



# **Aviation Activity Forecasts**

**03**

## 03 Aviation Activity Forecasts

This chapter presents aviation activity forecasts for air passengers, aircraft operations, aircraft fleet mix and based aircraft. The forecasts will be used in subsequent sections of this Master Plan Update to assess the ability of existing facilities to accommodate existing and future levels of demand. The forecasts will also be used to assess the proper timeframe for recommended projects shown on the ALP.

The FAA's Terminal Area Forecast (TAF), published January 2016, was adopted for the purpose of this Master Plan Update. The TAF is the official FAA forecast of aviation activity for U.S. airports and is used for the budgeting and planning needs of the FAA. The TAF for activity between 2016 and 2036 at PGD is summarized in this chapter.

In addition to the FAA TAF, the historical and monthly activity associated with air passengers, aircraft operations, and based aircraft is summarized. Historical and monthly activity are used to identify operational peaks for passengers and aircraft operations. These forecasts will be used to assess the adequacy of facilities during peak levels of demand.

All forecasts have a degree of error from the actual activity levels that occur subsequent to their publication. Therefore, the forecasts presented in this section should be reviewed with that fact in mind.

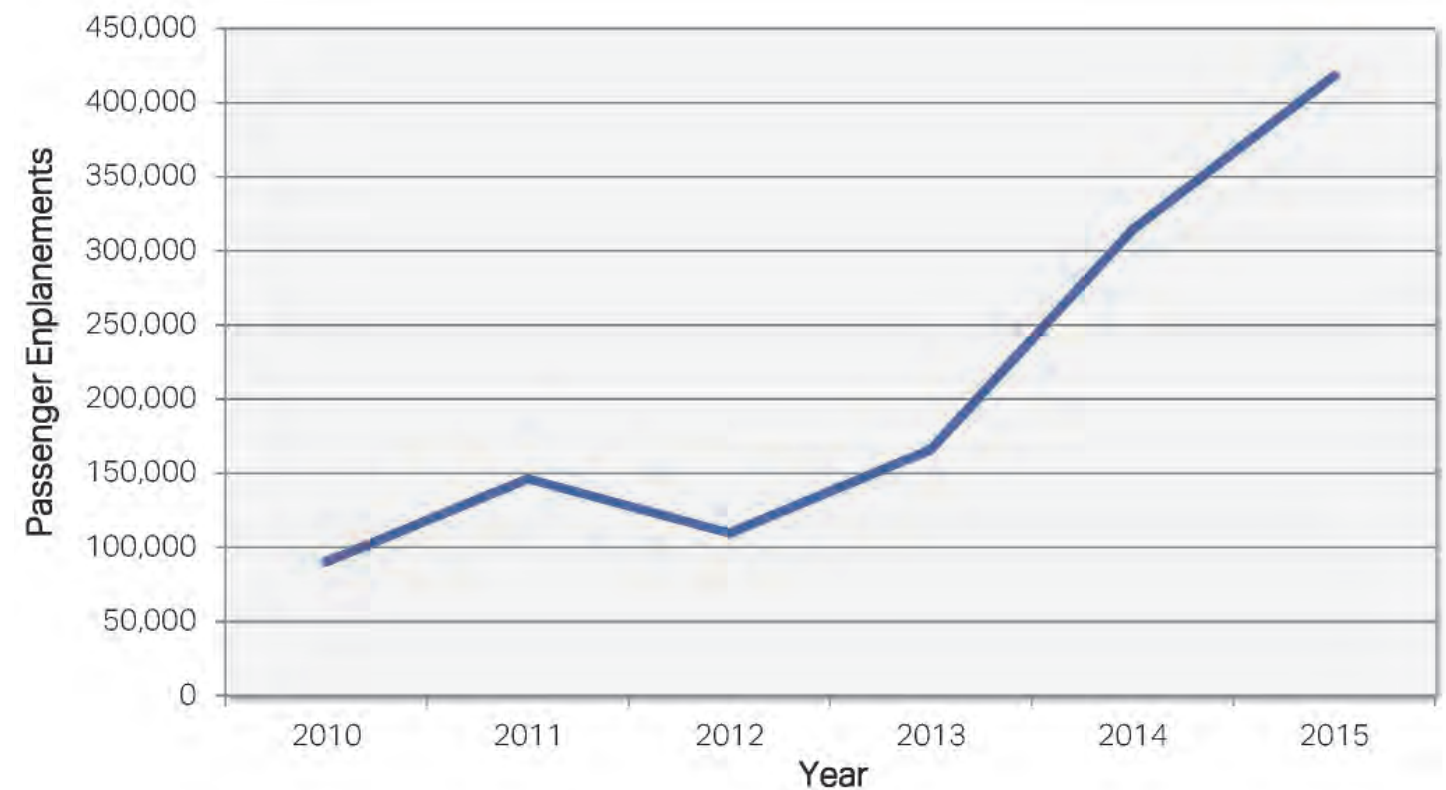
### 3.1 Passenger Enplanements

Passenger enplanements (the number of passengers that board scheduled commercial aircraft) are used to estimate future demand for passenger handling facilities such as ticketing functions, baggage processing areas, security screening, departure holdrooms, concessions and restrooms.

#### 3.1.1 Historical Passenger Enplanements

**Table 3-1** and **Figure 3-1** present historical passenger enplanements from 2010 through 2015. This data was obtained from Airport management records and is based on calendar years.

Passenger enplanements grew at an Average Annual Growth Rate (AAGR) of 36 percent from 2010 to 2015. By comparison, the growth rate for U.S. domestic revenue enplanements was 2.8 percent during the same period. The exceptionally high growth rate at the Airport reflects the initiation of service by Allegiant Air and their subsequent expansion to numerous markets.



**Figure 3-1: Historical Annual Enplanements**  
Source: Charlotte County Airport Authority (CCAA) 2016

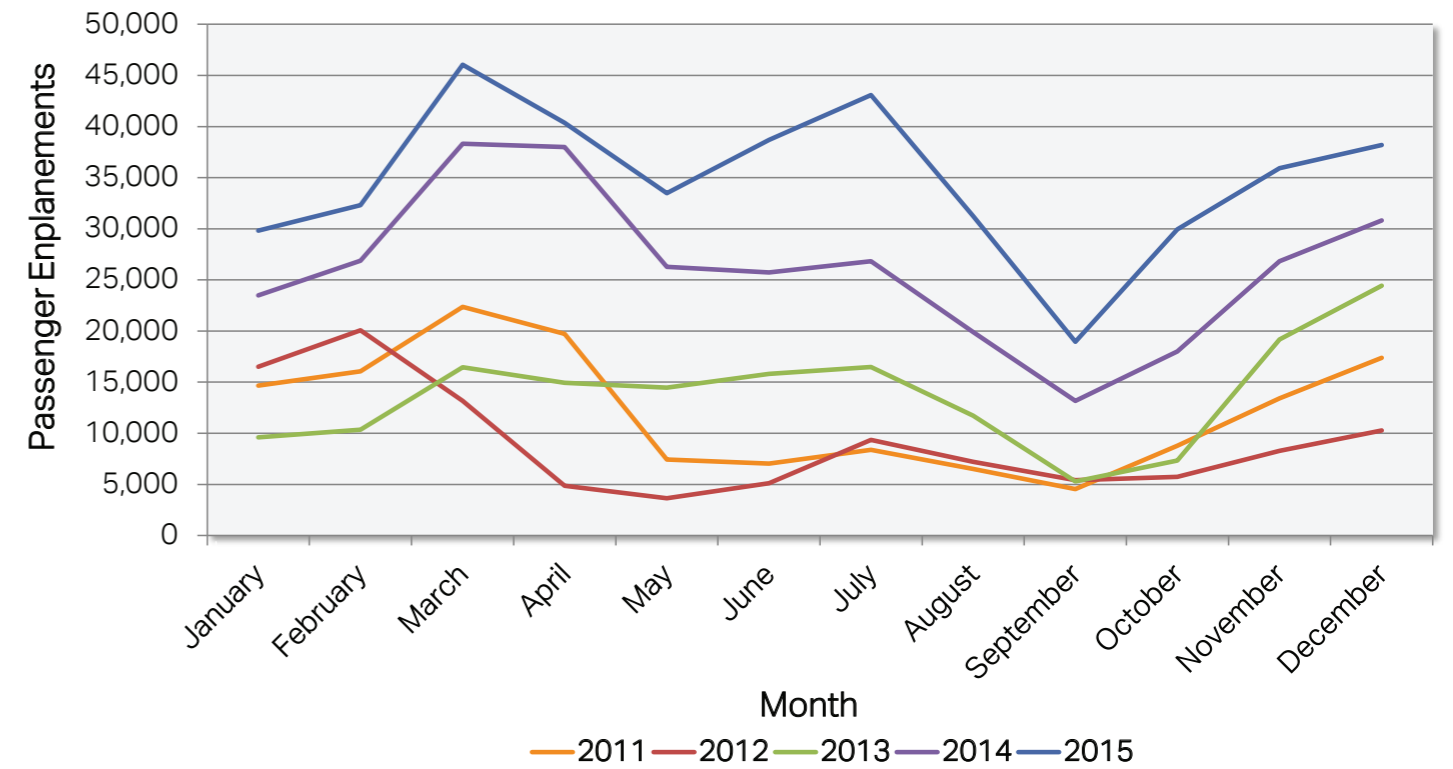
**Table 3-1: Historical Passenger Enplanements (2010-2015)**

| Year               | Annual Passenger Enplanements | Change (%) |
|--------------------|-------------------------------|------------|
| 2010               | 90,240                        | -          |
| 2011               | 146,330                       | 62.16%     |
| 2012               | 109,644                       | (25.07%)   |
| 2013               | 166,062                       | 51.46%     |
| 2014               | 314,244                       | 89.23%     |
| 2015               | 418,017                       | 33.02%     |
| <b>5-Year AAGR</b> | <b>36%</b>                    | <b>-</b>   |

Source: Data obtained from CCAA and represents calendar year 2016

### 3.1.2 Monthly Passenger Enplanements

**Table 3-2** and **Figure 3-2** present monthly passenger enplanements for 2011 through 2015. Passenger enplanements peak during winter months when northern climate tourists typically seek warm weather destinations for vacations. Conversely, passenger enplanements reach their low point during September when family vacation travel declines due to the start of a new school year. September is also the most frequent month for tropical storms and hurricanes which discourages tourism travel to most Florida markets. Peak month passenger enplanements averaged 14 percent of annual activity during the period from 2011 through 2015.



**Figure 3-2: Historical Monthly Enplanements**  
Source: CCAA (2016)

**Table 3-2: Historical Monthly Passenger Enplanements (2011-2015)**

| Month        | 2011           |             | 2012           |             | 2013           |             | 2014           |             | 2015           |             |
|--------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|
|              | Passengers     | Percent     | Passengers     | Percent     | Passengers     | Percent     | Passengers     | Percent     | Passengers     | Percent     |
| January      | 14,673         | 10%         | 16,497         | 15%         | 9,603          | 6%          | 23,481         | 7%          | 29,807         | 7%          |
| February     | 16,070         | 11%         | <b>20,084</b>  | <b>18%</b>  | 10,354         | 6%          | 26,872         | 9%          | 32,300         | 8%          |
| March        | <b>22,362</b>  | <b>15%</b>  | 13,156         | 12%         | 16,460         | 10%         | <b>38,329</b>  | <b>12%</b>  | <b>46,043</b>  | <b>11%</b>  |
| April        | 19,724         | 13%         | 4,865          | 4%          | 14,933         | 9%          | 37,998         | 12%         | 40,366         | 10%         |
| May          | 7,444          | 5%          | 3,638          | 3%          | 14,473         | 9%          | 26,280         | 8%          | 33,479         | 8%          |
| June         | 7,040          | 5%          | 5,127          | 5%          | 15,803         | 10%         | 25,725         | 8%          | 38,699         | 9%          |
| July         | 8,387          | 6%          | 9,365          | 9%          | 16,486         | 10%         | 26,835         | 9%          | 43,077         | 10%         |
| August       | 6,501          | 4%          | 7,206          | 7%          | 11,716         | 7%          | 19,907         | 6%          | 31,234         | 7%          |
| September    | 4,537          | 3%          | 5,411          | 5%          | 5,284          | 3%          | 13,175         | 4%          | 18,941         | 5%          |
| October      | 8,792          | 6%          | 5,728          | 5%          | 7,328          | 4%          | 17,995         | 6%          | 29,933         | 7%          |
| November     | 13,412         | 9%          | 8,285          | 8%          | 19,177         | 12%         | 26,835         | 9%          | 35,934         | 9%          |
| December     | 17,388         | 12%         | 10,282         | 9%          | <b>24,445</b>  | <b>15%</b>  | 30,812         | 10%         | 38,204         | 9%          |
| <b>Total</b> | <b>146,330</b> | <b>100%</b> | <b>109,644</b> | <b>100%</b> | <b>166,062</b> | <b>100%</b> | <b>314,244</b> | <b>100%</b> | <b>418,017</b> | <b>100%</b> |

Source: CCAA, Monthly Traffic Reports (2016)

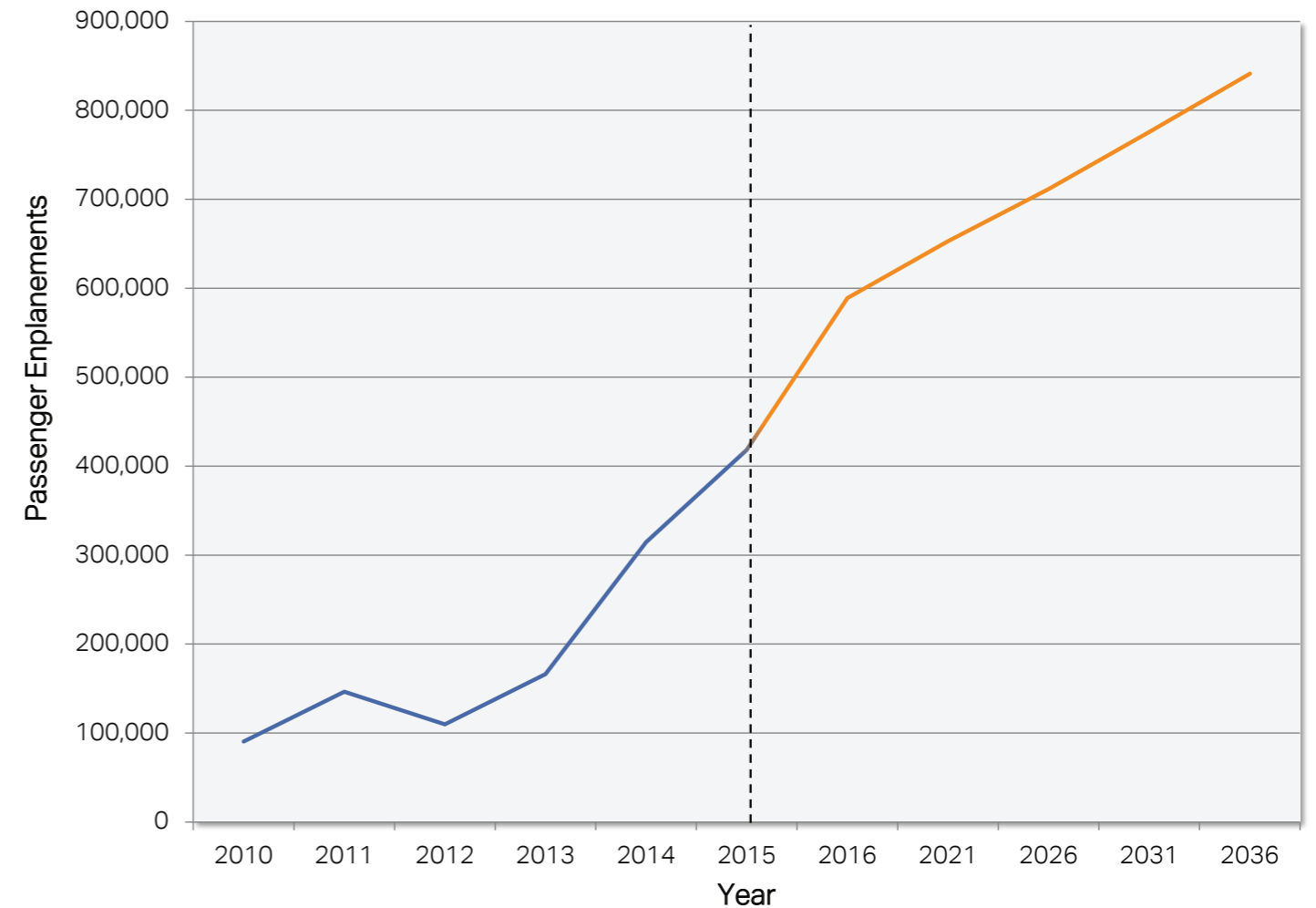
Note: Peak month shown in **bold red font**

### 3.1.3 Forecast of Passenger Enplanements

A forecast of passenger enplanements is needed to determine the demand for passenger related facilities at the Airport including the passenger terminal and parking, as well as facilities indirectly related to passenger growth such as access road traffic volumes. The FAA TAF contains activity projections through the year 2040 for all airports listed in the NPIAS. The most recent TAF was published in January 2016 and is based upon historical data through 2014. Consequently, it does not account for the more recent and higher passenger levels experienced at PGD during 2015, nor does it account for the air carrier service initiated by Frontier Airlines on October 30, 2016. The TAF projects that annual passenger enplanements at PGD will increase to approximately 841,169 in 2036. This reflects an average annual growth rate of 3.40 percent.

The TAF will be used for the purpose of this Master Plan Update. **Table 3-3** and **Figure 3-3** summarizes the forecast for each 5-year period in the 2016-2036 planning horizon.

The TAF should be considered a conservative projection of future passenger levels at PGD because it is based upon historical passenger enplanements through 2014 and does not reflect the higher level of enplanements that occurred during 2015 nor the air service provided by Frontier Airlines. This Master Plan Update will account for the potential of even higher levels of passenger demand through the use of Planning Activity Levels (PALs) that are described in **Section 04** of this report.



**Figure 3-3: Forecast Annual Enplanements**  
Source: FAA TAF (January 2016)

**Table 3-3: Forecast Passenger Enplanements (2016-2036)**

| Year          | Annual Passenger Enplanements | Change (%) |
|---------------|-------------------------------|------------|
| 2015 (Actual) | 418,017                       | -          |
| 2021          | 652,709                       | 56.14%     |
| 2026          | 711,256                       | 9.94%      |
| 2031          | 775,564                       | 9.85%      |
| 2036          | 841,169                       | 9.22%      |
| <b>AAGR</b>   | <b>3.23%</b>                  | <b>-</b>   |

Source: FAA TAF, January 2016; 2015 actual values from the CCAA

Note: AAGR = Average Annual Growth Rate

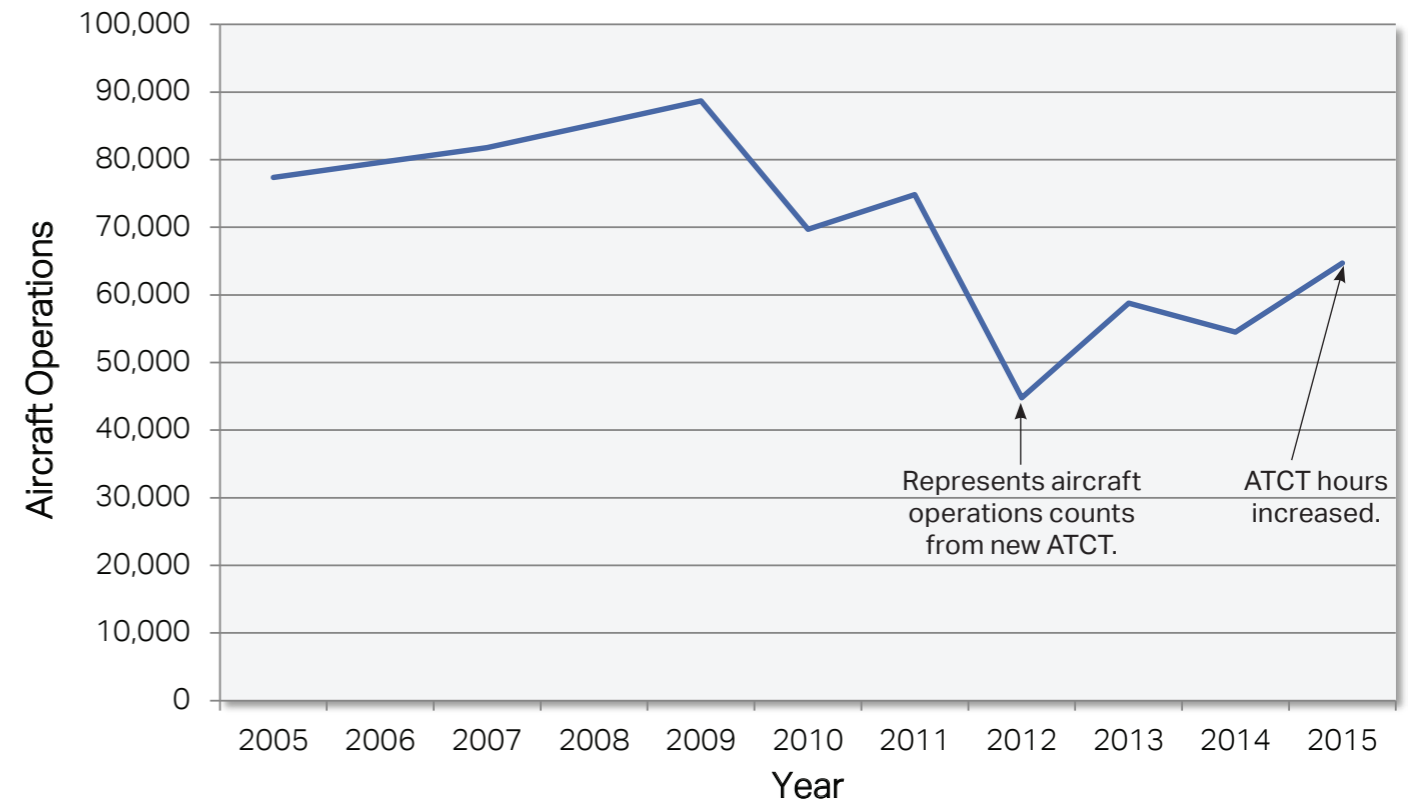
### 3.2 Aircraft Operations

Forecasts of aircraft operations and based aircraft will be used to determine future demand for facilities such as the runway and taxiways, apron space, as well as fuel storage requirements. The FAA defines an aircraft operation as either a landing or a takeoff.

#### 3.2.1 Historical Aircraft Operations

**Figure 3-4** and **Table 3-4** present total annual aircraft operations at the Airport for the period 2005 through 2015. This data was derived from the FAA's Terminal Area Forecast and the FAA's Operations Network (OPSNET) which is the official source of National Airspace System air traffic operations and delay data. The number of aircraft operations indicated for 2012 through 2015 reflect data reported by the Air Traffic Control Tower (ATCT) which opened in February 2012. Prior to 2012, aircraft operations were reported to the FAA by the Authority. Annual aircraft operations reported for 2012 through 2015 were significantly lower than during the previous seven years. This is partially due to the fact that the ATCT's operating hours were limited to 7AM through 7PM) and data was not collected for January and February. Similarly, the number of aircraft operations reported by the ATCT increased by nearly 19 percent in 2015 partially due to the fact that the ATCT operating hours increased to 14 hours (7AM-9PM) that year.

Total aircraft operations at the Airport have not shown growth during the last 10 years. This trend is consistent with decreasing general aviation activity at many airports throughout the U.S. as well as the trend to use larger aircraft and higher load factors for increased passenger demand rather than more flights. **Table 3-5** presents the distribution of historical aircraft operations by category for the last three years.



**Figure 3-4: Historical Annual Aircraft Operations**  
Source: FAA TAF (January 2016)

**Table 3-4: Historical Annual Aircraft Operations (2005-2015)**

| Year                | Total Aircraft Operations | Annual Change (%) |
|---------------------|---------------------------|-------------------|
| 2005                | 77,365                    | -                 |
| 2006                | 79,585                    | 2.90%             |
| 2007                | 81,807                    | 2.80%             |
| 2008                | 85,218                    | 4.20%             |
| 2009                | 88,699                    | 4.10%             |
| 2010                | 69,699                    | (21.40%)          |
| 2011                | 74,854                    | 7.40%             |
| 2012                | 44,799*                   | NM                |
| 2013**              | 58,795                    | 31.20%            |
| 2014**              | 54,521                    | (7.30%)           |
| 2015**              | 64,701                    | 18.70%            |
| <b>10-Year AAGR</b> | <b>(1.80%)</b>            | <b>-</b>          |

Source: Values for 2005 through 2011 obtained from FAA TAF (2016)  
 \* Value for 2012 obtained from FAA OPSNET database, but does not include January and February  
 \*\* Values for 2013 to 2015 obtained from FAA OPSNET  
 Notes: AAGR – Average Annual Growth Rate, NM – Not Meaningful

**Table 3-5: Historical Annual Aircraft Operations by Category (2013-2016)**

| Year | Air Carrier | Air Taxi | General Aviation | Military | Total  |
|------|-------------|----------|------------------|----------|--------|
| 2013 | 1,939       | 970      | 55,781           | 105      | 58,795 |
| 2014 | 3,499       | 858      | 50,007           | 157      | 54,521 |
| 2015 | 5,203       | 1,371    | 57,892           | 235      | 64,701 |

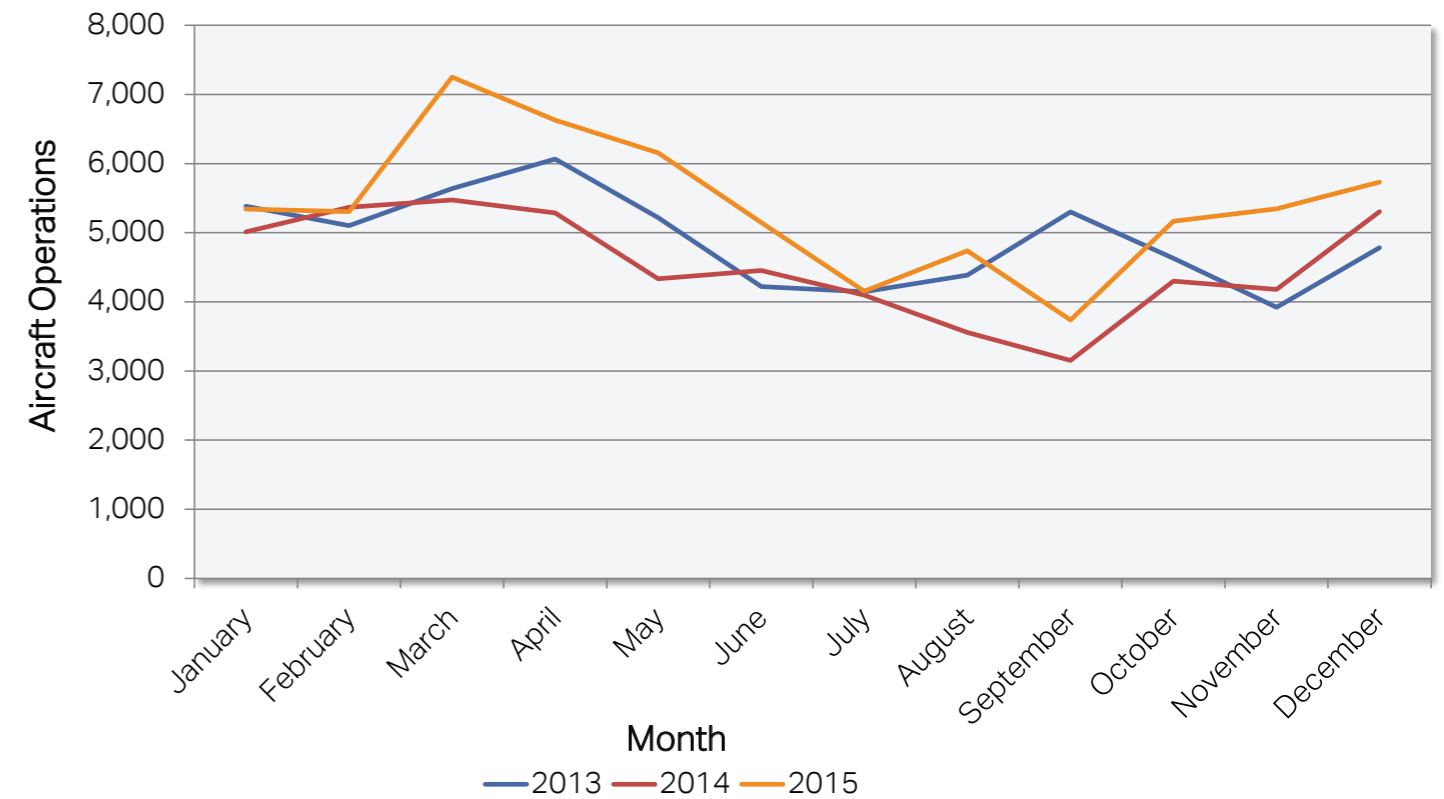
Source: FAA OPSNET (2016)

Air carrier operations are typically those conducted by commercial airlines under the Code of Federal Regulations (CFR) Title 14, Federal Aviation Regulations (FAR) Part 121, Air Carrier Certification. Air taxi operators are air carriers that transport persons, property, and mail using small aircraft under 60 seats or a maximum payload capacity of 18,000 pounds or less. Air taxi carriers typically hold FAR Part 135 certification for commuter and on-demand services (for compensation or hire). Air Trek is a Part 135 operator at PGD. Flight schools typically operate under Part 141, Schools and Other Certificated Agencies, and are counted as General Aviation.

### 3.2.2 Monthly Aircraft Operations

**Table 3-6** and **Figure 3-5** present monthly aircraft operations for 2013 through 2015. Data from the FAA database OPSNET began in March 2012. Therefore, 2013 was the first year that provided a full 12-months of data for analysis.

The monthly pattern for aircraft operations is similar to the monthly pattern for passenger enplanements; aircraft operations peak during winter months and reach their low point in September following the conclusion of the family vacation season and the height of the hurricane season.



**Figure 3-5: Historical Monthly Aircraft Operations**  
Source: FAA OPSNET (2016)

**Table 3-6: Historical Monthly Aircraft Operations (2013-2015)**

| Month        | 2013          |               | 2014          |               | 2015          |               |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
|              | Operations    | Percent       | Operations    | Percent       | Operations    | Percent       |
| January      | 5,384         | 9.2%          | 5,014         | 9.2%          | 5,341         | 8.3%          |
| February     | 5,102         | 8.7%          | 5,370         | 9.8%          | 5,304         | 8.2%          |
| March        | 5,637         | 9.6%          | <b>5,474</b>  | <b>10.0%</b>  | <b>7,250</b>  | <b>11.2%</b>  |
| April        | <b>6,067</b>  | <b>10.3%</b>  | 5,286         | 9.7%          | 6,628         | 10.2%         |
| May          | 5,219         | 8.9%          | 4,335         | 8.0%          | 6,156         | 9.5%          |
| June         | 4,220         | 7.2%          | 4,452         | 8.2%          | 5,148         | 8.0%          |
| July         | 4,145         | 7.0%          | 4,099         | 7.5%          | 4,153         | 6.4%          |
| August       | 4,386         | 7.5%          | 3,557         | 6.5%          | 4,739         | 7.3%          |
| September    | 5,301         | 9.0%          | 3,151         | 5.8%          | 3,737         | 5.8%          |
| October      | 4,629         | 7.9%          | 4,300         | 7.9%          | 5,165         | 8.0%          |
| November     | 3,920         | 6.7%          | 4,179         | 7.7%          | 5,347         | 8.3%          |
| December     | 4,785         | 8.1%          | 5,304         | 9.7%          | 5,733         | 8.9%          |
| <b>Total</b> | <b>58,795</b> | <b>100.0%</b> | <b>54,521</b> | <b>100.0%</b> | <b>64,701</b> | <b>100.0%</b> |

Source: FAA OPSNET, 2016

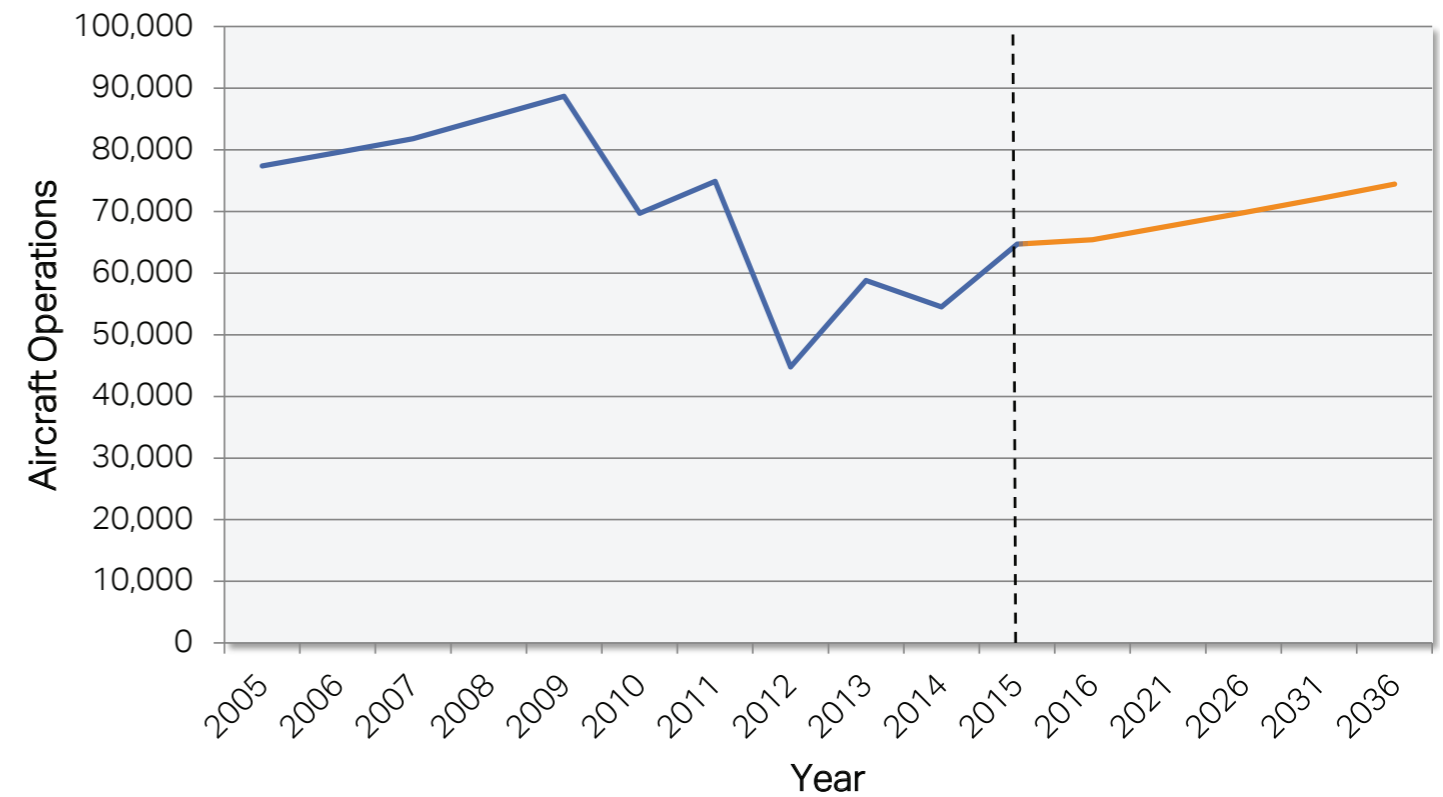
Note: Peak month shown in **bold red font**; aircraft operations numbers reflect those occurring during the operating hours of the ATCT

### 3.2.3 Forecast of Aircraft Operations

The 2016 TAF projects annual aircraft operations, by category, through 2040. Data is presented for air carriers (i.e., an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation), air taxi, general aviation (i.e., all civil aircraft, except those classified as air carriers or air taxis), and military.

Data for five-year increments beginning with 2016 and extending through 2036 are presented in **Table 3-7** and **Figure 3-6**. The vast majority of these aircraft operations are classified as itinerant, or operations performed by an aircraft that lands at an airport, arriving from outside the airport area, or departs and leaves the airport area. Approximately 25,000 of these operations, primarily in the general aviation category, are classified as local (i.e., touch and go's). The TAF projects a modest growth rate of slightly more than 0.5 percent for total aircraft operations during the 20-year forecast period.

The TAF predicts that the largest growth in aircraft operations (on a percentage basis) will occur in the air carrier category. Air carrier operations are predicted to experience an annual growth rate of approximately 2.7 percent, while the air taxi and general aviation categories are projected to experience a lower growth rate of approximately 0.5 percent. Only the military category is projected to show a decline.



**Figure 3-6: Forecast Aircraft Operations**  
Source: FAA TAF (January 2016)

**Table 3-7: Forecast Aircraft Operations by Category**

| Year | Air Carrier | Air Taxi | General Aviation | Military | Total  |
|------|-------------|----------|------------------|----------|--------|
| 2015 | 5,203       | 1,371    | 57,892           | 235      | 64,701 |
| 2016 | 6,327       | 1,266    | 57,646           | 235      | 65,474 |
| 2021 | 7,010       | 1,328    | 59,101           | 160      | 67,599 |
| 2026 | 7,644       | 1,393    | 60,591           | 160      | 69,788 |
| 2031 | 8,331       | 1,462    | 62,122           | 160      | 72,075 |
| 2036 | 9,030       | 1,534    | 63,689           | 160      | 74,413 |
| AAGR | 2.70%       | 0.50%    | 0.50%            | (1.80%)  | 0.70%  |

Source: FAA TAF (January 2016)  
Note: AAGR = Average Annual Growth Rate

### 3.3 Aircraft Fleet Mix

Aircraft fleet mix refers to the distribution of aircraft operations among the various types of aircraft that use an airport. The aircraft fleet mix is important because it determines many of the design factors associated with an airfield including runway length, runway and taxiway widths, minimum safety distances between pavements and many other design standards specified by the FAA.

Aircraft fleet mix for itinerant and local operations at PGD was projected to 2036 using professional judgment and information from a variety of data sources including the following:

- Aircraft acquisition announcements reported by the air carriers operating at PGD
- Aircraft orders as indicated on the Airbus web site
- General Industry trends in terms of aircraft orders and retirements. Sources of data included Boeing's "Current Market Outlook" and Airbus's "Global Market Forecast" and Bombardier's "Business Aircraft Market Forecast 2014-2033"
- FAA Aerospace Forecast (FY 2015 – 2035)

Review of these reports revealed several key points that were considered when developing the forecast, including:

- A review of the aircraft fleet owned by these airlines indicates that they primarily operate Airbus aircraft. While Allegiant Air operates a few Boeing 757's, those aircraft are not currently operated at PGD and are not projected to in the future.
- The Airbus A320 is currently the most common type of air carrier aircraft operated at the Airport. The A320 supplanted the MD-80 series as the most frequently operated air carrier aircraft at PGD during 2016 as it is the most common aircraft operated by Allegiant Air and Frontier Airlines. The next most common aircraft operated at PGD is the Airbus A319.
- It is anticipated that the A320neo (new engine option) and, to a lesser extent, the A321 will be the dominant types of air carrier aircraft operated at the Airport in the future. These aircraft have been ordered by, or are currently operated by, Allegiant Air and Frontier Airlines.
- Itinerant operations by general aviation aircraft are projected to remain fairly consistent with the current distribution between aircraft categories (i.e. single-engine, multi-engine, etc.). However, a small shift toward greater operations by the high end of the fleet (i.e., high performance turbo-props and jets) is expected, consistent with national trends. Operations by rotorcraft are projected to remain consistent with current percentages.

The projected aircraft fleet mix for itinerant air carrier and general aviation operations are shown in **Table 3-8**.

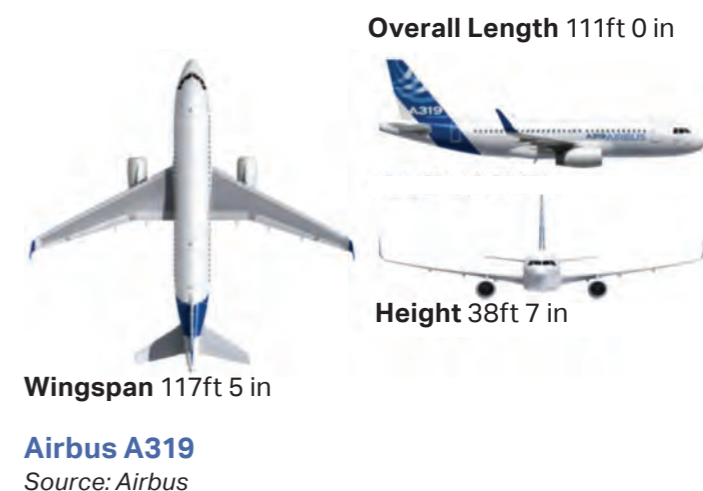
Consultation with air traffic control personnel at PGD revealed that local general aviation operations are estimated to be 85 percent single-engine, 10 percent multi-engine, and 5 percent rotor. These percentages are expected to remain constant throughout the planning period.

**Table 3-8: Forecast Aircraft Fleet Mix**

| Aircraft Type                       | Average Seats | Year           |             |             |             |             |
|-------------------------------------|---------------|----------------|-------------|-------------|-------------|-------------|
|                                     |               | 2015 (Actual)* | 2021        | 2026        | 2031        | 2036        |
| <b>Air Carrier<sup>1</sup></b>      |               |                |             |             |             |             |
| Airbus A321                         | 230           | 0%             | 5%          | 7%          | 10%         | 15%         |
| Airbus A320                         | 177-186       | 80%            | 85%         | 88%         | 90%         | 85%         |
| Boeing MD 83                        | 166           | 9%             | 0%          | 0%          | 0%          | 0%          |
| Airbus A319                         | 156           | 11%            | 10%         | 5%          | 0%          | 0%          |
| <b>Total</b>                        |               | <b>100%</b>    | <b>100%</b> | <b>100%</b> | <b>100%</b> | <b>100%</b> |
| <b>General Aviation<sup>2</sup></b> |               |                |             |             |             |             |
| Single-Engine                       |               | 58%            | 58%         | 58%         | 58%         | 58%         |
| Multi-Engine                        |               | 18%            | 18%         | 18%         | 18%         | 18%         |
| Turboprop                           |               | 2%             | 2%          | 2%          | 2%          | 2%          |
| Jet                                 |               | 17%            | 17%         | 17%         | 17%         | 17%         |
| Rotor                               |               | 5%             | 5%          | 5%          | 5%          | 5%          |
| <b>Total</b>                        |               |                | <b>100%</b> | <b>100%</b> | <b>100%</b> | <b>100%</b> |

Sources:

1. Current aircraft fleet mix for the air carrier category was calculated using FAA TFMS data for the period January 2016 through July 2016 and is representative of 2016 conditions
2. Current aircraft fleet mix for the general aviation category was estimated using FAA TFMS data from CY2015, flight strips and consultation with ATC personnel





### 3.4 Cargo Forecasts

Neither Allegiant Air nor Frontier Airlines transport air cargo. Therefore, cargo operations that occur at PGD are limited to those flying unscheduled operations to and from the GA terminal or to one of the Airport's tenants. Cargo volumes associated with those operations are not recorded by the CCAA and therefore are not known.

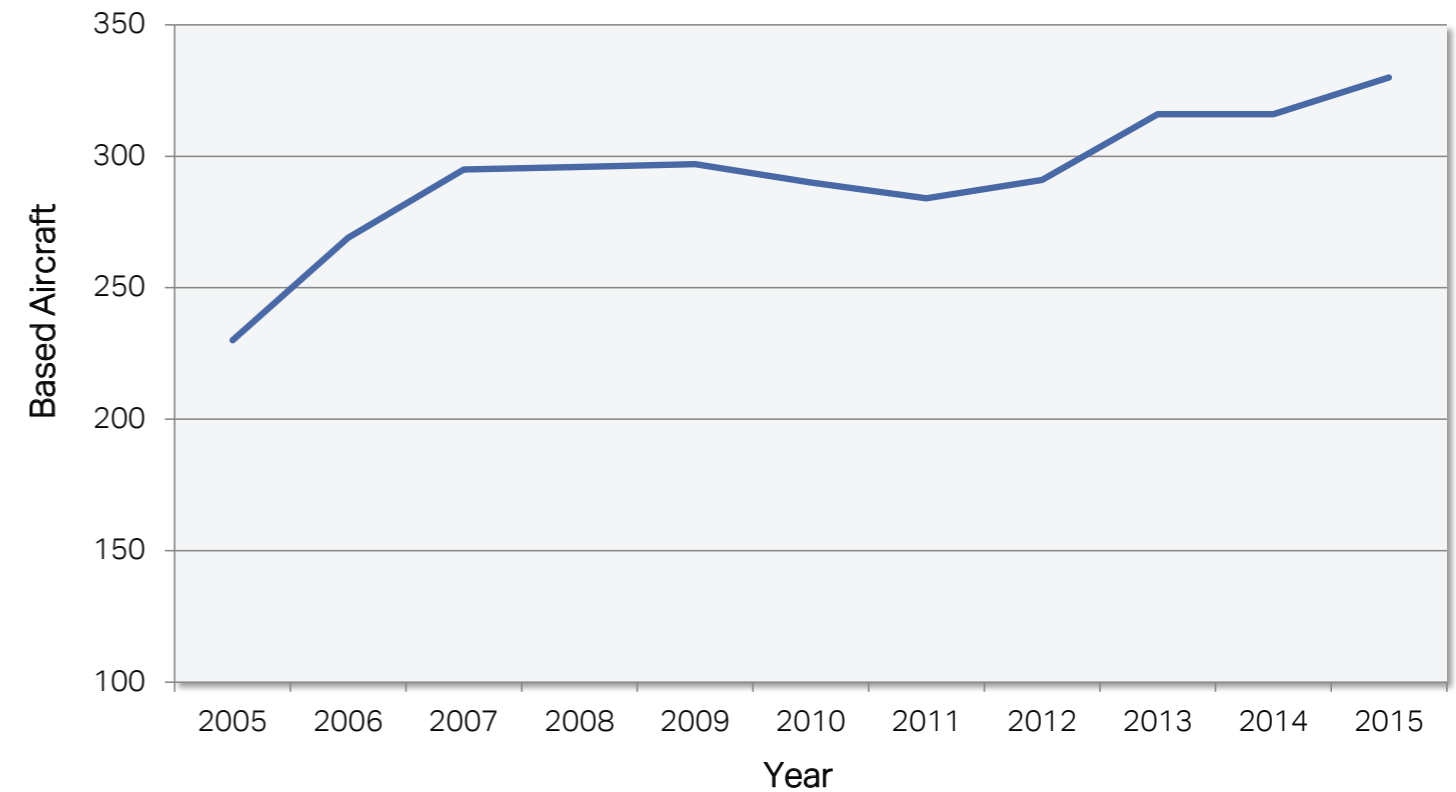
Scheduled air service at PGD is likely to be dominated by Low-Cost Carriers for the foreseeable future. Most of these carriers do not include cargo as part of their business model. Therefore, significant cargo volumes by scheduled air carriers are not projected to occur at PGD during the planning period.

### 3.5 Based Aircraft

Based aircraft at an airport are those that are operational and air worthy and are based at the airport for the majority of the year.

#### 3.5.1 Historical Based Aircraft

Historical levels of based aircraft at PGD were obtained from the FAA's TAF. **Table 3-9** and **Figure 3-7** present historical based aircraft from 2005 through 2015. Aircraft based at the Airport decreased dramatically in 2008 following the destruction caused by Hurricane Charley. The level of based aircraft recovered during the subsequent years as replacement storage hangars were constructed and occupied. According to the FAA 5010 Form, the aircraft mix at PGD in December 2015 included 281 single-engine aircraft, 33 multi-engine aircraft and 16 jets for a total of 330 fixed-wing aircraft. An additional 10 helicopters and two gliders were also based at the Airport.



**Figure 3-7: Historical Based Aircraft (2005-2015)**  
 Source: FAA TAF (January 2016)

**Table 3-9: Historical Based Aircraft (2005-2015)**

| Year | Total Based Aircraft | Change (%) |
|------|----------------------|------------|
| 2005 | 230                  |            |
| 2006 | 269                  | 16.96%     |
| 2007 | 295                  | 9.67%      |
| 2008 | 296                  | 0.34%      |
| 2009 | 297                  | 0.34%      |
| 2010 | 290                  | (2.36%)    |
| 2011 | 284                  | (2.07%)    |
| 2012 | 291                  | 2.46%      |
| 2013 | 316                  | 8.59%      |
| 2014 | 316                  | 0.00%      |
| 2015 | 330                  | 4.43%      |

Source: Data from 2005 through 2014 is from FAA TAF, January 2016. Data for 2015 is from FAA Form 5010 dated December 2015.

### 3.5.2 Forecast of Based Aircraft

The 2016 TAF projects based aircraft through 2040. **Table 3-10** and **Figure 3-8** present the TAF's projection of based aircraft at PGD to 2036. The forecast predicts fairly aggressive growth of 100 aircraft over the next 20 years. This level of growth is notable given the current state of the general aviation aircraft manufacturing which has seen only limited growth in recent years. However, the addition of Western Michigan University as well as the potential for other flight schools in the future could facilitate increases in based aircraft at PGD. The higher forecast may also prove useful for assessing the potential placement of additional storage hangars in subsequent sections of this report.

### 3.6 Peaking Forecasts

In addition to the forecasts presented in the preceding sections, the following forecasts are important for assessing facility requirements during peak hour conditions. Therefore, this section presents forecasts of peak month, average day of the peak month, and peak hour for passenger enplanements and aircraft operations. Definitions of these peaking factors are presented below:

- Peak Month: The month when the highest number of passengers or aircraft operations occur.
- Average Day of the Peak Month (ADPM): The average day during the peak month (i.e., the monthly value divided by 31 days).
- Peak Hour: The average of the hour with the highest number of passengers or aircraft operations during the peak month. Data for absolute peaks are also presented for comparison purposes.

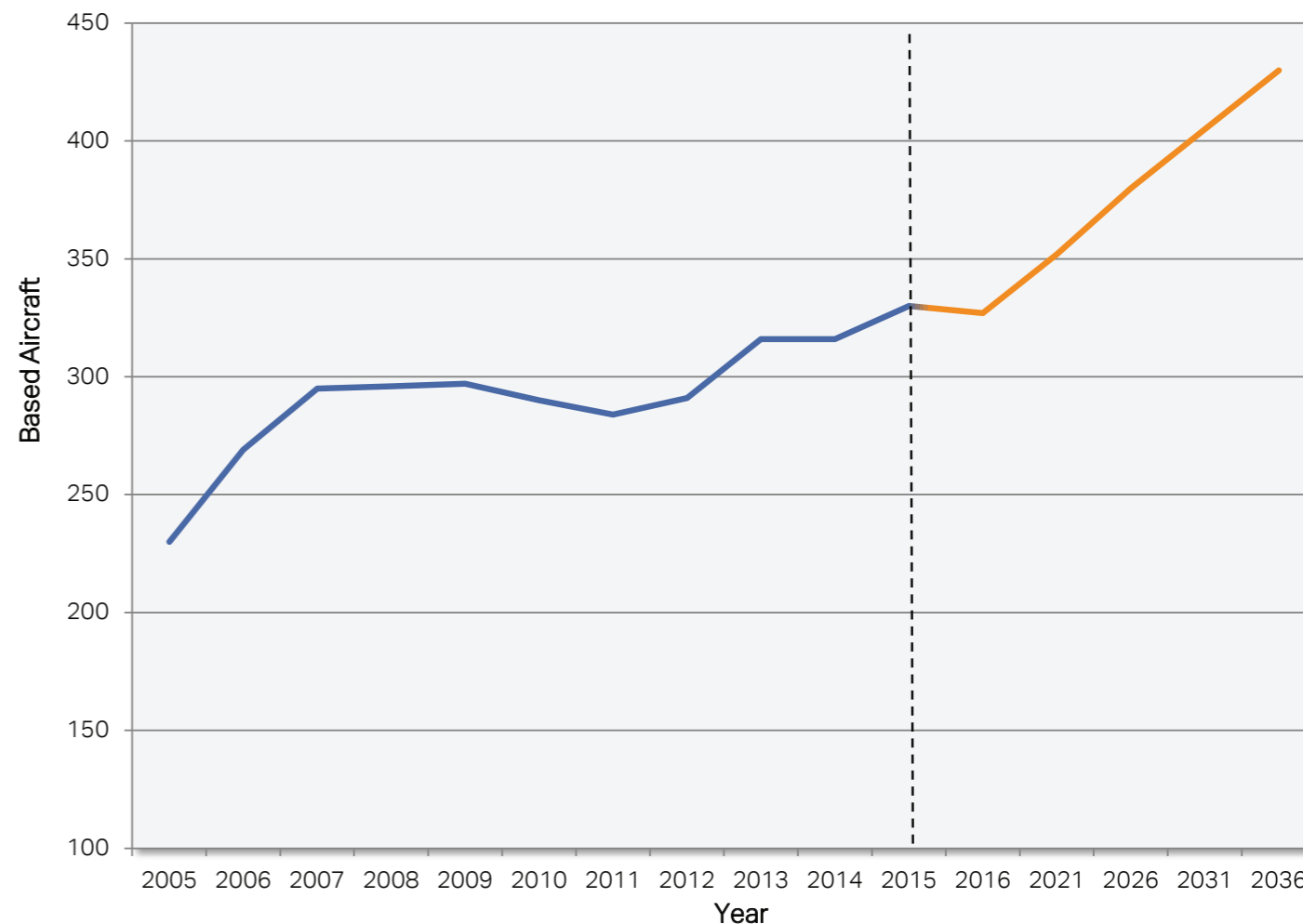
#### 3.6.1 Peaking of Passenger Enplanements

Forecasts of peak hour passenger enplanements are used to determine future peak hour demand for facilities used by departing passengers such as ticketing, security screening, departure holdrooms and restrooms.

The review of historical monthly passenger enplanements revealed that the peak month passenger enplanements averaged 14 percent between 2011 and 2015. The value was lower in recent years (i.e., 11 percent in 2015 and 12 percent in 2014) due to the fact that air carriers were not entering and exiting the market as was the case in 2011 and 2012. Both Vision Airlines and DirectAir operated at PGD in 2011 and 2012, but subsequently ceased operations. A peak month percentage of 14 percent is fairly high based upon industry standards and may over-estimate demand in future years as the market matures. Therefore, a peak month percentage of 12 percent was used for the forecast of annual passengers to estimate future peak month passengers. This value is consistent with actual levels during the past two years.

The average day of the peak month is simply the peak month divided by 31 days. The resulting forecast of ADPM in five-year increments through the forecast period is presented in **Table 3-11**.

An assessment of peak hour passengers was conducted by examining TSA passenger checkpoint data for the peak month of March 2016. The assessment revealed that the median peak hour during the peak month accounts for 18 percent of passengers. This percentage should be used with caution due to the fact that peak hours during the peak month ranged from a



**Figure 3-8: Forecast Based Aircraft**  
Source: FAA TAF (January 2016)

**Table 3-10: Forecast Based Aircraft (2016-2036)**

| Year        | Based Aircraft |              |     | Total | Change (%)   |
|-------------|----------------|--------------|-----|-------|--------------|
|             | Single-Engine  | Multi-Engine | Jet |       |              |
| 2016        | 278            | 33           | 16  | 327   | (0.91%)      |
| 2021        | 299            | 35           | 18  | 352   | 7.65%        |
| 2026        | 323            | 38           | 19  | 380   | 7.95%        |
| 2031        | 344            | 41           | 20  | 405   | 6.58%        |
| 2036        | 366            | 43           | 22  | 430   | 6.17%        |
| <b>AAGR</b> |                |              |     |       | <b>1.38%</b> |

Source: FAA TAF (January 2016)

low of approximately 13 percent to a high of 26 percent. Peaking was skewed toward higher percentages on days when Allegiant Air operated fewer flights.

Absolute peak hours are significantly higher than the calculated median peak hour. For example, an absolute hourly peak of 458 passengers was experienced during March 2016. This is approximately 30 percent higher than the calculated peak hour (i.e., 387) using the aforementioned percentages. However, the calculated median peak hour passengers for March 2016 was 388. Therefore, the table appears to provide a reasonable approximation of current peaking. Furthermore, some "spreading" of the peak will likely occur as the market matures thereby resulting in lower peak hour percentages. Likewise, the introduction of Frontier Airlines is not likely to significantly increase the peak hour in the immediate future as flights are only conducted a few days a week and do not coincide with peak hours for Allegiant Air flights.

### 3.6.2 Peaking of Aircraft Operations

The review of historical monthly aircraft operations revealed that the peak month for aircraft operations averaged 10.1 percent from 2013 through 2015. The review also revealed that the peak month did not consistently occur during the same month each year, although it always occurred during March or April. The calculated peak month average was applied to the forecast of annual aircraft operations to estimate future peak month aircraft operations.

The average day of the peak month for aircraft operations was calculated by dividing the peak month by 31 days. The resulting forecast of ADPM in five-year increments through the forecast period is presented in **Table 3-12**.

Counts of hourly aircraft operations for each day of the peak month (i.e., March 2016) were obtained from the PGD ATCT. Review of these counts revealed that the peak hour varied from 10 percent to 17 percent of daily operations. The average peak hour during all days of the peak month accounted for 13 percent of daily operations.

The average peak hour had 25 aircraft operations. The highest peak experienced 38 aircraft operations while the lowest peak hour experienced 20 operations.

**Table 3-11: Peaking Characteristics - Passenger Enplanements**

| Year             | Passenger Enplanements |                  |                                  |                 |
|------------------|------------------------|------------------|----------------------------------|-----------------|
|                  | Annual                 | Peak Month (12%) | Average Day Peak Month (31 days) | Peak Hour (18%) |
| 2016 (Estimated) | 555,230                | 66,628           | 2,149                            | 387             |
| 2021             | 652,709                | 78,325           | 2,527                            | 455             |
| 2026             | 711,256                | 85,351           | 2,753                            | 496             |
| 2031             | 775,564                | 93,068           | 3,002                            | 540             |
| 2036             | 841,169                | 100,940          | 3,256                            | 586             |

Source: AECOM (2016)

**Table 3-12: Peaking Characteristics - Aircraft Operations**

| Year             | Aircraft Operations |                  |                                  |                 |
|------------------|---------------------|------------------|----------------------------------|-----------------|
|                  | Annual              | Peak Month (11%) | Average Day Peak Month (31 days) | Peak Hour (13%) |
| 2016 (Estimated) | 65,399              | 7,194            | 232                              | 30              |
| 2021             | 67,599              | 7,436            | 240                              | 31              |
| 2026             | 69,788              | 7,677            | 248                              | 32              |
| 2031             | 72,075              | 7,928            | 256                              | 33              |
| 2036             | 74,413              | 8,185            | 264                              | 34              |

Source: AECOM (2016)

### 3.7 Summary of Forecasts

**Table 3-13** presents a consolidated summary of all the forecasts presented on the preceding sections. These forecasts will be used in subsequent sections as the basis for planning all facility improvements.

**Table 3-13: Summary of Forecasts**

| Forecast Element               | Year    |         |         |         |         |
|--------------------------------|---------|---------|---------|---------|---------|
|                                | 2016    | 2021    | 2026    | 2031    | 2036    |
| <b>Passenger Enplanements</b>  |         |         |         |         |         |
| Annual                         | 555,230 | 652,709 | 711,256 | 775,564 | 841,169 |
| Peak Month                     | 66,628  | 78,325  | 85,351  | 93,068  | 100,940 |
| ADPM                           | 2,149   | 2,527   | 2,753   | 3,002   | 3,256   |
| Peak Hour                      | 387     | 455     | 496     | 540     | 586     |
| <b>Aircraft Operations</b>     |         |         |         |         |         |
| Air Carrier                    | 6,327   | 7,010   | 7,644   | 8,331   | 9,030   |
| Air Taxi / Commuter            | 1,266   | 1,328   | 1,393   | 1,462   | 1,534   |
| General Aviation               | 57,646  | 59,101  | 60,591  | 62,122  | 63,689  |
| Military                       | 160     | 160     | 160     | 160     | 160     |
| Total                          | 65,399  | 67,599  | 69,788  | 72,075  | 74,413  |
| <b>Peaking Characteristics</b> |         |         |         |         |         |
| Peak Month                     | 7,194   | 7,436   | 7,677   | 7,928   | 8,185   |
| ADPM                           | 232     | 240     | 248     | 256     | 264     |
| Peak Hour                      | 30      | 31      | 32      | 33      | 34      |

Source: AECOM (2016)