Chapter Two
FORECASTS

Demand is a key factor in airport planning. Proper planning must begin with a definition of demand that may reasonably be expected to occur during the useful life of an airport's key components (e.g., runways, taxiways, terminal buildings, etc.). In airport planning, this involves projecting potential aviation activity for at least a 20-year period. Aviation demand forecasting for Corpus Christi International Airport (CCIA and/or CRP) will focus on demand indicators, including commercial airline passenger enplanements and operations, air cargo, based general aviation aircraft, based aircraft fleet mix, operations, military operations, and overall operational peaking periods.

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 are often an important input to future benefit-cost analyses associated with airport development, and the FAA reviews these analyses when federal funding requests are submitted.

The FAA will review individual airport forecasts with the objective of comparing them to its *Terminal Area Forecasts* (TAF) and the *National Plan of Integrated Airport Systems* (NPIAS). Even though the TAF is updated annually, it is developed by FAA personnel in Washington, D.C., and it is common to encounter a disparity between the TAF and more localized master planning forecast efforts. Historically, the disparity was primarily due to the TAF forecasters' lack of knowledge about local conditions or recent trends; however, the FAA updated its forecast model in recent years to be a more demand-driven forecast for aviation services, based on local and national economic conditions, as well as conditions within the aviation industry.

As stated in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, 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.

Historical operations at CCIA, as reported by the airport traffic control tower (ATCT), are presented in **Table 2A**. This data will serve as a baseline for the development of new operational forecasts for CCIA.

TABLE 2A | CCIA Aircraft Operations By Type

Year	ITINERANT					LOCAL			Total Operations
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	Civil	Military	Subtotal	
2000	11,987	15,536	27,707	15,753	70,983	15,135	43,013	58,148	129,131
2001	8,719	16,054	29,318	11,656	65,747	11,701	46,110	57,811	123,558
2002	4,904	19,095	28,612	9,858	62,469	6,776	48,293	55,069	117,538
2003	4,616	16,327	26,347	10,274	57,564	7,791	55,676	63,467	121,031
2004	4,501	16,694	25,164	10,620	56,979	6,068	58,685	64,753	121,732
2005	4,193	18,479	24,905	9,976	57,553	3,990	47,323	51,313	108,866
2006	4,135	18,085	21,735	10,779	54,734	3,170	50,970	54,140	108,874
2007	4,143	18,377	19,760	15,196	57,476	2,160	40,343	42,503	99,979
2008	4,045	17,229	20,200	28,667	70,141	794	28,711	29,505	99,646
2009	4,787	16,921	19,354	24,081	65,143	1,560	30,772	32,332	97,475
2010	3,461	17,238	18,637	25,129	64,465	4,067	32,944	37,011	101,476
2011	3,337	16,820	17,894	29,094	67,145	2,382	30,983	33,365	100,510
2012	3,406	16,292	16,717	25,779	62,194	3,278	20,600	23,878	86,072
2013	4,224	15,105	15,933	18,210	53,472	2,384	16,098	18,482	71,954
2014	4,487	13,416	16,547	20,272	54,722	2,004	19,537	21,541	76,263
2015	5,574	10,761	14,907	17,849	49,091	1,452	15,456	16,908	65,999
2016	8,075	7,024	14,913	29,827	59,839	1,338	22,286	23,624	83,463
2017	7,559	7,423	15,846	29,868	60,696	2,006	34,324	36,330	97,026
2018	6,950	9,079	15,647	36,407	68,083	2,956	29,677	32,633	100,716
2019	7,531	8,818	15,874	43,081	75,304	1,233	23,592	24,825	100,129
2020	4,768	6,363	11,460	34,023	56,614	587	31,700	32,287	88,901
2021	6,334	8,106	12,963	30,020	57,423	407	21,859	22,266	79,689
2022	6,111	9,093	12,900	27,394	55,498	454	22,157	22,611	78,109
2023	9,084	6,745	13,686	31,481	60,996	326	8,135	8,461	69,457

Sources: FAA The Operations Network (OPSNET)

The forecast process in airport planning consists of a series of basic steps that vary in complexity depending on the issues being 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 evaluation and documentation of the results. FAA Advisory Circular (AC) 150/5070-6B (Change 2), *Airport Master Plans*, outlines seven standard steps involved in the forecast process, including:

1) **Identify Aviation Activity Measures**: The level and type of aviation activities likely to impact facility needs. For general aviation, this typically includes based aircraft and operations.
2) **Review Previous Airport Forecasts**: May include the FAA *Terminal Area Forecast*, state or regional system plans, and previous airport planning.
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 for reasonableness.

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

7) **Compare Forecast Results with FAA's TAF**: Follow guidance in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*. In part, this Order indicates that forecasts should not vary significantly (more than 10 percent) from the TAF. When there is a greater than 10 percent variance, supporting documentation should be supplied to the FAA. (The FAA has provided additional guidance that indicates forecasts are consistent with the TAF when they differ by less than 10 percent in the first five years and less than 15 percent in the 10-year period.)

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. It is therefore 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 forecasts prepared here will be compared to the FAA *Terminal Area Forecasts* issued in January 2024. A summary of the TAF for CCIA is presented in **Table 2B**. The following sections of this chapter will discuss the reasonableness of each forecast and will establish the recommended forecast to be used.

TABLE 2B | FAA Terminal Area Forecast

	2023	2028	2033	2043
ENPLANEMENTS				
Air Carrier Enplanements	121,495	123,074	129,112	142,380
Commuter Enplanements	221,048	280,292	294,022	324,186
Total Enplanements	**342,543**	**403,366**	**423,134**	**466,566**
ANNUAL AIRCRAFT OPERATIONS				
Itinerant				
Air Carrier	8,581	12,736	13,186	14,164
Air Taxi/Commuter	6,918	6,182	6,497	7,177
General Aviation	13,361	16,063	16,063	16,063
Military	31,675	31,675	31,675	31,675
Total Itinerant	*60,535*	*66,656*	*67,421*	*69,079*
Local				
General Aviation	504	2,230	2,230	2,230
Military	14,446	14,446	14,446	14,446
Total Local	*14,950*	*16,676*	*16,676*	*16,676*
Total Annual Aircraft Operations	**75,485**	**83,332**	**84,097**	**85,755**
BASED AIRCRAFT	**54**	**54**	**54**	**54**

Source: FAA Terminal Area Forecast (January 2024)

The following forecast analysis was produced following the guidelines detailed above. Existing forecasts are examined and compared against current and historical activity. The 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 CCIA that will allow airport management to make planning adjustments, as necessary, to maintain a viable, efficient, and cost-effective facility.

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 to provide information that can be used by state and local authorities, the aviation industry, and the public. The current edition when this chapter was prepared was *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 commercial service forecasts.

FAA COMMERCIAL SERVICE FORECASTS

The commercial airline industry in the United States has been subject to ups and downs that are primarily related to the economy, but those changes are often volatile. For more than two decades after deregulation, commercial airlines were capital intensive as they competed for market share, which left the airline industry cash poor. While profits were evident in good economic times, the economic cycle (and the price of oil) would inevitably turn and airlines would suffer significant losses, sometimes resulting in bankruptcies or mergers.

The aftermath of the events of September 11, 2001 (9-11), prompted a new round of airline restructuring and consolidation as changes to airline business models began to take shape; however, the Great Recession that began in 2007 and carried into 2009 brought about perhaps the most deliberate change in how U.S. airlines manage their operations and finances. The commercial airlines' focus fully shifted from increasing market share to boosting returns on invested capital. The airlines worked to minimize losses by lowering operating costs, focusing on profitable routes, and removing older and less fuel-efficient aircraft from their fleets. A key to this shift was capacity discipline, which became an industry buzz phrase. This discipline, combined with some airlines charging separately for certain services, resulted in 11 consecutive years of profits for the U.S. airline industry, extending through 2019.

The outbreak of the COVID-19 global pandemic brought an immediate end to the years of prosperity. While restrictions related to the pandemic nearly halted traffic overnight, airlines began to face a new reality. Because their business models emphasized capacity discipline, they were able to slash costs. With the balance sheets and credit ratings built up over the past decade, they were able to raise capital through borrowing and restructuring fleets. While several regional airlines were not able to survive through 2020, all the mainline carriers did.

These modifications will affect the airline industry for years. Airlines became smaller due to retiring aircraft and reducing the workforce through the encouragement of voluntary retirements/separations. The fleet is now younger and more fuel-efficient, but the higher levels of debt are likely to limit capital investment spending, thus restraining growth.

Domestic leisure traffic led to the recovery; pent-up consumer demand due to travel restrictions was experienced, as predicted. Routes shifted somewhat to serve domestic vacation destinations, while business and international travel lagged. By the summer of 2022, leisure demand exceeded pre-pandemic levels, and business travel stood at about 70-80 percent of pre-pandemic demand by the end of 2022.

Over the long term, the airlines' business models developed during the past decade are expected to aid the recovery, demonstrating that the U.S. airline industry has left behind its capital intensive/cyclical tendencies for the discipline that can better generate returns on capital and sustain profits. According to the report, *"There is confidence that the U.S. airline industry as a whole has finally transformed from a capital intensive, highly cyclical industry to an industry that can generate solid returns on capital and sustained profits."* The 2024-2044 FAA forecast for U.S. domestic passengers projects an average growth of 2.4 percent annually over the next 20 years. **Exhibit 2A** presents the U.S. domestic passenger enplanement forecasts by segments.

ADVANCED AIR MOBILITY (AAM)

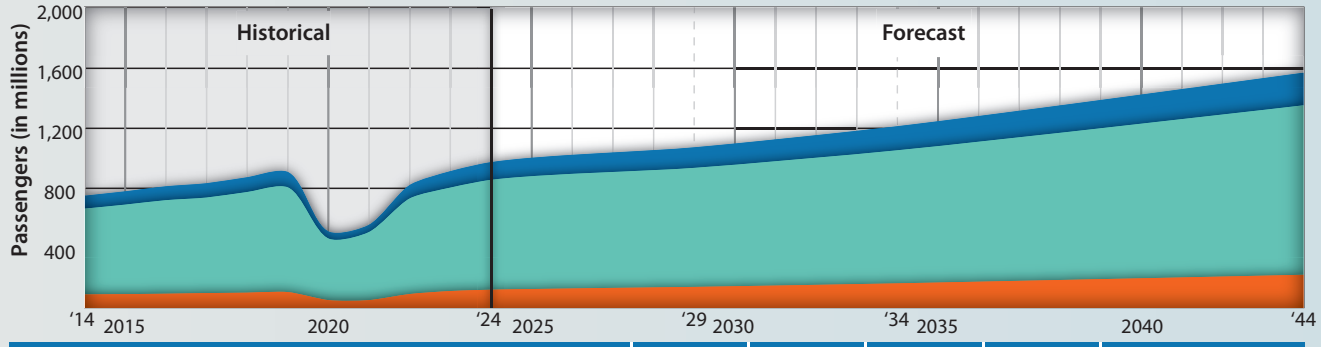
Another segment of air travel that is becoming a factor for the future is the potential of the emerging industry of advanced air mobility (AAM). AAM utilizes manned and unmanned electric-powered aircraft that are capable of vertical takeoff and landing (eVTOL) to conduct air taxi operations, moving people around urban areas and providing connections to other transportation modes, including airports. Other segments within the AAM industry include emergency services, package delivery, traffic monitoring, and public safety.

AAM technology presents considerable opportunities for economic growth over the coming decades. Small package delivery is the segment that is anticipated to grow fastest in the short term. The FAA estimates that there will be 40,000 delivery fleet vehicles completing 500 million deliveries per year by 2030.

Passenger service promises even larger markets for AAM services. Full integration may be slowed by safety challenges, infrastructure, public acceptance, and evolving technology; regardless, several commercial companies continue to conduct test flights. For example, Joby Aviation received Part 135 certification in May 2022 for its eVTOL aircraft. The four-passenger aircraft currently has the capability to fly 150 miles on a full battery charge.

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 parking garage operator REEF Technology with the goal of using parking garage rooftops as vertiports. Other options may include establishing vertiports at existing airports.

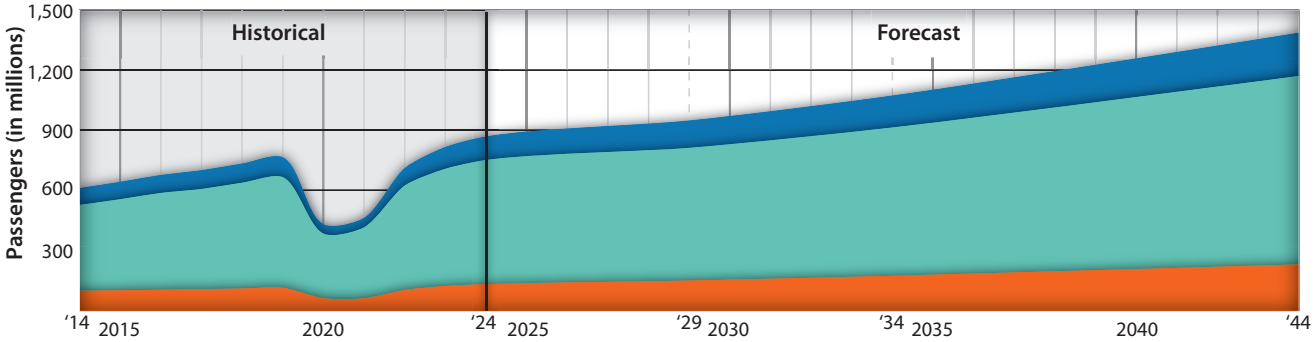
U.S. AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2024	2029	2034	2044	CAGR 2024-2044
Domestic Revenue Enplanements	864	945	1,064	1,368	2.3%
International Revenue Enplanements	120	139	163	221	3.1%
TOTAL	984	1,084	1,227	1,589	2.4%

Note: All figures measured in millions

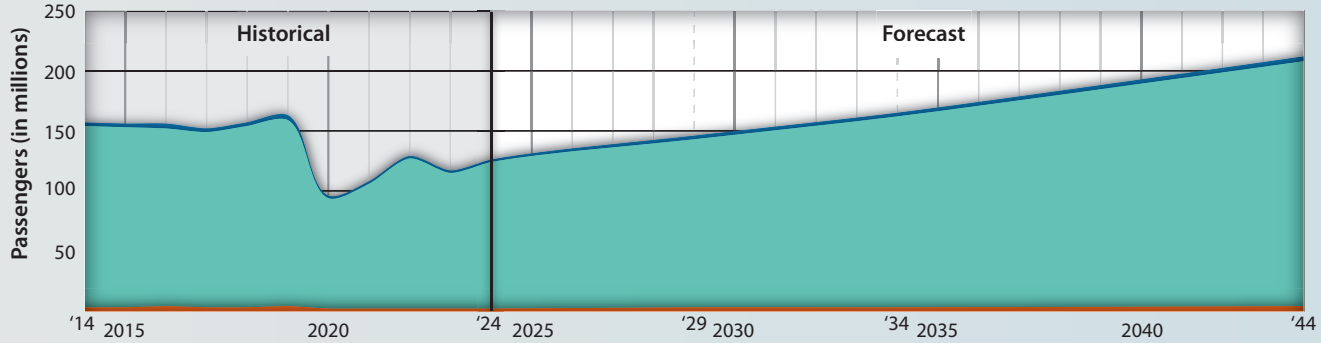
U.S. MAINLINE AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2024	2029	2034	2044	CAGR 2024-2044
Domestic Revenue Enplanements	740	801	903	1,161	2.3%
International Revenue Enplanements	118	136	160	217	3.1%
TOTAL	858	937	1,063	1,378	2.4%

Note: All figures measured in millions

U.S. REGIONAL AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2024	2029	2034	2044	CAGR 2024-2044
Domestic Revenue Enplanements	124	143	162	208	2.6%
International Revenue Enplanements	2	3	3	4	2.6%
TOTAL	126	146	165	212	2.6%

Note: All figures measured in millions. Totals may not equal due to rounding
CAGR: Compound Annual Growth Rate
Source: FAA Aerospace Forecast - Fiscal Years 2024-2044

CORE SOCIOECONOMIC FORECASTS

Besides aviation industry trends, the local demographics and economy will affect airport demand. Key indicators selected for CCIA are population, employment, gross regional product (GRP), and food and beverage retail sales. The latter indicator was selected because of the high number of second homes and vacation room rentals that impact local air travel demand. **Table 2C** presents a history and forecasts of these indicators for the Corpus Christi metropolitan statistical area (MSA), defined as Nueces, Aransas, and San Patricio Counties. The data set was prepared by Woods & Poole Economics. **Exhibit 2B** presents a brief community profile highlighting a variety of economic factors for the MSA.

TABLE 2C | Corpus Christi MSA Socioeconomic Forecasts

Year	POPULATION (in thousands)	EMPLOYMENT (in thousands of jobs)	EARNINGS (in millions of 2012 dollars)	GRP (in millions of 2012 dollars)	PCPI (in 2012 dollars)	MEAN HOUSEHOLD TOTAL PERSONAL INCOME (in 2012 dollars)	RETAIL SALES (in millions of 2012 dollars)
2000	381,006	206,856	8,759.49	$14,103.84	$30,438	$86,193.00	$5,215.66
2005	392,747	217,363	10,632.36	$16,960.32	$35,162	$95,782.00	$5,821.85
2010	404,675	228,466	11,493.96	$19,147.81	$38,523	$104,531.00	$5,937.45
2015	423,707	248,922	12,837.24	$19,779.89	$42,031	$115,360.00	$6,832.90
2020	422,214	240,370	12,318.17	$19,438.59	$43,938	$119,190.00	$6,917.95
2023	423,959	259,501	13,494.6	$23,068.53	$45,654	$121,673.00	$8,029.63
2029	437,150	279,102	15,068.7	$25,072.32	$50,040	$131,557.00	$8,383.21
2033	444,958	289,905	16,098.86	$26,204.31	$53,040	$139,351.00	$8,840.86
2043	460,449	315,910	18,870.6	$28,940.37	$61,124	$161,354.00	$10,066.81
CAGR (00-23)	0.47%	0.99%	1.90%	2.16%	1.78%	1.51%	1.89%
CAGR (23-43)	0.41%	0.99%	1.69%	1.14%	1.47%	1.42%	1.14%

Between 2000 and 2023, the population of the MSA has grown by a compound annual growth rate (CAGR) of 0.47 percent. Woods & Poole forecasts the population to grow at a slightly slower CAGR of 0.41 percent through 2043. Total employment in the three-county MSA grew at a similar 0.99 percent CAGR between 2000 and 2023. The forecast for employment calls for a continued 0.99 percent annual growth through 2043.

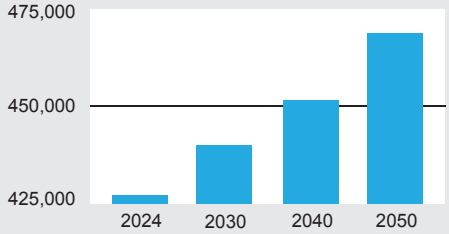
The economic indicators are presented in 2012 dollars and adjusted for inflation. GRP grew at a CAGR of 2.16 percent over the past 23 years. The forecast anticipates a slightly slowed growth rate of 1.14 percent annually through 2043. Over the same periods, the inflation-adjusted factors are all expected to grow by more than one but less than two percent through the 20-year planning period.

COMMERCIAL SERVICE FORECASTS

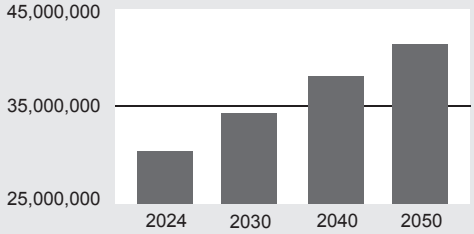
To evaluate commercial service potential and future airline activity at CCIA, two basic elements must be forecast: annual enplaned (boarding) passengers and annual airline operations. Annual enplaned passengers serve as the most basic indicators of demand for commercial passenger service activity. The combination of enplanements (departing passengers) and deplanements (arriving passengers) comprises the total number of passengers using an airport. The annual number of enplanements is the figure utilized by the FAA to determine various entitlement funding levels for commercial service airports.

POPULATION PROJECTIONS

Corpus Christi MSA
0.38% CAGR



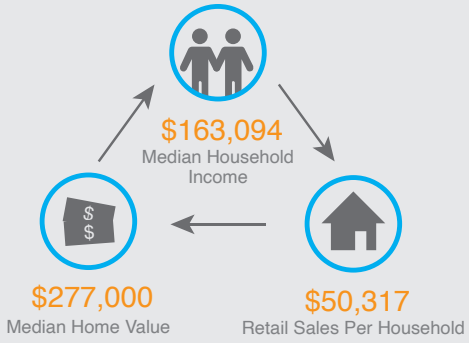
Texas
1.44% CAGR



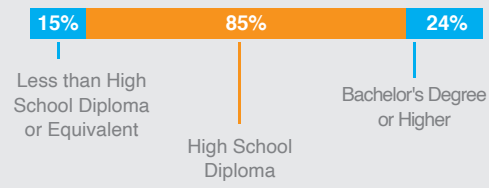
POPULATION BY AGE

- 26% AGES <20
- 20% AGES 20-34
- 37% AGES 35-64
- 17% AGES 65+
- 37.15 MEDIAN AGE

HOUSEHOLDS



EDUCATION



CORPUS CHRISTI EMPLOYMENT

MAJOR EMPLOYERS & INDUSTRIES

Employer	Industry
Corpus Christi Independent School District	Education
Naval Air Station Corpus Christi	Government
City of Corpus Christi	Government
HEB Stores & Bakery	Retail
CHRISTUS Spohn Hospital	Health Care
Driscoll Children's Hospital	Health Care
Corpus Christi Army Depot	Government
Kiewit Offshore Services	Construction
Corpus Christi Medical Center Bay LTD.	Health Care
Del Mar College	Education

CIVILIAN EMPLOYMENT BY SECTOR

- 16% Education,healthcare, & social services
- 12% Professional, scientific, & administrative services
- 12% Arts, entertainment, food & recreation
- 11% Construction
- 9% Retail trade
- 8% Finance, insurance, & real estate
- 6% Other services, except administration
- 6% Public administration
- 3% Agriculture, forestry, & mining
- 3% Manufacturing
- 3% Transportation, warehousing, & utilities
- 3% Wholesale trade
- 1% Information

UNEMPLOYMENT RATE

4.5%

Sources: U.S. Census Bureau (2020 Decennial Census & 2022 American Community Survey); Texas Water Development Board

Enplaning passengers can be further categorized as either originating or connecting. Originating passengers depart from a specific airport for either their destination airport or a hub airport to connect (transfer) to another flight to their final destination.

Connecting passengers are those who have departed from another location and are using the airport as an intermediate stop. These passengers may disembark their originating flight to wait in the terminal for their next flight or could simply remain on the aircraft at an intermediary stop as a through passenger. Corpus Christi International Airport almost exclusively serves originating passengers, while airline hubs like those in Charlotte, Atlanta, or Chicago have a significant percentage of connecting/transferring passengers.

CORPUS CHRISTI COMMERCIAL SERVICE BACKGROUND

Exhibit 2C graphically depicts the history of passenger enplanements at Corpus Christi International Airport over the past 20 years. Since 2000, CCIA passenger enplanements have experienced a generally decreasing trend starting from a period high of 441,682 in 2000 and ending with 348,702 in 2023.

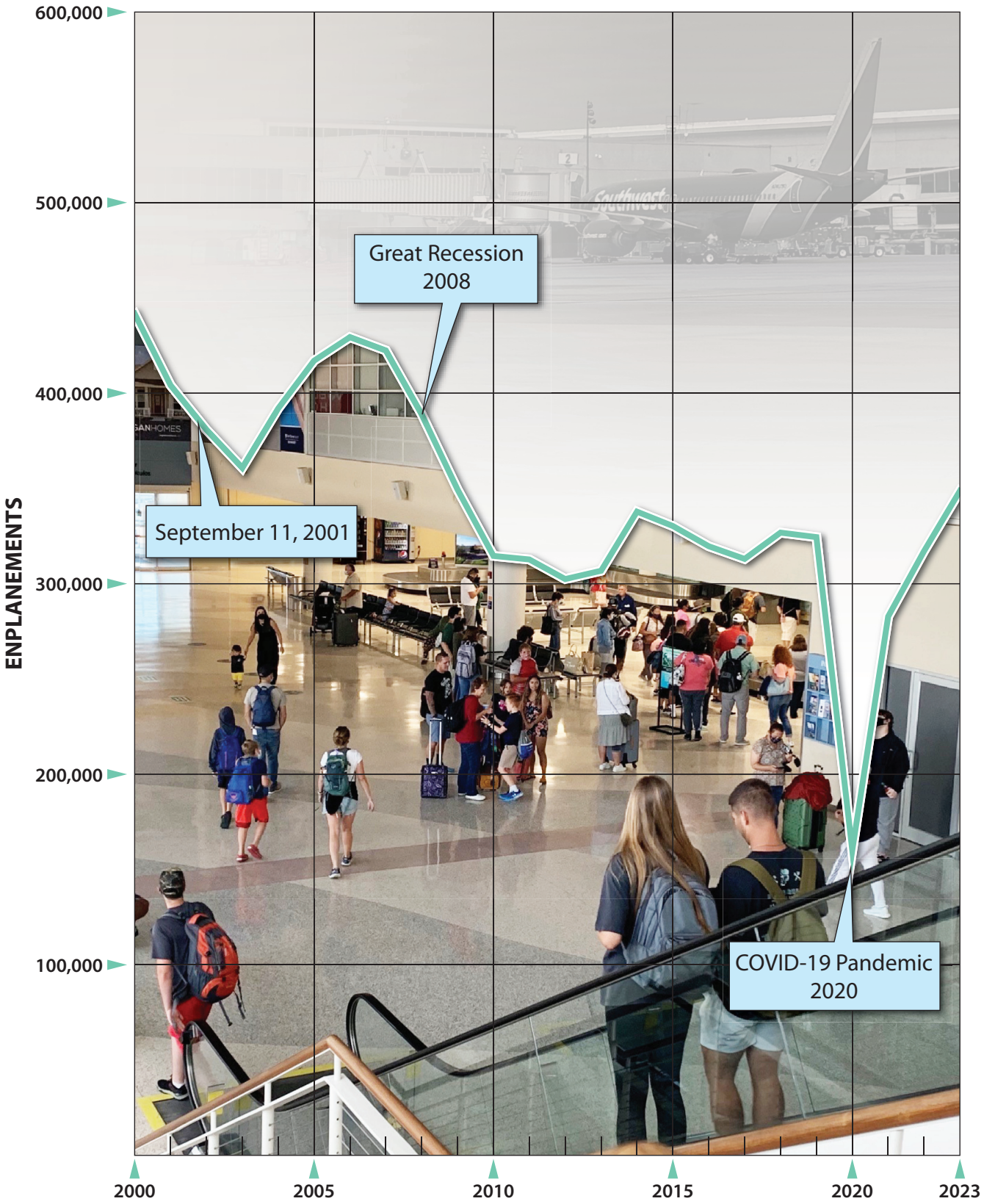
The airport experienced strong passenger growth leading up to the Great Recession of 2008-2009 after losing market share following the events of September 11, 2001. During the recovery from the recession, enplanements fell to nearly 300,000 then increased to more than 337,000 in 2014. Enplanements then remained relatively flat through 2019, which totaled 324,450.

The COVID-19 pandemic in 2020 put an end to what appeared to be a possible return to enplanement growth. **Exhibit 2D** shows a month-by-month comparison of enplanements, deplanements, available passenger seats, and board loading factors at CCIA from 2014 through 2023. It is evident from the graph that enplanements were steadily (if slowly) creeping upward, but travel restrictions began to have a significant impact in March 2020. Traffic became almost nonexistent during the April shutdown, averaging just 64 enplanements a day in April 2020. Traffic began to slowly return and, by May 2022, reached a similar level to that of May 2019. Enplanements in 2022 were slightly lower than 2019, while enplanements in 2023 exceeded those in 2019 by seven percent, indicating that the airport's airline service has fully recovered from the impacts of COVID.

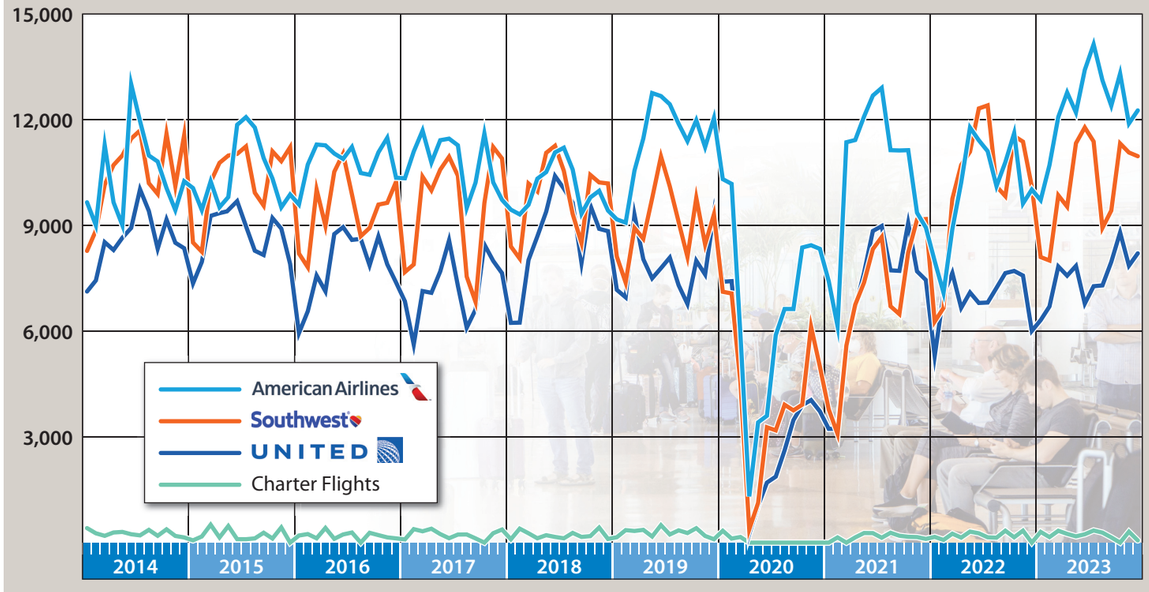
COMMERCIAL SERVICE AREA

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 service area is used to identify other factors, such as socioeconomic and demographic trends, which influence demand at an airport. Aviation demand is also impacted by the proximity of competing airports, the surface transportation network, and the strength of commercial airline services provided by the airport relative to competing airports.

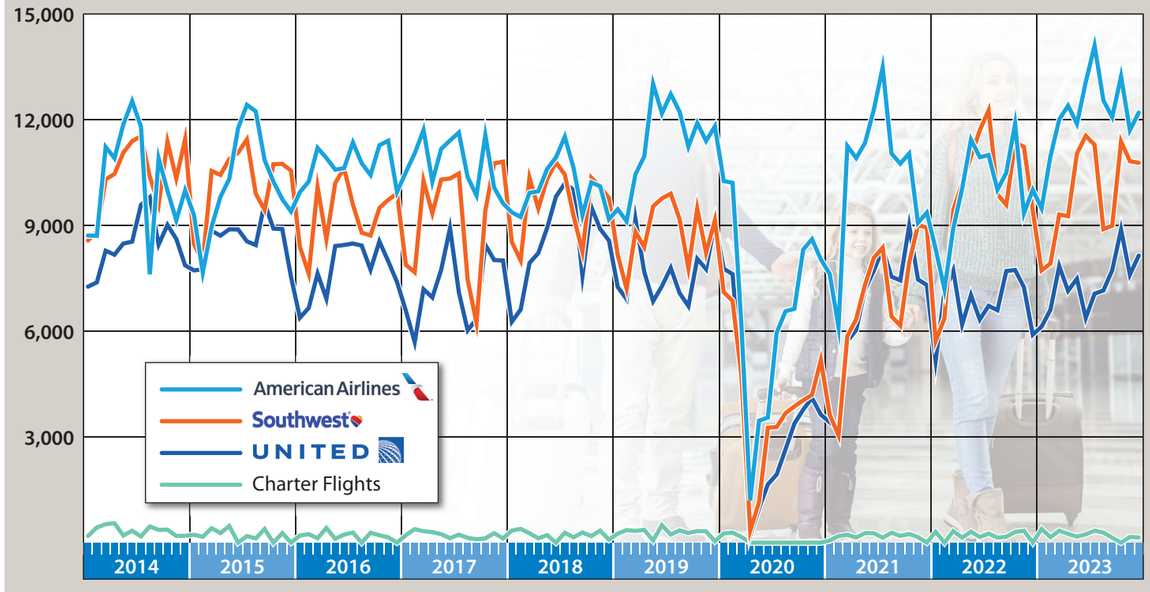
Generally, the Corpus Christi MSA, including Nueces, Aransas, and San Patricio Counties, has been selected to serve as the generalized service area for both commercial and general aviation activities. For commercial service, a study process for air service was recently completed by the airport's air service consultant, Crawford, Murphy, and Tilly (CMT). **Exhibit 2E** outlines the commercial service passenger catchment area selected by CMT. The catchment area is generally considered as the airport's commercial


600,000
500,000
400,000
300,000
200,000
100,000
ENPLANEMENTS
Great Recession 2008
September 11, 2001
COVID-19 Pandemic 2020
2000
2005
2010
2015
2020
2023

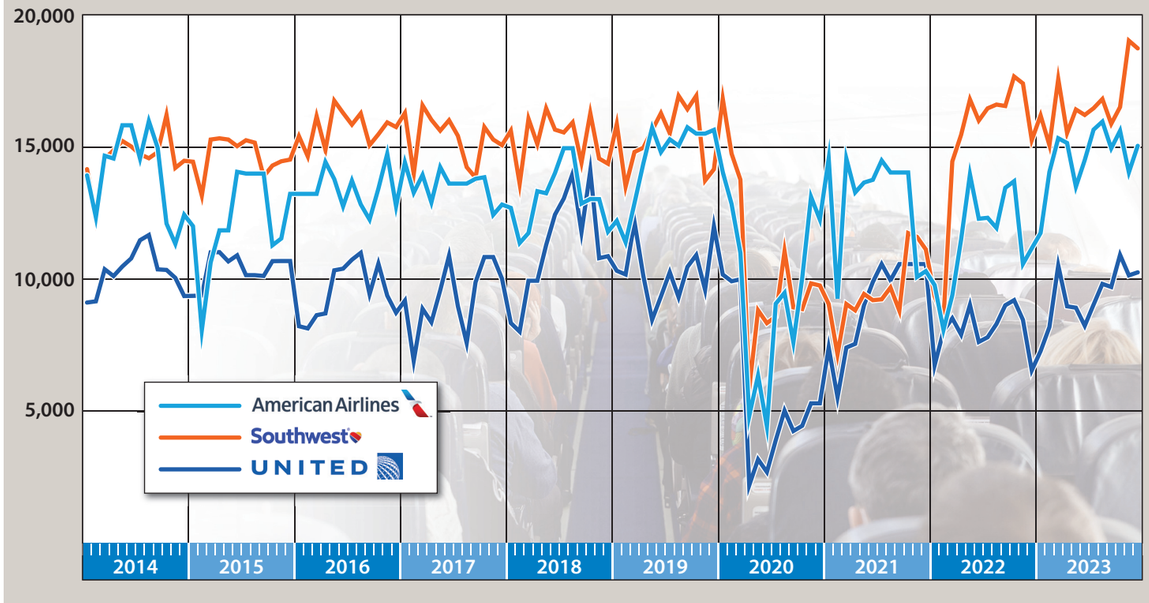
ENPLANED PASSENGERS



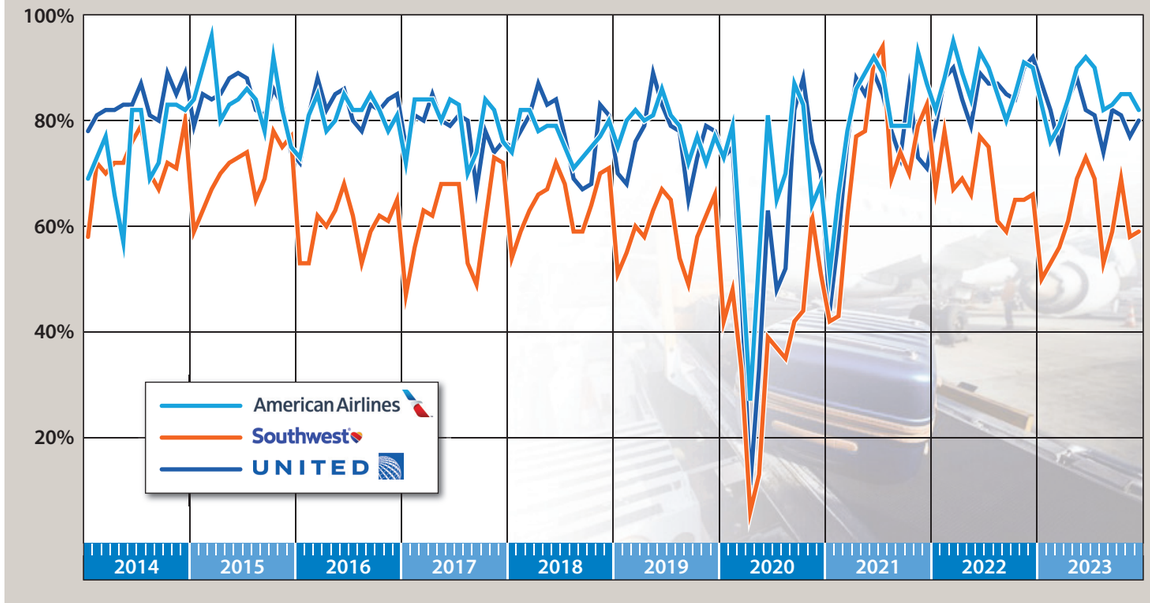
DEPLANED PASSENGERS



SEATS AVAILABLE



LOAD FACTOR



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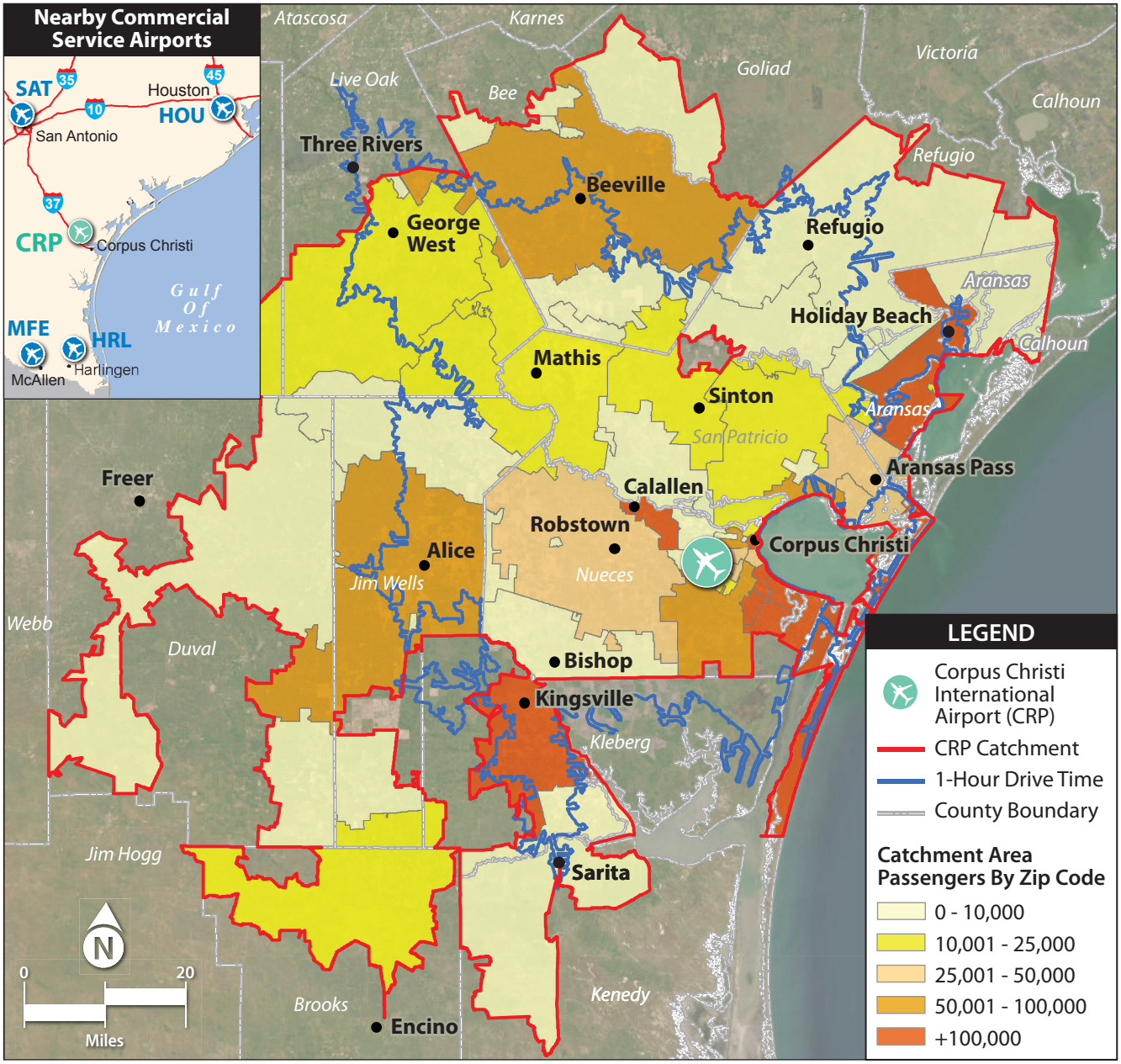


Zip Code	Population	Passengers	Passengers Per/Day (each way)
77950	132	259	0.4
78022	4,636	12,452	17.1
78060	No Data	14	0.0
78102	27,271	71,231	97.6
78104	96	271	0.4
78107	397	1,189	1.6
78125	17	82	0.1
78142	99	199	0.3
78162	341	538	0.7
78330	597	1,312	1.8
78332	27,274	83,572	114.5
78336	12,365	41,147	56.4
78339	348	555	0.8
78340	383	794	1.1
78342	226	412	0.6
78343	4,594	8,135	11.1
78349	768	570	0.8
78351	705	276	0.4
78352	290	205	0.3
78355	7,102	11,047	15.1

Zip Code	Population	Passengers	Passengers Per/Day (each way)
78358	987	16,322	22.4
78359	2,231	2,982	4.1
78362	10,789	32,462	44.5
78363	29,415	100,931	138.3
78368	8,586	24,554	33.6
78370	4,857	8,310	11.4
78372	5,261	7,880	10.8
78373	3,271	101,784	139.4
78374	19,737	86,207	118.1
78375	3,015	4,170	5.7
78377	3,272	7,424	10.2
78379	1,578	2,822	3.9
78380	24,014	46,934	64.3
78382	18,702	100,154	137.2
78383	5,057	11,081	15.2
78384	5,264	8,114	11.1
78385	169	502	0.7
78387	9,791	20,246	27.7
78389	1,888	2,858	3.9
78390	5,737	10,135	13.9

Zip Code	Population	Passengers	Passengers Per/Day (each way)
78391	156	328	0.4
78393	2,194	5,021	6.9
78401	4,660	148,347	203.2
78402	233	18,111	24.8
78404	15,650	36,563	50.1
78405	14,194	36,424	49.9
78406	2,328	1,440	2.0
78407	2,033	6,552	9.0
78408	10,294	60,550	82.9
78409	2,312	8,347	11.4
78410	27,623	105,778	144.9
78411	24,194	209,471	286.9
78412	41,071	161,176	220.8
78413	36,989	111,493	152.7
78414	46,133	107,011	146.6
78415	41,583	70,985	97.2
78416	15,030	35,744	49
78417	4,400	23,057	31.6
78418	30,015	148,956	204
78419	544	575	0.8

passenger service area having the highest level of potential to attract passengers to utilize the airport. CMT's analysis set the catchment boundary as shown. The exhibit also provides a one-hour drive time outline to indicate ease of access to CCIA from areas in and outside of the catchment area.

ORIGIN AND DESTINATION MARKETS

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

Information obtained from the O&D survey provides final destinations for those traveling from CCIA. Origin-destination data are typically useful in examining the strength of the local market to and from other markets. The data include both CCIA arrivals from (origins) and departures to (destinations) each of the top 20 markets. A market city is typically a metropolitan area and, in certain instances, may be served by multiple airports. For example, LaGuardia (LGA), Kennedy International (JFK), and Newark (EWR) Airports serve the New York-Newark market; Dallas-Fort Worth International (DFW) and Love Field (DAL) serve the Dallas market; and Midway (MDW) and O'Hare International (ORD) Airports serve the Chicago market. **Exhibit 2F** depicts Corpus Christi's top 20 markets and its nonstop destinations in 2023, with only two non-stop markets: Dallas (DFW) and Houston (both Houston Hobby [HOU] and George Bush International [IAH] Airports).

Exhibit 2F also shows the top 20 O&D markets for passengers flying to and from CCIA in 2013 with the intention of indicating how markets might have changed over time. Passenger levels in 2013 were at the recovery end of the Great Recession, while 2023 exemplifies the tail end of the COVID-19 pandemic. Based on the O&D survey, passengers flying from or to CCIA originate or depart from the two non-stop markets of Dallas and Houston. Obviously, these two markets, having non-stop service, offer nice incentives for immediacy for Corpus Christi passengers. As noted, Washington D.C., Denver, Las Vegas, Los Angeles, New York City, New Orleans, Chicago, and Orlando remain consistent top 10 markets for CCIA O&D passengers. These markets have shifted over the last ten years but remain consistently connected. Notably, Denver traffic nearly doubled over the ten-year period, shifting the market from the eighth spot to third.

As a part of their market assessment, CMT acquired a more precise data set for traveler market pairs; however, this analysis considered those flying from the area or having a destination to the Corpus Christi catchment area for all tickets sold. The true market analysis differs from the CCIA O&D data presented on **Exhibit 2F** as it considers passengers who either departed or arrived from the catchment area via CCIA or any other airport. **Table 2D** presents the true market total number of passengers daily each way (PDEW) for the Corpus Christi region catchment area. This is useful as it shows how many passengers utilized airline service connected with Corpus Christi catchment area passengers (to or from) and is tied specifically to the catchment zip code.

TOP TWENTY ORIGIN AND DESTINATION MARKETS

	2013 Top Twenty Markets		2023 Top Twenty Markets		
Rank	Destination	Passengers	Destination	Passengers	% change
1	Dallas/Fort Worth, TX	10,556	Dallas/Fort Worth, TX	8,122	-23.1%
2	Houston, TX	6,947	Houston, TX	3,517	-49.4%
3	Washington, DC (Metropolitan Area)	2,142	Denver, CO	2,279	38.4%
4	New Orleans, LA	1,899	Washington, DC (Metropolitan Area)	2,198	2.6%
5	Los Angeles, CA (Metropolitan Area)	1,831	Las Vegas, NV	2,172	19.8%
6	Las Vegas, NV	1,813	Los Angeles, CA (Metropolitan Area)	2,000	9.2%
7	New York City, NY (Metropolitan Area)	1,702	Orlando, FL	1,744	40.5%
8	Denver, CO	1,647	New Orleans, LA	1,689	-11.1%
9	Chicago, IL	1,491	Chicago, IL	1,595	7.0%
10	Orlando, FL	1,241	New York City, NY (Metropolitan Area)	1,548	-9.0%
11	San Francisco, CA (Metropolitan Area)	1,000	Phoenix, AZ	1,361	90.3%
12	San Diego, CA	901	Nashville, TN	1,297	98.9%
13	Oklahoma City, OK	889	San Diego, CA	1,181	31.1%
14	Atlanta, GA (Metropolitan Area)	881	Atlanta, GA (Metropolitan Area)	1,159	31.6%
15	Miami, FL (Metropolitan Area)	816	Miami, FL (Metropolitan Area)	1,049	28.6%
16	Tulsa, OK	775	Kansas City, MO	983	31.9%
17	Kansas City, MO	745	San Francisco, CA (Metropolitan Area)	951	-4.9%
18	Phoenix, AZ	715	El Paso, TX	898	80.0%
19	Boston, MA (Metropolitan Area)	668	Oklahoma City, OK	859	-3.4%
20	St. Louis, MO	656	Tampa, FL (Metropolitan Area)	834	31.3%

Non-Stop Service

- Dallas/Fort Worth
- Houston

Source: Bureau of Transportation Statistics, Airline Origin and Destination Survey (DB1B)

TABLE 2D | True Market Passengers Daily Each Way (PDEW) for Year Ending 2023

Market-Metro	Total	O&D	Leaking	% Leaking
New York City	190.1	19.3	170.8	89.8%
Los Angeles	159.0	25.6	133.4	83.9%
Dallas-Fort Worth	124.0	114.6	9.4	7.6%
Las Vegas	108.7	28.9	79.9	73.4%
Washington, D.C.	108.6	28.1	80.5	74.2%
Chicago	99.0	20.7	78.3	79.1%
San Francisco Bay Area	90.5	12.1	78.5	86.7%
Denver	89.1	30.0	59.2	66.4%
Orlando	87.0	23.0	64.1	73.6%
Atlanta	81.9	14.9	67.0	81.8%
Miami	79.5	13.3	66.1	83.2%
Boston	56.2	6.9	49.3	87.7%
Seattle	55.0	9.0	46.0	83.6%
Phoenix	52.6	17.8	34.8	66.1%
Houston	48.7	49.3	-0.5	-1.1%
San Diego	41.8	15.3	26.6	63.5%
Minneapolis	41.4	9.9	31.5	76.0%
Detroit	40.1	5.5	34.6	86.4%
Nashville	36.9	17.1	19.8	53.7%
Cancun (Mexico)	35.6	5.6	30.0	84.3%

As presented in the table, New York City is the highest true market connection for the Corpus Christi catchment area. Several markets overlap between true market and O&D, including Los Angeles, Dallas, Las Vegas, Washington, D.C., Chicago, and Denver. San Francisco and Atlanta are the only two markets that enter the true market top ten but are not also contained in the airport's actual O&D top ten.

From this data set, a "leaking" or "leakage" factor can also be determined. The market leakage demonstrates the level of passengers who choose to fly inbound or outbound from the catchment area regardless of which airport is utilized. CCIA has a significant level of competition for passengers, with more than five other airports offering commercial service, four of which have much higher levels of passenger service offerings. Based on the dataset, CCIA has a relatively high passenger leakage of approximately 68.6 percent for the catchment area passengers. More detailed information of the data assessment indicates that 54 percent of the PDEWs are local residents, with 46 percent being visitors to the area. Specific airport usage by inbound, outbound, and total passenger levels is presented in **Table 2E**.

Exhibit 2G presents a drive time map developed utilizing geographical information system (GIS) software to provide a generalized distance of convenience for other regional airports. These are the other regional airports that currently have scheduled commercial airline service and create the leakage presented in **Table 2D**. As seen on the exhibit, nine commercial service airports are located within, or just outside, a roughly 3-hour drive-time service area for CCIA. Four of these airports provide a substantially higher level of service than CCIA including:

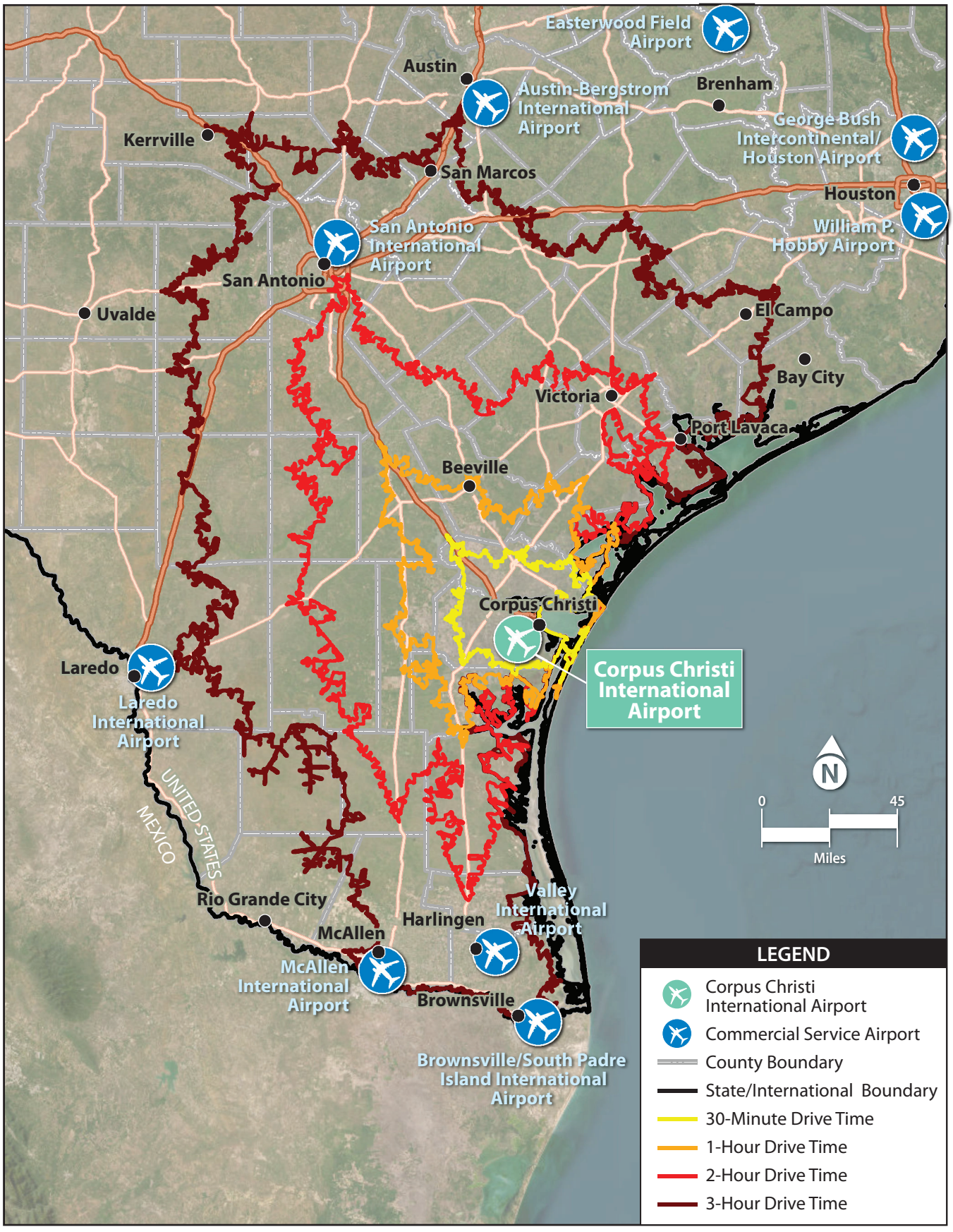
Table 2E | True Market Passengers Airport Usage 2023

AIRPORT USED	PASSENGERS	PDEW	% OF PASSENGERS
Outbound Catchment Passengers - Residents			
CRP	321,842	440.9	28%
AUS (Austin)	291,922	399.9	25%
IAH (Geoge Bush)	277,432	380.0	24%
SAT (San Antonio)	204,962	280.8	18%
HOU (Hobby)	44,274	60.6	4%
MFE (McAllen)	10,002	13.7	1%
Inbound Catchment Passengers - Visitors			
CRP	297,703	407.8	31%
IAH	294,085	402.9	30%
AUS	207,582	284.4	21%
SAT	120,272	164.8	12%
HOU	34,788	47.7	4%
HRL (Harlingen)	11,939	16.4	1%
MFE	3,391	4.6	0%
Total Catchment Passengers			
CRP	619,545	848.7	29%
IAH	571,517	782.9	27%
AUS	499,504	684.3	23%
SAT	325,234	445.5	15%
HOU	79,063	108.3	4%
HRL	15,402	21.1	1%
MFE	13,393	18.3	1%

- **San Antonio International Airport (SAT)** – located in San Antonio, 151 miles (2:06 drive time) north of Corpus Christi International Airport having all major airlines and several low-cost carriers (LCC) with 45 daily non-stop destinations.
- **Austin-Bergstrom International Airport (AUS)** – located in southeastern Austin, 220 miles (3:05 drive time) northeast of CCIA, serves all major airlines and several LCCs. There are more than 200 passenger flights with scheduled daily departures to 97 non-stop destinations in 11 countries and 39 U.S. states.
- **Houston Hobby (HOU)** – located in southern Houston, 132 miles (3:12 drive time) northeast of CCIA with non-stop passenger flights scheduled to 79 destinations with 69 domestic connections and six international locales.
- **George Bush Intercontinental Airport (IAH)** – located in northeastern Houston, 241 miles north-east (3:29 drive time); a major US hub with all major airlines and most LCCs serving most markets, including many international destinations.

Other airports include:

- **Harlingen Valley International Airport (HRL)** – located 129 miles and 1:56 drive time southwest, offering five airlines and five daily non-stop domestic destinations.
- **McAllen-Miller International Airport (MFE)** – located 148 miles and 2:14 drive time southwest, offering five daily non-stops including four domestics and one international non-stop (Mexico City).


Easterwood Field Airport
Austin
Austin-Bergstrom International Airport
Brenham
George Bush Intercontinental/ Houston Airport
Kerrville
San Marcos
Houston
William P. Hobby Airport
San Antonio International Airport
San Antonio
Uvalde
El Campo
Bay City
Victoria
Port Lavaca
Beeville
Corpus Christi
Corpus Christi International Airport
Laredo
Laredo International Airport
UNITED STATES
MEXICO
Rio Grande City
Valley International Airport
Harlingen
McAllen
McAllen International Airport
Brownsville
Brownsville/South Padre Island International Airport
N
0
45
Miles
LEGEND
Corpus Christi International Airport
Commercial Service Airport
County Boundary
State/International Boundary
30-Minute Drive Time
1-Hour Drive Time
2-Hour Drive Time
3-Hour Drive Time

Based on information provided in **Table 2E**, all six of these airports offer service that entices a portion of the CCIA catchment area passengers. AUS, IAH, and SAT create the greatest leakage for CCIA.

ENPLANEMENT FORECASTS

The first step in updating an airport's enplanement forecasts includes reviewing previous forecasts in comparison to actual activity to determine what changes (if any) might be necessary. After the review, consideration must be given to any new factors that could impact the forecasts, such as changes in the socioeconomic climate or air carrier services.

Previous Enplanement Forecasts

There are two recent forecasts of enplanement activity at Corpus Christi International Airport to consider:

- CMT service improvement scenarios developed as a part of their air service study assessment (Spring 2024)
- The FAA's *Terminal Area Forecast* (January 2024)

The forecasts developed by CMT under an air service contract with CCIA considered specific scenario planning. CMT developed three scenarios for enplanement forecasts based on different levels of carrier and capacity additions. Below are descriptions of the three capacity "Combo" scenarios. Built into each combination is the following (graphically presented later in the enplanement summary exhibit):

- **Combo 1 "Low Scenario"** – Existing incumbent carriers, capacity, and enplanements grow based on historical compound annual growth rates (CAGRs) from 2017-2023 (excluding the 2020 COVID-19 shutdown). This scenario drives a 1.74 percent CAGR from 2023-2043.
- **Combo 2 "Medium Scenario"** – Low Scenario plus the addition of a Part 135 carrier with 9-seat aircraft starting service in August 2024, an ultra-low-cost carrier starting 4x weekly service in March 2025, and an additional carrier starting 4x weekly service in March of 2029. This scenario drives a 2.13 percent CAGR from 2023-2043.
- **Combo 3 "High Scenario"** – Low Scenario plus Medium Scenario plus one incumbent carrier starting three months of peak seasonal service in 2026, one incumbent carrier starting Saturday and Sunday only year-round service in 2026, and one incumbent carrier starting an additional 1x daily year-round frequency in 2030. This scenario drives a 2.62 percent CAGR from 2023-2043.

As mentioned earlier, the FAA's TAF is updated annually and is utilized by the FAA as a starting point for considering the reasonableness of an airport's planning forecasts. The current TAF was issued in January 2024. **Table 2F** presents the CMT and TAF forecasts for CCIA. Recent historical enplanements are also included. As can be seen, all three of CMT's scenario projections are higher than the current TAF. The TAF projection follows a 1.47 percent CAGR.

TABLE 2F | Previous Passenger Enplanement Forecasts

	2023	2028	2033	2043
Actual	348,702	N/A	N/A	N/A
C.M.T. Combo "1" Scenario	N/A	384,185	417,962	496,576
C.M.T. Combo "2" Scenario	N/A	417,499	485,968	570,872
C.M.T. Combo "3" Scenario	N/A	432,153	531,179	625,205
2023 FAA TAF (Jan. 2024)	N/A	403,366	423,134	466,566

Enplanement Projections

The history of enplaned passengers at Corpus Christi International Airport over the past two decades has been discussed in earlier sections. Following the 2008-09 recession, enplanement levels increased then flattened with a slight uptick in 2019. This slight growth period ended dramatically with the 2020 global pandemic, when passenger numbers decreased by more than 50 percent in one year. Enplanements returned to 2019 levels in 2022, and then exceeded them in 2023.

A variety of time-series extrapolation and regression analyses that used multiple variables, including aviation and socioeconomic factors, were tested in relation to historical CCIA enplanements. For these analyses, the correlation coefficient (Pearson's "r") measures the association between the dependent variable (enplanements) and the independent variable(s). In social sciences, an r value greater than 0.90 generally indicates good predictive reliability. A value below 0.90 may still be considered, with the understanding that the predictive reliability is lower. Several variables were evaluated to determine if they might produce more reliable statistical trends.

Two time-series analysis of enplanements were considered as the two major events of the recession and pandemic significantly impacted enplanements. All enplanement regression analyses removed the 2020 data from consideration as it was such an anomaly that it skewed the outcomes. The first time-series analysis considered the dataset between 2000 through 2023 and generated a correlation coefficient of just 0.5722. The second considered the post-recession period of 2010-2023 (excluding 2020), with the r value decreasing to 0.3154. Neither of these present a reliable forecasting platform and will no longer be considered.

For the regression analyses, the independent variables evaluated included the Corpus Christi MSA socioeconomic factors (listed earlier in **Table 2C**) and U.S. domestic enplanements from the FAA *Aerospace Forecast – FY 2024-2044* (also discussed earlier and presented in **Exhibit 2A**). As with the time-series analysis, regressions for each single variable during the full period from 2000 through 2023 resulted in correlations below 0.070. Those conducted between 2010-2023 provided even lower correlations, as presented in **Table 2G**. It is obvious that the time-series and socioeconomic variables provide unreliable forecasting guides and will no longer be considered for this effort.

TABLE 2G | Regression Outputs for CCIA Enplanements

Variable Tested	r^2
*Independent Variables Range Between 2000-2023**	
Time	0.5722
Population	0.6094
Employment	0.5143
Earnings	0.505
Personal Income	0.6157
Wages	0.5164
PCPI	0.5999
GRP	0.5091
Retail Sales	0.4429
*Independent Variable Range Between 2010-2023**	
Time	0.3154
Population	0.2941
Employment	0.3875
Earnings	0.3509
Personal Income	0.3720
Retail Sales	0.24021

*2020 Enplanements not included in analysis due to significant COVID-19 impact

Travel Propensity Factor

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

The TPF is predominantly impacted by the proximity of an airport to other regional airports with higher levels of service or "hub" airports. Regional airports with higher TPF ratios tend to be located farther from hub airports in relatively isolated areas, or the regional airport has a level of service supporting a higher than commonly found TPF. One such condition is when a regional airport is served by a low cost or ultra low-cost carrier (LCC or ULCC). These airports generally have a service area that extends into adjacent, well-populated regions or have some type of air service advantage that attracts more of those passengers that might otherwise choose to drive to a more distant hub airport. Generally, the higher the TPF, the more likely air travelers are to utilize the local airport for commercial service. The examination and comparison of TPF should factor airports having similar characteristics so that reasonable projections can be made. **Table 2H** presents a historical presentation of TPF levels since 2000 at similarly sized and located (coastal community) locales.

The information in **Table 2H** examines ten coastal community TPFs between 2000 and 2022. These communities range from east to west coast locales and present differing levels of service and enplanements. Savannah, Charleston, and Myrtle Beach all have between one and 2.5 million annual enplanements with much higher levels of service. While enplanements are much higher than those at CCIA, the population base of the MSAs they serve are relatively similar, with Charleston being nearly double that of Corpus Christi. Virginia Beach/Newport News, on the other hand, has a much larger MSA population and a much smaller enplanement level. The low enplanement level is due to the close proximity and higher service offered in Norfolk, having more than 4.55 million enplanements in 2023, a record year.

CCIA had a period high TPF of 1.159 in 2000, then fell to 0.752 in 2023. This trend indicates that enplanement levels at CCIA have not kept pace with population growth. This can be particularly attributed to limited market availability with non-stop destinations only to Dallas and Houston. Moreover, the other larger competing airports with higher levels of service in Austin, San Antonio, and Houston create a leakage whereby passengers drive to more distant airports for lower airfares or better service options.

If CCIA were to be better served either with additional non-stop markets or via LCC or ULCC carries, a higher TPF would be likely. Key West had the highest TPF at 8.6, with Savannah and Panama City following with greater than 4.0. These markets have less competitive selections and longer drive times to larger service options. Most of the markets range between 0.4 and 1.5, as shown.

Two TPF trend projections have been developed and are presented on **Table 2J** and **Exhibit 2H**. The first TPF projection considers a constant share of 0.822 experienced in 2023 which would yield 378,489 enplanements by 2043, growing at a 0.41 percent CAGR. The next projection is an increasing trend reaching 1.25 TPF by 2043. This projection yields 575,561 enplanements by 2043.

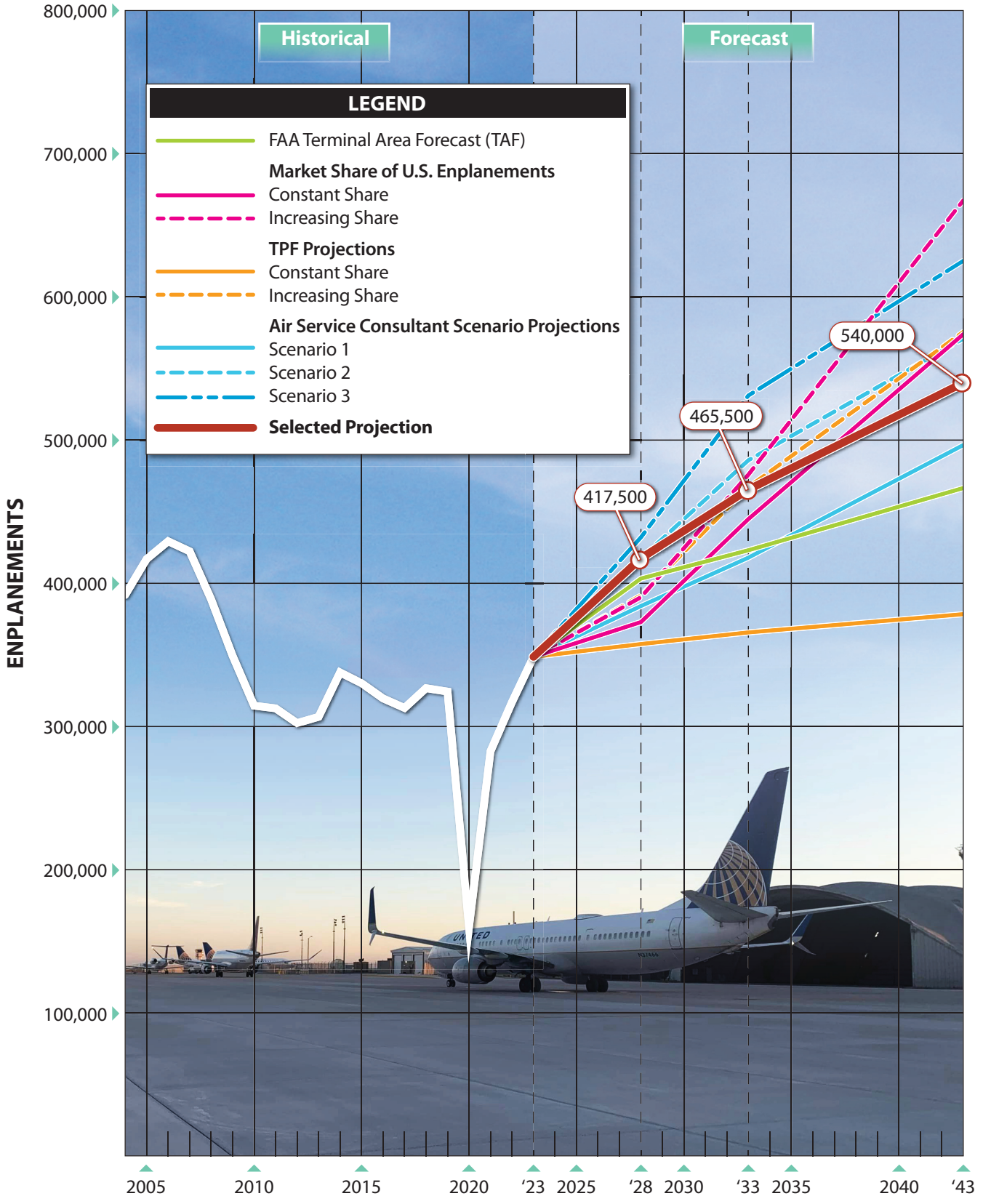

Historical
Forecast
LEGEND
FAA Terminal Area Forecast (TAF)
Market Share of U.S. Enplanements
Constant Share
Increasing Share
TPF Projections
Constant Share
Increasing Share
Air Service Consultant Scenario Projections
Scenario 1
Scenario 2
Scenario 3
Selected Projection
540,000
465,500
417,500
ENPLANEMENTS
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
2005
2010
2015
2020
'23
2025
'28
2030
'33
2035
2040
'43

TABLE 2H | Travel Propensity Factor for Coastal Airport Markets

	2000	2010	2015	2019	2022
Corpus Christi, TX					
MSA Population (in thousands)	381.006	404.675	423.707	421.8	421.628
Passenger Enplanements	441,682	314,578	330,268	324,450	317,093
TPF	1.159	0.777	0.779	0.769	0.752
Virginia Beach, VA (Inc. Norfolk and Newport News, VA-NC in MSA)					
MSA Population (in thousands)	1617.49	1717.11	1768.412	1792.767	1806.84
Passenger Enplanements	227,635	519,906	202,104	211,487	80,228
TPF	0.141	0.303	0.114	0.118	0.044
Key West, FL (Monroe County)					
MSA Population (in thousands)	79.47	73.226	81.234	81.954	81.708
Passenger Enplanements	292,508	287,359	362,108	497,656	708,807
TPF	3.681	3.924	4.458	6.072	8.675
Panama City, FL					
MSA Population (in thousands)	148.393	169.209	183.27	176.761	185.134
Passenger Enplanements	169,369	312,114	428,704	621,406	746,521
TPF	1.141	1.845	2.339	3.516	4.032
Santa Barbara, CA (Inc. Santa Maria in MSA)					
MSA Population (in thousands)	399.99	424.218	443.79	448.594	443.837
Passenger Enplanements	393,664	382,894	316,511	510,141	610,916
TPF	0.984	0.903	0.713	1.137	1.376
Savannah, GA					
MSA Population (in thousands)	293.721	348.672	382.862	402.566	418.373
Passenger Enplanements	879,821	798,194	980,531	1,431,360	1,726,444
TPF	2.995	2.289	2.561	3.556	4.127
Myrtle Beach, SC (Inc. Conway, North Myrtle Beach SC-NC MSA)					
MSA Population (in thousands)	271.736	378.365	420.379	477.077	536.165
Passenger Enplanements	776,729	782,737	899,859	1,285,200	1,706,591
TPF	2.858	2.069	2.141	2.694	3.183
Charleston, SC					
MSA Population (in thousands)	550.916	667.495	737.999	790.422	830.529
Passenger Enplanements	834,787	1,013,418	1,669,988	2,375,868	2,608,497
TPF	1.515	1.518	2.263	3.006	3.141
Wilmington, NC					
MSA Population (in thousands)	275.827	363.78	386.796	417.613	454.39
Passenger Enplanements	255,782	409,400	389,629	541,506	541,936
TPF	0.927	1.125	1.007	1.297	1.193
San Luis Obispo, CA					
MSA Population (in thousands)	247.839	269.8	279.953	282.395	282.013
Passenger Enplanements	150,732	129,220	144,324	267,924	273,690
TPF	0.608	0.479	0.516	0.949	0.970

TABLE 2J CCIA Enplanement Projections for TPF and Market Share of US Domestic Enplanements

Year	CCIA Enplanements	MSA Population	TPF Ratio	US Domestic Enplaned (millions)	US Market %	CAGR
2004	391,952	388,869	1.008	627.20	0.0625%	-
2005	417,022	392,747	1.062	669.50	0.0623%	6.4%
2006	429,394	396,135	1.084	668.42	0.0642%	3.0%
2007	422,391	397,235	1.063	690.06	0.0612%	-1.6%
2008	388,856	399,943	0.972	680.73	0.0571%	-7.9%
2009	349,383	403,971	0.865	630.78	0.0554%	-10.2%
2010	314,578	404,675	0.777	631.50	0.0498%	-10.0%
2011	312,721	406,933	0.768	646.53	0.0484%	-0.6%
2012	302,430	411,627	0.735	649.74	0.0465%	-3.3%
2013	306,794	416,718	0.736	650.53	0.0472%	1.4%
2014	337,807	420,170	0.804	664.87	0.0508%	10.1%
2015	330,268	423,707	0.779	691.76	0.0477%	-2.2%
2016	319,659	424,276	0.753	719.73	0.0444%	-3.2%
2017	313,011	422,947	0.740	737.69	0.0424%	-2.1%
2018	326,804	422,350	0.774	774.34	0.0422%	4.4%
2019	324,450	421,800	0.769	806.15	0.0402%	-0.7%
2020	160,121	422,214	0.379	460.58	0.0348%	-50.6%
2021	282,771	422,931	0.669	507.10	0.0558%	76.6%
2022	317,093	421,628	0.752	736.31	0.0431%	12.1%
2023	348,702	423,959	0.822	810.98	0.0430%	10.0%
Constant Share of US Domestic Enplanements Projection						
2028	372,982	435,075	0.857	867.40	0.0430%	1.36%
2033	444,900	444,958	1.000	1,034.65	0.0430%	2.47%
2043	573,977	460,449	1.247	1,334.83	0.0430%	2.52%
Increasing Share US Domestic Enplanements Projection						
2028	390,329	435,075	0.897	867.40	0.0450%	2.28%
2033	475,939	444,958	1.070	1,034.65	0.0460%	3.16%
2043	667,415	460,449	1.449	1,334.83	0.0500%	3.30%
Constant Share TPF						
2028	357,632	435,075	0.822	867.40	0.0412%	0.51%
2033	365,755	444,958	0.822	1,034.65	0.0354%	0.48%
2043	378,489	460,449	0.822	1,334.83	0.0284%	0.41%
Increasing Share TPF						
2028	391,568	435,075	0.900	867.40	0.0451%	2.35%
2033	467,206	444,958	1.050	1,034.65	0.0452%	2.97%
2043	575,561	460,449	1.250	1,334.83	0.0431%	2.54%
RECOMMENDED CCIA ENPLANEMENT FORECAST						
2028	417,500	435,075	0.960	867.40	0.0481%	3.67%
2033	465,500	444,958	1.046	1,034.65	0.0450%	2.93%
2043	540,000	460,449	1.173	1,334.83	0.0405%	2.21%

Market Share of U.S. Regional Enplanement Projections

The next forecasting method employed considers CCIA's market share of U.S. domestic enplanements. National forecasts of U.S. domestic enplanements are compiled each year by the FAA and consider the state of the economy, fuel prices, and prior year developments. The most recent publication is FAA *Aerospace Forecasts – Fiscal Years 2024-2044*. Two enplanement forecasts based on CCIA's market share of total U.S. airline carrier enplanements have been developed and are presented in **Table 2J**. Like its TPF, CCIA's market share of domestic airline enplanements decreased sharply in 2009 and then further in 2010 due to the economic recession but has generally increased since that time until COVID-19 impacts

occurred in 2020. Following the pandemic, the airport's enplanement levels have increased to a current share of 0.0430 percent. CCIA's peak market share during this period occurred in 2006, with 0.0642 percent, and the average share over this period was 0.050 percent.

Maintain Constant Share of U.S. Domestic Enplanements. The first projection is based upon CCIA maintaining the 2023 market share into the future. This would result in a slow but steady growth over the planning period, following along with national trends, resulting in 573,997 enplanements by 2043.

Increasing Share of U.S. Domestic Enplanements. The second projection considers an increasing maximum change scenario in which growth mirrors CCIA's recent growth between low and high points, resulting in an increase in market share to the period's average of 0.050 percent of U.S. domestic enplanements. This increasing share projection results in 667,415 enplanements by 2043.

ENPLANEMENT PROJECTION SUMMARY

The time-series and other regression projections failed to meet a minimal correlation level and were rejected for forecasting purposes. Thus, other forecasting methods were employed. The airport's recently completed air service assessment, conducted by CMT, offered three scenario projections based on differing levels of airline service and aircraft usage. These scenarios ranged in enplanements projections for 2043 from Scenario 1 at 496,576 (1.47% CAGR) to a high of Scenario 3 at 625,205 (2.96% CAGR). Scenario 2 would result in a CAGR of 2.5 percent growing to 570,872 enplanements by 2043.

Other market share projections factored enplanements compared to MSA population (TPF) and U.S. domestic enplanements. These projections had a low range of enplanements defined by the constant share TPF reaching 378,489 enplanements by 2043 and a high of 667,415 enplanements defined by the increasing share of U.S. domestic (0.0500 percent share).

Given the relatively variable enplanement levels over the last 23 years, there does not appear to be a straightforward forecast selection. FAA requires the selected forecasts to be within a specific tolerance range of 10 percent within the first five years and 15 percent beyond. While the TAF offers a CAGR of 1.47 percent, this level will likely be exceeded if CCIA attracts improved service and/or new entrant(s) that are (U)LCC. The City of Corpus Christi and the region are actively pursuing improved service as well as new businesses to support improved service. Strong post-COVID growth indicates that the local community can and will support increased enplanements if these attractions are successful. For this reason, the selected enplanement forecast closely follows, but slightly trails, the CMT Scenario 2 projection reaching 540,000 enplanements by 2043, which is above the TAF but within the approved tolerances. Moreover, the selected forecast falls within the mid-point of the forecasting envelope, as depicted on **Exhibit 2H**. It is likely, however, as the forecasting trend indicates, the outer years will likely have slower growth and the curve will taper as CCIA will always face more significant service barriers and competition from the airports in Austin, San Antonio, and Houston. Leakage will always be a factor but less so with better service options, especially by (U)LCC carriers.

AIRLINE OPERATIONS FORECAST

The commercial service aircraft fleet mix defines several key parameters in airport planning, including critical aircraft (for pavement design and ramp geometry), terminal complex layout, and maximum stage length capabilities (which affect runway length evaluations). A projection of the fleet mix for Corpus Christi International Airport has been developed by reviewing equipment used by the carriers that have served the airport over the years.

Changes in equipment, airframes, and engines have always had a significant impact on airlines and airport planning. There are many ongoing programs by aircraft manufacturers to improve performance characteristics; these programs continue to focus on improvements in fuel efficiency. Regional jets also became a larger factor as airlines looked for ways to reduce costs. Many airlines replaced larger commercial jets – as well as commuter turboprops on smaller emerging routes – with regional jets. Regional jet aircraft eventually became available with as few as 37 seats and as many as 100 seats. This bridged a long-existing gap in seating capacity, making regional jets the aircraft of choice at nonhub and many small hub airports.

In the United States, the use of regional jets was met with resistance from the pilot unions. Scope clauses were written into union contracts with the major airlines that placed restrictions on regional aircraft that may be flown by the airline's regional affiliates. The unions believed that limiting the regional airlines' passenger capacity through the number and size of aircraft would protect union jobs.

United, Delta, and American Airlines have varying scope clauses. The greatest limitation has been restricting affiliates to no more than 76 seats and 86,000 pounds maximum takeoff weight. This led the regional jet manufacturers, such as Embraer and Bombardier, to reconfigure 90-seat regional jets to just 76 (or even 70) seats to meet the scope clauses.

In addition, most next-generation regional aircraft, such as the Embraer E2-Jet and the Mitsubishi MRJ series, exceed the 76-seat, 86,000-pound limits. This essentially prohibits these aircraft from being utilized in the fleets of regional airlines in United States. In fact, Mitsubishi terminated its regional jet program in 2023 due to the uncertainty of the regional jet market size.

The scope clauses are generally more liberal for 50-seat and smaller aircraft. Unfortunately, the 50-seat and smaller regional jets, as well as 10- to 50-seat turboprops, are no longer being manufactured. United Airlines has begun operating a replacement 50-seat regional jet, the CRJ-550, with one of its regional affiliates, GoJet. The aircraft was developed by Bombardier from its 70-seat CRJ700 and is specifically designed to work around scope clauses. The aircraft is equipped with 10 first class seats, 20 economy-plus seats, and 20 economy seats. The first of these aircraft were put into use in late 2019 between Chicago O'Hare International Airport (ORD) and small hub airports 100 to 700 nautical miles from ORD.

The future of aircraft serving nonhub and small hub airports will remain at the mercy of the major airlines' negotiations with their unions. The following section examines the fleet mix of scheduled airline operations at Corpus Christi International Airport and forecasts what may be expected over the next 20 years.

SCHEDULED AIRLINE OPERATIONS AND FLEET MIX

Table 2K presents the fleet mix by seat capacity of the scheduled airlines at CCIA since 2019. In 2019, 77.0 percent of the airport's fleet mix consisted of regional jets. Just under 29 precent were 44-50 seat jets. In 2023, the regional jet percentage decreased to 75.9; however, the seating capacity increased to a higher level of 70+ seat aircraft, with the 40-50 seat aircraft usage declining to 18.4 percent. During this period, the usage of larger 737-800/900/Max models expanded, increasing the average seats per departure from 82.9 in 2018 to 89.2 in 2023. Upgauging aircraft actually had a negative impact on total commercial operations, with operations decreasing from 11,450 in 2018 to 10,916 in 2023. This is common when smaller aircraft in the fleet are replaced by larger aircraft models. The airport typically experiences a higher seat per departure but a loss of total annual operations/departures.

TABLE 2K | Airline Fleet Mix of Operations Forecast

FLEET MIX		ACTUAL			
Seating Capacity	Typical Aircraft	2019	2021	2022	2023
200+	B757-300; B767-300; A330	0.0%	0.0%	0.0%	0.0%
175-199	B737-800/900 MAX; A321	0.4%	2.3%	6.3%	7.3%
155-174	B737-800; A320	0.0%	0.0%	0.0%	0.0%
135-154	B737-700; A320	22.4%	14.2%	17.6%	16.8%
115-134	B737-700; A319	0.2%	0.0%	0.0%	0.0%
95-114	B717-200; A220; ERJ-190	0.0%	0.0%	0.0%	0.0%
80-94	Q400; ERJ-190-E2*	0.0%	0.0%	0.0%	0.0%
70-79	CRJ-900; ERJ-175	46.9%	41.0%	26.3%	53.7%
60-69	CRJ-700; ERJ-170	1.6%	4.6%	7.8%	3.9%
40-59	CRJ-200; ERJ-140,145	28.6%	37.9%	42.0%	18.4%
	Total	100.0%	100.0%	100.0%	100.0%
Average Seats Per Departure		82.9	77.2	82.4	89.2
Boarding Load Factor		68.3%	75.8%	75.7%	71.6%
Enplanements per Departure		56.7	58.5	62.4	63.9
Annual Enplanements		324,450	282,771	317,093	348,702
Annual Departures		5,725	4,832	5,082	5,458
Annual Operations		11,450	9,664	10,164	10,916

FLEET MIX		FORECAST		
Seating Capacity	Typical Aircraft	2028	2033	2043
200+	B757-300; B767-300; A330	0.0%	0.0%	0.0%
175-199	B737-800; B757-200; A321	8.0%	9.0%	12.0%
155-174	B737-800; A320	2.0%	3.0%	5.0%
135-154	B737-700; A320	15.0%	14.0%	12.0%
115-134	B737-700; A319	3.0%	5.0%	8.0%
95-114	B717-200; A220; ERJ-190	2.0%	10.0%	15.0%
80-94	Q400; ERJ-190-E2*	2.0%	3.0%	5.0%
70-79	CRJ-900; ERJ-175	48.0%	45.0%	40.0%
60-69	CRJ-700; ERJ-170	5.0%	4.0%	3.0%
40-59	CRJ-200; ERJ-140,145	15.0%	7.0%	0.0%
	Total	100.0%	100.0%	100.0%
Average Seats Per Departure		93.7	101.0	109.8
Boarding Load Factor		81.0%	82.0%	84.0%
Enplanements per Departure		75.9	82.8	92.2
Annual Enplanements		417,500	465,500	540,000
Annual Departures		5,500	5,620	5,860
Annual Operations		11,000	11,240	11,720

The boarding load factor (BLF) is defined as the ratio of passengers boarding aircraft compared to the seating capacity of the aircraft. The BLF at CCIA has remained relatively stable before and after the pandemic. The period high BLF was 75.7 percent, reached in 2021. In the future, boarding load factors can be expected to grow slightly to around 84 percent by 2043.

The lower half of the table presents the fleet mix and operations forecast for scheduled flights. As discussed, the regional carriers have been transitioning away from 50-seat aircraft, which are no longer being manufactured. The remaining aircraft are being dedicated to smaller markets, including those in the FAA's Essential Air Service (EAS) program, which subsidizes flights. As a result, 50-seat aircraft are forecast to leave the CCIA market in the next ten years.

Regional jets of 70 seats or fewer are forecast to shrink to only three percent at CCIA by the end of the 20-year forecast period. The percentage of 95+-seat aircraft will continue to increase, resulting in further growth in the average seats per departure. With the BLF remaining at 81 to 84 percent, the average enplanements per departure will also continue to grow. While annual scheduled enplanement passengers are expected to grow by 55 percent over the 20-year period, annual commercial departures are projected to increase by only 7.4 percent as much of the increased traffic will be accommodated by larger aircraft fleet mix operating on a daily basis.

AIRLINE PEAK ACTIVITY FORECASTS

The airport planning needs are related to levels of activity during certain periods of time. The key periods used for planning are:

- **Peak Month** – the calendar month when peak aircraft operations occur;
- **Design Day** – the average day in the peak month; at nonhub and small hub airports like CCIA, this is typically the average weekday, as weekends often have reduced flights; and
- **Design Hour** – the peak hour within the design day.

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

Since 2014 (the earliest monthly data available), the peak month for enplanements occurred in June six of the ten years, July (2014) and January (2020 Pandemic year) occurred as the peak month only once, while October was the peak month twice (2022 and 2023). The average for the ten years was 10.5 percent, with the pandemic year high at 15.7 percent due to the half year shut down. The next highest year was 10.7 percent in 2021. Averaging out the nine years (removing 2020 due to COVID-19), enplanements averaged 9.95 percent over the period.

The design day enplanement level for the peak month is essentially the average weekday enplanements of the peak month. Based on the daily flight schedule during the peak month of 2023 and the actual number of flights for the month, the design day enplanements were determined as 3.44 percent of the peak month enplanements.

The design hour enplanement estimate is based on the airline schedule during the peak month and the seats available during the peak hour. In July of 2023, the hourly peak for seat capacity typically occurred between 9:30 a.m. and 10:30 a.m. Approximately 19.5 percent of the daily seat capacity departed during that hour. The same percentage was applied to the design day to determine the design hour. As enplanements and flights increase in the future, the design hour percentage can be expected to decrease slightly. **Table 2L** outlines the peak period airline passengers and operations forecasts.

TABLE 2L | Airline Peaking Activity

	2023	2028	2033	2043
AIRLINE PASSENGER ENPLANEMENTS				
Annual	348,702	417,500	465,500	540,000
Peak Month	33,441	41,600	46,400	53,800
Design Day	1,113	1,410	1,620	1,940
Design Hour	211	275	332	427
AIRLINE AIRCRAFT OPERATIONS				
Annual	10,916	11,000	11,240	11,720
Peak Month	1,143	1,111	1,135	1,180
Design Day	39	38	39	41
Design Hour	6	6	8	10
Departures	3	3	4	5

OTHER COMMERCIAL OPERATIONS

The airport traffic control tower (ATCT) counts commercial flights operating under Title 14 Code of Federal Regulations (CFR) Part 121 (regularly scheduled carrier) or Part 135 as either air carrier or air taxi aircraft. Typically, commercial aircraft with 60 seats or more are counted as air carrier aircraft, and aircraft with fewer than 60 seats are counted as air taxi aircraft. All-cargo flights are also included. While the scheduled and non-scheduled (charter) airline flights are included in one of the two counts, depending on aircraft size, so are smaller for-hire flights that do not utilize the terminal. Some operations by aircraft that are operated under fractional ownership programs are also counted as air taxi operations. Because the airlines have been forecast, this section reviews the growth potential for the "other commercial" operations.

Table 2M estimates the other commercial operations since 2014. These were determined by subtracting the airline operations (passenger and all-cargo) from the ATCT count of air carrier and air taxi operations. After the Great Recession, operations declined from 2014 (6,434 operations) through 2016 (3,470 operations). Over the next four years, the other commercial operations essentially grew back, then fluctuated between a low of 4,293 in 2023 and a high of 6,677 in 2018. Unlike airline flights, the other commercial operations did not significantly decline in 2020 and totaled 3,419. Operations then jumped in one year to 4,498. The pandemic likely sustained – and ultimately grew – the demand for small private charters at CCIA.

TABLE 2M | Other Commercial Operations Forecasts

Year	Other Commercial Operations
2014	6,434
2015	4,075
2016	3,470
2017	4,797
2018	6,677
2019	5,578
2020	3,419
2021	4,498
2022	4,787
2023	4,913
Projections	
2028	5,165
2033	5,430
2043	6,000

The *FAA Aerospace Forecast – FY 2024-2044* projects commercial operations at FAA and contract towered airports to grow 1.0 percent annually over its forecast period, which was the basis of the forecast reaching 6,000 by 2043 as presented in **Table 2M**.

GENERAL AVIATION FORECASTS

General aviation (GA) 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 CCIA, certain elements of this activity must be forecast. These indicators of general aviation demand include based aircraft, aircraft fleet mix, and annual operations.

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 between 2023 and 2043, increasing by just 0.2 percent. While steady growth in both gross domestic product (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 (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 2N** shows the primary general aviation demand indicators, as forecast by the FAA.

TABLE 2N | FAA General Aviation Forecast

Demand Indicator	2023	2043	CAGR
General Aviation Fleet			
Total Fixed-Wing Piston	137,070	130,825	-0.2%
Total Fixed-Wing Turbine	27,355	40,830	2.1%
Total Helicopters	9,925	13,830	1.7%
Total Other (experimental, light sport, etc.)	35,380	42,225	0.9%
Total GA Fleet	209,730	227,710	0.4%
General Aviation Operations			
Local	15,282,665	17,506,977	0.5%
Itinerant	14,591,327	16,524,035	0.5%
Total General Aviation Operations	29,873,992	34,031,012	0.5%
CAGR = compound annual growth rate (2023-2043)			

Source: FAA Aerospace Forecast – FY 2024-2044

General Aviation Fleet Mix

For 2023, the FAA estimates there are 137,070 piston-powered fixed-wing aircraft in the national fleet. That number is forecast to decline by 0.2 percent by 2043, resulting in 130,825 aircraft. This includes a decline of 0.2 percent in SEP aircraft and a decline of 0.3 percent in MEP aircraft.

Total turbine aircraft are forecast to grow at an annual rate of 2.1 percent through 2043. The FAA estimates there are 27,355 fixed-wing turbine-powered aircraft in the national fleet in 2023 and there will be 40,830 by 2043. Turboprops are forecast to grow by 0.7 percent annually, while business jets are projected to grow by 2.8 percent annually through 2043.

Total helicopters are projected to grow by 1.7 percent annually in the forecast period. There are an estimated 9,925 total helicopters in the national fleet in 2023, and that number is expected to grow to a total of 13,830 by 2043. This includes annual growth rates of 0.8 percent for piston helicopters and 2.1 percent for turbine helicopters.

The FAA also forecasts experimental aircraft, light sport aircraft (LSA), and others. Combined, there are an estimated 35,380 other aircraft in 2023 that are forecast to grow to 42,225 by 2043, for an annual growth rate of 0.9 percent.

General Aviation Operations

Additionally, the FAA forecasts total operations based on activity at 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 29.9 million in 2023 to 34.0 million in 2043, 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. **Exhibit 2J** presents the historical and forecast 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 2P** presents historical data related to general aviation aircraft shipments.

Worldwide shipments of general aviation airplanes increased in the year 2023, with a total of 3,050 units 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 only 2,408 units were delivered. Worldwide general aviation billings were the highest in 2014. In 2022, an increase in new aircraft shipments generated more than $23 billion, compared to $22.7 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 for all aircraft categories, while Latin America follows Europe closely in the turboprop market.

TABLE 2P | Annual General Aviation Airplane Shipments - Manufactured Worldwide and Factory Net Billings

Year	Total	SEP	MEP	TP	J	Net Billings ($ million)
2003	2,686	1,825	71	272	518	9,998
2004	2,962	1,999	52	319	592	12,093
2005	3,590	2,326	139	375	750	15,156
2006	4,054	2,513	242	412	887	18,815
2007	4,277	2,417	258	465	1,137	21,837
2008	3,974	1,943	176	538	1,317	24,846
2009	2,283	893	70	446	874	19,474
2010	2,024	781	108	368	767	19,715
2011	2,120	761	137	526	696	19,042
2012	2,164	817	91	584	672	18,895
2013	2,353	908	122	645	678	23,450
2014	2,454	986	143	603	722	24,499
2015	2,331	946	110	557	718	24,129
2016	2,268	890	129	582	667	21,092
2017	2,324	936	149	563	676	20,197
2018	2,441	952	185	601	703	20,515
2019	2,658	1,111	213	525	809	23,515
2020	2,408	1,164	157	443	644	20,048
2021	2,646	1,261	148	527	710	21,603
2022	2,813	1,361	158	582	712	22,866
2023	3,050	1,508	174	638	730	23,378

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

Source: General Aviation Manufacturers Association (GAMA) 2023 Quarterly Shipments and Billings

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

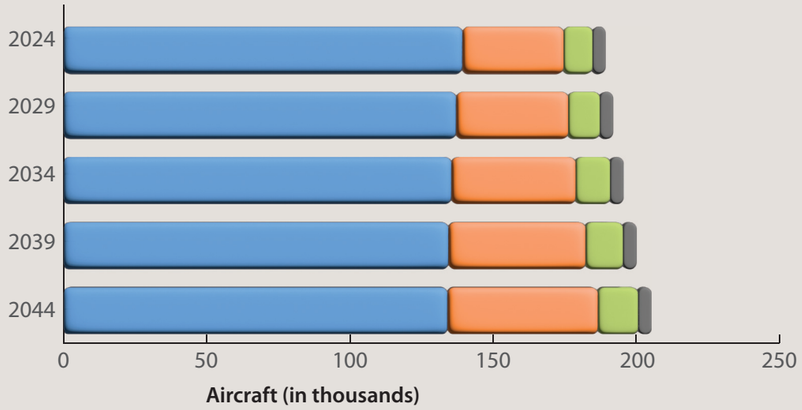
Turboprops | Turboprop shipments increased from 582 in 2022 to 638 in 2023. North America's market share of turboprop aircraft decreased by 2.1 percent in the last year. The European, Middle East, and Africa market shares increased while the Asia-Pacific and Latin American market shares decreased.

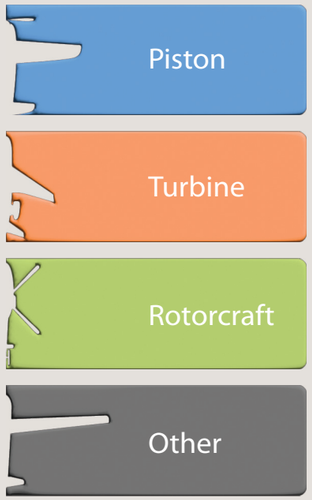
Pistons | In 2023, piston airplane shipments increased to 1,682 units from 1,519 units in the prior year. North America's market share of piston aircraft deliveries rose 7.2 percent from the year 2022. The European, Latin American, Middle East, and Africa regions experienced a positive rate in market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

U.S. PILOT POPULATION

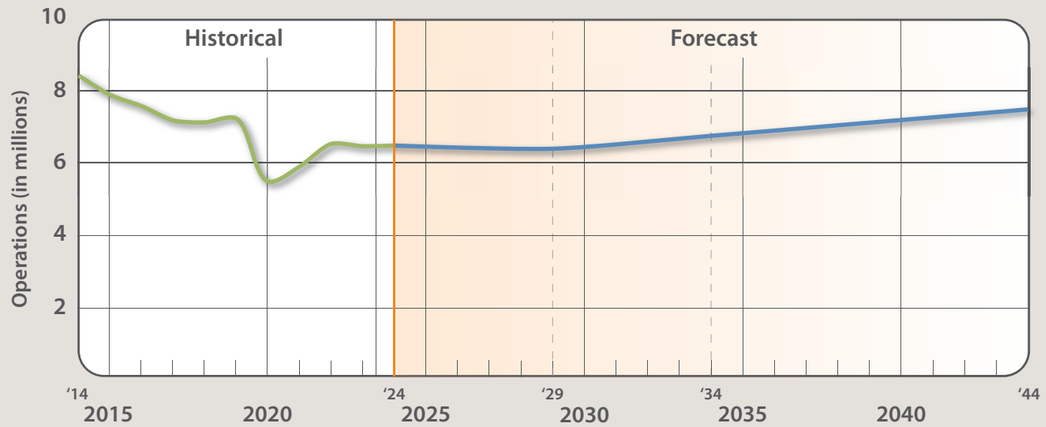
There were 490,470 active pilots certificated by the FAA at the end of 2023, with 500,406 active pilots projected in 2024. All pilot categories – except private and recreational-only certificates – are expected to continue to increase for the forecast length. Excluding student pilots, the number of active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

U.S. Active General Aviation Aircraft

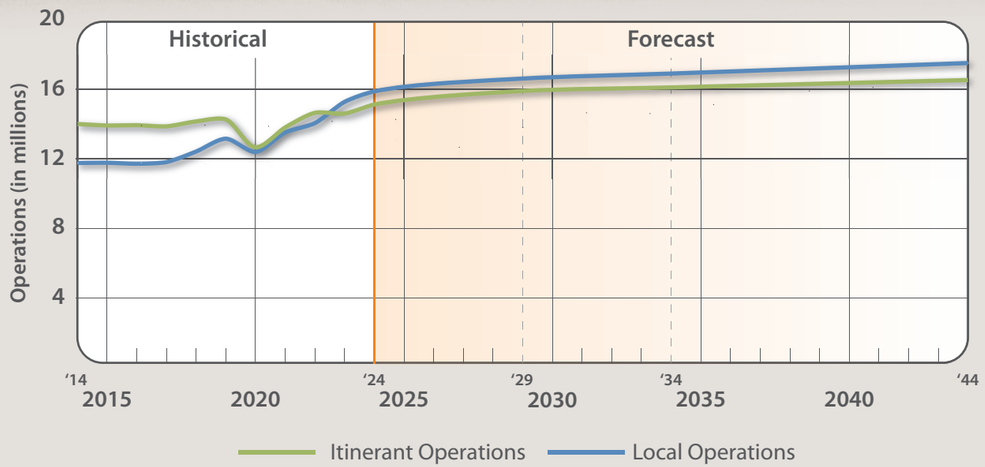




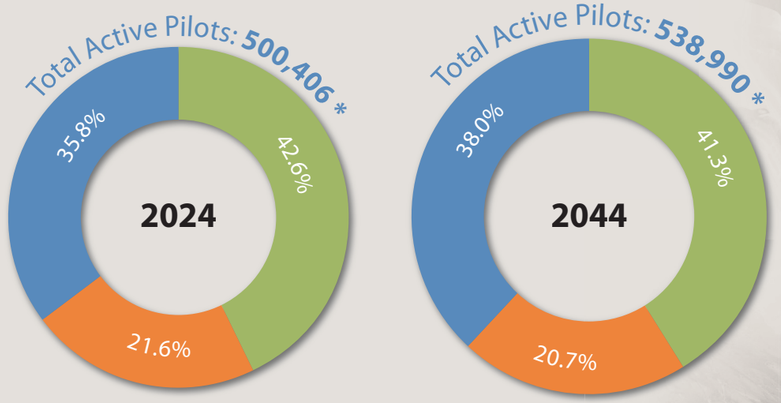
U.S. Air Taxi Operations



U.S. General Aviation Operations



Active Pilots By Certificate



*Excludes Student Pilot Certificates

Source: FAA Aerospace Forecasts FY2023-2043

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transport pilot (ATP) category is forecast 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.

RISKS TO THE FORECAST

While the FAA is confident that its forecasts for aviation demand and activity can be reached, they are dependent on several factors, including the strength of the global economy, security (including the threat of international terrorism), 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.

Worldwide shipments of general aviation airplanes increased in 2022, with a total of 2,818 units delivered around the globe, compared to 2,646 units in 2021 – the second year in a row to experience an increase after the drop during 2020, when only 2,408 units were delivered. Worldwide general aviation billings were the highest in 2014. In 2022, an increase in new aircraft shipments generated more than $22 billion, compared to $21.6 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. The Asia-Pacific region is the second largest market for piston-powered aircraft, while Latin America is the second leading in the turboprop market and Europe leads in business jet deliveries.

CCIA BASED AIRCRAFT FORECASTS

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

Documentation of the historical number of based aircraft at the airport has been somewhat intermittent with no real historic accounting held by the airport. Historical records for based aircraft include the previous master plan, which was completed in 2006, and the FAA's TAF. The based aircraft count reported in the current TAF is 54 aircraft. According to the most recent airport master record (FAA Form 5010), CCIA's current based aircraft count includes 25 single-engine aircraft, 15 multi-engine aircraft (including piston and turboprops), eight jets, and zero helicopters, for a total count of 48 aircraft. The current based aircraft count, which was conducted by airport staff as part of this study, is 45, thus lower than recent figures reported by the FAA TAF and the figures from the FAA Form 5010. For the purposes of this study, a based aircraft count of 45 will be utilized as the baseline figure as it represents an exhaustive count and verification by airport staff members.

Based Aircraft Service Area

The initial step in determining the general aviation based aircraft demand for an airport is to define its generalized service area. The service area is defined primarily by evaluating the locations of competing airports, their capabilities, their services, and their relative attraction and convenience. In determining the based aircraft 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.

As previously discussed, 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 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 such, a general aviation based aircraft service area is also evaluated and established in this analysis.

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 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, an airport's based aircraft service area typically extends for approximately 30 nautical miles (nm). There are nine public-use airports within the 30-mile range of CCIA, all of which are included within the NPIAS. There are two more within another three miles, as shown on the table. None of these regional airports can compare to CCIA's available facilities and amenities; however, several could serve turbine aircraft having a runway of at least 5,000 feet. Moreover, these airports substantially limit the market for smaller aircraft basing at CCIA. **Table 2Q** provides a summary of the NPIAS airports within 33 nautical miles of CCIA.

TABLE 2Q | NPIAS Airports Within 33 Nautical Miles of CCIA

Airport	Distance from CCIA	NPIAS Service Level	Based Aircraft	Annual Operations	Longest Runway (feet)	Lowest Visibility Minimums
Corpus Christi International (CCIA)	**-**	**P**	**45**	**69,457**	**7,510**	**1/2-mile**
Nueces County Airport (RBO)	10.0 nm W	GA	37	9,125	3,700	1-mile
Portland Hunt Airport (9R5)	10.6 nm NE	GA	8	2,080	1,400	none
Sinton Airport (T69)	16.1 nm N	GA	36	3,000	4,323	1-mile
Bishop-Windham Airport (07R)	16.5 nm SW	GA	24	1,200	3,200	none
McCampbell-Porter Airport (TFP)	17.6 nm ENE	GA	32	32,850	4,999	¾-mile
Old Hope Place Airport (67T)	18.6 nm W	GA	13	4,300	3,164	none
Mustang Beach Airport (RAS)	22.1 nm E	GA	10	3,330	3,482	1-mile
Alice International Airport (ALI)	27.9 nm W	GA	12	26,645	5,997	¾-mile
Aransas County Airport (RKP)	30.8 nm NE	GA	43	104,755	5,608	1-mile
Kleberg County Airport (IKG)	31.1 nm WSW	GA	11	1,510	6,000	¾-mile
Rooke Field Airport (RFG)	32.8 nm NNE	GA	16	3,900	4,361	none

P = primary
GA = general aviation
nm = nautical miles

Sources: National Plan of Integrated Airport Systems, 2023-2027; Airport Master Record; airnav.com

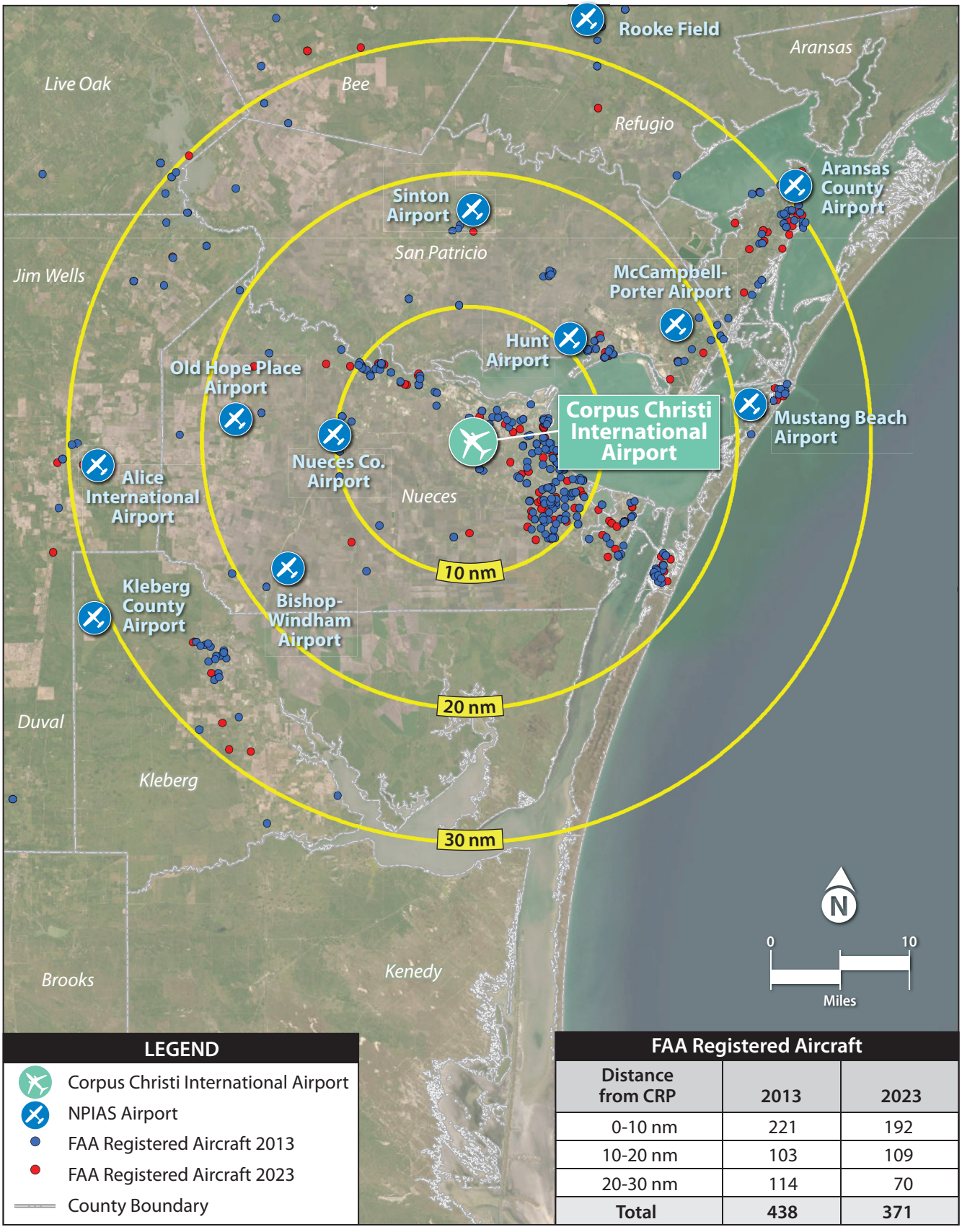
An airport's ability to attract based aircraft is an important factor when defining the service area; proximity is a consideration for most aircraft owners. Aircraft owners typically choose to base at airports that are close to their homes or businesses. **Exhibit 2K** depicts a 10-, 20-, and 30-nautical mile radius (and slightly beyond) from CCIA, which extends beyond Nueces County and includes the entirety of San Patricio County, as well as portions of Aransas, Refugio, Bee, Live Oak, Jim Wells, and Kleberg Counties. Registered aircraft in the region are also shown on the exhibit based on the registrant's "home" location indicated on file. The data includes a historical perspective with data for both 2013 and current year. Nueces County generally represents the largest concentration of based and registered aircraft in the region. In total, there are 371 aircraft registered within a 30-nm radius of CCIA, giving CCIA a 12 percent market share of aircraft registrations in that range. As noted earlier, the primary study area for forecasting purposes has been determined to be the Corpus Christi MSA. The Corpus Christi MSA includes the counties of Nueces, Aransas, and San Patricio. Surrounding counties – including Kleberg, Jim Wells, and Refugio, which are served by the smaller general aviation airports – could be considered secondary service areas.

The second demand segment to consider is itinerant operations. These are operations that are performed by aircraft that arrive from outside the airport area and land at CCIA or depart CCIA for another airport. In most cases, pilots will use airports nearer to their intended destinations; however, this is dependent on the airport's ability to accommodate the aircraft operator 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. This is especially true for cabin class aircraft and for any traveler that seeks the City of Corpus Christi as a destination, due to its closer proximity to the city when compared to other regional airports. CCIA's facilities and available services and amenities – particularly in regard to the two existing full-service fixed base operators (FBOs) located on the airport, as well as current and future potential flight schools – make CCIA a highly attractive airport for both itinerant and local general aviation operators.

BASED AIRCRAFT FORECASTS

Forecasts of based aircraft may directly influence needed facilities and the 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 reasonableness and any outliers are discarded or given less weight. The remaining forecasts will collectively 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 several forecasts developed or a blend of the forecasts.



LEGEND

- Corpus Christi International Airport
- NPIAS Airport
- FAA Registered Aircraft 2013
- FAA Registered Aircraft 2023
- County Boundary

FAA Registered Aircraft

Distance from CRP	2013	2023
0-10 nm	221	192
10-20 nm	103	109
20-30 nm	114	70
Total	**438**	**371**

Source: ESRI Basemap Imagery (2023), FAA Registered Aircraft Database

Registered Aircraft

Aircraft ownership trends for the primary service area (the Corpus Christi MSA) typically dictate based aircraft trends for an airport. **Table 2R** presents the history of registered aircraft in the service area from 2013 through 2023. These figures are derived from the FAA aircraft registration database that categorizes registered aircraft by county, based on the zip code of the registered aircraft. Although this information generally provides a correlation to based aircraft, it is not uncommon for some aircraft to be registered in the service area but based at an airport outside the service area, or vice versa.

TABLE 2R | Registered Aircraft Fleet Mix in the Corpus Christi MSA

Year	SEP	MEP	TP	Jet	H	Other*	UAV	Total
2013	269	46	28	10	12	12	0	377
2014	248	45	33	11	12	11	0	360
2015	236	44	30	12	14	14	11	361
2016	243	43	30	13	14	16	23	382
2017	219	39	27	14	15	15	28	357
2018	218	38	27	12	17	10	36	358
2019	209	30	30	13	20	11	32	345
2020	205	29	32	14	18	11	29	338
2021	187	26	42	16	19	10	24	324
2022	190	25	43	15	21	9	7	310
2023	210	28	47	18	20	8	7	338
10-Year % Change	-21.93%	-39.13%	67.86%	80.0%	66.67%	-33.33%	-	-10.34%
Compound Annual Growth Rate (CAGR) from 2013 to 2023:								**-1.09%**

SEP = single-engine piston
MEP = multi-engine piston
TP = turboprop
H = helicopter
UAV = unmanned aerial vehicle
*Other includes gliders, ultralights, experimental aircraft, and electric aircraft

Sources: FAA Aircraft Registry Database; FAA Census of U.S. Civil Aircraft

Over the 10-year period, aircraft registrations in the service area have decreased from 377 in 2013 to 338 in 2023. The fleet mix breakout shows that single-piston aircraft, which still account for the most registered aircraft, have decreased by the largest total number of aircraft (59 aircraft). The multi-engine piston category has decreased by the highest percentage at -39.13 percent over the period, dropping from 46 in 2013 to 28 in 2023. Jet aircraft have experienced the largest percentage growth; jets grew from 10 aircraft in 2013 to 18 in 2023, accounting for an 80 percent change. Unmanned aerial vehicles (UAV/drones) were not included as a separate category until 2015; there was a period high 36 registered drones in 2018, and the number has fluctuated over the period from 2016-2023, ending with seven drones registered in 2023. Understanding registered aircraft trends in the service area provides information that can be used to make new based aircraft projections, as well as forecast the fleet mix of aircraft. Overall, registered aircraft within the Corpus Christi MSA have experienced a negative growth rate of -1.09 percent CAGR since 2013.

While direct correlations between the MSA registered aircraft and the CCIA based aircraft cannot be ascertained from this data set, the historical trend for based aircraft at CCIA has been generally decreasing in total. The number of turbine aircraft has generally been stable or increased similar to the trends in the MSA. It is likely that CCIA is the driver of the positive growth changes for turbine aircraft in the MSA.

Trend Line/Historical Growth Rate Projection

The only historical records available for long-term analytical evaluation using trend line or other regression correlation is the FAA TAF. The TAF was never maintained as a true indicator of actual based aircraft but was simply a reasonable guess by the airport staff member that was interviewed for the FAA Form 5010 publication. Many times, these figures began as guesses and were simply carried forward from previous years due to limited availability to actually conduct the 5010 interviews. As such, the TAF data set can be viewed with a great deal of skepticism and is not usable for detailed statistical analysis. Given it is the only long-term data set, the use of trend line and/or historical growth rate projections are not feasible for this planning study.

TAF Growth Rate

The FAA's TAF report of based aircraft at CCIA is slightly higher than what current records show (54 for the TAF and 45 for airport records). The current FAA TAF projects that based aircraft at CCIA will remain constant at 54 for the planning period. It is not clear why the TAF preparer chose to keep the based aircraft fixed for the next 20 years, but this is not uncommon across the system. If the CCIA TAF were to be used and the forecast within the allowable TAF tolerances (10 percent within the first five years and 15 percent beyond), a based aircraft projection of 59 for 2028 and 62 for years beyond would be achieved.

Another common practice is to simply ascertain the FAA TAF's Statewide forecast for based aircraft and then apply it to CCIA. According to the State TAF projections, based aircraft are forecast to increase by 1.07 percent annually through 2043. Applying a 1.07 percent growth rate for CCIA based aircraft would yield 56 by 2043.

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 projected growth in population, employment, and GRP for the service area were also prepared. Through 2043, population in the service area is projected to grow at a CAGR of 1.24 percent; employment is projected to have a CAGR of 1.70 percent; and GRP is projected to have a CAGR of 2.39 percent. Applying these CAGRs results in 49 based aircraft for population, 51 for employment, and 55 for GRP by 2043.

Regression Analysis

As noted above, there is not enough nor any reliable historical based aircraft data to properly conduct regression analysis. As described previously, correlation values over 0.90 indicate good predictive reliability. Moreover, a good model will include at least ten iterations (years in this case) to be predictive. As such, the use of regression forecasts has been excluded from based aircraft forecast consideration.

FAA Aerospace 2024-2044 General Aviation Forecasts

The FAA's annual forecast production was released during the formulation of these forecasts and was relevant and timely to its completion. Another based aircraft projection was simply applying each specific aircraft category's projected growth rate. This equates to an overall 1.53 percent CAGR, reaching 61 total based aircraft by 2043, an increase of 16 aircraft over the planning period.

Selected Based Aircraft Forecast

Selecting a based aircraft forecast is ultimately based on the judgement of the forecast analyst. A 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 Corpus Christi MSA, the primary based aircraft service area. New forecasts considered the FAA TAF, maintaining FAA Aerospace Forecasts percentage growth by aircraft category, and growth rates based on key socioeconomic indicators (population, employment, and GRP). These projections are summarized in **Table 2S**.

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, as well as reasonable development of airport facilities necessary to accommodate aviation demand.

TABLE 2S | Based Aircraft Forecast Summary

Projection	2023	2028	2033	2043	CAGR 2023-2043
CCIA 2024 TAF	54	54	54	54	0.0%
CCIA TAF Tolerance	54	59	62	62	0.69%
Texas TAF Growth Rate	45	48	51	56	1.12%
Population Growth Rate	45	46	47	49	0.38%
Employment Growth Rate	45	47	48	51	0.67%
GRP Growth Rate	45	48	50	55	1.04%
FAA Aerospace Forecast Growth Rates by AC Type	45	49	52	61	1.53%

Boldface indicates selected forecast.
CAGR = compound annual growth rate

Sources: CCIA TAF, May 2021; Coffman Associates analysis

Consideration must also be given to the current and future aviation conditions at the airport. CCIA provides an array of general aviation services and will continue to be favored by aviation operators due to its location and available facilities. It is important to note that flight training programs could return to significant operation at CCIA, which would introduce new based aircraft.

The potential for available hangar space is not the only factor in future based aircraft levels. Economic conditions within the service area are also projected to increase at strong rates, which will support aviation and based aircraft growth. Based on all considerations, the projection utilizing the recently updated FAA aerospace forecasts for general aviation aircraft fleet by type was the selected projection. It would result in 16 additional aircraft at CCIA by 2043 and a CAGR of 1.53 percent. It should be noted that the selected forecast is within the tolerance of the current FAA TAF.

BASED AIRCRAFT FLEET MIX FORECAST

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

The current based aircraft fleet mix consists of 16 single-engine piston aircraft, three multi-engine (piston and turboprop) aircraft, 16 turboprops, and 10 jets. CCIA should continue to have a diverse fleet mix, including small single-engine pistons, turbine-powered aircraft, and helicopters. The forecasted growth trends in the CCIA based aircraft fleet mix take FAA projections of the national general aviation fleet mix into consideration. **Table 2T** presents the forecast fleet mix for based aircraft at CCIA.

TABLE 2T | CCIA Based Aircraft Fleet Mix

Year	SEP	%	MEP	%	TP	%	Jet	%	H	%	TOTAL
2023	16	35.6%	3	6.7%	16	35.6%	10	22.2%	0	0	45
PROJECTIONS											
2028	17	34.7%	2	4.1%	17	34.7%	12	24.5%	1	2.0%	49
2033	18	34.6%	1	1.9%	18	34.6%	13	25.0%	2	3.8%	52
2043	20	32.8%	0	0.0%	20	32.8%	17	27.9%	4	6.6%	61

SEP – Single Engin Piston; MEP – Multiengine Piston; TP – Turboprop; H - Helicopter

GENERAL AVIATION OPERATIONS FORECAST

General aviation operations include a wide range of activities, from recreational use and flight training to business and corporate uses. General aviation 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. Local operations are generally characterized by training activity. Itinerant operations are those performed by aircraft with a specific origin or destination away from an airport. Typically, itinerant operations increase with business and commercial use because business aircraft are used primarily to transport passengers from one location to another.

Several methods have been employed to develop a reasonable planning envelope. The following sections present several new operations forecasts. Counts from the CCIA ATCT were utilized in this analysis.

Market Share Projections

Market share analysis compares known historical and forecast data points to arrive at a trend for the unknown variable (CCIA operations). The results of each market share projection are presented in **Table 2U**. The first forecast considers the current market share of general aviation (itinerant and local) operations at the airport as compared to the FAA national forecast for operations at towered airports.

In 2023, CCIA accounted for 0.0938 percent of U.S. itinerant general aviation operations and 0 percent of U.S. local general aviation operations. By carrying these current percentages forward through the planning horizon, a constant market share forecast emerges, resulting in 15,500 itinerant and 1,660 local operations by 2043. The constant market share is considered a low range projection, as historical data indicate that CCIA's market share far exceeded each operational category at some point in the previous 20 years.

TABLE 2U | General Aviation Operations Market Share Projections

	GENERAL AVIATION ITINERANT			GENERAL AVIATION LOCAL		
Year	CCIA	U.S.	CCIA Market %	CCIA	U.S.	CCIA Market %
2014	16,547	13,942,761	0.1187%	2,004	11,679,412	0.02%
2015	14,907	13,856,535	0.1076%	1,452	11,679,293	0.01%
2016	14,913	13,930,865	0.1071%	1,338	11,629,923	0.01%
2017	15,846	13,933,523	0.1137%	2,006	11,842,865	0.02%
2018	15,647	14,067,161	0.1112%	2,956	12,510,742	0.02%
2019	15,874	14,385,032	0.1104%	1,233	13,295,230	0.01%
2020	11,460	12,333,442	0.0929%	587	12,366,299	0.00%
2021	12,963	14,108,432	0.0919%	407	13,452,474	0.00%
2022	12,900	14,561,684	0.0886%	454	14,295,966	0.00%
2023	13,686	14,591,327	0.0938%	326	15,281,665	0.00%
Constant Market Share – Low Range						
2028	14,898	15,882,264	0.094%	1,660	16,597,586	0.010%
2033	15,093	16,090,719	0.094%	1,660	16,890,688	0.010%
2043	15,500	16,524,035	0.094%	1,660	17,560,977	0.010%
CAGR	0.62%	N/A	0.000938	8.78%	N/A	N/A
Increasing Market Share – Mid Range						
2028	15,247	15,882,264	0.096%	1,992	16,597,586	0.012%
2033	16,091	16,090,719	0.100%	2,703	16,890,688	0.016%
2043	19,664	16,524,035	0.119%	3,512	17,560,977	0.020%
CAGR	1.83%	N/A	N/A	12.62%	N/A	N/A
Increasing Market Share – High Range						
2028	17,470	15,882,264	0.110%	2,490	16,597,586	0.015%
2033	19,309	16,090,719	0.120%	8,445	16,890,688	0.050%
2043	24,786	16,524,035	0.150%	14,927	17,560,977	0.085%
CAGR	3.01%	N/A	N/A	21.07%	N/A	N/A

CAGR = compound annual growth rate

Sources: U.S. Operations: FAA Aerospace Forecast, 2024-2044; Historical CCIA Operations: CCIA ATCT counts; CCIA Projections: Coffman Associates analysis

A mid-range increasing market share projection was prepared to assimilate previous levels. The mid-range projection takes CCIA's 2043 market share of itinerant general aviation operations to 0.119 percent. CCIA's 2043 market share of local general aviation operations is taken to 0.020 percent. This forecast results in 19,664 itinerant operations and 3,512 local operations by 2043. The results of these mid-range projections are also shown in **Table 2U**.

High range increasing market share projections were also prepared, which consider the potential for operations to grow well beyond the current market share of U.S. general aviation operations. The resulting projections take CCIA's 2043 market shares to 0.15 percent (itinerant general aviation) and 0.085 percent (local general aviation), yielding a forecast of 24,786 itinerant general aviation and 14,927 local general aviation operations, respectively. The results of the high range projections are shown in **Table 2U**.

Statewide TAF Growth Rate Forecast

FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, provides a method for estimating future operations at airports by applying the statewide TAF growth rate. While this method is typically used for non-towered airports, it is useful for checking the reasonableness of other forecasts and can be the selected forecast if determined to be the most reasonable. For all NPIAS

airports in Texas, the FAA projects an annual growth rate of 0.61 percent for itinerant general aviation operations and 0.67 percent for local general aviation operations in the state. Utilizing these growth rates to form projections takes CCIA's 2043 operations to 15,448 (itinerant general aviation) and 372 (local general aviation).

Regression Analysis

Several forecasts were prepared utilizing historical operations data and the regression model. Independent variables examined included national general aviation operations, population, employment, GRP, and time series regressions. Because none of the regressions produced a correlation value over 0.90, the regression forecasts have been excluded from consideration.

General Aviation Operations Forecast Summary

Table 2V summarizes the projections prepared for itinerant and local general aviation operations at CCIA. Operations at CCIA have historically experienced some fluctuation with a generally downward trend, especially for local operations which have fallen to less than 1,000 per year for the last several years. This is the direct result in having no dedicated aviation pilot training program, and other airports that do are not utilizing CCIA for training (touch-and-go operations). This condition could change substantively if a single flight school were to engage at CCIA. Historically, the airport has had as many as 15,000 local operations (recorded in 2000), but local operations have generally been nearer to 5,000 annually since that time. Itinerant operations have been more stable, although generally falling from just above 27,000 in 2000 to 13,686 in 2023. Corpus Christi is a slow but growing community, and there is a high likelihood that itinerant operations will return to previous heights.

TABLE 2V | General Aviation Operations Forecast Summary

Projection	2023	2028	2033	2043	CAGR 2023-2043
Itinerant General Aviation					
Constant Market - Low Range	13,686	14,898	15,093	15,500	0.62%
Increasing Market - Mid Range	**13,686**	**15,247**	**16,091**	**19,664**	**1.83%**
Increasing Market - High Range	13,686	17,470	19,309	24,786	3.01%
Texas TAF Growth Rate	13,686	14,107	14,541	15,448	0.61%
CCIA FAA TAF	13,361	16,063	16,063	16,063	0.93%
Local General Aviation					
Constant Market - Low Range	326	1,660	1,689	1,756	8.78%
Increasing Market - Mid Range	**326**	**1,992**	**2,703**	**3,512**	**12.62%**
Increasing Market - High Range	326	2,490	8,445	14,927	21.07%
Texas TAF Growth Rate	326	337	349	372	0.67%
CCIA FAA TAF	504	2,230	2,230	2,230	7.72%

Boldface indicates selected forecast. CAGR = compound annual growth rate

Source: Coffman Associates analysis

The selected forecasts take a realistic approach to growth and anticipate moderate operations growth levels over the planning period. **Exhibit 2L** graphically represents the operations projections that comprise the planning envelope with the selected forecasts for both itinerant and local general aviation operations.

Military Operations Forecast

Military aircraft can and do utilize civilian airports across the country. CCIA frequently experiences activity by military aircraft, especially training operations due to the close proximity of military training operations/bases. Forecasts of military activity are inherently difficult to predict because of the national security nature of their operations and the fact that their missions can change without notice; thus, it is typical for the FAA to use a flatline forecast for military operations. In 2023, the ATCT reported 31,481 itinerant military operations and 8,135 local military operations. Since 2000, military operations have averaged 19,765 itinerant and 34,000 local operations. For CCIA, the FAA TAF projects itinerant and local military operations to remain static at 31,675 and 14,446, respectively, over the forecast period. These TAF estimates will be utilized for the operations forecast for the purposes of this study but will likely be exceeded at points during the period as has historically been the case.

TOTAL OPERATIONS FORECAST SUMMARY

Table 2W presents a summary of the selected operations forecasts. The summary includes the airline segment (commercial aircraft with seating capacities of 60 or more), other commercial (commercial aircraft with 59 or fewer passenger seats), general aviation (any non-commercial/non-military operation), and military operations.

TABLE 2W | Total Operations Forecast Summary

Year	ITINERANT					LOCAL			Total Operations
	Airline	Other Commercial	General Aviation	Military	Total	General Aviation	Military	Total	
2023	10,916	4,913	13,686	31,481	60,996	326	8,135	8,461	69,457
2028	11,000	5,165	15,250	31,675	63,090	2,000	14,500	16,500	79,590
2033	11,240	5,430	16,100	31,675	64,445	2,700	14,500	17,200	81,645
2043	11,720	6,000	19,700	31,675	69,095	3,500	14,500	18,000	87,095
CAGR	0.36%	1.00%	1.84%	0.03%	0.63%	12.60%	2.93%	3.85%	1.14%

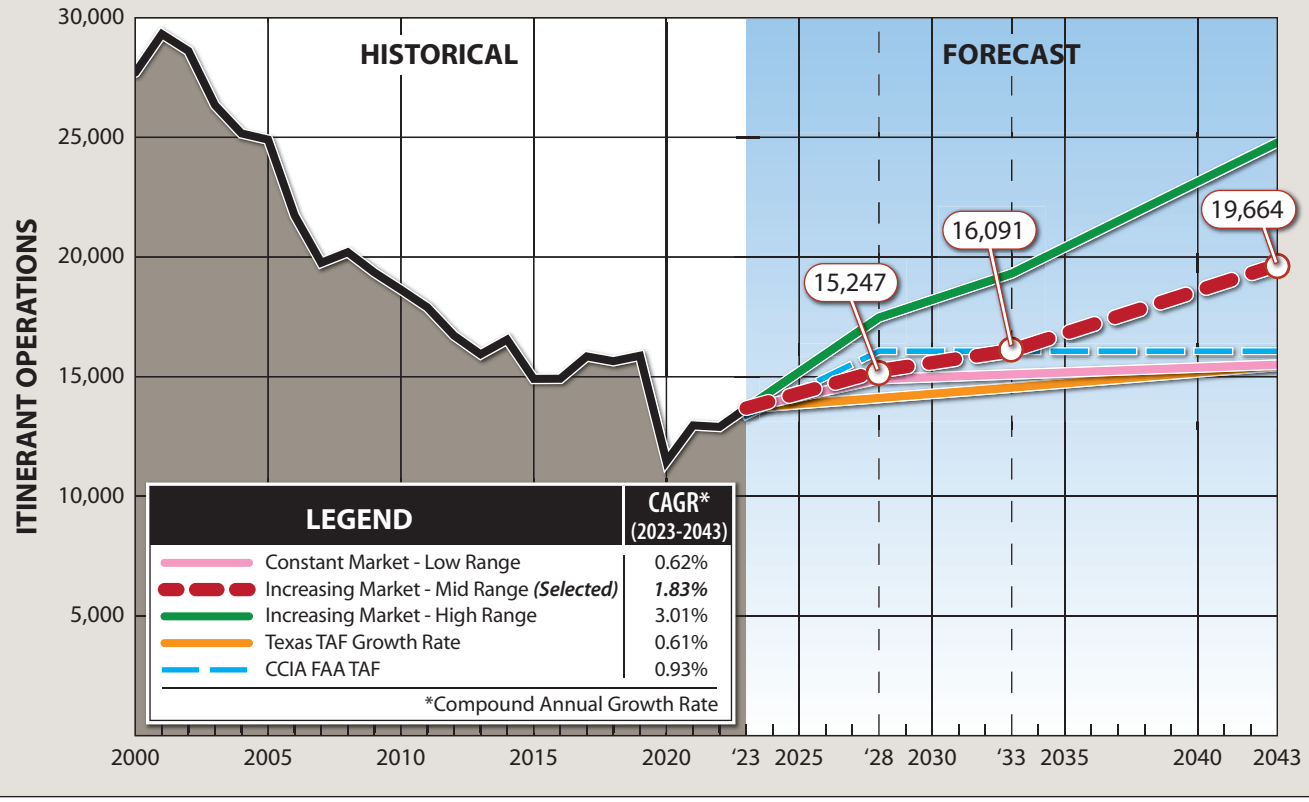
CAGR = compound annual growth rate

Sources: Base year counts from CCIA ATCT; forecasts from Coffman Associates analysis

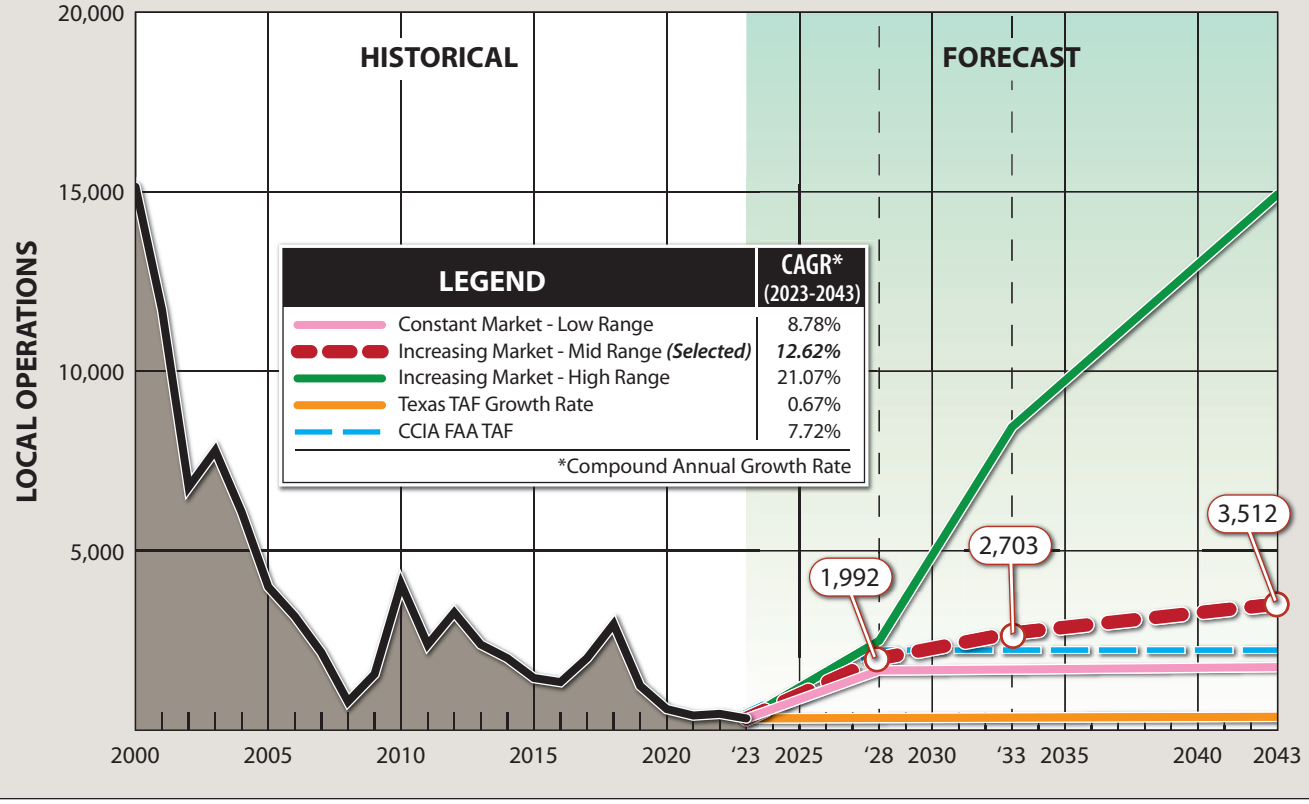
TOTAL OPERATIONS PEAKING CHARACTERISTICS

Similar to the process for identifying peaking characteristics for commercial passenger activity, the same peaking characteristics have been evaluated for total airport operations. Tower operations data provide an understanding of the peak operational periods for the airport. Over the last ten years, the peak month has averaged 10.2 percent of annual operations. The design day is the peak month average divided by the number of days in the peak month. The busy day during the average week of the peak month was 161.6 percent more than the design day as the military itinerant and training operations are generally concentrated on specific days, creating a much higher busy day than is typical at civilian airport. The design hour averaged 38.0 percent of design day operations; again, the military typically concentrates

ITINERANT GENERAL AVIATION OPERATIONS FORECASTS



LOCAL GENERAL AVIATION OPERATIONS FORECASTS



their operations during training days and within small time windows creating a higher peak hour than commonly experienced at most civilian airports. **Table 2Y** summarizes the combined peaking operational characteristics for the airport.

TABLE 2Y | Peaking Characteristics

Peak Period	2023	2028	2033	2043
Annual Operations	69,457	79,590	81,645	87,095
Peak Month	7,760	8,118	8,328	8,884
Busy Day	418	439	450	480
Design Day	259	271	278	296
Design Hour	99	102	103	105

Source: Coffman Associates Analysis

FORECAST SUMMARY

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2M** presents a summary of the aviation forecasts prepared in this chapter. The base year for these forecasts is 2023, with a 20-year planning horizon to 2043. The primary aviation demand indicators are based aircraft and operations. Passenger enplanements are forecast to increase from 348,702 in 2023 to 540,000 by 2043 (2.21 percent CAGR). Based aircraft are forecast to increase from 45 in 2023 to 61 by 2043 (1.53 percent CAGR). Total operations are forecast to increase from 69,457 in 2023 to 87,095 by 2043 (1.14 percent CAGR).

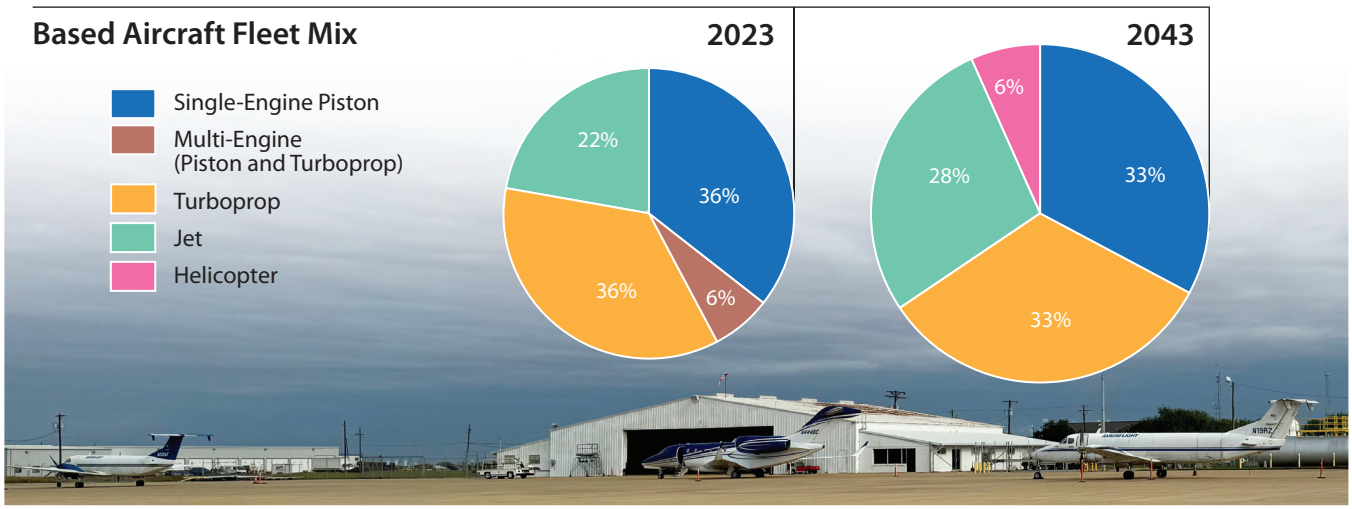
Projections of aviation demand will be influenced by unforeseen factors and events in the future; therefore, it is not reasonable to assume that future demand will follow the exact projection line, but forecasts of aviation demand tend to fall within the planning envelope over time. The forecasts developed for this study 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 slowed. Likewise, if demand exceeds these forecasts, facility construction can be accelerated.

FORECAST COMPARISON TO THE TAF

The FAA reviews the forecasts presented in this aviation planning study for comparison to the *Terminal Area Forecast*. The forecasts are considered consistent with the TAF if they meet 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; and
- 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 (NPIAS).*

	BASE	FORECAST		
	2023	2028	2033	2043
PASSENGER ENPLANEMENTS				
	348,702	**417,500**	**465,500**	**540,000**
ANNUAL OPERATIONS				
Itinerant				
Airline	10,916	11,000	11,240	11,720
Other Air Taxi	4,913	5,165	5,430	6,000
General Aviation	13,686	15,250	16,100	19,700
Military	31,481	31,675	31,675	31,675
Subtotal	**60,996**	**63,090**	**64,445**	**69,095**
Local				
General Aviation	326	2,000	2,700	3,500
Military	8,135	14,500	14,500	14,500
Subtotal	**8,461**	**16,500**	**17,200**	**18,000**
Total Operations	**69,457**	**79,590**	**81,645**	**87,095**
TOTAL PEAKING				
Annual Operations	**69,457**	**79,590**	**81,645**	**87,095**
Peak Month	7,760	8,118	8,328	8,884
Busy Day	418	439	450	480
Design Day	259	271	278	296
Design Hour	99	102	103	105
BASED AIRCRAFT				
Single-Engine Piston	16	17	18	20
Multi-Engine (Piston and Turboprop)	3	2	1	0
Turboprop	16	17	18	20
Jet	10	12	13	17
Helicopter	0	1	2	4
Total Based Aircraft	**45**	**49**	**52**	**61**



If the forecasts exceed these parameters, they may be sent to FAA Headquarters in Washington, D.C., for further review. **Table 2Z** presents the direct comparison of the master planning forecasts with the TAF that was published in January 2024.

TABLE 2Z | Forecast Comparison to the *Terminal Area Forecast*

	BASE YEAR 2023	FORECAST 2028	2033	2043
Enplanements				
Master Plan Forecast	348,702	417,500	465,500	540,000
2024 CCIA TAF	342,543	403,366	423,134	466,566
% Difference	1.80%	3.50%	10.01%	15.74%
Operations				
Master Plan Forecast	69,457	79,590	81,645	87,095
2024 CCIA TAF	75,485	83,332	84,097	85,755
% Difference	-7.99%	-4.49%	-2.92%	1.56%
Based Aircraft				
Master Plan Forecast	45	49	52	61
2024 CCIA TAF	54	54	54	54
% Difference	-16.67%	-9.26%	-3.70%	12.96%

TAF = Terminal Area Forecast (January 2024)

The base year data for the TAF is incorrect for most categories. Most significantly, the TAF is 16.67 percent higher in reporting of based aircraft than the actual numbers presented in this study. Operations in the TAF were 6.74 percent higher than actual ATCT count for calendar year 2023. Passenger enplanements, however, were actually higher than those presented in the TAF. These differences are not uncommon due to the TAF reporting fiscal year and this study presenting calendar year information. As shown in the table, all forecasts are within TAF tolerances in the five- and 10-year planning horizons.

AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed during landing operations) 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 based primarily on the characteristics of the aircraft that are currently using, or are expected to use, an airport. The *critical design aircraft* is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a group of aircraft with similar characteristics. The design aircraft is classified by three parameters: aircraft approach category (AAC), airplane design group (ADG), and taxiway design group (TDG). FAA AC 150/5300-13A, *Airport Design*, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 2N**.

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)

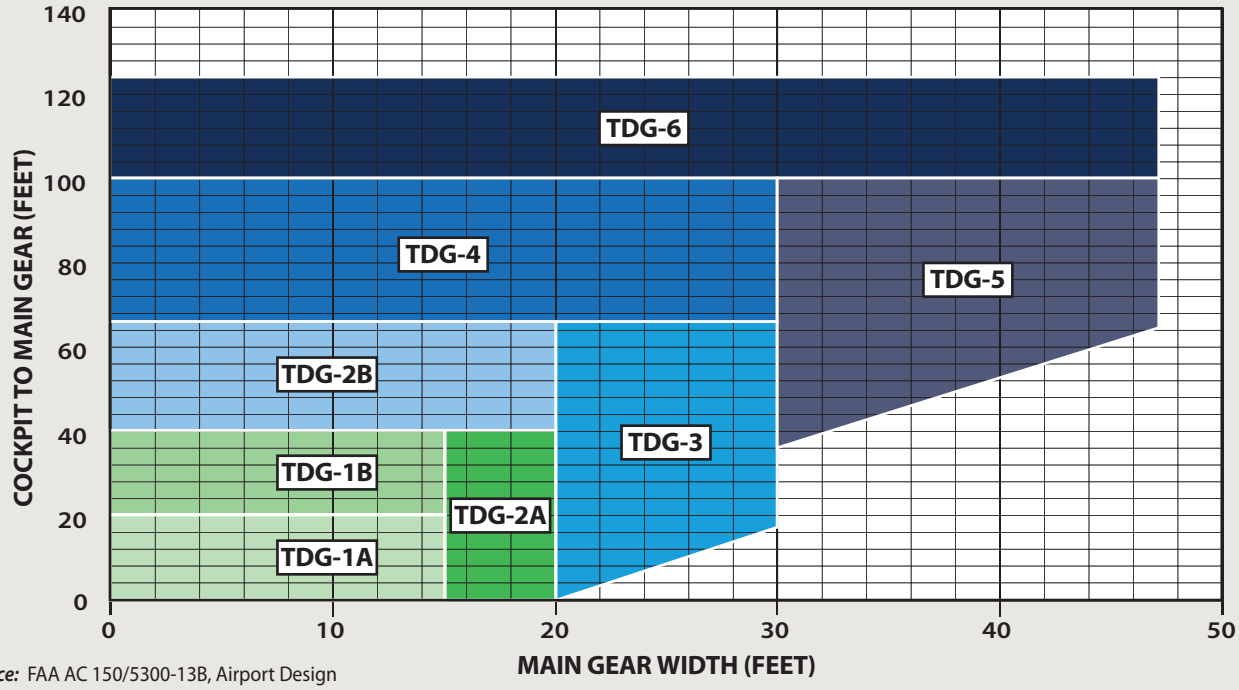
Group #	Tail Height (ft)	Wingspan (ft)
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

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

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 the stall speed (V_{SO}) at the maximum certified landing weight. V_{REF}, V_{SO}, and the maximum certified landing weight are those values established for the aircraft by the certification authority of the country of registry (the FAA in the United States).

The AAC refers to the approach speed of an aircraft in landing configuration and is depicted by a letter (A through E). The higher the approach speed (operational characteristic), the more restrictive the applicable design standards. 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 that relates to aircraft wingspan or tail height (physical characteristics). When the aircraft wingspan and tail height fall in different groups, the higher (more restrictive) group is used. The ADG influences design standards for 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 certain undercarriage dimensions of the aircraft. Both outer-to-outer main gear width (MGW) and cockpit-to-main gear (CMG) distances are used in the classification of an aircraft. The TDG is depicted by an alphanumeric system: 1A, 1B, 2, 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 design and dimensions, and (in some cases) the separation distance between parallel taxiways/taxilanes. Other taxiway elements – such as the taxiway safety area (TSA), taxiway 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 2P summarizes the classification 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.

AIRPORT AND RUNWAY CLASSIFICATIONS

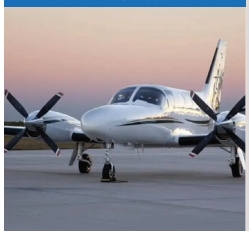
Airport and runway classifications, along with the aircraft classifications defined previously, are used to determine the appropriate FAA design standards to which the airfield facilities should be designed and built.

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 design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speeds (operational characteristic). The

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

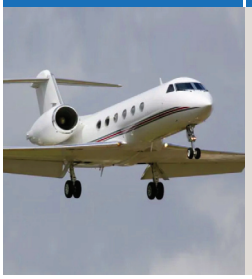
B-I	Aircraft	TDG
	• Eclipse 500	1A
	• Beech Baron 55/58	1A
	• **Beech King Air 100**	**1A**
	• Cessna 421	2A
	• Cessna Citation M2 (525)	1A
	• Cessna Citation 1(500)	1A
	• Embraer Phenom 100	1A

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.

second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristic), whichever is more restrictive. The third component relates to the available instrument approach visibility minimums, expressed by RVR values in feet of 1,200 (1/8-mile), 1,600 (1/4-mile), 2,400 (1/2-mile), 4,000 (3/4-mile), and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. A runway designed for visual approaches only will use "VIS" in place of a numerical value for the RVR.

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

Departure Reference Code (DPRC): The DPRC is a code that signifies the current operational capabilities of a runway and associated parallel taxiway regarding takeoff operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under meteorological conditions with no special operating conditions. The DPRC is like the APRC but is composed of only the AAC 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 runway design code (RDC) minus the third component (visibility) 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 CCIA identifies the ARC as C-III.

CRITICAL DESIGN AIRCRAFT

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 are currently using, or are expected to use, the airport. The critical design aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a group of aircraft with similar characteristics defined by the three parameters: AAC, ADG, and TDG.

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 a lower safety margin; however, it is not the usual practice to base the design of an airport on an aircraft that uses the airport infrequently.

The design 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 importance because the design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short-term development does not preclude the reasonable long-range potential needs of the airport.

According to FAA AC 150/5300-13A, *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 design aircraft must be realistic in nature and supported by current data and realistic projections.

For airports like CCIA that accommodate a significant number of military operations, it is important to account for the impact of these aircraft on facility planning; however, according to FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, planned projects based on the needs of military aircraft are not eligible for FAA funding (both Airport Improvement Program [AIP] and passenger facility charge [PFC] funding). In these cases, a critical design aircraft for AIP or PFC eligibility can be identified separately from a critical design aircraft for airfield facility planning.

AIRPORT DESIGN AIRCRAFT

There are three elements for classifying the airport design aircraft: AAC, ADG, and TDG. The AAC and ADG are examined first, followed by the TDG.

Existing Critical Design Aircraft

Exhibit 2Q presents the Traffic Flow Management System Counts (TFMSC) operational mix at the airport for turboprops and jets since 2014. It should be noted that TFMSC data do not indicate runway usage; however, based on a historical understanding of airport operations, it is generally understood that Runway 13-31 serves as the primary runway and accommodates approximately 70 percent of all operations, including commercial and military aircraft. Runway 18-36 serves as a secondary runway for commercial, military, and general aviation aircraft.

According to the TFMSC data, operations at CCIA within AAC D and ADG III have exceeded the 500 operations threshold regularly since 2014, including in 2020 and 2021, in which there was a decline in operations due to the COVID-19 pandemic. AAC D aircraft – including aircraft such as the Gulfstream 450, 500, and 600, as well as the Bombardier CRJ 900/1000, Boeing 737-800 and 737-900 – have exceeded the threshold of 500 annual operations since 2014.

ADG III civilian aircraft – including the Bombardier CRJ900/1000, Embraer EMB 170/175/190, Boeing 737-700/800/900 and Airbus A319/320/321 – have historically exceeded the threshold of 500 annual operations. In 2023, ADG III aircraft conducted 9,274 operations.

CCIA's primary runway current critical design civilian aircraft is represented by the Boeing 737-800 and 737-900, which are AAC D and ADG III aircraft and conducted a total of 900 operations in 2023.

The secondary runway, Runway 18-36, has historically also been planned to meet ARC D-III design standards, which coincides with historical planning for the primary runway. It is important for CCIA to maintain this runway to commercial service design standards to ensure safe operations during higher crosswind conditions and provide a level of redundancy to the airfield. Additionally, historical analysis has indicated that the secondary runway is utilized approximately 30 percent of the time; therefore, Runway 18-36 should also be designed to ARC D-III design standards.

ARC	Aircraft	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
A-I	Cirrus Vision Jet	0	0	2	0	4	2	14	12	18	28
	Kodiak Quest	0	0	0	0	2	0	2	2	0	0
	Lancair Evolution/Legacy	0	0	4	0	4	0	2	2	0	0
	Piper Malibu/Meridian	44	28	44	112	94	50	80	68	106	92
	Socata TBM 7/850/900	508	196	54	60	68	128	140	134	138	106
	Total	552	224	104	172	172	180	238	218	262	226
A-II	CASA Aviocar	26	14	4	4	0	0	0	0	0	0
	Cessna Caravan	238	44	36	46	114	44	28	42	34	26
	De Havilland Twin Otter	2	0	0	10	2	0	4	0	0	0
	Pilatus PC-12	874	1,692	2,276	2,026	2,332	2,436	2,556	3,334	3,768	3,868
	Total	1,140	1,750	2,316	2,086	2,448	2,480	2,588	3,376	3,802	3,894
A-III	De Havilland Dash 7	0	2	0	0	2	4	10	0	0	0
	Total	0	2	0	0	2	4	10	0	0	0
B-I	Aero Commander 690	22	0	14	2	12	6	2	6	6	0
	Beech 99 Airliner	52	36	32	12	16	2	8	12	4	10
	Beechjet 400	444	244	200	382	672	520	696	560	416	454
	Cessna 425 Corsair	26	12	56	54	48	20	18	22	18	26
	Cessna 526 Jet Trainer	0	6	0	4	0	0	0	0	0	0
	Challenger 300	86	132	0	134	136	144	70	168	208	322
	Citation CJ1	188	176	118	378	438	486	446	400	330	362
	Citation I/SP	42	48	38	52	48	82	76	48	30	12
	Citation M2	0	0	0	0	42	16	14	44	52	52
	Citation Mustang	58	42	38	36	38	20	16	28	22	8
	Eclipse 400/500	22	16	38	40	32	26	26	26	18	18
	Falcon 10	0	0	0	0	188	196	0	0	0	0
	Honda Jet	0	2	0	6	6	10	18	30	52	18
	King Air 90/100	0	0	0	0	0	0	0	2,612	2,388	0
	Learjet 31	34	28	20	22	24	22	4	32	16	6
	Mitsubishi MU-2	0	0	0	34	76	120	18	4	6	12
	Phenom 100	316	234	326	560	498	562	140	176	158	148
	Piper Cheyenne	84	88	32	14	20	6	14	6	2	2
	Premier 1	34	32	8	18	46	32	34	30	32	26
	T-6 Texan	1,086	978	1,860	1,810	2,552	2,268	2,322	1,774	1,234	1,088
	Mitsubishi MU-2	28	22	14	0	0	0	0	0	0	0
	Total	2,522	2,096	2,794	3,558	4,892	4,538	3,922	5,978	4,992	2,564
B-II	BAe Jetstream 31	282	252	206	182	172	254	58	30	0	0
	Beech 1900	600	930	930	908	932	828	650	730	806	734
	Cessna Conquest	252	202	300	162	14	8	8	12	50	24
	Citation CJ2/CJ3/CJ4	224	180	232	172	130	136	122	180	164	192
	Citation II/SP/Latitude	230	252	160	184	178	84	82	218	262	290
	Citation V/Sovereign	404	332	388	400	340	358	254	368	384	364
	Citation XLS	210	226	208	218	150	166	100	178	148	120
	Dornier 328	16	24	8	8	0	6	6	4	2	2
	Embraer 500/450 Legacy	0	2	10	12	20	24	16	54	54	66
	Embraer EMB-110/120	0	0	0	4	2	6	0	0	0	0
	Gulfstream 100/150	40	30	0	14	16	22	64	138	114	102
	King Air 200/300/350	2,662	2,482	2,600	2,254	1,858	1,802	1,402	1,670	1,604	1,752
	King Air 90/100	1,712	1,550	1,972	2,616	2,670	3,060	2,918	0	0	2,338
	King Air F90	172	84	48	38	42	14	6	4	16	22
	Phenom 300	38	56	68	156	116	120	96	178	122	128
	Pilatus PC-24	0	0	0	0	0	6	8	6	18	4
	Shorts 330/360	0	0	0	4	0	2	0	0	0	0
	Swearingen merlin	164	40	42	50	174	268	100	46	54	72
	Total	7,006	6,642	7,172	7,382	6,814	7,164	5,890	3,816	3,798	6,210

ARC	Aircraft	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
B-III	Bombardier Global 7500	0	0	0	0	0	0	0	8	6	4
	CASA 235	40	26	64	50	448	486	420	484	468	460
	Convair CV Series	0	0	0	2	0	0	0	0	0	2
	De Havilland Dash 8 Series	8	6	0	0	0	0	2	4	0	2
	Falcon 7X/8X	8	0	2	12	6	6	10	10	0	8
	Total	56	32	66	64	454	492	432	506	474	476
B-IV	Boeing C-17	0	0	6	28	2	0	0	6	0	10
	C-130 Hercules	64	10	40	12	34	38	34	16	14	12
	Total	64	10	46	40	36	38	34	22	14	22
C-I	BAe HS 125 Series	14	20	14	6	2	6	0	0	4	0
	BAe Systems Hawk	1,428	1,414	1,504	910	1,084	1,382	1,306	892	642	754
	F/A-18 Hornet	6	10	18	4	18	10	2	4	2	2
	Learjet 20 Series	4	0	0	4	0	0	0	0	2	0
	Learjet 35/36	22	32	30	50	38	22	34	42	32	6
	Learjet 40 Series	276	194	166	142	158	140	154	196	230	188
	Learjet 50 Series	40	44	74	38	28	14	6	6	6	4
	Learjet 60 Series	150	142	60	98	122	86	40	72	80	72
	Piaggio Avanti	2	6	22	6	12	6	26	20	10	2
	Rockwell Sabre 40/60	10	6	6	2	2	4	2	0	2	0
	Westwind II	200	134	124	120	58	76	26	28	38	30
	Total	2,152	2,002	2,018	1,380	1,522	1,746	1,596	1,260	1,048	1,058
C-II	Bombardier CRJ 100/200/700	0	0	588	494	0	0	0	0	0	692
	Challenger 300	0	0	94	0	0	0	0	0	0	0
	Challenger 600/604	86	50	32	54	42	58	32	80	76	60
	Citation III/VI	224	190	108	36	70	68	54	80	86	124
	Citation Longitude	0	0	0	2	0	6	4	16	8	28
	Citation X	88	80	162	122	176	178	112	170	236	148
	Embraer ERJ-135/140/145	6,982	6,686	2,966	2,132	2,402	3,240	2,944	3,608	4,306	1,760
	Fairchild A-10	0	2	0	0	0	0	0	0	0	0
	Falcon 20/50	402	204	196	154	0	0	96	0	0	42
	Falcon 2000	46	64	60	54	30	18	42	60	36	40
	Falcon 900	60	66	82	68	46	38	20	26	30	10
	Gulfstream 100/150	0	0	20	0	0	0	0	0	0	0
	Gulfstream 200	24	22	12	10	18	30	20	20	14	14
	Gulfstream 280	2	6	12	12	20	32	16	26	40	30
	Gulfstream G-III	0	2	0	2	0	0	0	0	0	2
	Hawker 1000	6	2	4	8	4	0	2	6	4	2
	Hawker 4000	6	2	6	2	2	4	0	6	0	2
	Hawker 800 (Formerly Bae-125-800)	212	128	148	78	94	142	48	54	78	52
	Learjet 70 Series	2	20	26	24	46	44	24	54	56	58
	Saab 340	0	2	0	0	0	2	2	0	0	0
	Total	8,140	7,526	4,516	3,252	2,950	3,860	3,416	4,206	4,970	3,064
C-III	Airbus A319/320/321	1,036	2	0	0	106	70	0	2	4	22
	BAe 146	0	0	0	0	0	0	0	0	2	0
	Boeing 717/727	0	0	0	0	0	0	0	0	2	0
	Boeing 737 (200 thru 700 series)	2,814	2,808	2,856	2,760	2,750	2,666	1,618	1,448	1,848	1,866
	Bombardier CS100	0	2	0	0	0	0	0	0	0	0
	Bombardier Global 5000	6	6	4	4	0	0	0	4	4	6
	Bombardier Global Express	4	4	4	8	2	8	6	12	8	38
	Embraer EMB 170/175/190	74	42	1,566	1,202	2,146	3,210	2,232	4,026	1,992	4,818
	Gulfstream 500/600	26	0	0	0	0	0	0	0	50	0
	Mcdonnell Douglas DC-9	0	18	2	2	0	0	0	0	0	0
	Mcdonnell Douglas MD-81/82/87/90	6	2	28	38	0	0	0	0	0	0
	P-3 Orion	36	14	50	92	108	34	12	34	20	8
	Saab 2000	4	0	0	2	2	6	0	2	2	8
	Total	4,006	2,898	4,510	4,108	5,114	5,994	3,868	5,528	3,932	6,766

ARC	Aircraft	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
C-IV	Boeing 707	10	0	2	0	4	0	0	2	0	0
	Boeing 757-200	4	2	6	6	2	2	0	2	2	8
	Boeing 767-200/300	4	0	0	0	0	0	0	0	0	0
	Boeing E-6 Mercury	4	0	0	2	2	0	0	0	0	0
	Total	22	2	8	8	8	2	0	4	2	8
C-V	Airbus A330-200/300 Series	0	2	0	0	0	0	0	0	0	0
	Total	0	2	0	0	0	0	0	0	0	0
C-VI	C-5 Galaxy	0	0	0	2	0	2	0	0	0	0
	Total	0	0	0	2	0	2	0	0	0	0
D-I	F-16 Falcon/Viper	2	2	4	0	0	0	0	2	0	0
	F-22 Raptor	0	0	0	2	0	0	2	0	2	0
	T-38 Talon	44	26	26	18	18	16	8	16	6	4
	Total	46	28	30	20	18	16	10	18	8	4
D-II	Bombardier CRJ 100/200/700	2,356	1,340	0	0	414	336	304	562	812	0
	Gulfstream 450	44	40	40	58	44	48	30	88	72	44
	Gulfstream G-IV	0	0	0	2	0	0	0	0	0	0
	Total	2,400	1,380	40	60	458	384	334	650	884	44
D-III	Airbus A319/320/321	0	0	2	4	0	0	0	0	0	0
	Boeing 737 800/900	42	56	68	74	176	144	216	244	590	610
	Boeing 737 Max 8/9	0	0	0	0	8	2	0	134	140	290
	Bombardier CRJ 900/1000	2	1,872	3,180	3,854	3,234	2,210	418	12	738	1,084
	Gulfstream 500/600	0	26	32	28	32	24	46	48	0	48
	Mcdonnell Douglas MD-83/88	30	24	46	98	0	0	0	0	0	0
	Total	74	1,978	3,328	4,058	3,450	2,380	680	438	1,468	2,032
D-IV	Boeing 757-300	2	0	0	0	0	0	0	0	0	0
	Boeing 767-200/300	0	0	0	0	0	8	0	0	0	0
	Total	2	0	0	0	0	8	0	0	0	0
D-V	Boeing 747 All Series	0	0	0	2	0	0	0	0	0	0
	Boeing 787-8/9/10	0	0	0	0	0	0	2	0	0	0
	Total	0	0	0	2	0	0	2	0	0	0
D-VI	Airbus A350/360	2	2	0	0	0	2	0	0	0	0
	Total	2	2	0	0	0	2	0	0	0	0
	F-15 Eagle	0	0	8	0	4	0	0	2	0	0
	Total	0	0	8	0	4	0	0	2	0	0

Source: TFMSC 2014-2023 - Data normalized annually

AIRPORT REFERENCE CODE (ARC) SUMMARY

ARC CODE	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
A-I	552	224	104	172	172	180	238	218	262	226
A-II	1,140	1,750	2,316	2,086	2,448	2,480	2,588	3,376	3,802	3,894
A-III	0	2	0	0	2	4	10	0	0	0
B-I	2,522	2,096	2,794	3,558	4,892	4,538	3,922	5,978	4,992	2,564
B-II	7,006	6,642	7,172	7,382	6,814	7,164	5,890	3,816	3,798	6,210
B-III	56	32	66	64	454	492	432	506	474	476
B-IV	64	10	46	40	36	38	34	22	14	22
C-I	2,152	2,002	2,018	1,380	1,522	1,746	1,596	1,260	1,048	1,058
C-II	8,140	7,526	4,516	3,252	2,950	3,860	3,416	4,206	4,970	3,064
C-III	4,006	2,898	4,510	4,108	5,114	5,994	3,868	5,528	3,932	6,766
C-IV	22	2	8	8	8	2	0	4	2	8
C-V	0	2	0	0	0	0	0	0	0	0
C-VI	0	0	0	2	0	2	0	0	0	0
D-I	46	28	30	20	18	16	10	18	8	4
D-II	2,400	1,380	40	60	458	384	334	650	884	44
D-III	74	1,978	3,328	4,058	3,450	2,380	680	438	1,468	2,032
D-IV	2	0	0	0	0	8	0	0	0	0
D-V	0	0	0	2	0	0	2	0	0	0
D-VI	2	2	0	0	0	2	0	0	0	0
E-I	0	0	8	0	4	0	0	2	0	0
Total	**28,184**	**26,574**	**26,956**	**26,192**	**28,342**	**29,290**	**23,020**	**26,022**	**25,654**	**26,368**

Approach Category

AC	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
A	1,692	1,976	2,420	2,258	2,622	2,664	2,836	3,594	4,064	4,120
B	9,648	8,780	10,078	11,044	12,196	12,232	10,278	10,322	9,278	9,272
C	14,320	12,430	11,052	8,750	9,594	11,604	8,880	10,998	9,952	10,896
D	2,524	3,388	3,398	4,140	3,926	2,790	1,026	1,106	2,360	2,080
E	0	0	8	0	4	0	0	2	0	0
Total	**28,184**	**26,574**	**26,956**	**26,192**	**28,342**	**29,290**	**23,020**	**26,022**	**25,654**	**26,368**

Design Group

DG	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
I	5,272	4,350	4,954	5,130	6,608	6,480	5,766	7,476	6,310	3,852
II	18,686	17,298	14,044	12,780	12,670	13,888	12,228	12,048	13,454	13,212
III	4,136	4,910	7,904	8,230	9,020	8,870	4,990	6,472	5,874	9,274
IV	88	12	54	48	44	48	34	26	16	30
V	0	2	0	2	0	0	2	0	0	0
VI	2	2	0	2	0	4	0	0	0	0
Total	**28,184**	**26,574**	**26,956**	**26,192**	**28,342**	**29,290**	**23,020**	**26,022**	**25,654**	**26,368**

Ultimate Critical Design Aircraft

It is not unusual for an airport to transition from one critical aircraft to another. **Table 2AA** presents the forecast operational fleet mix for jets and turboprops by AAC and ADG. In 2023, there were 26,368 turboprop and jet operations, of which 41.3 percent (10,896) were by aircraft in AAC C and 7.9 percent (2,080) were by aircraft in AAC D. The total operations fleet mix forecast was previously presented on **Exhibit 2M**. Operations by turboprops and jets in ACC C and D are forecast to maintain their current percentage of the whole (41.3 percent for ACC C and 7.9 percent for ACC D). Because activity by these types of aircraft is projected to grow over the next 20 years, the total number of operations in AAC C and D is also projected to grow.

The commercial enplanement sections of this chapter discuss the possibility of the fleet mix transitioning to include aircraft with larger seating capacities, up to and including the Airbus A319/A320/A321 and the Boeing 737 series, both groupings/families of aircraft are within the D-III classification.

TABLE 2AA | Jet and Turboprop Operations Forecast by Design Category

HISTORICAL JET & TURBOPROP OPERATIONS[1]			FORECAST JET & TURBOPROP OPERATIONS[1]			FORECAST MIX PERCENT		
Design Categories	Number of Operations	Percent	Short Term	Inter. Term	Long Term	Short Term %	Inter. Term %	Long Term %
AAC A	4,120	15.6%	4,961	5,093	5,437	15.6%	15.6%	15.6%
AAC B	9,272	35.2%	11,194	11,494	12,267	35.2%	35.2%	35.2%
AAC C	10,896	41.3%	13,133	13,484	14,393	41.3%	41.3%	41.3%
AAC D	2,080	7.9%	2,512	2,579	2,753	7.9%	7.9%	7.9%
AAC E	0	0.0%	0	0	0	0.0%	0.0%	0.0%
Total AAC	**26,368**	**100.0%**	**31,800**	**32,650**	**34,850**	**100.0%**	**100.0%**	**100.0%**
ADG I	3,852	14.6%	4,646	4,770	5,091	14.6%	14.6%	14.6%
ADG II	13,212	50.1%	15,934	16,360	17,462	50.1%	50.1%	50.1%
ADG III	9,274	35.2%	11,185	11,483	12,257	35.2%	35.2%	35.2%
ADG IV	30	0.1%	36	37	40	0.1%	0.1%	0.1%
ADG V	0	0.0%	0	0	0	0.0%	0.0%	0.0%
Total ADG	**26,368**	**100.0%**	**31,800**	**32,650**	**34,850**	**100.0%**	**100.0%**	**100.0%**

AAC = aircraft approach category
ADG = airplane design group

Source: [1] Traffic Flow Management System Count (TFMSC) FAA activity database

The ultimate civilian passenger airline critical design aircraft for the primary and crosswind runways at CCIA should consider the possibility of each of these aircraft (Airbus A319/320 and Boeing 737-800/900/MAX) in its future design; however, the Boeing 737-800/900 is the most demanding civilian aircraft that conducted over 500 annual operations in 2023. As such, the Boeing 737-800/900 is considered the existing critical design aircraft. For the purposes of this study, the ultimate design aircraft to be considered will be the Boeing 757 projected to operate under UPS cargo having at least one daily departure with increased operations during peak seasonal periods. This projection was supported via the report completed by Hubpoint and is an appendix to this study. The Hubpoint projection considers 757 aircraft operations exceeding 500 by the long term of the planning horizon. The Boeing 757 is a C-IV aircraft classification. As a result, the ultimate critical aircraft designation will be a combination of the D-III Boeing Max and the C-IV Boeing 757 resulting in an ultimate D-IV planning standard.

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 when no special operating procedures are necessary. Essentially, the APRC and DPRC describe the current conditions at an airport in runway classification terms when considering the parallel taxiway.

Taxiway B for Runway 13-31 is located more than 600 feet from the runway (centerline to centerline) at the nearest point. The runway is equipped with instrument landing system (ILS) and GPS approaches providing minimums down to ½-mile visibility, resulting in an APRC of D/VI/2400 and a DPRC of D/VI.

Runway 18-36 is separated from parallel Taxiway A also by more than 600 feet at its nearest point and has published instrument approaches to both ends offing as low as ½-mile visibility minimums; therefore, its APRC is D/VI/2400 and its DPRC is D/VI.

CRITICAL AIRCRAFT SUMMARY

Table 2BB summarizes the current and future runway classifications.

Table 2BB | Exiting and Ultimate Runway Classifications

	Runway 13-31 (Existing/Ultimate)	Runway 18-36 (Existing/Ultimate)
Airport Reference Code (ARC)	D-III	D-III
Critical Aircraft (Typ.)	Boeing 737-800/900	Boeing 757/Boeing 737 Max
Runway Design Code (RDC)	D-III-2400	D-IV-2400
Taxiway Design Group (TDG)	TDG 3	TDG 3
Approach Reference Code (APRC)	D/VI/2400	D/VI/2400
Departure Reference Code (DPRC)	D/VI	D/VI

SUMMARY

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period, as well as the critical design aircraft for the airport. Enplanements are forecasted to grow from 348,702 in 2023 to 540,000 by 2043, based aircraft are forecast to grow from 45 in 2023 to 61 by 2043, and total operations are forecasted to grow from 69,457 in 2023 to 87,095 by 2043. The projected growth is driven by the FAA's positive outlook for commercial and general aviation activity, as well as positive outlooks for new passenger service at CCIA and socioeconomic growth (population, employment, and income/GRP) projected for the Corpus Christi MSA. Recent growth trends specific to CCIA also factor into the projected growth, as does the opportunity to engage and attract a(n) (U)LCC airline(s) to the market offering greater levels of service and additional non-stop city pairs.

The critical design aircraft for the airport was determined by examining the FAA TFMSC database of flight plans. The current civilian critical design aircraft is described as an ARC D-III and is represented by the Boeing 737-800 and 737-900, which are commercial service jets operated by the airlines. The future critical design aircraft is expected to be represented by a combination of passenger and cargo commercial aircraft, such as the Boeing 737 Max series (ARC D-III) and Boeing 757 (C-IV). Military aircraft are considered separately from civilian aircraft and operate commonly for training purposes. It should be noted that AIP funding and PFC funding are not available for projects related to military aircraft.