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3 FORECASTS OF AVIATION DEMAND

Projecting future aviation activity at an airport is one of the most important and vital steps in the master planning process. All Akron-Canton (CAK) Master Plan Update recommendations for facility needs – airside and landside – are, in one form or another, directly impacted by the projected aviation activity levels presented in this chapter. In order to develop the most realistic forecasts possible, a solid understanding of current and historic Airport operations, industry trends and socio-economic conditions within the Airport's market area is vital. These variables are detailed below and factored into the individual scenarios evaluated as part of this forecasting effort.

The set of aviation demand forecasts developed for this Master Plan Update use multiple FAA-approved methodologies and growth scenarios to predict future levels of aviation activity at the Airport. Each individual scenario was then evaluated for its applicability to the Airport, representation of actual and anticipated market conditions and its relative resemblance to the FAA-provided CAK Terminal Area Forecast (TAF).

The preferred forecast described in this chapter was officially approved by the FAA Detroit ADO in February 2013. It serves as the basis for the demand/capacity analysis and identification of future facility requirements, discussed in **Chapter 4**. Because these forecasts were officially approved, much of this chapter was largely left unchanged in final production. Thus, there are outdated references as some of the conditions at the Airport have changed – such as the discontinuation of Frontier Airlines service. Although references to these conditions are still present within the document, the recommendations discussed in **Chapters 4, 5, and 6** have been adjusted to reflect current market conditions.

The assumptions, methodologies and data used to create the forecast scenarios are presented and analyzed in the following sections. The specific activity elements for which forecasts were prepared include:

- Air Carrier Activity
  - Operations
  - Fleet Mix
  - Enplaned Passengers
  - Load Factors
- Air Cargo Activity
  - Operations
  - Cargo Volume
- General Aviation Activity
  - Based Aircraft
  - Operations
- Military Aviation Activity
  - Based Aircraft
  - Operations
- Peak Activity
  - Enplaned Passengers
  - Operations

3.1 BASELINE FORECAST DATA

To determine the annual operations, enplanements, and based aircraft forecasts required for this Master Plan Update, the forecast baseline was identified and future activity levels using this baseline were developed. Authority data for calendar year 2011 is the baseline for the 20-year forecast. Aircraft operations by activity type – passenger carrier, air cargo, general aviation (GA), military, passenger enplanements, fleet mix and based aircraft counts were obtained and confirmed from several reliable sources to ensure a solid foundation for forecast scenarios. The Authority data and the 2010 FAA TAF for CAK were the starting point for this data-gathering effort. Additionally, the following sources verified and provided clarity to the 2011 baseline data:

- FAA Air Traffic Activity System (ATADS)
- FAA Enhanced Traffic Management System Counts (ETMSC)
- CAK Carrier Schedules
- FAA Form 5010-1, *Airport Master Record*

The TAF for CAK is prepared by the FAA and is the forecast of future aviation activity against which all other forecasts in this chapter will be compared. It includes historical and forecast data for passenger enplanements, airport operations, TRACON operations and based aircraft. It is the benchmark against which the FAA compares all airport activity forecasts. The 2010 forecasts are the most recent available. The 2010 forecasts cover the years 2010-2032 and project activity for the four major users of the air traffic system: air carriers, air taxi and commuters, general aviation (GA) and military, as well as annual enplanements and based aircraft.

Table 3-1 provides a summary of the 2010 CAK TAF. It is important to note that the 2011 data are FAA projected figures, although the data is shown as historic.

Table 3-1 – CAK Terminal Area Forecast

Year	Enplanements	Itinerant					Local			Total Ops.	Based Aircraft
		Air Carrier Ops.	Air Taxi & Commuter Ops.	GA Ops.	Military Ops.	Total	GA Ops.	Military Ops.	Total		
2001	361,107	5,725	24,001	59,891	6,754	96,371	23,847	4,665	28,512	124,883	198
2002	414,643	2,755	27,771	57,647	9,241	97,414	19,674	2,870	22,544	119,958	162
2003	536,589	7,146	25,586	65,245	9,421	107,398	16,243	1,606	17,849	125,247	159
2004	652,477	11,758	25,390	62,290	8,347	107,785	15,089	1,144	16,233	124,018	155
2005	706,664	15,006	23,412	48,977	2,210	89,605	17,361	664	18,025	107,630	155
2006	720,827	21,651	14,776	47,055	1,754	85,236	21,243	772	22,015	107,251	155
2007	683,007	21,597	10,996	45,592	1,710	79,895	23,281	801	24,082	103,977	155
2008	709,338	23,084	7,810	47,157	2,206	80,257	24,109	776	24,885	105,142	155
2009	717,212	21,981	3,770	34,215	1,800	61,766	18,251	556	18,807	80,573	139
2010	757,805	22,363	6,718	35,635	2,056	66,772	15,608	501	16,109	82,881	133
2011*	783,379	12,464	16,727	22,386	1,661	53,238	15,314	1,058	16,372	69,610	133
Projected:											
2012	938,829	19,858	11,017	19,107	1,661	51,643	14,634	1,058	15,692	67,335	133
2013	909,138	19,145	10,602	19,108	1,661	50,516	14,701	1,058	15,759	66,275	134
2014	904,251	18,965	10,466	19,109	1,661	50,201	14,769	1,058	15,827	66,028	134
2015	922,582	19,280	10,587	19,110	1,661	50,638	14,837	1,058	15,895	66,533	135
2016	945,786	19,695	10,757	19,111	1,661	51,224	14,905	1,058	15,963	67,187	135
2017	974,047	20,214	10,978	19,112	1,661	51,965	14,974	1,058	16,032	67,997	136
2018	1,003,153	20,748	11,204	19,113	1,661	52,726	15,043	1,058	16,101	68,827	137
2019	1,033,129	21,295	11,435	19,114	1,661	53,505	15,112	1,058	16,170	69,675	138
2020	1,064,003	21,857	11,670	19,115	1,661	54,303	15,182	1,058	16,240	70,543	138
2021	1,095,801	22,433	11,910	19,116	1,661	55,120	15,252	1,058	16,310	71,430	139
2022	1,128,551	23,024	12,155	19,117	1,661	55,957	15,322	1,058	16,380	72,337	139
2023	1,162,280	23,632	12,405	19,118	1,661	56,816	15,393	1,058	16,451	73,267	140
2024	1,197,017	24,255	12,660	19,119	1,661	57,695	15,464	1,058	16,522	74,217	140
2025	1,232,795	24,894	12,920	19,120	1,661	58,595	15,535	1,058	16,593	75,188	141
2026	1,269,643	25,551	13,186	19,121	1,661	59,519	15,606	1,058	16,664	76,183	142
2027	1,307,595	26,226	13,457	19,122	1,661	60,466	15,678	1,058	16,736	77,202	143
2028	1,346,681	26,918	13,734	19,123	1,661	61,436	15,750	1,058	16,808	78,244	144
2029	1,386,936	27,628	14,017	19,124	1,661	62,430	15,822	1,058	16,880	79,310	145
2030	1,428,397	28,356	14,306	19,125	1,661	63,448	15,895	1,058	16,953	80,401	146
2031	1,471,098	29,104	14,601	19,126	1,661	64,492	15,968	1,058	17,026	81,518	147
2032	1,515,077	29,873	14,901	19,127	1,661	65,562	16,041	1,058	17,099	82,661	148

Source: FAA TAF.

*2011 data is shown as historic, but is actually the FAA TAF projection for this year. Actual FAA reported data was not available at time of this report,

3.1.1 Baseline Operations

In order to accurately gauge true commercial air carrier and general aviation operations when comparing forecast scenarios to the FAA TAF, air taxi and commuter operations counts for CAK must be split. This is done by calculating the total number of air taxi and commuter operations with 50 seats or more. For the purposes of this forecast, the air taxi and commuter operation counts were split in the CAK baseline operations, with operations 50 seats or more included in the Passenger Carrier count; and seats 49 and below included in the general aviation operations count. This split will be applied in the following sections provided. **Table 3-2** details the CAK-reported 2011 baseline operations data that will serve as the foundation for the operations forecasts. The operations data is presented by category: passenger carrier, general aviation and military – to correspond with the individual forecasts developed for each activity type. Cargo operations are a subset of passenger carrier and general aviation operations.

Table 3-2 – 2011 Baseline Operations

Aircraft Category	Operations	Percent of Total
Passenger Carrier*	31,146	38.3%
General Aviation**	47,641	58.5%
Military	2,618	3.2%
Total	**81,405**	**100%**

Source: Akron-Canton Airport Authority, 2012.
*Note: Includes Commercial service "belly cargo" operations
**Note: Includes charter cargo service and GA air taxi (<50 seat) operations

In comparison, the 2011 TAF-projected operations and the 2011 CAK baseline totals are different because the TAF does not account for the same number of GA operations. The totals are as follows:

- CAK Baseline Total Operations: 81,405
- TAF Projected Total Operations: 69,610

3.1.2 Baseline Enplanements

The simple definition of an enplanement is a revenue-paying passenger boarding an aircraft at a given airport. In addition to being an important trend-tracking tool for airport management and a key driver of future airport needs, an airport's reported annual enplanements is also used by the FAA to calculate Airport Improvement Program (AIP) passenger entitlement funding through its apportionment formula. For the purposes of this Master Plan Update, forecast enplanements will be the basis for numerous facility requirements and financial projections.

These include:

- Check-in positions
- Terminal lobby and circulation areas
- Concession space
- Baggage claim, sort and make-up area

- Security – passenger and baggage screening
- Aircraft gates and hold room size and seating
- Surface transportation – terminal access and parking
- Passenger Facility Charge (PFC) and Customer Facility Charge (CFC) revenue projections

Table 3-3 presents the historic five-year snapshot showing monthly CAK enplanements from 2007-2011. The 2011 enplanement figure of 834,454 passengers will be the baseline for subsequent forecasts.

Table 3-3 – Historic CAK Enplanements by Month

Month	2007	2008	2009	2010	2011
January	51,612	48,784	52,788	54,582	57,557
February	49,356	52,399	50,153	53,198	53,100
March	60,414	61,945	60,416	68,676	68,359
April	56,692	54,076	58,723	62,067	65,549
May	56,900	60,354	59,791	66,631	72,628
June	61,946	67,928	67,106	74,222	76,191
July	64,793	74,975	70,531	73,133	77,253
August	62,213	72,333	67,376	73,288	76,467
September	56,202	61,020	58,298	63,135	70,443
October	65,339	64,625	62,459	66,730	74,430
November	58,466	57,560	57,348	63,793	71,441
December	52,952	59,343	57,401	63,045	71,036
Total	**696,885**	**735,342**	**722,390**	**782,500**	**834,454**

Source: Akron-Canton Airport Authority, 2012

Despite a decline in 2009, likely attributed to the 2008-2009 economic recession, CAK enplanements have shown positive growth – a 3.7 percent on average annually – since 2007. Furthermore, the majority of CAK passenger activity is origin and destination driven with limited connecting flights. As noted on **Table 3-4**, the percentage difference between enplaned and deplaned CAK passengers has historically been less than 1 percent.

Table 3-4 – CAK Enplaned and Deplaned Passenger Difference

Year	Enplanements	Deplanements	Percent Difference
2007	696,885	694,951	0.3%
2008	735,342	733,854	0.2%
2009	722,390	721,879	0.1%
2010	782,500	780,531	0.3%
2011	834,454	829,943	0.5%

Source: Akron-Canton Airport Authority, 2012.

3.1.3 Baseline Based Aircraft

General aviation aircraft based at the Airport were forecasted to determine GA facility needs, anticipated GA operations, and projected revenue derived from fuel sales. Military aircraft based at the Airport are also counted in the based aircraft total, but not actively forecast in the same manner as GA aircraft. This reasoning is discussed in greater detail in the GA and military forecast section. **Table 3-5** provides the breakdown of 2011 CAK-based aircraft by category.

Table 3-5 – 2011 Based Aircraft

Aircraft Category	Aircraft Count	Percent of Total
Single-Engine	73	50.0%
Multi-Engine	24	16.4%
Jet	38	26.0%
Rotorcraft	1	0.7%
Military	10	6.9%
Total	**146**	**100.0%**

Source: Akron-Canton Airport Authority, 2012.

3.1.4 Applied Forecast Factors

As with the baseline operations data, the forecast factors (i.e., the annual growth rates to be applied to baseline activity) were collected from multiple sources and adjusted as necessary based on specific Airport, market and industry conditions. The following are the primary sources of the growth factors used in this forecast:

- *Boeing Current Market Outlook 2011-2030*
- *Boeing World Air Cargo Forecast 2010-2011*
- *FAA Aerospace Forecast, Fiscal Years 2012-2032*
- FAA Terminal Area Forecast
- Woods & Poole Economics, Inc.

The following is a brief overview of each forecast factors and how they were applied to the aviation activity forecasts:

- As discussed previously, the FAA derives CAK TAF activity estimates from national aviation activity estimates. These estimates are then assigned to individual airports based on multiple market and forecast factors. The FAA looks at local and national economic conditions and trends in the aviation industry, to develop each forecast.
- The national TAF is a cumulative total of all U.S. airports and provides the anticipated national growth in enplanements, operations, and general aviation aircraft. The national growth rates and forecasts will differ from the Airport-specific CAK TAF forecast, since the CAK TAF is based on assumptions of local growth and market demand.
- The *FAA Aerospace Forecast, Fiscal Years (FY) 2012-2032* provides an overview of aviation industry trends and expected growth for the commercial passenger carrier, cargo carrier and general aviation activity segments. There are 20-year forecast horizons for national growth rates in enplanements, operations, fleet growth, fleet mix for commercial fleets and the general aviation fleet. For the purposes of this forecast, the FAA Aerospace Forecasts were

the basis for determining the growth of the CAK general aviation fleet and its composition by aircraft type (i.e., GA fleet mix) and for cargo operations growth.

- The *Boeing Current Market Outlook 2011-2030* provides insight into future commercial carrier fleet growth and anticipated fleet mix of domestic and foreign airlines. These insights helped to develop and confirm the validity of future CAK commercial carrier fleet mix assumptions.
- The biennial *Boeing World Air Cargo Forecast 2010-2011* provides anticipated growth factors in the domestic air cargo market and growth factors for international trade lanes (e.g., U.S.-Asia Pacific traffic). These factors gauged potential air cargo growth at the Airport.
- Woods & Poole Economics, Inc. provides historic and projected socioeconomic data that was used to verify and modify, as necessary, the FAA factors based on local market conditions in the CAK market areas. Woods & Poole Economics specializes in developing long-term economic and demographic projections for counties, Metropolitan Statistical Areas (MSA), states, and the United States. An analysis was conducted of the counties located within the Airport's market area, the Akron and Canton-Massillon MSAs, the state of Ohio, and the United States, as a basis to define the economic health and growth potential of CAK's market area. Woods & Poole Economics, Inc. provided socioeconomic data for each area presented in the following section.

3.2 SOCIOECONOMIC TRENDS AFFECTING AVIATION DEMAND

Commercial service airport activity levels are typically influenced by national and regional trends associated with location, tourism, airport prominence, and air service options. Airports that offer enhanced facilities and services, multiple airline and destination options, and competitive airfares have a propensity to attract higher levels of airline and passenger activity.

However, on a big-picture scale, the factors with the greatest impact on an airport's growth prospects are socioeconomic characteristics such as: population, income and employment that are present within the airport's market or market area. The market area's population growth, or decline, has the potential to directly influence aviation demand within the area. In general, the greater the market area population, the greater the demand for air travel in the area. An airport's per capita income is also a strong driver of aviation demand. It often reflects a community's level of discretionary income and ability to afford air travel. Finally, employment levels in the market area are an indication of overall economic strength. Employment levels are often directly associated with per capita income.

The ultimate determinants of future passengers and operations at a commercial service airport are the market area's population profile and economic characteristics, coupled with the continued availability of competitively priced air service at comparable levels through the forecast period. Consequently, a clear understanding of local demographic and economic trends is important for developing an accurate aviation activity forecast.

In order to examine each socioeconomic factor influencing CAK, the following counties immediately surrounding the Airport have been identified as the Airport's primary market area:

- Carroll County
- Medina County
- Portage County
- Stark County
- Summit County
- Wayne County

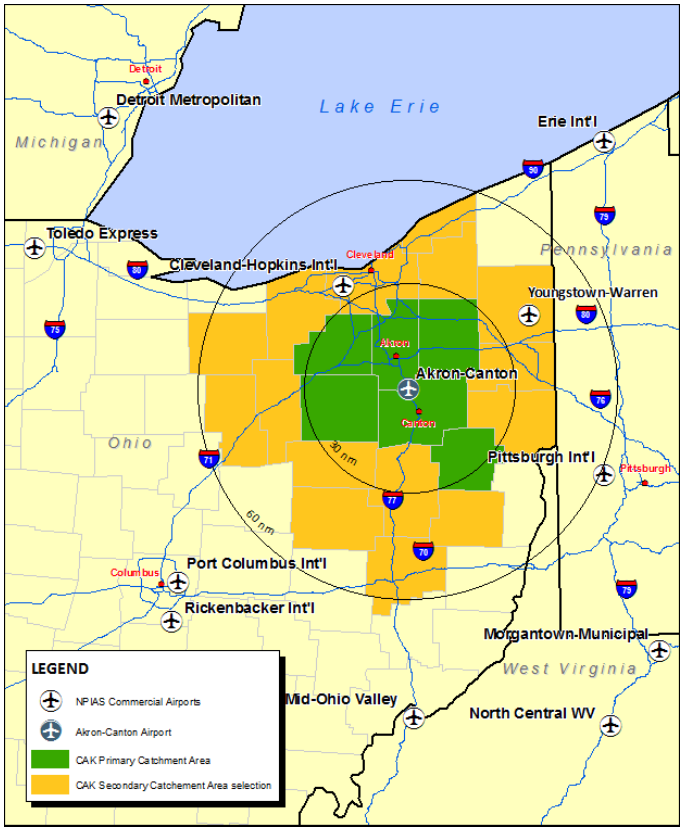
It is important to note that the primary market area includes four counties – Carroll, Portage, Stark and Summit – in the Akron and Canton-Massillon MSAs (CAK MSA). Additionally, a CAK secondary market area was identified. It contains passengers more likely to choose other surrounding commercial service airports, based on preferred airline schedules and/or non-stop destinations and less on proximity to CAK. The following counties in the CAK secondary market area are based on approximate one and a half hour drive times and proximity to Cleveland Hopkins and Pittsburgh International Airports.

For planning purposes, the primary and secondary market areas will be the baseline for the socioeconomic analyses. They are:

- Ashland County
- Columbiana County
- Coshocton County
- Cuyahoga County
- Geauga County
- Guernsey County
- Harrison County
- Holmes County
- Huron County
- Lake County
- Lorain County
- Mahoning County
- Trumbull County
- Tuscarawas County

Figure 3-1 shows the primary and secondary market areas for CAK. The counties in the primary market area are shown in green. The CAK MSA is included in this area. The surrounding counties of the secondary market area are shown in gold. The figure also shows neighboring commercial service airports and cities with influence on CAK.

Figure 3-1 – Akron-Canton Market Area



Source: CHA, 2012

3.2.1 Population

Table 3-6 includes historic and projected populations and corresponding average annual growth rates (AAGR) for the CAK market area – primary and secondary – the CAK MSA, the State of Ohio and the United States for years 2001-2011 (historic) and 2012-2032 (projected). These trends show that the historic CAK market area population growth is equivalent to that reported for the state of Ohio, and below that of the United States.

Table 3-6 – Population Growth (Historic and Projected)

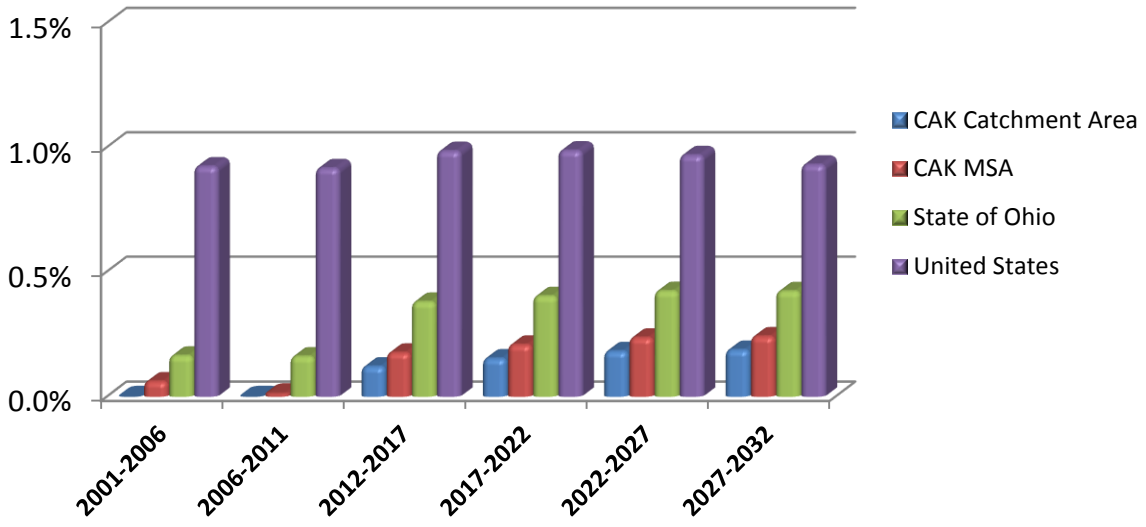
Year	CAK MSA (000)	AAGR	CAK Market Area (000)	AAGR	State of Ohio (000)	AAGR	United States (000)	AAGR
2001	1,104	-	4,286	-	11,387	-	284,969	-
2006	1,108	0.1%	4,235	-0.2%	11,481	0.2%	298,379	0.9%
2011	1,109	0.0%	4,197	-0.25	11,574	0.2%	312,308	0.9%
2001-2011 AAGR		**0.0%**		**-0.2%**		**0.2%**		**0.9%**
2012	1,111	0.2%	4,202	0.1%	11,618	0.4%	315,387	1.0%
2017	1,122	0.2%	4,235	0.2%	11,854	0.4%	331,274	1.0%
2022	1,136	0.2%	4,273	0.2%	12,107	0.4%	347,639	1.0%
2027	1,149	0.2%	4,314	0.2%	12,365	0.4%	364,127	0.9%
2032	1,163	0.2%	4,352	0.2%	12,616	0.4%	380,413	0.9%
2012-2032 AAGR		**0.2%**		**0.2%**		**0.4%**		**0.9%**

Source: Woods & Pool Economics, Inc., CHA 2012.
*Note: 2011 Woods & Poole Economics data is an estimated value.
CAK market area is primary and secondary market areas.
AAGR – average annual growth rate.

For years 2012-2032, projected population growth of the CAK MSA and CAK market area is anticipated to be below what is projected for the state of Ohio and the national population growth. However, incremental population growth in the CAK market (i.e., the CAK market area) should be considered a significant indicator of continued airport demand.

Figure 3-2 illustrates the historic and projected growth rates of the respective population groups.

Figure 3-2 – Historic and Projected Population Growth Rates



Source: Woods & Pool Economics, Inc., CHA 2012.

3.2.2 Per Capita Income

The historic and projected per capita income for the CAK market area, the CAK MSA, the state of Ohio and the United States are shown in **Table 3-7**. As shown, historic per capita income growth rates for the CAK MSA and the CAK market area are equal to or below the state of Ohio and the United States. This indicates historically that the MSA and market areas have been lagging in growth comparatively. However, for the years 2012-2032, the projected per capita income growth for the CAK MSA, CAK market area, the state of Ohio and the United States are shown to increase at an AAGR of 4.9 percent, 5.1 percent, 5 percent and 4.9 percent, respectively. These growth rates indicate that the CAK MSA and market area will begin to grow equally with the state of Ohio and the United States during the 20 year forecast period. These projections suggest that the CAK MSA and the CAK market area are anticipated to maintain a strong national financial presence throughout the planning period.

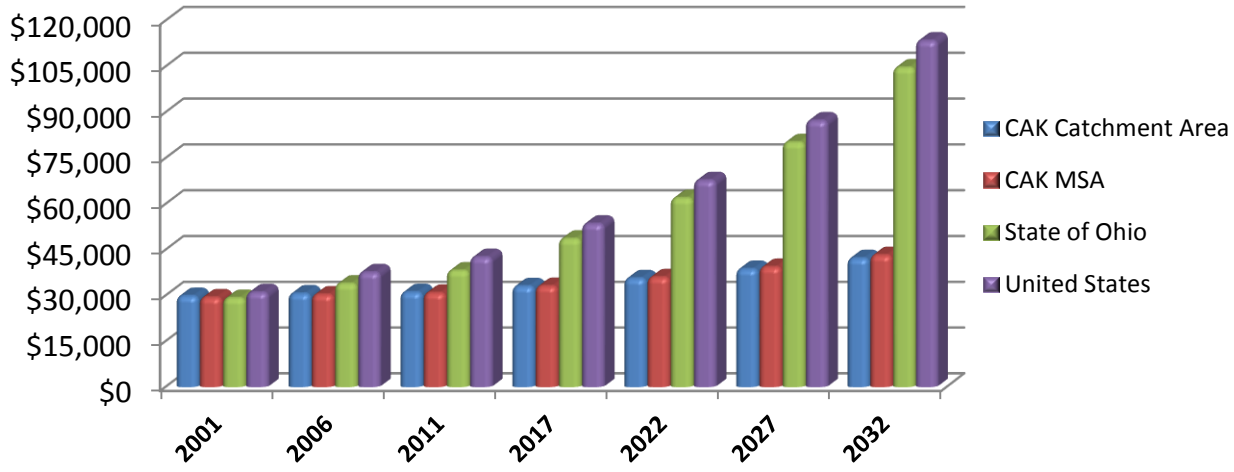
Table 3-7 – Per Capita Income Trend (Historic and Projected)

Year	CAK MSA ($)	AAGR	CAK Market Area ($)	AAGR	State of Ohio ($)	AAGR	United States ($)	AAGR
2001	29,702	-	26,978	-	29,275	-	31,157	-
2006	30,823	2.9%	31,249	3.0%	34,008	3.0%	37,726	3.9%
2011	34,966	2.6%	35,166	2.4%	38,293	2.4%	42,702	2.5%
2001-2011 AAGR		**2.7%**		**2.7%**		**2.7%**		**3.2%**
2012	36,091	3.2%	36,383	3.5%	39,507	3.2%	43,881	2.8%
2017	44,258	4.2%	44,988	4.3%	48,725	4.3%	53,634	4.1%
2022	55,994	4.8%	57,398	5.0%	62,022	4.9%	67,854	4.8%
2027	72,078	5.2%	74,490	5.4%	80,294	5.3%	87,412	5.2%
2032	93,560	5.4%	97,469	5.5%	104,766	5.5%	113,590	5.4%
2012-2032 AAGR		**4.9%**		**5.1%**		**5.0%**		**4.9%**

Source: Woods & Pool Economics, Inc., CHA 2012.
*Note: 2011 Woods & Poole Economics data is an estimated value.
CAK market area is primary and secondary market areas.
AAGR – average annual growth rate.

Figure 3-3 illustrates the historic and projected per capita income for each study area.

Figure 3-3 – Historic and Projected Per Capita Income



Source: Woods & Pool Economics, Inc., CHA 2012.

3.2.3 Total Employment

The historic and projected number of persons employed and the percentage of population group employed (i.e., persons employed divided by total population) for each study area for the years 2001-2011 (historic) and 2012-2032 (projected) are shown in **Table 3-8**. From 2001- 2011, the CAK market area, CAK MSA, the state of Ohio, and the United States experienced a decrease in employment levels with the state of Ohio witnessing the greatest decrease of -0.5 percent. Conversely, projected employment levels are anticipated to increase throughout the planning period, with the CAK market area experiencing an AAGR of 0.6 percent, a growth rate above what is projected nationally. Furthermore, employment growth levels for the state of Ohio are projected to outpace the nation by 0.2 percent. These projections suggest that the CAK market and the state of Ohio will maintain a competitive and relatively active workforce throughout the planning period.

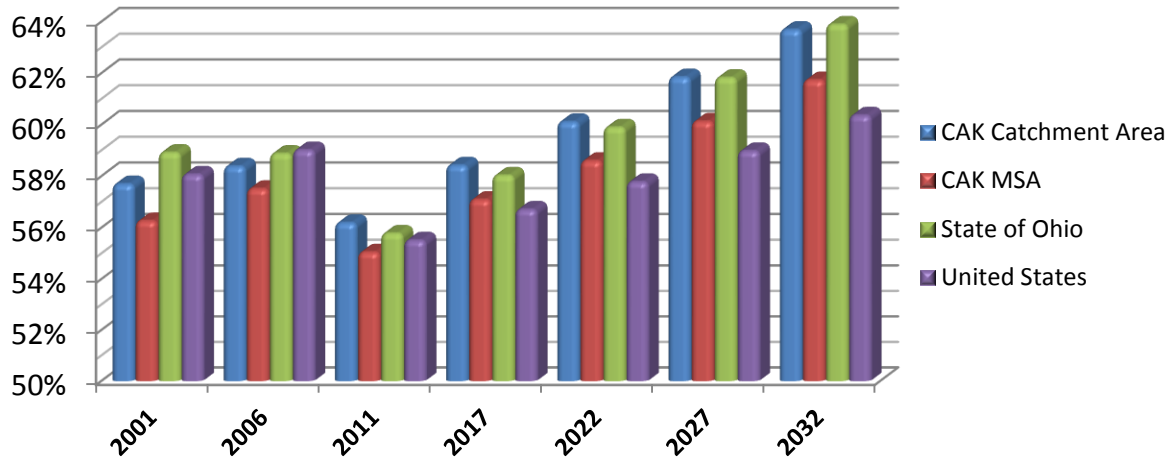
Table 3-8 – Employment Growth Levels (Historic and Projected)

Year	CAK MSA (000)	Percent Employed	CAK Market Area (000)	Percent Employed	State of Ohio (000)	Percent Employed	United States (000)	Percent Employed
2001	621	56.3%	2,473	57.7%	6,710	58.9%	165,510	58.1%
2006	637	57.5%	2,473	58.4%	6,761	58.9%	176,124	59.0%
2011	610	55.1%	2,359	56.2%	6,457	55.8%	173,400	55.5%
2001-2011 AAGR		**-0.2%**		**-0.3%**		**-0.5%**		**-0.4%**
2012	617	55.5%	2,384	56.7%	6,527	56.2%	175,736	55.7%
2017	641	57.1%	2,474	58.4%	6,880	58.0%	187,899	56.7%
2022	666	58.6%	2,569	60.1%	7,253	59.9%	200,904	57.8%
2027	691	60.1%	2,668	61.9%	7,646	61.8%	214,809	59.0%
2032	718	61.7%	2,772	63.7%	8,062	63.9%	229,676	60.4%
2012-2032 AAGR		**0.5%**		**0.6%**		**0.6%**		**0.4%**

Source: Woods & Pool Economics, Inc., CHA 2012.
*Note: 2011 Woods & Poole Economics data is an estimated value.
CAK market area is primary and secondary market areas.
AAGR – average annual growth rate.

Figure 3-4 illustrates the historic and projected percent of each population group that is employed.

Figure 3-4 – Percent of Population Employed



Source: Woods & Pool Economics, Inc., CHA 2012.

3.2.4 Socioeconomic Conditions Summary

Although Northeast Ohio and the greater Akron-Canton area were not immune to the recent economic downturn, CAK is located in a steadily growing, relatively affluent market area with a rebounding socioeconomic outlook. Key indicators of future Airport use such as: local population growth outpacing that of the state, projected state per capita income above that anticipated nationally and local employment levels on par with the national growth projections all score well for CAK. Consideration and inclusion of these metrics in the aviation activity forecast requires an analysis of the discussed socioeconomic growth factors to ensure that the anticipated growth in CAK's market area is accurately reflected in the forecasts prepared for this Master Plan Update.

3.3 FORECAST OF COMMERCIAL PASSENGER ACTIVITY

To determine the types and sizes of facilities necessary to accommodate present and future airline activity, a forecast of annual enplaned passengers and annual aircraft operations was developed. Of the forecasts, the number of annual enplaned passengers is the most basic indicator of demand for commercial service activity. It is the number of forecast enplanements that will drive passenger terminal and landside requirements and, to a lesser extent, will influence the commercial carrier operations and fleet mix. The level of commercial aircraft operations will also dictate requirements for the passenger terminal and other airside infrastructure.

In order to gauge future levels of operations and enplanements at CAK, multiple FAA-approved methodologies and statistical analyses were used to identify a reasonable base range of forecast activity levels.

From these forecasts, a preferred forecast was selected to be the baseline for additional air service scenario forecasts. These scenarios consider the expected increase in Southwest Airlines' activity, due to their recent merger with AirTran. Anticipated fluctuations between narrow body and regional jet activity levels were also considered.

3.3.1 Adjusted Commercial Carrier TAF

As previously discussed, there are two types of commercial service aircraft operations addressed in the TAF: air carrier operations and air taxi and commuter operations. However, for the purposes of the commercial carrier forecasts presented in this document, the two categories are combined into a single category labeled total commercial carrier operations.

It is important to note that the air taxi and commuter category includes scheduled air carrier operations and general aviation charter operations. Before the two categories could be combined, the approximate percentage split of air carrier and GA operations was determined. The FAA's ETMSC database was used to examine the percentage of air carrier and GA operations activity listed in the air taxi category. After examining the data, it was determined that the approximate percentage split of air carrier and GA operations listed in the air taxi category was 89 percent and 11 percent, respectively. **Table 3-9** shows the CAK TAF with the adjusted commuter carrier operations. As shown in the table, the category includes 89 percent of the air taxi and commuter operations listed within the CAK TAF.

Table 3-9 – CAK TAF with Adjusted Air Carrier Operations

Year	TAF Enplanements	Air Carrier Operations	Commuter Carrier Operations	Total Commercial Carrier Operations
2012	938,829	19,858	9,805	**29,663**
2013	909,138	19,145	9,436	**28,581**
2014	904,251	18,965	9,315	**28,280**
2015	922,582	19,280	9,422	**28,702**
2016	945,786	19,695	9,574	**29,269**
2017	974,047	20,214	9,770	**29,984**
2018	1,003,153	20,748	9,972	**30,720**
2019	1,033,129	21,295	10,177	**31,472**
2020	1,064,003	21,857	10,386	**32,243**
2021	1,095,801	22,433	10,600	**33,033**
2022	1,128,551	23,024	10,818	**33,842**
2023	1,162,280	23,632	11,040	**34,672**
2024	1,197,017	24,255	11,267	**35,522**
2025	1,232,795	24,894	11,499	**36,393**
2026	1,269,643	25,551	11,736	**37,287**
2027	1,307,595	26,226	11,977	**38,203**
2028	1,346,681	26,918	12,223	**39,141**
2029	1,386,936	27,628	12,475	**40,103**
2030	1,428,397	28,356	12,732	**41,088**
2031	1,471,098	29,104	12,995	**42,099**
2032*	1,515,077	29,873	13,262	**43,135**
2012-2032 Growth	61.4%	50.4%	35.3%	**45.4%**
2012-2032 AAGR	2.4%	2.1%	3.7%	**1.9%**

Source: FAA TAF, Akron-Canton Airport Authority, CHA, 2012.
*Estimate based on TAF AAGR.

3.3.2 Enplanement Forecasts

The following three FAA-approved methodologies were used to prepare a range of potential passenger enplanement forecast scenarios for CAK. The results of these analyses, as compared to the FAA TAF, are presented in **Table 3-10**.

Historic Trend: An historic trend forecast is a simple time-series model that relies on extrapolating historical enplanements growth – specific to the Airport – into the future. Examining the historic growth rates, applying historical AAGR and projecting that growth rate throughout the forecast period provides a picture of growth, should the market area and the state of the commercial passenger airline industry reflect past trends through the forecast

period. For the historic trend scenario, the historic AAGR for CAK was calculated directly from Authority- provided records from 2005-2011 and projected forward through the forecast horizon.

Adjusted Market Share: Market share forecasting is a top-down method where projected growth rates of reliable larger aggregates (e.g., the nation) are used to derive forecasts for smaller areas (e.g., airports). In other words, a market share forecast applies nationally-forecast growth rates to airport-specific market areas. A static market share forecast would assume that CAK maintains its 2011 level, or percentage, of commercial enplanements and operations relative to national activity throughout the planning period. However, the historic enplanement share at CAK has increased from 0.09 percent of national passenger activity in 2007 to 0.12 percent in 2011. Based on this and recent airline activity trends at CAK, an adjusted market share scenario was developed to account for added flights resulting from the Southwest-AirTran merger, local growth in airline activity and increased market share from passengers in the secondary capture area.

Regression Analysis Forecasts: A regression-based forecast examines aviation and passenger activity through the prism of current and historic activity levels. It seeks to find a relationship between activity levels and socioeconomic conditions prevalent during that time period. Causal relationships between population, employment and income are examined to determine if there is a statistically-valid relationship that may help to project future activity. The first step was to conduct a regression analysis to determine if there is a relationship between any of the socioeconomic factors addressed earlier in the chapter (i.e., population, employment, and income) and the historic level of enplanements. The output of a regression analysis is the coefficient of determination, or R^2, which ranges from 0-1. If the R^2 of an analysis is 0.8 or higher, there is a statistical correlation. In other words, the higher the R^2 value, the stronger the correlation is between the two variables. The following single- and multiple-regression analyses were conducted and yielded R^2 values below what is considered statistically reliable:

- Income-based regression: R^2 value = 0.49
- Population-based regression: R^2 value = 0.53
- Population-Employment-based regression: R^2 value = 0.64
- Population-Employment-Income-based regression: R^2 value = 0.78

Although socioeconomic indicators (i.e., population, per capita income, and total employment) have grown at rates consistent with state and national levels, passenger activity at the Airport during the past decade has shown an above-average increase overall. However, the CAK enplanements have shown to be erratic over that time period – showing rapidly increasing or decreasing enplanements from year to year. Based on these fluctuations in Airport activity, there is not a strong correlation between this activity and the relatively stable socioeconomic conditions in the study area. Therefore, these socioeconomic regression analyses were not considered to be statistically reliable to serve as the preferred forecast scenario.

Table 3-10 – Enplanement Forecast Summary

Year	TAF	Historic Trend	Adjusted Market Share	Regression			
				Income Based	Population Based	Population-Employment	Population-Employment-Income
2011*	834,454	834,454	834,454	834,454	834,454	834,454	834,454
Projected:							
2012	938,829	855,600	942,343	828,200	848,385	823,400	761,700
2013	909,138	877,300	1,018,000	856,800	899,977	851,400	729,700
2014	904,251	899,500	1,051,400	889,500	952,739	880,200	705,100
2015	922,582	922,300	1,086,500	925,600	1,006,284	909,400	686,900
2016	945,786	945,600	1,118,900	964,800	1,060,547	939,000	674,400
2017	974,047	969,500	1,144,900	1,006,800	1,116,495	969,800	665,500
2018	1,003,153	994,000	1,171,600	1,051,700	1,173,049	1,000,800	662,300
2019	1,033,129	1,019,200	1,199,000	1,099,700	1,230,135	1,032,100	665,100
2020	1,064,003	1,045,000	1,228,600	1,150,800	1,287,955	1,063,900	673,800
2021	1,095,801	1,071,500	1,257,500	1,205,400	1,345,671	1,095,500	690,600
2022	1,128,551	1,098,600	1,313,200	1,263,400	1,404,112	1,127,600	714,200
2023	1,162,280	1,126,400	1,343,500	1,325,300	1,462,748	1,159,700	746,300
2024	1,197,017	1,154,900	1,374,600	1,391,300	1,521,576	1,191,900	787,500
2025	1,232,795	1,184,100	1,406,500	1,461,700	1,580,800	1,224,200	838,100
2026	1,269,643	1,214,100	1,441,600	1,536,300	1,639,597	1,256,300	899,100
2027	1,307,595	1,244,800	1,475,400	1,615,200	1,698,143	1,288,000	970,600
2028	1,346,681	1,276,300	1,570,100	1,698,800	1,756,085	1,319,300	1,054,000
2029	1,386,936	1,308,600	1,548,100	1,787,200	1,814,228	1,350,700	1,148,300
2030	1,428,397	1,341,700	1,584,900	1,880,800	1,872,403	1,382,000	1,254,300
2031	1,471,098	1,375,700	1,622,700	1,979,900	1,930,207	1,413,000	1,373,900
2032	1,515,077	1,410,500	1,661,600	2,084,900	1,987,673	1,443,700	1,507,600
2012-2032 Growth	**61.4%**	**65.0%**	**76.3%**	**151.7%**	**134.3%**	**75.3%**	**97.9%**
2012-2032 AAGR	**2.4%**	**2.5%**	**2.9%**	**4.7%**	**4.4%**	**2.8%**	**3.5%**

Source: FAA TAF, Woods & Poole Economics, Akron-Canton Airport Authority, CHA, 2012.
*Note 2011 enplanements are Akron-Canton Airport Authority reported enplanements

3.3.3 Preferred Commercial Air Carrier Forecast

Based on the analysis presented in the previous section, the adjusted market share forecast was chosen as the preferred passenger enplanement forecast for CAK. This forecast acknowledges historic market share growth and recent airline activity trends, including the Southwest-AirTran merger. It anticipates an increasing local passenger market share. The methodology and development of the preferred commercial air carrier forecast are below.

As noted in **Section 3.1**, even with the interim fluctuations, CAK has experienced an overall growth in enplaned passengers from 2005-2011. Additionally, recent Authority data indicated that enplanement counts for the first four months of 2012 were up 13.1 percent from the same period in 2011. These figures indicate that CAK continues to maintain a strong aviation presence in the national air transportation system. To estimate the remaining 2012 calendar year enplanements, the 13.1 percent increase was applied to the remainder of the calendar year to arrive at a 2012 figure of 942,343 enplanements, compared to 834,454 enplanements in 2011. This assumption was then used as the baseline figure for the remainder of the forecast scenario.

The next step of the adjusted market share forecast scenario was to examine historic and current levels of CAK passenger activity relative to passenger activity at the national level, as reported in the FAA TAF. As described previously, increases in CAK passenger enplanements have resulted in the capturing of a greater market share of national passenger activity – increasing from 0.09 percent in 2007 to 0.12 percent by 2011. Additionally, the projected 2012 passenger enplanement figure of 942,343, when compared to the FAA TAF at the national level, results in a 0.13 percent share of the national passenger enplanement market for 2012. For purposes of developing this forecast scenario, the 0.13 percent market share of the national market was applied to the baseline CAK passenger enplanement figure and projected through 2032. This is based on Authority-provided data indicating growth in passenger enplanements in 2012 compared to 2011 and the incremental growth of the previous years. It is important to note that, while this scenario projects the growth of passenger enplanements at the Airport, the methodology does not consider elements that may influence other areas of Airport activity (e.g., additional airline mergers, fleet mix restructuring, etc.) during the forecast period.

To ensure that factors specific to the CAK market were incorporated into this forecast scenario, the adjusted market share forecast was modified, based upon the following factors:

- Gains in passenger activity resulting from the Southwest-AirTran merger
- Increasing the Airport's share of national enplanements
- A shift from regional jets to larger narrow body jets

As a result of the recent Southwest-AirTran merger, CAK has the potential to recapture traffic in the surrounding market area currently being used by other commercial service airports such as Cleveland-Hopkins International (CLE), Youngstown-Warren Regional (YNG) and Pittsburgh International (PIT). This potential market increase is expected to have a significant impact. It will result in passenger traffic gains and an increase in the average number of passengers per departure at the Airport. Additionally, according to Southwest Airlines and Delta Air Lines, Southwest will lease the newly acquired Boeing 717s (received in the merger with AirTran) to Delta Air Lines. The delivery of the aircraft is anticipated to occur over a two- year period, beginning in the second half of 2013. Delta Air Lines will use the Boeing 717s to replace a portion of its 50-seat regional jets, as well as some of their dated jets, including the DC-9. Assuming Delta is operating larger narrow body aircraft in place of regional jets by 2014 and with a growth in commercial service demand at CAK, an additional increase in the average number of passengers per departure is anticipated.

Southwest Airlines has upcoming flight changes to its daily operations from CAK to Chicago-Midway Airport (MDW). It is replacing currently existing flights to General Mitchell International Airport (MKE) and adding daily operations to Denver International Airport (DEN). These will begin by the end of 2012. This will add 730 annual air carrier operations. Furthermore, for the purposes of this analysis, it was assumed that Southwest will increase this service to three daily departures by 2022, resulting in an additional 1,095 annual air carrier operations by 2032. With the shift to larger narrow body aircraft, it is assumed that the number of operations to accommodate the growing number of passenger enplanements will not grow at a similar rate to that of the enplanements. Additional information will be analyzed later in this report.

The air service assumptions used in this analysis were then applied to a load factor assumption. The FAA Enhanced Traffic Management System Counts (ETMSC) data computed the estimated number of passengers per departure. The additional load factor assumption was made based on: fleet mix restructuring by individual airlines transitioning from smaller regional jets to larger narrow body jets, and Southwest Airlines operating the larger Boeing 737 instead of the Boeing 717, previously operated by AirTran. This resulted in an additional passenger enplanement estimate that was then added to the adjusted market share estimate. These assumptions are reinforced by modestly increasing socioeconomic factors (e.g., population, income and employment) throughout the forecast period, suggesting an increasing need for commercial air service in the CAK market area.

Similar to the adjusted market share forecast of passenger enplanement activity, a comparable methodology calculated commercial aircraft operations. Current and historic operations were compared with the FAA TAF at the national level. Historic activity data shows that CAK commercial operations have averaged a 0.22 percent market share over the past five years. This percentage was first applied to the baseline year 2011 and projected through 2032. The next step applied the air service operations assumptions to the 0.22 percent market share projection. The results were then compared to the 2012 FAA TAF operations at the national level. The result remained at a 0.22 percent market share. Therefore, for the purposes of the commercial aircraft operations forecast, the 0.22 percent share remained the variable used to project commercial operations through the forecast period.

The adjusted market share forecast reflects the overall growth and economic conditions anticipated for the Airport's market area during the forecast period. This forecast scenario captures incremental air service growth resulting from the Southwest-AirTran merger; and it directly quantifies the growth's impact in terms of projected passenger enplanements and aircraft operations.

Table 3-11 provides the preferred forecast (i.e., adjusted market share) for passenger enplanements and commercial carrier operations. As shown in the table, passenger enplanements are expected to increase more than 76 percent, while operations are anticipated to increase by over 40 percent during the forecast period.

Table 3-11 – Preferred Commercial Air Carrier Forecast

Year	Annual Enplanements	Annual Operations
2012	942,343	31,190
2017	1,144,900	32,840
2022	1,313,200	36,090
2027	1,475,400	39,680
2032	1,661,600	43,700
2012-2032 Growth	**76.3%**	**40.1%**
2012-2032 AAGR	**2.9%**	**1.7%**

Source: CHA, 2012.

Table 3-12 compares the preferred forecast with the FAA TAF for the Airport. By the end of the forecast period, projected passenger enplanements are expected to be 9.7 percent above what is predicted in the TAF, while air carrier operations are projected to be 1.3 percent above what is predicted in the TAF.

Table 3-12 – Preferred Commercial Air Carrier Forecast vs. TAF

Year	Enplanements			Operations		
	TAF	Adjusted Market Share	Forecast Vs. TAF	TAF	Adjusted Market Share	Forecast Vs. TAF
2012	938,829	942,343	0.4%	29,663	31,190	5.1%
2017	974,047	1,144,900	17.5%	29,984	32,840	9.5%
2022	1,128,551	1,313,200	16.4%	33,842	36,090	6.6%
2027	1,307,595	1,475,400	12.8%	38,203	39,680	3.9%
2032	1,515,077	1,661,600	9.7%	43,135	43,700	1.3%
2012-2032 AAGR	**2.4%**	**2.9%**		**1.9%**	**1.7%**	

Source: FAA Terminal Area Forecast, CHA 2012.

3.3.4 Alternate Forecast Scenarios

The following alternate forecast scenarios will assist the Authority in addressing varying levels of enplanements and operations, should potential air service developments increase or decrease from those anticipated in the preferred forecast. A graphic comparison of these alternate scenarios to the preferred enplanement forecast is in **Figure 3-5**.

3.3.4.1 International Traffic Gain Scenario

As a result of the merger and as Southwest begins to take over operations from AirTran, CAK has the potential to recapture current Southwest Airlines traffic from CLE, expanding its primary market area to the north. With the merger, CAK will now have access to the currently served Hartsfield-Jackson Atlanta Airport (ATL) hub of AirTran, and also to Southwest's focus cities: Dallas Love Field Airport (DAL), Las Vegas McCarran International Airport (LAS), Houston

Hobby Airport (HOU), Phoenix Sky Harbor International Airport (PHX) and Baltimore-Washington International Airport (BWI). Southwest Airlines says that they will focus on large-market point-to-point service with their ATL operations. This will free current AirTran capacity to operate in other Southwest markets.

The preferred forecast scenario assumes that CAK will gain a percentage of Southwest's customer base from CLE. Additionally, this alternate scenario anticipates increased passenger load factor per operation, stemming from the merger and resulting international connectivity options with AirTran's international operations into the Caribbean and Mexican markets. This form of route expansion has the potential to attract passengers from other airlines at CLE and ultimately identify CAK as an international destination airport. **Table 3-13** shows the results of the international traffic gain scenario. The table's original information is derived from the preferred enplanement forecast scenario, with the load factor's higher incremental growth being the fluctuating variable.

Table 3-14 compares the international traffic gain scenario with the preferred forecast. By the end of the forecast period, projected enplanements would be 4.2 percent above what is predicted in the preferred forecast, while operations will also be 4.2 percent above what is predicted in the preferred forecast.

Table 3-13 –International Traffic Gain Scenario

Year	Annual Enplanements	Annual Operations
2012	945,263	31,190
2017	1,179,210	33,930
2022	1,351,160	37,550
2027	1,544,020	41,500
2032	1,731,680	45,520
2012-2032 Growth	**83.2%**	**46.0%**
2012-2032 AAGR	**3.1%**	**1.9%**

Source: Akron-Canton Airport Authority, CHA, 2012.

Table 3-14 –International Traffic Gain Scenario vs. Preferred Forecast

Year	Enplanements			Operations		
	Preferred Forecast	International Gain	Difference	Preferred Forecast	International Gain	Difference
2012	942,343	945,263	0.3%	31,190	31,190	0.0%
2017	1,144,900	1,179,210	3.0%	32,840	33,930	3.3%
2022	1,313,200	1,351,160	2.9%	36,090	37,550	4.0%
2027	1,475,400	1,544,020	4.7%	39,680	41,500	4.6%
2032	1,661,600	1,731,680	4.2%	43,700	45,520	4.2%
2012-2032 AAGR	**2.9%**	**3.1%**		**1.7%**	**1.9%**	

Source: CHA, 2012.

3.3.4.2 Domestic High-Growth Scenario

This scenario assumes that CAK will see added gains from the Southwest-AirTran merger and increased airline activity. Along with the gains from the merger, it is assumed that CAK will have added consumer attraction by accessing international and domestic western U.S. destinations currently served by Southwest. As with the previous scenario, and for the purposes of this alternate forecast, it assumed that CAK gains new operations – beyond services currently operating – into new markets such as: Las Vegas McCarren International Airport (LAS), Phoenix Sky Harbor International Airport (PHX), Washington Dulles International Airport (IAD), Lambert-St. Louis International Airport (STL) and seasonal operations to U.S. east coast destinations.

Table 3-15 presents the results of the domestic high-growth forecast scenario and **Table 3-16** compares this alternative with the preferred forecast. By the end of the forecast period, under this high-growth scenario, projected enplanements would be 11.8 percent above what is predicted in the preferred forecast, while operations would be 5.9 percent above what is predicted in the preferred forecast.

Table 3-15 – Domestic High-Growth Scenario

Year	Annual Enplanements	Annual Operations
2012	942,343	31,190
2017	1,319,008	35,420
2022	1,499,032	38,670
2027	1,666,394	42,260
2032	1,857,756	46,280
2012-2032 Growth	**97.1%**	**48.4%**
2012-2032 AAGR	**3.5%**	**2.0%**

Source: Akron-Canton Airport Authority, CHA, 2012.

Table 3-16 – Domestic High-Growth vs. Preferred Forecast

Year	Enplanements			Operations		
	Preferred Forecast	Domestic High Growth	Difference	Preferred Forecast	Domestic High Growth	Difference
2012	942,343	942,343	0.0%	31,190	31,190	0.0%
2017	1,143,500	1,319,008	15.3%	32,840	35,420	7.9%
2022	1,313,200	1,499,032	14.2%	36,090	38,670	7.2%
2027	1,475,400	1,666,394	12.9%	39,680	42,260	6.5%
2032	1,661,600	1,857,756	11.8%	43,700	46,280	5.9%
2012-2032 AAGR	**2.9%**	**3.5%**		**1.7%**	**2.0%**	

Source: CHA, 2012.

3.3.4.3 Static Market Share Scenario

The static market share scenario is an assumption that CAK will not grow as expected with the Southwest-AirTran merger. For example, United Airlines is currently working through its merger process. It includes the possible downsizing of the current CLE hub, resulting in excess gates for a new airline to establish a presence or airlines serving CLE to expand. For the purposes of this scenario, it is anticipated that Southwest keeps existing AirTran operations at CAK, but does not expand services, instead expanding CLE operations into one of their focus cities. With a Southwest decision to not expand CAK operations, it is anticipated the airline will continue to capture an equivalent share of the national market share, as they have in years past.

As mentioned previously, a static market share forecast assumes that CAK will maintain its 2011 level of commercial enplanements and operations relative to current and national forecast activity throughout the planning period. However, this methodology does not take into account any external variables directly associated with the Airport (e.g., route restructuring, introduction into new markets, fleet mix transition from smaller regional jets to larger narrow body jets, etc.). The gains in enplanements and operations in **Table 3-17** show the above metrics applied to the 2011 baseline data and **Table 3-18** compares this alternate with the preferred forecast.

Table 3-17 – Static Market Share Scenario

Year	Enplanements	Percent of National Market Share	Annual Operations	Percent of National Market Share
2011	834,454	0.12%	31,146	0.24%
Projected:				
2012	862,800	0.12%	31,200	0.24%
2017	1,001,500	0.12%	35,200	0.24%
2022	1,130,100	0.12%	38,600	0.24%
2027	1,276,600	0.12%	42,500	0.24%
2032	1,445,100	0.12%	46,800	0.24%
2012-2032 Growth:	**67.5%**		**50.0%**	
2012-2032 AAGR	**2.6%**		**2.1%**	

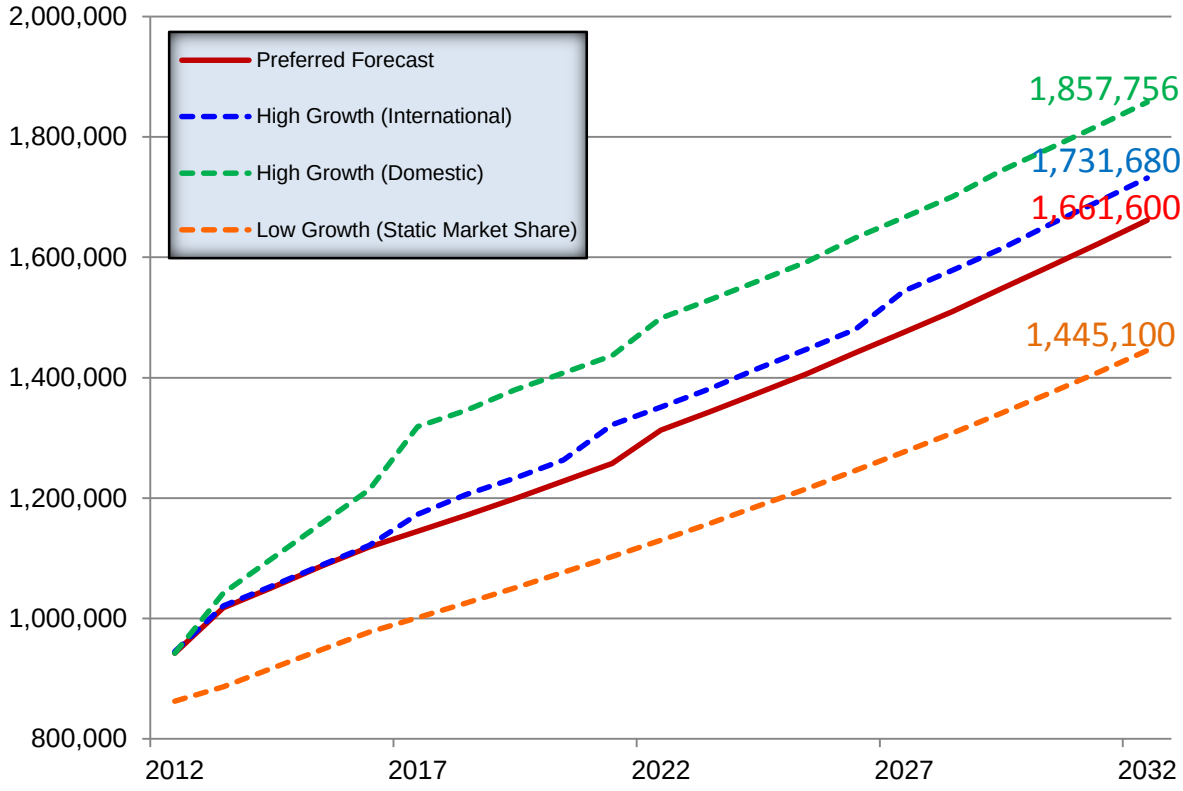
Source: Akron-Canton Airport Authority, National FAA TAF, CHA, 2012.

Table 3-18 – Static Market Share vs. Preferred Forecast

Year	Enplanements			Operations		
	Preferred Forecast	Static Market Share	Difference	Preferred Forecast	Static Market Share	Difference
2012	942,343	862,800	-8.4%	31,190	31,200	0.0%
2017	1,143,500	1,001,500	-12.4%	32,840	35,200	7.2%
2022	1,313,200	1,130,100	-13.9%	36,090	38,600	7.0%
2027	1,475,400	1,276,600	-13.5%	39,680	42,500	7.1%
2032	1,661,600	1,445,100	-13.0%	43,700	46,800	7.1%
2012-2032 AAGR	**2.9%**	**2.6%**		**1.7%**	**2.0%**	

Source: CHA, 2012.

Figure 3-5 – Comparison of Preferred Enplanement Forecast & Alternate Scenarios



3.4 COMMERCIAL AIRCRAFT FLEET MIX

Commercial aircraft fleet mix projections are a function of the scheduled commercial passenger carriers that operate, or are expected to operate, at the Airport during the forecast period. Each carrier's anticipated future fleet mix (i.e., aircraft acquisitions and retirements) and forecast enplanement levels influence a carrier's aircraft type and level of operations. This data is then coupled with forecasted commercial air carrier operations to determine the number of annual departures by aircraft type. The following are commercial carrier fleet mix projections.

3.4.1 Commercial Air Carrier Fleet Mix

The first step in determining CAK's future commercial carrier fleet mix is identifying the overall market trends that will drive future airline fleets and aircraft fleet mix decisions specific to each airline operating at the Airport. It is important to note, however, that overall passenger enplanements have increased and are forecast to maintain a positive growth throughout the planning period. There is an increase in the number of short- to medium-haul, low-cost air carriers. Older, larger aircraft – like the Boeing B737 and Airbus A320 – are being replaced and the demand for smaller, single-aisle aircraft has grown over the past decade. This is trending

the industry toward aircraft with fewer seats.[1] In general, this transition has translated to higher passenger load factor per flight.

However, according to the *2011 Boeing Current Market Outlook*, domestic air carriers have begun trending away from regional jet aircraft and retiring smaller 50-seat aircraft at an accelerated rate. These 50-seat aircraft are being replaced with larger 70 and 90-plus seat regional jets and larger, narrow body aircraft. However, replacements will not keep pace with retirements. Boeing predicts that the 2030 fleet of regional jets will consist of 760 aircraft, down from 1,780 in 2010. Single-aisle mainline aircraft will continue to be the majority of the domestic fleet and will increase market share from 56 percent of the fleet in 2009 to 73 percent in 2030.

As with the predicted national fleet shift toward newer, larger, more efficient aircraft, CAK-specific fleet mix characteristics and trends were identified and applied directly to the preferred passenger carrier forecasts through 2032. In order to provide a detailed picture of future CAK operations, the following assumptions are based on airline-specific fleet plans, aircraft orders, and overall industry trends:

- Southwest Airlines' Boeing B737-300 aircraft will gradually be phased out of service and replaced with Boeing B737-700 and B737-800 aircraft. For forecasting purposes, it is assumed that this transition will occur at a rate of 10 percent annually of the B737-300 fleet.
- Delta Air Lines' McDonnell-Douglas DC9 aircraft (acquired in the Northwest merger) will gradually be phased out of service and replaced with Canadair CRJ700 and CRJ900 aircraft, and newly-acquired B717s.[2] For forecasting purposes, it is assumed that this transition will occur at a rate of 15 percent per year of the DC9 fleet.
- Regional jet aircraft with a passenger capacity of 50 seats or under (Canadair CRJ100/200 and Embraer ERJ 135/140/145) will gradually be phased out and replaced with larger 70-plus seat regional jet aircraft (Canadair CRJ700/900 and Embraer ERJ170/175/190).[3]
- As a result of the Southwest Airlines-AirTran Airways merger, Southwest will be transitioning all Boeing 717 operations to Boeing 737 operations.
- Southwest Airlines will lease the 88 newly acquired Boeing 717s to Delta Air Lines. This process is expected to begin in mid-2013 at a rate of three aircraft per month. It is expected that the move will be completed within three years[5].
- It is anticipated that Delta Air Lines will gradually phase out 50-seat regional jet aircraft (CRJ 100/200) and replace operations with larger regional jets (CRJ 700/900) and newly leased Boeing 717s.
- It is anticipated that Canadair CRJ900 aircraft will begin operation during the five-year planning period.
- A cascading effect will occur with 70-seat regional jets. As 50-seat regional jet operations transition to 70-seat aircraft, likewise a percentage of 70-seat regional jet operations will transition to larger 80-plus seat and 99-seat regional jets and smaller narrow body aircraft.

[1] Boeing, *Long-Term Market Outlook 2012-2031.*
[2] Delta Museum.Org, *Douglas DC-9 Factsheet;* World Airline News*, Delta Retires the last DC9-30 from Scheduled Service,* September 9, 2010; Airbus.com, *Summary of Orders and Deliveries.*
[3] Boeing, *2010 Boeing Market Outlook.*

Consistent with what the *Boeing Market Outlook* is projecting, Delta Air Lines has begun to phase out smaller 50-seat regional jets and replace operations with larger regional jets and narrow body aircraft. According to Official Airline Guide (OAG) data, Delta only flew the McDonnell Douglas MD-88 series during peak periods for the airline. With the transition to larger aircraft and the tentative lease agreement with Southwest Airlines to acquire B717s, it is assumed that there will no longer be a need for the larger MD-88, thus replacing them with B717s.

With the Southwest-AirTran merger, it is important to note that all operations that were B717 operations are now being transitioned to larger B737 series aircraft. As the larger aircraft begins to dominate AirTran operations, it is anticipated that the number of operations needed to accommodate passengers will be lower to become more efficient and remain at a higher level of average passengers per departure. It is also assumed that this will create a slower growth in commercial operations over the course of the forecast horizon.

Using 2011 as the baseline year, the commercial air carrier fleet mix forecast for CAK considers the assumptions listed above and the projected annual departures for the Airport, as identified in the preferred forecast. A departure is considered a single operation, while an arrival is another. Simply put, departures equal one-half of total operations.

In 2012, regional jet operations accounted for 66 percent of commercial operations, gradually decreasing to 58 percent during the forecast period. Of the 66 percent, 50 percent were 50-seat regional jet aircraft. As mentioned, those 50-seat operations will transition into larger CRJ700/900 operations, accounting for the cascading effect and CRJ700 operations currently in service. For the purposes of this forecast, it is expected that the regional jets category will remain the largest, in terms of operation percentages at CAK.

Table 3-19 details the forecast commercial air carrier fleet mix by annual departures and aircraft type. **Table 3-20** represents the same data presented in **Table 3-19**, but organized by percentages by aircraft and type, to better illustrate the anticipated shift to larger aircraft. Note that this shift will also have a direct impact on capacity, as fewer flights are necessary to yield greater capacity.

Table 3-19 – Commercial Carrier Fleet Mix: Annual Departures by Aircraft Type

Aircraft Type	# of Seats**	2012	2017	2022	2027	2032
Narrow Body						
Airbus Industrie A320 Series*	136	780	821	902	992	1,092
Boeing 717	106	3,586	2,628	2,887	3,372	3,933
Boeing 737 Series	134	468	2,791	3,248	3,770	4,151
McDonnell Douglas MD80 Series	149	312	0	0	0	0
McDonnell Douglas DC9	120	156	0	0	0	0
Subtotal		**5,303**	**6,239**	**7,037**	**8,135**	**9,176**
Large Regional Jet (Over 50 Seats)						
Bombardier CRJ-700	65	2,495	4,433	5,233	5,952	6,991
Bombardier CRJ-900	76	0	2,463	4,331	4,960	5,681
Subtotal		**2,495**	**6,896**	**9,564**	**10,912**	**12,672**
Small Regional Jet (50-seat)						
Embraer ERJ	50	1,403	1,314	1,083	794	0
Bombardier CRJ 100/200	50	6,394	1,970	361	0	0
Subtotal		**7,797**	**3,284**	**1,444**	**794**	**0**
Total Departures:		**15,594**	**16,420**	**18,045**	**19,840**	**21,848**

Source: Akron-Canton Airport Authority, OAG Data 2011, CHA 2012.
Notes:
*Airbus A320 Series includes A319 as well as A318 operations
**Seat numbers derived by referencing aircraft seating specific to airline operations at CAK

Table 3-20 – Commercial Carrier Fleet Mix: Percent of Annual Departures by Aircraft Type

Aircraft Type	# of Seats**	2012	2017	2022	2027	2032
Narrow Body						
Airbus Industrie A320 Series*	136	5.0%	5.0%	5.0%	5.0%	5.0%
Boeing 717	106	23.0%	16.0%	16.0%	17.0%	18.0%
Boeing 737 Series	134	3.0%	17.0%	18.0%	19.0%	19.0%
McDonnell Douglas MD80 Series	149	2.0%	0	0	0	0
McDonnell Douglas DC9	120	1.0%	0	0	0	0
Subtotal		**34.0%**	**38.0%**	**39.0%**	**41.0%**	**42.0%**
Large Regional Jet (Over 50 Seats)						
Bombardier CRJ-700	65	16.0%	27.0%	29.0%	30.0%	32.0%
Bombardier CRJ-900	76	0.0%	15.0%	24.0%	25.0%	26.0%
Subtotal		**16.0%**	**42.0%**	**53.0%**	**55.0%**	**58.0%**
Small Regional Jet (50-seat)						
Embraer ERJ	50	9.0%	8.0%	6.0%	4.0%	0
Bombardier CRJ 100/200	50	41.0%	12.0%	2.0%	0	0
Subtotal		**50.0%**	**20.0%**	**8.0%**	**4.0%**	**0.0%**
Total Departure Percent:		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Akron-Canton Airport Authority, OAG Data 2011, CHA 2012.
Notes:
*Airbus A320 Series includes A319 as well as A318 operations
** Seat numbers derived by referencing aircraft seating specific to airline operations at CAK

As expected, the greatest increases in share of departures will come from narrow body and large regional jet aircraft as the small regional jet fleet is gradually phased out and their operations cascade ever increasingly toward larger aircraft. By the end of the forecast period, it is assumed that large regional jets will have accounted for more than 58 percent of commercial carrier departures and large narrow body aircraft the remaining 42 percent.

3.4.2 Commercial Air Carrier Capacity

Commercial air carrier capacity is calculated by multiplying the total number of annual departures of a given aircraft type by the number of available seats on those aircraft. **Table 3-21** presents the available seats by aircraft type of the projected annual fleet mix of CAK's forecast commercial air carrier activity.

Table 3-21 – Commercial Carrier Capacity: Available Seats by Aircraft

Aircraft Type	# of Seats**	2012	2017	2022	2027	2032
Narrow Body						
Airbus Industrie A320 Series*	136	105,782	111,380	122,406	134,580	148,203
Boeing 717	106	380,190	278,476	306,045	357,512	416,862
Boeing 737 Series	134	62,876	375,155	436,548	506,628	557,914
McDonnell Douglas MD80 Series	149	46,471	0	0	0	0
McDonnell Douglas DC9	120	23,236	0	0	0	0
Subtotal		**618,555**	**765,011**	**864,999**	**998,720**	**1,122,979**
Large Regional Jet (Over 50 Seats)						
Bombardier CRJ-700	65	162,181	288,164	340,151	386,875	454,441
Bombardier CRJ-900	76	-	187,183	329,143	376,955	431,719
Subtotal		**162,181**	**475,347**	**669,294**	**763,830**	**886,160**
Small Regional Jet (50-seat)						
Embraer ERJ	50	70,175	65,678	54,135	39,680	0
Bombardier CRJ 100/200	50	319,684	98,518	18,045	0	0
Subtotal		**389,859**	**164,196**	**72,180**	**39,680**	**0**
Total Departure Seats:		**1,170,595**	**1,404,554**	**1,606,473**	**1,802,230**	**2,009,139**

Source: Akron-Canton Airport Authority, OAG Data 2011, CHA 2012.
Notes: *Airbus A320 Series includes A319 as well as A318 operations
** Seat numbers derived by referencing aircraft seating specific to airline operations at CAK

Table 3-22 presents the available seats by type in percentage terms to highlight the share of CAK capacity that narrow body and large regional jet aircraft are anticipated to accommodate by 2032. These aircraft types are forecast to account for all of the available seats by the end of the forecast period.

Table 3-22 – Commercial Carrier Capacity: Percent of Seats by Type

Aircraft Type	2012	2017	2022	2027	2032
Narrow Body	52.8%	54.5%	53.8%	55.4%	55.9%
Large Regional Jet (Over 50 seats)	13.9%	33.8%	41.7%	42.4%	44.1%
Small Regional Jet (50 seats)	33.3%	11.7%	4.5%	2.2%	0
Total Departure Percent:	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Akron-Canton Airport Authority, OAG Data 2011, CHA 2012.

3.4.3 Commercial Air Carrier Load Factors

The projected level of air carrier capacity (available seats), based on operations and fleet mix forecasts, are combined with passenger enplanement projections to determine future average

seats per departure and average boarding load factor. **Table 3-23** depicts the average seats available per departure, based on the projected fleet mix, available seats and forecast enplanements. Despite a near continual increase in average seats per departure due to increasing aircraft size, the forecast average boarding load factor is still projected to increase by 5 percentage points by the end of the forecast period. It is important to note that the load factor percentages for the calendar year 2012 are lower than the rest. This can be attributed to the transition of AirTran's B717s to Southwest's larger B737s within the year.

Table 3-23 – Commercial Carrier Capacity: Percent of Seats by Type

Aircraft Type	2012	2017	2022	2027	2032
Average Seats per Departure	79	86	89	91	92
Annual Enplanements	942,343	1,144,900	1,313,200	1,475,400	1,661,600
Annual Available Seats	1,170,595	1,404,553	1,606,473	1,802,230	2,009,139
Average Boarding Load Factor	**81%**	**82%**	**82%**	**82%**	**83%**

Source: Akron-Canton Airport Authority, OAG Data 2011, CHA 2012.

3.5 FORECAST OF AIR CARGO ACTIVITY

Similar to most sectors in the aviation industry, air cargo activity and demand is cyclical and fluctuates based on national and global economic trends. According to the *FAA Aerospace Forecasts, FY 2012-2032,* specific factors that influence air cargo activity include economic market conditions, fuel price instability and globalization. According to the FAA, air cargo is projected to grow at an AAGR of 4.9 percent throughout the forecast period. However, domestic air cargo growth is forecast to increase at a modest AAGR of 1.8 percent.

3.5.1 Forecast of Air Cargo Operations

Air cargo traffic is comprised of freight, express cargo and mail. CAK air cargo is transported by three different methods: commercial air carrier belly cargo, dedicated all-cargo aircraft or charter service cargo. Belly cargo is defined as cargo transported in the belly compartment during a commercial air carrier operation. In 2011, of the 31,146 commercial aircraft operations at CAK, approximately 10,286 operations contained belly cargo. Roughly 100 operations were all-cargo carrier operations. Additionally in 2011, there were 1,460 charter cargo operations at CAK. According to the commercial air carriers and charter cargo service operators at CAK, Southwest Airlines will begin operating additional flights with belly cargo in the latter half of 2012. It was also indicated that the potential exists for increased operations by the existing charter cargo service providers, including expanded international cargo.

For the purposes of this forecast, two air cargo operations forecast scenarios were prepared, based on growth rates and data provided in the *FAA Aerospace Forecasts, FY 2012-2032* and the *Bureau of Transportation Statistics T-100 Market* database. The first forecast scenario assumes CAK maintains a static market share throughout the forecast period. This assumption was formed on the basis of data provided in the projected air cargo growth scenarios in the *FAA Aerospace*

Forecast. Along with a static growth projection, a high-growth forecast scenario was established using air service assumptions developed in the preferred air carrier operations forecast.

Table 3-24 shows the 2011 baseline air cargo operations for CAK. As noted in the tables, the total cargo operations count of 11,746 for belly cargo and charter cargo operations will be the baseline figures for the subsequent cargo forecasts.

Table 3-24 – 2011 Baseline Air Cargo Operations

Cargo	2011 Operations
Arriving	5,635
Departing	6,111
Total	**11,746**

Source: Bureau of Transportation Statistics T-100 BTS, Castle Aviation Inc., CHA 2012.

3.5.1.1 Static Market Share Air Cargo Operations Scenario

The static market share forecast scenario is based on the assumption that a constant market share and stable route structure, combined with capacity assumptions based on the CAK fleet mix, will remain constant. This scenario also anticipates that the current number of domestic passenger carrier and all-cargo carrier operations at the Airport will increase at the same rate as the national forecast numbers. Additional required capacity for the all-cargo carriers will likely be accommodated by upsizing the aircraft, instead of adding an additional flight. The fleet mix may change, but operations are expected to grow at a modest rate throughout the forecast period, consistent with national projections.

The projected growth rate applied to the 2011 baseline cargo operations is derived from the *FAA Aerospace Forecast, FY 2012-2032* for cargo jet aircraft growth. It predicts a 2 percent average annual growth rate for air cargo aircraft in the U.S. This methodology assumes consistent aircraft use rates through the forecast period, translating to a 2 percent AAGR in cargo aircraft operations. **Table 3-25** presents the static market based on 2011 CAK cargo operations and the Bureau of Transportation Statistics' T-100 data. As shown in the table, this scenario predicts an overall 48.6 percent increase in operations with cargo during the forecast period.

Table 3-25 – Static Market Share Air Cargo Operations Scenario

Year	Annual Operations	Change
2011	11,746	
Projected:		
2012	11,981	2.0%
2013	12,221	2.0%
2014	12,465	2.0%
2015	12,714	2.0%
2016	12,969	2.0%
2017	13,228	2.0%
2018	13,492	2.0%
2019	13,762	2.0%
2020	14,038	2.0%
2021	14,318	2.0%
2022	14,605	2.0%
2023	14,897	2.0%
2024	15,195	2.0%
2025	15,499	2.0%
2026	15,809	2.0%
2027	16,125	2.0%
2028	16,447	2.0%
2029	16,776	2.0%
2030	17,112	2.0%
2031	17,454	2.0%
2032	17,803	2.0%
2012-2032 Growth	**48.6%**	

Source: Bureau of Transportation Statistics T-100 Data, FAA Aerospace Forecast 2012-2032, Castle Aviation Inc., CHA 2012.

3.5.1.2 High-Growth Air Cargo Operations Scenario

The high-growth forecast scenario for CAK considers the previous information and assumptions in the static market share air cargo scenario. It also includes the additional assumptions noted in the preferred commercial air carrier forecast. To develop the high growth assumptions, it was first determined that approximately 17 percent of air carrier operations also transport air cargo. This percentage derived from taking the total number of cargo operations, commercial belly cargo and all cargo, and dividing that number by the total number of commercial service operations. The percentage was then applied to the added air service assumptions included in the preferred forecast to derive a potential increase in air cargo operations.

The growth rate from the *FAA Aerospace Forecast, FY 2012-2032* of 2 percent was applied to the baseline 2011 CAK cargo operations number. This methodology also factors the previously

mentioned added air service assumptions from the preferred forecast into the annual operations. As shown in the **Table 3-26**, the projected annual operations result in an AAGR of 3 percent for the forecast period.

3.5.1.3 Preferred Forecast of Air Cargo Operations

According to the *FAA Aerospace Forecast, FY 2012-2032*, national domestic commercial service air cargo operations declined in 2011. While this may also suggest a further decline in regional markets, Southwest and other cargo or passenger carriers operating at CAK anticipate CAK air cargo will grow based upon increased operations. However, due to the percentage of international activity largely based out of CLE – versus the percentage of domestic activity at CAK – the static market share forecast scenario results in modest increases in CAK cargo operations growth. It was selected as the preferred forecast of air cargo operations.

3.5.2 Forecast of Air Cargo Volume

As discussed previously, the majority of air cargo at CAK is largely transported by commercial service aircraft as belly cargo and cargo charter services. **Table 3-27** presents the baseline cargo volume in tons in 2011 at the Airport.

Similar to the forecast of air cargo operations, assumptions presented in the *FAA Aerospace Forecast, FY 2012-2032,* were used to develop projected volumes of cargo at CAK throughout the forecast period. Specifically, the FAA suggests:

- Existing security restrictions on air cargo transportation will remain
- Shifting of most air to ground cargo transportation has already occurred
- Tying long-term cargo activity to economic growth

For the purposes of developing a forecast of air cargo volume at CAK, projected air cargo revenue ton miles in the *FAA Aerospace Forecast, FY 2011-2031,* were used to forecast anticipated cargo volume.

Table 3-26 – High-Growth Air Cargo Operations Scenario

Year	Annual Operations	Change	Added Air Service Assumption
2011	11,746	-	-
Projected:			
2012	12,107	2.0%	126
2013	12,475	2.0%	126
2014	12,851	2.0%	126
2015	13,234	2.0%	126
2016	13,625	2.0%	126
2017	14,023	2.0%	126
2018	14,430	2.0%	126
2019	14,845	2.0%	126
2020	15,268	2.0%	126
2021	16,699	2.0%	126
2022	16,139	2.0%	126
2023	16,651	2.0%	189
2024	17,174	2.0%	189
2025	17,706	2.0%	189
2026	18,250	2.0%	189
2027	18,804	2.0%	189
2028	19,369	2.0%	189
2029	19,945	2.0%	189
2030	20,534	2.0%	189
2031	21,133	2.0%	189
2032	21,745	2.0%	189
2012-2032 Growth:	**79.6%**		
2012-2032 AAGR:	**3.0%**		

Source: Bureau of Transportation Statistics T-100 Data, FAA Aerospace Forecast 2012-2032, Castle Aviation Inc., CHA 2012.

Table 3-27 – 2011 Baseline Cargo Volume

Cargo	2011 Volume (tons)
Enplaned	90
Deplaned	950
Total	**1040**

Source: Akron-Canton Airport Authority, Castle Aviation Inc., CHA 2012.

Table 3-28 lists the types of commercial and all-cargo air service carriers that operated at CAK in 2011, along with each carrier's total volume count and total share of cargo volume at the Airport for the year.

Table 3-28 – 2011 Total Volume Share

Carrier	Volume (tons)	Share of Total
Airline	78	7.5%
All-Cargo	26	2.5%
Charter Services	936	90.0%
Total	**1040**	**100%**

Source: Akron-Canton Airport Authority, Bureau of Transportation Statistics T-100 Data, Castle Aviation Inc., CHA, 2012.

3.5.2.1 Static Market Share Air Cargo Volume Scenario

As with the static market share scenario for air cargo operations, it is anticipated that all static market variables will remain constant. Growth projections will continue to remain consistent with national forecast numbers. The *FAA Aerospace Forecast, FY 2012-2032,* projects that national air cargo volume will increase 1.6 percent annually. **Table 3-29** presents the static market share cargo volume forecast for CAK based on the projected cargo operations.

As shown in the table, the static market share scenario results in an overall 37 percent increase in air cargo volume during the forecast period.

Table 3-29 - Static Market Share Air Cargo Volume Scenario (tons)

Year	Deplaned	Enplaned	Total	Projected Growth
2011	950	90	1,040	-
Projected:				
2012	965	92	1,057	1.6%
2013	980	93	1,074	1.6%
2014	996	95	1,091	1.6%
2015	1,012	96	1,108	1.6%
2016	1,028	98	1,126	1.6%
2017	1,044	100	1,144	1.6%
2018	1,061	101	1,162	1.6%
2019	1,078	103	1,181	1.6%
2020	1,095	104	1,200	1.6%
2021	1,113	106	1,219	1.6%
2022	1,131	108	1,238	1.6%
2023	1,149	109	1,258	1.6%
2024	1,167	111	1,278	1.6%
2025	1,186	113	1,299	1.6%
2026	1,205	115	1,320	1.6%
2027	1,224	117	1,341	1.6%
2028	1,244	119	1,362	1.6%
2029	1,264	120	1,384	1.6%
2030	1,284	122	1,406	1.6%
2031	1,304	124	1,429	1.6%
2032	1,325	126	1,451	1.6%
2012-2032 Growth:	**37.3%**	37.0%	**37.3%**	

Source: Akron-Canton Airport Authority, Bureau of Transportation Statistics T-100 Data, FAA Aerospace Forecast 2012-2032, Castle Aviation Inc., CHA 2012.

3.5.2.2 High-Growth Air Cargo Volume Scenario

The high-growth cargo volume forecast scenario is directly based on the alternate high growth operations scenario (refer to **Section 3.5.1.2**). The resulting 3 percent AAGR derived in the high-growth operations scenario was applied to the 2011 baseline air cargo volume and the forecast horizon. **Table 3-30** presents the results of the high-growth cargo volume forecast scenario. As shown in the table, this scenario results in an overall 79.6 percent increase in air cargo volume during the forecast period.

Table 3-30 – High-Growth Cargo Volume Scenario (tons)

Year	Deplaned	Enplaned	Total	Projected Growth
2011	950	90	1,040	-
Projected:				
2012	978	93	1,071	3.0%
2013	1,007	96	1,103	3.0%
2014	1,037	99	1,135	3.0%
2015	1,067	102	1,169	3.0%
2016	1,099	105	1,204	3.0%
2017	1,132	108	1,240	3.0%
2018	1,165	111	1,277	3.0%
2019	1,200	114	1,314	3.0%
2020	1,236	118	1,354	3.0%
2021	1,272	121	1,394	3.0%
2022	1,310	125	1,435	3.0%
2023	1,349	129	1,478	3.0%
2024	1,389	132	1,522	3.0%
2025	1,431	136	1,567	3.0%
2026	1,473	140	1,613	3.0%
2027	1,517	145	1,661	3.0%
2028	1,562	149	1,711	3.0%
2029	1,608	153	1,762	3.0%
2030	1,656	158	1,814	3.0%
2031	1,705	163	1,868	3.0%
2032	1,756	167	1,923	3.0%
2012-2032 Growth:	**79.6%**	**79.6%**	**79.6%**	

Source: Akron-Canton Airport Authority, FAA Aerospace Forecast 2012-2032, Castle Aviation Inc., CHA, 2012.

3.5.2.3 Preferred Forecast of Air Cargo Volume

Consistent with the preferred growth forecast of air cargo operations, the static market share cargo volume forecast provides a likely scenario for cargo volume growth and is carried forward as the preferred forecast.

3.6 FORECAST OF GENERAL AVIATION AND MILITARY ACTIVITY

There are a variety of aviation activities that make up the broad definition of general aviation (GA). GA includes all segments of the aviation industry, except commercial air carriers, regional/commuter service, scheduled cargo and military operations.

General aviation represents the largest percentage of civil aircraft in the U.S. and accounts for the majority of operations handled by towered and non-towered airports, and the majority of certificated pilots. Its activities include: flight training, sightseeing, aerial photography, recreation, law enforcement, medical flights and business, and corporate and personal travel via air taxi charter operations. General aviation aircraft encompass a broad range of types, from single-engine piston aircraft to large corporate jets, helicopters, gliders and amateur-built aircraft.

Military aircraft and operations are simply defined as aircraft and operations conducted by the nation's military forces. Military aircraft are included in the based aircraft and operations projections, but are not forecast in the same manner as GA activity, since their number, location and activity levels are not a function of anticipated market and economic conditions. They are rather a function of military decisions, national security priorities and budget pressures that cannot be predicted over the course of the forecast period. For forecasting purposes, military based aircraft and military operations typically remain static at baseline year levels through the forecast period. After speaking with the commander of Army Guard at CAK, force level changes, unit expansions and mission changes during the forecast period are deemed unlikely; this reinforces the static projections of the military forecast.

General aviation and military operations are divided into local and itinerant operations subcategories. Local operations are arrivals or departures performed by aircraft that remain in the airport traffic pattern or are in sight of the airport. Local operations are most often associated with training activity and flight instruction. They include touch and go operations. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft that do not remain in the airport traffic pattern or within a 20-nautical mile radius.

For this forecast, three scenarios were evaluated: the adjusted FAA TAF for CAK, a market share growth scenario and a TAF-based growth scenario. From those scenarios, a preferred forecast was identified. It took into consideration data from the TAF and Authority-provided statistics.

Table 3-31 presents the 2011 based aircraft fleet mix for CAK, as provided by the Authority. Note that the total of 146 aircraft does not match the TAF-reported 133 aircraft for 2011. For the purposes of the forecast, the CAK-reported total was considered to be the most accurate and is the fleet mix baseline for this forecasting effort.

Table 3-31 – 2011 Based Aircraft Fleet Mix

Aircraft Category	Aircraft Count	Percent of Total
Single Engine *	73	50.0%
Multi-Engine *	24	16.4%
Jet	38	26.0%
Rotorcraft	1	0.7%
Military**	10	6.8%
Total	**146**	**100.0%**

Source: Akron-Canton Airport Authority, 2012.
* As reported, these are assumed to be piston engine for forecasting purposes
**Military category includes rotorcraft used only by the military

3.6.1 GA & Military Adjusted FAA TAF Scenario

The adjusted GA and military TAF forecast scenario for CAK is presented in **Table 3-32**. This adjusted forecast accounts for the removal of 2011 GA air taxi operations from the air taxi and commuter category – an exercise conducted in the commercial operations forecast section – and moves those operations into the GA itinerant operations total. Throughout the forecast period, the TAF indicates that based aircraft growth at CAK will be 0.54 percent annually; itinerant operations at 0.10 percent annually; and local operations at 0.43 percent annually.

Note that local operations at CAK account for roughly 19 percent of total Airport operations and are anticipated to decline throughout the forecast period. Local operations are commonly associated with flight training and touch-and-go activity, which is not typically prominent at airports with high levels of commercial activity. Since local operations represent a modest portion of CAK total operations, they will be combined with itinerant operations and presented in total for GA and military operations.

Table 3-32 – 2010 Adjusted GA & Military TAF

Year	Based Aircraft	Local Operations			Itinerant Operations		Total Itinerant	Total GA & Military Operations
		GA	Military	Total Local	GA*	Military		
Historic:								
2007	155	23,281	801	**24,082**	45,592	1,710	**47,302**	**71,384**
2008	155	24,109	776	**24,885**	47,157	2,206	**49,363**	**74,248**
2009	139	18,251	556	**18,807**	34,215	1,800	**36,015**	**54,822**
2010	133	15,608	501	**16,109**	35,635	2,056	**37,691**	**53,800**
2011	133	15,314	1,058	**16,372**	22,386	1,661	**24,047**	**40,419**
Projected:								
2012	133	14,634	1,058	**15,692**	20,319	1,661	**21,980**	**37,672**
2013	134	14,701	1,058	**15,759**	20,274	1,661	**21,935**	**37,694**
2014	134	14,769	1,058	**15,827**	20,260	1,661	**21,921**	**37,748**
2015	135	14,837	1,058	**15,895**	20,275	1,661	**21,936**	**37,831**
2016	135	14,905	1,058	**15,963**	20,294	1,661	**21,955**	**37,918**
2017	136	14,974	1,058	**16,032**	20,320	1,661	**21,981**	**38,013**
2018	137	15,043	1,058	**16,101**	20,345	1,661	**22,006**	**38,107**
2019	138	15,112	1,058	**16,170**	20,372	1,661	**22,033**	**38,203**
2020	138	15,182	1,058	**16,240**	20,399	1,661	**22,060**	**38,300**
2021	139	15,252	1,058	**16,310**	20,426	1,661	**22,087**	**38,397**
2022	139	15,322	1,058	**16,380**	20,454	1,661	**22,115**	**38,495**
2023	140	15,393	1,058	**16,451**	20,483	1,661	**22,144**	**38,595**
2024	140	15,464	1,058	**16,522**	20,512	1,661	**22,173**	**38,695**
2025	141	15,535	1,058	**16,593**	20,541	1,661	**22,202**	**38,795**
2026	142	15,606	1,058	**16,664**	20,571	1,661	**22,232**	**38,896**
2027	143	15,678	1,058	**16,736**	20,602	1,661	**22,263**	**38,999**
2028	144	15,750	1,058	**16,808**	20,634	1,661	**22,295**	**39,103**
2029	145	15,822	1,058	**16,880**	20,666	1,661	**22,327**	**39,207**
2030	146	15,895	1,058	**16,953**	20,699	1,661	**22,360**	**39,313**
2031	147	15,968	1,058	**17,026**	20,732	1,661	**22,393**	**39,419**
2032	148	16,041	1,058	**17,099**	20,766	1,661	**22,427**	**39,526**
2012-2032 Growth:	11.3%	9.6%	0.0%	**9.0%**	2.2%	0.0%	**2.0%**	**4.9%**
2012-2032 AAGR:	0.5%	0.5%	0.0%	**0.4%**	0.1%	0.0%	**0.1%**	**0.2%**

Source: 2011 FAA Terminal Area Forecast
*Note: GA numbers are populated from FAA TAF Local Civil Operations

3.6.2 GA & Military Market Share Scenario

The market share forecast methodology assumes that CAK GA operations will grow at the national rate, maintaining its relative share of national GA and military fleet and operations through the forecast period. For based aircraft projections, each aircraft type will grow at the projected rate detailed in **Table 3-33**. It presents the national GA fleet growth rates as forecast in the *FAA Aerospace Forecasts, FY 2012-2032*. Since each aircraft type is forecast independently based on specific growth rates unique to the aircraft type, a more robust fleet mix and total based aircraft count can be predicted with the FAA Aerospace Forecast than when using the TAF as a sole source forecast. The TAF forecasts an aggregate based aircraft number, not by specific type. The forecast factors in **Table 3-33** were applied and unadjusted to the 2011 CAK based aircraft count, presented in **Table 3-31**.

Table 3-33 – National GA Fleet Growth Rates

Year	Single Engine Piston	Multi Engine Piston	Turbo Prop	Turbo Jet	Rotor
2012-2017 AAGR	-0.2%	-0.4%	0.8%	3.7%	3.0%
2017-2022 AAGR	0.1%	-0.4%	0.7%	3.2%	2.1%
2022-2027 AAGR	0.4%	-0.3%	0.9%	3.4%	2.1%
2027-2032 AAGR	0.6%	-0.4%	0.8%	3.5%	2.0%

Source: FAA Aerospace Forecast FY 2012-2032, CHA 2012
*Note: Single Engine includes Experimental and Sport aircraft category.

Table 3-34 presents the market share based aircraft forecast. National growth rates are applied to the 2011 CAK fleet mix. Note that projections for military aircraft are not provided. Based on conversations with the Army Guard base commander, there are no anticipated changes in based military aircraft. For the purposes of this forecast, military aircraft at CAK will remain constant throughout the planning period.

Table 3-34 – Based Aircraft: Market Share Scenario

Year	Single Engine Piston	Multi Engine Piston	Turbine	Rotor	Military	Total
2011	73	24	38	1	10	146
Projected:						
2012	73	24	38	1	10	146
2013	73	24	38	1	10	146
2014	73	24	38	1	10	147
2015	73	24	38	1	10	147
2016	73	24	39	1	10	147
2017	73	24	39	1	10	147
2018	74	24	39	1	10	148
2019	74	24	39	1	10	148
2020	74	24	39	1	10	148
2021	74	24	39	1	10	148
2022	74	25	39	1	10	149
2023	74	25	39	1	10	149
2024	74	25	40	1	10	149
2025	74	25	40	1	10	149
2026	74	25	40	1	10	150
2027	74	25	40	1	10	150
2028	74	25	40	1	10	150
2029	74	25	40	1	10	150
2030	74	25	40	1	10	151
2031	74	25	40	1	10	151
2032	75	25	40	1	10	151
2012-2032 Growth:	**2.7%**	**4.2%**	**5.3%**	**0.0%**	**0.0%**	**3.4%**
AAGR 2012-2032	**0.1%**	**0.2%**	**0.3%**	**0.0%**	**0.0%**	**0.2%**

Source: Akron-Canton Airport Authority, FAA Aerospace Forecast FY 2011-2031, CHA 2012

Table 3-35 presents the CAK market share operations forecast, based on the national TAF growth rates for GA and military operations. Note that the total of 48,256 GA and military operations does not match the TAF reported 40,419 for 2011. For the purposes of the forecast, the CAK-reported total considered to be the most accurate is the GA and military operations baseline for subsequent forecasts.

Table 3-35 – GA & Military Operations Market Share Scenario

Year	Based Aircraft	Operations			Military	Total GA & Military Operations
		Itinerant GA	Local Civil	Total Civil GA		
2011	146	31,827	15,814	**45,638**	2,618	**48,256**
Projected:						
2012	146	33,977	14,615	**48,592**	2,618	**51,210**
2013	146	34,114	14,675	**48,789**	2,618	**51,407**
2014	147	34,254	14,735	**48,990**	2,618	**51,608**
2015	147	34,394	14,796	**49,190**	2,618	**51,808**
2016	147	34,534	14,857	**49,391**	2,618	**52,009**
2017	147	34,676	14,919	**49,595**	2,618	**52,213**
2018	148	34,820	14,982	**49,802**	2,618	**52,420**
2019	148	34,966	15,046	**50,011**	2,618	**52,629**
2020	148	35,114	15,110	**50,224**	2,618	**52,842**
2021	148	35,263	15,176	**50,439**	2,618	**53,057**
2022	149	35,416	15,242	**50,658**	2,618	**53,276**
2023	149	35,570	15,310	**50,879**	2,618	**53,497**
2024	149	35,726	15,378	**51,105**	2,618	**53,723**
2025	149	35,886	15,448	**51,333**	2,618	**53,951**
2026	150	36,047	15,518	**51,566**	2,618	**54,184**
2027	150	36,212	15,590	**51,802**	2,618	**54,420**
2028	150	36,379	15,663	**52,042**	2,618	**54,660**
2029	150	36,549	15,737	**52,286**	2,618	**54,304**
2030	151	36,721	15,813	**52,534**	2,618	**55,152**
2031	151	36,896	15,890	**52,786**	2,618	**55,404**
2032	151	37,074	15,967	**53,042**	2,618	**55,660**
AAGR 2012-2032	**0.2%**	**0.4%**	**0.4%**	**0.4%**	**0.0%**	**0.4%**
2012-2032 Growth	**3.3%**	**9.1%**	**9.3%**	**9.2%**	**0.0%**	**8.7%**

Source: Akron-Canton Airport Authority, FAA National TAF, CHA 2012.

Table 3-36 compares the market share forecast scenario to the CAK TAF forecast. By the end of the forecast period, projected based aircraft will be 2.1 percent above what is predicted in the TAF, while operations are expected to be 40.8 percent above the TAF estimates. The difference in based aircraft can be attributed to the difference in the 2011 baseline aircraft count, with the actual based aircraft count being 9.1 percent above that of the TAF estimate. However, the 31.6 percent difference in operations between the market share forecast and the TAF can be attributed to: an above average discrepancy in the GA actual count, between CAK actual

numbers and TAF reported numbers; and FAA acknowledgement that the CAK market is expected to grow at a higher rate than the national average.

Table 3-36 – Market Share Scenario vs. TAF

Year	Based Aircraft			Operations		
	TAF	Market Share	Difference	TAF	Market Share	Difference
2012	133	146	10.0%	37,672	51,210	35.9%
2017	136	147	8.4%	38,013	52,213	37.4%
2022	139	149	6.9%	38,495	53,276	38.4%
2027	143	150	4.8%	38,999	54,420	39.5%
2032	148	151	2.1%	39,526	55,660	40.8%
AAGR 2012-2032	**0.5%**	**0.2%**		**0.2%**	**0.4%**	

Source: FAA TAF, CHA 2012.

3.6.3 GA & Military TAF-Based Scenario

The GA and military TAF-based forecast scenario uses growth factors in the *FAA Aerospace Forecast, FY 2012-2032* to arrive at adjusted forecasted factors for the based aircraft and operations. As with the commercial air carrier forecast, it is believed that the CAK TAF, in relation to the national TAF, does not exhibit the related market growth characteristics suggested by local demographic conditions. A similar incremental growth adjustment to the CAK TAF growth rates were deemed necessary, using the *Aerospace Forecast* numbers.

The based aircraft AAGR of 0.5 percent provided in the CAK TAF is well above that of the national TAF and the *FAA Aerospace Forecast* AAGR of 0.2 percent. However, this may be a function of CAK's current fleet mix, which currently shows higher growths in the fastest growing segments of GA aircraft – turbojet aircraft – which are forecast to grow at an AAGR of 4.1 over the forecast period. Currently, single engine piston aircraft make up the largest percent of the based aircraft. However, the *FAA Aerospace Forecast, FY 2012-2032* predicts a decline in single-engine and multi-engine piston aircraft over the next five years. These types currently make up roughly 66 percent of the Airport's based aircraft fleet, compared to 26 percent of turbine engine-based aircraft.

Despite being higher than the *Aerospace Forecast*, likely due to fleet mix considerations, the CAK TAF AAGR may not be sufficient to adequately account for the expected incremental aircraft growth. Therefore, a growth rate that accounts for the market area's incremental population growth, coupled with the Airport's above average turbine engine fleet mix, must be established. To account for the difference, the FAA Aerospace GA fleet growth rates were applied to the 2011 based aircraft counts for CAK. **Table 3-37** presents the TAF-based, based aircraft growth scenario. Note that military aircraft are projected to remain static throughout

the forecast period. In total, the based aircraft count would be expected to increase to 156 aircraft by the end of the forecast period, a 6.8 percent increase.

Table 3-37 – Based Aircraft: TAF-Based Growth Scenario

Year	Single Engine Piston*	Multi Engine Piston	Turbine	Rotor	Military	Total
2011	73	24	38	1	10	146
Projected:						
2012	73	24	38	1	10	146
2013	73	24	39	1	10	146
2014	73	24	39	1	10	146
2015	72	24	39	1	10	146
2016	72	24	39	1	10	146
2017	72	23	40	1	10	146
2018	72	23	40	1	10	147
2019	72	23	40	1	10	147
2020	72	23	41	1	10	147
2021	72	23	41	1	10	148
2022	73	23	42	1	10	149
2023	73	23	42	1	10	149
2024	73	23	42	1	10	149
2025	73	22	43	1	10	150
2026	74	22	43	2	10	151
2027	74	22	44	2	10	152
2028	74	22	44	2	10	152
2029	75	22	45	2	10	153
2030	75	22	45	2	10	154
2031	76	22	46	2	10	155
2032	76	22	46	2	10	156
2012-2032 Growth	**4.1%**	**-8.3%**	**21.1%**	**100.0%**	**0.0**	**6.8%**
2012-2032 AAGR	**0.2%**	**-0.4%**	**1.0%**	**3.5%**	**0.0%**	**0.3%**

Source: Akron-Canton Airport Authority, FAA Aerospace Forecast FY 2012-2032, CHA 2012.
*Note: Single Engine includes Experimental and Sport aircraft category.

For the purposes of the TAF-based general aviation scenario, the CAK TAF annual growth numbers were used as the variable for annual growth. The CAK TAF predicts GA operations to grow at a rate above that of the national average for GA and military operations. Simply put, the CAK TAF already adjusts the national growth rates for GA operations to levels that reflect the incremental growth predicted in the Airport's primary market area. For this reason, no direct adjustment is needed for the GA operations forecast factors presented in the CAK TAF.

However, the TAF-based scenario will use TAF-based growth factors applied to actual 2011 operations. **Table 3-38** provides the TAF-based growth scenario forecast for GA and military operations. GA air taxi operations are a result of the previously-mentioned split of air taxi and commuter mentioned in **Section 3.1.2**.

Table 3-39 compares the TAF-based scenario to the FAA TAF. By the end of the forecast period, projected based aircraft will be 5.3 percent above what is predicted in the TAF, while the combined GA and military operations are expected to be approximately 39 percent above the TAF estimates. The main discrepancy is apparent in the 2011 baseline year difference between TAF data and Authority data.

Table 3-38 – GA & Military Operations: TAF-Based Growth Scenario

Year	Based Aircraft	Operations				Total GA & Military Operations
		GA Air Taxi	GA	Total GA	Military	
2011	146	2,003	45,638	**47,641**	2,618	**50,259**
Projected:						
2012	146	2,007	45,848	**47,854**	2,618	**50,472**
2013	146	2,010	46,059	**48,069**	2,618	**50,687**
2014	146	2,014	46,271	**48,285**	2,618	**50,903**
2015	146	2,018	46,484	**48,501**	2,618	**51,119**
2016	146	2,022	46,698	**48,719**	2,618	**51,337**
2017	147	2,025	46,912	**48,938**	2,618	**51,556**
2018	147	2,029	47,128	**49,158**	2,618	**51,776**
2019	147	2,033	47,345	**49,378**	2,618	**51,996**
2020	147	2,037	47,563	**49,600**	2,618	**52,218**
2021	148	2,041	47,782	**49,823**	2,618	**52,441**
2022	148	2,045	48,001	**50,046**	2,618	**52,664**
2023	149	2,049	48,222	**50,271**	2,618	**52,889**
2024	149	2,053	48,444	**50,497**	2,618	**53,115**
2025	150	2,057	48,667	**50,724**	2,618	**53,342**
2026	151	2,061	48,891	**50,952**	2,618	**53,570**
2027	152	2,065	49,116	**51,181**	2,618	**53,799**
2028	152	2,069	49,342	**51,411**	2,618	**54,029**
2029	153	2,073	49,569	**51,642**	2,618	**54,260**
2030	154	2,077	49,797	**51,874**	2,618	**54,492**
2031	155	2,081	50,026	**52,107**	2,618	**54,725**
2032	156	2,085	50,256	**52,341**	2,618	**54,959**
2012-2032 Growth	**6.8%**	**3.9%**	**9.6%**	**9.4%**	**0.0%**	**8.9%**
AAGR 2012-2032	**0.3%**	**0.2%**	**0.5%**	**0.5%**	**0.0%**	**0.4%**

Source: Akron-Canton Airport Authority, CAK FAA TAF, CHA 2012.

Table 3-39 – GA & Military TAF-Based Scenario vs. FAA TAF

Year	Based Aircraft			Operations		
	TAF	TAF-Based Scenario	Difference	TAF	TAF-Based Scenario	Difference
2012	133	146	9.8%	37,672	50,472	34.0%
2017	136	147	7.8%	38,013	51,556	35.6%
2022	139	148	6.6%	38,495	52,664	36.8%
2027	143	152	6.0%	38,999	53,799	37.9%
2032	148	156	5.3%	39,526	54,959	39.0%
AAGR 2012-2032	**0.5%**	**0.3%**		**0.2%**	**0.4%**	

Source: FAA TAF, CHA 2012.

3.6.4 Preferred GA & Military Forecast

For planning purposes, it is recommended that the TAF-based growth scenario be used as the preferred forecast for GA and military operations as well as based aircraft. This forecast methodology uses FAA-provided growth rates for based aircraft, independently provided for each aircraft type. They are moderately adjusted for the purposes of the methodology. In addition, socioeconomic factors, superior infrastructure and services at CAK justify growth projections for turbojet aircraft. They are key drivers of based aircraft growth, which are above national average forecasts. For GA operations, the CAK TAF growth rate, which is slightly above the nationally adjusted rate, forecasts operations based on Authority-provided 2011 operations totals. Military aircraft operations will remain static through the forecast period.

3.7 PREFERRED FORECAST SUMMARY

The following tables present a summary of the preferred aviation activity forecasts for commercial air carrier activity (operations and enplanements), air cargo carrier operations, GA activity (based aircraft and operations) and military activity (based aircraft and operations), as detailed in the previous sections. Additionally, direct comparisons to the CAK TAF are provided for evaluation purposes. **Table 3-40** presents the complete summary of the preferred forecast for based aircraft, enplanements and operations by type: passenger carrier, air cargo, GA and military.

Table 3-40 – Preferred Forecast Summary

Year	Based Aircraft	Enplanements	Operations			
			Air Carrier	GA	Military	Total Operations
2011	146	834,454	31,146	47,641	2,618	**81,405**
Projected:						
2012	146	942,343	31,190	47,854	2,618	**81,662**
2013	146	1,018,000	31,250	48,069	2,618	**81,937**
2014	146	1,051,400	31,323	48,285	2,618	**82,225**
2015	146	1,086,500	32,154	48,501	2,618	**83,273**
2016	146	1,118,900	32,224	48,719	2,618	**83,561**
2017	147	1,144,900	32,839	48,938	2,618	**84,395**
2018	147	1,171,600	33,467	49,158	2,618	**85,243**
2019	147	1,199,000	34,104	49,378	2,618	**86,100**
2020	147	1,228,600	34,755	49,600	2,618	**86,972**
2021	148	1,257,500	35,419	49,823	2,618	**87,860**
2022	148	1,313,200	36,090	50,046	2,618	**88,755**
2023	149	1,343,500	36,776	50,271	2,618	**89,665**
2024	149	1,374,600	37,478	50,497	2,618	**90,593**
2025	150	1,406,500	38,195	50,724	2,618	**91,537**
2026	151	1,441,600	38,929	50,952	2,618	**92,499**
2027	152	1,475,400	39,680	51,181	2,618	**93,478**
2028	152	1,510,100	40,447	51,411	2,618	**94,476**
2029	156	1,548,100	41,232	51,642	2,618	**95,492**
2030	154	1,584,900	42,035	51,874	2,618	**96,527**
2031	155	1,622,700	42,857	52,107	2,618	**97,582**
2032	156	1,661,600	43,696	52,341	2,618	**98,655**
2012-2032 Growth	**6.8%**	**76.3%**	**40.1%**	**9.4%**	**0.0%**	**20.8%**
2012-2032 AAGR	**0.3%**	**2.9%**	**1.7%**	**0.5%**	**0.0%**	**0.9%**

Source: Akron-Canton Airport Authority, FAA CAK TAF, 2012-2032 FAA Aerospace Forecast, CHA 2012.

Table 3-41 compares the preferred air carrier enplanements and total operations forecasts of all activity types to the TAF enplanements forecast. At the end of the planning period, the preferred forecast predicts a level of enplanements 9.7 percent above the CAK TAF and total Airport operations 19.3 percent above the TAF. This difference is attributed to a higher reported operations count of 81,405 in 2011 by CAK, as opposed to the TAF-reported operations of 69,610 in 2011.

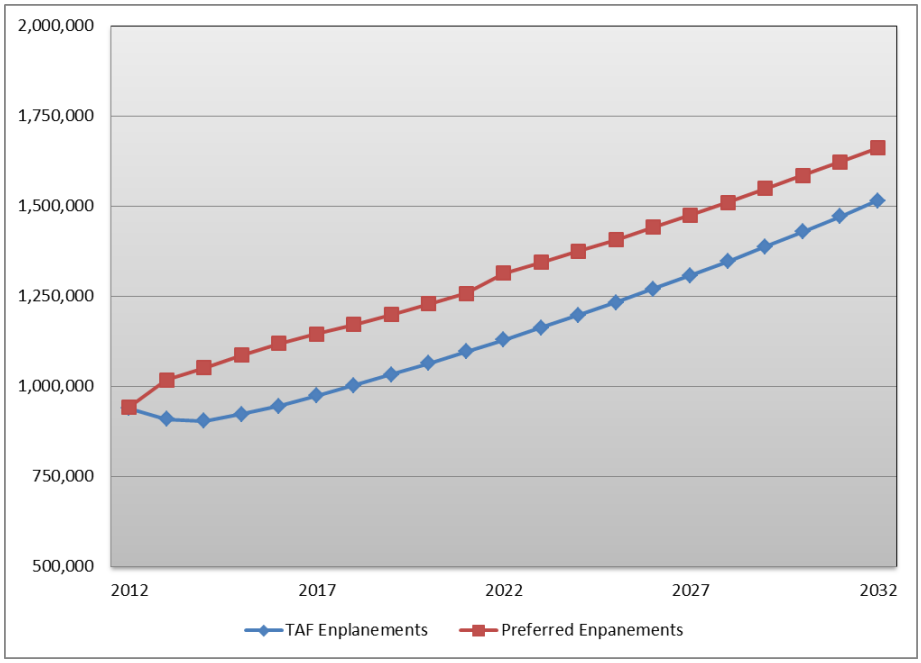
Table 3-41 – Air Carrier Enplanements and Total Operations vs. CAK TAF

Year	Enplanements			Operations		
	CAK TAF	Preferred Forecast	Preferred Forecast Vs. TAF	CAK TAF	Preferred Forecast	Preferred Forecast Vs. TAF
2012	938,829	942,343	0.4%	67,335	81,661	21.3%
2017	974,047	1,144,900	17.4%	67,997	84,395	24.1%
2022	1,128,551	1,313,200	16.4%	72,337	88,755	22.7%
2027	1,307,595	1,475,400	12.8%	77,202	93,478	21.1%
2032	1,515,077	1,661,600	9.7%	82,661	98,655	19.3%
2012-2032 AAGR	**2.4%**	**2.9%**		**1.0%**	**1.0%**	

Source: Akron-Canton Airport Authority, FAA CAK TAF, 2012-2032 FAA Aerospace Forecast, CHA 2012.

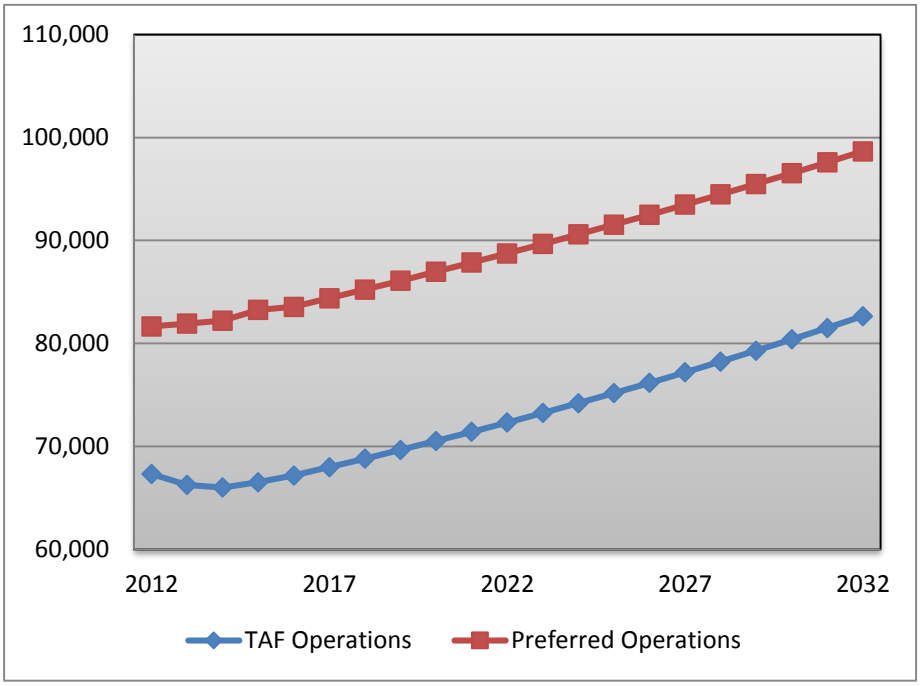
Figure 3-6 and **Figure 3-7** shows the comparison between enplanements and operations of the TAF and the preferred forecast.

Figure 3-6 – Preferred Forecast vs. TAF Enplanements



Source: FAA TAF, CHA 2012.

Figure 3-7 – Preferred Forecast vs. TAF Total Operations



Source: FAA TAF, CHA 2012.

Table 3-42 details the based aircraft projections for the Airport by aircraft type. This forecast predicts a based aircraft total of 156 at the end of the forecast period, an increase of more than 6.2 percent.

Table 3-42 – Based Aircraft Preferred Forecast

Year	Single Engine Piston	Multi Engine Piston	Jet	Rotor	Military	Total
2012	73	24	38	1	10	146
2017	72	23	40	1	10	147
2022	73	23	42	1	10	148
2027	74	22	44	2	10	152
2032	76	22	46	2	10	156
2012-2032 AAGR	**0.2%**	**-0.5%**	**0.9%**	**2.7%**	**0.0%**	**0.3%**

Source: Akron-Canton Airport Authority, FAA CAK TAF, 2012-2032 FAA Aerospace Forecast, CHA 2012.

As illustrated in **Table 3-43**, the growth in CAK-based aircraft is predicted to outpace the growth presented in the CAK TAF. Turbine engine aircraft that currently comprise more than 30 percent of the Airport's based GA aircraft will drive increases in CAK-based aircraft. By the end of the

forecast period, the preferred forecast predicts a based aircraft count that is 5.3 percent above that provided in the TAF.

Table 3-43 – Based Aircraft: Preferred Forecast vs. CAK TAF

Year	CAK TAF	Preferred	Preferred Vs. TAF
2012	133	146	**9.8%**
2017	136	147	**8.1%**
2022	139	148	**6.5%**
2027	143	152	**6.3%**
2032	148	156	**5.4%**
2012-2032 AAGR	**0.5%**	**0.3%**	

Source: Akron-Canton Airport Authority, FAA CAK TAF, CHA 2012.

3.8 PEAK ACTIVITY FORECAST

Commercial service airports experience peaks in enplanements, commercial carrier operations and total airport operations that will drive demand for differing areas of airport infrastructure. For example, Peak Month-Average Day (PMAD) airfield projections require that all aircraft operations be considered, while passenger terminal facilities need only those operations associated with commercial passenger activity. To properly plan, size and design passenger terminal facilities, it is necessary to understand PMAD and peak hour enplanement demand. The peak month, PMAD and peak hour forecasts are key elements in defining future facility requirements needed to accommodate above-average levels of utilization (i.e., peak activity). Each of these elements must be presented separately. Peak commercial carrier operations define the demand for airside facilities (e.g., gates and ramps). Peak enplanements directly impact the terminal (e.g., ticketing and baggage claim). Landside facilities (e.g., access roads and parking) and peak airport operations determine runway capacity and airfield needs.

3.8.1 Peak Month – Average Day

The peak month is the calendar month of the year when the highest level of enplanements and aircraft operations typically occur. Peak month-average day (PMAD) is the total operations, or enplanements, divided by the number of days in the peak month. The projected peak month levels of activity are a key component in the demand/capacity analysis used to determine future capacity requirements.

To provide the necessary metrics for the demand/capacity analysis, PMAD is forecast for the following:

- Enplanements
- Commercial Carrier Operations
- Total Operations

Terminal facilities are generally designed to accommodate enplanements on the average day during the peak month, rather than the absolute peak level of activity. A review of historical monthly enplanements and operations at CAK identified the peak month for passenger activity. This evaluation reveals seasonal variations in passenger traffic throughout the year, with peaks during the summer months of June, July and August. The strongest lulls occurred during the winter months of January and February. Using Authority records presented in **Table 3-44**, it was determined that between 2007-2011, July averaged the highest level of enplanements over the five-year period.

Table 3-44 – Peak Month Enplanements: 2007-2011

Year	2007	2008	2009	2010	2011	Average 2007-2011	Percent of Average Total Enplanements
January	51,612	48,784	52,788	54,582	57,557	53,065	7.0%
February	49,356	52,399	50,153	53,198	53,100	51,641	6.8%
March	60,414	61,945	60,416	68,676	68,359	63,962	8.5%
April	56,692	54,076	58,723	62,067	65,549	59,421	7.9%
May	56,900	60,354	59,791	66,631	72,628	63,261	8.4%
June	61,946	67,928	67,106	74,222	76,191	69,479	9.2%
July*	64,793	74,975	70,531	73,133	77,253	72,137	9.6%
August	62,213	72,333	67,376	73,288	76,467	70,335	9.3%
September	56,202	61,020	58,298	63,135	70,443	61,820	8.2%
October	65,339	64,625	62,459	66,730	74,430	66,717	8.8%
November	58,466	57,560	57,348	63,793	71,441	61,722	8.2%
December	52,952	59,343	57,401	63,045	71,036	60,755	8.1%
Total	**696,885**	**735,342**	**722,390**	**782,500**	**834,454**	**754,314**	**100%**

Source: Akron-Canton Airport Authority, CHA, 2012.
*Note: July averaged a greater percentage of enplanements historically.

As the previous table shows, from 2007-2011, July averaged 72,137 enplanements or approximately 9.6 percent of the total annual passengers over this timeframe. To calculate the PMAD, that percentage was applied to the total number of forecast annual enplanements to determine the peak month enplanements. The peak month enplanements were then divided by the number of days in the peak month (31) to define the PMAD. The forecasts for CAK peak month and peak month-average day enplanements, presented in **Table 3-45**, use a constant 9.6 percent of total annual enplanements for the month through the forecast period.

Table 3-45 – Peak Month Average Day Enplanement Forecast

Year	Enplanements	Peak Month Percent	Peak Month Enplanements	Peak Month Average Day
2012	942,343	9.6%	90,465	3,015
2017	1,144,900	9.6%	109,776	3,659
2022	1,313,200	9.6%	126,067	4,202
2027	1,475,400	9.6%	141,638	4,721
2032	1,661,600	9.6%	159,514	5,317

Source: Akron-Canton Airport Authority, CHA, 2012.

The PMAD for commercial carrier operations is calculated in the same manner as PMAD for enplanements. A review of historic monthly commercial carrier operations at the Airport determined the calendar month when the highest level of aircraft activity occurs. Unlike enplanements, the analysis reveals limited variation in carrier operations, with only February dipping below the 8 percent share of annual traffic threshold. Historic monthly operations data, displayed in **Table 3-46**, shows August as the peak month for commercial carrier operations over the five-year period.

PMAD for all Airport operations – commercial carrier, GA, cargo and military – are calculated in the same manner as the previous PMAD analyses. The historic monthly operations for CAK, detailed in **Table 3-47**, yield August as the peak month with approximately 9.9 percent of total operations.

August averaged 2,797 operations, equating to approximately 9.2 percent of the total average annual commercial operations over this timeframe. The forecast for CAK peak month and PMAD carrier operations, presented in **Table 3-48,** uses a constant 9.2 percent ratio for the month through the forecast period. To compute PMAD, the peak month operations are divided by the number of days in the peak month to represent the peak average day for the forecast period.

The forecast for CAK peak month and PMAD total Airport operations, presented in **Table 3-49**, uses a constant 9.9 percent ratio for the month through the forecast period.

Table 3-46 – Peak Month Commercial Carrier Operations: 2007-2011

Year	2007	2008	2009	2010	2011	Average 2007-2011	Percent of Average Total Operations
January	2,774	2,503	2,310	2,287	2,510	2,477	8.1%
February	2,469	2,398	2,103	2,099	2,216	2,257	7.4%
March	2,673	2,538	2,333	2,372	2,627	2,509	8.2%
April	2,653	2,549	2,244	2,376	2,616	2,488	8.1%
May	2,595	2,562	2,326	2,635	2,754	2,574	8.4%
June	2,726	2,648	2,295	2,801	2,872	2,668	8.7%
July	2,722	2,548	2,251	2,645	3,049	2,643	8.6%
August	2,986	2,557	2,412	2,903	3,127	2,797	9.2%
September	2,694	2,325	2,083	2,584	2,765	2,490	8.1%
October	2,876	2,410	2,198	2,565	2,960	2,602	8.5%
November	2,681	2,309	2,465	2,546	2,812	2,563	8.4%
December	2,482	2,346	2,271	2,541	2,841	2,496	8.2%
Total	**32,331**	**29,693**	**27,291**	**30,354**	**33,149**	**30,564**	**100%**

Source: Akron-Canton Airport Authority, CHA, 2012.

Table 3-47 – Peak Month Total Airport Operations: 2007-2011

Year	2007	2008	2009	2010	2011	Average 2007-2011	Percent of Average Total Enplanements
January	5,863	7,663	6,028	5,333	5,192	6,016	6.1%
February	6,408	6,368	5,855	4,408	4,800	5,568	5.7%
March	9,349	8,075	9,316	9,830	6,620	8,638	8.8%
April	8,843	11,403	8,704	8,522	6,527	8,800	9.0%
May	11,569	9,486	8,610	8,024	6,821	8,902	9.1%
June	10,872	9,062	8,269	8,162	7,551	8,783	9.0%
July	9,914	11,759	2,828	8,646	8,520	9,533	9.7%
August	10,885	11,554	8,517	9,358	8,219	9,707	9.9%
September	11,799	10,316	8,244	8,792	6,707	9,172	9.4%
October	12,307	9,573	8,878	8,707	7,537	9,400	9.6%
November	8,987	7,432	8,484	6,993	6,789	7,737	7.9%
December	6,658	5,373	5,857	5,045	6,122	5,811	5.9%
Total	**113,454**	**108,064**	**95,590**	**91,820**	**81,405**	**98,067**	**100%**

Source: Akron-Canton Airport Authority, CHA 2012.

Table 3-48 – Peak Month Average Day Commercial Carrier Operations

Year	Annual Airline Operations	Peak Month Percent	Peak Month Operations	Peak Month Average Day
2012	31,189	9.2%	2,854	95
2017	32,839	9.2%	3,005	100
2022	36,090	9.2%	3,303	110
2027	39,680	9.2%	3,631	121
2032	43,696	9.2%	3,999	133

Source: Akron-Canton Airport Authority, CHA, 2012.

Table 3-49 – Peak Month Average Day Airport Operations Forecast

Year	Airport Operations	Peak Month Percent	Peak Month Operations	Peak Month Average Day
2012	81,661	9.9%	8,083	269
2017	84,395	9.9%	8,355	279
2022	88,755	9.9%	8,787	293
2027	93,478	9.9%	9,254	308
2032	98,655	9.9%	9,767	326

Source: Akron-Canton Airport Authority, CHA 2012.

3.8.2 Peak Hour Operations and Enplanements

Establishing peak hour activity is instrumental in terminal facility planning and is the basis for identifying potential capacity issues. Hourly operations and enplanements data were extracted from the FAA ETMSC and Official Airline Guide (OAG) databases to determine 2011 peak hour activity for the following categories.

3.8.2.1 Peak Hour Total Airport and Commercial Carrier Operations

As discussed previously, the month of August averaged the greatest number of total Airport and commercial carrier operations for 2007-2011. As shown in **Table 3-50**, using the established peak month, peak hour total Airport operations (26) encompassed approximately 10 percent of the PMAD total Airport operations, and peak hour commercial carrier operations (14) encompassed approximately 15 percent of the PMAD commercial carrier operations in 2011. These percentages were then respectively applied to the projected PMAD total Airport and commercial carrier operations to derive peak hour total airport and commercial carrier operations through 2032.

3.8.2.2 Peak Hour Enplanements

According to the Authority, July averaged the greatest number of enplanements for 2007-2011. During July, there were an average total of seven peak hour commercial carrier departures in 2011. The peak period for commercial activity at the Airport was determined to be between 6-

7 a.m.[4,5] To calculate peak hour enplanements, the number of peak hour commercial carrier departures was increased at the same growth rate (40.1 percent) used in the preferred commercial carrier forecast. The adjusted peak hour commercial carrier departures were then applied to the projected load factors attributed to the calculations of **Table 3-11** to derive the peak hour enplanements.

3.8.2.3 Peak Hour Enplanement Surge Factor

The calculation of peak hour enplanements provides a logical order of magnitude starting point for terminal facility planning. However, it is inevitable that the Airport and airlines will occasionally experience flight departure delays due to maintenance, weather, crew scheduling and late aircraft arrivals during that average peak hour. This, combined with passengers arriving early for flights, adds to the total number of persons that need to be accommodated in the terminal building at any given time, particularly in the post security, gate and hold room areas. This surge in passenger activity, which is above the basic peak hour enplanement calculation, must also be accounted for when sizing terminal facilities to maintain a high standard of customer service and efficiency.

In determining an appropriate enplanement surge factor for CAK, several items were taken into consideration. Typically, a factor of 1.5 is applied to the peak hour enplanements to account for 15 minutes prior and 15 minutes after the designated peak hour, reflecting a 90-minute period of peak enplaning passenger demand. As mentioned, the peak period for commercial activity at CAK was determined to be from 6-7 a.m. Because this is the first group of daily departures and most of the aircraft have been at the gates overnight, there is a reduced probability of aircraft delay and resultant passenger congestion (i.e., due to late arrivals) before the peak hour. This alleviates the need to account for the 15-minute period before the peak hour. For purposes of this forecast, a surge factor of 1.25, or 75 minutes, was used to calculate the critical level of passenger activity during the peak period.

Table 3-50 – Projected Peak Hour Operations and Enplanements

	Enplanements			Commercial Carrier Operations		Total Airport Operations	
Year	PMAD	Peak Hour	Surge Factor	PMAD	Peak Hour	PMAD	Peak Hour
2012	3,015	508	635	95	14	269	26
2017	3,664	593	741	100	15	279	27
2022	4,202	671	839	110	16	293	28
2027	4,721	759	948	121	18	308	30
2032	5,317	818	1,022	133	20	326	31

Source: Akron-Canton Airport Authority, FAA ETMSC, CHA 2012.

[4] OAG custom data for CAK 2011 published commercial arrivals and departures, UBM Aviation Worldwide, LLC
[5] Note: OAG data indicates that due to fluctuating airline schedules, up to nine commercial departures occur during this peak period, representing 64.3% of peak hour commercial operations.