



Chapter 3 Forecast of Aviation Demand

3.1 Introduction

Southwest Florida International Airport (RSW) has experienced strong historic growth trends, including a record-breaking year in 2019 when record passenger enplanements were recorded in every month of the year. In 2019, RSW enplanements surpassed the 5 million passenger mark for the first time. The COVID-19 pandemic began during the formulation of this forecast and is ongoing as this project progresses. Following a period of decreased activity due to pandemic impacts, RSW has set monthly enplanement records for each month from April through December 2021, and ultimately 2021 passenger activity surpassing 2019. As a result, additional forecasting was conducted for purposes of comparison and consideration in planning the next 20 years and beyond for RSW. This process and results of the forecasting effort are discussed in detail later in this chapter.

RSW is the primary commercial service airport that serves a five-county trade area that includes Lee County where the airport is located, as well as Charlotte, Collier, Glades, and Hendry counties. The RSW Trade Area has experienced significant growth in recent years, which has stimulated increasing demand for Airport services. Despite COVID-19, continued growth is expected in the RSW trade area for the foreseeable future.

The peak season at RSW runs from late winter through spring - the degree of seasonality at RSW is considered non-traditional because seasonal fluctuations in passenger volumes are much more pronounced than at most U.S. airports. This pattern has become increasingly amplified in recent years. RSW's terminal facilities have become stressed as passenger volumes continue to increase, particularly during peak travel periods.

Given this context, a current set of passenger projections and updated comprehensive planning approach for RSW are needed to support the airport's sustained growth and quality of passenger

experience. This forecasting effort builds upon previous studies and uses a variety of FAA approved forecasting methods to project future annual enplanement passenger levels and aircraft operations for the 2021–2041 timeframe. An analysis of peak month and peak month average day levels based upon a preferred forecast are identified for this timeframe.

3.2 Historical Activity and Context

Historical passenger enplanement trends at RSW are shown in **Figure 3-1**. In 2019, RSW passenger traffic was at record levels with over 5 million enplanements. This growth has been significant, and since 1986 when RSW first exceeded 1 million enplanements, growth has continued to over 2 million enplanements in 1994, 3 million enplanements in 2004, 4 million in 2007, and 5 million in 2019. Reaching the mark of 5 million enplanements was delayed by the Great Recession of 2008–2009, which temporarily slowed growth before increasing again steadily after 2013.

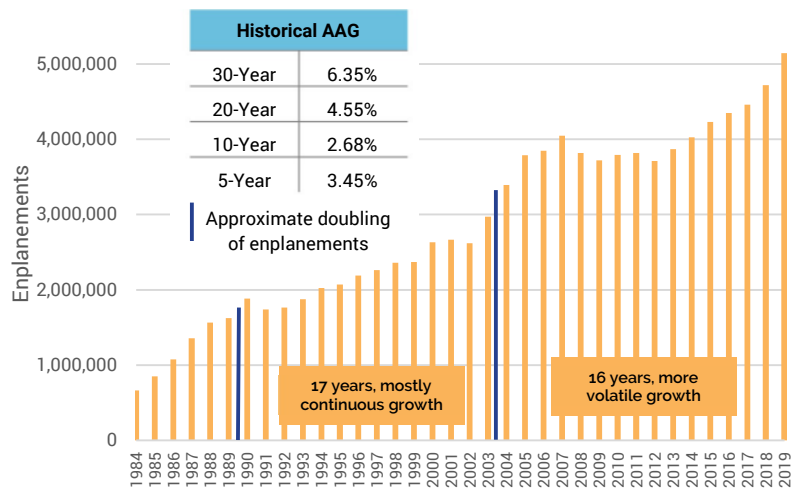
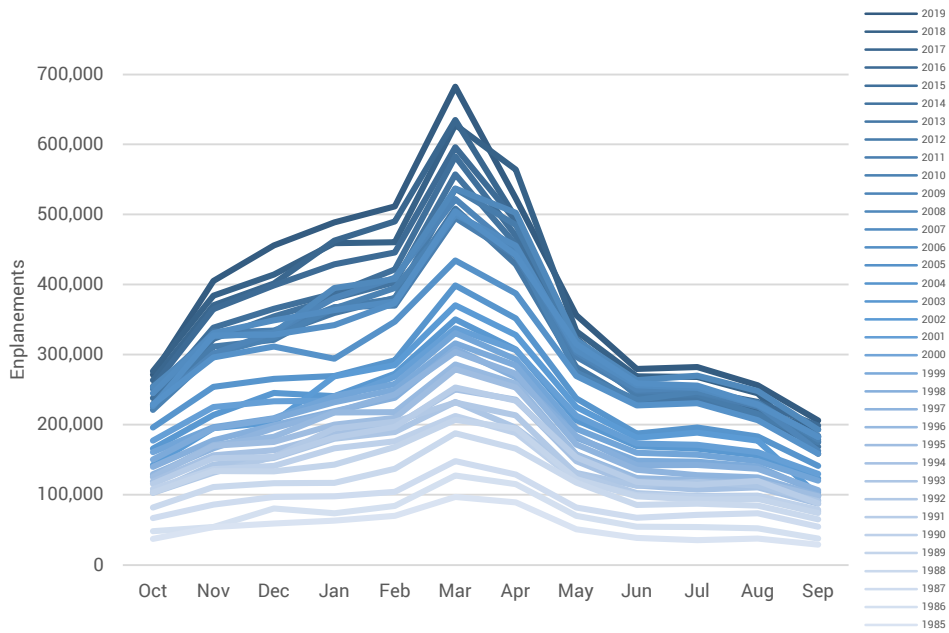


Figure 3-1 Historical Enplanements and Average Annual Growth (AAG) Rates

Figure 3-2 shows the historical monthly distribution of RSW enplanements over the course of the fiscal year. It should be noted that the 20-year historical average annual growth rate is 4.55%, the same 20-year timeframe being considered in this Master Plan. The peak season running from January–April is significant and has become increasingly amplified in recent years. RSW’s distribution of annual enplanements is considered non-traditional because it exhibits much greater seasonal fluctuation in enplanements than most U.S. airports. This pattern is caused by an influx of seasonal residents and tourism activity in the region from late winter through the spring months.

March is the peak month at RSW. The most recent five-year (2015–2019) average percentage of annual enplanements for March is 14.3%, and the most recent 20-year (2000–2019) average percentage is 13.7%. The four-month January–April peak season period represents 46.9% of RSW’s annual enplanement volume for the five-year average (2015–2019) timeframe and 45.8% for the 20-year average (2000–2019) timeframe.

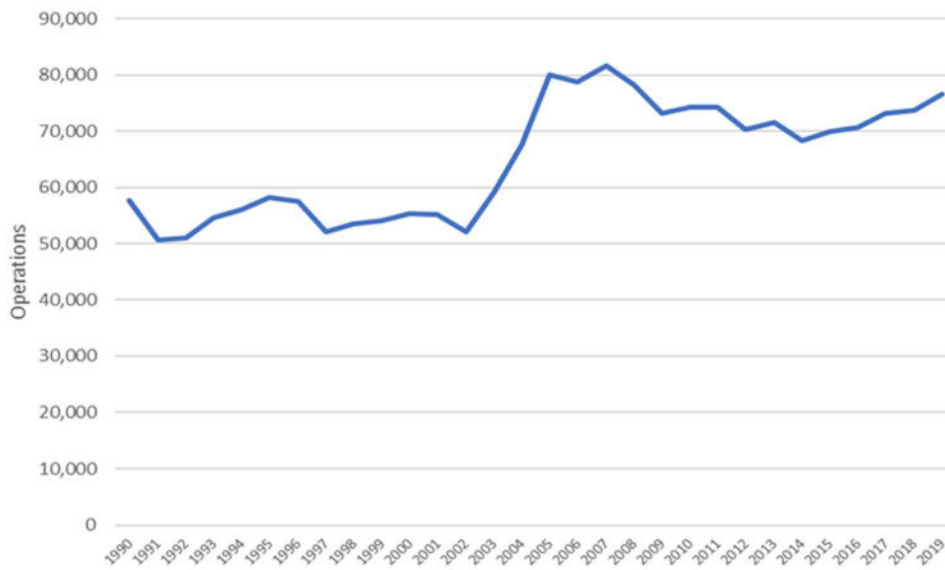
Historical annual aircraft operations at RSW were reviewed starting in 1990 to provide overview and context. In-depth monthly analysis was conducted using available Official Airline Guide (OAG) data from 2017 through 2019. **Figure 3-3** depicts total commercial operations at RSW since 1990. There is a relatively flat period of operations growth between 1990 and 2002, followed by a sharp increase between 2002 and 2007, a mild decrease to 2014, and then a steady increase of roughly 4% per year. Given the overall trend of increased operations between 1990 and 2019, it can be assumed that long term forecasts of operational growth when compared to the expected increase in passenger enplanements will follow the same general upward trend.



Historical Peak % of Annual Enplanements	
March 20-Year Avg.	13.70%
March 5-Year Avg.	14.30%
Jan-Apr 20-Year Avg.	45.80%
Jan-Apr 5-Year Avg.	46.90%

SOURCE: Lee County Port Authority and C&S Engineers Inc.

Figure 3-2 Historical Monthly Enplanements Distributed by Monthly %



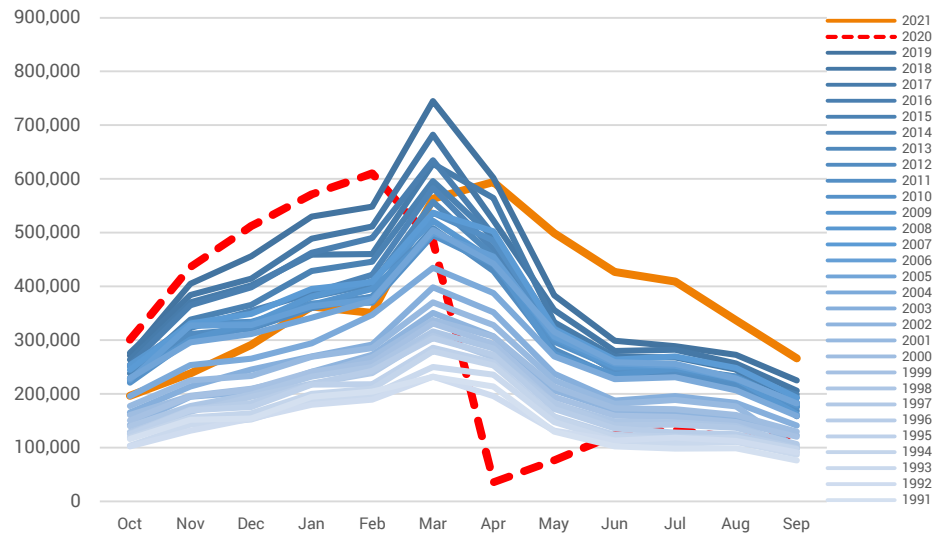
SOURCE: Federal Aviation Administration, Air Traffic Activity Data System (ATADS)

Figure 3-3 Historical Total Annual Commercial Operations

3.3 Recent Enplanement and Operations Trends

As a result of COVID and some uncertainty during this forecasting effort, this section provides an overview of monthly enplanements and operations activity at RSW for Fiscal Years 2019, 2020 and 2021. RSW's fiscal year runs from October through September.

As noted in **Figure 3-4** and in **Table 3-1**, enplanements have trended upward and at the end of FY2021, were at 90% of FY2019 levels. Calendar year (CY) 2021 passenger activity has exceeded CY 2019 levels. Of specific note is that RSW has had 6 consecutive months of all-time high monthly enplanements since April of 2021 indicating that the recovery of passenger activity is robust and one of the strongest in the country. This trend has continued to date in FY 2022 through December.



SOURCE: Lee County Port Authority and C&S Engineers Inc.

Figure 3-4 Updated Historical Monthly Enplanements Distributed by Monthly %

Table 3-1 Updated Historical Monthly Enplanements														
FY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	% of 2019
2019	271,412	404,957	456,013	529,581	548,463	745,324	601,658	383,653	298,690	288,809	272,874	225,241	5,026,675	-
2020	301,511	436,243	512,420	571,428	610,381	483,206	35,897	76,908	124,389	133,335	117,851	124,707	3,528,276	70%
2021	196,905	238,433	290,947	362,528	350,655	563,497	594,163	499,207	426,802	408,815	336,758	266,266	4,534,976	90%

SOURCE: Lee County Port Authority and C&S Engineers Inc.

For operations, the recovery has exceeded FY 2019 levels as indicated in **Table 3-1a**. Monthly operations started to exceed 2019 levels in March 2021 and have consistently been higher with FY2021 operational levels being 114% of FY2019 levels.

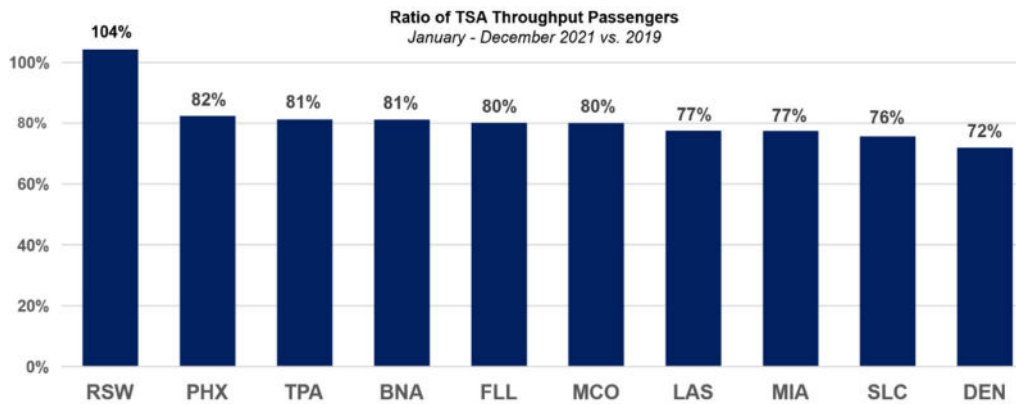
Table 3-1a Updated Historical Monthly Operations														
FY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	% of 2019
2019	5,379	7,252	8,504	9,338	9,079	11,202	8,970	6,018	4,804	4,675	4,439	4,127	83,787	-
2020	5,451	7,810	9,314	10,162	10,181	10,669	3,471	3,350	3,860	4,623	4,240	3,375	76,506	91%
2021	5,384	7,112	8,474	8,628	7,875	11,472	10,612	9,203	7,374	7,020	6,664	5,624	95,442	114%

SOURCE: Lee County Port Authority and C&S Engineers Inc.

Notes on the COVID-19 Pandemic

As previously noted, in early 2020 the worldwide COVID-19 pandemic shut down most non-essential businesses including the vast majority of airport activity. With the uncertainty of the novel coronavirus and related policy actions which have at times included quarantine protocols for airport users, it has been difficult to ascertain the exact trajectory of the industry. While many of the data sources used in this forecast report reflect long-term trend forecasts, there continues to be uncertainty surrounding the virus and the impacts it could have for the short-term or potentially beyond.

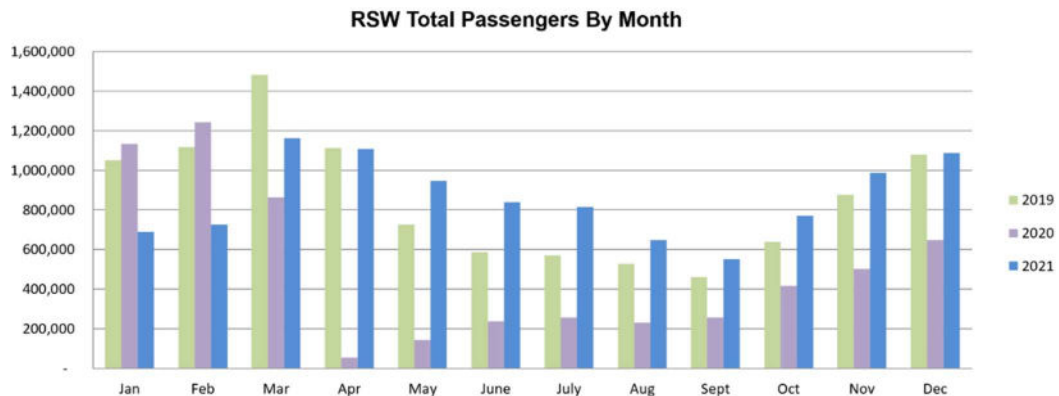
A decrease in activity levels at RSW can be linked to impacts of the COVID-19 pandemic, but also noted is a stronger recovery in 2021 going into 2022. In fact, RSW has been throughout the pandemic period the number one recovery airport of the top 60 airports in the US. For calendar year 2021, RSW was the top recovery airport finishing the year with 104% of its CY 2019 passenger activity with 10.3 million passengers as noted in **Figure 3-5**, an all-time record for the Airport. The next closest airport was PHX with 82% recovery. Other Florida airport rankings were 81% recovery for TPA, 80% for FLL and MCO and 77% for LAS and MIA. The fact that RSW is the only airport in the US to recover its passenger traffic to greater than CY 2019 levels for CY 2021 makes a unique case that RSW will experience short term growth (2021–2025) at a greater rate than what is projected to be seen nationally as seen in **Figure 3-6**.



SOURCE: Assembled by Lee County Port Authority

Figure 3-5 Passenger Recovery at Top 50 U.S Airports in 2021

RSW has recorded eight consecutive months of record-breaking traffic and set a new annual record of more than 10.3 million passenger in 2021



SOURCE: Assembled by Lee County Port Authority

Figure 3-6 Monthly Passenger Comparisons at RSW between 2019 and 2021

3.4 Socioeconomic Conditions

Demographic and socioeconomic conditions play an important role in determining levels of aviation demand within a region. This section provides an overview of key demographic and socioeconomic conditions and projected trends in five-year increments, covering a 20-year planning timeframe through 2040 (the time periods available when the data were pulled).

Population

Table 3-2 provides total population values for the five-county RSW Trade Area, State of Florida, and United States for the years 2010, 2020, 2025, 2030, 2035, and 2040. Compounded annual growth rate (CAGR) values are provided for each planning interval and geography. Total population values for 2010 and 2020 are based on historical data, and population values for 2025–2040 reflect projected growth.

Year	RSW Trade Area	Florida	United States
2010	1,155,000	18,846,000	309,320,000
2020	1,421,000 / 2.10%	21,695,000 / 1.42%	329,940,000 / 0.65%
2025 (est.)	1,544,000 / 1.67%	23,010,000 / 1.18%	341,470,000 / 0.69%
2030 (est.)	1,674,000 / 1.63%	24,361,000 / 1.15%	352,910,000 / 0.66%
2035 (est.)	1,811,000 / 1.59%	25,735,000 / 1.10%	364,070,000 / 0.62%
2040 (est.)	1,954,000 / 1.56%	27,113,000 / 1.08%	374,700,000 / 0.60%

SOURCE: Woods & Poole Economics Inc.; C&S Engineers Inc.

The RSW Trade Area has experienced significant population growth, increasing from 1,155,000 residents in 2010 to 1,421,000 in 2020. The region's CAGR over this 10-year timeframe is 2.10%, which is higher than the Florida statewide rate of 1.42% and the overall United States population growth rate of 0.65%.

Population growth is projected to continue at rates exceeding statewide and national levels in coming years. Based on these projections, the region's total population would increase by 37% over the 20-year period from 2020 to 2040. Rapid population growth in the RSW Trade Area has contributed to increased aviation demand at the Airport in recent years. The region's population is projected to continue this trend of growth at rates slightly lower than what was experienced between 2010 and 2020, but significantly higher than statewide and national growth rates. Total population data reference an individual's primary residence, meaning that seasonal residents are not included in Table 3-2 values, and the population counts represent a low-end accounting of the region's population especially during the peak travel months in late winter through spring. Continued population growth will provide fundamental support for aviation demand over the 20-year planning horizon.

Income

Per-capita income (PCI) values¹ for the RSW Trade Area, State of Florida, and United States are provided in **Table 3-3** for the years 2010, 2020, 2025, 2030, 2035, and 2040. CAGR values allow a comparison of income growth rates between geographies for each planning interval. PCI values for 2010 and 2020 are based on historical data and population values for 2025, 2030, 2035, and 2040 reflect projected growth.

Year	RSW Trade Area	Florida	United States
2010	\$44,000	\$38,500	\$40,500
2020	\$65,300 / 4.02%	\$54,400 / 3.52%	\$58,400 / 3.71%
2025 (est.)	\$80,700 / 4.34%	\$67,000 / 4.27%	\$71,500 / 4.14%
2030 (est.)	\$102,600 / 4.91%	\$85,000 / 4.87%	\$90,200 / 4.75%
2035 (est.)	\$131,400 / 5.07%	\$108,600 / 5.03%	\$114,600 / 4.92%
2040 (est.)	\$168,200 / 5.07%	\$138,900 / 5.04%	\$145,800 / 4.93%

SOURCE: Woods & Poole Economics Inc.; C&S Engineers Inc.

In the RSW Trade Area, PCI grew at an annual rate of just more than 4% between 2010 and 2020. This income growth is stronger than in the State of Florida (3.52%) and United States overall (3.71%). 2020 PCI was \$65,300 for the region—this is 20% higher than in the State of Florida and 12% higher than the national level. In 2040, the RSW Trade Area PCI is projected to be \$168,200, which is 21% higher than the statewide level and 15% higher than in the United States overall.

Income levels are relatively high in the RSW Trade Area and are projected to continue stronger-than-average growth through 2040. Higher income is often associated with greater levels of disposable income and spending on leisure travel, as well as the presence of industries that may involve business travel. The projected stability and growth of income levels in the RSW Trade Area are indicators of continued market support for aviation demand in the region.

Employment

Following is a summary of employment data for the five-county RSW Trade Area². **Table 3-4** provides a row for each major North American Industry Classification System (NAICS) industry category, and Total Employment represents the number of jobs for each industry within the five-county region.

Table 3-4 also provides location quotient (LQ) values for each industry category within the RSW Trade Area. Location quotients provide a measure of each industry's concentration within the subject region (RSW Trade Area), in comparison to the same industry's concentration in a larger reference geography. In this case, the State of Florida and the United States are used as reference geographies for LQ calculations.

¹ Defined as total income divided by total population.

² Based on 2019 county-level employment data.

Industry	Employment	Location Quotient State of Florida	Location Quotient United States
Retail Trade	86,800	1.14	1.25
Health Care & Social Services	71,100	0.89	0.85
Construction	70,500	1.53	1.72
Accommodations & Food Service	70,000	1.10	1.26
Real Estate	63,900	1.32	1.79
Government (Federal, State, Local)	62,500	1.12	0.86
Administrative & Waste Services	51,400	0.88	1.12
Other Services	51,000	1.02	1.19
Professional & Technical Services	47,400	0.88	0.88
Finance & Insurance	40,200	0.88	1.01
Arts, Entertainment, Recreation	25,500	1.15	1.44
Warehousing & Transportation	21,300	0.60	0.64
Wholesale Trade	16,200	0.69	0.68
Manufacturing	15,100	0.61	0.31
Forestry, Fishing, Related Activities	10,500	2.87	2.93
Education	8,600	0.62	0.49
Agriculture	6,900	1.53	0.73
Information	6,900	0.65	0.55
Management of Companies and Enterprises	5,600	0.63	0.55
Military	2,600	0.48	0.36
Mining	2,300	2.46	0.56
Utilities	1,300	0.93	0.63
Total Employment	741,200	—	—

SOURCE: Woods & Poole Economics Inc.; C&S Engineers Inc.

With reference to Table 3-4, an LQ value greater than 1 indicates that an industry is concentrated in the RSW Trade Area in comparison to the state and/or national levels. Values significantly higher than 1 are used to identify regional specialization in a given industry, and this is often referred to as an "industry cluster". Industries with LQ values less than 1 are less prevalent in the RSW Trade Area than in the state and/or national reference geographies.

Total employment in the five-county RSW Trade Area is 741,200. The five industries with the highest number of employees, in descending order, are: Retail Trade, Health Care & Social Services, Construction, Accommodations & Food Service, and Real Estate. Several industries hold LQ values greater than 1 relative to both state and national reference geographies, indicating regional strength and/or specialization in these industries. This set of industries includes Forestry, Fishing, and Related Activities; Construction; Retail Trade; Real Estate; Arts, Entertainment, and Recreation; Accommodations and Food Service; and Other Services.

The employment information summarized in Table 3-4 highlights some important features of the RSW Trade Area's economy. Notably, employment is concentrated in tourism-related industries such as retail, entertainment, hospitality and food service. The Airport serves a robust tourism economy, which supports employment and associated income in

these industries. Employment is highly concentrated in the construction and real estate industries, as well. This reflects the region's continued population growth, as well as the development and economic activity associated with tourism and seasonal visitation to the area.

As population growth continues and the Trade Area experiences demographic shifts through the in-migration of residents and businesses from elsewhere in the US, there appears to be potential for growth in knowledge-based or other industries that are not currently concentrated in the region. As examples, such industry sectors could include Professional & Technical Services, Finance & Insurance, Education, Information, and Management of Companies and Enterprises. Quality-of-life considerations and Florida's favorable business climate are important business location factors that support the region's potential for growth across a diverse set of industries.

In summary, the Trade Area is characterized by high concentrations of service, tourism, and real estate-oriented industry, and holds potential for future growth in knowledge-based or other industries moving forward. These conditions indicate that the region's economy features a concentration of industries associated with high demand for air travel, and future growth opportunities imply a likelihood of increased demand as economic development occurs across a diverse set of industries.

Tourism

Leisure travel represents a significant share of commercial air traffic at RSW and contributes to the Airport's unique degree of seasonal fluctuation in aviation demand. Beachfront destinations in Lee County drive much of the region's tourism activity. The Lee County Visitor & Convention Bureau (VCB) reports annually on key tourism-related statistics for the county's primary tourist destinations. Following are some key points from the VCB's *2019 Visitor Tracking, Occupancy & Economic Impact Study*.

- The beaches of Fort Myers and Sanibel attracted 4.9 million visitors in 2019.
- Sixty-six percent of visitors traveled to the region by air; of these visitors who flew, 72% traveled through RSW. This means that 47.5% of all visitors to Lee County flew to and from RSW.
- Visitors spent \$3.2 billion on accommodations, food, entertainment, and other tourism-related services in Lee County in 2019. This spending had a total economic impact of \$5.3 billion.
- Tourism supported more than 44,000 Lee County jobs providing \$1 billion in wages and salaries in 2019.
- Tourist visitation to the region increased by 0.2% overall from 2015 to 2019, while associated spending increased by 9% over this timeframe.

Tourism is a major driver of economic activity in Lee County and the RSW Trade Area, and nearly half of all visitors to the region fly through RSW. Visitation to the region increased steadily in the years leading up to the COVID-19 pandemic. Leisure travel is a vital source of aviation demand, and its importance has heightened in the pandemic recovery period. RSW plays a critical role in supporting the region's tourism industry and associated economic benefits.

Socioeconomic Conditions Summary

The RSW Trade Area has experienced significant population and economic growth in recent years, and growth trends are projected to continue at rates outpacing state and national levels over the next twenty years. The region is a major tourist destination that attracts nearly 5 million visitors and \$3.2 billion in direct spending each year. These demographic and socioeconomic conditions provide a foundation for continued aviation demand as RSW serves this flourishing air trade area.

3.5 Forecasts of Activity

A number of forecasting methodologies were used to develop planning-level enplanement and operations projections for RSW over the 2021–2041 timeframe. The projection scenarios are based on a variety of industry resources and airport-specific records, and demographic data. Projections based on demographic data assumed the five-county catchment area consisting of Lee, Charlotte, Collier, Glades, and Hendry Counties.

Taken together, the set of planning-level projections allows an understanding of how RSW's enplanements and operations are related to key factors associated with passenger demand - while considering airline strategy based on observed practices at the Airport. Each methodology used to derive RSW passenger projections is listed below.

- **FAA Aerospace Forecast (2019–2039)** – The Aerospace Forecast is a comprehensive industry forecast used at the national level. Specifically for this projection, the enplanement scenario growth rates were considered and evaluated for RSW. The baseline scenario uses an average annual growth rate of 1.8% a year (1.6% domestic and 3.0% international); an optimistic scenario uses an average annual growth rate of 2.5% (2.4%/3.4%); and a pessimistic scenario is based on a 1.3% annual growth rate (1.1%/2.6%). Values were extrapolated through 2041 based on the rate of growth under each scenario. The optimistic scenario was chosen as it was in the range of recent historical activity.
- **Market Share Analysis** – Generally speaking, this method calculates an individual or group's historical share of a larger population, then uses that share to project the future share of the larger forecasted population. In this case, the market share analysis utilizes RSW's historical share of overall enplanements nationally and applies this share forward to project the airport's enplanements for the subject time period (2019–2039). Market share scenarios of 0.60%, 0.61%, and 0.62% were calculated for RSW. The highest percentage was chosen as it was within reason and a conservative approach for planning purposes.
- **Regression Analysis** – Regression is a statistical method that measures demonstrated historical relationships between a dependent variable (enplanements in this case) and independent socioeconomic variables including population, per-capita personal income (PCPI) and employment in the five-county RSW market catchment area. Regression calculations were conducted to measure historical relationships between enplanements and each of these three variables, with projections based on the outcome of these calculations.
- **Historic Average Annual Growth/Trend Analysis** – This method uses historical activity at RSW to project future enplanement levels. Time is used as the independent variable in a regression equation, with projections essentially carrying forward historical rates of growth. Generally, this methodology uses the extrapolation of the most-recent 10-years for the analysis, as well as consideration of 5-, 10-, and 20-year historical average growth rates. In addition, in reviewing historical years 2018 and 2019 (pre-COVID), the average annual growth rate was 7.5%. Therefore, considering the robust recovery growth rate experienced for FY 2021, and the first 3 months of FY 2022, a 20 year scenario was also prepared using a blended historical growth rate of 7.0% through 2026 (first five years), with an average 2.5% annual growth rate from 2027 through 2041 thereafter. This was derived from the 10-year average historical growth rate.

Various scenarios for RSW enplanements and operations from 2021 to 2041 are included in the following summary of results. These scenarios represent a broad range of the perspectives and factors considered under the various projection methodologies, illustrating a range of outcomes based on these considerations.

Passengers

Ten projection scenarios for RSW enplanements from 2021 to 2041 are included in the following summary and discussion of results. These scenarios represent a broad range of the perspectives and factors considered under the various projection methodologies acceptable by the FAA, illustrating a range of outcomes based on these considerations. In viewing the summary of RSW annual enplanement forecasts (**Table 3-5** and **Figure 3-7**), several observations can be made.

- For 2041, enplanement forecasts range from 6,258,267 (Market Share) to 8,714,104 (Blended Historical growth), a difference of 2,455,837 enplanements.
- The compounded annual growth rates range from 1.62% (Market Share) to 3.32% (Blended Historical growth)
- RSW has a planning platform from all forecast scenarios starting in 2021 of approximately 9 million annual air passengers (4.5 million enplanements) to a potential of almost 17.5 million annual air passengers (8.7 million enplanements) in 2041.

FY	Blended Historical AAG	Historical 20-Year AAG	Historical 10-Year AAG	Historical 5-Year AAG	10-Year Trend Analysis	Aerospace Optimistic	Market Share (0.62%)	Regression Population (R ² = 0.98)	Regression Employment (R ² = 0.98)	Regression PCPI (R ² = 0.96)
2021 Actual	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976	4,534,976
2026	6,131,288	5,566,683	5,142,663	5,317,259	5,065,568	5,101,848	4,965,799	5,095,046	5,090,511	5,208,420
2031	6,909,961	6,598,390	5,750,350	6,099,543	5,596,160	5,668,720	5,396,621	5,655,115	5,646,045	5,881,864
2036	7,801,346	7,630,097	6,358,036	6,881,826	6,126,753	6,235,592	5,827,444	6,215,185	6,201,580	6,555,308
2041	8,714,104	8,661,804	6,965,723	7,664,109	6,657,345	6,802,464	6,258,267	6,775,254	6,757,114	7,228,752
AAG	4.61%	4.55%	2.68%	3.45%	2.34%	2.50%	1.90%	2.47%	2.45%	2.97%
CAGR	3.32%	3.29%	2.17%	2.66%	1.96%	2.05%	1.62%	2.03%	2.01%	2.36%

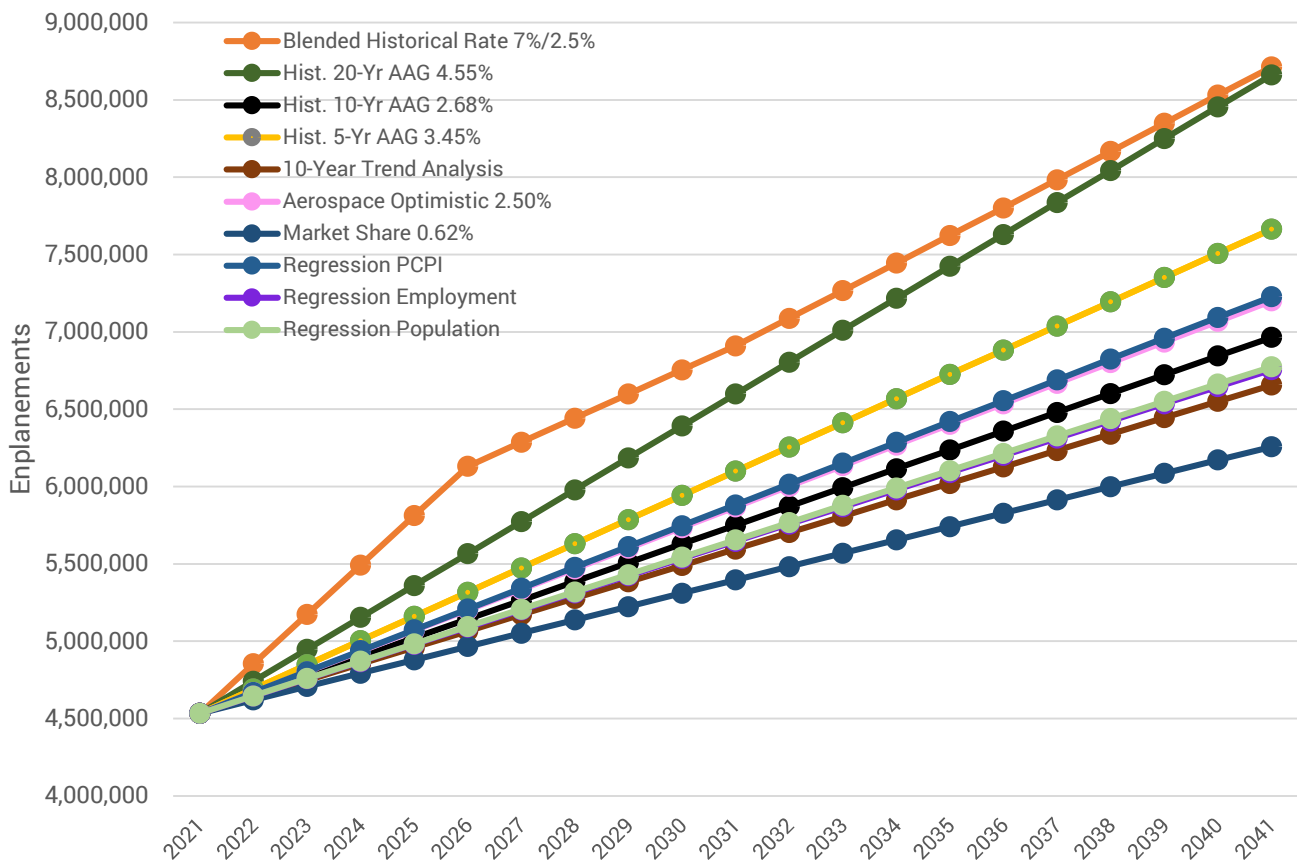
SOURCE: Federal Aviation Administration, Woods & Poole, C&S Engineers Inc.
AAG: Average Annual Growth, CAGR: Compound Annual Growth Rate

Based on the analyses conducted under this effort, positive socioeconomic conditions, and the robust on-going recovery, the Blended Historical growth forecast methodology is recommended as the preferred enplanement forecast for RSW. This methodology provides the highest 2021–2041 enplanement projections from among the set of forecasting methodologies evaluated and results in a compound annual growth rate of 3.32% over the forecast period. As a planning practice, it is beneficial to project future facility needs based upon a conservative (generally higher) forecast in order to allow for flexibility as needs may evolve under future conditions.

Table 3-6 provides preferred forecast enplanement values at five-year intervals over the 2026–2041 timeframe to be utilized during the master planning process.

Year	Enplanements
2026	6,131,288
2031	6,909,961
2036	7,801,346
2041	8,714,104

SOURCE: C&S Engineers Inc.



SOURCE: Federal Aviation Administration, Woods & Poole, C&S Engineers Inc.

Figure 3-7 Annual Enplanements Forecast Summary, 2021–2041

Operations

Operations are forecasted for the 20-year planning horizon and used to develop design day flight schedules for peak periods at five-year intervals through 2041. Like the enplanement forecast, several forecast methods were considered for the operations over the 20-year planning horizon at RSW. A comparison was made of annual operation estimates derived from different forecasting methodologies determined to produce a range of results for use in this effort:

- **FAA Aerospace Forecast (2019–2039)** – The three annual growth rates representing Baseline, Optimistic, and Pessimistic were applied and extended through 2041 using a constant rate. The Baseline estimate assumes 1.1% annual growth; the Optimistic estimate uses 1.8% annual growth; and the Pessimistic estimate uses 0.6% annual growth.
- **Linear regression** – A forecast based on itinerant air carrier operations from 1990 to 2019 estimates an average annual growth rate of 1.79%.
- **Trend Analysis** – This method uses historical activity at RSW to project future operations levels. Generally, this methodology uses the extrapolation of the most-recent years for the analysis, in this case, the 5-, 20-, and 25-year historical average growth rates. The 10-year historical average produced a negative growth rate and was not used for this analysis.

Seven projection scenarios for RSW operations from 2021 to 2041 are included in the following summary and discussion of results. These scenarios represent a broad range of the perspectives and factors considered under the various

projection methodologies acceptable by the FAA, illustrating a range of outcomes based on these considerations. In viewing the summary of RSW annual operations forecasts (Table 3-7 and Figure 3-8), several observations can be made.

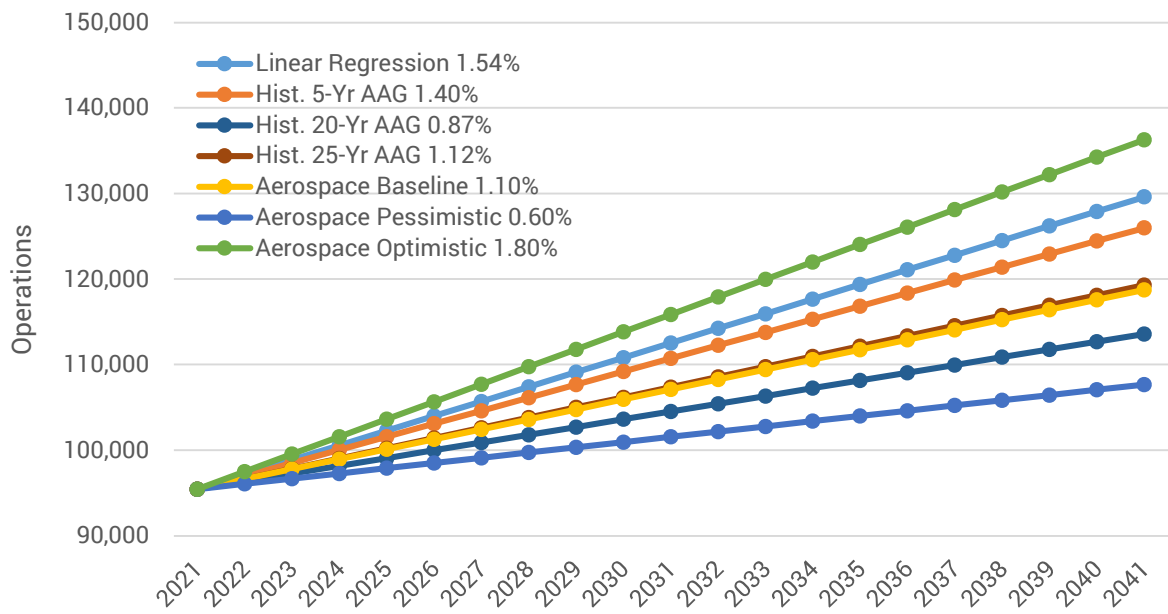
- For 2041, operations forecasts range from 136,291 (Aerospace Optimistic) to 107,659 (Aerospace Pessimistic), a difference of 28,632 operations.
- The compounded annual growth rates range from 1.80% (Aerospace Optimistic) to 0.60% (Aerospace Pessimistic).
- Starting with 2021, RSW has a planning platform level of approximately 95,000 annual operations to a potential of just over 135,000 annual operations.

The Optimistic Aerospace Forecast reflects the strong growth that RSW continues to experience and is in line with the robust operations recovery manifest to date, with 2021 operations standing at 114% of 2019 levels.

Table 3-7 Operations Forecasts by FAA Methodology

FY	Linear Regression	Historical 5-Year AAG	Historical 20-Year AAG	Historical 25-Year AAG	Aerospace Optimistic	Aerospace Pessimistic	Aerospace Baseline
2021 Actual	95,442	95,442	95,442	95,442	95,442	95,442	95,442
2026	103,984	103,077	99,975	101,407	105,654	98,496	101,264
2031	112,526	110,713	104,509	107,372	115,867	101,550	107,086
2036	121,068	118,348	109,042	113,337	126,079	104,604	112,908
2041	129,610	125,983	113,576	119,303	136,291	107,659	118,730
AAG	1.79%	1.60%	0.95%	1.25%	2.14%	0.64%	1.22%
CAGR	1.54%	1.40%	0.87%	1.12%	1.80%	0.60%	1.10%

SOURCE: Federal Aviation Administration, Woods & Poole, C&S Engineers Inc.
 AAG: Average Annual Growth, CAGR: Compound Annual Growth Rate



SOURCE: Federal Aviation Administration, TransSolutions, C&S Engineers Inc.

Figure 3-8 Annual Operations Forecast Summary, 2021–2041

Based on the analyses conducted under this effort, positive socioeconomic conditions, and the robust on-going recovery, the Aerospace Optimistic forecast methodology is recommended as the preferred operations forecast for RSW. **Table 3-8** provides the preferred forecast operations values at five-year intervals over the 2026–2041 timeframe to be utilized during the master planning process.

Year	Operations
2026	105,654
2031	115,867
2036	126,079
2041	136,291

SOURCE: C&S Engineers Inc.

Peak Periods

Airline activity is subject to peak-period movements—as described previously, RSW experiences extreme seasonal fluctuations in passenger enplanements and commercial operations between peak and off-peak months. The monthly distribution of enplanements at RSW follows a non-traditional, highly pronounced seasonal pattern with strong peak demand in the late winter through spring months. This unique degree of seasonal fluctuation poses a challenge for facility planning and design, as future facilities must be scaled to accommodate peak demand while balancing the reduced needs during off-peak months.

Design Month Average Day and Peak Month Average Day Peak Day projections were analyzed for RSW at five-year intervals for the 2026–2041 planning timeframe. Historically speaking, April at RSW represents a traditional airport peak month with 11.7% of the annual enplanements is typical. RSW is not typical and has unique peaking characteristics, and March represents the Airport’s true Peak Month with 14.3% of annual enplanements. These values are used in planning to estimate the size, configuration, and features of terminal buildings and other airport facilities.

Because of a continuing trend in recent years of March representing an increasingly higher percentage of annual enplanements, a monthly trend analysis was conducted to project monthly shares of annual enplanements for the 2026–2041 timeframe. For the Peak Month of March, the analysis indicates a continuing trend with monthly shares increasing from 14.3% in 2019 to 15.6% in 2041. **Table 3-9** provides the results of the monthly trend analysis and the recommended distribution percentages to be used for further peaking analysis.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2026	10.8%	11.3%	15.0%	11.6%	7.2%	5.5%	5.4%	5.0%	3.9%	5.7%	8.5%	10.3%
2031	11.1%	11.5%	15.2%	11.6%	7.0%	5.3%	5.2%	4.9%	3.8%	5.6%	8.5%	10.6%
2036	11.2%	11.7%	15.4%	11.6%	6.9%	5.2%	5.0%	4.8%	3.6%	5.5%	8.5%	10.9%
2041	11.4%	11.9%	15.6%	11.6%	6.8%	5.1%	4.9%	4.7%	3.5%	5.4%	8.5%	11.1%

SOURCE: C&S Engineers Inc.

Typically, Design Day Flight Schedules (DDFS) are determined by identifying an average day in the peak month for the Airport. RSW’s peak month is March. To develop the DDFS, the OAG for March 2020 was used as the base schedule. This March 2020 schedule was established prior to any major schedule adjustments by the airlines due to COVID 19. After evaluation, the average day chosen for March was Friday, March 13. Additionally, the non-daily international operations were included in the base schedule. The base monthly OAG schedules were adjusted to match the annual operations and enplanement forecasts for each forecast year. The enplanement forecast was allocated to commercial flight operations, yielding the projected annual, monthly, and design day operational levels.

The peak month (March) average day should be utilized for facility planning. This recommendation is summarized in **Table 3-10**.

Year	Peak Month Enplanements	Peak Month Average Day Enplanements	Peak Month Average Day Operations	Peak Month Peak Hour Enplanements	Peak Month Peak Hour Departures
2026	898,700	28,990	381	3,131	20
2031	1,026,528	33,114	427	3,576	22
2036	1,175,535	37,920	481	4,095	25
2041	1,329,986	42,903	538	4,633	28

SOURCE: C&S Engineers Inc., TransSolutions

Cargo, International, General Aviation, and Military

Cargo

Freight is carried at RSW by passenger carriers as belly cargo, and by cargo carriers FedEx (FX) and UPS (5X). For a number of years prior to 2018, cargo carriers carried less than 85% of the freight at RSW, while German carrier Air Berlin regularly carried more than 10% of the total freight as belly cargo. After Air Berlin ceased operations during the last quarter of 2017; however, the share of freight carried annually by cargo carriers increased to 95% in 2018 and has remained above 96% since. The total amount of freight carried annually by all carriers at RSW peaked from 2006 to 2008, exceeding 38 million pounds during each of those three years. From 2008 through 2018, freight carried was down from the peak to an average of 33 million pounds per year before rebounding in 2019. From January through June 2021, freight carried was just over 20 million pounds and is projected to exceed 42 million pounds for the full year based on the percentage of annual freight historically carried at RSW during the first six months.

Cargo operations forecasts were developed for the future planning years 2026, 2031, 2036, and 2041. The forecasts were developed by leveraging historical RSW freight data against the Preferred Operation Forecast to initially develop forecasts of freight for years 2021 - 2041. The cargo carrier operations forecast then were developed by determining the number of operations needed to carry the forecasted freight, based on the cargo carriers' average freight carried per operation.

Five methodologies were considered and analyzed to develop freight forecasts. Linear regression was used to develop two forecasts based on historical freight carried annually at RSW over a specific period of years. Two additional forecasts were developed utilizing the FAA's Aerospace forecasts of domestic cargo growth. A fifth freight forecast was developed using Boeing's World Air Cargo forecast of U.S. cargo growth.

- The first linear regression utilized historical annual freight carried at RSW for a 25-year period from 1995 to 2020 to forecast future freight pounds. The years utilized in the regression account for periods of year-over-year growth, stability and decline in freight pounds carried at RSW. This approach results in the most conservative forecast of freight growth, with an average annual growth rate of 0.9% and just under 50 million freight pounds in 2041.
- The second linear regression utilized historical annual freight carried at RSW for a 15-year period from 1990 to 2005, which represents a period of consistently high year-over-year growth in freight pounds carried at the airport. While aggressive, this high growth rate has been experienced during RSW's history. This approach results in the most optimistic forecast of freight growth, with an average annual growth rate of 3.2% and just over 77 million freight pounds in 2041.

- Two forecasts were developed utilizing FAA's Aerospace forecasts for domestic growth in cargo revenue ton miles (RTM). The Aerospace 2020 forecast was developed prior to the impact of COVID and forecasts an average annual growth rate in RTM's of 1.9% through 2041. The Aerospace 2021 forecast, which accounts for the impact of COVID, projects an average annual growth rate in RTM's of 1.6% through 2041. Utilizing the 1.9% and 1.6% annual growth rates results in forecasts of just over 60 million, and just under 57 million freight pounds in 2041, respectively.
- The fifth forecast of freight was developed using Boeing's 2020 World Air Cargo forecast for U.S. growth in cargo revenue ton kilometers (RTK). The forecast accounts for the impact of COVID and projects a 20-year average annual growth rate in RTK's of 2.7%. Utilizing the 2.7% annual growth rate results in a forecast of just over 70 million freight pounds in 2041.

Table 3-11 summarizes the forecast of cargo carrier operations developed using each of the five forecasting approaches for the future planning activity levels. Note that each forecast includes 188 operations by Western Global.

Table 3-11 Cargo Carrier Operations Forecast						
Forecasting Approach	Average Annual Growth Rate	2021 Actual	2026	2031	2036	2041
Linear Regression (15 Year)	3.2%	1,726	1,997	2,339	2,682	3,024
Linear Regression (25 Year)	0.9%	1,726	1,785	1,859	1,934	2,008
FAA Aerospace 2021 Forecast	1.6%	1,726	1,833	1,977	2,119	2,269
FAA Aerospace 2020 Forecast	1.9%	1,726	1,852	2,025	2,197	2,384
Boeing 2020 Forecast	2.7%	1,726	1,980	2,349	2,576	2,758

SOURCE: TransSolutions

The forecast of cargo carrier operations developed using the Aerospace 2020 forecast, which projects an average annual growth rate of 1.9% in operations through 2041, is recommended for use by LCPA in airport planning. Strong near-term, pre-COVID growth in freight suggests that RSW is on track to sustain a period of longer-term, consistent freight growth. The Aerospace 2020 forecast projects moderate growth over time, while accounting for possible fluctuations in demand for cargo carrier services during the 20-year forecast period.

International Activity

Commercial carriers at RSW have served markets primarily within the United States, with domestic service in 2019 accounting for 97.2% of operations. In recent years, RSW has supported international service to markets in Canada and to Germany, with increased service during the peak winter travel period. The number of international operations has fluctuated as a result of COVID-19 travel restrictions, but are anticipated to return. LCPA anticipates significant growth in service to international markets in the coming years, with an increase in operations to Canada and new service to markets in Europe, Latin America, and the Caribbean. As a result and depending on timing of service implementation by the airlines, RSW could see international operations range from 4% in 2026 up to 8% by 2041.

General Aviation and Military

The general aviation (GA) and military forecasts, as incidental to the overall aviation activity, is expected to be relatively constant throughout the planning period. GA activity is expected to maintain between approximately 7,000 and 8,000 annual operations through 2041, while military aircraft operations are expected to be maintained between 1,000 and 2,000 annual operations throughout the 20-year planning period.

3.6 Preferred Forecast Comparison to FAA TAF

The COVID-19 pandemic has caused severe disruption to the aviation industry worldwide. While major pandemic-related impacts continue at the time of this master plan update, signs of recovery appear to be taking hold in the United States and rates of air travel are trending upward.

In May 2021, the FAA released the 2020 TAF for RSW, which reflects the impacts of COVID-related air travel disruption and includes a multi-year recovery period before airport traffic again reaches pre-pandemic levels. RSW is one of a few airports leading the recovery with passengers at 90%, and operations at 114% of 2019 fiscal year levels. Since calendar year (CY) 2019 passenger and operations levels have already been surpassed in CY 2021, it can be expected that both passenger and operations will exceed FY 2019 levels in FY 2022.

The FY 2020 FAA TAF is filled with uncertainty due to the COVID pandemic and does not account for the extraordinary recovery experienced at RSW. However, when comparing the Preferred Passenger and Preferred Operations Forecasts to the 2020 FAA TAF, the trend comparison is within several percentage points. It is expected that future annual updates to the FAA TAF will more accurately reflect the unique growth trends and peaking characteristics at RSW. Therefore, it is recommended that the LCPA continue to actively review and provide comments and statistical information regarding annual draft FAA TAF updates, and for the LCPA to use the updated annual FAA TAF as an interim guide for future planning level activities until updated forecasts can be prepared as needed.

Comparison

With signs of strong current and near-term growth suggesting that - assuming no further disruptive events—RSW is already exceeding 2021 TAF enplanement projections. RSW holds a unique and favorable market position and is likely to continue to outperform national trends through the recovery era and potentially beyond. **Table 3-12** and **Table 3-13** provide a comparison of the preferred forecast and the 2021 TAF forecast for enplanements, and operations, respectively.

Table 3-12 Comparison of Forecast Enplanements, Preferred and 2021 TAF

Year	Preferred Forecast	TAF 2021	% Change, TAF 2021 to Preferred
2026	6,131,288	5,812,243	5.4%
2031	6,909,961	6,648,359	3.9%
2036	7,801,346	7,509,553	3.8%
2041	8,714,104	8,328,145	4.6%

SOURCE: C&S Engineers Inc. and FAA, 2021 Terminal Area Forecast (TAF), published March 2022

Table 3-13 Comparison of Total Operations, Preferred and 2021 TAF

Year	Preferred Forecast	TAF 2021	% Change, TAF 2021 to Preferred
2026	105,654	111,837	(5.5%)
2031	115,867	122,068	(5.1%)
2036	126,079	132,318	(4.7%)
2041	136,291	147,180	(7.4%)

SOURCE: C&S Engineers Inc., TransSolutions, and FAA, 2021 Terminal Area Forecast (TAF), published March 2022

As a matter of sound planning practice and because the preferred and 2020 TAF forecasts are within FAA guidelines to be within 10% of each other, it is appropriate and recommended for the Airport to continue to develop facility requirements based on the preferred forecasts, peak period forecasts, and design day flight schedules (DDFS) for facility and master planning at RSW.