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 – Key Takeaways

The evaluation of historical, current, and future activity at Quillayute Airport has identified several important takeaways that are critical in understanding Quillayute Airport.

The 2003 Quillayute Airport Master Plan forecasts were based on several assumptions related to specific local events occurring in the 20-year planning period (2000-2021). These events did not transpire as assumed, and activity at the Airport did not increase as forecast. As noted in the Chapter 2, Existing Conditions current activity at the Airport is comparable to the baseline activity (year 2000) documented in the 2003 forecast. Quillayute Airport currently has no based aircraft and generates approximately 570 annual operations, 100% by transient aircraft.

The unique circumstances surrounding Quillayute Airport described earlier in the master plan are reflected in a unique FAA perspective for the Airport. Despite its low level of activity, the FAA Seattle Airports District Office (ADO) recognizes Quillayute Airport's functional role as an emergency response asset that is uniquely capable of supporting the western Olympic Peninsula in the event of a major disaster, up to and including a major Cascadia Subduction Zone seismic event. Quillayute Airport is listed in the National Plan of Integrated Airport Systems (NPIAS) as the only federally eligible airport in Western Clallam County. The City of Forks has taken on the responsibility of maintaining and improving Quillayute Airport as both a local and regional facility with FAA support, while also maintaining its non-NPIAS airport—Forks Municipal Airport.

The FAA supports maintaining the critical aircraft, Airport Reference Code (ARC), and design standards previously defined in the 2003 Airport Master Plan. These elements will be applied in the forecast and facility requirements analyses prepared in this master plan, and the planning criteria designations from the 2003 Airport Layout Plan (ALP) drawing will be maintained.

The updated aviation activity forecasts will reflect a realistic level of non-emergency activity that could be expected during the 20-year planning period. There are no reliable forecast methods available to estimate aviation activity that might be associated with a major catastrophic event. In such an event, intense periods of flight activity could be sustained for weeks or months and could resemble relief efforts associated with coordinated civilian/military responses in coastal areas impacted by Tsunamis or hurricanes, with subsequent flood damage, or major earthquakes in remote areas.

It is important to note that among the unique features of the Airport is its Portland cement concrete airfield pavement (constructed in 1943) that remains largely intact, including pavement sections that have been previously closed. Based on available pavement condition ratings, it appears that all portions of the original airfield could be re-activated for emergency use with minimal effort (vegetation removal in cracks, moss removal on surfaces, repainting airfield markings, etc.). For this reason, the goal of preserving the Airport's original airfield capabilities with modern improvements intended to enhance regular aeronautical activity will be the primary focus of the facility requirements analysis. It is assumed that with the basic airfield intact, any emergency use facility needs will be funded through separate, expedited emergency authorizations rather than through existing FAA funding programs.

The following planning criteria will be applied in the 2021-2041 Quillayute Airport Master Plan based on FAA and airport sponsor agreement:

2021-2041 Quillayute Airport Master Plan – Planning Criteria

Forecasts

Existing/Future Critical Aircraft Designation and Airport Reference Code (ARC)

- *Runway 4/22: Large multi-engine turboprop (King Air 350 typical).* ***ARC: A-II****. These standards will apply to the runway and all major taxiways on the Airport.*
- *Second runway (formerly 12/30) is currently closed. If recommended for re-opening, it's critical aircraft will be a small single-engine piston aircraft.* ***ARC A-I Small Aircraft****.*

Facility Requirements (Existing and Future Standards)

Design Standards: Aircraft Approach Category (AAC) and Airplane Design Group (ADG)

- *Runway 4/22:* ***A/B-II, Visibility Minimums Not Lower than 1 mile*** *(Table G-4, FAA AC 150/5300-13B).*
- *Second runway is currently closed. If recommended for re-opening, it will be* ***A/B-I Small Aircraft, Visibility Minimums Visual****. (Table G-1, FAA AC 150/5300-13B).*

Part 77 Airspace

- *Runway 4/22:* ***Non-Precision Instrument (NPI), visibility minimums >3/4 statute mile****.*
- *Second runway is currently closed. If recommended for re-opening, it will be* ***Visual****.*

Introduction and Overview

This chapter provides updated aviation activity forecasts for Quillayute Airport (UIL) for the 20-year planning horizon (2021-2041). The most recent Federal Aviation Administration (FAA) approved aviation activity forecasts for the Airport were developed in the 2003 Airport Master Plan.[1]

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 Forks 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 Master Plan Report.

The 2017 Washington Aviation System Plan (WASP) defines Quillayute Airport as "Local" airport classification. Local airports support general aviation 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.

In the federal airport system, Quillayute Airport is classified as a "Basic" general aviation airport in the *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.

Quillayute Airport can accommodate a full range of general aviation aircraft, including single-engine and multi-engine piston aircraft, business class turboprops, small business jets, and helicopters. The airfield was originally designed to accommodate a variety of large military aircraft.

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.

1 Quillayute Airport Master Plan (Barnard Dunkelberg & Company, May 2003)

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). As noted earlier, the critical aircraft determinations for Quillayute Airport in this master plan will maintain the designations from the 2003 Airport Master Plan.

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 Quillayute Airport includes the local community and western Clallam County. As noted in Chapter 2, Existing Conditions, the local area is characterized by several small communities in a large, sparsely populated rural setting. The use of county-wide population data and long-term forecasts is recommended for this project. City of Forks data will also be referenced where available.

Historical Population

As described in Chapter 2, Existing Conditions, Clallam County's population has grown by about 8% (net gain of 5,750 residents) since 2012. Annual county population growth (0.86% AAGR[2]) trailed the statewide population growth (1.46% AAGR) during this period, which is consistent with other rural Washington counties. Historical population data for Forks shows a decline of approximately 6% (-0.67% AAGR) between 2012 and 2021, with a net loss of 210 residents. Due to a variety of data issues, the ability to define a reliable trend from available data is limited. Clallam County population forecasts, and population projections used by the City of Forks in its comprehensive planning, will be reviewed in the following section.

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, and 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 most recent Clallam County comprehensive plan update[5] was adopted in 2007 and includes a long-term population forecast (2005-2025) for the county and its three incorporated cities. Most of the projected population growth in Clallam County is expected to occur in Port Angeles and Sequim, with lower growth expected in the western part of the county. The current City of Forks comprehensive plan[6] was adopted in 2019 and utilizes the 2020 and 2025 population forecasts contained in the 2007 Clallam County comprehensive plan update.

It is noted that the local comprehensive plans were adopted prior to COVID-19 pandemic and their underlying projections do not necessarily reflect recent events or current conditions.

A summary of the available comprehensive plan and OFM forecasts is presented in **Table 3-1**.

TABLE 3-1: POPULATION FORECAST SUMMARY

	AAGR[1]	2020	2025	2030	2035	2040
Clallam County (2007 Comprehensive Plan)	1.16%[1]	79,416	84,130	-	-	-
City of Forks (2019 Comprehensive Plan)	-0.04%[2]	3,439	3,550	-	-	-
Other Recent Forecasts						
Clallam County (2017 GMA)[3]	0.79%	74,707	76,847	78,683	80,123	80,928
Washington (2017 GMA)[3]	0.96%	7,638,415	8,085,043	8,503,178	8,894,306	9,242,022
Washington (2021 Forecast)[4]	0.83%	7,707,047	8,041,743	8,399,102	8,749,819	9,092,210

Source: Clallam County Comprehensive Plan; City of Forks Comprehensive Plan; Washington OFM.
1. Forecast Annual Average Growth Rate: 2005-2025
2. Forecast Annual Average Growth Rate: 2015-2025
3. Washington Office of Financial Management (OFM): 2017 GMA Forecast (County) – Medium Series
4. Washington Office of Financial Management (OFM): Forecast of the State Population, December 2021

2 AAGR = Average Annual Growth Rate (compounded over time)
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)
5 Clallam County's Urban Growth Area Analysis and 10-Year Review, Clallam County Department of Community Development, May 2007
6 City of Forks 2019-2039 Comprehensive Plan

Summary – Population

Long-term population growth for Forks and western Clallam County is expected to be modest during the current planning period (2021-2041). The anticipated growth in local and county population is not expected to significantly drive increases in air traffic activity at Quillayute Airport, although growth within the local economy may be expected to contribute to increased airport activity.

ECONOMY

Clallam County's leading economic sectors include government, retail trade, various service providers (education, healthcare, business, etc.), tourism, industry (mining, logging and construction), and manufacturing. Government is the largest nonfarm employment sector, which is consistent with the expansive inventory of federal and state-owned resource lands in the county. **Table 3-2** summarizes Clallam County's leading employment sectors.

Jim Vleming, regional labor economist with the Washington Employment Security Department (ESD) characterizes the Clallam County job market's historic and ongoing dependence on natural resources: *"The region's 200 miles of coastline have fostered the maritime and fishing industries. Traditionally, much of the economy of the county has reflected this natural abundance with jobs in forestry, wood products and fisheries. As demand has declined for some of the goods-producing and agricultural products in the county, the service sector, including leisure and tourism has grown in their place. The labor market continues to develop, benefiting from the region's natural resources."*

The distribution of the region's economic output distribution appears to mirror its population, with heavier concentrations of industry and employment found in more densely populated areas of the county. The western section of Clallam County is made up of several smaller communities with a narrower economic base and fewer large employers. As noted in Chapter 2, Existing Conditions, attempts to grow and diversify the local economy are ongoing, including the creation of the Emerald Coast Opportunity Zone (ECOZ), which includes the Quillayute Airport.

Washington ESD data indicate total nonfarm employment for Clallam County in May 2022 surpassed pre-COVID-19 (May 2019) employment levels, after experiencing a nearly 15% decline in 2020. The data indicate improvement across most industry sectors as employment levels gradually returned to pre-pandemic levels both locally and statewide.

TABLE 3-2: CLALLAM COUNTY NONFARM EMPLOYMENT (2021)

	Number of jobs	Share of employment
Government	8,140	33.3%
Retail trade	3,560	14.6%
Education and Health Services	3,190	13.1%
Leisure and Hospitality	2,480	10.2%
Mining, Logging, and Construction	2,240	9.2%
Professional and Business Services	1,440	5.9%
Manufacturing	1,100	4.5%
All other industries	2,280	9.3%
All other industries	31,778	28.7%
Total	**24,430**	**100%**

Source: Washington Employment Security Department Labor Area Summaries, Not Seasonally Adjusted (May 2022). Percentages may not sum due to rounding.

Personal Income

Clallam County trails state and national per capita income levels and has a higher level of poverty. The conditions are consistent with a rural economy where access to full-time year-round employment is limited. The current ESD Clallam County profile provides the following summaries related to 2020 personal income:

- Inflation-adjusted per capita income in Clallam County was $49,718 compared to the state at $67,126 and the nation at $59,510.
- Median household income in Clallam County was $55,090, 71.5% of the state's median household income of $77,006 and 84.8% of the United States at $64,994.
- Clallam County's poverty rate (13.3%) was higher than the state's (9.5%) and the nation's (11.4%) poverty rates.

Unemployment

Clallam County's resource-based economy is subject to seasonal shifts in unemployment rates. Typically, peak unemployment levels occur in the winter and the lowest unemployment levels are found during summer months. The April 2022 unemployment rate was 5.3%, down from the recent peak of 6.6% in January. The peak level of unemployment (18.8%) recorded during the COVID-19 pandemic was in April 2020. The data for 2021-22 are consistent with the pre-COVID period, indicating a re-stabilization in the local economy.

Economic Outlook

The Washington ESD generates annual short and long-term employment forecasts by region. Clallam County is in the Olympic Consortium, which also includes Jefferson and Kitsap 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 Olympic Consortium region are summarized in **Table 3-3**. Both forecasts project an increase in employment, averaging 1.6% annual through 2025, then slowing to just under 1% annually through 2030.

TABLE 3-3: OLYMPIC CONSORTIUM REGION EMPLOYMENT FORECAST BY INDUSTRY (UPDATED JULY 2022)

Job Categories	Estimated employment 2020	Estimated employment 2025	Estimated employment 2030	Average annual growth rate 2020-2025	Average annual growth rate 2025-2030
TOTAL NONFARM	123,700	133,900	140,600	1.60%	0.98%
NATURAL RESOURCES and Mining	500	500	500	0.00%	0.00%
Logging	400	400	400	0.00%	0.00%
Mining	100	100	100	0.00%	0.00%
CONSTRUCTION	7,200	7,800	8,500	1.61%	1.73%
MANUFACTURING	4,500	4,600	4,800	0.44%	0.85%
Durable Goods	3,300	3,100	3,200	-1.24%	0.64%
Wood Product Manufacturing	300	300	300	0.00%	0.00%
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	200	200	300	0.00%	8.45%
Machinery Manufacturing	100	100	100	0.00%	0.00%
Computer and Electronic Product Manufacturing	100	100	100	0.00%	0.00%
Electrical Equipment and Appliance Mfg	0	100	100	0.00%	0.00%
Aerospace Product and Parts Manufacturing	200	100	100	-12.94%	0.00%
Other Transportation Equipment	1,400	1,200	1,200	-3.04%	0.00%
Other Durable Manufacturing	900	900	900	0.00%	0.00%
Non Durable Goods	1,200	1,500	1,600	4.56%	1.30%
Food and Beverages Manufacturing	600	700	800	3.13%	2.71%
Printing and Related Support Activities	100	100	100	0.00%	0.00%
Other Non Durable	100	200	200	14.87%	0.00%
WHOLESALE TRADE	1,800	1,900	2,000	1.09%	1.03%
RETAIL TRADE	15,600	16,600	17,400	1.25%	0.95%
Food and Beverage Stores	3,500	3,800	3,900	1.66%	0.52%
Motor Vehicle and Parts Dealers	2,000	2,100	2,100	0.98%	0.00%
Other Retail Trade	10,100	10,700	11,400	1.16%	1.28%
TRANSPORTATION, WAREHOUSING AND UTILITIES	1,500	1,800	1,800	3.71%	0.00%
Utilities	200	200	200	0.00%	0.00%
Transportation and Warehousing	1,300	1,600	1,600	4.24%	0.00%
INFORMATION	800	1,000	1,000	4.56%	0.00%
Software Publishers	100	200	200	14.87%	0.00%
Other Publishing Industries	200	200	200	0.00%	0.00%
Other Information	500	600	600	3.71%	0.00%
FINANCIAL ACTIVITIES	4,300	4,400	4,500	0.46%	0.45%
Finance and Insurance	2,700	2,700	2,700	0.00%	0.00%
Real Estate, Rental and Leasing	1,600	1,700	1,800	1.22%	1.15%
PROFESSIONAL and BUSINESS SERVICES	10,400	12,000	12,900	2.90%	1.46%
Professional, Scientific and Technical Services	5,800	6,800	7,300	3.23%	1.43%
Management of Companies and Enterprises	400	500	500	4.56%	0.00%
Other Professional Services	3,300	3,800	4,100	2.86%	1.53%
Employment Services	900	900	1,000	0.00%	2.13%
EDUCATION and HEALTH SERVICES	17,200	18,600	20,500	1.58%	1.96%
Education Services	1,300	1,300	1,300	0.00%	0.00%
Health Services and Social Assistance	15,900	17,300	19,200	1.70%	2.11%
LEISURE and HOSPITALITY	11,400	15,000	15,800	5.64%	1.04%
Arts, Entertainment and Recreation	1,200	1,500	1,700	4.56%	2.53%
Accommodation and Food Services	10,200	13,500	14,100	5.77%	0.87%
OTHER SERVICES	4,900	5,200	5,500	1.20%	1.13%
GOVERNMENT	43,600	44,500	45,400	0.41%	0.40%
Federal Government	21,600	21,500	21,800	-0.09%	0.28%
State and Local Government Other	13,700	14,700	15,500	1.42%	1.07%
Government Educational Services	8,300	8,300	8,100	0.00%	-0.49%

Source: Employment Security Department/DATA[1]

[1]Data Architecture Transformation and Analytics. Formerly LMEA and LMPA.

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 3-4** summarizes key growth rates for Clallam 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 3-4: CLALLAM COUNTY DEMOGRAPHICS - FORECAST ANNUAL GROWTH RATES (2021-2050)

Data Category	Average
Total Population	0.66%
Total Employment (includes farm employment)	0.76%
Total Earnings (2012 $)	1.52%
Personal Income (2012 $)	2.03%
Income Per Capita (2012 $)	1.41%
Mean Household Income (2012 $)	1.43%
Gross Regional Product (2012 $)	1.55%

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

Population growth for Clallam County, particularly the western end of the county, is expected to be modest during the Airport Master Plan's 20-year planning horizon. The projected growth is just under 1% annually over this period, which is comparable to the historical growth experienced over the last 20 years. The most recent City of Forks comprehensive plan projection anticipates annual growth of about 0.6% between 2020 and 2025. As with historical population trends, local and county 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 Clallam County indicates that per capita income, household income, and gross regional product is expected to outpace employment and population growth through 2050. This suggests a long-term strengthening in the economy that will generate demand for services and transportation.

The anticipated growth in local population and economic output is expected to be modest during the current planning period. However, the underlying growth provides a foundation for generating additional air traffic demand at Quillayute Airport that is consistent with overall expectations for the community and region.

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

Historical Aviation Activity

Historical activity data for Quillayute Airport is limited to FAA Airport Record Forms (5010-1), the FAA Terminal Area Forecast (TAF), and the 2003 Airport Master Plan baseline data (based aircraft and estimated annual operations). As noted earlier in this chapter, the primary data used in general aviation airport planning includes based aircraft and annual aircraft operations.

The current 5010 (data for 12 months ending 12/31/2018) and TAF (2020) for Quillayute Airport report identical data (based aircraft and annual aircraft operations totals) representing current activity: 0 based aircraft and 6,700 annual aircraft operations. The based aircraft total has recently been verified by airport management, although the source of the annual operations totals is unknown. It is noted that the TAF lists the same operations totals dating back to 2008 while the based aircraft totals have fluctuated from 0 to 6. Although the operations data cannot be documented, the overall activity level is not uncommon for small GA airports.

A review of Quillayute Airport's TAF historical data (1990 forward) indicates that the 2003 Airport Master Plan's baseline activity data were partially incorporated into the TAF. The baseline annual aircraft operations total (500) was entered in the TAF for the year 2000; the TAF's based aircraft total was also updated from 0 to 3 aircraft, although the forecast's baseline level was 2 aircraft. The FAA National Based Aircraft Inventory Program for Quillayute Airport was recently verified by airport management: (Validated Count: 0 aircraft).

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

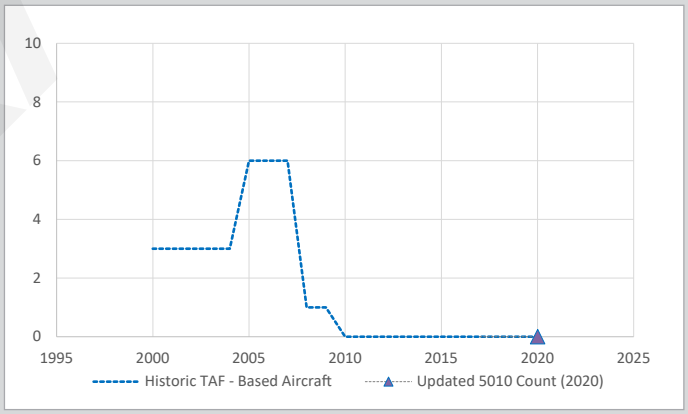
FIGURE: 3-1: ACTIVITY SUMMARY - FAA TAF, FAA 5010 AIRPORT RECORD FORM; 2003 AMP REPORT

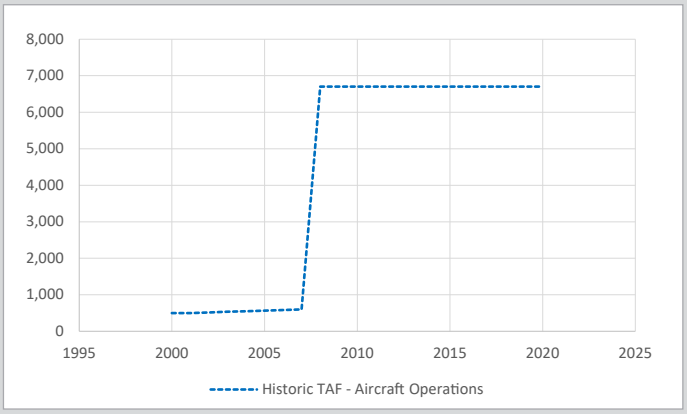
Available activity estimates for Quillayute Airport from FAA Terminal Area Forecast (TAF), Airport Record Form (5010-1), the 2003 AMP Report, and the Airport's 2021 validated based aircraft count are summarized below.

Based Aircraft and Operations

Aircraft Type	Updated Airport Count[1] (2021)	Airport Master Record[2] (12 months ending 12/31/18)	2003 AMP[3] (2000 Baseline)
Single Engine	0	0	0
Multi Engine	0	0	0
Jet	0	0	2
Helicopter	0	0	0
Glider	0	0	0
Military	0	0	0
Ultra-Light	0	0	0
Total Based Aircraft	0	0	2
Annual Operations	**570**	**6,700**	**500**

1. www.BasedAircraft.com (Validated January 2022)
2. Airport Master Record (5010) July 29, 2020
3. Quillayute Airport Master Plan (Final Report, May 2003)





Current Aviation Activity

The updated estimate of current activity at Quillayute Airport is 0 based aircraft and 570 annual aircraft operations. The aircraft operations estimate was developed through direct contacts with known airport users including local EMS/Hospital (medevac activity), area flight schools and Part 135 on-demand air charters, U.S. Coast Guard flight operations, and a survey of aircraft owners at nearby Forks Municipal Airport. This activity will be used as the 2021 baseline for the Airport Master Plan's 2021-2041 aviation activity forecasts. It is noted that current activity at the Airport is comparable to the baseline activity documented in the 2003 Airport Master Plan.

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 there are currently no based aircraft at the Airport, the use of the FAA-recommended operations per based aircraft (OPBA) formula defined in *FAA Order 5090.5 Formulation of the NPIAS and ACIP*, could not be used to estimate current air traffic levels.

With no based aircraft, 100% of air traffic at Quillayute Airport is currently generated by transient general aviation and military aircraft including:

- General Aviation (GA) flight training, personal, and business travel.
- Weather diversions due to local weather conditions (reported by aircraft owners based at Forks Municipal Airport) and area weather affecting flights transiting the Western Olympic Peninsula.
- Medical evacuation flights (fixed wing and helicopter).
- U.S. Coast Guard routine patrol, search and rescue, and training flights (helicopters).
- Military (USAF, Army, Navy, Air National Guard) operations support and flight training (primarily helicopters, with limited fixed wing transport and fighter jet operations).
- On-demand air charter flights.
- State, federal, and tribal government related flights.

The activity for these segments is summarized below and in **Table 3-5**. Once the updated activity forecasts are accepted and approved by FAA, the 5010 for the Airport should be updated for consistency. The FAA will determine if any adjustments are required to the current Terminal Area Forecast (TAF).

Air Ambulance (MEDEVAC)

Air ambulance operators (Life Flight and Air Lift Northwest) serve Forks and the surrounding area with fixed-wing aircraft and helicopters. The operators provide critical patient transports from Forks Community 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 larger population centers.

All current medevac flights serving Forks are limited to visual flight rules (VFR) weather conditions based on existing facilities capabilities, although the air ambulance operators have a variety of aircraft that are certified for operation under instrument flight rules (IFR). The air ambulance aircraft types currently stationed in the region include the Pilatus PC-12 (pressurized single engine turboprop, IFR certified), the Agusta AW109 (single-engine turbine helicopter, VFR certified), and the Eurocopter EC-135 (twin-engine turbine helicopter, IFR certified). Life Flight's nearest base (fixed-wing and helicopter) is in Port Angeles, and Air Lift Northwest's nearest base (helicopter) is located in Bremerton.

Quillayute Airport accommodates fixed wing and helicopter air ambulance flights, although local officials report the hospital helipad located in Forks accommodates most helicopter flights. Local emergency medical service (EMS) staff confirm that the absence of day/night all weather access (lighted runway with instrument approach) limits current use of Quillayute Airport for air ambulance flights, particularly fixed wing aircraft. Adverse weather conditions on the Olympic Peninsula frequently limits VFR medevac flights to Forks, which then may require a lengthy ambulance transport to Olympic Medical Center in Port Angeles (Trauma Level III facility). Due to limited EMS staff and equipment resources, the emergency response level in the community is reduced by roughly 1/3 during a typical 3-hour ambulance roundtrip to Port Angeles.

Based on data provided by local hospital and EMS staff, there is an average of one critical patient transport per week from the Forks area by helicopter, fixed-wing aircraft, and ambulance. Weekly demand levels can vary and are often higher during peak periods. Quillayute Airport currently accommodates approximately 15 transports per year (30 operations). The current flight activity is limited to VFR operations.

It is anticipated that future demand for critical patient transports will increase as the local community and surrounding area grows, and visitor numbers increase.[8] It is reasonable to assume that fixed wing and helicopter medevac activity Quillayute Airport may increase if specific facility improvements (e.g., instrumentation and lighting) are made. The ability to accommodate aircraft in instrument weather conditions would significantly expand current critical patient transport options and reduce the frequency of ground-based transports.

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 air ambulance helicopters are also included in Aircraft Approach Category A.

Source: Google Images

MILITARY/U.S. COAST GUARD

Quillayute Airport currently accommodates a variety of military flight training activity ranging from helicopters to high performance fighter jets. This activity can vary from year to year but is estimated to average 50 fixed wing operations and 250 helicopter operations annually.

Military aircraft from Joint Base Lewis McChord (JBLM) and Naval Air Station Whidbey Island conduct periodic flight training at the Airport, the majority of which is helicopter. A review of FAA instrument flight plan (TFMSC) data identifies a small number of military aircraft over the last 10 years including a variety of performance fixed wing aircraft (Boeing FA-18 Hornet, Lockheed F-117 Nighthawk, and F-16 Falcon). The nature of their flight operations at the Airport is unknown, although IFR flight plan filings would not typically include low-altitude training flights. With the absence of instrument approach and departure procedures at the Airport, any takeoff or landing on either end of an IFR flight plan must be conducted under visual flight rules (VFR).

The U.S. Coast Guard (USCG) Air Station Port Angeles also operates helicopters at Quillayute Airport, including the Eurocopter MH-65 Dolphin, a twin-engine turbine aircraft. The USCG activity has been limited in the past to about 50 to 60 operations per year. However, USCG reports that flight activity is expected to increase to

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

approximately 200 annual operations with the addition of a jet fuel storage cache recently installed at the Airport. USGG staff indicate that the addition of fuel at Quillayute Airport will expand mission capabilities throughout the north coast region, and its support capabilities for USGG Station Quillayute River in LaPush.

The current combined total of transient USGG and military aircraft air traffic at Quillayute Airport is approximately 300 annual operations. Military (U.S. Air Force, Navy, Army, and Washington National Guard) flight activity is estimated at 250 annual operations (200 helicopter/50 fixed wing) with a variety of aircraft types. The USCG activity is predominantly helicopter (50 annual operations). Military/USCG activity at the Airport is expected to increase to about 450 operations annually through the planning period based on increased USCG activity. This level of flight activity is expected to remain stable through the 20-year planning period.

OTHER GENERAL AVIATION ACTIVITY

Quillayute Airport accommodates a variety of general aviation users with aircraft ranging from single-engine piston aircraft to small jets. This activity includes aircraft located at nearby Forks Municipal Airport (weather and flight training related) and variety of transient aircraft (flight training, on-demand air charter, personal and business travel, and state/federal/tribal government agencies and related flights).

Area flight schools report their activity at Quillayute Airport is limited based on flight distances (from Port Angeles, Port Townsend), quickly changing local weather conditions, and the lack of fuel. A local area Part 135 charter operator (Rite Brothers Aviation) based in Port Angeles, reports a limited number of charter flights with Cessna 172 and 206 single-engine piston aircraft at both Quillayute Airport and Forks Municipal Airport. The convenience of flying into Forks Municipal is often cited as a customer choice. The absence of an instrument approach and a lighted runway were identified as factors limiting current flight activity at Quillayute Airport.

The current level of general aviation air traffic at Quillayute Airport is approximately 350 annual operations (100% transient). This aircraft activity includes primarily single engine and multi engine piston, turboprops, small jets, and helicopters, although most of the activity is generated by small ADG I single-engine piston aircraft. This activity could be expected to increase during the planning period depending on facility improvements such as runway instrumentation and lighting upgrades. The availability of hangar rental space in the future could be a significant factor in attracting based aircraft to the Airport. Without reasonably priced hangar rental space, the Airport's ability to attract based aircraft will continue to be limited.

Summary – Current Activity

The current air traffic at Quillayute Airport is generated exclusively by transient aircraft, including air ambulance flights, U.S. Coast Guard and military aircraft, and aircraft used for personal and business travel. **Table 3-5** summarizes the current level of aircraft activity for Quillayute Airport that will be the baseline for the new aviation activity forecasts developed in the 2021-2041 Airport Master Plan.

TABLE 3-5: AIRPORT ACTIVITY SUMMARY (2021)

Operator	A/C Type	ARC	Annual Operations[1]
Medevac	Pilatus PC-12	A-II	20
	Agusta Westland AW119Kx (typ.)	Heli	10
Military Flight Training & Operations	Helicopter	Heli	150
	Turboprop/Jet	B-II+	50
Other Local & Transient Activity	SE Piston	A/B-I	300
	ME Piston	A/B-I	10
	Turboprop	B-II	10
	Jet	B-II	10
	Helicopter	Heli	10
TOTAL OPS – ALL			570
TOTAL OPS – A/B-I			310
TOTAL OPS – A/B-II+			90
TOTAL OPS – HELI			170
Based Aircraft			0

1. Operations estimates based on user data assembled by Century West Engineering.

Existing Aviation Activity Forecasts

Existing forecasts for Quillayute Airport include the FAA Terminal Area Forecast (TAF), the 2003 Airport Master Plan, and an outdated Washington aviation system plan completed in 2007. Each of these forecasts have relevancy issues that limit valid comparisons with current activity or updated forecasts presented later in this chapter.

FAA TERMINAL AREA FORECAST (TAF)

The March 2022 TAF lists 0 based aircraft for the Airport in its most recent historical year (2020). The TAF maintains a 0 based aircraft total unchanged through 2045. The TAF lists 6,700 annual aircraft operations for 2020 and projects a moderate increase to 12,347 operations in 2045. **Table 3-6** summarizes the TAF for the 2020-2040 period and notes the updated based aircraft data, which represents 2021 activity.

TABLE 3-6: FAA TAF SUMMARY

Forecast	AAGR	2020	2025	2030	2035	2040
Based Aircraft	0.00%	0	0	0	0	0
Annual Aircraft Operations	2.48%	6,700	7,642	8,610	9,704	10,942
FAA National Based Aircraft Inventory Program		0*	-	-	-	-
* December 2021 Validated Count						

Source: FAA Terminal Area Forecast (UIL) Issued March 2022; National Based Aircraft Inventory Validated Based Aircraft Count, December 2021 AAGR: Average Annual Growth Rate (2020-2040)

2003 AIRPORT MASTER PLAN FORECASTS

The 2003 Airport Master Plan provided aviation activity forecasts for the 2000-2021 planning period. The forecast projected based aircraft to increase from 2 to 15, which represents an average annual growth rate of 10.1%. Annual aircraft operations were projected to increase from 500 to 19,088, which represents an average annual growth rate of 18.9%.

As noted earlier, the 2003 Airport Master Plan forecasts were based on a key assumption that was not ultimately realized:

> *"...in efforts to ensure eligibility for federal funding of future airport development projects at Quillayute Airport through the Federal Aviation Administration (FAA), the City of Forks was required to transfer the National Plan of Integrated Airport Systems (NPIAS) designation from Forks Municipal Airport to Quillayute. This transfer discontinues the federal funding of airport projects at Forks, and ultimately dictates the transfer of most, if not all fixed wing aircraft operations to the Quillayute facility. Therefore, the projections at Quillayute Airport were calculated with the premise of a total transition of aircraft operations and based aircraft from Forks Municipal Airport, precluding helicopter operations, by the year 2010."*

Table 3-7 summarizes the 2003 Airport Master Plan forecasts and notes the updated baseline activity, which represents 2021 activity. Based on the events occurring since the master plan was completed in 2003, forecast activity levels exceeds actual activity by a wide margin. As a result, no current comparison with the 2003 forecast is relevant.

TABLE 3-7: 2003 AMP – FORECAST SUMMARY

Forecast	AAGR	2000	2006	2011	2016	2021
Based Aircraft	10.1%	2	7	10	12	15
Annual Aircraft Operations	18.9%	500	8,482	14,216	16,472	19,088
2021 Baseline (Based Aircraft)	-	-	-	-	0	-
2021 Baseline (Aircraft Operations)	-	-	-	-	570	-

Source: Barnard Dunkelberg (2003); 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 Airport Master Plan'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 3-5**. The based aircraft forecast models are summarized in **Table 3-8** and depicted on **Figure 3-2**. 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 Master Plan 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

The absence of an established growth trend over the last 20 years eliminates the ability to develop reliable projections that rely on historical data. Based on these data constraints, four scenario-dependent forecasts were developed for based aircraft, each using the 2021 baseline of 0 based aircraft to generate 20-year forecasts. The scenarios reflect a range of assumptions related to future facility improvements at Quillayute Airport that would be expected to contribute to airport activity. Varying levels of aircraft relocation from Forks Municipal Airport to Quillayute Airport are also assumed for each forecast scenario.

Scenario 1 – Status Quo

Assumes maintenance only mode for existing airfield facilities. No significant facility improvements made during planning period. No hangar rental or public aviation fuel availability. Forks Municipal Airport remains open and maintained at current facility level. The projection assumes based aircraft at Quillayute Airport increase from 0 to 1 aircraft by 2041.

Scenario 2 – Basic Facility Improvements

Assumes basic airfield facility improvements including new runway edge lighting, instrument capabilities, and limited rental hangar availability (renovation of existing large hangar) in place by 2031. Facility improvements assumed to attract new to area aircraft and existing aircraft located at Forks Municipal Airport. The projection assumes based aircraft at Quillayute Airport increase from 0 to 4 aircraft by 2041.

Scenario 3 – Moderate Facility Improvements

Assumes all improvements included in Scenario 2, plus additional rental hangar availability (new construction) in place by 2031. Facility improvements assumed to attract new to area and additional based aircraft located at Forks Municipal Airport. Based aircraft at Quillayute Airport increase from 0 to 6 aircraft by 2041.

Scenario 4 – Full Facility Improvements, Closure of Forks Municipal Airport

Assumes all improvements included in Scenario 3 by 2041, plus closure of Forks Municipal Airport by 2035. Consolidation of local airport facilities is assumed to result in relocation of a 6 aircraft from Forks Municipal Airport to Quillayute Airport, with the remaining aircraft relocating outside the local area or becoming inactive due to fleet attrition. The projection assumes based aircraft at Quillayute Airport increase from 0 to 12 aircraft by 2041.

RECOMMENDED BASED AIRCRAFT FORECAST SUMMARY

Scenario 3 – Moderate Facility Improvements is the recommended based aircraft forecast model for use in the 2021-2041 Quillayute Airport Master Plan. The recommended forecast results in an increase from **0 to 6 based aircraft** at Quillayute Airport by 2041.

This projection assumes that facility improvements will be completed at Quillayute Airport that will contribute to growth in based aircraft due to improved operational capabilities and convenience provided by upgraded airfield facilities. The projection also assumes continued operation of Forks Municipal Airport during the 20-year planning period.

With a starting point of 0 based aircraft, it is important to note that any resulting growth rates for these projections are skewed. 15-year average annual growth rates are calculated for each forecast model based on the first forecast year (2026) with a listed based aircraft, projected to the end of the 20-year planning period (2026-2041). The actual growth rates may be different depending on the year when the first based aircraft is added between the 2021 baseline and 2026 forecast year, which could effectively reduce the equivalent 20-year average annual growth rate.

The based aircraft forecast models are summarized in **Table 3-8** and depicted on **Figure 3-2**.

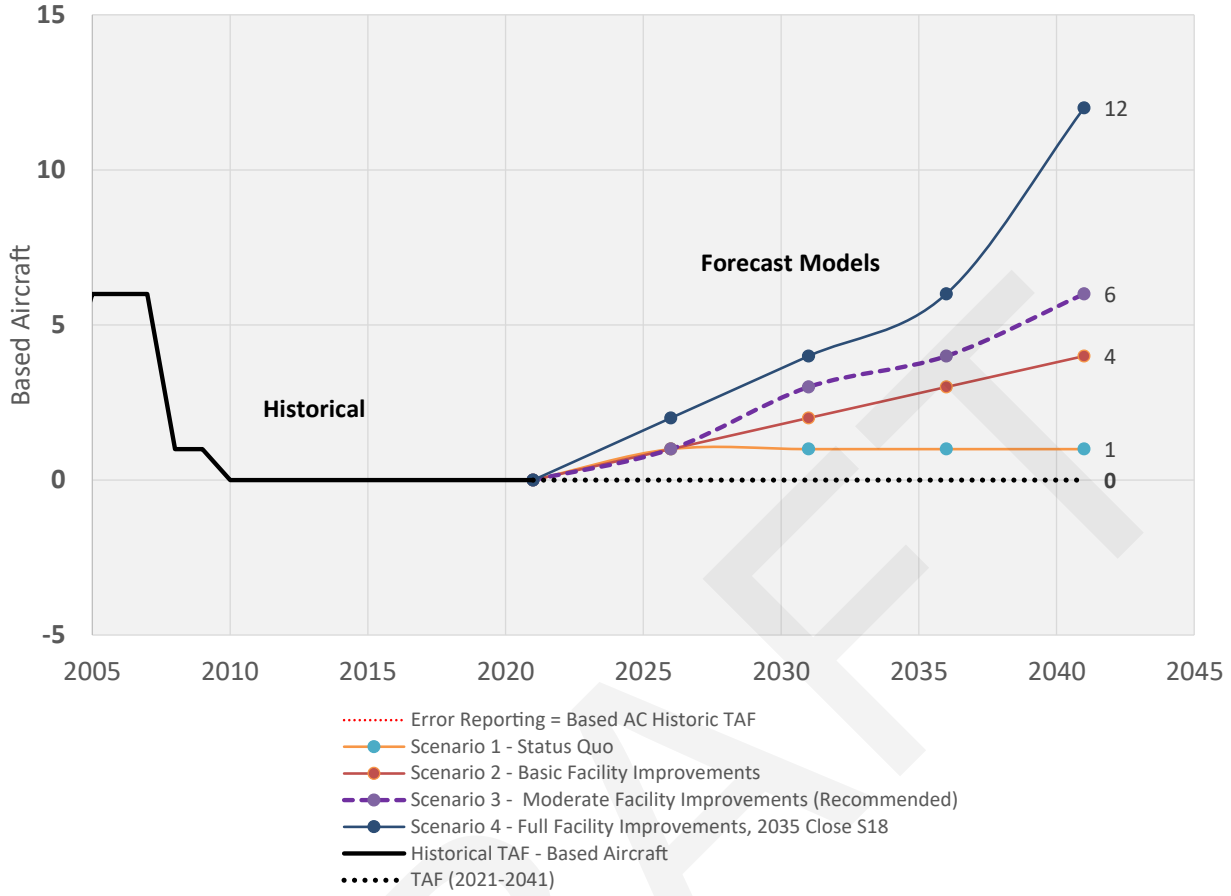
TABLE 3-8: BASED AIRCRAFT FORECAST MODELS (UIL)

Forecast	AAGR[1]	2021	2026	2031	2036	2041
Scenario 1 – Status Quo	0.0%	0	1	1	1	1
Scenario 2 – Basic Facility Improvements	9.7%	0	1	2	3	4
Scenario 3 – Moderate Facility Improvements (Recommended)	**12.6%**	**0**	**1**	**3**	**4**	**6**
Scenario 4 – Full Facility Improvements; Forks Municipal Airport Closed by 2035	12.6%	0	2	4	6	12

Source: Century West Engineering; AAGR: Average Annual Growth Rate
1. 15-year Average Annual Growth Rate calculated based on first year with based aircraft (2026) to 2041.

Based aircraft forecasts are primarily intended to identify future facility needs in forthcoming sections of the Airport Master Plan, 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 (+6) of based aircraft over the planning period. Accordingly, the long-term planning of landside facilities at Quillayute Airport should be capable of accommodating 12 additional based aircraft over the next 20 years.

FIGURE 3-2: BASED AIRCRAFT FORECAST (UIL)



BASED AIRCRAFT FLEET MIX

Table 3-9 summarizes the based aircraft fleet mix forecast for the planning period. The fleet mix at Quillayute Airport is expected to consist of single-engine piston aircraft and light sport aircraft (LSA)/experimental home-built aircraft, consistent with long term national general aviation fleet trends.

TABLE 3-9: FORECAST BASED AIRCRAFT FLEET MIX (UIL)

Aircraft Type	2021	2026	2031	2036	2041
Single Engine Piston	0	1	2	2	3
Multi Engine Piston	0	0	0	0	0
Turboprop	0	0	0	0	0
Jet	0	0	0	0	0
Helicopter	0	0	0	0	0
LSA / Experimental	0	0	1	2	3
TOTAL	**0**	**1**	**3**	**4**	**6**

Source: Century West Engineering

AIRCRAFT OPERATIONS

The absence of verifiable aircraft operations data at Quillayute Airport over the last 20 years eliminates the ability to develop reliable projections that rely on historical trends. Based on data constraints, aircraft operations projections were developed for each of the four scenario-dependent based aircraft forecasts:

- Each forecast uses a common baseline of 570 annual operations (2021).
- The anticipated increase of approximately 150 U.S. Coast Guard (USCG) annual helicopter operations at the Airport related to new jet fuel storage, is assumed to be fully realized in 2022 and 2023 as USCG operational missions are defined. This level of activity (200 annual operations) is maintained through the 20-year planning period.
- Annual operations associated with the projected number of based aircraft in each model are estimated using an FAA-defined operations per based aircraft (OPBA) ratio common to small general aviation (GA) airports (see note below).
- The existing baseline activity (570 annual operations, less USCG activity noted above) is projected to increase at an average annual rate of 1%, comparable to FAA Aerospace Forecast 2021-2041 growth rates for GA and Air Taxi operations at towered airports and hours flown for all GA aircraft.

Bullet #3 Note:

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.

The scenarios reflect a range of assumptions related to future facility improvements at Quillayute Airport that would be expected to contribute to airport activity. Varying levels of aircraft relocation from Forks Municipal Airport to Quillayute Airport are also assumed for each forecast scenario.

Scenario 1 – Status Quo

Forecast aircraft operations are consistent with the Scenario 1 based aircraft forecast assumptions. Aircraft operations increase due to the boosted USCG utilization of the Airport, growth in other existing user activity that is consistent with long-term economic growth in the area, and the addition of one based aircraft by the end of the planning period. Forks Municipal Airport continues to accommodate most of the air traffic generated at the two City of Forks airports. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 1,085 in the 2021-2041 planning period. This scenario maintains the existing emergency response capabilities at Quillayute Airport based on current airfield facilities.

Scenario 2 – Basic Facility Improvements

Forecast aircraft operations are consistent with the Scenario 2 based aircraft forecast assumptions. The anticipated facility improvements are expected to increase Airport utilization for both locally based aircraft and transient aircraft. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 1,835 in the 2021-2041 planning period. This scenario provides improved emergency response capabilities at Quillayute Airport that includes day/night operations in poor weather conditions.

Scenario 3 – Moderate Facility Improvements

Forecast aircraft operations are consistent with the Scenario 3 based aircraft forecast assumptions. More robust facility improvements are expected to increase the number of locally based aircraft that will generate increased aircraft operations levels. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 2,235 in the 2021-2041 planning period. This scenario also provides improved emergency response capabilities at Quillayute Airport.

Scenario 4 – Full Facility Improvements, Closure of Forks Municipal Airport

Forecast aircraft operations are consistent with the Scenario 4 based aircraft forecast assumptions. The closure of Forks Municipal Airport and consolidation of local aircraft at Quillayute Airport is expected to drive additional facility improvements and services that will in turn increase aircraft operations levels. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 3,835 in the 2021-2041 planning period. This scenario also provides improved emergency response capabilities at Quillayute Airport.

FAA Terminal Area Forecast (TAF) – Quillayute Airport

The current TAF operations projection (APO TAF Detail Report 2021-2046, Issued March 2022) for Quillayute Airport is provided for comparison to the operations forecast models. The current TAF (APO TAF Detail Report 2021-2046, Issued March 2022) projects annual aircraft operations to increase from a 2020 base of 6,700 to 11,208 by 2041, and to 12,347 in 2045.

Although the current TAF does not correlate to the baseline activity estimate developed in the Airport Master Plan, it does provide a projection that could represent the upper range for activity that could be realized at the Airport if activity deviates well outside the defined forecast scenarios.

RECOMMENDED AIRCRAFT OPERATIONS FORECAST

Scenario 3 – Moderate Facility Improvements is the recommended aircraft operations forecast model for use in the 2021-2041 Quillayute Airport Master Plan. The recommended forecast results in an increase from **570 to 2,235 annual aircraft operations** at Quillayute Airport by 2041. The projected increase in aircraft operations reflects a combination of increased USCG flight activity and increases in transient and based aircraft activity over the 20-year planning period.

This projection assumes that facility improvements will be completed at Quillayute Airport that will contribute to increased aircraft utilization and allow the Airport to attract based aircraft. The projection also assumes continued operation of Forks Municipal Airport during the 20-year planning period.

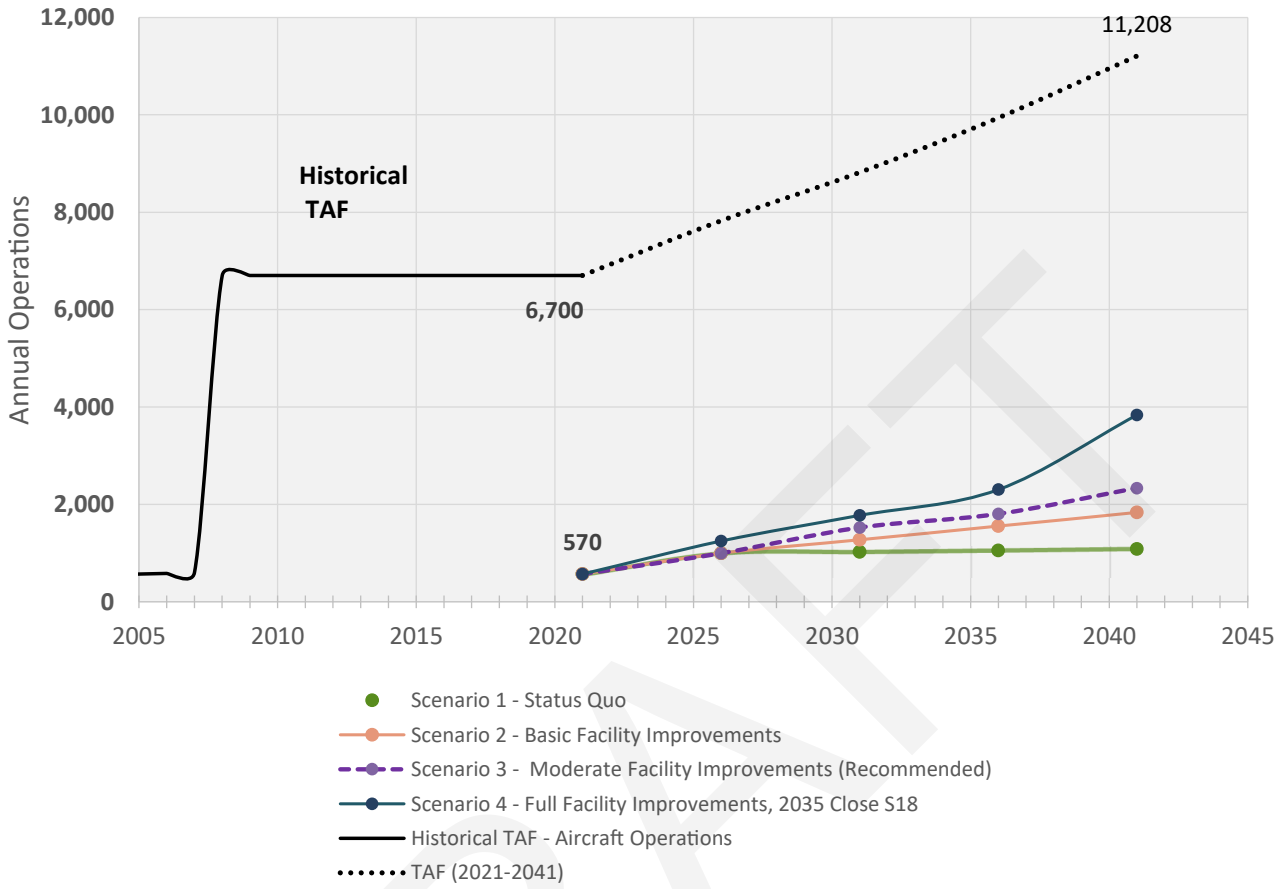
The new aircraft operations forecast models that were evaluated, including the recommended model and the current FAA TAF for the Airport are summarized in **Table 3-10**, and depicted on **Figure 3-3**.

TABLE 3-10: FORECAST ANNUAL AIRCRAFT OPERATIONS (UIL)

Forecast	AAGR	2021	2026	2031	2036	2041
Scenario 1 – Status Quo	3.27%	570	997	1,024	1,054	1,085
Scenario 2 – Basic Facility Improvements	6.02%	570	997	1,274	1,554	1,835
Scenario 3 – Moderate Facility Improvements (Recommended)	**7.07%**	**570**	**997**	**1,524**	**1,804**	**2,235**
Scenario 4 – Full Facility Improvements; Forks Municipal Airport Closed by 2035	10.00%	570	1,247	1,774	2,304	3,835
UIL TAF (2021-2041)	2.48%	6,905	7,826	8,818	9,939	11,208

Source: Century West Engineering

FIGURE 3-3: AIRCRAFT OPERATIONS FORECAST MODELS (UIL)



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 flight 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 air ambulance medevac flights, on-demand air charter, air cargo/express, cross-country flight training, and personal or business travel. By FAA definition, a transient aircraft flying to Quillayute Airport that conducts more than one landing and one takeoff (e.g., touch and go landings), generates both itinerant and local operations.

The current FAA Terminal Area Forecast (TAF) estimates the local/itinerant operations split at Quillayute Airport to be 48%/52%. This operational split appears to be high for an airport with no based aircraft and minimal flight training activity. However, since current and forecast air traffic volumes at the Airport are low, the local/itinerant split is reasonable for use in the forecast. The local and itinerant distribution for each forecast year is summarized in **Table 3-11**.

TABLE 3-11: FORECAST LOCAL & ITINERANT OPERATIONS (UIL)

Activity	2021	2026	2031	2036	2041
Total Itinerant Operations (48%)	274	479	732	866	1,073
Local Operations (52%)	296	518	792	938	1,162
Total Local & Itinerant Operations	570	997	1,524	1,804	2,235

Source: Century West Engineering

AIRCRAFT OPERATIONS FLEET MIX

As noted previously in **Table 3-5**, fixed wing aircraft currently account for just over 70% of operations at Quillayute Airport, with helicopters accounting for 30%. The operations fleet mix distribution at Quillayute Airport is expected to gradually change during the 20-year planning period, although the type of aircraft operating at the Airport is not. By 2041, fixed wing aircraft are projected to accommodate about 84% of operations at the Airport. The shift is attributed to an increase in based aircraft and transient flight activity demand related to facility upgrades including runway lighting and instrument approach capabilities.

Most current helicopter activity at the Airport is generated by various military users and the U.S. Coast Guard. Current fixed wing activity is predominantly civilian-generated. Most civilian fixed wing activity is generated by single engine piston aircraft, with multi-engine piston, single- and multi-engine turboprops, business jets, and helicopters generating the remaining flight activity. Military fixed wing traffic ranges from small piston aircraft to larger military transport and fighter aircraft.

The anticipated increase in USCG helicopter flights at the Airport is related to the addition of on-site fueling capabilities that will allow more mission flexibility in the area. Helicopter operations are projected to increase during the planning, although their share of total operations is projected to decrease to 15% by 2041. The future addition of instrument approach and departure procedures and runway lighting will improve all-weather access to the Airport for air ambulance operators and other general aviation users. The aircraft operations fleet mix forecast is summarized in **Table 3-12**.

TABLE 3-12: FORECAST AIRCRAFT OPERATIONS FLEET MIX (UIL)

Activity	2021	2026	2031	2036	2041
Single Engine Piston[1]	300	537	1,024	1,274	1,665
Multi Engine Piston	10	20	30	30	30
Turbo Prop	55	80	100	120	140
Jet	35	40	40	40	50
Helicopters	170	320	330	340	350
Total Operations	570	997	1,524	1,804	2,235

1. Includes light sport aircraft (LSA) and single engine piston experimental
Source: Century West Engineering

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 AND FUTURE CRITICAL AIRCRAFT

As noted in the chapter introduction, the recommended planning criteria for Quillayute Airport supported by FAA maintains the standards identified on the 2003 Airport Layout Plan as an effective way to preserve existing airport capabilities. This approach reflects the importance of maintaining the Airport's existing emergency response capabilities based on the unusual risk exposure to outer Olympic Peninsula coastal areas.

The **existing and future Airport Reference Code (ARC) for Runway 4/22 is B-II**, which is representative of a large multi-engine turboprop or medium business jet. A Beechcraft 300 series King Air is identified as the current and future critical aircraft.

The **ARC for the Airport's second (closed) runway, if reopened in the future, is A-I (small)**, which is representative of a small single-engine piston aircraft. A Cessna 182 is identified as the potential future critical aircraft for Runway 12/30. This selection is consistent with the 2003 Airport Layout Plan "future" ARC designation for the runway.

Table 3-13 summarizes current and forecast aircraft operations at Quillayute Airport by aircraft ARC.

Source: Textron Aviation

TABLE 3-13: FORECAST AIRCRAFT OPERATIONS FLEET MIX BY ARC (UIL)

Activity	2021	2026	2031	2036	2041
TOTAL OPS - A-I	300	537	1,024	1,274	1,665
TOTAL OPS - B-I	30	40	50	60	80
TOTAL OPS - A-II/B-II	50	80	100	110	120
TOTAL OPS - > B-II	20	20	20	20	20
TOTAL OPS - HELI	170	320	330	340	350
TOTAL OPS - ALL A/C	570	997	1,524	1,804	2,235

Source: Century West Engineering

Specific taxiway standards are defined by Taxiway Design Group (TDG), which are driven by the landing gear configuration of the critical aircraft. The TDG for both the Beechcraft King Air 200 and 300 series models is TDG 2.

It is noted that the runway length requirements for the current and future critical aircraft (multi engine turboprop) may be less demanding than for smaller aircraft that also use the runway, such as multi-engine piston aircraft. Consistent with FAA guidance on critical aircraft and ARC discussed earlier, the existing length of Runway 4/22 will be maintained; options for maintaining previously recommended runway extensions will be evaluated in the facility requirements chapter.

Figure 3-4 depicts the aircraft design criteria used to define ARC, and representative aircraft in each ARC category. The applicable dimensional standards for Quillayute 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	I	less than or equal to 49’
B	**92 to 121 Existing/Future**	**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

Airport activity peaking is evaluated to identify potential capacity related issues that may need to be addressed through facility improvements or operational changes. Based on the airfield configuration and forecast air traffic at Quillayute Airport, no operational peaking issues are anticipated. The following summary of peaking gauges typical conditions at the Airport.

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 Quillayute Airport is assumed to account for 30% of annual operations, which effectively captures increased summer (July or August) flight activity and concentrated periods of military flight training.

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.

Design Hour is the peak activity period in the Design Day. For planning purposes, the Design Hour operations are estimated to account for 25% of Design Day operations (Design Day x 0.25).

The operational peaks for each forecast year are summarized in **Table 3-14**. 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 3-14: PEAK AIRCRAFT OPERATIONS (UIL)

Aircraft Type	2021	2026	2031	2036	2041
Annual Operations	570	997	1,524	1,804	2,235
Peak Month Operations (30%)	171	300	457	541	670
Design Day Operations (average day in peak month)	6	10	15	18	22
Busy Day Operations (assumed 150% of design day)	9	15	23	27	34
Design Hour Operations (assumed 25% of design day)	2	3	4	5	6

Source: Century West Engineering

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 Quillayute Airport. 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 20 operations, which includes all medevac flights and a small number of charter flights. Future air taxi activity is projected to increase above current levels in conjunction with the addition of instrument capabilities at the Airport. For planning purposes, future air taxi activity at Quillayute Airport is estimated at 50 annual operations.

Forecast Summary

A summary of the based aircraft and annual aircraft operations forecast is presented in **Table 3-15**. These forecasts project modest growth over the 20-year planning period that is consistent with local airport conditions and anticipated improvements in facilities at Quillayute Airport that will encourage airport activity.

TABLE 3-15: FORECAST SUMMARY

Activity	2021	2026	2031	2036	2041
Itinerant Operations					
General Aviation	204	379	632	766	973
Air Taxi (On-Demand & Medevac)	20	50	50	50	50
Military	50	50	50	50	50
Total Itinerant Operations	**274**	**479**	**732**	**866**	**1,073**
Local Operations (Civil & Military)	296	518	792	938	1,162
Total Local & Itinerant Operations	**570**	**997**	**1,524**	**1,804**	**2,235**
Based Aircraft	0	1	3	4	6
Operations per Based Aircraft	-	997	508	451	373

Source: Century West Engineering

The average annual growth rate for aircraft operations at the Airport is 7.1% between 2021 and 2041. This rate of growth exceeds typical annualized growth rates commonly found at general aviation airports. However, the structural changes in activity attributed to adding based aircraft (increase from 0 to 6) in the 20-year planning period create more dramatic percentage increases than would otherwise be found with incremental growth on an established activity base.

TERMINAL AREA FORECAST COMPARISON

FAA review is required for both the based aircraft and the aircraft operations forecast for comparison to the current TAF, as presented in **Table 3-16** and **Figure 3-5**.

TABLE 3-16: TAF COMPARISON

Based Aircraft	2021	2026	2031	2036	2041
AMP Recommended Forecast	0	2	4	5	6
TAF	0	0	0	0	0
Percent Difference	**0.0%**	**≈200%**	**≈400%**	**≈500%**	**≈600%**

Aircraft Operations	2021	2026	2031	2036	2041
AMP Recommended Forecast	570	997	1,524	1,804	2,235
TAF	6,905	7,826	8,818	9,939	11,208
Percent Difference	**-91.8%**	**-87.3%**	**-82.7%**	**-81.9%**	**-80.1%**

Source: Century West Engineering

FIGURE 3-5: FAA TAF AND ALP FORECAST COMPARISON

Forecast Summary

UIL

Base Year: 2021

						Average Annual Compound Growth Rates			
	Base Yr. Level	Base Yr.+1yr.	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.	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	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
Total Commercial Operations	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
General aviation	170	175	287	544	674	2.9%	11.0%	12.3%	9.6%
Military	20	20	20	20	20	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	180	190	310	580	730	5.6%	11.5%	12.4%	9.8%
Military	180	330	330	330	330	83.3%	12.9%	6.2%	4.1%
TOTAL OPERATIONS	570	735	997	1,524	1,804	28.9%	11.8%	10.3%	8.0%
Instrument Operations	**0**	**0**	**50**	**50**	**50**	N/A	N/A	N/A	N/A
Peak Hour Operations	**2**	**3**	**3**	**4**	**5**	50.0%	8.4%	7.2%	6.3%
Cargo/mail (enplaned + deplaned tons)	**0**	**0**	**0**	**0**	**0**	N/A	N/A	N/A	N/A
Based Aircraft									
Single Engine (Nonjet)	0	0	1	3	4	N/A	N/A	N/A	N/A
Multi Engine (Nonjet)	0	0	0	0	0	N/A	N/A	N/A	N/A
Jet Engine	0	0	0	0	0	N/A	N/A	N/A	N/A
Helicopter	0	0	0	0	0	N/A	N/A	N/A	N/A
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
TOTAL	0	0	1	3	4	N/A	N/A	N/A	N/A
GA Operations Per Based Aircraft	N/A	N/A	**997**	**508**	**451**	N/A	N/A	N/A	N/A

Note: Rate of growth calculations can not be based off a zero base.

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	20	0	N/A
Base yr. + 5yrs.	2026	50	0	N/A
Base yr. + 10yrs.	2031	50	0	N/A
Base yr. + 15yrs.	2036	50	0	N/A
Total Operations				
Base yr.	2021	570	6,700	-91.5%
Base yr. + 5yrs.	2026	997	7,826	-87.3%
Base yr. + 10yrs.	2031	1,524	8,818	-82.7%
Base yr. + 15yrs.	2036	1,804	9,939	-81.8%

Note: TAF data is a 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 scope of work by extrapolating the average annual growth rates (AAGR) for the based aircraft and aircraft operations 20-year forecasts. The recommended aircraft operations forecast growth rate is extrapolated to 2071. The current FAA Aerospace Forecast long term projection for the national general aviation fleet (2021-2041: 0.1% Avg. Annual Growth) was used beyond the 2041 Airport Master Plan forecast. This adjustment is intended to temper the projected growth rate for based aircraft at the Airport that skews upward due to the forecast net increase from zero aircraft in the 20-year planning period. 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 3-17** summarizes the 50-year forecast including the intermediate 30- and 40-year projections.

TABLE 3-17: 50-YEAR FORECAST (UIL)

	2021	2041	2051	2061	2071
Annual Operations (1.04%AAGR)	570	2,235	3,451	5,329	8,228
Based Aircraft (1.04%AAGR)	0	6	6	6	7

Source: Century West Engineering