18	26	36	6	8	10	14	14
	HAR - Boeing AV-8 Harrier	No Data	0	0	0	2	12	0	0	0	0	0
	HAWK - BAe Systems Hawk	1A	56	30	6	34	34	8	36	46	50	68
	L36 - Bombardier Learjet 36	1B	0	0	0	0	2	0	0	0	0	0
	LJ24 - Bombardier Learjet 24	1A	0	2	4	0	0	0	0	4	0	0
	LJ25 - Bombardier Learjet 25	1A	24	14	10	8	0	0	0	0	0	0
	LJ35 - Bombardier Learjet 35/36	1B	1,084	792	740	580	470	410	360	284	286	96
	LJ40 - Learjet 40; Gates Learjet	1B	328	228	102	70	108	102	176	220	166	146
	LJ45 - Bombardier Learjet 45	1B	828	914	1,014	1,208	1,196	1,144	1,580	1,664	1,562	1,456
	LJ55 - Bombardier Learjet 55	1B	172	122	88	222	106	74	110	90	28	14
	LJ60 - Bombardier Learjet 60	1B	778	700	644	652	670	658	1,150	1,314	952	1,136
	LR35 - Learjet 35	1B	2	0	0	0	0	0	0	2	0	0
	P180 - Piaggio P-180 Avanti	2A	134	54	58	40	24	40	90	108	52	120
	SBR1 - North American Rockwell Sabre 40/60	1A	30	20	20	4	4	2	2	2	4	0
	T45 - BAe T-45 Goshawk	No Data	0	0	2	4	2	0	0	0	0	0
	WW23 - IAI 1123 Westwind	1B	0	0	2	2	2	0	0	0	0	0
	WW24 - IAI 1124 Westwind	1B	112	80	66	38	28	44	42	52	16	14
	Total		**3,570**	**2,966**	**2,798**	**2,902**	**2,712**	**2,500**	**3,578**	**3,798**	**3,150**	**3,070**
C-II	A10 - Fairchild A10	2A	0	0	0	0	0	0	2	0	0	0
	ASTR - IAI Astra 1125	1B	146	170	240	262	314	318	350	392	244	214
	C650 - Cessna III/VI/VII	1B	508	414	352	306	230	262	300	242	172	108
	C700 - Cessna Citation Longitude	1B	0	0	6	4	6	100	252	610	908	1,328

ARC	Aircraft	TDG	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
C-II cont.	C750 - Cessna Citation X	1B	1,536	1,452	1,308	1,222	1,254	1,378	1,670	1,644	1,506	1,416
	CL30 - Bombardier (Canadair) Challenger 300	1A	1,608	1,604	1,568	1,718	1,884	1,542	2,144	2,464	2,436	2,522
	CL35 - Bombardier Challenger 300	1B	38	456	858	1,258	1,602	1,984	2,762	2,898	2,802	2,996
	CL60 - Bombardier Challenger 600/601/604	1B	1,458	1,596	1,588	1,614	1,682	1,546	2,174	2,110	1,896	1,948
	DA50 - Mystere Falcon 50 Dassault	2A	0	0	0	0	0	0	0	2	0	2
	E135 - Embraer ERJ 135/140/Legacy	2B	116	88	86	58	46	24	26	22	30	1,222
	E145 - Embraer ERJ-145	2B	0	0	0	2	0	2	4	2	10	3,144
	E35L - Embraer 135 LR	2B	8	12	44	46	54	92	188	148	156	264
	E45X - Embraer ERJ 145 EX	2B	0	2	0	4	0	0	0	0	0	0
	F2TH - Dassault Falcon 2000	2A	1,460	1,568	1,590	1,606	1,234	1,076	964	1,062	1,156	1,278
	F900 - Dassault Falcon 900	2A	680	800	798	758	740	632	830	846	982	792
	FA50 - Dassault Falcon/Mystère 50	2A	728	632	532	704	744	816	1,140	1,144	900	620
	FTH2 - Dassault Falcon 2000	2A	0	0	0	0	0	0	0	0	0	2
	G150 - Gulfstream G150	1B	144	194	314	322	430	404	620	948	670	364
	G159 - Gulfstream Aerospace G 159/VC-4	No Data	2	0	0	0	0	0	0	0	0	0
	G200 - Gulfstream	1B	0	2	0	0	2	0	0	0	0	0
	G280 - Gulfstream G280	1B	164	224	324	392	494	366	476	612	690	952
	GALX - IAI 1126 Galaxy/Gulfstream G200	1B	636	466	480	508	436	420	692	602	612	818
	GLF2 - Gulfstream II/G200	1B	10	0	6	0	4	0	6	0	6	2
	GLF3 - Gulfstream III/G300	2A	226	270	286	118	40	18	12	14	18	16
	H25A - BAe HS 125-1/2/3/400/600	1A	12	4	4	0	4	0	0	0	2	6
	H25B - BAe HS 125/700-800/Hawker 800	1B	2,026	2,114	1,856	1,530	1,422	1,244	1,256	1,674	1,708	2,042
	H25C - BAe/Raytheon HS 125-1000/Hawker 1000	1B	34	106	138	96	102	110	130	106	70	38
	HA4T - Hawker 4000	1B	112	118	202	204	194	188	256	348	256	182
	HS25 - BAe HS 125; British Aerospace	1B	2	0	0	0	0	0	2	0	0	0
	LJ70 - Learjet 70	1B	38	72	66	34	52	70	76	76	70	74
	LJ75 - Learjet 75	1B	116	184	184	190	190	294	346	448	432	372
	SF34 - Saab SF 340	3	0	0	0	0	2	0	4	2	0	2
	Total		**11,808**	**12,548**	**12,830**	**12,956**	**13,162**	**12,886**	**16,682**	**18,416**	**17,732**	**22,724**
C-III	A320 - Airbus A320 All Series	3	0	0	0	0	0	0	0	0	0	4
	B461 - BAe 146-100	2A	0	0	2	0	0	0	0	0	0	0
	B737 - Boeing 737-700	3	2	0	0	0	0	0	0	0	0	2
	C27J - Alenia C-27J Spartan	No Data	0	0	2	2	2	0	0	0	0	0
	GL5T - Bombardier BD-700 Global 5000	2B	138	160	198	256	234	238	418	372	480	416
	GLEX - Bombardier BD-700 Global Express	2B	386	424	348	366	438	420	680	794	766	572
	P3 - Lockheed P-3C Orion	5	0	0	0	2	0	0	0	0	0	0
	SB20 - Saab 2000	3	0	0	2	0	0	0	2	0	6	4
	Total		**526**	**584**	**552**	**626**	**674**	**658**	**1,100**	**1,166**	**1,252**	**998**
C-IV	A310 - Airbus A310 All Series	5	0	0	0	0	0	0	0	2	0	0
	Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**
C-V	B772 - Boeing 777-200	5	0	0	0	0	2	0	0	0	0	0
	Total		**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**
D-I	F16 - Lockheed F-16 Fighting Falcon	1A	0	2	0	0	2	0	0	0	0	2
	F22 - Boeing Raptor F22	1B	0	0	0	0	2	2	4	2	2	0
	T38 - Northrop T-38 Talon	1A	10	2	2	6	0	4	8	2	0	0
	Total		**10**	**4**	**2**	**6**	**4**	**6**	**12**	**4**	**2**	**2**
D-II	CRJ1 - Bombardier CRJ-100	1B	2	0	0	0	0	0	0	0	0	0
	CRJ2 - Bombardier CRJ-200	1B	10	2	6	10	60	888	1,390	1,728	1,840	296
	G450 - Gulfstream G450	No Data	0	0	0	0	2	0	0	0	0	0
	GLF4 - Gulfstream IV/G400	2A	1,310	1,254	1,332	1,382	1,430	1,412	1,688	1,682	1,480	1,550
	Total		**1,322**	**1,256**	**1,338**	**1,392**	**1,492**	**2,300**	**3,078**	**3,410**	**3,320**	**1,846**
D-III	B738 - Boeing 737-800	3	0	0	0	0	0	0	0	2	0	0
	B739 - Boeing 737-900	3	0	0	0	0	2	0	0	0	0	0
	CRJ9 - Bombardier CRJ-900	2B	2	0	0	0	0	0	2	0	0	4
	GA5C - G-7 Gulfstream G500	2B	0	0	2	2	74	188	310	398	386	480
	GA6C - G-7 Gulfstream G600	2B	0	0	0	2	2	8	40	22	276	306
	GLF5 - Gulfstream V/G500	2B	368	446	488	576	684	514	738	904	842	852
	GLF6 - Gulfstream	2B	26	50	72	88	86	58	182	196	356	372
	Total		**396**	**496**	**562**	**668**	**848**	**768**	**1,272**	**1,522**	**1,860**	**2,014**
E-I	F15 - Boeing F-15 Eagle	1B	2	0	0	0	0	2	2	2	2	2
	Total		**2**	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**

AIRPORT REFERENCE CODE (ARC) SUMMARY

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A-I	792	1,066	1,222	1,114	1,326	1,678	1,884	2,024	1,818	2,148
A-II	1,448	1,638	1,688	1,782	1,802	1,760	2,162	2,436	2,576	2,764
A-III	0	0	0	4	2	4	2	0	0	0
B-I	6,772	6,654	6,822	6,618	7,534	7,490	9,076	8,814	6,348	5,648
B-II	11,662	13,058	14,538	14,714	15,044	16,378	22,170	24,460	21,872	22,016
B-III	254	276	286	374	462	382	576	624	592	626
C-I	3,570	2,966	2,798	2,902	2,712	2,500	3,578	3,798	3,150	3,070
C-II	11,808	12,548	12,830	12,956	13,162	12,886	16,682	18,416	17,732	22,724
C-III	526	584	552	626	674	658	1,100	1,166	1,252	998
C-IV	0	0	0	0	0	0	0	2	0	0
C-V	0	0	0	0	2	0	0	0	0	0
D-I	10	4	2	6	4	6	12	4	2	2
D-II	1,322	1,256	1,338	1,392	1,492	2,300	3,078	3,410	3,320	1,846
D-III	396	496	562	668	848	768	1,272	1,522	1,860	2,014
E-I	2	0	0	0	0	2	2	2	2	2
Total	38,562	40,546	42,638	43,156	45,064	46,812	61,594	66,678	60,524	63,858

Approach Category

AC	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A	2,240	2,704	2,910	2,900	3,130	3,442	4,048	4,460	4,394	4,912
B	18,688	19,988	21,646	21,706	23,040	24,250	31,822	33,898	28,812	28,290
C	15,904	16,098	16,180	16,484	16,550	16,044	21,360	23,382	22,134	26,792
D	1,728	1,756	1,902	2,066	2,344	3,074	4,362	4,936	5,182	3,862
E	2	0	0	0	0	2	2	2	2	2
Total	38,562	40,546	42,638	43,156	45,064	46,812	61,594	66,678	60,524	63,858

Design Group

DG	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
I	11,146	10,690	10,844	10,640	11,576	11,676	14,552	14,642	11,320	10,870
II	26,240	28,500	30,394	30,844	31,500	33,324	44,092	48,722	45,500	49,350
III	1,176	1,356	1,400	1,672	1,986	1,812	2,950	3,312	3,704	3,638
IV	0	0	0	0	0	0	0	2	0	0
V	0	0	0	0	2	0	0	0	0	0
Total	38,562	40,546	42,638	43,156	45,064	46,812	61,594	66,678	60,524	63,858

Taxiway Design Group

TDG	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1A	9,042	9,266	9,524	9,346	10,646	10,618	12,778	12,696	10,144	9,872
1B	15,202	16,052	17,418	18,732	19,930	21,798	30,128	33,518	31,370	31,656
2A	12,680	13,756	14,094	13,316	12,456	12,444	15,464	16,560	14,860	13,938
2B	1,044	1,182	1,240	1,400	1,618	1,544	2,588	2,860	3,306	7,634
3	16	2	10	20	32	92	156	176	156	148
Total	37,984	40,258	42,286	42,814	44,682	46,496	61,114	65,810	59,836	63,248

Exhibit 2N continued
HISTORICAL JET AND TURBOPROP OPERATIONS

(years 11-20) given the uncertainty inherent to this forecast range. The long-term change to the critical aircraft must be supported by a reasonable forecast."

An operational fleet mix by engine type was previously presented in **Table 2HH**. To meet the requirements for determining a future critical aircraft, a projection of operations by ARC (ADG and AAC) has been developed. **Table 2NN** shows this projection for jets and turboprops. Only jets and turboprops were examined because the critical aircraft will be a jet or turboprop (or a combination of the two) and the TFMSC database provides highly reliable data on operations by these aircraft types.

TABLE 2NN | Jet & Turboprop Fleet Mix Forecast by Aircraft Reference Code

	Historical Jet & Turboprop Operations				Forecast Jet & Turboprop Operations					
Design Category	**2015**	**%**	**2024**	**%**	**2029**	**%**	**2034**	**%**	**2044**	**%**
AAC A/B	20,928	54.3%	33,202	52.0%	39,552	49.0%	46,638	47.0%	63,390	42.0%
AAC C	15,904	41.2%	26,792	42.0%	34,709	43.0%	41,677	42.0%	67,918	45.0%
AAC D	1,730	4.5%	3,864	6.1%	6,457	8.0%	10,915	11.0%	19,621	13.0%
Total:	**38,562**	**100.0%**	**63,858**	**100.0%**	**80,718**	**100.0%**	**99,230**	**100.0%**	**150,929**	**100.0%**
ADG I	11,146	28.9%	10,870	17.0%	10,493	13.0%	11,908	12.0%	16,602	11.0%
ADG II	26,240	68.0%	49,350	77.3%	64,574	80.0%	78,392	79.0%	114,706	76.0%
ADG III	1,176	3.0%	3,638	5.7%	5,650	7.0%	8,931	9.0%	19,621	13.0%
Total:	**38,562**	**100.0%**	**63,858**	**100.0%**	**80,718**	**100.0%**	**99,230**	**100.0%**	**150,929**	**100.0%**

AAC = aircraft approach category
ADG = airplane design group

Determining the future critical aircraft can be challenging, as fleet mixes change over time; however, at SDL, historical operations in D-III-2B have exceeded the threshold of 500 operations every year for the past 10 years. Operations by larger aircraft are exceedingly rare and are not expected to exceed the threshold of 500 operations within the next 20 years; therefore, **the future critical aircraft is to remain D-III-2B**. This critical aircraft is best represented by the Gulfstream V/G500.

RUNWAY DESIGN CODE (RDC)

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 RVR. In most cases, the first two elements of the critical aircraft will also be the first two elements of the RDC for the primary runway. For an airport with a single runway, the RDC is the same as the critical aircraft.

Runway 3-21 has instrument approach procedures to each runway end. The lowest visibility minimum to Runway 3 is 1¼-mile. The lowest visibility minimum to Runway 21 is 1⅜-mile. There are also circling approaches to the airport with visibility minimums as low as 1-mile. The instrument approach visibility minimums are not anticipated to be lower than 1-mile in the future; therefore, **the current and future RDC for Runway 3-21 is D-III-5000**.

APPROACH AND DEPARTURE REFERENCE CODES

The approach and departure reference codes (APRC and DPRC) describe the current operational capabilities of each runway and the adjacent parallel taxiways, where no special operating procedures are necessary. Essentially, the APRC and DPRC describe the current condition at an airport in runway classification terms when considering the parallel taxiway and instrument approach visibility minimums.

Taxiways A and B are parallel to Runway 3-21 and are separated by 250 feet from centerline to centerline. The lowest visibility minimum to the runway is 1-mile, which is expected to remain the same through the planning period; therefore, the APRC for Runway 3-21 is B-II-4000. This classification is an indication that the current runway-to-taxiway separation meets the recommended design standard for frequent operations by aircraft in ACC B and ADG II.

The DPRC is based solely on the runway-to-taxiway separation distance, centerline to centerline. The DPRC is classified as B-II.

Table 2PP shows the FAA definitions of APRC and DPRC based on the runway-to-taxiway separation distances. Under ideal circumstances, the runway-to-parallel taxiway separation distance would be at least 400 feet to fully accommodate the frequent operations by the critical aircraft in D-III-2B. The feasibility of shifting the parallel taxiways will be examined in the facility requirements section of the master plan.

TABLE 2PP | FAA Approach and Departure Reference Codes

1-Mile Visibility Minimum	Runway-to-Taxiway Separation			
	≥240'	≥250'	≥300'	≥400'
Approach Reference Code (APRC)	B-II-4000	B-II-4000	B-III-4000 D-II-4000	D-IV-4000 D-V-4000
Departure Reference Code (DPRC)	B-II	B-II	B-III D-II	D-IV D-V

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

CRITICAL AIRCRAFT SUMMARY

Table 2QQ summarizes the airport and runway classifications for the current and future condition. Based on current activity levels, the airport is best classified as ARC D-III. This ARC is forecasted to remain the same through the 20-year scope of this study. The RDC for Runway 3-21 is currently D-III-5000 and is expected to remain the same in the future. The APRC and DPRC are shown to remain the same in the future.

TABLE 2QQ | Airport and Runway Classifications

	Current	Future
Airport Reference Code (ARC)	D-III	D-III
Airport Critical Aircraft	D-III-2B	D-III-2B
Runway Design Code (RDC)		
Runway 3-21	D-III-5000	D-III-5000
Approach Reference Code (APRC)		
Runway 3-21	B-II-4000	B-II-4000[1]
Departure Reference Code (DPRC)		
Runway 3-21	B-II	B-II[1]

[1]If the runway-to-taxiway separation were to change, the APRC and DPRC would also change.

Sources: Current ALP; FAA AC 150/5300-13B, Airport Design

SUMMARY

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period, as well as the critical aircraft for the airport. Total operations are forecasted to increase 2.83 percent annually, largely led by a significant increase in air taxi operations. Charter passenger enplanements are forecasted to grow from 43,765 in 2024 to 236,870 by 2044, for an annual growth rate of 8.81 percent. Based aircraft are forecasted to grow from 333 currently to 462 in the long term, for an annual growth rate of 1.65 percent.

The critical aircraft for the airport was determined by examining the FAA TFMSC database of flight plans to and from the airport. Based on 2024 data, the current critical aircraft is described as D-III-2B, which is primarily represented by the Gulfstream V business jet. The critical aircraft classification is planned to remain the same through the 20-year planning period. The facility requirements chapter to follow will examine the applicable design standards based on the critical aircraft.

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