2. Forecasts

2.1. INTRODUCTION

Forecasts of aviation demand are a key element in all airport planning. Demand forecasts, based upon the characteristics of the service area and airport, provide a basis for determining the type, size, and timing of aviation facility development and are a platform upon which this Master Plan is based. Consequently, these forecasts influence virtually all phases of the planning process. Major sections of this chapter include:

- Air Service Area
- Socioeconomic Trends
- Factors Affecting Future Aviation Demand
- Aviation Forecasts
- Forecast Summary and Comparison
- Future Design Aircraft

This section presents the methodologies and assumptions used in the development of the aviation forecasts. To provide a useful planning tool, the projections are presented for short (2016-2020), intermediate (2021-2025), and long (2026-2035) range time frames. These time frames will be used to develop the airport's capital improvement program (ACIP).

The aviation demand forecasts will serve three primary purposes in the development of this master plan. Specifically, they provide the basis for:

- Determining the necessary capacity of the airfield, passenger terminal area, general aviation area, and ground access network serving the airport.
- Identifying the needed size of future facilities and the type of expansion needed.
- Assessing the financial feasibility of alternative airport development scenarios.

Forecasts of aviation demand can be developed for numerous elements. In the case of the Wilkes-Barre/Scranton International Airport (AVP or the Airport), the key demand elements focus on scheduled airline passenger traffic and operations and general aviation descriptors such as based aircraft and operations. Other important elements are derived from these basic indicators. For this study aviation activity forecasts were prepared for the following elements:

Annual Passenger Enplanements – The number of people boarding aircraft at AVP each year.

Aircraft Operations – Defined as the number of takeoffs or landings at AVP (airline, general aviation, cargo, and military operations).

Based Aircraft by Type – Defined as a general aviation aircraft that is kept at an airport on a permanent basis.

Annual Instrument Approaches – Approaches during instrument meteorological conditions at AVP.

Airport statistics recorded 218,219 enplaned (boarding) commercial passengers in calendar year 2015. Total Domestic Passengers at AVP peaked in 2011 at a level slightly above 227,000 total passengers. Total passengers have been fluctuating and are just below 2008 total passengers, which is reflected by the FAA in their annual Terminal Area Forecasts (TAF). However, the actual enplanement level achieved by AVP for 2015 is ahead of FAA TAF projections.

The Northeastern Pennsylvania service area of the Wilkes-Barre/Scranton International Airport (AVP) has a total population approaching nearly 1.8 million residents and includes a 17-county region. The counties include: Bradford, Columbia, Lackawanna, Luzerne, Lycoming, Montour, Northern Monroe, North Central Schuylkill, Northumberland, Pike, Union, Sullivan, Susquehanna, Wayne, Wyoming and Broome and Chenango in Southern New York. Passenger enplanements have fluctuated since 2005 with a general decrease from 225,586 in 2011 to 218,219 in 2015. The recent decreasing trend was preceded by a series of increases during the periods from 2009 to 2011. The 2015 enplanement level is 2.4 percent greater than 2014. The continued commercial enplanements at the Airport have been influenced by the following factors:

- The airline fleet mix over the past decade had been predominately regional aircraft with the exception of less than daily or charter services to Florida. In 2014, Delta Air Lines restored mainline service on a network carrier.
- American and Delta combined provide over 72 percent of the seat capacity at AVP. None of the nonstop markets have competitive service. The AVP - PHL route has the most flights per day followed by AVP – DTW and AVP - CLT. Total seats increased by 22,562 in 2015 over 2014.

Higher levels of passengers are possible in the future, if AVP retains more of the passengers generated by its market as opposed to leakage to other Pennsylvania and New York airports, for example:

- New hub destination(s) enhance connecting opportunities,
- Larger two-class aircraft enhance product offerings for business travelers,
- Low fare service grows at AVP, or
- International charter flights increase at the Airport.

Other potential significant air service issues and influences on passenger levels include:

- The concern regarding continued increases in air fares often brought about by additional charges for services such as better seats, baggage fees, and change fees that could have a negative impact on leisure travel means of travel purchase (i.e. car versus air),
- A reduction in frequency of service brought about an industry-wide pilot shortage,
- The expansion of low cost service at Philadelphia and Newark International Airports,
- Any further reduction in the number of major U.S. carriers and low cost carriers brought about by mergers, including potential mergers involving Spirit Airlines and Frontier Airlines, Alaska and Virgin America, along with the remaining low cost airlines JetBlue and Allegiant.

Any combination of the aforementioned airlines could impact the number of major U.S. carriers,
- Changes to, or continued excessive delays in, the airport security screening process, and/or
- Return of high fuel prices.

This analysis will provide a base case forecast assuming the continuation of current passenger trends and alternative forecasts providing for varying levels of passenger and general aviation activity.

The forecasts were developed for 20 years based on existing conditions and inventory notes collected during meetings with tenants at AVP. The major benchmark years are 2020, 2025, 2030, and 2035. These years will be used to highlight growth within the forecasts and throughout the Master Plan as facility requirements are developed.

2.2. AIR SERVICE AREA

There are two service areas for AVP, as defined in Chapter 1, *Inventory*, of this Master Plan and discussed further in the following subsections.

2.2.1. Passenger Service Area

This section identifies the prime geographic area served by the Airport and the regional characteristics which influence aviation demand. It is recognized that air passengers come into the Northeastern Pennsylvania Region from outside the two-county market area and, conversely, local residents utilize other airports. However, this regional analysis provides a basis for identifying and understanding the AVP Core Catchment Area, which is comprised of a six-county geographic region and has been determined to be within a 45-minute drive of the Airport. The six counties include Lackawanna, Luzerne, Wyoming, Wayne, Susquehanna and Columbia. The total population of the Core Catchment Area is 772,668.

2.2.2. Identification of the Metropolitan Statistical Area and the Commercial Service Area

The Metropolitan Statistical Area (MSA) around AVP is defined as the four-county area of Lackawanna County, Luzerne County, Columbia County and Wyoming County. This area is defined by the U.S. Government as the prime business market for the area around AVP. For statistical purposes of this report, the MSA is used because of the comparable statistical data available.

A larger geographic area sometimes referred to as a Commercial Service Area (CSA) defines the boundary for an area that generates an airport's enplanements. Its boundary is determined by a variety of factors having to do with the relationship of airfares, air service, distance, the quality of transportation linkages between communities, and other factors within a given community with adjacent airport CSAs. The closest commercial service airports in the vicinity of AVP that are utilized by travelers in the Core Catchment Area include Wilkes-Barre Scranton (AVP), Lehigh Valley (ABE), Williamsport (IPT), Harrisburg (MDT), Elmira (ELM), State College (SCE), Binghamton (BGM), Philadelphia (PHL), Newark (EWR), John F. Kennedy International (JFK), LaGuardia (LGA), and Trenton's Mercer County Airport (TTN). For the purposes of this report, it was determined

that (with some additional counties) the CSA for AVP is primarily analogous to the geographical area of the MSA.

2.2.3. General Aviation Service Area

The general aviation service area is generally defined as a 30 nautical miles (nm) ring centered on AVP. Within this area there are ten airports of which AVP is the sole precision approach provider. Of these ten airports, AVP is one of four that provides Jet A fuel.

2.3. SOCIOECONOMIC TRENDS

2.3.1. Historical Population Comparison

This section identifies the key demographic characteristics of the MSA. The population of the MSA will be presented with comparable information for the entire United States and the State of Pennsylvania.

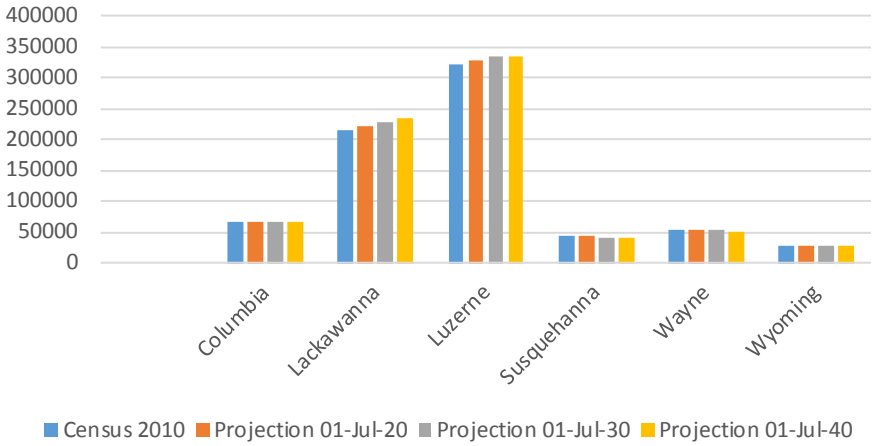
The Northeastern Pennsylvania region has a land area of 4,388 square miles and consists of seven counties: Carbon, Lackawanna, Luzerne, Monroe, Pike, Schuylkill, and Wayne. Wayne and Pike counties border the state of New York and Pike and Monroe counties share a border with the state of New Jersey. The population for each of the seven counties, along with the state and nation, is indicated in **Table 2-1** and **Figure 2-1.**

Table 2-1: Population for the United States, Pennsylvania and Northeastern Pennsylvania Counties, 2010 and 2014

County	Estimate 2010	Projection 2020	Projection 2030	Projection 2040	Percent Change 2010-2020	Percent Change 2010-2030	Percent Change 2010-2040
Columbia	67,311	67,759	67,922	67,091	1%	0.9%	-0.3%
Lackawanna	214,411	221,668	229,062	233,436	3.4%	6.8%	8.9%
Luzerne	320,925	327,889	334,201	335,149	2.2%	4.1%	4.4%
Susquehanna	43,348	42,355	41,525	40,133	-2.3%	-4.2%	-7.4%
Wayne	52,975	53,511	53,029	49,713	1.0%	0.1%	-6.2%
Wyoming	28,261	28,460	28,146	27,269	0.7%	-0.4%	-3.5%
Totals	**727,231**	**741,642**	**753,885**	**752,791**	**1.9%**	**3.6%**	**3.5%**

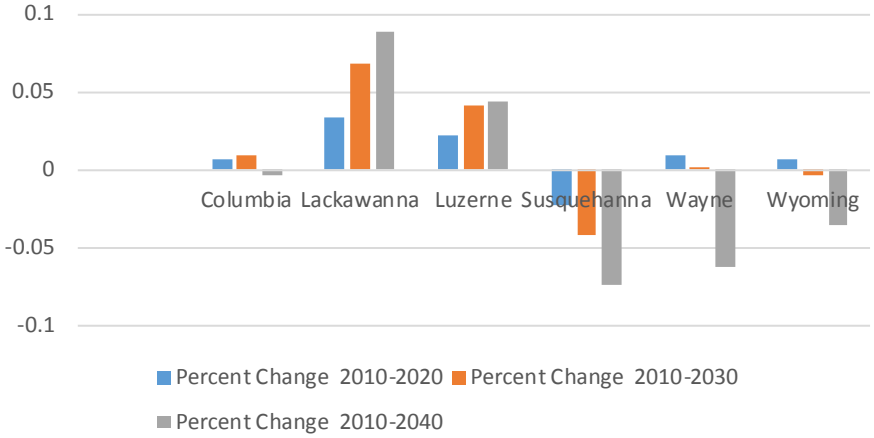
Source: The Center for Rural Pennsylvania, Pennsylvania Population Projections, 2010-2040.

Figure 2-1: Northeast Pennsylvania Population Forecast by County



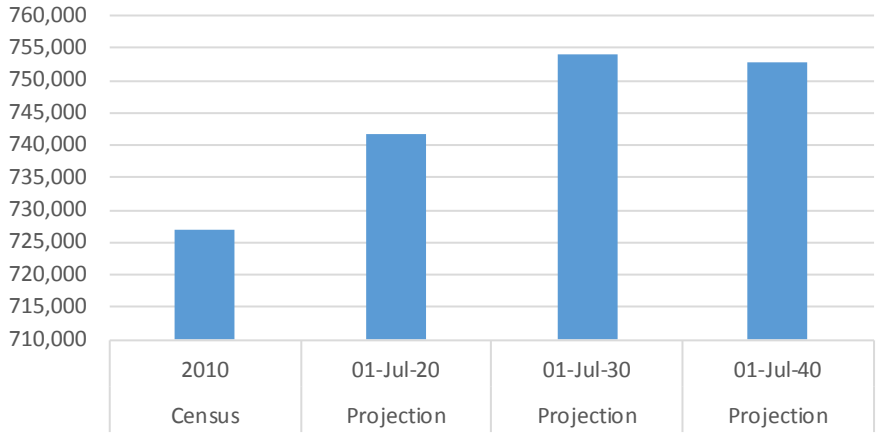
Sources: U.S. Census; the Center for Rural Pennsylvania, Pennsylvania Population Projects, 2010-2040.

Figure 2-2: Northeast Pennsylvania Population Forecast Percent Change by County



Sources: U.S. Census; the Center for Rural Pennsylvania, Pennsylvania Population Projects, 2010-2040.

Figure 2-3: Northeastern Pennsylvania Population Forecast



Sources: U.S. Census; the Center for Rural Pennsylvania, Pennsylvania Population Projects, 2010-2040.

2.3.2. Projected Air Service Area Population Comparison

The U.S. Census Bureau, Population Division population growth rates April 1, 2010 through July 1, 2014 indicated that the Northeastern Pennsylvania, the State of Pennsylvania, and the U.S. have contrasting population growth rates. The State of Pennsylvania grew at less than one percent (0.7percent) for the period from 2010 – 2014 with the U.S. growing at the fastest rate (3.3percent) and Northeastern Pennsylvania's growth rate below both the State and National rates at -1.3percent. The MSA grew at a slower rate (of 0.12 percent) than both the State and National rates but at a rate greater than Northeastern Pennsylvania itself.

2.3.3. Local Socioeconomics

A community's economic vitality is often directly correlated with increasing business travel and a growth in total aviation activity. Understanding how a community compares with the state and county trends is important to understanding the context of a local market. Current and projected economic trends and population projections associated with the Airport's MSA were examined and compared to Pennsylvania and the U.S. The economic metric and related data were produced by the Northeastern Pennsylvania Alliance (NEPA) as reported in its *2014 – 2015 Comprehensive Economic Development Strategy Annual Performance Report*. The NEPA Report provided forecast information on population, per capita personal income (PCPI), and employment growth in the local region, statewide and nationally.

The following summarized this demographic information:

- According to the U.S. Census Bureau, the population of Northeastern Pennsylvania in April 2010 was 1,028,926 and in July 2014 the estimated population was 1,015,692. This population decline was concentrated in Wayne County (-2.7 percent), Monroe County (-2.1 percent), Pike County (-2.0 percent), Schuylkill County (-1.7 percent), and Carbon County (-1.2 percent). Lackawanna and Luzerne counties also experienced a decrease with -0.8 percent and -0.7 percent, respectively. The population has become more diverse. In

2010, the region's population had a minority percentage of 13.3 percent. In 2014, the percentage rose to 15.6 percent.

- Northeastern Pennsylvania enjoys a diversified economic base. The region continues to be extremely competitive and successful as a location for warehousing and distribution centers, back office call centers, medical and health-related office facilities and processing centers, and food processing and distribution. Employment reflects diversification efforts and is not concentrated in any business sector.

- Northeastern Pennsylvania's business base is overwhelmingly dominated by small businesses. According to 2013 "County Business Patterns" from the U.S. Census Bureau, there were 22,059 businesses in the region and 73.6 percent of them employed between 1 and 9 people. The single largest industry sectors by employment are health care and social assistance and retail.

- In 2010, the not seasonally adjusted unemployment rate in the seven-county Northeastern Pennsylvania region was 9.7 percent, as compared to the nation, which was 9.6 percent and the state, which was 8.5 percent. From 2010 to 2014, the regional not seasonally adjusted unemployment rate decreased to 7.0 percent as compared to the nation and state, which decreased to 6.2 percent and 5.8 percent, respectively. In 2013, the not seasonally adjusted unemployment rate in the seven-county Northeastern Pennsylvania region was 9.1 percent, as compared to the nation and the state, which were both 7.4 percent. In October 2015, the not seasonally adjusted unemployment rate in the region was 5.3 percent as compared to the nation with 4.8 percent and the state with 4.6 percent, respectively.

- Pennsylvania has historically had employment growth rates at approximately half of the U.S. employment AAGR. The MSA has experienced employment growth rates slower than the State and Nation. The growth rates are anticipated to remain consistent with the growth rates over the past 40 years.

Although the population is not expected to change from current levels into the future, the slower forecasted decline indicates some strengthening in the local economy for the area.

2.4. FACTORS AFFECTING FUTURE AVIATION DEMAND

A number of factors influence aviation activity at AVP. Among these factors are national economic conditions, local socioeconomic conditions, and airline industry conditions. The local socioeconomic factors were evaluated earlier in this report. This section reviews other factors to provide insight on how these variables may influence demand for future aviation activity at the Airport.

2.4.1. National Economy

National economic conditions typically have a strong effect on local aviation demand. Local aviation demand is typically more robust during periods of strong economic growth and weaker during economic recessions. Often increases in aviation activity foretell of future economic growth. During production of this forecast, the national economy continues to recover from the recession that began in general in 2007. Air travel and airline profitability have recovered as well with airlines reporting record levels of revenue.

The national economy is cyclical and grows over long periods of time. The national FAA forecast and other national forecasts anticipate Gross Domestic Product (GDP) growing at about 2.6 percent annually over the long term. While these forecasts have been considered in calculating future annual growth rates at the Airport, the timing, extent, and rate of annual growth in the U.S. economy and future changes in real disposable income will affect the rate of future airline traffic both nationally and at the Airport.

2.4.2. Airline Industry

The airline industry is evolving rapidly in order to achieve sustained profitability as the economy continues to improve. There have been a number of airline mergers reducing overall system capacity and affecting individual market competition. These mergers have created more efficient airlines with increased load factors and profits, primarily resulting from reduced competition and passenger choices.

At the time of the writing of this forecast (May 2016), fuel prices have stabilized and decreased across the country resulting in record profits for most US airlines.

Recovery of the economy has also increased leisure and business travel while the airlines have continued slow growth in seating capacity. The net result between the economy and the mergers is fewer flight options nationwide and higher ticket costs to the passengers, but stronger airline profits. National and AVP aviation statistics reflect these industry conditions in the form of recent year over year declines and minimal growth in the number of passengers and commercial operations. The bulk of the traffic growth has been occurring at large-hub airports where competition is at its greatest.

Despite slow economic growth at home and abroad, 2015 was a very strong year for U.S. aviation. Stable demand, falling yields and falling costs added up to a year of record profits for the U.S. airline industry. Airline yield is a measurement of cost to travel calculated by dividing passenger revenue by passenger revenue miles. Demand for air travel in 2015 grew at the fastest pace since 2007 despite modest economic growth in the U.S. In 2015 system revenue passenger miles (RPMs) increased 3.8 percent as enplanements increased at the same rate. Domestic RPMs were up 4.8 percent while enplanements were up by 4.2 percent. Yields fell for the first time in five years. In domestic markets, falling oil prices and rapid expansion by ultra-low cost carriers such as Spirit and Allegiant led to a 1.6 percent decline in the average passenger yield. In 2015, the mainline carrier group provided 0.9 percent less seat capacity than it did in 2007 (but carried 2.1 percent more passengers, thus load factors increased). Seat capacity flown by the regional group has shrunk by

3.0 percent over the same period (with passengers carried down 2.1 percent) (source: FAA Aerospace Forecast Fiscal Years 2016-2036).

Within the airline industry, there has been a 7.0 percent reduction in domestic seat capacity since 2007 with the majority of the reduction from the mainline carriers instead of their regional counterparts. To better match demand to capacity, the mainline carriers contract out the thin routes to their regional counterparts. This resulted in the mainline carriers providing 8.0 percent less capacity while the regional carriers decreased capacity by only 0.4 percent.

Aircraft Fleet Trends

For the past decade, the industry has been continuing on the trend toward airlines use of larger, more efficient aircraft. Efficiencies are gained not only in fuel, but also flight crews. The Boeing Company produces a state of the aircraft industry document each year assessing world and world region airline growth. The Boeing Current Market Outlook (2014-2033)[1] forecasts world passenger traffic growth to be 5.0 percent and 2.9 percent in North America. Growth in the air cargo industry is forecast to be 4.7 percent worldwide and 3.4 percent in North America. Boeing forecasts that aircraft delivery increases in single-aisle aircraft worldwide will increase from 64 percent of the total fleet to 70 percent of the total fleet over the next 20 Years.

For the North American market, Boeing forecasts that 64 percent of 7,550 deliveries will be in single-aisle aircraft. Regional jet aircraft are a separate projection from single-aisle aircraft. Importantly, regional jets are projected to comprise 21 percent of future deliveries, but this represents a decrease in expectation of 20 percent over the 2013 forecast. The remaining growth will be in double-aisle aircraft.

For the entire fleet, 42 percent of new airplanes will be replacements and 58 percent are for growth.[2] In terms of the fleet at large, "over the past 20 years, average aircraft size across short, medium, and long regional routes have been converging to 160 seats as the flexibility of today's single-aisle aircraft allows airlines to fly more directly, more often, and more efficiently. Low-cost carriers, whose business models focus on fleet commonality, also drive demand for single-aisle airplanes and are expected to take 40 percent of single-aisle deliveries."[3]

The implication of these trends for AVP is an up-gauge from the less fuel efficient, under 60-seat, regional jets to those larger than 60 seats. It is anticipated that airlines may use a variety of models in the future, such as a 65-seat CRJ-700, a 70-seat ERJ 170, a 76 seat CRJ-900 or ERJ 175, and even a 110 seat B-717. This trend has already begun to occur in some other parts of the U.S. including Northeast Pennsylvania.

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[1] Boeing Current Market Forecast (2014-2033).
[2] Boeing Current Market Forecast (2014-2033), 2014, p. 15.
[3] Boeing Market Outlook (2014-2033), 2014, p. 16.

Passenger Yield Trends

Passenger yield information is important from the airline perspective as it drives the way a community is served based upon the voracity of the market. Airline yield is a measurement of cost to travel calculated by dividing passenger revenue by passenger revenue miles. This is a key metric that is often used in aviation forecasts. As yields rise, the use of air travel typically falls. As yields fall, the use of air travel typically rises. Table 2-2 illustrates the FAA's yield forecast identified by the FAA's 2015 Aerospace Forecast. As the table indicates, the recent rise in yields is forecast to continue for the next two to three years, and then the forecast calls for yields to fall into the long-term future. If the historic relationship between yield and air travel continues, lowers yields will result in higher enplanement forecasts in the future.

From the passenger perspective, passenger yield manifests itself in airfares. Air travel is often highly price sensitive, especially leisure and vacation travel. The consumer may make a decision on which airline to fly or which airport to fly from, depending upon the airfare. There are other variables – frequent flyer program preferences, time/inconvenience of travel to another airport, the cost of gasoline or parking – among others. For purposes of comparison with other airports, 1st quarter 2016 from the U.S. Department of Transportation, Bureau of Transportation Statistics fares were compared in Table 2-3.

Table 2-2: Airline Yield

	Historical							Percent Average Annual Growth			
Scenario	2015E	2016	2021	2026	2031	2036	2015-16	2016-21	2016-26	2016-31	2016-36
Pessimistic	14.36	13.71	16.41	18.91	21.36	24.18	-4.60%	3.70%	3.30%	3.00%	2.90%
Baseline	14.36	13.98	16.05	18.07	19.53	21.17	-2.60%	2.80%	2.60%	2.30%	2.10%
Optimistic	14.36	14.14	15.86	17.94	19.2	20.68	-1.50%	2.30%	2.40%	2.10%	1.90%

Source: FAA Aerospace Forecast Fiscal Years 2016-2036.

Table 2-3: Airlines Fares for Selected Cities – 1st Quarter 2016

Airport	Average Fare (Each Way)
Philadelphia International Airport	$195
Lehigh Valley International Airport	$204
Wilkes-Barre/Scranton International Airport	$207
Pittsburgh International Airport	$207
Harrisburg International Airport	$252
Newark- Liberty International Airport	$254

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, 1st Quarter 2016.

2.4.3. Summary

The variables discussed in this portion of the chapter play an important role in estimating the future demand for aviation activity at the Airport. The State of Pennsylvania has generally experienced population, PCPI, and employment growth since 2010 to the present, and these socioeconomic factors are projected for slow growth throughout the forecast period. These factors are judged as possible contributors to increases in passenger growth in the future.

2.4.4. Aviation Forecast Approach

The evaluation of both the local socioeconomic trends and external demand forces resulted in the forecasts that are incorporated into the Master Plan for AVP. These forecasts serve as the basis for the airport facility requirements that will be developed in Chapter 4. The forecast elements are grouped into the following areas:

- Air Carrier Operations and Passenger Enplanements
- General Aviation Operations
- Based Aircraft

Existing FAA Forecasts - Forecast guidance is available from several existing sources within the FAA. The FAA Terminal Area Forecast (TAF) is developed on general airport knowledge, high level trends, and national rates of growth or decline. No comprehensive airport-specific analyses are conducted as part of the development of the TAF. While these forecasts are not based on a master plan level analysis, they are considered generally reasonable and it is standard industry practice to use them as a benchmark for any other forecast. Forecasts that are not generally consistent with the TAF (10percent off within 5 years and 15percent off within 10 years) must be submitted to the FAA Office of Airport Planning and Programming for further analysis and approval.

Alternative Scenarios - Since its inception, the aviation industry has been in a constant state of change with new developments and technology constantly evolving. This forecast chapter will identify cases where an alternative scenario may exist in the future that have the potential to notably alter the operational activity at the Airport. The alternative scenarios are separate from, but supplemental to, the selected preferred forecast, which will be submitted to the FAA for approval. The alternative forecast scenarios will allow the Airport to quickly consider the impact of changes that could occur outside of the FAA approved forecasts.

2.5. HISTORICAL ACTIVITY REVIEW

The section presents a brief review of long-term historical trends in various elements of aviation activity at AVP. Elements reviewed include airlines serving the Airport, markets served, annual enplaned passengers, annual aircraft operations, cargo operations, and general aviation operations.

2.5.1. Airlines Serving the Airport

Delta Air Lines provides mainline and regional jet service to AVP with regional airline partners being used for United and American Airlines. ExpressJet has the largest market share of all Regionals serving AVP at 33.18percent. These airlines use four passenger boarding bridges in the passenger

terminal. Delta Airlines, American, and United all process belly cargo at AVP with some service by cargo carriers.

2.5.2. Markets Served

Non-stop service to six hub airports provides passengers from AVP with worldwide connections. Most flights to these hub airports are conducted using 50-seat to 90-seat CRJ and DH-8 aircraft. In addition to mainline service, Allegiant Airlines serves Orlando/Sanford International Airport with two weekly departures. Allegiant also serves Tampa/St. Petersburg with two weekly departures. These are shown in **Table 2-4**.

Table 2-4: Airlines Serving AVP – 2nd Quarter 2016

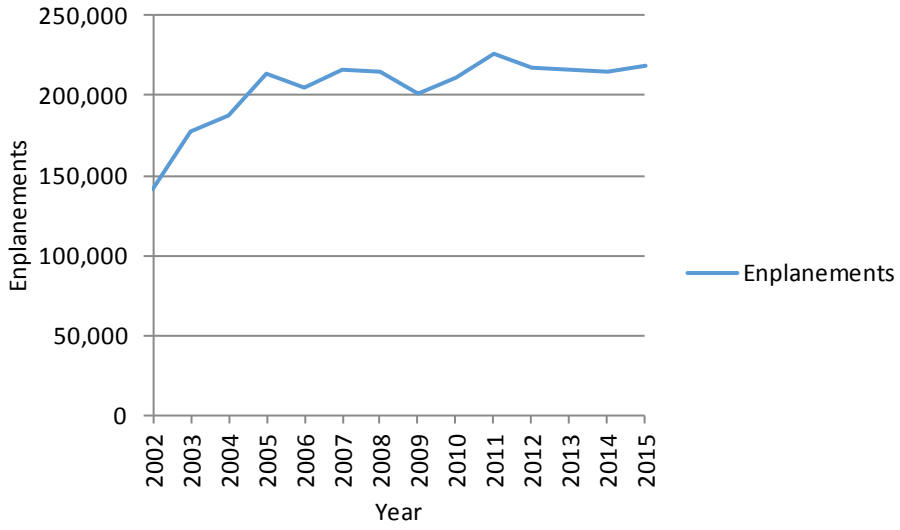
Airlines Serving AVP	Non-Stop Destinations	Daily Departures
Delta	Detroit	3x
	Atlanta	1x
United Airlines	Chicago O'Hare	2x
	Newark	2x
American/American Eagle	Philadelphia	5x
	Charlotte	2x
Allegiant Airlines	Orlando - Sanford	Twice Weekly
	Tampa - ST. Pete (PIE)	Twice Weekly

Source: Flight Schedules 6/1/16.

2.5.3. Annual Enplaned Passengers

Total enplaned passengers declined slightly each year between 2011 and 2014. The historical decrease in enplanements was due to many events such as lagging impacts of the economic recession, a slow recovery of the U.S. and Pennsylvania economy, airline service reductions, air service competition from other regional Pennsylvania airports, and a population in Northeastern Pennsylvania that is in a very slow decline. **Figure 2-4** and **Table 2-5** show historical annual enplanements. **Table 2-6** shows historical load factor trends. **Table 2-7** shows year over year comparisons in AVP's top ten domestic destination demand.

Figure 2-4: Passenger Enplanement Trends



Source: FAA TAF, 2015.

Table 2-5: Historical Annual Enplaned Passengers

Year	Enplanements	Difference	Percent Change
2002	189,970		
2003	183,622	-6,348	-3.34%
2004	196,864	13,242	7.21%
2005	216,554	19,690	10.00%
2006	214,631	-1,923	-0.89%
2007	217,823	3,192	1.49%
2008	220,702	2,879	1.32%
2009	208,189	-12,513	-5.67%
2010	206,339	-1,850	-0.89%
2011	227,128	20,789	10.08%
2012	222,809	-4,319	-1.90%
2013	216,675	-6,134	-2.75%
2014	213,116	-3,559	-1.64%
2015	218,219	5,103	2.39%

Source: FAA TAF 2015 (2002-2014) and Airport Management.

Table 2-6: Historical Load Factors

Year	Load Factor
2002	54.8%
2003	67.2%
2004	66.7%
2005	63.2%
2006	71.2%
2007	78.9%
2008	81.2%
2009	83.1%
2010	84.7%
2011	83.3%
2012	77.2%
2013	81.5%
2014	86.7%
2015	86.0%

Source: Bureau of Transportation Statistics T-100 Segment data.

Table 2-7: Year Over Year Top 10 Domestic Market Comparisons

Destination Airport	Destination City Name	JAN 2015 - DEC 2015 Passengers (each-way)	JAN 2014 –DEC 2014 Passengers (each-way)	Passengers Difference	Passengers % Difference
SFB	Orlando/Sanford	14,359	14,020	339	2.4%
CLT	Charlotte	9,223	8,023	1,200	15.0%
MCO	Orlando	8,811	7,994	816	10.2%
ORD	Chicago	8,789	10,653	-1,864	-17.5%
ATL	Atlanta	7,856	7,467	389	5.2%
DFW	Dallas/Fort Worth	7,130	6,003	1,126	18.8%
TPA	Tampa	6,148	4,877	1,271	26.1%
FLL	Fort Lauderdale	5,093	4,558	535	11.7%
DEN	Denver	5,021	3,955	1,067	27.0%
LAS	Las Vegas	4,988	4,228	760	18.0%

Source: Bureau of Transportation Statistics T-100 Segment data.

2.6. ANNUAL AIRCRAFT OPERATIONS

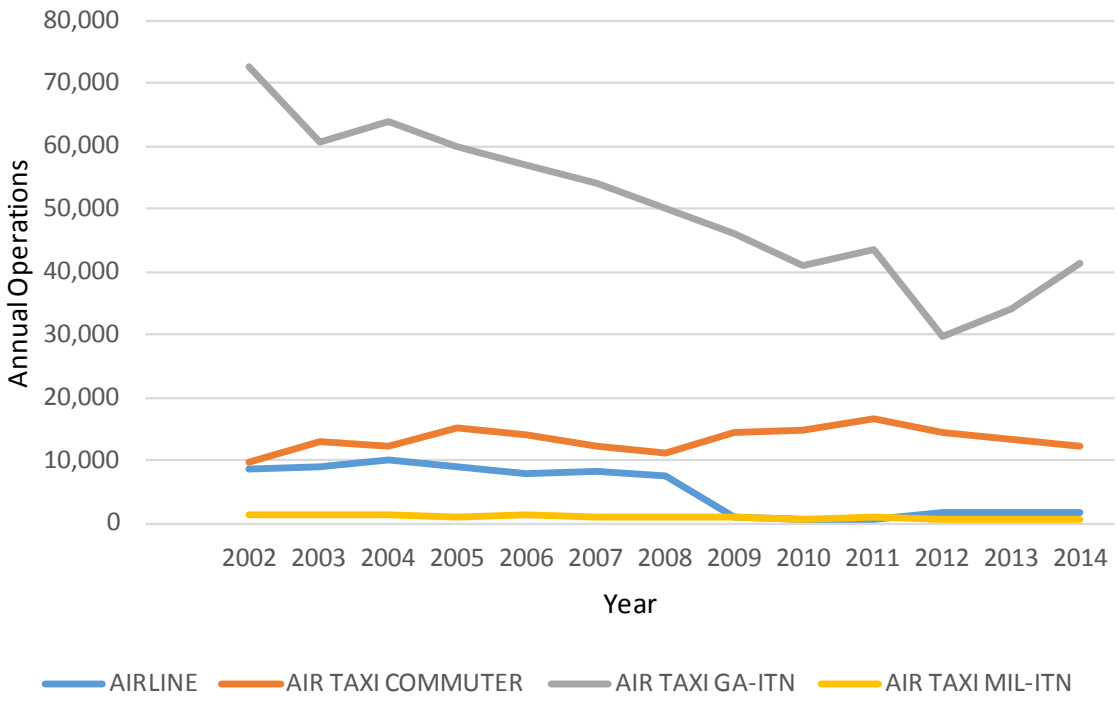
An aircraft operation is defined as either a takeoff or a landing. Table 2-8 presents historical annual aircraft operations recorded at the Airport in four categories: air carrier, commuter/air taxi, general aviation, and military. The FAA defines an "air carrier operation" as being either a takeoff or a landing of a commercial aircraft with a seating capacity of more than 60 seats. The term "commuter operation" refers to a scheduled commercial flight by aircraft with 60 or fewer seats. Included in the same category with commuter operations are air taxi operations, which are nonscheduled flights or for-hire flights of aircraft with 60 or fewer seats, primarily business jets operating under FAR Part 135 (functioning as general aviation). General aviation operations represent all civil aviation takeoffs and landings not classified as commercial (air carrier or commuter) or military. Since the commuter/air taxi category encompasses both commercial and general aviation operations, this forecast will categorize operations that best associate with the respective facility requirements. Air carrier and scheduled commuter/air taxi (i.e. regional jets) will be combined and referred to as "airline", whereas air taxi operations under FAR Part 135, though commercial, will be considered as general aviation itinerant operations, as it is consistent with the airport use profile when using this forecast for facility planning. It should be noted that the FAA TAF numbers show an anomaly in decrease of itinerant civil operations between 2011 and 2014. The numbers for 2015 are consistent with general historical trends.

Table 2-8: Historical Annual Operations

Year	Airline	Air-Taxi/ Commuter	GA Itinerant	Mil Itinerant	Itinerant Totals	Civil	Local-Mil	Local Total	Totals
2002	8,102	9,234	26,988	1,131	45,455	49,773	329	50,102	95,557
2003	9,284	12,355	25,250	752	47,641	35,000	532	35,532	83,173
2004	9,865	12,455	25,068	978	48,366	39,615	484	40,099	88,465
2005	9,754	15,039	22,920	504	48,217	36,944	471	37,415	85,632
2006	7,660	14,026	21,416	450	43,552	27,961	725	28,686	72,238
2007	8,154	12,849	24,121	625	45,749	33,208	347	33,555	79,304
2008	8,533	11,840	22,551	503	43,427	26,626	299	26,925	70,352
2009	2,113	13,523	20,458	683	36,777	17,789	188	17,977	54,754
2010	800	14,314	28,663	443	44,220	18,833	72	18,905	63,125
2011	807	16,616	19,266	526	37,215	20,753	60	20,813	58,028
2012	1,474	14,882	12,071	446	28,873	3,109	19	3,128	32,001
2013	1,791	13,629	12,139	488	28,047	9,990	30	10,020	38,067
2014	1,625	12,494	11,550	519	26,188	16,817	18	16,835	43,023
2015	2,038	12,629	12,790	665	28,122	23,236	33	23,269	51,391

Sources: FAA TAF, 2015.

Figure 2-5: Historical Annual Operations



Sources: 2002-2014 FAA TAF, 2015; 2015 AVP; RS&H Analysis, 2016.

Air carrier and commuter operations have fluctuated since 2002 with a major downturn between 2001 and 2011-2012. Air carrier operations decreased in 2008 by virtue of an increase in

commuter traffic, i.e., aircraft with 60 seats and less, replacing a portion of those operations classified as air carrier. At the time, this reflected a change in the airline business model in shifting from aircraft with more than 60 seats to ones with fewer than 60 seats.

General aviation activity has experienced less dramatic fluctuations when compared with the commercial traffic. There were major downturns for the local civil general aviation traffic in 2012. These occurrences of reduced local civil general aviation activity are not just a characteristic of the AVP market but consistent with general aviation trends nationwide during that time period. Through the historical period evaluated, general aviation traffic remained the largest portion of operations at AVP. There were over 12,790 general aviation operations per year in 2015 and this number is estimated to grow slightly in 2016 to over 12,800 general aviation operations.

It is typical for military activity to fluctuate greatly. In regards to local military activity, there were downturns in 2009 and 2012. There were approximately 698 annual military operations at AVP in 2015.

The year 2002 was the peak year for total operations when the Airport served more than 92,000 operations. There has been a steady decrease since 2002 until 2014 when operations rebounded with total operations of 42,225. The rebound continued in 2015 with total operations over 47,450. Figure 2-5 provides historical annual operations based upon TAF data.

Table 2-9 provides 2015 FAA flight data for AVP regarding the fleet mix that operates at the Airport. These data are Traffic Flow Management System Counts (TFMS), formerly called Enhanced Traffic Management System Counts (ETMSC), and are specific fleet mix data for a particular airport. The TFMSC database contains every flight record constructed and includes information about commercial traffic (categorized as air carriers or air taxis), general aviation, and military operations to and from every landing facility. Data for the previous month are available approximately ten days after the end of the month. Many aviation consultants use this information to determine the most demanding aircraft for an airport for use in design standards as part of master planning or pavement design efforts. While comprehensive, it does not include all flights since not all pilots file flight plans. At airports with smaller numbers of total operations, generally the total percentage of operations captured by this data is less than for larger airports. In this case for AVP, ETMSC data represents about 75percent of operations for the Airport in 2015. The data is considered very good for capturing the larger aircraft that operate at an airport.

Table 2-9: Current Operations Fleet Mix by Type

Aircraft Type	Total Operations	Percent of Operations
Air Carrier	2,038	4.1%
Air Taxi	12,629	25.3%
General Aviation (Local)	21,708	43.5%
General Aviation (Itinerant)	12,790	25.7%
Military	698	1.4%
Total Operations	**49,863**	**100%**

Source: FAA 5010 Airport Master Records & Reports (operations for 12 months ending 9/30/2015).

2.7. AIR CARRIER OPERATIONS AND ENPLANEMENT BASELINE FORECASTS

Forecast scenarios are the foundation upon the determination of the future facilities needed to accommodate projected operations and passenger volumes. This section discusses existing forecasts for AVP as well as the Master Plan's baseline forecast.

FAA Terminal Area Forecast (TAF)

An important consideration for master plans in the preparation of a forecast is compliance with the FAA's Terminal Area Forecast, or TAF. FAA TAFs are published on an annual basis for every airport in the United States that is included in the National Airspace System (NAS) for use in budgeting and planning by Airport Sponsors and the public at large. For airports with air traffic control towers, TAF traffic counts are derived from the recorded traffic counts in the Air Traffic Activity Data System (ATADS)[4].

As a consequence, the TAF is a primary source of information used by the aviation industry. The database provides a history of aviation activity covering about 50 years; 25-year history based on the ATADS and a 25-year projection. The TAF provides enplanement information and operations by general categories of aircraft such as air carrier, air taxi and commuter, general aviation, and military and includes the number of based aircraft at an airport.

In addition, the TAF is a very important planning tool for the FAA. One such use of the TAF is to review forecasts prepared by Airport Sponsors. In accordance with FAA guidance "The sponsor's forecast must be consistent with the Terminal Area Forecast (TAF). To be consistent with the TAF, the sponsor's 5-year forecast should be within 10 percent of the TAF and a 10-year forecast should be within 15percent of the TAF."[5]

[4] http://aspm.faa.gov/opsnet/sys/Main.asp?force=atads
[5] December 23, 2004, memorandum from the FAA Director, Airport Planning and Programming, entitled *Revision to Guidance on Review and Approval of Aviation Forecasts*.

AVP Forecast Scenarios

The forecast scenarios are the foundation upon which other commercial service activity forecasts are developed. The forecasts are also the basis for determination of the future facilities needed to accommodate projected passenger volumes. In addition to the Baseline Forecast, seven demand scenarios will be presented in this forecast analysis.

The FAA TAF 2015 will be largely utilized as the base case forecasts for AVP, but modified slightly to reflect the specific circumstances in the AVP community, as described below.

Both the base case and the alternative air carrier forecast reflect differing sets of assumptions that affect how enplanements grow during the forecast period. The base case scenario which generally follows the TAF assumes moderate passenger growth throughout the planning period.

It is important to prepare the alternative air carrier forecasts for purposes of evaluating what impact larger than anticipated growth might have for provision of facilities over the long term compared to the base case, as well as decreased activity and its associated impacts. This forecast analysis is a type of sensitivity analysis that planners use for contingency planning and reservation of future envelopes of space or to validate existing planning that has been done. This enables an airport to avoid development in areas that might be required for future use to accommodate new or expanded facilities and not underestimate space needs in the short term for potential growth.

2.7.1. Base Case Forecast

Enplanements

The base case enplaned passenger forecast adopted as part of this Master Plan primarily follows the 2015 FAA TAF, which is the latest version published by the FAA. The base year for the TAF forecast is about two years behind the publication date due to available data. The historical data in the TAF has been supplemented with airport provided data for 2015.

The TAF for AVP enplaned passengers in 2015 is 216,849. This number is actually about 1,370 fewer enplanements than the Airport actually recorded for 2015 (i.e., 218,219). It is important to note that the 2014 TAF projected a level of enplanements for 2014 less than the TAF 2013 projected for 2014 whereas actual 2014 levels were a few percentage points higher.

In preparation of a base case forecast for passenger enplanements, the current schedule was evaluated with airport staff in terms of how airlines serve AVP. AVP has good service for an airport of its size and is served from six hub airports: Detroit, Chicago, Newark, Atlanta, Charlotte, and Philadelphia in addition to the leisure-oriented service to Florida. Consequently, the frequency of service to the AVP market is, in part, a reflection of the corporate need for travel to hub cities that connect to major U.S. and world destinations.

Because AVP enplanements are exceeding TAF forecasts, it is possible that this is a reflection of the improving economy and an increase of business for the area. Therefore, the base case forecast for AVP reflects a slightly improving economy for the region over the TAF. Actual 2014 enplanement levels are used for AVP as the base for building future enplanement growth. This level is 0.8percent higher than 2014 TAF estimates.

Table 2-10 provides a comparison of the 2015 TAF with the base case forecast, which uses the 2015 TAF growth rates adjusted for the higher 2015 enplanements experienced at AVP.

Table 2-10: FAA TAF and Base Case Enplanement Forecast Comparison

Year	TAF 2015	TAF 2015 Using Higher Base (Actual 2015)	Base Case Forecast
2015	216,849	218,219	218,219
2020	234,571	245,183	245,183
2025	250,794	275,479	275,479
Year	**TAF 2015**	**TAF 2015 Using Higher Base (Actual 2015)**	**Base Case Forecast**
2015	-	0.6%	0.6%
2020	-	4.5%	4.5%
2025	-	9.8%	9.8%

Source: FAA TAF, 2015; RS&H analysis, 2016.

Using actual 2015 enplanement levels to develop a base case forecast results in moderate passenger growth throughout the planning period, with enplanements increasing from 218,219 in 2015 to more than 335,032 by 2035. This is roughly a growth of 156,436 enplanements and represents a 3.0 percent AAGR. This long-term outlook is reflective of continued growth within the aviation industry as well as assuming local economic recovery over the recent economic recession. Also, the base case forecast level of growth is supported by the PCPI anticipated growth over the period 2015-2035 of 2.18 percent.

Commercial Operations

The TAF for AVP commercial airline operations for 2015 is 10,124 annual commercial operations. This number is actually about 102 less commercial airline operations than the Airport actually recorded for 2015 (i.e., 10,226). It is important to note that the 2015 TAF projected a level of commercial airline operations for 2015 less than the TAF 2014 projected for 2014 whereas actual 2014 levels were a few percentage points higher. In preparation of a base case forecast for commercial airline operations, the current schedule was evaluated with airport staff in terms of how airlines serve AVP.

As was the case in the passenger enplanement forecasts, the base case forecast for AVP reflects a slightly improving operational forecast over the TAF as load factors will merit increased marginal increases in operational frequency demand by the airlines for the region over the TAF.

Table 2-11: FAA TAF and Base Case Commercial Airline Forecast Comparison

Year	TAF 2015	TAF 2015 Using Higher Base (Actual 2015)	Base Case Forecast
2015	10,124	10,226	10,226
2020	10,427	10,580	10,580
2025	10,739	10,964	10,964

Source: FAA Terminal Area Forecast, 2015; RS&H analysis, 2016.

Conclusion

The Airport will be able to achieve the growth outlined in the TAF through the 20-year forecast period with slightly more flights than operate today as a result of anticipated airline usage of larger aircraft in their fleet. Based upon airline trends now underway in parts of the U.S., legacy carriers are retiring the smaller, fuel inefficient aircraft for new, larger aircraft. AVP is currently experiencing load factors of approximately 85-88 percent averages on 50-seat aircraft. Accordingly, the base case forecast provides confirmation that these load factors can be maintained with the anticipated increase in enplanements while also increasing aircraft size.

At the same time, depending upon the level of enplanements for any given year, it is possible that service frequency would be slightly reduced with the up-gauging of aircraft from 50-seat airplanes to those with seating configurations larger than 60 seats. For example, the introduction of an aircraft with a seating configuration of 65 seats (Delta) or 70 seats (United) could result in the short-term decrease of one daily frequency. Depending upon the airline and the specific route served by a specific aircraft, it is possible that aircraft with larger seating configurations, like the CRJ-900 with 76 seats or even larger might be used on a route once per day (or more). Based upon the mathematics of the forecast process – aircraft, load factors, and flight frequencies -- today's schedule can be maintained over the long-term with the up-gauging of the fleet used by airlines with load factor increases as well.

2.7.2. Alternative Air Carrier Forecast

The development of the alternative air carrier forecast is useful for evaluating facility requirements that might be needed should air service grow at a faster rate than identified by the base case forecast. The alternative air carrier forecast assumes an improving set of economic circumstances and implementation of investment strategies that might result in an increase of air service. The following are examples of growth factors that may contribute to a higher rate of growth than the base case forecast at any given time over the course of the 20-year forecast period:

- Faster growth in population than anticipated;
- Greater percentage capture of AVP regional enplanements;
- Sustained economic growth on a national basis;
- Expanded local manufacturing and industrial base;
- Establishment of a new manufacturing or industrial base in the AVP area;
- Establishment of new regional or national company headquarters in the AVP area;

- New or expanded institutions or facilities at existing institutions such as state, federal, or local government, colleges and technical schools, or the health care industry;
- Success of regional or national advertising campaigns to increase local business use of the airport;
- New air service that increases competition, lowers fares, or takes advantage of lower yields; or
- Local incentives provided airlines to increase air service in the region.

The alternative air carrier forecasts examine the possible impact on enplanements and operations with increased or decreased growth in air carrier demand at AVP beyond that anticipated by the base case. There are four alternative air carrier forecasts with this forecast analysis. They are as follows:

- Increased passenger enplanements and operations from potential international service
- Increased passenger enplanements and operations from low cost carrier growth
- Increased passenger enplanements and operations from increased passenger retention
- Increased passenger enplanements and operations from increased commercial service

The alternative air carrier forecasts also examine the possible impact on enplanements and operations with decreased growth in air carrier demand at AVP. The opposite to the alternative base case forecast, the enplanements anticipated in these decreased growth scenarios will be forced to be accommodated with the possibility of fewer number of flights and reduced aircraft size than what are being forecasted in the alternative base case forecast.

There are three alternative air carrier decrease forecasts with this forecast analysis. They are as follows:

- Decreased passenger enplanements and operations from potential reduction in low cost carrier service.
- Decreased passenger enplanements and operations from decreased commercial service retention
- Decreased passenger enplanements and operations from reduced regional passenger retention.

Should any of these alternative rates of growth materialize, it would increase enplanements from approximately 218,000 to over a range of 328,000 to 500,000 enplanements by 2035, depending on the alternative carrier forecast scenario, representing a minimum increase or 145,000 enplanements over the base case forecast. Should any of the decrease rate scenarios materialize, it would decrease enplanements from approximately 218,000 to over a range of 322,967 to 177,039 enplanements by 2035.

Similar to the base case forecast, the enplanements anticipated in this scenario can be accommodated with the same number of flights but with an increase in load factors. This scenario also reflects the current airline trend of up-gauging from 50-seat aircraft to larger jets. Already, the legacy carriers have aircraft in their fleet that could provide such service when the routes justify such a change at AVP.

Given the level of enplanements anticipated by the alternative air carrier scenarios along with an up-gauge in aircraft, the resulting load factors would be approximately 80 percent for all flights which is similar to today's levels on the smaller aircraft. Further, there is a larger regional jet in Delta's fleet seating 76 passengers that may be used on routes to AVP beyond the 5-year time frame. Under this scenario, load factors would be anticipated to achieve 85-88 percent for all flights by 2035. Alternatively, such activity levels could support larger aircraft such as the B-717 with a seating configuration of 110 passengers.

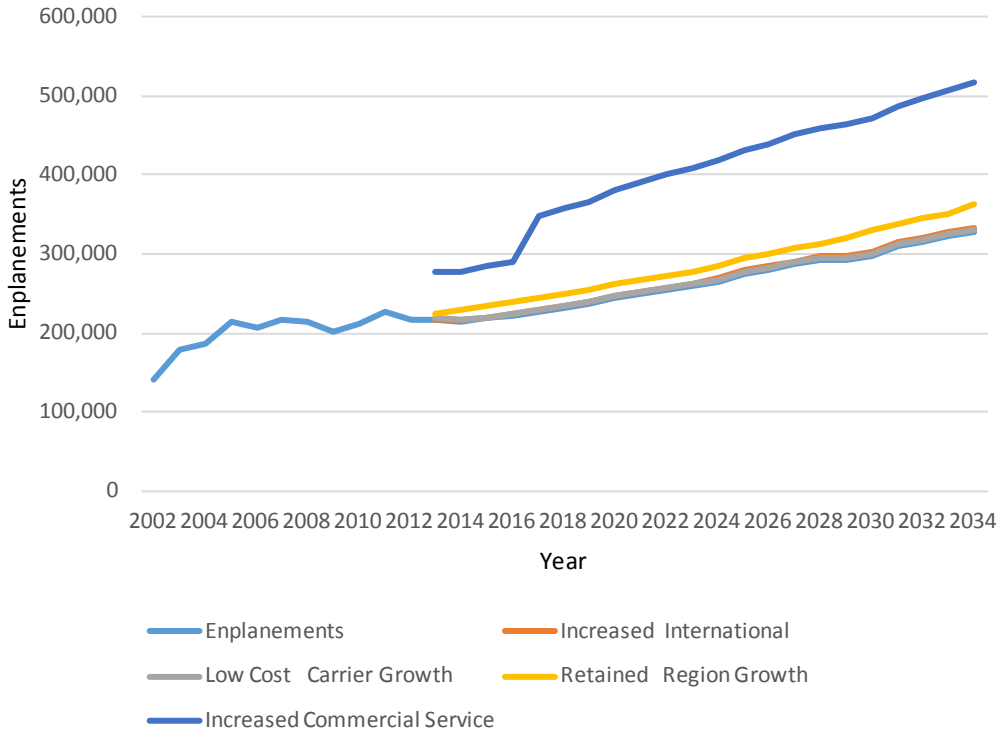
2.7.3. Summary of Air Carrier Forecasts

The base case forecast projects annual enplanements at AVP to reach over 335,000 by 2035. This represents a 2.36 percent year-over-year growth during the forecast period.

The alternative air carrier forecasts project enplanement growth rates of 2.74 percent AAGR which is the approximate U.S. national average enplanement growth from 2016 to 2035. The scenarios anticipate enplanements to range from 231,000 to 517,000 depending on the alternative air carrier forecast by 2035. Under the international growth alternative scenario, the estimated enplanements would be 1.5 percent greater than the base case. Under the low fare growth alternative scenario, the estimated enplanements would be 0.6 percent greater than the base case. Under the region retention growth alternative scenario, the estimated enplanements would be 11 percent greater than the base case. Under the commercial service growth alternative scenario, the estimated enplanements would be 57 percent greater than the base case. The alternative air carrier forecasts also assume a slight increase in the number of operations that are currently conducted at AVP.

The additional passengers can be accommodated through increases in aircraft size and load factors should such alternative scenarios materialize. Figure 2-6 and Table 2-12 provide the increase enplanement forecast scenarios and Table 2-13 and Figure 2-7 provide the decrease enplanement forecast scenarios.

Figure 2-6: Air Carrier Enplanement Forecasts



Source: FAA TAF, 2015; Airport Records, 2015; RS&H Analysis, 2016.

Table 2-12: Air Carrier Increase Enplanements Forecasts

Year	Historical Enplanements	Base Case Forecast	Increased Inter-national	Low Cost Carrier Growth	Retained Regional Growth	Increased Commercial Service
2002	141,854	-	-	-	-	-
2005	213,822	-	-	-	-	-
2008	215,310	-	-	-	-	-
2011	225,586	-	-	-	-	-
2013	216,536	-	-	-	-	-
2015	218,219	218,219	218,219	218,219	218,219	218,219
2020	-	245,183	247,959	247,203	262,399	381,719
2025	-	275,479	279,648	275,479	294,818	430,832
2030	-	298,187	302,723	298,187	331,245	472,734
2035	-	335,032	339,724	372,518	374,655	516,629

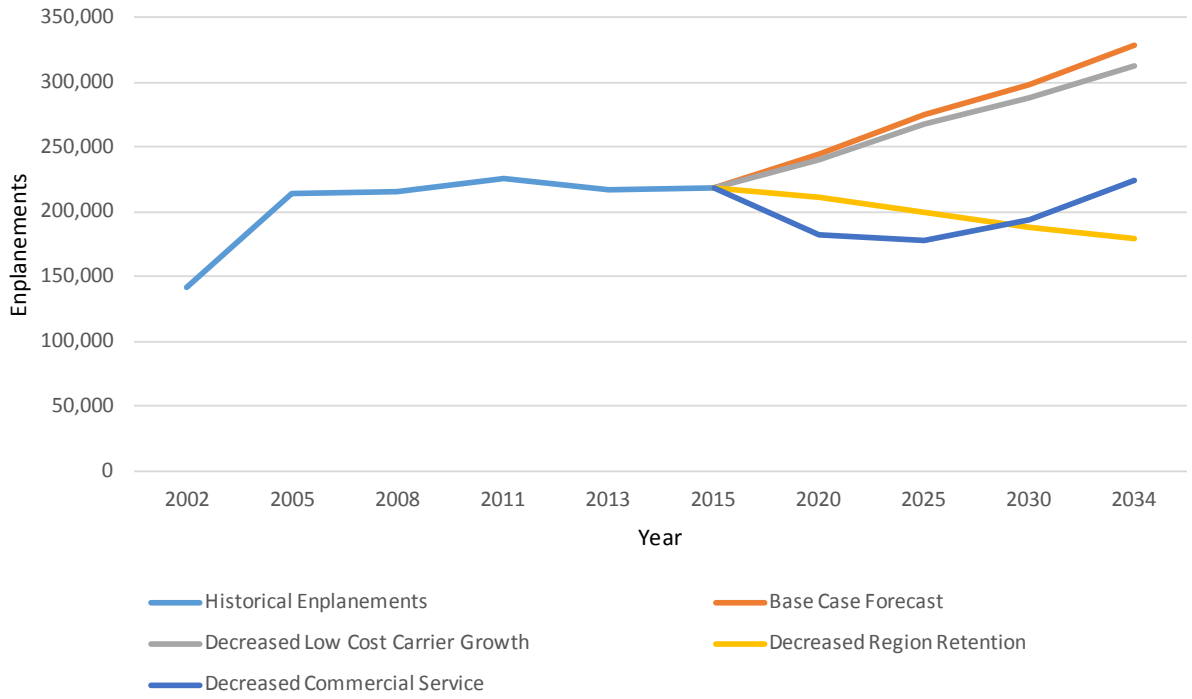
Source: FAA TAF, 2015; Airport Records, 2015; RS&H analysis, 2016.

Table 2-13: Air Carrier Decreased Enplanements Forecasts

Year	Historical Enplanements	Base Case Forecast	Decreased Low Cost Carrier Growth	Decreased Region Retention	Decreased Commercial Service
2002	141,854	-	-	-	-
2005	213,822	-	-	-	-
2008	215,310	-	-	-	-
2011	225,586	-	-	-	-
2013	216,536	-	-	-	-
2015	218,219	218,219	218,219	218,219	218,219
2020	-	245,183	239,950	211,469	182,657
2025	-	275,479	268,211	199,979	177,556
2030	-	298,187	287,866	188,489	194,083
2035	-	335,032	322,967	177,039	230,602

Sources: FAA TAF, 2015; RS&H analysis, 2016.

Figure 2-7: Air Carrier Decrease Enplanement Forecasts



Sources: FAA TAF, 2015; RS&H analysis, 2016.

The base case forecast projects annual air carrier operations at AVP to reach almost 11,862 annual operations by 2035. This represents a 0.79 percent year-over-year growth during the forecast period.

The alternative air carrier forecasts projects growth of air carrier operations for the period 2016-2035. The scenarios anticipate operations to range from 11,992 to 19,487 depending on the

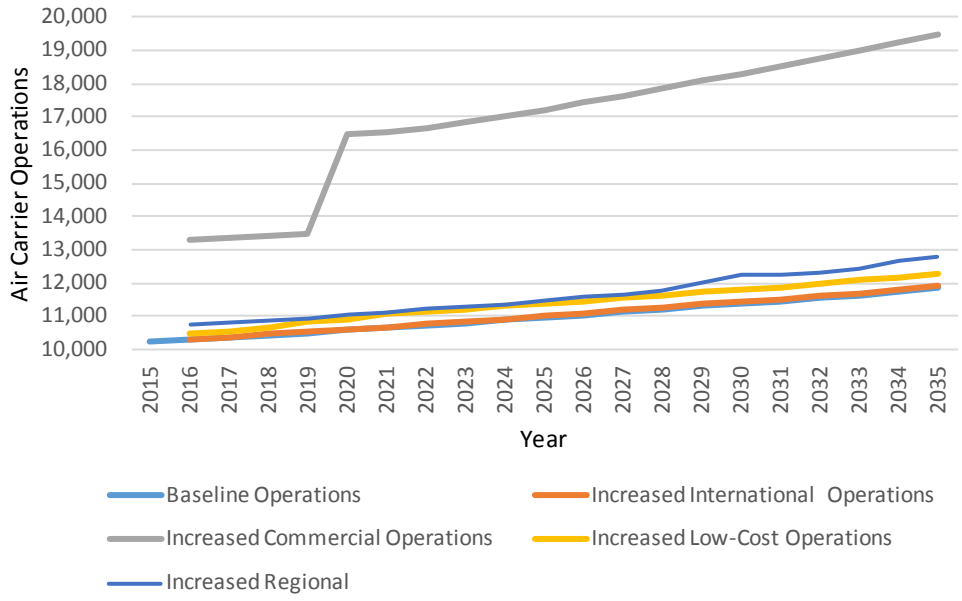
alternative air carrier forecast by 2035. Under the international growth alternative scenario, the estimated operations would be 0.5 percent greater than the base case. Under the low fare growth alternative scenario, the estimated operations would be 3.5 percent greater than the base case. Under the commercial service growth alternative scenario, the estimated operations would be 64 percent greater than the base case in 2035. These increase scenarios are shown in **Table 2-14**.

Table 2-14: Operations Increased Air Carrier Scenarios

Year	Baseline	Increased International	Increased Commercial	Increased Regional	Increased Low-Cost
2015	10,226	-	-	-	-
2020	10,580	10,604	16,480	11,040	10,892
2025	10,964	11,004	17,224	11,480	11,382
2035	11,862	11,922	19,487	12,784	12,286

Source: RS&H, 2016.

Figure 2-8: Operations Increased Air Carrier Scenarios



Source: RS&H, 2016.

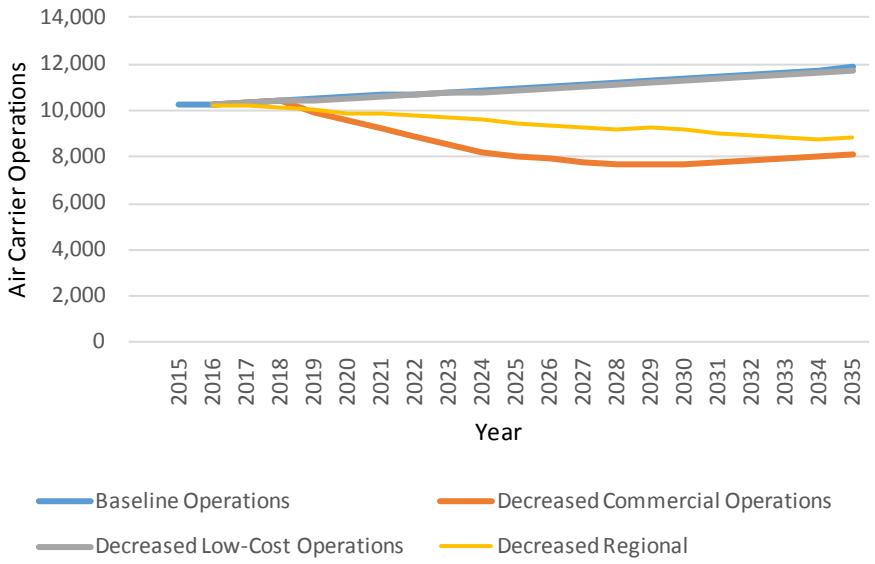
The alternative air carrier forecasts also projects decreased growth of air carrier operations for the period 2016-2035. These scenarios would forecast decreased operations to range from 11,702 to as low as 8,111 annual air carrier operations, depending on the alternative air carrier forecast by 2035. Under the low fare decreased growth alternative scenario, the estimated decreased total operations would be 1.3 percent less than the base case in 2035. Under the commercial service decreased growth alternative scenario, the estimated operations would be 31.6 percent less than the base case in 2035 and are shown in **Table 2-15**.

Table 2-15: Operations Decreased Air Carrier Scenarios

Year	Baseline	Decreased Commercial	Decreased Low-Cost	Decreased Regional
2015	10,226	-	-	-
2020	10,580	9,543	10,528	9,906
2025	10,964	8,023	10,886	9,454
2035	11,862	8,111	11,702	8,878

Source: RS&H, 2016.

Figure 2-9: Operations Decreased Air Carrier Scenarios



Source: RS&H, 2016.

2.7.4. General Aviation Activity

The operations forecast for the Airport is important for the assessment of the infrastructure and facilities utilized by all aviation elements including commercial airlines, corporate aviation, recreational aviation, and military activity. Overall, annual operations and peak hour activity numbers are not only applied in the assessment of runway and taxiway infrastructure, but the forecast is also useful for more specific airport requirements such as fuel facilities, terminal spatial requirements, and vehicle parking facilities. The growth elements below discuss both the local and national factors that influence general aviation operations growth at AVP.

General aviation operations represent the greatest share of operations at AVP. A large portion of the jet operations are conducted by tenants along with business and recreational flights serviced by Aviation Technologies, Inc., the Airport's Fixed Base Operator (FBO).

Aircraft services provided by the FBO include light aircraft maintenance, overnight storage, fuel, and concierge services. The FBO services both domestic and international flights. The majority of traffic that is serviced by the FBO is regional and operates from within a 350-mile radius of AVP

General aviation and air taxi average growth in operations has been strong in total turbine and total rotorcraft categories, which is anticipated to continue within the planning period. Other areas of general aviation and air taxi operations have experienced a decline. Lower fuel costs and higher disposable income are, and continue to be, the main driving factors in general aviation and air taxi hours flown. Operations for turbine and rotorcraft aircraft are anticipated to increase by 2.6 and 2.5 percent, respectively, within the 20-year planning period according to the 2016 FAA Aerospace Forecast. Experimental and sport aircraft are also anticipated to increase consistently by 1.9 and 5.0 percent, respectively, within the planning period. It should be noted that starting in 2012; experimental light-sport category aircraft will no longer be shown in sport aircraft, but rather as experimental aircraft. Turbo jet operations, which mostly consist of business jet operations, are forecast to increase by 3.1 percent per year within the planning period.

The TAF for total operations at AVP was compared with other commonly used forecasting methodologies to measure the reasonableness of the forecast. These commonly used methodologies include operations per based aircraft, market share analysis, and applying trends from the national aerospace forecast. These forecasts are explained and summarized below with results displayed in Table 2-16.

Operations Per Based Aircraft - A good metric for defining general aviation activity at an airport is the operations per based aircraft (OPBA) count. This is derived by dividing the total number of general aviation annual operations by the number of based aircraft. In the past 20 years, this number has ranged from 1,911 to as low as 361, with an overall average of approximately 1,129 at AVP.

According to FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, a general guideline is 250 OPBA for rural general aviation airports with little itinerant traffic and 350 OPBA for busier general aviation airports with more itinerant traffic. AVP does not fall into this range, which could be the result of multiple things: Based aircraft could be restricted at the Airport, local gas drilling may be driving up operations, local business activity and many other reasons. For this reason, the OPBA is not a good metric for AVP.

Market Share - The market share methodology is sometimes used when an airport operates as, or is located within, a multi-airport system. This approach is typically only used to measure operations as opposed to enplanements. For the sake of this analysis, AVP's regional market share is compared to the regional total from all public airports within the 35 nautical miles (nm) general aviation service area. The historical average indicated that AVP commands approximately 40percent of the total activity among the five airports. Since the Great Recession, though, its market share has been closer to 37 percent with 2012 representing the historical low of 28 percent. The market share scenario assumes that AVP will increase its current share to its average since the Great Recession of 37 percent based on the combined TAF forecast growth for the other airports in the region.

FAA National Aerospace Forecast - In addition to the TAF, each year the FAA publishes a national aerospace forecast that identifies activity trends on the nation-wide level. For airports with notable itinerant general aviation and commercial/scheduled traffic, such as AVP, the FAA National Aerospace Forecast is applicable because many of the operations are using the national airspace,

as opposed to local operations driven by the local based users. More than 60percent of AVP's traffic is considered itinerant, meaning it is operating through the national system to/from AVP.

Table 2-16: Annual General Aviation Operations Forecast Scenarios

Year	FAA TAF	Market Share	FAA Aerospace
2015	36,026	36,026	36,026
2020	38,027	45,055	37,677
2025	38,042	45,915	39,403
2035	38,072	47,575	43,096

Source: FAA TAF, 2015; McFarland Johnson, 2016.

2.7.5. General Aviation Peaking Characteristics

Peaking characteristics for general aviation operations usually include taking total annual itinerant general aviation operations and assuming 10 percent are conducted in the peak month and 10 percent of daily operations will be conducted in the peak hour.

For 2035, it is forecast that there will be approximately 14,000 annual itinerant general aviation operations, which translates into a peak month of 1,400 and a peak hour of approximately five operations.

2.7.6. Annual Instrument Approaches

Annual instrument approaches are anticipated to maintain the percentage of total operations as in 2015. According to the ETFMSC, approximately 35 percent of total operations were instrument operations. This translates into approximately 9,000 instrument approaches (over 18,000 operations). Forecast annual operations and instrument approaches for the planning period are shown in Table 2-17.

Table 2-17: Forecast Annual Operations and Instrument Approaches

	2015	2020	2025	2035
Annual Operations	47,450	56,351	57,595	60,658
Instrument Approaches	8,335	9,898	10,117	10,615

Source: RS&H and McFarland Johnson, 2016.

2.7.7. Military Operations

Military activity fluctuates significantly and is affected by events outside of normal aviation forecast parameters. It is anticipated that military operations will remain the same as their current levels of approximately 700 operations per year throughout the planning period due to their recent consistent operations at the Airport.

2.7.8. Operations Summary

Overall, the various forecast metrics and methodologies are largely consistent with one another for use and analysis within a master plan. The greatest 20-year (2035) difference between all of the forecast scenarios is approximately 14,200 annual operations. On an annual basis, this is a difference of 39 total operations per day and approximately four per hour. The differences between these forecasts would not result in changes to the facility requirements. With nearby facilities becoming increasingly constrained, it is anticipated that future growth could meet or exceed those identified in the market share scenario, which represents the forecast recommended for capacity analysis and facility requirements planning as master of the AVP master plan. A detailed breakdown of the operations in this forecast scenario is presented in **Table 2-18**.

Table 2-18: Annual Operations Forecast

	Itinerant				Local			
Year	Airline	General Aviation	Military	Total	Civil	Military	Total	Total Ops.
2015	10,226	12,792	698	23,716	23,716	18	23,734	47,450
2020	10,580	13,047	698	24,325	32,008	18	32,026	56,351
2025	10,964	13,348	698	25,010	32,567	18	32,585	57,595
2035	11,862	14,206	698	26,766	33,874	18	33,892	60,658

Source: McFarland Johnson, 2016

2.8. DESIGN DAY/DESIGN HOUR ACTIVITY FORECASTS

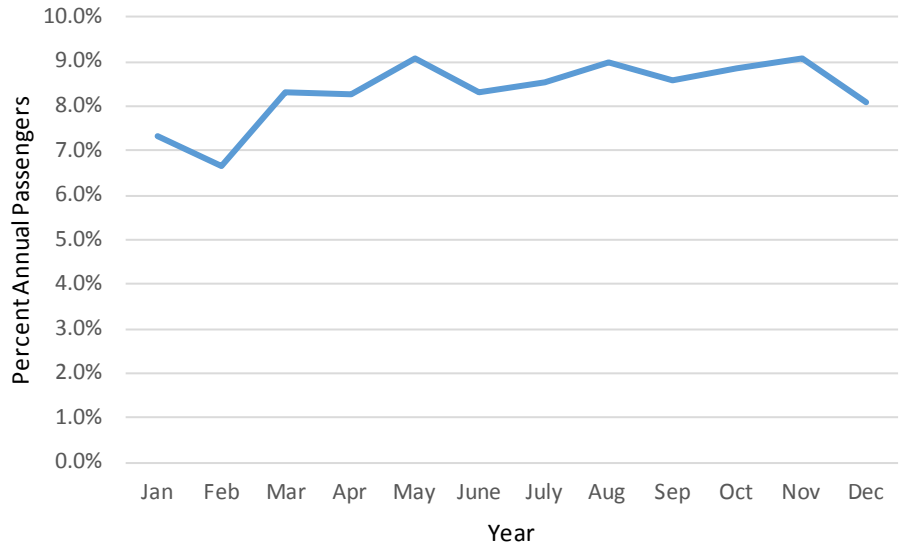
Capacity analyses and determination of future facility requirements of various elements of airport facilities are often based on design day or design hour activity levels. To avoid the construction and operational cost of acquiring capacity that would be rarely used, design day and design hour activity levels should not be the absolute busiest period at the Airport. Rather the design day and design hour activity levels should be representative of busy periods, but not the absolute peak periods. Often the design day is generally equivalent to the 85th percentile of activity for the design year. Facilities designed to accommodate this level of activity in the design year will provide a comfortable level of service for the large majority of the time. During unusually high activity periods, Airport facilities can be expected to experience more crowded conditions and longer, but not unreasonable or intolerable, processing times.

The design day level of activity is often calculated in airport planning efforts using a peak month/average day definition. **Figure 2-10** and **Table 2-19** show the average monthly distributions of annual total enplaned passengers. **Figure 2-11** and **Table 2-20** show the annual commercial service operations at the Airport. As is common when evaluating such data at airports, the month of the year experiencing the highest level of activity during the year often varies. The actual percentage of annual activity occurring in the peak month is fairly constant from year to year. If annual activity were equally distributed among all 12 months in a year, monthly activity would total 9.1 percent of the year's activity.

Both passenger enplanements and aircraft operations can vary throughout the year as well, depending on the season. Often, the peak period of the year is between June and August with

both operations and enplanements exceeding nine percent. Since AVP has a large leisure market, additional peaks can be seen for spring break (May) and autumn/snow bird/holiday travel (November).

Figure 2-10: Monthly Distribution of Annual Enplaned Passengers (2015)



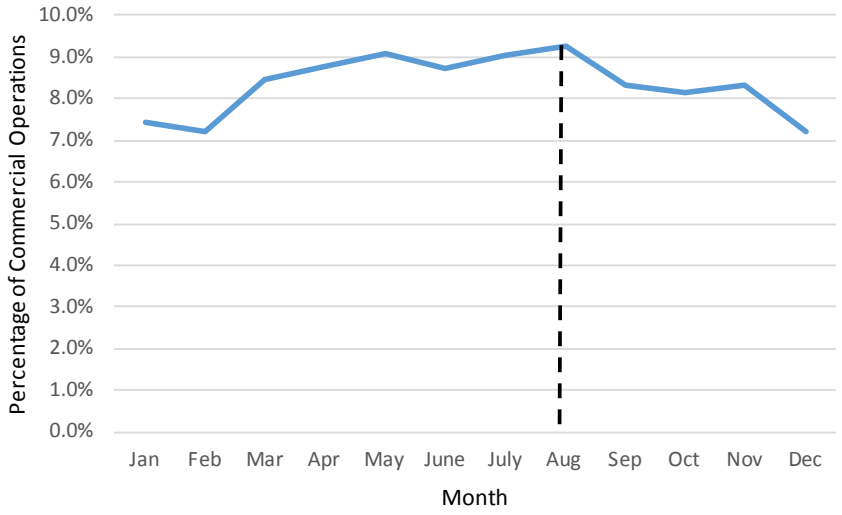
Source: Airport Records, 2015; RS&H Analysis, 2016.

Table 2-19: Monthly Distribution of Annual Enplaned Passengers (2015)

Month	Percent of Total
Jan	7.3%
Feb	6.7%
Mar	8.3%
Apr	8.3%
May	9.1%
June	8.3%
July	8.5%
Aug	9.0%
Sep	8.6%
Oct	8.8%
Nov	9.1%
Dec	8.1%

Source: Airport Records, 2015; RS&H analysis, 2016.

Figure 2-11: Monthly Distribution of Annual Commercial Operations (2015)



Source: Innovata Schedule Data, 2015; RS&H analysis, 2016.

Table 2-20: Monthly Distribution of Annual Commercial Operations (2015)

Month	Percent of Total
Jan	7.4%
Feb	7.2%
Mar	8.4%
Apr	8.8%
May	9.1%
June	8.7%
July	9.0%
Aug	9.2%
Sep	8.3%
Oct	8.1%
Nov	8.3%
Dec	7.2%

Source: Innovata Schedule Data, 2015; RS&H analysis, 2016.

Statistics for the design day/design hour activity for an Airport are very useful for facility planning in master plans. The primary statistics are peak hour activity and the peak 20-minute activity. For AVP, Airport records, FAA activity records, and actual flight operation data were used to estimate statistics for planning purposes. These variables are presented in Table 2-21 and Table 2-22. It should be noted that the 45percent peak hour passenger enplanement rate was determined based on the percentage of peak hour operations daily operations from the June 2016 Innovata Flight Schedules for AVP.

Table 2-21: Design Day/Design Hour Activity Forecasts

Description	2015	2020	2025	2030	2035	AAGR 2015-2035
Passengers - Base						
Annual Enplanement	218,219	245,183	275,479	298,187	335,032	2.17%
Peak Month	19,857	22,311	25,068	27,135	30,488	
Average Day (30)	662	744	836	905	1,016	
Peak Hour Passenger Enplanements (45%)	298	335	376	407	457	
Peak 20 Minute Passenger Enplanements (25%)	165	186	209	226	254	
Potential International Growth Scenario						
Annual Enplanement	218,219	247,959	279,648	302,723	333,315	2.14%
Peak Month	19,857	22,564	25,448	27,548	30,317	
Average Day (30)	662	752	848	918	1,011	
Peak Hour Passenger Enplanements (45%)	298	338	382	416	455	
Peak 20 Minute Passenger Enplanements (25%)	165	188	212	230	253	
Potential Low Cost Carrier Growth Scenario						
Annual Enplanement	218,219	247,203	277,504	300,217	365,949	2.62%
Peak Month	19,857	22,495	25,253	27,320	33,301	
Average Day (30)	662	750	842	911	1,110	
Peak Hour Passenger Enplanements (45%)	298	337	379	410	500	
Peak 20 Minute Passenger Enplanements (25%)	165	187	210	228	278	
Potential Retained Region Growth Scenario						
Annual Enplanement	218,219	262,399	294,818	331,245	368,086	2.65%
Peak Month	19,857	23,878	26,828	30,143	33,496	
Average Day (30)	662	796	894	1,005	1,117	
Peak Hour Passenger Enplanements (45%)	298	358	402	452	502	
Peak 20 Minute Passenger Enplanements (25%)	165	199	224	251	279	
Potential Increased Commercial Service Growth Scenario						
Annual Enplanement	218,219	381,719	430,832	472,734	510,060	4.34%
Peak Month	19,857	34,736	39,206	43,019	46,415	
Average Day (30)	662	1,158	1,307	1,434	1,547	

Description	2015	2020	2025	2030	2035	AAGR 2015-2035
Peak Hour Passenger Enplanements (45%)	298	521	588	645	696	
Peak 20 Minute Passenger Enplanements (25%)	165	289	327	358	387	
Potential Low Cost Carrier Decrease Scenario						
Annual Enplanement	218,219	239,950	268,211	287,866	312,328	1.98%
Peak Month	19,857	21,835	24,407	26,196	29,390	
Average Day (30)	662	728	814	873	980	
Peak Hour Passenger Enplanements (45%)	298	328	366	393	441	
Peak 20 Minute Passenger Enplanements (25%)	165	182	203	218	245	
Potential Commercial Service Decrease Scenario						
Annual Enplanement	218,219	182,657	177,556	194,083	230,602	0.28%
Peak Month	19,857	16,622	16,158	17,662	20,985	
Average Day (30)	662	554	539	589	699	
Peak Hour Passenger Enplanements (45%)	298	249	242	265	315	
Peak 20 Minute Passenger Enplanements (25%)	165	139	135	147	175	
Potential Decreased Region Growth Scenario						
Annual Enplanement	218,219	211,469	199,979	188,489	177,039	-1.04%
Peak Month	19,857	19,244	18,198	17,152	16,111	
Average Day (30)	662	641	607	572	537	
Peak Hour Passenger Enplanements (45%)	298	289	273	257	242	
Peak 20 Minute Passenger Enplanements (25%)	165	160	152	143	134	

Sources: FAA TAF, 2015; Innovata Schedule Data 2016; RS&H analysis, 2016.

Table 2-22: Design Day/Design Hour Activity Forecasts

Description	2015	2020	2025	2030	2035	AAGR 2015-2035
Total Operations - Base Case						
Commercial Operations	10,226	10,580	10,964	11,382	11,744	0.74%
GA & Military Operations	37,224	45,771	46,631	47,636	48,466	1.36%
Annual Operations	47,450	56,351	57,595	59,018	60,210	1.24%
Peak Month (13.3%)	6,311	7,495	7,660	7,849	8,068	
Average Day (30)	210	250	255	262	269	
Peak Hour (45%)	95	112	115	118	121	

Description	2015	2020	2025	2030	2035	AAGR 2015-2035
Potential International Growth Scenario						
Commercial Operations	10,226	10,620	11,024	11,442	11,922	0.77%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	56,391	57,655	59,078	60,718	1.24%
Peak Month (13.3%)	6,311	7,500	7,668	7,857	8,075	
Average Day (30)	210	250	256	262	269	
Peak Hour (45%)	95	113	115	118	121	
Potential Low Cost Carrier Growth Scenario						
Commercial Operations	10,226	10,996	11,384	11,804	12,286	0.92%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	56,767	58,015	59,440	61,082	1.27%
Peak Month (13.3%)	6,311	7,550	7,716	7,906	8,124	
Average Day (30)	210	252	257	264	271	
Peak Hour (45%)	95	113	116	119	122	
Potential Retained Region Growth Scenario						
Commercial Operations	10,226	11,040	11,480	12,262	12,784	1.12%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	56,811	58,111	59,898	61,580	1.31%
Peak Month (13.3%)	6,311	7,556	7,729	7,966	8,190	
Average Day (31)	210	252	258	266	273	
Peak Hour (45%)	95	113	116	119	123	
Potential Increased Commercial Service Growth Scenario						
Commercial Operations	10,226	16,598	17,606	18,712	19,676	**3.28%**
GA & Military Operations	37,224	45,771	46,631	47,636	48,466	**1.36%**
Annual Operations	47,450	62,369	64,237	66,348	68,142	**1.84%**
Peak Month (13.3%)	6,311	8,295	8,544	8,824	9,063	
Average Day (31)	210	268	276	285	292	
Peak Hour (45%)	95	120	124	128	132	
Potential Low Cost Carrier Decrease Scenario						
Commercial Operations	10,226	10,574	10,956	11,372	11,702	0.68%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	56,345	57,587	59,008	60,498	1.22%
Peak Month (13.3%)	6,311	7,494	7,659	7,848	8,046	
Average Day (31)	210	250	255	262	268	
Peak Hour (45%)	95	112	115	118	121	
Potential Commercial Service Decrease Scenario						
Commercial Operations	10,226	8,279	7,431	7,639	8,111	-1.15%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	54,050	54,062	55,275	56,907	0.91%

Description	2015	2020	2025	2030	2035	AAGR 2015-2035
Peak Month (13.3%)	6,311	7,189	7,190	7,352	7,569	
Average Day (31)	210	240	240	245	252	
Peak Hour (45%)	95	108	108	110	114	
Potential Decreased Region Growth Scenario						
Commercial Operations	10,226	10,475	10,855	11,269	8,878	-0.70%
GA & Military Operations	37,224	45,771	46,631	47,636	48,796	1.36%
Annual Operations	47,450	56,246	57,486	58,905	57,674	0.98%
Peak Month (13.3%)	6,311	7,481	7,646	7,834	7,671	
Average Day (31)	210	249	255	261	256	
Peak Hour (45%)	95	112	115	118	115	

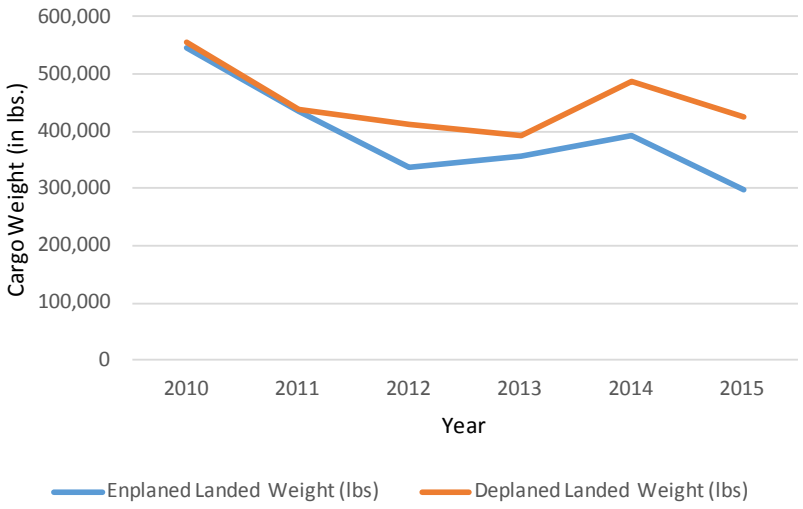
Sources: FAA TAF, 2015; DOT T-100; Innovata Schedule Data, 2016; RS&H analysis, 2016.

2.9. CARGO ACTIVITY

Cargo is transported through AVP by both cargo aircraft and the belly cargo in passenger airlines. Airport records were the source of data for air cargo for a five-year period between 2010 and 2015. The majority of all cargo, as high as 95 percent, was transported using cargo aircraft. Cargo aircraft use the apron adjacent Aviation Technologies, Inc. which services those aircraft.

Based on the available data and tenant interviews, cargo operations at AVP are non-scheduled and dramatically change from year to year depending on the airline and the demand it serves. One interesting trend at AVP, which has been consistent over time, is the preponderance for deplaned air cargo over enplaned. Most recently in 2015, over 425,959 pounds of cargo was deplaned whereas 298,805 pounds of cargo was enplaned. **Figure 2-12** and **Table 2-23** show data for historical cargo.

Figure 2-12: Cargo Historical Data



Source: Airport Statistics 2015.

Table 2-23: Cargo Historical Data

Year	Enplaned Weight (lbs)	Deplaned Weight (lbs)	Total
2010	546,330	557,079	1,103,409
2011	434,257	438,079	872,336
2012	336,707	411,808	748,515
2013	357,127	393,339	750,466
2014	392,373	487,501	879,874
2015	298,805	425,959	724,764

Source: Airport Statistics, 2015.

2.9.1. Air Cargo Forecast

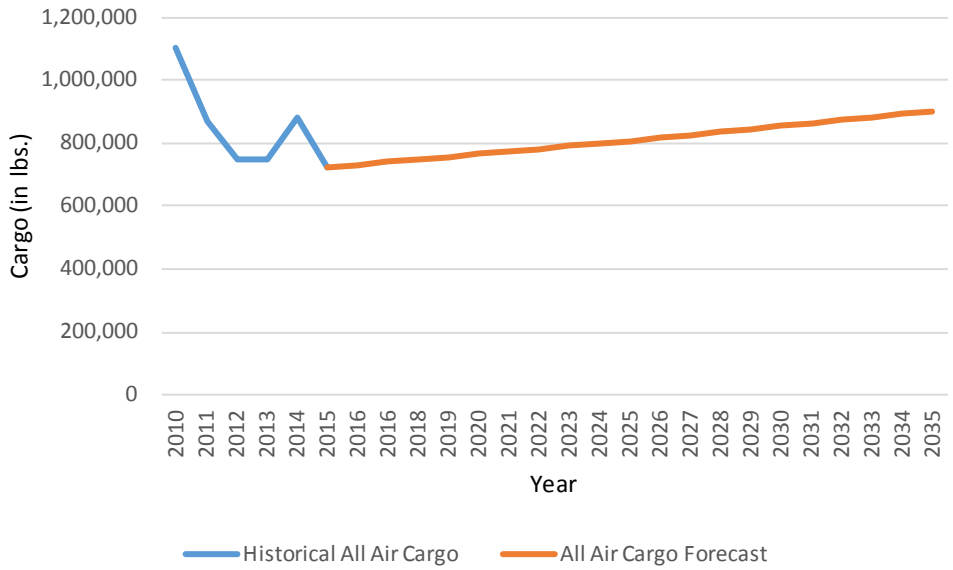
There are a multitude of factors that influence air cargo volumes. These factors include:

- Size of the local market.
- Location of an airport versus nearby airports that have scheduled air cargo services; as well as, quality of the highway system linking these airports.
- Condition of the local, state, and national economy.
- Diversification and strength of local industries and their demand for air shipments.
- Airport lease rates.
- Tendency to truck freight to regional destinations.

Historically, cargo levels at AVP have been inconsistent, but its growth and decline have reflected changes in line with the local and national economic trends. From the historical data available, the majority of cargo is deplaned cargo from cargo aircraft versus cargo carried in the belly of passenger aircraft. This trend is anticipated to continue during the planning period.

Air cargo at AVP is forecasted to grow at the national AAGR of 1.1 percent as shown in the 2016 FAA Aerospace Forecast for the period of 2016 through 2035. Cargo at AVP is expected to grow from almost 750,446 pounds in 2013 to over 901,835 pounds by 2035. **Figure 2-13** and **Table 2-24** provides the air cargo forecast. The forecast anticipates approximately 446,408 pounds of enplaned cargo and over 455,427 pounds of deplaned cargo by 2035. The continuing influx/growth of the warehousing and time sensitive product based industry development within Northeastern Pennsylvania will be the platform for the forecasted cargo growth trends.

Figure 2-13: Air Cargo Forecast



Source: 2015 FAA Aerospace Forecast; RS&H Analysis, 2016.

Table 2-24: Air Cargo Forecast

Year	Enplaned	Deplaned	Total
2013	357,127	393,339	750,466
2020	378,928	386,584	765,512
2025	400,233	408,299	808,552
2030	422,735	431,276	854,011
2035	446,408	455,427	901,835

Source: 2016 FAA Aerospace Forecast; RS&H analysis, 2016.

2.10. BASED AIRCRAFT

General aviation activity continues its recovery from the Great Recession in which general aviation activity experienced a steep decline. Recovery has been slow and certain parts of the general aviation market continue to experience no growth or even declines. These declines occurred for single-engine piston aircraft and multi-engine piston aircraft. All other general aviation aircraft types experienced some level of growth between 2007 and 2014, especially after 2009. It is anticipated that turbine and rotorcraft aircraft will show growth between 2.2 and 2.5 percent per year in the next 20 years. Light sport aircraft are also anticipated to show a significant increase in based aircraft.

One of the reasons for this general decline in general aviation based aircraft could be FAA's 2010 Rule for Re-Registration and Renewal of Aircraft Registration. The FAA changed its ruling to require all aircraft owners re-register their aircraft within a three-year time period. This resulted in a decline of registered aircraft, which may have partially been the result of incorrect or out of date addresses on file at the FAA. It was estimated in 2010 that up to 30,000 registrations had incorrect

or out of date addresses and may not receive FAA renewal paperwork. A three-year renewal of registration requirement may also deter hobby pilots from continuous renewal.

In an effort to stimulate flight training, student pilot certificates for pilots under the age of 40 were increased to be valid for 60 months (compared to the previous 36 months of validity). The goal is to allow student pilots additional time to complete their pilot training and continue flying after becoming a certified pilot. This may lead to an increase in based aircraft for flight schools.

Based aircraft forecasts serve an important role in the planning of future facilities at the Airport, particularly as it relates to features such as hangars and apron space. The most demanding based aircraft may also play in a role in the requirements for airport facilities that may not be utilized by the most demanding aircraft such as dedicated general aviation facilities. The growth elements below discuss both the local and national factors that influence based aircraft growth at AVP.

2.10.1. Growth Considerations

National Trends - The FAA publishes a forecast containing national trends and growth projections of active general aviation aircraft by type (jet, multi-turbo, multi-piston, single, and rotor). This forecast contains guidance that suggests relatively flat growth for both single and multi-engine aircraft with the majority of the growth occurring in the form of jet, rotorcraft, and light sport aircraft.

Local Socioeconomic Conditions – The growth in based aircraft provided by the FAA includes national growth rates. As previously discussed, the local socioeconomic conditions indicate a strong growth environment based on types of businesses in the area and low unemployment rates.

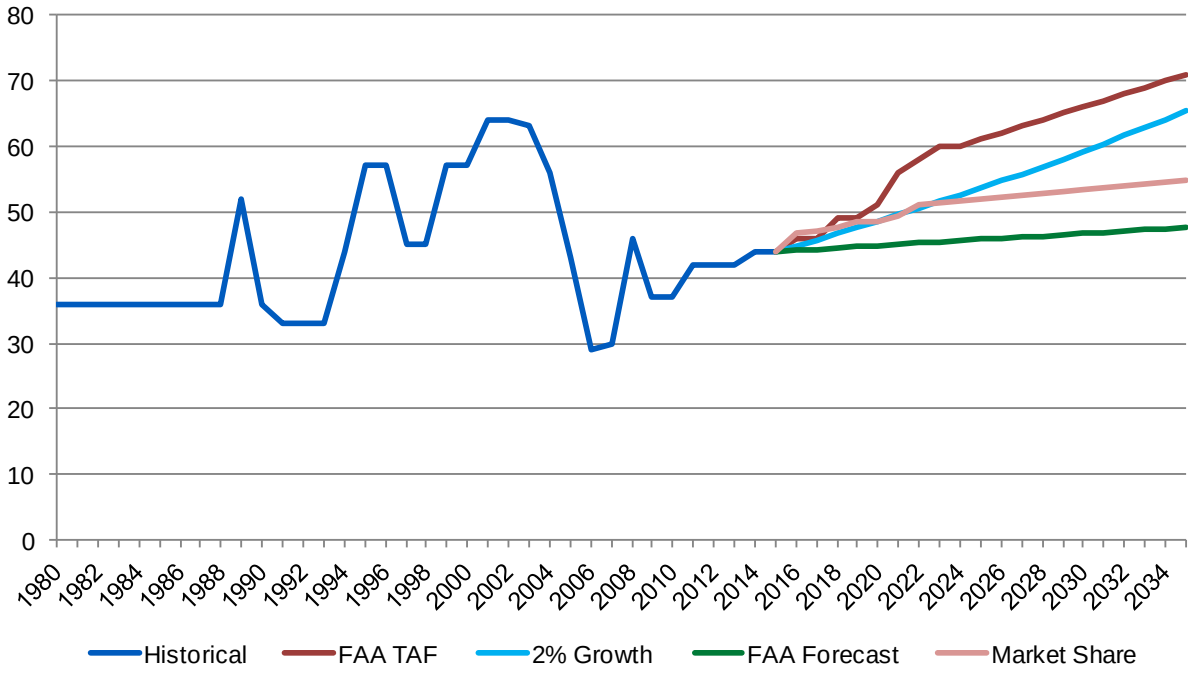
2.10.2. Based Aircraft Forecasts

Three forecasts were created for AVP as shown in **Figure 2-14.** The baseline forecast for based aircraft was calculated using the market share method. Within the service area, AVP has historically accounted for over 29 percent of based aircraft. It is anticipated that it will continue to hold this market share, and represent 29 percent of the market area by 2035 which translates to a growth of approximately 1.1 percent per year.

The low growth forecast is based on the current (2015-2035) FAA National Aerospace Forecast active general aviation and air taxi aircraft forecast of 0.4 percent per year. Since unemployment in the area is below the state and national average and there are strong and growing employers in the Wilkes-Barre/Scranton Area, such as Amazon, that represent a top ten employer, this forecast may be lower than actual growth the area is forecast to experience.

The high growth forecast anticipates that AVP increases its competitive edge within the planning period and local healthcare industries continue to do well and attract business operations. This high growth shows potential based aircraft should AVP realize annual growths of two percent per year.

Figure 2-14: Wilkes-Barre/Scranton Based Aircraft Forecasts



Source: McFarland Johnson, 2016

The TAF for AVP is showing an average annual increase of 2.45 percent of based aircraft. Based aircraft TAF for the 20-year planning period were reviewed and the forecast, shown in **Table 2-25** shows AVP exceeding its historical peak of 64 based aircraft by 2029. **Table 2-25** shows the forecast of based aircraft for AVP along with the projected numbers in the TAF as well as the total based on FAA forecasted national growth rates.

Table 2-25: Based Aircraft Baseline Forecast

Year	Single	Multi	Jet	Rotor	Total	TAF	FAA Aerospace
2015	28	12	3	1	44	44	44
2020	30	13	4	2	49	51	45
2025	32	13	5	2	52	61	46
2035	33	14	6	2	55	71	48

Source: McFarland Johnson, 2015

2.11. AIRCRAFT FLEET MIX

In addition to the number of airline enplanements and operations at AVP, is the size and make up of aircraft fleet serving the market is an important planning consideration. Forecasting the fleet mix permits planners to estimate the need for airport facilities in terms of runway length, strength, and terminal building requirements. The existing (2015) and future (2035) aircraft fleet mix for AVP can be found in Table 2-26.

Table 2-26: Aircraft Fleet Mix

Category	Existing (2015)	Future (2035)
Commercial Service	Embraer 145	Embraer E-175
	Bombardier CRJ-900	Bombardier CS-100
	Airbus 320	Airbus A320NEO
	29.4%	19.5%
General Aviation Itinerant	Beech Super King Air 200	Beech Super King Air 200
	Cessna Citation II	Embraer Phenom 300
	Hawker 800	Gulfstream V
	25.7%	23.2%
General Aviation Local	Beech Super King Air 200	Beech Super King Air 350
	Piper Seneca (PA-34)	Diamond DA-42
	Cessna Skyhawk (172)	Cirrus SR22
	43.5%	56.1%
Other	Swearingen Merlin 4/4A (Cargo)	Cessna Caravan
	C-130 (Military)	C-130 (Military)
	1.4%	1.2%

Source: FAA Traffic Flow Management System Count, 2015; McFarland Johnson, 2016.

2.12. FORECAST SUMMARY AND COMPARISON

Table 2-27 presents a summary of the aviation demand forecasts at AVP. These forecasts are considered reasonable and achievable and will be used throughout the Master Plan Update in the development of facility requirements and the identification of alternatives.

Table 2-27: Aviation Demand Forecast Summary

	Actual 2015	FORECAST		
		2020	2025	2035
ENPLANEMENTS				
Airline	218,219	245,183	275,479	335,032
Peak Hour	288	323	363	441
AIRCRAFT OPERATIONS				
Airline	10,226	10,580	10,964	11,862
General Aviation				
GA Itinerant	12,792	13,047	13,348	14,206
GA Local	23,716	32,008	32,567	33,874
Military	716	716	716	716
TOTAL AIRPORT	47,450	56,351	57,315	60,658
GENERAL AVIATION				
Airport Based Aircraft	44	49	52	55
Single	28	30	32	33
Multi	12	13	13	14
Jet	3	4	5	6
Rotor	1	2	2	2

Source: McFarland Johnson, 2016.

2.12.1. Comparison with FAA Terminal Area Forecasts

As a check on reasonableness, Master Plan aviation forecasts are often compared with other aviation forecasts prepared for the airport and the region. Ideally, this report's forecasts should be reasonably consistent with other forecasts of future airport activity, and compatible with forecasts for the larger region. With Master Plan forecasts being much more specific to the airport, it is not unusual to see some variation from national forecasts. The most useful forecasts for comparison are those prepared by the FAA – the TAF and the national and regional forecasts previously references in this report. The TAF is prepared annually, and includes airport forecasts for all active NPIAS airports. The AVP forecast is available on an FAA website (http: //www.apsm.faa.gov/). The table below, **Table 2-28**, visually displays the compared results between this forecast with that of the FAA's TAF.

The comparison shows that the results of the Master Plan forecast are within the allowances permitted by the FAA (10percent within 5 years; 15percent within 10 years) and is considered reasonable for planning purposes. As previously mentioned, small-hub and non-hub airports that have a tertiary proximity to a large-hub airport tend to be highly volatile in nature. Facility improvements associated with passenger enplanements may want to consider constructing in advance of the forecast years to avoid temporary facilities required from a short term spike in demand.

Table 2-28: Aviation Demand Forecast versus FAA Terminal Area Forecasts

Forecast/ Component	Actual 2015	FORECAST			Growth Rate[1]
		2020	2025	2035	
FAA TAF (2015)					
Enplanements	216,849	234,571	250,794	277,834	1.26%
Total Operations	51,391	53,982	55,040	56,816	0.51%
Master Plan Forecast					
Enplanements	218,219	245,183	275,479	335,032	2.18%
Total Operations	47,450	56,351	57,315	60,658	1.32%
Percent Difference From TAF					
Enplanements		4.52%	9.84%	20.59%	
Total Operations		4.39%	4.13%	6.76%	

[1] Average Annual Compound Growth Rate 2015-2035

Sources: FAA TAF, 2015; RS&H analysis, 2016; McFarland Johnson, 2016.

2.13. FUTURE DESIGN AIRCRAFT

The Runway Design Code (RDC) used in airport planning is derived from the features of the most demanding aircraft using the airport on a regular basis coupled with the best available instrument approach minimums. The first component, depicted by a letter, is the Aircraft Approach Category (AAC) and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the Airplane Design Group (ADG) and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the visibility minimums expressed by Runway Visual Range (RVR) values. Table 2-29 displays the RDC criteria used in airport planning.

AVP has a combination RDC as it has AAC C aircraft (Embraer 145, Boeing 717-200, and Airbus A319/320) with more than 500 annual operations. Similarly, its ADG is III based on more than 500 operations of the Airbus A319/320. The design aircraft may not have 500 operations, but it represents the combination of AAC and ADG of the most critical aircraft using the Airport.

It is anticipated that the Airbus A320 will be the critical/design aircraft. Table 2-30 shows 2015 operations by the largest aircraft. Table 2-31 presents the Airbus A320 design details.

While the Airbus A320 will be used in the analysis for future design aircraft, it is important to note that the characteristics of the A320 are equal to or more demanding than other potential aircraft that may use AVP during the planning period. Other aircraft that can be accommodated include: Boeing 717-200, Bombardier C-Series, Embraer 175/190 and all other regional aircraft.

Table 2-29: Runway Design Code Characteristics

Category	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Group	Tail Height (and/or)	Wingspan
I	< 20′	< 49′
II	20′ - < 30′	49′ - < 79′
III	30′ - < 45′	79′ - < 118′
IV	45′ - < 60′	118′ - < 171′
V	60′ - < 66′	171′ - < 214′
VI	66′ - < 80′	214′ - < 262′

RVR (FT)	Flight Visibility Category (statute mile)
VIS	Visual Approaches
5000	Not lower than 1 mile
4000	Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile)
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)
1200	Lower than 1/4 mile (CAT-III PA)

Source: FAA AC 150/5300-13A.

Table 2-30: Existing Critical Aircraft

Select III Operations	Annual
Boeing 717-200	251
Airbus A319/320	110
McDonnell Douglas MD-83	149
DeHavilland Dash 8 / Bombardier Q200/300/400	2,503
Bombardier CRJ-900	1,190
TOTAL	**4,231**
Select C Operations	**Annual**
Embraer 145	1,131
Boeing 717-200	251
Bombardier CRJ-200	2,564
Bombardier CRJ-700	433
Bombardier CRJ-900	1,190
TOTAL	**5,856**
Select C-IV Operations	**Annual**
Lockheed C-130 Hercules	33
C-17 Boeing Globemaster	4
TOTAL	**37**

Source: McFarland Johnson, 2016.

Table 2-31: Design Aircraft

Characteristic	Airbus 320
Approach Category	C
Runway Design Code	III
Taxiway Design Group	3
Length	123.3 feet
Cockpit to Main Gear	50.2 feet
Wingspan	111.9 feet
Tail Height	39.6 feet
Approach Speed	138
Seats	177

Source: AC 150/5300-13A.