- 3 -

AVIATION ACTIVITY FORECAST

3.1 INTRODUCTION

Aviation activity forecasts explored in this chapter are developed to assess and project future demand at Santa Barbara Airport ("SBA" or "the Airport"). SBA is located in the city of Santa Barbara, bordering the city of Goleta, near the University of California, Santa Barbara. The Airport borders the Goleta Slough, an area of coastal habitat and wetlands. SBA is located in Santa Barbara County, a part of the California Central Coast that is roughly halfway between the major cities of Los Angeles and San Francisco. SBA is a unique market for aviation activity due to the proximity to Los Angeles (100 miles) and San Francisco (300 miles). While these cities are within a few hours' drive time of Santa Barbara, many travelers consider flying due to traffic congestion.

The forecast uses the Federal Aviation Administration (FAA) fiscal year 2021 (October 1 to September 30) as the base year and is prepared for the next 20 years (2022-2041). Forecast results are reported in five-year intervals. The forecast encompasses a variety of methodologies that incorporate regression analysis, research, and industry knowledge. Each forecast category is evaluated against the 2022 FAA Terminal Area Forecast (TAF), which was published in February 2023. Data dating back to 2011 is used as the basis of historical trend analysis, with consideration of outliers such as those due to the impacts of the COVID-19 pandemic.

This forecast chapter is organized into the following sections:

- Community Profile
- Aviation Activity Profile
- Commercial Service Forecasts
- General Aviation Forecasts
- Critical Aircraft
- Summary

Many sections of this forecast chapter have unique terms and acronyms. They are defined within each section as they are first presented.

3.2 CHAPTER OVERVIEW

This chapter provides a 20-year projection of aviation activity at SBA. The forecasts consist of estimates for future activity levels that help guide the planning of airport development and improvement. The forecasts are used to determine facility requirements and the timing of implementing demand-based improvement projects at SBA. The forecast analysis includes consideration of the impact of regional socioeconomics and trends in the aviation market, both regionally and nationally. The geographic range of the socioeconomics analyzed in this study is based on the Santa Maria-Santa Barbara Metropolitan Statistical Area (MSA), which comprises the entirety of Santa Barbara County.

The forecasts include enplanements, operation counts, and the number of based aircraft at SBA. Enplanements consist of the total number of revenue passengers boarding aircraft at SBA. Airport operations include takeoffs and landings and are categorized into itinerant (different origin and destination airports) and local operations (aircraft takeoff and land at the same airport). Based aircraft are operational and air-worthy aircraft based at SBA for the majority of the year and are categorized by aircraft type. Growth rates in this chapter are presented in compound annual growth rate (CAGR), or the average annual growth rate. **Table 3-1** summarizes the results of the forecasts described in this chapter.

Table 3-1: SBA Forecast Summary

	Historical	Base Year	Forecast		
Fiscal Year	**2011**	**2021**	**2031**	**2041**	**21-'41 CAGR**
Enplanements	**370,233**	**342,669**	**732,500**	**878,700**	**4.8%**
Operations	**106,696**	**103,419**	**113,967**	**116,887**	**0.6%**
Air carrier	4,040	10,328	16,100	17,900	2.8%
Air taxi	22,730	12,311	14,100	13,700	0.5%
Itinerant general aviation	42,810	42,258	44,260	45,020	0.3%
Local general aviation	35,751	36,695	37,680	38,440	0.2%
Subtotal general aviation	78,561	78,953	81,940	83,460	0.3%
Military	1,365	1,827	1,827	1,827	0.0%
Based Aircraft	**202**	**141**	**167**	**185**	**1.4%**
Single-engine piston	145	104	115	115	0.5%
Jet	29	25	33	44	2.9%
Multi-engine piston	22	8	13	17	3.9%
Helicopter	6	2	4	7	6.5%
Other	0	2	2	2	0.0%

Sources: Mead & Hunt, 2022 FAA TAF, U.S. DOT T-100, Santa Barbara Airport

3.3 COMMUNITY PROFILE

A variety of local and regional socioeconomic factors were examined to determine their influence, if any, on aviation activity at SBA. These regional factors include area population, gross regional product, employment and income trends, and other factors such as tourism and traveler spending. This section assesses the primary characteristics unique to the MSA.

3.3.1 Population

Population data for the forecast is based on the MSA. The U.S. Office of Management and Budget defines MSAs as consisting of the county or counties (or equivalent entities) associated with at least one urbanized area with a population of at least 50,000, plus adjacent counties having a high degree of social and economic integration with the "core" as measured through commuting ties.[1] The MSA, also referred to as the geographic area, includes the entirety of Santa Barbara County in this forecast analysis.

Population records and projections for this forecast were sourced from the California Employment Development Department (CA EDD) Labor Market Division. **Table 3-2** shows the historical and projected population estimates for Santa Barbara County.

Table 3-2: Santa Barbara County Population History and Projections

Year	Population
Historical Census and Estimates	
2011	425,981
2016	446,157
2021	453,498
Forecast Period	
2026	463,045
2031	471,199
2036	477,040
2041	480,047
Compound Annual Growth Rates	
CAGR 2011-2021	0.6%
CAGR 2021-2041	0.3%

Source: California Employment Development Department
CAGR: Compound Annual Growth Rate – the average annual growth rate

3.3.2 Employment and Economy

Key industries in Santa Barbara County include agriculture and wine, tourism, and healthcare. Notable employers in Santa Barbara County include the University of California, Santa Barbara (UCSB) and Vandenberg Air Force Base (AFB). Tourism activity is prominent in south Santa Barbara County with beaches, shopping, and dining, while tourism in the Santa Ynez Valley is comprised of visits to "wine country" vineyards and wineries. Additionally, the area around UCSB is home to many tech-sector businesses that are involved in the Silicon Riviera[2], an organization based in Santa Barbara aiming to promote the Central Coast's technology and innovation industry.

Based on the California Department of Transportation's county-level economic forecasts, Santa Barbara County's labor market is expected to have fully recovered from the pandemic by the end of 2022. Most of the employment gains are attributed to leisure services, as the tourism industry is expected to be a major factor in leisure and hospitality job creation. Due to rising housing costs and the lack of available housing, many employees are commuting from outside the county, which affects socioeconomic data variables such as income per capita and employment.

[1] https://www.census.gov/programs-surveys/metro-micro/about/glossary.html
[2] https://www.siliconriviera.org/

Santa Barbara County economic data is sourced from the Woods & Poole Economics, Inc. (W&P) dataset. W&P provides data for the years between official censuses. This data was examined to determine what, if any, socioeconomics drivers may impact aviation demand at SBA. The main economic variables examined include gross regional product (GRP), income per capita, and employment. **Table 3-3** shows the historical and projected GRP, income per capita, and employment in SBA for the forecast period.

Table 3-3: Santa Barbara County Economic Indicators

Year	GRP (Millions)	Income Per Capita	Employment
Historical			
2011	$27,833	$60,631	250,715
2016	$31,214	$66,608	274,776
2021	$34,107	$73,900	288,834
Forecast			
2026	$37,262	$79,780	308,448
2031	$40,914	$86,377	324,590
2036	$44,727	$93,094	340,105
2041	$48,716	$99,939	355,129
Compound Annual Growth Rates			
CAGR 2011-2021	2.1%	2.0%	1.4%
CAGR 2021-2041	1.8%	1.5%	1.0%

Source: Woods & Poole Economics, Data presented in 2022 dollars.
CAGR: Compound Annual Growth Rate

3.4 AVIATION ACTIVITY PROFILE

Historical data for enplanements, operations, and based aircraft counts at SBA are reviewed in this section. The aviation activity profile provides context for historical airport activity trends and addresses the changes that have occurred. This data is used as a base for forecasting future activity at SBA.

3.4.1 Air Carrier Service

In 2022, SBA is served by four scheduled passenger-published air carriers: Alaska Airlines, American Airlines, Southwest Airlines, and United Airlines. Air carriers, such as SkyWest Airlines, Horizon Air, Mesa Airlines, and Envoy Airlines, operate some flights on behalf of the mainline carriers.

Non-stop service at SBA includes flights to: Dallas (DFW), Denver (DEN), Las Vegas (LAS), Los Angeles (LAX), Oakland (OAK), Phoenix Sky Harbor (PHX), Portland (PDX), Sacramento (SMF), San Francisco (SFO), Seattle (SEA), and seasonal Chicago (ORD) service.

Air cargo service includes Empire Airlines and West Air Inc., operating on behalf of FedEx, and Ameriflight, operating on behalf of United Parcel Service (UPS). Some air cargo is also transported on Alaska, Horizon, and American passenger flights.

3.4.1.1 Passenger Enplanements and Airline Operations

The TAF classifies a passenger enplanement as the total number of revenue passengers boarding aircraft, including both originations and transfer passengers. The enplanement counts do not include pilots, flight attendants, and non-revenue airline crew members.

The FAA classifies passenger enplanements based on the type of carrier operating the flight.

- **Air carrier enplanements:** The sum of domestic and international revenue passenger enplanements on mainline US commercial air carriers, plus international revenue passenger enplanements on mainline foreign-flag air carriers. Mainline air carriers provide service primarily using aircraft with 90 or more seats.
- **Commuter enplanements:** The sum of domestic and international revenue passenger enplanements on airlines whose primary function is feeding passengers to mainline carriers, regardless of aircraft size. Commuter airlines primarily operate aircraft with 89 or fewer seats.

Accordingly, revenue passengers on the American Airlines Airbus A319 to DFW are counted as air carrier enplanements while revenue passengers on the Mesa Airlines (American Eagle) Bombardier CRJ900 to PHX are counted as commuter enplanements.

The FAA also categorizes commercial operations into two categories; however, it is based on aircraft seat or payload capacity rather than operator type.

- **Air carrier operations:** Airport operations performed by aircraft with a seating capacity of more than 60 seats, or a maximum payload capacity of more than 18,000 pounds, carrying passengers or cargo for hire or compensation.
- **Air taxi/commuter operations:** Airport operations performed by aircraft with a seating capacity of 60 seats or less, or a maximum payload of 18,000 pounds or less, carrying passengers or cargo for hire or compensation – including both scheduled commuter and on-demand air taxi operations.

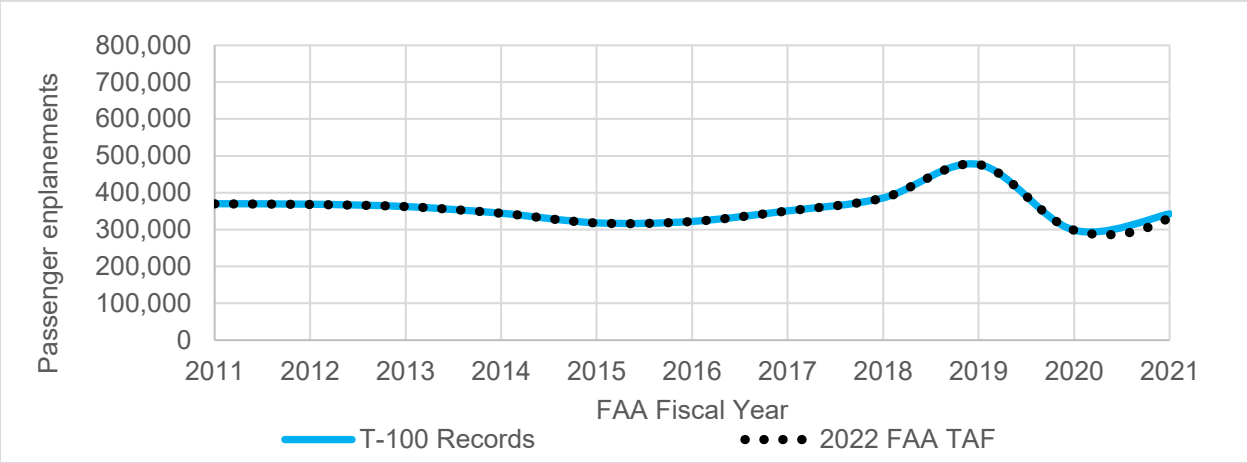
Historical enplanement and operation records at SBA are based on data from the United States Department of Transportation (U.S. DOT) T-100 database and records provided by SBA's air traffic control tower (ATCT). The T-100 form is filled out monthly by scheduled, charter passenger, and cargo airlines. This database provides a detailed record of passenger and cargo airline activity. The data used for enplanements and scheduled commercial service is based on T-100 records as they have detailed information about operations, airlines, and aircraft type. SBA ATCT records are used to verify T-100 information and to supplement operational data not captured in the T-100 records.

Enplanements

Enplanement records from the T-100 database compared against the TAF records from 2011 to 2021 are shown in **Figure 3-1**. SBA enplanements have decreased by an overall annual average of 0.8 percent since 2011. However, it is important to note that 2020 and 2021 aviation demand was severely impacted by the effects of the COVID-19 pandemic.

Prior to the pandemic, enplanements increased by an average of 3.2 percent annually between 2011 and 2019. At the time of this analysis, data for fiscal year (FY) 2022 has not been fully compiled; however, available Airport and T-100 records through May 2022 indicate that FY2022 enplanements have surpassed FY2021 results and exceed the pre-pandemic peak, which occurred in 2019.

Figure 3-1: Historic Passenger Enplanements at SBA (2011-2021)



Sources: 2022 FAA TAF, U.S. DOT T-100

Commercial Operations

Table 3-4 compares the historical data for commercial operations at SBA from the U.S. DOT's T-100 database against the 2022 TAF. T-100 air taxi operation records are noted to differ significantly from the 2022 TAF. Part of the difference may be due to the T-100 database not always capturing on-demand air taxi operations by charter airlines and private aircraft, as some operators have waivers and are exempt from submitting T-100 forms.

Table 3-4: Historical SBA Scheduled Commercial Operations vs 2022 TAF Comparison

Fiscal Year	Air Carrier Operations			Air Taxi Operations		
	T-100	TAF	% Difference from TAF	T-100	TAF	% Difference from TAF
2011	4,041	3,901	3.6%	18,574	22,334	-16.8%
2012	2,756	2,738	0.7%	20,200	23,534	-14.2%
2013	2,459	2,375	3.5%	19,785	24,128	-18.0%
2014	3,816	3,983	-4.2%	15,867	23,078	-31.2%
2015	4,231	4,099	3.2%	11,542	22,263	-48.2%
2016	6,171	5,611	10.0%	9,252	21,539	-57.0%
2017	8,065	7,761	3.9%	7,426	20,264	-63.4%
2018	7,224	6,897	4.7%	8,741	17,621	-50.4%
2019	9,695	9,188	5.5%	10,280	17,285	-40.5%
2020	8,216	7,782	5.6%	6,922	13,086	-47.1%
2021	10,664	10,328	3.3%	2,553	12,311	-79.3%
CAGR '11-'19	11.6%	11.3%	N/A	-7.1%	-3.2%	N/A
CAGR '19-'21	4.9%	6.0%		-50.2%	-15.6%	

Sources: U.S. DOT T-100, 2022 FAA TAF
CAGR: Compound Annual Growth Rate – the average annual growth rate

Additional commercial operations are sourced from SBA's ATCT. The additional operations are likely operations from private aircraft (for hire) flights to and from SBA. **Table 3-5** shows the comparison between T-100 and SBA records of air taxi operations.

Table 3-5: Historical SBA Air Taxi Operations – T-100 vs SBA Records

Fiscal Year	T-100 Air Taxi Ops	SBA ATCT Air Taxi	Difference from T-100
2011	18,574	22,730	-4,156
2012	20,200	24,281	-4,081
2013	19,785	24,313	-4,528
2014	15,867	23,072	-7,205
2015	11,542	22,263	-10,721
2016	9,252	21,539	-12,287
2017	7,426	20,264	-12,838
2018	8,741	17,621	-8,880
2019	10,280	17,285	-7,005
2020	6,922	13,086	-6,164
2021	3,617	12,311	-8,694
2022	4,269	13,875	-9,606

Sources: U.S. DOT T-100, SBA Records

COVID-19 Impacts and Recovery

Enplanements and operations at SBA declined in FY2020 and FY2021 due to the impacts of the COVID-19 pandemic. Based on T-100 records, enplanements fell over 37 percent between FY2019 and FY2020; however, FY2021 enplanements increased 15 percent from FY2020 levels, reaching 72 percent of FY2019 enplanement levels, with enplanements in FY2022 surpassing FY2019 levels by November 2022. T-100 records show that passenger air service operations also declined during this period, falling 24 percent between FY2019 and FY2020. Changes in air service operators within FY2020 include Frontier Airlines, Contour Airlines, Sun Country Airlines, and Delta Air Lines ending service at SBA. The total passenger air service operation counts are not expected to recover to FY2019 levels within the forecast period; however, the number of air carrier operations have increased between FY2019 and FY2021. This is attributed to increased air service offerings with new routes and the entrance of Southwest Airlines, which is operating three routes with large aircraft classified as air carrier operations.

3.4.2 General Aviation

The general aviation category covers flight activities that do not include passenger operations, cargo operations, and military operations. General aviation activities include, but are not limited to, flight training, recreational flying, private and corporate air transportation, emergency response, law enforcement, and flight testing.

3.4.2.1 Itinerant Operations

Itinerant operations are civil aircraft operations that originate and terminate at different airports. Itinerant operations comprised 54 percent of overall general aviation operations at SBA in FY2021 and have decreased an average of 0.1 percent per year between FY2011 and FY2021.

Outside of the outlier of FY2020, itinerant general aviation at SBA appears to have remained relatively stable in the past decade. This stability can partially be attributed to the presence of privately owned aircraft operating at the Airport and itinerant training operations from other airports in the surrounding area conducting operations at an airport with a control tower.

Table 3-6: Historic SBA Itinerant General Aviation Operations

Fiscal Year	SBA	Percent Change	U.S.	Percent Change
2011	42,810	-	33,679,459	-
2012	44,057	2.9%	33,549,130	-0.4%
2013	41,999	-4.7%	33,014,296	-1.6%
2014	44,676	6.4%	32,485,675	-1.6%
2015	45,825	2.6%	32,305,334	-0.6%
2016	42,678	-6.9%	31,949,705	-1.1%
2017	40,862	-4.3%	31,749,227	-0.6%
2018	42,700	4.5%	31,991,071	0.8%
2019	41,565	-2.7%	32,229,240	0.7%
2020	38,498	-7.4%	30,461,946	-5.5%
2021	42,258	9.8%	31,621,431	3.8%
CAGR 2011-2021	-0.1%	N/A	-0.6%	N/A

Sources: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.4.2.2 Local Operations

Local general aviation operations are those that originate and terminate at the same airport. Local operations are generally performed by pilots practicing takeoffs and landings or for flight testing after a repair. Touch-and-go operations, where aircraft fly in a pattern of landing, slowing, and then accelerating to take off without leaving the runway, count as two operations and are included in local operations counts. Local general aviation operations are primarily determined by the amount of flight training occurring at an airport. An aircraft can generally perform more than six operations in an hour while practicing touch-and-go operations, depending on the traffic pattern. Major sources of local operations at SBA include the flight school and the flying club based at SBA.

Table 3-7: SBA Historic Local General Aviation Operations

Fiscal Year	SBA	Percent Change	National	Percent Change
2011	35,751	-	35,880,947	-
2012	31,897	-10.8%	35,685,307	-0.5%
2013	33,838	6.1%	35,471,486	-0.6%
2014	31,844	-5.9%	35,375,675	-0.3%
2015	33,009	3.7%	35,665,567	0.8%
2016	30,206	-8.5%	35,287,075	-1.1%
2017	24,550	-18.7%	35,307,222	0.1%
2018	27,602	12.4%	35,794,970	1.4%
2019	34,457	24.8%	36,507,450	2.0%
2020	33,362	-3.2%	35,824,624	-1.9%
2021	36,695	10.0%	36,952,140	3.1%
CAGR 2011-2021	0.26%	N/A	0.29%	N/A

Sources: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.4.2.3 Based Aircraft

Based aircraft are those stored at SBA that do not include visiting itinerant aircraft. The FAA classifies based aircraft by the propulsion system, engine configuration, and weight. The main categories of based aircraft are single-engine piston (SEP), multi-engine piston (MEP), jets (turboprops and turbojets), helicopters, and other (experimental, light sport, glider, and ultralight aircraft).

Data for based aircraft at SBA are from the TAF and SBA records – the 2011 to 2020 records are sourced from the TAF, and the 2021 based aircraft count is from the 5010 form the Airport compiled and submitted. **Table 3-8** shows the historic based aircraft count in five-year increments from 2011 to 2021.

Table 3-8: SBA Historic Based Aircraft Counts

Fiscal Year	2011	2016	2021	2011-2021 CAGR
Single-engine piston	145	134	104	-3.3%
Jet	29	31	25	-1.5%
Multi-engine piston	22	16	8	-9.6%
Helicopter	6	6	2	-10.4%
Other	0	1	2	N/A
Total	**202**	**188**	**141**	-3.5%

Sources: 2011 to 2020 records from 2022 TAA TAF, 2022 based aircraft count from SBA FAA 5010 form
CAGR: Compound Annual Growth Rate

The number of based aircraft at SBA has declined an average of 3.5 percent annually in the past decade. This decline can be attributed to multiple factors, such as availability of hangar space at the Airport and, notably, the waitlists for hangar space at the Airport.

Industry-wide trends also indicate a decrease in general aviation aircraft through this period. Based on records in the 2022 FAA Aerospace Forecast, the national general aviation market for single- and multi-engine piston aircraft has been declining while turbine and light-sport fleets have been growing.

3.4.3 Military

No military aircraft are based at SBA, though military aircraft have operated at SBA, primarily for training purposes. Military activity is based on the demands of the U.S. Department of Defense rather than socioeconomic drivers; therefore, for planning purposes, military operations are assumed to remain flat throughout the forecast period.

3.4.4 Terminal Area Forecast

The TAF is the official forecast that the FAA releases annually for each airport in the FAA National Plan of Integrated Airport Systems (NPIAS). The TAF reports data and projections for the federal fiscal year (October 1 to September 30). The TAF contains forecasts for passenger enplanements, operations, and based aircraft. The TAF does not provide forecasts for operations by aircraft type, peak activity level, critical aircraft, or air cargo tonnage. The TAF data reported herein was published in February 2023 and is referred to in this chapter as the 2022 TAF. **Table 3-9** summarizes the TAF prepared for SBA.

Table 3-9: 2022 FAA TAF Summary

Fiscal Year	2011	2021	2031	2041	2021-2041 CAGR
Enplanements	**369,800**	**337,592**	**734,175**	**872,782**	**4.9%**
Operations	**106,161**	**103,419**	**121,296**	**128,747**	**1.1%**
Air carrier	3,901	10,328	14,610	17,272	2.6%
Air taxi	22,334	12,311	16,142	17,918	1.9%
Itinerant GA	42,810	42,258	46,644	49,917	0.8%
Itinerant military	1,127	1,229	1,083	1,083	-0.6%
Local GA	35,751	36,695	42,305	42,045	0.7%
Local military	238	598	512	512	-0.8%
Based aircraft	**202**	**141**	**164**	**182**	**1.3%**
Single-engine piston	145	104	124	144	2.8%
Jet	29	25	26	26	9.1%
Multi-engine piston	22	8	10	10	6.1%
Helicopter	6	2	2	2	8.4%
Other	0	2	2	2	0.0%

Source: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.5 COMMERCIAL SERVICE FORECASTS

This section discusses the methods, assumptions, and uncertainty associated with each of the enplanement, air cargo volume, and commercial operation forecasts. A preferred method is selected for each category and then compared against the TAF. The preferred method is selected based on factors including statistical validity, feasibility, past trends, professional judgment, and local market/airport characteristics.

3.5.1 Passenger Enplanements

3.5.1.1 Methods

Two main methods of forecasting were assessed for passenger enplanements at SBA. The first method is based on multivariable regression analysis, and the second method is based on the analysis of the current and past airlines operating at SBA and expected trends occurring with each airline's fleet, which affects airline seat capacity.

Regression Analysis Method

The passenger enplanement forecast evaluates historical trends and uses multivariable regression methods to project passenger enplanements. Variables highly correlated (those with a correlation coefficient (r) greater than 0.8) with passenger enplanements in the past are applied in the regression models. In the case of SBA, a strong correlation between enplanements and socioeconomics was found between 2015 and 2019.

The 2020 data were excluded from the analysis due to the impact of the COVID-19 pandemic. This period is marked by new airlines starting or resuming service at SBA, increasing the number of available routes to residents and visitors. For example, Alaska Airlines, American Airlines, and United Airlines all started regular or seasonal mainline service at SBA between April and August 2017.

Correlation describes how strongly related the rates of change between two variables are to each other. The stronger the correlation, the more linear their relationship is – a positive correlation means two variables increase together while a negative correlation means one variable decreases, while the other increases. The stronger the correlation, the closer the correlation coefficient approaches a value of 1.0 (strong positive correlation) or -1.0 (strong negative correlation), and having no correlation equals a correlation coefficient of 0.

The five most highly correlated variables for passenger enplanements at SBA between 2015 and 2019 are listed in **Table 3-10**. The strong correlation results indicate a relationship between the population and economy with passenger demand at SBA. This type of relationship between demand and socioeconomics can be attributed to factors such as wages and total income – people who earn more can afford to travel more or can choose to travel by air over other methods of transportation. A growing population and economy allow for more leisure travel by residents and/or allow businesses to afford more business-related flying.

These five independent variables were tested against the enplanement records using regression analysis. The validity of each test can be assessed in part by the R-squared (R^2) value, which describes how well the variables explain variance in the dependent variable (enplanements). R^2 is the percent of variance explained by the model.

Table 3-10: 2015-2019 SBA Enplanement Correlation Analysis

Variable	Correlation Coefficient
Population[1]	0.898
County employment[2]	0.961
County income per capita[2]	0.959
County gross regional product (GRP)[2]	0.915
County retail sales[2]	0.965

Sources: 1) California Employment Development Department, 2) Woods & Pool Economics

To account for the effects of the different but strongly correlated variables, multi-variable regression models were tested against historical enplanements. Multi-variable models allow the forecast to account for local (county employment and population) and national (GDP and national commercial passengers) forces. However, every variable added to a model increases the R^2 and never decreases it, which can lead to a high R^2 value, which could be misleading. Thus, the adjusted R^2 value is used to determine the level of confidence, as it accounts for this effect and mitigates the issue of not knowing if the R^2 value is higher due to the model being better or because it has more independent variables.

Table 3-11 shows the adjusted R^2 values of different variable combinations tested. Single-variable adjusted R-squared values are also shown for additional context.

Table 3-11: Regression Analysis

Variable(s)	Adjusted R-Squared Value
Population, employment	0.853
Income per capita, GRP, retail sales	0.922
Population, retail sales	0.885
Population	0.743
Employment	0.899

Source: California Employment Development Department, 2) Woods & Pool Economics

The regression method considers the forecasts of each variable to create the regression models. Each variable's projected value is used to produce the passenger enplanement forecast for the next 20 years. This analysis shows that multiple combinations of socioeconomic variables have resulted in good to strong adjusted R^2 values. Thus, the selection of the preferred variable combination for the multivariable regression forecast is determined by which combination of variables can best reflect SBA's community and market.

Based on the results of the regression analysis and consideration of the forecasts for each variable, the multivariable model based on population and employment was selected to model SBA passenger enplanement projections. When compared to the other combinations assessed, this combination accounts for both demographic and economic demand drivers that have historically correlated with enplanements at SBA.

Passenger Enplanement Regression Equation: $y = m_1(x_1) + m_2(x_2) + b$

y = Passenger Enplanements, b = Intercept from Regression Analysis

$$y = (15.43 \times County\ Employment) + (-3.01 \times County\ Population) - 2{,}571{,}940.23$$

This forecast results in an estimated 1,462,000 enplanements by 2041 with a 2021 to 2041 CAGR of 7.5 percent.

Unconstrained Growth and Enplanement per Capita

The multivariable regression method resulted in very strong probability of strong growth into the future. As with all forecasting methods in this chapter, it does not account for capacity constraints and assumes facilities will grow as needed to accommodate demand. If facilities are not developed to accommodate demand, this forecast assumes the demand remains regardless of whether it is actually realized. To account for factors such as market maturation that may result in growth rates decreasing over time, an enplanement per capita analysis was performed.

This second result from the regression forecast method examines the enplanement per capita at other airports that are expected to reach similar enplanement levels in the forecasting period. The airports were found using the FAA TAF website's search criteria in combination with population projections from the W&P dataset. Additionally, airports located in regions with a significantly higher population than Santa Barbara County were excluded. For example, any airport located in Los Angeles County would have significantly lower enplanement per capita due to the large population size.

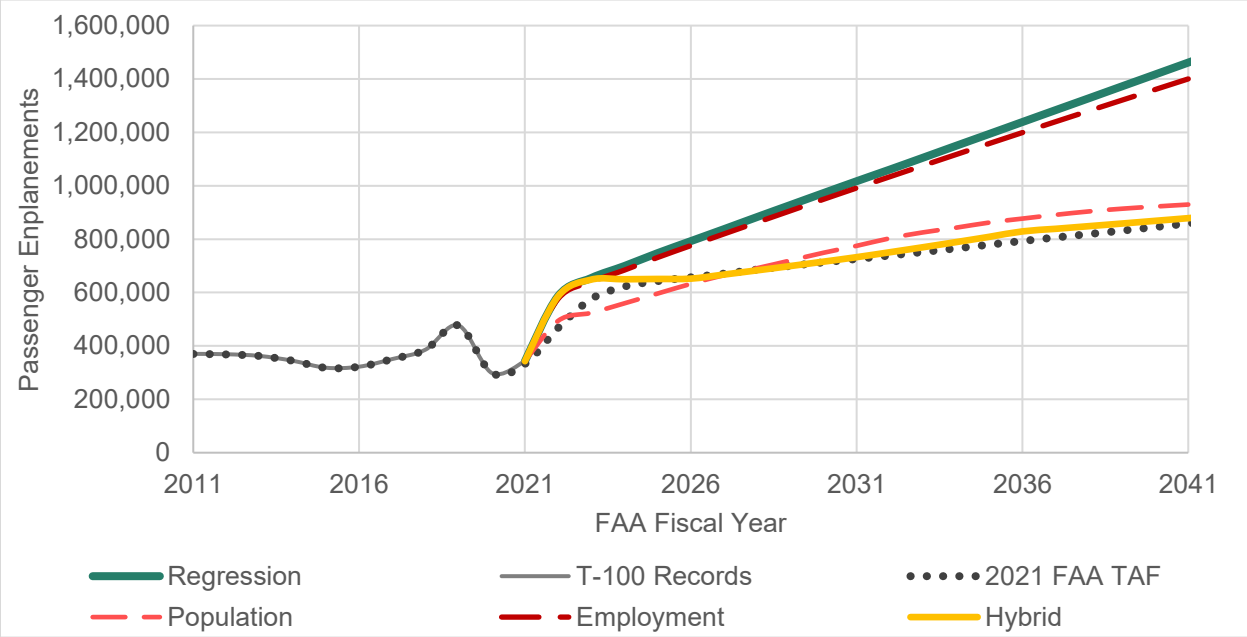
The results of this analysis indicated that enplanements per capita levels under 2.3 would be reasonable for the population size and enplanement expectations at SBA. The enplanement per capita forecast method caps the growth rate to 2.3 enplanements per capita by 2041, which would manifest in the lower CAGR between 2031 and 2041. This adjustment results in 1,104,000 enplanements in 2041 and a 20-year CAGR of 6 percent compared to the 7.5 percent of the unconstrained regression forecast.

Single-Variable Regression Analysis

Single-variable regression models were also tested as part of the regression analysis to assess how each variable may affect the multi-variable model. The variables included are the two used in the multivariable regression analysis: population and employment. The single-variable models show how each variable contributes to the two-variable model. The results show that employment projections are driving the majority of the high growth rate shown in the two-variable regression, having a 7.3 percent 20-year CAGR compared to the 5.1 percent CAGR of the population regression model.

The results of the regression analysis models are presented and compared against the 2022 FAA TAF in **Figure 3-2**.

Figure 3-2: Regression Method Forecast Results



Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Airline Fleet Mix Analysis Method

This method is based on determining enplanement projections by developing forecasts for airline activity and fleet changes. Changes projected for airline activity are based on maintaining current routes, increasing frequency to existing markets, reducing the seasonality of service, and adding new market nonstop service to airline network hubs or destinations with strong origin-destination demand.

Changes in the airline's fleet mix are based on the airlines' aircraft deliveries and orders. Nationally, there has been a trend in retiring smaller capacity aircraft, 50-seat aircraft like the Bombardier CRJ200 or the ~60-seat CRJ700, in favor of the larger aircraft, such as the ~76-seat CRJ900 or Embraer 175. Airlines also up-gauge equipment if passenger demand is sufficient. This trend is due to a variety of reasons, including aircraft age, economic viability, capacity, network hub considerations, and pilot availability. Airlines such as United Express are also replacing older, smaller, 50-seat jets with newer, more efficient models.

The changes in airline fleet mix affects the classification of operations in the forecast due to the FAA's classification of operation type by aircraft size – operations by the larger, 76-seat aircraft would be classified as air carrier operations rather than commuter operations.

This forecast method examines the current aircraft operating at SBA and determines if the models are being retired and replaced by the incumbent airlines. The FY2022 flight schedule, as reported by the airlines, is used as a foundation for this forecast with the aircraft grouped by seat capacity into four different categories (as shown in **Table 3-12**).

Table 3-12: Airline Fleet Mix Analysis Method Aircraft Seat Capacity Groups

Seat Capacity Group*	Typical Aircraft Operating at SBA
1-59 seats	CRJ200
60-76 seats	CRJ700, CRJ900, E175
125-150 seats	A319, 737-700, A320
> 150 seats	737-800, 737 MAX 7/8

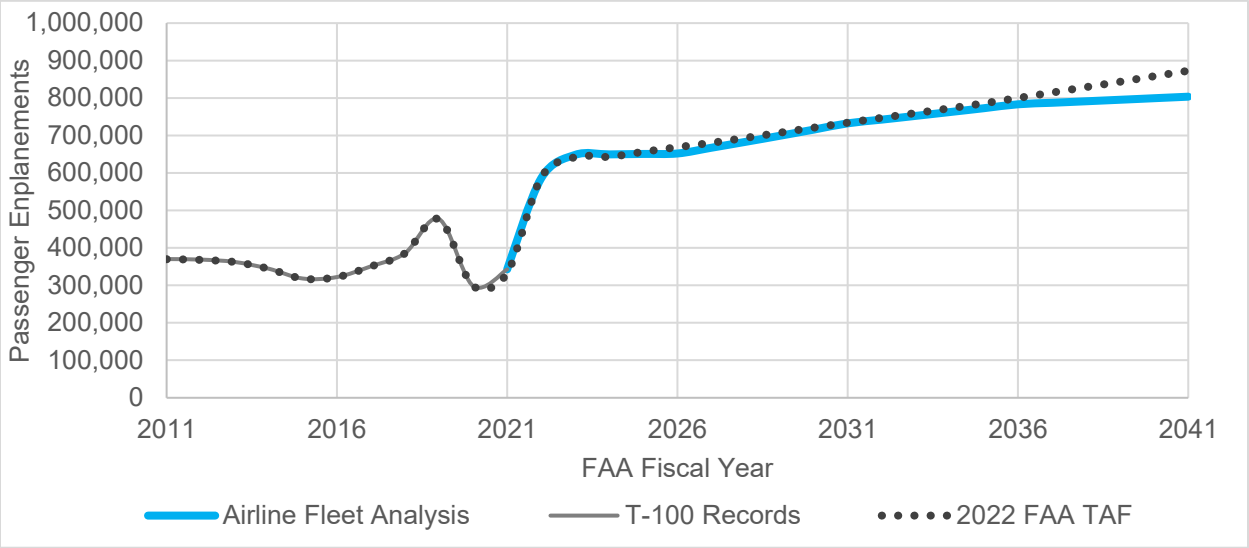
*Commercial service airlines did not operate aircraft with 76 to 125 seats in FY2022, so the category is excluded in this table. Currently, operating airlines are not currently expected to be replaced with aircraft of such gauge.
Sources: DiioMi, Santa Barbara Airport

The assumptions for this forecast method are as follows:

- Regional airlines are expected to up-gauge to 76-seat aircraft operations by 2036. This is based on airline aircraft orders and recent trends as reported in the 2022 FAA ASF.
- Southwest Airlines will replace the majority of 143-seat 737-700 operations at SBA with the 150-seat 737 MAX 7 as the 737-700 fleet is gradually retired through 2031.
- Aircraft seat configurations are not expected to change significantly over the forecast period; thus, the current seating capacity of each aircraft for each airline is assumed to remain constant as long as the aircraft is in service.
- Additional operations will result from the increasing frequency of current non-daily or seasonal routes, potential for up to three new carriers to enter the market within the forecast period, and the potential for up to five new routes or destinations.
- The forecast assumes an average annual load factor of 80 percent starting in FY2023. This load factor is based records provided by the airport, confirmation from T-100 data and an additional assessment of the FAA ASF projection – 85.1 percent average load factor for domestic operations by U.S. Commercial Air Carriers by FY2042, which is up from 83.2 percent in FY2022.

The results of the forecast are shown in **Figure 3-3** with the 2022 TAF enplanement levels shown for comparison. This forecast projects 804,000 total enplanements at SBA by 2041, or a 4.4 percent average annual growth rate through the forecast period.

Figure 3-3: Airline Fleet Mix Analysis Forecast Method Results



Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Preferred Enplanements Forecast and TAF Comparison

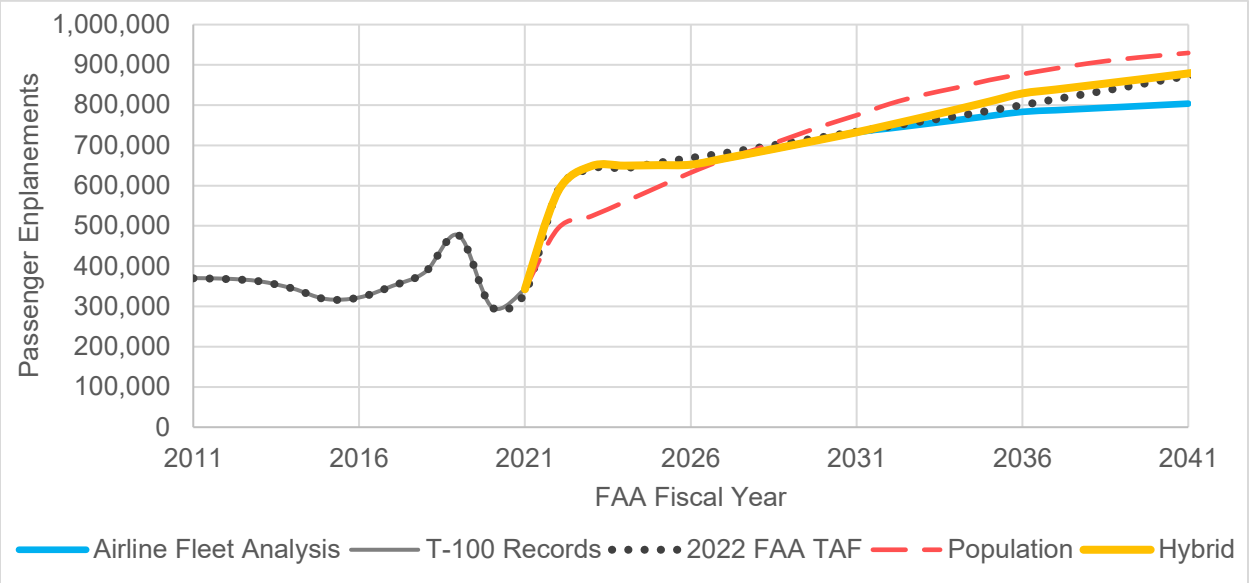
The preferred enplanements forecast is a combination of the airline operations analysis method and the population regression model. This hybrid forecast method is split into two sections: the short-term and the long-term. The short-term section projects out to 2031, during which air service at SBA continues to build up with additional routes, frequency, or additional airlines (based on the Airline Fleet Mix Analysis Forecast Method described above). The long-term projections are based on the population regression model from 2031 through the forecast period.

The hybrid method accounts for noted changes in airlines' fleet mixes in the coming years as well as assesses the existing and potential routes served by airlines at SBA in the short-term. In the long term, the strong correlation between Santa Barbara County's population counts and enplanements at SBA provides a model for forecasting enplanements as air service at SBA matures.

The multivariable regression methods result in greater growth rates and more than doubles enplanements at SBA in the 2022-2042 forecast period. While socioeconomic indicators have shown strong correlation with enplanements, due to external factors, such as the community's enjoyment of SBA being easily accessible and not as busy as larger airports, the more conservative market analysis method encompasses a more measured approach to accommodating increasing air travel demand with the preferences of the local community.

Figure 3-4 compares the preferred forecast against the 2022 FAA TAF. The projections from the airline fleet analysis method and population regression model are also shown for reference.

Figure 3-4: Enplanement Forecast Results vs 2022 TAF



Source: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Compared to the 2022 TAF, the preferred forecast exceeds the TAF in short-term growth until 2026, when the TAF projections coincide with the preferred forecast. This short-term variance is due to the relatively higher FY2022 enplanement levels expected in the preferred forecast. Based on airport records, FY2022 enplanements have exceeded the estimated FY2022 levels in the 2022 TAF by more than 10 percent. **Table 3-13** shows the difference between the 2022 TAF and the preferred forecast results.

Table 3-13: Preferred Enplanement Forecast and 2022 FAA TAF Comparison

Fiscal Year	TAF	Preferred Forecast	Difference from TAF	% Variance
2021	332,658	342,669	10,011	3.0%
2022	588,482	586,000	-2,503	-0.4%
2026	668,777	652,000	-16,748	-2.5%
2031	734,175	732,500	-1,700	-0.2%
2036	800,122	829,000	28,858	3.6%
2041	872,782	878,700	5,880	0.7%
CAGR '21-'41	4.9%	4.8%	N/A	N/A

Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

3.5.2 Commercial Aircraft Operations

Commercial aircraft operations are performed by scheduled and charter passenger airlines and cargo aircraft as well as Part-135 on-demand air taxi entities. Private business jet operations are counted as general aviation operations rather than commercial operations. This section combines the results of passenger enplanement and air cargo forecasts to determine the number of operations that will be occurring to meet the needs of passengers and cargo.

3.5.2.1 Commercial Passenger Service

The scheduled commercial operations were forecasted as part of the airline operations method for the enplanement forecast. The forecast analysis involved examining the FY2021 and FY2022 flight schedules provided by the airlines to determine the current fleet mix operating at SBA. Each aircraft model in the schedule was sorted by airline, seat capacity, and operation count. Airlines often differ in exact seat capacity due to the configurations used, such as number of first or business-class seats. For example, United Airlines' 737-700 is configured to 126 seats while Southwest Airlines' 737-700 is configured for 143 seats.

Each aircraft was assessed for routes served and potential for up-gauging and frequency increases. The information used for up-gauging was determined by each airline's aircraft orders and deliveries. Service frequency and operation count changes consisted of evaluating existing routes for changes from seasonal to year-round and potential new routes airlines may offer. New routes were evaluated by analyzing routes the airlines already serve at other airports and looking for potential new destinations, such as those formerly served by airlines that have left the SBA market, hubs that are not currently served such as Salt Lake City (SLC), or destinations based on current socioeconomic changes such as Austin, Texas – which would fall in line with the efforts to grow the tech businesses in Santa Barbara and the rest of the Central Coast.

Thus, the assumptions for this forecast method are the following:

- Regional airlines are expected to up-gauge to 76-seat aircraft operations by 2036. This is based on airline aircraft orders and recent trends as reported in the 2022 FAA ASF.
- Southwest Airlines will replace the majority of 143-seat 737-700 operations at SBA with the 150-seat 737 MAX 7 as the 737-700 fleet will be gradually retired through 2031.
- Aircraft seat configurations are not expected to change significantly over the forecast period; thus, the current seating capacity of each aircraft for each airline is assumed to remain constant as long as the aircraft is in service.
- Additional operations will result from the increasing frequency of current non-daily or seasonal routes, potential for up to three new carriers to enter the market within the forecast period, and the potential for up to five new routes or destinations.

Table 3-14 shows the projected operations per day by aircraft seat capacity group using these assumptions. The estimates are calculated based on the FY2022 airline schedule with the up-gauging, frequency changes, and potential new routes.

Table 3-14: Estimated Operations Per Day by Aircraft Seat Capacity

Seat Capacity Group*	2022	2026	2031	2036	2041
1-59 seats (CRJ-200)	5.5	4.2	2.0	0.0	0.0
60-76 seats (CRJ-700, E175)	15.4	16.6	19.5	20.1	21.1
125-150 seats (737-700, A319)	19.9	19.9	21.8	23.5	24.0
> 150 seats (B737 Max 7/8)	1.8	2.9	2.9	3.9	3.9

*Commercial service airlines did not operate aircraft with 76 to 125 seats in FY2022, so the category is excluded from this table. Currently, operating airlines are not currently expected to be replaced with aircraft of such gauge.
Sources: DiioMi, U.S. DOT T-100, Santa Barbara Airport

Table 3-15 provides a summary of the scheduled passenger operations forecast. The total number of scheduled passenger aircraft operations are expected to have a CAGR of 2.1 percent through the forecast period. Air carrier operations are expected to grow at an average of 2.6 percent annually. Air taxi operations by scheduled air carriers are expected to decrease and to be discontinued by 2036.

Table 3-15: Scheduled Passenger Aircraft Operations

Fiscal Year	Air Carrier	Air Taxi / Commuter	Total Scheduled Passenger Operations
2021	10,328	981	11,309
2022	12,384	1,998	14,382
2026	14,000	1,500	15,500
2031	16,100	730	16,830
2036	17,300	0	17,300
2041	17,900	0	17,900
CAGR '21-'41	2.8%	-99.9%	2.3%

Sources: 2022 FAA TAF, Mead & Hunt
CAGR: Compound Annual Growth Rate

Air Taxi Passenger Operations

Additional non-scheduled air taxi passenger operations are included in the U.S. DOT T-100 records and within SBA ATCT records. SBA's air taxi operations count is considered to capture the non-scheduled air taxi operations in the T-100 records.

The forecast for non-scheduled commercial passenger operations is based on the difference between the T-100 and SBA records, as shown in **Table 3-5**. The forecasted growth rate of the non-scheduled air taxi operations is based on the 2022 FAA Aerospace Forecast (ASF). The growth rates used are broken into three timeframes to capture the near- (2021-2026), mid- (2026-2031), and long-term (2031-2041) projections of the FAA ASF. **Table 3-16** shows the results of the non-scheduled air taxi operation forecast and the total passenger air taxi operations forecast.

Table 3-16: Passenger Air Taxi Operations Forecast

Fiscal Year	Non-Scheduled Air Taxi Operations	Total Air Taxi Operations
2021	8,700	9,675
2022	9,600	11,604
2026	11,700	13,300
2031	11,900	12,600
2036	12,000	12,000
2041	12,200	12,200
CAGR '21-'41	1.7%	1.2%

Sources: Mead & Hunt, U.S. DOT T-100, SBA ATCT

Total Commercial Passenger Operations Forecast

The total commercial passenger operations forecast is the sum of the scheduled and non-scheduled operation projections. **Table 3-17** shows the results of the commercial passenger operations forecast.

Table 3-17: Total Commercial Passenger Operations Forecast

Fiscal Year	Air Carrier Operations	Air Taxi / Commuter Operations	Total Passenger Aircraft Operations
2021	10,328	11,213	21,541
2022	12,384	12,775	25,159
2026	14,000	13,300	27,300
2031	16,100	12,600	28,700
2036	17,300	12,000	29,300
2041	17,900	12,200	30,100
CAGR '21-'41	2.8%	0.4%	1.7%

Sources: Mead & Hunt, U.S. DOT T-100, SBA ATCT

3.5.2.2 Scheduled Air Cargo

The air cargo operations and volume forecast is based on a combination of T-100 records, the FAA's Traffic Flow Management System Counts (TFMSC) data, and Airport-provided records. The cargo airlines operating at SBA include Ameriflight, operating for UPS, and FedEx operators, which include Empire Airlines and West Air Inc. The data obtained from the T-100 records only includes FedEx-related data as Ameriflight does not report to the U.S. DOT due to the company's operating certificate. Thus, Ameriflight operations were extrapolated from TFMSC records by cross-referencing Ameriflight's aircraft fleet with TFMSC's operation count by aircraft type.

The air cargo operations at SBA are categorized as air taxi/commuter operations due to the aircraft being used by the cargo airlines operating at the Airport. The projected air cargo activity is expected to be lower than the COVID-19 pandemic period of FY2020 and FY2021, but it will remain flat through the forecast period. Cargo volume is also projected to remain flat; however, it is anticipated that additional volume will be accommodated at the projected aircraft operation levels as not every flight utilizes the full payload capacity of the aircraft.

Table 3-18: Air Cargo Airline Activity

Year	Air Taxi/Commuter Cargo Aircraft Operations	Volume (Metric Tons)
Historical		
2011	1,193	1,822
2016	1,170	1,582
2021	1,098	1,537
Forecast		
2026	1,460	1,535
2031	1,460	1,535
2036	1,460	1,535
2041	1,460	1,535
CAGR 2011-2021	-0.8%	-1.7%
CAGR 2021-2041	1.4%	0.0%

Sources: Cargo volume data from Santa Barbara Airport, Operations data from U.S.DOT T-100 and FAA TFMSC
CAGR: Compound Annual Growth Rate

The flat projections are attributed to two main factors: SBA's driving distance to two large metro areas and the major difference in cost between ground cargo and air cargo.

First, SBA's location, which is within a 3-hour drive from the Los Angeles metro area and an average 6-hour drive to San Francisco, means that air cargo carriers can utilize the larger hub airports in northern and southern California for a large portion of cargo traveling to and from the region. Thus, it is mainly the packages requiring faster delivery times that would likely comprise SBA air cargo as other cargo can be transported via ground transportation.

Second, there has been a general nationwide trend over the past two decades of shifting to increased ground-freight methods due to the modern logistics models used by shipping companies. Companies like Amazon, FedEx, and UPS have developed nationwide systems to facilitate the growing demand for quick delivery times.

The delivery model allows for fewer flights between the origin and destination as ground transportation, using trucks and vans, is typically able to reach the final destination within a day after the cargo arrives at the processing facilities. This delivery method involves a hub-and-spoke model where packages can fly overnight from the origin to a facility near the destination and ground-transportation can provide last-mile delivery.

3.6 GENERAL AVIATION FORECASTS

The aviation operations forecast was based on the market share method, which compares the percentage market share SBA operations have against the larger market. The two markets used for comparison are the state of California and the FAA Western-Pacific (APW) Region, which encompasses multiple states and territories (California, Nevada, Arizona, Hawaii, American Samoa, Guam, and Marshall Islands). The markets were selected due to location and availability of general aviation operations data. The forecasts assume SBA's market share of general aviation activity will remain consistent through the forecast period.

A regression-based forecast was ruled out after initial correlation analysis did not result in any socioeconomic indicators showing strong correlation with general aviation operations at SBA. The low correlation coefficients indicate that socioeconomic variables would not likely be accurate demand drivers for SBA general aviation activity.

Based on the 2022 FAA TAF, general aviation operations at SBA between FY2011 and FY2021 averaged 0.95 percent of California's general aviation operations and 0.65 percent of the APW region's operations. SBA's market share in both geographic ranges has remained relatively consistent through this period and, thus, the market share being used in the forecast is held constant through the forecast period.

Table 3-19 shows the results of the market share forecast for total general aviation activity at SBA for each geographic market.

Table 3-19: SBA Total General Aviation Operations Forecast Results

Fiscal Year	California Market Share (0.95%)	APW Market Share (0.65%)
Historical		
2021	78,950	78,950
Forecast		
2022	76,530	76,240
2026	81,210	82,670
2031	81,940	83,480
2036	82,690	84,310
2041	83,460	85,180
CAGR 2021-2041	0.28%	0.38%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

The two forecasts differ by 1,720 operations, with the APW market share forecast having a higher growth rate. The preferred forecast is the California market share method. This is due to the smaller geographic area of California in comparison to the APW region. The California TAF is better suited to show nuances in the local trends in general aviation, and SBA's market share is also shown to be more consistent over the historic period when compared to the APW market share.

3.6.1 Itinerant General Aviation Operations

The itinerant general aviation operation forecast for SBA is based on the Airport's market share of California's itinerant general aviation operations. Between FY2011 and FY2021, SBA's market share averaged 1.1 percent of California's itinerant general aviation operations. This forecast method takes SBA's market share for the California market and applies it to the future operations for each market as projected in the 2022 FAA TAF.

Table 3-20 shows the results of the forecasts based on the California itinerant general aviation market.

Table 3-20: SBA Itinerant GA Operations Forecast Results

Fiscal Year	California Market Share (1.1%)
Historical	
2021	42,258
Forecast	
2022	41,220
2026	43,900
2031	44,260
2036	44,640
2041	45,020
CAGR 2021-2041	0.32%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

Compared to the 2022 TAF, the preferred forecast has a higher short-term growth in the next five years, but the overall FY2021 to FY2041 average annual growth rate is lower compared to the TAF estimates. **Table 3-21** compares the TAF and preferred forecast results.

Table 3-21: Preferred Itinerant GA Operations Forecast and 2022 FAA TAF Comparison

Fiscal Year	TAF	Preferred Forecast	Difference	% Variance from TAF
2021	42,258	42,258	0	0.0%
2022	43,881	41,220	-2,661	-6.1%
2026	45,089	43,900	-1,189	-2.6%
2031	46,644	44,260	-2,384	-5.1%
2036	48,253	44,640	-3,613	-7.5%
2041	49,917	45,020	-4,897	-9.8%
CAGR '21-'41	0.84%	0.32%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.6.2 Local General Aviation Operations

Local general aviation operations at SBA rely on the presence of flight training activity to remain consistent. The introduction of additional flight training, such as those due to increased flight school fleet, additional flight school tenants, existing tenants offering new flight training programs, or increased flight training activity at nearby airports, may result in increased numbers of touch-and-go operations. SBA's location and the ATCT makes the Airport an attractive airfield for practice for pilots from nearby non-towered airports who want experience flying at a towered airport. However, based on current information, there are no expected changes that would significantly increase or decrease training activity at SBA.

The local general aviation operation forecast is based on the difference between the total general aviation operations forecast and the itinerant general aviation operations forecast at SBA. This method was chosen as locally generated operations at SBA are assumed to have demand drivers more localized than that of itinerant general aviation.

The results of the local general aviation operations forecast are shown in **Table 3-22**

Table 3-22: SBA Local General Aviation Operations Forecast Results

Fiscal Year	Local GA Operations
2021	36,695
2022	35,320
2026	37,320
2031	37,680
2036	38,050
2041	38,440
CAGR '21-'41	0.23%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

The preferred forecast is based on which geographic location is better suited to describe the conditions more specific and local to SBA, making the California market share forecast the preferred forecast. **Table 3-23** compares the TAF and preferred forecast results.

Table 3-23: Preferred Local GA Operations Forecast and 2022 FAA TAF Comparison

Fiscal year	TAF	Preferred forecast	Difference	% Variance from TAF
2021	36,695	36,695	0	0.0%
2022	42,539	35,320	-7,219	-17.0%
2026	42,435	37,320	-5,115	-12.1%
2031	42,305	37,680	-4,625	-10.9%
2036	42,175	38,050	-4,125	-9.8%
2041	42,045	38,440	-3,605	-8.6%
CAGR 2021-2041	0.68%	0.23%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.6.3 Based Aircraft

Exploratory correlation analysis of based aircraft at SBA and Santa Barbara County socioeconomic indicators did not result in any strong correlations being found. Thus, socioeconomic variables were not considered further as demand drivers for based aircraft at SBA.

The forecast method used to project the based aircraft fleet at SBA is based on market share, in accordance with the methodology best suited to project general aviation aircraft operations. As noted above, the aviation operations forecast was based on the market share method, which compares the percentage market share SBA operations have against the larger market. The two markets used for comparison are the state of California and the national general aviation fleet as shown in the 2022 FAA ASF. The California-based aircraft fleet data is sourced from the 2022 FAA TAF. **Table 3-24** shows SBA's market share percentages of California, the APW Region, and National fleets by aircraft type.

Table 3-24: SBA Based Aircraft Fleet Market Share Percentages

Market	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other
California	0.86%	2.49%	0.94%	0.67%	0.19%
APW Region	0.61%	1.71%	0.62%	0.40%	0.09%
National	0.10%	0.11%	0.12%	0.05%	0.00%

Source: National Fleet - 2022 FAA Aerospace Forecast, California Fleet and APW Fleet - 2022 FAA TAF

All aircraft types in the California based aircraft fleet are projected to grow through the forecast period. In contrast, the national GA fleet has been experiencing a decrease in single- and multi-engine piston aircraft while jet, helicopter, and other aircraft have been experiencing growth and are expected to continue to grow. **Table 3-25** shows the average annual growth rates by aircraft type for California, the FAA APW region, and the United States.

Table 3-25: California, Region, and National Based Aircraft Fleet FY2021-FY2041 CAGR

Market	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other
California	0.85%	0.45%	1.31%	0.19%	0.00%
APW Region	1.02%	0.39%	1.45%	0.61%	0.00%
National	-0.91%	1.87%	-0.35%	1.54%	1.32%

Source: National Fleet - 2022 FAA Aerospace Forecast, California and APW Fleet – 2022 FAA TAF
CAGR: Compound Annual Growth Rate

Compared to the national GA fleet, the state and APW markets are expected to experience more growth in piston aircraft and relatively less growth in jet aircraft. Based on hangar waiting lists provided by the airport and information provided by airport tenants, aircraft included on the waitlist are jets and turboprops such as the those in the Gulfstream family or the Beechcraft King Air. Thus, the national market share is the preferred base to project the future based aircraft fleet at SBA. Additionally, piston aircraft waitlist data was included in the forecast by adding the aircraft over the next decade. This method assumes that additional facilities needed to accommodate the waitlist will be added within the next ten years.

The market share is applied to the 2022 FAA ASF general aviation fleet forecasts, resulting in the based aircraft estimates for FY2022 to FY2041. To incorporate the FY2021 based aircraft count obtained from SBA's 5010 form, the CAGR between FY2021 and FY2041 of the national market share forecast was calculated. An adjusted forecast is then calculated using this CAGR – this method results in the same number of based aircraft in FY2041, with the final forecast having a gradual increase to 185 total based aircraft. **Table 3-26** shows the results of the adjusted national market share of the based aircraft forecast.

Table 3-26: SBA Based Aircraft Forecast

Fiscal Year	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other	Total
2021	104	25	8	2	2	141
2022	104	26	8	2	2	142
2026	109	29	11	3	2	154
2031	115	33	13	4	2	167
2036	115	38	15	5	2	175
2041	115	44	17	7	2	185
CAGR '21-'41	0.5%	2.9%	3.9%	6.5%	0.0%	1.4%

Source: Santa Barbara Airport, Mead & Hunt
CAGR: Compound Annual Growth Rate

The comparison between the 2022 TAF and preferred forecast results for based aircraft at SBA is shown in **Table 3-27.** Overall, the preferred total based aircraft count forecast is expected to be similar to the 2022 TAF projections, with the preferred forecast's CAGR being 0.05 percent above that of the 2022 TAF.

Table 3-27: Preferred Based Aircraft Forecast and 2022 FAA TAF Comparison

Fiscal Year	TAF	Preferred Forecast	Difference from TAF	% Variance
2021	141	141	0	0.0%
2022	144	142	-2	-1.3%
2026	154	154	0	-0.2%
2031	164	167	3	1.7%
2036	174	175	1	0.7%
2041	184	185	1	0.6%
CAGR '21-'41	1.34%	1.37%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.7 ELECTRIC AIRCRAFT AND ADVANCED AIR MOBILITY

The electric aircraft forecast for SBA is an estimate of potential activity levels by Electric Vertical Takeoff and Landing (eVTOL) aircraft. This analysis is based on regional-scale transportation rather than urban air mobility. Santa Barbara's location in the California central coast makes it a feasible destination from many

areas in Southern California. Thus, the eVTOL aircraft used in this analysis would be those with a range of approximately 250 miles. This is on the longer-range side of currently available eVTOLs; however, the potential adoption and acceptance of new aviation technologies will depend heavily on the availability of infrastructure at the origin and destination, as well as how convenient it will be to get to and from vertiports at the origin and destination. Thus, long-range eVTOLs that are currently in testing would likely be available when infrastructures and policies for eVTOLs are in place.

The forecast for eVTOLs is based on an analysis conducted by Goyal et. Al (2021) in *Advanced Air Mobility: Demand Analysis and Market Potential of the Airport Shuttle and Air Taxi Markets*. The study used a multi-method approach, combining AAM travel demand modeling, Monte Carlo simulations, and constraint analysis of ten metropolitan regions including New York, Phoenix, Southern California counties, and the San Francisco Bay Area. The study concluded that AAM could capture 0.5 percent of the air taxi and airport taxi mode share. With an unconstrained estimate, such as assuming vertiports will be located in areas favorable to all travelers and costs were not a consideration, future eVTOL passengers would total approximately 14,822 in 2041. Assuming the eVTOL aircraft will have an average capacity of 4 passengers, that results in 3,705 annual eVTOL operations, or approximately 10 daily operations.

3.8 CRITICAL AIRCRAFT

The critical aircraft is defined as being the most demanding type or group of aircraft with similar characteristics that make regular use of the airport. Regular use is defined as more than 500 annual operations (a takeoff or landing), excluding touch-and-go operations. To determine the critical aircraft at SBA, operations data by aircraft type is provided by the Traffic Flow Management System Counts (TFMSC). The TFMSC only captures operations with filed flight plans, so aircraft used for flight training are not represented in the dataset.

Aircraft type is defined by the Airport Reference Code (ARC), which consists of the Aircraft Approach Category (AAC) and the Airport Design Group (ADG). These categories are defined by the aircraft dimensions and approach speed.

The critical aircraft at SBA for FY2022 is the Boeing 737-800 (ARC D-III), with 584 total operations based on TFMSC records. Additionally, TFMSC records show 394 operations by Gulfstream V/G500 and 288 operations by Gulfstream G650, both of which are categorized as D-III. The future fleet composition at SBA is unknown and is based on the airlines' aircraft orders that are currently being fulfilled or have yet to be fulfilled. Based on the aircraft currently operating at SBA and publicly available information regarding the airlines' fleet plans, newer Boeing 737 MAX aircraft models that are expected to replace their existing counterparts have similar physical features. Thus, the critical aircraft is expected to remain at ARC D-III through the forecast period.

3.9 SUMMARY

The forecast summary compared to the 2022 FAA TAF is presented in **Table 3-28** and **Table 3-29**. Highlights of the forecast are as follows:

- Santa Barbara County's population is expected to remain relatively steady throughout the 2022-2042 forecast period. The economy is projected to grow with income per capita, GRP, and total retail sales all growing faster than the population.

- The preferred enplanement forecast method is a hybrid method based on airline operations analysis where fleet mix, seat capacity, and serviced routes were assessed for the short term and a population regression model for the long-term forecast. This forecast projects enplanements at SBA to grow 4.8 percent between FY2021 and FY2041.
- Commercial passenger operations are expected to increase an average of 1.9 percent annually. Most of the growth is due to the increase in air carrier operations as airlines up-gauge from smaller aircraft and retire older 50-seat aircraft. Following national trends, regional airlines are expected to replace 50-seat aircraft with 76-seat aircraft by 2031.
- Cargo operations and volume are expected to remain steady into the future as ground transportation is preferred by cargo operators due to efficiency and SBA's proximity to the Los Angeles and San Francisco metro areas.
- Itinerant general aviation operations are projected to increase an average of 0.3 percent annually through the forecast period. The forecast is based on SBA's market share of total California itinerant general aviation operations.
- Local general aviation operations are projected to increase an at an average rate of 0.2 percent annually through the forecast period. The forecast is based on subtracting the projected total general aviation operations at SBA and the forecasted itinerant general aviation operations.
- SBA's based aircraft counts are forecasted using SBA's market share of the national general aviation fleet. All aircraft types are expected to grow through the forecast period. The total based aircraft count is expected to grow at a CAGR of 1.37 percent between FY2021 and FY2041.
- The current critical aircraft at SBA is the Boeing 737-800, which is ARC D-III. The future critical aircraft is expected to remain in the same ARC.

Table 3-28: Forecast/TAF Comparison

AIRPORT NAME: Santa Barbara Airport

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2021	342,669	337,592	1.5%
Base yr. + 5yrs.	2026	652,000	668,777	-2.5%
Base yr. + 10yrs.	2031	732,500	734,175	-0.2%
Base yr. + 15yrs.	2036	829,000	800,122	3.6%
Commercial Operations				
Base yr.	2021	22,639	22,639	0.0%
Base yr. + 5yrs.	2026	28,800	28,750	0.2%
Base yr. + 10yrs.	2031	30,200	30,752	-1.8%
Base yr. + 15yrs.	2036	30,800	32,884	-6.3%
Total Operations				
Base yr.	2021	103,419	103,419	0.0%
Base yr. + 5yrs.	2026	111,847	117,869	-5.1%
Base yr. + 10yrs.	2031	113,967	121,296	-6.0%
Base yr. + 15yrs.	2036	115,317	124,907	-7.7%

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).

Source: Mead & Hunt, 2022 FAA TAF

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Table 3-29: **TAF Forecast Worksheet**

A. Forecast Levels and Growth Rates

AIRPORT NAME: Santa Barbara Airport **Specify base year:** 2021

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.	Average Annual Compound Growth Rates: Base yr. to +1	Base yr. to +5	Base yr. to +10	Base yr. to +15
Passenger Enplanements									
Air Carrier	320,131	513,640	596,160	706,070	829,000	60.4%	13.2%	8.2%	6.5%
Commuter	22,538	72,360	55,840	26,430	0	221.1%	19.9%	1.6%	-100.0%
TOTAL	342,669	586,000	652,000	732,500	829,000	71.0%	13.7%	7.9%	6.1%
Operations									
Itinerant									
Air carrier	10,328	12,384	14,000	16,100	17,300	19.9%	6.3%	4.5%	3.5%
Commuter/air taxi	12,311	13,875	14,800	14,100	13,500	12.7%	3.8%	1.4%	0.6%
Total Commercial Operations	22,639	26,259	28,800	30,200	30,800	16.0%	16.0%	4.9%	2.9%
General aviation	42,258	41,220	43,900	44,260	44,640	-2.5%	0.8%	0.5%	0.4%
Military	1,229	1,229	1,229	1,229	1,229	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	36,695	35,320	37,320	37,680	38,050	-3.7%	0.3%	0.3%	0.2%
Military	598	598	598	598	598	0.0%	0.0%	0.0%	0.0%
TOTAL OPERATIONS	103,419	104,626	111,847	113,967	115,317	1.2%	1.6%	1.0%	0.7%
Instrument Operations	33,277	36,625	39,791	41,288	41,987	10.1%	3.6%	2.2%	1.6%
Peak Hour Operations	52	52	52	55	56	-0.9%	0.0%	0.6%	0.5%
Cargo/mail (enplaned+deplaned tons)	1,333	1,333	1,690	1,690	1,690	26.8%	26.8%	4.9%	2.4%
Based Aircraft									
Single Engine (Nonjet)	104	104	109	115	115	0.0%	0.9%	1.0%	0.7%
Multi Engine (Nonjet)	8	8	11	13	15	2.8%	7.0%	4.9%	4.2%
Jet Engine	25	26	29	33	38	2.9%	2.9%	2.9%	2.9%
Helicopter	2	2	3	4	5	6.5%	6.5%	6.5%	6.5%
Other	2	2	2	2	2	0.0%	0.0%	0.0%	0.0%
TOTAL	141	142	154	167	175	0.8%	1.7%	1.7%	1.5%

B. Operational Factors

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.
Average aircraft size (seats)					
Air carrier	112	111	111	111	113
Commuter	50	50	50	50	50
Average enplaning load factor					
Air carrier	64%	71%	80%	80%	80%
Commuter	76%	80%	80%	0%	0%
GA operations per based aircraft	560	551	527	490	485

Source: Mead & Hunt, 2022 FAA TAF

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