Chapter 2 – Aviation Activity Forecast

OVERVIEW

Growth in aviation activity drives airport development needs and plans. This chapter provides forecasts of unconstrained demand for aviation services at Palm Springs International Airport (PSP or the Airport) for 20 years from 2023 through 2042, on a calendar year basis unless stated otherwise. This chapter focuses primarily on commercial passenger traffic and airline operations, as they place the greatest demand on facilities at the Airport, particularly on the terminal and related facilities. The forecasts encompass commercial passenger enplanements, aircraft operations, and corresponding peak period activity profiles, to guide planning for the future development of the terminal and other facilities at the Airport. In addition, the chapter provides forecasts of belly cargo, as well as noncommercial general aviation and military aircraft operations to cover all aviation activities at the Airport.

Forecast development is a comprehensive process that involves understanding the regional and macroeconomic context, the historical trends in aviation activity at the Airport, and how regional and macroeconomic factors shape aviation activity trends at the Airport. **Appendix A** provides a detailed assessment of relevant demographic and economic indicators at the regional and national levels, while **Appendix B** identifies sources of forecast risk and uncertainty. This chapter begins with an analysis of historical commercial passenger traffic trends at the Airport, which informs forecast development and provides context for the resulting forecasts of commercial passenger aviation activity.

Forecast development involves using various quantitative methods and data sources to analyze different types and measures of aviation activity, also explained in this chapter. Although quantitative methods provide a systematic and replicable framework for developing quantitative forecasts, every step involves

qualitative assessment and professional judgment, drawing insights from the analyses of the Airport's regional and macroeconomic environment, trends in aviation activity at the Airport, and trends in the aviation industry.

HISTORICAL COMMERCIAL AVIATION ACTIVITY

In this section, we examine past commercial aviation activity at PSP, which mainly involves scheduled passenger carriers. There are no all-cargo carriers at the Airport. However, scheduled passenger carriers transport some belly cargo. We analyze historical data available through 2022 and present annual data on a calendar-year basis, unless stated otherwise.

Operating Airline History

According to airline schedules accessed as of March 6, 2023, there are 12 passenger carriers with scheduled service at PSP through 2023. Since 2018, PSP has lost two service providers: Frontier Airlines in 2021 and Virgin America in 2018 (Alaska Airlines acquired Virgin America). Additionally, five other airlines—mostly smaller and low-cost—have come and gone, each lasting one to two years at the Airport. These five airlines include Boutique (2020-2021), Contour (2019-2020), Corporate Flight Management (2019), ExpressJet (2022), and Swoop (2021-2022). Two airlines entered the PSP market during the COVID-19 pandemic and continue to serve the Airport: Southwest in 2020 and Avelo in 2022. Southwest's entry was likely due to the airline's opportunistic strategy during the COVID-19 pandemic to spread out its services to mitigate the negative impact of the pandemic.

Several major airlines, including Alaska, American, Delta, Southwest, United, and WestJet, operate year-round flights at the Airport. However, Air Canada, Flair, Sun Country, Allegiant, and JetBlue do not operate during the summer season. In 2022, Air Canada and Flair did not operate from May to September, Allegiant and JetBlue did not operate from June to September, and Sun Country did not operate from June to August.[1] All five airlines mentioned above resumed flights toward the end of the year. **Table 2-1** shows the passenger carriers that provide scheduled service at PSP.

[1] OAG Schedules Analyzer, last accessed April 14, 2023.

Table 2-1: Carriers with Scheduled Service at PSP, by Calendar Year

Airlines	2018	2019	2020	2021	2022	2023
Air Canada	•	•	•	•	•	•
Alaska Airlines	•	•	•	•	•	•
Allegiant Air LLC	•	•	•	•	•	•
American Airlines	•	•	•	•	•	•
Avelo Airlines					•	•
Delta Air Lines	•	•	•	•	•	•
Flair Airlines	•	•		•	•	•
JetBlue Airways	•	•	•	•	•	•
Southwest Airlines			•	•	•	•
Sun Country Airlines	•	•	•	•	•	•
United Airlines	•	•	•	•	•	•
Westjet	•	•	•	•	•	•
Former PSP Service Providers						
Boutique Air			•	•		
Contour Airlines		•	•			
Corporate Flight Management		•				
ExpressJet Airlines, Inc.					•	
Frontier Airlines Inc.	•	•	•	•		
Swoop				•	•	
Virgin America	•					

Source: *OAG Schedules Analyzer, last accessed on March 6, 2023.*

HISTORICAL ENPLANEMENT TRENDS

Fundamentally passenger traffic is driven by changes in the U.S. economic cycle—the demand for air travel grows during periods of economic expansion and declines during periods of economic recession. Passenger traffic is also affected by significant changes in airline network strategies and one-off events such as the 2001 terrorist attacks, which took place during the 2001 U.S. economic recession, and the ongoing COVID-19 pandemic, which caused the 2020 economic recession. Smaller airports tend to be vulnerable to changes in airline service.

Significant Developments Affecting the U.S. Airline Industry

The U.S. aviation industry enjoyed several periods of rapid expansion, including the 1980s following the federal deregulation of the industry and the 1990s during a decade-long economic boom. Nevertheless, the long-running U.S. economic expansion ended abruptly with the bursting of the dot-com bubble in 2001. Since then, additional adverse events have prompted significant structural changes that continue to shape the industry today.

The terrorist attacks on September 11, 2001, caused a significant decrease in air travel demand for several months. U.S. airlines, especially American Airlines and United Airlines, suffered significant financial losses. Airport security measures were strengthened to prevent future attacks, resulting in longer passenger screening times. This discouraged air travel especially for short-haul destinations that could be reached by ground transportation. To attract passengers, airlines lowered airfares, and both leisure and business travelers became increasingly price sensitive. The internet also made it easier to search and compare airfares.

Meanwhile, airlines faced rising fuel costs. Jet fuel prices quadrupled from 2000 to 2008, remaining at record-high levels through 2014. Amid record fuel prices, the U.S. economy entered the Great Recession from December 2007 to June 2009—the most drawn-out U.S. economic recession since the Great Depression. The recession spread globally and weakened air travel demand. Because of the significant and negative labor market impacts of the recession, including large declines in household income, the ensuing economic and air travel recovery was slow.

Mounting financial difficulties resulting from high fuel costs and weak demand during the Great Recession led to airline bankruptcies and mergers, leaving four major airlines—American, Delta, Southwest, and United—controlling 80 percent of the U.S. domestic passenger traffic. Surviving airlines responded with various cost-cutting measures. They retired old aircraft, acquired larger and more fuel-efficient aircraft, and added seats to existing aircraft. They transferred routes between mainline and regional service to match the supply of seats with demand better. They changed their route networks to maximize profits, moving flights from less to more profitable markets. To increase profitability, they not only changed pricing structures to increase revenue, but they also made deliberate cuts to flight schedules to increase load factors and improve aircraft utilization—a business strategy that has become known as the U.S. airline industry capacity rationalization, and said cuts fell disproportionately on small- and medium-hub airports.

Although the U.S. economic recovery from the Great Recession was slow, it spurred the longest U.S. economic expansion on record. As air travel demand returned, the U.S. airline industry began earning profits in 2010 and sustained those profits for more than ten years. In late 2014, jet fuel prices began to fall, allowing airlines to boost profits, renew fleets, and increase flight schedules while maintaining capacity discipline. As the economy continued to expand, nationwide air traffic growth accelerated in the last quarter of the decade, despite adverse shocks to the industry, including the grounding of the Boeing 737 MAX, a recent addition to the commercial passenger aircraft fleet.

In 2020, COVID-19 infections emerged, and the spread of the virus was declared a global pandemic on March 11, 2020. As a result, air travel came to a near halt, and U.S. airport passenger traffic plummeted nearly 97 percent in mid-April 2020. The pandemic significant impacted air travel, inducing structural changes in both the demand for air travel and the supply of airline passenger service that may have long-lasting effects on the airline industry.

Unlike the experience following previous shocks, the recovery of business travel from the pandemic has been slower than the recovery of leisure travel for holidays, vacations, and visiting friends and relatives. Factors delaying business travel recovery include:

- The widespread adoption of virtual conferencing.
- The delay in the workers' return to offices.
- The possible permanent transition to remote work and hybrid work practices.

International travel was suspended for an extended period and continued to be depressed by travel restrictions that remained in place to varying degrees in certain countries. Slow recovery in business and international travel slowed passenger traffic recovery at most airports.

In response to the sharp decrease in air travel demand at the onset of the pandemic, airlines reduced capacity by retiring older aircraft models and postponing the delivery of new ones. They also shrank their workforce by creating voluntary retirement and extended leave incentives. Then, as air travel demand rebounded, airlines began restoring flights. However, as recovery progressed, the constraint shifted to the supply side: fleet constraints, delays in new aircraft deliveries, and labor shortages limited airlines' capacity to meet returning demand.

Unlike the aftermath of the Great Recession, consumers recovered strongly from the deep but brief recession caused by the COVID-induced economic lockdowns and stay-at-home orders. The job market also rebounded strongly: Today, unemployment is historically low, and job openings outnumber those looking for jobs. Households emerged, on average, with relatively healthy finances and the ability to spend on the pent-up demand for travel. With COVID-19 infections slowing down, international travel has been gradually returning as pandemic-related restrictions get lifted, including China's three-year-long border restrictions and closure to foreign visitors, which has reopened as of March 2023. However, international travel recovery is hampered instead by geopolitical reasons, including the ongoing war between Russia and Ukraine that began in early 2022.

Historical Long-Term Enplanement Trends at PSP

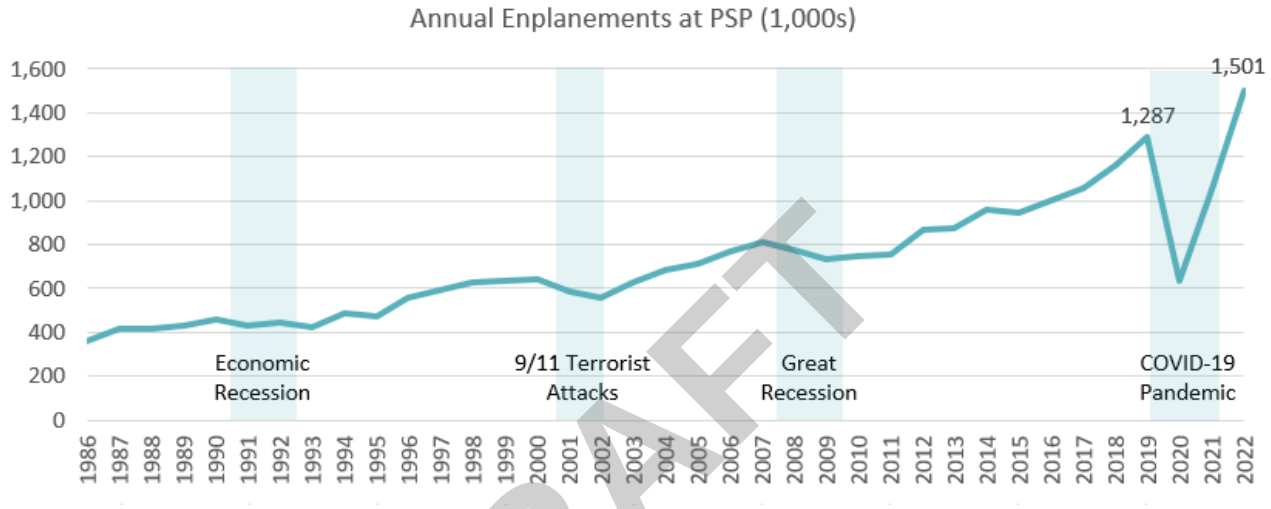
Figure 2-1 shows PSP's long-term enplanement history from 1986 through 2022. Despite experiencing several economic recessions between 1986 and 2022, passenger traffic at PSP exhibited strong growth, growing by a 2.7 percent compound annual growth rate (CAGR). Since 2002, passenger traffic growth has accelerated to a 5.1 percent CAGR from 2002 through 2022. During this period of accelerated growth, PSP experienced one period of significant decline in air traffic: the 2008-2009 Great Recession, which led to a 9.0 percent decrease from 807,706 enplanements in 2007 to 734,908 enplanements in 2009. However, the entries and re-entries of new airlines—Air Canada (in 2015), Frontier (in 2012 and again in 2018), and JetBlue (in 2016)—contributed to a 36.3 percent increase in air traffic between 2015 and 2019, as air traffic rose from 944,625 enplanements to 1.3 million.

In 2020, the COVID-19 pandemic halted the Airport's upward momentum. As a result of a nationwide suspension of air travel and other lockdown efforts attempting to contain the spread of COVID-19, PSP's

enplanements fell 50.9 percent down to about 632,000 enplanements in 2020. Passenger traffic has not reached such a low level since 2003, and 2020 easily marked the largest single decline in the Airport's history.

However, the next two years brought PSP's fastest recovery, helped along by the widespread distribution of COVID-19 vaccinations. As of 2022, the Airport reached 1.5 million enplanements, surpassing its pre-pandemic 2019 peak of 1.3 million.

Figure 2-1: Annual Enplanements at PSP



Source: *Airport records.*

Comparison With U.S. System Enplanement Trends

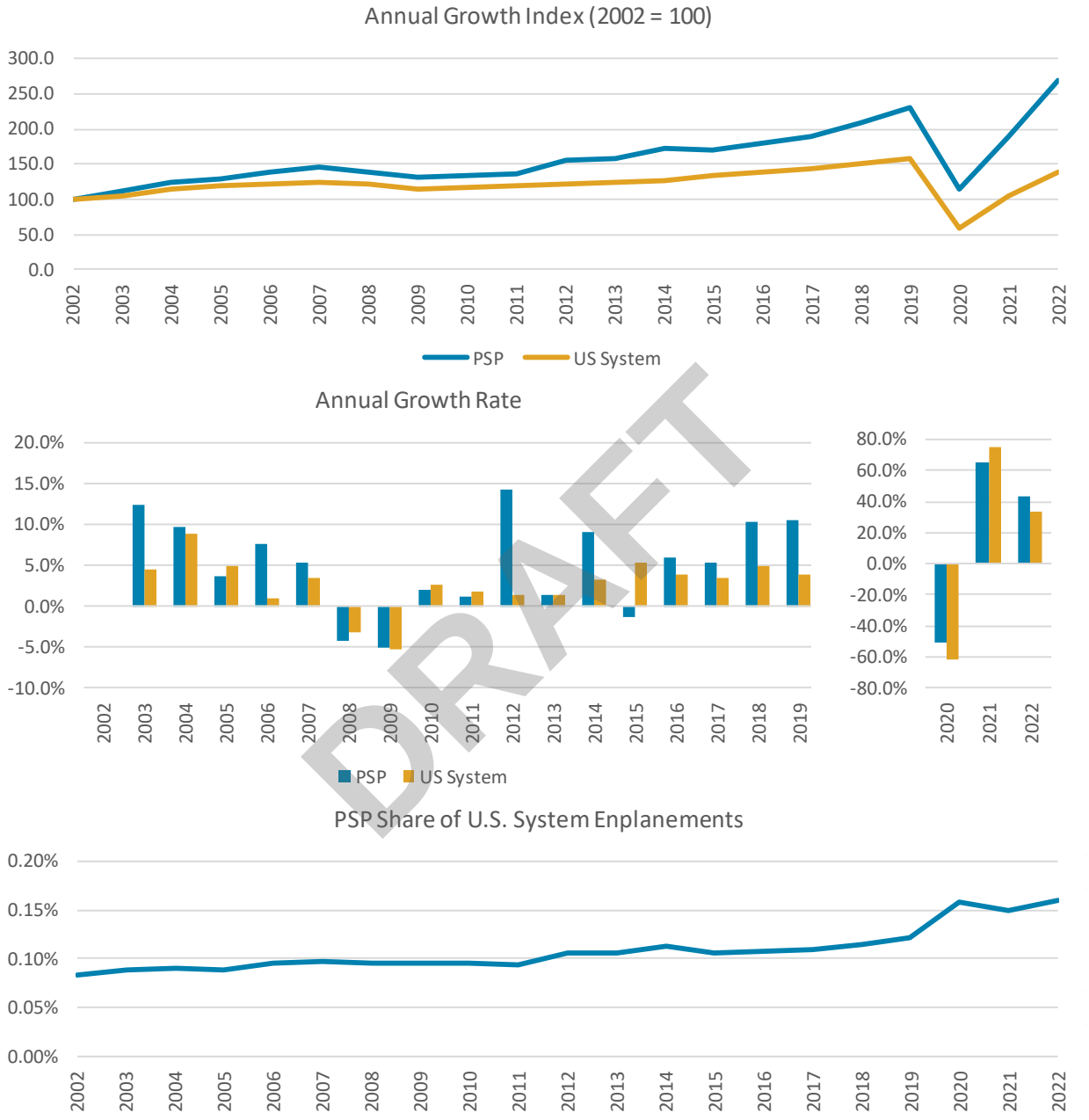
From 2002 to 2022, PSP consistently exceeded the U.S. system growth trends. In particular, PSP experienced significantly higher year-over-year growth in 2003, 2006, 2012, 2014, 2018, and 2019. In 2012, PSP recorded its highest annual pre-pandemic growth, with enplanements rising 14.3 percent while the national trend only grew by 1.4 percent.

Even though PSP remains classified as a small hub by the Federal Aviation Administration (FAA), its faster growth relative to national trend is reflected in its growing share of total U.S. enplanements. Its market share doubled from 0.08 percent in 2002 to 0.16 percent in 2022.[2] Much of the growth of PSP's market share occurred during the height of the COVID-19 pandemic in 2020. Although both PSP and the U.S. system experienced significant decline in 2020, PSP's decrease was smaller (50.9 percent versus the U.S. system's 62.1 percent), leading PSP's share size to grow from 0.12 percent in 2019 to 0.16 percent in just one year.

[2] FAA defines a small hub as an airport enplaning between 0.05 to 0.25 percent of total U.S. enplanements.

Figure 2-2 compares the enplanement growth trends of PSP with that of the larger nationwide aviation system.

Figure 2-2: PSP vs. U.S. System Enplanement Growth Trends



Sources: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

Table 2-2 shows the underlying data for the comparison and analysis of PSP versus U.S. system enplanements.

Table 2-2: PSP vs. U.S. Annual Enplanements

Year	PSP		US System		PSP Share of U.S.
	EP (1000s)	AGR	EP (1000s)	AGR	
2002	557		670,604		0.08%
2003	626	12.4%	700,864	4.5%	0.09%
2004	686	9.6%	763,710	9.0%	0.09%
2005	712	3.7%	800,850	4.9%	0.09%
2006	767	7.7%	808,103	0.9%	0.09%
2007	808	5.4%	835,510	3.4%	0.10%
2008	774	-4.2%	809,822	-3.1%	0.10%
2009	735	-5.0%	767,817	-5.2%	0.10%
2010	750	2.0%	787,478	2.6%	0.10%
2011	758	1.1%	802,135	1.9%	0.09%
2012	866	14.3%	813,123	1.4%	0.11%
2013	877	1.3%	825,322	1.5%	0.11%
2014	957	9.1%	851,850	3.2%	0.11%
2015	945	-1.3%	896,632	5.3%	0.11%
2016	1,002	6.1%	931,989	3.9%	0.11%
2017	1,055	5.3%	964,765	3.5%	0.11%
2018	1,164	10.4%	1,013,213	5.0%	0.11%
2019	1,287	10.6%	1,052,981	3.9%	0.12%
2020	632	-50.9%	398,655	-62.1%	0.16%
2021	1,048	65.7%	700,560	75.7%	0.15%
2022	1,501	43.2%	935,445	33.5%	0.16%
Compound Annual Growth Rate					
2002-2010	3.8%		2.0%		
2010-2019	6.2%		3.8%		
2019-2022	5.2%		-3.9%		
2010-2022	6.0%		1.4%		
2002-2022	5.1%		1.7%		

Sources: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

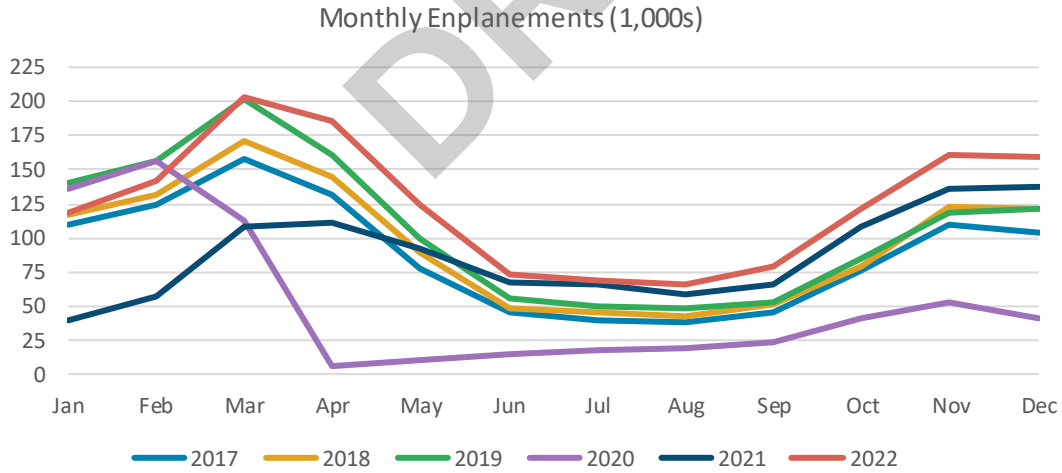
Monthly Enplanement Trends

Figure 2-3 shows PSP's monthly enplanement levels over the past six years from 2017 through 2022, while **Table 2-3** breaks down each year into its monthly enplanement shares (and dates further back to 2014).

Except in 2020 and 2021, PSP's seasonal patterns have been consistent over the years. Passenger activity peaks in March and gradually declines through August before rising again through November. PSP has similar enplanement levels between November and December, as travelers are drawn to PSP's moderate winters.

The COVID-19 pandemic temporarily disrupted PSP's usual seasonality with a dramatic drop from February 2020 to April 2020, with air traffic levels remaining much lower than typical patterns through the rest of the year. Enplanement recovery began to pick up in early 2021 when COVID-19 vaccines saw widespread distribution. By May 2021, PSP's enplanements had reached a level on par with the same month of pre-pandemic years. By June 2021 and onward, air traffic returned to usual patterns and held the pattern at a level above that of pre-pandemic years. The building surge of infections due to the omicron variant caused California to issue a travel advisory and statewide indoor mask mandate (regardless of vaccination status) from December 2021 through February 2022.[3] Alongside the Omicron-related fifth wave leading to the pandemic's peak number of infections by over three-fold, these factors caused monthly enplanements in early 2022 to dip below 2019 levels, but by March had returned to maintaining its pattern above pre-pandemic levels.

Figure 2-3: PSP Monthly Enplanement Trends



Source: *Airport records.*

[3] Richard Procter, "Remember when? Timeline marks key events in California's year-long pandemic grind," *CalMatters*, March 2021, https://calmatters.org/health/coronavirus/2021/03/timeline-california-pandemic-year-key-points/.

Table 2-3: PSP Monthly Distribution of Enplanements

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	10.3%	10.9%	10.1%	10.3%	10.1%	10.9%	21.5%	3.8%	7.9%
Feb	11.4%	12.5%	12.5%	11.7%	11.4%	12.2%	24.8%	5.5%	9.5%
Mar	14.8%	15.7%	15.1%	14.9%	14.7%	15.6%	17.9%	10.3%	13.5%
Apr	12.7%	12.8%	12.2%	12.4%	12.4%	12.5%	0.9%	10.6%	12.4%
May	8.3%	7.9%	7.6%	7.3%	7.6%	7.7%	1.7%	8.9%	8.2%
Jun	4.5%	4.0%	4.1%	4.2%	4.2%	4.3%	2.3%	6.4%	4.9%
Jul	3.9%	3.5%	3.7%	3.7%	3.9%	3.9%	2.7%	6.3%	4.5%
Aug	3.8%	3.7%	3.8%	3.6%	3.6%	3.7%	2.9%	5.6%	4.4%
Sep	4.5%	4.1%	4.3%	4.3%	4.3%	4.1%	3.7%	6.3%	5.3%
Oct	6.8%	6.7%	7.1%	7.2%	6.8%	6.6%	6.6%	10.4%	8.0%
Nov	9.5%	9.3%	10.1%	10.4%	10.5%	9.1%	8.4%	13.0%	10.7%
Dec	9.4%	9.0%	9.3%	9.9%	10.5%	9.4%	6.6%	13.1%	10.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

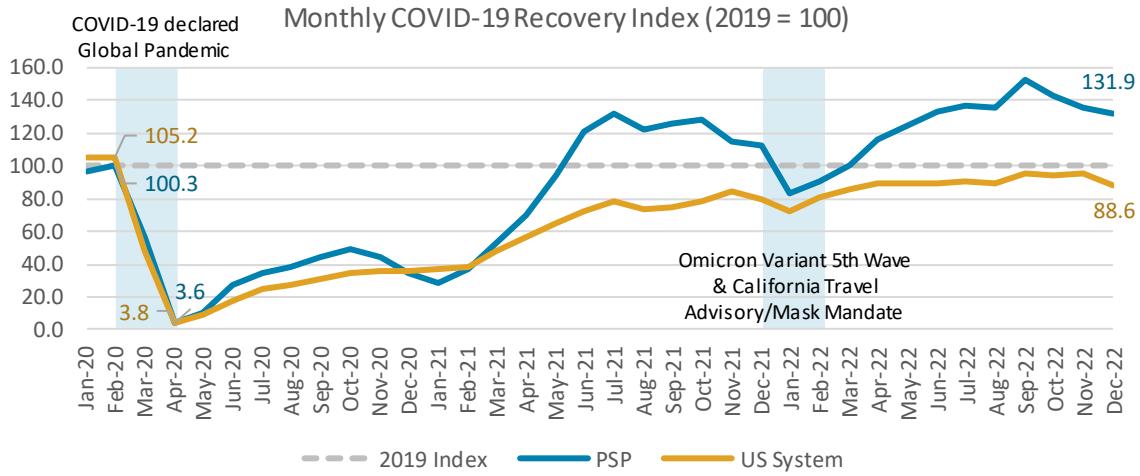
Third largest share percentage of annual total.
Second largest share percentage of annual total.
Largest share percentage of annual total.

Third smallest share percentage of annual total.
Second smallest share percentage of annual total.
Smallest share percentage of annual total.

Source: *Airport records.*

Figure 2-4 compares the monthly enplanement recovery trends over the course of the COVID-19 pandemic, indexed to the corresponding month in 2019. Since the initial drop in air traffic through March and April 2020, PSP's recovery has almost entirely outpaced that of the U.S. system, briefly dipping below national trends in the winter of 2020/2021. The distribution of COVID-19 vaccines accelerated PSP's recovery further than the national recovery, widening the gap in their trends. This gap tightened in January 2022 when the Omicron variant of COVID-19 led to peak infection rates, a California travel advisory, and a reinstated mask mandate, all of which hampered PSP's recovery more than the national recovery. However, the Airport soon continued to outpace the U.S. system in the following months as the fifth wave of infections tapered off. PSP's recovery index had been on a decline in the fourth quarter of 2022, but by December 2022, PSP's enplanements still sat well above the U.S. system at 131.9 percent of its 2019 level (versus the U.S. system's 88.6 percent).

Figure 2-4: Monthly COVID-19 Recovery Trends (2019 = 100)



Source: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

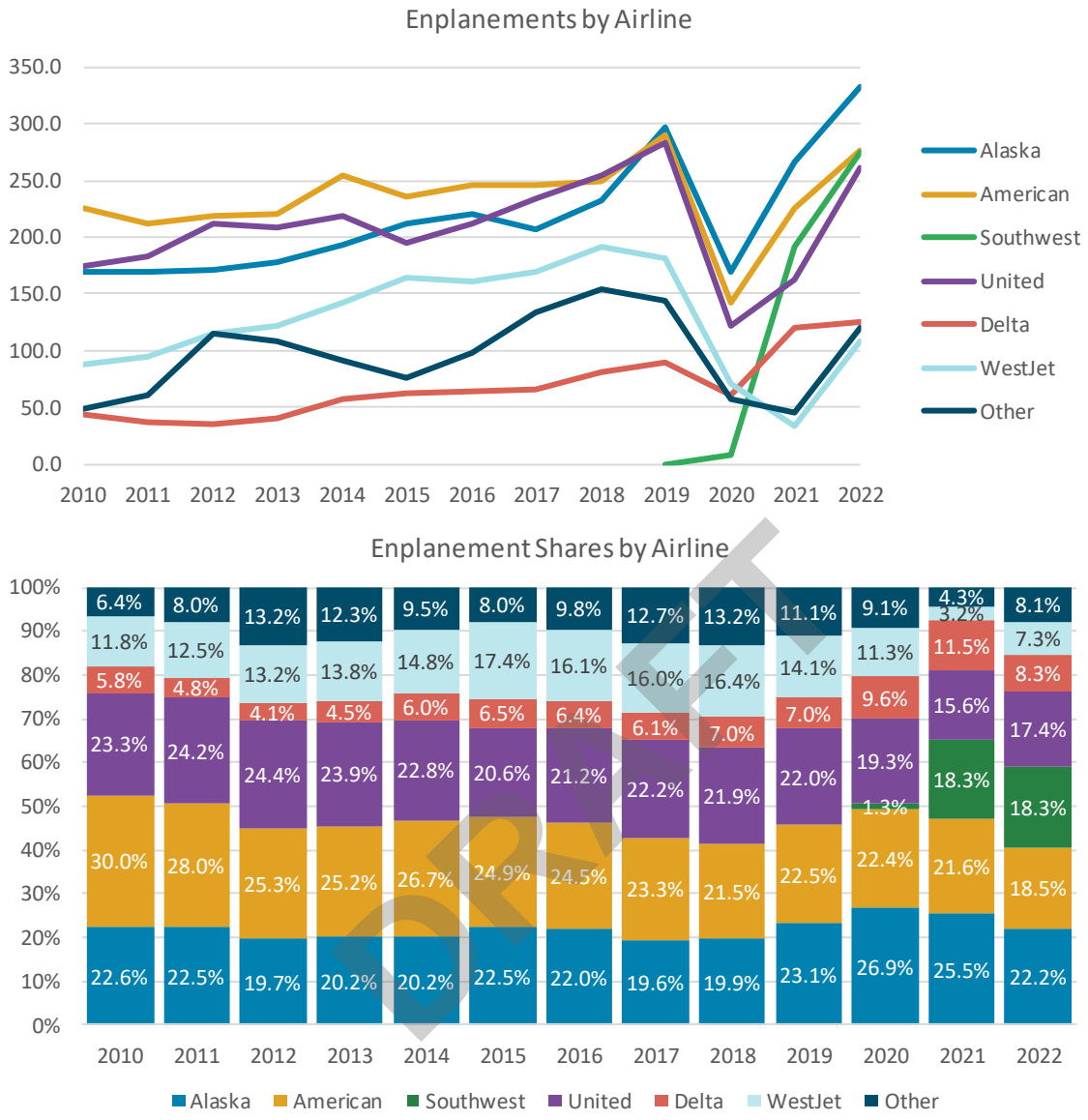
AIRLINE MARKET SHARES

As shown in **Figure 2-5**, in 2022, Alaska held the largest market share at 22.2 percent, followed by American (18.5 percent), followed by Southwest (18.3 percent), followed by United (17.4 percent), and then Delta (8.3 percent) and WestJet (7.3 percent). The remaining 8.1 percent share is made up of PSP's remaining airlines (the "Other" category). **Table 2-4** shows the underlying data for annual airline enplanements.

Throughout the 2010s, there had been significant changes in the composition of air carriers at the Airport. Initially, American held the largest share of the PSP market, around 30.0 percent, with roughly 225,000 enplanements. However, as the growth in other airlines began to surpass American's, its market share began to fall and was down to 18.5 percent by the end of 2022. Since 2019, Alaska has overtaken American as the largest airline at PSP.

Southwest began servicing PSP in 2020, capturing just 1.3 percent of market share. Over the next two years, Southwest's activity at the Airport grew rapidly, surpassing WestJet, Delta, and United, establishing itself as the third largest carrier by the end of 2021. Due to international travel restrictions between Canada and the United States, WestJet faced a continued decline in 2021. Other airlines began recovery in the same year, causing its share to fall below Delta and the collective share of airlines in the "Other" category.

Figure 2-5: Enplanement Trends by Airline



Source: *Airport records.*

Table 2-4: Annual Enplanements and Market Shares by Airline

Enplanements by Airline (Thousands)													
Airline	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Alaska	169.3	170.3	170.7	177.5	193.7	212.7	220.0	206.7	232.2	298.0	170.3	267.0	333.5
American	225.1	212.5	219.4	221.4	255.2	235.5	245.8	245.8	250.0	290.2	141.9	226.2	277.1
Southwest										0.0	8.3	191.7	274.9
United	174.9	183.8	211.4	209.4	218.3	194.7	212.7	234.1	255.4	283.4	122.1	163.0	260.8
Delta	43.7	36.2	35.6	39.6	57.3	61.6	64.0	64.9	81.7	90.3	60.7	120.3	124.6
WestJet	88.5	94.8	114.4	121.4	141.8	164.4	161.3	169.0	191.4	182.1	71.7	33.8	108.8
Other	48.1	60.5	114.7	108.1	91.0	75.8	98.3	134.2	153.7	143.5	57.4	45.5	120.9
Total	**749.7**	**758.0**	**866.1**	**877.5**	**957.2**	**944.6**	**1002.0**	**1054.8**	**1164.3**	**1287.5**	**632.3**	**1047.6**	**1500.6**
AGR		1.1%	14.3%	1.3%	9.1%	-1.3%	6.1%	5.3%	10.4%	10.6%	-50.9%	65.7%	43.2%

CAGR		
2010-2019	**2019-2022**	**2010-2022**
6.5%	3.8%	5.8%
2.9%	-1.5%	1.7%
5.5%	-2.7%	3.4%
8.4%	11.3%	9.1%
8.3%	-15.8%	1.7%
12.9%	-5.5%	8.0%
6.2%	**5.2%**	**6.0%**

Enplanement Shares by Airline													
Airline	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Alaska	22.6%	22.5%	19.7%	20.2%	20.2%	22.5%	22.0%	19.6%	19.9%	23.1%	26.9%	25.5%	22.2%
American	30.0%	28.0%	25.3%	25.2%	26.7%	24.9%	24.5%	23.3%	21.5%	22.5%	22.4%	21.6%	18.5%
Southwest											1.3%	18.3%	18.3%
United	23.3%	24.2%	24.4%	23.9%	22.8%	20.6%	21.2%	22.2%	21.9%	22.0%	19.3%	15.6%	17.4%
Delta	5.8%	4.8%	4.1%	4.5%	6.0%	6.5%	6.4%	6.1%	7.0%	7.0%	9.6%	11.5%	8.3%
WestJet	11.8%	12.5%	13.2%	13.8%	14.8%	17.4%	16.1%	16.0%	16.4%	14.1%	11.3%	3.2%	7.3%
Other	6.4%	8.0%	13.2%	12.3%	9.5%	8.0%	9.8%	12.7%	13.2%	11.1%	9.1%	4.3%	8.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

SCHEDULED PASSENGER SERVICE

Table 2-5 and **Figure 2-6** show the scheduled service trends at PSP from 2018 through the advance schedules of 2023, with three different measures: number of nonstop destinations, average daily departures, and average daily seats.

Across all three measures, PSP's scheduled service has exhibited strong growth over the past six years, helped in part by the addition of Southwest and its quick expansion in the Airport. The total number of unique nonstop destinations served at PSP rose from 20 in 2018 to 34 in 2023, peaking in 2022 with 39 destinations. Despite falling during the pandemic, PSP's average daily departures increased from 40 in 2019 to 43 by 2023. Its average daily seats increased from 4,487 in 2019 to an average of 5,516 in 2023.

In the years leading up to the COVID-19 pandemic, United was the largest presence at PSP in terms of departures, averaging 10 departures per day in 2018 and 11 per day in 2019. During the pandemic, Alaska narrowly surpassed United's daily average departures. As of 2023's advance schedules, both United and Alaska show an even average of 10 scheduled departures per day, ahead of American and Southwest with an average of 7 and 6 per day, respectively. Delta and WestJet trail slightly behind with an average of 4 and 3 daily departures respectively, and the remaining airlines are scheduled to operate a daily average of 2 departures collectively.

Broken down by airlines, Alaska had the highest capacity in terms of daily average seats before the pandemic, followed by United. Since the pandemic, Southwest has surpassed United in 2022, though by a small margin in 2022. Based on advance schedules for 2023, Alaska is set to return to the market leader in terms of seat capacity in 2023, with an average of 1,097 scheduled seats per day (which now exceeds its pre-pandemic numbers), followed by Southwest and United with a daily average of 1,023 and 1,022 seats, respectively. American trails behind with an average of 999 daily scheduled seats, though it has exceeded its 2019 pre-pandemic level. WestJet and Delta are expected to have a daily average of 521 and 482 scheduled seats in 2023, respectively, and the remaining airlines are expected to have a daily average of 371 scheduled seats.

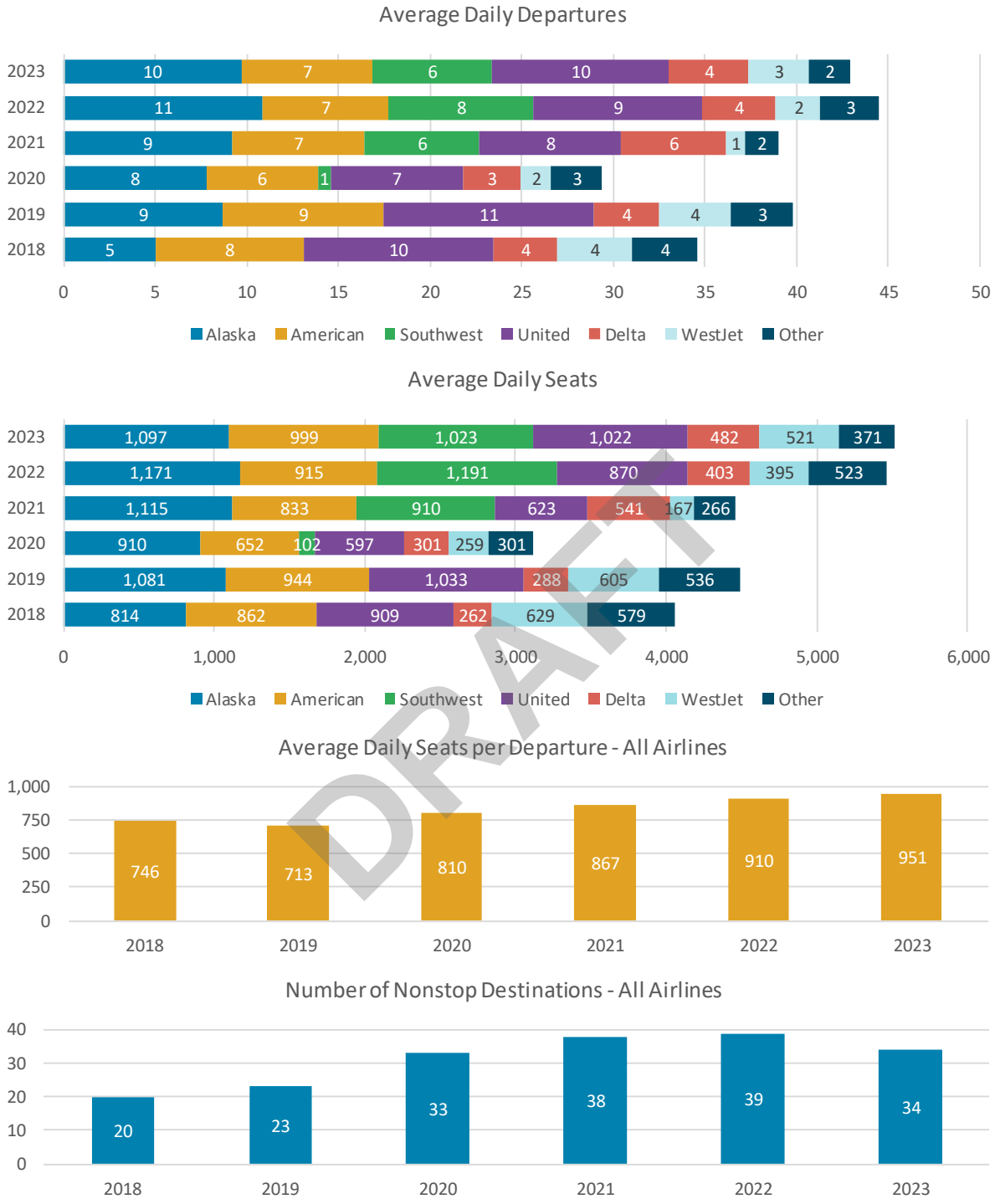
By nature of being composed of multiple distinct air carriers, the "Other" category has consistently served the highest number of unique destinations. The number of destinations served by this group of air carriers spiked during the pandemic, reaching a peak of 18 unique destinations in 2021. Advance schedules show a slight retreat from this large number of destinations, down to 12 unique destinations in 2023, though it still far exceeds the number of destinations served by PSP's six other airlines.

Table 2-5: Scheduled Passenger Service at PSP

Airline	2018	2019	2020	2021	2022	2023
Alaska						
Number of Nonstop Destinations	4	5	6	8	7	6
Average Daily Departures	5	9	8	9	11	10
Average Daily Seats	814	1,081	910	1,115	1,171	1,097
American						
Number of Nonstop Destinations	3	4	4	4	5	5
Average Daily Departures	8	9	6	7	7	7
Average Daily Seats	862	944	652	833	915	999
Southwest						
Number of Nonstop Destinations	0	0	3	8	10	8
Average Daily Departures	0	0	1	6	8	6
Average Daily Seats	0	0	102	910	1,191	1,023
United						
Number of Nonstop Destinations	6	6	7	5	5	6
Average Daily Departures	10	11	7	8	9	10
Average Daily Seats	909	1,033	597	623	870	1,022
Delta						
Number of Nonstop Destinations	4	4	5	5	4	4
Average Daily Departures	4	4	3	6	4	4
Average Daily Seats	262	288	301	541	403	482
WestJet						
Number of Nonstop Destinations	5	5	4	4	4	4
Average Daily Departures	4	4	2	1	2	3
Average Daily Seats	629	605	259	167	395	521
Other						
Number of Nonstop Destinations	11	13	17	18	16	12
Average Daily Departures	4	3	3	2	3	2
Average Daily Seats	579	536	301	266	523	371
All Airlines						
Number of Nonstop Destinations	20	23	33	38	39	34
Average Daily Departures	35	40	29	39	45	43
Average Daily Seats	4,054	4,487	3,122	4,455	5,468	5,516

Source: *OAG Schedules Analyzer, last accessed March 4, 2023.*

Figure 2-6: Scheduled Passenger Service Trends



Source: *OAG Schedules Analyzer, last accessed March 4, 2023.*

TOP DOMESTIC O&D MARKETS

Table 2-6 and **Figure 2-7** show PSP's top 25 O&D markets through the available months of 2022 (currently January through September 2022, as of the time of writing), ranked by share of the Airport's total 2022 O&D enplanements.

Altogether, the top 25 markets make up 70.9 percent of O&D enplanements at PSP. Seattle-Tacoma International Airport (SEA) holds the largest share of 12.9 percent in 2022. San Francisco International Airport (SFO) holds the second largest share of 8.8 percent—the rest of the top five consists of Portland International Airport (PDX) with a 5.5 percent share, Denver International Airport (DEN) with a 4.4 percent share, and Minneapolis−Saint Paul International Airport (MSP) with a 4.3 percent share.

The top three states found in PSP's top 25 O&D markets include—in descending order of their O&D enplanement share—California, Washington, and Oregon. While SEA in Washington holds the largest share of PSP's O&D market as an individual airport, California holds the largest collective market share at the state level. Four of PSP's top 25 O&D destinations are California airports, accounting for a share size of 17.3 percent. Washington is the second largest state market, with three of its airports in PSP's top 25 O&D destinations, and a share size of 15.1 percent. Oregon is third—despite having only one airport in PSP's top 25 O&D markets, PDX accounted for a 5.5 percent share in 2022, which alone exceeds that of Texas with 3 airports and a 4.9 percent share.

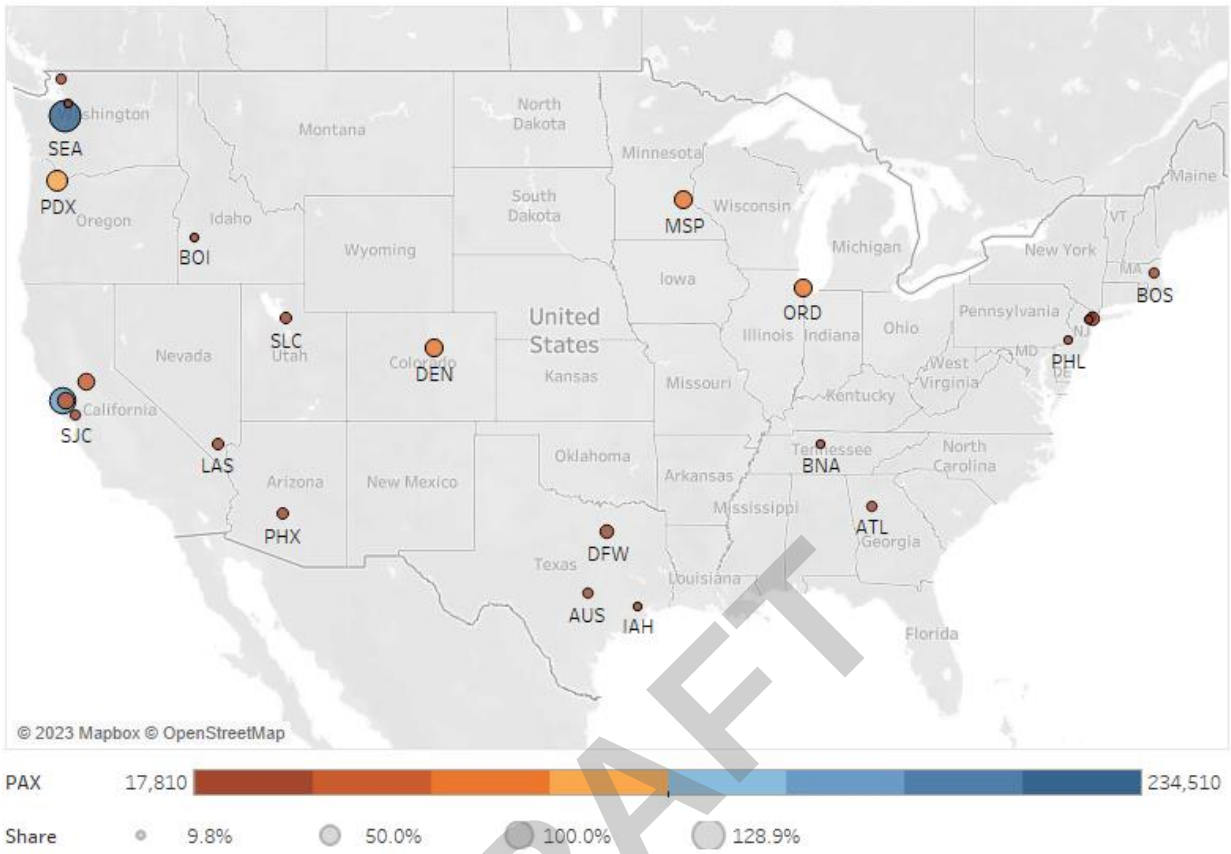
Table 2-6: PSP Top 25 O&D Markets, January-September YTD 2022

Rank	Airport	City	State	PAX	Daily Avg	Share
1	SEA	Seattle	WA	234,510	642.5	12.9%
2	SFO	San Francisco	CA	159,600	437.3	8.8%
3	PDX	Portland	OR	99,830	273.5	5.5%
4	DEN	Denver	CO	79,470	217.7	4.4%
5	MSP	Fort Snelling	MN	79,000	216.4	4.3%
6	ORD	Chicago	IL	73,120	200.3	4.0%
7	OAK	Oakland	CA	67,600	185.2	3.7%
8	SMF	Sacramento	CA	64,540	176.8	3.5%
9	DFW	Dallas	TX	44,620	122.2	2.5%
10	JFK	New York	NY	42,280	115.8	2.3%
11	PHX	Phoenix	AZ	35,750	97.9	2.0%
12	LAS	Las Vegas	NV	30,570	83.8	1.7%
13	SLC	Salt Lake City	UT	29,210	80.0	1.6%
14	AUS	Austin	TX	26,650	73.0	1.5%
15	BOS	Boston	MA	25,700	70.4	1.4%
16	SJC	San Jose	CA	23,790	65.2	1.3%
17	BLI	Bellingham	WA	21,330	58.4	1.2%
18	ATL	Atlanta	GA	21,310	58.4	1.2%
19	LGA	New York	NY	19,990	54.8	1.1%
20	PAE	Everett	WA	19,690	53.9	1.1%
21	BOI	Boise	ID	18,960	51.9	1.0%
22	BNA	Nashville	TN	18,920	51.8	1.0%
23	IAH	Houston	TX	18,130	49.7	1.0%
24	PHL	Philadelphia	PA	17,940	49.2	1.0%
25	EWR	Newark	NJ	17,810	48.8	1.0%
Top 25 Subtotal				**1,290,320**	**3,535.1**	**70.9%**
Other				**528,950**	**6,427.8**	**29.1%**
Total				**1,819,270**	**12,418.2**	**100.0%**

Source: *DB1B, last accessed March 23, 2023.*

Note: *PAX amounts are estimates based on the DB1B sample, rounded to nearest 10.*

Figure 2-7: PSP Top 25 O&D Market Map, January-September YTD 2022



Source: *DB1B, last accessed March 23, 2023.*

Note: *PAX amounts are estimates based on the DB1B sample, rounded to nearest 10.*

COMPARISON WITH OTHER AIRPORTS

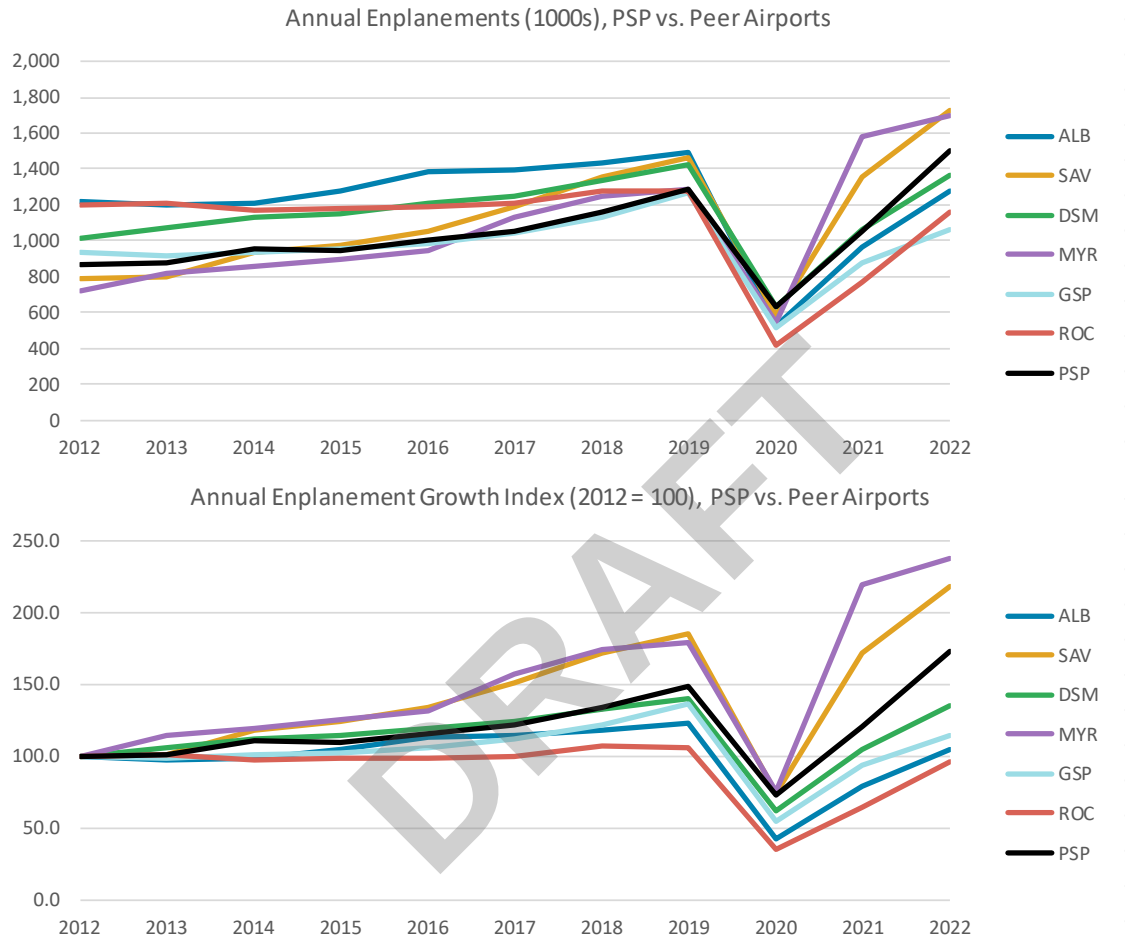
This subsection compares PSP's air traffic and market fare history with two sets of six airports. The first six are airports with the closest enplanement count to PSP, based on 2019 pre-pandemic rankings. These airports include Albany International (ALB), Savannah/Hilton Head International (SAV), and Des Moines International (DSM) as the three closest airports directly above PSP's 2019 enplanement count, as well as Myrtle Beach International (MYR), Greenville Spartanburg International (GSP), and Greater Rochester International (ROC) as the three closest airports directly below PSP's 2019 enplanement count. The second set are six airports also based in Southern California: Los Angeles International (LAX), San Diego International (SAN), John Wayne (SNA), Long Beach (LGB), Ontario International (ONT), and Hollywood Burbank—also known as Bob Hope (BUR).

Comparison of Enplanement Trends with Peer Airports

Relative to its peers, the growth in PSP's enplanements has quickened since the pandemic. Prior to the pandemic, both PSP's enplanement level and growth largely had ranked in the lower half among peer

airports However, due to it being less impacted by the pandemic and its faster rebound, PSP's enplanement levels and growth in 2021 and 2022 have surpassed most of its peer airports (except for MYR and SAV). It now ranks third both in terms of enplanement levels and growth. **Figure 2-8** details the regional enplanement growth trends of PSP and its peer airports.

Figure 2-8: Growth Trends for PSP vs. Airports of Closest 2019 Enplanements



Sources: *Airport records for PSP and Bureau of Transportation Statistics for other airports.*

Comparison of Airline Fare and Passenger Yield Trends with Peer Airports

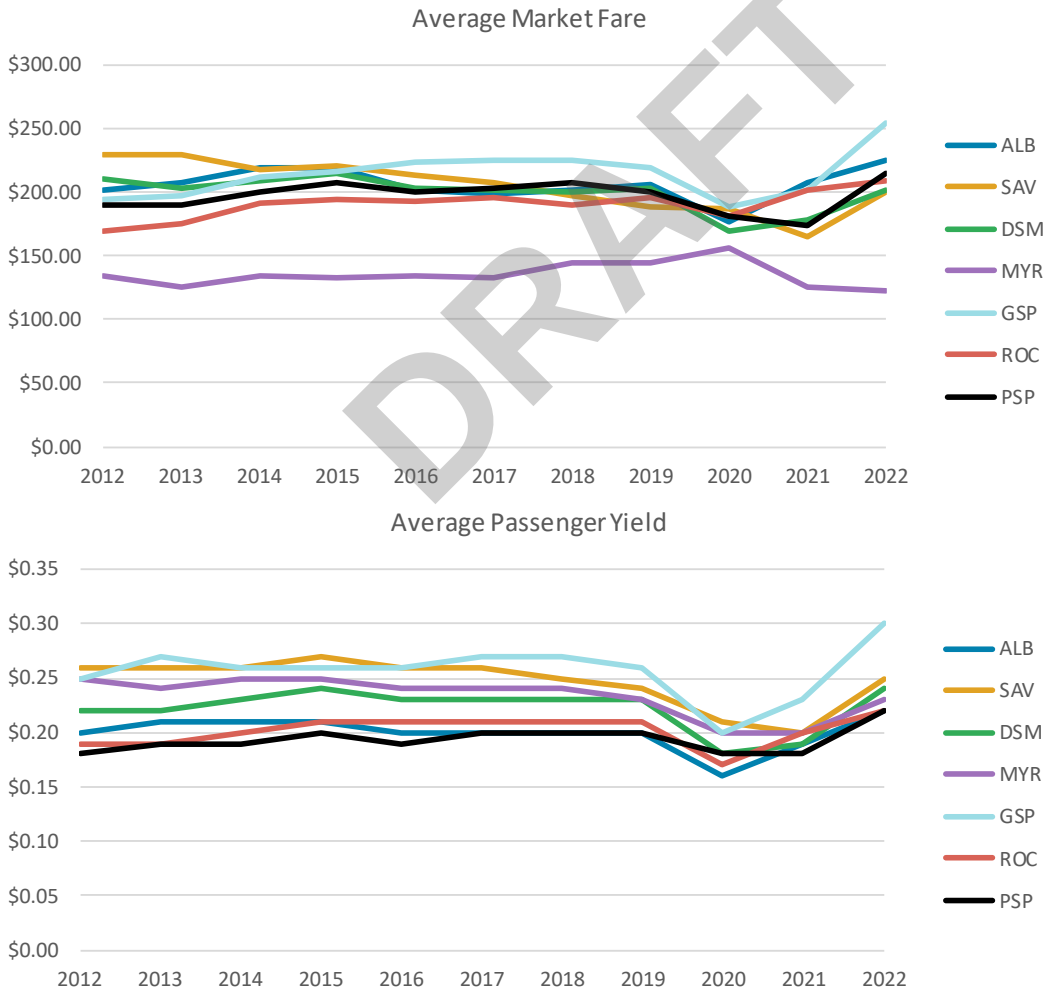
Lower airfares attract passengers. **Figure 2-9** compares the average market fares and average passenger yields at PSP and its peer airports from 2012 to 2022. Passenger yield—defined as the average airline revenue per revenue passenger mile—is similar to average market fare but controls for trip length.

Prior COVID-19, PSP's average market fare stayed between 190 and 210 dollars. This kept the Airport's fare in the lower half of its peers until 2017, when the steady decreases in ALB and DSM's fares eventually put them below PSP. SAV's steadily decreasing market fare also fell below PSP in 2018, though PSP's own

slight reduction in market fare placed it into the median among its peers in 2019. PSP's average market fare saw continued decreases through 2020 and 2021 during the COVID-19 pandemic. In 2022, the downward trend reversed—due to inflation, staffing and equipment shortages, and elevated air travel demand—PSP saw a sharp increase from 174 to 214 dollars, which nudged PSP's average market fare to the third highest among sampled peer airports.

Compared to its peer airports, PSP's average passenger yield ranks as one of the lowest. In fact, prior to the pandemic, all of the airports' passenger yields had remained relatively flat. During this period, PSP's annual average passenger yields ranged between 0.18 and 0.20 dollars, which was among the lowest of the seven sampled airports. PSP's yield had a relatively flatter decrease than the other airports at the beginning of the COVID-19 pandemic, from 0.20 dollars in 2019 to 0.18 in 2020. As of September 2022, its average passenger yield rose slightly to 0.22 dollars, though it remains one of the lowest among peer airports.

Figure 2-9: Average Market Fare and Yield, PSP vs. Airports of Closest 2019 Enplanements

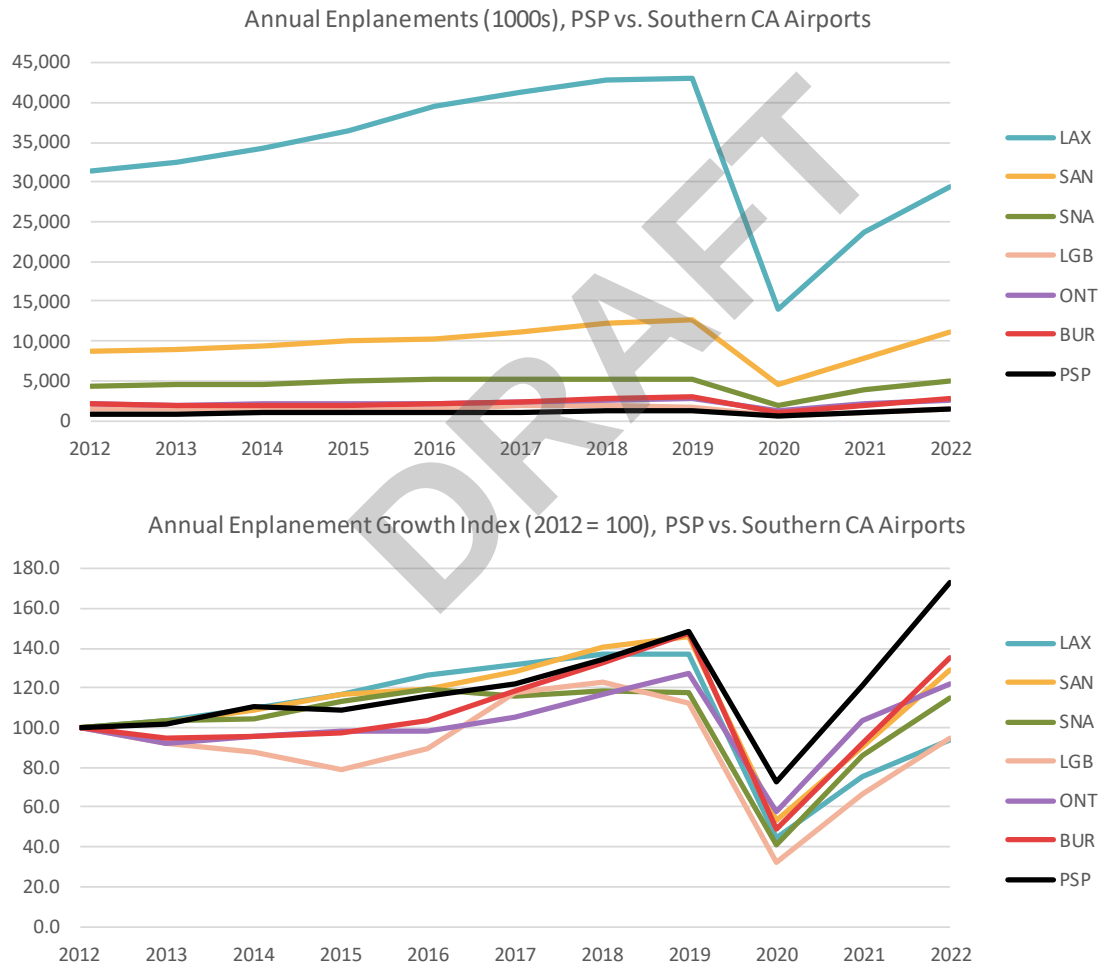


Source: *DB1B.*

Comparison of Enplanement Trends with Southern California Airports

PSP's enplanement history was on the lower end of the sample for Southern California airports, consistently holding the least number of enplanements throughout the 2010s (**Figure 2-10**). Most Southern California airports have not been too far above PSP, though SNA shows the first gap, likely due to being a medium hub airport. From there, SAN maintains the next gap over SNA in enplanements, due to being a large hub airport. Naturally, LAX leads the other airports, as it is one of the most active airports in the United States. However, upon the downturn in 2020 from the COVID-19 pandemic, PSP experienced a less severe decline compared to other Southern California airports, putting its enplanements just above LGB. PSP maintained this slight lead over LGB through the next two years of pandemic recovery.

Figure 2-10:Growth Trends for PSP vs. Southern California Airports



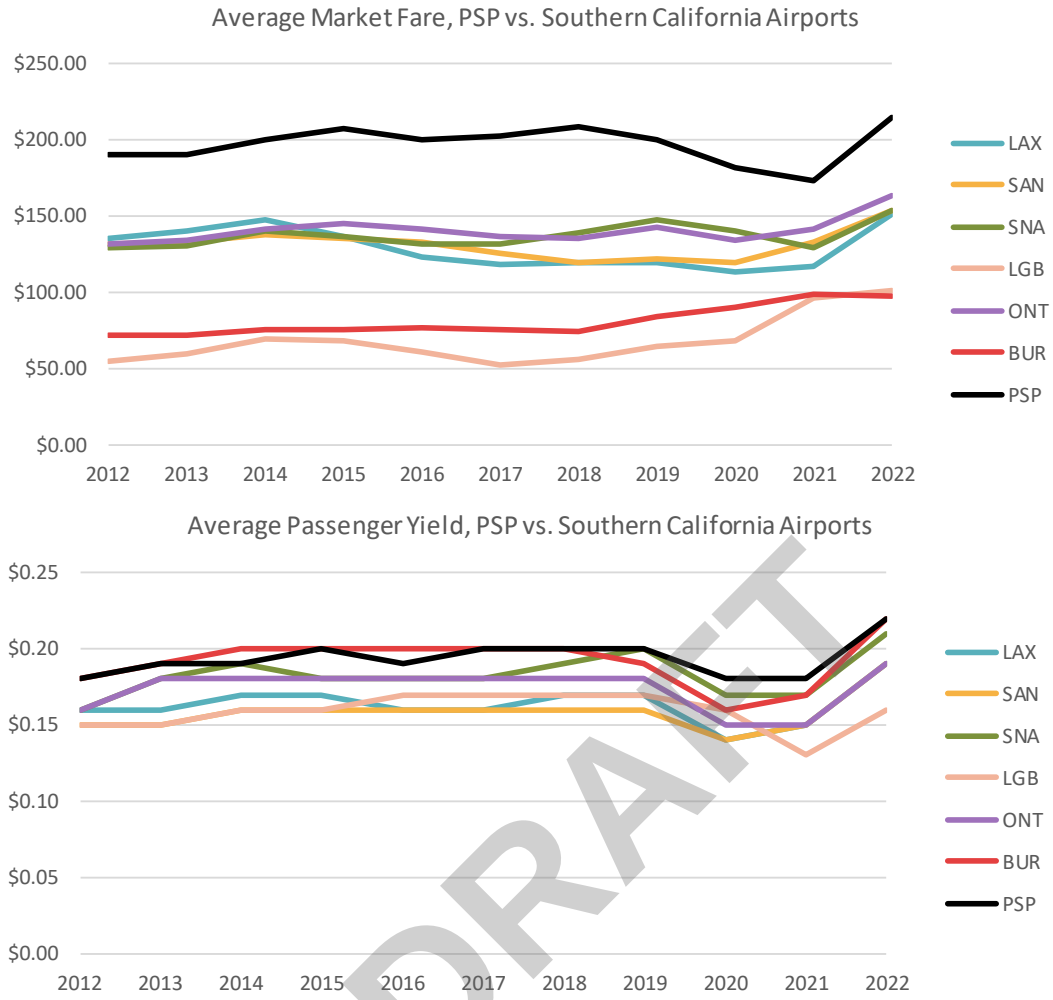
Sources: *Airport records for PSP and Bureau of Transportation Statistics for other airports.*

Comparison of Airline Fare and Passenger Yield Trends with Southern California Airports

Figure 2-11 compares PSP's average market fare and yield with that of the other six sample Southern California airports. PSP maintained the highest average market fare throughout the past decade, hovering between $190 and $210 until dipping down to $181.17 and $173.67 in 2020 and 2021, respectively. Since then, however, PSP's market fare increased significantly, up to $214.36 in 2022. LAX, SAN, SNA, and ONT all sit near each other in average market fare, substantially below PSP. Below those airports with another notable gap are BUR and LGB, which sit at the bottom two for average market fare, having only neared or barely passed $100 in recent post-pandemic years.

All seven airports are closer together in average yield than average market fare, ranging from $0.15 to $0.20, though PSP has often held or tied for the highest average yield throughout the available history. PSP's average yield declined to $0.18 in 2020 and 2021, though that was still the highest at the time compared to the other Southern California airports. In 2022, PSP surpassed its previous highest average yield, now with an average of $0.22, equal to BUR after that airport experienced its own sharp increase the same year. LGB currently sits at the bottom of the sample, with an average yield of $0.16, due to having not as strong a recovery as other Southern California airports during the pandemic.

Figure 2-11: Average Market Fare and Yield, PSP vs. Southern California Airports

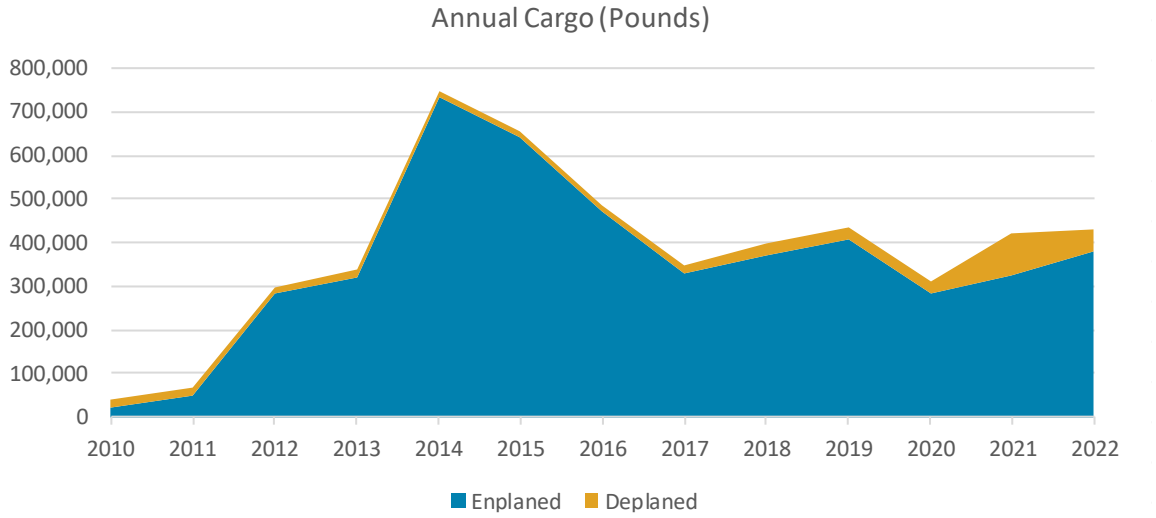


Source: *DB1B.*

AIR CARGO

Figure 2-12 charts PSP's annual air cargo trends, broken down by enplaned and deplaned cargo, while PSP has seen limited growth in air cargo since 2014. Most cargo at the Airport is enplaned, though deplaned cargo began gaining a larger share since the COVID-19 pandemic. In fact, PSP enplaned almost no cargo until 2012, when enplaned cargo increased from 47,235 in 2011 to 281,043 pounds in 2012. Cargo activity at PSP saw a spike in 2014, rising from 336,969 pounds to a peak of 749,041 pounds. From there, PSP's cargo activity declined over the next few years through 2017, and currently sits at 430,806 enplaned and deplaned pounds as of 2022.

Figure 2-12: Annual Air Cargo Trends



Source: *Airport records.*

Table 2-7 breaks down the Airport's annual cargo by each airline's enplaned and deplaned total weight. PSP is not served by any all-cargo carriers, and thus all recorded cargo at the Airport is belly cargo on scheduled passenger carriers, almost all of which carried by Alaska Airlines. After US Airways ceased its cargo service at the Airport after 2011, Alaska has since accounted for over 99 percent of PSP's air cargo through the rest of the decade. While that share has very slightly shrunk with American, United, and Delta contributing in recent years, Alaska still dominates PSP's air cargo with a 97.7 percent share.

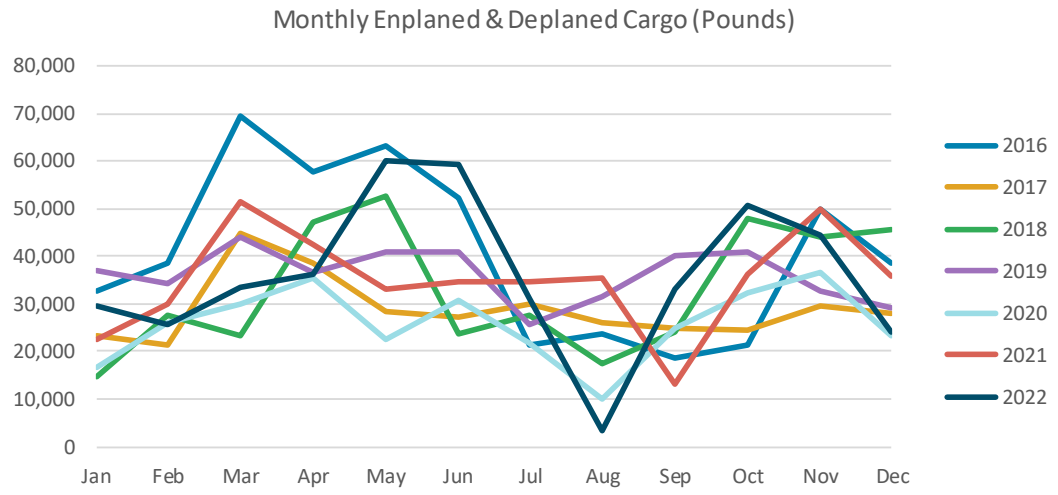
Table 2-7: Annual Enplaned and Deplaned Air Cargo by Airline (in Thousand Pounds)

Year	Alaska	American	United	Delta	Horizon	US Airways	Total
2010	32.4				1.6	7.3	41.2
2011	57.1		0.1		1.2	9.2	67.6
2012	294.0		0.2		0.7		294.9
2013	335.9				1.1		337.0
2014	746.4		1.7		0.9		749.0
2015	655.4						655.4
2016	487.2						487.2
2017	344.6	1.5					346.1
2018	391.6	3.8		0.5			396.0
2019	432.8			1.2			434.0
2020	309.7			0.6			310.4
2021	411.9	6.1		0.9			418.9
2022	421.1	6.9	2.5	0.2			430.8
Compound Annual Growth Rate							
2010-2019	33.4%						29.9%
2019-2022	-0.9%			-41.4%			-0.2%
2010-2022	23.8%						21.6%

Source: *Airport records.*

Figure 2-13 shows monthly cargo patterns at PSP from January 2016 through December 2022. PSP's cargo seasonality is very erratic, with the years only loosely following a general pattern of experiencing its highest months in the spring and lowest months in the late summer or early fall.

Figure 2-13: Monthly Cargo Trends



Source: *Airport records.*

COMMERCIAL AIRCRAFT LANDINGS AND LANDED WEIGHT

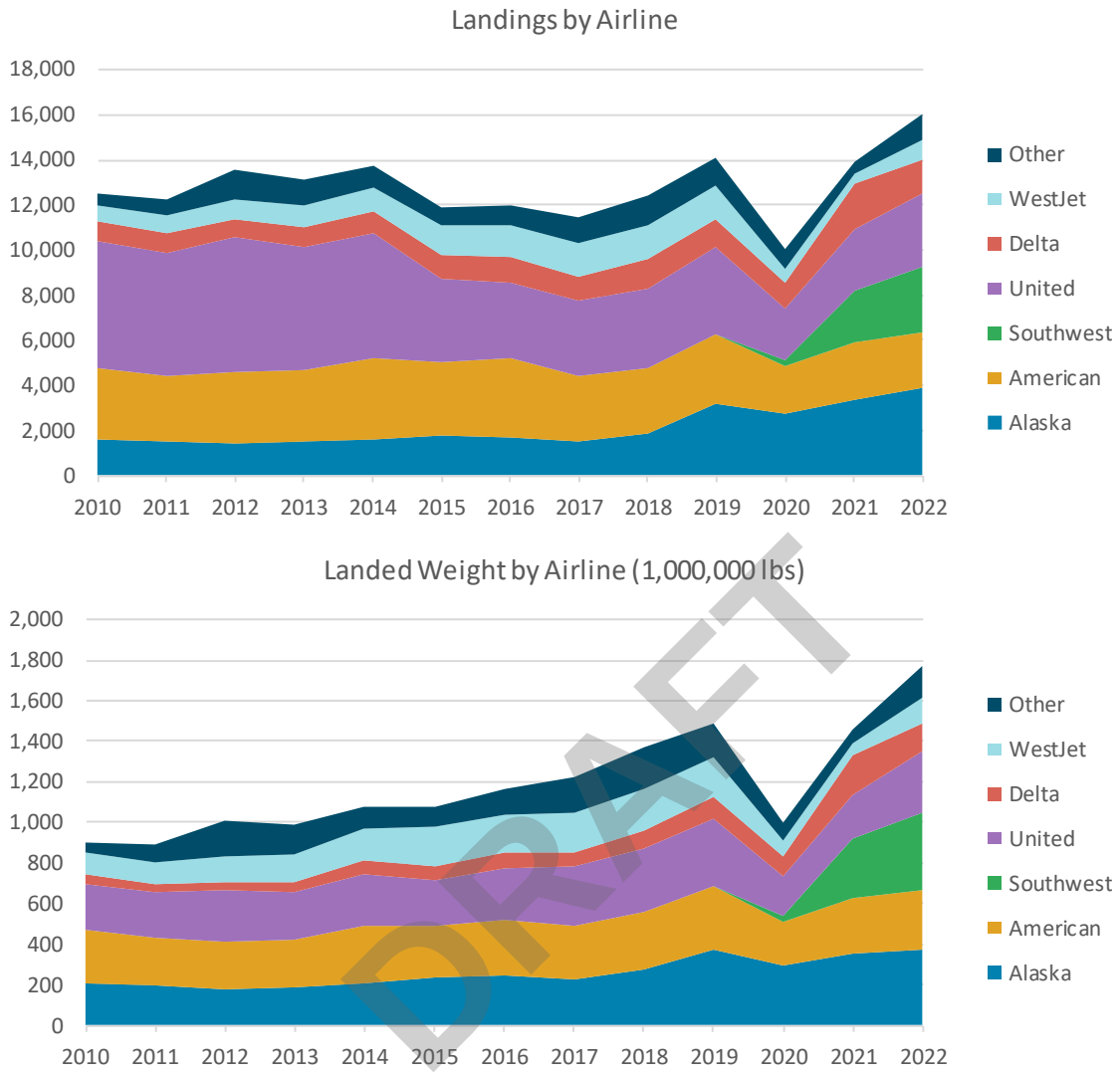
Figure 2-14 shows the annual historical landings and landed weight trends at PSP from 2010 to 2022, broken down by airline. Table 2-8 and Table 2-9 break down the underlying data and airline shares, while Table 2-10 calculates the annual average landed weight per landing by airline.

Over the past decade, the size and capacity of aircraft at PSP have increased, leading to a significant increase in landed weight. In 2010, the average landed weight per landing was 546,491 pounds, which increased to 813,868 pounds in 2022 (a 48.9 percent total increase). Additionally, the number of annual landings increased from 12,534 in 2010 up to 16,005 in 2022 (a 27.7 percent total increase). As a result, annual landed weight increased from 905 million pounds in 2010 up to 1.8 billion pounds in 2022 (a 95.2 percent total increase).

In terms of landings, United was the largest air carrier at PSP, holding 45 percent of the PSP market in 2010. That share has gradually decreased over time, and more recently, with Alaska's expansion in 2020, United has lost its top standing to Alaska. As of 2022, Alaska holds 24.5 percent of landings at the Airport, followed by United with 20.7 percent, Southwest with 17.8 percent, American with 15.3 percent, Delta with 9.2 percent, and WestJet with 5.4 percent. The remaining 7.1 percent share is composed of the remaining airlines outside of the six biggest shares.

In terms of landed weight, United and American competed closely for the largest share of PSP's market before COVID-19 pandemic. Alaska's market share was a close third. Since 2019, Alaska's growth has exceeded that of the United and American, and in 2021, Alaska held the largest share of PSP's market in terms of landing weight. The entry of Southwest in 2020 and its subsequent rapid growth and use of larger, higher capacity aircraft led it to overtake Alaska by the end of 2022 when it comprised 21.2 percent of landed weight at PSP with 375 million pounds, despite having fewer landings than Alaska and American.

Figure 2-14: Annual Landings and Landed Weight Trends



Source: *Airport records.*

Table 2-8: Annual Landings by Airline

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	CAGR 2010-2019	CAGR 2019-2022	CAGR 2010-2022
Alaska	1,593	1,482	1,434	1,485	1,607	1,747	1,710	1,511	1,811	3,147	2,753	3,317	3,917	7.9%	7.6%	7.8%
American	3,183	2,923	3,148	3,148	3,569	3,315	3,482	2,880	2,930	3,150	2,067	2,576	2,455	-0.1%	-8.0%	-2.1%
Southwest											255	2,275	2,844			
United	5,604	5,496	5,973	5,528	5,545	3,646	3,388	3,327	3,565	3,804	2,338	2,727	3,317	-4.2%	-4.5%	-4.3%
Delta	850	825	789	884	1,003	1,077	1,147	1,121	1,286	1,301	1,135	2,093	1,468	4.8%	4.1%	4.7%
WestJet	751	786	928	965	1,084	1,330	1,351	1,438	1,468	1,420	578	361	863	7.3%	-15.3%	1.2%
Other	553	687	1,249	1,095	907	740	920	1,195	1,326	1,238	889	587	1,141	9.4%	-2.7%	6.2%
Total	**12,534**	**12,199**	**13,521**	**13,105**	**13,715**	**11,855**	**11,998**	**11,472**	**12,386**	**14,060**	**10,015**	**13,936**	**16,005**	**1.3%**	**4.4%**	**2.1%**
AGR		-2.7%	10.8%	-3.1%	4.7%	-13.6%	1.2%	-4.4%	8.0%	13.5%	-28.8%	39.2%	14.8%			

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	12.7%	12.1%	10.6%	11.3%	11.7%	14.7%	14.3%	13.2%	14.6%	22.4%	27.5%	23.8%	24.5%
American	25.4%	24.0%	23.3%	24.0%	26.0%	28.0%	29.0%	25.1%	23.7%	22.4%	20.6%	18.5%	15.3%
Southwest											2.5%	16.3%	17.8%
United	44.7%	45.1%	44.2%	42.2%	40.4%	30.8%	28.2%	29.0%	28.8%	27.1%	23.3%	19.6%	20.7%
Delta	6.8%	6.8%	5.8%	6.7%	7.3%	9.1%	9.6%	9.8%	10.4%	9.3%	11.3%	15.0%	9.2%
WestJet	6.0%	6.4%	6.9%	7.4%	7.9%	11.2%	11.3%	12.5%	11.9%	10.1%	5.8%	2.6%	5.4%
Other	4.4%	5.6%	9.2%	8.4%	6.6%	6.2%	7.7%	10.4%	10.7%	8.8%	8.9%	4.2%	7.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

Table 2-9: Annual Landed Weight by Airline (in Million Pounds)

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	205	195	172	191	210	235	246	227	275	368	295	355	371
American	269	237	241	226	278	253	277	266	287	315	215	267	298
Southwest											33	295	375
United	225	222	254	242	261	231	251	287	306	337	187	222	304
Delta	49	39	37	42	63	69	73	72	90	102	103	195	142
WestJet	101	110	129	136	155	187	192	198	211	196	80	52	122
Other	55	89	176	153	115	102	130	177	199	168	87	73	155
Total	**905**	**891**	**1,009**	**991**	**1,081**	**1,076**	**1,169**	**1,228**	**1,367**	**1,485**	**1,001**	**1,459**	**1,767**
AGR		-1.5%	13.2%	-1.8%	9.1%	-0.5%	8.6%	5.1%	11.3%	8.6%	-32.6%	45.8%	21.1%

CAGR		
2010-2019	2019-2022	2010-2022
6.7%	0.3%	5.1%
1.8%	-1.8%	0.8%
4.6%	-3.4%	2.5%
8.4%	11.8%	9.3%
7.6%	-14.6%	1.6%
13.1%	-2.7%	8.9%
5.7%	**6.0%**	**5.7%**

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	22.7%	21.8%	17.0%	19.3%	19.4%	21.8%	21.0%	18.5%	20.1%	24.8%	29.5%	24.3%	21.0%
American	29.7%	26.6%	23.9%	22.8%	25.7%	23.5%	23.7%	21.7%	21.0%	21.2%	21.5%	18.3%	16.8%
Southwest											3.3%	20.2%	21.2%
United	24.9%	24.9%	25.2%	24.4%	24.1%	21.4%	21.5%	23.4%	22.4%	22.7%	18.6%	15.2%	17.2%
Delta	5.4%	4.4%	3.7%	4.2%	5.8%	6.4%	6.2%	5.9%	6.6%	6.8%	10.3%	13.4%	8.0%
WestJet	11.2%	12.3%	12.8%	13.7%	14.3%	17.4%	16.5%	16.1%	15.4%	13.2%	8.0%	3.5%	6.9%
Other	6.1%	10.0%	17.4%	15.4%	10.7%	9.4%	11.1%	14.4%	14.5%	11.3%	8.7%	5.0%	8.8%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

Table 2-10: Annual Average Weight per Landing by Airline (in Pounds)

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	128,801	131,242	119,910	128,833	130,514	134,258	143,767	150,257	151,751	116,863	107,272	106,932	94,637
American	84,560	81,189	76,554	71,946	77,931	76,463	79,569	92,521	97,953	99,914	104,242	103,719	121,286
Southwest											128,063	129,483	131,987
United	40,159	40,392	42,545	43,838	46,982	63,243	74,090	86,293	85,730	88,575	79,834	81,560	91,699
Delta	57,661	47,090	46,825	47,534	63,021	64,157	63,480	64,232	70,033	78,022	91,150	93,262	96,581
WestJet	135,034	139,338	139,500	141,036	142,536	140,683	142,386	137,889	143,590	138,276	138,631	143,209	141,873
Other	100,275	129,809	140,557	139,769	127,000	137,289	140,951	148,240	149,937	135,748	98,228	124,880	135,805
Total Avg.	**72,225**	**73,068**	**74,626**	**75,644**	**78,840**	**90,797**	**97,414**	**107,046**	**110,376**	**105,644**	**99,950**	**104,697**	**110,413**
AGR		1.2%	2.1%	1.4%	4.2%	15.2%	7.3%	9.9%	3.1%	-4.3%	-5.4%	4.7%	5.5%

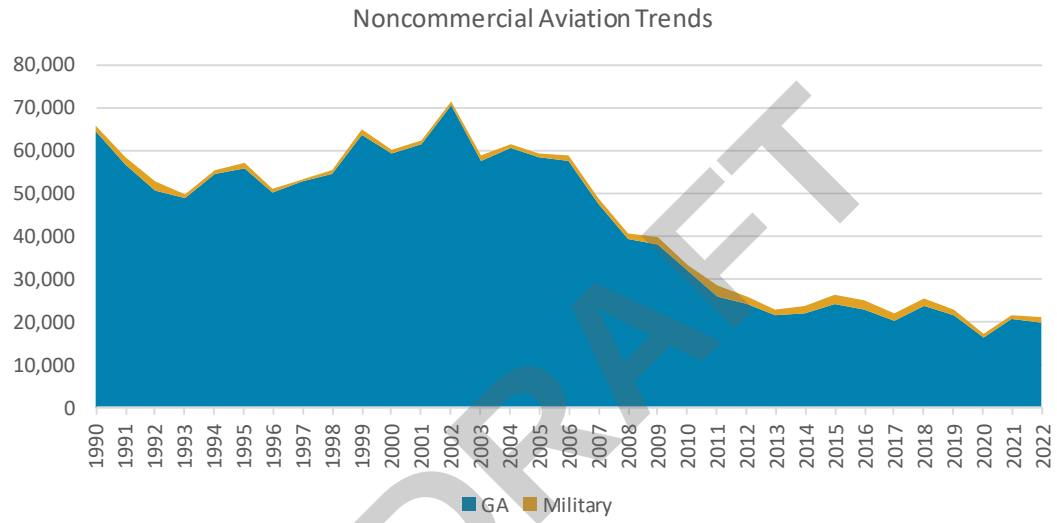
CAGR		
2010-2019	2019-2022	2010-2022
-1.1%	-6.8%	-2.5%
1.9%	6.7%	3.1%
9.2%	1.2%	7.1%
3.4%	7.4%	4.4%
0.3%	0.9%	0.4%
3.4%	0.0%	2.6%
4.3%	**1.5%**	**3.6%**

Source: *Airport records.*

HISTORICAL NONCOMMERCIAL AVIATION ACTIVITY

Noncommercial aviation activity consists of general aviation (GA) and military operations. **Figure 2-15** shows the history of noncommercial aviation trends at PSP from 1990 to 2022. Overall, noncommercial operations at PSP swung down through the early 1990s, then back up to a peak of 71,782 in 2002. Since then, noncommercial operations almost consistently trended downward. The overall decrease decelerated by 2013 and hovered in the 20,000s through the rest of the decade. After a sharper dip in 2020, noncommercial operations now sit at 21,101 as of 2022. Almost all of PSP's noncommercial trends are GA operations, which have consistently made up more than a 90 percent share compared to military operations.

Figure 2-15: Noncommercial Aircraft Operations



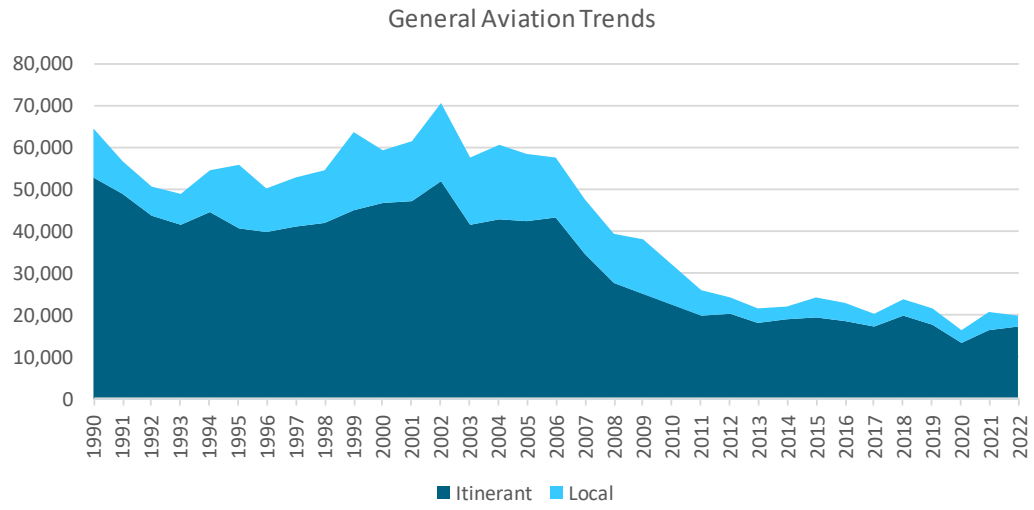
Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Annual General Aviation Trends

PSP's GA activity, comprised of itinerant and local operations, covers non-commercial and non-military passenger or cargo services provided at the Airport. GA activity typically satisfies regional demands for air transport, including private business travel, emergency transport, flight instruction, and recreational flying. It is therefore sensitive to both local and national economic conditions. Itinerant operations are flights going to and coming from a different airport, while local GA operations include flights within the local traffic pattern of the Airport.

Itinerant activity makes up the majority of PSP's GA, at least 70 percent of the Airport's GA operations almost annually. Local operations grew during the Great Recession, reaching a peak of 34.2 percent in 2009 (the only year itinerant operations fell below a 70 percent share). Since then, the local share varied but had largely shrunk through the next decade. As of 2022, local operations make up 13.9 percent of PSP's GA. **Figure 2-16** shows PSP's annual GA operations.

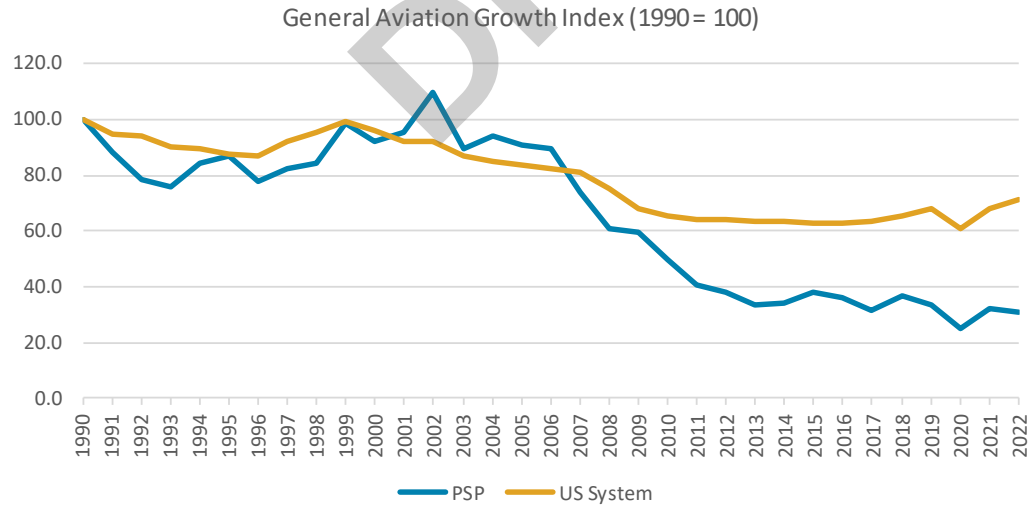
Figure 2-16: Annual GA Operations



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Throughout their available recorded history, except for a brief period between 2001 and 2006, GA operations growth at PSP has mostly lagged behind that of the U.S. system. Since 2006, the gap between PSP's GA operations and the U.S. system has widened. As of 2022, PSP's GA operations are currently at 30.9 percent of what they used to be in 1990, while U.S. system GA operations are at 71.1 percent of their 1990 level. **Figure 2-17** compares the annual growth in GA operations for PSP against the national aviation system.

Figure 2-17: PSP vs. U.S. System Annual GA Operations Growth Index (1990 = 100)

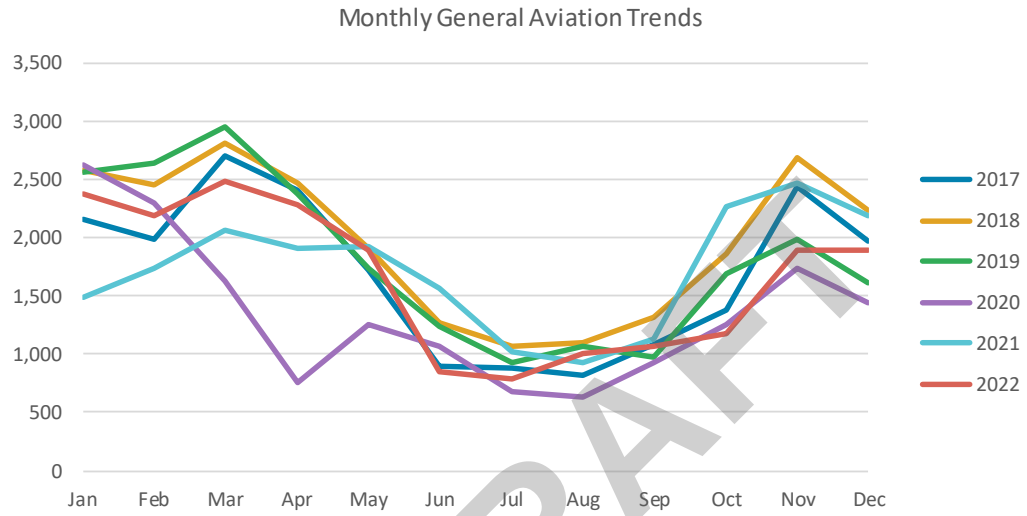


Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Monthly General Aviation Trends

Aside from the initial drop in operations between January and April 2020, the seasonal patterns in PSP's GA trends have mostly remained consistent since 2017. GA activity largely peaks in March, after which operations would swing down to the Airport's least active months in the late summer, followed by another upswing to another peak in November. The March peak is usually higher than the November peak, with the exception of 2021, when operations were still recovering from the pandemic. **Figure 2-18** details PSP's GA operations by month.

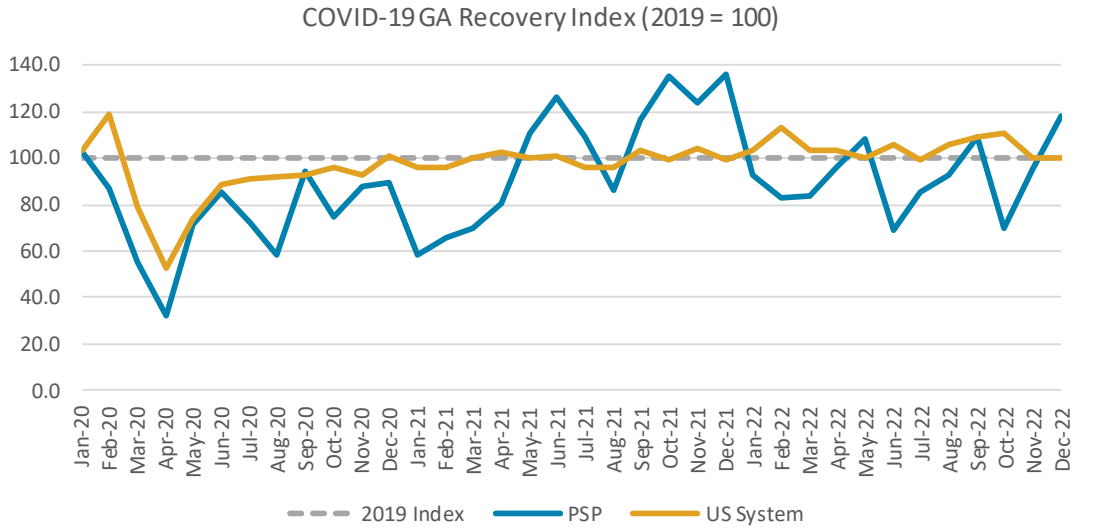
Figure 2-18: Monthly GA Operations



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

As with the rest of the aviation industry, GA activity dropped at PSP and the U.S. system through the beginning months of the COVID-19 pandemic: PSP's GA operations decreased to 32 percent of its 2019 level, while the U.S. system decreased to 53 percent of its 2019 level. Unlike commercial aviation, however, GA activity did not fall as far down, nor did it stay down for as long. U.S. system GA operations returned to pre-pandemic levels by December 2020. PSP's GA recovery has been much rockier, first passing pre-pandemic levels in May 2021, but falling back below pre-pandemic levels with periodic spikes through 2022. As of December 2022, PSP's GA operations have again surpassed pre-pandemic numbers at 117.9 percent of its 2019 level, while the U.S. system's GA operations sit at 100.2 percent of its 2019 level. **Figure 2-19** compares PSP's monthly COVID-19 GA recovery index to that of the national aviation system.

Figure 2-19: Monthly PSP vs. U.S. System COVID-19 GA Recovery Index (2019 = 100)



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Based Aircraft

Figure 2-20 shows the number of aircraft based at PSP, which has fallen by more than 50 percent since 1990. Based on the historical numbers reported in the latest FAA Terminal Area Forecast (TAF) for PSP, the number of based aircraft decreased from 178 in 1990 and 1991 to 81 in 2019-2021 and is estimated to be 183 in 2022.

Figure 2-20: Based Aircraft

Source: *Federal Aviation Administration Terminal Area Forecasts.*

COMMERCIAL PASSENGER TRAFFIC - FORECASTS

This section presents forecasts of enplanements and passenger aircraft operations, along with a discussion of the forecast methodology and results. Forecast development takes into account the pandemic impacts, the ensuing demand and supply changes in the aviation industry, and the changes in the business environment. To achieve this, it employs a hybrid modeling framework that combines multiple forecasting methods and multiple data sources to project air traffic during different phases of recovery and growth. This approach allows the use of different methods and available data to best reflect supply and demand trends during each phase. The forecast horizon is divided into a near-term phase and a long-term phase.

The different forecasting methods employed are summarized below:

- Use of available advance airline schedules, along with an analysis of trends in seat completion rates and boarding load factors—a bottom-up forecasting approach reflecting current and near-term supply changes.
- Analysis of monthly enplanement recovery trends using trendline fitting (univariate time series regression) to capture current air traffic demand growth patterns.
- Multivariate regression analysis to link long-term growth in demand for air travel to fundamental economic drivers such as (1) national economic growth trends indicated by the U.S. real Gross Domestic Product (GDP) per capita and (2) trends in the price of air travel measured by average passenger yield.
- A top-down forecasting approach to derive projections of aircraft operations from forecast enplanements, where intermediate forecast inputs include fleet mix projections, seats per aircraft operation, and boarding load factors by airline—forecast inputs that reflect supply-side changes.

Forecast scenario development acknowledges the elevated risk and uncertainty in the aviation industry (see **Appendix B**) and the broad economic environment by producing a range of forecasts. Three forecast scenarios are presented: Low, Base, and High scenarios. Among the three scenarios presented, the Base scenario is recommended as the forecast scenario for FAA approval.

The Low and High complete a range of forecast activity levels for planning and sensitivity analyses to anticipate both downside and upside possibilities. In the short run, the differences in enplanement growth are driven by assumptions on boarding load factors and schedule completion rates. In the long run, the differences are driven by differences in key demand drivers, including GDP growth and passenger yields. The future, however, is inherently uncertain. A multitude of factors and events can introduce uncertainty, especially over a long forecast period. Forecast development relies on information available at the time of development; if the outlook changes materially and any of the assumptions fail to hold, actual traffic could fall outside forecast levels presented by the three scenarios.

Hybrid Forecast Development Framework

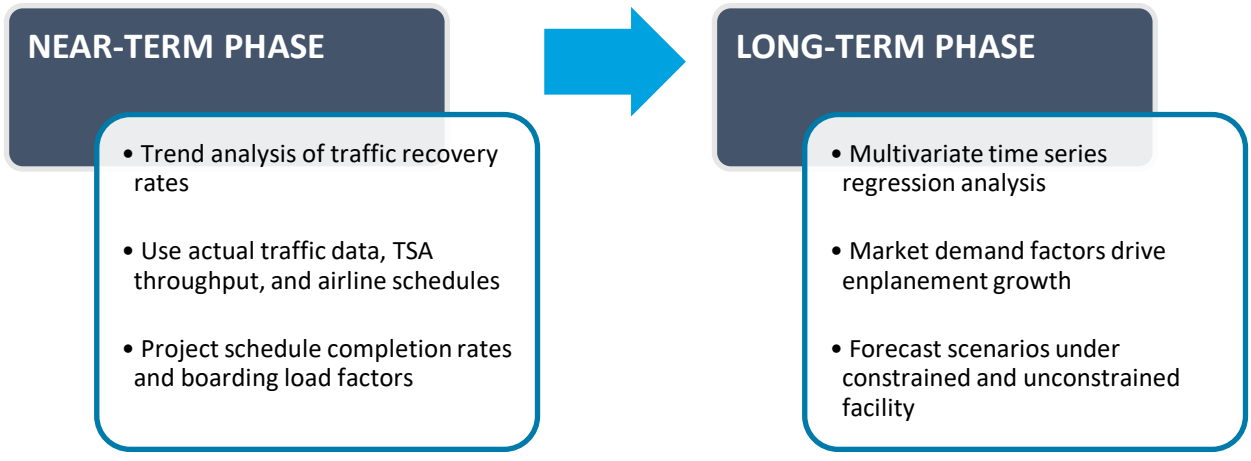
A hybrid modeling framework leverages the strengths of different forecasting methods and data sources in projecting air traffic during different phases of recovery and growth, which is shown in **Figure 2-21**. The forecast period is divided into two phases: a near-term phase and a long-term phase.

In the near-term phase, analysis of traffic recovery trends, published airline schedules, seat completion rates, and boarding load factors produce projections of flights, seats, and enplanements. During this phase, the growth of passenger traffic is projected on a monthly frequency. Once the growth patterns of projected monthly enplanements stabilize, the forecast period enters the long-term phase. In the long-term phase, multivariate regression analysis is used to (1) quantify the relationship between air travel demand and key market drivers and (2) project annual enplanement growth rates based on projected trends in key market drivers.

Forecast development by phase allows us to consider different factors expected to drive traffic trends in the different phases. In the near-term phase, for instance, the enplanement forecasts are based on assumptions of monthly seat completion rates and boarding load factors. These assumptions are derived from the analysis of high-frequency TSA throughput data and published advance airline schedules. This forecasting approach, in addition to the use of near real-time data, allows the forecasts to reflect the most up-to-date trends in the Airport's air traffic and airlines' capacity.

In the long-term phase, the growth patterns of the Airport's passenger traffic are assumed to have stabilized. This "normalization" indicates a new equilibrium in the relationship between air travel demand and air travel supply. Market demand factors, such as income and price, along with any lasting changes in personal and business travel propensity and preferences, will again become the primary driver of growth in passenger demand for air travel. Forecasting in this phase is done on a quarterly frequency.

Figure 2-21: Forecast Development by Phase



Near-Term Phase

In this phase, forecast development considers the recent progress in traffic recovery and growth. To reflect the most recent air traffic trends at the Airport, the analysis is based on near real-time traffic data at the time of forecast development (April 2023). Data on actual airport activity (enplanements, departures, and landed weight) was available through January 2023. The Transportation Security Administration (TSA) screening throughput data was available through April 2023, reflecting PSP's actual passenger traffic patterns in real time. Data on airlines' seat capacity is based on advance airline schedules accessed in April 2023.

Airline schedules, supplemented with TSA throughput screening data, provide the starting point for projecting monthly flights, seats, and enplanements by airline from February to September 2023. Specifically, the enplanements are estimated using advance airline schedules, adjusted for expected schedule completion rates as shown in **Table 2-11**, and projected boarding load factors as shown in **Table 2-12**.

Table 2-11: Projected Schedule Completion Rates and Seats

Month	Schedule Completion Rate			Projected Seats		
	Base	Low	High	Base	Low	High
Feb-23	100%	100%	100%	247,939	247,939	247,939
Mar-23	100%	100%	100%	276,732	276,732	276,732
Apr-23	100%	100%	100%	252,603	252,603	252,603
May-23	100%	97%	100%	163,152	158,257	163,152
Jun-23	100%	97%	100%	85,194	82,638	85,194
Jul-23	99%	96%	100%	80,528	78,087	81,341
Aug-23	96%	93%	99%	77,232	74,819	79,646

Source: *Unison Consulting, Inc.*

Schedule completion rates are projected to decrease below 100 percent to anticipate cuts in airline schedules. The sub-100 percent schedule completion rate assumptions consider both airlines' practice of adjusting advance schedules—mostly downward—as flight dates get closer and external factors constrain airline capacity. Low and high projections of the rates anticipate different degrees by which supply-side issues—for example, pilot shortage, tight labor supply, inflation, and fleet constraints—could constrain airline capacity. Based on advance schedules published in April 2023, airlines are expected to complete at least 93 percent of their schedules through August 2023.

Table 2-12: Projected Boarding Load Factors

Actual Boarding Load Factors[1]			
Month	2019	2022	Difference (pp)[2]
Jan	68.53%	58.72%	-9.81
Feb	75.37%	74.97%	-0.41
Mar	83.95%	83.72%	-0.24
Apr	79.42%	82.46%	3.05
May	84.53%	83.66%	-0.86
Jun	86.18%	76.18%	-10.00
Jul	85.50%	71.35%	-14.15
Aug	82.52%	68.11%	-14.42
Sep	84.01%	74.09%	-9.92
Oct	79.16%	79.11%	-0.05
Nov	77.21%	77.74%	0.53
Dec	73.44%	68.10%	-5.35

Projected Boarding Load Factors[3]			
Month	Base	Low	High
Jan-23	67.62%	67.62%	67.62%
Feb-23	74.58%	74.58%	74.58%
Mar-23	85.12%	85.12%	85.12%
Apr-23	79.30%	77.28%	81.36%
May-23	84.69%	82.69%	86.69%
Jun-23	85.38%	83.38%	87.38%
Jul-23	83.93%	81.93%	85.93%
Aug-23	80.43%	78.43%	82.43%
Sep-23	85.53%	83.48%	87.62%
Oct-23	80.68%	78.64%	82.71%
Nov-23	79.67%	77.69%	81.65%
Dec-23	75.27%	73.25%	77.32%

Source: *Unison Consulting, Inc.*

Notes: *[1] Boarding load factors (BLF) = enplanements divided by available seats.*

[2] The column reports the percentage-point (pp) difference between 2019 and 2022 monthly boarding load factors. Negative values indicate lower 2022 levels, relative to the 2019 levels for the same months.

[3] BLF projections begin in March 2023.

The boarding load factor assumptions reflect seasonal patterns as well as an overall improving trend. In 2022, monthly average boarding load factors were near or above 2019 levels around half of the months.[4] On average, monthly boarding load factors in 2022 were 5.1 percent points lower than 2019 levels, up from being 14 percentage points lower in 2021. Following these trends, the Base scenario assumes an improvement in monthly boarding load factors, nearing or exceeding 2019 levels from March 2023 through August 2023. By contrast, the Low scenario assumes that monthly boarding load factors remain around 2 percentage points lower than the 2019 levels over the same period. The High scenario assumes boarding load factors are around 2 percentage points higher than the 2019 levels.

Between September and December 2023, forecast development employs trend analysis to project enplanements for the remaining months of 2023. A trendline is fitted on monthly enplanements from April 2020, when they fell to their lowest level during the pandemic, to August 2023. We also fit a truncated trendline, which begins in June 2021 when monthly enplanements first exceeded 2019 levels. Both linear and logarithmic functional forms are evaluated to represent the Airport's air traffic trajectory. The linear function projects a steeper, straight-line growth trajectory. The logarithmic function projects an initial acceleration of growth and eventual tapering. The truncated logarithmic functional form is ultimately chosen, considering limiting factors on both the demand side (inflation and slowing economy)

[4] The exceptions were January, June, July, August, September, and December.

and the supply side (pilot shortage, staffing constraints due to tight labor supply, supply chain issues, and inflation).

In the Base scenario, monthly enplanements between September and December 2023 are assumed to hold steady at around 129 percent of 2019 levels, slightly above the January-August 2023 average (125.5 percent of 2019 levels). In the Low scenario, monthly enplanements are assumed to be 122 percent of 2019 levels through the remainder of 2023. In the High scenario, monthly enplanements are assumed to be 137 percent of 2019 levels through the remainder of 2023.

Long-Term Phase

Beyond 2023 marks the end of the near-term phase and the start of the long-term phase. In this phase, growth in passenger traffic is expected to be driven by the economics of air travel demand, assuming air travel supply would adjust to accommodate changes in demand. The effects of macroeconomic factors, air fare, and the residual impacts of the COVID-19 pandemic are accounted for via the projected trends in market demand drivers, which are sourced from independent forecasts by Moody's Analytics.

Multivariate time series regression analysis is used to link enplanement growth to changes in key market demand drivers. In particular, multivariate time series regression analysis provides a quantitative framework for measuring the contributions of key demand drivers to passenger traffic, while accounting for structural changes, time-dependent trends, and serial correlation often found in time series data. Model estimation uses quarterly data from 1993Q1 through 2019Q4 to measure the historical relationships between enplanements and demand drivers.

Based on the economic theory of consumer demand, the main determinants of demand for air travel are trends in income and price of air travel. Income growth is driven by overall economic growth. Trends in the price of air travel reflect the effects of supply-side factors such as competition, input costs, and profit targets, and any constraints on capacity, among others. They also reflect any imbalances in air travel demand and supply.

The regression model uses U.S. real GDP per capita as the economic indicator to measure income growth trends and the Airport's average real passenger yield as the price variable. The average passenger yield—calculated as the average fare per mile traveled—serves as a better measure of the price of air travel because it controls for trip distance. The historical and forecast trends in these variables are shown in **Figure 2-22**. U.S. real GDP per capita is expected to continue its (linear) upward trend, ending the forecast period 66 percent above the 2012 level. PSP's average real passenger yield is expected to resume its downward trend, which was briefly interrupted by the pandemic, and end the forecast period at around 89 percent of the 2012 level.

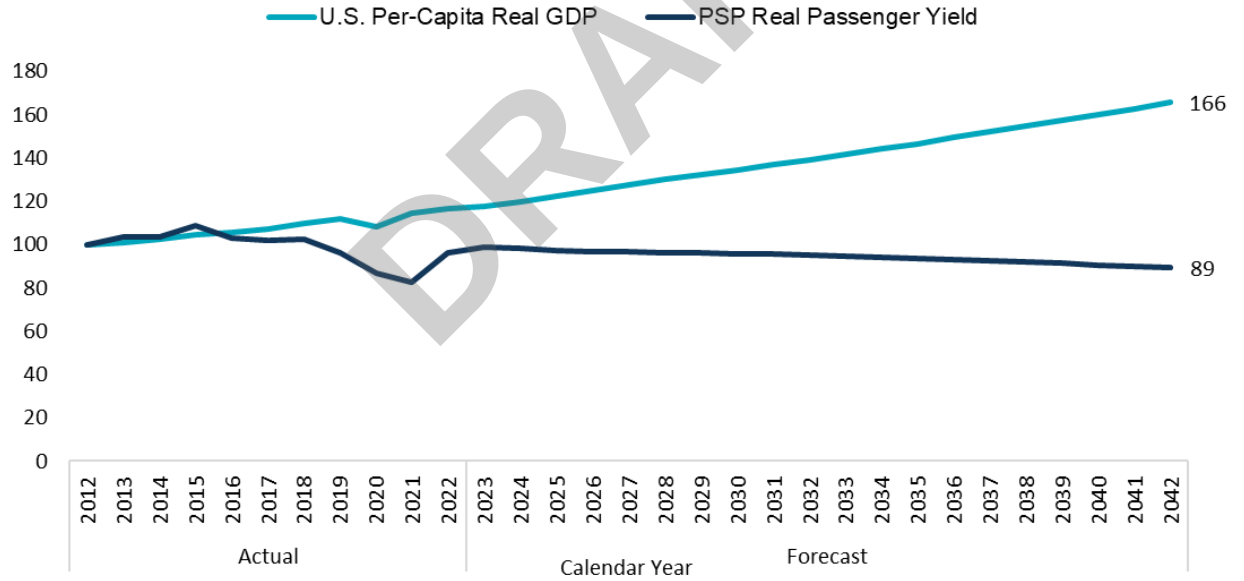
The model also controls for structural changes over the estimation period, such as the 9/11 terrorist attacks in 2001, quarterly enplanement patterns, and autoregressive and moving average terms commonly used to address serial correlation in time series data. Other variables were also tested,

including U.S. unemployment rate, U.S. nonfarm employment, U.S. population, and MSA income per capita. These variables were ultimately omitted from the model as they failed to provide a better fit.

Forecasting using regression analysis is done in two steps. The first step is model estimation, and the second step is using the estimated model for prediction. Model estimation uses historical data to estimate regression coefficients for the explanatory variables discussed above. Regression coefficients measure the contribution of each explanatory variable to the dependent variable (quarterly enplanements). The result is a regression equation that is then used to calculate future values of the dependent variable given projected values for the explanatory variables.

The estimated regression equation meets statistical evaluation criteria for determining its suitability for forecasting. The regression equation yields statistically significant regression coefficients in the demand drivers and control variables. Importantly, all of the signs of the regression coefficients confirm their expected contributions to air travel demand: positive for the income variable and negative for the price variable and control for variable for the impact of the 9/11 terrorist attacks. The estimated regression equation also produces a high adjusted R-squared result—a value greater than 0.98—whereby an R-squared result of 1 indicates a perfect fit.[5]

Figure 2-22: Growth of Key Market Demand Drivers (2012 Level = 100)



Sources: *Unison Consulting, Inc., and Federal Aviation Administration.*

Notes: *Moody's Analytics for the forecasts of U.S. real GDP per capita and Consumer Price Index (CPI), and 2023-2043 FAA Aerospace Forecasts for PSP's nominal passenger yield. Conversion of nominal passenger yield to real passenger yield is based on Moody's forecast of CPI.*

[5] The regression model with only the price variable, the income variable, the 9/11 indicator variable, and the quarterly indicator variable, already captures a high degree of variation in PSP's enplanement trends, yielding an adjusted R-squared of 0.9.

Commercial Passenger Traffic Forecast

Three forecast scenarios of annual commercial passenger enplanements from 2023 to 2042 are presented in this section. **Table 2-13** presents the forecast annual enplanements at five-year intervals over the forecast period, starting at 2027 and ending in 2042, and compares them with FAA's 2022 TAF (February 2023 publication). The corresponding forecast annual enplanements are detailed in **Figure 2-23**.

In all three scenarios, annual enplanements are expected to demonstrate robust growth over the forecast horizon. Scenario 2 (Base) is the recommended scenario and serves as the base scenario on which other scenarios are developed. Under the preferred Scenario 2 (Base), annual enplanements grow to 2.19 million enplanements by 2032 (70.0 percent above the 2019 level) and 2.88 million enplanements by 2042 (around 123.0 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 3.84 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.77 percent.

Compared to Scenario 2, Scenario 1 presents lower forecast enplanement levels and a slower pace of growth. Scenario 1 reflects a conservative outlook to anticipate downside risk factors, including a near-term recession in 2024, upward inflationary pressures, and dampened long-term economic growth. Under Scenario 2 (Low), annual enplanements grow to 2.01 million enplanements by 2032 (56.0 percent above the 2019 level) and 2.54 million enplanements by 2042 (97.5 percent above the 2019 level). The 2022-2032 compounded annual growth rate is 2.96 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.39 percent.

Scenario 3 (High) presents the forecast associated with an optimistic economic outlook, including faster economic growth and lower inflationary pressures resulting in faster declines in real passenger yields. It also considers the expert input from Air Service Development consultants and the Airport regarding PSP's air service development initiatives and objectives. The initiatives include the conversion of current seasonal service into year-round service, the addition of new seasonal and year-round service, and the introduction of long-haul international flights to Europe. Annual enplanements are projected to be around 2.36 million in 2032 (82.9 percent above the 2019 level) and 3.22 million in 2042 (149.7 percent above the 2019 level). The 2022-2032 compounded annual growth rate is 4.61 percent, and the 2032-2042 compounded annual growth rate is projected to be 3.16 percent.

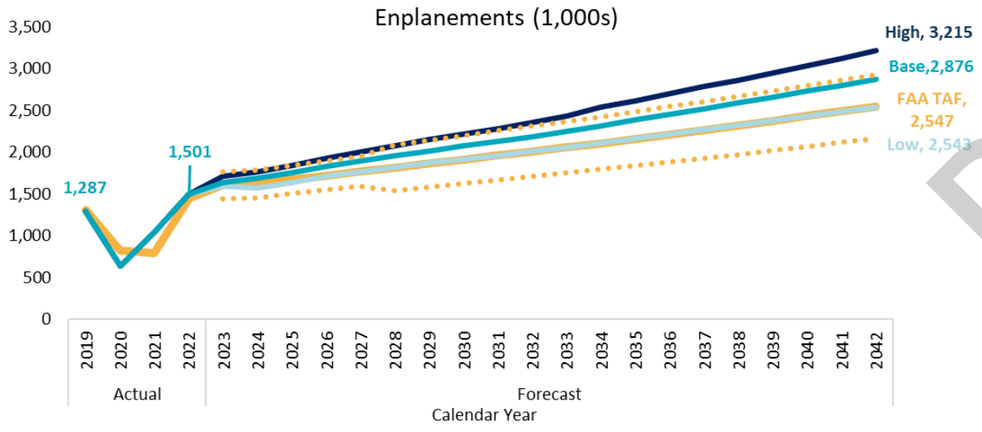
Table 2-13: Forecast Annual Commercial Enplanements by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Enplanements (1,000)													
Scenario 1 (Low)	1,287	632	1,048	1,501	1,768	2,009	2,269	2,543	5.24%	2.96%	2.39%	156.0%	197.5%
Scenario 2 (Base)	1,287	632	1,048	1,501	1,891	2,188	2,522	2,876	5.24%	3.84%	2.77%	170.0%	223.4%
Scenario 3 (High)	1,287	632	1,048	1,501	2,001	2,355	2,784	3,215	5.24%	4.61%	3.16%	182.9%	249.7%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.36%	3.34%	2.39%	153.4%	194.3%
Percent of FAA TAF													
Scenario 1 (Low)	98.2%	76.7%	132.2%	103.7%	100.1%	99.9%	100.1%	99.8%					
Scenario 2 (Base)	98.2%	76.7%	132.2%	103.7%	107.0%	108.8%	111.2%	112.9%					
Scenario 3 (High)	98.2%	76.7%	132.2%	103.7%	113.3%	117.1%	122.8%	126.2%					

Sources: *Historical data from Airport records, forecasts by Unison Consulting, Inc., and Federal Aviation Administration Terminal Area Forecasts as of February 2023.*

Note: *Terminal Area Forecasts data is on federal fiscal year ending in September.*

Figure 2-23: Forecast Annual Commercial Enplanements by Calendar Year



Sources: *Historical data from Airport records, forecasts by Unison Consulting, Inc., and Federal Aviation Administration Terminal Area Forecasts as of February 2023.*

Notes: *Terminal Area Forecasts data is on federal fiscal year ending in September. Dashed lines indicate the range in which the FAA consider the forecasts to be consistent with the 2022 Terminal Area Forecast for PSP.*

Table 2-14 presents a summary of the forecast commercial aircraft operations (departures and arrivals) at five-year intervals over the forecast period, starting in 2027 and ending in 2042. The corresponding forecast trends for annual commercial passenger aircraft operations are presented in **Figure 2-24**. Over the long run, aircraft operations, generally, grow at a slower pace than enplanements due to the increases in average seats per flight and improvements in boarding load factors.

Scenario 1 (Low) projects annual aircraft operations will eventually reach 48,779 operations in 2042 (67.6 percent above the 2019 level). The 2019-2022 compounded annual growth rate was 3.76 percent, the 2022-2032 compounded annual growth rate is projected to be 2.05 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.27 percent.

Scenario 2 (Base) projects annual aircraft operations will eventually reach 54,305 operations in 2042 (86.6 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 2.60 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.75 percent.

Scenario 3 (High) projects annual aircraft operations will eventually reach 59,014 operations in 2042 (102.8 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 3.03 percent, and the 2032-2042 compounded annual growth rate is projected to be 3.12 percent.

With the increase in aircraft operations, air cargo is expected to rise at PSP. As PSP's air cargo is comprised mostly of belly cargo from Alaska Airlines, the forecast assumes that PSP's air cargo grows with the number of Alaska's aircraft operations at the Airport. By 2042, air cargo at PSP is expected to grow to 348.1 short tons in the Low scenario (60.8 percent above the 2019 level), 370.2 short tons in the Base scenario (71.1 percent above the 2019 level), and 397.4 short tons (83.6 percent above the 2019 level). **Table 2-15** and **Figure 2-25** summarize forecasted commercial aircraft cargo tonnage.

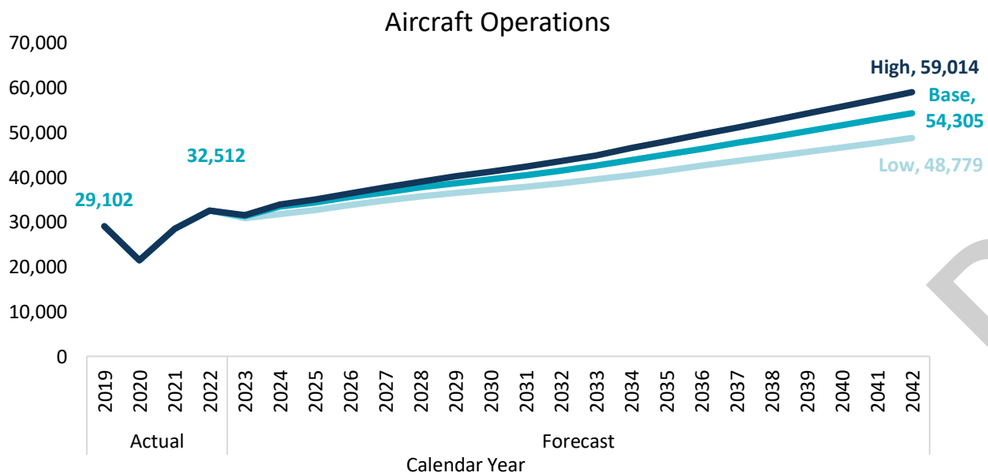
Table 2-14: Forecast Annual Commercial Passenger Aircraft Operations by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Aircraft Operations													
Scenario 1 (Low)	29,102	21,458	28,462	32,512	34,781	38,693	43,578	48,779	3.76%	2.05%	2.27%	133.0%	167.6%
Scenario 2 (Base)	29,102	21,458	28,462	32,512	36,618	41,483	47,665	54,305	3.76%	2.60%	2.75%	142.5%	186.6%
Scnario 3 (High)	29,102	21,458	28,462	32,512	37,760	43,587	51,072	59,014	3.76%	3.03%	3.12%	149.8%	202.8%
Percent of Scenario 2 (Base)													
Scenario 1 (Low)	100.0%	100.0%	100.0%	100.0%	95.0%	93.3%	91.4%	89.8%					
Scenario 3 (High)	100.0%	100.0%	100.0%	100.0%	103.1%	105.1%	107.1%	108.7%					

Sources: *Historical data from Airport record, OAG schedules, and forecasts by Unison Consulting, Inc.*

Notes: *Historical data are based on OAG schedules and do not include nonscheduled operations. They could overestimate the actual aircraft operations in 2020 due to elevated flight cancellations during the COVID-19 pandemic.*

Figure 2-24: Forecast Annual Commercial Passenger Aircraft Operations by Calendar Year



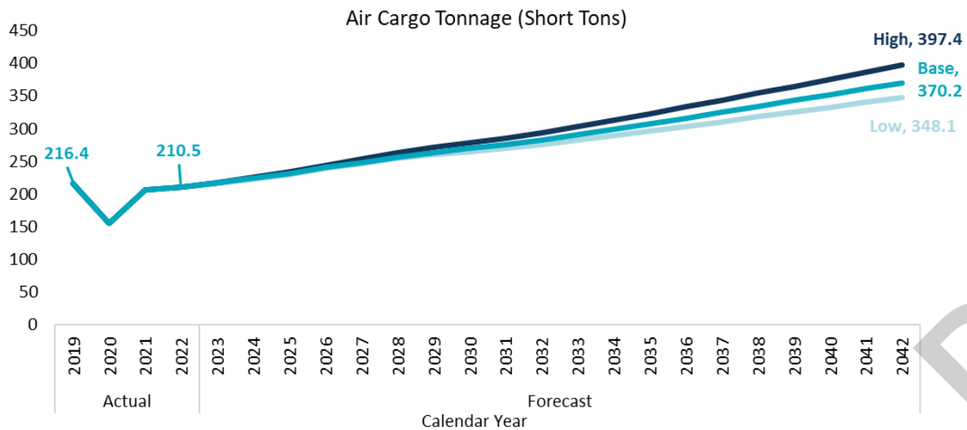
Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

Table 2-15: Forecast Annual Commercial Passenger Aircraft Cargo (Short Tons) by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Cargo Tonnage (Short Tons)													
Scenario 1 (Low)	216.4	154.9	205.9	210.5	246.9	275.9	310.9	348.1	-0.91%	2.74%	2.35%	127.5%	160.8%
Scenario 2 (Base)	216.4	154.9	205.9	210.5	248.4	282.7	324.9	370.2	-0.91%	2.99%	2.74%	130.6%	171.1%
Scenario 3 (High)	216.4	154.9	205.9	210.5	253.2	293.9	343.5	397.4	-0.91%	3.39%	3.06%	135.8%	183.6%
Percent of Base Scenario													
Scenario 1 (Low)	100.0%	100.0%	100.0%	100.0%	99.4%	97.6%	95.7%	94.0%					
Scenario 3 (High)	100.0%	100.0%	100.0%	100.0%	102.0%	104.0%	105.7%	107.3%					

Sources: *Historical data from Airport records, OAG schedule, and forecasts by Unison Consulting, Inc.*

Figure 2-25: Forecast Annual Commercial Passenger Aircraft Cargo (Short Tons) by Calendar Year

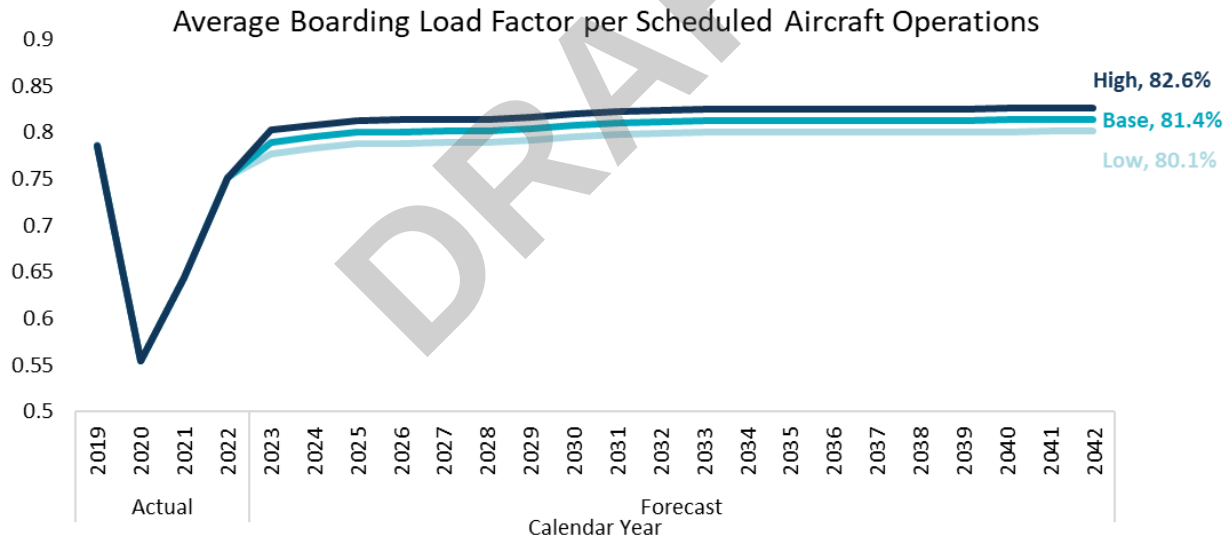


Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

Projections of aircraft operations are derived from forecast enplanements, along with projections of aircraft fleet mix, seats per aircraft operation, and boarding load factors at the airline level. Specifically, forecast enplanements and average boarding load factor determine the number of seats needed to accommodate forecast enplanements. The forecast number of seats and seats per aircraft operation determine the number of aircraft operations. The projected trends in boarding load factors follow the projected industry trends for the 2023-2043 FAA Aerospace Forecasts, rising slightly throughout the forecast horizon. Projections of the average number of seats per aircraft operation are derived from the projections of airlines' fleet composition.

As airlines recover from the pandemic and restore flight operations, boarding load factors, which fell sharply during the pandemic, are projected to return to pre-COVID levels and continue to increase at diminishing rates thereafter. Over the long run, the average boarding load factor per aircraft operation is expected to rise above the 2019 level of 78.6 percent. It is expected to converge to 80.1 percent in Scenario 1 (Low), 81.4 percent in Scenario 2 (Base), and 82.6 percent in Scenario 3 (High). **Figure 2-26** presents the trends in average boarding load factor per scheduled aircraft operation.

Figure 2-26: Scheduled Commercial Passenger Service Average Boarding Load Factor per Aircraft Operation



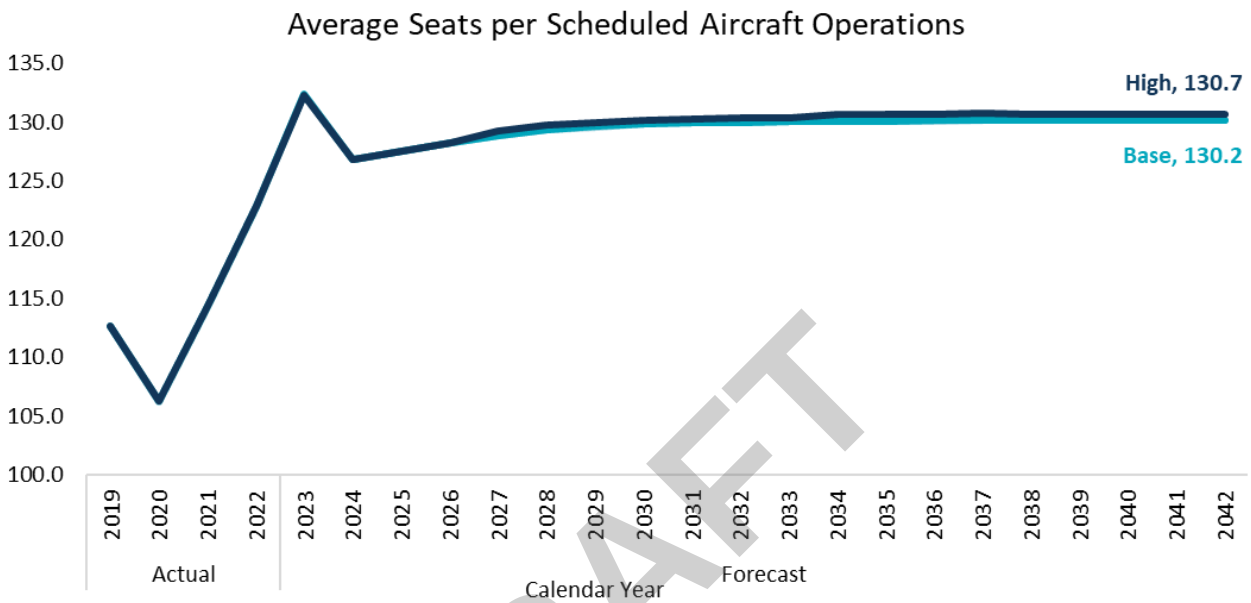
Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

The number of seats per aircraft operation is also projected to increase over time as airlines renew their depreciated fleets with larger aircraft—a process known as fleet up-gauging.[6] The pandemic has accelerated fleet up-gauging as airlines retire older aircraft and replace them with newer aircraft models that are not only more fuel efficient but also with higher seat capacity. These industry-level changes are reflected in the forecast fleet composition at PSP.

[6] Fleet up-gauging was a common strategy among airlines following the Great Recession as a way to reduce maintenance cost and increase operation efficiency.

Average seat capacity per operation is similar between the Base and Low scenarios and is projected to increase gradually from 126.8 in 2024 to 130.2 in 2042. Under the High scenario, the average seat capacity is expected to be higher with the introduction of widebody jets, rising to 130.7 by the end of 2042. **Figure 2-27** presents the trends in average seats per scheduled aircraft operations.

Figure 2-27: Scheduled Commercial Passenger Service Average Seats per Aircraft Operation



Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

Note: *The figure does not include data from the Low scenario, which is similar to the Base scenario and converges to 130.1 average seats per scheduled aircraft operations by 2042.*

Table 2-16 summarizes the composition of scheduled commercial passenger operations by equipment group. In 2022, the two primary equipment groups at the Airport were narrowbody jets (18,774 operations and 57.7 percent of total operations) and regional jets (13,738 operations and 42.3 percent of total operations). In all three scenarios, the share of operations performed by narrowbody jets is expected to grow to around 62 percent by the end of 2042, with the share of operations performed by regional jets fall to around 38 percent. In the High scenario, the share of operations performed by widebody jet is expected to be around 0.4-0.7 percent beginning in 2027.

Table 2-16: Scheduled Commercial Passenger Operations by Equipment Group

	Actual				Scenario 1 (Low)				Scenario 2 (Base)				Scenario 3 (High)			
	2019	2020	2021	2022	2027	2032	2037	2042	2027	2032	2037	2042	2027	2032	2037	2042
Passenger Airline Fleet Composition																
Narrowbody Jet	14,938	9,754	14,300	18,774	21,508	23,928	26,955	30,177	22,641	25,650	29,480	33,591	23,221	26,823	31,347	36,261
Regional Jet	14,164	11,192	13,988	13,738	13,273	14,765	16,623	18,602	13,977	15,833	18,185	20,714	14,365	16,591	19,378	22,406
Turboprop Jet	0	512	174	0	0	0	0	0	0	0	0	0	0	0	0	0
Widebody Jet	0	0	0	0	0	0	0	0	0	0	0	0	173	173	347	347
Total	**29,102**	**21,458**	**28,462**	**32,512**	**34,781**	**38,693**	**43,578**	**48,779**	**36,618**	**41,483**	**47,665**	**54,305**	**37,760**	**43,587**	**51,072**	**59,014**
Percentage of Total Aircraft Operations																
Narrowbody Jet	51.3%	45.5%	50.2%	57.7%	61.8%	61.8%	61.9%	61.9%	61.8%	61.8%	61.8%	61.9%	61.5%	61.5%	61.4%	61.4%
Regional Jet	48.7%	52.2%	49.1%	42.3%	38.2%	38.2%	38.1%	38.1%	38.2%	38.2%	38.2%	38.1%	38.0%	38.1%	37.9%	38.0%
Turboprop Jet	0.0%	2.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Widebody Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.4%	0.7%	0.6%

Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

Table 2-17 decomposes further the projected distribution of commercial passenger aircraft operations by aircraft type (fleet mix). Fleet mix projections are developed at the airline level and are aggregated here for ease of interpretation. They determine the annual average number of seats per aircraft operation, one of the measures that link forecast enplanements to forecast aircraft operations.

Fleet mix projections reflect recent and planned changes in individual airline fleets. Aircraft retirement and replacement consider the composition of each airline's fleet, expected new aircraft deliveries, planned new purchases, average age of specific aircraft types, and the assumption of a 25-year depreciation period. Retired aircraft are replaced by newer aircraft closest in seat capacity (gauge). For instance, A320neo, A321neo, and B737 MAX are expected to gradually replace the aging A320, A321, and B737 fleets, respectively.[7] Regardless of age, aircraft models expected to remain in production over the forecast horizon are retained, assuming they will be replaced by future deliveries of the same model.

When fully depreciated aircraft have no same-model replacements, they are replaced with newer models closest in seat capacity. For instance, 50-seat regional jets are replaced with 76-seat regional jets. In these instances, the forecast assumes that airlines up-gauge, raising the annual average number of seats per aircraft operation, and thus reducing the number of projected annual operations.

Table 2-18 presents estimates of commercial passenger aircraft operations (arrivals and departures) during the peak month (March), the peak month average day (PMAD), and the PMAD peak hour.

[7] Excepted replacement aircraft and timeframes are based on analysis of annual reports by airlines and aircraft manufacturers.

Table 2-17: Scheduled Commercial Passenger Operations by Airline Fleet Composition

	Actual				Scenario 1 (Low)				Scenario 2 (Base)				Scenario 3 (High)			
Aircraft Name	**2019**	**2020**	**2021**	**2022**	**2027**	**2032**	**2037**	**2042**	**2027**	**2032**	**2037**	**2042**	**2027**	**2032**	**2037**	**2042**
Domestic	**25,542**	**19,958**	**27,622**	**29,980**	**31,511**	**35,050**	**38,913**	**43,135**	**33,222**	**37,689**	**42,754**	**48,298**	**34,106**	**39,473**	**45,565**	**52,284**
Airbus A220-100	0	0	190	316	355	397	444	493	373	426	486	551	383	445	518	596
Airbus A220-300	0	0	0	0	155	177	197	220	163	189	216	245	167	198	230	265
Airbus A318/319/320/321	206	112	20	8	3	0	0	0	3	0	0	0	3	0	0	0
Airbus A319	1,862	1,974	1,714	1,242	329	368	411	459	345	393	449	510	353	410	477	551
Airbus A320	3,336	1,160	848	1,662	292	165	184	206	307	178	204	232	318	192	224	258
Airbus A320neo	0	0	0	0	436	486	544	607	461	524	599	681	474	550	640	740
Airbus A321	294	68	364	920	682	381	2	3	721	411	2	3	742	432	3	3
Airbus A321-200neo	0	0	0	0	451	821	1,087	1,360	471	875	1,186	1,512	482	912	1,258	1,630
Airbus A321neo	2,358	1,232	1,934	1,602	1,463	2,006	2,674	2,983	1,543	2,159	2,941	3,343	1,586	2,264	3,140	3,625
Boeing 717-200	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-700	312	20	306	1,230	1,032	422	474	528	1,085	451	517	588	1,108	468	547	631
Boeing 737-800	1,420	1,714	4,744	6,022	6,105	3,875	1,749	655	6,437	4,163	1,915	725	6,589	4,344	2,030	778
Boeing 737-900	1,580	1,884	3,280	2,962	1,646	1,187	591	0	1,736	1,277	650	0	1,786	1,340	694	0
Boeing 737MAX 7	0	0	0	0	821	1,621	1,743	1,895	866	1,744	1,916	2,123	886	1,819	2,033	2,289
Boeing 737MAX 8	0	0	60	104	2,993	6,103	9,117	11,265	3,158	6,568	10,027	12,625	3,237	6,867	10,665	13,637
Boeing 737MAX 9	0	0	0	174	1,438	2,177	3,027	3,885	1,517	2,343	3,329	4,355	1,561	2,460	3,556	4,725
Boeing 757	0	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canadair Regional Jet	3,302	1,974	1,990	1,788	282	0	0	0	297	0	0	0	305	0	0	0
Canadair Regional Jet 700	2,844	2,412	3,222	2,536	1,014	0	0	0	1,070	0	0	0	1,100	0	0	0
Canadair Regional Jet 900	3,314	1,158	982	442	316	156	0	0	334	169	0	0	344	177	0	0
Embraer 175	4,494	5,428	7,794	8,810	11,698	14,710	16,668	18,578	12,335	15,821	18,317	20,806	12,683	16,594	19,550	22,556
Embraer RJ 135/140/145	210	220	0	162	0	0	0	0	0	0	0	0	0	0	0	0
Pilatus PC-12	0	512	174	0	0	0	0	0	0	0	0	0	0	0	0	0
International	**3,560**	**1,500**	**840**	**2,532**	**3,479**	**3,814**	**4,282**	**4,775**	**3,662**	**4,094**	**4,696**	**5,337**	**3,939**	**4,467**	**5,358**	**6,132**
Airbus A319	182	216	0	38	19	0	0	0	20	0	0	0	20	0	0	0
Airbus A320	128	68	0	4	2	0	0	0	2	0	0	0	2	0	0	0
Airbus A321	26	12	0	14	50	77	87	97	52	82	94	107	53	85	99	115
Boeing 737-400	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-600	204	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-700	1,552	742	500	1,478	969	0	0	0	1,024	0	0	0	1,056	0	0	0
Boeing 737-800	1,082	408	10	60	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737MAX 8	368	0	330	938	2,439	3,736	4,195	4,678	2,564	4,012	4,602	5,230	2,634	4,208	4,912	5,670
Boeing 787-800	0	0	0	0	0	0	0	0	0	0	0	0	173	173	347	347
Total	**29,102**	**21,458**	**28,462**	**32,512**	**34,990**	**38,864**	**43,194**	**47,910**	**36,884**	**41,783**	**47,450**	**53,634**	**38,045**	**43,939**	**50,923**	**58,415**

Source: *Unison Consulting, Inc.*

Note: *Fleet detail by airline is available.*

Table 2-18: Peak Month Average Day Peak Hour Commercial Passenger Aircraft Operations

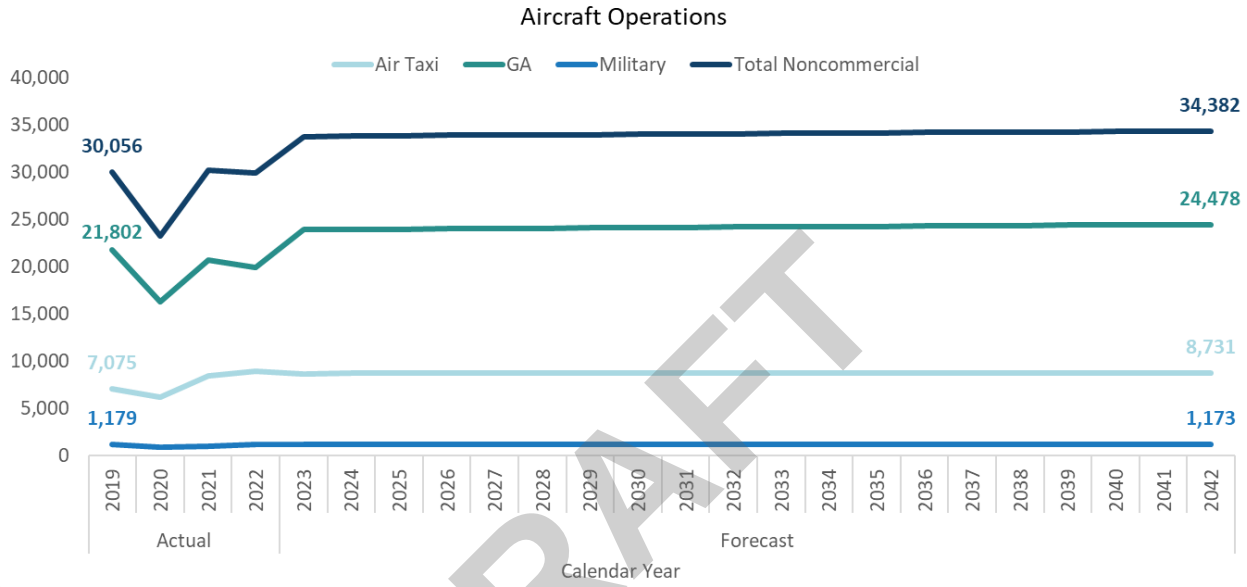
	Actual	Forecast			
	2022	2027	2032	2037	2042
Scenario 1 (Low)					
Annual Operations	32,512	34,781	38,693	43,578	48,779
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	3,995	4,444	5,005	5,603
Peak Month Average Day (PMAD) Operations	120	129	143	161	181
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	573	638	718	804
PMAD Average Peak Hour Operations	17	18	21	23	26
Scenario 2 (Base)					
Annual Operations	32,512	36,618	41,483	47,665	54,305
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	4,206	4,765	5,475	6,237
Peak Month Average Day (PMAD) Operations	120	136	154	177	201
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	604	684	786	895
PMAD Average Peak Hour Operations	17	19	22	25	29
Scenario 3 (High)					
Annual Operations	32,512	37,760	43,587	51,072	59,014
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	4,337	5,006	5,866	6,778
Peak Month Average Day (PMAD) Operations	120	140	161	189	219
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	622	718	842	973
PMAD Average Peak Hour Operations	17	20	23	27	31

Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

NONCOMMERCIAL AVIATION ACTIVITY – FORECASTS

Figure 2-28 summarizes the forecasts for GA, military, and air taxi operations. Overall, total noncommercial aircraft operations, including air taxi and military aircraft operations, are expected to stay stable over the forecast period. Based aircraft (not shown) are expected to increase by 2 annually from 76 in 2023 (Airport Data and Information Portal, accessed in March 2023) to 114 by 2042.

Figure 2-28: Forecast Noncommercial Aircraft Operations by Calendar Year



Sources: *2022-2042 FAA Terminal Area Forecasts, Airport Data and Information Portal (ADIP), and forecasts by Unison Consulting, Inc.*

Notes: *Based aircraft, which is not shown, is expected to increase from 76 in 2023 to 114 in 2042.*

FORECAST SUMMARY AND COMPARISON WITH TAF

Table 2-19, **Table 2-20**, and **Table 2-21** summarize the forecasts of air traffic measures for commercial passenger service and noncommercial aviation activity for 2027, 2032, 2037, and 2042 and compare the totals with FAA's TAF as of February 2023.

Under Scenario 1 (Low), the total enplanements are similar to the FAA TAF through 2042. The forecast total aircraft operations are 2 percent lower in 2027, 4 percent lower in 2032 and 2037, and 5 percent lower in 2042. Scenario 1 (Low) is recommended for financial planning sensitivity analysis.

Under Scenario 2 (Base), relative to the TAF, the forecast total enplanements are 7 percent higher in 2027, 9 percent higher in 2032, 11 percent higher in 2037, and 13 percent higher in 2042. The forecast total aircraft operations are similar to the FAA TAF forecasts in 2027 and 2032 and around 1 percent higher in 2037 and 2042. Scenario 2 (Base) is the recommended Master Plan base forecast scenario for FAA approval.

Under Scenario 3 (High), relative to the TAF, the forecast total enplanements are 13 percent higher in 2027, 17 percent higher in 2032, 23 percent higher in 2037, and 26 percent higher in 2042. The forecast total aircraft operations are 3 percent higher in 2027 and 2032, 5 percent higher in 2037, and 7 percent higher in 2042. Scenario 3 (High) is recommended as the high scenario for terminal planning.

The based aircraft forecasts are the same in all three scenarios. They are lower than the TAF mainly because the actual number of based aircraft at PSP in 2023 is significantly lower than predicted in the TAF (69 actual versus 84 predicted by the TAF). The based aircraft forecasts are 9 percent lower in 2027, 8 percent lower in 2032, 7 percent lower in 2037 and 2042.

Table 2-19: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 1 (Low)

Scenario 1 (Low)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	1,768	2,009	2,269	2,543	5.2%	3.0%	2.4%	156.0%	197.5%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	100.1%	99.9%	100.1%	99.8%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	34,781	38,693	43,578	48,779	3.8%	1.8%	2.3%	133.0%	167.6%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**68,723**	**72,784**	**77,815**	**83,160**	**1.8%**	**1.5%**	**1.3%**	**123.0%**	**140.6%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	98.2%	96.4%	95.8%	95.0%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is based on federal fiscal year ending in September.*

Table 2-20: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 2 (Base)

Scenario 2 (Base)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	1,891	2,188	2,522	2,876	5.2%	3.8%	2.8%	170.0%	223.4%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	107.0%	108.8%	111.2%	112.9%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	36,618	41,483	47,665	54,305	3.8%	2.5%	2.7%	142.5%	186.6%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**70,561**	**75,575**	**81,902**	**88,687**	**1.8%**	**1.9%**	**1.6%**	**127.8%**	**149.9%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	100.9%	100.1%	100.8%	101.4%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is based on federal fiscal year ending in September.*

Table 2-21: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 3 (High)

Scenario 3 (High)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	2,001	2,355	2,784	3,215	5.2%	4.6%	3.2%	182.9%	249.7%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	113.3%	117.1%	122.8%	126.2%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	37,760	43,587	51,072	59,014	3.8%	3.0%	3.1%	149.8%	202.8%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**71,702**	**77,679**	**85,309**	**93,395**	**1.8%**	**2.2%**	**1.9%**	**131.3%**	**157.9%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	102.5%	102.9%	105.0%	106.7%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is on federal fiscal year ending in September.*