CHAPTER TWO – FORECASTS

An important factor in facility planning is estimating the demand that can reasonably be expected to occur during the useful life of an airport's key components (e.g., runways, taxiways, terminal facilities, etc.). In airport planning, this involves projecting potential aviation activity for at least a 20-year timeframe. Aviation demand forecasting for Cameron County Airport (PIL) will primarily consider based aircraft, aircraft operations, and critical aircraft.

The Texas Department of Transportation (TxDOT) Aviation Division has oversight responsibility to review and approve aviation forecasts developed in conjunction with airport planning studies. TxDOT reviews individual airport forecasts with the objective of comparing them to the Federal Aviation Administration (FAA) *Terminal Area Forecast* (TAF) for PIL.

When reviewing a sponsor's forecast from a planning study, TxDOT must ensure the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecasting methods. According to the FAA, forecasts should be:

- Realistic;
- 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 a planning study includes a series of basic steps that vary in complexity, depending on the issues to be addressed and the level of effort required. The steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and documentation and evaluation of the results. FAA Advisory Circular (AC) 150/5070-6B, *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 (GA), these typically include based aircraft and operations.

2. **Review Previous Airport Forecasts** – These 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's TAF** – Based aircraft and total operations are considered consistent with the TAF if they meet one of the following criteria:

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

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

The 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 of this element is to provide an updated set of aviation demand projections for the airport that will permit airport management to make planning adjustments, as necessary, to maintain a viable, efficient, and cost-effective facility.

The forecasts for this planning study will utilize a base year of 2024 with a long-range forecast out to 2044.

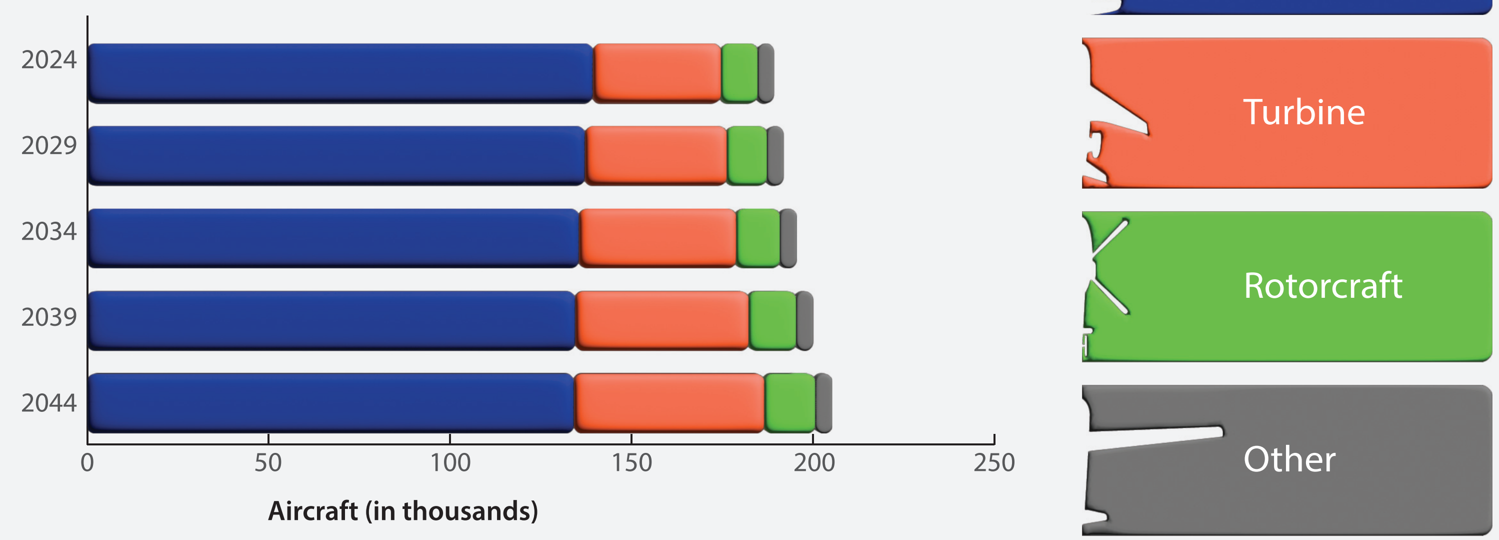
NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet the budget and planning needs of the FAA and provide information that can be used by state and local authorities, the aviation industry, and the public. At the time this chapter was prepared, the most recent edition was the *FAA Aerospace Forecast – Fiscal Years* (FY) *2024-2044*. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets. The following discussion is a brief synopsis of highlights from the FAA's national general aviation forecasts. A summary of the FAA's forecasts is also shown on **Exhibit 2A**.

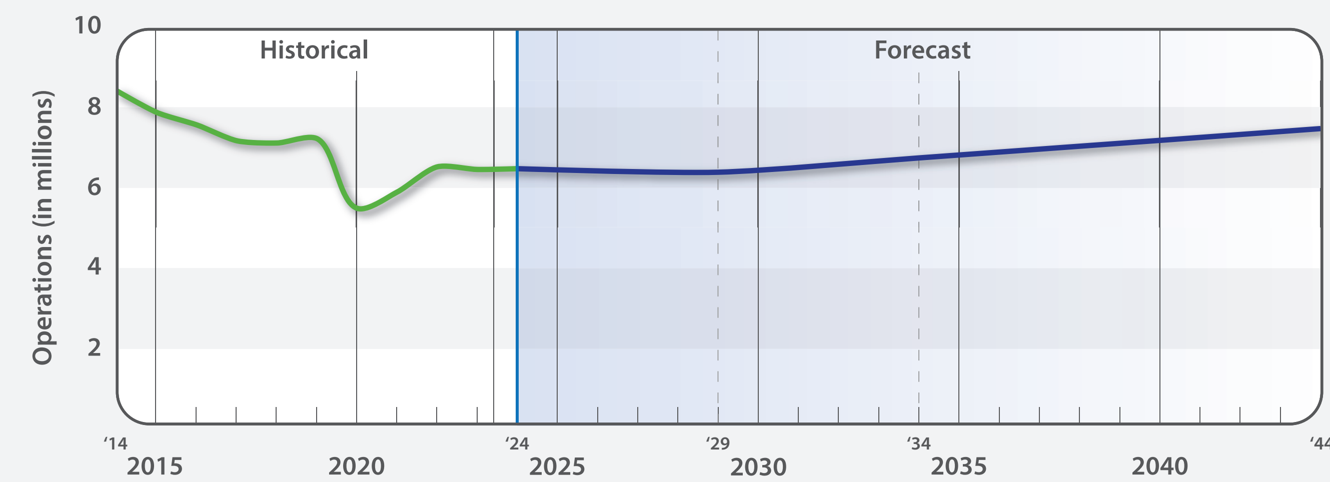
NATIONAL GENERAL AVIATION TRENDS

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 forecast to remain relatively stable, increasing by just 0.4 percent between 2024 and 2044. While steady growth in both gross domestic product (GDP) and corporate profits results in the 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.

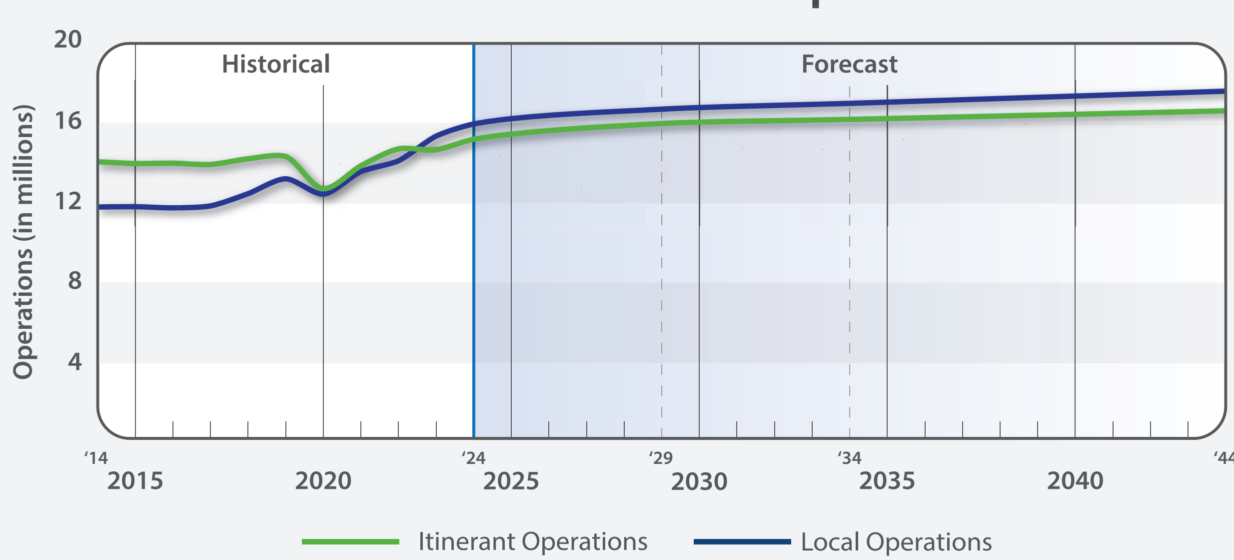
U.S. Active General Aviation Aircraft



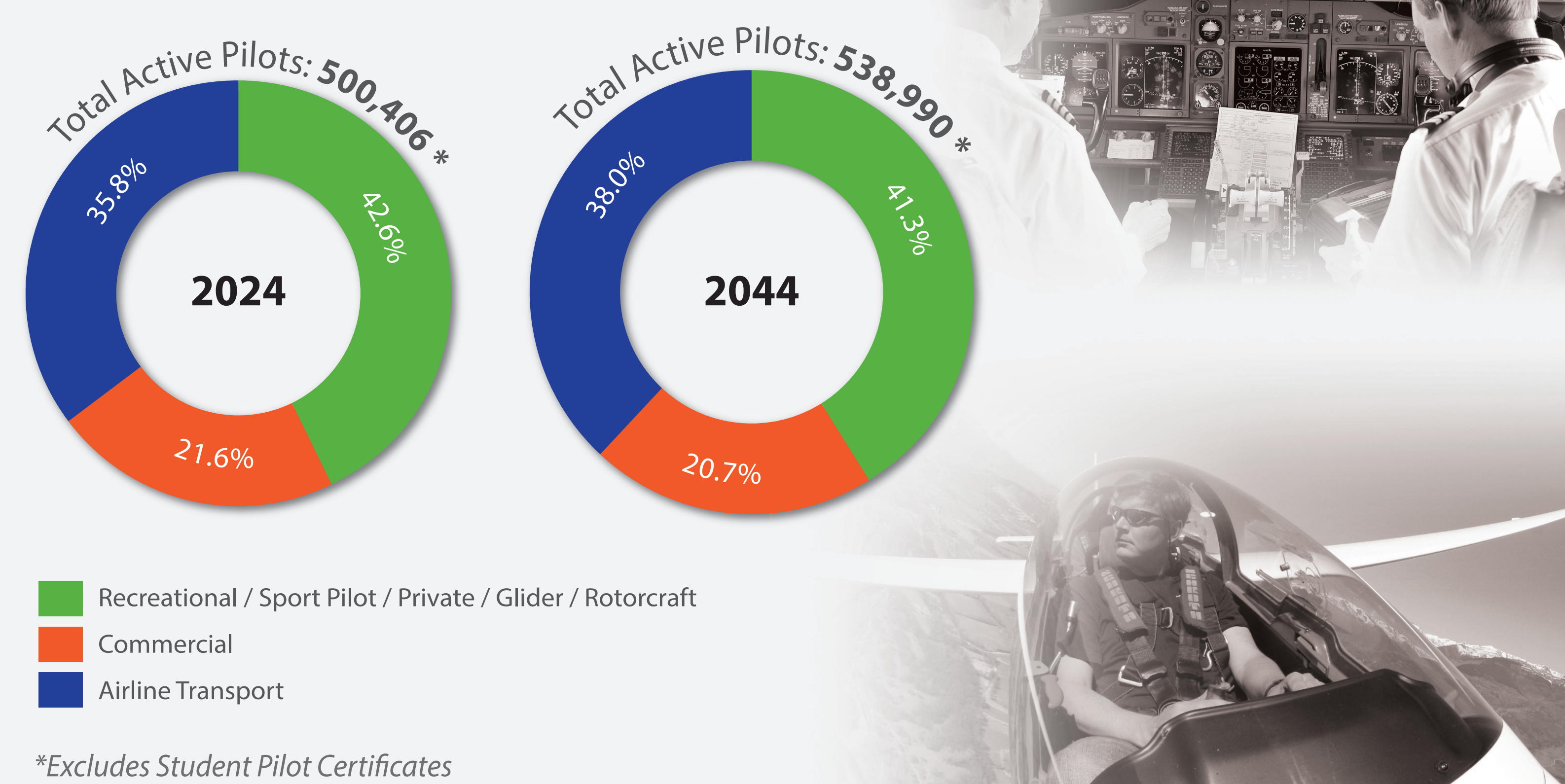
U.S. Air Taxi Operations



U.S. General Aviation Operations



Active Pilots By Certificate



**Excludes Student Pilot Certificates*

Source: FAA Aerospace Forecasts FY2024-2044

This page intentionally left blank

The FAA forecasts the fleet mix and hours flown for single-engine piston (SEP) aircraft; multi-engine piston (MEP) 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. From 2010 through 2013, the FAA undertook an effort to have all aircraft owners re-register their aircraft. This effort resulted in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category. **Table 2A** shows the primary general aviation demand indicators, as forecast by the FAA.

TABLE 2A | FAA General Aviation Forecast

Demand Indicator	2024	2044	CAGR
General Aviation Fleet			
Total Fixed-Wing Piston	136,485	130,790	-0.2%
Total Fixed-Wing Turbine	27,905	41,580	2.0%
Total Helicopters	10,090	14,025	1.7%
Total Other (experimental, light sport, etc.)	35,625	42,580	0.9%
Total General Aviation Fleet	**210,105**	**228,975**	**0.4%**
General Aviation Operations			
Local	15,900,404	17,570,920	0.5%
Itinerant	15,125,333	16,568,634	0.5%
Total General Aviation Operations	**31,025,737**	**34,139,554**	**0.5%**
CAGR = compound annual growth rate (2024-2044)			

Source: FAA Aerospace Forecast – FY 2024-2044

FAA forecasts of total operations are based on activity at airport traffic control towers across the United States and are categorized as air carrier, air taxi/commuter, general aviation, and military. 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 both local and itinerant general aviation operations.

AIRPORT SERVICE AREA

The initial step in determining the aviation demand for an airport is to define its generalized service area for various segments of aviation. The service area is primarily defined 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. PIL is classified in the National Plan of Integrated Airport Systems (NPIAS) as a general aviation local airport, which means its main purpose is to serve general aviation operators within the local communities in the immediate area of the airport.

The service area for an airport is a geographic 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, which influence aviation demand at an airport. Aviation demand will also be impacted by the proximity and strength of aviation services offered at competing airports, as well as the local and regional surface transportation network.

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 an airport from more distant locales.

As a rule, a general aviation airport's service area can extend for approximately 30 nautical miles (nm). There are three public-use airports with at least one paved runway within a 30-nm radius of PIL: Brownsville/South Padre Island International Airport (BRO), Valley International Airport (HRL) and Charles R Johnson Airport (T05). BRO and HRL are primary commercial service airports that also accommodate general aviation activities. T05 is a non-NPIAS airport located approximately 24 nm north of PIL that has a 3,200-foot-long runway and no published instrument approach procedures.

When evaluating the GA service area, two primary demand segments must be considered: based aircraft and itinerant operations. An airport's ability to attract based aircraft is an important factor when defining the service area, as proximity is a consideration for most aircraft owners. Aircraft owners typically choose to base at airports that are close to their homes or businesses.

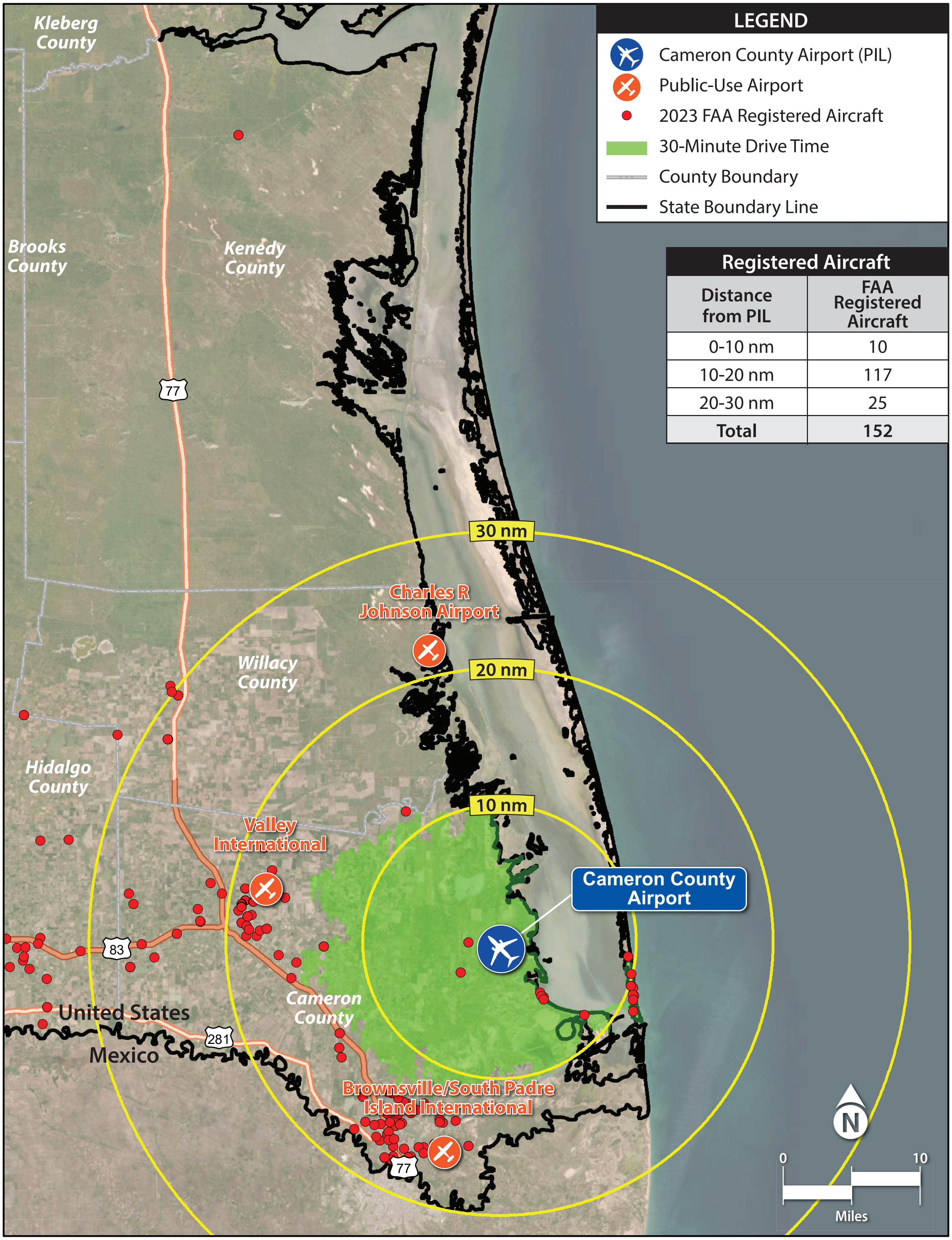
Exhibit 2B depicts a radius of 10, 20, and 30 nm from PIL, extending beyond Cameron County and into several neighboring counties. The 30-minute drive time from PIL is contained entirely within Cameron County. Registered aircraft in the region are also shown on the exhibit, with large clusters of registered aircraft located around the population centers of Brownsville and Harlingen and out on South Padre Island. In total, there are 152 registered aircraft within a 30-nm radius of PIL, 125 of which are registered in Cameron County.

The second demand segment to consider is itinerant operations. These operations are performed by aircraft that arrive from outside the airport area and either land at or depart from PIL to fly to other airports. In most cases, pilots use airports nearer their intended destinations; however, this is dependent on an airport's ability to accommodate aircraft operators in terms of the facilities and services available. As a result, airports with better facilities and services are more likely to attract a larger portion of the region's itinerant operations.

PIL offers a typical array of general aviation services and amenities, including fueling services, aircraft maintenance and repairs, ground handling, passenger and crew services, flight planning and support, aircraft storage and tiedowns, and administrative support. From a location standpoint, PIL is a convenient option for travelers visiting Port Isabel, South Padre Island, and eastern portions of the Rio Grande Valley. Due to PIL's location in Cameron County and the longer drive times to neighboring counties, PIL's primary service area is identified as Cameron County for the purposes of this study.

SERVICE AREA SOCIOECONOMICS

The socioeconomic characteristics of an airport's service area can provide valuable information from which to derive an understanding of the dynamics of growth near that airport. This information is crucial in determining aviation demand level requirements, as most aviation demand is directly related to the socioeconomic conditions of the surrounding region. Statistical analysis of population, employment, income, and gross regional product (GRP) trends outlines the economic strength of a region and can help



Registered Aircraft	
Distance from PIL	FAA Registered Aircraft
0-10 nm	10
10-20 nm	117
20-30 nm	25
Total	**152**

Source: FAA Aircraft Registry

determine the ability of the area to sustain a strong economy in the future. Socioeconomic data utilized in the development of new based aircraft and operations forecasts for PIL include historical and projected population, employment, per capita personal income (PCPI), and GRP data from Woods and Poole Economics, Inc.; 10 years of historical data and projections through 2044 for the service area and the State of Texas are summarized in **Table 2B**.

TABLE 2B | Socioeconomic Information

Year/CAGR	Population		Employment	
	Cameron County	Texas	Cameron County	Texas
Historical				
2014	417,519	26,908,012	187,620	16,001,897
2015	417,355	27,398,609	188,761	16,414,565
2016	418,916	27,828,636	191,137	16,683,269
2017	419,240	28,189,190	192,455	17,104,406
2018	418,810	28,507,509	196,298	17,608,889
2019	419,666	28,855,292	197,865	17,901,634
2020	421,480	29,234,361	196,814	17,700,738
2021	422,636	29,561,286	206,176	18,559,324
2022	424,911	30,029,848	216,083	19,631,439
2023	426,710	30,503,301	220,419	20,056,150
2024	430,959	30,876,641	223,310	20,421,550
2014-2024 CAGR	**0.3%**	**1.4%**	**1.8%**	**2.5%**
Forecast				
2029	452,039	32,776,657	238,587	22,347,171
2034	472,545	34,714,462	255,091	24,311,042
2044	511,265	38,674,453	290,172	28,443,622
2024-2044 CAGR	**0.9%**	**1.1%**	**1.3%**	**1.7%**
Year/CAGR	**Income (2017 dollars)**		**GRP (millions/2017 dollars)**	
	Cameron County	**Texas**	**Cameron County**	**Texas**
Historical				
2014	$26,898	$48,124	$10,151	$1,626,115
2015	$27,491	$48,058	$10,411	$1,617,178
2016	$27,853	$46,665	$10,729	$1,606,584
2017	$27,737	$48,523	$10,667	$1,673,234
2018	$28,353	$50,318	$10,853	$1,773,101
2019	$29,176	$51,445	$11,246	$1,795,676
2020	$32,208	$52,673	$11,509	$1,710,645
2021	$34,903	$55,543	$12,133	$1,882,339
2022	$32,187	$53,933	$12,460	$2,035,924
2023	$32,896	$55,474	$12,746	$2,114,778
2024	$33,533	$56,502	$12,941	$2,170,852
2014-2024 CAGR	**2.2%**	**1.6%**	**2.2%**	**1.6%**
Forecast				
2029	$36,912	$61,855	$13,969	$2,467,736
2034	$40,663	$67,521	$15,084	$2,785,986
2044	$49,135	$79,996	$17,463	$3,501,717
2024-2044 CAGR	**1.9%**	**1.8%**	**1.5%**	**2.4%**

CAGR = compound annual growth rate
GRP = gross regional product

Source: Woods & Poole Economics, Inc., 2024

FORECASTING APPROACH

The development of aviation forecasts involves both analytical processes and expert judgment. 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 final determination of the preferred forecast. The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trendline/time series projections, correlation/regression analysis, and market share analysis. The forecast analyst may elect to not use certain techniques based on the accuracy of the forecasts produced using other methods.

Trendline/time series projections are the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical data and extending them into the future, a basic trendline projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in the same manner as in the past. While this assumption is broad, the trendline 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, thereby yielding a correlation coefficient. The correlation coefficient (Pearson's r) measures association between the changes in the dependent variable and the independent variable(s). If the r^2 value (coefficient determination) is greater than 0.95, it indicates good predictive reliability. A value less than 0.95 may be used, but with the understanding that the predictive reliability is lower.

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 for the larger geographical area to produce a market share projection. This method has the same limitations as trendline projections but can be used to check the validity of other forecasting techniques.

Forecasts age, and the further a forecast is from the base year, the less reliable it may become, particularly due to changing local and national conditions; nevertheless, the FAA requires that a 20-year forecast be developed for long-range airport planning. Facility and financial planning usually require at least a 10-year outlook because completion of a major facility development program often takes more than five years; however, it is important to use forecasts that do not overestimate revenue-generating capabilities or understate the demand for facilities needed to meet public (user) needs.

A wide range of factors are known to influence the aviation industry and can have significant impacts on the extent and nature of aviation activity in the local and national markets. Historically, the nature and trend of the national economy has had a direct impact on aviation activity levels. Recessionary periods have been closely followed by declines in aviation activity; nevertheless, trends emerge over time and provide the basis for airport planning.

Future facility requirements, such as hangar, apron, and terminal needs, 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 current aviation trends, forecasts are presented for the following aviation demand indicators:

- Based aircraft
- Based aircraft fleet mix
- Based aircraft
- Based aircraft fleet mix

PREVIOUS FORECAST

Consideration is given to any recently completed forecasts of aviation demand for the airport. For PIL, the only recently prepared forecast is the FAA TAF, which was prepared in January 2024.

On an annual basis, the FAA publishes the TAF for each airport included in the NPIAS. The TAF is a generalized forecast of airport activity that is used by the FAA primarily for internal planning purposes. It is available to airports and consultants to use as a baseline projection and is an important point of comparison when developing local forecasts.

Table 2C presents the 2024 TAF projections for PIL. As shown, the FAA estimates PIL currently accommodates approximately 29,420 annual operations and 20 based aircraft. Over 54 percent of total operations at PIL are estimated to be conducted by military aircraft (primarily Beechcraft King Air and CASA 235 turboprop aircraft); these military aircraft operations are associated with the Port Isabel Detention Center, which is operated by the U.S. Department of Homeland Security. The FAA TAF has applied a no-growth projection for PIL over the next 20 years, which is common for general aviation airports.

TABLE 2C | FAA Terminal Area Forecast for PIL

Year	Itinerant Operations					Local Operations			Total Operations	Based Aircraft
	Air Carrier	Air Taxi	GA	Military	Subtotal	GA	Military	Subtotal		
Historical										
2014	0	50	800	1,000	1,850	2,400	0	2,400	4,250	13
2015	0	50	800	1,000	1,850	2,400	0	2,400	4,250	12
2016	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	13
2017	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	13
2018	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	13
2019	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	24
2020	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20
2021	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20
2022	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	19
2023	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	19
2024	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20
Forecast										
2029	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20
2034	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20
2044	0	20	11,000	16,000	27,020	2,400	0	2,400	29,420	20

BASED AIRCRAFT AND OPERATIONS FORECASTS

The numbers of based aircraft and operations are the most basic indicators of aviation demand. By first developing a forecast of based aircraft for the airport, other demand indicators can be projected. The process of developing forecasts of based aircraft begins with an analysis of aircraft ownership in the primary general aviation service area through a review of historical aircraft registrations. An initial forecast of registered aircraft is developed and used as one data point to arrive at a based aircraft forecast for the airport. To determine the types and sizes of facilities that should be planned to accommodate activity at PIL, certain indicators of demand must be forecast. These include based aircraft, aircraft fleet mix, and annual operations.

BASED AIRCRAFT FORECAST

Forecasts of based aircraft may directly influence needed facilities and applicable design standards. The needed facilities may include hangars, aprons, taxilanes, etc. The applicable design standards may include separation distances and object clearing surfaces. The sizes and types of based aircraft are also an important consideration; 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.

Because of the numerous variables known to influence aviation demand, several separate forecasts of based aircraft are developed. Each forecast is examined for practicality and any outliers are discarded or given less weight. Collectively, the remaining forecasts will create a planning envelope. A single planning forecast is then selected for use in developing facility needs for the airport. The selected forecast of based aircraft can be one of the forecasts developed, based on the experience and judgment of the forecaster, or it can be a blend of the forecasts.

Based Aircraft Inventory

Documentation of the historical number of based aircraft at PIL has been somewhat intermittent. The FAA did not require airports to report their based aircraft numbers until recently, with the establishment of a based aircraft inventory, in which it is possible to cross-reference based aircraft claimed by one airport with other airports. The FAA now utilizes this inventory as a baseline for determining how many and what types of aircraft are based at individual airports. This database evolves daily as aircraft are added or removed. It is the responsibility of the sponsor (owner) of each airport to input based aircraft information into the FAA database (www.basedaircraft.com).

Airport staff have undertaken and submitted a comprehensive physical count to the FAA for validation. The most recent validation of based aircraft at PIL identified 24 validated based aircraft. Of the validated based aircraft, there are 20 single-engine piston aircraft, two multi-engine piston aircraft, and two helicopters.

REGISTERED AIRCRAFT FORECASTS

Aircraft ownership trends for the service area (Cameron County) typically dictate based aircraft trends for an airport. As such, a forecast of registered aircraft for the primary service area is developed for use as an input to the subsequent based aircraft forecast.

Table 2D presents the historical registered aircraft for Cameron County over the past 10 years. These figures are derived from the FAA aircraft registration database, which categorizes aircraft registrations by county, based on the zip codes of the aircraft owners. Although this information generally provides a correlation to based aircraft, it is not uncommon for some aircraft to be registered in the county but be based at airports outside the county, or vice versa. For example, in the case of PIL, the airport has two based helicopters, but the FAA's registry database shows no helicopters currently registered within Cameron County.

TABLE 2D | Historical Registered Aircraft – Cameron County

Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Other	UAV	Total
2014	132	20	3	5	3	2	0	165
2015	125	18	5	2	2	2	0	154
2016	128	19	5	2	2	2	1	159
2017	123	14	7	2	2	1	1	150
2018	116	10	7	2	2	0	1	138
2019	115	13	10	2	2	0	0	142
2020	109	13	11	3	1	0	0	137
2021	107	17	11	3	0	0	0	138
2022	102	12	11	4	0	0	0	129
2023	94	11	11	8	0	0	0	124
2024	94	13	11	7	0	0	0	125

UAV = unmanned aerial vehicle

Source: FAA Aircraft Registry

The registered aircraft in the service area show a declining trend over the last several years, with registrations dropping from 165 in 2014 to 125 in 2024. Single-engine piston aircraft comprise the majority of aircraft (over 75 percent of registrations).

Although there are no recently prepared forecasts for the service area regarding registered aircraft, one was prepared for this study using market share, ratio, and historical growth rate projection methods.

Historical Growth Rate Projection

Utilizing historical data of registered aircraft, a growth rate projection was prepared to reflect the compound annual growth rate (CAGR) of -2.5 percent for the most recent five-year period. This declining trend results in 75 registered aircraft by 2044. While registrations have declined in recent years, this trend could be reversed as the local region is infused with more rapid population growth and increased economic output from tourism and the success of the SpaceX Starbase rocket production and testing complex in Boca Chica. The historical growth rate projection is included for comparison purposes but is not viewed as a likely outcome.

Market Share of Texas Based Aircraft

Market share projections consider the ratio of service area registered aircraft to the total number of based aircraft, both historically and forecasted by the FAA, in the State of Texas. Texas state data were used due to the expected growth in based aircraft numbers at the state level, as opposed to the general declining historical trend of national registrations. The service area count of 125 registered aircraft in 2024 represents approximately 0.95 percent of all based aircraft in Texas. If the service area maintains this market share, it would result in 132 aircraft by 2029 and 155 aircraft by 2044 (1.1 percent CAGR). An additional growth forecast was prepared based on an increasing market share scenario in which the service area returns to a 10-year average of 1.15 percent market share. This results in a total service area aircraft count of 139 by 2029 and 188 by 2044 (2.1 percent CAGR). **Table 2E** shows the market share of the service area compared to Texas totals.

TABLE 2E | Registered Aircraft Projections – Market Share of Texas Based Aircraft

Year	Service Area Registered Aircraft	Texas Based Aircraft	Service Area Market Share %
2014	170	12,279	1.38%
2015	158	11,865	1.33%
2016	162	13,065	1.24%
2017	150	12,416	1.21%
2018	138	12,920	1.07%
2019	142	11,968	1.19%
2020	137	11,600	1.18%
2021	138	11,977	1.15%
2022	129	12,937	1.00%
2023	124	13,080	0.95%
2024	125	13,208	0.95%
2014-2024 CAGR	**-2.5%**	**2.0%**	**–**
Constant Market Share			
2029	132	13,902	0.95%
2034	139	14,648	0.95%
2044	155	16,353	0.95%
2024-2044 CAGR	**1.1%**	**1.1%**	**–**
Increasing Market Share			
2029	139	13,902	1.00%
2034	153	14,648	1.05%
2044	188	16,353	1.15%
2024-2044 CAGR	**2.1%**	**1.1%**	**–**

Sources: Texas TAF, January 2024; Coffman Associates analysis

Ratio of Registered Aircraft to Population

The number of registered aircraft in an area often fluctuates based on population trends. As of 2024, the service area contains 0.29 registered aircraft per 1,000 residents. Over the past five years, this ratio has decreased as the number of aircraft registrations has declined and the service area population has grown. Two projections have been prepared: one based on maintaining the current ratio over the forecast period, and another projecting an increasing ratio that returns to the 10-year historical high of 0.41 registered aircraft per 1,000 residents. Maintaining the constant ratio (0.29) through 2044 results in 148 registered aircraft (0.8% CAGR). The increasing ratio projection results in 208 registered aircraft by 2044 (2.6% CAGR).

Registered Aircraft Forecast Summary

Table 2F summarizes the five registered aircraft forecasts for Cameron County. Overall, registrations have been declining; however, based on projected increases in population growth, as well as the economic and tourism impacts the SpaceX Starbase rocket production and testing complex has had on the county, it is reasonable to consider that aviation will also experience a boost in activity in the form of registered aircraft growth. Furthermore, the overall state market for aircraft is strong and far exceeds national registered aircraft growth rates. For these reasons, the constant market share projection, with a CAGR of 1.1 percent, is considered the most realistic scenario. This forecast reflects modest growth while maintaining a reasonable ratio of aircraft to population. The selected registered aircraft forecast results in 132 aircraft in 2029, 139 in 2034, and 155 in 2044.

TABLE 2F | Registered Aircraft Forecast Summary

Projection	2029	2034	2044	CAGR 2024-2044
5-Year Growth Rate	110	97	75	-2.5%
Constant % of TX Based Aircraft	**132**	**139**	**155**	**1.1%**
Increasing % of TX Based Aircraft	139	153	188	2.1%
Constant Aircraft/1,000 Population	131	137	148	0.8%
Increasing Aircraft/1,000 Population	144	165	208	2.6%

CAGR = compound annual growth rate
Boldface indicates selected forecast.
Source: Coffman Associates analysis

Based Aircraft Market Share of Registered Aircraft Forecast

Utilizing the forecast of registered aircraft in Cameron County, a market share forecast of based aircraft at PIL has been developed.

In 2024, the 24 based aircraft at PIL represented 19.2 percent of the aircraft registered in Cameron County. By maintaining this market share as a constant through the planning years, a forecast emerges that results in 30 based aircraft by 2044 (1.1% CAGR). An increasing market share projection, which assumes a 10 percent increase in the airport's market share to 29.25 percent (approximately the same percentage growth between 2019 and 2024), results in 45 based aircraft by 2044 (3.2% CAGR). **Table 2G** presents the two market share projections.

TABLE 2G | Based Aircraft Market Share of Registered Aircraft Forecast

Year	PIL Based Aircraft	Service Area Registered Aircraft	PIL Market Share %
2019	13	142	9.15%
2020	13	137	9.49%
2021	13	138	9.42%
2022	20	129	15.50%
2023	19	124	15.32%
2024	24	125	19.20%
CAGR	**13.0%**	**-2.5%**	**–**
Constant Market Share			
2029	25	132	19.20%
2034	27	139	19.20%
2044	30	155	19.20%
CAGR	**1.1%**	**1.1%**	**–**

(Continues)

TABLE 2G | Based Aircraft Market Share of Registered Aircraft Forecast (continued)			
Year	**PIL Based Aircraft**	**Service Area Registered Aircraft**	**PIL Market Share %**
Increasing Market Share			
2029	29	132	21.71%
2034	34	139	24.22%
2044	45	155	29.25%
CAGR	**3.2%**	**1.1%**	**–**
CAGR = compound annual growth rate			

Sources: basedaircraft.com; Cameron County Airport records; Coffman Associates analysis

Growth Rate/Trendline Projections

According to based aircraft records, PIL's count has grown in the last five years, from 13 based aircraft in 2019 to 24 in 2024 (13.0% CAGR). This CAGR is well above what would be considered reasonable for a long-term scenario, so a projection based on this historical CAGR was not prepared; however, a trendline analysis produces a forecast of 68 based aircraft at PIL by 2044 (5.3% CAGR).

Socioeconomic Growth Projections

Based aircraft growth is often related to the population and economic activity of the service area. For this reason, based aircraft projections tied to the projected CAGRs in population (0.9%), employment (1.3%), income (1.9%), and GRP (1.4%) for Cameron County were also prepared. Applying these CAGRs results in 28 based aircraft for population, 31 for employment, 35 for income, and 32 for GRP by 2044.

Regression Analysis

Several forecasts were prepared utilizing 10 years of historical based aircraft data and the regression model. Correlations were examined with independent variables, including population, employment, income, and GRP, as well as a time series regression. None of the regressions produced a strong correlation; the r^2 values were between 0.4 and 0.6. As previously described, correlation values over 0.95 indicate good predictive reliability. Because none of the regressions produced a correlation value over 0.95, the regression forecasts have been excluded from consideration.

Selected Based Aircraft Forecast

Selecting a based aircraft forecast ultimately falls to the judgment of the forecast analyst. The selected forecast should be reasonable and based on a sound methodology. The methodology presented in this analysis first examines the history of aircraft ownership in the service area (Cameron County). Utilizing the selected registered aircraft projection, a market share analysis was conducted based on maintaining a constant market share and an increasing market share over the forecast period. Additional projections considered a trendline analysis and growth rates based on key socioeconomic indicators (population, employment, income, and GRP). These eight projections are summarized in **Table 2H**.

TABLE 2H | Based Aircraft Forecast Summary

Projection	2024	2029	2034	2044	CAGR 2024-2044
PIL 2024 TAF	20	20	20	20	0.0%
Constant Market Share	24	25	27	30	1.1%
Increasing Market Share	**24**	**29**	**34**	**45**	**3.2%**
Five-Year Trendline	24	34	46	68	5.3%
Service Area Population Growth Rate	24	25	26	28	0.8%
Service Area Employment Growth Rate	24	26	27	31	1.3%
Service Area Income Growth Rate	24	26	29	35	1.9%
Service Area GRP Growth Rate	24	26	28	32	1.4%

CAGR = compound annual growth rate
Boldface indicates selected forecast.

Sources: FAA TAF; basedaircraft.com; Coffman Associates analysis

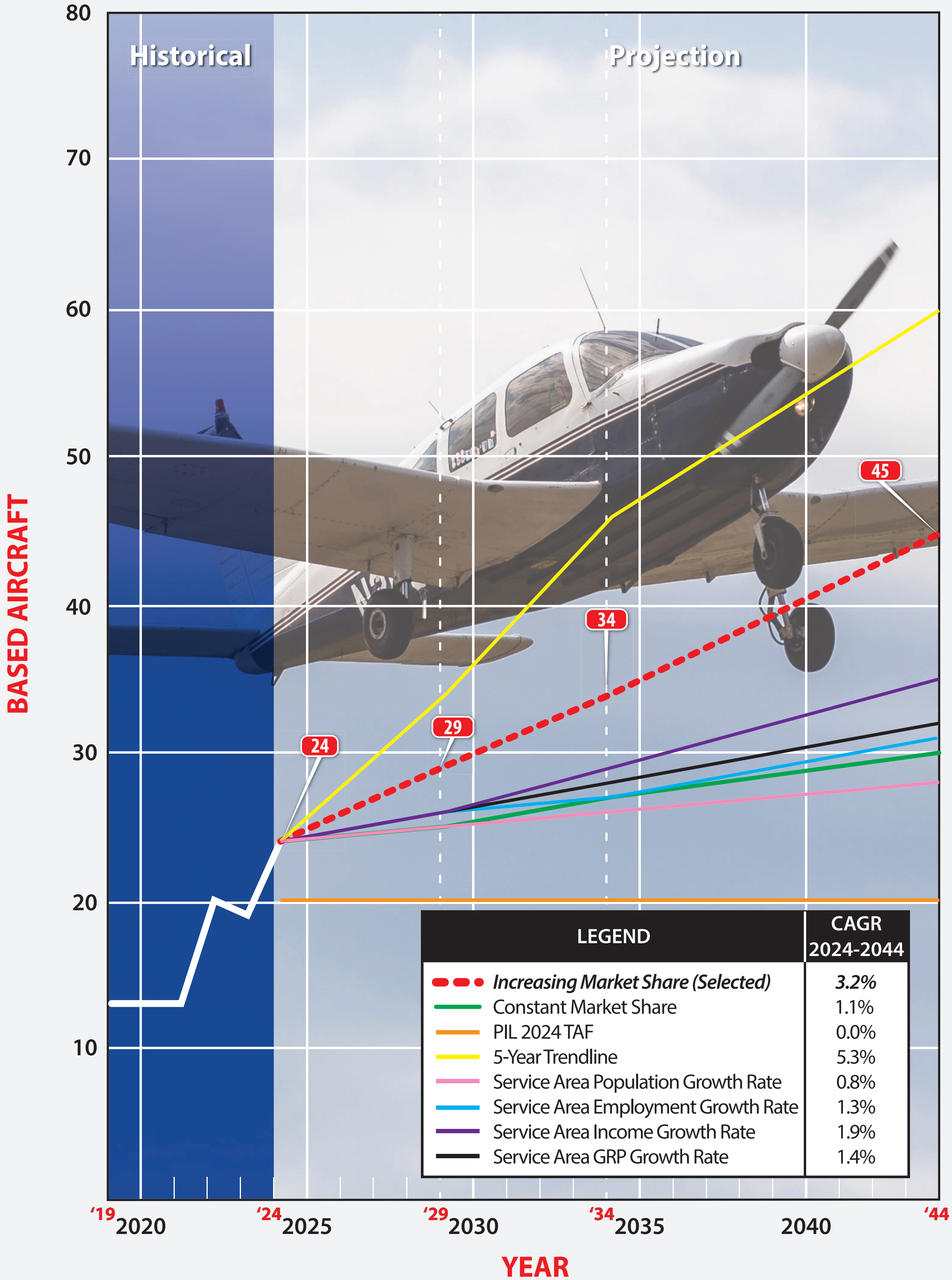
Future aircraft basing at the airport will depend on several factors, including the state of the economy, fuel costs, available facilities, competing airports, and hangar development potential. Forecasts assume a reasonably stable and growing economy and reasonable development of airport facilities necessary to accommodate aviation demand. PIL will not experience significant based aircraft growth unless new hangar facilities are constructed. The airport's hangar facilities are already at full capacity and there are 15 individuals on a hangar waiting list. With available space for new hangar development, this unconstrained forecast must consider the potential for meeting this demonstrated demand. As a result, the increasing market share projection has been selected as the preferred forecast. The selected forecast results in 45 based aircraft by 2044: an increase of 21 total based aircraft over the next 20 years.

Exhibit 2C presents the nine based aircraft forecasts that comprise the planning envelope.

BASED AIRCRAFT FLEET MIX FORECAST

It is important to understand the current and projected based aircraft fleet mix at an airport to ensure the planning of proper facilities. For example, the addition of one or several larger turboprop or business jet aircraft to the airfield could have a significant impact on separation requirements and various obstacle clearing surfaces.

The current based aircraft fleet mix consists of 20 single-engine piston aircraft, two multi-engine piston aircraft, and two helicopters. As a general aviation airport, PIL should grow to serve a more diverse fleet mix, including turbine-powered aircraft. The forecasted growth trends in the PIL based aircraft fleet mix take FAA projections of the national general aviation fleet mix into consideration. Consistent with national aviation trends, growth is anticipated to occur within the more sophisticated aircraft categories, including the turboprop and jet categories. **Table 2J** presents the forecast fleet mix for based aircraft at PIL.



Source: FAA TAF; basedaircraft.com; Coffman Associates analysis

TABLE 2J | Based Aircraft Fleet Mix

Aircraft Type	2024	%	2029	%	2034	%	2044	%
SEP	20	83.3%	21	72.4%	22	64.7%	29	64.4%
MEP	2	8.3%	2	6.9%	2	5.9%	1	2.2%
Turboprop	0	0.0%	1	3.4%	2	5.9%	3	6.7%
Jet	0	0.0%	2	6.9%	3	8.8%	5	11.1%
Helicopter	2	8.3%	3	10.3%	4	11.8%	5	11.1%
Glider/Other	0	0.0%	0	0.0%	1	2.9%	2	4.4%
Total	**24**	**100%**	**29**	**100%**	**34**	**100%**	**45**	**100%**

MEP = multi-engine piston
SEP = single-engine piston

Sources: FAA Based Aircraft Registry; Coffman Associates analysis

OPERATIONS FORECASTS

Operations at PIL are classified as either general aviation (GA), air taxi, or military. GA 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. Examples of air taxi operations include chartered aircraft (executive jets, turboprops, or pistons), subscription-based air services, air medical flights, air cargo, or tour/sightseeing flights. Military operations include those conducted by various branches of the U.S. military or by other branches of the federal government. In the case of PIL, many operations conducted at the airport are in support of the Port Isabel Detention Center, which is operated by the U.S. Department of Homeland Security. Air carrier is an additional category of operation that is conducted by large aircraft with 60 or more passenger seats. These flights are very infrequent at PIL and are not included as part of the operations forecast.

Aircraft operations are further classified as local and 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. Generally, local operations are characterized by training activity. Itinerant operations are those performed by aircraft with specific origins or destinations away from an airport. Itinerant operations typically increase with business and commercial use because business aircraft are primarily used to transport passengers from one location to another.

Because PIL is not equipped with an airport traffic control tower (ATCT), precise historical operational (takeoff and landing) counts are not available. The only available data source for operations estimates is the FAA’s TAF (previously detailed in **Table 2C**); therefore, the FAA TAF estimates will be utilized as the baseline for GA and military operations.

The AirportIQ database maintained by GCR, which documents operations with filed flight plans, indicates that there were 42 total air taxi operations at PIL during the 12-month period ending October 2024. Air taxi operations at PIL have been consistent over the past five years, averaging approximately 40 per year. Most PIL air taxi operations are unbranded, but Boutique Air and Executive Jet, a Netjets company, report several operations over the past three years. AirportIQ is considered a reliable data source for air taxi operations, as they are typically performed under filed flight plans, whereas GA operations do not always include filed flight plans.

No data suggest any of the estimated 16,000 military operations at PIL are local operations; therefore, it is assumed they are all itinerant. According to the FAA's Traffic Flow Management System Counts (TFMSC) database, the most frequent military aircraft utilizing PIL are the CASA 235 and the Beechcraft King Air 90, both twin-engine turboprops. These data establish an operational baseline for the generation of forecasts.

It should be noted that the FAA's forecast of nationwide air taxi operations trends lower in the short term and returns to growth after 2028, due to ongoing changes to the scheduled airline aircraft fleet mix. Airlines are transitioning away from 50-seat regional jets, which are counted under the air taxi category, to larger jets with seating capacities of 60 seats or more, which are counted under the air carrier category. This airline fleet mix transition should have no impact on unscheduled PIL air taxi operations.

A summary of historical operations data for PIL is shown in **Table 2K**. As mentioned previously, all GA and military data are sourced from the FAA TAF, while air taxi operations are sourced from the AirportIQ database.

TABLE 2K | Historical Operations Data

Year	Itinerant					Local			Total
	Air Carrier	Air Taxi	GA	Military	Total	GA	Military	Total	Operations
2019	0	40	11,000	16,000	27,040	2,400	0	2,400	29,440
2020	0	32	11,000	16,000	27,032	2,400	0	2,400	29,432
2021	0	60	11,000	16,000	27,060	2,400	0	2,400	29,460
2022	0	26	11,000	16,000	27,026	2,400	0	2,400	29,426
2023	0	36	11,000	16,000	27,036	2,400	0	2,400	29,436
2024	0	42	11,000	16,000	27,042	2,400	0	2,400	29,442

Source: FAA TAF (GA and military); AirportIQ database (air taxi)

Market Share Projections

Market share analysis compares the historical estimate and forecast data points to arrive at a trend for the unknown variable (PIL operations). The first forecast compares the current market share of GA (itinerant and local) and air taxi operations at the airport to the FAA TAF forecast for operations in Texas.

In 2024, PIL accounted for 0.45 percent of itinerant GA operations in Texas; 0.08 percent of Texas local GA operations; and 0.01 percent of Texas air taxi operations. By carrying these percentages forward through the planning horizon, a constant market share forecast emerges; **Table 2L** shows the results. The constant market share is considered a low-range projection because it is anticipated with based aircraft growth; each of these operational segments should experience growth beyond maintaining a constant share.

A mid-range increasing market share projection was prepared that increases PIL's market share of itinerant GA operations to 0.7 percent. The local GA operations market share is taken to 0.1 percent and the market share of air taxi operations is taken to 0.03 percent. Each reflects marginal increases. The results of the mid-range projections are also shown in **Table 2L**.

High-range, increasing market share projections were also prepared that consider the potential for operations to grow substantially from current estimates and far exceed growth rates expected at the state level. The resulting projections take PIL's 2044 market shares to 1.0 percent (itinerant GA); 0.2 percent (local GA); and 0.1 percent (air taxi). The results of the high-range projections are shown in **Table 2L**.

TABLE 2L | Operations Market Share Projections

Year	GA Itinerant			GA Local			AIR Taxi		
	PIL	Texas	PIL Market %	PIL	Texas	PIL Market %	PIL	Texas	PIL Market %
2024	11,000	2,421,991	0.45%	2,400	2,922,850	0.08%	42	457,101	0.01%
Constant Market Share – Low Range									
2029	11,500	2,533,465	0.45%	2,500	3,050,406	0.08%	38	415,322	0.01%
2034	11,800	2,588,499	0.45%	2,560	3,123,590	0.08%	40	433,102	0.01%
2044	12,300	2,710,927	0.45%	2,700	3,286,859	0.08%	43	471,778	0.01%
CAGR	0.6%	0.6%	–	0.6%	0.6%	–	0.1%	0.2%	–
Increasing Market Share – Mid Range									
2029	**13,100**	2,533,465	0.52%	**2,600**	3,050,406	0.09%	**60**	415,322	0.01%
2034	**14,900**	2,588,499	0.58%	**2,800**	3,123,590	0.09%	**80**	433,102	0.02%
2044	**19,000**	2,710,927	0.70%	**3,300**	3,286,859	0.10%	**140**	471,778	0.03%
CAGR	**2.8%**	0.6%	–	**1.6%**	0.6%	–	**6.2%**	0.2%	–
Increasing Market Share – High Range									
2029	15,000	2,533,465	0.59%	3,400	3,050,406	0.11%	130	415,322	0.03%
2034	18,800	2,588,499	0.73%	4,400	3,123,590	0.14%	240	433,102	0.05%
2044	27,100	2,710,927	1.00%	6,600	3,286,859	0.20%	470	471,778	0.10%
CAGR	4.6%	0.6%	–	5.2%	0.6%	–	12.8%	0.2%	–

CAGR = compound annual growth rate
Boldface indicates selected forecast.

Sources: FAA TAF (GA); AirportIQ database (air taxi); Coffman Associates analysis

Regression Analysis

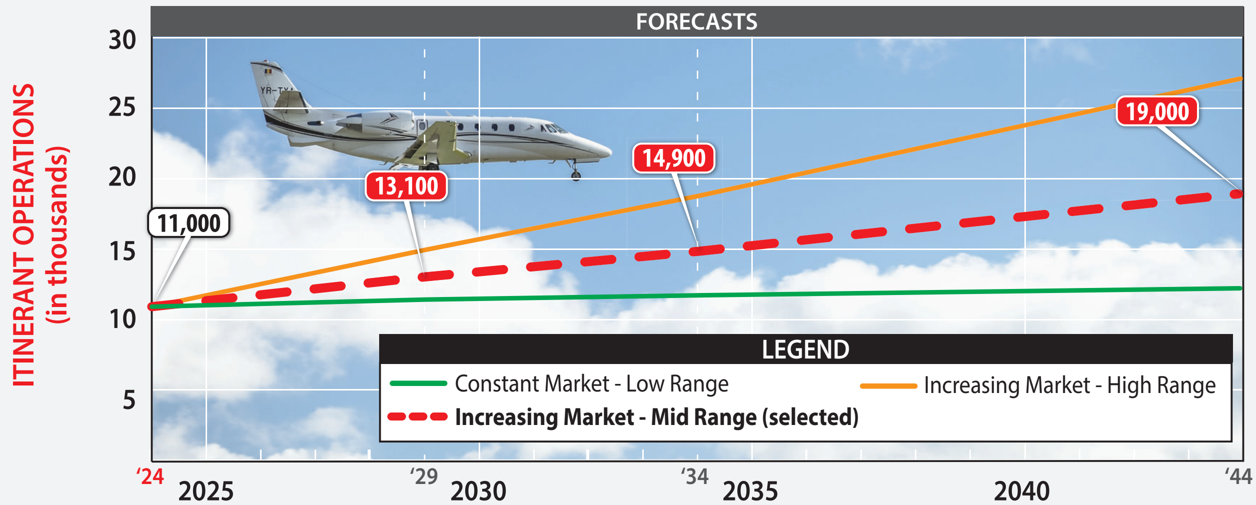
Development of regressions requires reliable historical data so that correlations between dependent and independent variables can be examined. Because PIL does not have reliable historical operational data, regression analysis cannot be used; therefore, regressions are not included in the operations forecast analysis.

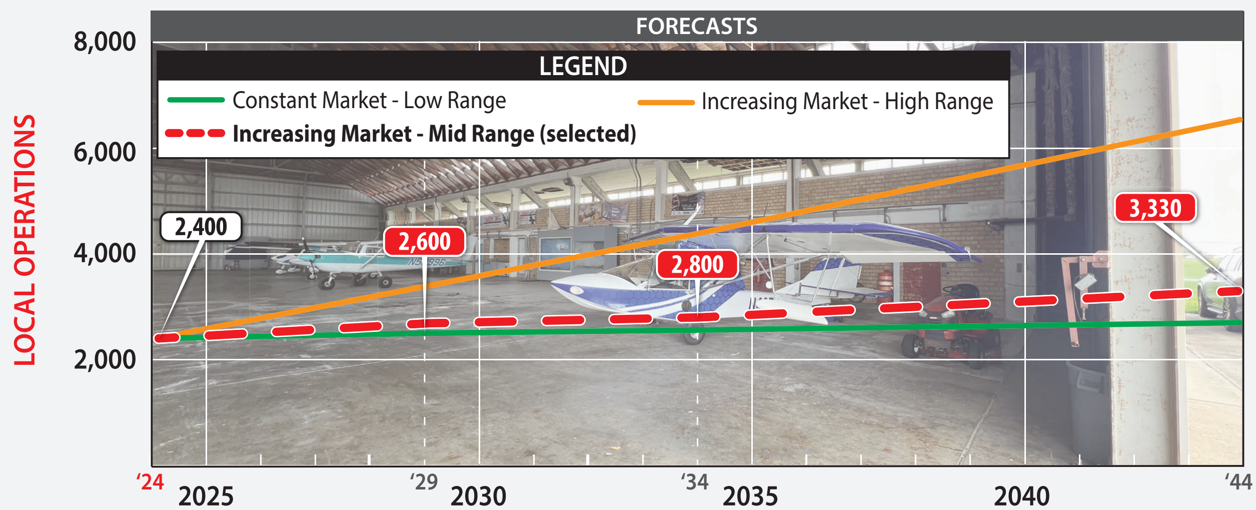
General Aviation and Air Taxi Operations Forecast Summary

When reliable historical operational trends are unavailable to predict future activity, an approach that considers a variety of forward-looking factors must be used to select an operations forecast. Market trends indicate that GA and air taxi operations will continue to grow in the State of Texas. More people are traveling to Texas for business and recreation and many travel by air. Airlines are developing new programs to grow the next generation of pilots, which has led to the creation of new flight schools and flight training programs. Socioeconomic indicators suggest Cameron County will continue to grow over the planning period, including new business opportunities and potential users and tenants. The SpaceX facility in Boca Chica has already had an estimated $800 million economic impact on the county and should continue to draw both businesses and tourists.

As discussed in the based aircraft section, there is strong demand for new based aircraft at PIL, which has the potential to support operational growth across the GA and air taxi categories. For these reasons, the mid-range increasing market share projections of itinerant GA, local GA, and air taxi operations have been selected. These projections reflect moderate growth rates, considering the development potential of the airport.

Exhibit 2D graphically represents the operations projections that comprise the planning envelope.





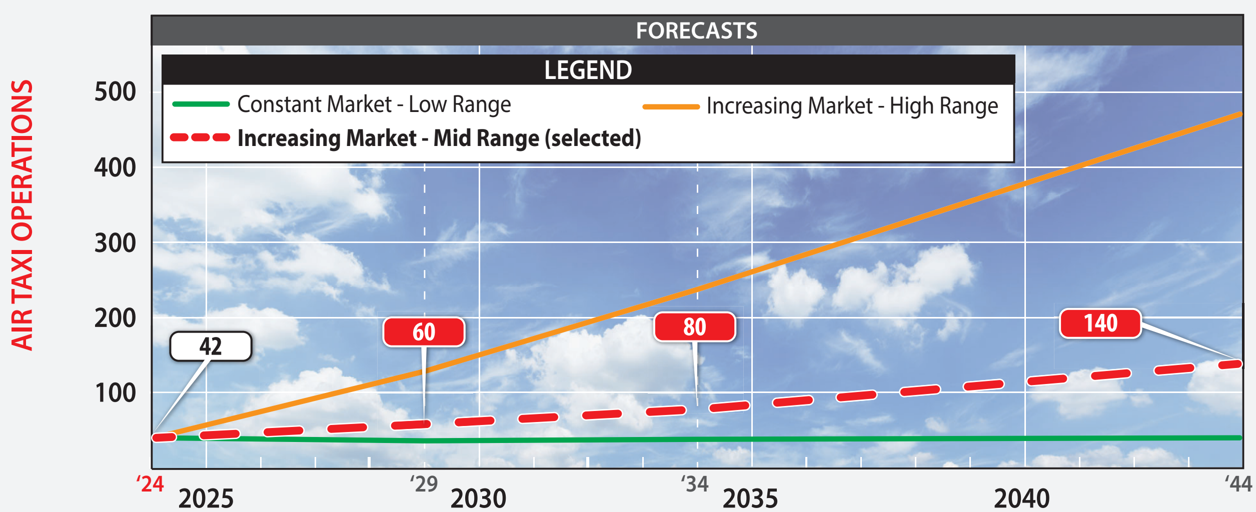


Exhibit 2D
OPERATIONS FORECASTS

Military Operations Forecast

Military aircraft can (and do) utilize civilian airports across the country, including PIL. As previously mentioned, military operations at PIL primarily support the neighboring Port Isabel Detention Center. It is inherently difficult to project future military operations due to their national security nature and the fact that such missions can change without notice; thus, it is typical for the FAA to use a flat-line number for military operations. For this planning study, the FAA TAF estimate of 16,000 annual military operations will be carried forward as the selected military operations forecast.

Total Operations Forecast Summary

Table 2M presents the summary of the selected operations forecasts. The summary table details the culmination of each selected operations forecast. Over the planning horizon, total operations at PIL are projected to grow from 29,442 in 2024 to 38,440 by 2044 with a CAGR of 1.3 percent.

TABLE 2M | Total Operations Forecast Summary

Year	Itinerant					Local			Total Operations
	Air Carrier	Air Taxi	GA	Military	Subtotal	GA	Military	Subtotal	
2024	0	42	11,000	16,000	27,042	2,400	0	2,400	29,442
2029	0	60	13,100	16,000	29,160	2,600	0	2,600	31,760
2034	0	80	14,900	16,000	30,980	2,800	0	2,800	33,780
2044	0	140	19,000	16,000	35,140	3,300	0	3,300	38,440
CAGR	**0**	**6.2%**	**2.8%**	**0.0%**	**1.3%**	**1.6%**	**0.0%**	**1.6%**	**1.3%**

CAGR = compound annual growth rate
Source: Coffman Associates analysis

FORECAST SUMMARY

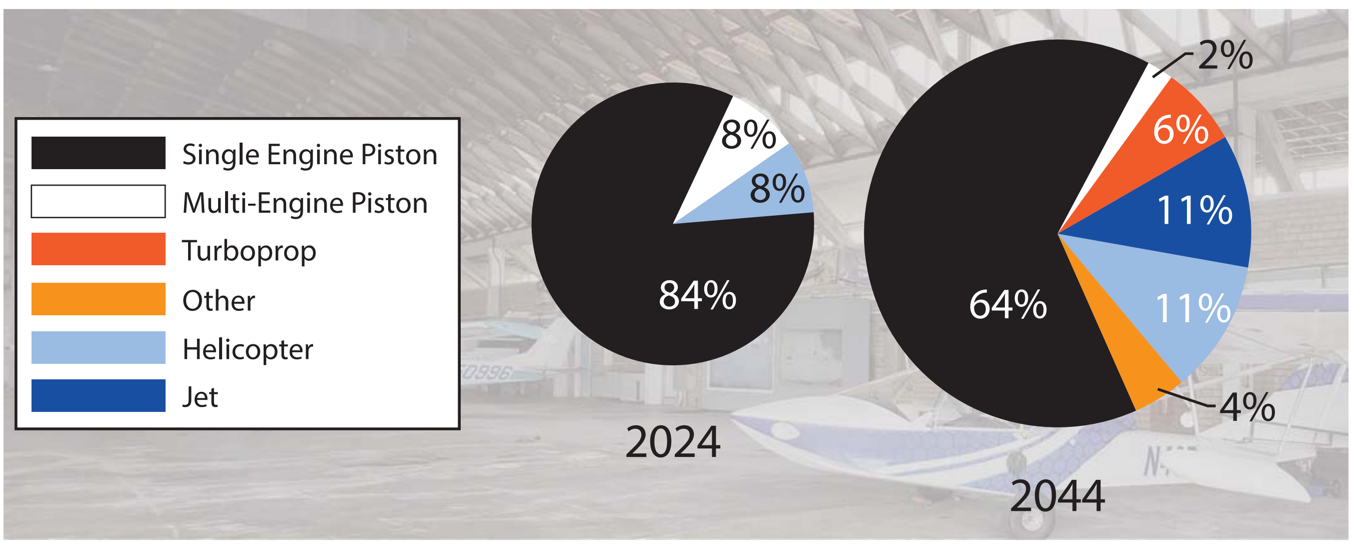
This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2E** presents a summary of the aviation forecasts prepared in this chapter. The base year for these forecasts is 2024 with a 20-year planning horizon to 2044. The primary aviation demand indicators are based aircraft and operations. The based aircraft count is forecast to increase from 24 aircraft in 2024 to 45 by 2044 (3.2% CAGR). Total operations at PIL are forecast to increase from 27,042 operations in 2024 to 35,140 by 2044 (1.3% CAGR).

Projections of aviation demand will be influenced by unforeseen factors and events in the future; therefore, it is not reasonable to assume future demand will follow the exact projection line, but forecasts of aviation demand tend to fall within the planning envelope over time. The forecasts developed for this planning effort are considered reasonable for planning purposes. The need for additional facilities will be based on these forecasts; however, if demand does not materialize as projected, implementation of facility construction can be slower. Likewise, if demand exceeds these forecasts, the airport may accelerate construction of new facilities.

	2024	2029	2034	2044	CAGR
ANNUAL OPERATIONS					
Itinerant					
Air Carrier	0	0	0	0	N/A
Air Taxi	42	60	80	140	6.2%
General Aviation	11,000	13,100	14,900	19,000	2.8%
Military	16,000	16,000	16,000	16,000	0.0%
Itinerant Subtotal	***27,042***	***29,160***	***30,980***	***35,140***	***1.3%***
Local					
General Aviation	2,400	2,600	2,800	3,300	1.6%
Military	0	0	0	0	N/A
Local Subtotal	***2,400***	***2,600***	***2,800***	***3,300***	***1.6%***
Total Operations	**29,442**	**31,760**	**33,780**	**38,440**	**1.3%**
BASED AIRCRAFT					
Single-Engine Piston	20	21	22	29	1.9%
Multi-Engine Piston	2	2	2	1	-3.4%
Turboprop	0	1	2	3	N/A
Jet	0	2	3	5	N/A
Helicopter	2	3	4	5	4.7%
Glider/Other	0	0	1	2	N/A
TOTAL BASED AIRCRAFT	**24**	**29**	**34**	**45**	**3.2%**

N/A - Not Applicable ***CAGR*** - Compound annual growth rate

Total Based Aircraft Fleet Mix



Source: Coffman Associates analysis

FORECAST COMPARISON TO THE FAA TAF

Historically, forecasts have been submitted to the FAA to be evaluated and compared to the TAF. The FAA has preferred that forecasts differ by less than 10 percent in the five-year period and less than 15 percent in the 10-year period. Where forecasts differ, supporting documentation has been necessary to justify the difference.

Table 2N presents a summary of the selected forecasts and a comparison to the FAA TAF for PIL. The selected operations forecast is within TAF tolerances in both the five- and 10-year periods.

TABLE 2N | Comparison of Selected Forecasts to FAA TAF

	2024	2029	2034	2044	CAGR
Total Operations					
Selected Forecast	29,442	31,760	33,780	38,440	1.3%
TAF	29,420	29,420	29,420	29,420	0.0%
% Difference from TAF	**0.1%**	**7.6%**	**13.8%**	**26.6%**	**–**
Based Aircraft					
Selected Forecast	24	29	34	45	3.2%
TAF	20	20	20	20	0.0%
% Difference from TAF	**18.2%**	**36.7%**	**51.9%**	**76.9%**	**–**

Based aircraft are outside TAF tolerances. This is primarily due to the baseline TAF count differing by 18.2 percent from the FAA-validated count in 2024 and the fact that the TAF reflects a no-growth scenario. As previously discussed, in an unconstrained condition, the 15-person hangar waiting list demonstrates real demand for more based aircraft at PIL. The selected forecast accounts for the realization of that demand over the next 20 years.

CRITICAL AIRCRAFT

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 important 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.

AIRCRAFT CLASSIFICATION

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily 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. The critical aircraft 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 2F**.

Aircraft Approach Category (AAC) | The AAC is a grouping of aircraft based on a reference landing speed (V_{REF}), if specified. If V_{REF} is not specified, it is based on 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 is, the more restrictive the applicable design standards will be. The AAC is depicted by a letter (A through E) and 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.

Airplane Design Group (ADG) | The ADG is depicted by a Roman numeral (I through VI) and is a classification of aircraft related to aircraft wingspan or tail height (physical characteristics). When the aircraft wingspan and tail height fall in different groups, the higher group is used. The ADG influences design standards for the taxiway safety area (TSA), taxiway object free area (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 critical aircraft and is classified by an alphanumeric system (1A, 1B, 2A, 2B, 3, 4, 5, 6, and 7). 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 critical aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards based on expected use.

The reverse side of **Exhibit 2F** 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 AAC B and C, while the larger commercial aircraft will fall in AAC C and D.

RUNWAY CLASSIFICATION

Runway classifications, along with the aircraft classifications defined previously, 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 runway. The RDC provides the information needed to determine certain applicable design standards. The first component, the AAC, is depicted by a letter and relates to aircraft approach speed (operational characteristics). The second

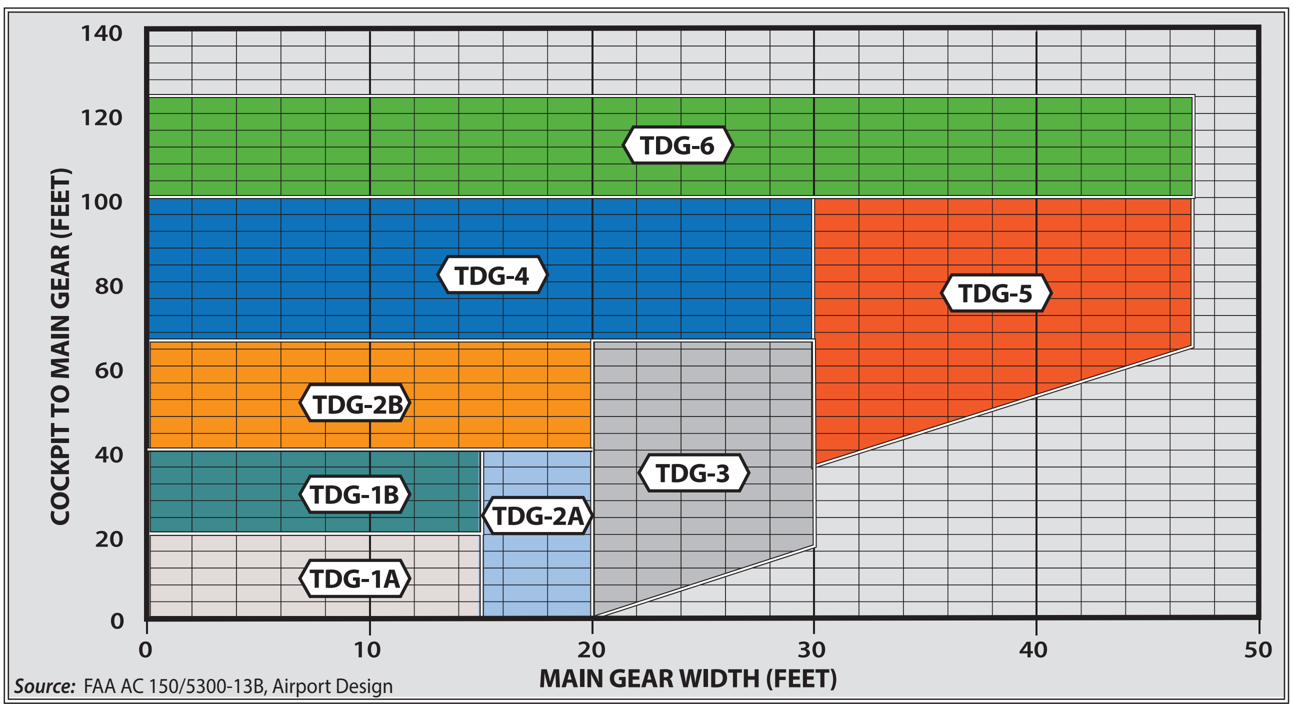
AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

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

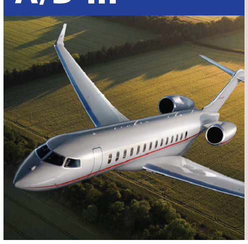
***RVR**: Runway Visual Range

TAXIWAY DESIGN GROUP (TDG)



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

Exhibit 2F
AIRCRAFT CLASSIFICATION PARAMETERES

A-I	Aircraft	TDG
	• Beech Bonanza • **Cessna 150**, 172 • Piper Comanche, Seneca	1A **1A** 1A
B-I		
	• Eclipse 500 • Beech Baron 55/58 • **Beech King Air 100** • Cessna 421 • Cessna Citation M2 (525) • Cessna Citation 1(500) • Embraer Phenom 100	1A 1A **1A** 2A 1A 1A 1A
A/B-II *12,500 lbs. or less*		
	• Beech Super King Air 200 • Beech King Air 90 • **Cessna 441 Conquest** • Cessna Citation CJ2 • Pilatus PC-12	2A 1A **1A** 2A 2
B-II *over 12,500 lbs.*		
	• Beech Super King Air 350 • Cessna Citation CJ3(525B) • **Cessna Citation CJ4 (525C)** • Cessna Citation Latitude • Embraer Phenom 300 • Falcon 20 • Pilatus PC-24	2A 2A **1B** 1B 1B 1B 2A
A/B-III		
	• Bombardier Dash 8 • **Bombardier Global 7500** • Falcon 7X, 8X	3 **2B** 2A
C/D-I		
	• **Lear** 35, 40, **45**, 55, 60XR • F-16	**1B** 1A

C/D-II	Aircraft	TDG
	• Challenger 600/604 • Cessna Citation III, VI,VII, X • Embraer Legacy 135/140 • **Gulfstream IV** (D-II) • Gulfstream G280 • Lear 70, 75 • Falcon 50, 900, 2000 • Hawker 800XP, 4000	1B 1B 2B **2A** 1B 1B 2A 1B
C/D-III *less than 150,000 lbs.*		
	• Gulfstream V • **Gulfstream** 550, 600, **650** • Global 5000, 6000	2B **2B** 2B
C/D-III *over 150,000 lbs.*		
	• **Airbus** A319, **A320**, A321 • Boeing 737-800, 900 • MD-83, 88	3 3 4
C/D-IV		
	• Airbus A300 • Boeing 757-200 • **Boeing 767**-300, 400 • MD-11	5 4 **5** 6
C/D-V		
	• Airbus A330-200, 300 • Airbus A340-500, 600 • Boeing 747-100 - 400 • Boeing 777-300 • **Boeing 787-8**, 9	5 6 5 6 **5**
E-I		
	• **F-15**	**1B**

Note: Aircraft pictured is identified in bold type.

component, the ADG, is depicted by a Roman numeral 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 (one 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.

EXISTING AND ULTIMATE CRITICAL AIRCRAFT

The Traffic Flow Management System Counts (TFMSC) database is maintained by the FAA to monitor the types of aircraft and frequency of usage at airports; the TFMSC is the preferred data source for establishing critical aircraft. Information is regularly added to the TFMSC database when pilots file flight plans and/or when flights are detected by the National Airspace System (NAS) on radar. The TFMSC includes data for GA, commercial service (air carrier and air taxi), 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; however, the TFMSC provides an accurate reflection of IFR activity. Operators of high-performance aircraft, such as turboprops and jets, tend to file flight plans at a high rate.

Historical operations at PIL by AAC/ADG are summarized in **Table 2P**. Data are limited, as the TFMSC reports that no single family of aircraft exceeds the threshold of 500 annual operations at PIL. Most operations are reported within the B-I (117 operations), B-II (115 operations), and B-III (146 operations) groups. The most frequent aircraft to operate at PIL within those groups are the Beechcraft King Air family of twin-engine turboprops and the CASA 235, which is a twin-engine turboprop. The Cessna Citation family of business jets and the Eclipse Jet account for the most jet operations at PIL. AAC C aircraft account for approximately 60 annual operations at PIL, on average, and are represented by the Bombardier Challenger 600 business jet.

TABLE 2P | Historical and Forecasted Operations by AAC/ADG

Year	B-I	B-II	B-III	C-I	C-II	C-III	D-II	D-III
Historical								
2019	54	81	111	18	56	0	8	0
2020	61	84	78	20	30	0	0	0
2021	56	182	92	14	73	0	2	0
2022	134	165	82	8	50	0	0	0
2023	125	168	105	8	51	0	0	0
2024*	117	115	146	13	26	0	2	0
CAGR	**16.7%**	**7.3%**	**5.6%**	**-6.3%**	**-14.2%**	**N/A**	**-24.2%**	**N/A**
Forecast								
2029	110	190	170	10	50	10	0	0
2034	100	300	210	10	110	20	0	10
2044	80	770	290	10	500	50	0	20
CAGR	**-1.9%**	**10.0%**	**3.5%**	**-1.3%**	**15.9%**	**N/A**	**-100.0%**	**N/A**

N/A = not applicable
*2024 data represent a 12-month period ending October 2024.
A-I and A-II are not shown because smaller/slower aircraft are unlikely to impact critical design aircraft.
C-IV through C-V and D-IV and above are not shown due to the absence of such activity at PIL.
Sources: FAA TFMSC; Coffman Associates analysis

Historically, PIL has been planned to meet design standards associated with AAC C and ADG II aircraft. This designation is supported by the *Texas Airport System Plan* (TASP), which classifies PIL as a Business/Corporate airport that should be designed to accommodate turboprop and turbojet business aircraft. However, since operational data reflect AAC B as the most frequent user class at PIL the primary runway should be designed to B-II standards with the Beechcraft King Air family of turboprops as the representative aircraft. The B-II classification is still consistent with the Business/Corporate designation from the 2010 TASP as it accommodates a wide range of business jets and turboprops.

For the secondary runways at PIL, consideration must be given to the airfield's crosswind wind coverage. In Chapter One, wind data showed that no single runway orientation at PIL provides 95 percent crosswind coverage in the 10.5-knot crosswind condition. According to FAA AC 150/5300-13B, A/B-I design standards have a crosswind component of 10.5 knots. As a result, PIL is justified in maintaining a crosswind runway to A/B-I design standards and Runway 17-35 should be planned to A/B-I design standards in the existing and ultimate condition. Runways 8-26 and 3-21 should be maintained to A/B-I design standards until such time that they are decommissioned.

To determine PIL's ultimate ARC, annual operations by AAC/ADG were forecast through 2044 using a growth rate forecast based on industry growth trends within each ARC category. In particular, operation levels within the AAC C and ADG II categories are projected to increase reflecting the potential for one or more based business jets in the C-II category, which is reasonable, considering the business growth anticipated for Cameron County. Operations levels within the higher AAC C/D and ADG III categories are also anticipated to increase, but likely not to levels that will exceed the threshold of 500 annual operations; therefore, the ultimate condition reflects a plan to meet C-II design standards on Runway 13-31. The ultimate critical aircraft should be represented by the Beechcraft Challenger 600.

RUNWAY DESIGN CODE

Each runway at an airport is assigned an RDC. The RDC relates to specific FAA design standards that should be planned in relation to each runway, regardless of whether the airport currently meets the appropriate design standards (to be discussed in the next chapter). Runway 13-31 measures 8,001 feet long by 150 feet wide and Runway 13 is equipped with the airport's only published straight-in instrument approach procedure, which has 1¼-mile visibility minimums. The resulting RDC for Runway 13-31 in the existing condition is B-II-5000 and C-II-5000 in the ultimate condition with a TDG of 2A, based on the Beechcraft King Air 200/300/350, which has a higher TDG designation than the Challenger 600. The three secondary runways at PIL should be designed to A/B-I-VIS standards and TDG 1A in the existing condition, with the Beechcraft King Air 100 as the critical aircraft. In the ultimate condition, Runways 8-26 and 3-21 are planned to be decommissioned and Runway 17-35 should continue to meet A/B-I-VIS standards.

Table 2F summarizes the current and future airport and runway classifications. The next chapter, Facility Requirements and Development Alternatives, will outline the airside and landside elements necessary to meet the aviation needs that have been determined in this forecasting effort. Various development alternatives to meet facility needs will also be presented.

CRITICAL AIRCRAFT SUMMARY

Table 2Q summarizes the current and future runway classifications.

TABLE 2Q | Airport and Runway Classifications

	Runway 13-31		Runway 17-35
	Existing	Ultimate	Existing/Ultimate
Critical Aircraft	Beechcraft King Air 200/300/350	Bombardier Challenger 600	Beechcraft King Air 100
Runway Design Code (RDC)	B-II-5000	C-II-5000	A/B-I-VIS
Taxiway Design Group (TDG)	2A	2A*	1A

Notes:
*2A TDG for Runway 13-31 is based on the Beechcraft King Air 200/300/350 family of turboprops.
Runways 8-26 and 3-21 are planned to be decommissioned in the ultimate condition.

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