

---

## 4.0 Forecasts

### 4.1 Introduction

Forecasts of Wisconsin aviation activity contribute to several aspects of the system plan. The forecasts are used to verify activity levels and based aircraft at individual airports and to help determine whether existing facilities have sufficient capacity to accommodate future demand. Information collected for 2010 serves as the beginning of the forecasts and a benchmark for future comparisons of aviation activity in Wisconsin. Forecast years are 2015, 2020 and 2030.

The following aviation activity components are considered in the forecasts:

- Commercial airline enplanements and operations
- General aviation (GA) based aircraft and operations
- Military operations
- Air cargo volumes and air cargo operations performed by dedicated air cargo aircraft

Forecasts are presented by component, according to the Wisconsin airport classifications: commercial service, large, medium and small GA airports.

The methodologies used to prepare the forecasts involved examination of individual airports, extensive data analysis, and trends at regional, state and national levels. A multi-factor approach best suits Wisconsin's complex and diverse system of airports and helps to account for variations in size, activity levels and primary missions and circumstances of individual airports.

In the ten years since the last system plan, legacy and low-cost carriers continued to refine their operating models. This resulted in a reduced number of carriers and substantial changes in network structures, capacity in the U.S. system and aircraft in service. Some of these changes impacted Wisconsin in important ways:

- Frontier Airlines discontinued its hub at General Mitchell International Airport
- United and Continental Airlines merged, resulting in a consolidation of the two carriers' hub and spoke services
- Delta Airlines merged with Northwest Airlines and a similar reconstruction of Delta's network is on-going
- Most of the turboprop fleet was retired in favor of regional jets

Other components of Wisconsin aviation remained stable or declined. With the exception of some increases in business aviation, general aviation in Wisconsin experienced a sustained decline. Air cargo remained flat. However, in the last ten years, the integrated carriers (e.g. FedEx and UPS), carriers that offer direct point-to-point pick-up and delivery services, have become the dominant providers. In 2003, one quarter of Wisconsin's air cargo was carried in the cargo holds of air passenger aircraft; in 2011 the amount of air cargo carried by passenger aircraft shrunk to three percent with the integrated carriers handling most of the remainder.



---

This chapter is organized to first provide an overview of the socio-economic factors that influence demand for aviation services and facilities. Each component of aviation activity is presented separately beginning with commercial air service and then proceeding to general aviation, air cargo, military activity and wrapping up with a summary and forecast of total Wisconsin operations.

## 4.2 Socio-economic Context for Aviation in Wisconsin

Eight commercial service airports and ninety general aviation airports are included in the Wisconsin Airport System and support a diversified economy. The largest employment sectors are manufacturing and trade, transportation, and utilities. Other sectors that are well represented in the state's economy include: the automotive industry, education and health services, professional and business services, construction, and agriculture.

The 2010 U.S. Census reported approximately 5.7 million people in the state, making Wisconsin the 20<sup>th</sup> largest state. Two thirds of the population lives within metropolitan statistical areas (MSAs). MSAs are growing faster than less urban areas in the state. The Milwaukee MSA accounts for almost 28 percent of the state's population, with Madison and Green Bay MSAs representing the next largest urban areas. Some counties in the state are included in MSAs in adjacent states. For example, Kenosha is part of the Chicago-Naperville-Joliet MSA, Superior is part of the Duluth MSA, and Pierce and St. Croix Counties in western Wisconsin are part of the Minneapolis-St. Paul-Bloomington MSA. The proximity of these metropolitan areas and their respective airports is a factor in the use of Wisconsin airports. For residents of northern Illinois, General Mitchell International Airport in Milwaukee is an alternate airport choice. Conversely, residents of Eau Claire MSA can drive to Minneapolis-St. Paul International Airport. Wisconsin populations included in MSA and non-MSA areas are presented in **Table 4-1**.



**Table 4-1  
Population in Wisconsin and Neighboring MSAs, 2010**

<b>Wisconsin MSAs</b>	<b>2010</b>	<b>Share of Wisconsin Population</b>	<b>2000-2010 Annual Change</b>
Appleton	224,439	3.9%	1.0%
Eau Claire	162,463	2.9%	0.9%
Fond du Lac	100,488	1.8%	0.3%
Green Bay	306,774	5.4%	0.8%
Janesville	161,038	2.8%	0.5%
La Crosse, WI-MN	134,194	2.4%	0.6%
Madison	579,403	10.2%	1.4%
Milwaukee-Waukesha-West Allis	1,565,828	27.5%	0.4%
Oshkosh-Neenah	163,931	2.9%	0.4%
Racine	201,487	3.5%	0.6%
Sheboygan	115,486	2.0%	0.2%
Wausau	132,314	2.3%	0.5%
<b>Total MSA</b>	<b>3,847,845</b>	<b>67.5%</b>	<b>0.7%</b>
<b>Other Wisconsin Counties</b>	<b>1,868,500</b>	<b>32.8%</b>	<b>0.4%</b>
<b>State of Wisconsin</b>	<b>5,697,061</b>	<b>100.0%</b>	<b>0.6%</b>
<b>Neighboring MSAs</b>			
Chicago-Naperville-Joliet, IL-IN-WI	9,652,775		0.6%
Duluth, MN-WI	276,750		0.0%
Minneapolis-St. Paul-Bloomington, MN-WI	3,310,162		1.1%

Source: Woods and Poole Economics

In addition to population, other economic measures tend to correlate positively with the demand for air service. These measures include employment, per capita income, gross regional product (GRP) and retail sales. **Table 4-2** presents an economic snapshot of the state and shows annual rates of change from 2005 to 2010. For income, GRP and retail sales, numbers are expressed in constant 2005 dollars.<sup>1</sup>

<sup>1</sup> Constant dollars are an adjusted value of currency that does not consider the impact of inflation or deflation and makes it possible to compare dollar values from one period to another.



**Table 4-2  
Economic Measures of the Wisconsin Economy**

Wisconsin MSAs	Employment		Per Capita Income (2005 Dollars)		Gross Regional Product (Thousands of 2005 Dollars)		Retail Trade (Thousands of 2005 Dollars)	
	2010	05-10 Annual Change	2010	05-10 Annual Change	2010	05-10 Annual Change	2010	05-10 Annual Change
Appleton	144,280	-0.3%	\$34,037	-0.6%	\$8,754,945	-0.3%	\$3,540,048	-0.6%
Eau Claire	103,191	0.3%	\$29,447	-0.3%	\$5,525,718	0.4%	\$2,373,696	-0.6%
Fond du Lac	56,879	-0.8%	\$32,193	-0.4%	\$3,377,668	-0.8%	\$1,232,247	-1.2%
Green Bay	200,768	-0.4%	\$33,139	-0.3%	\$12,519,991	-0.3%	\$4,184,392	-0.8%
Janesville	76,681	-2.0%	\$28,025	-1.0%	\$4,564,562	-1.6%	\$2,139,905	-1.0%
La Crosse WI-MN	92,802	0.5%	\$31,559	-0.1%	\$5,003,397	0.5%	\$1,933,496	-0.7%
Madison	432,805	0.4%	\$39,211	-0.7%	\$28,274,630	0.5%	\$10,079,236	-0.3%
Milwaukee-Waukesha-West Allis	961,170	-0.7%	\$37,836	-0.4%	\$69,206,821	-0.6%	\$19,609,310	-1.1%
Oshkosh-Neenah	105,793	-0.1%	\$33,242	0.0%	\$7,132,415	0.0%	\$1,823,379	-1.0%
Racine	87,794	-1.3%	\$32,842	-0.5%	\$5,958,613	-1.1%	\$2,300,269	-1.1%
Sheboygan	72,901	-1.2%	\$33,942	-0.7%	\$4,539,675	-1.3%	\$1,340,991	-1.2%
Wausau	84,942	-1.3%	\$32,170	-1.1%	\$5,002,435	-1.1%	\$2,174,302	-0.8%
<b>Total MSA</b>	<b>2,420,006</b>	<b>-0.5%</b>	<b>\$34,915</b>	<b>-0.5%</b>	<b>\$159,860,870</b>	<b>-0.3%</b>	<b>\$52,731,271</b>	<b>-0.9%</b>
<b>Other Wisconsin Counties</b>	<b>1,030,070</b>	<b>-0.3%</b>	<b>\$29,632</b>	<b>0.2%</b>	<b>\$52,145,991</b>	<b>-0.2%</b>	<b>\$20,407,249</b>	<b>-1.2%</b>
<b>State of Wisconsin</b>	<b>3,440,790</b>	<b>-0.4%</b>	<b>\$37,175</b>	<b>-0.3%</b>	<b>\$211,612,624</b>	<b>-0.3%</b>	<b>\$73,030,698</b>	<b>-1.0%</b>

Source: Woods and Poole Economics

**Table 4-2** is notable because all of these measures of economic activity declined over the period 2005 to 2010. Demand for aviation services also was soft, and recovery is just beginning to show in selective markets.

**Table 4-3** provides a snapshot of Wisconsin aviation activity in 2010 and shows aviation activity components that are included in the forecasts. They are listed and defined below:

- **Enplaned Passengers** – Passengers who board an aircraft at a particular airport (also includes passengers that are connecting to and boarding a different aircraft at the airport)
- **Commercial Operations** – Scheduled air carrier landings and take-offs
- **General Aviation and Air Taxi Operations** – Personal use, business, or charter aircraft landings and take-offs
- **Military Operations** – Military and reserve aircraft landings and take-offs
- **Total Operations** – All landings and take-offs
- **Enplaned and Deplaned Cargo** – Pounds of aircraft cargo that are loaded (enplaned) and unloaded (deplaned)
- **Based Aircraft** – Any aircraft that is registered and kept at a particular airport



**Table 4-3  
2010 Summary of Wisconsin Aviation Activity**

<b>Activity Measure</b>	<b>2010</b>	<b>Share</b>
<b>Enplaned Passengers</b>		
Milwaukee	4,760,170	74%
Other Airports	1,698,870	26%
<b>Total Enplanements</b>	<b>6,459,040</b>	<b>100%</b>
<b>Commercial Operations</b>		
Milwaukee	153,420	64%
Other Airports	85,050	36%
<b>Total Commercial Operations</b>	<b>238,470</b>	<b>100%</b>
<b>GA and Air Taxi Operations</b>		
Commercial Airports	257,130	13%
Large GA Airports	691,060	36%
Medium GA Airports	819,200	42%
Small GA Airports	166,040	9%
<b>Total GA and Air Taxi Operations</b>	<b>1,933,430</b>	<b>100%</b>
<b>Dedicated Cargo Operations</b>		
Commercial Airports	20,650	88%
Large GA Airports	1,140	5%
Medium GA Airports	1,560	7%
Small GA Airports	0	0%
<b>Total Dedicated Cargo Operations</b>	<b>23,350</b>	<b>100%</b>
<b>Military Operations</b>		
Commercial Airports	17,520	37%
Large GA Airports	14,560	30%
Medium GA Airports	15,170	32%
Small GA Airports	590	1%
<b>Total Military Operations</b>	<b>47,840</b>	<b>100%</b>
<b>Total Operations</b>		
Commercial Airports	533,760	24%
Large GA Airports	706,760	31%
Medium GA Airports	835,930	37%
Small GA Airports	169,180	8%
<b>Total Operations</b>	<b>2,245,630</b>	<b>100%</b>
<b>Enplaned and Deplaned Cargo (pounds)</b>		
Commercial Airports	228,206,200	98%
Large GA Airports	1,166,000	1%
Medium GA Airports	1,771,440	1%
Small GA Airports	2,000	0%
<b>Total Air Cargo</b>	<b>231,145,640</b>	<b>100%</b>
<b>Based Aircraft</b>		
Commercial Airports	618	16%
Large GA Airports	1,314	34%
Medium GA Airports	1,599	42%
Small GA Airports	279	7%
<b>Total Based Aircraft</b>	<b>3,810</b>	<b>100%</b>



---

**Table 4-3** highlights key aspects of the Wisconsin Airport System:

- Commercial aviation activity is concentrated at General Mitchell International Airport (MKE). The Milwaukee MSA has 28 percent of the population, but handles 74 percent of enplaned passengers, 64 percent of commercial operations, and most of the air cargo.
- The largest share of general aviation and air taxi operations takes place at the large and medium GA airports. This is also where most of the based aircraft are located in the state.
- Military operations are not extensive but occur throughout the system.

Each component of Wisconsin’s aviation system is described separately in the following sections beginning with an overview of commercial air service followed by forecasts of enplaned passengers and commercial operations.

## 4.3 Commercial Air Service

### 4.3.1 Overview of Commercial Air Service

Eight commercial service airports operate in the State of Wisconsin and offer access to the national and international transportation system. General Mitchell International Airport and Madison handle the largest number of enplaned passengers, followed by Green Bay and Appleton. Mosinee and La Crosse are somewhat smaller service points. Rhinelander and Eau Claire are designated Essential Air Service (EAS) cities and have single point service to Minneapolis-St. Paul International and Chicago O’Hare International airports, respectively.

General Mitchell International Airport is a medium hub airport and Madison is a small hub airport as defined by the FAA. The remaining six commercial service airports are considered non-hub airports. Proximity of airports to one another creates multi-airport regions where passengers have a choice of which airport to use. **Figure 4-1** identifies Wisconsin’s commercial service airports.



Figure 4-1 – Commercial Service Airports



 Commercial Service Airports

0 12.5 25 50 Miles

Source: WISDOT, ESRI, WisDNR, Wilbur Smith Associates



**Table 4-4** identifies driving distances between commercial service airports. Distances between airports that are less than 150 miles appear in bold. With the exception of Mosinee, every commercial service airport has a larger alternate airport within driving distance. Green Bay and Appleton are located in close proximity to one another (33 miles). Eau Claire is 94 miles from Minneapolis-St. Paul, and Madison is 83 miles from Milwaukee. General Mitchell International Airport is 74 miles from Chicago O’Hare. Central Wisconsin Airport is 86 miles from Appleton, and Rhinelander is 74 miles from Mosinee. These overlapping service areas offer air passengers a choice of schedules and fares; although Green Bay, Appleton and Mosinee have similar air service.

**Table 4-4  
Driving Distances Between Commercial Service Airports (in miles)**

Airport	Chicago O’Hare (ORD)	Milwaukee	Minneapolis/St. Paul (MSP)	Green Bay	Appleton	Mosinee
Appleton	182	<b>108</b>	285	<b>33</b>	-	-
Eau Claire	304	252	<b>94</b>	-	-	<b>110</b>
Green Bay	196	<b>127</b>	279	-	<b>33</b>	-
La Crosse	268	215	<b>149</b>	-	-	-
Madison	<b>136</b>	<b>83</b>	267	-	-	-
Milwaukee	<b>74</b>	-	344	-	-	-
Mosinee	254	180	201	<b>102</b>	<b>86</b>	-
Rhinelander	323	253	245	156	157	<b>74</b>

Source: [www.travelmath.com](http://www.travelmath.com)

The cost of air travel is an important factor when choosing an airport. **Table 4-5** includes the average roundtrip domestic air fares from Wisconsin airports, compared to Chicago O’Hare and Minneapolis-St. Paul airports. Within the region, General Mitchell International Airport is, on average, the lowest cost option for air travel. If a passenger lives near Eau Claire and is headed to Chicago, subsidized EAS air service from Eau Claire is priced competitively. Appleton, Green Bay, and Mosinee are priced comparably, although, in the third quarter of 2012, Appleton’s average fares were lower than the fares out of Mosinee or Green Bay. In 2012, air fare increased at all airports, with Minneapolis-St. Paul experiencing the most stable fares.

**Table 4-5  
Average Fares**

Airport	2000	2005	2010	Q3 2011	Q3 2012	Percent Change	
						2000-2010	3Q 2011 - 3Q 2012
Appleton	\$480	\$389	\$386	\$435	\$538	-20%	24%
Eau Claire	\$501	\$452	\$295	\$285	\$342	-41%	20%
Green Bay	\$429	\$384	\$394	\$416	\$602	-8%	45%
La Crosse	\$477	\$422	\$521	\$555	\$586	9%	5%
Madison	\$412	\$380	\$391	\$442	\$435	-5%	-2%
Milwaukee	<b>\$360</b>	<b>\$312</b>	<b>\$259</b>	<b>\$285</b>	<b>\$317</b>	<b>-28%</b>	<b>11%</b>
Mosinee	\$460	\$401	\$362	\$462	\$605	-21%	31%
Rhinelander	\$457	\$421	\$479	\$516	\$372	5%	-28%
Chicago	\$409	\$314	\$356	\$371	\$379	-13%	2%
Minneapolis/St. Paul	\$390	\$350	\$385	\$407	\$421	-1%	3%

Source: Bureau of Transportation Statistics, Passenger Origin and Destination (O&D) Survey

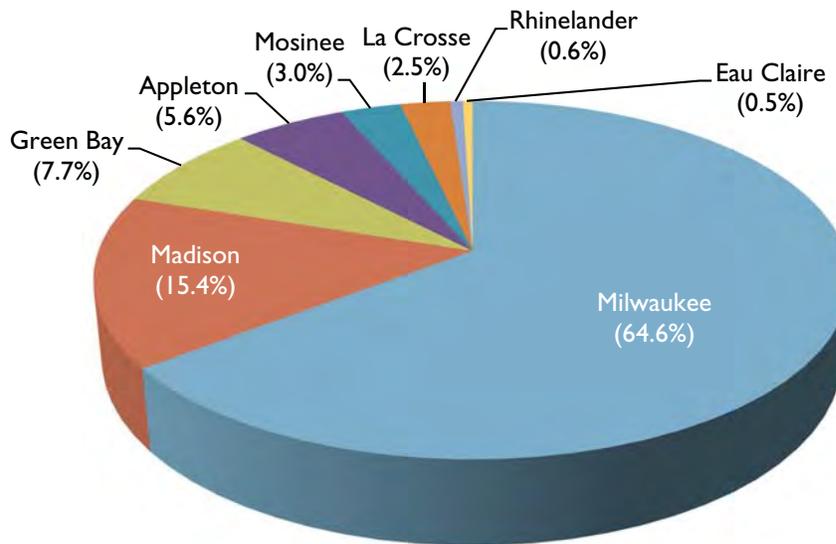


Average fare data does not include non-ticket charges that airlines began to impose in 2007. There is no statewide data on baggage and cancellation fees. However, these service fees generated \$5.8 billion nationwide in the year ending third quarter 2011, with \$3.4 billion spent on baggage fees and \$2.4 billion for reservation changes and cancellations.<sup>2</sup>

### 4.3.2 Enplaned Passenger Trends

**Charts 4-1** and **4-2** outline the distribution of enplaned passengers at Wisconsin airports in 2001 and 2011. During that 10-year period, enplaned passengers grew at an average annual rate of 3.7 percent, from 4.4 million in 2001 to 6.3 million statewide in 2011. Most of the growth in enplaned passengers occurred at Milwaukee where its statewide market share increased from 65 percent to 74 percent.

**Chart 4-1**  
**Airport Shares of Wisconsin Enplaned Passengers, 2001**  
 Total Enplanements = 4,370,992



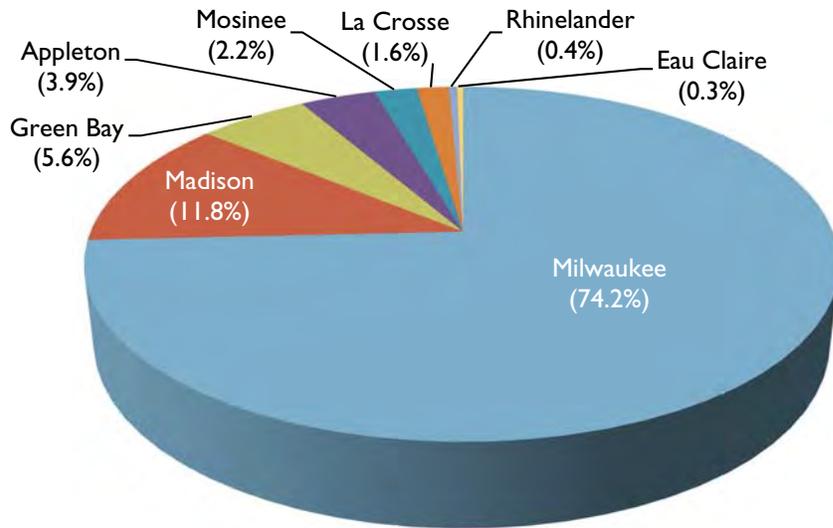
Source: FAA, ACAIS Database, 2001

<sup>2</sup> Bureau of Transportation Statistics, Schedule P-1.2



**Chart 4-2**  
**Airport Shares of Wisconsin Enplaned Passengers, 2011**

Total Enplanements = 6,294,639



Source: FAA, ACAIS Database, 2011

The increased concentration of enplaned passengers at Milwaukee can be explained using two factors. Frontier Airlines briefly operated the Midwest Airlines hub at Milwaukee from 2009 through mid-2012 when Frontier discontinued most of its flights. In addition, the airlines consolidated service and capacity that favored long-range routes over short-haul routes. **Table 4-6** compares the number of domestic scheduled flights in June 2007 with June 2012. The number of flights with lengths less than 250 miles declined 24 percent. For flights between 250 and 499 miles in length, the decline was 16 percent.

**Table 4-6**  
**Changes in U.S. Scheduled Flights by Flight Distance,**  
**June 2007 vs. June 2012**

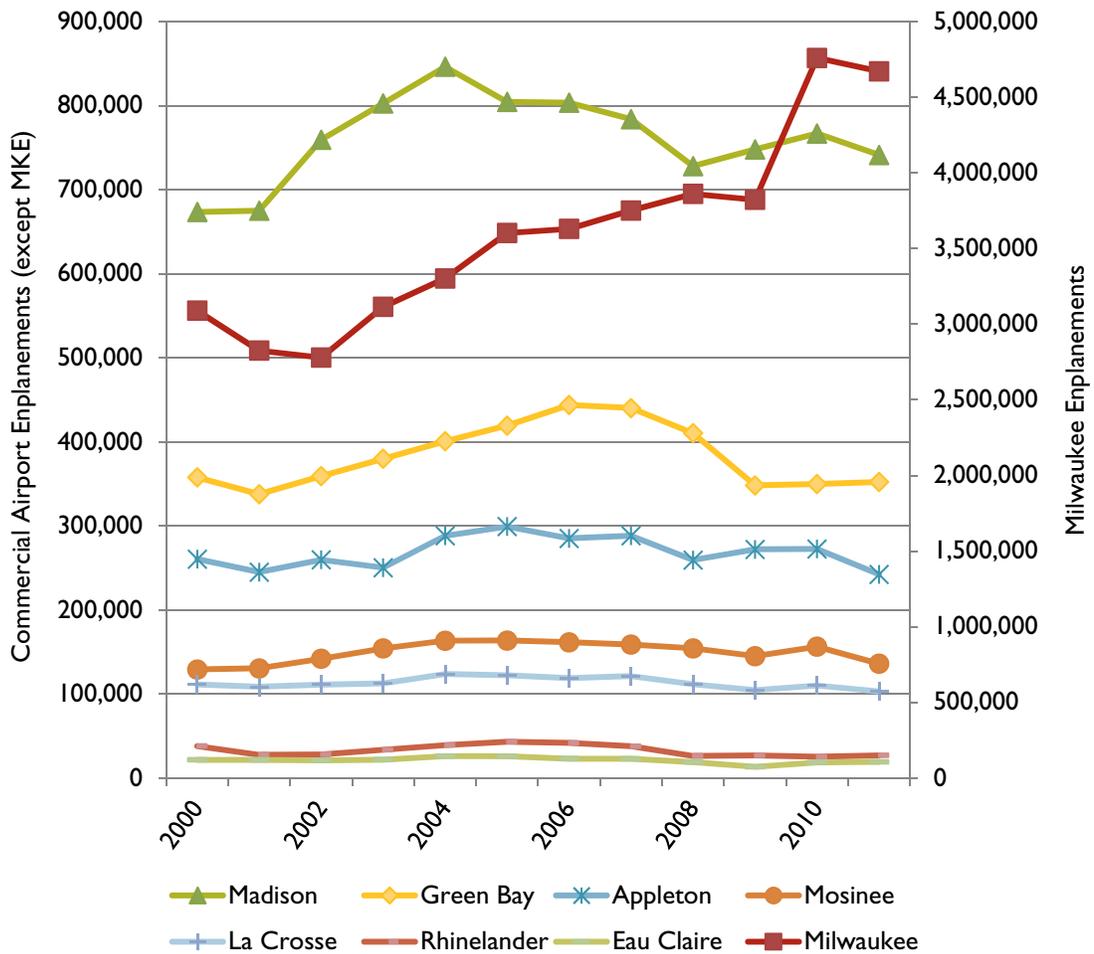
Range in Miles	Category	Percent Change
0 to 249	Short Haul	-24%
250 to 499	Short Haul	-16%
500 to 999	Medium Haul	-10%
1,000 to 1,499	Medium Haul	-1%
1,500 to 2,499	Long Haul	-4%
2,500 +	Long Haul	7%

Source: FAA via Office of Inspector General, "Aviation Industry Performance", 2012



**Chart 4-3** and **Table 4-7** identify historical trends for enplaned passengers at Wisconsin’s commercial service airports. The right vertical axis on **Chart 4-3** shows Milwaukee enplanements; the left vertical axis shows the other commercial service airports. Milwaukee’s surge begins in 2009 and reflects Frontier’s expansion of the former Midwest Airlines hub. Elimination of the Frontier hub in 2012 indicates a return to pre-2009 trends. Other airports are relatively flat over the period. Between 2000 (a peak year for passengers) and 2011, Milwaukee, Madison and Mosinee are the communities that experienced growth in enplaned passengers.

**Chart 4-3**  
**Enplaned Passenger Trends at Wisconsin Airports, 2000-2011**



Source: FAA, ACAIS Database



**Table 4-7  
Enplaned Passengers at Wisconsin Airports, 2000-2011**

<b>City</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2011</b>	<b>CAGR 2000-2011</b>
Milwaukee	3,089,592	3,602,536	4,760,170	4,671,976	3.8%
Madison	673,451	804,519	766,953	741,365	0.9%
Green Bay	357,660	419,308	349,733	352,157	-0.1%
Appleton	260,474	299,179	272,471	242,346	-0.7%
Mosinee	129,062	163,557	156,251	135,965	0.5%
La Crosse	111,238	122,068	109,962	102,958	-0.7%
Rhineland	37,937	43,076	25,137	26,764	-3.1%
Eau Claire	21,493	25,694	18,369	19,097	-1.1%
<b>Totals</b>	<b>4,682,907</b>	<b>5,481,942</b>	<b>6,461,056</b>	<b>6,294,639</b>	<b>2.7%</b>

Source: FAA, ACAIS Database

A number of factors will impact airport use and growth of enplaned passengers at Wisconsin commercial service airports going forward:

- The loss of the Frontier hub has resulted in a substantial decline in flights in Milwaukee and other communities that participated as spoke cities for the Frontier hub.
- Previously, Rhineland, an EAS community, had service to Milwaukee. In 2013, this service was replaced with twice-daily service to Minneapolis-St. Paul provided by SkyWest Airlines, a Delta Connection carrier. Connecting opportunities at Minneapolis-St. Paul are greater than at Milwaukee and may reduce leakage of Rhineland passengers to other airports such as Mosinee.
- Delta Airlines is consolidating its Wisconsin networks, mostly in favor of spoke service to Minneapolis-St. Paul. La Crosse lost service to Detroit, and Mosinee lost one frequency to Detroit.
- If the recent transition from Saab 340's to 50-seat regional jets is instructive, this transition was completed over eight to nine years. Delta is preparing to retire its 50-seat regional aircraft in favor of a 70-76 seat aircraft. This transition is likely to continue early in the forecast and may result in fewer frequencies at the non-hub airports. Likewise, American Airlines is planning to increase the size of its regional jet fleet based at O'Hare, potentially impacting the frequency of service to Milwaukee, Green Bay, Mosinee, La Crosse and Madison. American's merger with US Airways may also impact service offered in these markets.
- Perennial uncertainty in funding and eligibility of the EAS program could result in service changes at Rhineland and Eau Claire. Contracts for service to Minneapolis-St. Paul for Rhineland, and O'Hare for Eau Claire, are in place for 2013.



---

### 4.3.3 Airlines, Aircraft, and Capacity Serving Wisconsin

In the last decade, many of the legacy carriers and regional airlines serving Wisconsin have either filed for bankruptcy, merged, renegotiated service contracts, or ceased to exist or serve the state. Since 2000, Midwest Airlines, Continental, Northwest, TWA, Comair, Atlantic Southeast Airlines, Independence Air, and Chicago Express have ceased to exist. Given the turmoil within the airline industry, it is not surprising that aircraft and capacity also have changed.

**Table 4-8** includes annual operations at each of the commercial service airports and compares use of turboprop aircraft, regional jets and jets over time from 2000 to 2010. This decade is notable for:

- Airline industry retirement of turboprop aircraft. Between 2005 and 2010, the number of turboprop operations decreased from 60,368 to 11,613.
- Heavy reliance on 50-seat regional jet aircraft service from spoke cities to airline hub airports.
- Retirement of small fuel-inefficient jets such as the MD80, DC9-10/30, Avro RJ-85, Boeing 727, F 100s, and BAe 146. These aircraft served Appleton, Green Bay, Madison and La Crosse in 2000, and accounted for larger-than-average seat capacity during the early part of the decade.
- Predominance of regional aircraft for commercial service, accounted for 68 percent of all scheduled service operations in Wisconsin.



**Table 4-8  
Annual Operations by Airport and Aircraft Type Group  
(CY 2000 - CY 2010, YTD July 2010)**

Airport	Aircraft Type	2000	2005	2010	2000-2010	
					Total Change	Annual Change
Appleton	Jet	82	22	582	500	21.6%
	Regional Jet	10,781	15,978	12,827	2,046	1.8%
	Turboprop	8,053	3,107	374	(7,679)	-26.4%
	<b>Total</b>	<b>18,916</b>	<b>19,107</b>	<b>13,783</b>	<b>(5,133)</b>	<b>-3.1%</b>
Eau Claire	Jet	30	40	47	17	4.6%
	Regional Jet	0	4	1,700	1,700	See note
	Turboprop	4,997	3,926	456	(4,541)	-21.3%
	<b>Total</b>	<b>5,027</b>	<b>3,970</b>	<b>2,203</b>	<b>(2,824)</b>	<b>-7.9%</b>
Green Bay	Jet	1,086	3,002	1,296	210	1.8%
	Regional Jet	12,619	16,737	16,114	3,495	2.5%
	Turboprop	2,983	3,651	4	(2,979)	-48.4%
	<b>Total</b>	<b>16,688</b>	<b>23,390</b>	<b>17,414</b>	<b>726</b>	<b>0.4%</b>
La Crosse	Jet	75	221	76	1	0.1%
	Regional Jet	5,098	5,025	7,474	2,376	3.9%
	Turboprop	3,178	3,134	26	(3,152)	-38.2%
	<b>Total</b>	<b>8,351</b>	<b>8,380</b>	<b>7,576</b>	<b>(775)</b>	<b>-1.0%</b>
Madison	Jet	7,006	7,065	4,541	(2,465)	-4.2%
	Regional Jet	18,097	25,992	24,150	6,053	2.9%
	Turboprop	4,231	1,336	594	(3,637)	-17.8%
	<b>Total</b>	<b>29,334</b>	<b>34,393</b>	<b>29,285</b>	<b>(49)</b>	<b>0.0%</b>
Milwaukee	Jet	37,143	57,824	57,723	20,580	4.5%
	Regional Jet	55,003	71,909	93,206	38,203	5.4%
	Turboprop	2,421	31,002	2,487	66	0.3%
	<b>Total</b>	<b>94,567</b>	<b>160,735</b>	<b>153,416</b>	<b>58,849</b>	<b>5.0%</b>
Mosinee	Jet	22	57	65	43	11.4%
	Regional Jet	10	5,024	6,939	6,929	See note
	Turboprop	11,627	7,300	3,856	(7,771)	-10.4%
	<b>Total</b>	<b>11,659</b>	<b>12,381</b>	<b>10,860</b>	<b>(799)</b>	<b>-0.7%</b>
Rhineland	<b>Jet</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0%</b>
	Regional Jet	0	2	116	116	See Note
	Turboprop	4,507	6,912	3,816	(691)	-1.7%
	<b>Total</b>	<b>4,507</b>	<b>6,914</b>	<b>3,932</b>	<b>(575)</b>	<b>-1.4%</b>
All Airports	Jet	45,444	68,231	64,330	18,886	3.5%
	Regional Jet	101,608	140,671	162,526	60,918	4.8%
	Turboprop	41,997	60,368	11,613	(30,384)	-12.1%
	<b>Grand Total</b>	<b>189,049</b>	<b>269,270</b>	<b>238,469</b>	<b>49,420</b>	<b>2.3%</b>

Notes: Annual change is not presented if base year activity is very low or zero.  
Embraer 190's are included with jets.

Source: U.S. DOT T-100, Note: Embraer 190's included with jets



**Table 4-9** identifies the number of annual seats offered at Wisconsin commercial service airports from 2000 to 2010. **Table 4-10** shows the average seats per operations and **Table 4-11** shows enplaned passenger load factors (the number of passengers that occupy available seats). Together, these tables are informative about changes in service at commercial service airports:

- Jet aircraft used at Appleton, Green Bay and La Crosse in 2000 were larger on average. Many of these older aircraft were replaced by 50-seat regional jets and resulted in fewer seats offered in these communities.
- At the other end of the spectrum, turboprop aircraft in the 30-seat category were replaced with 50-seat regional jets, resulting in an increased number of seats per operation.
- The average load factors increased over the decade. This trend is an on-going national trend as airlines exercise capacity control and load factors.

**Table 4-9  
Annual Seats at Wisconsin Commercial Service Airports**

<b>Airport</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>Total Change</b>	<b>Annual Change</b>
Appleton	1,050,564	983,991	748,865	(301,699)	-3.3%
Eau Claire	173,873	139,848	107,906	(65,967)	-4.7%
Green Bay	1,156,262	1,433,519	1,016,300	(139,962)	-1.3%
La Crosse	429,072	412,079	382,899	(46,173)	-1.1%
Madison	2,193,574	2,344,579	1,874,644	(318,930)	-1.6%
Milwaukee	9,307,663	10,675,826	12,469,566	3,161,903	3.0%
Mosinee	393,149	461,990	477,701	84,552	2.0%
Rhineland	153,238	179,557	111,088	(42,150)	-3.2%
<b>Grand Total</b>	<b>14,857,395</b>	<b>16,631,389</b>	<b>17,188,969</b>	<b>2,331,574</b>	<b>1.5%</b>

Source: U.S. DOT T-100

**Table 4-10  
Average Seats per Operation**

<b>Airport</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
Appleton	56	51	54
Eau Claire	35	35	49
Green Bay	69	61	58
La Crosse	51	49	51
Madison	75	68	64
Milwaukee	98	66	81
Mosinee	34	37	44
Rhineland	34	26	28

Source: U.S. DOT T-100



**Table 4-11  
Enplaned Passenger Load Factor**

Airport	2000	2005	2010
Appleton	45%	61%	72%
Eau Claire	24%	36%	34%
Green Bay	56%	58%	69%
La Crosse	47%	59%	56%
Madison	58%	68%	81%
Milwaukee	60%	66%	76%
Mosinee	57%	70%	65%
Rhineland	34%	48%	45%
<b>National Regional Carrier Average</b>	<b>60%</b>	<b>71%</b>	<b>76%</b>

*Sources: U.S. DOT T-100, FAA Aerospace Forecasts FY 2012-2032*

### 4.3.4 Commercial Service Forecasts

This section presents 20-year forecasts for enplaned passengers and commercial service operations at the eight commercial service Wisconsin airports. Forecast years are 2015, 2020 and 2030.

#### 4.3.4.1 Approach and Methodology

Airport master plans are available for several of the commercial service airports in Wisconsin and are a resource for data about what drives airport demand. There also exists solid information about enplaned passengers, commercial operations, capacity, and fares. It is available from the individual airports, the Wisconsin Bureau of Aeronautics (BOA) and U.S. Department of Transportation (U.S. DOT). Other important data sources include socio-economic data for Wisconsin at the county and MSA level.

Separate enplanement and commercial operations forecasts were prepared for each of the eight airports with commercial air service. The following historical information was collected and evaluated:

- Enplanement trends, 2000-2011 (FAA Air Carrier Activity Information System (ACAIS), U.S. DOT T-100, airport records)
- Year-to-date enplanements for 2012 (U.S. DOT T-100, airport records)
- Historical operations, seats, on-board passengers, seats per departure, enplaned and on-board load factors (U.S. DOT T-100)
- Current daily nonstop departures by commercial airport and aircraft (ICF/SH&E Airport Schedule Report)
- Scheduled departures by month (Official Airline Guide)
- FAA Air Traffic Activity Data System (ATADS)
- Population, income, employment, gross regional product and retail sales 2000-2030 (Woods and Poole Economics)
- FAA Terminal Area Forecasts (TAF) as of January 2012
- FAA National Aerospace Forecasts FY 2012-2032
- Individual airport master plans



---

General Mitchell International Airport provided their forecasts for enplanements through 2021. These forecasts are presented in the system plan and include forecasts through 2030 using a trend analysis.

New enplanement and commercial operations forecasts were prepared for the remaining seven airports using the following forecasting approaches:

- Regression and trend analyses were performed to test the importance of independent variables such as population, employment growth, per capita income, national forecasts of gross domestic product (GDP) and enplanement growth. Historical trends were analyzed to incorporate recent data for 2011 and 2012. Multiple forecasts were prepared for each airport and included the changes in commercial service caused by the elimination of Frontier's hub at General Mitchell International Airport and retirement of 50-seat regional aircraft. In addition, forecasts were compared with current FAA Terminal Area Forecasts (TAF), national growth rates in the FAA Aerospace Forecasts FY 2012-2032, and individual airport master plans.
- Essential Air Service points, Eau Claire and Rhinelander, were assumed to remain at current frequencies using the 50-seat regional jet aircraft. Sufficient capacity exists to accommodate normal traffic growth going forward.
- To determine operations at the other commercial service airports, the current ratio of jets to regional jets was estimated for each of the airports. Forecasts of enplanements and estimates of load factors per departure were used to forecast commercial operations. This approach assumed that the aircraft mix and level of service will remain relatively stable over the forecast period. Forecast of seats per aircraft and load factors were adopted from the FAA Aerospace Forecasts FY 2012-2032.

The next sections present the actual forecasts of enplaned passengers and commercial operations.

#### 4.3.4.2 Forecasts of Enplaned Passengers

**Chart 4-4** and **Table 4-12** include statewide forecasts for enplaned passengers. Over the 20-year period, forecasts indicate an average annual growth rate of .5 percent. Because of its dominance, General Mitchell International Airport is considered separately in the statewide forecasts. Given the termination of Frontier flights, enplaned passengers at General Mitchell International Airport suffered a substantial decline in 2011 and 2012. For this reason, the forecasts dip in the first five years and resume growth in later years. Despite early declines in the forecast period, enplaned passengers increase from 6.5 million in 2010 to 7.1 million in 2030. The other Wisconsin commercial service airports grow at a faster annual rate. However, these airports are smaller contributors to the statewide forecast. In total, the seven other commercial service airports accounted for 1.7 million enplaned passengers in 2010. In 2030, these airports are projected to handle 2.2 million enplaned passengers.



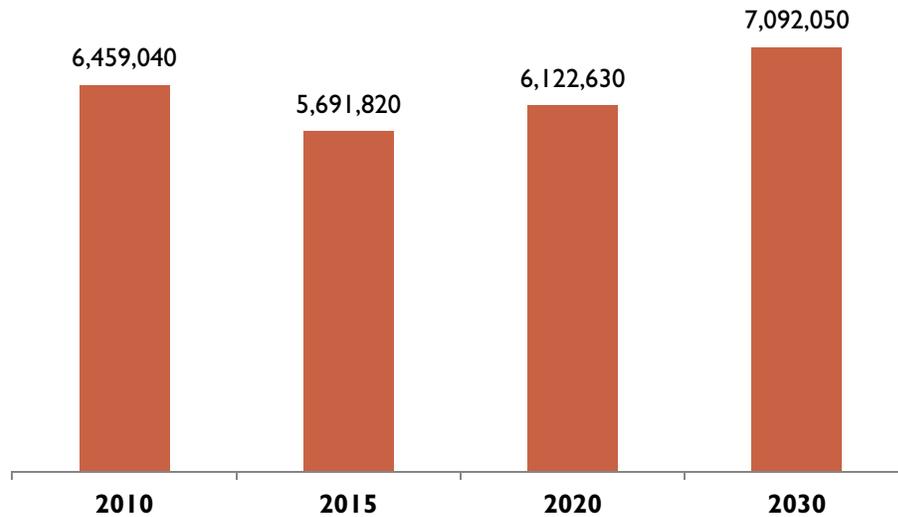
**Table 4-12  
Statewide Forecasts of Enplaned Passengers**

Airport	2010 <sup>1</sup>	Enplanement Forecast			2010-2030 CAGR
		2015	2020	2030	
General Mitchell International	4,760,170	3,885,350	4,200,990	4,923,810	0.2%
All Other Airports	1,698,870	1,806,470	1,921,640	2,168,240	1.2%
<b>Total Wisconsin Airports</b>	<b>6,459,040</b>	<b>5,691,820</b>	<b>6,122,630</b>	<b>7,092,050</b>	<b>0.5%</b>

Note: <sup>1</sup>2010 numbers have been rounded

Source: FAA, ACAIS Database (2010), KRAMER aerotek inc. (Forecasts)

**Chart 4-4  
Statewide Forecast of Enplaned Passengers**



Sources: FAA, ACAIS Database (Actual), KRAMER aerotek inc. (Forecasts)

**Table 4-13** includes the forecasts of enplaned passengers by airport. Madison is the fastest growing airport. Other airports demonstrate historical stability of demand and modest growth going forward.



**Table 4-13  
Individual Airport Forecasts of Enplaned Passengers**

Airport	2010 <sup>1</sup>	Enplanement Forecast			2010-2030 CAGR
		2015	2020	2030	
Appleton	272,470	297,820	314,400	347,560	1.2%
Eau Claire	18,370	22,200	23,420	26,050	1.8%
Green Bay	349,730	423,780	447,230	494,120	1.7%
La Crosse	109,960	106,810	111,820	122,570	0.5%
Madison	766,950	783,870	840,440	966,120	1.2%
Milwaukee	4,760,170	3,885,350	4,200,990	4,923,810	0.2%
Mosinee	156,250	144,310	155,460	180,420	0.7%
Rhineland	25,140	27,680	28,870	31,400	1.1%
<b>Total Commercial Enplanements</b>	<b>6,459,040</b>	<b>5,691,820</b>	<b>6,122,630</b>	<b>7,092,050</b>	<b>0.5%</b>

Note: <sup>1</sup>2010 numbers have been rounded

Sources: FAA, ACAIS Database (2010), KRAMER aerotek inc. (Forecasts)

#### 4.3.4.3 Commercial Operations Forecasts

Load factors are the number of passengers that occupy available seats. **Table 4-11** presents the average load factors for enplaned passengers in 2010. Nationally, average load factors on regional jet aircraft were 76 percent. In Wisconsin, only Madison exceeded the national average at 81 percent. General Mitchell International Airport and Appleton had average load factors of 76 percent and 72 percent, respectively. Other commercial service airports in Wisconsin had lower load factors. For forecasting purposes, projected enplanements drive commercial operations. As aircraft occupancy increases to between 74 and 80 percent, additional flights are added. Since aircraft are not yet operating at these load factors, enplanements will grow faster than commercial operations. The commercial operations forecasts assume that the number of regional aircraft seats will increase over the forecast period and that the regional jet will continue to be the most used aircraft for Wisconsin air service.

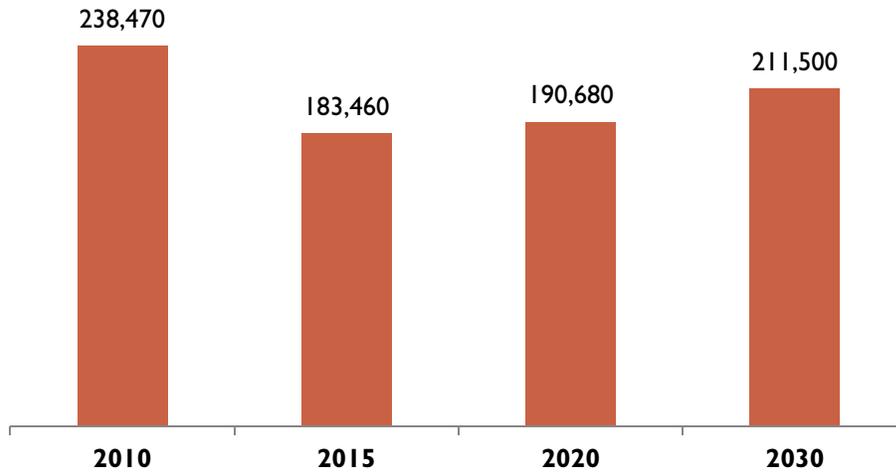
**Table 4-14** and **Chart 4-5** include the statewide forecasts for commercial operations. Eighty percent of Wisconsin operations occurred at General Mitchell International Airport. The first five years of the forecast reflect reduced Frontier Airline flights, consolidation of United and Continental routes, and of Delta and Northwest routes. Furthermore, both Delta and American airlines are transitioning to larger regional jet aircraft which resulted in reductions in frequencies at some cities. Overall, commercial operations are projected to decline each year by .6 percent from 238,470 in 2010 to 211,500 in 2030.



**Table 4-14  
Summary of Statewide Forecasts of Commercial Operations**

Airport	Actual	Forecast of Commercial Operations			2010-2030 CAGR
	2010	2015	2020	2030	
General Mitchell International Airport	153,420	110,000	115,000	131,000	-0.8%
All Other Airports	85,050	73,460	75,680	80,500	-0.3%
<b>Total Wisconsin Airports</b>	<b>238,470</b>	<b>183,460</b>	<b>190,680</b>	<b>211,500</b>	<b>-0.6%</b>

**Chart 4-5  
Statewide Forecasts of Commercial Operations**



*Sources: U.S. DOT T-100 (2010), KRAMER aerotek inc. (Forecasts)*



**Table 4-15** includes the forecast of commercial operations by airport. In 2010, some airlines deployed turboprop aircraft to Wisconsin airports, and these smaller aircraft typically operated at greater frequencies. There is a transition away from these smaller aircraft to larger regional jets during the forecast period which resulted in muted growth or declines in commercial service operations.

**Table 4-15  
Individual Airport Forecasts of Commercial Operations**

Airport	Actual	Forecast of Commercial Operations			2010-2030 CAGR
	2010	2015	2020	2030	
Appleton	13,780	12,500	12,600	13,000	-0.3%
Eau Claire	2,200	1,470	1,470	1,470	-2.0%
Green Bay	17,410	17,200	17,500	18,000	0.2%
La Crosse	7,580	4,350	4,360	4,360	-2.7%
Madison	29,290	30,000	31,800	35,000	0.9%
Milwaukee	153,420	110,000	115,000	131,000	-0.8%
Mosinee	10,860	6,510	6,520	7,240	-2.0%
Rhineland	3,930	1,430	1,430	1,430	-4.9%
<b>Total Air Carrier Commercial Operations</b>	<b>238,470</b>	<b>183,460</b>	<b>190,680</b>	<b>211,500</b>	<b>-0.6%</b>

Sources: U.S. DOT T-100 (2010), KRAMER aerotek inc. (Forecasts)

## 4.4 General Aviation

### 4.4.1 Overview

There are two general aviation activity components that are included in the system plan forecasts: based aircraft and general aviation operations (takeoffs and landings).

Based aircraft are aircraft that are registered and housed at a particular airport. Beginning in 2007, the FAA began a multi-year process to obtain more accurate information on based aircraft. Initially, the program sought to assign (by N-number) each aircraft to one specific airport. In addition, the report process sought to remove from the based fleet those aircraft that were not airworthy. By 2009, the FAA's revised counting procedures were mostly in place. However, as a result of this effort, some airports experienced a reduction or change in the reported number of based aircraft. The 2010 inventory of based aircraft reflects a more accurate count using the new procedures. However, it also means that previous counts of based aircraft at Wisconsin airports are not necessarily comparable.

In terms of aircraft operations, general aviation is the largest component of Wisconsin aviation, and it occurs at all 98 system airports and at many small private airports and hospital heliports that are not included in the system plan. The largest share of these operations (78 percent) takes place at large and medium GA airports in the state. In 2010, there were an estimated 1.9 million general aviation operations in Wisconsin. General aviation aircraft are used for: business and personal travel, recreational travel, flight instruction, emergency airlift and agricultural spraying.



---

Five general aviation airports in Wisconsin have FAA air traffic control towers that count arriving and departing aircraft: Kenosha, Janesville, Waukesha, Oshkosh and Milwaukee's Timmerman. In addition, Sparta/Fort McCoy Airport has an air traffic control tower that is operated under a joint-use agreement with the military. The remaining 84 airports estimate their annual operations. Often, airport-reported operations estimates remain relatively constant over time. The lack of accurate traffic counts increases the value of data that comes from airports with air traffic control towers. This data is particularly useful to identify trends in the state's general aviation system.

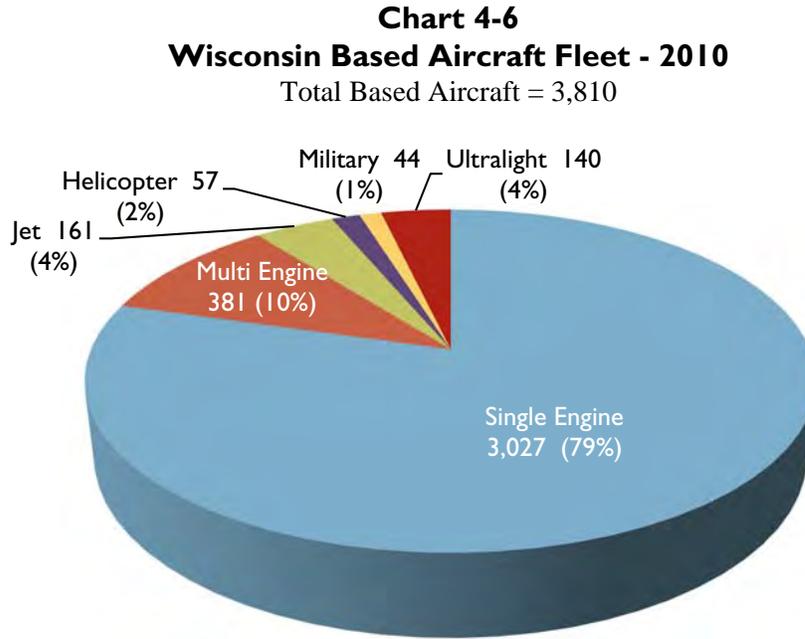
Oshkosh is the busiest general aviation airport in Wisconsin, followed by Green Bay, Fond du Lac and Sheboygan. However, no single Wisconsin airport reports more than 75,200 general aviation operations. This is typical of many general aviation airports in the U.S. except the largest corporate airports such as Van Nuys in California, Teterboro in New York or Centennial in Colorado.



## 4.4.2 Based Aircraft

### 4.4.2.1 Fleet Mix

In 2010, the based aircraft fleet in Wisconsin was estimated at 3,810 aircraft. Eighty-nine percent of the fleet consists of single- and multi-engine aircraft. **Chart 4-6** presents Wisconsin's based aircraft fleet mix in 2010.



*Source:* National Based Aircraft Database (April 2010). Non-NPIAS SASP Airports and Commercial Service Airports: FAA 5010 Form.

**Table 4-16** identifies the distribution of based aircraft by airport classification.

**Table 4-16**  
**Based Aircraft by Airport Classification**

Airport Classification	2010	Share
Commercial Service	618	16%
Large GA	1,314	35%
Medium GA	1,599	42%
Small GA	279	7%
<b>Total Wisconsin Based Aircraft</b>	<b>3,810</b>	<b>100%</b>

*Source:* National Based Aircraft Database (April 2010). Non-NPIAS SASP Airports and Commercial Service Airports: FAA 5010 Form.



#### 4.4.2.2 Forecasts of Based Aircraft

Because the new FAA procedures for counting based aircraft were implemented between 2007 and 2009, it is not possible to consistently track historical trends in based aircraft at individual airports. However, since 2009, counts of based aircraft at U.S. airports are reliable.

The following methodology was used to prepare forecasts of based aircraft. The fleet mix at each Wisconsin airport was analyzed. In long-term aerospace forecasts prepared by the FAA, growth rates for different general aviation aircraft are projected over 20 years. **Table 4-17** shows the FAA average annual growth rates for each type of general aviation aircraft. These growth rates were applied to the fleet mix at each airport.<sup>3</sup>

**Table 4-17**  
**FAA Forecast of General Aviation and Air Taxi Aircraft**

Aircraft Type	2012	2032	CAGR
Single Engine Piston	138,560	134,625	-0.1%
Multi-Engine Piston	15,810	14,405	-0.5%
Turboprop and Turbo Jets	21,190	37,125	2.8%
Helicopter	10,410	17,825	2.7%
Glider	5,680	5,550	-0.1%
Ultra-light	6,645	10,040	2.1%

Source: FAA Aerospace Forecasts FY 2011-2031

It is noteworthy that the two most numerous aircraft in Wisconsin, single and multi-engine piston aircraft, are projected to decline over the forecast period by -0.1 and -0.5 percent annually. These aircraft are among the oldest in the fleet. Some are being replaced by light sport aircraft and others are being retired without replacement. The decline in these types of aircraft is part of a sustained national trend and explains why based aircraft in Wisconsin are projected to grow very modestly.

**Table 4-18** includes the statewide forecast of based aircraft, and **Table 4-19** includes individual airport forecasts. The based aircraft fleet is projected to grow from 3,810 to 4,117 during the forecast period or by 0.4 percent each year.

<sup>3</sup> For four airports that had recently completed master plans (Appleton, Green Bay, Kenosha, and Cable), growth rates for based aircraft from the master plan were incorporated into the forecasts for these cities.



**Table 4-18  
Statewide Forecast of Based Aircraft**

Airport Classification	Actual	Forecast			2010-2030 CAGR
	2010	2015	2020	2030	
Commercial Service	618	636	655	708	0.7%
Large GA	1,314	1,328	1,343	1,394	0.3%
Medium GA	1,599	1,606	1,614	1,689	0.3%
Small GA	279	281	285	326	0.8%
<b>Total Wisconsin Based Aircraft</b>	<b>3,810</b>	<b>3,850</b>	<b>3,897</b>	<b>4,117</b>	<b>0.4%</b>

*Sources:* National Based Aircraft Database (April 2010), Non-NPIAS SASP Airports and Commercial Service Airports: FAA 5010 Form. (2010), KRAMER aerotek inc. (Forecasts)

**Table 4-19  
Individual Forecasts of Based Aircraft**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Appleton*	69	70	72	75
Eau Claire	78	79	79	82
Green Bay*	137	144	150	167
La Crosse	84	85	86	90
Madison	144	149	155	171
Milwaukee	48	51	54	62
Mosinee	26	26	26	28
Rhineland	32	32	32	34
<b>Total Commercial Service</b>	<b>618</b>	<b>636</b>	<b>655</b>	<b>708</b>
East Troy	70	70	71	73
Fond du Lac	66	66	65	66
Janesville	69	70	71	76
Kenosha*	140	147	153	168
Middleton	56	56	56	57
Milwaukee-Timmerman	79	79	79	80
New Richmond	159	164	169	179
Oshkosh	154	153	153	153
Racine	60	60	60	62
Rice Lake	30	30	31	33
Sheboygan	87	88	89	93
Stevens Point	45	45	46	48
Waukesha	193	194	196	201
West Bend	106	106	105	106
<b>Total Large GA</b>	<b>1,314</b>	<b>1,328</b>	<b>1,343</b>	<b>1,394</b>



**Table 4-19 (Continued)  
Individual Forecasts of Based Aircraft**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Amery	22	22	23	25
Antigo	18	18	19	21
Ashland	33	33	33	35
Baraboo	49	49	49	50
Black River Falls	22	22	22	24
Boscobel	24	24	24	24
Brookfield	92	92	93	95
Burlington	22	22	22	22
Chetek	47	47	47	49
Clintonville	17	17	17	18
Cumberland	22	22	22	24
Eagle River*	59	61	63	66
Fort Atkinson	27	27	28	29
Friendship-Adams	16	16	16	17
Hartford	103	104	105	108
Hayward	19	19	19	20
Juneau	69	71	73	78
Ladysmith	16	16	16	17
Land O'Lakes	11	11	11	13
Lone Rock	26	26	26	27
Manitowoc	60	59	59	59
Marshfield	17	17	17	18
Medford	15	15	16	18
Menomonie	21	21	21	22
Merrill	26	27	27	31
Mineral Point	21	21	21	22
Minocqua-Woodruff	24	24	24	24
Monroe	30	30	30	32
Osceola	63	63	62	63
Palmyra	68	67	67	67
Phillips	14	14	14	16
Platteville	23	23	23	24
Portage	25	25	25	26
Prairie du Chien	13	13	13	14
Prairie du Sac	37	37	37	39



**Table 4-19 (Continued)  
Individual Forecasts of Based Aircraft**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Reedsburg	18	18	18	19
Shawano	32	32	32	33
Shell Lake	16	16	16	17
Siren	18	18	18	19
Sparta	10	10	10	11
Sturgeon Bay	45	45	45	46
Superior**	45	47	48	52
Tomahawk	26	26	26	26
Viroqua	23	23	23	25
Watertown	59	59	58	59
Waupaca	34	35	35	38
Wausau	60	60	60	62
Wisconsin Rapids	42	43	43	46
<b>Total Medium GA</b>	<b>1,599</b>	<b>1,606</b>	<b>1,614</b>	<b>1,689</b>
Barron	15	15	15	16
Boulder Junction	0	0	0	1
Boyceville	11	11	11	12
Cable*	2	3	4	8
Cassville	8	8	8	9
Crandon	3	3	3	4
Crivitz	2	2	2	4
Ephraim-Gibraltar	7	7	7	8
Grantsburg	15	15	15	17
Hillsboro	7	7	7	8
La Pointe	1	1	1	2
Lancaster	6	6	6	7
Madison	34	34	34	34
Manitowish Waters	11	11	11	12
Necedah	9	9	9	10
Neillsville	36	36	35	36
New Holstein	16	16	16	18
New Lisbon	7	7	7	9
Oconto	17	17	17	18
Park Falls	5	5	5	7
Prentice	0	0	0	1
Richland Center	7	7	8	10



**Table 4-19 (Continued)  
Individual Forecasts of Based Aircraft**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Solon Springs	9	9	9	10
Three Lakes	5	5	5	6
Tomah	7	7	7	8
Washington Island	8	8	8	9
Wautoma	19	20	21	25
Wild Rose	12	13	13	16
<b>Total Small GA</b>	<b>279</b>	<b>281</b>	<b>285</b>	<b>326</b>
<b>Total Wisconsin Based Aircraft</b>	<b>3,810</b>	<b>3,850</b>	<b>3,897</b>	<b>4,117</b>

*Notes:* \* Airports where the growth rate used was determined by a recent master plan

\*\* Because of the Kestrel Aircraft move to Superior and anticipated aircraft certification in 2014, based aircraft growth was assigned a higher growth rate of .71% which is the TAF growth rate for the region

*Sources:* National Based Aircraft Database (April 2010). Non-NPIAS SASP Airports and Commercial Service Airports: FAA 5010 Form. (2010), KRAMER aerotek inc. (Forecasts)

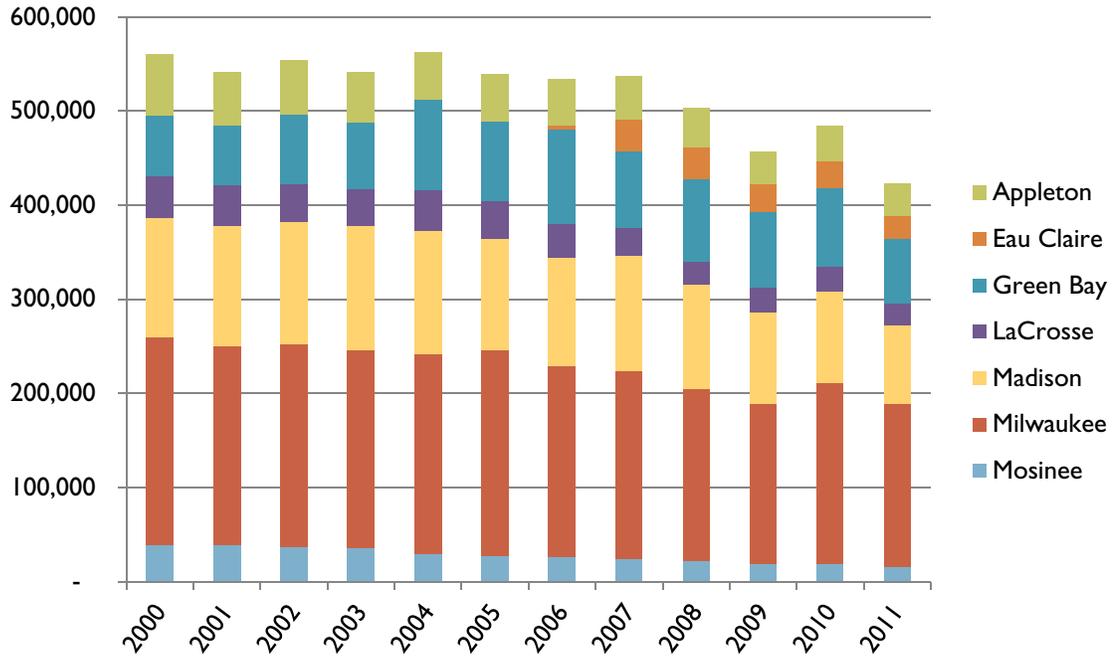
### 4.4.3 General Aviation and Air Taxi Operations

#### 4.4.3.1 Trends in General Aviation and Air Taxi Operations

While based aircraft counts are consistently reported at Wisconsin airports, the number of general aviation landings and take-offs is estimated at all airports in the state except the 13 that have air traffic control towers. Seven commercial service airports and six general aviation airports have towers. Traffic counts for these airports provide solid historical information about operations and form a good starting point for the forecasts of general aviation and air taxi operations. **Chart 4-7** shows total operations from 2000-2011 at commercial service airports. **Chart 4-8** shows total operations at general aviation airports and offers a clearer view of general aviation and air taxi operations, separate from scheduled commercial service activity.

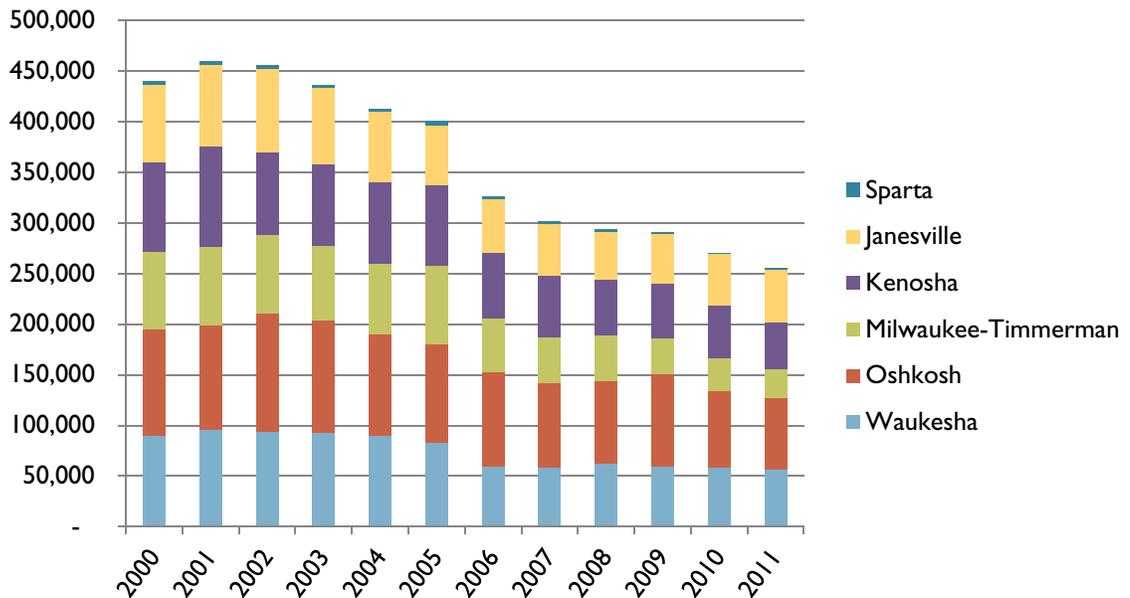


**Chart 4-7**  
**Total Operations at Commercial Service Airports with Air Traffic Control Towers**



Source: Air Traffic Activity System (ATADS)

**Chart 4-8**  
**Total Operations at General Aviation Airports with Air Traffic Control Towers**



Sources: Air Traffic Activity System (ATADS) (except Sparta), Air Traffic Control Tower and FAA Form 5010 Records (Sparta)



Considering both **Charts 4-7** and **4-8**, total operations have experienced a steady decline at towered airports since the events of September 11, 2001. However, general aviation airports have experienced a much higher rate of decline. A number of factors contribute to the decline including:

- An aging fleet of general aviation piston aircraft and an aging group of pilots
- Volatile and higher fuel costs that contribute to increased costs of aircraft operations, especially for recreational flying
- Sensitivity to economic conditions, especially during the recession that began in 2008.

#### 4.4.3.2 Forecasts of General Aviation and Air Taxi Operations

Several methodologies were applied to prepare the forecasts of general aviation and air taxi operations. For the 13 airports with air traffic control towers, tower counts were adopted as the most accurate information about operations. However, tower counts combine air taxi operations with commercial service operations that use regional jets or turboprop aircraft. Using data reported by air carriers to the US DOT, commercial operations were separated from air taxi operations. Historical air taxi and general aviation operations were analyzed for trends and relationship to local economic factors at the towered airports.

For non-towered airports, an operation per based aircraft (OPBA) methodology was used because the data on based aircraft was a known input. Operations for 2010 were estimates. Each airport was checked for a reasonable relationship between based aircraft and operations.<sup>4</sup> **Table 4-20** includes the statewide forecast for general aviation and air taxi operations. Operations are expected to grow from 1.9 million in 2010 to 2.1 million in 2030, for an average annual growth rate of 0.4 percent.

**Table 4-20**  
**Statewide Forecasts of General Aviation and Air Taxi Operations**

Airport Classification	GA and Air Taxi Operations				2010-2030 CAGR
	2010	2015	2020	2030	
Commercial Service	257,130	264,930	273,190	297,430	0.7%
Large GA	691,060	693,970	698,020	718,670	0.2%
Medium GA	819,200	820,550	822,750	863,110	0.3%
Small GA	166,040	167,340	168,840	196,320	0.8%
<b>Total Wisconsin GA and Air Taxi Operations</b>	<b>1,933,430</b>	<b>1,946,790</b>	<b>1,962,800</b>	<b>2,075,530</b>	<b>0.4%</b>

Sources: Towered airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)

**Table 4-21** includes the forecasts for general aviation and air taxi operations at individual Wisconsin airports.

<sup>4</sup> Airports with exceptionally high OPBAs were noted for future estimates of general aviation operations.



**Table 4-21  
Individual Airport Forecasts of General Aviation and Air Taxi Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Appleton	23,150	23,120	23,130	23,600
Eau Claire	25,250	25,420	25,650	26,610
Green Bay	63,370	66,610	69,380	77,250
La Crosse	16,540	16,710	16,930	17,670
Madison	58,890	61,000	63,480	69,730
Milwaukee	37,040	39,070	41,440	47,580
Mosinee	7,580	7,610	7,650	8,100
Rhineland	25,310	25,390	25,530	26,890
<b>Total Commercial Service</b>	<b>257,130</b>	<b>264,930</b>	<b>273,190</b>	<b>297,430</b>
East Troy	50,750	50,960	51,260	52,960
Fond du Lac	62,900	62,480	62,080	62,480
Janesville	48,730	49,510	50,450	53,550
Kenosha	52,160	52,330	52,590	53,780
Middleton	48,500	48,310	48,160	49,010
Milwaukee-Timmerman	32,210	32,110	32,030	32,430
New Richmond	44,000	45,320	46,690	49,540
Oshkosh	75,130	74,770	74,490	74,660
Racine	47,000	47,110	47,320	48,850
Rice Lake	27,500	27,800	28,190	30,220
Sheboygan	61,500	62,090	62,840	65,520
Stevens Point	36,600	36,900	37,280	39,160
Waukesha	58,080	58,460	58,970	60,550
West Bend	46,000	45,820	45,670	45,960
<b>Total Large GA</b>	<b>691,060</b>	<b>693,970</b>	<b>698,020</b>	<b>718,670</b>
Amery	13,800	14,070	14,380	15,890
Antigo	8,200	8,410	8,640	9,730
Ashland	13,000	13,050	13,130	13,790
Baraboo	27,500	27,380	27,280	27,830
Black River Falls	12,320	12,410	12,520	13,470
Boscobel	16,300	16,160	16,020	16,560
Brookfield	15,000	15,030	15,080	15,440
Burlington	54,800	54,290	53,780	55,740
Chetek	7,240	7,240	7,260	7,490
Clintonville	7,980	7,920	7,850	8,280
Cumberland	10,900	10,930	10,970	11,680
Eagle River	20,580	21,190	21,830	23,170



**Table 4-21 (Continued)**  
**Individual Airport Forecasts of General Aviation and Air Taxi Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Fort Atkinson	10,850	10,940	11,050	11,830
Friendship-Adams	7,050	7,040	7,040	7,580
Hartford	15,400	15,510	15,650	16,190
Hayward	10,300	10,220	10,140	10,620
Juneau	28,000	28,840	29,710	31,520
Ladysmith	8,050	8,050	8,060	8,690
Land O'Lakes	8,100	8,210	8,340	9,540
Lone Rock	11,800	11,770	11,760	12,280
Manitowoc	26,000	25,770	25,530	25,590
Marshfield	25,900	25,870	25,880	27,820
Medford	7,500	7,660	7,840	8,880
Menomonie	13,550	13,440	13,340	13,890
Merrill	21,800	22,380	23,040	25,640
Mineral Point	11,750	11,740	11,740	12,420
Minocqua-Woodruff	27,180	26,950	26,720	27,610
Monroe	17,500	17,600	17,730	18,750
Osceola	19,350	19,230	19,110	19,260
Palmyra	15,450	15,340	15,220	15,270
Phillips	18,000	18,220	18,490	20,640
Platteville	15,500	15,470	15,450	16,270
Portage	8,800	8,790	8,790	9,220
Prairie du Chien	12,450	12,300	12,150	13,000
Prairie du Sac	8,050	8,090	8,140	8,540
Reedsburg	14,150	14,020	13,900	14,580
Shawano	17,250	17,230	17,220	17,880
Shell Lake	12,500	12,400	12,300	13,020
Siren	14,700	14,580	14,460	15,200
Sparta	3,000	2,980	2,960	3,270
Sturgeon Bay	34,650	34,640	34,670	35,730
Superior	19,200	19,300	19,430	20,330
Tomahawk	7,200	7,140	7,070	7,270
Viroqua	9,550	9,590	9,650	10,300
Watertown	57,000	56,560	56,150	56,530
Waupaca	20,150	20,460	20,820	22,390
Wausau	44,900	45,010	45,180	46,590
Wisconsin Rapids	9,000	9,130	9,280	9,900
<b>Total Medium GA</b>	<b>819,200</b>	<b>820,550</b>	<b>822,750</b>	<b>863,110</b>



**Table 4-21 (Continued)**  
**Individual Airport Forecasts of General Aviation and Air Taxi Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Barron	6,550	6,550	6,560	7,120
Boulder Junction	450	450	450	450
Boyceville	8,050	7,990	7,930	8,690
Cable	2,950	2,930	2,910	4,610
Cassville	3,100	3,120	3,150	3,680
Crandon	4,400	4,370	4,340	6,010
Crivitz	520	550	580	660
Ephraim-Gibraltar	9,300	9,230	9,170	10,610
Grantsburg	3,200	3,230	3,260	3,590
Hillsboro	1,400	1,390	1,380	1,600
La Pointe	8,100	8,100	8,100	10,000
Lancaster	7,100	7,050	7,000	8,300
Madison	6,020	5,980	5,930	6,060
Manitowish Waters	6,200	6,160	6,110	6,690
Necedah	7,500	7,450	7,390	8,270
Neillsville	7,500	7,450	7,390	7,530
New Holstein	7,700	7,760	7,820	8,570
New Lisbon	6,600	6,660	6,740	8,040
Oconto	11,900	11,800	11,710	12,350
Park Falls	6,750	6,860	6,980	8,880
Prentice	1,520	1,520	1,520	1,520
Richland Center	9,100	9,640	10,240	13,180
Solon Springs	3,030	3,000	2,980	3,340
Three Lakes	4,750	4,720	4,680	5,740
Tomah	7,050	7,100	7,160	8,520
Washington Island	6,000	5,960	5,910	6,720
Wautoma	12,300	12,960	13,700	16,210
Wild Rose	7,000	7,360	7,750	9,380
<b>Total Small GA</b>	<b>166,040</b>	<b>167,340</b>	<b>168,840</b>	<b>196,320</b>
<b>Total Wisconsin GA and Air Taxi Operations</b>	<b>1,933,430</b>	<b>1,946,790</b>	<b>1,962,800</b>	<b>2,075,530</b>

Sources: Towered airports: FAA air traffic control tower traffic counts. All other SASP airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)



## 4.5 Air Cargo

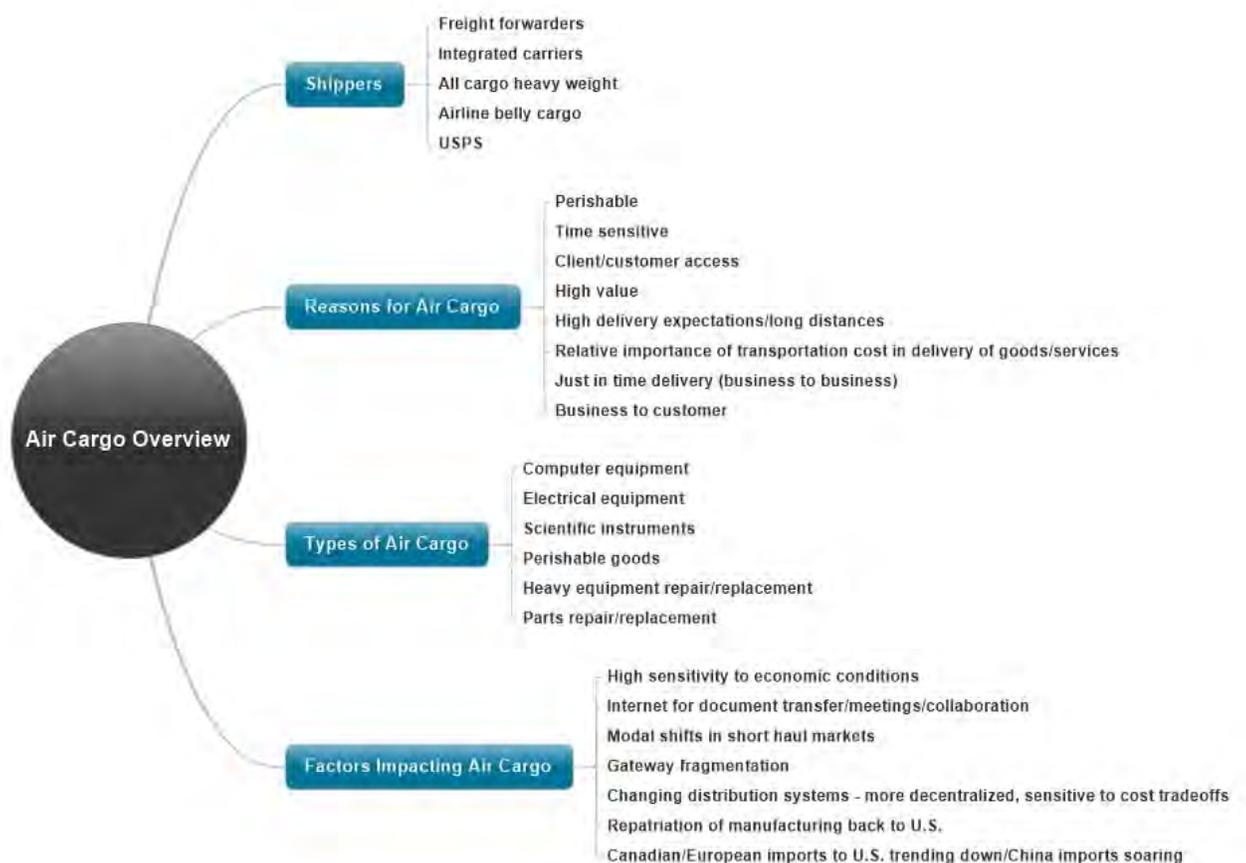
### 4.5.1 Overview of Air Cargo

Air cargo is shipped into and out of commercial service airports and some general aviation airports in Wisconsin. Typical airport users that are engaged in air cargo lift include:

- The airlines that carry mail or freight in the cargo hold of commercial aircraft
- Integrated carriers such as FedEx and UPS
- Dedicated all-cargo heavy weight carriers that operate unscheduled charters
- Freight forwarders and logistics companies
- U.S. Postal Service (USPS)

**Figure 4-2** provides an overview of types of shippers, reasons for use of air cargo lift, types of air cargo, and factors that influence air cargo lift demand and how it is provided.

**Figure 4-2 – Overview of Air Cargo**



Source: KRAMER aerotek inc.



---

Shipment by air is the most expensive mode of freight transport. Usually, goods are sent by air if they are perishable, of high value, delivery is time sensitive, or the product is shipped from or going to another country. Air cargo is highly sensitive to economic conditions. During the recession of 2008-2009, air cargo shipments decreased as demand disappeared and/or other less expensive modes were substituted.

A number of trends have shifted demand in the U.S. away from air transport to either ground transport for packages or to electronic transfer of information and money. The technology that powered express air service has been replicated by ground transport services. Many packages that were once shipped by air are transported by truck and tracked at a much lower cost. Often, a shipper is concerned that a package arrives on schedule and is indifferent about how the package is transported.

Both the USPS and the integrated carriers have responded to shifts in demand and modes of transport. In 2011, UPS and FedEx increased their ground capacity. FedEx reported an 11 percent expansion of ground operations; while express services were flat. Short haul markets are frequently served by ground transportation. Some cargo in Wisconsin that was previously shipped by air is now trucked to Minneapolis-St. Paul or Chicago for consolidation and further transport.

## 4.5.2 Air Cargo Data

Since 2003, commercial air carriers and all cargo carriers report information such as: pounds of air freight and mail, airport origin and destination, and the aircraft used for transport directly to the U.S. DOT. However, the data set is not perfect. Some smaller carriers that transport cargo for a larger carrier do not always report this information. Also, FedEx has held a USPS contract for more than a decade to carry USPS first class, priority and express mail. FedEx does not report mail separately.

To construct a reasonable estimate of air cargo shipped to and from Wisconsin, three data sources were used:

- U.S. DOT T-100 market and segment data (air carrier reports)
- Wisconsin airport reports on enplaned and deplaned pounds of cargo
- Interviews with air cargo airlines operating in Wisconsin.

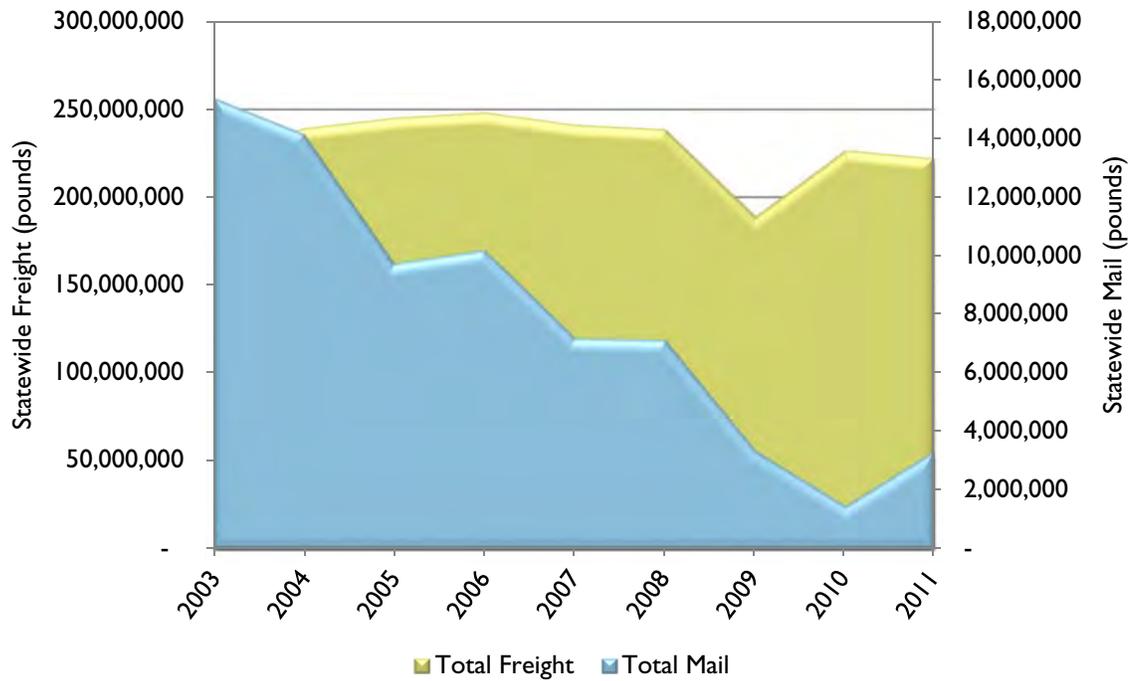
## 4.5.3 Wisconsin Air Cargo Trends

### 4.5.3.1 Air Freight and Mail Volumes

**Chart 4-9** and **Table 4-22** present Wisconsin air freight and mail from 2003 to 2011. Air freight has remained in the range of 225 million pounds per year statewide, except during the 2008-2009 recession. What has changed dramatically is the percentage of air freight versus mail. In 2011, there was 227.2 million pounds of enplaned and deplaned freight and mail handled at Wisconsin airports. Ninety-eight percent was reported as freight, versus two percent as air mail. Looking back to 2003, air mail represented six percent of total air freight.



**Chart 4-9  
Enplaned/Deplaned Air Freight and Air Mail at Commercial Service  
Airports 2003-2011**



*Sources: U.S. DOT T-100 and Individual Airport Reports*

**Table 4-22  
Enplaned/Deplaned Air Freight and Mail at Commercial Service Airports  
2003-2011**

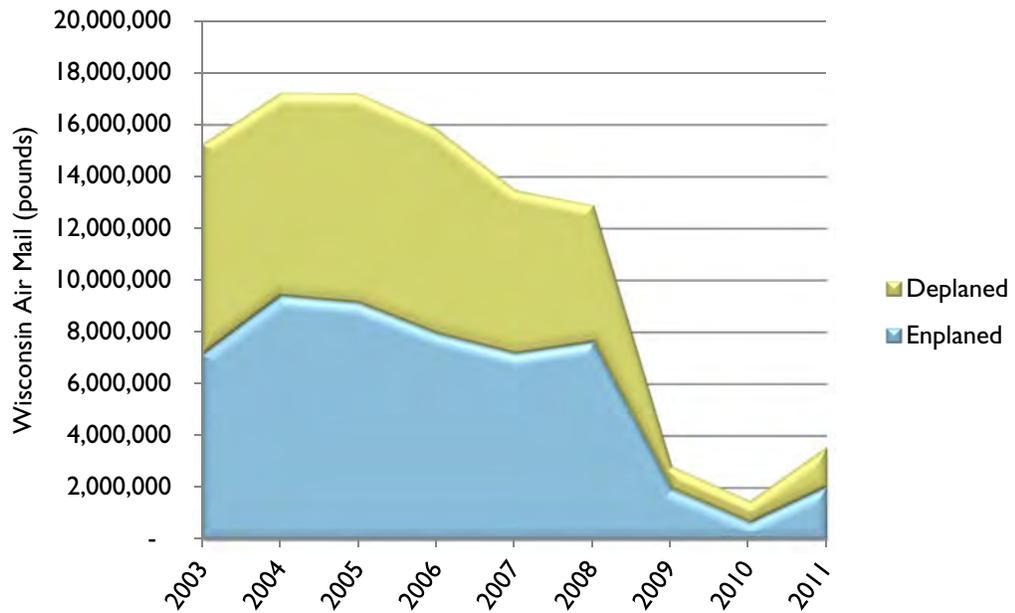
Year	Pounds		
	Mail	Freight	Total
2003	15,389,220	225,343,590	240,732,810
2004	14,152,230	239,160,170	253,312,400
2005	9,746,280	245,097,810	254,844,090
2006	10,195,610	248,174,570	258,370,180
2007	7,216,320	241,092,700	248,309,020
2008	7,161,190	238,528,300	245,689,490
2009	3,382,860	189,015,160	192,398,020
2010	1,470,620	226,735,590	228,206,210
2011	3,361,210	221,945,990	225,307,200

*Sources: U.S. DOT T-100 and Individual Airport Reports*



The trend for mail in Wisconsin mirrors national trends. In October 2011, the U.S. Government Accountability Office (GAO) examined USPS data and reported a substantial decline in mail volumes due to the rise in e-commerce, electronic billing and payment transactions, and online communications<sup>5</sup>. First class mail, a major component of air mail, is projected to decrease by 50 percent. In 2010, fewer than 50 percent of all bills were paid by mail. These trends also appear in Wisconsin and there is reason to anticipate a more diminished role for mail as a component of air cargo in the future. The surviving components of air mail include express, priority and international mail. **Chart 4-10** shows historical trends for enplaned and deplaned mail at Wisconsin airports.

**Chart 4-10  
Enplaned/Deplaned Mail at Wisconsin Commercial Service Airports, 2003-2011**



*Sources: U.S. DOT T-100 and Individual Airport Reports*

#### 4.5.3.2 Air Cargo Carrier Trends

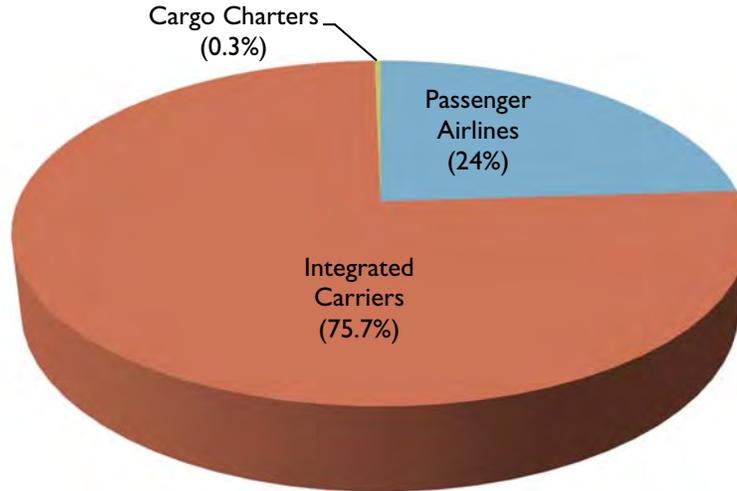
Despite steady volumes of air freight since 2003, the airlift of cargo has shifted from a competitive multi-provider environment to a highly-concentrated provider market. Integrated carriers have dominated, but in 2003, nearly one quarter of air cargo was carried in the cargo hold of passenger aircraft. Air freight and mail was a stable product of every airline, including the regional carriers. By 2011, cargo lift by airlines represented three percent of all cargo lift, with the integrated carriers hauling 97 percent. The integrated carriers serve all of the commercial service airports except Eau Claire and La Crosse. Air cargo out of La Crosse and Eau Claire is carried by the airlines or otherwise trucked to Rochester, Minneapolis-St. Paul or Chicago.

<sup>5</sup> GAO-12-159SP, US Postal Service, Mail Trends Highlight Need to Fundamentally Change Business Model



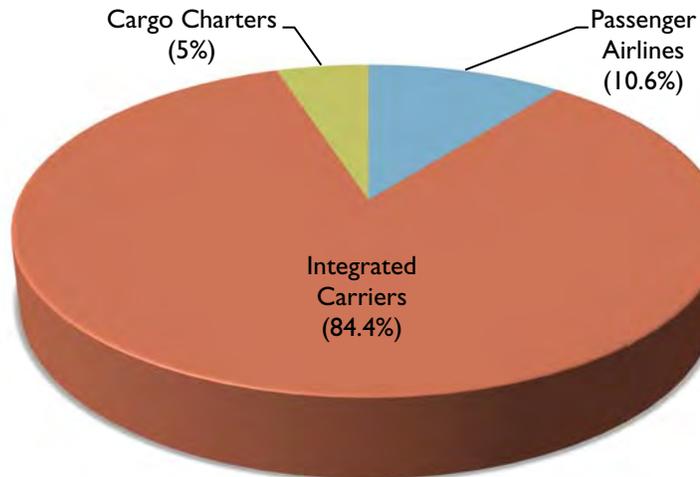
Charts 4-11, 4-12 and 4-13 highlight how the transport of air cargo at Wisconsin's commercial service airports has become increasingly concentrated over the last decade.

**Chart 4-11**  
**Air Carrier Market Share, 2003**  
Total Enplaned Cargo = 121,820,100 pounds



Source: U.S. DOT T-100

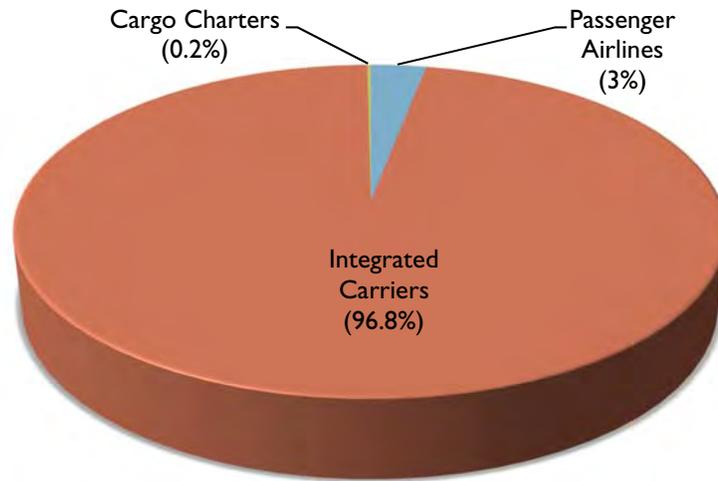
**Chart 4-12**  
**Air Carrier Cargo Market Share, 2007**  
Total Enplaned Cargo = 113,138,496 pounds



Source: U.S. DOT T-100



**Chart 4-13**  
**Air Carrier Cargo Market Share, 2011**  
Total Enplaned Cargo = 114,405,700 pounds



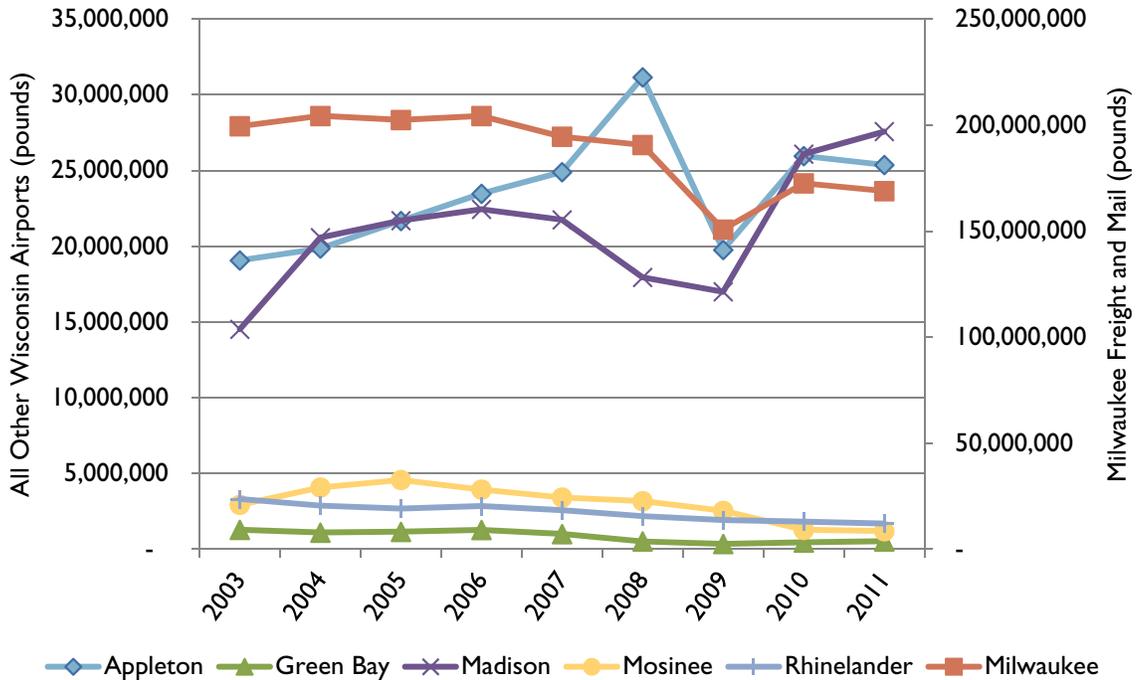
Source: U.S. DOT T-100

#### 4.5.3.3 Airport Trends

Air cargo from Wisconsin airports that is carried point-to-point is consolidated at General Mitchell International Airport or transported directly to other cargo hubs for shipment (Memphis for FedEx or Louisville for UPS). **Chart 4-14** shows the history of enplaned and deplaned mail and freight reported by carriers at the commercial airports in Wisconsin. General Mitchell International Airport handles the largest amount of air freight (74 percent) of Wisconsin's statewide air cargo. Madison and Appleton are also contributors to the state's air cargo, representing 12 and 11 percent, respectively. Many other general aviation airports also ship or receive air cargo, in small quantities and on a regular basis. These include Rice Lake, Mineral Point and Baraboo. Other airports report intermittent air cargo shipments. Air cargo at some of the smaller airports is tightly correlated with the fortunes of local companies and consequently volume of air cargo is variable. Many of the smaller general aviation airports do not keep records or count operations. In this regard, air cargo operations are no different than estimates of general aviation or air taxi operations at these airports.



**Chart 4-14  
Enplaned and Deplaned Freight and Mail at Wisconsin Commercial  
Service Airports**



Source: U.S. DOT T-100

#### 4.5.4 Forecasts of Air Cargo Volumes

Air cargo forecasts were prepared for the commercial service airports and the general aviation airports with a sustained history of air cargo activity. The forecasts were guided by historical trends and cargo forecasts prepared by Boeing Company. Because the U.S. is a mature air cargo market, Boeing expects air cargo to grow relatively slowly within the U.S., especially when compared to other parts of the world.

Ultimately, mail and freight were combined for a single forecast. Air mail shipped directly by the USPS or in the cargo hold of passenger aircraft, is a very small portion of air cargo. Furthermore, the use of integrated carriers to carry USPS mail makes it more difficult to track mail separately.



**Table 4-23** presents the statewide forecast for air cargo and **Table 4-24** shows the cargo forecasts for individual airports in Wisconsin. Overall, air cargo is expected to increase at an annual rate of 1.3 percent per year.

**Table 4-23  
Statewide Forecasts of Air Cargo Volumes**

Airport Classification	Actual	Forecast (Pounds In and Out)			2010-2030 CAGR
	2010	2015	2020	2030	
Commercial Service	228,206,200	256,896,800	268,642,600	294,029,100	1.3%
Large GA	1,166,000	1,192,100	1,193,200	1,196,300	0.1%
Medium GA	1,771,440	1,774,440	1,777,440	1,782,440	0.0%
Small GA	2,000	2,000	2,000	2,000	0.0%
<b>Total Wisconsin Air Cargo</b>	<b>231,145,640</b>	<b>259,865,340</b>	<b>271,615,240</b>	<b>297,009,840</b>	<b>1.3%</b>

Sources: U.S. DOT T-100 and Airport Records (2010), KRAMER aerotek inc. (Forecasts)

**Table 4-24  
Individual Airport Forecasts of Air Cargo Volumes**

Airport	Actual	Forecast (Pounds In and Out)		
	2010	2015	2020	2030
Appleton	25,962,500	27,913,000	30,858,100	36,748,200
Eau Claire	20,400	22,800	25,400	31,600
Green Bay	452,100	484,000	517,900	592,900
La Crosse	3,800	4,500	5,200	6,800
Madison	26,085,700	30,248,300	33,968,300	42,837,000
Milwaukee	172,582,700	194,900,700	199,701,800	209,707,500
Mosinee	1,281,800	1,380,900	1,489,500	1,732,900
Rhineland	1,817,200	1,942,600	2,076,400	2,372,200
<b>Total Commercial Service</b>	<b>228,206,200</b>	<b>256,896,800</b>	<b>268,642,600</b>	<b>294,029,100</b>
Janesville	0	25,000	25,000	25,000
Kenosha	60,000	60,000	60,000	60,000
Middleton	36,000	36,100	36,200	36,300
Rice Lake	1,050,000	1,051,000	1,052,000	1,055,000
Sheboygan	20,000	20,000	20,000	20,000
<b>Total Large GA</b>	<b>1,166,000</b>	<b>1,192,100</b>	<b>1,193,200</b>	<b>1,196,300</b>
Baraboo	468,000	470,000	472,000	475,000
Juneau	15,000	15,000	15,000	15,000
Marshfield	1,200	1,200	1,200	1,200
Menomonie	480,000	480,500	481,000	482,000
Mineral Point	781,000	781,500	782,000	783,000



**Table 4-24 (Continued)**  
**Individual Airport Forecasts of Air Cargo Volumes**

Airport	Actual	Forecast (Pounds In and Out)		
	2010	2015	2020	2030
Phillips	15,000	15,000	15,000	15,000
Reedsburg	10,000	10,000	10,000	10,000
Watertown	1,240	1,240	1,240	1,240
<b>Total Medium GA</b>	<b>1,771,440</b>	<b>1,774,440</b>	<b>1,777,440</b>	<b>1,782,440</b>
Prentice	2,000	2,000	2,000	2,000
<b>Total Small GA</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>
<b>Total Wisconsin Air Cargo</b>	<b>231,145,640</b>	<b>259,865,340</b>	<b>271,615,240</b>	<b>297,009,840</b>

Note: Janesville did not report air cargo in 2010. However, air cargo in 2011 and 2012 was in excess of 23,500 pounds.

Sources: U.S. DOT T-100 and Airport Records (2010), KRAMER aerotek inc. (Forecasts)

### 4.5.5 Forecasts of Dedicated Air Cargo Operations

Forecasts of air cargo operations focus on aircraft operated exclusively to carry freight and mail. A passenger aircraft that hauls air cargo is counted as a commercial operation. Dedicated air cargo aircraft carry thousands of pounds of cargo on each flight. Consequently, the growth of air cargo at Wisconsin airports results in a modest increase of operations.

**Table 4-25** includes the statewide forecast of dedicated air cargo operations and **Table 4-26** shows the forecast for individual airports.

**Table 4-25**  
**Statewide Forecasts of Dedicated Air Cargo Operations**

Airport Classification	Actual	Cargo Forecast			2010-2030 CAGR
	2010	2015	2020	2030	
Commercial Service	20,650	21,170	21,480	22,050	0.3%
Large GA	1,140	1,150	1,150	1,150	0.0%
Medium GA	1,560	1,560	1,560	1,560	0.0%
Small GA	0	0	0	0	0.0%
<b>Total Wisconsin Air Cargo</b>	<b>23,350</b>	<b>23,880</b>	<b>24,190</b>	<b>24,760</b>	<b>0.3%</b>

Sources: U.S. DOT T-100 and Airport Records (2010), KRAMER aerotek inc. (Forecasts)



**Table 4-26  
Individual Airport Forecasts of Dedicated Air Cargo Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Appleton	1,452	1,452	1,556	1,712
Eau Claire	4	4	4	4
Green Bay	1,043	1,043	1,043	1,043
La Crosse	0	0	0	0
Madison	2,361	2,465	2,569	2,777
Milwaukee	12,478	12,894	12,998	13,206
Mosinee	1,673	1,673	1,673	1,673
Rhineland	1,636	1,636	1,636	1,636
<b>Total Commercial Service</b>	<b>20,647</b>	<b>21,167</b>	<b>21,479</b>	<b>22,051</b>
Janesville	0	4	4	4
Kenosha	0	4	4	4
Middleton	520	520	520	520
Rice Lake	620	620	620	620
Sheboygan	4	4	4	4
<b>Total Large GA</b>	<b>1,144</b>	<b>1,152</b>	<b>1,152</b>	<b>1,152</b>
Baraboo	520	520	520	520
Menomonie	520	520	520	520
Mineral Point	520	520	520	520
<b>Total Medium GA</b>	<b>1,560</b>	<b>1,560</b>	<b>1,560</b>	<b>1,560</b>
<b>Total Small GA</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Wisconsin GA and Air Taxi Operations</b>	<b>23,351</b>	<b>23,879</b>	<b>24,191</b>	<b>24,763</b>

Note: Janesville did not report air cargo in 2010. However, air cargo in 2011 and 2012 was in excess of 23,500 pounds.

Sources: U.S. DOT T-100 and Airport Records (2010), KRAMER aerotek inc. (Forecasts)

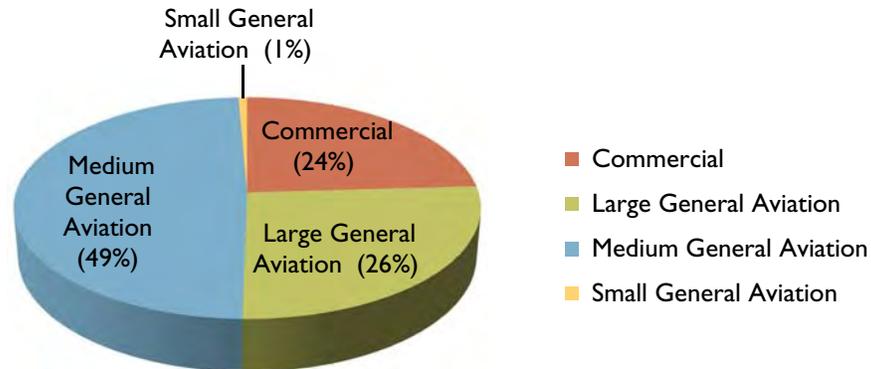
## 4.6 Military Operations

Overall, military operations are a relatively small contributor to the airport activity at public use airports. Volk Field is an important contributor to operations, but it is not part of the state airport system. The Wisconsin Army and Air National Guard units are actively engaged in support of domestic and foreign initiatives. These units operate out of Volk Field, Sparta/Fort McCoy, West Bend, Madison and General Mitchell International Airport.

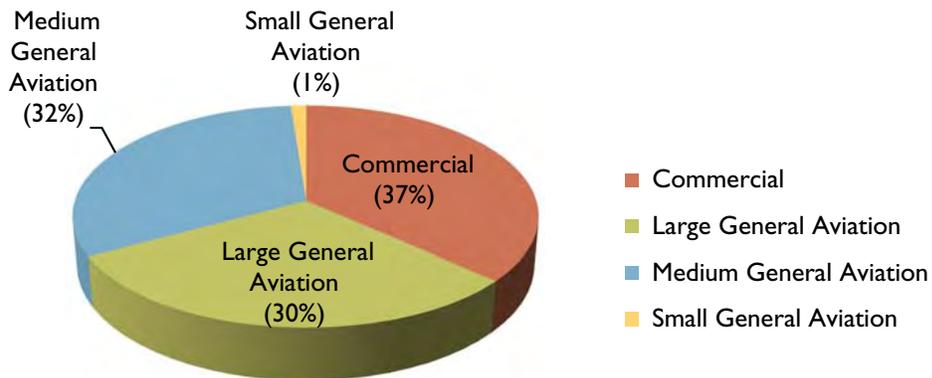
Since the last system plan, military operations have become more concentrated at the commercial and large GA airports. **Chart 4-15** and **Chart 4-16** compare the distribution of military operations in 2002 (the last system plan) and 2010.



**Chart 4-15**  
**Military Operations, 2002**  
 Total Military Operations = 67,627



**Chart 4-16**  
**Military Operations, 2010**  
 Total Military Operations = 47,823



Sources: 2002 Wisconsin State Airport System Plan 2020 (2002), FAA ATADS, Towered Airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP Airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)

Military operations are difficult to forecast because levels of activity are determined by federal budgets, foreign policy, and unexpected domestic and international events. Over the last decade, there has been an increased reliance on the use of state national guards and more recently, a national reluctance to commit large numbers of U.S. soldiers into foreign engagements. In Wisconsin, total military operations declined from 67,000 in 2002 to 47,800 in 2010. The forecasts assume that 2010 levels of activity will continue during the forecast period. **Table 4-27** shows statewide military operations; **Table 4-28** presents military operations by individual airport.



**Table 4-27  
Statewide Historical and Forecast of Military Operations**

Airport Classification	Actual		Forecast		
	2002	2010	2015	2020	2030
Commercial Service	16,270	17,520	17,520	17,520	17,520
Large GA	17,730	14,560	14,570	14,570	14,570
Medium GA	33,170	15,170	15,170	15,170	15,170
Small GA	460	590	590	590	590
<b>Total Wisconsin Military Operations</b>	<b>67,630</b>	<b>47,840</b>	<b>47,850</b>	<b>47,850</b>	<b>47,850</b>

*Sources:* 2002 Wisconsin State Airport System Plan 2020 (2002), FAA ATADS, Towered Airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP Airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)

**Table 4-28  
Individual Airport Forecasts of Military Operations**

Airport	Actual		Forecast		
	2002	2010	2015	2020	2030
Appleton	58	270	270	270	270
Eau Claire	1,700	850	850	850	850
Green Bay	319	3,430	3,430	3,430	3,430
La Crosse	687	1,620	1,620	1,620	1,620
Madison	6,778	9,010	9,010	9,010	9,010
Milwaukee	4,810	1,620	1,620	1,620	1,620
Mosinee	1,899	720	720	720	720
Rhineland	20	0	0	0	0
<b>Total Commercial Service</b>	<b>16,271</b>	<b>17,520</b>	<b>17,520</b>	<b>17,520</b>	<b>17,520</b>
East Troy	500	500	500	500	500
Fond du Lac	150	150	150	150	150
Janesville	364	1,360	1,360	1,360	1,360
Kenosha	198	240	240	240	240
Middleton	10	10	10	10	10
Milwaukee-Timmerman	63	210	210	210	210
New Richmond	500	500	500	500	500
Oshkosh	1,069	650	650	650	650
Racine	0	0	0	0	0
Rice Lake	150	150	150	150	150
Sheboygan	450	500	500	500	500
Stevens Point	150	150	150	150	150
Waukesha	128	150	150	150	150
West Bend	14,000	10,000	10,000	10,000	10,000
<b>Total Large GA</b>	<b>17,732</b>	<b>14,570</b>	<b>14,570</b>	<b>14,570</b>	<b>14,570</b>



**Table 4-28 (Continued)**  
**Individual Airport Forecasts of Military Operations**

Airport	Actual		Forecast		
	2002	2010	2015	2020	2030
Amery	100	100	100	100	100
Antigo	50	50	50	50	50
Ashland	50	30	30	30	30
Baraboo	2,500	2,500	2,500	2,500	2,500
Black River Falls	0	0	0	0	0
Boscobel	500	100	100	100	100
Brookfield	0	150	150	150	150
Burlington	500	500	500	500	500
Chetek	0	0	0	0	0
Clintonville	20	20	20	20	20
Cumberland	0	0	0	0	0
Eagle River	30	30	30	30	30
Fort Atkinson	0	50	50	50	50
Friendship-Adams	20	20	20	20	20
Hartford	100	100	100	100	100
Hayward	20	100	100	100	100
Juneau	1,000	1,000	1,000	1,000	1,000
Ladysmith	20	20	20	20	20
Land O'Lakes	0	0	0	0	0
Lone Rock	0	200	200	200	200
Manitowoc	0	100	100	100	100
Marshfield	150	150	150	150	150
Medford	20	20	20	20	20
Menomonie	0	0	0	0	0
Merrill	10	10	10	10	10
Mineral Point	25	500	500	500	500
Minocqua-Woodruff	10	10	10	10	10
Monroe	150	150	150	150	150
Osceola	1,000	500	500	500	500
Palmyra	200	200	200	200	200
Phillips	100	100	100	100	100
Platteville	50	50	50	50	50
Portage	50	50	50	50	50
Prairie du Chien	50	50	50	50	50
Prairie du Sac	300	300	300	300	300
Reedsburg	350	150	150	150	150



**Table 4-28 (Continued)**  
**Individual Airport Forecasts of Military Operations**

Airport	Actual		Forecast		
	2002	2010	2015	2020	2030
Shawano	300	300	300	300	300
Shell Lake	50	50	50	50	50
Siren	0	0	0	0	0
Sparta	24,000	6,000	6,000	6,000	6,000
Sturgeon Bay	300	300	300	300	300
Superior	50	50	50	50	50
Tomahawk	0	0	0	0	0
Viroqua	0	50	50	50	50
Watertown	1,000	1,000	1,000	1,000	1,000
Waupaca	10	10	10	10	10
Wausau	50	50	50	50	50
Wisconsin Rapids	30	50	50	50	50
<b>Total Medium GA</b>	<b>33,165</b>	<b>15,170</b>	<b>15,170</b>	<b>15,170</b>	<b>15,170</b>
Barron	0	0	0	0	0
Boulder Junction	0	0	0	0	0
Boyceville	0	0	0	0	0
Cable	10	10	10	10	10
Cassville	0	0	0	0	0
Crandon	0	0	0	0	0
Crivitz	0	0	0	0	0
Ephraim-Gibraltar	0	0	0	0	0
Grantsburg	0	40	40	40	40
Hillsboro	0	0	0	0	0
La Pointe	0	0	0	0	0
Lancaster	0	0	0	0	0
Madison	0	20	20	20	20
Manitowish Waters	50	0	0	0	0
Necedah	0	20	20	20	20
Neillsville	24	20	20	20	20
New Holstein	200	200	200	200	200
New Lisbon	0	0	0	0	0
Oconto	20	20	20	20	20
Park Falls	0	0	0	0	0
Prentice	0	0	0	0	0
Richland Center	100	100	100	100	100
Solon Springs	0	0	0	0	0



**Table 4-28 (Continued)**  
**Individual Airport Forecasts of Military Operations**

Airport	Actual		Forecast		
	2002	2010	2015	2020	2030
Three Lakes	0	0	0	0	0
Tomah	0	100	100	100	100
Washington Island	30	30	30	30	30
Wautoma	25	30	30	30	30
Wild Rose	0	0	0	0	0
<b>Total Small GA</b>	<b>459</b>	<b>590</b>	<b>590</b>	<b>590</b>	<b>590</b>
<b>Total Wisconsin Military Operations</b>	<b>67,627</b>	<b>47,840</b>	<b>47,850</b>	<b>47,850</b>	<b>47,850</b>

Sources: 2002 Wisconsin State Airport System Plan 2020 (2002), FAA ATADS, Towered Airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP Airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)

## 4.7 Total Operations

Total operations are the sum of each segment of Wisconsin aviation including:

- Commercial air service operations
- General aviation and air taxi operations
- Air cargo operations
- Military operations

Tables 4-29 and 4-30 present a statewide and individual airport view of 2010 total operations and forecasts.

**Table 4-29**  
**Statewide Forecasts of Total Operations**

Airport Groups	Total Operations				2010-2030 CAGR
	2010	2015	2020	2030	
Commercial Service	533,770	487,070	502,870	548,500	0.1%
Large GA	706,770	709,680	713,730	734,380	0.2%
Medium GA	835,930	837,280	839,480	879,840	0.3%
Small GA	166,630	167,930	169,430	196,910	0.8%
<b>Total Wisconsin Operations</b>	<b>2,243,100</b>	<b>2,201,960</b>	<b>2,225,510</b>	<b>2,359,630</b>	<b>0.3%</b>

Sources: aerotek inc. Towered Airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP Airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)



**Table 4-30  
Individual Airport Forecasts of Total Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Appleton	38,650	37,340	37,560	38,580
Eau Claire	28,300	27,740	27,970	28,930
Green Bay	85,260	88,280	91,350	99,720
La Crosse	25,740	22,680	22,910	23,650
Madison	99,550	102,480	106,860	116,520
Milwaukee	204,560	163,580	171,060	193,410
Mosinee	20,830	16,510	16,560	17,730
Rhineland	30,880	28,460	28,600	29,960
<b>Total Commercial Service</b>	<b>533,770</b>	<b>487,070</b>	<b>502,870</b>	<b>548,500</b>
East Troy	51,250	51,460	51,760	53,460
Fond du Lac	63,050	62,630	62,230	62,630
Janesville	50,090	50,870	51,810	54,910
Kenosha	52,400	52,570	52,830	54,020
Middleton	49,030	48,840	48,690	49,540
Milwaukee-Timmerman	32,420	32,320	32,240	32,640
New Richmond	44,500	45,820	47,190	50,040
Oshkosh	75,780	75,420	75,140	75,310
Racine	47,000	47,110	47,320	48,850
Rice Lake	28,270	28,570	28,960	30,990
Sheboygan	62,000	62,590	63,340	66,020
Stevens Point	36,750	37,050	37,430	39,310
Waukesha	58,230	58,610	59,120	60,700
West Bend	56,000	55,820	55,670	55,960
<b>Total Large GA</b>	<b>706,770</b>	<b>709,680</b>	<b>713,730</b>	<b>734,380</b>
Amery	13,900	14,170	14,480	15,990
Antigo	8,250	8,460	8,690	9,780
Ashland	13,030	13,080	13,160	13,820
Baraboo	30,520	30,400	30,300	30,850
Black River Falls	12,320	12,410	12,520	13,470
Boscobel	16,400	16,260	16,120	16,660
Brookfield	15,150	15,180	15,230	15,590
Burlington	55,300	54,790	54,280	56,240
Chetek	7,240	7,240	7,260	7,490
Clintonville	8,000	7,940	7,870	8,300
Cumberland	10,900	10,930	10,970	11,680
Eagle River	20,610	21,220	21,860	23,200



**Table 4-30 (Continued)**  
**Individual Airport Forecasts of Total Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Fort Atkinson	10,900	10,990	11,100	11,880
Friendship-Adams	7,070	7,060	7,060	7,600
Hartford	15,500	15,610	15,750	16,290
Hayward	10,400	10,320	10,240	10,720
Juneau	29,000	29,840	30,710	32,520
Ladysmith	8,070	8,070	8,080	8,710
Land O'Lakes	8,100	8,210	8,340	9,540
Lone Rock	12,000	11,970	11,960	12,480
Manitowoc	26,100	25,870	25,630	25,690
Marshfield	26,050	26,020	26,030	27,970
Medford	7,520	7,680	7,860	8,900
Menomonie	14,070	13,960	13,860	14,410
Merrill	21,810	22,390	23,050	25,650
Mineral Point	12,770	12,760	12,760	13,440
Minocqua-Woodruff	27,190	26,960	26,730	27,620
Monroe	17,650	17,750	17,880	18,900
Osceola	19,850	19,730	19,610	19,760
Palmyra	15,650	15,540	15,420	15,470
Phillips	18,100	18,320	18,590	20,740
Platteville	15,550	15,520	15,500	16,320
Portage	8,850	8,840	8,840	9,270
Prairie du Chien	12,500	12,350	12,200	13,050
Prairie du Sac	8,350	8,390	8,440	8,840
Reedsburg	14,300	14,170	14,050	14,730
Shawano	17,550	17,530	17,520	18,180
Shell Lake	12,550	12,450	12,350	13,070
Siren	14,700	14,580	14,460	15,200
Sparta	9,000	8,980	8,960	9,270
Sturgeon Bay	34,950	34,940	34,970	36,030
Superior	19,250	19,350	19,480	20,380
Tomahawk	7,200	7,140	7,070	7,270
Viroqua	9,600	9,640	9,700	10,350
Watertown	58,000	57,560	57,150	57,530
Waupaca	20,160	20,470	20,830	22,400
Wausau	44,950	45,060	45,230	46,640
Wisconsin Rapids	9,050	9,180	9,330	9,950
<b>Total Medium GA</b>	<b>835,930</b>	<b>837,280</b>	<b>839,480</b>	<b>879,840</b>



**Table 4-30 (Continued)**  
**Individual Airport Forecasts of Total Operations**

Airport	Actual	Forecast		
	2010	2015	2020	2030
Barron	6,550	6,550	6,560	7,120
Boulder Junction	450	450	450	450
Boyceville	8,050	7,990	7,930	8,690
Cable	2,960	2,940	2,920	4,620
Cassville	3,100	3,120	3,150	3,680
Crandon	4,400	4,370	4,340	6,010
Crivitz	520	550	580	660
Ephraim-Gibraltar	9,300	9,230	9,170	10,610
Grantsburg	3,240	3,270	3,300	3,630
Hillsboro	1,400	1,390	1,380	1,600
La Pointe	8,100	8,100	8,100	10,000
Lancaster	7,100	7,050	7,000	8,300
Madison	6,040	6,000	5,950	6,080
Manitowish Waters	6,200	6,160	6,110	6,690
Necedah	7,520	7,470	7,410	8,290
Neillsville	7,520	7,470	7,410	7,550
New Holstein	7,900	7,960	8,020	8,770
New Lisbon	6,600	6,660	6,740	8,040
Oconto	11,920	11,820	11,730	12,370
Park Falls	6,750	6,860	6,980	8,880
Prentice	1,520	1,520	1,520	1,520
Richland Center	9,200	9,740	10,340	13,280
Solon Springs	3,030	3,000	2,980	3,340
Three Lakes	4,750	4,720	4,680	5,740
Tomah	7,150	7,200	7,260	8,620
Washington Island	6,030	5,990	5,940	6,750
Wautoma	12,330	12,990	13,730	16,240
Wild Rose	7,000	7,360	7,750	9,380
<b>Total Small GA</b>	<b>166,630</b>	<b>167,930</b>	<b>169,430</b>	<b>196,910</b>
<b>Total Wisconsin Operations</b>	<b>2,243,100</b>	<b>2,201,960</b>	<b>2,225,510</b>	<b>2,359,630</b>

Sources: Towered Airports: FAA Air Traffic Control Tower Traffic Counts. All other SASP Airports: FAA 5010 Form (2010), KRAMER aerotek inc. (Forecasts)



---

## 4.8 Summary and Conclusions

The Wisconsin Airport System has demonstrated stability and durability throughout a turbulent decade. The events of September 11, 2001, two long wars in Afghanistan and Iraq, volatile and rising fuel prices, a severe recession and on-going budgetary uncertainties are hardly a solid backdrop for stability within the aviation industry and the Wisconsin Airport System. Perhaps because the airline industry has endured turmoil since airline deregulation in 1978, the airlines proved adept at responding quickly to each of these crises through effective control over capacity, costs and pricing. Not all public airports were able to respond as rapidly. However, the Wisconsin system of airports proved stable under pressure.

Going forward, there will be continued challenges including:

- How the merger between American Airlines and US Airways will affect service between Wisconsin airports and Chicago O’Hare
- How replacement of 50-seat regional jets with 70-seat aircraft will impact schedule frequencies at Wisconsin commercial service airports
- The outcome for General Mitchell International Airport as Southwest Airlines consolidates Air Tran service into its network
- The impact of increasing airline fees on the cost of flying, air passenger demand and choice of airport
- The future eligibility and funding for subsidized service under the Essential Air Service program
- The continued substitution of ground transportation for air cargo and its effect on air cargo activity in Wisconsin
- The stability and containment of fuel prices
- The availability of 100LL avgas for general aviation aircraft, the development of alternative fuels, and the rate of conversion of aircraft to use newer types of fuel
- The degree to which general aviation and business aviation recovers from a decade of decline

These factors will continue to shape the demand for aviation services and facilities in Wisconsin and serve as a reminder that forecasts in a system plan offer a direction to move forward based on the parameters in place at this moment in time. With that caveat in mind, **Table 4-31** presents a summary of forecasts for each component of aviation activity in Wisconsin.



**Table 4-3 I  
Summary of System Plan Forecasts**

Airport Groups	Total Operations				2010-2030 CAGR
	2010	2015	2020	2030	
<b>Enplanements</b>	<b>6,459,040</b>	<b>5,691,820</b>	<b>6,122,630</b>	<b>7,092,050</b>	<b>0.5%</b>
<b>Air Cargo (pounds)</b>	<b>231,145,640</b>	<b>259,865,340</b>	<b>271,615,240</b>	<b>297,009,840</b>	<b>1.3%</b>
<b>Based Aircraft</b>	<b>3,810</b>	<b>3,850</b>	<b>3,897</b>	<b>4,117</b>	<b>0.4%</b>
Commercial Operations	238,470	183,460	190,680	211,500	-0.6%
Dedicated All Cargo Operations	23,340	23,880	24,190	24,760	0.3%
Military Operations	47,823	47,850	47,850	47,850	0.0%
GA and Air Taxi Operations	1,933,430	1,946,790	1,962,800	2,075,530	0.4%
<b>Total Operations</b>	<b>2,243,100</b>	<b>2,201,960</b>	<b>2,225,510</b>	<b>2,359,630</b>	<b>0.3%</b>

*Sources:* U.S. DOT T-100, Air Traffic Control Tower Traffic Counts, FAA 5010 Form., Airport Records, and KRAMER aerotek inc.



This Page Left Blank Intentionally