2023 ALP Update
Aviation Demand Forecast
Aspen/Pitkin County Airport

Draft: Work in progress for review only

Draft date: April 20, 2023

Contents

Aviation Demand Forecast

1.1 Introduction

This report describes the forecasts of aviation demand at Aspen/Pitkin County Airport (ASE or the Airport) that will be used to guide the Airport Layout Plan Update (ALP Update) process. Aviation demand forecasts represent critical inputs to the ALP Update as they determine the required level of airport facility development needed to accommodate expected levels of future demand. The forecasts for this ALP Update Plan have been prepared using the base year of 2022 and cover a 20-year planning horizon (2022 to 2042). They represent an independent evaluation of future activity at ASE and use the most recent available data.

Key aviation demand elements measured in the forecast include airline passenger enplanements, commercial aircraft operations (air carrier and air taxi), general aviation (GA) operations, military operations, projections of based aircraft, and peak period activity.

1.2 Economic Basis for Forecast Aviation Demand

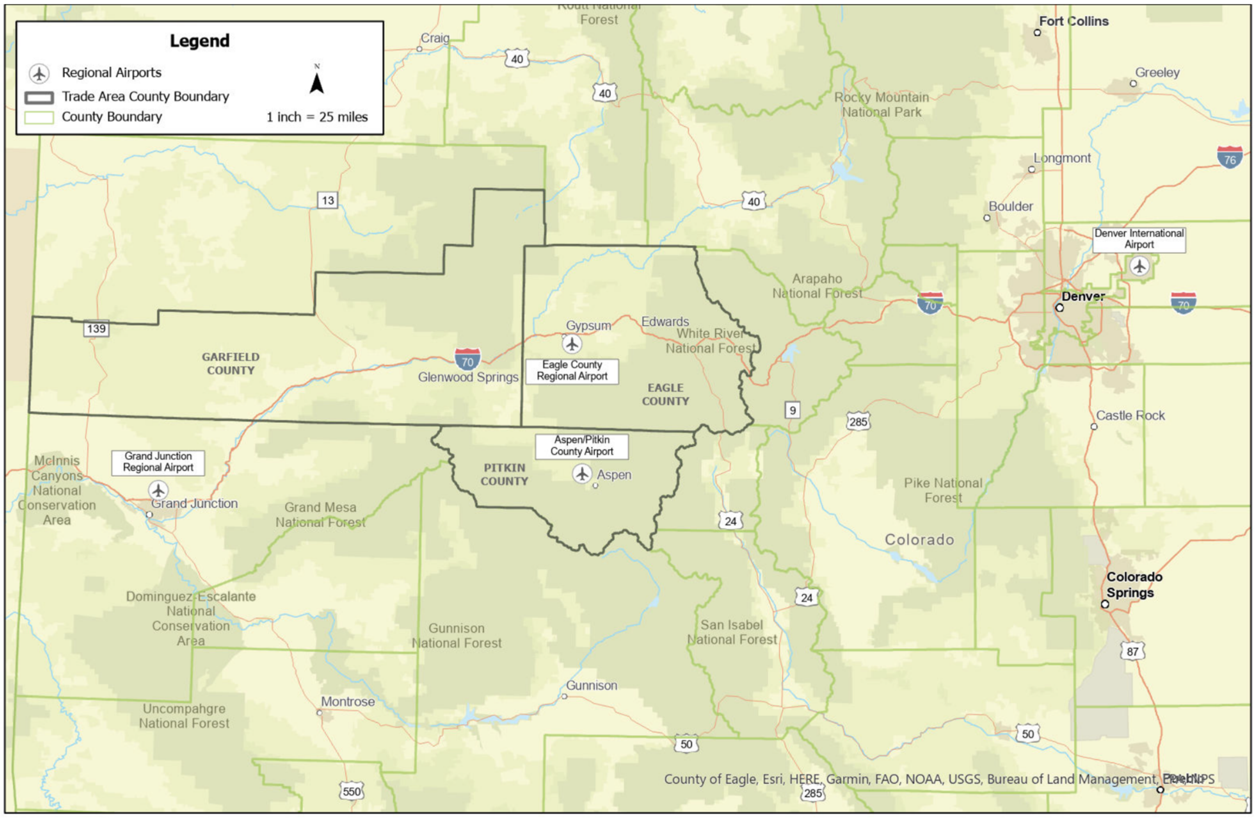
This report's forecast for aviation demand is based in part on the outlook for socio-economic growth in the CSA, Colorado, and the U.S. Population, employment, and personal income in the CSA are all projected to maintain steady growth and will continue to provide a consistent economic base for aviation demand. Employment is projected to be anchored by the strong and well-developed tourism industry, with unemployment rates typically below that in Colorado and the U.S. In addition, GDP for the CSA is projected to increase at a rate above historical rates (2.4% forecast vs. 0.6% historical 2010 - 2021) as the region and the nation recover from recently depressed economic conditions. The outlook based on these socioeconomic factors is reflected in the aviation demand forecasts presented in this report.

1.3 Airport Service Area

A review of historical and projected socioeconomic data for the Airport's air service area (ASA) is an essential element in developing the aviation demand forecast. The air service area is the geographic area from which the Airport draws most of its passengers. The Aspen/Pitkin County Airport air service area is defined for this report as the Edwards-Glenwood Springs Combined Statistical Area (Aspen CSA or CSA). According to the US Office of Management and Budget, the CSA includes Garfield, Eagle, and Pitkin counties in Colorado. The CSA consists of the major cities of Glenwood Springs, Carbondale, and Aspen.

The City of Aspen is in Pitkin County in west-central Colorado and is surrounded by the White River National Forest in the central region of the Colorado Rocky Mountains. Aspen is located 200 miles southwest of Denver and 130 miles East of Grand Junction at the southeastern end of the Roaring Fork Valley. Aspen is home to four world-class ski resorts, including Aspen Highlands, Aspen Mountain, Snowmass, and Buttermilk. Other popular ski destinations near Aspen include Vail, located approximately 35 miles northeast of the Airport; Crested Butte, about 20 miles to the southwest; and Steamboat Springs, about 155 miles north. **Map 1** shows the counties within the CSA and the Airport's location.

Map 1
AIR TRADE AREA
Aspen/Pitkin County Airport



1.4 Socioeconomic Indicators

The following sections provide an overview of the key socioeconomic variables of the Aspen CSA that typically contribute to aviation demand, including population, non-farm employment, personal income, and gross domestic product (GDP). In addition, the most recent available historic and forecast statistics are provided below for these key socioeconomic variables for the CSA, the State of Colorado (Colorado), and the U.S. The historic and forecast statistics for these socioeconomic variables are presented in **Table 1**. Many of the socioeconomic data included in this report are sourced from Woods & Poole Economics, Inc. Woods & Poole is an independent research firm that publishes demographic and economic research on a county level. Woods & Poole has been in business for over 40 years and is based in Washington, D.C.

1.4.1 Population

Population growth in the CSA from 2010 to 2021 occurred at an average rate of 0.69% per year, which was below the average rate for Colorado of 1.29% per year and just over the U.S. average rate of 0.64% per year, according to Woods & Poole Economics, Inc. (Woods & Poole) data. For 2022 to 2042 population in the CSA is projected to grow at an average rate of 1.04% per year compared to 0.97% per year for Colorado and 0.60% for the U.S. (see **Table 1**).

1.4.2 Employment

Non-farm employment in the CSA grew at a rate of 1.16% per year from 2010 to 2021, which was below the average rates for both Colorado of 2.08% per year and the U.S. of 1.41%, according to data from Woods & Poole. Based on employment growth projections, non-farm employment in the CSA for 2022 to 2042 is projected to increase at a rate of 1.49% per year compared to 1.42% per year for Colorado and 1.22% for the U.S. (see **Table 1**).

1.4.3 Income

Per Capita Personal Income (PCPI) in the CSA grew at a rate of 4.05% per year from 2010 to 2021 compared to growth of 2.85% per year for Colorado and 1.99% for the U.S. according to data from Woods & Poole. Based on PCPI growth projections, PCPI in the CSA for the period 2022 to 2042 is projected to increase at a rate of 1.65% per year compared to 1.66% per year for Colorado and 1.57% for the U.S. (see **Table 1**)

Table 1
HISTORICAL AND PROJECTED SOCIOECONOMIC DATA
Aspen/Pitkin County Airport

	Population			Non-Farm Employment			Per Capita Personal Income (2012 dollars)		
Historical	**Aspen CSA**	**Colorado**	**United States**	**Aspen CSA**	**Colorado**	**United States**	**Aspen CSA**	**Colorado**	**United States**
2010	125,326	5,047,539	309,327,089	99,859	3,143,632	172,901,669	50,512	42,597	42,497
2011	125,434	5,119,563	311,785,264	101,071	3,204,076	176,091,719	51,613	44,468	43,552
2012	126,717	5,188,975	314,280,968	102,248	3,262,924	178,979,693	54,639	45,627	44,557
2013	127,711	5,263,755	316,665,134	104,356	3,356,176	182,325,107	56,973	46,769	44,210
2014	128,817	5,343,274	319,193,123	107,459	3,467,514	186,233,744	63,485	49,369	45,582
2015	130,346	5,442,635	321,748,258	109,126	3,574,243	190,325,797	69,045	50,753	47,265
2016	132,383	5,529,796	324,281,918	110,003	3,666,729	193,425,890	68,215	50,298	47,649
2017	133,230	5,601,035	326,534,147	111,429	3,760,538	196,393,122	69,975	52,131	48,644
2018	134,150	5,678,429	328,451,784	113,727	3,857,793	200,280,221	73,505	53,970	49,698
2019	134,550	5,737,418	330,145,373	113,210	3,893,915	201,644,205	75,298	55,559	50,708
2020	134,783	5,784,308	331,501,080	105,477	3,737,076	190,776,766	75,906	57,572	53,178
2021	135,236	5,812,069	331,893,745	113,351	3,942,204	201,624,197	78,187	58,007	52,768
Projected									
2022	136,643	5,874,726	334,193,837	117,292	4,044,761	207,048,429	79,951	58,985	53,658
2027	143,907	6,187,944	345,453,926	129,041	4,407,558	223,733,232	87,613	64,279	58,274
2032	151,566	6,502,509	356,413,897	138,630	4,727,227	237,417,579	95,187	69,896	63,086
2037	159,642	6,814,544	366,893,550	148,146	5,044,477	250,859,680	102,968	75,800	68,097
2042	168,154	7,123,807	376,916,244	157,636	5,360,545	264,133,081	110,968	82,003	73,305
Historical	**Compound Annual Growth Rate**								
2010 - 2015	0.79%	1.52%	0.79%	1.79%	2.60%	1.94%	6.45%	3.57%	2.15%
2015 - 2021	0.62%	1.10%	0.52%	0.64%	1.65%	0.97%	2.09%	2.25%	1.85%
2010 - 2021	0.69%	1.29%	0.64%	1.16%	2.08%	1.41%	4.05%	2.85%	1.99%
Projected									
2022 - 2027	1.04%	1.04%	0.66%	1.93%	1.73%	1.56%	1.85%	1.73%	1.66%
2027 - 2032	1.04%	1.00%	0.63%	1.44%	1.41%	1.19%	1.67%	1.69%	1.60%
2032 - 2037	1.04%	0.94%	0.58%	1.34%	1.31%	1.11%	1.58%	1.64%	1.54%
2037 - 2042	1.04%	0.89%	0.54%	1.25%	1.22%	1.04%	1.51%	1.59%	1.48%
2022 - 2042	1.04%	0.97%	0.60%	1.49%	1.42%	1.22%	1.65%	1.66%	1.57%

Source: Woods & Poole Economics, Inc. 2022 MSA Profile database, accessed December 2022.

1.4.4 Unemployment Rates

Unemployment rates for the CSA, Colorado, and the U.S. are provided below in **Table 2**. Between 2012 and 2019, Aspen CSA had unemployment rates lower than those of both Colorado and the U.S. CSA unemployment rates generally followed trends like those in Colorado and the U.S. They steadily declined between 2010 and 2019 before spiking up to 8.1% in 2020 during the COVID-19 pandemic. In 2021, the CSA unemployment rate fell to 4.7% compared to 5.4% for Colorado and 5.4% for the U.S.

Table 2
HISTORICAL UNEMPLOYMENT RATES
Aspen/Pitkin County Airport

	Unemployment Rates		
Historical	Aspen CSA	Colorado State	United States
2010	9.6%	9.2%	9.6%
2011	8.8%	8.7%	8.9%
2012	7.8%	8.0%	8.1%
2013	6.6%	6.7%	7.4%
2014	4.7%	5.0%	6.2%
2015	3.5%	3.7%	5.3%
2016	3.0%	3.1%	4.9%
2017	2.5%	2.6%	4.4%
2018	2.8%	3.0%	3.9%
2019	2.4%	2.6%	3.7%
2020	8.1%	6.9%	8.1%
2021	4.7%	5.4%	5.4%

Source: US Bureau of Labor Statistics website (www.bls.gov) accessed December 2022

1.4.5 Employment by Industry Sector

Table 3 depicts the distribution of employment by industry sector for the CSA, Colorado, and the U.S. The two largest employment sectors in the CSA are Professional and Business Services and Accommodation and Food Services, which account for approximately 21.7% and 14.2% of total employment, respectively, in 2022. As a popular tourist destination, Aspen's share of Accommodation and Food Services (14.2%) is considerably higher than the Colorado average of 7.7% and the U.S. average of 7.4 % in 2022. It is also notable that Aspen has a significantly higher rate in the Entertainment sector than both Colorado and the U.S. in the years 2021 and 2022. Other large CSA employment sectors in 2022 include Trade, Transportation, and Utilities at 12.1%, Mining, Logging, and Construction at 11.3%, and Government at 10.2% of total employment in 2022.

Table 3
EMPLOYMENT BY INDUSTRY SECTOR
Aspen/Pitkin County Airport

Industry Sector	CSA 2010	CSA 2021	CSA 2022	2021 Colorado	2022 Colorado	U.S. 2021	U.S 2022
Mining, Logging, and Construction	13.2%	11.5%	11.3%	8.3%	8.2%	6.5%	6.4%
Trade (a), Transportation, and Utilities	12.3%	12.3%	12.1%	15.8%	15.6%	17.3%	17.1%
Professional and Business Services (b)	21.3%	21.8%	21.7%	22.8%	22.8%	19.2%	19.2%
Health Care	5.5%	6.7%	6.6%	9.4%	9.4%	11.8%	11.8%
Entertainment	7.2%	6.8%	7.0%	2.6%	2.8%	2.1%	2.3%
Accommodation and Food Services	14.0%	13.8%	14.2%	7.4%	7.7%	7.1%	7.4%
Government (c)	10.9%	10.3%	10.2%	13.1%	13.0%	12.2%	12.0%
Administrative and Waste Services	5.6%	6.3%	6.3%	5.5%	5.6%	6.2%	6.3%
Other Services	10.1%	10.7%	10.6%	15.1%	15.0%	17.6%	17.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

(a) Represents retail and wholesale trade.
(b) Represents finance and insurance, real estate, technical, and managerial services.
(c) Includes local, state, and federal government employment.
Source: Woods & Poole Economics, Inc. 2022 MSA Profile database accessed December 2022.

1.4.6 Major Employers

Table 4 lists the major employers in Aspen, including the Aspen Skiing Company (Ski Co.), Aspen Valley Hospital, and the Roaring Fork Transportation Authority. Other significant employers include the City of Aspen, the Aspen School District, and Pitkin County.

Table 4
MAJOR EMPLOYERS IN PITKIN COUNTY
Aspen/Pitkin County Airport

Organization
Aspen Skiing Company (Ski Co)
Aspen Meadows Resort
Aspen Music Festival and School
Aspen School District
Aspen Ski Tours
Aspen Valley Hospital
Aspen Valley Ski & Snowboard Club
City of Aspen
Coldwell Banker Real Estate, LLC
High Society Freeride
J Bar at the Hotel Jerome
Pitkin County
Roaring Fork Transportation Authority
Sotheby's
Sport Obermeyer
The Aspen Club
The Little Nell Hotel
The Little Nest, Inc.
The St. Regis Aspen Resort
Viceroy Snowmass

Sources: Zippia.com website (www.zippia.com/company/best-biggest-companies-in-aspen-co) accessed December 2022, and Commumity Profiel for Pitkin County, Colorado Northwest Colorado Council of Governments Economic Development District, August 2019.

Note: Reliable employment figures by organization are not readily available.

1.4.7 Gross Domestic Product

Table 5 presents the annual change in the gross domestic product (GDP) for the CSA, Colorado, and the U.S. From 2010 – 2021, GDP averaged annual growth of 0.6% for the CSA, 2.5% for Colorado, and 1.9% for the U.S. The significantly lower average GDP growth in the CSA is primarily the result of changes in the economy that materially affected the tourism industry and had a magnified effect on the CSA. After significant declines for all three regions in 2020 of -8.7% in the CSA, -3.6% in Colorado, and -3.4% for the U.S., GDP is projected to grow by 2.4% per year in the CSA, 2.3% in Colorado and 2.0% for the U.S. over the 2022-2042 forecast period.

Table 5
GROSS DOMESTIC PRODUCT
Aspen/Pitkin County Airport

Percent Change in GDP

Historical	Aspen CSA	Colorado State	United States
2010	-1.1%	1.0%	2.1%
2011	-2.3%	1.0%	1.1%
2012	-3.8%	1.6%	2.3%
2013	6.5%	4.1%	2.3%
2014	5.4%	4.4%	2.7%
2015	-5.4%	3.4%	3.5%
2016	0.5%	1.8%	1.7%
2017	5.9%	3.9%	2.3%
2018	1.2%	4.2%	3.1%
2019	0.9%	4.1%	2.6%
2020	-8.7%	-3.6%	-3.4%
2021	5.8%	3.7%	4.4%

GDP Forecast Compound Annual Growth Rate

Projected	Aspen CSA	Colorado State	United States
2010 - 2021	0.6%	2.5%	1.9%
2022 - 2027	2.6%	2.3%	2.1%
2027 - 2032	2.4%	2.3%	2.0%
2032 - 2037	2.3%	2.2%	1.9%
2037 - 2042	2.2%	2.1%	1.8%
2022 - 2042	2.4%	2.3%	2.0%

Source: Woods & Poole Economics, Inc. 2022 MSA Profile database, accessed December 2022.

1.4.8 Hotel/Rental Accommodations Inventory

Hotel/Rental accommodations in the Aspen Area (Aspen, Snowmass Village, Basalt, and Carbondale) are presented below by units and pillows (persons per unit) for short-term rentals (stays of less than 30 days) (see **Table 6**). This data is based on a rental inventory study prepared for the Aspen Chamber Resort Association entitled "Stay Aspen Snowmass Transient Inventory Study"[1] (Inventory Study). The Inventory Study was prepared every three years from 2009 through 2022 (2021 skipped) and includes an inventory of rental units and pillows available from traditional rental properties such as hotels/motels/resorts, condominiums, private homes, and bed and breakfasts (Traditional Rental Properties) and Short Term Rentals (STRs), also known as Rent by Owner (RBO) units offered through online portals like Airbnb and Vrbo. The 2022 Rental Study includes a count of RBOs only for report years 2015, 2018, and 2022 while Traditional Rental Properties are included for report years 2009, 2012, 2015, 2018, and 2022.

From 2009 to 2022, the estimated number of Traditional Rental Properties has increased from 3,955 to 4,372, and the number of pillows increased from 17,476 to 21,239. Including STRs, rental units increased from 3,955 in 2009 to 8,763 in 2022, and pillows increased from 17,476 to 48,194. The Inventory Study describes pillow counts as theoretical capacity or maximum occupancy and suggests practical capacity be estimated at 90% of theoretical capacity during peak times and 80% at all other times.

The rapid growth in STRs has become of increasing concern to state and local government agencies in Colorado, and together they have enacted legislation that seeks to limit the uncontrolled expansion of STRs while understanding the importance of STRs to a tourist-based economy and for employee-based housing supporting the tourism industry.

In 2020, the Colorado legislature passed an amendment allowing counties to regulate and license STRs. In 2022, the Board of County Commissioners of Pitkin County issued Ordinance 028-2022 that essentially limits new annual licenses for STRs in unincorporated Pitkin County to only existing license holders and limits the number of nights per year properties may be rented. Likewise, in 2022, the City of Aspen passed Ordinance No. 9, Series of 2022 that increased STR licensing and permitting requirements, revised tax-filing requirements, restricted the number of STRs by city zone, enacted maximum occupancy regulations, and limited the number of nights per year that STRs may be rented. Snowmass Village passed similar legislation in Ordinance No. 6, Series of 2022. These and previous restrictions placed on STRs appear to have limited the growth in new STR units and STR pillows available for rental in the Aspen Area (see **Figure 1**). **Table 6** below shows how the dramatic rise in STR units and pillows from approximately 2015 (earliest data available) through 2021 has leveled off in 2022.

The aviation demand forecast does not attempt to estimate future hotel/lodging accommodations (including STRs) and is not constrained by projected availability. Still, if a significant shortage of rental accommodations occurred over the forecast horizon, this could restrict future enplanement growth and aircraft operations.

[1] "Stay Aspen Snowmass Transient Inventory Study, July 2022-November 2022, prepared by DestiMetrics.

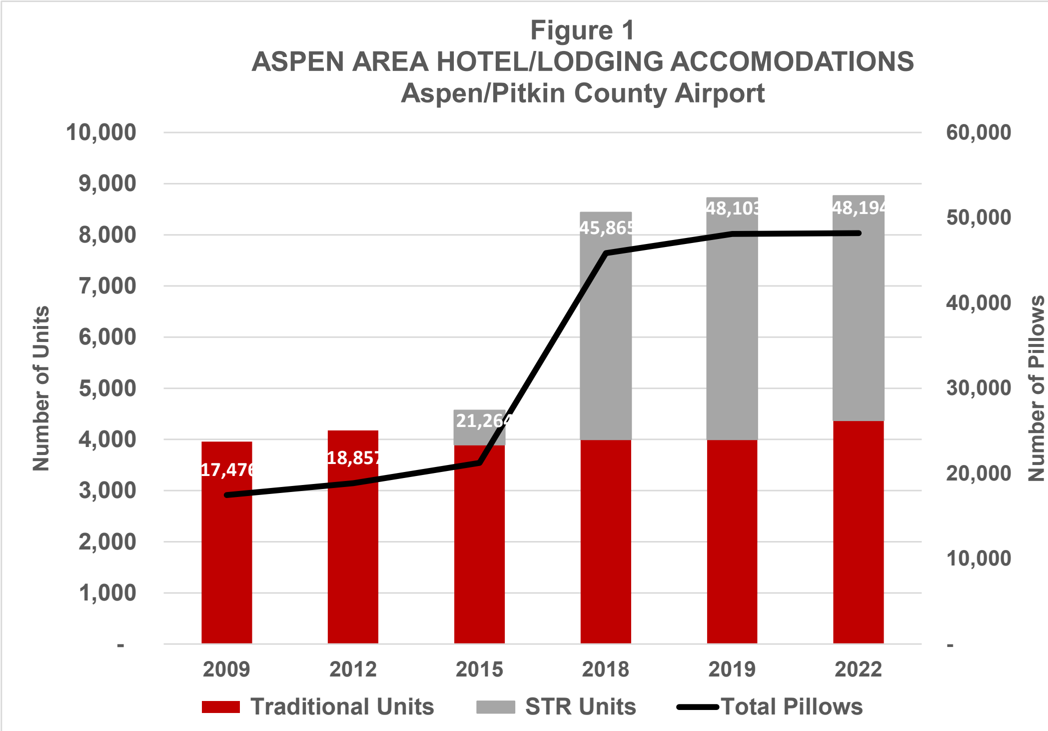


Table 6
ESTIMATED ASPEN AREA RENTAL ACCOMODATIONS
Aspen/Pitkin County Airport

Survey Year	Traditionally Managed Properties (a) Units (c)	Traditionally Managed Properties (a) Pillows (c)	Short Term Rentals (b) Units	Short Term Rentals (b) Pillows	Total Accomodations Units	Total Accomodations Pillows
2009	3,955	17,476	n/a	n/a	3,955	17,476
2012	4,175	18,857	n/a	n/a	4,175	18,857
2015	3,898	17,739	669	3,525	4,567	21,264
2018	4,003	18,558	4,433	27,307	8,436	45,865
2019	4,003	18,558	4,718	29,545	8,721	48,103
2022	4,372	21,239	4,391	26,955	8,763	48,194
Compound Average Annual Growth Rate						
2009-2022	0.8%	1.5%	n/a	n/a	6.3%	8.1%
2015-2022	1.7%	2.6%	30.8%	33.7%	9.8%	12.4%
Total Growth						
2009-2022	417	3,763	n/a	n/a	4,808	30,718
2015-2022	474	3,500	3,722	23,430	4,196	26,930

(a) Traditionally managed properties includes hotel/motels/resorts, condos, private homes, and bed & breakfasts. Data sourced from "Stay Aspen Snowmass Transient Inventory Study, July 2022-November 2022" by DestiMetrics.

(b) Short term rentals include rent by owner (RBO) properties offered through online portals like Airbnb and Vrbo. Data sourced from the "Stay Aspen Snowmass Transient inventory Study, July 2022-November 2022," by DestiMetrics.

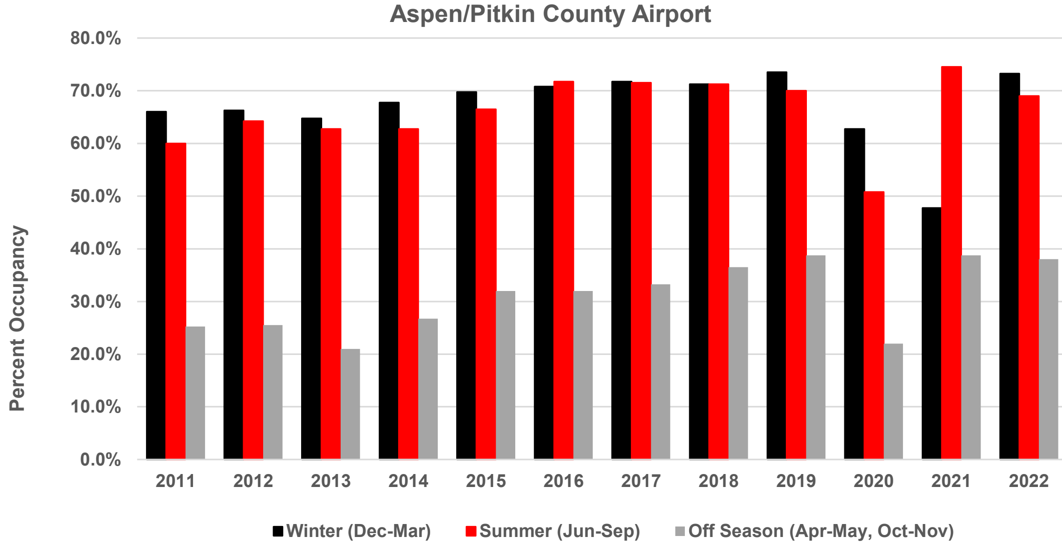
(c) Data for Traditionally Managed Properties was not available for 2019 so the the 2018 totals were held constant for 2019.

1.4.9 Seasonal Occupancy Rates

Winter has historically been the most popular season for travel to Aspen. Visitors can experience skiing, snowboarding, ice skating, and snowmobiling during winter. While Aspen gained recognition for skiing, visitors soon began to appreciate the area in the warmer months. Aspen has become increasingly popular for hiking, biking, rafting, and art entertainment in the spring, summer, and fall. In the early 2000s, the Aspen Chamber Resort Association introduced an initiative to promote Aspen as a multi-season tourism destination. This increased visitors outside the typical peak ski season (December to March).

Figure 2 below presents the seasonal occupancy rates for Traditional Rental Properties in the Aspen area. As expected, winter and summer are historically the busiest seasons of the year, with occupancy rates reaching over 73% in 2022. Conversely, the occupancy rates for the off-peak seasons of April-May and October-November are generally significantly lower than peak seasons. However, the off-peak season has demonstrated a steady increase in demand, with occupancy increasing from approximately 25% in 2011 to 39% in 2021, including a strong rebound in demand from the 2020 COVID-19 period (see **Table 7**).

Figure 2
ASPEN REGION HOTEL OCCUPANCY RATES
Aspen/Pitkin County Airport



Source: Aspen Chamber Resort Association Occupancy Reports accessed February 2023. Hotels includes hotels, motels, and resorts, condominiums, private homes, bed & breakfasts, and excludes short term rentals also known as rent by owner (RBO) units. (www.as

Table 7
ASPEN REGION SEASONAL HOTEL OCCUPANCY RATES
Aspen/Pitkin County Airport

Average Occupancy by Season	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Winter (Dec-Mar)	66.0%	66.3%	64.8%	67.8%	69.8%	70.8%	71.8%	71.3%	73.5%	62.8%	47.8%	73.3%
Summer (Jun-Sep)	60.0%	64.3%	62.8%	62.8%	66.5%	71.8%	71.5%	71.3%	70.0%	50.8%	74.5%	69.0%
Off Season (Apr-May, Oct-Nov)	25.3%	25.5%	21.0%	26.8%	32.0%	32.0%	33.3%	36.5%	38.8%	22.0%	38.8%	38.0%
Annual Average Occupancy	50.4%	51.3%	49.8%	52.5%	56.8%	58.3%	58.8%	59.7%	60.9%	43.3%	55.6%	59.9%
Annual Percent Change	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Winter (Dec-Mar)		0.2%	-1.5%	3.0%	2.0%	1.0%	1.0%	-0.5%	2.3%	-10.8%	-15.0%	25.5%
Summer (Jun-Sep)		4.2%	-1.5%	0.0%	3.7%	5.3%	-0.3%	-0.2%	-1.3%	-19.3%	23.8%	-5.5%
Off Season (Apr-May, Oct-Nov)		0.3%	-4.5%	5.8%	5.3%	0.0%	1.3%	3.3%	2.3%	-16.8%	16.8%	-0.8%
Annual Average Occupancy		0.9%	-1.5%	2.7%	4.3%	1.5%	0.5%	0.9%	1.3%	-17.6%	12.3%	4.3%

Note: The Aspen Region is defined as the municipalities of Aspen, Snowmass Village, Basalt and Carbondale.

Source: Aspen Chamber Resort Association Occupancy Reports accessed February 2023. Data includes occupancy rates for approximately 30 hotel properties. Hotels includes hotels, motels, and resorts and excludes condominiums, private homes, bed & breakfasts, and short term rentals also known as rent by owner (RBO) units. (www.aspenchamber.org/membership/economic-development/data-center/occupancy).

1.5 Historical Aviation Demand

1.5.1 Airlines Serving the Airport

The Airport is currently served year-round by the regional affiliates of United Airlines (United Express), American Airlines (American Eagle), and on a seasonal basis by Delta Air Lines (Delta Connection). The flights for all three regional affiliate airlines are operated by SkyWest Airlines under a codeshare or similar contractual arrangement. Currently, no international airlines are providing scheduled air service at the Airport (see **Table 8**)

Table 8
AIRLINES SERVING ASPEN/PITKIN COUNTY AIRPORT
as of December 2022

Mainline	Regional Affiliate
American Airlines	American Eagle (a)
Delta Air Lines	Delta Connection (b)
United Airlines	United Express (c)

(a) Flights operated by SkyWest Airlines doing business as American Eagle.
(b) Flights operated by SkyWest Airlines doing business as Delta Connection.
In 2022, Delta Air Lines operated seasonal service only (December - March) from the Airport on the 69-seat CRJ-700 aircraft.
(c) Flights operated by SkyWest Airlines doing business as United Express.
Source: Cirium Diio Mi Schedule database accessed December 2022.

1.5.2 Historical Enplaned Passengers

The FAA generally categorizes enplaned passengers as either air carriers or regional/commuter enplanements. Air carrier enplanements are typically transported by mainline carriers (carriers primarily operating aircraft with 90 or more seats). Regional/commuter enplanements are counted on flights considered “feeder” service to mainline airlines that provide service on aircraft with 89 or fewer seats. Since 2002, when this enplanement classification system was initiated, the FAA categorizes ASE enplanements primarily as regional/commuter enplanements. This enplanement categorization system is different from how the FAA counts aircraft operations which is based on the size of the aircraft providing service, where flights on aircraft with more than 60 seats are considered air carrier operations, and flights on aircraft with 60 or fewer seats are counted as air taxi operations. Under this categorization system, ASE’s scheduled airline enplanements are classified as regional/commuter enplanements. The aircraft operating these flights have more than 60 seats and are categorized as air carrier operations.

Total enplanements at the Airport increased from 196,335 in 2000 to 298,561 in 2022, which equates to an increase of 102,226 enplanements at an average annual rate of 1.9% (see **Table 9**). From 2000 to 2019, before the COVID-19 pandemic, enplaned passengers increased at a faster pace of approximately 2.3% annually. However, enplaned passengers declined by 40.7% in 2020 before rebounding by 37.5% in 2021 and by an estimated 21.2% in 2022 as the nation began to recover from the pandemic and its adverse effects on air travel and the economy. As a result, the projected enplanements for 2022 of 298,561 are just 1.2% below the historical high of 302,200 recorded in 2019.

As shown in **Table 9**, from 2000 to 2022, the Airport’s historical enplanements have demonstrated significant year-to-year variability. The annual percent changes were driven by national and local economic conditions, significant events such as the September 11, 2001, terrorist attacks, and the 2020-2022 COVID-19 pandemic. In addition, given the Airport’s relatively small base of enplanements, introducing new service, or eliminating existing air service by a single airline to an individual market can significantly change year-over-year enplanement levels.

Following the decline in air traffic caused by the effects of September 11, 2001, enplanements began to increase in 2003 with new air service at the Airport by America West Airlines to Phoenix, United Airlines to San Francisco, and improved service by Northwest Airlines (before its merger with Delta Air Lines) to Memphis. However, from 2006 to 2007, enplanements decreased by 10.3% following the elimination of service by America West to its hub in Phoenix and by Northwest Airlines to its hubs in Memphis and Minneapolis/St. Paul. In addition, the Airport’s runway was closed for repairs for approximately 60 days in the spring of 2007, contributing to this decline in activity in 2007. In 2008, enplanement levels surged by 20.1% as Frontier Airlines initiated nonstop service from ASE to its connecting hub at Denver International Airport, increasing airline competition in ASE by providing air service connections to all Frontier destinations from Denver. Enplanements generally increased from 2008 through 2011 but declined in 2012 and 2013 following the cessation of air service from ASE to Denver by Frontier Airlines.

From 2012 through 2019, total enplanements increased from 211,693 to 302,200, equating to an average annual growth rate of 5.2%. This sizeable yearly growth rate was the result of new air service by American Airlines from ASE to Chicago O’Hare, Dallas/Ft. Worth, Los Angeles, and Phoenix. During this same period, United Airlines added new air service from ASE to Houston Intercontinental, and Delta Air Lines added new air service seasonal air service to Atlanta and Los Angeles. In 2020, because of the pandemic, ASE recorded a sudden decline in enplanements of 40.7%, which, although unprecedented in ASE's history, was significantly less than the 62.2% decline recorded nationally.

Table 9
TOTAL ENPLANED PASSENGERS
Aspen/Pitkin County Airport

Calendar Year	Aspen/ Pitkin County Airport	Annual Percent Change	State of Colorado	Annual Percent Change	United States	Annual Percent Change
2000	196,335		19,344,425		380,317,877	
2001	174,322	-11.2%	17,837,028	-7.8%	352,651,849	-7.3%
2002	178,885	2.6%	17,761,603	-0.4%	345,909,417	-1.9%
2003	189,030	5.7%	19,342,150	8.9%	361,637,283	4.5%
2004	181,613	-3.9%	21,790,508	12.7%	392,724,180	8.6%
2005	191,082	5.2%	22,254,898	2.1%	409,909,075	4.4%
2006	197,764	3.5%	24,291,451	9.2%	412,427,482	0.6%
2007	177,450	-10.3%	25,721,599	5.9%	425,999,144	3.3%
2008	213,050	20.1%	25,944,957	0.9%	411,631,975	-3.4%
2009	215,716	1.3%	25,556,589	-1.5%	389,675,280	-5.3%
2010	220,335	2.1%	26,744,842	4.6%	399,413,395	2.5%
2011	220,287	0.0%	27,222,994	1.8%	407,255,911	2.0%
2012	211,693	-3.9%	27,292,982	0.3%	411,414,091	1.0%
2013	204,921	-3.2%	26,815,615	-1.7%	416,859,001	1.3%
2014	212,857	3.9%	27,199,811	1.4%	429,393,914	3.0%
2015	230,448	8.3%	27,414,140	0.8%	450,989,106	5.0%
2016	249,500	8.3%	29,528,314	7.7%	467,886,479	3.7%
2017	243,145	-2.5%	31,277,210	5.9%	484,626,162	3.6%
2018	280,782	15.5%	32,783,342	4.8%	507,943,825	4.8%
2019	302,200	7.6%	34,974,563	6.7%	526,742,740	3.7%
2020	179,110	-40.7%	16,986,222	-51.4%	199,046,009	-62.2%
2021	246,286	37.5%	29,984,664	76.5%	349,098,275	75.4%
2022	298,561	21.2%	33,650,000	12.2%	416,444,000	19.3%
Compound Annual Growth Rates						
2000-2014	0.6%		3.2%		1.7%	
2000-2019	2.3%		3.2%		1.7%	
2010-2022	2.6%		1.9%		0.3%	
2014-2019	7.3%		5.2%		4.2%	
2000-2022	1.9%		2.5%		0.4%	
Total Growth						
2000-2022	102,226		14,305,575		36,126,123	

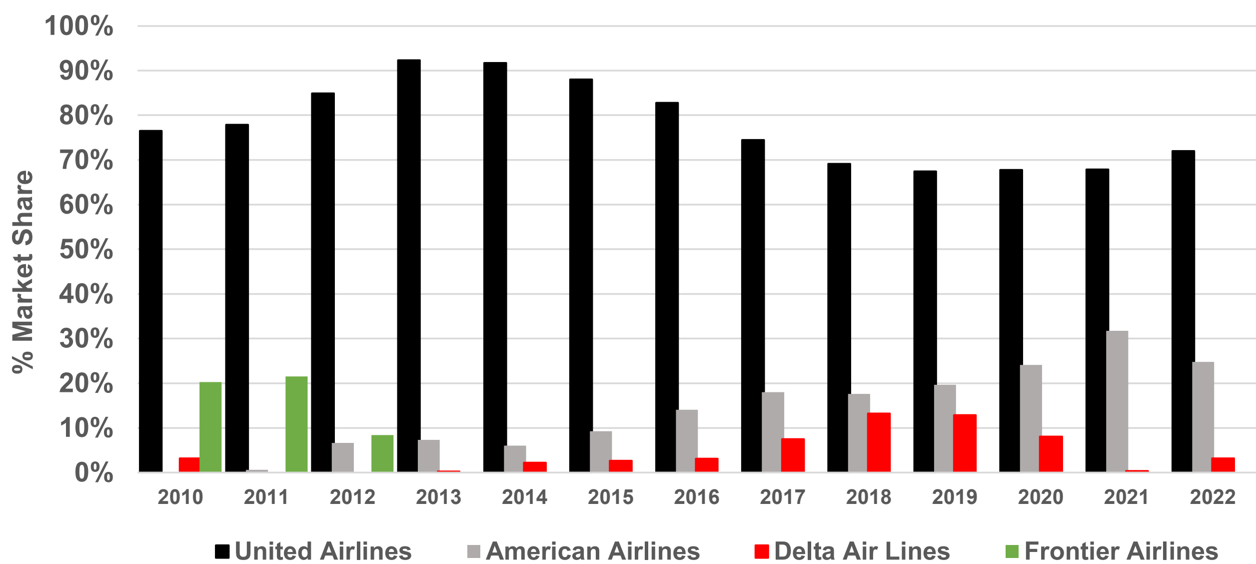
Source: Airport Management Records and Cirium Diio Mi T-100 database accessed December 2022.

1.5.3 Enplaned Passengers Airline Market Share

The Airport's airline market share, as presented in **Figure 3** below, has been historically dominated by United Airlines, recording a market share of at least 67.0% since 2010. From 2010 to 2013, United's market share increased from 76.5% in 2010 to a peak of 92.4% in 2013 (see **Table 10**). Frontier Airlines claimed the second-largest market share during the same period at 20.3% in 2010 and 21.5% in 2011. Frontier's market share declined to 8.4% in 2012 when it discontinued service at ASE.

Over 2012 to 2021, American Airlines steadily increased its ASE market share from 6.7% in 2012 to 31.7% in 2021 before slipping to 24.8% in 2022. In 2022, American Airlines reduced its scheduled service from ASE to its hubs at Dallas/Ft. Worth, Chicago O'Hare, Los Angeles, and Phoenix. Delta Air Lines recorded a market share of 3.2% in 2010 but discontinued service at ASE in 2011 and 2012. Delta resumed seasonal service at ASE in 2013 and slowly increased its market share to a peak of 13.3% in 2018. Delta reduced scheduled service at ASE during the pandemic, and its market share declined 8.1% in 2020 and 0.4% in 2021. In 2022, Delta's market share increased to 3.2% as it added back service to its Atlanta and Los Angeles hubs. Delta provided only winter and summer seasonal flights at ASE from 2013 to 2016. In the first quarter of 2017, Delta began year-round service at ASE, which ran through the third quarter of 2020 before changing to only winter and summer seasonal service in 2021 and 2022.

Figure 3
ENPLANED PASSENGER MARKET SHARE
Aspen/Pitkin County Airport



Source: Cirium Diio Mi T-100 database accessed February 2023

Table 10
AIRLINE ENPLANED PASSENGER MARKET SHARE
Aspen/Pitkin County Airport

	Airline Enplaned Passenger Market Share												
Airline	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
United Airlines (a)	76.5%	77.9%	84.9%	92.4%	91.7%	88.0%	82.8%	74.5%	69.1%	67.5%	67.8%	67.9%	72.0%
American Airlines (b)	0.0%	0.6%	6.7%	7.4%	6.1%	9.3%	14.1%	18.0%	17.6%	19.6%	24.1%	31.7%	24.8%
Delta Air Lines (c)	3.2%	0.0%	0.0%	0.3%	2.2%	2.7%	3.1%	7.5%	13.3%	12.9%	8.1%	0.4%	3.2%
Frontier Airlines (d)	20.3%	21.5%	8.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

(a) Flights operated by United Airlines' regional affiliate United Express.
(b) Flights American Airlines' regional affiliate American Eagle.
(c) Flights operated by Delta Air Lines' regional affiliate Delta Connection.
(d) Flights operated by Frontier Airlines' regional affiliate Lynx Aviation.
Source: Cirium Diio Mi T-100 database accessed February 2023.

1.5.4 Origin and Destination Markets

Presented in **Table 11** are the Airport's top 25 origin and destination (O&D) markets for the 12 months ending September 2022. O&D data is based on a 10% ticket sample ordered by the Department of Transportation and conducted by airlines. The O&D survey counts the number of passengers traveling between a specific origin airport and a final destination airport regardless of connecting flights or intermediate stops. The Airport's largest O&D market is Los Angeles which accounts for approximately 13.0% of passengers from ASE. Other top O&D destinations include New York City, Chicago, Houston and Miami.

Table 11
TOP 25 DOMESTIC ORIGIN AND DESTINATION MARKETS
Aspen/Pitkin County Airport

12 Months Ending September 2022 (a)

Aspen Rank	Origin-Destination Market	Air Miles from Aspen	Percent of O&D Passengers	Average Daily Passengers Each Way	Average Daily Nonstop Departures (b)	Airlines Providing Service
1	Los Angeles (c)	737	13.0%	97	5	AA, UA, DL
2	New York City (d)	1,744	10.1%	75	-	-
3	Chicago O'Hare	1,013	7.1%	53	5	AA, UA
4	Houston (e)	914	6.2%	46	3	UA
5	Miami (f)	1,797	5.9%	44	-	-
7	San Francisco (g)	847	5.5%	41	2	UA
6	Dallas/Ft. Worth	701	5.4%	40	4	AA
8	Washington, D.C.	1,598	3.3%	24	-	-
9	Denver	125	3.0%	22	8	UA
11	Boston	1,879	2.4%	18	-	-
10	Austin	812	2.2%	16	1	AA
12	Atlanta	1,304	1.9%	14	1	DL
14	Orange County	721	1.6%	12	1	UA
15	Philadelphia	1,681	1.4%	10	-	-
13	Phoenix	491	1.2%	9	1	AA
16	San Diego	730	1.2%	9	-	-
17	Tampa	1,596	1.2%	9	-	-
18	Minneapolis/St. Paul	802	1.1%	8	-	-
19	Seattle	960	1.0%	8	-	-
21	New Orleans	1,138	1.0%	7	-	-
22	Detroit	1,248	0.9%	7	-	-
20	Orlando	1,639	0.9%	7	-	-
24	Nashville	1,125	0.8%	6	-	-
23	Charlotte	1,451	0.8%	6	-	-
25	Las Vegas	503	0.7%	5	-	-

(a) Represent data for the 12-month period ending September 30, 2022. Latest available data.

(b) Scheduled air service at the Airport is highly seasonal with the majority of traffic occurring during the December to March peak periods. Nonstop service is shown for March 2022 which is typically the Airport's peak month of service.

(c) Los Angeles includes Los Angeles International Airport, Hollywood Burbank Airport (formerly Bob Hope), and Ontario International Airport.

(d) New York City includes Newark Liberty International, LaGuardia Airport, and John F. Kennedy International Airports.

(e) Houston includes George Bush Intercontinental Airport and William P. Hobby Airport.

(f) Miami includes Miami International Airport, Fort Lauderdale-Hollywood International Airport, and Palm Beach International Airport.

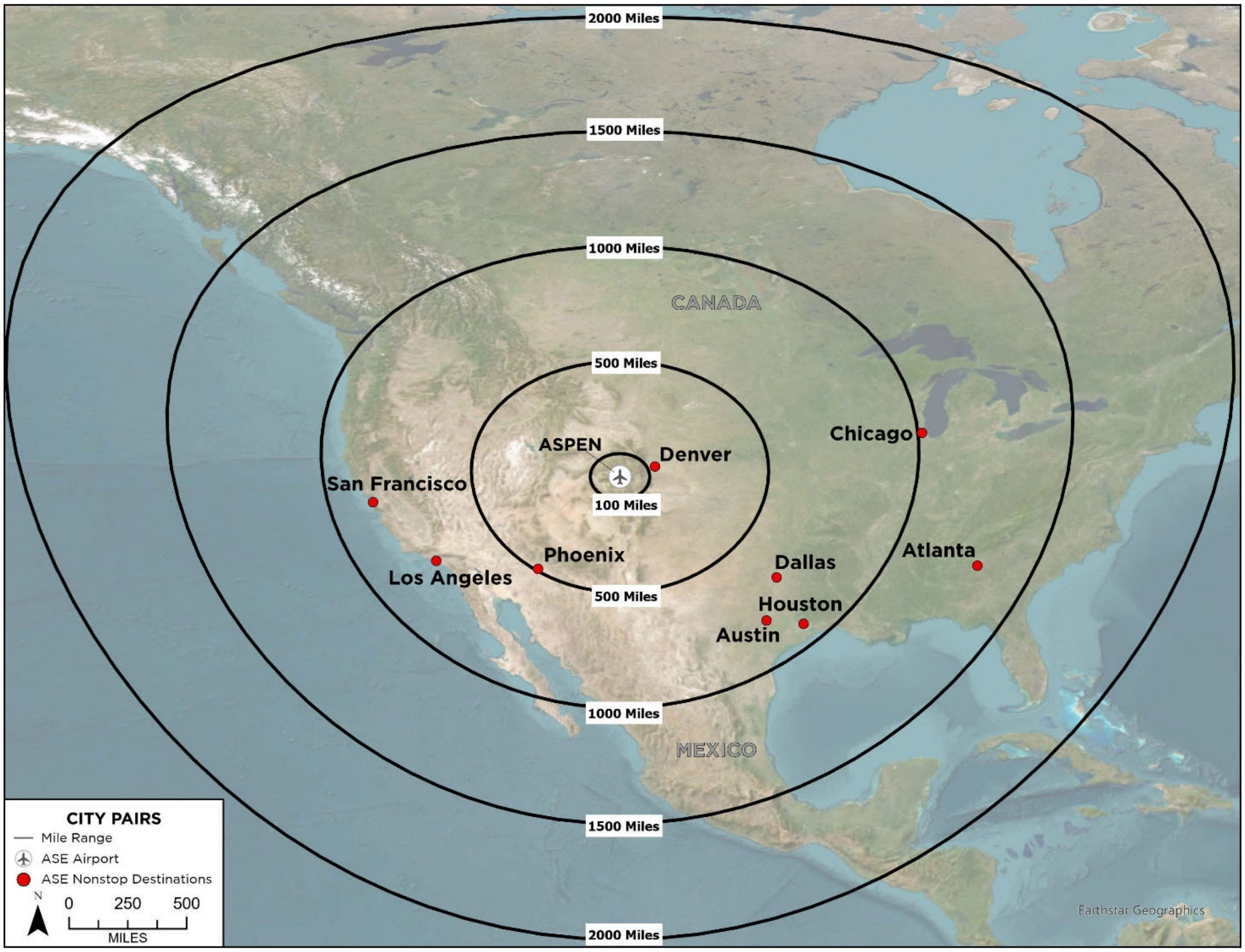
(g) San Francisco includes San Francisco International Airport, Oakland International Airport, and Norman Y. Mineta San Jose International Airport.

Source: Cirium Diio Mi O&D database T-100 and Schedule database accessed March 2023.

The O&D data for ASE shows that many of the Airport's top O&D markets are served with non-stop service but that some of the largest O&D markets, such as New York City, Miami, Washington, D.C., and Boston, are not served nonstop from ASE. The decisions by airlines on whether they serve a particular city-pair (Aspen-Chicago, Aspen-Dallas, etc.) with non-stop or connecting flights are based on market competition (service quality and airfares), airline network strategies, available aircraft fleet, and many other factors. All airline scheduled seats at ASE are currently provided on the Canadair Regional Jet 700 series aircraft (CRJ-700). The limited flight range of the CRJ-700 is one of the factors influencing the nonstop markets offered by the airlines from ASE. Markets such as New York City, Miami, and Boston are beyond the 1,600-

mile scheduled flight range of the CRJ-700, according to SkyWest, the current operating carrier of the CRJ-700 at ASE. **Map 2** shows the nonstop city pairs from ASE within various flight ranges.

Map 2
NONSTOP CITY PAIR DESTINATIONS FROM ASE
Aspen/Pitkin County Airport



1.5.5 Historical Air Cargo Tonnage

The Airport has historically recorded only a minimal volume of commercial air cargo (freight and mail), as shown in **Table 12** below. Schedule air service since 2017 has been provided solely with CRJ-700 aircraft, which offers limited cargo hold capacity, especially during the winter ski season when passenger baggage typically includes many skiing equipment bags. In addition, the Airport has yet to report to the FAA any air cargo landings (aircraft operations dedicated exclusively to air cargo transportation) over the federal fiscal years 2010 through 2020 for use in determining annual Airport Improvement Program cargo entitlement funds. As a result, any air cargo activity at ASE is likely on small non-scheduled air taxis or cargo carriers that do not report their cargo activity to the Airport or the U.S. Department of Transportation. This report assumes that any future air cargo activity at ASE will be on air taxi operations and remain unreported. Therefore, this report does not include a forecast of air cargo pounds for ASE.

1.5.6 Aircraft Operations

Aircraft operations are the total annual aircraft takeoffs and landings at the Airport. This report is organized by air carrier, air taxi, general aviation, and military operations. The FAA defines air carrier and air taxi operations as Commercial Operations. These aircraft operations categories are used to compare the ALP Update forecast to the FAA's Terminal Area Forecast (TAF). **Table 13** and the following sections summarize the Airport's historical aircraft operations.

Table 13
HISTORICAL AIRCRAFT OPERATIONS
Aspen/Pitkin County Airport

		AIR TAXI AND GA OPERATIONS				
Calendar Year	**Air Carrier**	**Air Taxi**	**General Aviation**	**Subtotal Air Taxi and General Aviation**	**Military**	**Total Operations**
2000	7,632	7,199	33,748	40,947	239	48,818
2001	6,988	9,008	29,930	38,938	121	46,047
2002	6,902	10,034	29,377	39,411	128	46,441
2003	6,580	10,034	26,241	36,275	124	42,979
2004	5,224	12,446	26,228	38,674	93	43,991
2005	5,223	12,522	26,383	38,905	125	44,253
2006	5,410	13,904	25,330	39,234	94	44,738
2007	6,380	12,786	23,513	36,299	65	42,744
2008	7,849	12,750	25,909	38,659	78	46,586
2009	8,359	10,247	21,053	31,300	127	39,786
2010	9,698	7,945	19,842	27,787	118	37,603
2011	9,682	8,664	19,171	27,835	98	37,615
2012	9,485	8,797	18,493	27,290	125	36,900
2013	8,307	9,428	17,507	26,935	86	35,328
2014	8,716	8,926	17,604	26,530	149	35,395
2015	8,986	9,674	20,297	29,971	237	39,194
2016	9,310	10,248	21,448	31,696	334	41,340
2017	9,626	10,865	21,667	32,532	268	42,426
2018	11,590	9,514	19,867	29,381	267	41,238
2019	11,202	10,615	19,840	30,455	233	41,890
2020	8,082	12,508	21,738	34,246	483	42,811
2021	10,183	15,655	25,847	41,502	844	52,529
2022	11,006	15,058	24,043	39,101	316	50,423
Compound Annual Growth Rates						
2000-2014	1.0%	1.5%	-4.5%	-3.1%	-3.3%	-2.3%
2000-2019	2.0%	2.1%	-2.8%	-1.5%	-0.1%	-0.8%
2014-2019	5.1%	3.5%	2.4%	2.8%	9.4%	3.4%
2019-2022	-0.6%	12.4%	6.6%	8.7%	10.7%	6.4%
2000-2022	1.7%	3.4%	-1.5%	-0.2%	1.3%	0.1%

Source: FAA OPSNET website (www.faa.gov/opsnet) accessed January 2023.

1.5.7 Historical Air Carrier Operations

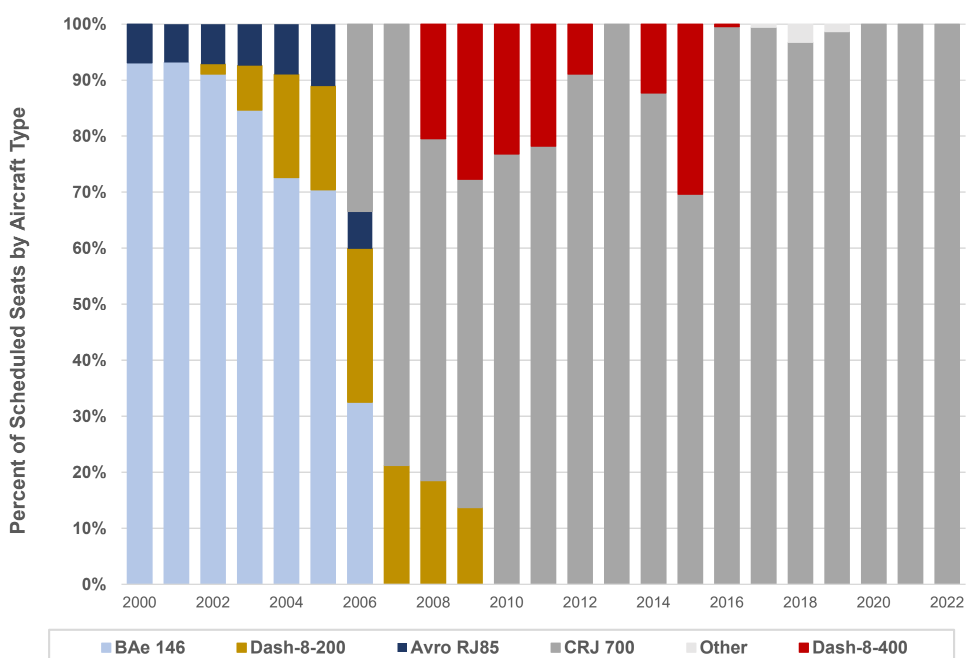
The FAA defines air carrier operations as those on aircraft with more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation. Historical air carrier operations at ASE consist of mostly scheduled passenger flights operated by United, American, Delta, and other passenger airlines from 2000 through 2022. Most passenger flights at ASE have historically been operated by aircraft with over 60 seats; all commercial airline flights at ASE are counted as air carrier operations.

In 2001, the Airport began operating under the terms of section 10.12.030 (c) of the Pitkin County Code, which prohibits aircraft operations at ASE with a tip-to-tip wingspan of greater than 95 feet. This restriction significantly limited the number and type of aircraft allowed to operate at the Airport. In addition, the altitude, topographical environment, and weather patterns of the Airport further restrict the aircraft types with the operational capabilities to operate at ASE safely. Likewise, specific technical and navigational capabilities also restrict certain particular aircraft from operating at ASE. Currently, and since 2017 all air carrier operations at ASE have been on the CRJ-700 aircraft, which has a seating configuration of between 65 and 70 seats.

Air carrier operations at ASE have increased from 7,632 in 2000 to approximately 11,006 in 2022, which equates to an average annual growth rate of 1.7%. The yearly growth trend in air carrier operations has followed a pattern like that of enplaned passengers. However, total aircraft operations generally change at smaller annual increments than total enplanements because a single aircraft flight can accommodate a wide range of passengers based on its seating capacity and variable load factors.

From 2000 to 2002, over 90% of all scheduled seats at the Airport were provided by the 88-seat BAe-146 (see **Figure 4**). The BAe-146 was a 4-engine regional jet known for its powerful performance capabilities (especially at mountain airports like ASE). In 2001, the newly developed CRJ-700 entered the fleet of U.S. airlines and began operations at ASE in 2006. Because of the superior operating economics of the new 2-engine regional jets, the aging BAe-146 was phased out of service for regional jets like the CRJ-700.

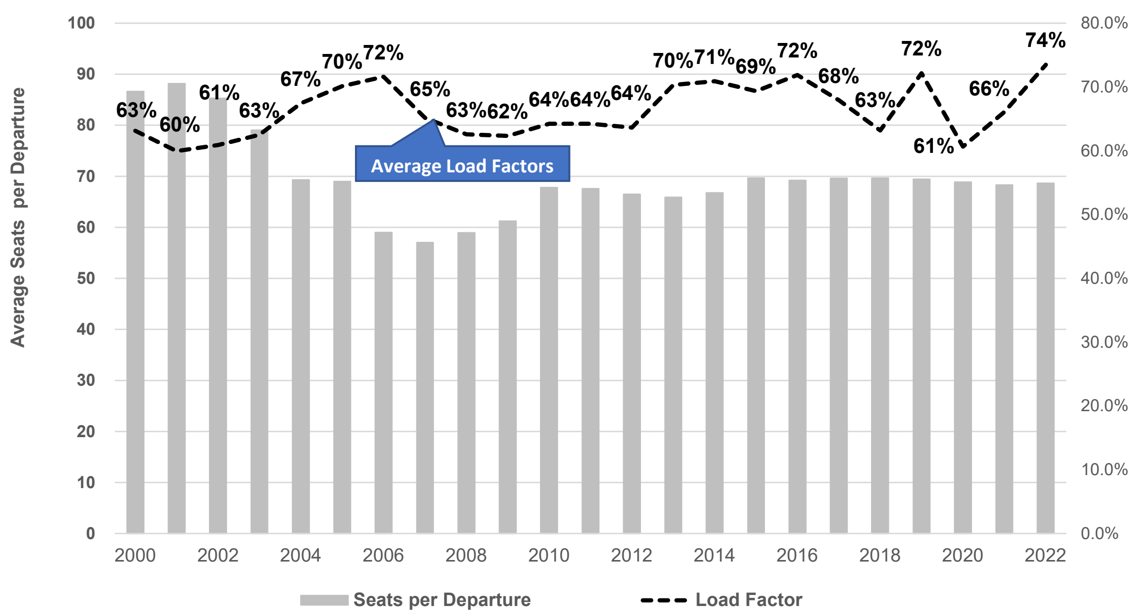
Figure 4
PERCENTAGE OF SCHEDULED SEATS BY AIRCRAFT TYPE
Aspen/Pitkin County Airport



Source: Cirium Diio Mi T-100 database accessed February 2023.

From 2000 to 2006, as the percentage of scheduled seats on the BAe-146 was declining and the aircraft was eventually phased out of service, the Airport's average seats per departure decreased from approximately 87 in 2000 to 57 in 2007 (see **Figure 5**). During this same period, total demand, measured by annual enplaned passengers, decreased (see **Table 9**) from 196,336 enplanements in 2000 to 177,450 in 2007. Because of the lower passenger demand, the number of scheduled air carrier operations required to serve this demand did not increase even with a lower average seats per departure. From 2000 to 2007, scheduled air carrier operations declined from 7,632 to 6,380 (see **Table 13**). Average load factors did increase from approximately 63% in 2000 to 72% in 2007, but they were within average industry load factors and were not high enough to require additional scheduled seats and flights. Since the CRJ-700 became the primary aircraft operating at ASE in 2007, the average seats per departure have ranged between 60 – 70 seats, and load factors have varied between approximately 65%-75% as the demand for air service and the supply of scheduled seats has stabilized.

Figure 5
AVERAGE SEATS PER PER DEPARTURE AND LOAD FACTOR
Aspen/Pitkin County Airport



Source: Cirium Diio Mi T-100 database accessed February 2023.

1.5.8 Historical Air Taxi Operations

Air Taxi operations are flights by aircraft designed to have a maximum 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. ASE air taxi operations typically include charter service or on-demand flight service operated on aircraft with 60 or fewer seats. And because air taxi operations transport passengers or cargo for compensation, the FAA classifies them as commercial operations like air carrier flights. Air taxi operations are differentiated from personal or business/corporate flights, which are categorized by the FAA as general aviation operations (see Section 1.3.20, "Historical General Aviation Operations").

Air taxi operations provide an alternative to airline scheduled service, and because of this, its growth trend at ASE has often moved in the opposite direction of air carrier operations. Air taxi operations include flight services provided by private jet charter companies like Aero Charter, Executive Jet Management, and VistaJet; and private flight services offered through fractional jet ownership companies like NetJets, Flexjets, and Nicholas Air. As scheduled commercial airline service (air carrier operations) increases or decreases over time, air taxi service will often increase to fill the void left by a decrease in scheduled service and often decline when scheduled air service improves and more flights planned are provided to existing or new markets.

From 2000 to 2008, air taxi operations at ASE increased from 7,199 to 12,750 as air taxi service gained popularity following September 11th, and America West and Northwest Airlines ceased operations at ASE in 2006 and 2007. However, in 2008, when Frontier Airlines added new service to its Denver hub, air taxi operations began to decrease until 2012, when Frontier started scaling back its operations at ASE. Nevertheless, from 2013 to 2019, air taxi operations recorded steady growth, increasing from 9,428 operations in 2013 to 10,615 in 2019. In 2020, during the onset of COVID-19 and when scheduled air service was rapidly reduced, air taxi operations surged to 12,508 in 2020 and 15,655 in 2021. In 2022, air taxi operations declined slightly to approximately 15,058 (see **Table 13**).

1.5.9 Historical All-Cargo Operations

Air carriers dedicated exclusively to air cargo transportation, such as FedEx, UPS, DHL, and their regional affiliates, perform all-cargo operations. All cargo flights also include operations by other freight-only and charter freight carriers. The Airport does not currently have all-cargo service and has not historically had any significant number of all-cargo operations.

1.5.10 Historical General Aviation Operations

General aviation (GA) operations are takeoffs and landings of all civil aircraft not classified as air carriers, air taxi, or military operations and include small single-engine piston-powered aircraft, multi-engine turboprops, business jets, and helicopters. The FAA classifies GA operations in its Terminal Area Forecast as local or itinerant operations.

The FAA defines Itinerant operations as those "operations performed by an aircraft under instrument flight rules (IFR), special visual flight rules (SVFR), or visual flight rules (VFR), that lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area." Itinerant GA flights typically include business/corporate flights and personal flights operated by private pilots.

1.5.10.1 Drop-and-Go Operations

A portion of GA itinerant operations (and air taxi operations) at ASE includes activity known as drop-and-go operations. A study conducted for the ASE Airport Vision Committee in 2020[2] defined a drop-and-go

[2] Airport Vision Committee Recommendations Development – Work Session #4, January 30, 2020, "Drop & Go Operations" (www.aspenairport.com/operation/planning/ase-vision-resources)

operation as an aircraft operation with a two-hour or less layover between landing and takeoff. Drop-and-go operations occur for multiple reasons, including aircraft operator scheduling, the cost of local FBO services, and available aircraft parking and storage facilities. For example, the Airport Vision Committee study indicates that 38% of all drop-and-go operations involve other Colorado airports suggesting aircraft are repositioning at other regional airports.

Flights by charter operators or fractional jet management companies such as NetJets that operate within a complex aircraft scheduling system contribute to drop-and-go operations. For example, a particular aircraft (specific tail number) arrival in ASE could be just one of multiple flights scheduled on that aircraft for that day. In this case, the aircraft's departure in less than two hours from arrival is standard aircraft scheduling by the aircraft operator. As a result, operations driven by operator schedules and aircraft utilization would likely occur regardless of local FBO services, aircraft parking cost, or availability.

Other potential reasons for drop-and-go operations include the cost of aircraft services at the destination airport and the availability of aircraft parking and storage facilities. For example, an aircraft that makes a stop at ASE and needs to position for an upcoming return flight with an extended layover may find it more economical to depart from ASE and reposition at another regional airport because the cost of parking, fuel, deicing, etc. at the secondary airport is less expensive. This could occur whether the aircraft operator is a private owner, a charter operator, or a fractional management company. These operations are driven by the economics of supply and demand and would likely continue at some level as airports/FBOs compete for aircraft customers.

Additionally, drop-and-go operations are influenced by the availability of aircraft parking facilities. At ASE, aircraft parking is limited by the number and physical dimensions of parking positions. With the high frequency of large business jets at ASE, accommodating all parking demand is often difficult during peak periods. This occasionally forces certain aircraft operators to reposition their aircraft at other regional airports.

As discussed, there are multiple reasons for drop-and-go operations, and a significant share of these operations would likely occur regardless of airport facility improvements or expansion. Given the uncertain correlation between drop-and-go operations and the circumstances for their occurrence, they are expected to continue but are not used as a factor in forecasting future GA and/or air taxi operations.

1.5.10.2 General Aviation Itinerant Operations

From 2000 to 2022, GA itinerant operations decreased by approximately 38.2%, from 30,178 in 2000 to 18,644 in 2022 at an average annual rate of -2.4% (see **Table 14**). Most of this decrease occurred from 2000 to 2014 when itinerant operations declined by 53.4% from 30,178 in 2000 to a recent low of 14,060 in 2014 at an average rate of -5.3%. From 2014 to 2019, itinerant operations began to increase and reached 15,621 in 2019. In 2020, itinerant operations rose by 7.5% to 16,787 and then surged by 18.7% in 2021 to a recent high of 19,926 operations. In 2022, the rapid growth of 2020 and 2021 subsided, and itinerant operations declined by -6.4% to 18,644.

1.5.10.3 General Aviation Local Operations

The FAA defines Local GA operations as "those operations performed by aircraft that remain in the local traffic pattern, execute simulated instrument approaches or low passes at the airport, and the operations to or from the airport and a designated practice area within a 20−mile radius of the tower." Local GA flights typically include recreational flights by private pilots and flight school training flights." From 2000 to 2022, GA local operations increased by approximately 51.2%, from 3,570 in 2000 to 5,399 in 2022 at an average annual rate of 2.1% (see **Table 14**). From 2000 to 2019, local operations increased steadily, reaching 4,219 operations in 2019 at an average annual rate of 0.9% before experiencing rapid growth in 2020 and 2021. In 2020, local operations rose by 17.4%, a by 19.6% in 2021 to a recent high of 5,921 operations. In 2022, the rapid growth recorded in 2020 and 2021 subsided, and local operations declined by -8.8% to 5,399.

Table 14
GENERAL AVIATION OPERATIONS BY AIRCRAFT CATEGORY
Aspen/Pitkin County Airport

Historical Genaral Aviation Operations

Calendar Year	Itinerant	% change	Local	% change	Total	% change
2000	30,178		3,570		33,748	
2001	27,978	-7.3%	1,952	-45.3%	29,930	-11.3%
2002	27,335	-2.3%	2,042	4.6%	29,377	-1.8%
2003	24,504	-10.4%	1,737	-14.9%	26,241	-10.7%
2004	25,023	2.1%	1,205	-30.6%	26,228	0.0%
2005	25,140	0.5%	1,243	3.2%	26,383	0.6%
2006	24,721	-1.7%	609	-51.0%	25,330	-4.0%
2007	22,351	-9.6%	1,162	90.8%	23,513	-7.2%
2008	22,334	-0.1%	3,575	207.7%	25,909	10.2%
2009	19,670	-11.9%	1,383	-61.3%	21,053	-18.7%
2010	16,005	-18.6%	3,837	177.4%	19,842	-5.8%
2011	15,677	-2.0%	3,494	-8.9%	19,171	-3.4%
2012	14,985	-4.4%	3,508	0.4%	18,493	-3.5%
2013	14,266	-4.8%	3,241	-7.6%	17,507	-5.3%
2014	14,060	-1.4%	3,544	9.3%	17,604	0.6%
2015	15,447	9.9%	4,850	36.9%	20,297	15.3%
2016	16,407	6.2%	5,041	3.9%	21,448	5.7%
2017	16,012	-2.4%	5,655	12.2%	21,667	1.0%
2018	15,715	-1.9%	4,152	-26.6%	19,867	-8.3%
2019	15,621	-0.6%	4,219	1.6%	19,840	-0.1%
2020	16,787	7.5%	4,951	17.4%	21,738	9.6%
2021	19,926	18.7%	5,921	19.6%	25,847	18.9%
2022	18,644	-6.4%	5,399	-8.8%	24,043	-7.0%

Compound Annual Growth Rates

	Itinerant	Local	Total
2000-2014	-5.3%	-0.1%	-4.5%
2000-2019	-3.4%	0.9%	-2.8%
2014-2019	2.1%	3.5%	2.4%
2019-2022	6.1%	8.6%	6.6%
2000-2022	-2.4%	2.1%	-1.7%

Source: FAA OPSNET website accessed January 2023.

1.5.11 Military Operations

Military operations include local and itinerant operations based solely on the U.S. Department of Defense requirements, increasing or decreasing accordingly. Since 2000, military operations at ASE have ranged between a low of 65 annual operations in 2007 and a high of 844 in 2021 and are projected at 316 operations in 2022.

1.5.12 Aircraft Based at ASE

Since 2010, the total based aircraft count at ASE has ranged between 81 and 99, depending on the availability of aircraft hangars and parking positions (see **Table 15**). In 2022, there were 96 based aircraft, including approximately 54 single-engine piston-powered aircraft, seven multi-engine piston-powered aircraft, 20 turboprops, 14 jets, and one helicopter (see **Table 16**). In addition, the Airport's fixed base operator (FBO) reports a current waiting list for approximately 60 aircraft parking positions.

Table 15
HISTORICAL BASED AIRCRAFT
Aspen/Pitkin County Airport

Calendar Year	Based Aircraft
2010	81
2011	81
2012	82
2013	82
2014	82
2016	93
2017	99
2018	95
2019	95
2020	95
2021	96
2022	96

Source: FAA 2022 Terminal Area Forecast and Airport Management Records.

Table 16
2022 BASED AIRCRAFT FLEET MIX
Aspen/Pitkin County Airport

Aircraft Type	Number	Percent of Total
Piston single engine	54	56.3%
Piston multi-engine	7	7.3%
Turboprop	20	20.8%
Jet	14	14.6%
Helicopter	1	1.0%
Total	96	100.0%

Source: Airport Management Records, December 2022.

1.6 Aviation Demand Forecasts

The aviation demand forecast was prepared for three scenarios: a lower-range, mid-range, and upper-range, and was developed to provide a range of potential outcomes to assist in the long-term planning for the Airport. The mid-range forecast is considered the “best estimate” or base forecast for planning purposes and will be submitted to the FAA as the ALP Update forecast.

The forecast assumes the base year of 2022 and covers a 20-year forecast horizon with key horizon dates of 2027, 2032, 2037, and 2042. The forecast is unconstrained, which means the forecast is not limited by airport or air traffic control system capacity. The forecast includes projections for enplaned passengers and aircraft operations, including air carrier and commuter/air taxi operations. Only a base case (mid-range) forecast was prepared for General Aviation and Military operations. Also provided is a forecast of based aircraft and an aircraft fleet mix forecast for an air carrier, air taxis, and general aviation aircraft.

The following sections describe the methodologies and data used to develop each forecast scenario and the primary assumptions driving the forecast.

1.6.1 Enplaned Passenger Forecast

The forecast scenarios for enplaned passengers were developed by applying industry-standard forecasting methodologies, including trend analysis, market share analysis, regression analysis, and extrapolation of historical growth rates. The results of the various studies were reviewed for reasonableness by comparing the results to historical trends and other available forecasts and applying professional judgment. Three scenarios were chosen to represent a lower-range, mid-range, and upper-range enplaned passenger forecast.

1.6.1.1 Lower-Range Scenario

The low-case scenario projects enplanements to increase from 298,561 in 2022 to 337,613 enplanements in 2042, which equates to an average annual growth rate of 0.6% (see **Table 18**). The low-range forecast was based on a regression analysis from 1990 to 2019 with a dependent variable of total enplanements and the independent or predictor variable of total Colorado employment. The regression analysis produced an "R-squared" of 0.71. The regression statistics for the low-case scenario are provided below, and the regression dataset is provided in the appendix.

This regression analysis was chosen to represent the low-case scenario because it was comparable to the average yearly growth rate from 2000 to 2014, before the expansion in air service and the rapid increase in enplanements at ASE from 2014 to 2019 (see **Table 9**). Therefore, the 0.6% growth rate is representative of growth that could be expected with only minimal increases in annual scheduled air service over the forecast horizon.

Regression Statistics	
Multiple R	0.84
R Square	0.71
Adjusted R Square	0.69
Standard Error	19370.57
Observations	30

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	34380.76	20922.26	1.64	0.11
Emp	56.57	6.91	8.19	0.00

1.6.1.2 Mid-Range Scenario

The mid-range or base-case scenario projects enplanements to increase from 298,561 in 2022 to approximately 390,234 enplanements in 2042, which equates to a total increase of roughly 92,000 enplanements at an average annual growth rate of 1.3% (see **Table 18**).

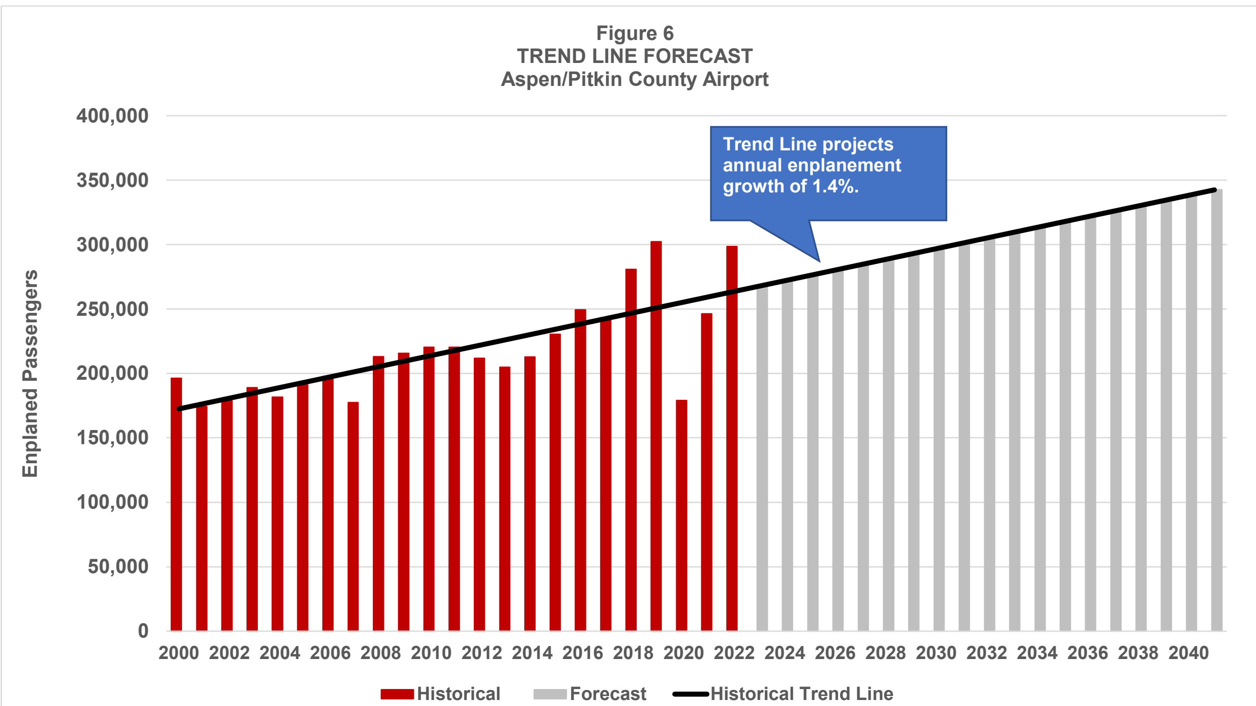
The Mid-Range forecast was developed by analyzing the results of multiple forecast methodologies. First, a linear trend line analysis of enplanements was created for 2002 to 2022. Then, when extending this trend line into the future, it projected an annual enplanement growth rate of 1.4% from 2022 to 2042 (Figure 6). (The trend line data set is included in the appendix under the Mid-Range forecast.)

A regression analysis for the period 1990 to 2019, with total enplanements as the dependent variable and total personal income for Colorado as the independent or predictor variable, was used as the second methodology. The regression analysis produced an "R-squared" of 0.71. (The regression statistics for the mid-range scenario are provided below, and the regression dataset is provided in the appendix.)

The regression equation projected total enplanements to increase from 298,561 enplanements in 2022 to approximately 390,000 in 2042 at an annual growth rate of 1.3%.

In addition to the trend line and regression analyses discussed above, preliminary data such as the -6.6% projected decline in scheduled seats for 2023 (see **Table 17**) and the assumption that there will not be a significant near-term expansion of scheduled service (like the American Airlines expansion of 2014-2019) was considered in developing the Mid-Range forecast. These results, coupled with a longer-term uncertainty regarding future demand, recovery from the COVID-19 pandemic, and potential reduction in available hotel/lodging supply (see **Section 1.4.8 Hotel/Rental Accommodations Inventory**), support a conservative forecast.

Based on the trend line results and the regression analyses, which produced annual growth rates of 1.4% and 1.3%, respectively, and the other assumptions discussed above, the enplanement forecast of 1.3% annual growth was selected as the Mid-Range and ALP Update forecast.



Regression Statistics	
Multiple R	0.84
R Square	0.71
Adjusted R Square	0.70
Standard Error	19321.55
Observations	30.00

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	105471.37	12409.90	8.50	0.00
Inc	0.49	0.06	8.22	0.00

Table 17
TOTAL SCHEDULED SEATS 2019-2023
Aspen/Pitkin County Airport

Year	Scheduled Departures	% Change	Scheduled Seats	% Change
2019	6,649		457,141	
2020	4,913	-26.1%	336,182	-26.5%
2021	5,902	20.1%	402,917	19.9%
2022	6,465	9.5%	444,004	10.2%
2023	6,051	-6.4%	414,706	-6.6%
2019 to 2023		-9.0%		-9.3%

Source: Cirium Diio Mi Schedule database, retrieved March 9, 2023.

1.6.1.3 Upper-Range Scenario

The upper-range enplanement forecast was also developed by regression analysis. For the upper-range forecast, the dependent variable was total enplanements, and the predictor variable was total income for the United States from 2000 to 2019. The regression analysis quantifying the relationship between the two variables produced an "R-squared" of 0.82. The regression statistics for the base-case scenario are provided below, and the regression dataset is provided in the appendix.

The high case forecast projects enplanements to increase from approximately 298,561 in 2022 to 474,926 by 2042 at an average annual growth rate of 2.3%. This regression analysis was selected as the high-case scenario because it represents the growth experienced at ASE from 2000 to 2019 prior to the onset of the COVID-19 pandemic.

Regression Statistics	
Multiple R	0.91
R Square	0.82
Adjusted R Square	0.81
Standard Error	14905.16
Observations	19

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-37182.30	28615.88	-1.30	0.21
US Inc 2000-2019	0.02	0.00	8.89	0.00

Figure 7
ENPLANED PASSENGER FORECAST
Aspen/Pitkin County Airport

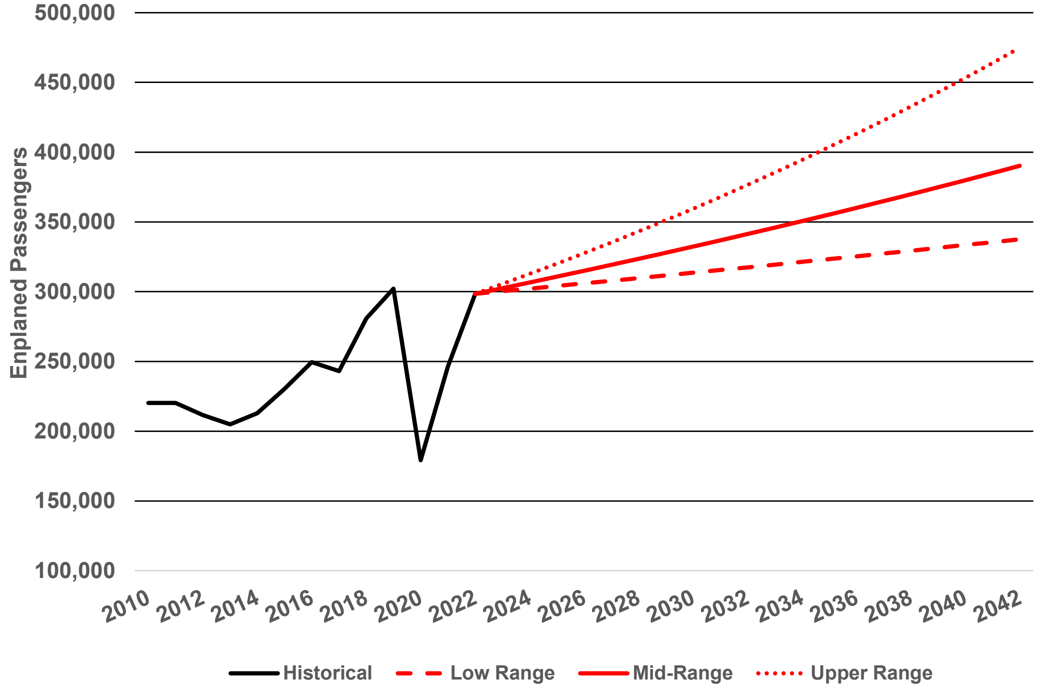


Table 18
ENPLANED PASSENGER FORECAST
Aspen/Pitkin County Airport

Activity	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	302,200	302,200	302,200
	2020	179,110	179,110	179,110
	2021	246,286	246,286	246,286
Estimate	2022	298,561	298,561	298,561
Forecast	2027	307,879	319,232	335,298
	2032	317,487	341,334	376,556
	2037	327,395	364,966	422,890
	2042	337,613	390,234	474,926
	Forecast Compound Annual Growth Rate			
	2022-2027	0.6%	1.3%	2.3%
	2027-2032	0.6%	1.3%	2.3%
	2032-2042	0.6%	1.3%	2.3%
	2022-2042	0.6%	1.3%	2.3%

Sources: Historical: Cirium Diio Mi T-100 Database. Forecast: Jacobsen Daniels Associates, December 2022.

1.6.2 Air Carrier Operations Forecast

The air carrier aircraft (aircraft with more than 60 seats) operations forecasts were developed for lower-range, mid-range, and upper-range scenarios based on the respective low, mid, and upper enplanement scenarios. Future aircraft operating factors were forecast based on fleet mix assumptions, including average seats per departure, estimated airline load factors, and enplanements per departure. The air carrier operations forecast assumes that section 10.12.030 (C) of the Pitkin County Code, which prohibits aircraft operations at ASE with a tip-to-tip wingspan greater than 95 feet, will remain in effect through 2032. After 2032, the air carrier operations forecast assumes that any aircraft currently operating in the U.S. domestic airline fleet and having the aircraft operating performance necessary to perform at ASE safely may be included in the future fleet mix.

The forecasts of air carrier operations were derived by dividing total forecast enplanements by projected enplanements per departure. The result was then multiplied by two to project future aircraft operations. The enplanements per departure factor were developed by converting a design day fleet mix for each forecast horizon period (2027, 2032, 2037, 2042) into a set of aircraft operating assumptions (see **Table 19**). The aircraft operating assumptions include total scheduled seats required to meet future enplaned passenger demand and estimated aircraft load factors. The forecast load factors are based on historical trends at ASE and assumed changes in the load factor over the forecast period. Total scheduled seats per departure are derived from the total number of seats needed to meet future enplaned passenger levels and assumed seats per departure based on the projected future fleet mix.

Table 19
FORECAST AIR CARRIER OPERATING ASSUMPTIONS
Aspen/Pitkin County Airport

Lower Range	2021	2022	Forecast 2027	2032	2037	2042
Average seats per departure	68.3	68.8	68.8	68.8	69.3	69.4
Average load factor	66.1%	73.5%	74.0%	74.7%	75.1%	76.7%
Enplanements per departure	45.1	50.5	50.9	51.4	52.0	53.2

Mid-Range	2021	2022	Forecast 2027	2032	2037	2042
Average seats per departure	68.3	68.8	68.8	77.8	83.7	85.7
Average load factor	66.1%	73.5%	74.0%	74.7%	75.1%	76.7%
Enplanements per departure	45.1	50.5	50.9	58.1	62.9	65.7

Upper Range	2021	2022	Forecast 2027	2032	2037	2042
Average seats per departure	68.3	68.8	68.8	77.9	84.9	88.7
Average load factor	66.1%	73.5%	74.0%	74.7%	75.1%	76.7%
Enplanements per departure	45.1	50.5	50.9	58.2	63.8	68.0

Source: Actual activity from Airport Management Records and Cirium Diio Mi T-100 database accessed March 2023. Forecast developed by Jacobsen Daniels Associates, March 2023.

1.6.2.1 Lower-Range Scenario

The lower-range aircraft operations scenario assumes the existing fleet mix will remain a regional jet fleet comprised of the CRJ-700 and the 70-seat EMB-175 LR. The lower-range forecast assumes the average seats per departure will increase only slightly from 68.8 seats in 2022 to 69.4 in 2042. The resulting air carrier operations are forecast to increase from approximately 11,006 in 2022 to 12,701 in 2042 at an annual rate of 0.7% (see **Table 20**).

1.6.2.2 Mid-Range Scenario

In the mid-range forecast, average seats per departure are projected to remain level through 2032 and then increase to approximately 71.3 seats per departure in 2037 and 73.1 seats per departure in 2042. Because of the increased demand for enplaned passengers in the mid-range forecast, the load factor is expected to grow from approximately 73.0% in 2022 to 76.7% in 2042. As a result, the upper-range air carrier operations are forecast to increase from about 11,006 in 2022 to 13,923 in 2042 at an average annual rate of 1.2% (see **Table 20**).

1.6.2.3 Upper-Range Scenario

The upper-range forecast assumes a considerable increase in the average seats per departure. As a result, average seats per departure are projected to increase from approximately 68.9 in 2027 to 69.0 in 2032, 72.5 in 2037, and 74.7 in 2042. In addition, the average load factor is projected to increase likewise from 73.0% in 2022 to approximately 74.7% in 2042. As a result, high-case air carrier operations are forecast to increase from about 11,006 in 2022 to 16,579 in 2042 at an average annual rate of 2.1% (see **Table 20**).

Figure 8
FORECAST AIR CARRIER OPERATIONS
Aspen/Pitkin County Airport

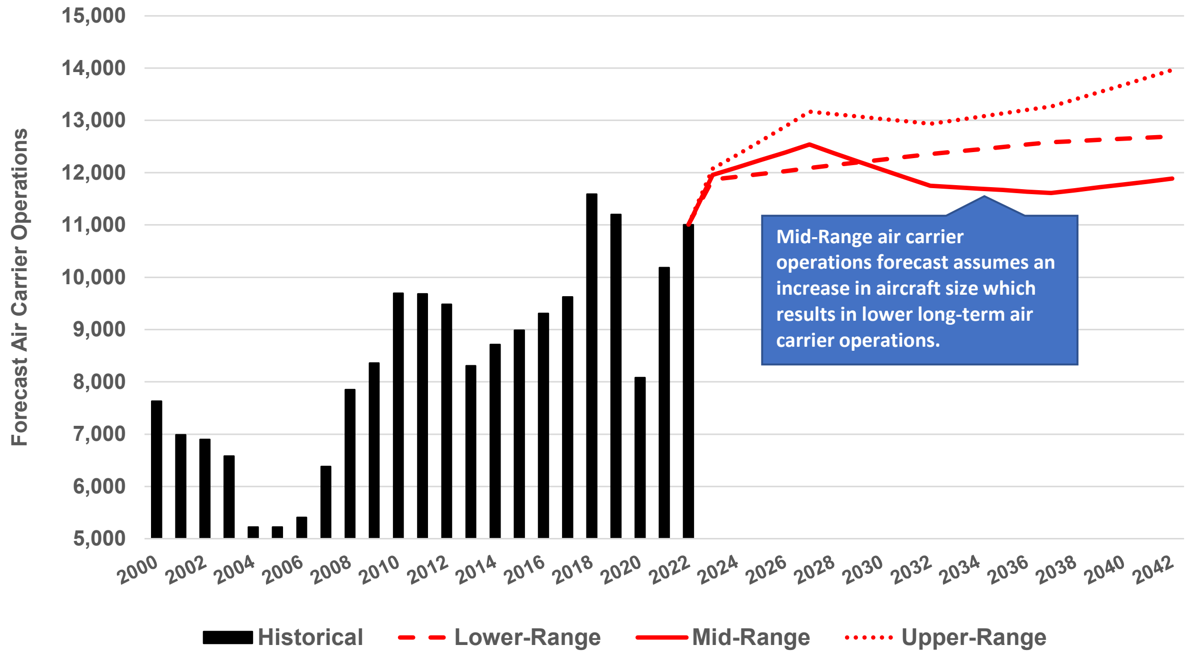


Table 20
AIR CARRIER OPERATIONS FORECAST
Aspen/Pitkin County Airport

Activity	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	11,202	11,202	11,202
	2020	8,082	8,082	8,082
	2021	10,183	10,183	10,183
	2022	11,006	11,006	11,006
Forecast	2027	11,407	11,672	12,193
	2032	11,823	12,379	13,508
	2037	12,254	13,128	14,965
	2042	12,701	13,923	16,579
	Forecast Compound Annual Growth Rate			
	2022-2027	0.7%	1.2%	2.1%
	2027-2032	0.7%	1.2%	2.1%
	2032-2042	0.7%	1.2%	2.1%
	2022-2042	0.7%	1.2%	2.1%

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed January 2023.
Forecast: Jacobsen Daniels Associates, January 2023.

1.6.3 Air Taxi Operations Forecast

The FAA defines Air Taxi operations as aircraft designed to have a maximum 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. All the scheduled airline flights at ASE are on air carrier aircraft (more than 60 seats); therefore, the air taxi operations forecast includes only air charter and on-demand flights operated by aircraft with 60 seats or less. The air taxi operations forecasts were developed for lower-range, mid-range, and upper-range scenarios (see **Table 21**).

1.6.3.1 Lower-Range Scenario

The low-case forecast was based on a market share analysis that assumed the ratio of air taxi operations at ASE to those for the United States, as presented in the 2022 Terminal Area Forecast, would remain at the 2021 ratio of approximately 0.19% over the forecast horizon. Based on this formula, air taxi operations will increase from about 15,058 in 2022 to 17,910 in 2042 at an average annual growth rate of 0.9%.

2022 ASE Air Taxi Operations: **15,655**

2022 TAF U.S. Air Taxi Operations: **8,295,994**

Market Share Ratio: **0.19%**

1.6.3.2 Mid-Range Scenario

The base case forecast was based on an extrapolation of the average annual growth rate recorded from 2000 to 2019 of approximately 2.1%. In 2020, 2021, and 2022, there was a spike in air taxi operations at ASE driven by the COVID-19 pandemic. It's assumed for the base case forecast that air taxi operations will continue to increase but return to an average annual growth rate comparable to the long-term trend recorded from 2000 to 2019. Base case air taxi operations are projected to increase from approximately 15,058 in 2022 to 22,662 in 2042 at an average annual rate of 2.1%.

1.6.3.3 Upper-Range Scenario

The high case forecast was based on an extrapolation of the average annual growth rate recorded from 2000 to 2022 of approximately 3.4%. It's assumed for the high case forecast that air taxi operations will continue to increase at the long-term average annual rate that accounts for the surge in air taxi operations recorded from 2020 to 2022. The high-case air taxi operations are projected to increase from approximately 15,058 in 2022 to 29,453 in 2042 at an average annual rate of 3.4%.

Figure 9
FORECAST AIR TAXI OPERATIONS
Aspen/Pitkin County Airport

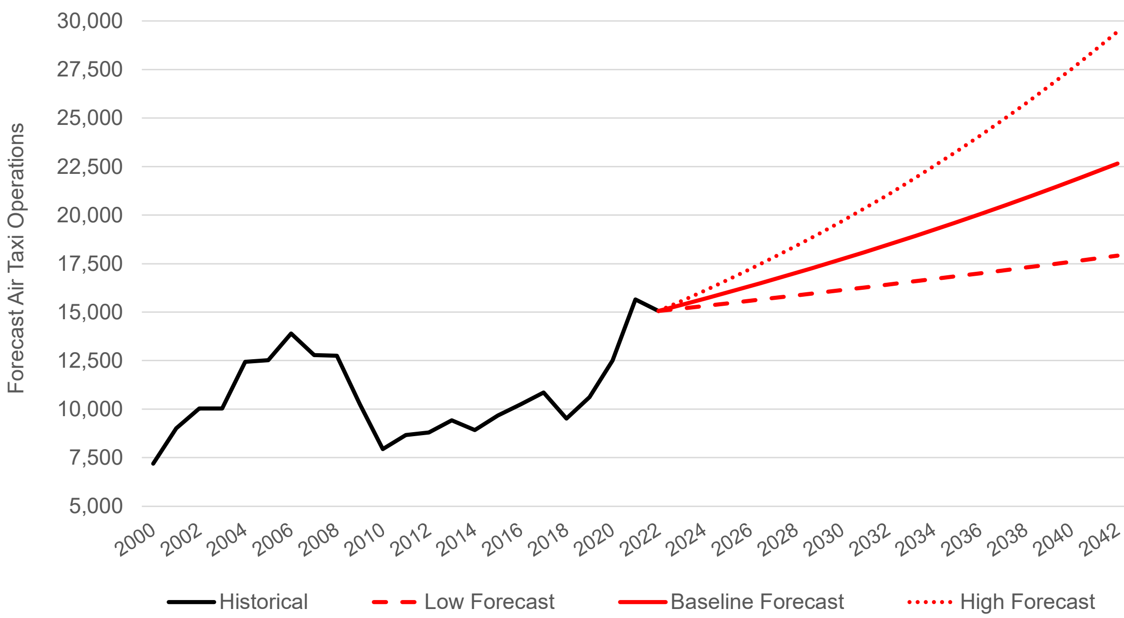


Table 21
AIR TAXI OPERATIONS FORECAST
Aspen/Pitkin County Airport

Activity	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	10,615	10,615	10,615
	2020	12,508	12,508	12,508
	2021	15,655	15,655	15,655
	2022	15,058	15,058	15,058
Forecast	2027	15,725	16,678	17,808
	2032	16,422	18,473	21,059
	2037	17,150	20,460	24,905
	2042	17,910	22,662	29,453
	Forecast Compound Annual Growth Rate			
	2022-2027	0.9%	2.1%	3.4%
	2027-2032	0.9%	2.1%	3.4%
	2032-2042	0.9%	2.1%	3.4%
	2022-2042	0.9%	2.1%	3.4%

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed January 2023.
Forecast: Jacobsen Daniels Associates, January 2023.

1.6.4 General Aviation Operations

General aviation operations are classified as itinerant and local, and both categories are expected to increase over the forecast period. As shown in Figure 10 below, Itinerant operations generally declined from 2000 to 2015 before reversing the trend and increasing through 2022. At the same time, local operations displayed much less historical variability and have gradually increased since 2000. The forecast of general aviation operations is provided in **Table 22**.

1.6.4.1 Itinerant General Aviation Operations

From 2010 to 2019, itinerant operations generally remained steady between 15,000 to 16,000 annual operations. The Airport recorded a rapid increase in itinerant operations from 2019 to 2021, primarily because of the travel disruptions caused by the COVID-19 pandemic and the switch to private flight options. This short-term growth in itinerant operations declined in 2022 to approximately 18,800 (see **Table 14**). Itinerant operations are projected to continue to increase, but slower than the 2010 to 2022 historical average annual rate of 1.3%. The dataset for the itinerant operations forecast is provided in the appendix.

The Itinerant operations forecast is based on a market share analysis that calculates the Airport's historical share of total U.S. itinerant operations and assumes that this market share will remain steady from 2022 to 2042. Given the sizeable affluent population in the Aspen area, the Airport believes those with the financial means to fly on private aviation are already doing so regardless of the 95-foot wingspan restriction, which limits the size of some GA aircraft. Lifting the restriction on aircraft with wingspans over 95 feet is not assumed to increase the number of itinerant operations. Therefore, total itinerant operations are projected to increase in line with historical trends.

The forecast projects that the Airport's future itinerant operations will stay at or near the average historical market share from 2000 to 2019 of approximately 0.028%. This average market share results in itinerant operations at the Airport increasing from about 18,644 in 2022 to 21,617 in 2042 at an average annual growth rate of 0.7% per year.

1.6.4.2 Local General Aviation Operations

The local operation forecast projects that the long-term trend of moderate growth in local operations at ASE will continue over the forecast period. The forecast for local operations was based on a trip's per capita methodology. The Airport's average local trips per capita of 0.038 for 2015 to 2022 was chosen because it represents a period where growth in local operations was relatively stable. Assuming average trips per capita of 0.038 held constant over the forecast horizon results in an increase in local operations from approximately 5,400 in 2022 to 6,300 in 2042 at an average annual growth rate of approximately 0.8%. The trip per capita ratio of 0.038 was constant over the forecast period. Although the population is expected to increase, the based aircraft fleet that performs most local operations, specifically the piston-engine fleet, is projected to decrease slightly over the 2022 to 2042 horizon. The dataset for the local operations forecast is provided in the appendix.

Figure 10
FORECAST GENERAL AVIATION OPERATIONS
Aspen/Pitkin County Airport

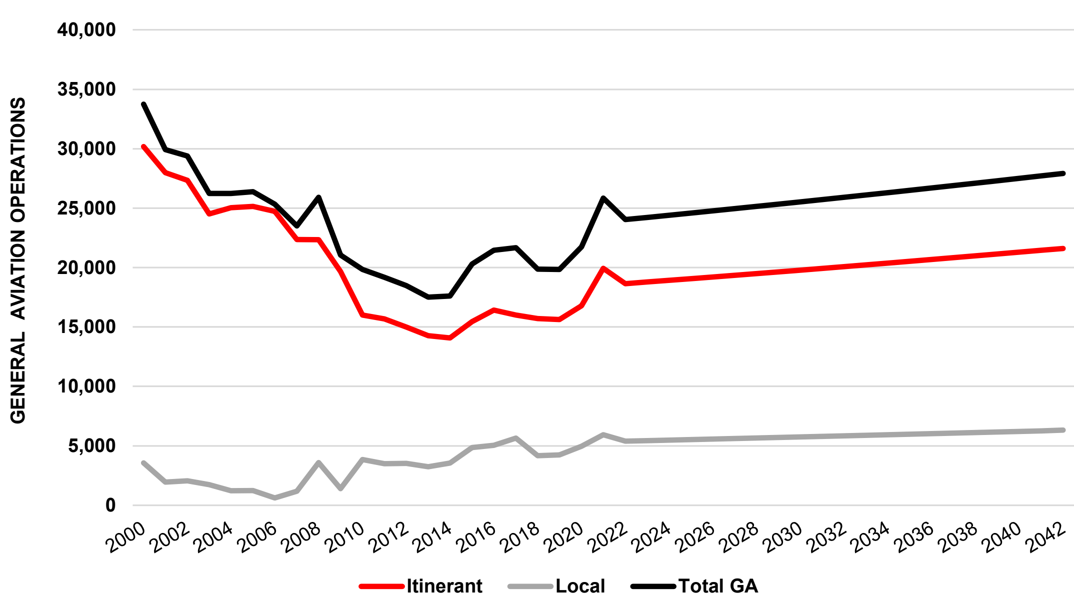


Table 22
GENERAL AVIATION OPERATIONS FORECAST
Aspen/Pitkin County Airport

Activity	Year	Itinerant	Local	Total
Historical	2019	15,621	4,219	19,840
	2020	16,787	4,951	21,738
	2021	19,926	5,921	25,847
	2022	18,644	5,399	24,043
Forecast	2027	19,347	5,613	24,960
	2032	20,076	5,836	25,912
	2037	20,832	6,067	26,900
	2042	21,617	6,308	27,925
	Forecast Compound Annual Growth Rate			
	2022-2027	0.7%	0.8%	0.8%
	2027-2032	0.7%	0.8%	0.8%
	2032-2042	0.7%	0.8%	0.8%
	2022-2042	0.7%	0.8%	0.8%

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed December 2022.
Forecast: Jacobsen Daniels Associates, December 2022.

1.6.5 Total Air Taxi and General Aviation Operations

Presented in **Table 23** is the operations forecast for the combination of air taxi and total general aviation operations (itinerant and local). Under the lower range forecast, operations are projected to increase from 39,101 in 2022 to 45,836 in 2042 at an average annual rate of 0.8%. The mid-range forecast projects total operations to reach 50,587 in 2042 at an average annual rate of 1.3%, and the upper range forecast projects 57,378 operations in 2042 at an average annual rate of 1.9%.

Table 23
AIR TAXI AND GENERAL AVIATION OPERATIONS FORECAST
Aspen/Pitkin County Airport

	Year	Lower-Range	Mid-Range	Upper-Range
Historical	2019	30,455	30,455	30,455
	2020	34,246	34,246	34,246
	2021	41,502	41,502	41,502
	2022	39,101	39,101	39,101
Forecast (a)	2027	40,685	41,638	42,767
	2032	42,334	44,384	46,971
	2037	44,050	47,360	51,805
	2042	45,836	50,587	57,378
	Forecast Compound Annual Growth Rate			
	2022-2027	0.8%	1.3%	1.9%
	2027-2032	0.8%	1.3%	1.9%
	2032-2042	0.8%	1.3%	1.9%
	2022-2042	0.8%	1.3%	1.9%

(a) The forecasts include lower, mid and upper range projections for air taxi operations and the mid-range forecast for total general aviation operations

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed December 2022. Forecast: Jacobsen Daniels Associates, December 2022.

1.6.6 Military Operations

Military operations are determined solely by the Department of Defense; therefore, they have been held constant, with no growth projected over the 2022 to 2042 forecast period. As a result, military operations are expected to average approximately 330 annual operations during the forecast period.

1.6.7 Total Aircraft Operations Summary

The Airport's total aircraft operations for each forecast scenario are provided below in **Table 24**. Total aircraft operations include air carrier, air taxi, local and itinerant general aviation, and military operations. Under the lower-range forecast, total Airport operations are projected to increase from approximately 50,423 in 2022 to 58,859 in 2042 at an annual rate of 0.8%. The mid-range, which will be included in the ALP Update and submitted to the FAA as the Airport's best estimate or base case forecast, projects an annual growth rate of 1.1%, with total operations projected at approximately 62,801 in 2042. The upper range forecast projects total operations to increase at an annual rate of 1.8%, reaching approximately 71,671 aircraft operations in 2042 (see **Figure 11**).

Figure 11
FORECAST TOTAL AIRCRAFT OPERATIONS
Aspen/Pitkin County Airport

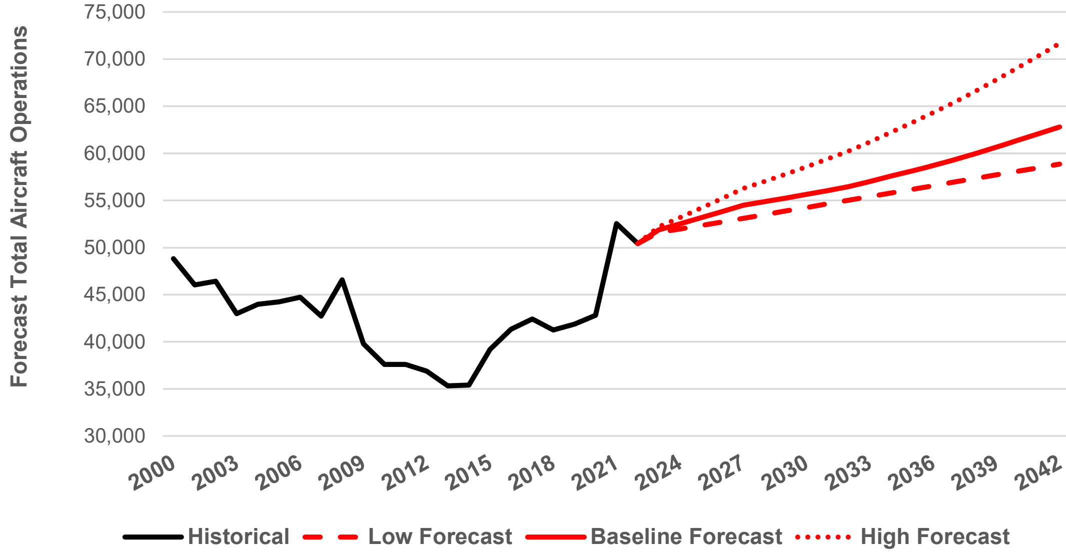


Table 24
TOTAL AIRCRAFT OPERATIONS FORECAST
Aspen/Pitkin County Airport

Activity	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	41,890	41,890	41,890
	2020	42,811	42,811	42,811
	2021	52,529	52,529	52,529
	2022	50,423	50,423	50,423
Forecast	2027	53,112	54,504	56,265
	2032	55,015	56,464	60,236
	2037	56,961	59,303	65,401
	2042	58,859	62,801	71,671
	Forecast Compound Annual Growth Rate			
	2022-2027	1.0%	1.6%	2.2%
	2027-2032	0.7%	0.7%	1.4%
	2032-2042	0.7%	1.1%	1.8%
	2022-2042	0.8%	1.1%	1.8%

Sources: Historical: FAA OPSNET w ebsite (w w w .faa.gov/opsnet) accessed January 2023.
Forecast: Jacobsen Daniels Associates, January 2023.

1.6.8 Based Aircraft

The Airport currently has a fleet of approximately 96 based aircraft (see **Table 25**), and their available aircraft parking positions (hangars, tie-downs, patio shelters) are generally at full capacity. In addition, there is a waiting list of aircraft owners seeking to base their aircraft at ASE, including piston-powered aircraft, turboprops, jet aircraft, and helicopters. The ALP Update will include an airfield space reservation for potential expansion of the General Aviation facilities, including possibly developing a second FBO. The exact location, development timeline, and facility requirements will be determined during the ALP Update process. Therefore, the based aircraft fleet mix forecast is preliminary and based on the assumption that facilities to accommodate an additional [30] based aircraft will be developed over the forecast horizon.

The Based Aircraft fleet mix assumes the existing fleet mix will change between 2022 and 2027 based on the anticipated changes to the national GA fleet projected in the FAA's Aerospace Forecast for Fiscal Years 2022-2042, "Active General Aviation and Air Taxi Aircraft" forecast. In 2032 it assumed that GA facilities to accommodate an additional 30 based aircraft would be available. The increase in the individual-based aircraft types in 2032 is based on the percentage of such aircraft currently on the Airport's aircraft space waiting list. From 2032 forward, the fleet mix will change based on growth rates assumed in the FAA's Aerospace Forecast and local demand characteristics.

Table 25
FORECAST BASED AIRCRAFT FLEET MIX
Aspen/Pitkin County Airport

Aircraft Type	2022	2027	2032	2037	2042
Single engine piston	54	51	62	60	59
Multi-engine piston	7	7	8	8	8
Turboprop	20	20	30	31	31
Jet	14	17	24	25	26
Helicopter	1	1	2	2	2
Total	**96**	**96**	**126**	**126**	**126**

Source: Historical: Airport Management Records, December 2022. Forecast: Jacobsen Daniels Associates, March 2022.

1.6.9 Comparison to FAA Terminal Area Forecast

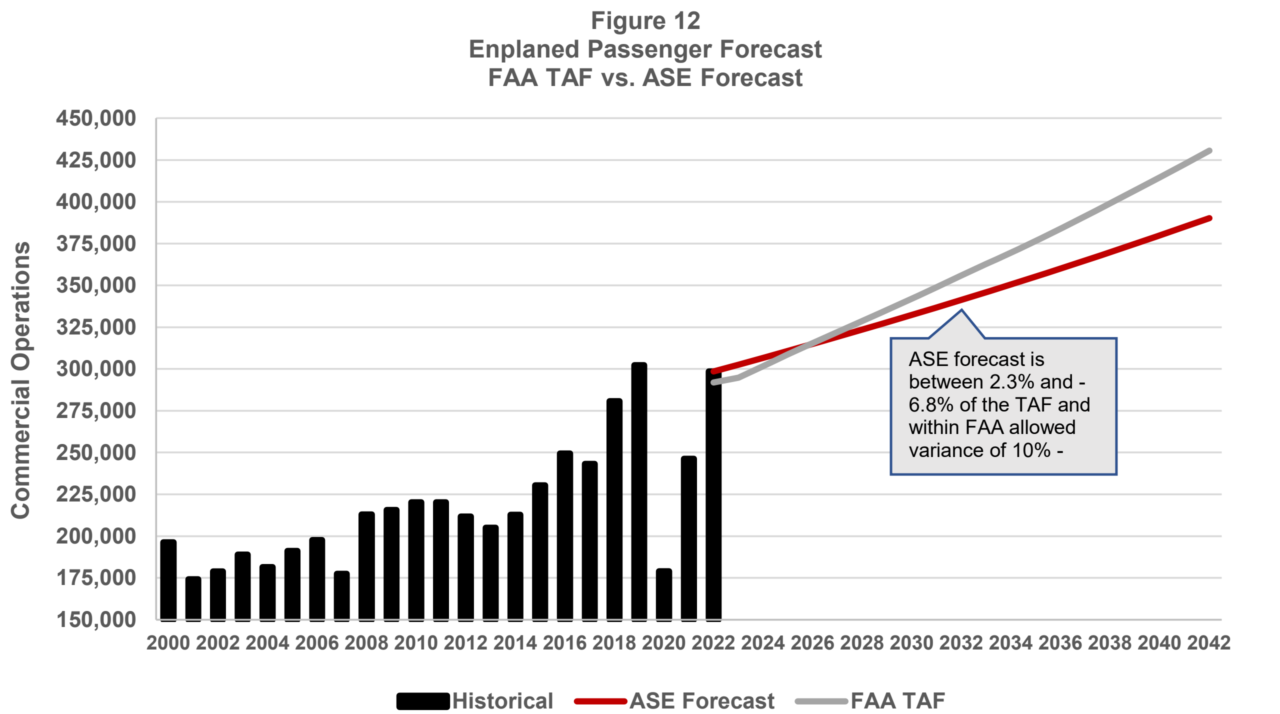
Presented below in **Table 27** is a comparison of the 2022 TAF (published March 2023) for ASE and the mid-range 2023 ASE ALP Update Forecast. The mid-range forecast is considered the “best estimate” of the three forecast scenarios, and therefore it will be submitted as the base forecast for review by the FAA. The forecasts are compared based on passenger enplanements, commercial operations, and total operations using the FAA’s required template for forecast comparisons.

The ALP Update Mid-Range Forecast differs from the TAF’s passenger enplanement forecast by 2.3% for the base year of 2022, -0.9% at the base year plus five years (2027), -4.1% at the base year plus ten years (2032), and -6.8% for the base year plus 15 years (2037)(see Figure 12).

The forecast of commercial operations for the ALP Update Forecast differs from the TAF by 1.8% in the base year (2022), 3.1% in the base year plus five years (2027), 4.6% for the base year plus ten years (2032), and 6.2% for the base year plus 15-years (2037). These results indicate that the ALP Update is consistent with the TAF and varies by less than 10% in the five-year forecast period (2027) and less than 15% in the ten-year forecast period (2032).

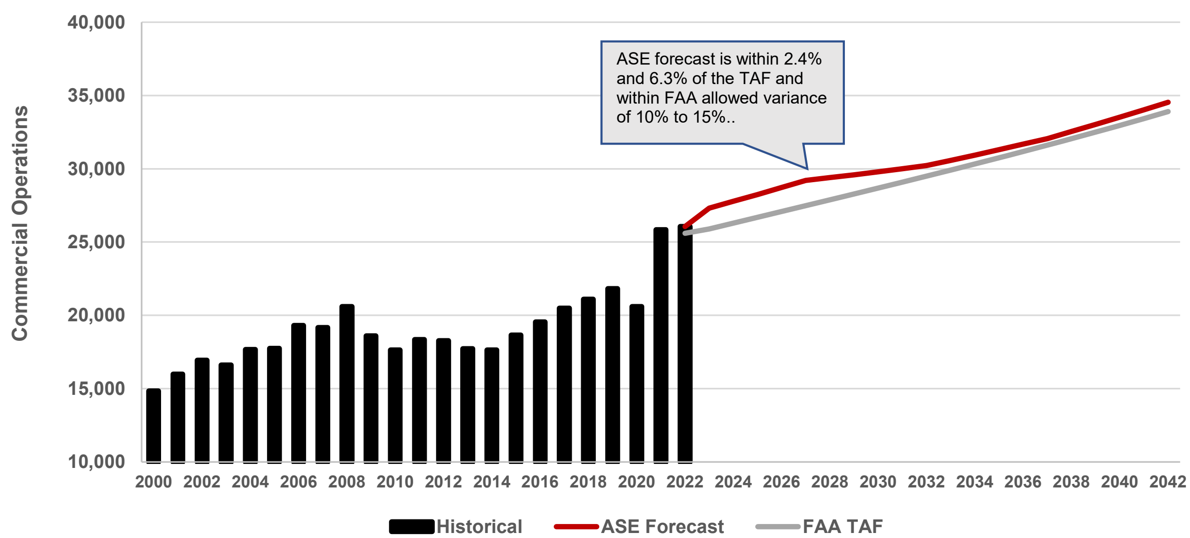
Table 27 provides a more detailed breakout of passenger enplanements, aircraft operations, cargo tonnage, and based aircraft presented using the FAA template for TAF comparison. In **Table 27**, enplaned passengers at ASE are classified as Regional/Commuter enplanements because they are carried on airlines whose primary function is to provide scheduled feeder service to mainline airlines to/from the mainline airlines’ connecting hub airports. The FAA classification of Regional/Commuter enplanements is independent of the aircraft size operating the flights to/from the hub airport. Aircraft operations, in contrast, are classified by the seating capacity of the aircraft operating the flights. Flights operated by aircraft with more than 60 seats are classified in the TAF as Air Carrier operations. Flights on aircraft with 60 or fewer seats are classified as Air Taxi operations.

Based on these FAA definitions, all enplaned passengers at ASE are classified as Regional/Commuter enplanements. Likewise, scheduled enplaned passengers at ASE are carried on flights operated by aircraft with more than 60 seats (all on CRJ-700 with 65 to 70 seats) and therefore are classified as Air Carrier operations.



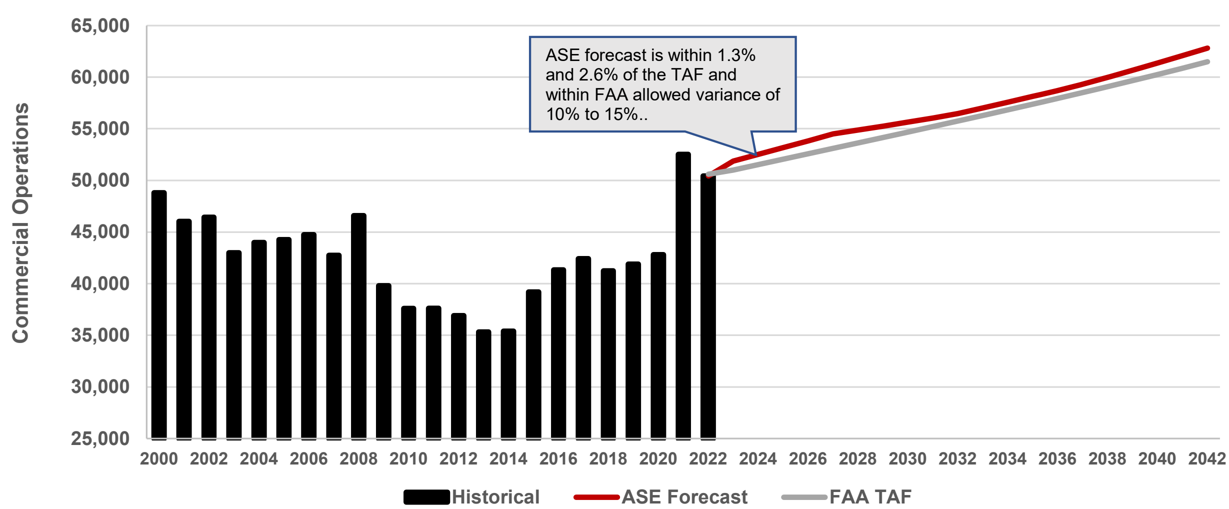
Source: FAA TAF published March 1, 2023 and ASE ALP Update forecast prepared by Jacobsen Daniels Associates, January 2023.

Figure 13
Total Commercial Operations Forecast
FAA TAF vs. ASE ALP Update



Source: FAA TAF published March 1, 2023 and ASE ALP Update forecast prepared by Jacobsen Daniels Associates, January 2023. Note: Commercial Operations are defined by FAA as the sum of Air Carrier and Air Taxi operations.

Figure 14
Total Operations Forecast
FAA TAF vs. ASE ALP Update



Source: FAA TAF published March 1, 2023 and ASE ALP Update forecast prepared by Jacobsen Daniels Associates, January 2023. Note: Commercial Operations are defined by FAA as the sum of Air Carrier and Air Taxi operations.

Table 27
FAA TAF FORECAST COMPARISON
Aspen/Pitkin County Airport

	Forecast Years	Aspen Mid-Range Forecast	FAA 2022 TAF	Percent Variance from 2022 TAF
Passenger Enplanements				
Base year	2022	298,561	291,825	2.3%
Base year + 5 years	2027	319,232	322,062	-0.9%
Base year + 10 years	2032	341,334	355,855	-4.1%
Base year + 15 years	2037	364,966	391,588	-6.8%
Commercial Operations				
Base year	2022	26,064	25,593	1.8%
Base year + 5 years	2027	29,214	27,491	6.3%
Base year + 10 years	2032	30,222	29,505	2.4%
Base year + 15 years	2037	32,073	31,623	1.4%
Total Operations				
Base year	2022	50,423	50,598	-0.3%
Base year + 5 years	2027	54,504	53,103	2.6%
Base year + 10 years	2032	56,464	55,747	1.3%
Base year + 15 years	2037	59,303	58,520	1.3%

Source: 2022 FAA Terminal Area Forecast for ASE, 2022 enplanements from Airport Management Records. 2022 operations from FAA OPSNET w ebsite (w w w .aspm.faa.gov/opsnet), report created January 2023. Forecast provided by Jacobsen Daniels Associates, January 2023.

Table 28
2022 FAA TAF FORECAST SUMMARY TEMPLATE
Aspen/Pitkin County Airport

	Forecast Years					Compound Annual Growth Rates			
ASE Mid-Range Forecast	Base Year 2022	Base Year + 1 year 2023	Base Year + 5 years 2027	Base Year + 10 years 2032	Base Year + 15 years 2037	Base Year + 1 year 2022-2023	Base Year + 5 years 2022-2027	Base Year + 10 years 2022-2032	Base Year + 15 years 2022-2037
Passenger Enplanements (a)									
Air Carrier	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%
Regional/Commuter	298,561	302,585	319,232	341,334	364,966	1.3%	1.3%	1.3%	1.3%
Total	298,561	302,585	319,232	341,334	364,966	1.3%	1.3%	1.3%	1.3%
Aircraft Operations									
Itinerant									
Air Carrier	11,006	11,957	12,536	11,749	11,613	8.6%	4.8%	0.7%	0.4%
Air Taxi	15,058	15,369	16,678	18,473	20,460	2.1%	0.0%	0.0%	2.1%
Total Commercial Operations	26,064	27,326	29,214	30,222	32,073	4.8%	2.3%	1.5%	1.4%
Itinerant									
General Aviation	18,644	18,782	19,347	20,076	20,832	0.7%	0.7%	0.7%	0.7%
Military	157	160	160	160	160	1.9%	0.4%	0.2%	0.1%
Local									
General Aviation	5,399	5,441	5,613	5,836	6,067	0.8%	0.8%	0.8%	0.8%
Military	159	170	170	170	170	6.9%	1.3%	0.7%	0.4%
Total Operations	50,423	51,880	54,504	56,464	59,303	2.9%	1.6%	1.1%	1.1%
Total Air Taxi and GA Operations	39,101	39,593	41,638	44,384	47,360	1.3%	1.3%	1.3%	1.3%
Cargo Tons	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%
Based Aircraft									
Single engine piston	54	54	51	62	60	0.0%	-1.0%	1.3%	0.7%
Multi-engine piston	7	7	7	8	8	0.0%	-0.4%	1.1%	0.7%
Turboprop	20	20	20	30	31				
Jet	14	14	17	24	25	0.0%	4.0%	5.5%	3.8%
Helicopter	1	1	1	2	2	0.0%	0.0%	7.2%	4.7%
Total	96	96	96	126	125	0.0%	0.1%	2.7%	1.8%

(a) Enplaned passengers at ASE are classified in the TAF as Regional/Commuter enplanements because they are carried on airlines whose primary function is to provide scheduled service to/from major connecting hub airports. The classification of Regional/Commuter enplanements is independent of the aircraft size operating the flights to/from the hub airport. Aircraft operations, in contrast, are classified by the seat capacity of the aircraft operating the flights. Flight operated by aircraft with greater than 60-seats are classified in the TAF as Air Carrier operations and flights on aircraft with 60 or fewer seats are classified as Air Taxi operations.

Source: 2022 enplanements from Airport management records. 2022 operations from FAA OPSNET w ebsite w w w .aspm.faa.gov/opsnet, report created January 2023. Forecast provided by Jacobsen Daniels Associates, January 2023.

1.6.10 Peak Period Demand

This section presents the peak period demand at ASE for the peak month, peak month average day (PMAD), and peak hour of the PMAD. The peak period data is presented for enplaned passengers, scheduled air carrier operations, and total operations. The peak period forecasts are given for the base year of 2022 and the forecast horizon years of 2027, 2032, 2037, and 2042. The forecast aircraft fleet mix distribution is presented following the peak period analysis.

The historical peak period analysis was prepared by analyzing aircraft operations data from Cirium's Diio Mi Schedule database for scheduled passenger service and the FAA OPSNET and FAA TFMSC data for air taxi, general aviation, and military total aircraft operations.

March has historically been the peak month for enplaned passengers averaging approximately 15.2% of the total annual enplaned passenger during the years 2012-2021 (see **Table 28**) and an estimated 47,600 enplaned passengers in 2022. The PMAD is the mathematical average of the peak month (peak month total divided by 31 days) or approximately 1,488 in 2022. The peak hour enplaned passengers (of the PMAD) was calculated by multiplying the total airline scheduled seats for the peak hour by the annual load factor for 2022.

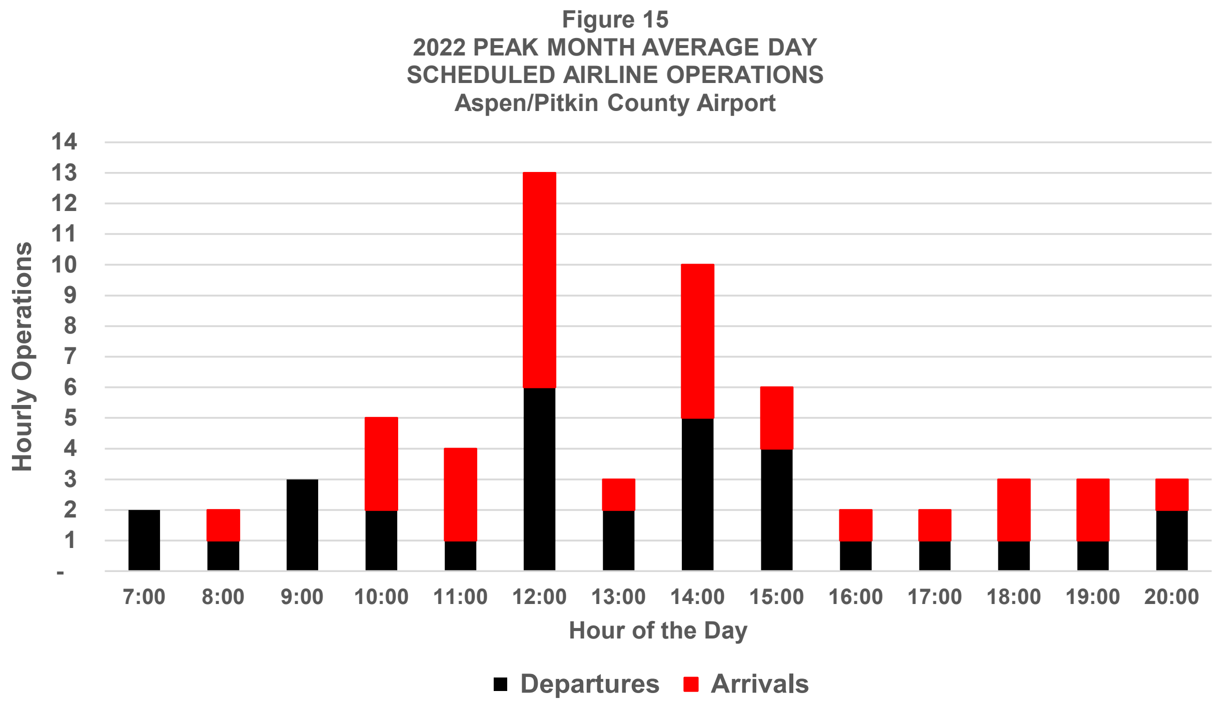
Table 29
2022 MONTHLY ENPLANED PASSENGERS AND SCHEDULED DEPARTURES
Aspen/Pitkin County Airport

	Monthly Enplaned Passengers												
Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
2012	30,902	31,234	33,438	9,963	6,132	15,421	22,050	19,858	10,038	6,721	6,357	19,583	211,693
2013	27,129	27,772	32,380	9,174	6,048	15,710	21,267	20,431	10,834	7,270	5,911	20,998	204,921
2014	25,309	27,888	35,624	9,380	7,208	16,747	22,439	20,931	11,790	8,308	6,163	21,073	212,857
2015	31,235	30,733	37,509	10,537	6,372	16,851	23,421	21,261	12,481	8,550	6,525	24,976	230,448
2016	31,274	36,420	38,428	10,435	6,477	17,844	25,039	23,440	15,295	10,102	7,270	27,479	249,500
2017	32,335	31,877	38,996	8,654	6,272	17,833	24,329	22,212	15,105	9,824	8,775	26,936	243,145
2018	36,323	34,327	42,361	14,244	9,714	21,821	21,643	26,310	17,826	13,028	11,540	31,648	280,782
2019	39,277	37,185	43,367	14,076	10,965	23,465	30,966	29,170	19,224	13,449	9,495	31,565	302,200
2020	38,640	41,574	22,890	323	1,272	4,065	9,766	12,874	10,125	10,024	7,825	19,737	179,110
2021	20,400	22,177	32,283	11,668	6,606	21,894	31,114	29,293	21,289	14,405	10,854	24,305	246,286
2022	39,923	38,106	47,611	13,276	4,268	21,245	28,124	28,048	22,987	17,072	10,843	27,058	298,561
Total	**352,744**	**359,290**	**404,885**	**111,728**	**71,331**	**192,893**	**260,155**	**253,825**	**166,991**	**118,750**	**91,555**	**275,357**	**2,659,501**
	Average Percent of Annual Passengers												
2012-2021	**13.3%**	**13.5%**	**15.2%**	**4.2%**	**2.7%**	**7.3%**	**9.8%**	**9.5%**	**6.3%**	**4.5%**	**3.4%**	**10.4%**	**100.0%**

	Monthly Scheduled Departures												
Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
2012	809	739	904	305	144	371	467	426	246	153	161	470	5,195
2013	633	628	671	239	147	397	479	432	255	154	143	483	4,661
2014	720	719	852	233	179	381	466	416	262	203	146	540	5,117
2015	717	712	840	303	155	380	449	407	260	182	156	586	5,147
2016	757	777	845	231	119	349	497	455	300	205	137	628	5,300
2017	765	752	884	182	141	384	509	481	331	226	188	637	5,480
2018	985	907	1,069	403	246	496	567	531	373	285	261	732	6,855
2019	921	820	994	274	243	560	646	605	400	278	206	702	6,649
2020	924	883	927	121	107	108	247	300	218	246	236	596	4,913
2021	616	598	747	238	146	653	703	655	443	265	180	658	5,902
2022	904	845	940	262	120	521	561	562	474	322	226	728	6,465
Total	**8,751**	**8,380**	**9,673**	**2,791**	**1,747**	**4,600**	**5,591**	**5,270**	**3,562**	**2,519**	**2,040**	**6,760**	**61,684**
	Average Percent of Annual Passengers												
2012-2022	**14.2%**	**13.6%**	**15.7%**	**4.5%**	**2.8%**	**7.5%**	**9.1%**	**8.5%**	**5.8%**	**4.1%**	**3.3%**	**11.0%**	**100.0%**

Source: Airport management recoreds and Cirium Diio Mi T-100 and Airline Schedule databases accessed January 2023.

As shown in **Figure 15** below, according to airline schedule data, there were six peak-hour departures and seven arrivals from 12:00 pm to 1:00 pm. During the peak hour, there were 412 scheduled departing seats. When multiplied by the average load factor of 73.2% equals approximately 305 enplaned passengers during the peak hour or about 20.0% of the PMAD (see **Table 29**).



Source: Cirium's Diio Mi Schedule database accessed January 2023. Analysis provided by Jacobsen Daniels Associates.

These peak period ratios were held constant over the forecast periods for the lower, mid, and upper-range forecasts to produce the peak period forecasts presented in **Table 29**. Peak hour enplanements are projected to increase from approximately 305 in 2022 to 346 in 2042 in the lower range forecast, 400 in the mid-range forecast, and 483 in the upper range forecast. The peak period scheduled airline operations is presented in **Table 30**. Peak-hour scheduled operations are projected to increase from approximately 13 in 2022 to 15 in 2042 in the lower-range forecast, 16 in the mid-range forecast, and 19 in the upper-range forecast.

Table 30
PEAK PERIOD ENPLANEMENTS FORECAST
Aspen/Pitkin County Airport

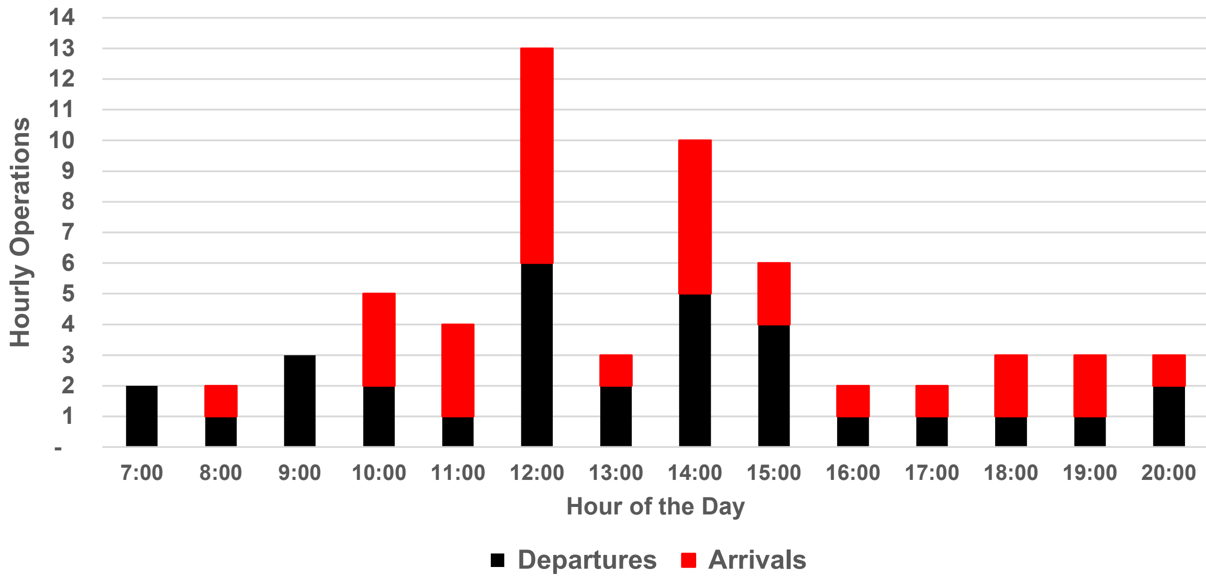
	Actual	Forecast Enplanements			
Lower Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual enplanements	298,561	307,879	317,487	327,395	337,613
Peak month	46,125	46,590	48,044	49,544	51,090
Peak month average day	1,536	1,576	1,625	1,676	1,728
PMAD peak hour	303	311	321	331	341

	Actual	Forecast Enplanements			
Mid Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual enplanements	298,561	319,232	341,334	364,966	390,234
Peak month	47,611	48,308	51,653	55,229	59,053
Peak month average day	1,536	1,634	1,747	1,868	1,998
PMAD peak hour	303	323	345	369	394

	Actual	Forecast Enplanements			
Upper Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual enplanements	298,561	335,298	376,556	422,890	474,926
Peak month	47,611	50,740	56,983	63,995	71,869
Peak month average day	1,536	1,717	1,928	2,165	2,431
PMAD peak hour	303	339	381	427	480

Sources: Historical: FAA OPSNET w ebsite (w w w .faa.gov/opsnet) accessed January 2023 and Cirium's Diio Mi Schedule database accessed January 2023. Forecast: Jacobsen Daniels Associates, January 2023.

Figure 16
2022 PEAK MONTH AVERAGE DAY
SCHEDULED AIRLINE OPERATIONS
Aspen/Pitkin County Airport



Source: Cirium's Diio Mi Schedule database accessed January 2023. Analysis provided by Jacobsen Daniels Associates.

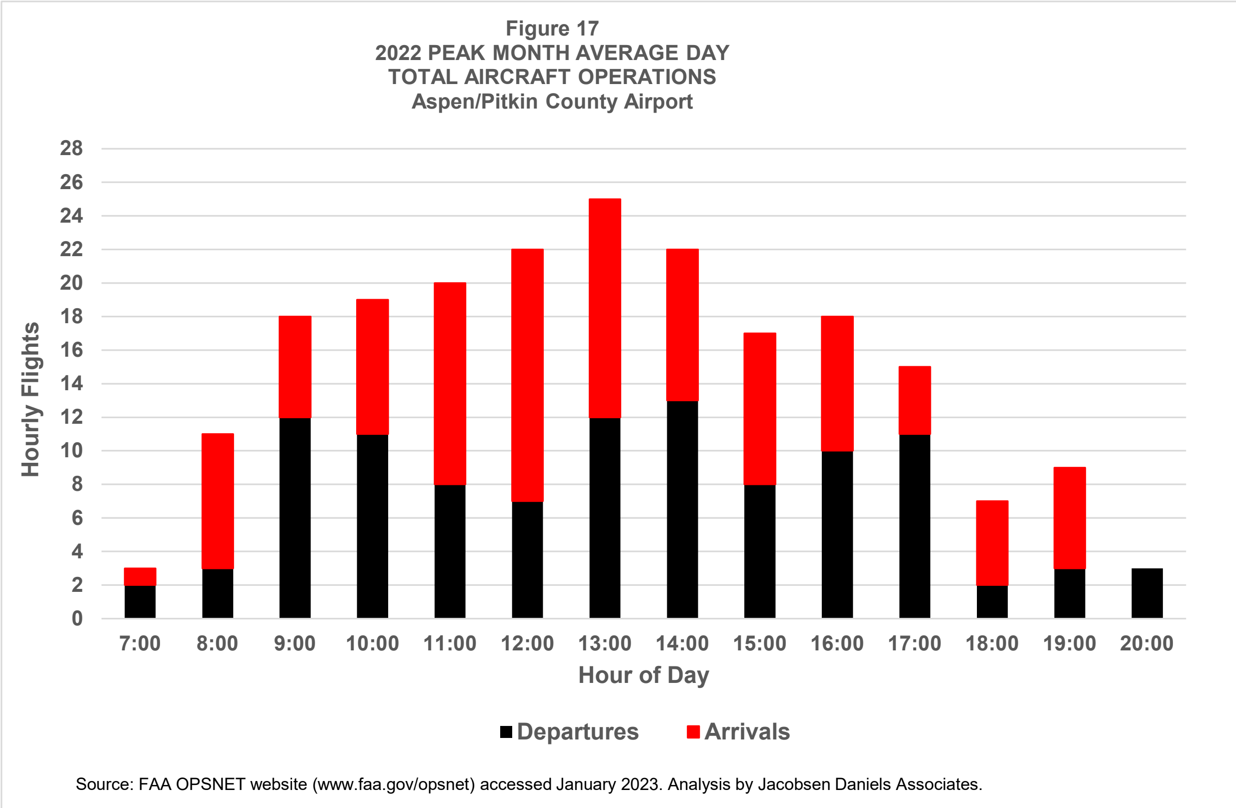
Table 31
PEAK PERIOD SCHEDULED AIR CARRIER OPERATIONS FORECAST
Aspen/Pitkin County Airport

	Actual	Forecast			
Lower Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	11,006	12,090	12,357	12,581	12,693
Peak month	1,880	2,065	2,111	2,149	2,168
Peak month average day	61	67	68	69	70
PMAD peak hour	13	14	15	15	15

	Actual	Forecast			
Mid Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	11,006	12,536	11,749	11,613	11,884
Peak month	1,880	2,141	2,007	1,984	2,030
Peak month average day	61	69	65	64	65
PMAD peak hour	13	15	14	14	14

	Actual	Forecast			
Upper Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	11,006	13,167	12,935	13,266	13,963
Peak month	1,880	2,249	2,209	2,266	2,385
Peak month average day	61	73	71	73	77
PMAD peak hour	13	16	15	16	16

Sources: Historical: FAA OPSNET w ebsite (w w w .faa.gov/opsnet) accessed January 2023 and Cirium's Diio Mi Schedule database accessed January 2023. Forecast: Jacobsen Daniels Associates, January 2023.



The peak period operations for all Airport operations (air carrier, air taxi, general aviation, and military) are presented in **Figure 17**. March 2022 was chosen as the peak month for total operations since it is the peak month for air carrier operations and is typically one of the busiest months for total operations. The forecast for peak period Airport operations is presented in **Table 31**. Peak hour total Airport operations are projected to increase from approximately 25 in 2022 to 29 in 2042 in the lower range forecast, 32 in the mid-range forecast, and 37 in the upper range forecast.

Table 32
PEAK PERIOD AIRCRAFT OPERATIONS FORECAST
Aspen/Pitkin County Airport

	Actual	Forecast Operations			
Lower Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	50,423	53,106	55,021	56,961	58,859
Peak month	5,897	6,211	6,435	6,662	6,884
Peak month average day	190	200	208	215	222
PMAD peak hour	25	26	27	28	29

	Actual	Forecast Operations			
Mid Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	50,423	54,504	56,464	59,303	62,801
Peak month	5,897	6,374	6,603	6,935	7,345
Peak month average day	190	206	213	224	237
PMAD peak hour	25	27	28	29	31

	Actual	Forecast Operations			
Upper Range	**2022**	**2027**	**2032**	**2037**	**2042**
Annual operations	50,423	56,265	60,236	65,401	71,671
Peak month	5,897	6,580	7,045	7,649	8,382
Peak month average day	190	212	227	247	270
PMAD peak hour	25	28	30	32	36

Sources: Historical: FAA OPSNET w ebsite (w w w .faa.gov/opsnet) accessed January 2023.
Forecast: Jacobsen Daniels Associates, January 2023.

1.6.11 ASE Aircraft Fleet Mix Forecast

The FAA guide to developing aviation demand forecasts[3] states that the primary source for aircraft fleet mix data is the Official Airline Guide and USDOT T-100 data, including aircraft currently operating in airline fleets or on order and expected to begin service within the next six to 12 months. The FAA may allow the inclusion of aircraft in the future fleet mix that are not currently operating today. Still, generally, these aircraft must have obtained their FAA standard airworthiness certificate.

3 GRA, Incorporated, April 2001, *Forecasting Aviation Activity by Airport* prepared for the Federal Aviation Administration, Office of Aviation Policy and Plans Statistics and Forecast Branch (APO-110), Washington, DC.

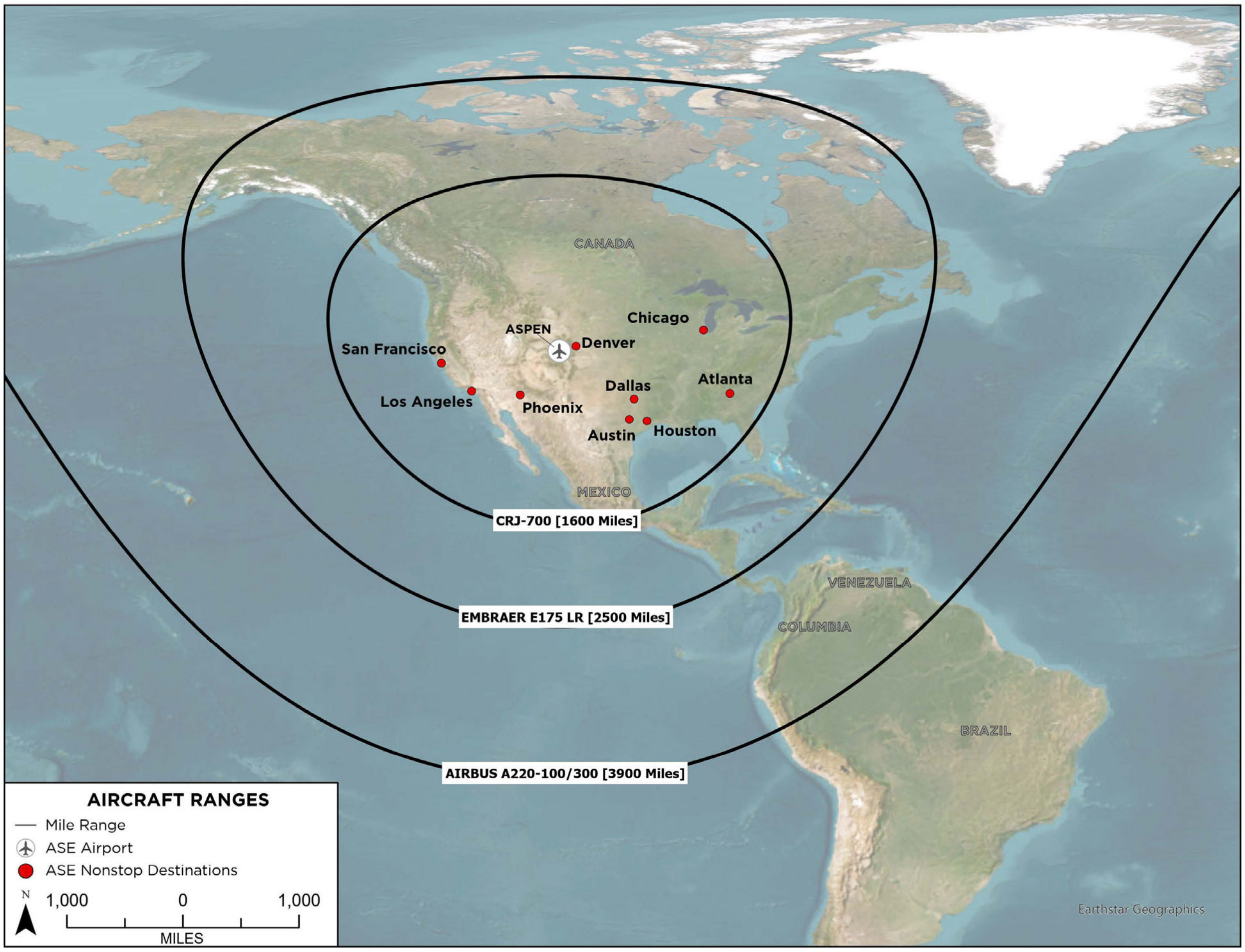
The fleet mix projections for this report incorporate USDOT T-100 data and airline schedule data from the Cirium Diio Mi aviation database. The Official Airline Guide is a commercial source of airline schedule data similar to the Cirium Schedule database used in this report. In addition, the FAA Airport Improvement Handbook[4] states that the future fleet mix, if different from the current fleet mix, must be based on the airport forecast approved by the FAA Airports District Office (ADO). Given the uncertainties regarding the timing and development of the eVTOL technology and its provision of air service at significant levels, operations by eVTOL aircraft are excluded from the ALP Update aviation demand forecasts.

Below is a description of the primary aircraft projected to operate at ASE over the forecast horizon, including the CRJ-700, the Embraer EMB-175, and the Airbus A220-100, and an aircraft range map depicting the range of these aircraft from ASE (see **Map 3**).

In addition, a summary of some critical advances in aircraft technology that, although not included in the future fleet mix for ASE, will likely have a significant influence on the national fleet mix's long-term future.

Map 3
SELECT AIRCRAFT RANGES FROM ASE
Aspen/Pitkin County Airport

[4] FAA Order 5100.38D, effective February 26, 2019



1.6.11.1 CRJ-700

The Canadair Regional Jet Series 700 aircraft (CRJ-700) is a 65 to 70-seat, two-engine regional jet built by Bombardier, Inc. with a maximum take-off weight of 75,000 pounds. The CRJ-700 entered airline service in the U.S. in 2001 and gained popularity among airlines because of its improved speed and comfort compared to comparably sized turboprops and its superior operating economics compared to existing regional jets at that time, such as the four-engine BAe-146.

During the early 2000s, the BAe-146, which provided the majority of scheduled seats at ASE (see Table X), was being phased out of service by U.S. airlines and ceased operating at ASE by 2004. Therefore, the CRJ-700 was the logical replacement for the BAe-146, given its wingspan of 76.3 feet and operating performance to operate safely.

Since 2004, scheduled service on the CRJ-700 has been provided predominantly by SkyWest through code-share agreements with American, Delta, and United. As of December 31, 2022, SkyWest operates 80 CRJ-700s for American, five for Delta, and 19 for United, with an average age of approximately 17 years. The aircraft in the SkyWest fleet range in age from about 24 years. Based on the age of the older CRJ-700 in the SkyWest fleet, it's reasonable to assume that the younger aircraft can safely operate for another 12 to 15 years or perhaps longer.

Bombardier delivered the last new CRJ-700 in 2011, and the aircraft is no longer in production, although long-term maintenance and support services are expected to continue. In 2020, Bombardier sold its CRJ Series aircraft program to Mitsubishi Heavy Industries, Ltd. (MHI) "which acquired the maintenance, support, refurbishment, marketing, and sales activities for the CRJ Series aircraft, including the related services and support network located in Montréal, Québec, and Toronto, Ontario and its service centers located in Bridgeport, West Virginia, and Tucson, Arizona, as well as the type certificates."[5] MHI believes that with the service and support its Maintenance, Repair, and Overhaul (MRO) network provides; the CRJ Series can continue operating for the next few decades.[6] In addition, SkyWest currently has a roster of trained and experienced CRJ-700 pilots and support staff that would be expensive to retrain to switch to a different aircraft type.

Supporting the continued use of the CRJ-700 are the limited aircraft options currently available to airlines other than the Embraer EMB-175. In February 2023, MHI officially canceled the development of its long-planned Mitsubishi Regional Jet program, also known as the Spacejet program. The Spacejet program included plans for a 76-seat regional jet which would have been a competitor to the CRJ-700. Mitsubishi is currently working with ZeroAvia, Inc. studying the potential for replacing the existing jet engines on regional-sized aircraft with hydrogen-electric powertrains. However, this technology has yet to receive FAA aircraft certifications and is a decade or more away from scheduled airline operations.

Embraer has also been developing the next generation of the EMB-175, the E175-E2. This aircraft was designed for 80 to 88 seats which exceeds the seat limit imposed by the pilot scope clauses of major U.S. airlines like American, Delta, and United. However, because of the 76-seat scope clause prohibitions, no U.S. airlines have yet to place an order for the EMB-175 E2, and Embraer has put further development of the airplane on hold until 2027. In addition, the E175-E2 has a wingspan of over 103 feet which would prohibit current operation at ASE.

Based on the age of the aircraft in the existing SkyWest fleet and the planned service and maintenance of the aircraft by MHI, it is possible to assume CRJ-700 will have a remaining viable service life of approximately 20 years through 2042).

1.6.11.2 Embraer EMB-175

The EMB-175 is a two-engine regional jet manufactured by Embraer and designed to seat 76 to 88 passengers. The EMB-175 has a wingspan of 85.3 feet and a maximum take-off weight of 86,500 pounds, so it's an acceptable aircraft under the terms of the Pitkin County Code restrictions. In addition, the EMB-175 has the operating performance capabilities to operate at ASE.[7]

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[5] Bombardier Annual Information Form 2022 for Fiscal Year ended December 31, 2022.
[6] Waldron, Greg. "MHIRJ see long future for CRJ regional jets", *FlightGlobal*, July 25, 2022 (*www.flightglobal.com*)
[7] *Airspace Impact and Aircraft Feasibility Assessment Update* prepared by Lean Engineering, August 25, 2018.

SkyWest Airlines currently operate 194 EMB-175s under code-share agreements with American (20 aircraft), Delta (84 aircraft), and United (90 aircraft). The average age (years) of the SkyWest EMB-175 is approximately 5.[Error! Bookmark not defined.]

The airlines currently operating at ASE have informed the Airport that within 12 to 18 months, they plan to begin service at ASE with the EMB-175. In anticipation of operations by the EMB-175, the Airport has recently prepared a Passenger Facility Charge (PFC) Application (22-12-C-ASE) to fund the acquisition/replacement of four (4) mobile boarding ramps and the design and expansion of five (5) existing air carrier aircraft parking hardstands. Currently, no airline operations are scheduled by the EMB-175 at ASE through 2023, so the exact service date is still being determined. It's also uncertain if these new EMB-175 operations will replace existing CRJ-700 operations or serve new routes and destinations. Based on this information, the EMB-175 has been included in the fleet mix forecast for ASE beginning January 2024.

Airbus A220-100/300

The Airbus A220-100 is a relatively new 2-engine narrowbody aircraft that entered service in 2016. The A220-100 is designed for a seating configuration of between 100 and 120 seats and has a wingspan of just over 115 feet. In addition, the A220-100 was determined to have the operating performance to serve ASE.[7] Delta is currently the only U.S. airline to operate the Airbus A220-100 with a total of 45 in their fleet at an average age of 3 years. Delta's A220-100s have a capacity of 109 seats and a maximum take-off weight of 139,000 pounds.

The Airbus A220-300 is a larger derivative of the A220-100 with a typical seating configuration between 120 and 150 seats. Delta Air Lines is the only airline currently operating the Airport that operates the A220-300, and it has a seating configuration of 130 seats and a maximum take-off weight of 156,300 pounds.

1.6.12 Future Aircraft Technology

1.6.12.1 Advanced Air Mobility

Recent advances in battery and electric propulsion technology have created a new and growing industry dedicated to providing electric vertical take-off and landing aircraft (eVTOL) that could transform the future of commercial air service. It's envisioned that these eVTOL aircraft would provide air taxi or "Uber" like shuttle services on small planes in urban and rural environments. This air shuttle service would likely begin by providing short flights from major urban centers to commercial service airports. Eventually, this technology could be expanded to include options for daily travel within and between cities and other geographical areas currently provided by traditional transportation methods.

Significant investments are being made by major airlines such as United, American, Delta, and others, as well as aircraft manufacturers like Airbus, Boeing, and Embraer, to develop the aircraft technology and physical infrastructure required to support this new technology. In addition, NASA and the FAA are working closely with the eVTOL industry to support the development and implementation of this technology. And in September 2022, the FAA issued an engineering brief that provides interim guidance for designing vertiports for aircraft with vertical takeoff and landing (VTOL) capabilities.

Archer Aviation, one of the leading firms in the eVTOL industry, has announced its goal to have its four-passenger Midnight aircraft certified by the FAA in late 2024 and begin commercial service in 2025. The Midnight is initially planned to provide short-distance trips of approximately 20 miles within the Archer urban air mobility network (Archer-managed vertiports). The plane's batteries could then be recharged within 10 minutes for another short-distance flight. In addition, Archer formed a partnership with United Airlines in 2021 and recently announced their plans, assuming successful certification of the Archer aircraft, to fly a shuttle route for United between the Downtown Manhattan Heliport in New York City and Newark Liberty International Airport in New Jersey. The flight is estimated to take less than 10 minutes compared to a typical commute by car of an hour or more.

eVTOL technology has the potential to play a significant role in the future of commercial air service. However, there are still many issues to be resolved. eVTOL aircraft are currently designed to use helicopter landing and take-off facilities, but these helipads are typically not designed to handle high traffic volumes. Air traffic control procedures and regulations must be developed to safely control and manage the potential high volumes of low-flying aircraft in and around airport airspace. The physical infrastructure to support the aircraft's electrical charging, maintenance, and storage needs to be developed. Finally, and of critical importance, is the acceptance by the public of their safety onboard eVTOL aircraft and their concern with additional low-flying local air traffic.

1.6.12.2 New Aircraft Propulsion Technology

The aviation industry has increased its focus on developing new aircraft engine technologies to help reduce carbon emissions. Most recent research and development have focused on aircraft powered by rechargeable lithium-ion batteries, hydrogen-electric systems (hydrogen fuel cells), hydrogen-combustion engines, and hybrid-electric systems.

There have been significant advances in developing these new engine technologies comparable to the development of eVTOL technologies. For example, the all-electric (batter powered) airplane manufacturer Eviation has approximately 300 orders for its Alice 9-seat commuter aircraft. The Alice performed its first successful test flight in September 2022, and Eviation is currently working with the FAA to certify the airplane for commercial service.

Another leading innovator is ZeroAvia which is developing a hydrogen-electric powertrain that replaces traditional engines on existing fixed-wing aircraft. In January 2023, ZeroAvia conducted a successful test flight with a 19-seat Dornier 228 aircraft with one of its two turboprop engines retrofitted with a hydrogen-electric powered motor. Although the flight lasted approximately 10 minutes, it was considered a significant step in developing this new technology. ZeroAvia is projected to receive FAA certification for its technology in 2025; it would still need to obtain FAA airworthiness certification before aircraft could enter commercial service. ZeroAvia has attracted investments from United Airlines and American Airlines, claiming approximately 1,500 pre-orders for its hydrogen-electric powerplant systems. The ZeroAvia technology is being developed for existing aircraft in the range of approximately 20 to 100 seats.

Likewise, Airbus is working on a hydrogen-combustion system as part of its ZEROe carbon emissions reduction program. The Airbus system uses gaseous or liquid hydrogen as the combustible fuel to power a modified turbine jet engine. If developed to full scale, Airbus believes this technology could power up to a 100-seat aircraft on flights up to 1,000 miles and be placed in service by approximately 2035.

These new aircraft propulsion technologies may eventually power a significant portion of the nation's airline fleet, but they are not currently in the active fleet of any U.S. airline. The outlook on when or if these new aircraft designs enter the national fleet is highly uncertain., As discussed above under Advance Air Mobility, the fleet mix forecast for this report is based on aircraft currently operating in airline fleets. Therefore, aircraft with new engine propulsion technology is not included in the forecast fleet mix supporting the ALP Update.

1.6.13 Fleet Mix Assumptions for Scheduled Airline Service

The forecast fleet mix distribution was based on the current aircraft fleet mix (March 2022), individual airline aircraft orders (firm orders and options), recent trends in airline scheduling practices, and projected airline trends from other independent forecasts such as the FAA Aerospace Forecast, the Boeing Commercial Market Outlook, and the Airbus Global Market Forecast.

The fleet mix for a peak month average day was prepared for the lower, mid. Upper range air carrier operations forecast. **Tables 32-34** provide the fleet mix distribution by percentage of total passenger aircraft operations by aircraft type based on the forecast of total commercial operations for the peak month average day in 2022 and forecast years 2022, 2027, 2032, 2037, and 2042. The peak month was identified as March 2022 and determined by analyzing the monthly departures over the last ten years.

1.6.13.1 Lower Range Fleet Mix

The lower-range fleet mix forecast assumes the CRJ-700 will continue operating at ASE through 2042 (20 years). The lower-range forecast assumes slow long-term enplanement growth and that the existing schedule of non-stop destinations would generally remain the same as today. It also assumes that service on the CRJ-700 will be gradually reduced over the forecast horizon from 100% of all scheduled service in 2022 to approximately 25% by 2042. The EMB-175 LR is assumed to provide the remaining scheduled service over the forecast horizon, increasing from no scheduled service in 2022 to approximately 75% of all scheduled service in 2042. The lower-range forecast assumes that all scheduled airline service will be provided by regional jets (with wingspans less than 95 feet) regardless of whether airfield improvements are implemented, and ASE is brought up to whether full Airport Reference Code (ARC) D-III standards and the existing 95-foot aircraft wingspan restriction is lifted.

Table 33
LOWER RANGE FLEET MIX FORECAST
PEAK MONTH AVERAGE DAY SCHEDULED DAILY DEPARTURES
Aspen/Pitkin County Airport

	Lower Range - PMAD Daily Departures					Base Case - PMAD % Departures				
Narrowbody Aircraft	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
A220-100	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
A220-300	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Subtotal Narrowbody Aircraft	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Regional Jets										
CRJ-700	32	32	25	9	9	100.0%	97.0%	73.5%	25.7%	25.0%
EMB-175 LR	0	1	9	26	27	0.0%	3.0%	26.5%	74.3%	75.0%
Subtotal Regional Jets	32	33	34	35	36	100.0%	100.0%	100.0%	100.0%	100.0%
PMAD Aircraft Departures	32	33	34	35	36	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Aircraft included in the fleet mix forecast must be currently operating in the national airline fleet and are limited to those with the operational performance necessary to operate year-round at ASE

Sources: Cirium's Airline Schedule database and T-100 database, Airport Management Records, individual airline Annual Reports
Forecast provided by Jacobsen Daniels Associates, January 2023.

1.6.13.2 Mid-Range Fleet Mix

The mid-range forecast assumes that airfield improvements will allow the Airport to meet full ARC D-III standards, and the existing 95-foot wingspan restriction will be rescinded by approximately 2032. Therefore, the mid-range forecast assumes the CRJ-700 will continue operating at ASE through 2032, and all future scheduled service on the CRJ-700 will be replaced by the EMB-175 by 2037. In addition, the mid-range forecast assumes that with lifting the 95-foot aircraft wingspan restriction, narrowbody aircraft such as the Airbus A220-100 will begin scheduled service at ASE by 2037.

Table 34
MID-RANGE FLEET MIX FORECAST
PEAK MONTH AVERAGE DAY SCHEDULED DAILY DEPARTURES
Aspen/Pitkin County Airport

	Mid Range - PMAD Daily Departures					Mid Range - PMAD % Departures				
Narrowbody Aircraft	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
A220-100	0	0	1	3	2	0.0%	0.0%	3.1%	9.1%	5.9%
A220-300	0	0	4	6	8	0.0%	0.0%	12.5%	18.2%	23.5%
Subtotal Narrowbody Aircraft	0	0	5	9	10	0.0%	0.0%	15.6%	27.3%	29.4%
Regional Jets										
CRJ-700	32	22	0	0	0	100.0%	64.7%	0.0%	0.0%	0.0%
EMB-175 LR	0	12	27	24	24	0.0%	35.3%	84.4%	72.7%	70.6%
Subtotal Regional Jets	32	34	27	24	24	100.0%	100.0%	84.4%	72.7%	70.6%
PMAD Aircraft Departures	32	34	32	33	34	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Aircraft included in the fleet mix forecast must be currently operating in the national airline fleet and are limited to those with the operational performance necessary to operate year-round at ASE

Sources: Cirium's Airline Schedule database and T-100 database, Airport Management Records, individual airline Annual Reports
Forecast provided by Jacobsen Daniels Associates, March 2023.

1.6.13.3 Upper Range Fleet Mix

The assumptions for the upper-range forecast are similar to those of the mid-range forecast and assume the existing 95-foot wingspan restriction will be rescinded by approximately 2032. The upper-range forecast assumes the CRJ-700 will continue operating at ASE through 2032, and the EMB-175 will replace all future scheduled service on the CRJ-700 by 2037. In addition, the upper-range forecast assumes that with lifting the 95-foot aircraft wingspan restriction, narrowbody aircraft such as the Airbus A220-100 will begin scheduled service at ASE by 2037. Because of the assumed higher passenger demand in the upper-range forecast, more operations on the narrowbody A220-100 are assumed over the forecast horizon.

Table 35
MID RANGE FLEET MIX FORECAST
PEAK MONTH AVERAGE DAY SCHEDULED DAILY DEPARTURES
Aspen/Pitkin County Airport

	Mid Range - PMAD Daily Departures					Mid Range - PMAD % Departures				
Narrowbody Aircraft	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
A220-100	0	0	2	4	5	0.0%	0.0%	5.7%	10.8%	13.2%
A220-300	0	0	4	7	9	0.0%	0.0%	11.4%	18.9%	23.7%
Subtotal Narrowbody Aircraft	0	0	6	11	14	0.0%	0.0%	17.1%	29.7%	36.8%
Regional Jets										
CRJ-700	32	22	0	0	0	100.0%	64.7%	0.0%	0.0%	0.0%
EMB-175 LR	0	12	29	26	24	0.0%	35.3%	82.9%	70.3%	63.2%
Subtotal Regional Jets	32	34	29	26	24	100.0%	100.0%	82.9%	70.3%	63.2%
PMAD Aircraft Departures	32	34	35	37	38	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Aircraft included in the fleet mix forecast must be currently operating in the national airline fleet and are limited to those with the operational performance necessary to operate year-round at ASE

Sources: Cirium's Airline Schedule database and T-100 database, Airport Management Records, individual airline Annual Reports
Forecast provided by Jacobsen Daniels Associates, March 2023.

1.6.14 Airport Fleet Mix Forecast

Provided in **Table 36** is the projected Airport fleet mix for air carrier (scheduled airline), Air Taxi, and General Aviation aircraft over the 2022 to 2042 forecast horizon. The fleet mix is based on the Mid-Range, or ALP Update Forecast, for scheduled air carriers, air taxis, and general aviation operations. In addition, a count for military operations is also included.

The fleet mix forecast for scheduled air carrier operations is subdivided into regional jet and narrowbody aircraft types based on what is discussed in Section 1.6.13 for the Mid-Range (ALP Update) Forecast. The fleet mix assumes the CRJ-700 will remain the primary aircraft operating scheduled airline service through approximately 2027. The EMB-175 LR is expected to begin service at the Airport in 2023 or 2024 and, by 2027, is projected to account for about 8.1% of total Airport operations. By 2032, the Airbus A220-100 and A220-300 are expected to begin service at the Airport and account for 3.3% of total Airport operations (0.7% for the A220-100 and 2.6% for the A220-300). The Airbus A220-100/300 operations are expected to increase gradually over the forecast horizon, reaching 5.6% of total Airport operations by 2042 (see **Table 36**).

The ASE fleet mix of air taxi and general aviation aircraft has a significant amount of overlap by a similar aircraft type. ASE has an extensive business/corporate market that operates large turboprops and business jet aircraft, as well as a large charter, fractional ownership, and on-demand air taxi market which operates similar-sized aircraft. In addition, ASE has a steady flow of local operations on smaller piston and turboprop aircraft. Due to this significant overlap between the GA and air taxi fleet mix, the two are combined with piston-engine aircraft in **Table 36** below.

The fleet mix was developed by downloading the latest 12 months (December 2021 – November 2022) operations by aircraft type from the FAA's Traffic Flow Management System Count website. This data was supplemented with local aircraft operation counts from the FAA Operations Network website to develop a baseline 2022 fleet mix and percent of operations by aircraft type. The percent change in the various aircraft types over the forecast horizon was based on the projected growth in the jet, turboprop, single-engine piston, and multi-engine piston aircraft fleet mix changes estimated in the FAA's 2021 Aerospace Forecast for "Active Air Taxi and General Aviation Hours Flown" and assumptions based on local market conditions. For example, the piston-engine fleet at ASE represents less than 2.0% of its total air taxi and general aviation fleet operations in 2022. On a national level, piston-engine aircraft operations are projected to decline over the 2042 forecast horizon. However, because they are such a small portion of the existing fleet at ASE, their share of fleet mix operations is held constant to account for likely future operations by this aircraft category.

In addition to the existing air taxi and general aviation fleet, several new aircraft models were added to the fleet mix forecast to account for new aircraft likely to operate at ASE over the forecast horizon. Many of these aircraft have wingspans greater than 95 feet and therefore are not expected to operate at ASE until after 2032 when the airfield is assumed to be upgraded to full ADG III standards. For example, the Gulfstream G650, G700, and G800 are all forecast to operate at ASE over the forecast horizon, as the G500 and G600 do today.

The G650 is currently in service today, but the G700 and the G800 are presently in production, and the first aircraft are expected to be delivered in 2023 and 2024, respectively. All three planes have wingspans over 95 feet and are currently restricted at ASE. The Bombardier Global 8000 and the Dassault Falcon 10 X are also examples of aircraft currently under development that can be reasonably assumed to serve ASE over the forecast horizon. Still, these aircraft also have wingspans greater than 95 feet. Based on information shared by Gulfstream with the Airport, there is a strong demand for access to ASE with new yet-to-be-delivered Gulfstream jets. The number of operations for these future aircraft is estimated based on operations counts for similar aircraft operating at ASE today.

For example, it was estimated that the new Gulfstream jets such as the G650, G700, and G800, and Bombardier Global 8000 and Dassault Falcon 10X would enter service at ASE between 2032 and 2037 and account for 300 annual operations by 2037, approximately equal to projected G600 operations. The Gulfstream G600 recorded about 233 operations at ASE in 2022, and its operations are projected to increase by about 1.5% annually and reach about 289 annual operations by 2037 (see Table 36).

Table 36
AIRPORT FLEET MIX FORECAST
Aspen/Pitkin County Airport

	Annual Fleet Mix Operations					Annual % of Fleet Mix Operations				
Regional Jets	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
CRJ-700	11,006	8,112	-	-	-	21.8%	14.9%	0.0%	0.0%	0.0%
ERJ-175	-	4,425	9,914	8,446	8,389	0.0%	8.1%	17.6%	14.2%	13.4%
Subtotal Regional Jets	**11,006**	**12,536**	**9,914**	**8,446**	**8,389**	**21.8%**	**23.0%**	**17.6%**	**14.2%**	**13.4%**
Narrowbody Jets	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
A220-100	-	-	367	1,056	699	0.0%	0.0%	0.7%	1.8%	1.1%
A220-300	-	-	1,469	2,111	2,796	0.0%	0.0%	2.6%	3.6%	4.5%
Subtotal Narrowbody Jets	**-**	**-**	**1,836**	**3,167**	**3,495**	**0.0%**	**0.0%**	**3.3%**	**5.3%**	**5.6%**
Business Jets	**2022**	**2027**	**2032**	**2037**	**2042**	**2022**	**2027**	**2032**	**2037**	**2042**
Embraer Phenom 300	2,003	2,149	2,308	2,481	2,669	4.0%	3.9%	4.1%	4.2%	4.3%
Cessna Excel/XLS	1,822	1,955	2,099	2,257	2,428	3.6%	3.6%	3.7%	3.8%	3.9%
Bombardier Challenger 300	1,790	1,920	2,062	2,217	2,386	3.5%	3.5%	3.7%	3.7%	3.8%
Gulfstream IV/G400	1,770	1,899	2,039	2,192	2,359	3.5%	3.5%	3.6%	3.7%	3.8%
Cessna Citation Latitude	1,547	1,660	1,782	1,916	2,062	3.1%	3.0%	3.2%	3.2%	3.3%
Cessna Citation X	1,538	1,650	1,772	1,905	2,050	3.1%	3.0%	3.1%	3.2%	3.3%
Bombardier (Canadair) Challenger 300	1,290	1,384	1,486	1,598	1,719	2.6%	2.5%	2.6%	2.7%	2.7%
Bombardier Challenger 600/601/604	1,102	1,182	1,270	1,365	1,469	2.2%	2.2%	2.2%	2.3%	2.3%
Gulfstream G500	1,014	1,088	1,168	1,256	1,351	2.0%	2.0%	2.1%	2.1%	2.2%
Bombardier BD-700 Global Express	974	1,045	1,122	1,206	1,298	1.9%	1.9%	2.0%	2.0%	2.1%
Cessna Citation CJ3	958	1,028	1,104	1,186	1,277	1.9%	1.9%	2.0%	2.0%	2.0%
BAe HS 125/700-800/Hawker 800	940	1,008	1,083	1,164	1,253	1.9%	1.9%	1.9%	2.0%	2.0%
Cessna Citation Sovereign	868	931	1,000	1,075	1,157	1.7%	1.7%	1.8%	1.8%	1.8%
Dassault Falcon 900	849	911	978	1,051	1,131	1.7%	1.7%	1.7%	1.8%	1.8%
Dassault Falcon 2000	790	848	910	978	1,053	1.6%	1.6%	1.6%	1.6%	1.7%
Cessna Citation V/Ultra/Encore	606	650	698	751	808	1.2%	1.2%	1.2%	1.3%	1.3%
Embraer EMB-545 Legacy 450	542	581	624	671	722	1.1%	1.1%	1.1%	1.1%	1.2%
Raytheon/Beech Beechjet 400/T-1	532	571	613	659	709	1.1%	1.0%	1.1%	1.1%	1.1%
Bombardier Learjet 60	525	563	605	650	700	1.0%	1.0%	1.1%	1.1%	1.1%
Gulfstream G280	515	552	593	638	686	1.0%	1.0%	1.1%	1.1%	1.1%
Bombardier Learjet 45	481	516	554	596	641	1.0%	0.9%	1.0%	1.0%	1.0%
Dassault Falcon/Mystère 50	431	462	497	534	574	0.9%	0.8%	0.9%	0.9%	0.9%
Bombardier BD-700 Global 5000	404	433	465	500	538	0.8%	0.8%	0.8%	0.8%	0.9%
Dassault Falcon F7X	396	425	456	490	528	0.8%	0.8%	0.8%	0.8%	0.8%
Cessna Citation CJ2	354	380	408	438	472	0.7%	0.7%	0.7%	0.7%	0.8%
Hondajet 2600	-	200	215	231	248	0.0%	0.4%	0.4%	0.4%	0.4%
Gulfstream G600	233	250	268	289	311	0.5%	0.5%	0.5%	0.5%	0.5%
Gulfstream G650	-	-	-	300	323	0.0%	0.0%	0.0%	0.5%	0.5%
Gulfstream G700/800	-	-	-	300	323	0.0%	0.0%	0.0%	0.5%	0.5%
Bombardier Global 8000	-	-	-	300	323	0.0%	0.0%	0.0%	0.5%	0.5%
Dassault Falcon 10X	-	-	-	300	323	0.0%	0.0%	0.0%	0.5%	0.5%
Business Jets - Other	5,011	5,139	5,481	4,652	4,966	9.9%	9.4%	9.7%	7.8%	7.9%
Subtotal Business Jets	**29,285**	**31,380**	**33,661**	**36,146**	**38,857**	**58.1%**	**57.6%**	**59.6%**	**61.0%**	**61.9%**
Turboprop Aircraft										
Pilatus PC-12	1,233	1,316	1,406	1,504	1,610	2.4%	2.4%	2.5%	2.5%	2.6%
Beech Super King Air 350	403	430	460	491	526	0.8%	0.8%	0.8%	0.8%	0.8%
Beech 200 Super King	292	312	333	356	381	0.6%	0.6%	0.6%	0.6%	0.6%
Fairchild Swearingen SA-226T/TB Merlin 3	128	137	146	156	167	0.3%	0.3%	0.3%	0.3%	0.3%
Socata TBM	112	120	128	137	146	0.2%	0.2%	0.2%	0.2%	0.2%
Beech Denali	-	100	107	115	123	0.0%	0.2%	0.2%	0.2%	0.2%
Daher Kodiak 900	-	-	100	107	114	0.0%	0.0%	0.2%	0.2%	0.2%
Turboprops - Other (a)	2,408	2,464	2,527	2,696	2,880	4.8%	4.5%	4.5%	4.5%	4.6%
Subtotal Turboprop Aircraft	**4,576**	**4,878**	**5,206**	**5,561**	**5,948**	**9.1%**	**9.0%**	**9.2%**	**9.4%**	**9.5%**
Piston Aircraft										
Cirrus SR-22/SR-22 Turbo	113	116	119	122	125	0.2%	0.2%	0.2%	0.2%	0.2%
Piper Malibu	62	64	65	67	69	0.1%	0.1%	0.1%	0.1%	0.1%
Cessna 210 Centurion	51	52	54	55	57	0.1%	0.1%	0.1%	0.1%	0.1%
Piston - Other (a)	5,014	5,314	5,279	5,408	5,532	9.9%	9.8%	9.3%	9.1%	8.8%
Subtotal Multi-engine Piston	**5,240**	**5,379**	**5,517**	**5,652**	**5,783**	**10.4%**	**10.2%**	**9.8%**	**9.5%**	**9.2%**
Total Air Taxi and General Aviation	**39,101**	**41,638**	**44,384**	**47,360**	**50,587**	**77.5%**	**76.7%**	**78.6%**	**79.9%**	**80.6%**
Military Aircraft	316	330	330	330	330	0.6%	0.6%	0.6%	0.6%	0.5%
Total Airport Operations	**50,423**	**54,504**	**56,464**	**59,303**	**62,801**	**100.0%**	**100.3%**	**100.0%**	**100.0%**	**100.0%**

Sources: FAA Traffic Flow Management System Counts website (www.aspm.faa.gov/tfms) accessed January 2023. FAA OPSNET website (www.aspm.faa.gov/opsnet) accessed January 2023, Airport Management Records. Analysis by Jacobsen Daniels Associates.

(a) Includes estimated allocation of local VFR operations based on percentage of piston and turboprop based aircraft.

Note: Percentage totals may not add due to rounding errors.

1.6.15 Critical Aircraft Forecast

The critical aircraft forecast uses historical information to project the largest or most demanding aircraft anticipated to conduct a minimum of 500 annual operations at the Airport. This designation is used to size runways and taxiways in the ALP Update.

Based on a review of the FAA's Traffic Flow Management System Counts (TFMSC) for 2022, the Gulfstream G500 represent the most demanding aircraft that conduct a minimum of 500 annual operations. The G500 has an Airplane Design Group code of D-III.

The critical aircraft for planning of airfield facilities is recommended to continue to be the Airbus A220-300 throughout the planning horizon.

1.7 Appendix: Forecast Datasets

Lower-Range Enplanement Forecast Regression and Dataset:

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.84
R Square	0.71
Adjusted R Square	0.69
Standard Error	19370.57
Observations	30

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	25,166,499,356	25,166,499,356	67	6.48467E-09
Residual	28	10,506,130,112	375,218,933		
Total	29	35,672,629,468			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	34,380.7649	20,922.2580	1.6433	0.1115	(8,476.5379)
CO Employment	56.5674	6.9071	8.1897	0.0000	42.4188

Forecast equation: Intercept coefficient + (CO Employment coefficient x Forecast Colorado Employment)

Year	ASE Enplanements	Total Colorado Employment (000s)	Forecast Enplanements
1990	139,670	2,040	
1991	138,968	2,087	
1992	160,381	2,135	
1993	175,197	2,234	
1994	184,682	2,346	
1995	202,891	2,425	
1996	198,496	2,519	
1997	189,855	2,629	
1998	210,379	2,732	
1999	205,919	2,808	
2000	196,335	2,918	
2001	174,322	2,942	
2002	178,885	2,917	
2003	189,030	2,909	
2004	181,613	2,958	
2005	191,082	3,037	
2006	197,764	3,109	
2007	177,450	3,218	
2008	213,050	3,251	
2009	215,716	3,164	
2010	220,335	3,144	
2011	220,287	3,204	
2012	211,693	3,263	
2013	204,921	3,356	
2014	212,857	3,468	
2015	230,450	3,574	
2016	249,501	3,667	
2017	243,159	3,761	
2018	280,791	3,858	
2019	302,204	3,894	
2020	179,123	3,737	
2021	246,331	3,942	
2022	298,561	4,045	298,561
2023		4,147	268,985
2024		4,211	272,598
2025		4,279	276,425
2026		4,343	280,071
2027		4,408	283,705
2028		4,471	287,320
2029		4,536	290,945
2030		4,600	294,586
2031		4,664	298,189
2032		4,727	301,788
2033		4,791	305,383
2034		4,854	308,976
2035		4,918	312,566
2036		4,981	316,150
2037		5,044	319,734
2038		5,108	323,312
2039		5,171	326,888
2040		5,234	330,462
2041		5,297	334,035
2042		5,361	337,613
CAGR 2022-2042			0.6%

Mid-Range Enplanement Forecast Regression and Dataset:

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.84
R Square	0.71
Adjusted R Square	0.70
Standard Error	19,321.55
Observations	30.00

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	25219606131	25219606131	67.55451977
Residual	28	10453023337	373322262	
Total	29	35672629468		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	105,471	12,409.90	8.4990	0.0000
(Millions 2012$)	0.4875	0.0593	8.2192	0.0000

Forecast equation: Intercept coefficient + (Millions 2012$ coefficient x Forecast Colorado Income)

Mid-Range Forecast Trend Line Data Set:

Trend Line Forecast (TREND function)
Time Series Trend Line

Calendar Year	Total Enplaned Passengers	% change	2000-2022 Trend	% change
2000	196,335		172,430	
2001	174,322	-11.2%	176,578	2.4%
2002	178,885	2.6%	180,726	2.3%
2003	189,030	5.7%	184,874	2.3%
2004	181,613	-3.9%	189,022	2.2%
2005	191,082	5.2%	193,170	2.2%
2006	197,764	3.5%	197,319	2.1%
2007	177,450	-10.3%	201,467	2.1%
2008	213,050	20.1%	205,615	2.1%
2009	215,716	1.3%	209,763	2.0%
2010	220,335	2.1%	213,911	2.0%
2011	220,287	0.0%	218,059	1.9%
2012	211,693	-3.9%	222,208	1.9%
2013	204,921	-3.2%	226,356	1.9%
2014	212,857	3.9%	230,504	1.8%
2015	230,448	8.3%	234,652	1.8%
2016	249,500	8.3%	238,800	1.8%
2017	243,145	-2.5%	242,948	1.7%
2018	280,782	15.5%	247,096	1.7%
2019	302,200	7.6%	251,245	1.7%
2020	179,110	-40.7%	255,393	1.7%
2021	246,286	37.5%	259,541	1.6%
2022	298,561	21.2%	263,689	1.6%
2023			267,837	1.6%
2024			271,985	1.5%
2025			276,133	1.5%
2026			280,282	1.5%
2027			284,430	1.5%
2028			288,578	1.5%
2029			292,726	1.4%
2030			296,874	1.4%
2031			301,022	1.4%
2032			305,171	1.4%
2033			309,319	1.4%
2034			313,467	1.3%
2035			317,615	1.3%
2036			321,763	1.3%
2037			325,911	1.3%
2038			330,059	1.3%
2039			334,208	1.3%
2040			338,356	1.2%
2041			342,504	1.2%
2042			346,652	1.2%
CAGR 2022-2042			**1.4%**	

Year	ASE Enplanements	Total Colorado Income (Millions 2012$)	Forecast Enplanements
1990	139,670	103,853	
1991	138,968	106,514	
1992	160,381	112,688	
1993	175,197	118,986	
1994	184,682	125,346	
1995	202,891	133,455	
1996	198,496	141,025	
1997	189,855	149,316	
1998	210,379	163,967	
1999	205,919	173,696	
2000	196,335	188,555	
2001	174,322	193,889	
2002	178,885	191,618	
2003	189,030	191,572	
2004	181,613	194,063	
2005	191,082	201,516	
2006	197,764	212,115	
2007	177,450	220,617	
2008	213,050	222,666	
2009	215,716	211,936	
2010	220,335	215,011	
2011	220,287	227,659	
2012	211,693	236,759	
2013	204,921	246,179	
2014	212,857	263,794	
2015	230,450	276,230	
2016	249,501	278,136	
2017	243,159	291,989	
2018	280,791	306,464	
2019	302,204	318,762	
2020	179,123	333,012	
2021	246,331	337,139	
2022	298,561	346,523	298,561
2023		355,979	279,000
2024		366,139	283,951
2025		376,485	288,994
2026		387,021	294,130
2027		397,754	299,362
2028		408,689	304,692
2029		419,832	310,124
2030		431,182	315,657
2031		442,737	321,289
2032		454,499	327,023
2033		466,469	332,858
2034		478,654	338,797
2035		491,061	344,845
2036		503,692	351,003
2037		516,544	357,267
2038		529,616	363,639
2039		542,909	370,119
2040		556,431	376,711
2041		570,183	383,414
2042		584,173	390,234
CAGR 2022-2042			1.3%

Upper-Range Enplanement Forecast Regression and Dataset:

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.91
R Square	0.82
Adjusted R Square	0.81
Standard Error	14,905.16
Observations	19.00

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	17,577,799,724	17,577,799,724	79
Residual	17	3,776,786,357	222,163,903	
Total	18	21,354,586,081		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	(37,182)	28,616	(1)	0.2112
U.S. Income 2012$	0	0	9	0.0000

Forecast equation: Intercept coefficient + (U.S. Income coefficient x U.S. Income)

Year	ASE Enplanements	Total United States Income (Millions 2012$)	Forecast Enplanements
2000	196,335	11,082,804	
2001	174,322	11,310,940	
2002	178,885	11,347,528	
2003	189,030	11,518,960	
2004	181,613	11,886,495	
2005	191,082	12,200,842	
2006	197,764	12,733,864	
2007	177,450	13,113,833	
2008	213,050	13,226,502	
2009	215,716	12,835,584	
2010	220,335	13,145,591	
2011	220,287	13,578,930	
2012	211,693	14,003,346	
2013	204,921	13,999,673	
2014	212,857	14,549,484	
2015	230,450	15,207,372	
2016	249,501	15,451,773	
2017	243,159	15,883,894	
2018	280,791	16,323,380	
2019	302,204	16,740,965	273,106
2020	179,123	17,628,633	289,558
2021	246,331	17,513,458	287,424
2022	298,561	17,932,090	298,561
2023		18,353,421	302,992
2024		18,789,467	311,074
2025		19,230,887	319,256
2026		19,677,973	327,542
2027		20,130,886	335,937
2028		20,589,752	344,442
2029		21,054,717	353,060
2030		21,525,689	361,789
2031		22,002,364	370,624
2032		22,484,638	379,563
2033		22,972,558	388,606
2034		23,466,291	397,757
2035		23,966,231	407,024
2036		24,472,320	416,404
2037		24,984,225	425,892
2038		25,501,748	435,484
2039		26,024,856	445,179
2040		26,553,865	454,984
2041		27,088,719	464,898
2042		27,629,764	474,926
CAGR 2022-2042			2.35%

Air Taxi Lower-Range Forecast Dataset:

	U.S. TAF Air Taxi	ASE OPSNET Air Taxi Ops	% of U.S. Market Share	Forecast
2000	14,209,636	7,199	0.05%	
2001	14,265,426	9,008	0.06%	
2002	13,891,554	10,034	0.07%	
2003	14,950,858	10,034	0.07%	
2004	15,815,452	12,446	0.08%	
2005	15,500,785	12,522	0.08%	
2006	14,780,293	13,904	0.09%	
2007	14,522,951	12,786	0.09%	
2008	13,776,919	12,750	0.09%	
2009	12,267,037	10,247	0.08%	
2010	12,125,258	7,945	0.07%	
2011	11,916,906	8,664	0.07%	
2012	11,669,834	8,797	0.08%	
2013	11,472,904	9,428	0.08%	
2014	11,037,236	8,926	0.08%	
2015	10,496,017	9,674	0.09%	
2016	10,090,374	10,248	0.10%	
2017	9,689,298	10,865	0.11%	
2018	9,577,072	9,514	0.10%	
2019	9,689,010	10,615	0.11%	
2020	7,912,398	12,508	0.16%	
2021	8,296,994	15,655	0.19%	
2022	8,704,649		0.19%	15,058
2023	9,072,081		0.19%	15,189
2024	9,068,107		0.19%	15,321
2025	8,755,709		0.19%	15,455
2026	8,453,997		0.19%	15,590
2027	8,400,802		0.19%	15,725
2028	8,472,202		0.19%	15,862
2029	8,543,603		0.19%	16,001
2030	8,612,958		0.19%	16,140
2031	8,681,691		0.19%	16,280
2032	8,750,788		0.19%	16,422
2033	8,820,515		0.19%	16,565
2034	8,889,715		0.19%	16,710
2035	8,964,060		0.19%	16,855
2036	9,037,650		0.19%	17,002
2037	9,111,293		0.19%	17,150
2038	9,184,773		0.19%	17,299
2039	9,260,205		0.19%	17,450
2040	9,336,361		0.19%	17,602
2041	9,413,518		0.19%	17,756
2042	9,492,210		0.19%	17,910

Local GA Operations Forecast Dataset:

	LOCAL GA TRIPS PER CAPITA FORECAST			
			Aspen	
	Year	Local GA Operations	CSA Population	Historical Trips/Capita
Historical	2000	3,570	101,035	0.035
	2001	1,952	103,887	0.019
	2002	2,042	106,250	0.019
	2003	1,737	107,834	0.016
	2004	1,205	109,306	0.011
	2005	1,243	112,183	0.011
	2006	609	115,574	0.005
	2007	1,162	119,151	0.010
	2008	3,575	122,952	0.029
	2009	1,383	126,610	0.011
	2010	3,837	125,326	0.031
	2011	3,494	125,434	0.028
	2012	3,508	126,717	0.028
	2013	3,241	127,711	0.025
	2014	3,544	128,817	0.028
	2015	4,850	130,346	0.037
	2016	5,041	132,383	0.038
	2017	5,655	133,230	0.042
	2018	4,152	134,150	0.031
	2019	4,219	134,550	0.031
	2020	4,951	134,783	0.037
	2021	5,921	135,236	0.044
	2022	5,399	136,643	0.040
Forecast	**2023**	**5,179**	**138,066**	**0.038**
	2024	**5,233**	**139,503**	**0.038**
	2025	**5,288**	**140,957**	**0.038**
	2026	**5,343**	**142,423**	**0.038**
	2027	**5,398**	**143,907**	**0.038**
	2028	**5,455**	**145,408**	**0.038**
	2029	**5,511**	**146,923**	**0.038**
	2030	**5,569**	**148,454**	**0.038**
	2031	**5,627**	**150,002**	**0.038**
	2032	**5,686**	**151,566**	**0.038**
	2033	**5,745**	**153,149**	**0.038**
	2034	**5,805**	**154,745**	**0.038**
	2035	**5,865**	**156,360**	**0.038**
	2036	**5,927**	**157,992**	**0.038**
	2037	**5,989**	**159,642**	**0.038**
	2038	**6,051**	**161,308**	**0.038**
	2039	**6,114**	**162,992**	**0.038**
	2040	**6,178**	**164,695**	**0.038**
	2041	**6,243**	**166,415**	**0.038**
	2042	**6,308**	**168,154**	**0.038**

Itinerant GA Operations Forecast Dataset:

ITINERANT OPERATIONS U.S. MARKET SHARE FORECAST				
Year	U.S. 2021 TAF Itinerant GA Operations	ASE % Market Share	Forecast Based on US Share	Forecast Smoothing
2000	43,688,572	0.069%	30,178	
2001	85,363,664	0.033%	27,978	
2002	85,297,109	0.032%	27,335	
2003	82,932,168	0.030%	24,504	
2004	82,169,900	0.030%	25,023	
2005	80,635,115	0.031%	25,140	
2006	79,655,079	0.031%	24,721	
2007	79,701,648	0.028%	22,351	
2008	77,518,412	0.029%	22,334	
2009	73,147,935	0.027%	19,670	
2010	70,780,287	0.023%	16,005	
2011	69,560,406	0.023%	15,677	
2012	69,234,437	0.022%	14,985	
2013	68,485,782	0.021%	14,266	
2014	67,861,350	0.021%	14,060	
2015	67,970,901	0.023%	15,447	
2016	67,236,780	0.024%	16,407	
2017	67,056,449	0.024%	16,012	
2018	67,786,041	0.023%	15,715	
2019	68,736,690	0.023%	15,621	
2020	66,286,570	0.025%	16,787	
2021	68,573,571	0.029%	19,926	
2022	69,824,611	0.027%	18,644	18,644
2023	**70,855,940**	**0.028%**	**19,839**	**18,782**
2024	**71,710,729**	**0.028%**	**20,078**	**18,922**
2025	**72,326,072**	**0.028%**	**20,250**	**19,062**
2026	**72,644,487**	**0.028%**	**20,339**	**19,204**
2027	**72,902,670**	**0.028%**	**20,412**	**19,347**
2028	**73,162,038**	**0.028%**	**20,484**	**19,490**
2029	**73,424,920**	**0.028%**	**20,558**	**19,635**
2030	**73,690,888**	**0.028%**	**20,632**	**19,781**
2031	**73,960,601**	**0.028%**	**20,708**	**19,928**
2032	**74,234,297**	**0.028%**	**20,785**	**20,076**
2033	**74,512,099**	**0.028%**	**20,862**	**20,225**
2034	**74,794,098**	**0.028%**	**20,941**	**20,375**
2035	**75,080,406**	**0.028%**	**21,022**	**20,526**
2036	**75,371,054**	**0.028%**	**21,103**	**20,679**
2037	**75,666,108**	**0.028%**	**21,186**	**20,832**
2038	**75,965,683**	**0.028%**	**21,269**	**20,987**
2039	**76,269,832**	**0.028%**	**21,355**	**21,143**
2040	**76,578,642**	**0.028%**	**21,441**	**21,300**
2041	**76,890,426**	**0.028%**	**21,528**	**21,458**
2042	**77,208,959**	**0.028%**	**21,617**	**21,617**
CAGR 2022-2042			**0.7%**	**0.7%**