



PAE Master Plan

Chapter 3 | Forecast – Executive Summary

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PREPARED FOR
Snohomish County

Aviation Forecasts

This chapter of the Master Plan provides forecasts of airport activity for Paine Field Airport (PAE). Forecasting provides an airport with a projection of the magnitude of growth that can be expected over a 20-year forecast period. The forecasts will help PAE determine existing and planned future facility needs based on airport activity level projections. The forecasts will be used to adequately plan, size, and phase the development of future facilities to meet future projected growth. Forecasts attempt to develop a realistic estimate of future changes. When conditions dramatically change, forecasts should be reviewed and updated.

To develop aviation forecasts, a technical review has been completed using several methods to help quantify the potential aviation activity over the next 20 years. The forecasts for this Airport Master Plan study were prepared by Landrum and Brown.

The passenger activity and passenger aircraft operations forecast will be different as compared to most forecasts. This is because commercial passenger air service only started at PAE in March 2019 and there is little historical activity. Because of this, we reviewed more closely the broader Seattle economy and air service market. This included benchmarking the Seattle Metropolitan Statistical Area (MSA) and air service market versus other similarly sized MSAs to gauge the relative strength of the Seattle economy and subsequently the air service market. The Air Service Area which is defined as the five-county area of Island, King, Kitsap, Skagit and Snohomish counties was reviewed. The Air Service Area is the region mostly likely to use PAE, although even within this region, it is expected that most of the travel demand will come from Snohomish and northern King County. Because of this, the PAE Catchment Area was used to develop the passenger activity forecast. This area is defined as a 15-mile radius around PAE. This Catchment Area's air travel demand was benchmarked against other "secondary airports" within multi-airport cities to generate passenger activity forecasts.

In addition, Seattle-Tacoma International Airport (SEA) will likely not be able to supply adequate capacity to meet passenger demand sometime in the next 20 years. At some point this could impact PAE as an outlet for this unmet passenger demand.

1. FAA Forecast Review Criteria

Forecasts developed for airport master plans and/or federal grants must be approved by the Federal Aviation Administration (FAA). It is the FAA's policy, listed in Advisory Circular 150/5070-6B, *Airport Master Plans*, that FAA approval of forecasts at non-hub airports with commercial service should be consistent with the Terminal Area Forecasts (TAF). Master plan forecasts for operations, based aircraft and passenger volumes are consistent with the TAF if they meet the following criteria:

- Forecasts differ by less than 10% in the five-year forecast and by less than 15% in the 10-year period, or
- Forecasts do not affect the timing or scale of an airport project, or
- Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems*.

Furthermore, FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) Document Information*, states forecasts should be:

- Realistic
- Based on the latest available data

- Reflect the current conditions at the airport
- Supported by information in the study
- Provide an adequate justification for the airport planning and development

The TAF model used for this report is from the 2021 FAA TAF that was made available in May 2021. This is the latest data available when the forecasting effort was conducted for this airport master plan.

2. PAE Commercial Passenger Activity Forecast (2021-40)

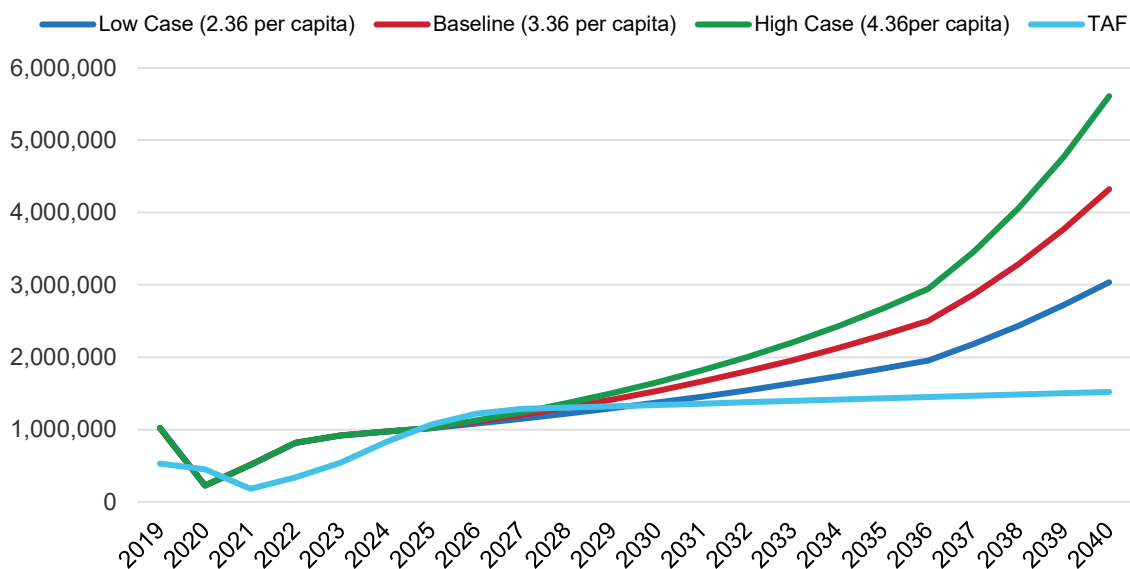
The passenger forecasts in this section assume that PAE primarily relies on traffic from its core catchment area of 15 miles. The key assumptions include:

- PAE will recover back to 2019 passenger levels in 2025.
- Over the subsequent fifteen years, PAE will capture shares of air travel demand from its catchment area consistent with the experience of other secondary U.S. airports. This assumes that air travel will gravitate to the airport that is more convenient and that offers air service at an equitable air fare relative to SEA.
- Underlying economic conditions and primarily population growth of the catchment area will drive demand in the future.
- SEA will begin to experience unmet passenger demand starting in 2037.

Because the forecast assumes air travel demand from the region will return to 2019 levels in 2025, the baseline year is 2025 and growth rates start after that year.

The forecasted passenger results are presented in **Exhibit 3-25** (Exhibit and table numbers are based on the same numbering system as the main document.). All forecasts assumed the same ramp up from 2021 to 2024, where passenger traffic would be at 50% of 2019 levels in 2021, 80% in 2022, 90% in 2023 and 95% in 2024 before getting back to 2019 levels in 2025.

Exhibit 3-25 PAE Passenger Forecast Ranges



Source: Landrum & Brown analysis

The baseline forecast is 4.3 million total passengers by 2040. This translates to 54% of the forecasted catchment area bookings, which is consistent with the experience at other secondary airports. This forecast assumes total passengers per capita reaches 3.36 by 2040. This compares to the average of secondary airports in the U.S. Over the 15-year period (2040 vs 2025), passenger volume will grow at a compound annual growth rate (CAGR) of 10.1%. The CAGR is 7.1% when comparing 2040 to 2019.

3. Forecast Summary

Table 3-29 summarizes the key aspects of the traffic forecasts. The Compound Annual Growth Rates are all relative to CY 2019.

Forecast Summary

Paine Field (PAE) is forecasted to generate 4.3 million total passengers by 2040

- 7.1% CAGR from 2019 to 2040
- Traffic will primarily come from Snohomish & northern King Counties
- PAE's share of Seattle's traffic is below other secondary airports in the U.S. due to PAE's catchment area having a relatively smaller population base as compared to others

PAE will experience more rapid growth in the late 2030s as estimates of unmet passenger demand at SEA due to facility constraints ramp up

- Estimated SEA unmet passenger demand ranges from 2.9 million annual passengers to 5.2 million annual passengers in 2040
- Ties relatively closely to low case and high case passenger forecasts, with baseline forecast in the middle of this range

PAE is forecasted to generate 41,506 passenger aircraft operations by 2040

- 4.4% CAGR from 2019 to 2040
- 50% of passenger aircraft operations forecasted to be on 737-900 aircraft by 2040
- Most of PAE's passenger activity will be driven by Alaska Airlines

Total operations at PAE forecasted to be 187,303 by 2040 (1.5% CAGR versus 2019)

- PAE GA activity is relatively strong due to the number of flight schools nearby
- Given that Boeing is shifting 787 Dreamliner manufacturing to Boeing's South Carolina facility, it is assumed that PAE's 787-related cargo activity ends by 2023
- A new cargo operator starts cargo service at PAE in 2023; by 2025 it is assumed that the cargo operator offers 24 - 757 freighter operations per week, split between Memphis and Oakland

Table 3-29 Forecast Summary

	2019*	2020	2025	2030	2040	CAGR vs 2019		
						2025	2030	2040
Commercial Passengers (000s)	1,022	226	1,022	1,535	4,322	0.0%	3.8%	7.1%
Operations								
Itinerant								
Passenger Air Carrier	16,660	5,342	16,660	18,741	41,506	0.0%	1.1%	4.4%
All Other Air Carrier	1,800	1,062	3,099	3,355	3,932	9.5%	5.8%	3.8%
Commuter	-	-	-	-	-	-	-	-
Air Cargo	760	422	1,248	1,248	1,248	8.6%	4.6%	2.4%
Air Taxi	1,239	1,735	1,239	1,239	1,239	0.0%	0.0%	0.0%
Total Commercial Operations	20,459	8,561	22,246	24,583	47,925	1.4%	1.7%	4.1%
General Aviation	56,966	49,337	58,057	59,168	61,445	0.3%	0.3%	0.4%
Military	395	649	535	535	535	5.2%	2.8%	1.5%
Total Itinerant Operations	77,820	58,547	80,838	84,286	109,905	0.6%	0.7%	1.7%
Local								
General Aviation	59,728	64,104	67,074	70,182	76,837	2.0%	1.5%	1.2%
Military	447	733	561	561	561	3.9%	2.1%	1.1%
Total Local Operations	60,175	64,837	67,635	70,743	77,398	2.0%	1.5%	1.2%
Total Operations	137,995	123,384	148,473	155,028	187,303	1.2%	1.1%	1.5%
Air Freight (Metric Tons)	n/a	n/a	16,000	18,280	23,860	n/a	2.7%	2.7%
Based Aircraft	476	479	502	526	575	0.9%	0.9%	0.9%
Average Aircraft Size	76	76	76	102	127	0.0%	2.7%	2.5%
Load Factor	80.7%	80.7%	80.7%	80.7%	82.0%	0.0%	0.0%	0.1%

Source: Compiled by Landrum and Brown

* Sources for 2019: [May 2021 TAF](#) for: Air Taxi, All General Aviation and Military Operations. [CY 2019 FAA Traffic Flow Management System](#) for All Other Air Carrier Operations. [CY 2019 Snohomish County Airport Statistics](#) for Air Cargo Operations. [Year-ending March 3, 2020 Snohomish County Airport Statistics](#) for Commercial Passengers and Passenger Air Carrier operations.

4. Traffic Forecast vs FAA TAF

Forecast vs TAF Summary

Baseline passenger traffic through 2025 is in-line with FAA TAF

- Assumes that industry returns to 2019 levels in 2024
- Assumes that PAE experiences a bit slower recovery period, with return to 2019 levels in 2025

2030 Passenger forecast is 14.6% above FAA TAF

- Within FAA guidelines
- FAA TAF only assumes 1.3% CAGR from 2026 to 2030 (and through remainder of forecast period)

Aircraft operations are in-line with FAA TAF forecasts

- In-part this is due to TAF forecast apparently assuming continued E-175 passenger aircraft while this forecast assumes a transition to the larger 737-900 aircraft
- Additionally, while forecasted GA activity is above TAF estimates, the forecasts are generally in-line

Table 3-33 Forecast Summary vs FAA TAF

	Year	Airport Forecast	FAA Terminal Area Forecast (TAF)	AF/TAF % Difference
Total Passengers				
Base Yr.	2019*	1,022,046	531,314	N/M
Base Yr. + 5 Years	2025	1,022,046	1,070,798	-4.6%
Base Yr. + 10 Years	2030	1,535,412	1,339,446	14.6%
Total Operations				
Base Yr.	2019*	137,995	129,496	6.6%
Base Yr. + 5 Years	2025	148,473	146,465	1.4%
Base Yr. + 10 Years	2030	155,028	153,357	1.1%
Based Aircraft				
Base Yr.	2019*	476	476	0.0%
Base Yr. + 5 Years	2025	502	493	1.8%
Base Yr. + 10 Years	2030	526	508	3.5%

Notes:

- *Passenger volume for 2019 is for the time-period year-ending March 3, 2020; this is due to Airport opening for commercial service on March 4, 2019. Source: PAE Airport records. FAA TAF Baseline year was only for 7 months of operations at PAE.
- *Passenger aircraft operations were conducted the same way (year-ending March 3, 2020); again, FAA TAF for 2019 only included 7 months of passenger aircraft operations
- *2019 figures for General Aviation, Air Taxi and Military Operations came from the May 2021 TAF. 2020 figures for these sectors were sourced from the Air Traffic Activity System (ATADS)
- *Based Aircraft take from FAA May 2021 TAF; note that the Master Airport Record (5010) showed 509 based aircraft in 2018