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AVIATION DEMAND FORECASTS

AIRPORT FORECAST METHODOLOGY

Aviation demand forecasts are prepared to estimate future airport facility and equipment needs. The preferred forecasts are used to identify the type, extent, and timing of aviation development, along with an estimate of the financial feasibility of airport development alternatives, and evaluating potential environmental affects. Aviation demand forecasts have been prepared for the following:

- Based aircraft by category
- Aircraft operations (landings & takeoffs)
- Critical aircraft (family of aircraft)
- Commercial enplaned passengers
- Military and air taxi operations
- Fleet mix by aircraft type
- Actual instrument approaches (AIA's)
- Commercial service operations

During the past decade, Jefferson County International Airport has hosted chartered non-scheduled commercial service aviation activity. Over the past two years the final two non-scheduled commercial service operators have closed operations and ceased to exist at JCIA. Due to the utilization of the facility as a commercial service airport in the recent past, methodologies to forecast commercial service departures, passenger enplanements, and commercial service aircraft operations will be completed to inform the airport sponsor what might be a reasonable expectation of commercial service demand at the airport should a Part 125 or 135 charter operator choose to begin commercial service to and from the Jefferson County International Airport.

Development of aviation forecasts involves analytical, trend analysis and judgmental assumptions to realize the highest level of forecast confidence. The general aviation demand forecasts are developed in accordance with national trends, and in context with the inventory findings, including local population, per capita income, and employment, as well as economic trends. The forecasts are time-based projections which provide a schedule for expecting demand levels, in which the forecasts ultimately serve as a guide for development – as demand and facilities warrant. National general aviation trends and forecasts, used to provide a baseline of growth rates, are provided by the FAA *Aviation Forecast (FY 2001-2012)*.



NATIONAL GENERAL AVIATION TRENDS

Several national trends have been identified as an influence to the forecast analysis for the Jefferson County International Airport. During the past several years, industry and legislative reforms have been initiated which are poised to bring rather significant change and growth to all aspects of the general aviation industry.¹

In conjunction with this, the growing national economy has induced a greater reliance of business aircraft utilization, but also a resurgence in recreational flying, as demonstrated by new pilots starts and aircraft shipments. These factors have resulted in a newly found optimism for long-term growth of the general aviation industry.

Overall, the general aviation segment of the industry is expected to experience moderate annual growth (0.9% to 1.5%) during the next 13 years, and within the 3 to 5 year period is projected to sustain activity levels experienced prior to the mid-1980's general aviation decline.

As examples, the single-engine general aviation fleet is becoming more sophisticated, with a gradual increase (average net of approximately 1,000 aircraft annually) in the fleet size and pilot training. The recent infusion of new aircraft technology into general aviation has resulted in improved performance, more reliable and cost-effective single-engine airplanes, as evidence of the manufacturing proliferation of new production airplanes and various experimental aircraft models.

More vibrant business utilization, combined with increasingly complex pilot and airspace regulations, have greatly contributed to a more sophisticated pilot population flying more advanced and demanding aircraft. Associated with this, the recent cost escalation associated with recreational flying, coupled with higher liability and taxes for those who own, rent, and operate general aviation aircraft, have contributed to an increase in business and itinerant aircraft operations relative to pilot training and recreational activity. This trend is becoming more evident at smaller, highly active general aviation airports such as JCIA.

The higher-value turbo-propeller aircraft (average annual increase of 1.2%) are being manufactured in advance of normal attrition, and continue to gain market share popularity. However, multi-engine piston engine aircraft are expected to remain constant during a large portion of the 20-year forecast period with twin-engine aircraft attrition rate equaling the production rate. Due to new airframe and engine technology and cost-sharing arrangements, turbojet (turbine/jet) aircraft also have become an economical substitute for a number of the larger twin-turbine propeller aircraft and are expected to grow at an annual increase of 4.3 percent. Overall, the turbine-powered fleet is expected to increase at an average annual rate of

¹ Aviation activity is often influenced by the types of airport services offered for transient and based aircraft, and by the general business environment. In addition, factors such as vigorous local airport marketing, gains in sales and services, increased industrialization, changes in transportation mode preferences, or fluctuations in the national or local economy all influence aviation demand.



three percent. In addition, the pre-owned general aviation aircraft market has remained strong. Also, national legislation passed in 1994 established an 18-year liability horizon for the design of general aviation aircraft and components, allowing more affordable design and navigational technologies in the mainstream marketplace, as well as a proliferation of experimental aircraft production under revised FAA certification guidelines. The above-mentioned, as well as numerous other reasons, cast a positive light on the possible continued prosperity of general aviation.

LOCAL AREA/JCIA FORECAST FACTORS AND ASSUMPTIONS

Based on information obtained in the inventory analysis, the following factors and assumptions have been incorporated into the forecasts of based aircraft and annual operations at JCIA.

- A net increase in based aircraft at JCIA will likely be influenced by the timing and availability of future hangar expansion, as well as business expansion at the Airport. In addition, an aircraft restoration business is based at the Airport, likely attracting additional based aircraft to the Airport in the short to mid-term planning phase. The demand for future based aircraft would likely arise from recreational/leisure/retirement and business interests from within the Port Townsend vicinity and outlying Quimper Peninsula and Puget Sound region.
- Establishment of published instrument approach procedures with minimums to increase the reliability and allow for the safe and efficient use of the Airport by additional single and multi-engine aircraft, as well as higher performance cabin class aircraft.
- Re-establishment within the short-term planning period of one or more charter/on-demand commercial carriers at JCIA utilizing primarily single and multi-engine piston powered aircraft.
- Future projections are provided for planning purposes only. The actual rate or aviation demand activity experienced at the airport will occur based upon market factors consistent with the provisions of this plan.

GENERAL AVIATION DEMAND FORECASTS

The JCIA aviation demand forecasts have been developed using statistical techniques including regression and multiple regression analysis, market-share evaluation, linear trend-line and time series analysis, as well as FAA growth rates. A judgmental analysis of the various forecasts culminates in the selection of a *preferred* forecast as a reasonable indicator of future general aviation demand at the Airport. The following provides a summary of the preferred forecasts.



FORECAST OF BASED AIRCRAFT

Table 3.1 summarizes the various forecasts of based aircraft prepared for the JCIA throughout the 20-year planning period. Forecasts of based aircraft were developed using multiple methodologies such as regression, linear trend line/trend extension, market share, time-series, as well as FAA annual growth rates per the *FAA Aerospace Forecasts (2001-2012)*. Judgmental or professional analysis was utilized in formulating the preferred forecasts as well.

Overall, the forecast methods resulted in a range of 117 to 177 based aircraft by the end of the planning period (2022), representing a 0.6% to 3.6% annual growth rate, respectively.

Due to the existing and historic information available, the forecast methodologies utilized provided a statistically acceptable confidence factor (90% significance). The preferred forecast was developed by averaging the outcomes of each of the forecast methods to arrive at a reasonable expectation of based aircraft demand. In addition, the preferred forecast of based aircraft represents a reasonably conservative projection, and is consistent with recent past airport trends, the anticipated growth of the general aviation fleet, and is realistic with respect to market factors and socio-economic conditions identified in the Port Townsend and Quimper Peninsula vicinity.

<p align="center">Table 3.1 <i>Summary of Based Aircraft Forecasts – Total Aircraft Jefferson County International Airport</i></p>							
Year	Regression/ Multiple Regression Analysis		Time Series Analysis	Jefferson County Market Share Analysis	Averaged (Cumulative Local Demand)	FAA Annual Growth Rates (National Average)	Linear Trend Line Analysis
2002	102	102	102	102	102	102	102
2007	109	111	99	106	107	105	107
2012	128	125	112	110	117	109	112
2017	151	139	123	113	126	113	118
2022	177	154	134	117	138	121	123

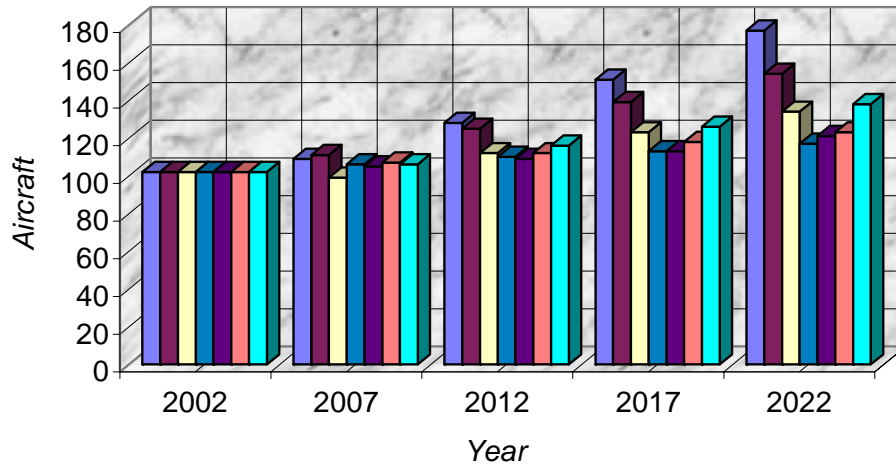
Note 1: Forecasts were not prepared for ultralights, rotorcraft, sailplanes/ gliders, or non-airworthy aircraft (5).

Note 2: The FAA fleet size rate of increase varies with the type of aircraft. The overall general aviation fleet is expected to grow at 0.9 % to 1.2% annually (2001-2012). The single-engine aircraft fleet is expected to grow at an annual rate of 0.6% to 1.2%, multi-engine at 0.0% to 0.5%, twin turbine-engine aircraft at 1.2%, and jet/turbine at 4.3%. Growth rates per category of aircraft were applied to the number of based aircraft starting in 2002.

Source: BWR, Summary Forecast of Based Aircraft, May 2002.



JCIA Based Aircraft Forecast Summary



- Regression Analysis
- Multiple Regression Analysis
- Time-Series
- Market Share Analysis
- FAA Annual Growth Rates
- Linear Trend Line
- Cumulative Local Demand

BASED AIRCRAFT FORECAST (PREFERRED)

Table 3.2 provides a detailed breakdown, by category, of the preferred mix forecast of based aircraft. The projected number of based airplanes was developed in reference to local area economic, social, as well as historic trends during the past 10-year period. For this, the baseline number of aircraft identified at JCIA in 2002 was incrementally adjusted during the planning period based on the survey and interview information collected with regard to the hangar waiting list demand, expected aircraft purchases, anticipated aircraft upgrades, as well as local area economics and demographics. The projected based aircraft estimate at the completion of the 20-year planning period represents a 42 percent overall growth rate which further accounts for an annual growth rate of two (2) percent. This growth rate is representative of small general aviation airport growth throughout the U.S. that is similar in size and activity to JCIA.



JEFFERSON COUNTY INTERNATIONAL AIRPORT (JCIA)

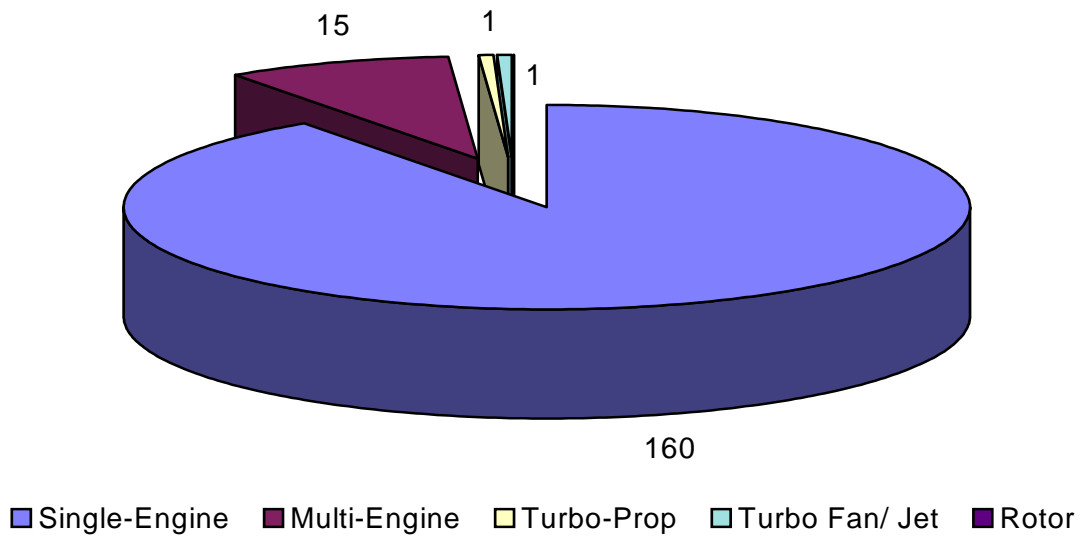
Airport Master Plan Update
Port of Port Townsend, Washington

<p align="center"><i>Table 3.2 Preferred Total Based Aircraft Forecast Jefferson County International Airport</i></p>						
Year	Single-Engine Aircraft (A-I)	Multi-Engine Piston (A-I to B-I)	Multi-Engine Turbine (B-II)	Business Jets (B-I to B-II)	Helicopters	Total Based Fixed-Wing Aircraft
2002	96	6	0	0	0	102
2007	100	9	0	0	0	109
2012	117	11	0	0	0	128
2017	138	13	0	0	0	151
2022	160	15	1	1	2	177

Note: Forecasts have not been prepared for other aircraft; ultralights, rotorcraft, sailplanes/ gliders, or non-airworthy aircraft.

Source: BWR, Preferred Forecast of Based Aircraft, January 2002.

Preferred Based Aircraft Forecasts





The significant aspect of the forecast indicates a realistic expectation for a small-cabin business turbo-prop to be based at JCIA by the end of the planning period, most likely as an upgrade from an existing based business twin-piston aircraft similar to the existing critical aircraft. This could likely occur as a shared general aviation interest amongst a group or consortium of local-area business interests or the arrival of a business enterprise in the area with the resources and need for such an aircraft. The arrangement of such a partnership could introduce similar aircraft through mechanisms initially provided by the FBO. Such arrangements, similar to fractional aircraft ownership, are the fastest growing component of the general aviation industry.

Additional twin-engine piston aircraft are shown to be based at JCIA, which corresponds with the existing and historical level and demand for twin-engine aircraft in the region. Additional single-engine aircraft being based at the airfield is contingent on the availability of additional hangar space and associated accommodations to include additional tie-down area and ramp space, as well as available area for hangar expansion.

AIRCRAFT OPERATIONS FORECAST (PREFERRED)

Table 3.3 summarizes the forecast of annual aircraft operations at the JCIA forecast phase. The forecast of operations was projected in reference to the forecast of based aircraft, as well as JCIA's utilization rate². The utilization rate, as specific to individual airports, is a common means to extrapolate future total traffic levels in using based aircraft figures.

For planning purposes, JCIA's utilization rate of 466 is expected to remain relatively constant throughout the planning period, a rate which is consistent with utilization experienced at the airport during the past 10 years. This particular utilization rate is also consistent with similar airport facilities with low flight training activity and a higher percentage of recreational aviation activity. With operations established by this methodology, itinerant and local operations were determined by application of the current relationship of local (30%) and itinerant (70%) operations.

The forecast of operations, similar to the based aircraft forecast, is a reasonable expectation of activity demand throughout the planning period. The additional 18,050 annual operations represent a 1.3% growth per year, an increase consistent with state and national projections for general aviation airports.

² **Utilization Rate** - Ratio of annual operations to the number of based aircraft, providing a consistent gauge of total activity relative to the number of based aircraft.



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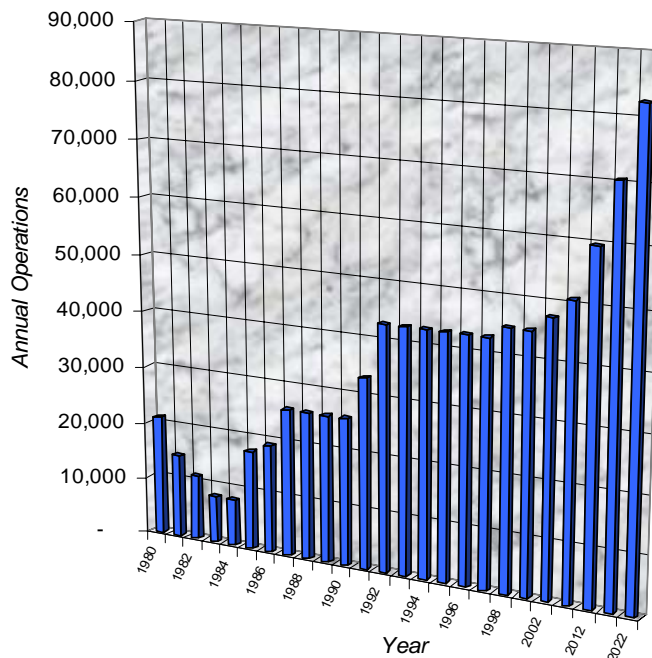
It should be noted that, although accounted in terms of an *unconstrained* forecast, levels of activity could fluctuate due to the success of flight training programs, FBO fuel and hangar pricing, active airport marketing initiatives, the introduction of an established Part 135 air charter/taxi service, or the timing of additional commercial business at the Airport.

Table 3.3 Preferred Aircraft Operations Forecast Jefferson County International Airport							
Year	Total Based Aircraft	Utilization Rate	Total Local Operations	Total Itinerant Operations			Total Forecast Operations
				Military	Air Taxi	Other Itinerant	
2002	102	466	14,280 (30%)	50	1,500	31,700	47,600
2007	109	466	15,240 (30%)	50	1,600	33,900	50,800
2012	128	466	17,910 (30%)	50	1,700	40,000	59,700
2017	151	466	21,120 (30%)	50	1,800	47,400	70,400
2022	177	466	24,750 (30%)	50	1,900	55,800	82,500

Note: *Other* itinerant operations include transient general aviation operations.
 Note: 2002 level of based aircraft – BWR airport inspection and survey responses, October 2001- February 2002.
 Note: Forecast operations were rounded to the nearest hundred for simplicity and planning purposes.
 Note: Annual forecast operations *do not* include potential commercial air service operations.

Source: BWR, Preferred Aircraft Operational Forecast, May 2002.

Forecast Annual Aircraft Operations



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COMMERCIAL SERVICE FORECASTS

Forecasts have been prepared as part of the Airport Master Plan Update to project the number of passenger enplanements, commercial aircraft fleet mix, and airline operational activity opportunities for the JCIA during the forecast 20-year period should an FAR Part 121/135 operator begin to offer service to and from JCIA. Given JCIA's historical commercial service activity, a forecast analysis was completed to provide the airport sponsor a reasonable estimate of the potential commercial service demand that might exist at JCIA should service initiate at the Airport in the near to distant future. The following section summarizes the key findings and *preferred* commercial service forecasts from the information prepared and researched.

The airline forecasts were developed using the following methodology:

- Potential enplaned passengers were estimated by identifying the demand and ability to retain air travelers from a defined *catchment* area established for JCIA.
- In the case of JCIA, the Airport's catchment/service area is the same geographical service area identified in the airport inventory chapter.
- The population base within the JCIA catchment area was forecast for the planning period with the peak passenger demand for the JCIA catchment/service area extrapolated from the county population forecasts;
- The analysis estimated the load factor and revenue passenger seats of numerous categories and types of aircraft which is representative of the equipment utilized for commercial service operations by regional airlines in the Quimper Peninsula and Puget Sound Region.

SCHEDULED and CHARTERED COMMERCIAL SERVICE PASSENGER DEMAND

Exhibit 2.3 located in the Airport Inventory chapter identifies the JCIA catchment/service area which includes portions of Jefferson County from which current and potential passengers are drawn. The total catchment area population residing within the immediate JCIA service area boundary is estimated to be 15,200 residents. A recent commercial airline service study conducted by the Kiehl Hendrickson Group found that it is common to expect that annual passenger enplanements for a given city are approximately equal to the population base being served. This one-to-one ratio is not true for all markets, but serves as a test of reasonableness across the industry. Results tend to follow the logic that a larger population base creates more passenger activity, unless certain unforeseen factors in the environment alter that one-to-one relationship. Therefore, JCIA's current potential annual commercial service demand is 15,200 enplaned passengers. Relying on Jefferson County population projections to the end of the 20-



year planning period, the potential annual commercial service enplanement demand may reach as high as 24,600 potential passengers.

It should be noted that the one-to-one relationship is an initial industry baseline for calculation purposes and is dependent on the community's ability to attract, as well as the commercial service operator's ability to retain, satisfactory air service for business and leisure travelers.

ESTIMATE OF JCIA'S COMMERCIAL SERVICE LOAD FACTOR

Load factor is defined as the percentage of the capacity of an aircraft that is in use. Simply stated, load factor is arrived at by dividing the revenue passenger miles by the available seat miles (aircraft seating capacity). For purposes of estimating commercial service demand at JCIA, recent trends, as well as airline studies, were referenced to arrive at a high and low range of load factors that could be applied to JCIA. Initially, a load factor of 45% is comparable to rural airports and small community airports that do, or have the potential to, accommodate commercial service such as JCIA. Secondly, a 60% load factor is one that allows a commercial service carrier to be profitable and one that is likely to accommodate growth of the carrier. Next, a load factor of 70% is representative of the current domestic scheduled passenger service industry as a whole. Finally, a 90% load factor represents an optimistic high range of air carrier seat occupancy.

Table 3.4 indicates the varying load factors throughout the 20-year planning period as they relate to aircraft equipment and influence annual enplanements at the Airport. For planning purposes, as well as clarity, a load factor of 70% was applied to the commercial service forecasts throughout the 20-year planning period. This was due in large part to the fact that airline passenger load factors can vary widely based on financial, sociological, and economic circumstances.

ESTIMATE OF COMMERCIAL SERVICE DEPARTURES AND ENPLANEMENTS

A passenger enplanement is defined as a passenger boarding a departing aircraft. The potential commercial service passenger enplanement forecast for JCIA was derived from making an educated assumption as to the passenger load factor, as well as specifying a particular number of aircraft departures per day. Initially, in the case of JCIA, a high and low range of one to three commercial service aircraft departures per day was utilized to form the first part of the enplanement estimate. Secondly, the enplanement forecast was also based on the assumption that service would be offered at JCIA a total of six days per week. The passenger load factor coupled with daily departures, as well as daily service throughout the year, yielded a high and low passenger enplanement estimate.

Table 3.4 depicts the forecast of the potential annual passenger enplanements for JCIA throughout the 20-year forecast period. The baseline of annual passenger enplanements for



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Table 3.4
Commercial Service/Passenger Enplanement Retention Forecast
Jefferson County International Airport

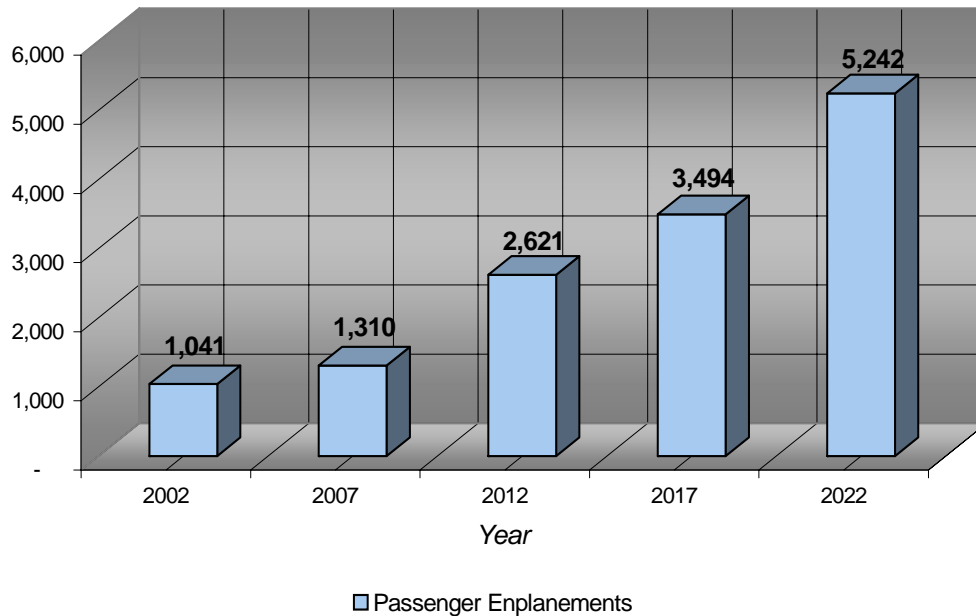
Year	Seating	Load Factor	Departures per Day	Catchment Area Retention Rate	Total Annual Passenger Enplanements	Peak Month	Design Day	Peak Hour
2002	-	-	-	6.8%	1,041	125	4	2
2007	6	70%	One (1)	7.6%	1,300	156	5	2
2012	6	70%	Two (2)	13.6%	2,600	312	10	5
2017	8	70%	Two (2)	16.0%	3,500	420	14	6
2022	8	70%	Three (3)	21.3%	5,200	624	21	9

Peak Month = 12% of the total passenger enplanements
Design Day = Peak month / 30 days
Peak Hour = Design day x 45%

Note: 2000 and 2001 passenger activity utilized as 2002 baseline of passenger enplanement activity at the airport. Annual passenger enplanements are rounded to the nearest hundred.

Source: BWR, JCIA Commercial Service/ Passenger Enplanement Retention Forecast, May 2002.

JCIA Passenger Enplanement Activity Forecast



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2002, which totaled 1,041, were based on combined 2000 and 2001 passenger enplanement data. Passenger enplanements could potentially increase steadily from approximately 1,041 in 2002 to approximately 5,200 at the conclusion of the 20-year period while utilizing six to eight passenger aircraft departing between one and three times per day over a six day per week period. Given the historical commercial service at JCIA, as well as the utilization of small regional air carriers in the Puget Sound region coupled with Port Townsend's standing as a vacation/leisure and retirement destination, it is not unreasonable to state that should a charter/on-demand commercial service carrier provide service at JCIA, the projected commercial service activity may well be justified, if not slightly under estimated.

Historically, JCIA was designated as a commercial service airport enplaning at least 2,500 passengers. The current commercial service forecast analysis indicates that JCIA could expect to enplane approximately 2,500 passengers during the mid-term planning period (2012) utilizing a six passenger aircraft, operating with a load factor of 70%, and conducting two departures per day. In order for the Airport to be designated as a primary commercial service airport enplaning at least 10,000 passengers annually, aircraft accommodating eight to ten passengers, conducting at least four departures per day with a load factor of up to 90% would be required to operate from the Airport in the future.

ESTIMATE OF JCIA COMMERCIAL SERVICE PASSENGER RETENTION RATES

Retention is defined as the percentage of the total potential commercial passengers that reside and utilize an airport accommodating commercial service within a specific catchment area. Passenger traffic "leakage" is defined as passengers who drive to another airport outside of the region to begin their travel. Leakage tends to be more common in the smaller communities, primarily because local air service is often not as attractive to consumers as it might be from larger cities within a reasonable driving distance. In the case of JCIA, Seattle-Tacoma International (SeaTac) and Port Angeles-Fairchild International (CLM) Airport would be the two facilities drawing potential passengers out of the JCIA catchment area to begin their travel by air.

The passenger enplanement forecasts for the short to mid-term (2007 an 2012) forecast period assume that a charter/non-scheduled regional carrier will initiate air carrier service at JCIA operating either single or twin-engine piston powered aircraft. This new service would likely operate to and from other commercial service airports in the region on an on-demand or charter basis. The catchment area retention rate for the short-term planning period (2007) indicates that approximately 7.6% of the potential commercial passenger enplanements would utilize air carrier service at JCIA. Conversely, JCIA would fail to capture, or "leak," 92.4% of the identified air traveler market to most likely either SeaTac or Fairchild International airports. Passenger retention rates are forecast to rise steadily throughout the middle to long-term planning phases (2007-2022) from as low as 7.6% up to nearly 21.3% (92.4 to 78.7% market leakage, respectively), while JCIA would accommodate six to eight passenger aircraft performing



between two and three departures per day. The rise in passenger retention, as well as additional daily departures assumes that more than one carrier would provide service at JCIA or that the single carrier service will experience sustained passenger activity and aircraft fleet growth. However optimistic, the total passenger enplanements and passenger retention rates will be largely attributed to airline pricing, as well as the types and level of air carrier services offered.

Table 3.4 includes the ranges of potential enplaned passenger demand for JCIA and retention sensitivities (percent of demand that JCIA could reasonably expect to retain). The passenger demand retention figures were arrived at by first determining the annual enplanement activity based on load factor and aircraft fleet utilization. Next, by utilizing the current JCIA catchment area population and incrementally adjusting it over the 20-year forecast period by utilizing the forecast annual population growth of Jefferson County, a low to high range of passenger retention rate estimates were generated.

ESTIMATE OF COMMERCIAL SERVICE FLEET UTILIZATION/FLEET MIX

Table 3.5 depicts the forecast of the commercial fleet mix for JCIA throughout the 20-year forecast period. The commercial service fleet utilization typically identifies a number of pertinent parameters in airport planning. At JCIA, this is primarily related to terminal area design features including ramp size, strength and geometry, passenger processing areas and servicing equipment needs, and public circulation areas. Airfield factors include an assessment of runway lengths based on maximum aircraft stage length capabilities (average distance traveled by an aircraft in order to determine its operating parameters at an airport), taxiway systems, and lighting and approach capabilities associated with the commercial aircraft design family.

The fleet mix has been developed on review of the carriers serving the Puget Sound/Quimper Peninsula region, in addition to the forecast levels of revenue passenger mile traffic as consistent with regional airline load factors. Other factors included in this assessment involve the stage length patterns reasonable with future commercial service destinations, the existing and expected production (transition) of FAR Part 121, 125 and 135 aircraft, and the potential impacts of governmental regulations (essential air service route program, airport security, noise, FAR Part 139, etc.).

Based on the forecasts of passenger enplanements and estimated retention rates for the JCIA catchment area, it is projected that commercial air service at JCIA would utilize primarily twin piston engine six, eight and nine passenger capacity aircraft manufactured by Cessna, Piper, and Raytheon. In addition, ten to 12 passenger capacity single and twin-engine turbine aircraft including the Cessna 207 "Grand Caravan", Cessna 425 & 441 "Conquest" series, as well as the Pilatus PC-12 aircraft, may also be utilized for commercial service at JCIA should the Airport experience high volume of commercial service demand and high passenger load factors and sustained growth.



<p align="center"><i>Table 3.5</i> <i>Scheduled Airline Fleet Utilization Forecast</i> <i>Jefferson County International Airport</i></p>				
Year	Aircraft Categories/ Annual Operations			Annual Commercial Service Operations
	Six (6) Passenger Seat Twin-Piston	Eight (8) Passenger Seat Twin-Piston	Nine (9-12) Passenger Seat Single and Twin-Engines	
2002	-	-	-	-
2007	600	-	-	600
2012	1,200	-	-	1,200
2017	200	1,300	-	1,500
2022	100	1,700	100	1,900

Source: BWR, Scheduled Airline Fleet Utilization Forecast, May 2002.

ANNUAL INSTRUMENT APPROACH (AIA) FORECAST

Table 3.6 summarizes the forecast of annual civilian instrument approaches for JCIA during the 20-year planning period. The forecast of annual instrument approaches (AIA's) provides further guidance in determining requirements for the type, extent, and timing of future navigational (NAVAID) equipment.



<p align="center">Table 3.6 Annual Instrument Approach Forecast (AIAs) Jefferson County International Airport</p>						
Year	Total Itinerant Operations- Transient/ Flight Training	Air-Taxi/ Commercial Service Operations	Percent IFR Rated Pilots	Percent IMC	Itinerant AIA Operations	Actual Itinerant AIA Operations (% of Total Operations)
Annual Instrument Approach (AIA) Forecast EXCLUDING Commercial Service Operational Activity						
2002	31,700	1,500	48.6%	3.9%	659	330 (0.69%)
2007	33,900	1,600	48.6%	3.9%	705	352 (0.69%)
2012	40,000	1,700	48.6%	3.9%	824	412 (0.69%)
2017	47,400	1,800	48.6%	3.9%	969	484 (0.69%)
2022	55,800	1,900	48.6%	3.9%	1,132	566 (0.69%)
Annual Instrument Approach (AIA) Forecast INCLUDING Commercial Service Operational Activity						
2002	31,700	1,500	48.6%	3.9%	660	330 (0.69%)
2007	33,900	2,200	48.6%	3.9%	729	364 (0.71%)
2012	40,000	2,900	48.6%	3.9%	871	436 (0.73%)
2017	47,400	3,300	48.6%	3.9%	1,027	514 (0.74%)
2022	55,800	3,800	48.6%	3.9%	1,206	603 (0.75%)
<p>Note: The percent of IFR Rated Pilots is based on FAA Forecasts (200-2012), and trend line (2013-2022). The increase in the percent of IFR-rated pilots is extrapolated from FAA forecasts, indicating 1.3 percent growth in IFR training during the next 12 years. The percent of IFR Rated Pilots is based on FAA Forecasts (2001-2012), and linear trend line (2013-2022).</p> <p>Note: Forecast based on unconstrained condition – IFR flight plans are completed and canceled after executing the full approach. Military operations are <i>not</i> included in the AIA forecast.</p> <p>Note: An instrument approach is defined as an approach to an airport, with intent to land in accordance with an instrument flight rule (IFR), when visibility is less than three nautical miles and/ or the cloud ceiling is at or below the minimum initial approach altitude.</p>						

Source: BWR, Annual Actual Instrument Approach Forecast, May 2002.
NOAA, International Station Meteorological Climate Summary (Version 4.0, September 1996).



AIRCRAFT FLEET MIX FORECAST

Table 3.7 presents the aircraft fleet mix forecast at JCIA for each phase throughout the 20-year planning period. The mix forecast is used to determine future airport design, structural and material needs, and was developed by applying the forecast of activity to future aircraft use patterns and trends obtained during the inventory analysis. Ultimately, three categories of general aviation aircraft are forecast to use JCIA: 1) light single-engine aircraft weighing less than 12,500 pounds; 2) light and medium twin-piston engine aircraft weighing less than 12,500 pounds; and 3) small to medium-cabin turbine powered aircraft, generally weighing less than 15,000 pounds.

<p align="center"><i>Table 3.7 Forecast Aircraft Mix by FAA Design Groups Jefferson County International Airport</i></p>				
<p><i>Aircraft Approach Category (AAC) - This grouping is based on 1.3 times the stall speed of the aircraft at the maximum certified landing weight in the landing configuration (knots).</i></p>				
Aircraft Approach Category	Existing (2002)	Phase 1 Short-Term (2002-2007)	Phase 2 Mid-Term (2008-2012)	Phase 3 Long-Term (2013-2022)
Category A (Less 91 knots)	42,600 (89.5%)	44,700 (88.0%)	51,900 (87.0%)	71,400 (86.5%)
Category B (92 to 120 knots)	5,000 (10.5%)	6,100 (12.0%)	7,800 (13.0%)	11,100 (13.5%)
Category C (121 to 141 knots)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Category D (142 to 165 knots)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Category E (166 knots or more)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
<p><i>Airplane Design Group (ADG) - A grouping of aircraft based on wingspan dimension (feet).</i></p>				
Airplane Design Group	Existing (2002)	Phase 1 Short-Term (2002-2007)	Phase 2 Mid-Term (2008-2012)	Phase 3 Long-Term (2013-2022)
Group I (Less than 49')	47,400 (99.5%)	50,550 (99.5%)	59,350 (99.25%)	81,800 (99.25%)
Group II (49' to 78')	200 (0.5%)	250 (0.5%)	450 (0.75%)	700 (0.75%)
Group III (79' to 117')	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Group IV (118' to 170')	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Group V (171' to 212')	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Group VI (213' to 261')	(0.0%)	(0.0%)	(0.0%)	(0.0%)
<p>Note: The aircraft approach category (AAC) is classified from A to E, and the airplane design group (ADG) is classified from I to IV. Combined, the two classifications produce an Airport Reference Code (ARC) which yields specific characteristics about the type of airplane that the airport is designed to accommodate.</p> <p>Note: Fleet mix estimates are rounded to the nearest hundredth (00); fleet mix estimates indicating 0% denotes total operations for the period are less than one (1) percent of total annual operations.</p>				

Source: FAA Advisory Circular 150/5300-13 (Change #6), Airport Design, BWR, Aircraft Mix Forecast, May 2002.



ULTIMATE CRITICAL AIRCRAFT/FAMILY OF AIRCRAFT

Table 3.8 provides information about the ultimate critical aircraft for JCIA. The critical aircraft is the largest airplane within a composite family or category of aircraft conducting at least 500 annual itinerant operations (combination of 250 takeoffs and landings) per year at JCIA. The future critical aircraft is evaluated with respect to size, speed and weight, and is important for determining airport design, structural, and equipment needs for the airfield and terminal area facilities.

The future critical aircraft for JCIA, identified by application of the forecast of fleet mix (executive travel, fuel, personal use) and itinerant activity, is a small to medium-sized cabin class turbo-prop aircraft in the ARC B-II family of aircraft. This category of aircraft was selected based on current airport usage, and forecast assumptions for activity by large aircraft. A common business turbo-prop representative of the ARC B-II fleet is the Raytheon/Beechcraft King Air C90, a six to twelve passenger pressurized cabin aircraft commonly used for executive travel and limited cargo and air ambulance transport.

<p align="center"><i>Table 3.8 Critical Aircraft Information – Future Aircraft Jefferson County International Airport</i></p>							
Aircraft Type & (ARC)	Wing Span	Aircraft Length	Aircraft Height	Seating	Max. Takeoff Weight	Ground Roll Distance*	Approach Speed**
Raytheon/ Beechcraft King Air C90B (ARC B-II)	50' 3"	35' 6"	14' 3"	6-12	10,100 lbs.	2,710'	101 knots
<p>Note : Takeoff distance for JCIA computations are based on aircraft manufacturers' specification and conditions. Note: (*) Takeoff distance over 50' obstacle at 10,100 pounds with flaps up; (**) Landing at 9,600 pounds, flaps down (without reversing), ISA, sea level, landing distance over 50' obstacle is 2,290 feet.</p>							

Source: BWR, Aircraft Performance File, 2002; Raytheon Aircraft, Wichita, Kansas, 2001.





AVIATION DEMAND FORECAST SUMMARY

Table 3.9 summarizes various forecast elements. The forecasts, combined with the inventory data, will be used to identify and develop the facility requirements for JCIA. The next chapter, Facility Requirements, identifies the types and extent of facilities required to adequately accommodate the demand levels identified in this chapter.

<i>Table 3.9 Aviation Demand Forecast Summary Jefferson County International Airport</i>					
	Existing (2002)	2007 (5 year)	2012 (10 year)	2017 (15 year)	2022 (20 year)
Total Forecast Based Aircraft					
Single-Engine Aircraft (A-I & B-I)	96	100	117	138	160
Piston Multi-Engine Aircraft (B-I)	6	9	11	13	15
Turbine Multi-Engine Aircraft (B-II)	0	0	0	0	1
Business Jet Aircraft (B-II to C-I)	0	0	0	0	1
Helicopters/Rotorcraft	0	0	0	0	2
Total Based Aircraft	102	109	128	151	177
Total Forecast Annual Aircraft Operations					
Local Operations	14,280	15,240	17,910	21,120	24,750
Other Itinerant Operations	31,700	33,900	40,000	47,400	55,800
Air Taxi Operations	1,500	1,600	1,700	1,800	1,900
Military Operations	50	50	50	50	50
Total Annual Operations	47,600	50,800	59,700	70,400	82,500
Commercial Service Operations	-	600	1,200	1,500	1,900
Total Annual Operations + Commercial Service Operations	47,600	51,400	60,900	71,900	84,400
Annual Passenger Enplanements	1,041	1,300	2,600	3,500	5,200
Annual Instrument Approaches (AIA)	330	352	412	484	566
Annual Instrument Approaches + Commercial Service AIAs	330	364	436	514	603
<p>Note: Annual instrument operations are counted as part of total annual operations; instrument operations include local and itinerant operations, but not military operations. The AIAs include only a projection of actual instrument approaches during IMC for general aviation.</p> <p>Note: Forecasts have not been prepared for other aircraft; ultralights, rotorcraft, sailplanes/ gliders, or non-airworthy aircraft.</p> <p>Note: Future projections are provided for planning purposes only. The actual rate or aviation demand activity experienced at the airport will occur based upon market factors consistent with the provisions of this plan.</p>					

Source: BWR, Aviation Demand Forecast Summary, May 2002.