Chapter 3

Aviation Activity Forecasts

COVID-19 IMPACTS ON AVIATION ACTIVITY FORECASTS

This forecast was prepared the end of the second full year of the COVID-19 pandemic. The disruption of activity experienced throughout the U.S. airport system related to COVID-19 since 2020 is unprecedented and has led to significant declines in activity that are not consistent with recent historical trends. It is acknowledged that not all elements of general aviation activity have been affected equally. Some segments of personal air travel have demonstrated resilience, partly in response to the heavily impacted commercial airline industry.

Although the limits of the current industry-wide disruption have yet to be defined, it is believed that the underlying elements of demand within general aviation will remain intact until all public health constraints are fully addressed, and economic conditions gradually return to normal.

Federal Aviation Administration (FAA) forecast approval will be based in reference to the data and methodologies used and the conclusions at the time the document was prepared. However, consideration must still be given to the significant impacts of COVID-19 on aviation activity. As a result, there is lower than normal confidence in future growth projections.

FAA approval of the forecast does not provide justification to begin airport development. Justification for future projects will be made based on activity levels at the time the project is requested for development, rather than this forecast approval. Further documentation of actual activity levels reaching the planning activity levels will be needed prior to FAA participation in funding for eligible projects.

Introduction and Overview

This chapter provides updated aviation activity forecasts for Sunnyside Municipal Airport (1S5) for the twenty-year planning horizon (2021-2041). The most recent Federal Aviation Administration (FAA) approved aviation activity forecasts for the Airport were developed in the December 2008 Airport Layout Plan Update report.[1] The Airport can accommodate a full range of general aviation aircraft, including single-engine and multi-engine piston aircraft, aerial applicator aircraft, business class turboprops, small business jets and helicopters.

The forecasts presented in this chapter are consistent with the facility's current and historical role as a local general aviation airport serving the community and surrounding area. The forecasts are unconstrained and assume the City of Sunnyside will be able to make the facility improvements necessary to accommodate the anticipated demand unless specifically noted. The City will consider if any unconstrained demand will not or cannot be met through the evaluation of airport development alternatives later in the Airport Layout Plan (ALP) Report.

As noted in Chapter 2 - Existing Conditions, the 2017 Washington Aviation System Plan (WASP) defines Sunnyside Municipal Airport as "Local" airport classification. Local airports support GA activities including personal transportation, recreational flying, pilot training, and agricultural activities. Local airports are typically located outside of metropolitan areas and regional centers; they have paved primary runways; and 15 or fewer based aircraft.

1 Sunnyside Municipal Airport Layout Plan Update (Century West Engineering, 2008)

In the federal airport system, Sunnyside Municipal Airport is classified as a "Basic" general aviation airport – *2021 National Plan of Integrated Airport Systems (2021-2025)*, report to Congress. Basic airports provide a means for general aviation flying and link the community to the national airport system. Basic airports support general aviation activities such as emergency response, air ambulance service, flight training, and personal flying.

FAA Forecasting Process

The FAA provides aviation activity forecasting guidance for airport master planning projects. This guidance also applies to Airport Layout Plan Report forecast development, although the level of detail is typically reduced. *FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans*, outlines seven standard steps involved in the forecast process:

1. **Identify Aviation Activity Measures**: The level and type of aviation activities likely to impact facility needs. For general aviation, this typically includes based aircraft and operations.
2. **Previous Airport Forecasts**: May include the FAA Terminal Area Forecast (TAF), state or regional system plans, and previous master plans.
3. **Gather Data**: Determine what data are required to prepare the forecasts, identify data sources, and collect historical and forecast data.
4. **Select Forecast Methods**: There are several appropriate methodologies and techniques available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modeling, comparison with other airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgment.
5. **Apply Forecast Methods and Evaluate Results**: Prepare the actual forecasts and evaluate for reasonableness.
6. **Summarize and Document Results**: Provide supporting text and tables, as necessary.
7. **Compare Forecast Results with FAA's Terminal Area Forecast (TAF)**: Follow guidance in FAA Order 5090.5, Field Formulation of the National Plan of Integrated Airport Systems and Airport Capital Improvement Program. In part, the Order indicates that forecasts should not vary significantly (more than 10%) from the TAF. When there is a greater than 10% variance, supporting documentation should be supplied to the FAA. The aviation demand forecasts are then submitted to the FAA for their approval.

KEY ACTIVITY ELEMENTS

As noted above, general aviation airport activity forecasting focuses on two key activity segments: based aircraft and aircraft operations (takeoffs & landings). Detailed breakdowns of these activity segments include:

- Aircraft fleet mix
- Peak activity
- Distribution of local and itinerant operations
- Determination of the critical aircraft (also referred to as the design aircraft)

The critical aircraft represents the most demanding aircraft type or family of aircraft that uses an airport on a regular basis (a minimum of 500 annual takeoffs & landings). The critical aircraft is used to establish a variety of FAA design categories, which then establish design standards for airfield facilities. FAA airport design standard groupings reflect the physical requirements of specific aircraft types and sizes. Design items, such as runway length evaluations, are determined by the requirements of current/future critical aircraft. The activity forecasts also support the evaluation of several demand-based facility requirements including runway and taxiway capacity, aircraft parking, and hangar capacity.

Population and Economic Conditions

Historically, downturns in general aviation activity often occur during periods of weak economic conditions while growth typically coincides with favorable economic conditions. The historic depth of the 2008 Great Recession dramatically impacted regions and local communities and rippled throughout general aviation for several years after the official end of the recession. Following a slow economic recovery, the 10-year period of sustained economic growth leading into 2020 significantly improved conditions in general aviation including increased flight activity, sustained growth in new aircraft deliveries, particularly in the business aviation, helicopter, light sport aircraft, and kit aircraft segments. The onset of the COVID-19 pandemic in the United States in early 2020 began a period of rapidly declining economic conditions that once again disrupted civil aviation activity. The effects of the pandemic and related impacts have constrained the aviation industry over the last two years. However, signs of rebound within general aviation began to appear heading into 2021 and have been sustained despite ongoing economic challenges. This period has coincided with unprecedented levels of federal funding to facilitate economic recovery through investment in public facilities, including airports.

The FAA's current long-term Aerospace Forecast, Fiscal Years 2021-2041 was released in 2020. The forecast reflects overall strength in both the U.S. and regional economies and sustained, modest growth in aviation activity over the long-term. The 2021-2041 forecasts reflect areas of depressed general aviation activity in the near term and the assumption that general aviation will return to pre-COVID activity levels later in the forecast period, before resuming previously forecast growth. It appears that long-term growth in general aviation, although positive, may be tempered by the impacts of COVID-19 for the near future. The cumulative impacts of recent domestic and global events and conditions on civil aviation activity will be addressed in the next update of the FAA forecast in 2022 or 2023.

POPULATION

The population within an airport's service area, in broad terms, affects the type and scale of aviation facilities and services that can be supported. Changes in population often reflect broader economic conditions that may also affect airport activity. The service area for Sunnyside Municipal Airport includes the local community and extends into lower Yakima County. For forecasting aviation activity, an evaluation of population for both the City of Sunnyside and Yakima County provides a reasonable indication of trends within the Airport's service area.

Historical Population (2010-2021)

Yakima County's population has grown by about 6% (net gain of 14,869 residents) since the 2010 Census. Annual population growth between 2010 and 2021 (0.54% AAGR[2]) trailed the statewide population growth (1.32% AAGR) during this period, which is consistent for eastern Washington counties. Also worth noting, population growth in unincorporated Yakima County, which includes areas surrounding Sunnyside, averaged 0.48% AAGR over this 11-year period.

During this period, Sunnyside outpaced county-wide growth with a 6.4% overall increase (0.57% AAGR) and a net gain of 990 residents. This rate of growth is virtually identical to the 0.58% AAGR documented for Sunnyside during the 14 years since the last airport plan was completed in 2008.

The recent historical population growth rate in Sunnyside and Yakima County are comparable. For this reason, it appears that the State of Washington Office of Financial Management (OFM) long term population forecasts for Yakima County will provide a reasonable projection of future population growth trends that can be applied to the City of Sunnyside for airport layout plan evaluations. Recent historical population data and average annual growth rates for Sunnyside, Yakima County (overall and unincorporated areas), several other incorporated cities in the county, and Washington are summarized in **Table 3-1**.

2 AAGR = Average Annual Growth Rate (compounded over time)

Table 3-1: Yakima County Population Summary (Historical)

	AAGR[1]	2010	2017	2018	2019	2020	2021
Washington	1.32%	6,724,540	7,310,300	7,427,570	7,546,410	7,707,047	7,766,975
Yakima County	0.54%	243,231	253,000	254,500	255,950	256,728	258,100
Sunnyside	0.57%	15,410	16,640	16,850	17,070	16,375	16,400
Grandview	0.08%	10,862	11,170	11,180	11,200	10,910	10,960
Mabton	-0.13%	2,286	2,315	2,315	2,320	1,959	1,975
Yakima	0.64%	91,196	93,900	94,190	94,440	96,968	97,810
Unincorporated (Outside UGBs)	0.48%	83,755	87,115	87,715	88,155	88,147	88,240

Source: U.S. Census Bureau (2010, 2020); WA Office of Financial Management (OFM) Postcensal Estimates (2017-2021)
1 AAGR: 2010-2021

Forecast Population

In Washington state, the Office of Financial Management (OFM) is responsible for developing long term population forecasts to support various local and state government programs. OFM also generates postcensal estimates of population on April 1 each year to supplement available census data. OFM periodically generates 20-year population forecasts for Growth Management Act (GMA) counties for use in their comprehensive planning; the most recent GMA forecast was issued in 2017.[3] OFM also periodically prepares forecasts of Washington state population outside the GMA updates. The most recent Washington state forecast was issued in December 2021.[4]

The current Yakima County comprehensive plan (Horizon 2040) was adopted in 2017. This plan contains OFM population forecasts that were generated in 2015. The Horizon 2040 forecast (2020-2040) was based on the OFM Medium Series forecast for Yakima County and included a population distribution for 14 incorporated cities and unincorporated Yakima County. A summary of the comprehensive plan forecast (county wide and selected cities) is presented in **Table 3-2**.

Table 3-2: Yakima County Horizon 2040 (Comprehensive Plan) Population Forecast

	AAGR[1]	2020	2025	2030	2035	2040
Yakima County	0.84%	269,347	282,057	294,445	306,636	318,494
Incorporated	0.76%	172,300	179,579	186,661	193,659	200,511
Unincorporated (Outside UGBs)	0.98%	97,047	102,478	107,784	112,977	117,983
Select Cities						
Sunnyside	0.65%	17,030	17,668	18,271	18,850	19,397
Grandview	0.07%	11,762	12,239	12,695	13,137	13,558
Mabton	0.05%	2,401	2,471	2,535	2,595	2,649
Yakima	0.62%	97,493	100,993	104,288	107,433	110,387
Other Recent Forecasts						
Yakima County (2017 GMA)[2]	0.79%	262,887	274,932	287,567	298,162	307,591
Washington (2017 GMA)[2]	0.96%	7,638,415	8,085,043	8,503,178	8,894,306	9,242,022
Washington (2021 Forecast)[3]	0.83%	7,707,047	8,041,743	8,399,102	8,749,819	9,092,210

Source: Yakima County Comprehensive Plan (Horizon 2040), Adopted August 2017
1. AAGR: 2020-2040
2. Washington Office of Financial Management (OFM): 2017 GMA Forecast (County) – Medium Series
3. Washington Office of Financial Management (OFM): Forecast of the State Population, December 2021

3 State of Washington Office of Financial Management (https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/growth-management-act-county-projections/growth-management-act-population-projections-counties-2010-2040-0)
4 State of Washington Forecast of the State Population, December 2021 Forecast (Forecasting and Research Division, Office of Financial Management, December 2021)

It is noted that Yakima County's Horizon 2040 comprehensive plan was adopted prior to COVID-19 pandemic and its underlying population and economic projections do not reflect recent events. This is indicated by the most recent (April 1, 2021) OFM estimates for Sunnyside and Yakima County presented in **Table 3-1** falling below the 2020 forecast presented in **Table 3-2**. Two more recent OFM forecasts are also noted in **Table 3-2**, although only the 2021 Washington state population forecast reflects impacts related to COVID-19, which pushed down statewide average annual growth from 0.96% to 0.83% between 2020 and 2040.

Summary – Population

Despite recent disruptive events, long-term population growth for Sunnyside, Yakima County, and Washington is expected to be sustained at just less than 1% annually between 2020 and 2040. As with the historical population data, local population growth is expected to trail statewide growth slightly. The anticipated growth in local and county population is consistent with conditions favorable to growth in air traffic activity at Sunnyside Municipal Airport.

ECONOMY

Yakima County's economy is heavily influenced by agriculture and the region's economic output reflects a diverse range of production. Dan Meseek, regional labor economist with the Washington Employment Security Department (ESD) characterizes the Yakima County job market as being moderated by agriculture "in good years we grow slower than Washington state, but in the bad years we do not lose jobs as rapidly as the state." The current Yakima County profile[5] summarizes the local and regional economy, with a preliminary assessment of COVID impacts and subsequent events. According to the County profile, agriculture is the single largest employment segment in Yakima County, with health services and local government rounding out the top three segments (accounting for 55% of total employment in the county in 2020).

The Washington State Dairy Federation reports that in 2012 the Yakima Valley region supported 91 dairies and over 110,000 cows – one of the largest dairy-producing areas in the nation. Industrial processing and transportation services are critical components of the local agricultural economy. An example is Lynden Transport Industries (LTI) Sunnyside terminal that supports a wide range of food grade product transport, including fruit juices and milk. This facility is part of the company's network of trucking services, a business that uses Sunnyside Municipal Airport with company aircraft. LTI's Milky Way division, recognized as the leading milk hauler in the Pacific Northwest, supports a network of local milk producers and the recently expanded Darigold Sunnyside Plant. As reported in 2016, the Darigold plant processes nearly 9 million pounds of raw milk daily, most of it from dairies located within 30 miles.[6]

Table 3-3 summarizes the county's leading employment sectors. It is noted that agricultural-related manufacturing (food processing) accounts for just under half of total manufacturing employment in Yakima County. The economic impacts of agriculture in Yakima County are well established and this industry is a major part of the Sunnyside economy. State of Washington 2020 data indicate total employment for Yakima County was 110,800, down about 2.3% from 2019 levels. The county experienced a decline in employment during the COVID-19 pandemic, which led that sharp increase in the unemployment rate. Preliminary 2021 data indicate improvement across most industry sectors as employment levels gradually returned to pre-pandemic levels both locally and statewide.

5 Yakima County Profile, Washington Employment Security Department (April 2022)
6 Tri-Cities Area Journal of Business (https://www.tricitiesbusinessnews.com/2016/07/darigold-completes-97-million-expansion-sunnyside-plant/), July 2016.

Table 3-3: Yakima County Employment (2020)

	Number of jobs	Share of employment
Agriculture, forestry, fishing	30,767	27.8%
Health services	16,543	14.9%
Local government	13,079	11.8%
Retail trade	10,623	9.6%
Manufacturing	8,010	7.2%
All other industries	31,778	28.7%
Total	**110,800**	**100%**

Source: Washington Employment Security Department – Yakima County Profile (April 2022)

Personal Income

Yakima County trails state and national per capita income levels and has a higher level of poverty. The conditions are consistent with a seasonal agricultural economy where access to full-time year-round employment is limited. The current ESD Yakima County profile provides the following summaries related to personal income:

- Inflation-adjusted per capita income in Yakima County in 2020 was $49,099 compared to the state at $67,126 and the nation at $59,510.
- Median household income from 2016 through 2020 (in 2020 dollars) was $54,917 in Yakima County, 71.3% of the state's median household income of $77,006 and 84.5% of the United States at $64,994.
- Yakima County's poverty rate in 2020 was higher (14.8%) than the state's (9.5%) and the nation's (11.4%) poverty rates.

Unemployment

Yakima County's reliance on the agricultural economy is reflected in its distinct seasonal shifts in unemployment rates. Typically, peak unemployment levels occur in the winter and the lowest unemployment levels are found during peak summer months. A review of eleven years (pre COVID: 2009-2019) of historical unemployment data indicates an average spread of 5.12 percentage points between the high and low recorded monthly unemployment levels each year. The range within the spread is narrow and consistent with recognized seasonal patterns in the industry.

Data indicate that in the years following The Great Recession (2009-2012), both the high and low unemployment rates were elevated, and seasonal variation was reduced. The peak level of unemployment (14.4%) recorded during the COVID-19 pandemic was in April 2020, and the seasonal variation was significantly higher than normal (8.2 percentage points). The data for 2021 are consistent with the extended (pre-COVID) period for peak seasonal variation (5.0 percentage point spread), indicating some re-stabilization in the local economy. The April 2022 unemployment rate was 6.2%, down from the recent peak of 8.9% in January.

Economic Outlook

The Washington Employment Security Department (ESD) generates annual short and long-term employment forecasts by region. Yakima County is in the South-Central region, which also includes Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, and Walla Walla counties. The ESD projections show expected changes in employment by industry and occupation, current and projected employment counts, estimated growth rates and average annual openings.

The current five- and ten-year forecasts for the South-Central region are summarized in **Table 3-4**. The near-term forecast (2019-2024) reflects a net decline in employment for 2024 based on the mid-2021 update performed in the second year of the current COVID -19 pandemic. The longer-term forecast (2024-2029) shows more traditional growth, averaging just under 1% annually.

Table 3-4: South Central Region Employment Forecast By Industry (Updated July 2021)

Job Categories	Estimated employment 2019	Estimated employment 2024	Estimated employment 2029	Average annual growth rate 2019-2024	Average annual growth rate 2024-2029
TOTAL NONFARM	113,400	109,000	114,100	-0.79%	0.92%
NATURAL RESOURCES and Mining	300	300	300	0.00%	0.00%
Logging	200	200	200	0.00%	0.00%
Mining	100	100	100	0.00%	0.00%
CONSTRUCTION	5,700	5,500	5,800	-0.71%	1.07%
MANUFACTURING	11,000	10,200	10,200	-1.50%	0.00%
Durable Goods	4,600	4,300	4,200	-1.34%	-0.47%
Wood Product Manufacturing	700	700	600	0.00%	-3.04%
Nonmetallic Mineral Product Manufacturing	100	100	100	0.00%	0.00%
Primary Metal Manufacturing	0	0	0	0.00%	0.00%
Fabricated Metal Product Manufacturing	1,000	1,000	1,000	0.00%	0.00%
Machinery Manufacturing	700	600	600	-3.04%	0.00%
Aerospace Product and Parts Manufacturing	1,400	1,200	1,200	-3.04%	0.00%
Other Transportation Equipment	200	200	200	0.00%	0.00%
Other Durable Manufacturing	400	400	400	0.00%	0.00%
Non-Durable Goods	6,400	5,900	6,000	-1.61%	0.34%
Food and Beverages Manufacturing	4,100	3,900	4,000	-1.00%	0.51%
Paper Manufacturing	400	400	400	0.00%	0.00%
Printing and Related Support Activities	100	100	100	0.00%	0.00%
Other Non-Durable	1,800	1,500	1,500	-3.58%	0.00%
WHOLESALE TRADE	5,400	5,400	5,500	0.00%	0.37%
RETAIL TRADE	13,500	13,000	12,900	-0.75%	-0.15%
Food and Beverage Stores	2,900	3,000	3,000	0.68%	0.00%
Motor Vehicle and Parts Dealers	2,000	1,800	1,800	-2.09%	0.00%
Other Retail Trade	8,600	8,200	8,100	-0.95%	-0.25%
TRANSPORTATION, WAREHOUSING AND UTILITIES	4,200	4,400	4,600	0.93%	0.89%
Utilities	200	300	300	8.45%	0.00%
Transportation and Warehousing	4,000	4,100	4,300	0.50%	0.96%
INFORMATION	1,000	700	700	-6.89%	0.00%
Software Publishers	100	100	100	0.00%	0.00%
Other Information	700	500	500	-6.51%	0.00%
FINANCIAL ACTIVITES	3,300	3,200	3,300	-0.61%	0.62%
Finance and Insurance	2,100	2,000	2,100	-0.97%	0.98%
Real Estate, Rental and Leasing	1,200	1,200	1,200	0.00%	0.00%
PROFESSIONAL and BUSINESS SERVICES	5,700	5,500	6,000	-0.71%	1.76%
Professional, Scientific and Technical Services	2,200	2,200	2,400	0.00%	1.76%
Management of Companies and Enterprises	700	700	800	0.00%	2.71%
Other Professional Services	2,600	2,400	2,600	-1.59%	1.61%
Employment Services	200	200	200	0.00%	0.00%
EDUCATION and HEALTH SERVICES	20,400	21,400	23,100	0.96%	1.54%
Education Services	1,600	1,500	1,600	-1.28%	1.30%
Health Services and Social Assistance	18,800	19,900	21,500	1.14%	1.56%
LEISURE and HOSPITALITY	12,000	9,000	9,600	-5.59%	1.30%
Arts, Entertainment and Recreation	1,500	1,000	1,100	-7.79%	1.92%
Accommodation and Food Services	10,500	8,000	8,500	-5.29%	1.22%
OTHER SERVICES	3,700	3,100	3,700	-3.48%	3.60%
GOVERNMENT	27,200	27,300	28,400	0.07%	0.79%
Federal Government	1,600	1,600	1,600	0.00%	0.00%
State and Local Government Other	11,300	11,200	11,700	-0.18%	0.88%
Government Educational Services	14,300	14,500	15,100	0.28%	0.81%

Source: Washington Employment Security Department/LMEA, South-Central Region (July 2021 update)

Woods & Poole Forecasts

A review of Woods & Poole Economics, Inc., population, and economic forecasts for the region reflect similar long-term growth expectations. Woods & Poole forecasts are recognized nationally for the demographic detail provided down to the county level, with additional breakouts provided for a variety of defined place designations. The Woods & Poole 2021 State Profile Series[7] forecast for Washington state contains regional data and projections for all Combined Statistical Areas (CSAs), Metropolitan Statistical Areas (MSAs), Micropolitan Statistical Areas (MICROs), Metropolitan Divisions (MDIVs), and counties in the state. The current forecasts extend to 2050 and provide a useful comparison to shorter term projections developed by state or local government. Although some differences in data organization may exist from the forecasts noted earlier, the overall growth rates within the forecasts provide relevant evaluations of long-term economic growth for comparison. **Table 3-5** summarizes key growth rates for Yakima County from the Woods & Poole 2021-2050 forecasts. The economic data are presented in 2012 dollars, referred to as "constant" dollars, which are used to measure real change in earnings and income when inflation is considered.

Table 3-5: Yakima County – Forecast Annual Growth Rates (2021-2050)

Annual Growth Rates (2021-2050) Data Category	Average
Total Population	0.43%
Total Employment (includes farm employment)	1.02%
Total Earnings (2012 $)	1.75%
Personal Income (2012 $)	1.98%
Income Per Capita (2012 $)	1.55%
Mean Household Income (2012 $)	1.55%
Gross Regional Product (2012 $)	1.77%

Source: Woods & Poole Economics, 2021 State Profile Series (Idaho, Washington, Oregon)
2012 referenced data represents "constant" dollars used to measure real change over time when inflation is considered.

Summary – Economic Outlook

Modest population growth is expected for Yakima County during the current ALP 20-year planning horizon. Annual population growth is projected to average about 0.4% over this period, which is comparable to the historical growth experienced over the last 20 years. As with historical population trends, local growth is expected to be slower than statewide growth. Long term economic forecasts project more robust growth in terms of employment levels and measures of economic output (post-COVID-19 pandemic recovery).

The Woods & Poole 2021-2050 forecast for Yakima County highlights several key long-term indicators. The forecast projects employment growth to increase at twice the rate of population growth over the 29-year period. In addition, forecast per capita income, household income, and gross regional product outpaces employment growth over the long term. This suggests a long-term strengthening in the economy that will generate demand for services and transportation.

Data indicates that the agricultural components of the Yakima County economy will continue leading economic growth in the county. It is reasonable to assume that the influence of agriculture on activity at Sunnyside Municipal Airport will continue in the future with growth that is consistent with overall industry trends and growth within the community.

Several changes in activity experienced at the Airport since the last Airport Layout Plan (ALP) project are directly attributed to growth in key industries (agriculture, health services, and transportation). This includes private investment in hangar facilities associated a new aerial applicator business established at the Airport and an increase in transient aircraft activity associated with local hospital medevac flights and corporate operational support for a major trucking freight terminal. The ability of the Airport to accommodate a variety of business and personal travel activities and recreational aviation is a critical factor in attracting these industries to the local community.

7 2021 State Profile – Idaho, Oregon, and Washington. Copyright 2021, Woods & Poole Economics, Inc. Washington, D.C.

The anticipated growth in local population and economic output is expected to be modest during the current ALP planning period. The expected underlying growth will provide a solid foundation for generating additional air traffic demand at Sunnyside Municipal Airport that is consistent with overall expectations for the community and region.

Historical Aviation Activity

Historical activity data for Sunnyside Municipal Airport is limited to FAA Airport Record Forms (5010-1), the FAA Terminal Area Forecast (TAF), and periodic airport plans. As noted earlier in this chapter, the primary data used in general aviation airport planning includes based aircraft and annual aircraft operations. The methods used to develop these data are described below.

The two cited FAA records appear to rely on common data, although the directional relationship between the records is not always clear. The current TAF and 5010 for Sunnyside Municipal Airport have exact data (based aircraft and annual aircraft operations totals) representing current activity. The current 5010 (data for 12 months ending 12/31/2018) and TAF (2020) both report 10 based aircraft and 24,000 annual aircraft operations. The source of the annual operations totals is unknown, although it is noted that the TAF lists the same number dating back to 1994. The extended timeline of TAF historical aircraft operations data directly corresponding to the current 5010 form appears to demonstrate that the TAF was used to populate the 5010. FAA 5010 forms are periodically updated by airport sponsors with best available data and submitted to FAA for publication; the TAF is updated by FAA without a formal data verification process for airport sponsors. The inconsistencies noted above indicates that the two FAA data sets cannot be assumed to be independent indicators of activity.

The process for updating based aircraft counts has become significantly more dependable in recent years with the FAA National Based Aircraft Inventory Program that relies on airport owner visual verification and records searches. The data base allows FAA to verify reporting of “validated counts” by eliminating inactive or non-airworthy aircraft and aircraft reported by other airports.

The process for updating 5010 form aircraft operations data at non-towered airports is far more challenging. Accurately tracking aircraft operations numbers by airport management is not feasible without actual counts (e.g., air traffic control tower or other on-site traffic counts). Without actual traffic counts, airport sponsors typically interpolate/extrapolate available airport master plan forecasts, rely on the current year TAF data, or simply carry forward the existing 5010 entry. These methods are not considered highly accurate and will not be used to define baseline operations levels for the ALP Report. However, these data are summarized below for reference.

The 2008 ALP Report forecasts also concluded that available TAF operations data could not be adequately documented, and they were not used in the recommended forecast. The forecasts noted the inconsistency reflected in the TAF’s 24,000 annual operations total (unchanged since 1994) and the resulting ratio of 1,200 operations per based aircraft (OPBA) was not consistent with FAA activity expectations at small GA airports.

A recent review of Sunnyside Municipal Airport’s TAF historical data (1990 forward) indicates that the 2008 ALP Report’s updated baseline activity data was only partially incorporated into the TAF. The annual aircraft operations total (3,750) was not entered in the TAF, while the TAF’s 2007 based aircraft total (15) was updated to match the 2007 baseline for the ALP Report forecast.

The current National Based Aircraft Inventory Program (December 2021) validated count for Sunnyside Municipal Airport is 13 aircraft. This data is not yet reflected in the current 5010 or the March 2022 TAF update but is accepted as the baseline for developing updated based aircraft forecasts for the ALP. The updated aircraft operations data presented in Chapter 2 - Existing Conditions will be used as the baseline for the aviation activity forecasts.

A summary of current and historical activity data for the Airport is presented in **Figure 3-1**.

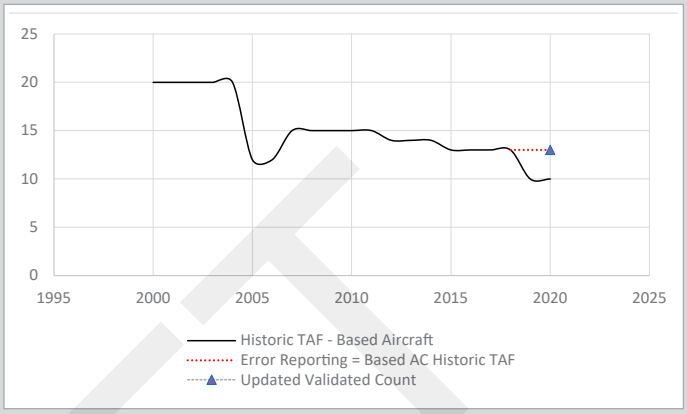
Figure: 3-1: Activity Summary - FAA TAF, FAA 5010 Airport Record Form; 2008 ALP Report

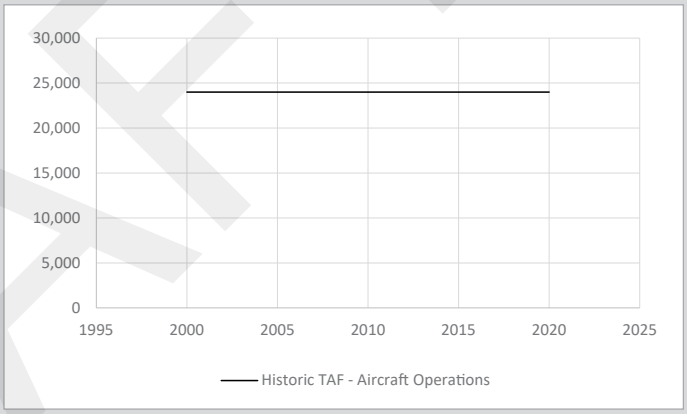
Available activity estimates for Sunnyside Municipal Airport from FAA Terminal Area Forecast (TAF), Airport Record Form (5010-1), the 2008 ALP Report, and the Airport's 2021 validated based aircraft count are summarized below.

Based Aircraft and Operations

Aircraft Type	Updated Airport Count[1] (2021)	Airport Master Record[2] (12 months ending 12/31/18)	2008 ALP Update Report[3] (2007 Baseline)
Single Engine	12	9	14
Multi Engine	1	1	1
Jet	0	0	0
Helicopter	0	0	0
Glider	0	0	0
Military	0	0	0
Ultra-Light	0	0	0
Total Based Aircraft	13	10	15
Annual Operations	**4,225**	**24,000**	**1,980**

1. www.BasedAircraft.com (Validated June, 2020)
2. Airport Master Record (5010) June 18, 2020
3. Airport Layout Plan Report – Sunnyside Municipal Airport Layout Plan Update (Final Report, December 2008, Century West Engineering)





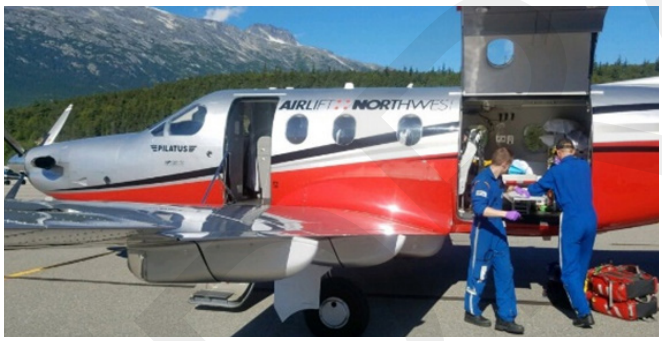
Current Aviation Activity

Updated estimates of existing based aircraft and aircraft operations (takeoffs and landings) were prepared based on airport records and data provided by individual operators at Sunnyside Municipal Airport. Aircraft takeoffs and landings are defined as operations by FAA, with a single takeoff or landing counted as one operation. A touch-and-go landing is counted as two operations since it involves both a takeoff and landing. Since air traffic counts are not available to document most flight activity at the Airport, an FAA-recommended operations per based aircraft (OPBA) formula was applied to the 2021 verified based aircraft count to approximate this activity.

FAA Order 5090.5 Formulation of the NPIAS and ACIP, suggests a methodology for non-towered airports that relies on a general formula for estimating operations by utilizing an activity ratio that is applied to based aircraft. The Order identifies a typical range of 250 to 450 OPBA for distinct types of general aviation airports depending on the airport's role in the NPIAS. Consistent with FAA NPIAS guidance, the recommended multiplier (250 OPBA) for a Basic General Aviation airport was used. In addition to the basic flight activity, three individual activity segments (medevac, aerial applicator, and regular transient corporate operator) were identified for specific evaluation based on their unique operations and the ability to obtain accurate activity data from the operators. The activity for these segments is summarized below and in **Table 3-6**. Current activity at the Airport is 13 based aircraft and 4,225 annual operations.

AERIAL AMBULANCE (MEDEVAC)

Two aerial ambulance operators (Life Flight and Air Lift Northwest) conduct most medevac flights at Sunnyside Municipal Airport. The operators provide critical patient transports from Astria Sunnyside Hospital, an Adult Trauma Level IV facility.[8] Critical patient transports are performed when life threatening conditions require emergency treatment at higher level trauma care facilities, typically located in large population centers. Life Flight and Air Lift Northwest provide close support with fixed-wing and rotor aircraft based at nearby airports in Yakima and Richland.



Source: Google Images

Currently 100% of Astria Sunnyside Hospital's medevac flights are accommodated at Sunnyside Municipal Airport. This includes fixed-wing aircraft that require a runway and helicopters (the hospital is not equipped with helipad facilities). The aircraft types typically stationed in the region include the Pilatus PC-12 (pressurized single engine turboprop) and the Agusta AW119 (single-engine turbine helicopter). All current medevac flights at Sunnyside Municipal Airport are limited to visual flight rules (VFR) weather conditions based on existing airport facilities capabilities.

Local emergency medical service (EMS) staff report the current operations level for the Pilatus PC-12 medevacs at Sunnyside Municipal Airport averages 4 flights per week. This equates to 8 operations per week and 416 annual operations. The current operations level for the medevac helicopters at the Airport averages 1 flight per week. This equates to 2 operations per week and 100 annual operations. Weekly demand levels can vary and are often higher during peak periods.

8 Trauma Level IV defined by WA. Department of Health.

It is anticipated that future demand for critical patient transports will increase as the local community and surrounding area grows. It is reasonable to assume that Sunnyside Municipal Airport will continue to accommodate fixed-wing medevac flights for Astria Sunnyside Hospital based on established service and demand levels. It also appears that the Airport will continue to support helicopter medevac flight activity for the foreseeable future. However, if helipad facilities are added at the hospital in the future, it is assumed that the majority of helicopter medevac flight activity would move to the hospital.

The Pilatus PC-12 is included in Aircraft Approach Category A (Approach Speed in landing configuration: 87 knots) and Airplane Design Group II (wingspan 53' 3"; tail height 14'). The PC-12 has a maximum takeoff weight below 12,500 pounds and is included in the small aircraft category. These design components correspond to **Airport Reference Code (ARC) A-II (Small Aircraft)**. The medevac helicopters are also included in Aircraft Approach Category A.

AERIAL APPLICATORS

Sunnyside Municipal Airport currently accommodates two locally based aerial applicators with one aircraft each. The current activity reported by local aerial applicators is 875 annual operations. Demand levels vary by season, with the heaviest periods running from spring to late fall. The flight activity generated by the two commercial operators accounts for about 20% of all activity at the Airport. The aircraft currently operated are described below.

AG Air Flying Service operates an Air Tractor 802 (AT-802A), a single engine turboprop. The AT-802A is included in Aircraft Approach Category A (Approach Speed in landing configuration: 70 knots) and Airplane Design Group II (wingspan 59' 3"; tail height 11' 1.5"). The AT-802A has a maximum takeoff weight of 16,000 pounds and is included in the large aircraft category. These design components correspond to **Airport Reference Code (ARC) A-II.**

The second locally based aerial applicator (Jorn Tronstad) operates an Air Tractor 301 (AT-301), a single engine piston engine aircraft. The AT-301 is included in Aircraft Approach Category A (Approach Speed in landing configuration: 64 knots) and Airplane Design Group I (wingspan 45' 1.25"; tail height 8' 6"). The AT-301 has a maximum takeoff weight of 7,400 pounds and is included in the small aircraft category. These design components correspond to **Airport Reference Code (ARC) A-I (Small Aircraft)**.

Based on local aerial applicator reporting, the current level of 875 annual operations at Sunnyside Municipal Airport includes 700 A-II and 175 A-I operations. The current volume of flight activity at the Airport is relatively stable and reflects market opportunities and competition among spray operators. However, it is reasonable to assume that growth in regional agricultural will contribute to increased demand for aerial applicator services during the current planning period.

BUSINESS AVIATION USERS

Sunnyside Municipal Airport accommodates a variety of business aviation users with aircraft ranging from single-engine piston aircraft to small jets. The volume of flight activity by individual users is limited to several trips per year. Since there are no definitive estimates for this activity grouping (estimated to be 100 to 200 annual operations), the transient activity is captured in the OPBA ratio applied to locally based aircraft in Table 3-6.

A transient corporate user that operates regularly at the Airport is Bering Marine Corporation, which is part of the Lynden Transport (LTI) family of businesses. Bering Marine operates a Pilatus PC-12 with an average of 3 to 4 trips to Sunnyside per month, depending on weather. This equates to 84 annual operations. The aircraft is based at Skagit Regional Airport in Burlington (163 nautical air miles, 236 road miles from Sunnyside) and is used to transport management and operations staff to LTI's Sunnyside freight terminal. The aircraft allows staff from the various locations to routinely conduct business in Sunnyside and make the roundtrip back home in a single day. The operator indicates that some planned flights to Sunnyside are cancelled, delayed, or re-routed to Yakima when local weather conditions do not permit flight in visual conditions. The addition of instrument approach and departure procedures was identified by the operator as an airport improvement that would increase their use of the Airport. As noted earlier, the Pilatus PC-12 is included in **Airport Reference Code (ARC) A-II (Small Aircraft)**.

OTHER GA AIRCRAFT ACTIVITY

Sunnyside Municipal Airport currently has 13 based aircraft, including 2 aerial applicator aircraft described earlier in this section. The remaining 11 based aircraft are privately owned non-commercial piston engine aircraft, including 10 single engine and 1 multi engine aircraft. Based on FAA methodology, annual flight activity attributed to these aircraft is captured within the 250 OPBA ratio used to approximate the overall airport activity generated by both non-duplicated based aircraft and transient users. Current flight activity generated by non-specific aircraft without operator-reported data is estimated to total 2,750 annual operations (11 x 250 OPBA). This aircraft activity includes primarily single engine and multi engine piston, turboprops, small jets, and helicopters. Most of this fixed wing activity is generated by small ADG I aircraft.

Summary – Current Activity

The current mix of air traffic at Sunnyside Municipal Airport includes users that have direct ties to the local economy and a wide range of personal and business travel and recreational aviation. Agricultural aviation is represented by two local aerial applicator tenants with based aircraft. The remaining commercial activity is generated by transient aircraft, including air ambulance flights and aircraft used for business travel. Eleven of the Airport's 13 based aircraft are used primarily for personal travel. **Table 3-6** summarizes the current level of aircraft activity for Sunnyside Municipal Airport that will be the baseline for all new aviation activity forecasts developed in the 2021-2041 ALP Report Update.

Table 3-6: Airport Activity Summary (2021)

Operator	A/C Type	ARC	Annual Operations
Aerial Applicator[1]	Air Tractor 802	A-II	700
	Air Tractor 301	A-I	175
Medevac[1]	Pilatus PC-12	A-II	416
	Agusta Westland AW119Kx	Heli	100
Corporate User 1[2]	Pilatus PC-12	A-II	84
Other Local & Transient Activity[3]	SE Piston	A-I	2,600
	ME Piston	B-I	60
	Turboprop	B-I	30
	Jet	B-II	10
	Helicopter	Heli	50
TOTAL OPS - ALL			4,225
TOTAL OPS - A-I			2,775
TOTAL OPS - B-I			90
TOTAL OPS - A-II			1,200
TOTAL OPS - B-II			10
TOTAL OPS - HELI			150
TOTAL OPS - ALL A/C			4,225
Based Aircraft			13

1. Operations counts provided by aircraft operators.
2. Bering Air Pilatus PC-12 based at BVS.
3. Operations are estimates using 250 OPBA applied to based aircraft counts and are exclusive of counts provided by operators.

Existing Aviation Activity Forecasts

Existing forecasts for Sunnyside Municipal Airport include the FAA Terminal Area Forecast (TAF), the previous ALP Report completed in 2008, and an outdated Washington aviation system plan completed in 2007. Each of these forecasts have relevancy issues that do not support valid comparisons with current activity or updated forecasts presented later in this chapter.

FAA TERMINAL AREA FORECAST

The March 2022 TAF lists 10 based aircraft and 24,000 annual operations for the Airport in its most recent historical year (2020) and maintains these numbers unchanged through 2045. The TAF baseline and projected activity data are not considered to accurately reflect current or future potential activity for the Airport. The deviations will need to be considered by FAA when the recommended ALP Report forecasts are compared to the TAF, as required by FAA. **Table 3-7** summarizes the 2022 TAF and notes the updated baseline activity, which represents 2021 activity.

Table 3-7: FAA TAF – Sunnnyside Municipal Airport 2008 ALP Report – Forecast Summary

Forecast	AAGR	2020	2025	2030	2035	2040
Based Aircraft	0.00%	10	10	10	10	10
Annual Aircraft Operations	0.00%	24,000	24,000	24,000	24,000	24,000
FAA National Based Aircraft Inventory Program	-	13*	-	-	-	-
* December 2021 Validated Count						

Source: FAA Terminal Area Forecast (1S5) Issued March 2022; National Based Aircraft Inventory Validated Based Aircraft Count, December 2021
AAGR: Average Annual Growth Rate

2008 ALP REPORT FORECASTS

The 2008 ALP Report provided forecasts for the 2007-2027 planning period. The forecast projected based aircraft to increase from 15 to 20, which represents an average annual growth rate of 1.7%. Annual aircraft operations were projected to increase from 3,750 to 6,300, which represents an average annual growth rate of 2.63%. The updated baseline data noted above can be compared to the 2022 forecast to determine current relevance. **Table 3-8** summarizes the 2008 ALP Report forecasts and notes the updated baseline activity, which represents 2021 activity.

Table 3-8: 2008 ALP Report – Forecast Summary

Forecast	AAGR	2007	2012	2017	2022	2027
Based Aircraft	1.70%	15	17	18	19	21
Annual Aircraft Operations	2.63%	3,750	4,420	4,860	5,320	6,300
2021 Baseline (Based Aircraft)	-	-	-	-	13	-
2021 Baseline (Aircraft Operations)	-	-	-	-	4,250	-

Source: Century West Engineering; AAGR: Average Annual Growth Rate

WASHINGTON STATE AVIATION SYSTEM PLAN FORECAST

The 2017 WASP does not include individual airport activity forecasts. The most recent system plan forecasts prepared for individual airports were included in the 2007 Long Term Air Transportation Study (LATS). The LATS was replaced with the 2017 WASP, although no new airport specific forecasts were included. The LATS forecasts are considered obsolete and are not currently used by WSDOT to support its system planning analyses.

Updated Aviation Activity Forecasts

Updated aviation activity forecasts developed for the ALP Report's 20-year planning period (2021-2041) are presented in this section. The updated activity forecasts use the common baseline activity data presented earlier in **Table 3-6** and provide projections in 5-year increments. A review of the preliminary based aircraft and annual aircraft operations models presented is provided at the end of this section, with recommended forecasts identified for each.

The recommended ALP Report forecasts will be compared to the TAF (APO TAF Detail Report 2020-2045, Issued March 2022) when presented to FAA for review and approval. Additional information about the TAF based aircraft and operations comparison is presented at the end of the chapter.

BASED AIRCRAFT

Three new based aircraft forecasts were developed for evaluation. The growth trends established by these models were applied to the 13 based aircraft count established for 2021 to generate 20-year forecasts.

MODIFIED FAA AEROSPACE GA FLEET MODEL

This model was developed by applying the FAA's national Aerospace Forecast[9] annual growth rates for the U.S. general aviation (GA) fleet to the current based aircraft fleet at the Airport. The FAA forecast provides projections in 5-year increments beginning with the 2021 forecast that extend to 2041. The FAA forecast provides fleet projections by individual GA aircraft types ranging from single-engine piston to jet aircraft. The underlying annual forecast growth rates were then applied with specific fleet adjustments to Sunnyside Municipal Airport.

The FAA forecast projects that the overall GA fleet will grow at 0.1% annually over the next 20 years, but the fixed wing piston fleet will shrink, with an average annual decline of -0.9% for single-engine aircraft and -0.4% for multi-engine aircraft. The general expectation is the GA fleet of aging conventional piston aircraft will continue to decline due to fleet attrition and the comparatively slow rate of new aircraft manufacturing needed to replenish these aircraft types in the fleet. The forecast projects the number of light sport aircraft (LSA) and experimental aircraft in the fleet will grow, averaging 4.00% and 1.4% annually. The number of turboprops, jets, and helicopters in the fleet are all projected to increase at rates ranging from 0.6 to 2.3% per year through 2041.

The model reflects anticipated shifts in the GA fleet that includes increased use of LSA and/or experimental aircraft, as a replacement for conventional (legacy) single-engine piston aircraft. LSAs and experimental aircraft are cheaper to buy, own and operate, and are rapidly growing in popularity nationwide at a time where factory production of single-engine piston aircraft remains low.

The model assumes that the loss of conventional single-engine piston aircraft at the Airport will occur in line with broader FAA fleet expectations. However, based on local market conditions, the model assumes that these aircraft will be replaced on a 1:1 basis with LSA or experimental aircraft, effectively offsetting the anticipated decline in older aircraft. Although this assessment is more optimistic than the FAA's national forecast, it reflects the Airport's ability to attract existing conventional aircraft and newly manufactured aircraft within its service area, consistent with the long-term economic outlook for the region.

The Modified FAA Aerospace GA Fleet Model projects an **average annual growth rate of 0.72%**. When applied to the current based aircraft count, this model predicts an increase from **13 to 15 aircraft** at Sunnyside Municipal Airport by 2041. This represents an increase of 2 aircraft (15%) over the planning period. This model is consistent with long-term FAA forecast assumptions for the general aviation fleet segments that regularly operate at Sunnyside Municipal Airport.

9 FAA Aerospace Forecasts Fiscal Years 2021-2041 (Table 28).

YAKIMA COUNTY PER CAPITA INCOME/LONG TERM EMPLOYMENT FORECAST

Woods & Poole Economics, Inc. forecasts[10] of per capita income for Yakima County, adjacent Benton County, and the state of Washington were reviewed to gauge long term income expectations as a potential indicator of airport activity trends. The 2021 Woods & Poole forecast indicates per capita income (using "constant" dollars) in Yakima County is expected to increase at annual rate of 1.76% between 2010 and 2050. This annual growth rate is comparable to the forecast growth rate for Washington (1.76%) and outpaces Benton County (1.27%) over the next thirty years. Yakima County's forecast growth in per capita income accelerates between 2020 and 2050, averaging 2.05% annually, slightly ahead of Washington's forecast (1.99%).

A review of Woods & Poole's long term employment forecasts for Yakima County was also conducted. Employment in Yakima County is forecast to increase at annual rate of 1.14% between 2010 and 2050. The forecast rate is maintained at 1.15% annually for the period between 2020 and 2050, which trails Washington's forecast rate of 1.44%.

An increase in per capita income and employment indicates underlying economic durability, which suggests, although not empirically, that the conditions are favorable to sustained growth in airport activity. Since both economic indicators provide important foundations for economic growth, their 2020-2050 growth rates were combined (averaging 1.45%) for use is projecting future based aircraft.

The Yakima County Income/Employment Model projects an **average annual growth rate of 1.45%**. When applied to the current based aircraft count, this model predicts an increase from **13 to 17 aircraft** at Sunnyside Municipal Airport by 2041. This represents an increase of 4 aircraft (31%) over the planning period.

Terminal Area Forecast (TAF) – All Facilities (Washington) Model

This model applies the TAF "All Facilities" Washington 2021-2045 forecast annual growth rate for based aircraft to Sunnyside Municipal Airport for the 20-year planning period. The model is non-linear and year-over-year growth rates vary. The model assumes that the Airport's based aircraft fleet growth will be in line with the aggregated growth at the 64 listed Washington airports. The TAF All Facilities - Washington Model projects an **average annual growth rate of 1.04%**. When applied to the current based aircraft count, this model predicts an increase from **13 to 16** aircraft at Sunnyside Municipal Airport by 2041. This represents an increase of 4 aircraft (31%) over the planning period.

RECOMMENDED BASED AIRCRAFT SUMMARY

The TAF All Facilities - Washington Model is recommended as the preferred based aircraft model for use in the Sunnyside Municipal Airport – Airport Layout Plan Report. This projection assumes that the Airport will be able to sustain growth in its fleet that is in line with the FAA's aggregated forecast growth for 64 listed Washington airports. This model produces the same net increase in based aircraft as the Yakima County Income/Employment Model due to rounding. The forecast assumes similar shifts in aircraft types noted in the model based on the FAA's Aerospace Forecast.

The preferred forecast results in an increase from **13 to 16 aircraft** at Sunnyside Municipal Airport by 2041, which reflects an **average annual growth rate of 1.04%**. This represents an increase of 3 aircraft (23%) over the planning period. The based aircraft forecast models that were developed, including the recommended model, are summarized in **Table 3-9**, and depicted on **Figure 3-2**.

Table 3-9: Based Aircraft Forecast Models (1S5)

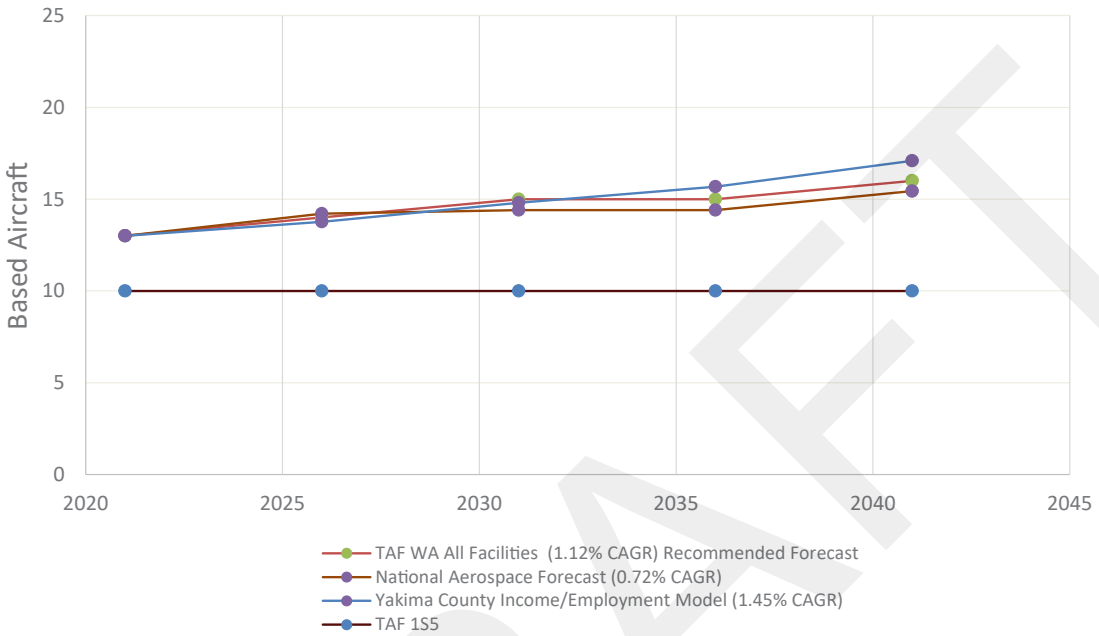
Forecast	AAGR	2021	2026	2031	2036	2041
Yakima County Wages Per Capita/ LT Employment Forecast	1.45%	13	14	15	16	17
National Aerospace Forecast - GA Fleet Model	0.72%	13	14	14	15	15
Terminal Area Forecast – WA/ANM All Facilities (Recommended)	**1.04%**	**13**	**14**	**15**	**15**	**16**

Source: Century West Engineering; AAGR: Average Annual Growth Rate

10 2021 State Profile - Idaho, Washington and Washington, Woods & Poole Economics, Inc. © 2021 ISSN 1044-4947

Based aircraft forecasts are primarily intended to identify future facility needs in forthcoming sections of the ALP Report, particularly aircraft storage – apron parking and hangar space. The use of development reserves is recommended for defining activity-dependent facility needs that may exceed forecasted growth. The proposed development reserve should have the capacity to accommodate 100% of the projected net increase (+3) of based aircraft over the planning period. Accordingly, the long-term planning of landside facilities at Sunnyside Municipal Airport should be capable of accommodating 6 additional based aircraft over the next 20 years.

Figure 3-2: Based Aircraft Forecast Models (1S5)



BASED AIRCRAFT FLEET MIX

Conventional single-engine piston aircraft account for 85% (11 of 13) of the current based aircraft fleet at Sunnyside Municipal Airport. The two other existing based aircraft include a multi-engine piston and single-engine turboprop. **Table 3-10** summarizes the current and forecast fleet mix for the planning period. The based aircraft fleet mix at Sunnyside Municipal Airport is expected to become slightly more diverse as it is anticipated that as a portion of the single-engine piston aircraft are retired over time, they are likely be replaced by LSA or experimental home-built aircraft, following national trends.

Table 3-10: Based Aircraft Fleet Mix Summary (1S5)

Aircraft Type	AAGR	2021	2026	2031	2036	2041
Single Engine Piston	-0.48%	11	10	10	10	10
Multi Engine Piston	0.0%	1	1	1	1	1
Turboprop	0.0%	1	1	1	1	1
Jet	0.0%	0	0	0	0	0
Helicopter	0.0%	0	0	0	0	0
LSA / Experimental	≈20.3%	0	2	3	3	4
TOTAL	**1.04%**	**13**	**14**	**15**	**15**	**16**

Source: Century West Engineering
1. Includes LSA and Experimental AC

AIRCRAFT OPERATIONS

Three new operations forecasts were prepared for the ALP Report. The first two forecasts apply growth rates established by national planning efforts (2021-2041 FAA Aerospace Forecasts and March 2022 FAA Terminal Area Forecast database). The third projects a growth trend based on a modified operations per based aircraft (OPBA) formula recognized by FAA for estimating activity at non-towered GA airports. The current TAF operations projection (APO TAF Detail Report 2021-2046, Issued March 2022) for Sunnyside Municipal Airport is provided for comparison only, as this airport particular TAF projection is not considered valid.

FAA Aerospace GA Operations Growth Rate

This model was developed by applying the FAA Aerospace Forecast – Fiscal Years (2021- 2041) annual growth rates for GA and air taxi operations for the current planning period. However, since the FAA forecast for GA and air taxi operations is limited to airports with control towers, a second FAA projection for GA and air taxi hours flown was evaluated. These forecasts project similar annual growth rates ranging from 0.8% to 1.1%. Merging the FAA's long term flight activity expectations for towered airports and the entire GA fleet provides a reasonable basis for a broad projection of aircraft operations at Sunnyside Municipal Airport. Based on a weighted distribution of commercial and non-commercial flight activity at the Airport, the FAA Aerospace Forecast model projects an **average annual growth rate of 0.95%**. When applied to the current baseline operations, this model predicts an increase from **4,225 to 5,105 annual aircraft operations** at Sunnyside Municipal Airport by 2041. This represents an 20.8% increase above the current air traffic level over the planning period.

Modified FAA NPIAS Operations Per Based Aircraft (OPBA) Formula

This model utilizes the same methodology that was used to calculate the baseline operations presented earlier. The modified OPBA formula was applied to the recommended based aircraft forecast noted earlier to project future aircraft operations. The fixed 250 OPBA was applied to forecast non-duplicated based aircraft through the planning period. The user-specific activity segments were individually projected, with growth rates slightly lower than the 1.12% annual growth assumed for based aircraft. Agricultural aircraft operations were projected to increase in line with long-term forecast growth in Yakima County farm employment (0.6% annually); Medevac operations were projected to increase in line with the FAA long-term forecast for air taxi TRACON operations (0.8% annually); and the regular transient user's activity was maintained at current levels with a slight increase midway in the planning period to account for potential facility upgrades (instrument approach) and increased airport utilization. The combination of these forecast inputs results in an average annual growth rate of 1.04% over the planning period. This approach assumes that aircraft operations at Sunnyside Municipal Airport will increase at a rate comparable to forecast based aircraft.

The Modified NPIAS OPBA model projects an **average annual growth rate of 1.04%**. When applied to the current baseline operations, this model predicts an increase from **4,225 to 5,196 annual aircraft operations** at Sunnyside Municipal Airport by 2041. This represents an 23.0% increase above the current air traffic level over the planning period.

Terminal Area Forecast (TAF) – All Facilities (Washington)

This model applies the March 2022 TAF "All Facilities" Washington 2021-2045 forecast annual growth rate for annual aircraft operations to Sunnyside Municipal Airport for the 20-year planning period. The model is non-linear and year-over-year growth rates vary. The model assumes that the Airport's future flight activity will be in line with the aggregated growth at the 64 listed Washington airports. The TAF All Facilities - Washington Model projects an **average annual growth rate of 1.31%**. When applied to the 2021 baseline operations, this model predicts an increase from **4,225 to 5,484 annual aircraft operations** at Sunnyside Municipal Airport by 2041. This represents an 29.8% increase above the current air traffic level over the planning period.

Terminal Area Forecast (TAF) – Sunnyside Municipal Airport (1S5)

The current TAF for the Airport is provided for comparison to the updated operations forecast models. As noted earlier, the current TAF (APO TAF Detail Report 2021-2046, Issued March 2022) projects a static 24,000 annual operations at Sunnyside Municipal Airport 2046 (AAGR 0.00%). This projection is not consistent with the updated baseline operations estimate developed for the ALP Report and the absence of future growth is not consistent with the Airport's potential.

RECOMMENDED AIRCRAFT OPERATIONS FORECAST

The recommended forecast of aircraft operations at Sunnyside Municipal Airport is the **Modified FAA NPIAS Operations per Based Aircraft (OPBA) Formula**. This model projects an average **annual growth rate of 1.04%** over the planning period, resulting in an increase from **4,225 to 5,196 operations** at Sunnyside Municipal Airport by 2041. The use of the modified NPIAS OPBA model is consistent with FAA guidance for estimating operations at non-towered airports and the projected estimates derived from the model are in line with operational estimates of other area airports of comparable size and characteristics.

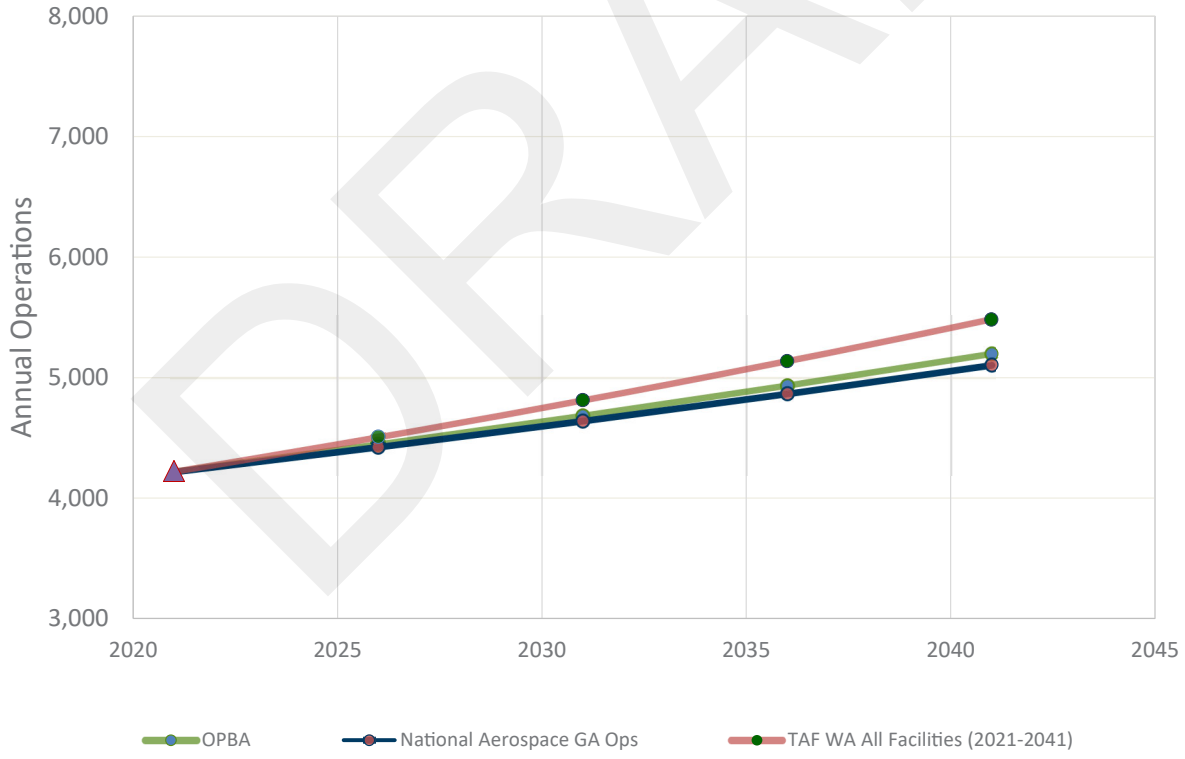
The new aircraft operations forecast models that were evaluated, including the recommended model, are summarized in **Table 3-11**, and depicted on **Figure 3-3**. The current TAF operations data specific to the Airport (1S5) is provided for reference in the table but is not charted.

Table 3-11: Forecast Annual Operations Rates (1S5)

Forecast	AAGR	2021	2026	2031	2036	2041
OPBA (Recommended)	**1.04%**	**4,225**	**4,449**	**4,686**	**4,934**	**5,196**
National Aerospace Forecast - GA Fleet Model	0.95%	4,225	4,430	4,644	4,869	5,105
Terminal Area Forecast – WA All Facilities	1.31%	4,225	4,510	4,814	5,138	5,484
1S5 TAF (2021-2041)	0.00%	24,000	24,000	24,000	24,000	24,000

Source: Century West Engineering; AAGR: Average Annual Growth Rate

Figure 3-3: Aircraft Operations Forecast Models (1S5)



LOCAL AND ITINERANT OPERATIONS

Aircraft operations are classified by FAA as local or itinerant. Local operations are conducted in the vicinity of an airport and include flights that begin and end at the airport. These include aerial applicators, flight training, training flights within the airport traffic pattern such as touch and go landings, and other flights that do not involve a landing at another airport. Itinerant operations include flights between airports such as on-demand air charter, air cargo/express, cross-country flight training, and personal or business travel.

The 2008 ALP Report forecasts estimated the local/itinerant operations split to be 25%/75%. This operational split is reasonable for current activity and is recommended for use in the forecast. As noted earlier in **Table 3-6**, the two locally based aerial applicator aircraft currently account for approximately 21% of total airport operations. Most aerial applicator flights at the Airport are categorized as local operations since the aircraft depart and return without landing at another airport. The local and itinerant distribution for each forecast year is summarized in **Table 3-12**.

Table 3-12: Forecast Itinerant/Local Operations Mix (1S5)

Activity	AAGR	2021	2026	2031	2036	2041
Total Itinerant Operations (75%)	1.04%	3,170	3,338	3,514	3,700	3,898
Local Operations (25%)	1.04%	1,055	1,112	1,172	1,234	1,298
Total Local & Itinerant Operations	1.04%	4,225	4,450	4,686	4,934	5,196

Source: Century West Engineering; AAGR: Average Annual Growth Rate

AIRCRAFT OPERATIONS FLEET MIX

Single-engine piston aircraft currently account for just over 65% of operations at Sunnyside Municipal Airport, followed by single-engine turboprops at about 29%. Multi-engine piston, multi-engine turboprops, business jets, and helicopters generate the remaining flight activity. As documented in the updated baseline operations total, one locally based single-engine turboprop (aerial applicator) currently generates approximately 17% of total operations at the Airport; the fixed wing aircraft medevac operator serving the local hospital generates just under 10% of total operations. Commercial and corporate operators use of turbine aircraft at the Airport is well established. Based on current aircraft manufacturing trends, it is reasonable to assume that turbine aircraft activity will increase during the planning period and the overall mix of air traffic will shift slightly to include more turboprops, helicopters, and smaller jets. Additional information about the critical aircraft is provided in the following section. The aircraft operations fleet mix forecast is summarized in **Table 3-13**.

Table 3-13: Operations Fleet Mix (1S5)

Activity	AAGR	2021	2026	2031	2036	2041
Single Engine Piston[1]	1.04%	2,775	2,928	3,144	3,308	3,412
Multi Engine Piston	0.8%	60	60	70	70	70
Turbo Prop	1.03%	1,230	1,294	1,364	1,436	1,510
Jet	3.53%	10	10	12	16	20
Helicopters	1.03%	150	158	166	174	184
Total Operations	1.04%	4,225	4,450	4,686	4,934	5,196

1. Includes LSA and Experimental AC
Source: Century West Engineering; AAGR: Average Annual Growth Rate

Critical Aircraft

The selection of design standards for airfield facilities is based upon the characteristics of the most demanding aircraft that are expected to use an airport, which is designated as the "critical aircraft." The FAA provides the following definition:

"The critical aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, including both itinerant and local operations, but excluding touch- and-go operations. An operation is either a takeoff or landing." (FAA AC 150/5000-17)

The FAA groups aircraft into five categories (A-E) based upon their approach speeds. Aircraft Approach Categories (AAC) A and B include small propeller aircraft, many small or medium business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots (nautical miles per hour). Categories C, D, and E consist of the remaining business jets, and larger jet and propeller aircraft associated with commercial and military use with approach speeds of 121 knots or more. The FAA also establishes six airplane design groups (I-VI), based on the wingspan and tail height of the aircraft. The categories range from Airplane Design Group (ADG) I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft. The combination of airplane design group and aircraft approach speed for the critical aircraft creates the **Airport Reference Code (ARC)**, which is used to define applicable airfield design standards.

CURRENT CRITICAL AIRCRAFT

The identification of the current critical aircraft for an airport is required by FAA to define the appropriate design standards for airport facilities currently and in the near term. **Table 3-14** summarizes the 2021 (baseline) estimate of aircraft operations at Sunnyside Municipal Airport by aircraft type and ARC. The future critical aircraft is determined by forecast aircraft operations (see Table 3-15).

Table 3-14: Aircraft Activity By Arc (2021)

ARC	Representative A/C Type	2021 Operations
TOTAL OPS – ALL		**4,225**
TOTAL OPS - A-I	Cessna 182	2,775
TOTAL OPS - B-I	Cessna 310, Beech Baron 58	90
TOTAL OPS - A-II	Air Tractor 802, Pilatus PC-12	1,200
TOTAL OPS - B-II	Beechcraft King Air, Cessna Citation Bravo	10
TOTAL OPS - HELI	Agusta Westwind	150

Source: Century West Engineering

The assessment of current air traffic at Sunnyside Municipal Airport identifies sufficient ADG II operations to meet the FAA's regular use threshold of 500 annual operations. The Airport currently accommodates regular ADG II aircraft activity, generated by both locally based and transient aircraft:

- One locally based Air Tractor 802 (AT-802) single-engine turboprop aerial applicator. The AT-802 has a maximum takeoff weight above 12,500 pounds, which places it in the "large" aircraft category.
- Multiple transient Pilatus PC-12 single engine turboprops operated by a fixed wing medevac provider and a corporate aircraft owner with local business operations. The PC-12 has a maximum takeoff weight below 12,500 pounds, which places it in the "small" aircraft category.

Other ADG II transient aircraft including single-engine and multi-engine turboprops and business jets identified through FAA TFMSC instrument flight plan filings associated with the Airport. Over the last 10 years, this activity has averaged about 20 operations per year, which is limited by the absence of instrument approach and departure procedures at the Airport. These aircraft are required to conduct the local flight segments (takeoff or landing on either end of an IFR flight plan) to be conducted under visual flight rules (VFR).

Source: Air Tractor, Inc. (www.airtractor.com)

Source: Google Image

When combined, the ADG II activity generated by these users totals approximately 1,200 annual operations. Both critical aircraft types are included in ADG II and Aircraft Approach Category (AAC) A, which corresponds to ARC A-II. Since there are more than 500 annual operators by a large airplane, large airplane standards will apply to the airfield.

Future Critical Aircraft

Based on forecast activity, no change in critical aircraft designation or ARC A-II is anticipated during the current 20-year planning period.

Summary – Critical Aircraft

The current and future critical aircraft identified for Sunnyside Municipal Airport is a single-engine turboprop, **Air Tractor 802**. This aircraft is representative of large aerial applicator aircraft commonly used throughout the region. The AT802 is included in Aircraft Approach Category A and Airplane Design Group II, which corresponds to **Airport Reference Code (ARC) A-II**. The AT802 is classified as a large airplane based on a maximum takeoff weight above 12,500 pounds. **Table 3-15** summarizes forecast operations for Sunnyside Municipal Airport by ARC. The current (2021) fleet mix percentages are maintained through the forecast period.

Table 3-15: Operations Fleet Mix by ARC

Activity	%	2021	2026	2031	2036	2041
TOTAL OPS - A-I	66%	2,775	2,920	3,086	3,224	3,400
TOTAL OPS - B-I	2%	90	90	100	110	120
TOTAL OPS - A-II/B-II	29%	1,210	1,280	1,340	1,430	1,496
TOTAL OPS - HELI	3%	150	160	160	170	180
TOTAL OPS - ALL A/C	100.00%	4,225	4,450	4,686	4,934	5,196

Source: Century West Engineering; AAGR Average Annual Growth Rate; "%" based on 2021 air traffic estimate.

Activity by Approach Category B aircraft is expected to increase over the course of the planning period, assuming increased utilization by business aircraft. However, there are no significant differences in the corresponding FAA design standards because the FAA consolidates Approach Category A and B into a single set of standards for all design groups.[11] As a result, the design standards for ARC A-II and B-II are the same.

Specific taxiway standards are defined by Taxiway Design Group (TDG), which are driven by the landing gear configuration of the critical aircraft. It is noted that the runway length requirements for the current and future critical aircraft (single engine turboprop) may be less demanding than for smaller aircraft that also use the runway, such as multi-engine piston pr turboprop aircraft. An evaluation of runway length requirements will be conducted in the facility requirements chapter.

The 2008 ALP Report identified the existing and future critical aircraft for the Airport as a Cessna 421, a small multi-engine piston aircraft included in ARC B-I (small). The previous critical aircraft designations should be updated to ARC A-II for current and future designations on the updated ALP.

11 FAA Advisory Circular (AC) 150-5300-13B, Appendix G, Table G-4.

Figure 3-4 depicts the aircraft design criteria used to define ARC, and representative aircraft in each ARC category. The applicable dimensional standards for Sunnyside Municipal Airport are shown in bold.

Figure 3-4: Critical Aircraft & Airport Reference Code (ARC)

Aircraft Approach Category	Aircraft Approach Speed knots	Airplane Design Group	Aircraft Wingspan
A	**less than or equal to 91 - Existing/Future**	I	less than or equal to 49’
B	92 to 121	**II - Existing/Future**	**50’ to 79’**
C	122 to 141	III	80’ to 118’
D	142 to 166	IV	119’ to 171’

A-I
12,500 lbs. or less

Beech Baron 55
Beech Bonanza
Cessna 182
Piper Archer

B-I(small)
12,500 lbs. or less

Beech Baron 58
Beech King Air C90
Cessna 402
Cessna 421

A-II, B-II
12,500 lbs. or less

Super King Air 200
Pilatus PC-12
DCH Twin Otter
Cessna Caravan

ARC - B-II
Greater than 12,500 lbs.

Super King Air 300, 350
Beech 1900
Cessna Citation
Falcon 20, 50

A-III, B-III
Greater than 12,500 lbs.

DHC Dash 7, Dash 8
Q-200, Q-300
DC-3
Convair 580

C-I, D-I

Lear 25, 35, 55, 60
Israeli Westwind
HS 125-700

C-II, D-II

Gulfstream II, III, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar

C-III, D-III

Boeing Business Jet
Gulfstream 650
B 737-300 Series
MD-80, DC-9

C-IV, D-IV

B - 757
B - 767
DC - 8-70
DC - 10

Source: Century West Engineering

Operational Peaks

Activity peaking is evaluated to identify potential capacity related issues that may need to be addressed through facility improvements or operational changes. The Peak Month represents the month of the year with the greatest number of aircraft operations (takeoffs and landings). The peak month for most general aviation airports occurs during the summer when weather conditions and daylight are optimal.

For planning purposes, the peak month for aircraft operations at Sunnyside Municipal Airport is assumed to account for 20% of annual operations, which effectively captures increased summer (July or August) flight activity.

Peak Day operations are defined by the average day in the peak month (Design Day) and the busy day in the typical week during peak month (Busy Day). The Design Day is calculated by dividing peak month operations by 30. For planning purposes, the Busy Day is estimated to be 50% higher than the average day in the peak month (Design Day x 1.5), based on common activities generating significant surges in flight activity.

The peak activity period in the Design Day is the Design Hour. For planning purposes, the Design Hour operations are estimated to account for 20% of Design Day operations (Design Day x 0.20).

The operational peaks for each forecast year are summarized in **Table 3-16**. This level of peaking is consistent with the mix of airport traffic and is expected to remain unchanged during the planning period. These measures of activity are considered when calculating runway/taxiway capacity and transient aircraft parking requirements. No significant runway or taxiway capacity issues have been identified at the Airport based on current or forecast activity levels.

Table 3-16: Peak Operations (1S5)

Aircraft Type	2021	2026	2031	2036	2041
Annual Operations	4,225	4,449	4,686	4,934	5,196
Peak Month Operations (20%)	845	899	937	987	1,039
Design Day Operations (average day in peak month)	28	30	31	33	35
Busy Day Operations (assumed 150% of design day)	42	45	45	49	52
Design Hour Operations (assumed 20% of design day)	6	6	6	7	7

Source: Century West Engineering; AAGR: Average Annual Growth Rate

Military Activity

The FAA Terminal Area Forecast (TAF) lists no military flight activity at Sunnyside Municipal Airport. However, occasional military use with helicopters or small fixed-wing aircraft in support of emergency response, search and rescue, and training activities would be consistent with activity (Washington Army National Guard, etc.) experienced at other Washington general aviation airports. A normal amount of military flight activity at the Airport (50 annual operations) is assumed during the planning period.

Air Taxi Activity

Air taxi activity includes for-hire charter flights, medevac flights, and some scheduled commercial air carriers operating under FAR Part 135. The current FAA TAF and 5010 Airport Record Form lists a 0 air taxi operations at Sunnyside Municipal Airport. Actual air taxi activity at the Airport includes flights by the two area Medevac providers (LifeFlight and Airlift NW), that operate under FAR 135. Other air taxi activity may include on-demand charter flights.

Air Taxi operations for 2021 are estimated at 530 operations, which includes all medevac flights and a small number of charter flights. Future activity is projected to increase at the annual rate of 0.97%, which is reflects the FAA TAF consolidated forecast growth rate for Air Taxi/Commuter operations in Washington and the Northwest-Mountain region (ANM) for the 2021-2045 period.

Forecast Summary

A summary of the based aircraft and annual aircraft operations forecast is presented in **Table 3-17**. These forecasts project modest growth over the 20-year planning period that is consistent with FAA's long-term expectations for general aviation in the region. The average annual growth rate for the forecasts is 1.04% for based aircraft and aircraft operations between 2021 and 2041.

Table 3-17: Forecast Summary

Activity	2021	2026	2031	2036	2041
Itinerant Operations					
General Aviation	2,590	2,731	2,880	3,037	3,208
Air Taxi (Fire & Medevac)	530	556	584	613	644
Military	50	50	50	50	50
Total Itinerant Operations	**3,170**	**3,337**	**3,514**	**3,700**	**3,902**
Local Operations	1,055	1,112	1,172	1,234	1,294
Total Local & Itinerant Operations	**4,225**	**4,449**	**4,686**	**4,934**	**5,196**
Based Aircraft	13	14	15	15	16
Operations per Based Aircraft	325	318	312	329	325

Source: Century West Engineering

TERMINAL AREA FORECAST COMPARISON

As discussed previously, the evaluation of the existing TAF[12] for Sunnyside Municipal Airport has identified significant issues related to data accuracy. Based on this review, it was determined that the TAF's based aircraft and aircraft operations data do not provide an accurate long-term indication of future aeronautical activity. Data from the most recent historical year (2020) is presented for all future years through 2045 for both based aircraft and annual aircraft operations. Other inaccuracies identified include the absence of air taxi operations (listed as 0) that are documented in ALP Report updated baseline and forecast data.

FAA review will be required for both the based aircraft and the aircraft operations models for comparison to the current TAF, as presented in **Table 3-18** and **Figure 3-5**.

Table 3-18: TAF Comparison

Based Aircraft	2021	2026	2031	2036	2041
Recommended Forecast	13	14	15	15	16
TAF	10	10	10	10	10
Percent Difference	**30.0%**	**40.0%**	**50.0%**	**50.0%**	**60.0%**

Aircraft Operations	2021	2026	2031	2036	2041
Recommended Forecast	4,225	4,449	4,686	4,934	5,196
TAF	24,000	24,000	24,000	24,000	24,000
Percent Difference	**-82.4%**	**-81.5%**	**-80.5%**	**-79.4%**	**-78.4%**

Source: Century West Engineering

12 APO Terminal Area Forecast Detail Report – Forecast Issued March 2022, 1S5

Figure 3-5: FAA TAF and ALP Forecast Comparison

Forecast Summary

1S5 — Base Year: 2021

	Base Yr. Level	Base Yr.+1yr.	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.	Average Annual Compound Growth Rates: Base Yr. to +1	Base Yr. to +5	Base Yr. to +10	Base Yr. to +15
Passenger Enplanements									
Air Carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter	0	0	0	0	0	N/A	N/A	N/A	N/A
TOTAL	0	0	0	0	0	N/A	N/A	N/A	N/A
Operations									
Itinerant									
Air carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter/air taxi	530	535	556	584	613	0.9%	1.0%	1.0%	1.0%
Total Commercial Operations	530	535	556	584	613	0.9%	1.0%	1.0%	1.0%
General aviation	2,590	2,618	2,732	2,880	3,037	1.1%	1.1%	1.1%	1.1%
Military	50	50	50	50	50	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	1,055	1,066	1,112	1,172	1,234	1.0%	1.1%	1.1%	1.1%
Military	0	0	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
TOTAL OPERATIONS	4,225	4,269	4,450	4,686	4,934	1.0%	1.0%	1.0%	1.0%
Instrument Operations	**0**	**0**	**0**	**0**	**0**	#NUM!	#NUM!	#NUM!	#NUM!
Peak Hour Operations	**6**	**6**	**6**	**6**	**7**	0.0%	0.0%	0.0%	1.0%
Cargo/mail (enplaned + deplaned tons)	**0**	**0**	**0**	**0**	**0**	N/A	N/A	N/A	N/A
Based Aircraft									
Single Engine (Nonjet)	12	12	14	14	15	0.0%	3.1%	1.6%	1.5%
Multi Engine (Nonjet)	1	1	1	1	1	0.0%	0.0%	0.0%	0.0%
Jet Engine	0	0	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
Helicopter	0	0	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
TOTAL	13	13	15	15	16	0.0%	2.9%	1.4%	1.4%
GA Operations Per Based Aircraft	**325**	**328**	**297**	**312**	**308**	0.9%	-1.8%	-0.4%	-0.4%

Airport Planning and TAF Forecast Comparison

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2021	0	0	0.0%
Base yr. + 5yrs.	2026	0	0	0.0%
Base yr. + 10yrs.	2031	0	0	0.0%
Base yr. + 15yrs.	2036	0	0	0.0%
Commercial Operations				
Base yr.	2021	530	0	#DIV/0!
Base yr. + 5yrs.	2026	556	0	#DIV/0!
Base yr. + 10yrs.	2031	584	0	#DIV/0!
Base yr. + 15yrs.	2036	613	0	#DIV/0!
Total Operations				
Base yr.	2021	4,225	24,000	-82.4%
Base yr. + 5yrs.	2026	4,450	24,000	-81.5%
Base yr. + 10yrs.	2031	4,686	24,000	-80.5%
Base yr. + 15yrs.	2036	4,934	24,000	-79.4%

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

FIFTY-YEAR FORECAST

Fifty-year demand forecasts were prepared as required in the FAA-approved ALP Report scope of work by extrapolating the average annual growth rates (AAGR) for the recommended twenty-year based aircraft and aircraft operations forecasts. The purpose of the 50-year projection is to provide an estimate of demand to approximate long-term aviation use land requirements for the Airport. **Table 3-19** summarizes the 50-year forecast including the intermediate 30- and 40-year projections.

Table 3-19: 50-Year Forecast (1S5)

	2021	2041	2051	2061	2071
Annual Operations (1.04%AAGR)	4,225	5,196	5,763	6,391	7,088
Based Aircraft (1.04%AAGR)	13	16	18	20	22

Source: Century West Engineering