3. AVIATION ACTIVITY FORECASTS

This document presents historical trends in aviation activity at Milwaukee Mitchell International Airport (the Airport or MKE) and summarizes forecasts of aviation activity through 2040, the end of the planning period for MKE's Master Plan Update. Forecasts were developed for enplaned passengers, as well as passenger, cargo, general aviation, air taxi and military operations. Projections were developed for the aircraft fleet mix serving the Airport. The forecasts and projections provide the basis for determining facility requirements, and for conducting the environmental, financial, and other analyses necessary for preparing the Master Plan Study. The forecasts presented herein are not constrained by any assumptions regarding the availability of airport facilities, such as aircraft gates, that may be needed to accommodate demand.

Forecasts of activity were prepared in calendar Q4 2018 using estimated calendar year 2018 as the base year. Published airline schedules for 2018[1] provide the basis for presenting the airlines currently serving the Airport and the destinations served from the Airport, as well as other attributes of air service.

The assumptions and historical data underlying the activity forecasts are summarized in this document, which is organized as follows:

- Historical Aviation Activity
- Factors Affecting Aviation Activity at the Airport
- Enplaned Passenger and Passenger Airline Operations Forecasts
- Cargo Activity Forecast
- General Aviation and Military Forecasts
- Comparison of Activity Forecasts

3.1 HISTORICAL AVIATION ACTIVITY

3.1.1 CURRENT AIR SERVICE

As of December 2018, nine scheduled passenger airlines operated at the Airport. As listed in **Table 3-1**, in addition to the nine mainline airlines, seventeen regional airlines provide service as affiliates and five all-cargo airlines operate at the Airport. **Table 3-2** presents the scheduled passenger air carrier base[2] at the Airport since 2009. Specific points concerning the scheduled passenger air carrier base at the Airport include the following:

- The Airport has had the benefit of a relatively stable and growing scheduled passenger air carrier base in recent years; Delta, United, American, Southwest, Air Canada, and Frontier have operated at the Airport throughout this period
- Three airlines including one foreign airline have initiated service at the Airport since 2015 (Alaska, Allegiant, and Volaris)

[1] December 2018 was the current month at the time of forecast presentation; July 2018 is recognized and appropriately reflected in supporting analyses as the month with the peak number of scheduled airline departures and scheduled departing seats.

[2] Includes airlines previously acquired or merged, where applicable.

- Only one airline, OneJet which declared bankruptcy in 2017, has discontinued service at the Airport since 2009

TABLE 3-1 CURRENT AIRLINES SERVING THE AIRPORT

MAINLINE AIRLINES (9)	REGIONAL AIRLINES (17)	CARGO AIRLINES (5)
American	Air Wisconsin (American, United)	CSA Air
Air Canada	Air Georgian (Air Canada)	DHL
Alaska	Chautauqua (American, Delta, Frontier, United)	FedEx
Allegiant Air	Compass (Delta)	Freight Runners Express
Delta	CommutAir (United)	UPS
Frontier	Endeavor (Delta)	
Southwest	Envoy (American)	
United	ExpressJet (American, Delta, United)	
Volaris	GoJet (Delta, United)	
	Horizon (Alaska)	
	Mesa (American, United)	
	Piedmont (American)	
	PSA (American, Delta)	
	Republic (American, Delta, Frontier, United)	
	Shuttle America (Delta)	
	SkyWest (Alaska, American, Delta, United)	
	Trans States (American, United)	

SOURCE: Innovata, December 2018.

TABLE 3-2 HISTORICAL AIR CARRIER BASE

AIRLINE [1]	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[2]
Southwest (and merged carriers)	●	●	●	●	●	●	●	●	●	●
United (and affiliates)	●	●	●	●	●	●	●	●	●	●
American (and affiliates)	●	●	●	●	●	●	●	●	●	●
Delta (and merged carriers)	●	●	●	●	●	●	●	●	●	●
Frontier	●	●	●	●	●	●	●	●	●	●
Air Canada	●	●	●	●	●	●	●	●	●	●
Alaska							●	●	●	●
Allegiant									●	●
Volaris									●	●
OneJet [3]							●	●	●	

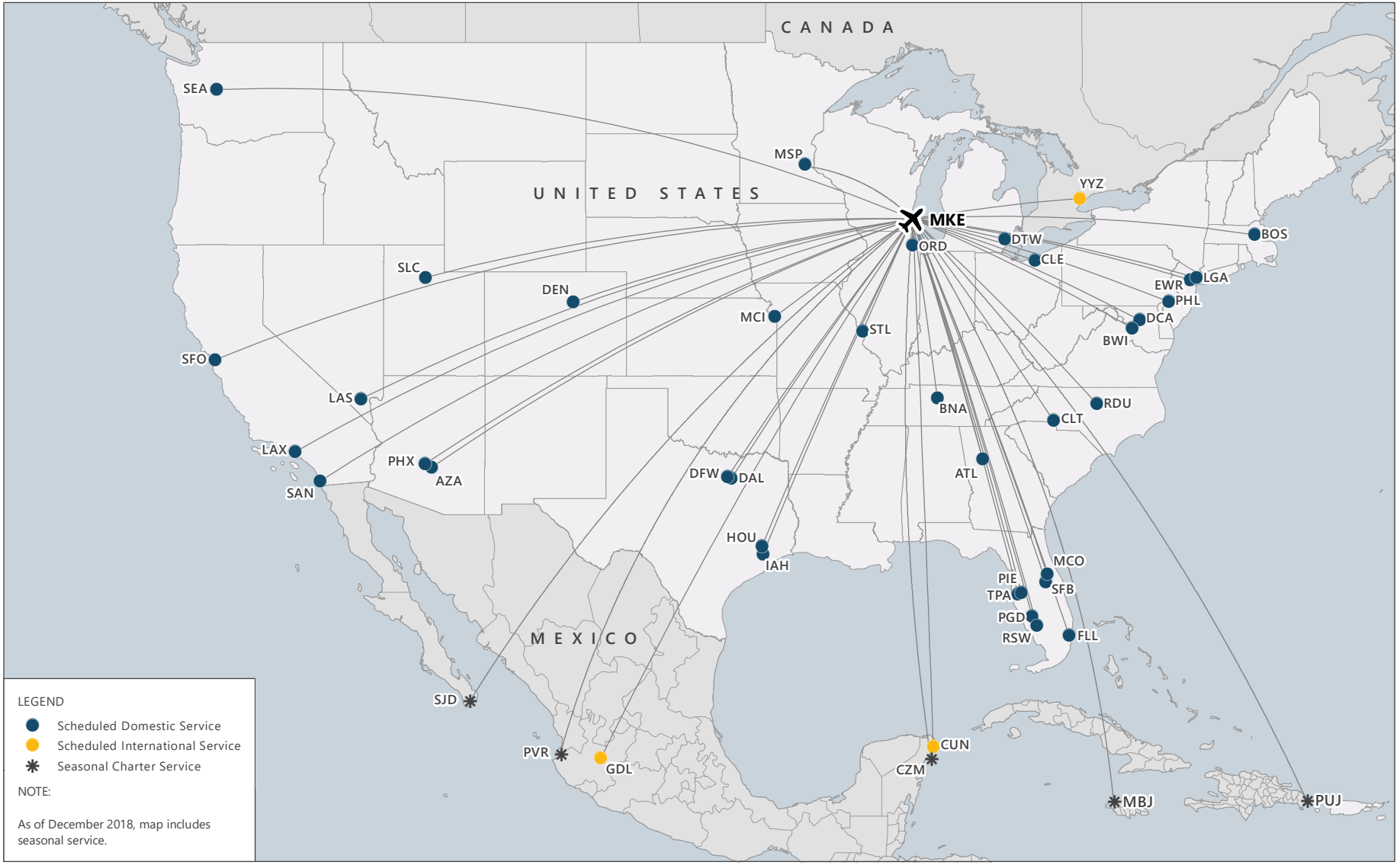
NOTES:
1 Where applicable, includes affiliated, regional, and merged carriers.
2 Scheduled as of December 2018. Peak 2018 scheduled air carrier departure activity at MKE occurred in March.
3 OneJet ceased service at MKE in June 2018.
SOURCE: Innovata, December 2018.

In March 2018 (peak month for scheduled airline activity), there were approximately 115 daily departures and 13,300 departing seats scheduled from the Airport. The airlines operating from the Airport offer scheduled service to 36 domestic destinations and three international destinations, including seasonal service. Seasonal charter service is offered to five additional international destinations. These destinations are presented in **Exhibit 3-1**.

3.1.2 PASSENGER ACTIVITY

The Airport is classified by the Federal Aviation Administration as a medium hub airport, accounting for between 0.25 and 1.0 percent of total nationwide enplaned passengers. **Table 3-3** presents enplaned passenger activity statistics at MKE and for the United States since 2009. In 2018, approximately 3.6 million passengers were enplaned at MKE, representing 0.41 percent of total United States enplanements. Detail regarding changes in passenger activity at the Airport is provided below.

- 2009-2010: Enplaned passenger volumes grew 23.7 percent from 2009 to 2010 as Southwest and AirTran both undertook significant capacity increases. Southwest began service during the fourth quarter of 2009, and during 2010 operated over 500,000 departing seats to six destinations. AirTran established a crew base and continued expanding its hub at the Airport and in 2010 grew capacity 54 percent to over 1.9 million departing seats. In November 2010, the merger of Frontier and the Airport's largest airline, Midwest Airlines, was completed. Midwest Airlines was headquartered in Milwaukee and MKE was its largest hub, crew base and maintenance facility. During the year, the combined carrier's scheduled seat capacity remained relatively unchanged.
- 2011-2012: In 2011, enplaned passengers declined 3.4 percent, and in 2012 declined a further 20.6 percent. Southwest completed its purchase of AirTran in May 2011, and the combined airline began to operate both brands at the Airport. In response to mounting systemwide financial losses and the start of its business model shift from full-service to ULCC, Frontier began to pull down capacity at the Airport, decreasing scheduled seat capacity by 16 percent in 2011, and accelerated its pull down in 2012 by reducing scheduled seat capacity a further 73 percent. The dissolution of both hubs resulted in a significant decline in the number of enplaned passengers connecting at the Airport, down from approximately 1.1 million in 2010 to 466,000 in 2012. In the period from 2010 to 2012, Frontier's scheduled departing seat capacity decreased from 2.1 million to less than 500,000.
- 2013: Enplaned passenger volumes declined again in 2013 by 13.6 percent. Frontier continued its reductions at the Airport and during the year scheduled just 160,000 departing seats. Southwest also reduced capacity by approximately 17 percent as it integrated the AirTran route network into its own, eliminating some former AirTran routes served using Skywest regional jets (an aircraft type that Southwest does not operate). Also contributing to Southwest's reductions at the Airport was the airline's decision to remove the Boeing 717 aircraft from its fleet (which had been used by AirTran on most of the airline's routes from MKE); Southwest operates a Boeing 737 fleet.
- 2014-2015: Enplaned passenger activity stabilized in 2014 and 2015, growing by 0.4 percent in 2014 and then remaining flat in 2015. Two new airlines initiated service at MKE during 2015; OneJet began service to Pittsburgh (PIT) and Indianapolis (IND), and Alaska Airlines began service to Seattle (SEA).



SOURCES: Innovata, Diio Mi Schedule Dynamic Table Report, December 12, 2018 (destination data); OpenFlights.org, December 2018 (routes, airports); US Census Bureau, 2021 (water, boundaries).

EXHIBIT 3-1

DOMESTIC AND INTERNATIONAL NONSTOP DESTINATIONS

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- 2016-2017: Passenger growth resumed in 2016 and 2017, as enplaned passengers grew 3.2 percent and 2.0 percent, respectively. In 2016, Frontier nearly doubled in size at the Airport as the airline added new four new markets and expanded in others while operating its newly implemented ultra low-cost carrier business model. In 2017, passenger growth was supported by further service additions by Frontier, as well an 11 percent increase in scheduled seats by United which added capacity to Denver (DEN) and Chicago O'Hare (ORD). In addition, Allegiant began service to Phoenix/Mesa (AZA), Ft. Lauderdale (FLL), Punta Gorda (PGD), St. Petersburg/Clearwater (PIE), and Orlando-Sanford (SFB), while Volaris began service to Guadalajara, Mexico (GDL), and Delta began service to Salt Lake City (SLC).
- 2018E: Enplaned passenger volumes grew 3.8 percent to approximately 3.6 million passengers, their highest level since 2012. Frontier continued its expansion at the Airport adding three new markets for a total of 12 nonstop destinations and growing capacity by 10 percent to approximately 300,000 scheduled departing seats. Delta added additional seat capacity at MKE to existing markets by operating larger aircraft, while Alaska also doubled seat capacity through the use of larger aircraft.

TABLE 3-3 HISTORICAL ENPLANED PASSENGERS

YEAR	AIRPORT ENPLANED PASSENGERS	AIRPORT GROWTH	U.S. TOTAL ENPLANEMENTS[1]	U.S. GROWTH	MARKET SHARE
2009	3,981,871	(0.5%)	710,488,751	(4.8%)	0.56%
2010	4,927,558	23.7%	726,144,188	2.2%	0.68%
2011	4,760,952	(3.4%)	739,170,855	1.8%	0.64%
2012	3,780,315	(20.6%)	743,949,432	0.6%	0.51%
2013	3,266,309	(13.6%)	750,735,667	0.9%	0.44%
2014	3,278,820	0.4%	771,670,792	2.8%	0.42%
2015	3,277,356	(0.0%)	809,039,675	4.8%	0.41%
2016	3,383,271	3.2%	837,865,649	3.6%	0.40%
2017	3,452,544	2.0%	865,418,742	3.3%	0.40%
2018E	3,584,924	3.8%	882,134,514	1.9%	0.41%
Compound Annual Growth Rate					
2009 - 2018	(1.2%)		2.4%		

NOTE:
1 2018 United States enplaned passengers are for the twelve months ending May 2018, the latest period for which data are available.
SOURCES: Milwaukee Mitchell International Airport, November 2018; U.S. Department of Transportation T-100, 2008 – 2018E passenger data, November 2018.

Table 3-4 presents the historical share of enplaned passengers by airline since 2014. In each year, Southwest held the largest market share, serving at least 42.3 percent of enplaned passengers. Southwest's share has steadily declined since 2014 as other carriers have grown at the Airport. Delta has held the second highest market share in each of these years and accounted for 26.0 percent of enplaned passengers in 2018E. Ultra low-cost carriers (ULCCs) Frontier and Allegiant have been among the fastest growing airlines at the Airport since 2014. Frontier has grown from 4.5 percent of MKE enplaned passengers in 2014 to 6.9 percent in 2018E. Allegiant initiated service at MKE in 2017 and currently accounts for 1.3 percent of Airport enplaned passengers.

TABLE 3-4 HISTORICAL ENPLANED PASSENGERS BY AIRLINE

	2013		2014		2015		2016		2017		2018E	
CARRIER[1]	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE
Southwest	1,500,728	45.9%	1,514,527	46.2%	1,523,497	46.5%	1,545,222	45.7%	1,472,695	42.7%	1,516,215	42.3%
Delta	881,088	27.0%	852,747	26.0%	860,423	26.3%	829,656	24.5%	862,152	25.0%	930,325	26.0%
American	391,828	12.0%	411,740	12.6%	442,003	13.5%	425,444	12.6%	447,694	13.0%	438,541	12.2%
United	245,287	7.5%	320,615	9.8%	301,359	9.2%	306,200	9.1%	329,831	9.6%	294,409	8.2%
Frontier	148,448	4.5%	156,697	4.8%	99,290	3.0%	202,258	6.0%	229,111	6.6%	248,411	6.9%
Alaska	0	0.0%	0	0.0%	12,087	0.4%	24,760	0.7%	30,680	0.9%	51,383	1.4%
Allegiant	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10,691	0.3%	45,017	1.3%
Air Canada	0	0.0%	0	0.0%	3,515	0.1%	17,293	0.5%	17,264	0.5%	25,447	0.7%
Volaris	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9,831	0.3%	9,305	0.3%
Other[2]	98,930	3.0%	22,494	0.7%	35,182	1.1%	32,438	1.0%	42,595	1.2%	25,871	0.7%
Airport Total	**3,266,309**	**100.0%**	**3,278,820**	**100.0%**	**3,277,356**	**100.0%**	**3,383,271**	**100.0%**	**3,452,544**	**100.0%**	**3,584,924**	**100.0%**

NOTES:

1 Top 10 by enplaned passengers as of 2018.

2 Includes airlines with minimal market share, charter activity, or airlines that may not operate at the Airport as of 2018.

SOURCE: Milwaukee Mitchell International Airport, November 2018.

The Airport primarily serves origin and destination (O&D) passengers, which are passengers beginning or ending their journeys at the Airport. As shown in **Table 3-5** total O&D passenger volumes declined from 2010 to 2013. This was due in large part to capacity reductions by Frontier. Since then, O&D passenger volumes have grown from approximately 3.0 million enplaned passengers in 2013 to 3.5 million enplaned passengers in 2018E. O&D passengers accounted for approximately 98 percent of all passengers in 2018E.

Connecting passengers were at one point a significant component of total traffic but connecting passenger volumes have declined significantly due to the dissolution of both the Midwest/Frontier and AirTran hubs. Connecting passengers reached a peak of 1.1 million enplaned passengers, or 23 percent of total airport enplaned passengers in 2010. In 2018E, connecting passengers accounted for approximately 88,000 enplaned passengers, or 2 percent of total passengers. Southwest is currently responsible for nearly all connecting passengers at the Airport.

TABLE 3-5 HISTORICAL O&D AND CONNECTING ENPLANED PASSENGERS

YEAR	O&D ENPLANED PASSENGERS	CONNECTING ENPLANED PASSENGERS	TOTAL ENPLANED PASSENGERS	GROWTH	PERCENTAGE O&D	PERCENTAGE CONNECTING
2009	3,109,160	872,711	3,981,871		78%	22%
2010	3,803,714	1,123,844	4,927,558	23.7%	77%	23%
2011	3,798,707	962,245	4,760,952	-3.4%	80%	20%
2012	3,313,591	466,724	3,780,315	-20.6%	88%	12%
2013	3,049,831	216,478	3,266,309	-13.6%	93%	7%
2014	3,066,744	212,076	3,278,820	0.4%	94%	6%
2015	3,077,740	199,616	3,277,356	0.0%	94%	6%
2016	3,220,235	163,036	3,383,271	3.2%	95%	5%
2017	3,332,257	120,287	3,452,544	2.0%	97%	3%
2018E	3,496,951	87,973	3,584,924	3.8%	98%	2%
Compound Annual Growth Rate						
2009-2018E	1.3%	-22.5%	-1.2%			

NOTE: O&D - Origin and Destination
SOURCE: U.S. Department of Transportation DB1b Survey, November 2018.

An important airport characteristic is the schedule of nonstop airline service to the airport's largest markets, which is a function of air travel demand and airline profitability or supportability. **Table 3-6** presents historical data on the Airport's top 20 domestic O&D markets during the four quarters ending Q2 2018 (the latest period available for these data), as measured by total O&D passengers. All of the top 20 markets had nonstop service (year-round or seasonal) from the Airport. The average domestic air fare at MKE during Q2 2018 was $183. Combined, the top 20 markets accounted for more than 70 percent of all O&D passengers, while the five largest markets, Orlando, New York, Denver, Phoenix, and Las Vegas accounted for more than 30 percent of O&D passengers.

TABLE 3-6 TOP 20 MKE DOMESTIC O&D MARKETS (FOUR QUARTERS ENDING Q2 2018)

RANK	MARKET	TOTAL O&D PASSENGERS (BOTH WAYS)	PERCENTAGE OF TOTAL	AVERAGE GROSS FARE	NONSTOP SERVICE [1]
1	Orlando	437,581	6.9%	$130	●
2	New York [2]	420,622	6.6%	$196	●
3	Denver	361,242	5.7%	$137	●
4	Phoenix	355,440	5.6%	$138	●
5	Las Vegas	338,007	5.3%	$146	●
6	Atlanta	273,367	4.3%	$166	●
7	Dallas [3]	236,020	3.7%	$156	●
8	Miami [4]	215,893	3.4%	$153	●
9	Tampa	208,051	3.3%	$145	●
10	Los Angeles[5]	186,471	2.9%	$231	●
11	Fort Myers	185,334	2.9%	$149	●
12	Boston[6]	166,089	2.6%	$192	●
13	Washington[7]	179,964	2.8%	$192	●
14	Minneapolis	154,930	2.4%	$191	●
15	San Francisco[8]	147,331	2.3%	$232	●
16	Seattle	137,336	2.2%	$215	●
17	Baltimore	134,371	2.1%	$174	●
18	Nashville	114,850	1.8%	$116	●
19	Philadelphia	108,110	1.7%	$227	●
20	Houston[9]	100,740	1.6%	$204	●
Total Top 20 Airports		4,461,749	70.5%		
Other O&D Markets		1,870,926	29.5%		
Total O&D Passengers		**6,332,675**		**$183**	

NOTES:
1 Non-stop service as of November 2018, passenger volumes and average fares are as of Q2 2018.
2 Includes John F. Kennedy (JFK), LaGuardia (LGA), and Newark, NJ (EWR).
3 Includes Dallas Love Field (DAL) and Dallas/Fort Worth (DFW).
4 Includes Fort Lauderdale (FLL), Miami (MIA), and West Palm Beach (PBI).
5 Includes Los Angeles (LAX), Orange County (SNA), Ontario (ONT), Burbank (BUR), and Long Beach (LGB).
6 Includes Logan International Airport (BOS) and T.F. Green Airport (PVD).
7 Includes Washington Reagan National (DCA) and Washington Dulles (IAD).
8 Includes San Francisco (SFO), San Jose (SJC), and Oakland (OAK).
9 Includes Houston Hobby (HOU) and Houston Bush Intercontinental (IAH).
SOURCES: U.S. Department of Transportation DB1b Survey, November 2018; Innovata, December 2018.

- Passenger Airline: Passenger airline operations declined sharply from a peak of 154,955 in 2010 to 76,977 in 2015. The pulldown of the former Midwest Airlines hub had a significant impact on operations as it accounted for more than half of passenger airline operations at the Airport in 2010. Since 2014, passenger airline operations have stabilized. Growing passenger volumes have been accommodated by airlines with larger aircraft, and many 50-seat regional jets at the Airport have been replaced with larger regional jets and mainline aircraft.
- Cargo Airlines: Cargo airline operations have grown at a compound annual rate of 2.8 percent since 2009. Growth of cargo aircraft operations in recent years, from 12,886 in 2014 to 13,477 in 2018E has been due to increased activity by Freight Runners Express, a regional scheduled and on-demand cargo airline.
- General Aviation: General aviation activity has remained stable over the past ten years. Operations have grown from a ten-year low point of 12,394 in 2016 to 13,477 operations in 2018E. Many of general aviation operations in the region take place at surrounding general aviation airports such as Timmerman Airport (MWC), Waukesha County Airport (UES), and Kenosha Regional Airport (ENW).
- Military: The Airport is the home of Wisconsin Air National Guard's 128th Air Refueling Wing (ARW) which operates KC-135 Stratotanker aircraft. Military operations have fluctuated from a high of 2,161 in 2013 to 1,491 in 2015. As of 2018E, 2,059 military operations were conducted.

3.1.3 AIRCRAFT OPERATIONS

Table 3-7 depicts historical aircraft operations for passenger airline, cargo airline, general aviation, and military aircraft. Total aircraft operations have declined at a compound annual rate of 4.2 percent since 2009, due to reductions in passenger airline operations Some of this reduction can be attributed to the spike in jet fuel prices, which contributed to the discontinuation of service by smaller commuter planes feeding Midwest's MKE hub. **Table 3-8** provides historical fleet mix data for the last five years.

TABLE 3-7 HISTORICAL AIRCRAFT OPERATIONS

YEAR	PASSENGER AIRLINE	CARGO AIRLINE	GENERAL AVIATION	MILITARY	TOTAL
2009	134,815	10,516	22,562	1,800	169,693
2010	154,955	12,184	22,814	1,600	191,553
2011	138,345	12,652	20,652	1,368	173,017
2012	97,718	12,772	21,105	1,771	133,366
2013	84,667	13,034	19,687	2,161	119,549
2014	78,892	12,886	19,566	1,904	113,248
2015	76,977	13,236	19,797	1,491	111,501
2016	78,453	13,498	19,475	2,104	113,530
2017	76,042	13,354	20,890	2,059	112,345
2018E	77,306	13,477	21,457	2,059	114,299
Compound Annual Growth Rate					
2009-2018E	(6.0%)	2.8%	-0.2%	1.5%	(4.2%)

SOURCES: Milwaukee Mitchell Milwaukee International Airport, November 2018; U.S. Department of Transportation T-100, November 2018; Federal Aviation Administration, Operations Network (OPSNET), December 2018.

TABLE 3-8 HISTORICAL AIRCRAFT FLEET MIX

AIRCRAFT TYPE	SEAT CAPACITY	2014	2015	2016	2017	2018E
Passenger						
Small Piston/Turboprop/Regional Jet	<51	27,726	25,575	25,089	19,220	17,059
Medium Regional Jet/Turboprop	51-76	6,510	8,661	8,768	11,805	16,002
Large Regional Jet/Turboprop	77-100	0	0	0	0	0
Small Narrowbody	101-130	4,203	675	949	1,448	776
Medium Narrowbody	131-160	39,323	36,309	36,524	32,188	29,281
Large Narrowbody	161-199	1,027	5,392	6,738	10,558	13,121
High Density Narrowbody	200-230	101	363	385	823	1,067
Small Widebody	231+	0	0	0	0	0
Subtotal		**78,892**	**76,977**	**78,453**	**76,042**	**77,306**
Cargo						
Small Piston/Turboprop		9,536	9,706	9,811	9,622	9,627
Narrowbody		1,031	1,108	1,178	1,212	1,270
Widebody		2,319	2,422	2,509	2,520	2,580
Subtotal		**12,886**	**13,236**	**13,498**	**13,354**	**13,477**
General Aviation/Other Air Taxi						
Jet		14,694	15,085	15,152	15,208	15,619
Piston		2,270	2,178	2,025	2,465	2,523
Turboprop/Turboshaft		2,465	23,56	2,162	3,154	3,237
Helicopter		0	0	0	0	0
Other		137	178	136	84	78
Subtotal		**19,566**	**19,797**	**19,475**	**20,890**	**21,457**
Military						
Subtotal		**1,904**	**1,491**	**2,104**	**2,059**	**2,059**
Airport Total		**113,248**	**115,501**	**113,530**	**112,345**	**114,299**

NOTE: Totals may not add due to rounding.

SOURCES: Milwaukee Mitchell Milwaukee International Airport, November 2018; U.S. Department of Transportation T-100, November 2018; Federal Aviation Administration, Operations Network (OPSNET), December 2018.

3.2 FACTORS AFFECTING AVIATION DEMAND

This section discusses the qualitative factors that may influence future aviation activity at the Airport. These factors were considered, either directly or indirectly, in developing the aviation activity forecasts for the Airport.

3.2.1 NATIONAL ECONOMY

Historically, trends in airline travel have been closely correlated with national economic trends, most notably changes in Gross Domestic Product (GDP). Section 3.3, Forecasts of Passenger Airline Activity, provides an overview of the general economic trends, both national and local, that may influence demand for air service over time. National GDP is expected to increase 2.1 percent annually through the forecast period, which should support

generally increasing demand for air service. Actual economic activity may differ from this projection, especially on a year-to-year basis. Demand for air service may be impacted by changes in economic performance.

3.2.2 STATE OF THE AIRLINE INDUSTRY

In the aftermath of the terrorist attacks on September 11, 2001, the U.S. airline industry experienced a material adverse shift in the demand for airline travel, which exacerbated problems for a U.S. airline industry already weakened by a slowing economy and rising labor and fuel costs. The result was 4 years of reported industry operating losses in 2001 through 2004, totaling more than $22 billion (excluding extraordinary charges and gains). Following these years, the airline industry recovered through 2007, with U.S. airlines posting combined operating profits in all 3 years.[3] In 2008 and through the first half of 2009, the combination of record-high fuel prices, weakening economic conditions, and a weak dollar resulted in the worst financial environment for U.S. airlines since the September 11 terrorist attacks.

In 2008, many domestic network airlines announced significant capacity reductions, increases in fuel surcharges, airfares and fees, and other measures to address the challenges. Capacity cuts improved conditions for the airlines, even though the recovery was uneven across different regions. After a $4.6 billion loss in 2009, the global airline industry recovered and remained profitable with annual net profits in each subsequent year. Globally, passenger traffic increased 5.5 percent from 2013 to 2014. After a nearly $19.9 billion net profit for the global airline industry in 2014, the industry recorded $35.3 billion in profits in 2015. North American airline net profit reached $13.2 billion in 2015, compared with $11.9 billion in 2014. Declining fuel prices since 2015 have enabled greater capacity growth and sustained profitability. North American airlines grew capacity 4.6 percent in 2016, and a further 3.9 percent in 2017. In 2017, North American airline net profit reached $15.6 billion, and is projected by the International Air Transport Association to grow to $16.4 billion in 2018.[4]

3.2.3 COMPETING AIRPORTS

Passengers in and around the Airport Service Area have a choice of airports. In particular, Chicago's O'Hare International Airport (ORD), located approximately 73 miles south of the Airport, competes for Milwaukee passengers, especially those living south of the Airport. ORD serves as a hub for American and United. ORD has scheduled service to a wide range of domestic and international destinations, often with multiple flights each day. According to a study commissioned by the Airport[5], there is some evidence of leakage, where passengers living closer to MKE drive to ORD to fly from that airport for reasons such as the lack of a nonstop flight from MKE to the desired passenger destination.

In addition to airports that compete for MKE passengers, the Airport also attracts passengers from geographic areas served by other Wisconsin airports, including Green Bay Austin Straubel International Airport (GRB), Appleton International Airport (ATW), and Dane County Regional Airport (MSN). MKE captures approximately 13 percent of traffic in the Madison area and approximately 33 percent of traffic in the Appleton and Green Bay areas[6] due to MKE's greater number of flights and nonstop destinations. MKE also captures a small percentage of travelers in northern Illinois who choose MKE due to its relative ease of access.

[3] Source: Airlines for America, 2009 Economic Report.

[4] Source: International Air Transport Association, Airline Industry Economic Performance, December 2017.

[5] Source: *Milwaukee General Mitchell Catchment Study*, July 2017 (updated Q1 2018).

[6] Ibid.

Passenger choice of airports will be influenced by several factors, including availability of seats, schedule options, nonstop service, and ease of access. **Table 3-9** depicts service levels and average fares to MKE's top 50 domestic O&D destinations, as well as those same service levels and average fares from ORD in 2017. MKE had nonstop service to 34 of its top 50 destinations, while ORD had nonstop service to 50 of those same destinations, with 49 of those destinations served by more than one airline due to its role as a hub for two airlines.

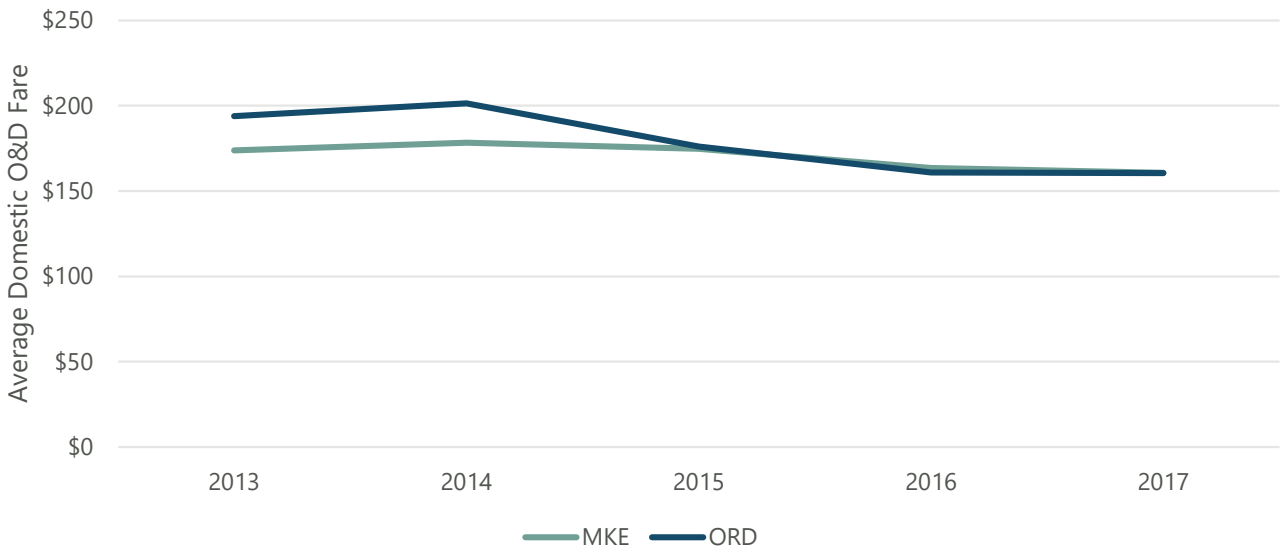
TABLE 3-9 SCHEDULED SERVICE AND AVERAGE FARES FOR MKE'S TOP 50 MARKETS (2017)

AIRPORT	MARKETS WITH NONSTOP SERVICE	AVERAGE DAILY DEPARTING DOMESTIC SEATS	AVERAGE DAILY DEPARTING FLIGHTS	AVERAGE FARE	MARKETS SERVED BY MULTIPLE AIRLINES
MKE	34	11,070	89	$154	16
ORD	50	84,623	638	$152	49

SOURCES: Innovata, December 2018; U.S. Department of Transportation DB1b Survey, December 2018.

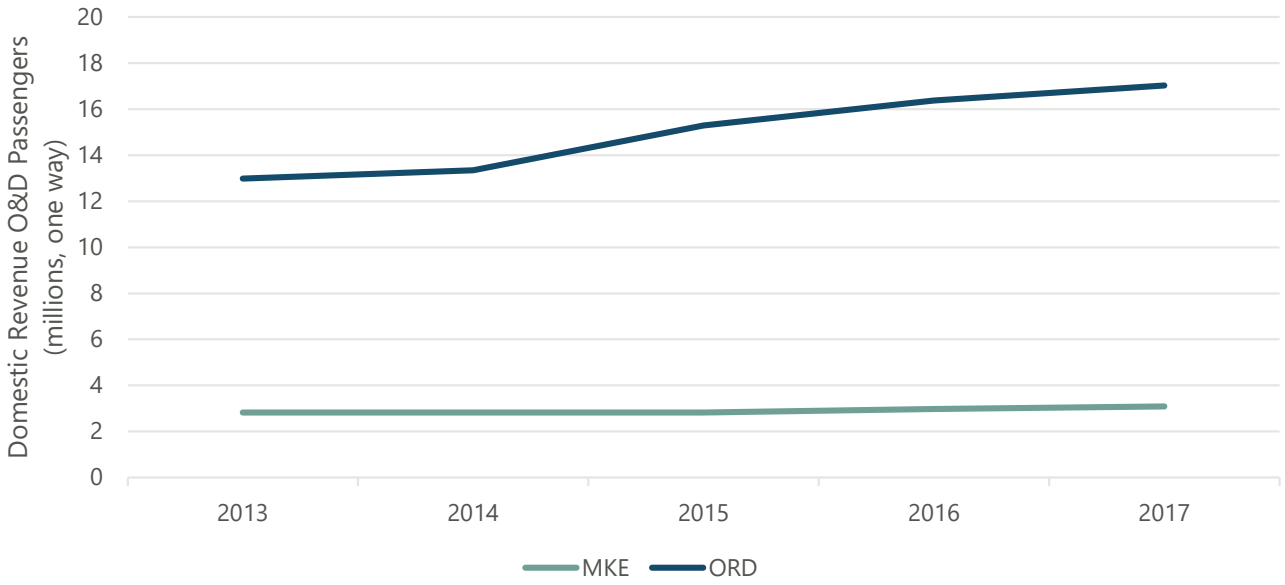
Considering average O&D fares in the ORD and MKE markets, as shown in **Exhibit 3-2**, the average O&D fares in these markets have been nearly identical at ORD and MKE since 2015. MKE fares were lower than ORD's until 2015, when Spirit and Frontier grew at ORD and fares declined as American and United matched their fares. MKE's O&D passenger volumes have not declined however. As shown, in **Exhibit 3-3**, O&D domestic passenger volumes at MKE have remained steady while ORD's have grown. The presence of a hub or focus city at airports near MKE will continue to have an impact on passengers, especially some international passengers who choose nonstop international service from ORD.

EXHIBIT 3-2 AVERAGE O&D FARES FOR MKE'S TOP 50 MARKETS



NOTE: O&D – Origin and Destination
SOURCE: U.S. Department of Transportation DB1b Survey, October 2018.

EXHIBIT 3-3 TOTAL DOMESTIC O&D PASSENGER VOLUMES AT MKE AND ORD



NOTE: O&D – Origin and Destination
SOURCE: U.S. Department of Transportation DB1b Survey, October 2018.

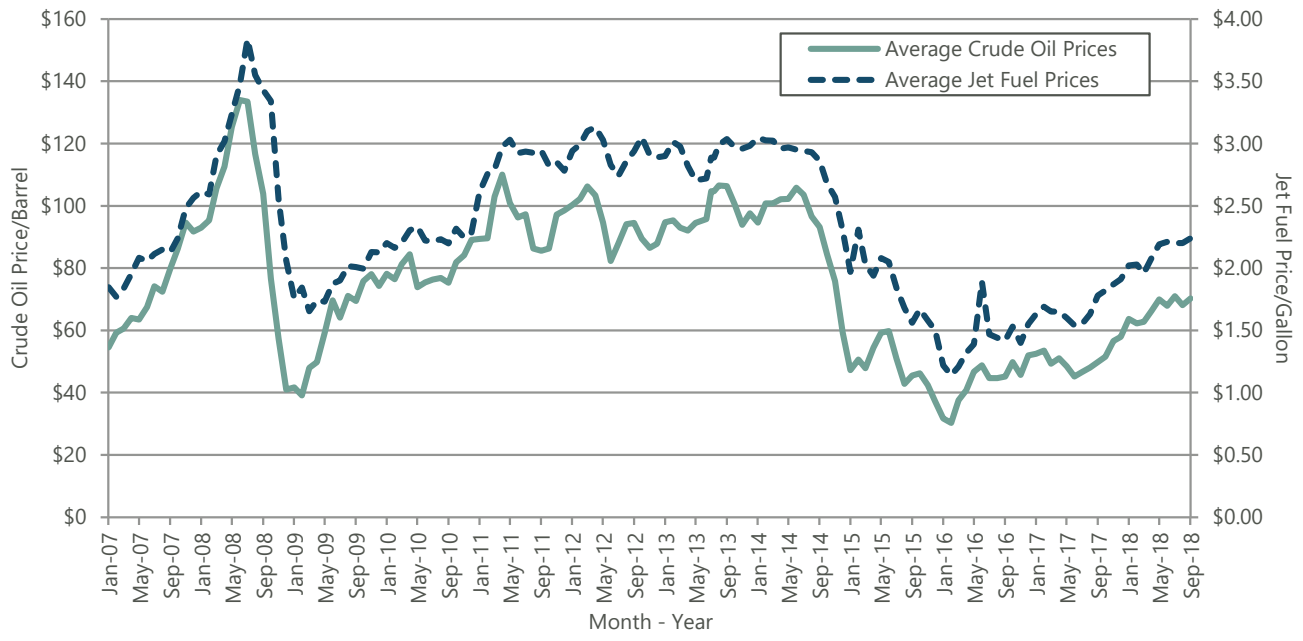
Ease of access is another factor that influences passenger choice among Airports. The I-94 North-South Freeway Project has been initiated to redevelop and expand a 35-mile stretch of I-94 from the Illinois state line to the Mitchell Interchange. This project will improve access from points south to MKE upon completion in 2020.

3.2.4 COST OF AVIATION FUEL

As of the second quarter of 2018, jet fuel accounted for 20.1 percent of total airline operating costs, second only to labor, according to Airlines for America (A4A) [7]. As recently as 2014, jet fuel represented an airline's largest operating expense, and the cost of fuel is one of the most significant and volatile factors affecting the airline industry today. In September 2018, the average price of jet fuel was $2.24 per gallon; it has grown steadily since June 2017, but it is still well below previously sustained high prices in 2014. **Exhibit 3-4** shows the monthly averages for jet fuel and crude oil prices from January 2007 through September 2018. If jet fuel prices continue to increase over time, passenger volumes may be impacted as airlines could reduce capacity and raise fares to offset higher costs through higher revenues.

[7] Source: Airlines for America, Passenger Airline Cost Index (PACI), (accessed December 2018).

EXHIBIT 3-4 HISTORICAL MONTHLY AVERAGES OF JET FUEL AND CRUDE OIL PRICES



SOURCES: U.S. Bureau of Transportation Statistics, November 2018; U.S. Energy Information Administration, November 2018.

3.2.5 REGIONAL ECONOMIC DEVELOPMENT

In June 2018, Foxconn broke ground on a $10 billion LCD fabrication facility 20 miles south of MKE. The facility is expected to serve as the anchor for additional manufacturing and technology-related industries in what has been termed the Wisconn Valley. Based on economic impact studies commissioned separately by Foxconn and the State of Wisconsin, the facility may directly employ up to 10,000 people by 2024. The facility's operations will support over 35,000 jobs when including the impact of construction and other indirect and induced jobs. The total economic impact of the fabrication facility is expected to provide $955 million in incremental earnings, and an additional $3.4 billion dollars to Wisconsin's Gross State Product by 2025. Foxconn also purchased a building in downtown Milwaukee for its new North American headquarters. An overview of the projected economic impacts is provided in **Table 3-10.**

TABLE 3-10 ESTIMATED INCREMENTAL ECONOMIC IMPACT OF FOXCONN

YEAR	EMPLOYMENT[1]	EARNINGS[2]	GDP[2]
2017	0	$0	$0
2018	1	$159	$420
2019	7	$318	$840
2020	18	$478	$1,260
2021	28	$637	$1,680
2022	35	$796	$2,101
2023	35	$955	$2,521
2024	35	$955	$2,941
2025	35	$955	$3,361
2026	35	$955	$3,361
2027	35	$955	$3,361
2028	35	$955	$3,361
2029	35	$955	$3,361
2030	35	$955	$3,361
2031	35	$955	$3,361
2032	35	$955	$3,361
2033	35	$955	$3,361
2034	35	$955	$3,361
2035	35	$955	$3,361
2036	35	$955	$3,361
2037	35	$955	$3,361
2038	35	$955	$3,361
2039	35	$955	$3,361
2040	35	$955	$3,361

NOTES:
1 In thousands
2 In millions

SOURCES: EY *Quantifying Project Flying Eagles Potential Economic Impacts on Wisconsin*, July 2017; *An Evaluation of the Economic Impact of the Foxconn Proposal*, Noah Williams Center for Research on the Wisconsin Economy (CROWE) Univ. of Wisconsin-Madison, August 2017; Woods & Poole Economics, Inc. 2018.

Other significant regional developments are included in the socioeconomic data sourced from Woods & Poole, Examples of developments either planned or currently underway include:

- A new $285 million HQ/manufacturing campus for Komatsu Mining Corp in Milwaukee
- A 2.6 million square foot Amazon distribution center in Oak Creek, Wisconsin
- An additional 800,000 square foot distribution facility for Uline in Kenosha, Wisconsin
- Construction of a $242 million Haribo plant in Pleasant Prairie, Wisconsin
- A $1 billion NBA Arena and surrounding entertainment complex opened in 2018
- Planned upgrade and expansion of the Wisconsin Center
- Completion of the $132.6 million BMO Harris Tower in 2020

3.2.6 THREAT OF TERRORISM AND GEOPOLITICAL ISSUES

Acts of terrorism against either domestic or global aviation are risks to achieving the results of activity forecasts. Tighter security measures since 2011 have restored the public's confidence in the integrity of U.S. and world aviation security systems. However, terrorist incidents aimed at aviation could have an immediate and significant effect on the future demand for aviation services.

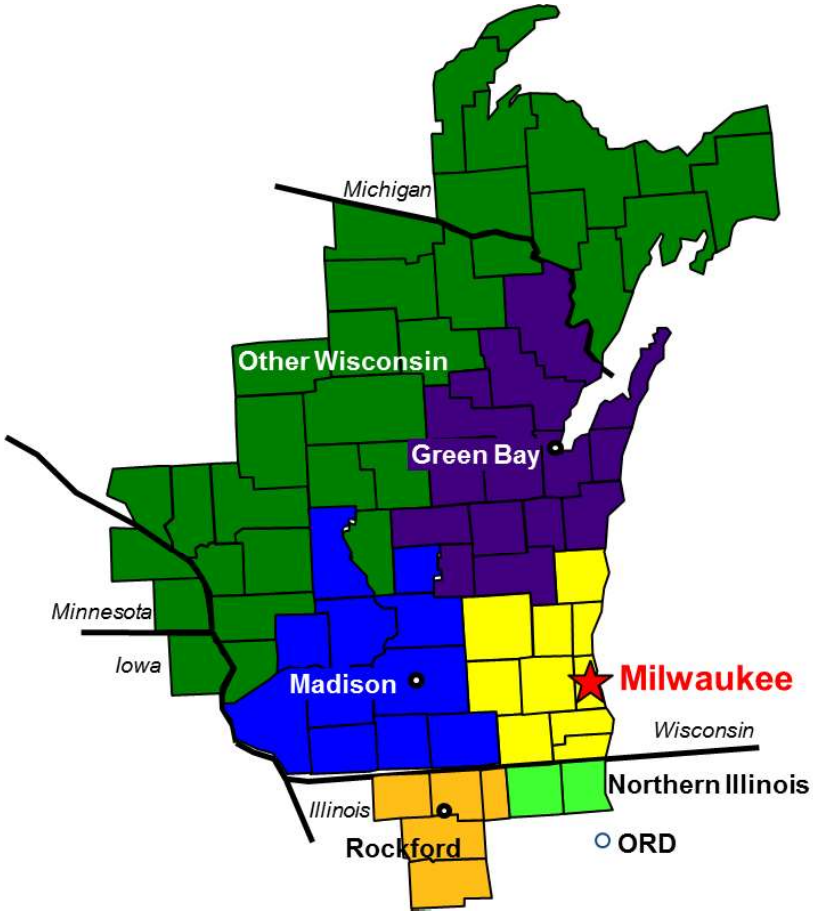
3.2.7 AIRPORT SERVICE AREA

The Airport Service Area is explained as, for the purposes of this Master Plan Update, the geographic area surrounding an airport that generates most "local" activity. The population, economic characteristics, and number of competing airports within an airport's service area are important factors in defining locally-generated demand for aviation facilities and service. Economic and demographic changes in the Airport Service Area will have a material impact on future demand of aviation activity.

Various geographic areas surrounding the Airport were evaluated for use as the Airport Service Area based on the predictive relationship between historical O&D passenger demand and socioeconomics of the geographic area. The selected Airport Service Area is a six-region geographic region defined by the *Milwaukee General Mitchell International Airport Catchment Study* dated Q1 2018 and depicted in **Exhibit 3-5**. This study, which relies on Airline Reporting Corporation Market Locator Ticketing data, summarizes travel patterns for passengers residing in the six-region geographic area that forms the Airport Service Area.

The identified Airport Service Area includes counties in portions of Wisconsin, and parts of four adjacent states. The socioeconomics of each county were weighted proportionately based on the percentage of MKE originating passengers that originated in each county during the four quarters ending Q1 2018. For example, if 2.5 percent of MKE originating passengers came from Dodge County, Dodge County's population would be weighted as 2.5 percent of the total Airport Service Area population.

EXHIBIT 3-5 AIRPORT SERVICE AREA



NOTE:
The colors shown correspond to six regions depicted in the referenced leakage study. These include the Milwaukee, Madison, Green Bay, Other Wisconsin/Michigan, Lake-McHenry Counties (Northern Illinois), and Rockford regions.
SOURCE: *Milwaukee General Mitchell International Airport Catchment Study Executive Summary*, Q1 2018.

3.3 FORECASTS OF PASSENGER AIRLINE ACTIVITY

3.3.1 FORECAST METHODOLOGY

Forecasts of passenger airline activity were developed considering historical and expected factors, including passenger volume trends at the Airport and throughout the industry, historical trends and projections of local and national socioeconomic factors, and anticipated trends in the use of the Airport by the airlines serving it. The following subsections provide an overview of the assumptions and methodologies used in forecasting aviation activity at the Airport and present the results of those forecasts.

3.3.2 KEY ASSUMPTIONS

The forecasts are based on several underlying assumptions, including:

- While year-to-year fluctuations in economic activity are likely, the historical long-term trends of generally expanding economic activity, both nationally and within the Airport Service Area, will continue through the forecast period, resulting in increased demand for air service.
- The Airport will continue its role of primarily serving O&D passengers, with most having destinations offered within one stop of the Airport. In most cases, airlines will continue to focus nonstop service from the Airport to their larger connecting hub airports and to major cities. Airlines will continue to operate as efficiently as possible, actively managing capacity and seeking to maintain or increase load factors on flights.
- The Airport will maintain its general market share of O&D passenger traffic relative to competing airports within the region.
- For these analyses, no terrorist incidents that could materially impact U.S. air traffic demand during the forecast period will occur. Additionally, any airline bankruptcies or industry consolidation during the forecast period will not result in a major contraction within the aviation industry.

3.3.3 NEAR-TERM (2019) PASSENGER FORECAST METHODOLOGY

Published airline schedules for 2019 were analyzed, and flight segment-level estimates of performance were developed based on trends of load factors and completion rates. These were identified through analysis of actual performance data furnished by the Airport through September 2018, as well as through analysis of U.S. DOT enplaned passenger and O&D data available through May 2018. Estimates of load factors and completion rates were applied to scheduled seat capacity and operations to derive enplaned passenger and operations forecasts for 2019.

3.3.4 LONG-TERM (2020-2040) PASSENGER FORECAST METHODOLOGY

Multiple methodologies were explored in the development of passenger activity forecasts, including:

- Market Share
- Socioeconomic Regression Analysis – Multi-Variable (passenger demand with fuel and socioeconomics)
- Socioeconomic Regression Analysis – Single-Variable (passenger demand with socioeconomics)

Each of these methodologies is explained and evaluated below to assess how effectively each can be used to accurately project future passenger activity at the Airport

3.3.4.1 MARKET SHARE

The market share approach is based on the expectation of how passengers at MKE will grow relative to the rest of the industry. **Table 3-11** depicts MKE's share of total United States enplaned passengers since 2009. MKE's share of total United States enplaned passengers grew from 0.560 percent in 2009 to 0.679 percent in 2010, before steadily declining in each year through 2017. In 2018E, MKE's share increased from 0.399 percent to 0.406 percent of total United States enplaned passengers as the Airport grew at a faster rate, 3.8 percent, than the United States' 1.9 percent growth rate. Due to the inconsistent share of total United States enplaned passengers, this approach was not selected for use in the baseline forecasts.

TABLE 3-11 MKE'S HISTORICAL SHARE OF UNITED STATES ENPLANED PASSENGERS

YEAR	AIRPORT ENPLANED PASSENGERS	AIRPORT GROWTH	U.S. TOTAL ENPLANEMENTS[1]	U.S. GROWTH	MARKET SHARE
2009	3,981,871	(0.5%)	710,488,751	(4.8%)	0.560%
2010	4,927,558	23.7%	726,144,188	2.2%	0.679%
2011	4,760,952	(3.4%)	739,170,855	1.8%	0.644%
2012	3,780,315	(20.6%)	743,949,432	0.6%	0.508%
2013	3,266,309	(13.6%)	750,735,667	0.9%	0.435%
2014	3,278,820	0.4%	771,670,792	2.8%	0.425%
2015	3,277,356	(0.0%)	809,039,675	4.8%	0.405%
2016	3,383,271	3.2%	837,865,649	3.6%	0.404%
2017	3,452,544	2.0%	865,418,742	3.3%	0.399%
2018E	3,584,924	3.8%	882,134,514	1.9%	0.406%
Compound Annual Growth Rate					
2009 - 2018	(1.2%)		2.4%		

NOTE:
1 2018 United States enplaned passengers are for the twelve months ending May 2018, the latest period for which data are available.
SOURCES: Milwaukee Mitchell International Airport, November 2018; U.S. Department of Transportation T-100, 2008 – 2018E passenger data, November 2018.

3.3.4.2 SOCIOECONOMIC REGRESSION ANALYSIS

Multi-variable and single variable socioeconomic regression analyses were explored to identify predictive relationships between historic O&D passenger activity at the Airport and historic local and national socioeconomic variables such as population and economic activity as well as the price of jet fuel. Independent projections of the socioeconomic variables and the price of fuel were then used to forecast O&D passenger activity at the Airport.

Table 3-12 shows the historical and forecast socioeconomic data that were sourced from Woods & Poole Economics, Inc., for the Airport Service Area and the nation and used in the regression analyses. Employment, earnings, and Gross Regional Product (GRP) for the Airport Service Area were further adjusted to account for impacts related to the Foxconn development. This forecast assumes 50 percent of the maximum economic impact described in Section 3.2.5, Regional Economic Development, and depicted in Table 3-10 to be incremental to the independent forecasts of socioeconomics. Due to uncertainty surrounding the ultimate build out of this development, 50 percent of the maximum economic impact was selected as a conservative assumption incorporating some, but not all of the potential activity.

Table 3-13 shows the new values for each variable when adjusted for Foxconn-related impacts. Construction of the Foxconn campus is underway, and the company has initiated staffing actions. Recognizing that the pace of development and business actions by this company, as with any company undertaking a similar development, could vary from the schedule and magnitude initially defined, the forecast recognizes this potential uncertainty in the baseline forecast through the assumption of one half of the maximum economic impact of the Foxconn development. The incremental impact for each variable is also shown in **Exhibit 3-6**, **Exhibit 3-7**, and **Exhibit 3-8**.

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TABLE 3-12 HISTORICAL AND FORECAST SOCIOECONOMICS

	AIRPORT SERVICE AREA							UNITED STATES						
YEAR	POPULATION[1]	EMPLOYMENT[1]	TOTAL EARNINGS (2009$)[2]	PERSONAL INCOME (2009$)[2]	NET EARNINGS (2009$)[2]	PCPI (2009$)[3]	GRP (2009$)[2]	POPULATION[1]	EMPLOYMENT[1]	TOTAL EARNINGS (2009$)[2]	PERSONAL INCOME (2009$)[2]	NET EARNINGS (2009$)[2]	PCPI (2009$)[3]	GDP (2009$)[2]
Historical														
2009	1,910	1,129	$55,085	$76,180	$49,556	$39,879	$90,094	306,771	174,234	$8,743,722	$12,079,444	$39,376	$7,783,877	$14,320,115
2010	1,915	1,144	$56,426	$78,460	$51,470	$40,969	$91,027	309,348	173,035	$8,829,868	$12,257,005	$39,622	$7,866,430	$14,618,132
2011	1,921	1,151	$57,593	$80,740	$52,633	$42,037	$92,845	311,663	176,279	$9,017,120	$12,706,253	$40,769	$8,140,482	$14,792,272
2012	1,924	1,165	$57,893	$79,662	$52,147	$41,397	$94,652	313,998	179,082	$9,272,654	$13,102,482	$41,728	$8,380,661	$15,115,991
2013	1,928	1,181	$58,682	$81,399	$52,826	$42,209	$96,370	316,205	182,408	$9,412,786	$13,083,510	$41,377	$8,390,643	$15,415,632
2014	1,930	1,194	$60,456	$84,364	$54,387	$43,720	$98,324	318,563	186,355	$9,678,829	$13,568,885	$42,594	$8,625,321	$15,860,078
2015	1,929	1,210	$61,135	$84,782	$55,019	$43,941	$99,355	320,899	190,423	$10,067,003	$14,201,241	$44,255	$8,968,355	$16,447,679
2016	1,949	1,265	$64,067	$89,052	$57,833	$45,701	$104,227	323,132	193,668	$10,203,884	$14,363,146	$44,450	$9,084,542	$16,708,790
2017	1,959	1,281	$65,253	$90,916	$59,002	$46,411	$106,210	325,888	198,990	$10,475,887	$14,773,992	$45,335	$9,339,674	$17,204,393
2018	1,969	1,295	$66,303	$92,649	$60,042	$47,046	$107,977	328,911	202,638	$10,722,936	$15,161,771	$46,097	$9,573,592	$17,602,878
Forecast														
2019	1,980	1,310	$67,350	$94,358	$61,074	$47,663	$109,740	331,969	205,736	$10,941,891	$15,519,764	$46,751	$9,780,481	$17,957,335
2020	1,990	1,325	$68,404	$96,108	$62,122	$48,292	$111,515	335,058	208,570	$11,144,750	$15,864,181	$47,348	$9,972,501	$18,287,087
2021	2,001	1,338	$69,472	$97,864	$63,181	$48,919	$113,312	338,177	211,558	$11,344,322	$16,203,700	$47,915	$10,161,263	$18,614,867
2022	2,011	1,352	$70,544	$99,611	$64,243	$49,534	$115,117	341,328	214,599	$11,548,203	$16,554,354	$48,500	$10,355,021	$18,949,785
2023	2,021	1,366	$71,627	$101,397	$65,323	$50,163	$116,939	344,505	217,445	$11,755,010	$16,908,591	$49,081	$10,551,706	$19,286,327
2024	2,032	1,380	$72,717	$103,160	$66,410	$50,777	$118,772	347,712	220,327	$11,964,181	$17,264,076	$49,651	$10,750,160	$19,626,972
2025	2,042	1,394	$73,809	$104,888	$67,494	$51,369	$120,608	350,937	223,254	$12,175,743	$17,628,555	$50,233	$10,952,097	$19,971,767
2026	2,052	1,408	$74,906	$106,598	$68,581	$51,951	$122,453	354,177	226,217	$12,389,393	$17,991,563	$50,798	$11,156,286	$20,320,187
2027	2,062	1,421	$76,005	$108,291	$69,669	$52,520	$124,300	357,430	229,158	$12,604,888	$18,351,055	$51,342	$11,361,603	$20,671,067
2028	2,072	1,434	$77,107	$109,938	$70,752	$53,066	$126,152	360,689	232,065	$12,822,036	$18,710,033	$51,873	$11,568,171	$21,023,958
2029	2,081	1,447	$78,207	$111,486	$71,821	$53,568	$127,999	363,960	234,965	$13,040,438	$19,068,275	$52,391	$11,775,833	$21,378,635
2030	2,090	1,460	$79,306	$112,986	$72,883	$54,055	$129,843	367,239	237,848	$13,259,713	$19,420,444	$52,882	$11,983,534	$21,734,514
2031	2,099	1,472	$80,401	$114,465	$73,946	$54,537	$131,681	370,478	240,694	$13,479,134	$19,756,610	$53,327	$12,189,524	$22,090,261
2032	2,107	1,484	$81,495	$115,947	$75,011	$55,027	$133,517	373,667	243,485	$13,698,171	$20,085,547	$53,753	$12,394,767	$22,444,882
2033	2,115	1,496	$82,590	$117,476	$76,085	$55,544	$135,352	376,816	246,223	$13,916,742	$20,412,242	$54,170	$12,600,403	$22,798,304
2034	2,123	1,507	$83,687	$118,972	$77,159	$56,052	$137,188	379,926	248,918	$14,135,088	$20,740,990	$54,592	$12,806,416	$23,150,938
2035	2,130	1,518	$84,786	$120,385	$78,226	$56,524	$139,028	382,998	251,572	$14,353,553	$21,079,895	$55,039	$13,014,051	$23,503,297
2036	2,137	1,530	$85,894	$121,737	$79,292	$56,974	$140,882	386,038	254,184	$14,572,063	$21,414,227	$55,472	$13,221,982	$23,855,200
2037	2,143	1,541	$87,013	$123,067	$80,365	$57,418	$142,750	389,046	256,759	$14,790,701	$21,734,031	$55,865	$13,428,678	$24,206,857
2038	2,150	1,552	$88,145	$124,435	$81,457	$57,885	$144,638	392,027	259,306	$15,009,708	$22,042,756	$56,228	$13,634,663	$24,558,722
2039	2,156	1,563	$89,293	$125,762	$82,548	$58,337	$146,552	394,981	261,826	$15,229,273	$22,347,402	$56,578	$13,840,901	$24,910,994
2040	2,162	1,574	$90,459	$127,121	$83,649	$58,809	$148,493	397,912	264,330	$15,449,997	$22,659,359	$56,946	$14,049,470	$25,264,672
Compound Annual Growth Rate														
2009-2018	0.3%	1.5%	2.1%	2.2%	2.2%	1.9%	2.0%	0.8%	1.7%	2.3%	2.6%	1.8%	2.3%	2.3%
2018-2040	0.4%	0.9%	1.4%	1.4%	1.5%	1.0%	1.5%	0.9%	1.2%	1.7%	1.8%	1.0%	1.8%	1.7%

NOTES: GRP – Gross Regional Product; GDP – Gross Domestic Product.
1 In thousands.
2 In millions.
3 Per Capita Personal Income.
SOURCE: Woods & Poole Economics, Inc., November 2018.

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TABLE 3-13 AIRPORT SERVICE AREA SOCIOECONOMICS ADJUSTED FOR FOXCONN

	WOODS & POOLE PROJECTIONS			PROJECTIONS ADJUSTED FOR FOXCONN			DIFFERENCE		
YEAR	EMPLOYMENT[1]	TOTAL EARNINGS (2009$)[2]	GRP (2009$)[2]	EMPLOYMENT[1]	TOTAL EARNINGS (2009$)[2]	GRP (2009$)[2]	EMPLOYMENT[1]	TOTAL EARNINGS (2009$)[2]	GRP (2009$)[2]
Historical									
2009	1,129	$55,085	$90,094	1,129	$55,085	$90,094	0	0	0
2010	1,144	$56,426	$91,027	1,144	$56,426	$91,027	0	0	0
2011	1,151	$57,593	$92,845	1,151	$57,593	$92,845	0	0	0
2012	1,165	$57,893	$94,652	1,165	$57,893	$94,652	0	0	0
2013	1,181	$58,682	$96,370	1,181	$58,682	$96,370	0	0	0
2014	1,194	$60,456	$98,324	1,194	$60,456	$98,324	0	0	0
2015	1,210	$61,135	$99,355	1,210	$61,135	$99,355	0	0	0
2016	1,265	$64,067	$104,227	1,265	$64,067	$104,227	0	0	0
2017	1,281	$65,253	$106,210	1,281	$65,253	$106,210	0	0	0
2018	1,295	$66,303	$107,977	1,295	$66,303	$107,977	0	0	0
Forecast									
2019	1,310	$67,350	$109,740	1,314	$67,509	$110,160	3.5	$159	$420
2020	1,325	$68,404	$111,515	1,334	$68,643	$112,145	9	$239	$630
2021	1,338	$69,472	$113,312	1,352	$69,791	$114,152	14	$319	$840
2022	1,352	$70,544	$115,117	1,370	$70,942	$116,168	17.5	$398	$1,051
2023	1,366	$71,627	$116,939	1,384	$72,105	$118,200	17.5	$478	$1,261
2024	1,380	$72,717	$118,772	1,398	$73,195	$120,243	17.5	$478	$1,471
2025	1,394	$73,809	$120,608	1,412	$74,287	$122,289	17.5	$478	$1,681
2026	1,408	$74,906	$122,453	1,426	$75,384	$124,134	17.5	$478	$1,681
2027	1,421	$76,005	$124,300	1,439	$76,483	$125,981	17.5	$478	$1,681
2028	1,434	$77,107	$126,152	1,452	$77,585	$127,833	17.5	$478	$1,681
2029	1,447	$78,207	$127,999	1,465	$78,685	$129,680	17.5	$478	$1,681
2030	1,460	$79,306	$129,843	1,478	$79,784	$131,524	17.5	$478	$1,681
2031	1,472	$80,401	$131,681	1,490	$80,879	$133,362	17.5	$478	$1,681
2032	1,484	$81,495	$133,517	1,502	$81,973	$135,198	17.5	$478	$1,681
2033	1,496	$82,590	$135,352	1,514	$83,068	$137,033	17.5	$478	$1,681
2034	1,507	$83,687	$137,188	1,525	$84,165	$138,869	17.5	$478	$1,681
2035	1,518	$84,786	$139,028	1,536	$85,264	$140,709	17.5	$478	$1,681
2036	1,530	$85,894	$140,882	1,548	$86,372	$142,563	17.5	$478	$1,681
2037	1,541	$87,013	$142,750	1,559	$87,491	$144,431	17.5	$478	$1,681
2038	1,552	$88,145	$144,638	1,570	$88,623	$146,319	17.5	$478	$1,681
2039	1,563	$89,293	$146,552	1,581	$89,771	$148,233	17.5	$478	$1,681
2040	1,574	$90,459	$148,493	1,592	$90,937	$150,174	17.5	$478	$1,681
Compound Annual Growth Rate									
2009-2018	1.5%	2.1%	2.0%	1.5%	2.1%	2.0%	NA	NA	NA
2018-2040	0.9%	1.4%	1.5%	0.9%	1.4%	1.5%	NA	NA	NA

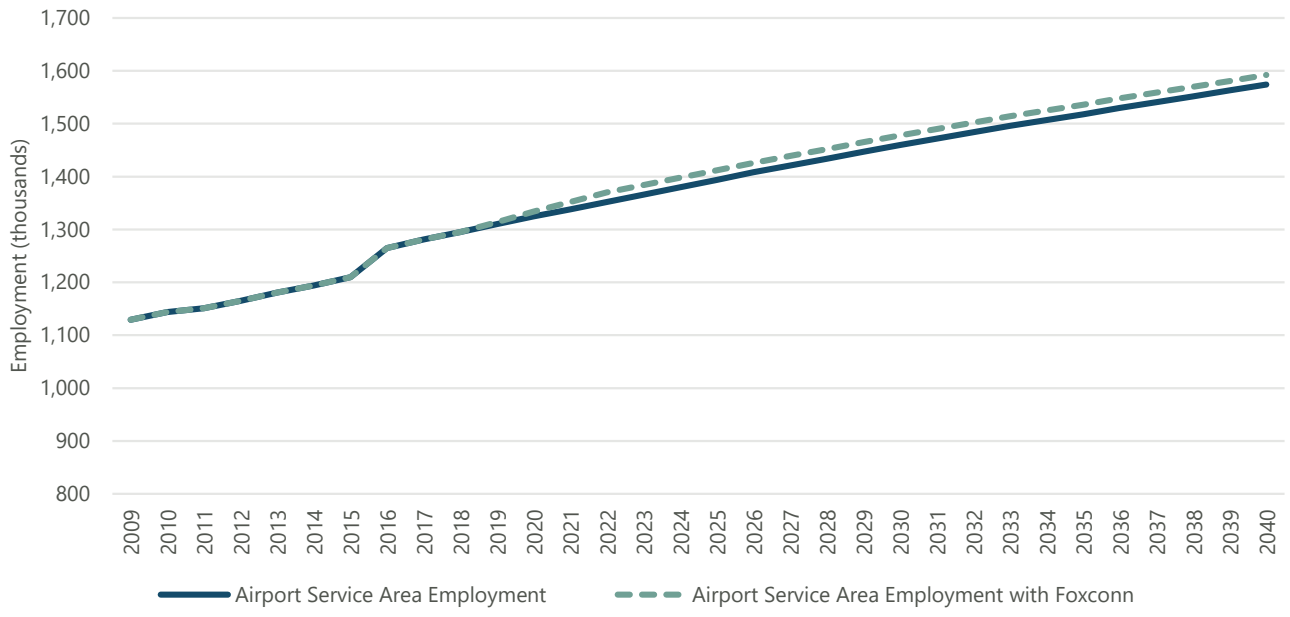
NOTES: GRP – Gross Regional Product

1 In thousands.

2 In millions.

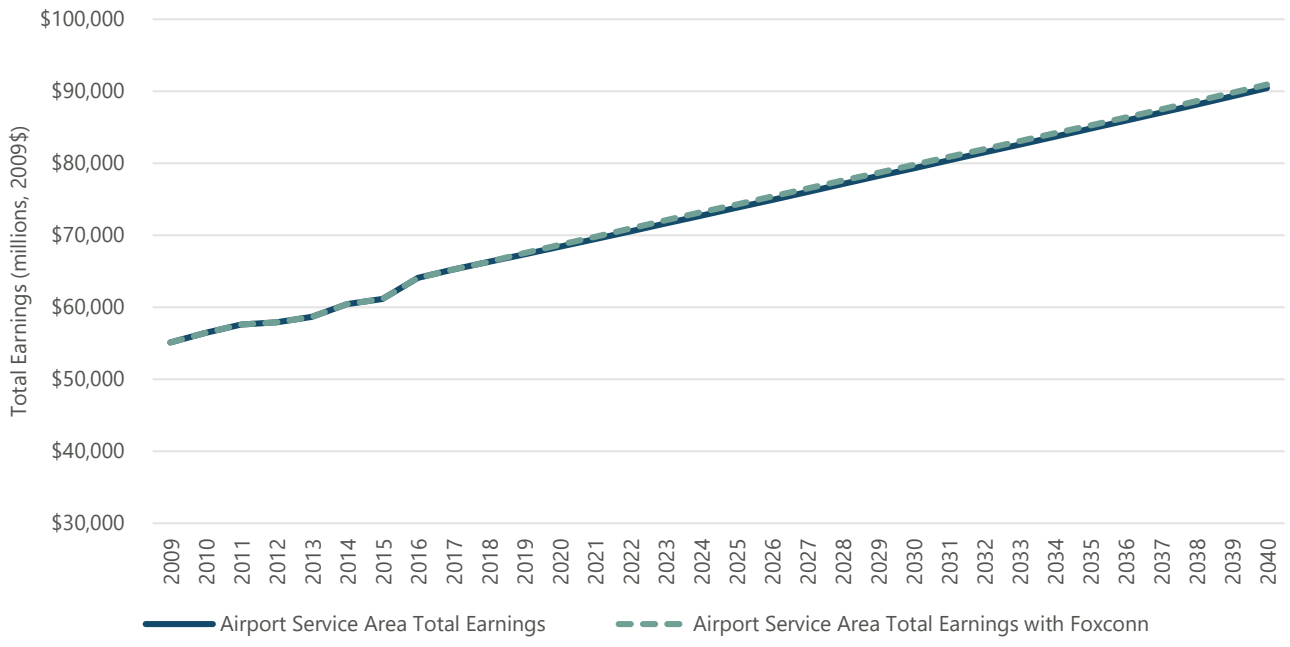
SOURCES: *EY Quantifying Project Flying Eagles Potential Economic Impacts on Wisconsin*, July 2017; *An Evaluation of the Economic Impact of the Foxconn Proposal*, Noah Williams Center for Research on the Wisconsin Economy (CROWE) Univ. of Wisconsin-Madison, August 2017; Woods & Poole Economics, Inc. 2018.

EXHIBIT 3-6 INCREMENTAL IMPACT OF FOXCONN-RELATED EMPLOYMENT



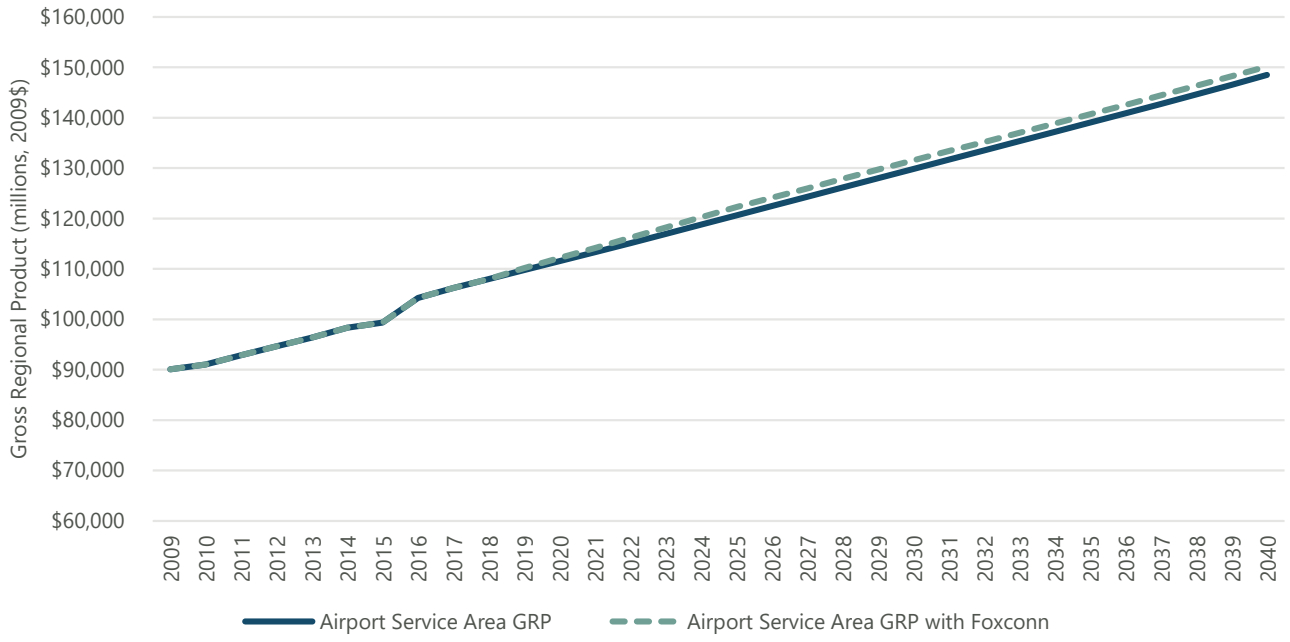
SOURCES: *EY Quantifying Project Flying Eagles Potential Economic Impacts on Wisconsin*, July 2017*; An Evaluation of the Economic Impact of the Foxconn Proposal*, Noah Williams Center for Research on the Wisconsin Economy (CROWE) Univ. of Wisconsin-Madison, August 2017; Woods & Poole Economics, Inc. 2018.

EXHIBIT 3-7 INCREMENTAL IMPACT OF FOXCONN-RELATED TOTAL EARNINGS



SOURCES: *EY Quantifying Project Flying Eagles Potential Economic Impacts on Wisconsin*, July 2017*; An Evaluation of the Economic Impact of the Foxconn Proposal*, Noah Williams Center for Research on the Wisconsin Economy (CROWE) Univ. of Wisconsin-Madison, August 2017; Woods & Poole Economics, Inc. 2018.

EXHIBIT 3-8 INCREMENTAL IMPACT OF FOXCONN-RELATED GROSS REGIONAL PRODUCT



NOTE:
GRP – Gross Regional Product
SOURCES: *EY Quantifying Project Flying Eagles Potential Economic Impacts on Wisconsin*, July 2017; *An Evaluation of the Economic Impact of the Foxconn Proposal*, Noah Williams Center for Research on the Wisconsin Economy (CROWE) Univ. of Wisconsin-Madison, August 2017; Woods & Poole Economics, Inc. 2018.

A standard measure of how well each variable explains passenger demand is the regression model's coefficient of determination, or R-squared value. A result of 100 percent is the maximum value possible and represents a perfect fit between the variables analyzed. For the purposes of this forecast, and based on our professional judgement, a minimum R-squared value of 75 percent was deemed necessary for use in these analyses.

Multi-Variable Regression Analysis

Multi-variable regression analysis was used to analyze the relationship between O&D passenger volumes and Airport Service Area or national socioeconomics and the price of aviation fuel. Forecasts of socioeconomic activity were sourced as described above, while historical and forecast fuel prices were sourced from the *FAA Aerospace Forecast, Fiscal Years 2018-2038*. This analysis resulted in R-squared values ranging from a low of 51 percent to a high of 69 percent. Detail of these relationships are depicted below in **Table 3-14**. Due to the lack of observed relationships with an R-squared value greater than 75 percent, multi-variable regression analysis was not selected for use in the baseline activity forecasts.

TABLE 3-14 SOCIOECONOMIC MULTI-VARIABLE REGRESSION ANALYSIS RESULTS

INDEPENDENT VARIABLES	R-SQUARED
Airport Service Area Employment and Fuel Price	51%
Airport Service Area GRP and Fuel Price	62%
Airport Service Area Net Earnings and Fuel Price	53%
Airport Service Area Personal Inc. and Fuel Price	61%
Airport Service Area Personal Income Per Capita and Fuel Price	58%
Airport Service Area Population and Fuel Price	69%
Airport Service Area Total Earnings and Fuel Price	53%
U.S. Employment and Fuel Price	59%
U.S. GDP and Fuel Price	64%
U.S. Net Earnings and Fuel Price	61%
U.S. Personal Inc. and Fuel Price	64%
U.S. Personal Income Per Capita and Fuel Price	61%
U.S. Population and Fuel Price	68%
U.S. Total Earnings and Fuel Price	61%

NOTES: GRP – Gross Regional Product; GDP – Gross Domestic Product.

SOURCES: Woods & Poole Economics, Inc; U.S. Department of Transportation DB1b Survey; *FAA Aerospace Forecast, Fiscal Years 2018-2038*; Ricondo & Associates, Inc. (analysis), November 2018

Single-Variable Regression Analysis

Single variable regression analysis identified multiple relationships between local and national socioeconomic variables and O&D passenger activity at the Airport with an R-squared value greater than 75 percent. These socioeconomic variables were population, personal income, and GRP of the Airport Service Area, as well as population, total earnings, personal income, and GDP of the United States. **Table 3-15** depicts the coefficient of correlation, or R-squared values of these relationships, and the implied growth rate through 2040. Based on the number of predictive relationships observed, single-variable regression analysis was selected to serve as the basis of the long term forecast of O&D enplaned passengers.

TABLE 3-15 SOCIOECONOMIC SINGLE-VARIABLE REGRESSION ANALYSIS RESULTS

INDEPENDENT VARIABLE	R-SQUARED	COMPOUND ANNUAL GROWTH RATE (2018-2040)	EQUATION
Airport Service Area GRP	80%	2.2%	y=(35.76708271*x) - 456746.2415
Airport Service Area Personal Inc.	80%	2.0%	y=(40.37610315*x) - 330,860.86
U.S. Total Earnings	79%	1.8%	y=(0.2814759*x) - 245,060.17
U.S. Personal Income	81%	1.8%	y=(0.185325437*x) + 493354.2526
Airport Service Area Population	87%	1.8%	y=(6577.928664*x) - 9628899.317
U.S. Population	85%	1.7%	y=(19.622026) - 3,192,703.24
U.S. GDP	81%	1.7%	y=(0.1656283) + 369,123.2949
Average		**1.9%**	

NOTES: GRP – Gross Regional Product; GDP – Gross Domestic Product.

SOURCES: Woods & Poole Economics, Inc; U.S. Department of Transportation DB1b Survey; *FAA Aerospace Forecast, Fiscal Years 2018-2038*; Ricondo & Associates, Inc. (analysis), November 2018

It is recognized that aviation demand is largely a function of demographic and economic activity[8], making regression analyses a frequently used approach in the forecast of enplaned passengers. Socioeconomic regression analysis was also determined to be an appropriate method for use in developing the Airport's forecast of aviation activity, considering recent and planned economic development activity in the southeastern region of Wisconsin, the availability of relevant data including population and economic activity, the FAA's recognition that the consideration of local and regional socioeconomic data is beneficial, and the acceptance of regression analysis as one of the most frequently used methodologies for preparing forecasts of aviation activity.

The Airport is not anticipated to become a connecting hub for any carrier and connecting passengers will remain a small portion of total passenger volumes. The forecast assumes that connecting passengers as a percentage of total airport passengers will grow over the next five years from approximately 2 percent in 2018 to approximately 5 percent by 2023. This is similar to the connecting percentage at the Airport in 2016 as airlines, primarily Southwest, are expected to increase connections to optimize profitability of flights at the Airport. The addition of connecting passengers to a flight allows an airline to improve load factors, filling seats that would have otherwise departed empty. Beyond 2023, connecting passengers have been modeled to grow proportionately with O&D passengers as O&D passengers are the primary demand base at the Airport.

Table 3-16 presents the forecast of O&D and connecting passenger activity at the Airport. O&D enplaned passengers are forecast to grow from approximately 3.5 million in 2018 to approximately 5.2 million in 2040, a compound annual growth rate of 1.8 percent. Connecting enplaned passengers are forecast to grow from approximately 88,000 in 2018 to approximately 261,000 in 2040, a compound annual growth rate of 5.1 percent. Total enplaned passengers are forecast to increase from approximately 3.6 million in 2018 to approximately 5.4 million in 2040, a compound annual growth rate of 1.9 percent over the forecast period.

Most enplaned passengers at the Airport are forecast to be on domestic flights. International enplaned passengers are expected to continue to grow as airlines, both scheduled and seasonal charter[9], add additional nonstop flights to close-in leisure destinations in Mexico and the Caribbean, along with some limited seasonal long-haul flying. The majority of passengers travelling to international destinations from the Airport will continue to do so as a domestic enplaned passenger departing from MKE to a major U.S. gateway then connecting on to an international destination (e.g., departing MKE to Detroit [DTW] then connecting to Frankfurt [FRA]).

The enplaned passenger forecast also incorporates the estimated impact of planned expansion of the Wisconsin Center, a convention and events facility located in Milwaukee, beginning in 2023. The incremental impact of the expanded conference center was informed by an analysis of the planned expansion and similar impacts at other convention centers.

As shown in **Table 3-17**, domestic enplaned passengers are forecast to grow from approximately 3.5 million in 2018 to approximately 5.3 million in 2040, a compound annual growth rate of 1.9 percent. International enplaned passengers are forecast to grow from approximately 54,000 in 2018 to approximately 102,000 in 2040, a compound annual growth rate of 2.9 percent. In total, enplaned passengers are forecast to grow at a compound annual rate of 1.9 percent to approximately 5.4 million in 2040.

[8] GRA, Incorporated, *Forecasting Aviation Activity by Airport*, April 2001.

[9] Apple/FunJet Vacations provides seasonal international charter service.

TABLE 3-16 O&D AND CONNECTING ENPLANED PASSENGER FORECAST

YEAR	O&D ENPLANED PASSENGERS	CONNECTING ENPLANED PASSENGERS	TOTAL ENPLANED PASSENGERS	ANNUAL GROWTH	PERCENTAGE O&D	PERCENTAGE CONNECTING
Historical						
2009	3,109,160	872,711	3,981,871		78%	22%
2010	3,803,714	1,123,844	4,927,558	23.7%	77%	23%
2011	3,798,707	962,245	4,760,952	-3.4%	80%	20%
2012	3,313,591	466,724	3,780,315	-20.6%	88%	12%
2013	3,049,831	216,478	3,266,309	-13.6%	93%	7%
2014	3,066,744	212,076	3,278,820	0.4%	94%	6%
2015	3,077,740	199,616	3,277,356	0.0%	94%	6%
2016	3,220,235	163,036	3,383,271	3.2%	95%	5%
2017	3,332,257	120,287	3,452,544	2.0%	97%	3%
2018E	3,496,951	87,973	3,584,924	3.8%	98%	2%
Forecast						
2019	3,524,432	106,128	3,630,560	1.3%	97%	3%
2020	3,583,898	125,849	3,709,747	2.2%	97%	3%
2021	3,643,966	146,367	3,790,333	2.2%	96%	4%
2022	3,703,420	167,648	3,871,068	2.1%	96%	4%
2023	3,785,839	190,883	3,976,721	2.7%	95%	5%
2024	3,864,963	194,872	4,059,835	2.1%	95%	5%
2025	3,944,968	198,906	4,143,873	2.1%	95%	5%
2026	4,025,839	202,983	4,228,823	2.0%	95%	5%
2027	4,107,161	207,084	4,314,245	2.0%	95%	5%
2028	4,188,894	211,205	4,400,099	2.0%	95%	5%
2029	4,270,996	215,344	4,486,341	2.0%	95%	5%
2030	4,353,426	219,500	4,572,927	1.9%	95%	5%
2031	4,436,141	223,671	4,659,812	1.9%	95%	5%
2032	4,519,097	227,854	4,746,951	1.9%	95%	5%
2033	4,602,249	232,046	4,834,295	1.8%	95%	5%
2034	4,685,089	236,223	4,921,312	1.8%	95%	5%
2035	4,767,547	240,381	5,007,927	1.8%	95%	5%
2036	4,849,549	244,515	5,094,064	1.7%	95%	5%
2037	4,931,021	248,623	5,179,644	1.7%	95%	5%
2038	5,011,890	252,700	5,264,590	1.6%	95%	5%
2039	5,092,080	256,744	5,348,824	1.6%	95%	5%
2040	5,171,516	260,749	5,432,265	1.6%	95%	5%
Compound Annual Growth Rate						
2009-2018	1.3%	-22.5%	-1.2%			
2018-2040	1.8%	5.1%	1.9%			

NOTE:
O&D – Origin and Destination.
SOURCES: Milwaukee Mitchell International Airport, November 2018 (historical); Ricondo & Associates, Inc., November 2018 (forecast).

TABLE 3-17 DOMESTIC AND INTERNATIONAL ENPLANED PASSENGER FORECAST

YEAR	DOMESTIC ENPLANED PASSENGERS	INTERNATIONAL ENPLANED PASSENGERS	TOTAL ENPLANED PASSENGERS	GROWTH
Historical				
2009	3,963,948	17,923	3,981,871	
2010	4,912,584	14,974	4,927,558	23.7%
2011	4,723,605	37,347	4,760,952	-3.4%
2012	3,739,108	41,207	3,780,315	-20.6%
2013	3,220,228	46,081	3,266,309	-13.6%
2014	3,224,323	54,497	3,278,820	0.4%
2015	3,221,965	55,391	3,277,356	0.0%
2016	3,332,984	50,287	3,383,271	3.2%
2017	3,387,915	64,629	3,452,544	2.0%
2018E	3,530,529	54,395	3,584,924	3.8%
Forecast				
2019	3,575,127	55,433	3,630,560	1.3%
2020	3,652,500	57,247	3,709,747	2.2%
2021	3,731,221	59,112	3,790,333	2.2%
2022	3,810,067	61,001	3,871,068	2.1%
2023	3,913,223	63,498	3,976,721	2.7%
2024	3,994,346	65,489	4,059,835	2.1%
2025	4,076,351	67,522	4,143,873	2.1%
2026	4,159,224	69,599	4,228,823	2.0%
2027	4,242,538	71,708	4,314,245	2.0%
2028	4,326,251	73,848	4,400,099	2.0%
2029	4,410,321	76,019	4,486,341	2.0%
2030	4,494,707	78,220	4,572,927	1.9%
2031	4,579,363	80,449	4,659,812	1.9%
2032	4,664,245	82,706	4,746,951	1.9%
2033	4,749,306	84,988	4,834,295	1.8%
2034	4,834,029	87,283	4,921,312	1.8%
2035	4,918,340	89,587	5,007,927	1.8%
2036	5,002,165	91,899	5,094,064	1.7%
2037	5,085,429	94,215	5,179,644	1.7%
2038	5,168,058	96,532	5,264,590	1.6%
2039	5,249,974	98,849	5,348,824	1.6%
2040	5,331,103	101,162	5,432,265	1.6%
Compound Annual Growth Rate				
2009-2018	-1.3%	13.1%	-1.2%	
2018-2040	1.9%	2.9%	1.9%	

SOURCES: Milwaukee Mitchell International Airport, November 2018 (historical); Ricondo & Associates, Inc., November 2018 (forecast).

3.3.5 PASSENGER AIRLINE OPERATIONS AND FLEET MIX METHODOLOGY AND RESULTS

The passenger airline operations forecast was developed using the enplaned passenger forecast and an analysis of completion rates, load factors, and published airline fleet plans. Passenger growth in the long term is forecast to be accommodated through a combination of increased load factors, higher average seats per departure, and growth in operations.

Table 3-18 presents historical and forecast enplaned passengers, passenger airline aircraft operations, load factors, and seats per departure. Passenger airline operations are expected to grow from approximately 77,000 in 2018 to approximately 99,000 in 2040, a compound annual growth rate of 1.1 percent. Average seats per departure are forecast to increase from 115.5 in 2018 to 133.9 in 2040. Average load factor is forecast to increase from 80.3 percent in 2018 to 82.0 percent in 2040.

TABLE 3-18 PASSENGER AIRLINE OPERATIONS FORECAST

YEAR	ENPLANED PASSENGERS	AIRCRAFT OPERATIONS	SEATS PER DEPARTURE	LOAD FACTOR
Historical				
2009	3,981,871	134,815	78.9	74.9%
2010	4,927,558	154,955	81.3	78.3%
2011	4,760,952	138,345	88.1	78.1%
2012	3,780,315	97,718	99.2	78.0%
2013	3,266,309	84,667	102.5	75.3%
2014	3,278,820	78,892	105.8	78.5%
2015	3,277,356	76,977	108.7	78.3%
2016	3,383,271	78,453	110.3	78.2%
2017	3,452,544	76,042	114.2	79.5%
2018E	3,584,924	77,306	115.5	80.3%
Forecast				
2019	3,630,560	76,618	117.0	81.0%
2020	3,709,747	77,143	118.3	81.3%
2021	3,790,333	77,676	119.6	81.6%
2022	3,871,068	78,417	120.6	81.9%
2023	3,976,721	79,589	121.5	82.0%
2024	4,059,835	80,622	122.5	82.0%
2025	4,143,873	81,658	123.4	82.0%
2026	4,228,823	82,695	124.4	82.0%
2027	4,314,245	83,726	125.3	82.0%
2028	4,400,099	84,749	126.3	82.0%
2029	4,486,341	85,765	127.2	82.0%
2030	4,572,927	86,874	128.0	82.0%
2031	4,659,812	87,975	128.8	82.0%
2032	4,746,951	89,067	129.6	82.0%
2033	4,834,295	90,149	130.4	82.0%
2034	4,921,312	91,351	131.0	82.0%
2035	5,007,927	92,535	131.6	82.0%
2036	5,094,064	93,735	132.2	82.0%
2037	5,179,644	94,951	132.7	82.0%
2038	5,264,590	96,218	133.1	82.0%
2039	5,348,824	97,464	133.5	82.0%
2040	5,432,265	98,689	133.9	82.0%
Compound Annual Growth Rate				
2009-2018	-1.2%	-6.0%	4.3%	0.8%
2018-2040	1.9%	1.1%	0.7%	0.1%

SOURCES: Milwaukee Mitchell International Airport, November 2018; U.S. Department of Transportation T-100, November 2018; Federal Aviation Administration, Operations Network (OPSNET), November 2018 (historical); Ricondo & Associates, Inc., November 2018 (forecast).

Table 3-19 presents the 2018 base year and forecast fleet mix for aircraft operating at MKE. Passenger aircraft are categorized into groupings based on average seat capacity. All-cargo operations are categorized according to aircraft size (small piston/turboprop, narrow-body, and wide-body). Over the forecast period, the critical aircraft[10] at the Airport is expected to be an Airplane Design Group (ADG) V aircraft, such as the Boeing 787-8 or similar.

The forecast fleet mix was developed for passenger airlines considering publicly available future aircraft orders, known aircraft retirement schedules, and anticipated upgauging of existing aircraft based on the size and types of routes flown from the Airport. Specific assumptions used in the passenger airline fleet mix include:

- The use of 50-seat regional aircraft will continue to decline throughout the forecast period as these aircraft are replaced with larger regional jets and small mainline aircraft
- In general, carriers will continue to upgauge their fleets using higher capacity aircraft
- Southwest's fleet orders are comprised almost entirely of 175-seat 737 MAX 8 aircraft[11]
- American and United are each in the process of or have recently completed densifying their narrowbody fleets
- Use of high density narrowbody aircraft by ULCCs will increase over the forecast period
- Some long-haul international flying is forecast and will be conducted by smaller widebody aircraft such as the Boeing 787-8

3.3.6 PASSENGER AIRLINE FLEET MIX IMPACT ON ENPLANED PASSENGER FORECAST

The forecast of enplaned passengers includes all airline passengers based on the correlations between local and national demographic and economic factors and demand. The enplaned passenger forecast is divided into air carrier and commuter based on aircraft seating capacity in order to meet FAA review requirements. Air carrier enplaned passengers are those considered to fly on aircraft with greater than 76 seats. Commuter enplaned passengers are considered to fly on aircraft with 76 or fewer seats.

It is recognized that airlines utilize aircraft interchangeably and align the scheduled fleet with anticipated demand (i.e., an airline does not view a passenger as "commuter" or "air carrier" when developing fleet assignments; rather, airlines assign aircraft based on passenger demand). For this reason, a passenger ticketed on a single airline may depart MKE on an aircraft with 76 or fewer seats (thereby classified as a commuter enplaned passenger) and return to MKE on an aircraft with greater than 76 fleets (thereby classified as an air carrier passenger).

Forecasts of commuter and air carrier passengers have been developed considering the future airline fleet mixes and the aircraft available to accommodate passenger demand. **Table 3-20** presents the allocation of enplaned passengers forecast as air carrier passengers and as commuter passengers.

[10] The FAA defines the critical aircraft as "the most demanding aircraft type or grouping of aircraft with similar characteristics that make regular use of the airport. Regular use is defined as 500 annual operations."

[11] According to Southwest Airlines' *2018 Form 10K* filing, as of December 31, 2018, the airline had firm orders and options for 383 Boeing 737 MAX aircraft, 30 Boeing 737 MAX 7 aircraft and 353 Boeing 737 MAX 8 aircraft.

TABLE 3-19 FORECAST AIRCRAFT FLEET MIX

AIRCRAFT CATEGORY	SEAT RANGE	REPRESENTATIVE AIRCRAFT	2018E		2023		2028		2040	
			OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT
Passenger										
Small Piston/Turboprop/Regional Jet	<51	CRJ-200	17,059	22.1%	6,367	8.0%	1,695	2.0%	888	0.9%
Medium Regional Jet/Turboprop	51-76	CRJ-900; EMB-175	16,002	20.7%	24,115	30.3%	29,577	34.9%	31,580	32.0%
Large Regional Jet/Turboprop	77-100	EMB-190	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small Narrowbody	101-130	717; A220	776	1.0%	2,626	3.3%	4,237	5.0%	4,934	5.0%
Medium Narrowbody	131-160	A320; B737-700	29,280	37.9%	26,981	33.9%	24,153	28.5%	26,153	26.5%
Large Narrowbody	161-199	A321; B737-800	13,121	17.0%	18,305	23.0%	22,713	26.8%	31,580	32.0%
High Density Narrowbody	200-230	A321	1,067	1.4%	1,194	1.5%	1,949	2.3%	2,961	3.0%
Small Widebody	231+	B787-8	0	0.0%	0	0.0%	424	0.5%	592	0.6%
Subtotal			**77,306**	**100.0%**	**79,589**	**100.0%**	**84,749**	**100.0%**	**98,689**	**100%**
Cargo										
Small Piston/Turboprop		C208, BE99, E120	9,627	71.4%	11,275	70.0%	12,870	70.0%	16,112	70.0%
Narrowbody		B733, B752	1,270	9.4%	1,611	10.0%	1,839	10.0%	2,302	10.0%
Widebody		A306, MD11	2,580	19.1%	3,222	20.0%	3,677	20.0%	4,603	20.0%
Subtotal			**13,477**	**100.0%**	**16,108**	**100.0%**	**18,386**	**100.0%**	**23,017**	**100.0%**
General Aviation/Other Air Taxi										
Jet			15,619	72.8%	17,268	79.3%	17,520	79.3%	18,152	79.3%
Piston			2,523	11.8%	1,670	7.7%	1,694	7.7%	1,756	7.7%
Turboprop/Turboshaft			3,237	15.1%	2,403	11.0%	2,438	11.0%	2,526	11.0%
Helicopter			0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other			78	0.4%	422	1.9%	428	1.9%	443	1.9%
Subtotal			**21,457**	**100.0%**	**21,763**	**100.0%**	**22,080**	**100.0%**	**22,877**	**100.0%**
Military										
Subtotal			**2,059**	**100.0%**	**2,059**	**100.0%**	**2,059**	**100.0%**	**2,059**	**100.0%**
Airport Total			**114,299**	**100.0%**	**119,519**	**100.0%**	**127,274**	**100.0%**	**146,642**	**100.0%**

SOURCES: U.S. Department of Transportation T-100, November 2018; Federal Aviation Administration, Operations Network (OPSNET), November 2018; Ricondo & Associates, Inc., November 2018 (forecast).

TABLE 3-20 AIR CARRIER AND COMMUTER ENPLANED PASSENGER FORECAST

YEAR	TOTAL ENPLANED PASSENGERS	AIR CARRIER ENPLANED PASSENGERS 1/	AIR CARRIER GROWTH	COMMUTER ENPLANED PASSENGERS 2/	COMMUTER GROWTH
2018E	3,584,924	2,785,486	-	799,438	-
2019	3,630,560	2,823,192	1.4%	807,368	1.0%
2020	3,709,747	2,894,449	2.5%	815,298	1.0%
2021	3,790,333	2,967,105	2.5%	823,228	1.0%
2022	3,871,068	3,039,910	2.5%	831,158	1.0%
2023	3,976,721	3,137,633	3.2%	839,088	1.0%
2024	4,059,835	3,204,640	2.1%	855,195	1.9%
2025	4,143,873	3,272,572	2.1%	871,301	1.9%
2026	4,228,823	3,341,415	2.1%	887,408	1.8%
2027	4,314,245	3,410,731	2.1%	903,514	1.8%
2028	4,400,099	3,480,478	2.0%	919,621	1.8%
2029	4,486,341	3,561,871	2.3%	924,470	0.5%
2030	4,572,927	3,643,608	2.3%	929,319	0.5%
2031	4,659,812	3,725,645	2.3%	934,167	0.5%
2032	4,746,951	3,807,935	2.2%	939,016	0.5%
2033	4,834,295	3,890,430	2.2%	943,865	0.5%
2034	4,921,312	3,972,598	2.1%	948,714	0.5%
2035	5,007,927	4,054,364	2.1%	953,563	0.5%
2036	5,094,064	4,135,652	2.0%	958,412	0.5%
2037	5,179,644	4,216,383	2.0%	963,261	0.5%
2038	5,264,590	4,296,480	1.9%	968,110	0.5%
2039	5,348,824	4,375,865	1.8%	972,959	0.5%
2040	5,432,265	4,454,457	1.8%	977,808	0.5%
Compound Annual Growth Rate					
2018-2040	1.9%	2.2%		0.9%	

NOTES:
1 Passengers forecast to be accommodated on aircraft with more than 76 seats, based on the fleet mix forecast.
2 Passengers forecast to be accommodated on aircraft with 76 or fewer seats, based on the fleet mix forecast.
SOURCES: Milwaukee Mitchell International Airport, November 2018 (historical); Ricondo & Associates, Inc., November 2018 (forecast).

3.4 FORECASTS OF CARGO ACTIVITY

3.4.1 CARGO INDUSTRY TRENDS

The global air cargo industry has undergone a major transformation over the past two decades. In the early 2000's, the e-commerce industry was just materializing. It was far from certain that many of the integrated carriers, companies such as UPS, FedEx, or DHL who provide fully integrated door-to-door transportation/logistics services, would embrace home delivery due to the high cost associated with the number of undelivered parcels caused by not-at-home end recipients. Higher margin business-to-business services, especially in the buoyant economic years preceding the recession of 2008, drove innovation in the industry resulting in initiatives such as electronic proof-of-delivery notes, providing for greater levels of visibility in the supply chain. Business-to-consumer home delivery companies, often off-shoots of traditional home shopping and catalogue retailers, were a separate sector. Today, business-to-consumer activity is established as an important part of the major players' business model.

3.4.1.1 E-COMMERCE GROWTH AFFECTING THE FUTURE CARGO MARKET

In late 2015, Amazon made a strategic move when it signed a deal with Air Transport Services Group to lease 20 Boeing 767 aircraft to shuttle merchandise around the U.S. as part of the online retailer's efforts to reduce its high shipping expenses. Since then, Amazon now has over 40 aircraft in their corporate fleet with orders for both additional widebody (767 and A300) and narrowbody (converted passenger 737) aircraft with a plan to build the fleet to 120 total freighters. This is a significant development in the air cargo industry and to put this into context, the following are the number of planes in the fleets of some of the biggest cargo airlines: FedEx, 605; UPS, 237; and DHL, 120.

It is expected that Amazon will continue to expand its existing small package business model in the U.S. This means that in addition to their own freighter aircraft, they will incorporate additional cargo capacity through partner all-cargo airlines (DHL, Atlas, ATI, etc.) at a faster pace than their competitors and use more advanced analytics, resulting in a faster and more efficient delivery model. Based on volume, scale, and buying power, Amazon may command more attractive pricing than other freight forwarders, enabling them to secure capacity at a lower cost and improve profitability as they fill that space more easily than competitors.

Although Amazon is still in the early stages of entering the air cargo industry, air cargo companies may see Amazon underbid them in building a fully integrated shipping process, providing an end-to-end solution from warehouse to doorstep. Ultimately, Amazon's entry into the market could help increase demand for airfreight services as its competitors try to keep up with the company's fulfillment pace. If Amazon offers up spare capacity to other shippers utilizing its technology expertise and possible lower rates, it could potentially generate more air cargo volume in the industry.

There is much at stake for the established shipping companies such as FedEx and UPS, which have seen a boom in parcel delivery as e-commerce spending has risen. Approximately 20 different partners currently share the duties of shipping Amazon's 600 million annual packages, with FedEx, USPS, and UPS moving the most. However, the number of partners and the volumes handled by these three leading companies could be materially affected by Amazon's Prime Air network and its rapidly expanding logistics services including first-, middle-, and last-mile segments of the shipping chain. The implications to airport operators, their tenants, the balance of demand/capacity of on-airport facilities, and the overall tonnage handled by Amazon's corporate growth remains to be determined but there is no doubt that the overall air cargo industry landscape will change significantly.

3.4.2 MILWAUKEE CARGO MARKET OVERVIEW

Several steps were taken to understand both the key drivers and the outlook of the MKE cargo market. Historical data were reviewed, market competition analyzed, and the competitive landscape and driving influences assessed for their impact throughout the planning horizon.

3.4.2.1 HISTORICAL CARGO ACTIVITY

According to ACI-North America, the Airport's 2017 total volume cargo ranked 53rd largest in the U.S, behind several regional airports, namely Chicago O'Hare International Airport (ORD) and Rockford International Aiprort (RFD) which ranked as the 6th and 30th largest (based on total cargo volume) among U.S. cargo airports, respectively.

The total cargo tonnage at the Airport experienced a sustained decline for four years (2011-2014) followed by a period of growth from 2015 to 2017. Total cargo grew at a compound annual rate of 1.6 percent, from 73,695 tons in 2009 to 84,998 in 2018E. The estimated cargo volume for 2018, calculated from January through September data, suggests the increasing trend to continue with approximately 4.4 percent growth over 2017 total tonnage.

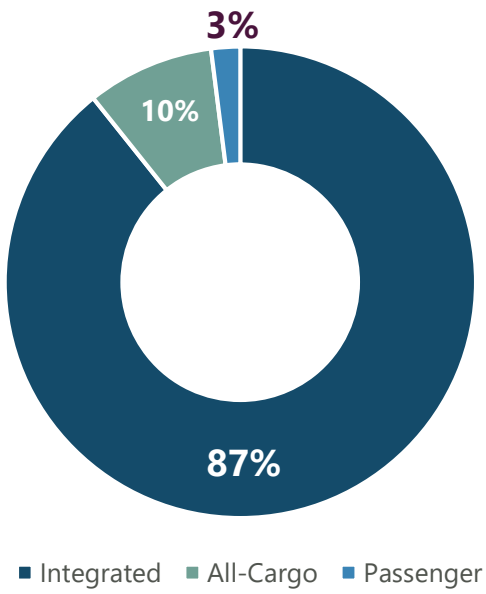
Table 3-21 provides a summary of the past ten years of historical air cargo activity by cargo carrier group at the Airport. **Exhibit 3-9** depicts the share of total cargo volumes handled at MKE by cargo carrier group in 2018E.

TABLE 3-21 HISTORICAL AIR CARGO ACTIVITY

CARGO CARRIER GROUP	HISTORICAL TONNAGE										CAGR
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018E	2014-2018E
Integrated	68,054	79,334	76,686	72,4475	68,194	65,144	64,198	70,814	72,654	73,923	0.9%
All-Cargo	4,022	4,287	4,229	3,900	4,218	4,921	7,173	6,779	7,121	8,197	8.2%
Passenger	1,619	1,941	1,876	1,917	2,026	1,877	2,125	1,836	1,616	2,878	6.6%
Total	**73,695**	**85,562**	**82,792**	**78,291**	**74,438**	**71,942**	**73,496**	**79,430**	**81,391**	**84,998**	**1.6%**
Average Annual Growth	**--%**	**16.1%**	**(3.2%)**	**(5.4%)**	**(4.9%)**	**(3.4%)**	**2.2%**	**8.1%**	**2.5%**	**4.4%**	

NOTE:
CAGR - Compound Annual Growth Rate
SOURCE: Milwaukee Mitchell International Airport, October 2018.

EXHIBIT 3-9 SHARE OF CARGO VOLUME BY CARRIER TYPE



SOURCES: US Department of Transportation T-100, June 2018; Milwaukee Mitchell International Airport, October 2018.

The cargo carrier group comprises integrated, all-cargo, and passenger airlines. The integrated carriers (DHL, FedEx and UPS) are those companies that own and operate all the assets (aircraft, trucks, delivery vans, etc.) throughout the entire door-to-door transportation service. All-cargo carriers are those companies that provide only the airport-to-airport cargo transportation, and that rely on other companies to provide the delivery services between the shipper/customer locations. The passenger carrier group is comprised of passenger airlines that carry cargo in their aircraft. The analysis of these carrier groups is important to understanding the cargo market at the Airport, as each group has different market drivers.

Integrated carriers have dominated the MKE cargo market over the past decade and are estimated to have handled over 87 percent of the total cargo tonnage in 2018E. These carriers have held the highest market share of total MKE cargo tonnage since 2009, although the volume of cargo carried by that group has remained relatively constant. A significant reason for this low-growth trend is the ability of these companies to effectively serve the greater Milwaukee market through the expansive use of trucks from ORD and RFD. This is especially true for UPS that operates one of their six regional sort hubs at RFD, a 90-minute drive from Milwaukee. The company dispatches multiple trucks daily from the hub directly to Milwaukee sort centers for local deliveries. While the growth rate since 2009 is low, the more recent tonnage history (2014-2018E) has shown a stronger 3.2 percent compound annual growth rate (CAGR) for this carrier group. Specifically, FedEx has posted very strong growth since 2014 with a CAGR of 7.1 percent (37,461 tons in 2014 to 49,298 in 2018E) driven largely by the increase in e-commerce activity. The expected acceleration in online shopping and overall growth within the e-commerce industry suggests that integrated carrier cargo growth at MKE will follow the most recent growth trend.

The all-cargo and passenger carrier groups have experienced higher annual growth rates since 2009, albeit from a smaller base of cargo tonnage, as indicated in **Table 3-22**. The all-cargo airlines have experienced significant changes over the past decade, especially since 2014 when DHL entered the market as the primary transportation provider for Amazon, directly accommodating Amazon's growth in the region. Combined, the all-cargo carrier group has grown at a compound annual rate of 8.2 percent since 2009 and has nearly doubled total cargo volumes carried since 2013.

In the passenger cargo market, Southwest has carried the largest volume of cargo at the Airport since 2009. Passenger airlines operate aircraft fleets and network routes that do not generate large cargo volumes.

TABLE 3-22 TOP CARRIERS HISTORICAL AIR CARGO TONNAGE

AIRLINE	AIRLINE TYPE	HISTORICAL TONNAGE										CAGR
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018E	2009-2018E
FedEx	Integrator	44,779	51,875	49,739	47,052	41,521	37,461	37,127	43,779	45,390	49,298	1.1%
UPS	Integrator	23,275	27,459	26,947	25,423	26,673	27,682	27,071	27,035	27,264	24,625	0.6%
DHL	All-Cargo	--	--	--	--	--	691	2,734	3,082	3,405	4,599	N/A
Freight Runners Express	All-Cargo	2,185	2,336	2,260	2,030	2,266	2,374	2,618	2,247	2,372	2,032	(0.8%)
CSA Air	All-Cargo	1,681	1,774	1,640	1,603	1,525	1,660	1,694	1,317	1,268	1,561	(0.7%)
Southwest	Passenger	69	423	434	858	1,400	1,464	1,661	1,470	1,227	1,172	37.1%
Delta	Passenger	143	488	522	388	371	266	337	268	274	1,172	26.3%
American	Passenger	1	1	4	--	12	76	76	98	111	494	95.9%
Ameriflight	All-Cargo	--	--	--	--	158	147	126	119	75	39	N/A
Others[1]		1,563	1,206	1,246	937	512	119	51	15	4	2	(52.3%)
Total Cargo		**73,695**	**85,562**	**82,792**	**78,291**	**74,438**	**71.942**	**73,496**	**79,430**	**81,391**	**84,998**	**1.6%**

NOTES:
1 Others include Alaska, Frontier, Mountain Air Cargo, US Airways, US Checks-Airnet.
2 CAGR - Compound Annual Growth Rate
3 N/A – Not Applicable
SOURCE: Milwaukee Mitchell International Airport, October 2018.

3.4.2.2 REGIONAL AIRPORT COMPETITION

As explained earlier, ORD and RFD are competitors to MKE in the cargo market. ORD is the region's principal international and domestic cargo gateway due in large part to the wide range of destinations, high numbers of daily all-cargo freighter flights to and from Europe and Asia (and to a lesser degree, the Latin/South American market), the large volumes of containerized belly cargo capacity in widebody passenger aircraft, and the concentration of logistics companies and freight forwarders. These factors combine to create an international gateway having a reach that extends at least to the 11-hour drive radius[12], as depicted in **Exhibit 3-10**. While ORD is an effective international gateway, congestion and upward pressure on costs to handle cargo through this airport can be significant. [13]

EXHIBIT 3-10 TRUCK DRIVE RADIUS FROM CHICAGO O'HARE INTERNATIONAL AIRPORT

SOURCES: Esri, November 2018; Intermap, November 2018; GeoBase, November 2018 (maps); Ricondo & Associates, Inc., October 2018 (drive times).

[12] Eleven hours is the federal regulation maximum a single truck driver can operate without the mandated rest period.

[13] Barnett, Chris, "Collaboration urged to ease O'Hare cargo delays," *Journal of Commerce*, March 1, 2019, http://www.joc.com.

Large volumes of cargo are trucked much farther than this radius, not only to take advantage of the operations at ORD, but also because there are very few other options for the international cargo market within the region. In addition, DHL has recently completed its international gateway facility at ORD and this, combined with a multitude of other cargo airline and 3rd party operated all-cargo facilities, creates a large gateway at ORD in international and domestic cargo markets.

RFD is rapidly becoming a major domestic regional cargo hub. While the growth of DHL tonnage is growing rapidly at MKE, it does not match the overall regional Amazon cargo activity growth, and this is due to other large regional Amazon airport operations. Like the UPS sort hub at RFD, Amazon also has integrated RFD as one of the important regional airports in their growing national logistics network. The company does a tremendous amount of trucking nationwide and that includes activity from the RFD hub to the local distribution and sort centers in Kenosha, WI (and eventually, the planned fulfillment center in Oak Creek, WI). In addition, DHL will dispatch trucks throughout the region from its ORD international gateway to serve Amazon and the e-commerce industry. UPS also has a large regional hub at RFD, operating dozens of daily flights and dispatching hundreds of weekly tractor-trailers throughout the region.

3.4.3 MILWAUKEE CARGO ACTIVITY FORECAST

Forecasts of cargo activity (i.e., cargo tonnage and freighter aircraft operations) were developed considering multiple historical and forecast factors, including cargo tonnage trends at the Airport and throughout the industry, historical trends and projections of local and national socioeconomic factors, and anticipated trends in the use of the Airport by the various cargo carrier groups. The air cargo demand forecasts involve both quantitative analysis and professional judgment. Methodologies employed for this forecast include both a bottom-up and top-down approach using time-series extrapolation and market share analysis. Specifically, the time-series review considered 10 years of carrier group (passenger, integrated, and all-cargo) analysis with particular focus on the last 5 years (2014-2018) during which significant shifts in tonnage among the carrier groups have taken place. This review established the increasing importance of the market share analysis to identify the key drivers affecting the change between sectors of the market at MKE and throughout the region, including ORD and RFD. For example, the emergence of companies like Amazon and other e-commerce related companies has increased the use of all-cargo carriers like DHL and Atlas Air at the Airport and throughout U.S., resulting in recent significant market share growth for that carrier group versus passenger and integrated carriers. The following section presents the results of these analyses and the forecast of cargo activity.

3.4.3.1 INDEPENDENT CARGO INDUSTRY FORECASTS

As described earlier, the e-commerce sector will continue to bolster worldwide air cargo growth over the next several years and overall e-commerce activity is projected to more than double by 2025, growing from $1.7 trillion in 2017 to $3.6 trillion by 2025[14]. E-commerce sales in the U.S. have grown 15 percent per year on average over the last 15 years, reaching $480 billion in 2017.

The latest independent forecasts prepared by aircraft manufacturers Airbus and Boeing, noted in **Table 3-23**, indicate long-term growth rates of 3.8 percent to 4.2 percent per year for the cargo industry worldwide, based primarily on anticipated underlying global economic growth. The Boeing *World Air Cargo Forecast 2016-2017* also indicates a low case annual growth rate of 3.8 percent and a high case of 5.0 percent global growth rate.

[14] Boeing *World Air Cargo Forecast 2016-17*, October 2016.

TABLE 3-23 GLOBAL AIR CARGO TONNAGE FORECASTS

	FORECAST PERIOD	ANNUAL GROWTH RATE
Airbus[1]	2017-2036	3.8%
Boeing[2]	2016-2035	4.2%

NOTES:
1 Airbus *Cargo Global Market Forecast 2017*, April 2017.
2 Boeing *World Air Cargo Forecast 2016-17*, October 2016.
SOURCES: Airbus *Cargo Global Market Forecast 2017*, April 2017; *Boeing World Air Cargo Forecast 2016-17*, October 2016.

3.4.3.2 FORECAST OF AIR CARGO TONNAGE

The following assumptions were used to forecast air cargo activity at MKE:

- The integrated carriers will continue to dominate the MKE cargo market and in the near-term (5 years), it is expected that the integrated carrier group will continue the growth pattern experienced since 2014, driven by e-commerce expansion, a slight boost from Foxconn economic activity, and UPS facility enhancement at MKE by expanding the cargo aircraft ramp and addressing a current split-facility layout.
- In the longer timeframe (10 years), growth by integrated carriers is expected to slow slightly to more closely align with regional economic growth. Growth by integrated carriers will continue to incorporate additional volumes of regional trucking that meets customer service requirements.
- The all-cargo airlines will see the highest growth rates through the forecast period, as the e-commerce industry rapidly expands and drives an increase in the use of dedicated freighter aircraft in distribution networks. Also supporting growth of the all-cargo group at MKE will be increased activity by Amazon/DHL in support of the planned second fulfillment center (Oak Creek, WI), as well as expected Foxconn activity.
- It is expected that the Foxconn supply chain logistics will follow a traditional international forwarding/logistics strategy that largely utilizes ORD as the main gateway for its inbound component parts and outbound finished products. However, nonstop all-cargo flights into MKE may occur when supply chain disruptions occur.
- Passenger airline total tonnage is assumed to grow in similar proportion to forecast passenger aircraft operations through 2040.

As shown in **Table 3-24**, the volume of air cargo at MKE is forecast to increase from 84,998 tons in 2018 to 129,740 tons in 2028 (a compound annual increase of approximately 4.3 percent) and is projected to result in 182,332 tons in 2040 for an overall CAGR of 3.5 percent for the 2018-2040 period.

TABLE 3-24 FORECAST OF AIR CARGO TONNAGE

CARGO TONNAGE	HISTORICAL		FORECAST			CAGR		
	2009	2018E	2023	2028	2040	2018-2023	2018-2028	2018-2040
Integrated	68,054	73,923	87,880	102,869	143,277	3.5%	3.4%	3.1%
All-Cargo	4,022	8,197	17,335	23,349	34,768	2.2%	11.0%	6.8%
Passenger	1,619	2,878	3,206	3,523	4,287	13.5%	2.0%	1.8%
Total	**73,695**	**84,998**	**108,420**	**129,740**	**182,332**	**5.0%**	**4.3%**	**3.5%**

NOTES:
1 CAGR - Compound Annual Growth Rate.
2 Totals may not add due to rounding.
SOURCES: Milwaukee Mitchell International Airport (historical), October 2018; Ricondo & Associates, Inc. (forecast), November 2018.

3.4.3.3 FREIGHTER OPERATIONS FORECAST

Historical annual all-cargo freighter operations at the Airport are depicted in **Table 3-25**.

TABLE 3-25 HISTORICAL FREIGHTER AIRCRAFT OPERATIONS

YEAR	FREIGHTER OPERATIONS
2015	13,236
2016	13,498
2017	13,354
2018E	13,477

SOURCES: FAA Form 108 (historical), October 2018; Ricondo & Associates, Inc., (forecast) November 2018.

Table 3-26 and **Table 3-27** presents the forecast of air cargo freighter operations. To forecast future aircraft operations, average payload was increased two percent per year through 2020, and one percent per year for the remaining years of the forecast period.

TABLE 3-26 FREIGHTER OPERATIONS FORECAST

YEAR	FREIGHTER VOLUME (TONS)	FREIGHTER AIRCRAFT OPERATIONS	PAYLOAD PER OPERATION (TONS) [1]
Historical			
2018E	82,120	13,477	6.1
Forecast			
2023	105,214	16,108	6.5
2028	126,218	18,386	6.9
2040	178,045	23,017	7.7

NOTE:
1 Data from the integrated and all-cargo carrier groups are included in the freighter volumes for those airlines operating freighter aircraft at the Airport.
SOURCES: FAA Form 108 (historical), October 2018; Ricondo & Associates, Inc., (forecast) November 2018.

TABLE 3-27 FREIGHTER OPERATIONS FORECAST BY AIRCRAFT CATEGORY

	2018E	2023	2028	2040
Piston/Turboprop	9,627	11,275	12,870	16,112
Narrowbody	1,270	1,611	1,839	2,302
Widebody	2,580	3,222	3,677	4,603
Total Freighter Operations	**13,477**	**16,108**	**18,386**	**23,017**

SOURCES: FAA Form 108 (historical), October 2018; Ricondo & Associates, Inc., (forecast) November 2018.

The majority of freighter operations at the Airport are turboprop aircraft (71 percent in 2017) operated by airlines such as Freight Runners Express and CSA Air; the overall total operations and mix of aircraft (piston/turboprop, narrowbody, and widebody) have remained steady over the past several years. UPS, FedEx, and DHL operate a mix of freighter aircraft with Boeing 757 and Boeing 737 narrowbody aircraft and Boeing MD-11 and Airbus A-300 widebody aircraft. The freighter operations fleet mix is forecast to remain in line with current levels over the 2040 planning horizon. A slight shift in future activity is forecast as narrowbody aircraft grow at a slightly faster rate, while turboprop activity grows at a slightly lower rate. This is consistent with the most recent Boeing *World Air Cargo Forecast 2016-17* that suggests that narrowbody aircraft will be the fastest growing segment in the freighter market. It is expected that growth in narrowbody freighter aircraft will slightly outpace that of widebody at MKE with Amazon's expected increased use of Boeing 737 converted passenger aircraft in the future.

3.5 FORECASTS OF GENERAL AVIATION AND OTHER AIR TAXI AND MILITARY ACTIVITY

The following sections provide historical and forecast general aviation (GA) activity including other air taxi operations[15], fleet mix, and based aircraft at the Airport, as well as forecasts of military aircraft operations.

3.5.1 GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS

To forecast GA operations at the Airport, the historical relationships between local and national socioeconomic variables and GA operations were examined. The socioeconomic variables considered in the analyses were total population, total employment, total earnings, total personal income, total per capita personal income, total net earnings, and total GRP. The local area considered included the Milwaukee Combined Statistical Area (CSA), which encompasses Milwaukee, Racine, and Waukesha, Wisconsin, plus neighboring Kenosha County, Wisconsin, and Lake County, Illinois. These analyses reveal an inverse correlation between historical local and national socioeconomic variables and GA operations at the Airport, suggesting that as socioeconomic conditions improve GA operations would decline.

The decline in GA operations at the Airport mirrors local, national, and global GA trends. In general, there has been a decrease in GA aircraft deliveries and utilization. GA operations at the Airport have represented a stable share of total regional and national GA operations since 2010 — approximately 0.82 percent of total GA operations in the state of Wisconsin and approximately 0.05 percent of total GA operations in the United States. The relationship between GA operations at the Airport and nationwide was assumed to remain constant throughout the forecast

[15] Other air taxi operations include nonscheduled passenger and cargo aircraft (60 seats and fewer or a payload less than 18,000 lbs.) which do not report activity through the U.S. Department of Transportation Form T-100.

period. This share was applied to the forecast of national GA operations in the FAA National Aerospace Forecast for Federal Fiscal Years 2018 to 2038,[16] resulting in a forecast 0.3 percent compound annual growth rate for total GA operations through the forecast period. Since 2009, itinerant GA operations have decreased from 97.4 percent to 94.9 percent of total GA operations at MKE. To reflect the lower share of itinerant operations while accounting for potential increases in itinerant operations, the relative shares of local and itinerant GA operations were assumed to remain constant at the average over 2015, 2016, and 2017, at 94.9 percent itinerant and 5.1 percent local. Historical and forecast itinerant and local GA operations are presented in **Table 3-28**.

3.5.2 GENERAL AVIATION AND OTHER AIR TAXI FLEET MIX

Jet operations have been increasing as a share of total GA operations at the Airport, while the share of piston operations has been decreasing. The share of turbine operations has fluctuated but has also been trending downward. Based on discussions with Airport stakeholders, strong growth in jet operations is expected, with a continued decline in piston and turbine operations.

The GA fleet mix was forecast to evolve from 2018 to 2023 based on a trend analysis of the fleet mix from 2000 through 2017, as determined using Federal Aviation Administration Traffic Flow Management System data. Low, baseline, and high trends were developed using an exponential smoothing algorithm, and weighted averages of these trend lines were used based on input from Airport stakeholders to reflect the expected higher growth in jet operations and the expected relative decrease in piston operations. From 2023 to 2040, the fleet mix was held constant at 2023 levels. Historical and forecast total GA operations by fleet type, with share of total operations, are presented in **Table 3-29**.

3.5.3 GENERAL AVIATION BASED AIRCRAFT

General aviation based aircraft often correspond with GA activity at an airport. In comparing historical based aircraft with total GA operations at the Airport, however, there was no clear relationship between the two. Since GA operations at the Airport were found to correlate with national GA operations, the relationships between based aircraft and national active GA hours flown, as reported in the FAA Aerospace Forecast, were examined (by engine type). For example, based single-engine piston aircraft at MKE were compared to national active GA hours flown for single-engine piston aircraft. From 2015 to 2018, these comparisons showed that based aircraft at the Airport have represented a stable share of national active GA hours flown, as illustrated in **Exhibit 3-11**. The notable exception to the stable shares is for multi-engine turboprop aircraft, which increased from 18 based aircraft in 2014 to 42 based aircraft in 2015 and 2016.[17] The increase in based aircraft was due to new based aircraft from a local cargo carrier.

[16] The general aviation forecast in the Federal Aviation Administration National Aerospace Forecast is prepared on a fiscal year basis and was converted to a calendar year basis for use in this Master Plan update. Trends from 2038 were extrapolated through 2040 for use in this master plan update.

[17] Data for based aircraft in 2014 and 2016 were not available and assumed to equal the based aircraft from the previous year.

TABLE 3-28 HISTORICAL AND FORECAST ITINERANT AND LOCAL GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS

YEAR	ITINERANT GENERAL AVIATION/OTHER AIR TAXI OPERATIONS	ITINERANT SHARE	LOCAL GENERAL AVIATION/OTHER AIR TAXI OPERATIONS	LOCAL SHARE	TOTAL GENERAL AVIATION/OTHER AIR TAXI OPERATIONS
Historical					
2009	21,975	97.4%	587	2.6%	22,562
2010	22,677	99.4%	137	0.6%	22,814
2011	20,466	99.1%	186	0.9%	20,652
2012	20,894	99.0%	211	1.0%	21,105
2013	19,116	97.1%	571	2.9%	19,687
2014	18,940	96.8%	626	3.2%	19,566
2015	19,183	96.9%	614	3.1%	19,797
2016	18,482	94.9%	993	5.1%	19,475
2017	19,428	93.0%	1,462	7.0%	20,890
2018E	20,363	94.9%	1,094	5.1%	21,457
Forecast					
2019	20,420	94.9%	1,097	5.1%	21,518
2020	20,478	94.9%	1,100	5.1%	21,578
2021	20,537	94.9%	1,104	5.1%	21,640
2022	20,594	94.9%	1,107	5.1%	21,701
2023	20,653	94.9%	1,110	5.1%	21,763
2024	20,712	94.9%	1,113	5.1%	21,825
2025	20,772	94.9%	1,116	5.1%	21,889
2026	20,833	94.9%	1,120	5.1%	21,952
2027	20,892	94.9%	1,123	5.1%	22,014
2028	20,954	94.9%	1,126	5.1%	22,080
2029	21,014	94.9%	1,129	5.1%	22,143
2030	21,076	94.9%	1,133	5.1%	22,209
2031	21,138	94.9%	1,136	5.1%	22,274
2032	21,200	94.9%	1,139	5.1%	22,339
2033	21,262	94.9%	1,143	5.1%	22,404
2034	21,325	94.9%	1,146	5.1%	22,471
2035	21,389	94.9%	1,149	5.1%	22,538
2036	21,452	94.9%	1,153	5.1%	22,605
2037	21,516	94.9%	1,156	5.1%	22,672
2038	21,582	94.9%	1,160	5.1%	22,742
2039	21,646	94.9%	1,163	5.1%	22,809
2040	21,711	94.9%	1,167	5.1%	22,877
Compound Annual Growth Rate					
2009–2018	(0.8%)		7.2%		(0.6%)
2018–2040	0.3%		0.3%		0.3%

SOURCES: Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2018–2038*, March 2018; Federal Aviation Administration, Operations Network (OPSNET), October 2018; Ricondo & Associates, Inc., October 2018 (analysis).

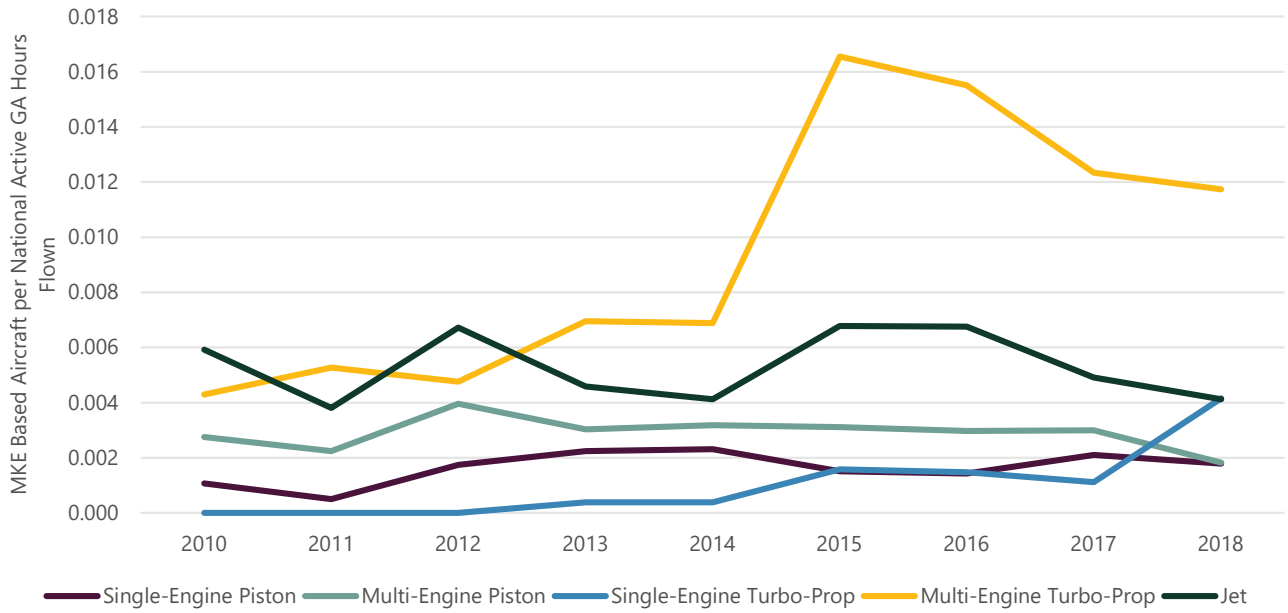
TABLE 3-29 HISTORICAL AND FORECAST GENERAL AVIATION AND OTHER AIR TAXI FLEET MIX

	JET		PISTON		TURBINE		OTHER		
YEAR	OPERATIONS	SHARE	OPERATIONS	SHARE	OPERATIONS	SHARE	OPERATIONS	SHARE	TOTAL
Historical									
2009	17,328	76.8%	2,617	11.6%	2,572	11.4%	68	0.3%	22,562
2010	17,202	75.4%	2,669	11.7%	2,897	12.7%	46	0.2%	22,814
2011	15,799	76.5%	2,024	9.8%	2,747	13.3%	83	0.4%	20,652
2012	16,483	78.1%	2,174	10.3%	2,322	11.0%	127	0.6%	21,105
2013	15,238	77.4%	1,988	10.1%	2,323	11.8%	138	0.7%	19,687
2014	14,694	75.1%	2,270	11.6%	2,465	12.6%	137	0.7%	19,566
2015	15,085	76.2%	2,178	11.0%	2,356	11.9%	178	0.9%	19,797
2016	15,152	77.8%	2,025	10.4%	2,162	11.1%	136	0.7%	19,475
2017	15,208	72.8%	2,465	11.8%	3,154	15.1%	84	0.4%	20,890
2018E	15,621	72.8%	2,532	11.8%	3,240	15.1%	86	0.4%	21,457
Forecast									
2019	15,794	73.4%	2,087	9.7%	3,335	15.5%	301	1.4%	21,518
2020	16,184	75.0%	2,007	9.3%	3,021	14.0%	367	1.7%	21,578
2021	16,555	76.5%	1,904	8.8%	2,792	12.9%	390	1.8%	21,640
2022	16,905	77.9%	1,779	8.2%	2,582	11.9%	412	1.9%	21,701
2023	17,258	79.4%	1,676	7.7%	2,394	11.0%	413	1.9%	21,763
2024	17,307	79.4%	1,681	7.7%	2,401	11.0%	415	1.9%	21,825
2025	17,380	79.4%	1,685	7.7%	2,408	11.0%	416	1.9%	21,889
2026	17,430	79.4%	1,690	7.7%	2,415	11.0%	417	1.9%	21,952
2027	17,457	79.4%	1,695	7.7%	2,422	11.0%	418	1.9%	22,014
2028	17,531	79.4%	1,700	7.7%	2,429	11.0%	420	1.9%	22,080
2029	17,560	79.4%	1,705	7.7%	2,436	11.0%	421	1.9%	22,143
2030	17,634	79.4%	1,710	7.7%	2,443	11.0%	422	1.9%	22,209
2031	17,663	79.4%	1,715	7.7%	2,450	11.0%	423	1.9%	22,274
2032	17,715	79.4%	1,720	7.7%	2,457	11.0%	424	1.9%	22,339
2033	17,767	79.4%	1,725	7.7%	2,464	11.0%	426	1.9%	22,404
2034	17,842	79.4%	1,730	7.7%	2,472	11.0%	427	1.9%	22,471
2035	17,895	79.4%	1,735	7.7%	2,479	11.0%	428	1.9%	22,538
2036	17,926	79.4%	1,741	7.7%	2,487	11.0%	429	1.9%	22,605
2037	17,979	79.4%	1,746	7.7%	2,494	11.0%	431	1.9%	22,672
2038	18,034	79.4%	1,751	7.7%	2,502	11.0%	432	1.9%	22,742
2039	18,087	79.4%	1,756	7.7%	2,509	11.0%	433	1.9%	22,809
2040	18,142	79.4%	1,762	7.7%	2,517	11.0%	435	1.9%	22,877
Compound Annual Growth Rate									
2009–2018	(1.1%)		(0.4%)		2.6%		2.7%		(0.6%)
2018–2040	0.7%		(1.6%)		(1.1%)		7.7%		0.3%

NOTE: The FAA's Other category includes experimental and light sport aircraft.

SOURCES: Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2018–2038*, March 2018; Federal Aviation Administration, Operations Network (OPSNET), October 2018; Federal Aviation Administration, Traffic Flow Management System Counts, October 2018; Ricondo & Associates, Inc., October 2018 (analysis).

EXHIBIT 3-11 BASED AIRCRAFT AT MKE PER NATIONAL ACTIVE GENERAL AVIATION HOURS FLOWN



SOURCES: Milwaukee Mitchell International Airport, Based Aircraft Inventory, October 2018 (historical); Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2018–2038*, March 2018; Ricondo & Associates, Inc., October 2018 (analysis).

The average based aircraft per active GA hours flown from 2015 to 2018 was used to forecast based aircraft by engine type; the ratio used was calibrated to match the actual data for 2018 provided by the Airport. Overall, based aircraft are projected to increase from 95 in 2018 to 128 in 2040, a compound annual growth rate of 1.4 percent. Single-engine turbo-prop, multi-engine turbo-prop, and jet aircraft are projected to increase at a compound annual growth rate of 2.0 percent, 1.9 percent, and 2.7 percent, respectively, while single-engine piston aircraft are projected to decrease at a compound annual growth of 1.0 percent and multi-engine piston projected to remain unchanged. The historical and forecast based aircraft are presented in **Table 3-30**.

3.5.4 MILITARY AIRCRAFT ACTIVITY FORECAST

The Department of Defense does not publish guidance on future aircraft activity levels. Military aircraft activity levels do not follow socioeconomic patterns, as military missions are unrelated to socioeconomic factors such as population, employment, or GDP. An assessment was conducted to determine if there were impending changes that could greatly increase or reduce the level of military activity at MKE. The 128th Air Refueling Wing (128th ARW) operates the Boeing KC-135 Stratotanker, an aircraft that is currently included in the Air Force budget through 2040, the end of the master plan period. The 128th ARW is also a candidate for the KC-46 Pegasus, the Air Force's expected replacement of the KC-135 aircraft. In addition, the unit is not currently included in any proposed Base Realignment and Closure actions.

TABLE 3-30 HISTORICAL AND FORECAST BASED AIRCRAFT

YEAR	SINGLE-ENGINE PISTON	MULTI-ENGINE PISTON	SINGLE-ENGINE TURBO-PROP	MULTI-ENGINE TURBO-PROP	JET	OTHER[1]	TOTAL
Historical							
2009	15	4	1	9	23	0	52
2010	13	5	0	10	20	0	48
2011	6	4	0	13	13	0	36
2012	20	7	0	13	23	0	63
2013	24	5	1	18	16	0	64
2014[2]	24	5	1	18	16	0	64
2015	17	5	4	42	26	0	94
2016[2]	17	5	4	42	26	0	94
2017	25	5	3	33	21	10	97
2018E	21	3	11	31	19	10	95
Forecast							
2019	21	3	11	31	21	10	97
2020	21	3	11	31	21	10	97
2021	20	3	11	31	22	10	97
2022	20	3	11	31	23	10	98
2023	19	3	11	31	24	10	98
2024	19	3	12	32	24	10	100
2025	19	3	12	32	25	10	101
2026	19	3	12	33	25	10	102
2027	19	3	12	33	26	10	103
2028	18	3	12	34	27	10	104
2029	18	3	13	35	27	10	106
2030	18	3	13	36	28	10	108
2031	18	3	13	37	28	10	109
2032	18	3	14	38	29	10	112
2033	18	3	14	39	30	10	114
2034	18	3	14	40	30	10	115
2035	17	3	15	41	31	10	117
2036	17	3	15	42	32	10	119
2037	17	3	16	43	32	10	121
2038	17	3	16	44	33	10	123
2039	17	3	17	46	34	10	127
2040	17	3	17	47	34	10	128
Compound Annual Growth Rate							
2009–2018	3.8%	(3.1%)	30.5%	14.7%	(2.1%)	NA	6.9%
2018–2040	(1.0%)	0.0%	2.0%	1.9%	2.7%	0.0%	1.4%

NOTES:

1 Historically, "Other" aircraft at the Airport as reported in the FAA Terminal Area Forecast, may include military aircraft. The data from Milwaukee Mitchell International Airport suggest these are military based aircraft. For purposes of this forecast, based military aircraft are projected to remain at 2017 levels since military based aircraft would be mission-specific and not demand-driven.

2 Data were missing and assumed to be equal to the previous year.

SOURCES: Milwaukee Mitchell International Airport, Based Aircraft Inventory, October 2018 (historical); Federal Aviation Administration, *FAA Aerospace Forecast: Fiscal Years 2018–2038*, March 2018; Ricondo & Associates, Inc., October 2018 (analysis).

Based on this assessment, it was determined reasonable to apply a similar methodology as the FAA does in their Terminal Area Forecast (TAF) to forecast military activity, where the last year of actual operations is used as the activity level throughout the forecast period. The forecast is presented in **Table 3-31**.

TABLE 3-31 HISTORICAL AND FORECAST MILITARY OPERATIONS

YEAR	MILITARY AIRCRAFT OPERATIONS
Historical	
2009	1,800
2010	1,600
2011	1,368
2012	1,771
2013	2,161
2014	1,904
2015	1,491
2016	2,104
2017	2,059
2018E	2,059
Forecast	
2019	2,059
2020	2,059
2021	2,059
2022	2,059
2023	2,059
2024	2,059
2025	2,059
2026	2,059
2027	2,059
2028	2,059
2029	2,059
2030	2,059
2031	2,059
2032	2,059
2033	2,059
2034	2,059
2035	2,059
2036	2,059
2037	2,059
2038	2,059
2039	2,059
2040	2,059
Compound Annual Growth Rate	
2009-2018	1.5%
2018-2040	0.0%

SOURCE: Federal Aviation Administration, Operations Network (OPSNET), October 2018.

3.6 PEAK HOUR ACTIVITY

A Design Day Flight Schedule (DDFS) of activity, representing activity throughout the hours of the selected peak month average weekday at the Airport, was prepared for the base year (2018), 2023, 2028, and 2040. The methodology used in preparing the DDFS is addressed in Section 3.9, Design Day Flight Schedules. Results and statistics, summarizing baseline forecast peak hour passengers, peak hour passenger airline operations, and peak hour total airport operations, respectively, are shown in **Tables 3-32**, **3-33**, and **3-34**.

TABLE 3-32 DDFS SUMMARY – PEAK HOUR PASSENGERS (BASELINE FORECAST)

YEAR	DEPLANED	TIME	ENPLANED	TIME	TOTAL	TIME
2018	1,491	16:50 – 17:49	1,803	6:40 – 7:39	2,561	17:40 – 18:39
2023	1,717	16:50 – 17:49	2,107	6:40 – 7:39	2,924	16:50 – 17:49
2028	2,218	16:50 – 17:49	2,146	6:40 – 7:39	3,519	16:50 – 17:49
2040	2,497	16:50 – 17:49	2,495	6:40 – 7:39	4,103	17:40 – 18:39

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-33 DDFS SUMMARY – PEAK HOUR PASSENGER AIRLINE OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	14	16:50 – 17:49	16	6:40 – 7:39	24	16:50 – 17:49
2023	14	16:50 – 17:49	17	6:40 – 7:39	24	16:50 – 17:49
2028	18	16:50 – 17:49	17	5:10 – 6:09 6:40 – 7:39	29	16:50 – 17:49
2040	19	16:50 – 17:49	18	6:40 – 7:39	30	16:50 – 17:49

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

TABLE 3-34 DDFS SUMMARY – PEAK HOUR TOTAL AIRPORT OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	20	16:50 – 17:49	24	6:40 – 7:39	33	16:50 – 17:49
2023	20	16:50 – 17:49	26	6:40 – 7:39	34	15:40-16:39
2028	24	16:50 – 17:49	26	6:40 – 7:39 7:00 – 7:59	38	16:50 – 17:49
2040	25	16:50 – 17:49	29	6:40 – 7:39 7:00 – 7:59	40	16:50 – 17:49

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

3.7 COMPARISON TO OTHER FORECASTS

This section compares the master plan update forecasts to the FAA's 2017 TAF.

3.7.1 ENPLANED PASSENGER FORECAST COMPARISON

Table 3-35 presents forecasts of enplaned passengers in the master plan update and the 2017 TAF while **Exhibit 3-12** depicts this information graphically.

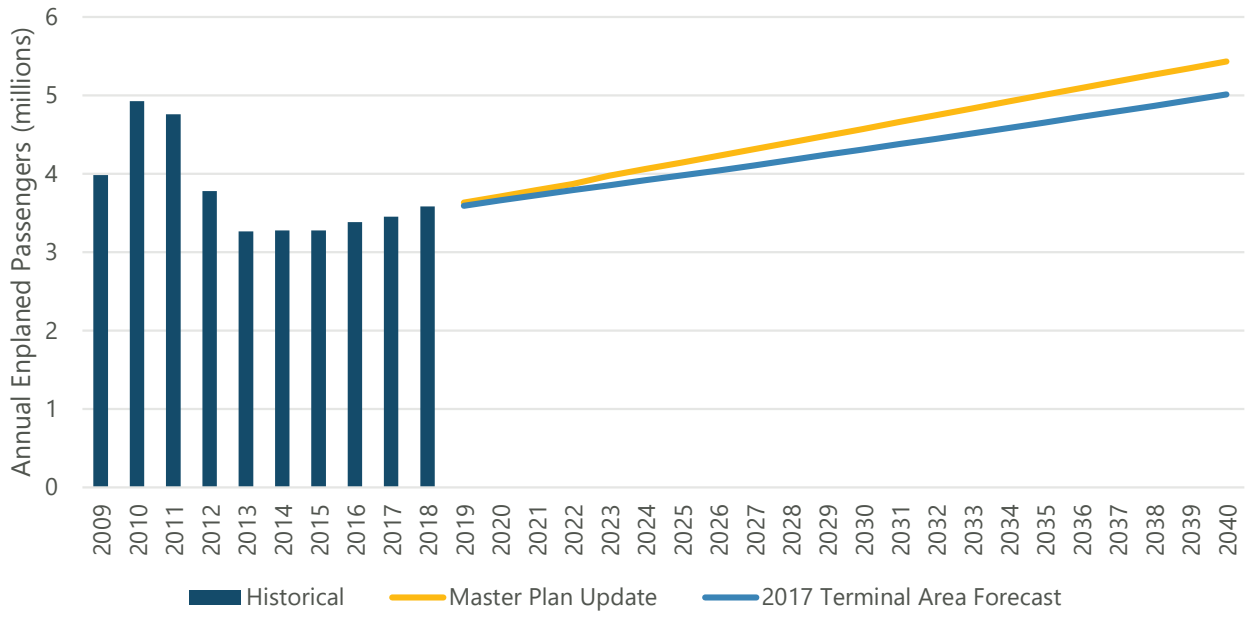
TABLE 3-35 COMPARISON OF ENPLANED PASSENGER FORECASTS

YEAR	MASTER PLAN UPDATE	2017 TAF	VARIANCE FROM TAF
Historical			
2009	3,981,871	3,601,954	10.5%
2010	4,927,558	4,583,841	7.5%
2011	4,760,952	4,812,394	-1.1%
2012	3,780,315	3,935,825	-4.0%
2013	3,266,309	3,227,852	1.2%
2014	3,278,820	3,255,921	0.7%
2015	3,277,356	3,221,801	1.7%
2016	3,383,271	3,298,421	2.6%
2017	3,452,544	3,383,874	2.0%
2018E	3,584,924	3,515,143	2.0%
Forecast			
2019	3,630,560	3,592,098	1.1%
2020	3,709,747	3,661,038	1.3%
2021	3,790,333	3,724,966	1.8%
2022	3,871,068	3,790,032	2.1%
2023	3,976,721	3,853,722	3.2%
2024	4,059,835	3,916,710	3.7%
2025	4,143,873	3,977,930	4.2%
2026	4,228,823	4,041,071	4.6%
2027	4,314,245	4,106,277	5.1%
2028	4,400,099	4,173,414	5.4%
2029	4,486,341	4,242,652	5.7%
2030	4,572,927	4,310,997	6.1%
2031	4,659,812	4,378,975	6.4%
2032	4,746,951	4,446,579	6.8%
2033	4,834,295	4,513,080	7.1%
2034	4,921,312	4,582,143	7.4%
2035	5,007,927	4,652,774	7.6%
2036	5,094,064	4,724,425	7.8%
2037	5,179,644	4,795,006	8.0%
2038	5,264,590	4,865,848	8.2%
2039	5,348,824	4,938,951	8.3%
2040	5,432,265	5,012,742	8.4%
Compound Annual Growth Rate			
2009-2018	-1.2%	-0.3%	
2018-2040	1.9%	1.6%	

NOTE: The TAF excludes nonrevenue passengers and is presented on a federal fiscal year basis (October-September). The master plan update forecast includes nonrevenue passengers and is presented on a calendar year basis.

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., November 2018, (forecast); Federal Aviation Administration, 2017 *Terminal Area Forecast*, November 2018.

EXHIBIT 3-12 COMPARISON OF ENPLANED PASSENGER FORECASTS



SOURCES: Milwaukee Mitchell International Airport (historical); Ricondo & Associates, Inc. (forecast); Federal Aviation Administration, 2017 *Terminal Area Forecast*, November 2018.

Also shown in Table 3-35 is the variance of the master plan update from the 2017 TAF. Between 2018E and 2040, the TAF forecasts enplaned passengers to grow at a compound annual rate of 1.6 percent compared to 1.9 percent CAGR forecast in the master plan update. While differences exist between these forecasts in the composition of enplaned passengers (the Master Plan Update forecast includes nonrevenue passengers, while the FAA's TAF does not), the Master Plan forecast remains within the variance tolerance levels specified by the FAA (within 10 percent over 5 years, and within 15 percent over 10 years).[18]

3.7.2 AIRCRAFT OPERATIONS FORECAST COMPARISON

Table 3-36 presents forecasts of total aircraft operations in the master plan update and the 2017 TAF while **Exhibit 3-13** presents this information graphically. Also shown in Table 3-36 is the variance of the master plan update aircraft operations forecast from the 2017 TAF. Between 2018E and 2040, both the TAF and the master plan update forecast aircraft operations to grow at a compound annual rate of 1.1 percent.

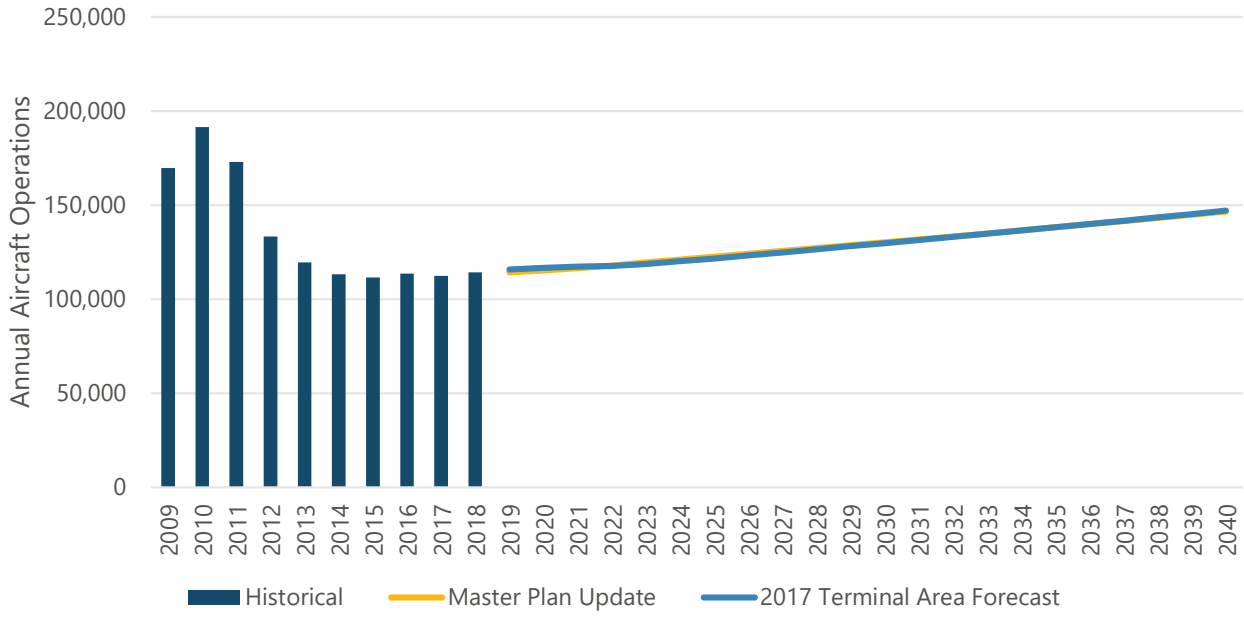
[18] Forecast tolerances are defined in FAA Advisory Circular 150/5070-6B, *Airport Master Plans*.

TABLE 3-36 COMPARISON OF AIRCRAFT OPERATIONS FORECASTS

YEAR	MASTER PLAN UPDATE	2017 TAF	VARIANCE FROM TAF
Historical			
2009	169,693	164,424	3.2%
2010	191,553	189,527	1.1%
2011	173,017	181,973	-4.9%
2012	133,366	141,489	-5.7%
2013	119,549	120,477	-0.8%
2014	113,248	115,479	-1.9%
2015	111,501	111,242	0.2%
2016	113,530	113,902	-0.3%
2017	112,345	111,543	0.7%
2018E	114,299	114,665	-0.3%
Forecast			
2019	114,198	115,836	-1.4%
2020	115,310	116,725	-1.2%
2021	116,431	117,246	-0.7%
2022	117,758	117,719	0.0%
2023	119,519	118,699	0.7%
2024	121,070	120,150	0.8%
2025	122,624	121,663	0.8%
2026	124,181	123,219	0.8%
2027	125,729	124,820	0.7%
2028	127,274	126,462	0.6%
2029	128,739	128,152	0.5%
2030	130,299	129,826	0.4%
2031	131,851	131,494	0.3%
2032	133,394	133,155	0.2%
2033	134,928	134,796	0.1%
2034	136,583	136,493	0.1%
2035	138,220	138,226	0.0%
2036	139,873	139,982	-0.1%
2037	141,541	141,721	-0.1%
2038	143,264	143,469	-0.1%
2039	144,963	145,267	-0.2%
2040	146,642	147,082	-0.3%
Compound Annual Growth Rate			
2009-2018	-4.3%	-3.9%	
2018-2040	1.1%	1.1%	

NOTE: The TAF is presented on a federal fiscal year basis (October-September). The master plan update forecast is presented on a calendar year basis.
SOURCES: Milwaukee Mitchell International Airport (historical); Ricondo & Associates, Inc. (forecast); Federal Aviation Administration, 2017 *Terminal Area Forecast*, November 2018.

EXHIBIT 3-13 COMPARISON OF AIRCRAFT OPERATIONS FORECASTS



SOURCES: Milwaukee Mitchell International Airport (historical); Ricondo & Associates, Inc. (forecast); Federal Aviation Administration, 2017 *Terminal Area Forecast*, November 2018.

3.7.3 SUMMARY OF FORECAST – FAA TEMPLATE

Table 3-37 and **Table 3-38** summarize the baseline forecast of aviation activity prepared in support of the master plan update for Milwaukee Mitchell International Airport. Data are presented using templates provided in Appendices B and C, respectively, in the document *Forecasting Aviation Activity by Airport*. [19]

[19] GRA, Incorporated, *Forecasting Aviation Activity by Airport*, April 2001.

TABLE 3-37 (1 OF 2) FAA FORECAST SUMMARY

	FORECAST LEVELS AND GROWTH RATES					AVERAGE COMPOUND ANNUAL GROWTH RATE			
BASE YEAR: 2018[1]	BASE YEAR LEVEL	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 15 YEARS	BASE YEAR TO +1	BASE YEAR TO +5	BASE YEAR TO +10	BASE YEAR TO +15
Forecast Levels and Growth Rates									
Passenger Enplanements									
Air Carrier	2,785,486	2,823,192	3,137,633	3,480,478	3,890,430	1.4%	2.4%	2.3%	2.3%
Commuter [2]	799,438	807,368	839,088	919,621	943,865	1.0%	1.0%	1.4%	1.1%
Total Enplanements	3,584,924	3,630,560	3,976,721	4,400,099	4,834,295	1.3%	2.1%	2.1%	2.0%
Operations									
Itinerant									
Air Carrier (incl. Air Cargo)	48,094	48,001	53,939	58,992	64,625	-0.2%	2.3%	2.1%	2.0%
Commuter/Air Taxi	42,689	42,411	41,758	44,143	45,961	-0.7%	-0.4%	0.3%	0.5%
Total Commercial Operations	90,783	90,412	95,697	103,135	110,586	-0.4%	1.1%	1.3%	1.3%
General Aviation	20,363	20,420	20,653	20,954	21,262	0.3%	0.3%	0.3%	0.3%
Military	1,905	1,905	1,905	1,905	1,905	0.0%	0.0%	0.0%	0.0%
Local									
General Aviation	1,094	1,097	1,110	1,126	1,143	0.3%	0.3%	0.3%	0.3%
Military	154	154	154	154	154	0.0%	0.0%	0.0%	0.0%
Total Operations	114,299	113,988	119,519	127,274	135,050	-0.3%	0.9%	1.1%	1.1%
Instrument Operations [3]	111,213	110,910	116,292	123,838	131,404	-0.3%	0.9%	1.1%	1.1%
Peak Hour Operations	33	33	35	40	45	0.0%	1.2%	1.9%	2.1%

TABLE 3-37 (2 OF 2) FAA FORECAST SUMMARY

	FORECAST LEVELS AND GROWTH RATES					AVERAGE COMPOUND ANNUAL GROWTH RATES			
BASE YEAR: 2018[1]	BASE YEAR LEVEL	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 15 YEARS	BASE YEAR TO +1	BASE YEAR TO +5	BASE YEAR TO +10	BASE YEAR TO +15
Cargo									
Cargo/mail (tons) [4]	84,998	88,675	108,420	129,740	151,290	4.3%	5.0%	4.3%	3.9%
Based Aircraft									
Single Engine (Nonjet)	32	32	30	30	32	0.0%	-1.3%	-0.6%	0.0%
Multi Engine (Nonjet)	34	34	34	37	42	0.0%	0.0%	0.8%	1.4%
Jet Engine	21	21	24	27	30	0.0%	2.7%	2.5%	2.4%
Helicopter/Other	10	10	10	10	10	0.0%	0.0%	0.0%	0.0%
Total	97	97	98	104	114	0.0%	0.2%	0.7%	1.1%
Operational Factors									
Average aircraft size (seats)									
Air Carrier	154.8	154.4	156.0	158.2	161.1				
Commuter	60.2	61.3	67.4	70.8	71.0				
Average Enplaning Load Factor									
Air Carrier	81.9%	82.0%	82.3%	82.3%	82.3%				
Commuter	78.8%	79.3%	80.0%	80.0%	80.0%				
General Aviation Operations per Based Aircraft	**221**	**222**	**222**	**212**	**197**				

NOTES:

1 Forecast prepared on a calendar year basis.

2 Commuter as defined by FAA. Commuter operations include takeoff and landings by aircraft with 76 or fewer seats that transport regional passengers on scheduled commercial flights.

3 Instrument operations have averaged 97.3 percent of total operations for the 11-year period of 2008 – 2018.

4 Cargo/mail in total U.S. tons (enplaned and deplaned).

SOURCES: Federal Aviation Administration (template); Milwaukee Mitchell International Airport (historical passenger, aircraft operations, and cargo activity); Federal Aviation Administration, Air Traffic Activity Data System (ATADS), April 2019 (historical aircraft operations activity); U.S. Department of Transportation, Form T-100, December 2018 (historical passenger activity); Ricondo & Associates, Inc., November 2018 (forecast).

TABLE 3-38 COMPARISON TO TERMINAL AREA FORECAST (FAA TEMPLATE)

BASE YEAR: 2018	YEAR[1]	MASTER PLAN FORECAST	FAA TAF	BASELINE VS. FAA TAF (% DIFFERENCE)
Passenger Enplanements[2]				
Base year	2018	3,584,924	3,515,143	2.0%
Base year + 5 years	2023	3,976,721	3,853,722	3.2%
Base year + 10 years	2028	4,400,099	4,173,414	5.4%
Base year + 15 years	2033	4,834,295	4,513,080	7.1%
Commercial Operations				
Base year	2018	90,783	99,432	-8.7%
Base year + 5 years	2023	95,697	103,466	-7.5%
Base year + 10 years	2028	103,135	111,229	-7.3%
Base year + 15 years	2033	110,586	119,563	-7.5%
Total Operations				
Base year	2018	114,299	114,665	-0.3%
Base year + 5 years	2023	119,519	118,699	0.7%
Base year + 10 years	2028	127,274	126,462	0.6%
Base year + 15 years	2033	134,928	134,796	0.1%

NOTES:

1 The Master Plan Update forecast was prepared on a calendar year basis while the FAA Terminal Area Forecast is prepared on a federal fiscal year basis (October through September).

2 The Master Plan Update Forecast includes nonrevenue passengers while the FAA TAF does not.

SOURCES: Federal Aviation Administration (template); Milwaukee Mitchell International Airport (historical passenger and aircraft operations activity); Federal Aviation Administration, Air Traffic Activity Data System (ATADS), December 2018 (historical aircraft operations activity); U.S. Department of Transportation, Form T-100, December 2018 (historical passenger activity); Federal Aviation Administration, 2017 Terminal Area Forecast, November 2018; Ricondo & Associates, Inc., November 2018 (forecast).

3.8 ALTERNATIVE DEMAND SCENARIO

In addition to the baseline activity forecasts, an alternative demand scenario was developed for passenger airline and cargo airline activity to estimate the possible variation in activity resulting from changes to the socioeconomic and competitive environment assumed in the baseline forecast. The elements addressed in the alternative scenario were formulated in conjunction with representatives of MKE. The results of the analysis of these three elements of the alternative demand scenario are described in this section, as well as the compiled results.

3.8.1 PASSENGER AIRLINE SCENARIOS

The passenger airline scenarios comprise three separate elements that were modeled independently of each other to demonstrate the impact that each element had on the baseline forecast. These elements include (1) increased Southwest connecting traffic; (2) increased economic activity in Southeastern Wisconsin; (3) greater capture of passengers residing in counties between Milwaukee and Chicago.

3.8.1.1 ELEMENT 1 – INCREASED SOUTHWEST CONNECTING TRAFFIC

This element assumes that as Southwest's MDW focus city (Chicago) reaches capacity, the airline will choose to reroute connections to other airports in its network in order to accommodate Chicago O&D passenger growth. MKE

passenger growth in this element would come from Southwest passengers flying between two cities that previously connected in MDW now using MKE instead. Beginning in 2020, connections were modeled to gradually increase in market (city) pairs that can currently be served through MKE. For example, a passenger currently flying from Las Vegas McCarran International Airport (LAS) through MDW to Ronald Reagan Washington National Airport (DCA), was assumed to fly between LAS and DCA using MKE as the connecting point beginning in 2020. Additional nonstop destinations were also assumed over the forecast period that will further enhance connecting passenger volumes at MKE. Existing Southwest focus cities that have experienced recent growth in connecting traffic (e.g., St. Louis Lambert International Airport [STL], Dallas Love Field [DAL], Nashville International Airport [BNA]) were used as reference points for connecting passenger growth potential. The new nonstop flights will also support additional O&D passenger volumes, however not all of the O&D traffic would be incremental, as some passengers would already be flying between these points on a connecting itinerary. Passenger volume growth is expected to be accommodated through a combination of larger aircraft and new flights as Southwest initially upgauges aircraft at MKE to accommodate more connections before adding flights to new and existing destinations.

In this scenario, enplaned passengers are forecast to grow from approximately 3.6 million in 2018 to approximately 6.4 million in 2040, a compound annual growth rate of 2.7 percent. During the same period aircraft operations are forecast to grow from approximately 77,300 to approximately 113,700, a compound annual growth rate of 1.8 percent. The results of the Element 1 passenger and operations forecasts are depicted in **Table 3-39** and **Table 3-40**.

3.8.1.2 ELEMENT 2 – INCREASED ECONOMIC ACTIVITY IN SOUTHEASTERN WISCONSIN

This element assumes an increase in socioeconomic activity beyond what was described in Sections 3.2.5, Regional Economic Development, and 3.3.4, Long-Term (2020-2040) Passenger Forecast Methodology. This element includes additional Wisconsin Center (convention) visitors beyond what was assumed in the baseline forecasts and greater economic output from the research and development, manufacturing, and technology developments currently taking place in southeastern Wisconsin. The baseline forecast assumed 50 percent of the total possible economic impact as incremental to the baseline socioeconomic forecasts of the Airport Service Area (Table 3-12). These adjusted forecasts were then used in the econometric models to forecast passenger demand, as described in Section 3.3.4, Long-Term (2020-2040) Passenger Forecast Methodology. This element assumes the full economic impact of the increased development activity in southeastern Wisconsin and associated indirect labor multipliers. These updated socioeconomic inputs were then applied to the econometric models in the same way that the baseline forecast was developed.

In this scenario, enplaned passengers are forecast to grow from approximately 3.6 million in 2018 to approximately 5.5 million in 2040, a compound annual growth rate of 2.0 percent. During the same period aircraft operations are forecast to grow from approximately 77,300 to approximately 100,400, a compound annual growth rate of 1.2 percent. The results of the Element 2 passenger and operations forecasts are summarized in **Table 3-41** and **Table 3-42**.

TABLE 3-39 ELEMENT 1 ENPLANED PASSENGER FORECAST

YEAR	BASELINE FORECAST	ELEMENT 1 – INCREASED CONNECTIVITY	DIFFERENCE
Historical			
2009	3,981,871	3,981,871	0
2010	4,927,558	4,927,558	0
2011	4,760,952	4,760,952	0
2012	3,780,315	3,780,315	0
2013	3,266,309	3,266,309	0
2014	3,278,820	3,278,820	0
2015	3,277,356	3,277,356	0
2016	3,383,271	3,383,271	0
2017	3,452,544	3,452,544	0
2018E	3,584,924	3,584,924	0
Forecast			
2019	3,630,560	3,630,560	0
2020	3,709,747	3,854,323	144,576
2021	3,790,333	3,975,785	185,452
2022	3,871,068	4,098,972	227,905
2023	3,976,721	4,325,416	348,694
2024	4,059,835	4,426,875	367,040
2025	4,143,873	4,538,442	394,568
2026	4,228,823	4,644,123	415,300
2027	4,314,245	4,751,080	436,835
2028	4,400,099	4,869,696	469,598
2029	4,486,341	4,984,521	498,180
2030	4,572,927	5,100,736	527,809
2031	4,659,812	5,220,302	560,489
2032	4,746,951	5,357,884	610,933
2033	4,834,295	5,484,123	649,828
2034	4,921,312	5,613,536	692,223
2035	5,007,927	5,742,348	734,420
2036	5,094,064	5,872,941	778,877
2037	5,179,644	6,007,842	828,198
2038	5,264,590	6,146,431	881,841
2039	5,348,824	6,287,782	938,958
2040	5,432,265	6,432,041	999,775
Compound Annual Growth Rate			
2018-2040	1.9%	2.7%	

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

TABLE 3-40 ELEMENT 1 AIRCRAFT OPERATIONS FORECAST

YEAR	BASELINE FORECAST	ELEMENT 1 – INCREASED CONNECTIVITY	DIFFERENCE
Historical			
2009	134,815	134,815	0
2010	154,955	154,955	0
2011	138,345	138,345	0
2012	97,718	97,718	0
2013	84,667	84,667	0
2014	78,892	78,892	0
2015	76,977	76,977	0
2016	78,453	78,453	0
2017	76,042	76,042	0
2018E	77,306	77,306	0
Forecast			
2019	76,618	76,618	0
2020	77,143	79,534	2,391
2021	77,676	80,712	3,036
2022	78,417	82,110	3,693
2023	79,589	85,184	5,595
2024	80,622	86,454	5,832
2025	81,658	87,866	6,209
2026	82,695	89,209	6,514
2027	83,726	90,556	6,830
2028	84,749	92,068	7,319
2029	85,765	93,504	7,739
2030	86,874	95,047	8,174
2031	87,975	96,627	8,652
2032	89,067	98,468	9,401
2033	90,149	100,117	9,968
2034	91,351	101,937	10,585
2035	92,535	103,731	11,195
2036	93,735	105,571	11,836
2037	94,951	107,497	12,547
2038	96,218	109,535	13,318
2039	97,464	111,601	14,137
2040	98,689	113,695	15,006
Compound Annual Growth Rate			
2018-2040	1.1%	1.8%	

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

TABLE 3-41 ELEMENT 2 ENPLANED PASSENGER FORECAST

YEAR	BASELINE FORECAST	ELEMENT 2 – INCREASED ECONOMIC ACTIVITY	DIFFERENCE
Historical			
2009	3,981,871	3,981,871	0
2010	4,927,558	4,927,558	0
2011	4,760,952	4,760,952	0
2012	3,780,315	3,780,315	0
2013	3,266,309	3,266,309	0
2014	3,278,820	3,278,820	0
2015	3,277,356	3,277,356	0
2016	3,383,271	3,383,271	0
2017	3,452,544	3,452,544	0
2018E	3,584,924	3,584,924	0
Forecast			
2019	3,630,560	3,655,338	24,778
2020	3,709,747	3,746,958	37,211
2021	3,790,333	3,840,022	49,689
2022	3,871,068	3,933,263	62,195
2023	3,976,721	4,056,911	80,190
2024	4,059,835	4,142,699	82,864
2025	4,143,873	4,229,440	85,566
2026	4,228,823	4,314,940	86,117
2027	4,314,245	4,400,924	86,679
2028	4,400,099	4,487,353	87,254
2029	4,486,341	4,574,192	87,852
2030	4,572,927	4,661,393	88,466
2031	4,659,812	4,748,909	89,097
2032	4,746,951	4,836,687	89,736
2033	4,834,295	4,924,670	90,375
2034	4,921,312	5,012,323	91,011
2035	5,007,927	5,099,573	91,645
2036	5,094,064	5,186,340	92,276
2037	5,179,644	5,272,543	92,899
2038	5,264,590	5,358,093	93,503
2039	5,348,824	5,442,916	94,093
2040	5,432,265	5,526,918	94,653
Compound Annual Growth Rate			
2018-2040	1.9%	2.0%	

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

TABLE 3-42 ELEMENT 2 AIRCRAFT OPERATIONS FORECAST

YEAR	BASELINE FORECAST	ELEMENT 2 – INCREASED ECONOMIC ACTIVITY	DIFFERENCE
Historical			
2009	134,815	134,815	0
2010	154,955	154,955	0
2011	138,345	138,345	0
2012	97,718	97,718	0
2013	84,667	84,667	0
2014	78,892	78,892	0
2015	76,977	76,977	0
2016	78,453	78,453	0
2017	76,042	76,042	0
2018E	77,306	77,306	0
Forecast			
2019	76,618	77,135	517
2020	77,143	77,911	767
2021	77,676	78,689	1,013
2022	78,417	79,675	1,258
2023	79,589	81,199	1,610
2024	80,622	82,272	1,650
2025	81,658	83,349	1,691
2026	82,695	84,383	1,688
2027	83,726	85,413	1,687
2028	84,749	86,434	1,685
2029	85,765	87,450	1,685
2030	86,874	88,560	1,686
2031	87,975	89,662	1,687
2032	89,067	90,755	1,689
2033	90,149	91,839	1,690
2034	91,351	93,046	1,694
2035	92,535	94,234	1,699
2036	93,735	95,438	1,702
2037	94,951	96,658	1,707
2038	96,218	97,931	1,713
2039	97,464	99,183	1,719
2040	98,689	100,413	1,724
Compound Annual Growth Rate			
2018-2040	1.1%	1.2%	

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

3.8.1.3 ELEMENT 3 – INCREASED CAPTURE FROM COUNTIES BETWEEN MILWAUKEE AND CHICAGO

Based on the leakage study discussed in Section 3.2.7, Airport Service Area, approximately 3.6 percent of passengers residing in northern Illinois (see Exhibit 3-5) use MKE as their airport. The overwhelming majority currently use ORD or other airports in the area. This scenario assumes that a greater percentage of travelers in the counties between Milwaukee and Chicago (Kenosha and Racine Counties in Wisconsin and McHenry and Lake Counties in Illinois) will use MKE over the forecast horizon. The impetus for this change is the growth of ULCCs at MKE, by both new entrant and existing ULCCs. Average fares are expected to decline at MKE as the ULCCs increase their presence and existing airlines competitively reduce their fares as well. This increase in service by expanded ULCCs and declining average fares will lead to an increasing number of passengers choosing to fly from MKE, rather than ORD, resulting in a shift of passengers from ORD to MKE. Increased ULCC activity is assumed to begin in 2021 with four daily flights initially and will continue to increase service levels and the number of destinations served throughout the forecast period. Not all passenger growth in this element will be incremental at MKE, as ULCC growth will siphon some passengers from other airlines already operating at MKE. Passenger volume growth is expected to be accommodated primarily through a combination of new flights and increased load factors, and aircraft operations have been modelled to increase reflecting current ULCC fleet plans, the use of high density narrowbody aircraft, and higher load factors.

In this element, enplaned passengers are forecast to grow from approximately 3.6 million in 2018 to approximately 5.9 million in 2040, a compound annual growth rate of 2.3 percent. During the same period aircraft operations are forecast to grow from approximately 77,300 to approximately 105,400, a compound annual growth rate of 1.4 percent. The results of the Element 3 passenger and operations forecasts are depicted in **Table 3-43** and **Table 3-44**.

3.8.2 AIR CARGO FORECAST SCENARIO

The cargo component of the alternative demand scenario encompasses three elements: new bi-directional demand to accommodate Foxconn and other regional manufacturing activities; additional DHL activity to accommodate e-commerce/recent Amazon cargo demand patterns and to support new fulfillment center in Oak Creek; and additional FedEx/UPS flights to support expanding e-commerce activity. The following assumptions were used in the air cargo alternative demand (high) scenario forecast:

- The Airport's largest air cargo carrier group, the integrated carriers (FedEx and UPS), will experience larger annual tonnage increases due to stronger local and regional e-commerce activity and the need to process additional cargo at MKE versus traditional truck traffic directly from hub locations to city sort locations. In addition, in the alternative demand scenario these carriers' tonnage growth will benefit from the Foxconn and other manufacturing developments – in both direct contracts with manufacturing companies for emergency shipping to maintain production lines during supply chain disruptions (just-in-time shipping) and with industries associated with the regional economic impact of manufacturing development. Ultimately, the integrated air cargo carrier group is expected to increase annual tonnage at a compound annual rate of 4.2 percent through 2028 and 3.8 percent in 2040 (111,482 and 168,620 tons respectively) in the alternative demand scenario.
- The all-cargo airlines will experience robust growth rates through the forecast period with continued expansion of the e-commerce industry as additional MKE flights are required direct from Amazon airports (see **Exhibit 3-14**) to meet local/regional customer demand. The second regional fulfillment center (Oak Creek, WI) is expected to be an important component of Amazon regional expansion and expedited deliveries are required from MKE to maintain distribution patterns in support of anticipated growth through the 2040 planning period.

TABLE 3-43 ELEMENT 3 ENPLANED PASSENGER FORECAST

YEAR	BASELINE FORECAST	SCENARIO 3- INCREASED CAPTURE FROM COUNTIES BETWEEN MILWAUKEE AND CHICAGO	DIFFERENCE
Historical			
2009	3,981,871	3,981,871	0
2010	4,927,558	4,927,558	0
2011	4,760,952	4,760,952	0
2012	3,780,315	3,780,315	0
2013	3,266,309	3,266,309	0
2014	3,278,820	3,278,820	0
2015	3,277,356	3,277,356	0
2016	3,383,271	3,383,271	0
2017	3,452,544	3,452,544	0
2018E	3,584,924	3,584,924	0
Forecast			
2019	3,630,560	3,630,560	0
2020	3,709,747	3,709,747	0
2021	3,790,333	3,834,122	43,788
2022	3,871,068	3,928,857	57,789
2023	3,976,721	4,049,066	72,345
2024	4,059,835	4,147,251	87,416
2025	4,143,873	4,242,535	98,662
2026	4,228,823	4,338,730	109,907
2027	4,314,245	4,440,917	126,672
2028	4,400,099	4,544,294	144,195
2029	4,486,341	4,648,912	162,572
2030	4,572,927	4,754,479	181,552
2031	4,659,812	4,861,194	201,382
2032	4,746,951	4,968,934	221,983
2033	4,834,295	5,077,753	243,458
2034	4,921,312	5,187,195	265,883
2035	5,007,927	5,296,690	288,763
2036	5,094,064	5,406,484	312,420
2037	5,179,644	5,516,865	337,221
2038	5,264,590	5,627,692	363,102
2039	5,348,824	5,738,766	389,943
2040	5,432,265	5,850,038	417,773
Compound Annual Growth Rate			
2018-2040	1.9%	2.3%	

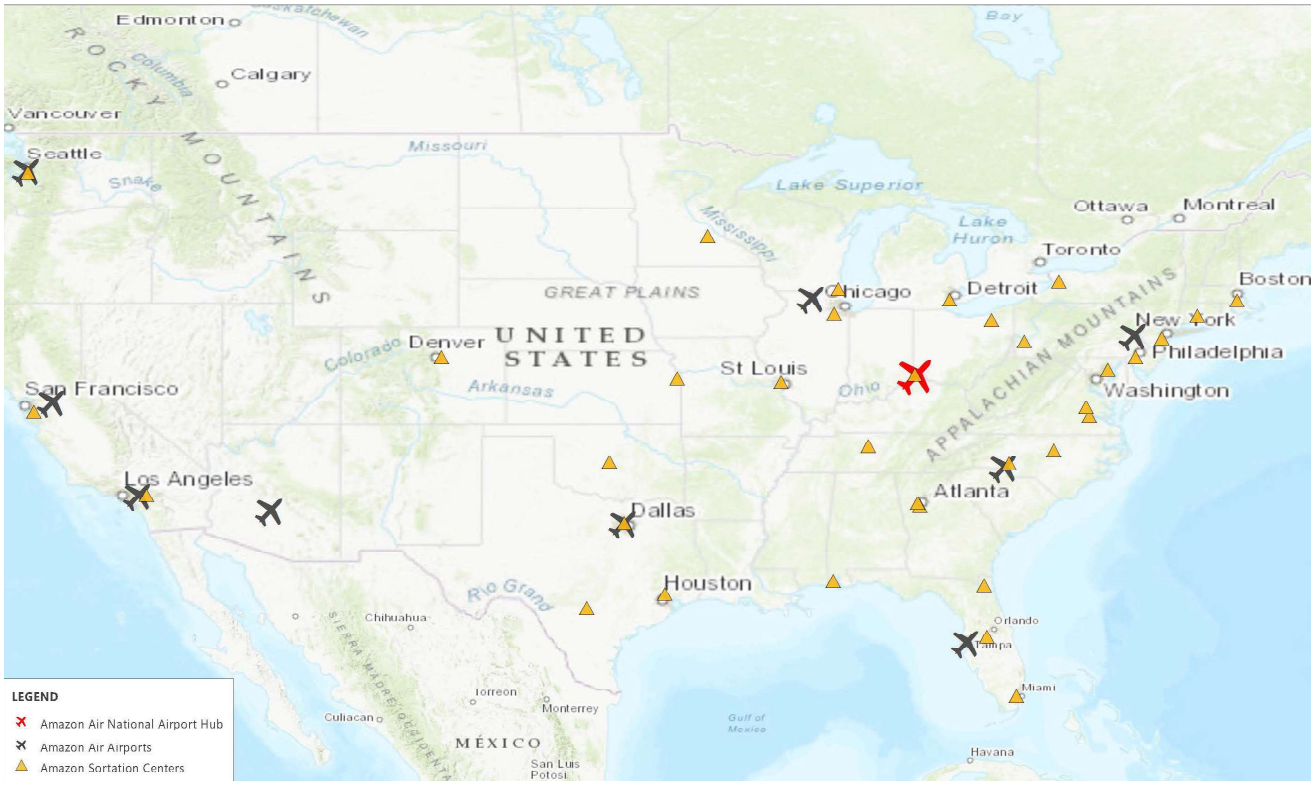
SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

TABLE 3-44 ELEMENT 3 AIRCRAFT OPERATIONS FORECAST

YEAR	BASELINE FORECAST	SCENARIO 3- INCREASED CAPTURE FROM COUNTIES BETWEEN MILWAUKEE AND CHICAGO	DIFFERENCE
Historical			
2009	134,815	134,815	0
2010	154,955	154,955	0
2011	138,345	138,345	0
2012	97,718	97,718	0
2013	84,667	84,667	0
2014	78,892	78,892	0
2015	76,977	76,977	0
2016	78,453	78,453	0
2017	76,042	76,042	0
2018E	77,306	77,306	0
Forecast			
2019	76,618	76,618	0
2020	77,143	77,143	0
2021	77,676	78,485	809
2022	78,417	79,477	1,060
2023	79,589	80,906	1,317
2024	80,622	82,201	1,579
2025	81,658	83,338	1,680
2026	82,695	84,652	1,957
2027	83,726	85,965	2,239
2028	84,749	87,279	2,530
2029	85,765	88,597	2,832
2030	86,874	90,014	3,140
2031	87,975	91,434	3,459
2032	89,067	92,853	3,786
2033	90,149	94,273	4,124
2034	91,351	95,823	4,472
2035	92,535	97,359	4,824
2036	93,735	98,919	5,184
2037	94,951	100,508	5,557
2038	96,218	102,162	5,944
2039	97,464	103,805	6,341
2040	98,689	105,437	6,748
Compound Annual Growth Rate			
2018-2040	1.1%	1.4%	

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

EXHIBIT 3-14 AMAZON AIR HUBS AND SORTATION CENTERS



SOURCES: Amazon Inc. Annual Reports, November 2018; Ricondo & Associates, Inc., January 2019.

- The Foxconn and other manufacturing supply chain logistics will take a much more MKE-direct approach to inbound commodity parts to support manufacturing production and finished goods delivery to worldwide customers. It is assumed that manufacturing activity will begin in 2021 and direct freighter flights would commence that year with 2-3 weekly Boeing 767 flights from Asia (likely making a refueling stop at Anchorage International Airport [ANC]) with inbound component parts and outbound finished goods to various locations around the globe. The expectation is that the freighter aircraft frequency will increase to 4 per week after five years as businesses mature and subsequently to 5 per week from 2030-2040, the last ten years of the forecast horizon. In addition, larger freighter aircraft (Boeing 747-8) will likely be needed after five years with a single weekly frequency beginning in 2031 to support the supply chain requirements as Foxconn and other manufacturing activity is developed to expected production levels.
- Boeing expects the Boeing 777F freighter to gradually replace the Boeing 747-8 over the next several decades; it is expected that service by the more efficient and slightly larger cargo capacity aircraft will materialize at MKE during the 2028-2040 planning period. This will ultimately result in two Boeing 777F frequencies per week from 2036-2040. In terms of the cargo carrier fleet, the result is that Boeing 767 tonnage will grow from 15,600 tons in 2021 to 33,800 tons in 2040 for a compound annual growth rate of 4.2 percent over that 20-year period. The larger freighter aircraft (747-8 and 777F) are anticipated to begin service in 2026 and 2029, respectively, and ultimately accommodate 9,256 tons in 2028 and 31,408 tons in 2040 for the total manufacturing-related tonnage represented in **Table 3-45**. The all-cargo tonnage exhibits a 13.5 percent compound annual growth rate through 2028 and a 7.5 percent total compound annual growth rate through 2040.

- Passenger airline total tonnage is assumed to increase slightly more than in the baseline forecast (a compound annual growth rate of 2.1 percent versus the baseline 1.8 percent through 2040) in the alternative demand scenario due to the potential new routes, including international destinations, and larger aircraft in the alternative demand scenario passenger aircraft operations through 2040.

TABLE 3-45 ALTERNATIVE DEMAND SCENARIO FORECAST OF AIR CARGO TONNAGE

	HISTORICAL		ALTERNATIVE DEMAND SCENARIO FORECAST			CAGR		
CARGO TONNAGE	2009	2018E	2023	2028	2040	2018-2023	2018-2028	2018-2040
Integrated Carrier Cargo	68,054	73,923	91,456	111,482	168,620	4.3%	4.2%	3.8%
All-Cargo Airline (Foxconn [1])			19,094	35,988	65,208	-- [1/]	13.5%	7.5%
All-Cargo Airline (DHL/Amazon)			18,727	28,261	44,549	18.0%	13.2%	8.0%
Subtotal All-Cargo Carrier Airlines	4,022	8,197	37,821	64,249	109,757	35.8%	22.9%	12.5%
Passenger Aircraft Cargo	1,619	2,878	3,238	3,599	4,529	2.4%	2.4%	2.1%
Total Tonnage	**73,695**	**84,998**	**132,515**	**179,330**	**282,906**	**9.3%**	**7.8%**	**5.6%**
Baseline Forecast	73,695	84,998	108,420	129,740	182,332	5.0%	4.3%	3.5%
Difference	0	0	24,094	49,590	100,574			

NOTES:
1 Foxconn and regional manufacturing activities are expected to begin in 2021 and therefore the CAGR calculations represent 2021-2028 and 2021-2040.
2 CAGR - Compound Annual Growth Rate.
SOURCES: Milwaukee Mitchell International Airport (historical), October 2018; Ricondo & Associates, Inc. (forecast), January 2019.

As shown in Table 3-45, the volume of air cargo at MKE in the alternative demand scenario forecast is expected to increase from 84,998 tons in 2018 to 132,515 tons in 2023 (a compound annual increase of 9.3 percent), to 179,330 tons in 2028 (a compound annual increase of approximately 7.8 percent), and is projected to result in 282,906 tons in 2040 for an overall compound annual growth rate of 5.6 percent for the 2018-2040 period.

Table 3-46 and **Table 3-47** presents the forecast of air cargo freighter operations under the alternative demand scenario. To forecast future aircraft operations, average payload was increased two percent per year through 2020, and one percent per year for the remaining years of the forecast period for the narrowbody and widebody aircraft only. It is expected that the additional cargo and freighter operations are required to meet local Milwaukee-specific shipping requirements (e.g., Amazon, etc.) and that additional piston/turboprop regional feeder operations are not required for these cargoes. In addition, the additional widebody freighter operations from 2021 through 2040 in the baseline forecast (summarized in Table 3-27) are added.

TABLE 3-46 FREIGHTER OPERATIONS ALTERNATIVE DEMAND SCENARIO CASE FORECAST

YEAR	FREIGHTER VOLUME (TONS)	FREIGHTER AIRCRAFT OPERATIONS	PAYLOAD PER OPERATION (TONS)[1]
Historical			
2018E	82,120	13,477	6.1
Forecast			
2023	129,277	18,108	7.1
2028	175,731	21,823	8.1
2040	278,377	28,798	9.7

NOTE:
1 Data from the integrated and all-cargo carrier groups are included in the freighter volumes for those airlines operating freighter aircraft at the Airport.
SOURCES: FAA Form 108 (historical), October 2018; Ricondo & Associates, Inc., (forecast) January 2019.

TABLE 3-47 FREIGHTER OPERATIONS ALTERNATIVE DEMAND SCENARIO FORECAST BY AIRCRAFT CATEGORY

	2018E	2023	2028	2040
Piston/Turboprop	9,627	11,276	12,870	16,112
Narrowbody	1,270	2,173	2,811	3,951
Widebody	2,580	4,658	6,142	8,735
Total Freighter Operations	**13,477**	**18,107**	**21,823**	**28,798**
Baseline Forecast	13,477	16,108	18,386	23,017
Difference	**0**	**1,999**	**3,437**	**5,781**

SOURCES: FAA Form 108 (historical), October 2018; Ricondo & Associates, Inc., (forecast) January 2019.

Most of the freighter operations at the Airport are turboprop aircraft (approximately 71 percent in 2017) operated by airlines such as Freight Runners Express and CSA Air; the overall total operations and mix of aircraft (piston/turboprop, narrowbody, and widebody) have remained steady over the past several years. However, the alternative demand (high) scenario expects additional direct larger freighter aircraft operations (Boeing 757 and 737 narrowbody aircraft, and Boeing 747-8, 777F, MD-11, and Airbus A-300 widebody aircraft) to support the expanding manufacturing and regional e-commerce shipping requirements. The resultant aircraft category freighter operations shift from 71 percent turboprop in 2017 to 56 percent in 2040. Similarly, narrowbody cargo operations increase from over 9 percent in 2017 to 14 percent by 2040 and widebody cargo aircraft operations increase from approximately 19 percent in 2017 to 30 percent by 2040.

3.8.3 COMPILATION OF ALL SCENARIO ELEMENT RESULTS

Table 3-48 and **Exhibit 3-15** summarize the baseline enplaned passenger forecast and the alternative demand elements described above. **Table 3-49** and **Exhibit 3-16** summarize the baseline aircraft operations forecast and the alternative demand scenario elements described above. **Table 3-50** summarizes the alternative demand scenario aircraft fleet mix.

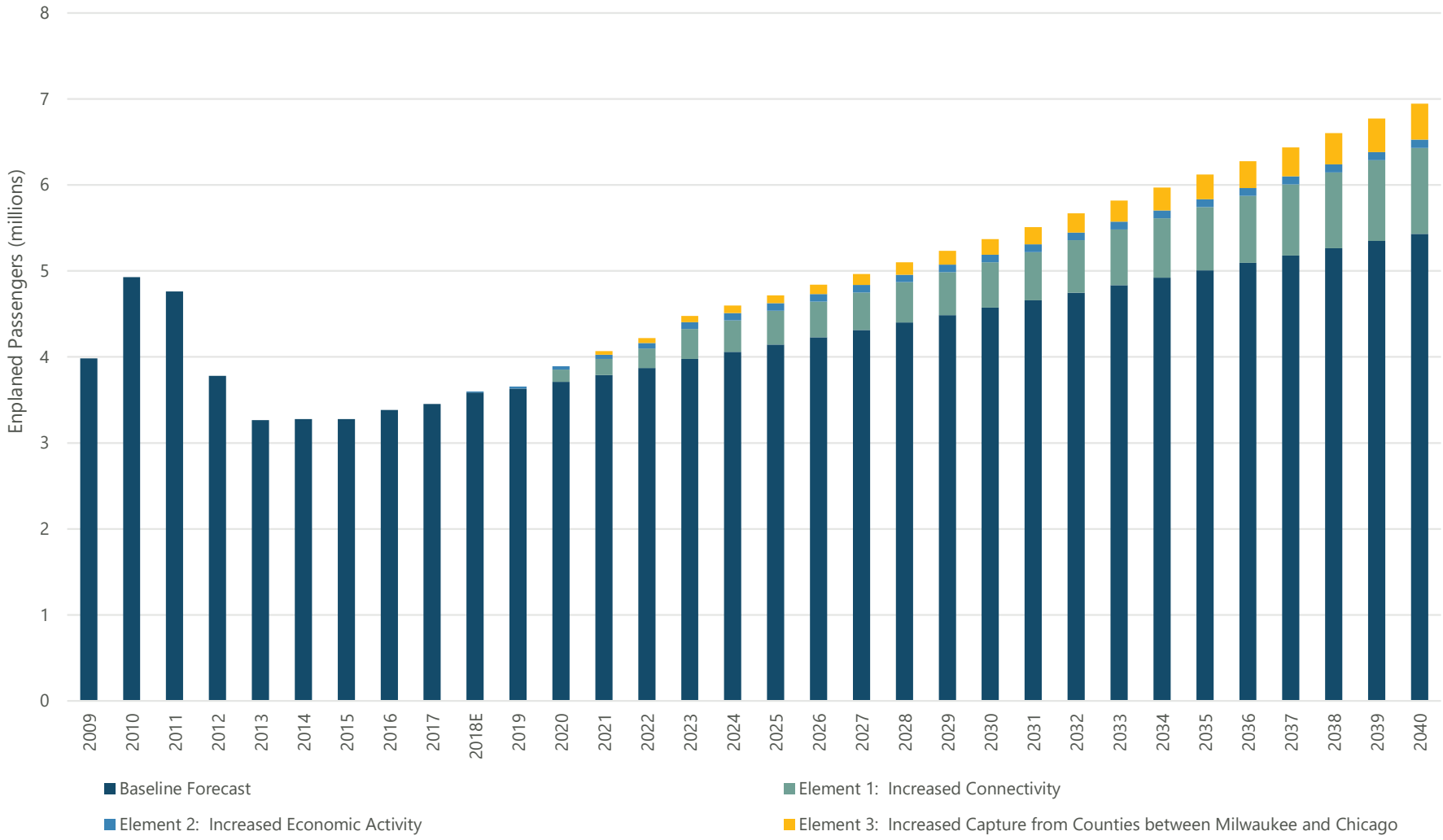
The alternative demand scenario forecast did not include an adjustment in the general aviation/other air taxi or military operations.

TABLE 3-48 COMPILATION OF ALTERNATIVE DEMAND SCENARIO ENPLANED PASSENGER ELEMENTS

YEAR	BASELINE FORECAST	ELEMENT 1 INCREASED CONNECTIVITY	ELEMENT 2 INCREASED ECONOMIC ACTIVITY	ELEMENT 3 INCREASED CAPTURE FROM COUNTIES BETWEEN MILWAUKEE AND CHICAGO	TOTAL
Historical					
2009	3,981,871	0	0	0	3,981,871
2010	4,927,558	0	0	0	4,927,558
2011	4,760,952	0	0	0	4,760,952
2012	3,780,315	0	0	0	3,780,315
2013	3,266,309	0	0	0	3,266,309
2014	3,278,820	0	0	0	3,278,820
2015	3,277,356	0	0	0	3,277,356
2016	3,383,271	0	0	0	3,383,271
2017	3,452,544	0	0	0	3,452,544
2018E	3,584,924	0	0	0	3,584,924
Forecast					
2019	3,630,560	0	24,778	0	3,655,338
2020	3,709,747	144,576	37,211	0	3,891,534
2021	3,790,333	185,452	49,689	43,788	4,069,263
2022	3,871,068	227,905	62,195	57,789	4,218,957
2023	3,976,721	348,694	80,190	72,345	4,477,951
2024	4,059,835	367,040	82,864	87,416	4,597,156
2025	4,143,873	394,568	85,566	98,662	4,722,670
2026	4,228,823	415,300	86,117	109,907	4,840,147
2027	4,314,245	436,835	86,679	126,672	4,964,431
2028	4,400,099	469,598	87,254	144,195	5,101,146
2029	4,486,341	498,180	87,852	162,572	5,234,944
2030	4,572,927	527,809	88,466	181,552	5,370,754
2031	4,659,812	560,489	89,097	201,382	5,510,780
2032	4,746,951	610,933	89,736	221,983	5,669,602
2033	4,834,295	649,828	90,375	243,458	5,817,956
2034	4,921,312	692,223	91,011	265,883	5,970,429
2035	5,007,927	734,420	91,645	288,763	6,122,756
2036	5,094,064	778,877	92,276	312,420	6,277,637
2037	5,179,644	828,198	92,899	337,221	6,437,963
2038	5,264,590	881,841	93,503	363,102	6,603,036
2039	5,348,824	938,958	94,093	389,943	6,771,817
2040	5,432,265	999,775	94,653	417,773	6,944,467
Compound Annual Growth Rate					
2018-2040	1.9%				3.0%

NOTE: Totals may not add due to rounding.
SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019, (forecast).

EXHIBIT 3-15 COMPILATION OF ALTERNATIVE DEMAND SCENARIO ENPLANED PASSENGER ELEMENTS



SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., January 2019 (forecast).

TABLE 3-49 COMPILATION OF ALTERNATIVE DEMAND SCENARIO AIRCRAFT OPERATIONS ELEMENTS

	BASELINE FORECAST[1]	ELEMENT 1 INCREASED CONNECTIVITY	ELEMENT 2 INCREASED ECONOMIC ACTIVITY	ELEMENT 3 INCREASED CAPTURE FROM COUNTIES BETWEEN MILWAUKEE AND CHICAGO	CARGO SCENARIO	GA/OTHER AIR TAXI / MILITARY	TOTAL
Historical							
2009	145,331	0	0	0	0	24,362	169,693
2010	167,139	0	0	0	0	24,414	191,553
2011	150,997	0	0	0	0	22,020	173,017
2012	110,490	0	0	0	0	22,876	133,366
2013	97,701	0	0	0	0	21,848	119,549
2014	91,778	0	0	0	0	21,470	113,248
2015	90,213	0	0	0	0	21,288	111,501
2016	91,951	0	0	0	0	21,579	113,530
2017	89,396	0	0	0	0	22,949	112,345
2018E	90,783	0	0	0	0	23,516	114,299
Forecast							
2019	90,412	0	517	0	400	23,577	114,906
2020	91,347	2,391	767	0	800	23,637	118,942
2021	92,740	3,036	1,013	809	1,200	23,699	122,497
2022	94,044	3,693	1,258	1,060	1,600	23,760	125,415
2023	95,698	5,595	1,610	1,317	2,000	23,822	130,042
2024	97,180	5,832	1,650	1,579	2,287	23,884	132,412
2025	98,643	6,209	1,691	1,680	2,575	23,948	134,746
2026	100,218	6,514	1,688	1,957	2,862	24,011	137,250
2027	101,688	6,830	1,687	2,239	3,150	24,073	139,667
2028	103,136	7,319	1,685	2,530	3,437	24,139	142,246
2029	104,541	7,739	1,685	2,832	3,632	24,202	144,631
2030	106,048	8,174	1,686	3,140	3,828	24,268	147,144
2031	107,680	8,652	1,687	3,459	4,023	24,333	149,834
2032	109,142	9,401	1,689	3,786	4,218	24,398	152,634
2033	110,586	9,968	1,690	4,124	4,414	24,463	155,245
2034	112,253	10,585	1,694	4,472	4,609	24,530	158,143
2035	113,779	11,195	1,699	4,824	4,804	24,597	160,898
2036	115,326	11,836	1,702	5,184	5,000	24,664	163,712
2037	116,895	12,547	1,707	5,557	5,195	24,731	166,632
2038	118,518	13,318	1,713	5,944	5,390	24,801	169,684
2039	120,121	14,137	1,719	6,341	5,586	24,868	172,772
2040	121,706	15,006	1,724	6,748	5,781	24,936	175,901
Compound Annual Growth Rate							
2018-2040	1.3%						2.0%

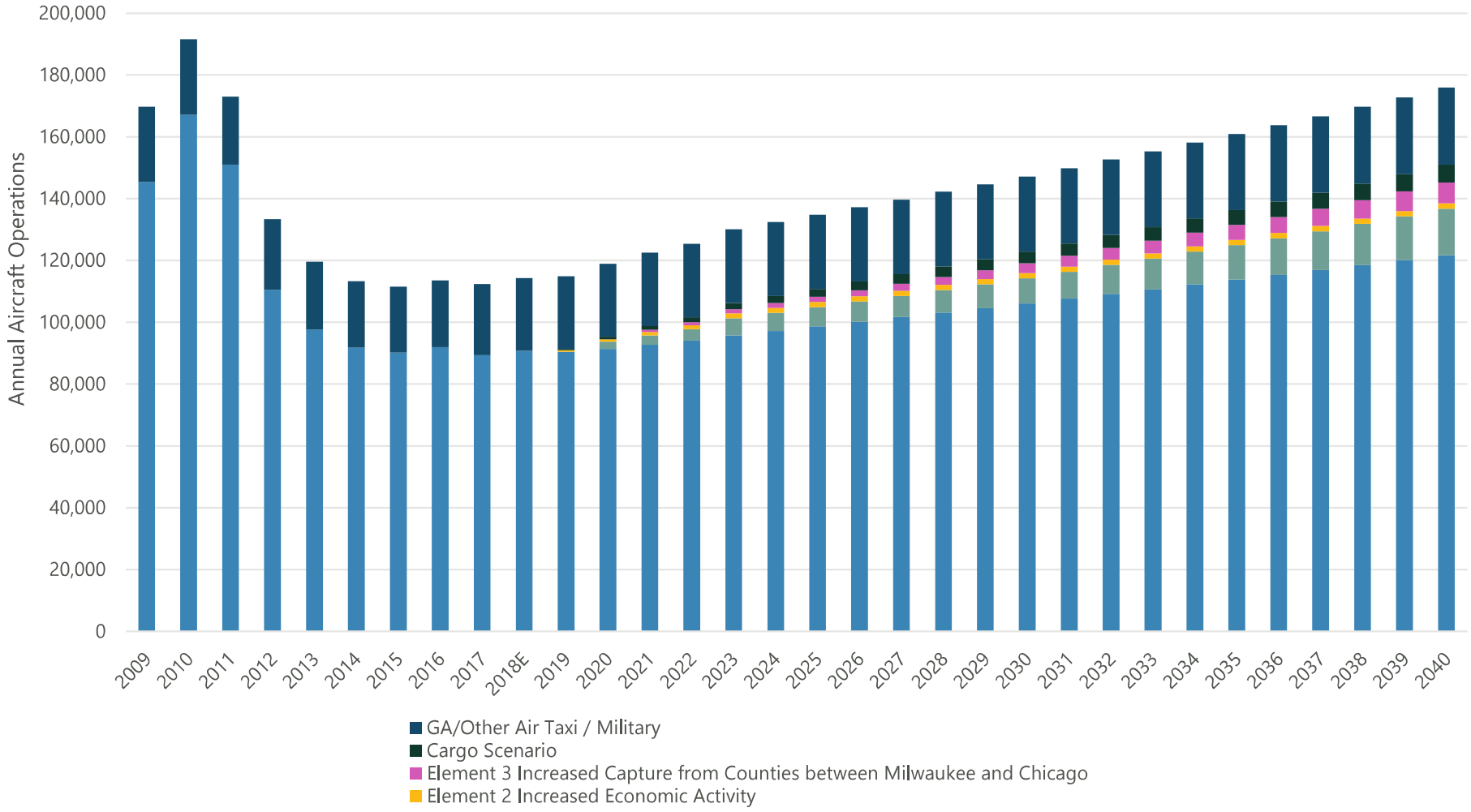
NOTES:

1 Includes cargo and passenger aircraft operations.

2 GA – General Aviation. Totals may not add due to rounding.

SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., June 2019, (forecast).

EXHIBIT 3-16 COMPILATION OF ALTERNATIVE DEMAND SCENARIO AIRCRAFT OPERATIONS ELEMENTS



SOURCES: Milwaukee Mitchell International Airport, November 2018, (historical); Ricondo & Associates, Inc., June 2019 (forecast).

TABLE 3-50 AIRCRAFT FLEET MIX – ALTERNATIVE DEMAND SCENARIO

AIRCRAFT CATEGORY	SEAT RANGE	REPRESENTATIVE AIRCRAFT	2018E		2023		2028		2040	
			OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT
Passenger										
Small Piston/Turboprop/Regional Jet	<51	CRJ-200	17,059	22.1%	6,168	7.0%	1,926	2.0%	611	0.5%
Medium Regional Jet/Turboprop	51-76	CRJ-900; EMB-175	16,002	20.7%	25,552	29.0%	30,811	32.0%	36,650	30.0%
Large Regional Jet/Turboprop	77-100	EMB-190	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small Narrowbody	101-130	717; A220	776	1.0%	3,084	3.5%	3,851	4.0%	6,108	5.0%
Medium Narrowbody	131-160	A320; B737-700	29,280	37.9%	29,871	33.9%	27,922	29.0%	29,442	24.1%
Large Narrowbody	161-199	A321; B737-800	13,121	17.0%	20,794	23.6%	26,960	28.0%	40,682	33.3%
High Density Narrowbody	200-230	A321	1,067	1.4%	2,643	3.0%	4,333	4.5%	7,941	6.5%
Small Widebody	231+	B787-8	0	0.0%	0	0.0%	481	0.5%	733	0.6%
Subtotal			77,306	100.0%	88,112	100.0%	96,284	100.0%	122,167	100.0%
Cargo										
Small Piston/Turboprop		C208, BE99, E120	9,627	71.4%	12,313	68.0%	14,185	65.0%	17,855	62.0%
Narrowbody		B733, B752	1,270	9.4%	1,992	11.0%	2,619	12.0%	3,888	13.5%
Widebody		A306, MD11	2,580	19.1%	3,803	21.0%	5,019	23.0%	7,056	24.5%
Subtotal			13,477	100.0%	18,108	100.0%	21,823	100.0%	28,798	100.0%
General Aviation/Other Air Taxi										
Jet			15,619	72.8%	17,268	79.3%	17,520	79.3%	18,152	79.3%
Piston			2,523	11.8%	1,670	7.7%	1,694	7.7%	1,756	7.7%
Turboprop/Turboshaft			3,237	15.1%	2,403	11.0%	2,438	11.0%	2,526	11.0%
Helicopter			0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other			78	0.4%	422	1.9%	428	1.9%	443	1.9%
Subtotal			21,457	100.0%	21,763	100.0%	22,080	100.0%	22,877	100.0%
Military										
Subtotal			2,059	100.0%	2,059	100.0%	2,059	100.0%	2,059	100.0%
Airport Total			**114,299**	**100.0%**	**130,042**	**100.0%**	**142,246**	**100.0%**	**175,901**	**100.0%**

SOURCES: U.S. Department of Transportation T-100, November 2018; Federal Aviation Administration, Operations Network (OPSNET), November 2018; Ricondo & Associates, Inc., June 2019 (forecast).

3.9 DESIGN DAY FLIGHT SCHEDULES

3.9.1 OVERVIEW

For purposes of assessing future facility and operating requirements, design day flight schedules (DDFSs) of airport aircraft and passenger activity were developed to define the magnitude and characteristics of aircraft utilizing the Airport. This design day schedule represents aircraft movements and the distribution of passengers throughout the hours of a peak month average weekday (PMAWD) at the Airport.

This section presents the methodology used to define the design day flight schedule and the analyses and assumptions that went into its development. It is important to recognize that the design day flight schedule is foremost a representation of what could be experienced at the Airport at the future activity levels in terms of a peak month average weekday (PMAWD), specifically reflecting hourly arriving and departing passengers and aircraft. The DDFS secondarily provides an indication of future individual airline activity levels and market service patterns.

The following sections describe the development and results of the projected Airport design day flight schedules for base year (2018) and the future planning horizons of 2023, 2028, and 2040 for both the Baseline Forecast and the Alternative Demand Scenario.

3.9.2 DESIGN DAY FLIGHT SCHEDULE DEVELOPMENT

The DDFS represents the aircraft and passenger activity anticipated at the Airport during the PMAWD and provides information on aircraft arrival time, aircraft departure time, equipment type, numbers of arriving passengers, numbers of departing passengers, O&D and connecting passengers, seating capacity, load factor, and markets for each commercial flight at the Airport during the design day. A representative airline and/or operator is also included.

3.9.2.1 DESIGN DAY FLIGHT SCHEDULE - 2018

In order to develop the passenger airline DDFS, the monthly passenger activity levels (scheduled seat capacity and operations) for 2018 were reviewed to determine the peak month. Airport data, FAA-reported operations and published data identified March as the peak month for total Airport operations, passenger airline operations, and passenger volumes in 2018. Five years of historical peak month data are shown in **Table 3-51** (total operations), **Table 3-52** (scheduled passenger airline operations), and **Table 3-53** (enplaned passengers).

Due to weekend airline operations levels (typically less than weekday levels), the number of weekday operations in March 2018 was totaled to determine the average weekday. Innovata airline schedules for each weekday in March 2018 were reviewed to determine that airline operation levels on March 15th were the closest to the PMAWD. Consequently, the March 15th schedule is the PMAWD baseline schedule. **Table 3-54** provides scheduled passenger airline operations, seat capacity, total aircraft operations and a comparison of the selected base day (March 15th) to other daily data in March 2018. **Exhibit 3-17** and **Exhibit 3-18** depict March 2018 scheduled passenger airline daily operations and scheduled seat capacity data, respectively.

The Innovata airline schedule for this day provides the airline, type of aircraft, number of seats, origin, destination, and flight times for each scheduled passenger airline flight. Charter and non-daily international operations not captured in the daily scheduled data were incorporated into the PMAWD schedule. In addition to the U.S. DOT monthly data, which captures charter activity, Airport representatives provided daily international charter operations for March. Scheduled airlines (i.e., Delta and Southwest) operating once weekly (Saturday) international service were included in the base design day flight schedules to properly capture peak international passenger airline activity which does not coincide with the selected March 15th base design day. As a result, the base design day schedule resulted in 264 passenger airline operations (published, charter, and additional nondaily international service).

TABLE 3-51 HISTORICAL AIRCRAFT OPERATIONS – AIRPORT

MONTH	2014	2015	2016	2017	2018
January	9,186	8,600	8,926	8,720	9,213
February	8,448	7,935	8,881	8,342	8,536
March	10,086	9,715	10,064	9,980	10,011
April	9,729	9,489	9,470	9,579	9,333
May	9,863	9,488	9,558	9,399	9,678
June	9,852	9,887	10,085	9,580	9,416
July	10,204	10,472	10,099	9,933	9,972
August	9,932	9,695	10,112	10,007	9,878
September	9,027	9,002	9,481	8,964	8,915
October	9,499	9,292	9,230	9,194	9,432
November	8,478	9,067	8,935	9,367	8,684
December	8,982	8,867	8,874	9,280	8,644
Total Operations	**113,286**	**111,509**	**113,715**	**112,345**	**111,712**
Peak Month	July	July	August	August	March

SOURCE: Federal Aviation Administration Air Traffic Activity Data System (ATADS), January 2019.

TABLE 3-52 HISTORICAL SCHEDULED PASSENGER AIRLINE DEPARTURES

MONTH	2014	2015	2016	2017	2018
January	3,296	3,129	3,230	3,096	3,238
February	2,979	2,857	3,081	2,836	2,993
March	3,599	3,585	3,601	3,463	3,569
April	3,378	3,375	3,354	3,291	3,264
May	3,417	3,352	3,383	3,157	3,247
June	3,462	3,379	3,483	3,254	3,257
July	3,584	3,478	3,504	3,313	3,322
August	3,401	3,301	3,394	3,336	3,221
September	3,148	3,035	3,075	2,841	2,893
October	3,265	3,169	3,143	3,019	3,058
November	3,067	3,184	3,029	3,117	2,943
December	3,177	3,130	3,055	3,140	2,935
Total Departures	**39,773**	**38,974**	**39,332**	**37,863**	**37,940**
Peak Month	March	March	March	March	March

SOURCE: Innovata, January 2019.

TABLE 3-53 HISTORICAL ENPLANED PASSENGERS

MONTH	2014	2015	2016	2017	2018
January	242,729	237,771	252,872	252,702	271,660
February	236,934	232,306	251,851	250,389	271,146
March	316,937	318,944	334,546	332,455	353,270
April	280,721	280,177	263,707	296,087	274,970
May	281,882	273,295	281,590	284,642	295,586
June	291,124	292,089	301,281	310,122	309,827
July	305,816	306,637	311,950	317,334	335,707
August	298,473	290,789	293,063	314,779	316,861
September	247,748	256,141	275,076	258,052	268,021
October	281,879	281,789	292,827	285,958	303,622
November	241,733	255,404	267,347	280,026	280,441
December	252,844	252,014	257,161	269,998	267,706
Total	**3,278,820**	**3,277,356**	**3,383,271**	**3,452,544**	**3,548,817**
Peak Month	March	March	March	March	March

SOURCE: Milwaukee Mitchell International Airport, February 2019.

TABLE 3-54 PEAK MONTH DAILY OPERATIONS METRICS

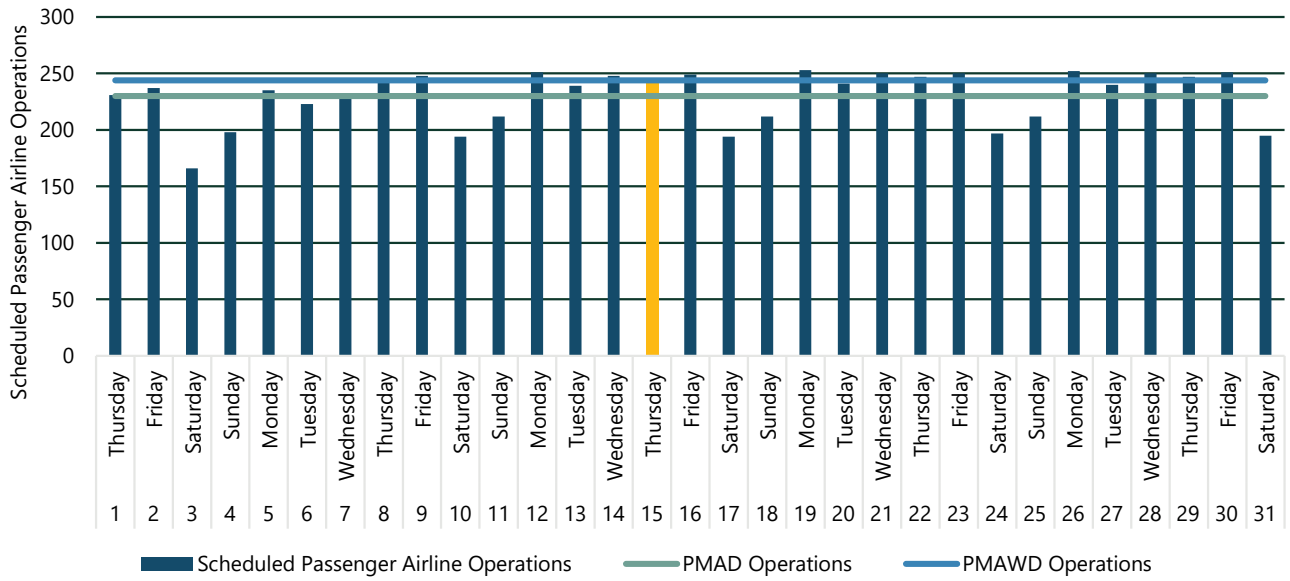
DAY	DAY OF WEEK	SCHEDULED PASSENGER AIRLINES		AIRPORT
		OPERATIONS	SEATS	TOTAL OPERATIONS
1	Thursday	231	25,605	358
2	Friday	237	26,699	313
3	Saturday	166	18,872	240
4	Sunday	198	22,920	251
5	Monday	235	26,659	315
6	Tuesday	223	24,687	345
7	Wednesday	232	26,160	363
8	Thursday	242	27,596	355
9	Friday	248	28,739	369
10	Saturday	194	23,230	259
11	Sunday	212	24,994	270
12	Monday	251	29,211	321
13	Tuesday	239	27,239	347
14	Wednesday	248	28,642	365
15	Thursday	245	27,963	377
16	Friday	249	28,993	340
17	Saturday	194	23,530	260
18	Sunday	212	25,274	268
19	Monday	253	29,561	321
20	Tuesday	241	27,571	358
21	Wednesday	250	28,992	343
22	Thursday	247	28,435	367
23	Friday	250	29,175	357
24	Saturday	197	24,011	263
25	Sunday	212	25,265	274
26	Monday	252	29,434	332
27	Tuesday	240	27,410	339
28	Wednesday	250	29,032	361
29	Thursday	247	28,421	364
30	Friday	251	29,305	373
31	Saturday	195	23,899	243
	Total	**7,141**	**827,524**	**10,011**
	Average Day (PMAD)	230	26,694	323
	Average Weekday (PMAWD)	244	27,979	349
	Annual rank of selected day (March 15th) [1]	17th	17th	20th

NOTE:

1 Annual rank of selected day based on calendar year 2018 published schedule data. Total operations ranking based on FAA ATADS data.

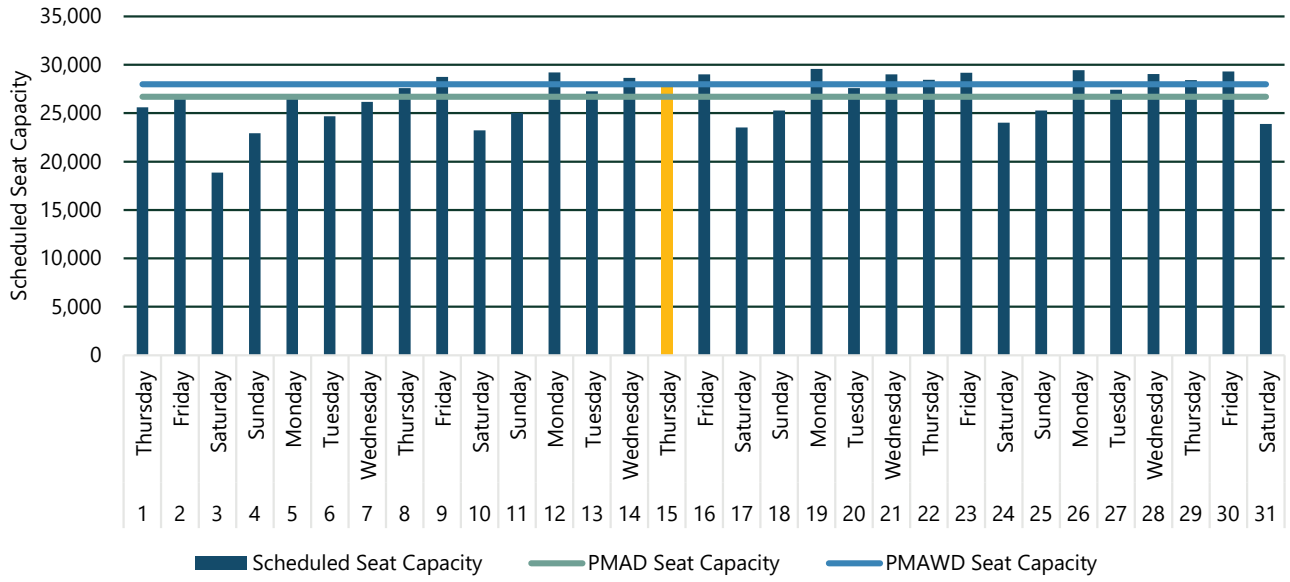
SOURCES: Federal Aviation Administration Air Traffic Activity Data System (ATADS) (Airport Total); Innovata (Scheduled Passenger Airlines), January 2019.

EXHIBIT 3-17 SCHEDULED PASSENGER AIRLINE OPERATIONS – MARCH 2018



NOTES: PMAD = Peak Month Average Day. PMAWD = Peak Month Average Weekday.
SOURCES: Innovata; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-18 SCHEDULED PASSENGER AIRLINE SEAT CAPACITY – MARCH 2018



NOTES: PMAD = Peak Month Average Day. PMAWD = Peak Month Average Weekday.
SOURCES: Innovata; Ricondo & Associates, Inc., March 2019.

The number of passengers on each flight was determined by calculating the average monthly flight load factor using the number of monthly passengers and the number of monthly seats by airline and market based on March 2018 U.S. DOT data (T-100 data provided through Innovata databases). This airline/market load factor was applied to the number of seats in the PMAWD baseline schedule to determine the number of passengers on each flight for the base year (2018).

The all-cargo and other air taxi/general aviation DDFS elements were based on a peak month average day (PMAD). Specifically, these DDFS elements were based on March 2018 monthly FAA Air Traffic Activity Data Systems (ATADS), FAA Traffic Flow Management System Counts (TFMSC), and daily block hour aircraft operation data provided by Airport representatives. As with standard practice in annual forecasts, military operations in the DDFS were held constant across all schedules.

3.9.2.2 SCHEDULED PASSENGER AIRLINES

Future year DDFSs are based on the Master Plan Baseline and Alternative Demand Scenario Forecasts. Overall assumptions used in developing the DDFSs include:

- Forecast growth for passengers and operations was based on the corresponding domestic and international annual growth rates presented in the forecasts. Individual airline and/or market activity forecasts were not applied to the DDFS development.
- The base year PMAWD to annual ratio of passengers and operations would remain stable over future years in the planning horizon.
- Announced new and reinstated service (i.e., Dallas, Orlando, etc.) scheduled to begin after the selected base PMAWD (March 15, 2018), was incorporated into the 2023 DDFS. Input on potential new markets serving MKE were based on projected O&D demand in top O&D markets without nonstop service in the base year. Projected annual O&D passenger volumes in these markets were compared to an established threshold based on an average aircraft size (143 seats) with an assumed load factor (85 percent) and capable of once daily annual service. Some potential top O&D markets were incorporated throughout different years in the DDFS development as projected O&D passenger volumes reached and/or surpassed the established passenger threshold (approximately 44,300 annual O&D passengers). **Table 3-55** provides top domestic O&D markets and projected annual O&D passenger volumes.
- One representative new entrant foreign flag airline will serve the Airport in the 2040 DDFS (service may start prior to 2040 but is not projected prior to 2028). This new entrant is shown in the DDFSs as New Carrier (NC) providing nonstop service with assigned arrival and departure times corresponding from/to London, United Kingdom.
- New destinations and increased service to existing destinations would continue to be served by airlines currently operating at the Airport. New destinations were incorporated based on top O&D markets not served in the base (2018) DDFSs.

TABLE 3-55 TOP TEN DOMESTIC O&D MARKETS NOT SERVED IN BASE DDFS

	DOMESTIC O&D ENPLANED PASSENGER			
AIRPORT	2018	2023	2028	2040
SFO – San Francisco	46,680	51,740	57,201	70,486
SAN – San Diego	43,240	47,927	52,985	65,292
AUS - Austin	32,776	36,329	40,164	49,493
DAL – Dallas Love Field	30,324	33,611	37,158	45,789
PDX – Portland, OR	28,458	31,543	34,872	42,972
RDU – Raleigh-Durham	26,968	29,891	33,046	40,722
SAT – San Antonio	22,237	24,647	27,249	33,578
MSY – New Orleans	21,792	24,154	26,703	32,905
SMF - Sacramento	19,247	21,333	23,584	29,062
SNA – Orange County, CA	19,229	21,313	23,563	29,035

NOTE: O&D – Origin and Destination.
SOURCES: U.S. DOT DB1B (2018); Ricondo & Associates, Inc., March 2019.

The base year DDFS was used in the progressive development of the 2023, 2028, and 2040 DDFSs. Load factors and available seats were determined through an iterative process that attempted to simulate an individual airline's changes in flight frequency and aircraft size in response to forecast growth in enplaned/deplaned passengers and aircraft operations. The steps listed below describe an overview of the schedule development process:

1. Forecasts of domestic and international passenger and aircraft operation growth rates were applied to the base year schedule in order to establish "targets" (passenger and aircraft operation levels) for each of the future DDFSs. These targets provide guidance by maintaining forecast market share and identifying the number of additional daily aircraft operations needed in each of the future schedules.
2. Forecast passenger growth rates from 2018 to 2023 were applied to the base schedule on a route-by-route basis. This was followed by a test calculation (run on a route-by-route basis) to determine whether forecast 2023 passenger volumes could be accommodated on base year aircraft seat capacity (i.e., was the load factor below 100 percent). If the load factor was greater than the flight-specific threshold (approximately 95 percent), the base year aircraft was either (1) increased in gauge, (2) unchanged and a new flight added to the airline-market combination, and/or (3) unchanged if the load factor was below 100 percent in order to meet forecast operations and projected fleet mix targets. If the forecast passenger growth resulted in reasonable load factors and acceptable aircraft types/sizes, the aircraft assigned in the schedule remained unchanged. In some instances, passenger growth resulted in reasonable load factors; however, the aircraft was changed to represents changes in planned airline fleets (i.e., retirement of specific aircraft).
3. In some cases, professional judgment was used to determine whether an increase in aircraft gauge and/or a new flight(s) was added to an airline-market combination. These decisions were based primarily on whether (1) the airline fleet consists of, or the airline has on order, larger gauge aircraft for the applicable DDFS period, (2) a larger gauge aircraft is available that could reasonably and effectively operate in the market, and (3) a new flight addition would be consistent with forecast growth of additional aircraft operations.

4. If an additional flight(s) was added to an existing market, passengers were redistributed across all flights in that airline-market combination. Flights added to the DDFS were matched with new flight arrivals/departures and based on typical turnaround times for the specific airline and fleet types serving the Airport. If applicable, new flights were assumed to return to their origins/destinations rather than "flowing through" to other origins and destinations. Times for additional flights to existing markets were established considering flights currently provided by the specific airline, estimates of times airline travelers would typically prefer to arrive at and depart from the Airport, and timings of connections in destination hubs (if applicable).
5. Once the 2023 DDFS was complete, the process was repeated for the 2028 DDFS, and then again for the 2040 DDFS. Each horizon year DDFS was built upon the prior horizon year's DDFS.

It was assumed that aircraft gauge would not decrease in future years, unless (1) no larger gauge aircraft was available in the fleet, and (2) the new additional flight in the airline-market combination resulted in unreasonably low load factors for the combination. For example, a single daily Airbus 321 operation may have been down-gauged to an Airbus 320 as a new flight using an Airbus 319 was added to the airline-market combination in order to maintain reasonable load factors that are consistent with airline practices.

3.9.2.3 ALL-CARGO AND OTHER AIR TAXI/GENERAL AVIATION

As noted, all-cargo and other air taxi/general aviation DDFSs were based on Airport and FAA data and developed in accordance with annual operational growth defined in the Baseline and Alternative Demand Scenario Forecasts. Overall assumptions used in developing both the Baseline and Alternative Demand Scenario all-cargo, air taxi, and general aviation components of the DDFSs include:

- The base year to annual ratio of operations would remain stable over the future years of the planning horizon.
- New all-cargo operations were based on established all-cargo operations that are not operating on the foundational PMAD provided in the FAA and Airport data (i.e., an all-cargo operator that currently operates at MKE, but that may not currently have daily all-cargo service) and established all-cargo operations in the Base DDFS. **Table 3-56** and **Table 3-57** are based on U.S. DOT and FAA data which were reconciled to inform the development of the base all-cargo DDFS with operations by airline and aircraft type. Since specific arrival and departure times vary throughout the peak month (March), all-cargo operations were compiled, and arrival and departure times were based on a monthly average percentage of peak month (March) operations within each block hour. **Table 3-58** provides the percentage of block hour operations allocated in the DDFS.
- Other air taxi/GA aircraft would remain unchanged in future years (e.g., aircraft were not up-gauged from a Cessna 152 to a Cessna 172 or from a Gulfstream 3 to a Gulfstream 4, etc.). In an effort to capture different types of aircraft, new operations were based on the average type of aircraft in the peak month (March) FAA data, as shown in **Table 3-59**. Approximately 80 percent of the air taxi/general aviation aircraft types operating in March 2018 are captured in the DDFS development. New arrival and departure times were based on the average monthly percentage of all other air taxi/general aviation peak month (March) operations in the block hour. This entailed a staggered distribution of arrival and departures times within the block hour since air taxi/general aviation times in the Airport data varied significantly. **Table 3-60** provides the percentage of block hour operations allocated in the DDFS.

TABLE 3-56 U.S. DOT ALL-CARGO OPERATIONS SUMMARY – MARCH 2018

AIRLINE	AIRCRAFT TYPE	MARCH 2018 ARRIVALS	DEPARTURES	TOTAL	AIRLINE SHARE
UPS	Airbus A300-600	1		1	
UPS	Boeing 757-200	1	1	2	
UPS	Boeing 767-300/300ER	4	4	8	
UPS	McDonnell Douglas MD-11	18	19	37	
UPS Total		**24**	**24**	**48**	**7.9%**
Atlas Air	Boeing 767-200/ER	1	1	2	
Atlas Air Total		**1**	**1**	**2**	**0.3%**
Southern Air	Boeing 737-400	45	45	90	
Southern Air Total		**45**	**45**	**90**	**14.9%**
FedEx	Airbus A300-600	59	59	118	
FedEx	Boeing 757-200	19	19	38	
FedEx	Cessna 208 Caravan	138	137	275	
FedEx	McDonnell Douglas DC-10-10	20	9	29	
FedEx	McDonnell Douglas DC-10-30	3	1	4	
FedEx Total		**239**	**225**	**464**	**76.6%**
USA Jet Airlines	McDonnell Douglas DC-9-15F	1	1	2	
USA Jet Airlines Total		**1**	**1**	**2**	**0.3%**
All-Cargo Total		**310**	**296**	**606**	**100.0%**

SOURCES: U.S. DOT T100; FAA Traffic Flow Management System Counts (TFMSC); Ricondo & Associates, Inc., March 2019.

TABLE 3-57 FAA FREIGHTER OPERATIONS SUMMARY – MARCH 2018

AIRCRAFT (CODE – AIRCRAFT TYPE)	MARCH 2018 ARRIVALS	DEPARTURES	TOTAL	SHARE
BE99 - Beech Airliner 99	173	177	350	40.8%
A306 - Airbus A300-600	60	59	119	13.9%
B734 - Boeing 737-400	45	44	89	10.4%
B190 - Beech 1900/C-12J	35	35	70	8.2%
E120 - Embraer Brasilia EMB 120	33	34	67	7.8%
DC10 - Boeing (Douglas) DC 10-10/30/40	23	22	45	5.3%
B752 - Boeing 757-200	20	19	39	4.6%
MD11 - Boeing (Douglas) MD 11	18	18	36	4.2%
B350 - Beech Super King Air 350	11	11	22	2.6%
BE20 - Beech 200 Super King	6	5	11	1.3%
B763 - Boeing 767-300	5	4	9	1.1%
TOTAL	**429**	**428**	**857**	**100.0%**

SOURCES: FAA Traffic Flow Management System Counts (TFMSC); Ricondo & Associates, Inc., March 2019.

TABLE 3-58 PEAK MONTH BLOCK HOUR OPERATIONS ALLOCATION – ALL-CARGO AIRLINES

	MARCH 2018		BASE DDFS	
BLOCK HOUR	ARRIVALS	DEPARTURES	ARRIVALS	DEPARTURES
0	4.9%	0.9%	1	0
1	0.8%	0.0%	0	0
2	1.4%	1.2%	0	0
3	0.0%	0.3%	0	0
4	4.9%	0.3%	1	0
5	12.2%	8.1%	2	2
6	1.6%	14.5%	0	3
7	2.4%	13.0%	0	2
8	2.7%	10.5%	1	2
9	1.9%	5.4%	0	1
10	2.2%	4.2%	0	1
11	2.2%	1.5%	0	0
12	1.1%	0.6%	0	0
13	1.4%	2.1%	0	0
14	0.3%	2.1%	0	0
15	1.9%	1.2%	0	0
16	6.8%	2.1%	1	0
17	6.5%	3.0%	1	1
18	5.7%	5.7%	1	1
19	10.3%	1.8%	2	0
20	20.1%	0.6%	4	0
21	7.3%	7.2%	1	1
22	0.5%	13.3%	0	3
23	1.1%	0.3%	0	0
TOTAL	**100.0%**	**100.0%**	**19**	**19**

SOURCES: Milwaukee Mitchell International Airport; U.S. DOT T100; FAA Traffic Flow Management System Counts (TFMSC); Ricondo & Associates, Inc., March 2019.

TABLE 3-59 PEAK MONTH OTHER AIR TAXI/GENERAL AVIATION AIRCRAFT OPERATIONS

AIRCRAFT (CODE - AIRCRAFT TYPE)	MARCH 2018				
	ARRIVALS	DEPARTURES	TOTAL	MONTHLY SHARE	DDFS SHARE
F900 - Dassault Falcon 900	25	24	49	7.7%	7.5%
CL60 - Bombardier Challenger 600/601/604	21	22	43	6.8%	7.5%
TBM8 - Socata TBM-850	19	19	38	6.0%	7.5%
C680 - Cessna Citation Sovereign	15	14	29	4.6%	5.0%
H25B - BAe HS 125/700-800/Hawker 800	14	15	29	4.6%	5.0%
C56X - Cessna Excel/XLS	15	13	28	4.4%	5.0%
GLF5 - Gulfstream V/G500	13	14	27	4.2%	5.0%
C750 - Cessna Citation X	12	12	24	3.8%	5.0%
CL30 - Bombardier (Canadair) Challenger 300	12	12	24	3.8%	5.0%
SH 36 – Shorts 360 [1/]	12	12	24	3.8%	5.0%
C25C - Cessna Citation CJ4	10	10	20	3.1%	5.0%
LJ60 - Bombardier Learjet 60	8	8	16	2.5%	5.0%
C525 - Cessna Citation Jet/CJ1	9	6	15	2.4%	2.5%
BE30 - Raytheon 300 Super King Air	7	7	14	2.2%	2.5%
C550 - Cessna Citation II/Bravo	6	8	14	2.2%	2.5%
PRM1 - Raytheon Premier 1/390 Premier 1	9	5	14	2.2%	2.5%
C25A - Cessna Citation CJ2	7	6	13	2.0%	2.5%
F2TH - Dassault Falcon 2000	6	7	13	2.0%	2.5%
LJ45 - Bombardier Learjet 45	6	6	12	1.9%	2.5%
C310 - Cessna 310	5	5	10	1.6%	2.5%
PC12 - Pilatus PC-12	5	5	10	1.6%	2.5%
C25B - Cessna Citation CJ3	4	5	9	1.4%	2.5%
LJ40 - Learjet 40	5	4	9	1.4%	2.5%
GLF4 - Gulfstream IV/G400	4	4	8	1.3%	2.5%
C172 - Cessna Skyhawk 172/Cutlass	4	3	7	1.1%	2.5%
Remaining 45 aircraft types [2]	69	69	138	21.7%	0.0%
Total	**322**	**315**	**637**	**100.0%**	**100.0%**

NOTES:

1 Shorts 360 aircraft was classified as an air carrier operation in FAA TFSMC database; however, the aircraft is included in the DDFS to reflect Air Cargo Carriers activity. Shorts 360 operations do not carry cargo or passengers in/out of MKE; Air Cargo Carriers operates a maintenance facility at the Airport.

2 Remaining aircraft types not specifically represented in the DDFS due to infrequency of operation in peak month.

SOURCE: FAA Traffic Flow Management System Counts (TFMSC); Ricondo & Associates, Inc., March 2019.

TABLE 3-60 PEAK MONTH BLOCK HOUR OPERATIONS ALLOCATION – OTHER AIR TAXI/GENERAL AVIATION

	MARCH 2018		BASE DDFS	
BLOCK HOUR	ARRIVALS	DEPARTURES	ARRIVALS	DEPARTURES
0	0.2%	0.0%	0	0
1	0.2%	0.0%	0	0
2	0.2%	0.0%	0	0
3	0.0%	0.2%	0	0
4	0.0%	0.0%	0	0
5	0.2%	0.9%	0	0
6	1.8%	3.4%	1	1
7	3.3%	6.6%	1	3
8	4.1%	8.3%	2	3
9	6.1%	7.0%	2	3
10	6.5%	7.0%	3	3
11	6.7%	6.3%	3	3
12	7.7%	8.5%	3	3
13	8.1%	7.6%	3	3
14	9.6%	10.8%	4	4
15	10.2%	7.6%	4	3
16	8.9%	9.8%	4	4
17	8.5%	4.5%	3	2
18	6.7%	3.0%	3	1
19	3.9%	3.4%	2	1
20	2.6%	2.1%	1	1
21	1.4%	1.1%	1	0
22	2.0%	1.3%	1	1
23	1.0%	0.4%	0	0
TOTAL	**100.0%**	**100.0%**	**40**	**40**

SOURCES: Milwaukee Mitchell International Airport; FAA Traffic Flow Management System Counts (TFMSC); Ricondo & Associates, Inc., March 2019.

3.9.3 DESIGN DAY FLIGHT SCHEDULE SUMMARY

DDFS results and statistics developed from the Baseline forecast for 2018 (Base year), 2023, 2028, and 2040 schedules are shown in **Table 3-61** through **Table 3-68** and **Exhibit 3-19** through **Exhibit 3-24**. DDFS results and statistics developed for the Alternative Demand Scenario forecast for 2018, 2023, 2028, and 2040 schedules are shown in **Table 3-69** through **Table 3-76**. The 2023, 2028, and 2040 Baseline and Alternative Demand Scenario passenger volume comparisons are presented with the Alternative Demand Scenario results in **Exhibit 3-25** through **Exhibit 3-39**.

TABLE 3-61 DDFS SUMMARY – BASELINE FORECAST

	PASSENGERS			PASSENGER AIRLINE OPERATIONS		
YEAR	DDFS	ANNUAL	RATIO	DDFS	ANNUAL	RATIO
2018	27,247	7,169,848	0.380%	264	77,306	0.342%
2023	30,309	7,953,443	0.381%	262	79,589	0.329%
2028	33,628	8,800,197	0.382%	284	84,749	0.335%
2040	41,625	10,864,530	0.383%	330	98,689	0.344%
Compound Annual Growth Rate						
2018 - 2023	2.2%	2.1%		-0.2%	0.6%	
2023 - 2028	2.1%	2.0%		1.6%	1.3%	
2028 - 2040	1.8%	1.8%		1.3%	1.3%	

NOTE: Passenger airline operations for 2018 include OneJet (10 operations); however, projected growth rates for passenger airline operations were not applied to OneJet operations. Excluded OneJet operations results in 254 total passenger airline operations and a ratio of 0.329 percent for 2018. Based on the OneJet exclusion, total passenger airline operations would increase from 254 (2018) to 262 (2023), a CAGR of 0.6 percent.

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

TABLE 3-62 DDFS PASSENGER AIRLINE FLEET SUMMARY – BASELINE FORECAST

	PASSENGER AIRCRAFT OPERATIONS			
YEAR	REGIONAL/ COMMUTER	NARROWBODY	WIDEBODY	TOTAL
2018	84	180	0	264
2023	70	192	0	262
2028	80	204	0	284
2040	98	240	2	330
Share of Passenger Aircraft Operations				
2018	32%	68%	0%	100%
2023	27%	73%	0%	100%
2028	28%	72%	0%	100%
2040	27%	73%	1%	100%
Average Seats per Operation				
2018	53.5	149.2	NA	118.7
2023	67.0	157.9	NA	133.6
2028	83.4	158.0	NA	137.0
2040	86.3	159.2	225.0	140.2

NOTES:

1 Regional/commuter represents aircraft with seat capacity less than 79 seats. Narrowbody represents single-aisle aircraft with a seat capacity greater than 78 seats. Widebody represents dual-aisle aircraft.

2 Totals may not add due to rounding.

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

TABLE 3-63 DDFS SUMMARY – PEAK HOUR PASSENGERS (BASELINE FORECAST)

YEAR	DEPLANED	TIME	ENPLANED	TIME	TOTAL	TIME
2018	1,491	16:50 – 17:49	1,803	6:40 – 7:39	2,561	17:40 – 18:39
2023	1,717	16:50 – 17:49	2,107	6:40 – 7:39	2,924	16:50 – 17:49
2028	2,218	16:50 – 17:49	2,146	6:40 – 7:39	3,519	16:50 – 17:49
2040	2,497	16:50 – 17:49	2,495	6:40 – 7:39	4,103	17:40 – 18:39

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-64 DDFS SUMMARY – PEAK HOUR PASSENGER AIRLINE OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	14	16:50 – 17:49	16	6:40 – 7:39	24	16:50 – 17:49
2023	14	16:50 – 17:49	17	6:40 – 7:39	24	16:50 – 17:49
2028	18	16:50 – 17:49	17	5:10 – 6:09 6:40 – 7:39	29	16:50 – 17:49
2040	19	16:50 – 17:49	18	6:40 – 7:39	30	16:50 – 17:49

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

TABLE 3-65 DDFS SUMMARY – PEAK HOUR TOTAL AIRPORT OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	20	16:50 – 17:49	24	6:40 – 7:39	33	16:50 – 17:49
2023	20	16:50 – 17:49	26	6:40 – 7:39	34	15:40 – 16:39
2028	24	16:50 – 17:49	26	6:40 – 7:39 7:00 – 7:59	38	16:50 – 17:49
2040	25	16:50 – 17:49	29	6:40 – 7:39 7:00 – 7:59	40	16:50 – 17:49

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

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TABLE 3-66 HOURLY SUMMARY – PASSENGERS (BASELINE FORECAST)

TIME OF DAY (HOURLY)	2018			2023			2028			2040		
	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL
0:00 - 0:59	127	116	242	134	135	269	137	141	278	154	166	320
1:00 - 1:59	295	0	295	312	0	312	315	0	315	335	0	335
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:59	0	976	976	0	1,034	1,034	0	1,322	1,322	0	1,422	1,422
6:00 - 6:59	90	1,385	1,475	96	1,467	1,563	98	1,493	1,592	113	1,914	2,027
7:00 - 7:59	103	1,633	1,737	109	1,920	2,029	111	1,952	2,063	121	2,272	2,393
8:00 - 8:59	577	755	1,333	613	819	1,433	626	1,009	1,635	687	1,142	1,829
9:00 - 9:59	665	957	1,622	709	1,034	1,743	724	1,052	1,776	795	1,129	1,924
10:00 -10:59	303	790	1,093	514	833	1,347	522	847	1,370	681	995	1,676
11:00 - 11:59	596	650	1,246	752	927	1,679	767	1,127	1,894	1,112	1,417	2,530
12:00 - 12:59	472	679	1,151	499	850	1,349	628	866	1,494	983	1,421	2,404
13:00 - 13:59	659	600	1,260	700	660	1,360	773	818	1,591	951	1,223	2,174
14:00 - 14:59	362	433	795	384	449	833	525	519	1,044	841	681	1,522
15:00 - 15:59	1,140	476	1,616	1,208	504	1,712	1,228	662	1,890	1,420	1,084	2,503
16:00 - 16:59	881	1,240	2,121	951	1,304	2,255	1,030	1,323	2,353	1,307	1,488	2,795
17:00 - 17:59	1,370	937	2,307	1,588	1,119	2,707	2,024	1,210	3,234	2,280	1,317	3,597
18:00 - 18:59	1,167	1,194	2,362	1,268	1,246	2,514	1,435	1,541	2,975	1,736	1,983	3,719
19:00 - 19:59	559	722	1,281	754	781	1,535	893	799	1,692	1,202	1,099	2,301
20:00 - 20:59	924	260	1,183	991	282	1,273	1,011	422	1,434	1,513	486	2,000
21:00 - 21:59	686	463	1,149	727	499	1,226	740	511	1,251	954	559	1,513
22:00 - 22:59	873	0	873	940	0	940	1,149	0	1,149	1,248	0	1,248
23:00 - 23:59	1,128	0	1,128	1,195	0	1,195	1,277	0	1,277	1,392	0	1,392
Total	**12,980**	**14,264**	**27,244**	**14,445**	**15,865**	**30,309**	**16,012**	**17,616**	**33,628**	**19,826**	**21,799**	**41,625**
Peak Block Hour	1,370	1,633	2,362	1,588	1,920	2,707	2,024	1,952	3,234	2,280	2,272	3,719
Peak Rolling Hour (10-minute intervals)	1,491	1,803	2,561	1,717	2,107	2,924	2,218	2,146	3,519	2,497	2,495	4,103

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-67 HOURLY SUMMARY – PASSENGER AIRLINE OPERATIONS (BASELINE FORECAST)

	2018			2023			2028			2040		
TIME OF DAY (HOURLY)	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL
0:00 - 0:59	1	1	2	1	1	2	1	1	2	1	1	2
1:00 - 1:59	2	0	2	2	0	2	2	0	2	2	0	2
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:59	0	9	9	0	9	9	0	11	11	0	11	11
6:00 - 6:59	2	14	16	2	13	15	2	13	15	2	15	17
7:00 - 7:59	1	15	16	1	16	17	1	16	17	1	17	18
8:00 - 8:59	8	7	15	7	6	13	7	7	14	7	8	15
9:00 - 9:59	7	9	16	7	9	16	7	9	16	7	9	16
10:00 -10:59	4	7	11	5	7	12	5	7	12	7	8	15
11:00 - 11:59	6	6	12	6	7	13	6	8	14	8	10	18
12:00 - 12:59	5	6	11	5	7	12	6	7	13	10	10	20
13:00 - 13:59	7	6	13	6	5	11	7	6	13	8	10	18
14:00 - 14:59	3	4	7	3	4	7	4	5	9	6	6	12
15:00 - 15:59	11	5	16	11	4	15	11	5	16	13	8	21
16:00 - 16:59	8	11	19	8	11	19	9	11	20	10	12	22
17:00 - 17:59	13	10	23	13	10	23	16	11	27	17	11	28
18:00 - 18:59	11	10	21	11	10	21	12	12	24	14	14	28
19:00 - 19:59	6	7	13	7	7	14	8	7	15	10	9	19
20:00 - 20:59	10	2	12	9	2	11	9	3	12	12	3	15
21:00 - 21:59	8	3	11	8	3	11	8	3	11	9	3	12
22:00 - 22:59	9	0	9	9	0	9	10	0	10	10	0	10
23:00 - 23:59	10	0	10	10	0	10	11	0	11	11	0	11
Total	**132**	**132**	**264**	**131**	**131**	**262**	**142**	**142**	**284**	**165**	**165**	**330**
Peak Block Hour	13	15	23	13	16	23	16	16	27	17	17	28
Peak Rolling Hour (10-minute intervals)	14	16	24	14	17	24	18	17	29	19	18	30

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

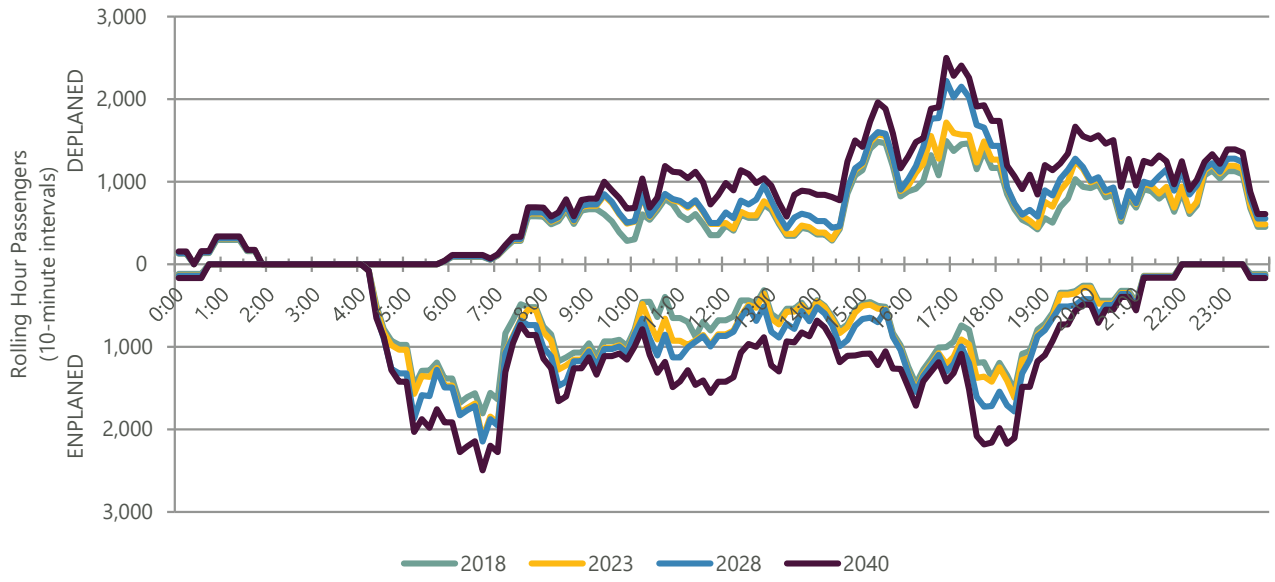
TABLE 3-68 DDFS AIRCRAFT OPERATIONS SUMMARY – BASELINE FORECAST

YEAR	CARGO	OTHER AIR TAXI/ GENERAL AVIATION	MILITARY	NON-PASSENGER AIRLINE TOTAL	PASSENGER AIRLINE TOTAL	AIRPORT TOTAL
			DDFS Operations			
2018	38	80	14	132	264	396
2023	46	82	14	142	262	404
2028	52	84	14	150	284	434
2040	66	86	14	166	330	496
			Annual Operations			
2018	13,477	21,457	2,059	36,993	77,306	114,299
2023	16,108	21,763	2,059	39,930	79,589	119,519
2028	18,386	22,080	2,059	42,525	84,749	127,274
2040	23,017	22,877	2,059	47,953	98,689	146,642
			DDFS to Annual Operations Ratio			
2018	0.282%	0.373%	0.680%	0.357%	0.342%	0.346%
2023	0.286%	0.377%	0.680%	0.356%	0.329%	0.338%
2028	0.283%	0.380%	0.680%	0.353%	0.335%	0.341%
2040	0.287%	0.376%	0.680%	0.346%	0.334%	0.338%

NOTE: Passenger airline operations for 2018 include OneJet (10 operations); however, projected growth rates for passenger airline operations were not applied to OneJet operations. Excluded OneJet operations results in 386 total airport operations and a ratio of 0.338 percent for 2018. Based on the OneJet exclusion, total airport operations would increase from 386 (2018) to 406 (2023), a CAGR of 0.9 percent.

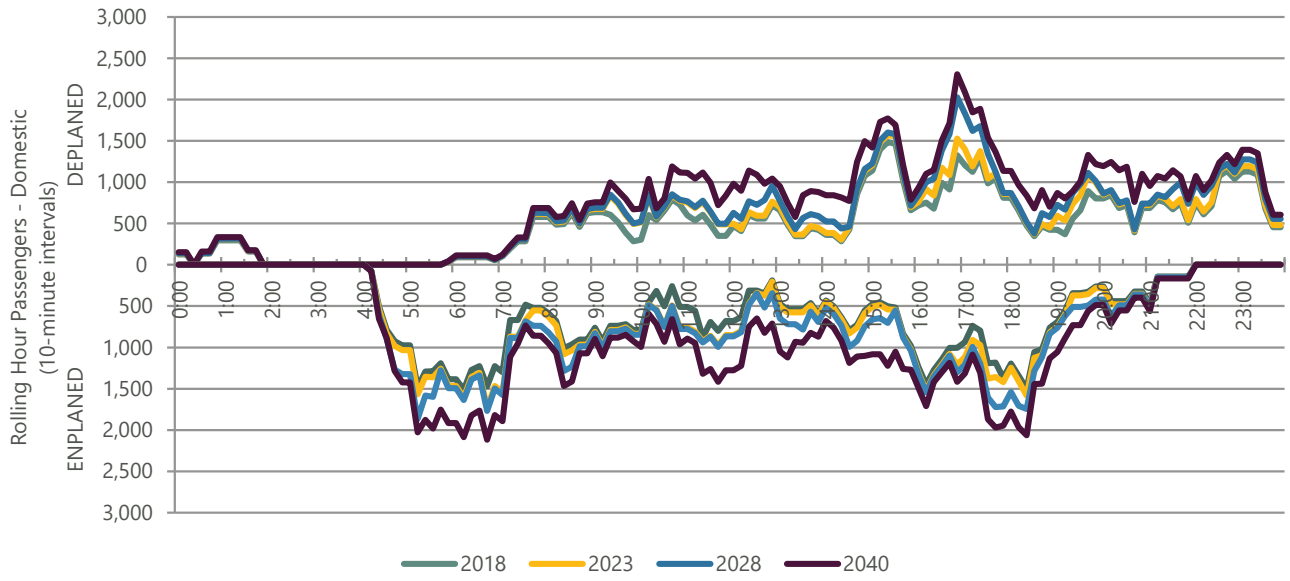
SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

EXHIBIT 3-19 ROLLING HOUR PASSENGERS – TOTAL (BASELINE FORECAST)



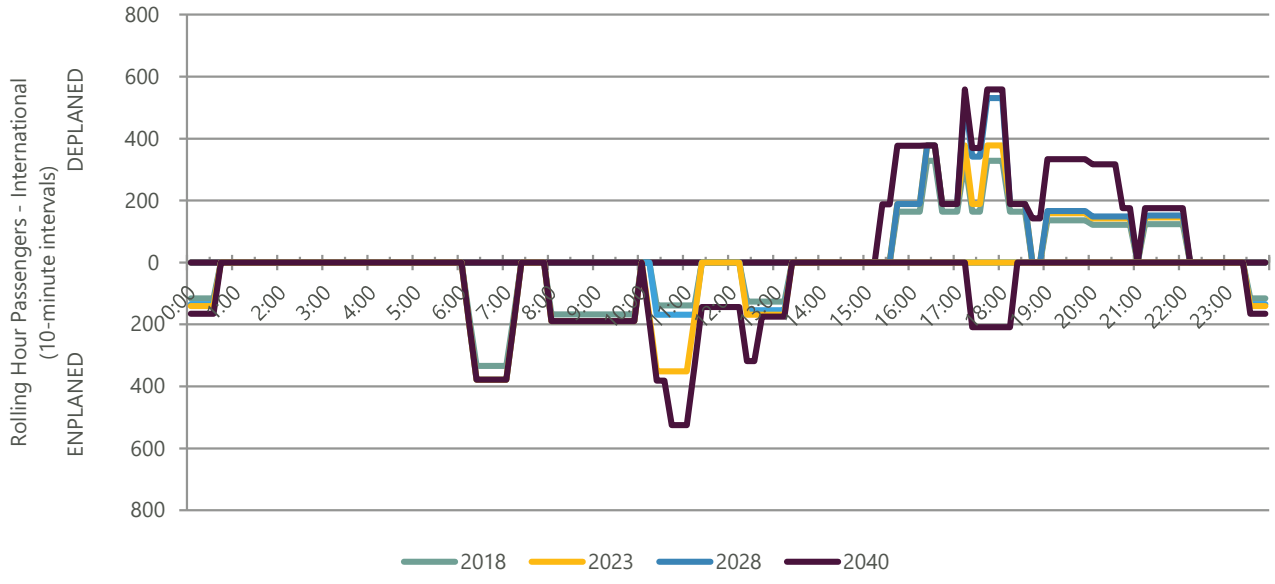
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-20 ROLLING HOUR PASSENGERS – DOMESTIC (BASELINE FORECAST)



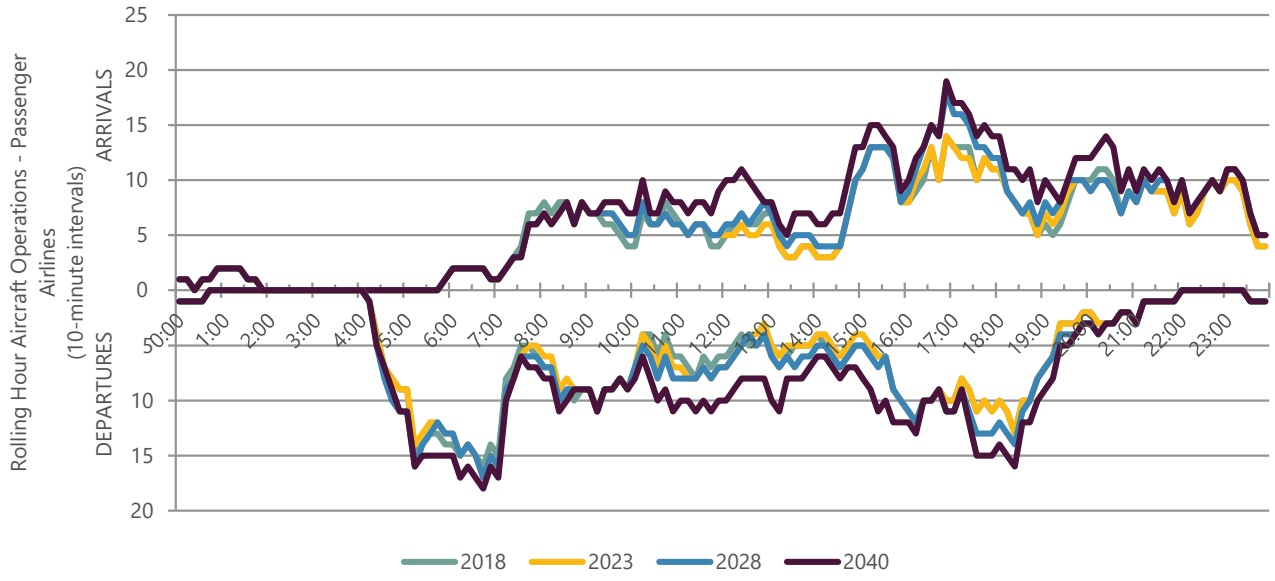
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-21 ROLLING HOUR PASSENGERS – INTERNATIONAL (BASELINE FORECAST)



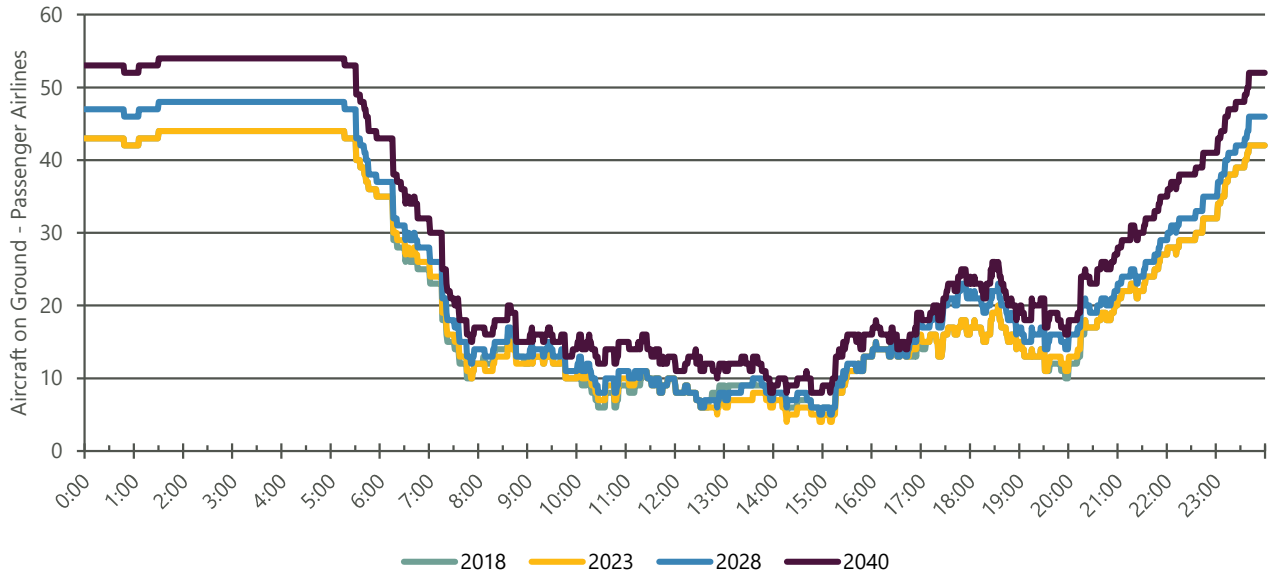
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-22 ROLLING HOUR PASSENGER AIRLINE OPERATIONS – BASELINE FORECAST



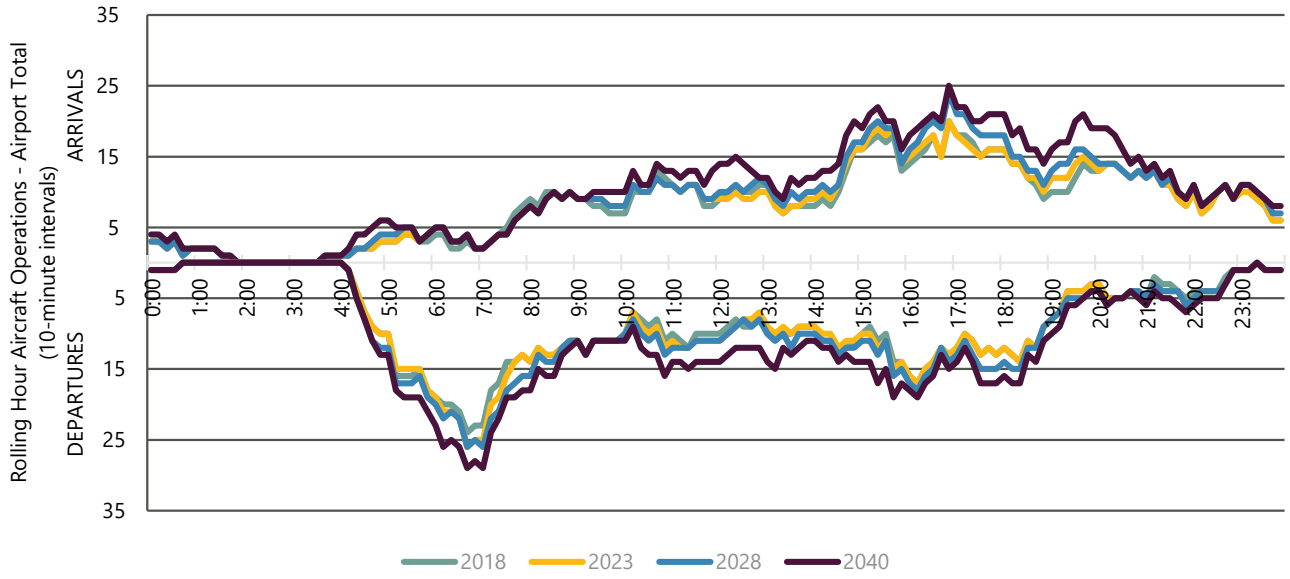
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., June 2019.

EXHIBIT 3-23 AIRCRAFT ON GROUND– PASSENGER AIRLINES (BASELINE FORECAST)



NOTE: Aircraft on ground is not a direct correlation to gate demand.
SOURCES: Innovata; Ricondo & Associates, Inc., June 2019.

EXHIBIT 3-24 ROLLING HOUR AIRPORT OPERATIONS – BASELINE FORECAST



SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., June 2019.

TABLE 3-69 DDFS SUMMARY – ALTERNATIVE DEMAND SCENARIO

	PASSENGERS			PASSENGER AIRLINE OPERATIONS		
YEAR	DDFS	ANNUAL	RATIO	DDFS	ANNUAL	RATIO
2018	27,247	7,169,848	0.380%	264	77,306	0.342%
2023	33,929	8,955,902	0.379%	290	88,111	0.329%
2028	38,242	10,202,292	0.375%	318	96,283	0.330%
2040	53,543	13,888,933	0.386%	404	122,167	0.331%
Compound Annual Growth Rate						
2018 - 2023	4.5%	4.5%		1.9%	2.7%	
2023 - 2028	2.4%	2.6%		1.9%	1.8%	
2028 - 2040	2.8%	2.6%		2.0%	2.0%	

NOTE: Passenger airline operations for 2018 include OneJet (10 operations); however, projected growth rates for passenger airline operations were not applied to OneJet operations. Excluded OneJet operations results in 254 total passenger airline operations and a ratio of 0.329 percent for 2018. Based on the OneJet exclusion, total passenger airline operations would increase from 254 (2018) to 290 (2023), a CAGR of 2.7 percent.

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

TABLE 3-70 DDFS PASSENGER AIRLINE FLEET SUMMARY – ALTERNATIVE DEMAND SCENARIO

YEAR	PASSENGER AIRCRAFT OPERATIONS			
	REGIONAL/ COMMUTER	NARROWBODY	WIDEBODY	TOTAL
2018	100	164	0	264
2023	104	186	0	290
2028	114	204	0	318
2040	112	290	2	404
Share of Passenger Aircraft Operations				
2018	38%	62%	0%	100%
2023	36%	64%	0%	100%
2028	36%	64%	0%	100%
2040	28%	72%	0%	100%
Average Seats per Operation				
2018	56.5	156.7	NA	118.7
2023	65.8	169.9	NA	132.5
2028	69.8	172.6	NA	135.7
2040	71.7	177.8	225.0	148.6

NOTE: Regional/commuter represents aircraft with seat capacity less than 79 seats. Narrowbody represents single-aisle aircraft with a seat capacity greater than 78 seats. Widebody represents dual-aisle aircraft.

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., March 2019.

TABLE 3-71 DDFS SUMMARY – PEAK HOUR PASSENGERS (ALTERNATIVE DEMAND SCENARIO)

YEAR	DEPLANED	TIME	ENPLANED	TIME	TOTAL	TIME
2018	1,491	16:50 – 17:49	1,803	6:40 – 7:39	2,561	17:40 – 18:39
2023	2,092	16:50 – 17:49	2,130	6:40 – 7:39	3,381	16:50 – 17:49
2028	2,264	16:50 – 17:49	2,379	6:40 – 7:39	3,610	16:50 – 17:49
2040	2,746	16:50 – 17:49	2,675	6:40 – 7:39	4,842	17:40 – 18:39

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-72 DDFS SUMMARY – PEAK HOUR PASSENGER AIRLINE OPERATIONS (ALTERNATIVE DEMAND SCENARIO)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	14	16:50 – 17:49	16	6:40 – 7:39	24	16:50 – 17:49
2023	17	16:50 – 17:49	17	5:10 – 6:09, 6:40 – 7:39	28	16:50 – 17:49
2028	18	16:50 – 17:49	18	6:40 – 7:39	29	16:50 – 17:49
2040	21	16:50 – 17:49	19	6:40 – 7:39	35	17:40 – 18:39

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-73 DDFS SUMMARY – PEAK HOUR TOTAL AIRPORT OPERATIONS (ALTERNATIVE DEMAND SCENARIO)

YEAR	ARRIVALS	TIME	DEPARTURES	TIME	TOTAL	TIME
2018	20	16:50 – 17:49	24	6:40 – 7:39	33	16:50 – 17:49
2023	23	16:50 – 17:49	26	6:40 – 7:39 7:00 – 7:59	37	16:50 – 17:49
2028	24	16:50 – 17:49	28	6:40 – 7:39 7:00 – 7:59	39	16:50 – 17:49
2040	27	16:50 – 17:49	33	6:40 – 7:39	44	15:20 – 16:19 17:40 – 18:39

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., May 2019.

TABLE 3-74 HOURLY SUMMARY – PASSENGERS (ALTERNATIVE DEMAND SCENARIO)

	2018			2023			2028			2040		
TIME OF DAY (HOURLY)	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL
0:00 - 0:59	127	116	242	143	136	279	143	149	292	151	393	544
1:00 - 1:59	295	0	295	318	0	318	318	0	318	326	0	326
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:59	0	976	976	0	1,315	1,315	0	1,368	1,368	0	1,423	1,423
6:00 - 6:59	90	1,385	1,475	104	1,482	1,586	106	1,712	1,819	113	1,884	1,997
7:00 - 7:59	103	1,633	1,737	115	1,938	2,053	116	2,173	2,288	266	2,457	2,722
8:00 - 8:59	577	588	1,166	649	639	1,288	656	911	1,567	687	1,485	2,172
9:00 - 9:59	665	790	1,455	748	855	1,603	760	895	1,655	1,089	1,082	2,171
10:00 -10:59	303	1,124	1,427	644	1,290	1,934	649	1,324	1,973	1,253	1,854	3,106
11:00 - 11:59	596	650	1,246	783	997	1,781	937	1,231	2,168	1,402	1,903	3,305
12:00 - 12:59	472	679	1,151	752	1,001	1,753	822	1,214	2,036	1,759	2,297	4,056
13:00 - 13:59	659	600	1,260	793	917	1,711	920	1,050	1,970	1,879	2,062	3,940
14:00 - 14:59	362	433	795	537	517	1,054	813	667	1,479	1,275	1,221	2,497
15:00 - 15:59	1,140	476	1,616	1,256	658	1,914	1,385	1,054	2,439	1,762	1,732	3,494
16:00 - 16:59	881	1,240	2,121	1,061	1,317	2,378	1,073	1,424	2,497	1,298	1,887	3,185
17:00 - 17:59	1,370	937	2,307	1,891	1,199	3,090	2,060	1,249	3,309	2,531	1,450	3,981
18:00 - 18:59	1,167	1,194	2,362	1,303	1,533	2,837	1,675	1,581	3,256	2,196	2,286	4,482
19:00 - 19:59	559	722	1,281	1,046	791	1,836	1,142	1,060	2,202	1,368	1,425	2,793
20:00 - 20:59	924	260	1,183	1,033	419	1,452	1,200	445	1,646	1,535	631	2,166
21:00 - 21:59	686	463	1,149	766	506	1,272	920	533	1,453	1,636	557	2,193
22:00 - 22:59	873	0	873	1,166	0	1,166	1,188	0	1,188	1,618	0	1,618
23:00 - 23:59	1,128	0	1,128	1,309	0	1,309	1,319	0	1,319	1,373	0	1,373
Total	12,980	14,264	27,244	16,418	17,512	33,929	18,202	20,040	38,242	25,514	28,029	53,543
Peak Block Hour	1,370	1,633	2,362	1,891	1,938	3,090	2,060	2,173	3,309	2,531	2,457	4,482
Peak Rolling Hour (10-minute intervals)	1,491	1,803	2,561	2,092	2,130	3,381	2,264	2,379	3,610	2,746	2,675	4,842

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., March 2019.

TABLE 3-75 HOURLY SUMMARY – PASSENGER AIRLINE OPERATIONS (ALTERNATIVE DEMAND SCENARIO)

	2018			2023			2028			2040		
TIME OF DAY (HOURLY)	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL
0:00 - 0:59	1	1	2	1	1	2	1	1	2	1	2	3
1:00 - 1:59	2	0	2	2	0	2	2	0	2	2	0	2
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:59	0	9	9	0	11	11	0	11	11	0	11	11
6:00 - 6:59	2	14	16	2	13	15	2	14	16	2	15	17
7:00 - 7:59	1	15	16	1	16	17	1	17	18	2	18	20
8:00 - 8:59	8	6	14	7	5	12	7	7	14	7	10	17
9:00 - 9:59	7	8	15	7	8	15	7	8	15	9	9	18
10:00 -10:59	4	9	13	7	10	17	7	10	17	11	13	24
11:00 - 11:59	6	6	12	6	8	14	7	9	16	10	13	23
12:00 - 12:59	5	6	11	8	8	16	9	9	18	15	15	30
13:00 - 13:59	7	6	13	7	8	15	8	9	17	14	15	29
14:00 - 14:59	3	4	7	4	5	9	6	6	12	9	9	18
15:00 - 15:59	11	5	16	11	5	16	13	8	21	15	12	27
16:00 - 16:59	8	11	19	9	11	20	9	12	21	10	14	24
17:00 - 17:59	13	10	23	15	11	26	16	11	27	19	12	31
18:00 - 18:59	11	10	21	11	12	23	14	12	26	17	16	33
19:00 - 19:59	6	7	13	9	7	16	10	9	19	11	11	22
20:00 - 20:59	10	2	12	9	3	12	10	3	13	12	4	16
21:00 - 21:59	8	3	11	8	3	11	9	3	12	13	3	16
22:00 - 22:59	9	0	9	10	0	10	10	0	10	12	0	12
23:00 - 23:59	10	0	10	11	0	11	11	0	11	11	0	11
Total	132	132	264	145	145	290	159	159	318	202	202	404
Peak Block Hour	13	15	23	15	16	26	16	17	27	19	18	33
Peak Rolling Hour (10-minute intervals)	14	16	24	17	17	28	18	18	29	21	19	35

SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., March 2019.

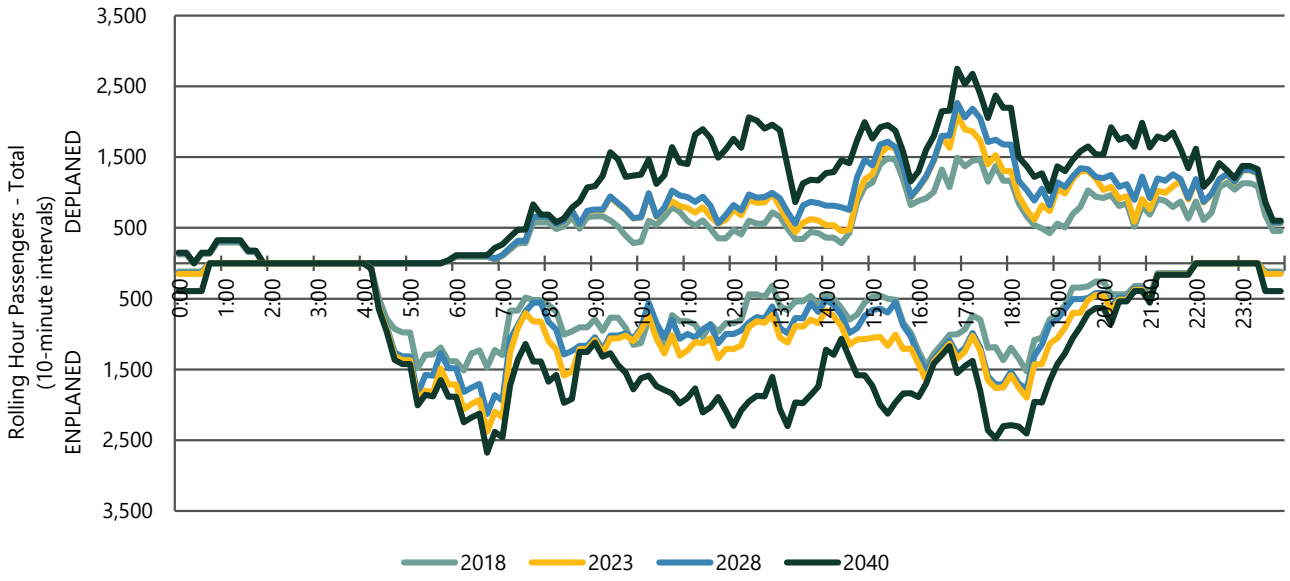
TABLE 3-76 DDFS AIRCRAFT OPERATIONS SUMMARY – ALTERNATIVE DEMAND SCENARIO

YEAR	CARGO	OTHER AIR TAXI/ GENERAL AVIATION	MILITARY	NON-PASSENGER AIRLINE TOTAL	PASSENGER AIRLINE TOTAL	AIRPORT TOTAL
			DDFS Operations			
2018	38	80	14	132	264	396
2023	52	82	14	148	290	438
2028	62	84	14	160	318	478
2040	82	86	14	182	404	586
			Annual Operations			
2018	13,477	21,457	2,059	36,993	77,306	114,299
2023	18,108	21,763	2,059	41,930	88,111	130,041
2028	21,823	22,080	2,059	45,962	96,283	142,245
2040	28,798	22,877	2,059	53,734	122,167	175,901
			DDFS to Annual Operations Ratio			
2018	0.282%	0.373%	0.680%	0.357%	0.342%	0.346%
2023	0.287%	0.377%	0.680%	0.353%	0.329%	0.337%
2028	0.284%	0.380%	0.680%	0.348%	0.330%	0.336%
2040	0.285%	0.376%	0.680%	0.339%	0.331%	0.333%

NOTE: Passenger airline operations for 2018 include OneJet (10 operations); however, projected growth rates for passenger airline operations were not applied to OneJet operations. Excluded OneJet operations results in 386 total airport operations and a ratio of 0.338 percent for 2018. Based on the OneJet exclusion, total airport operations would increase from 386 (2018) to 438 (2023), a CAGR of 2.6 percent.

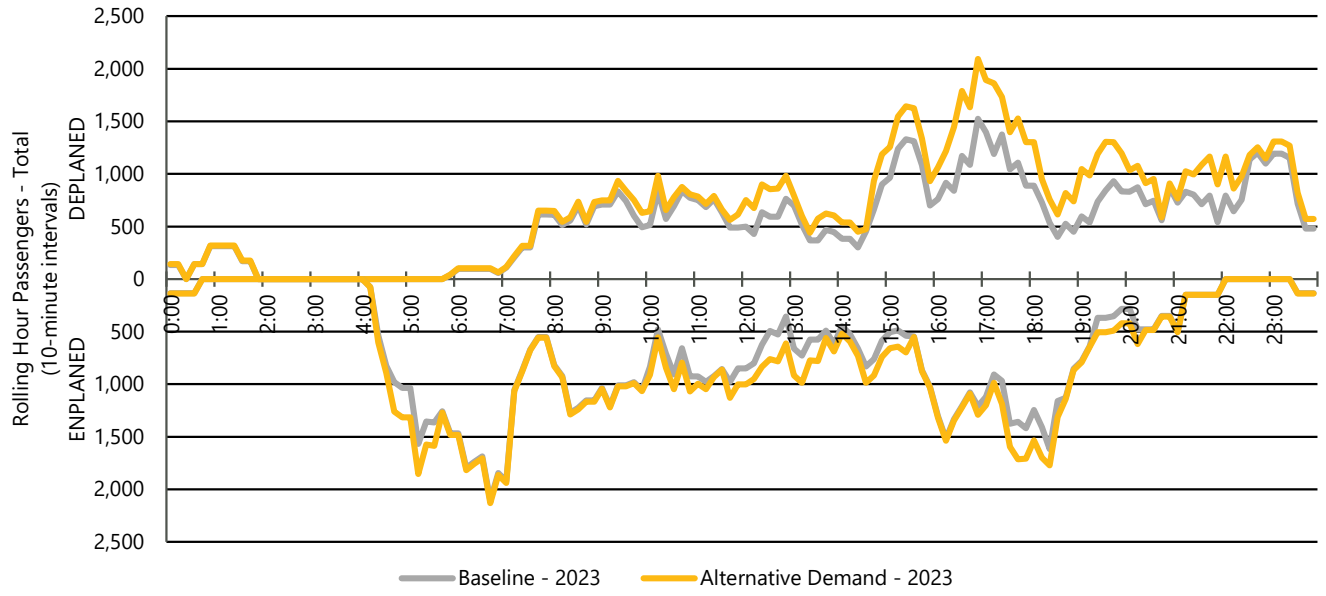
SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., June 2019.

EXHIBIT 3-25 ROLLING HOUR PASSENGERS – TOTAL (ALTERNATIVE DEMAND SCENARIO)



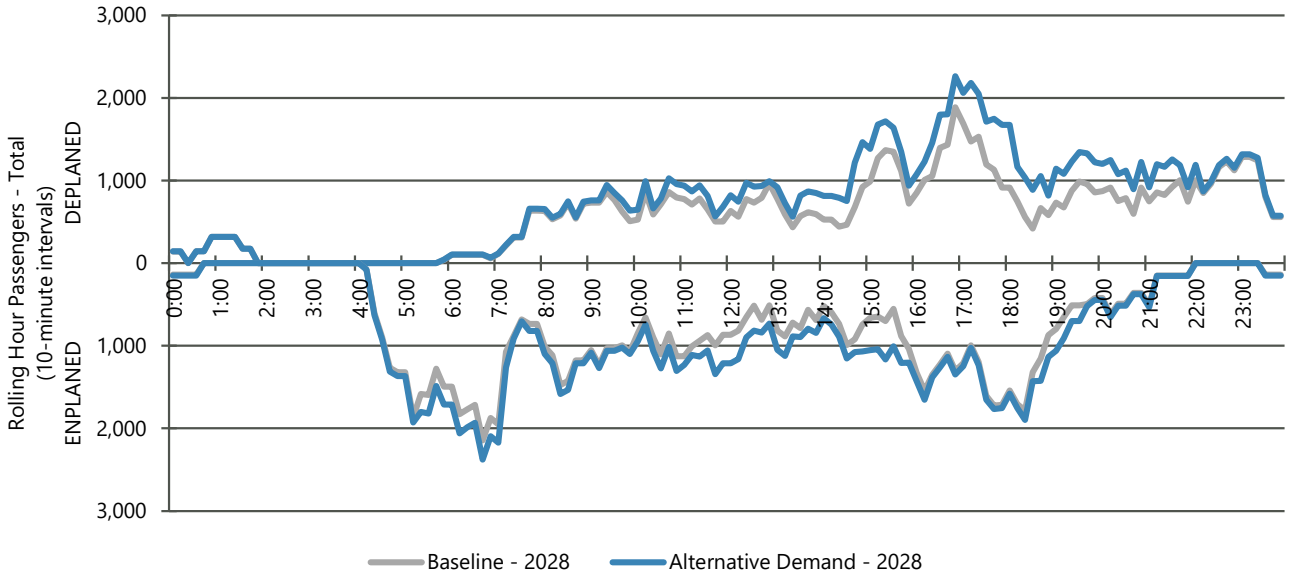
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-26 ROLLING HOUR PASSENGERS – TOTAL 2023 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



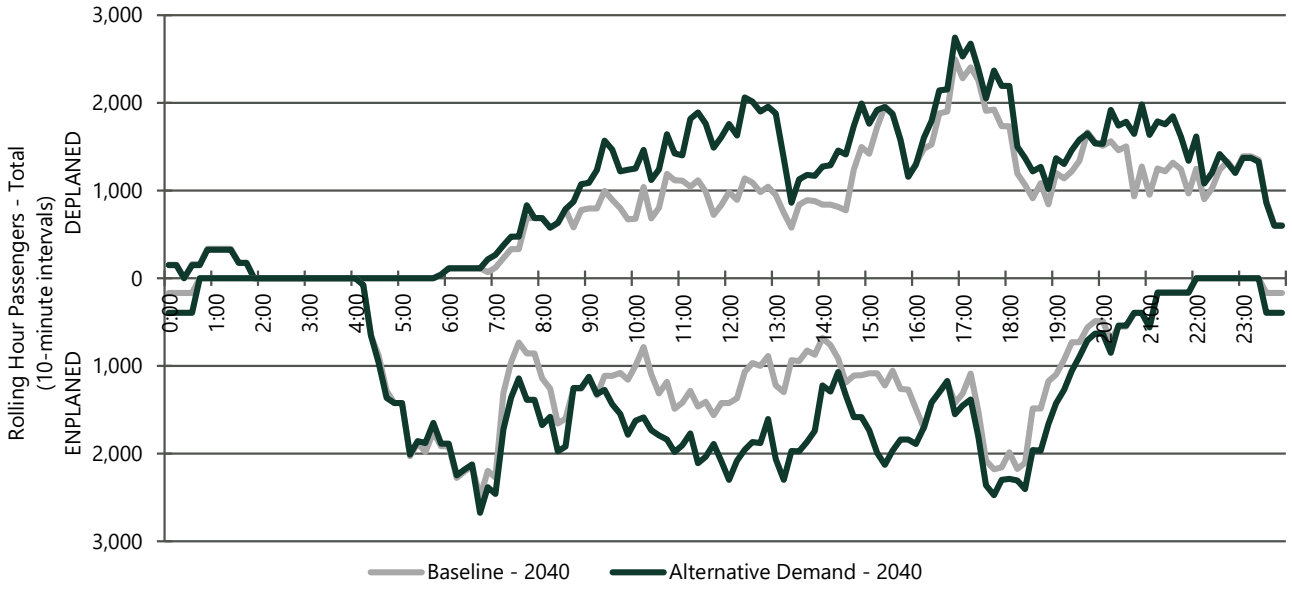
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-27 ROLLING HOUR PASSENGERS – TOTAL 2028 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



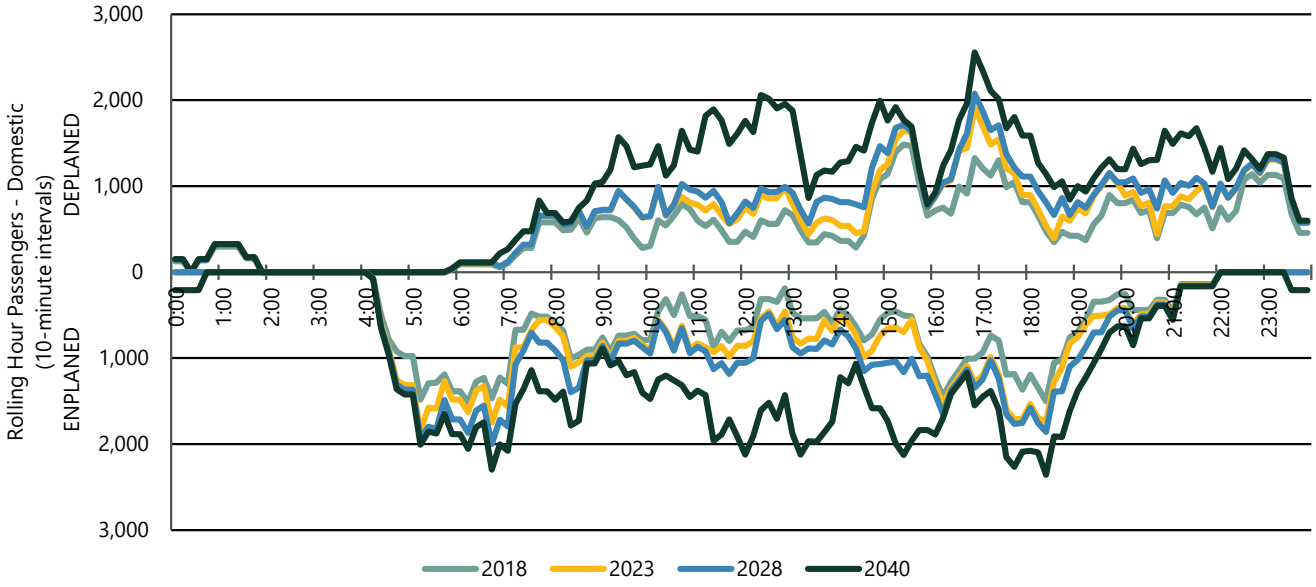
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-28 ROLLING HOUR PASSENGERS – TOTAL 2040 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



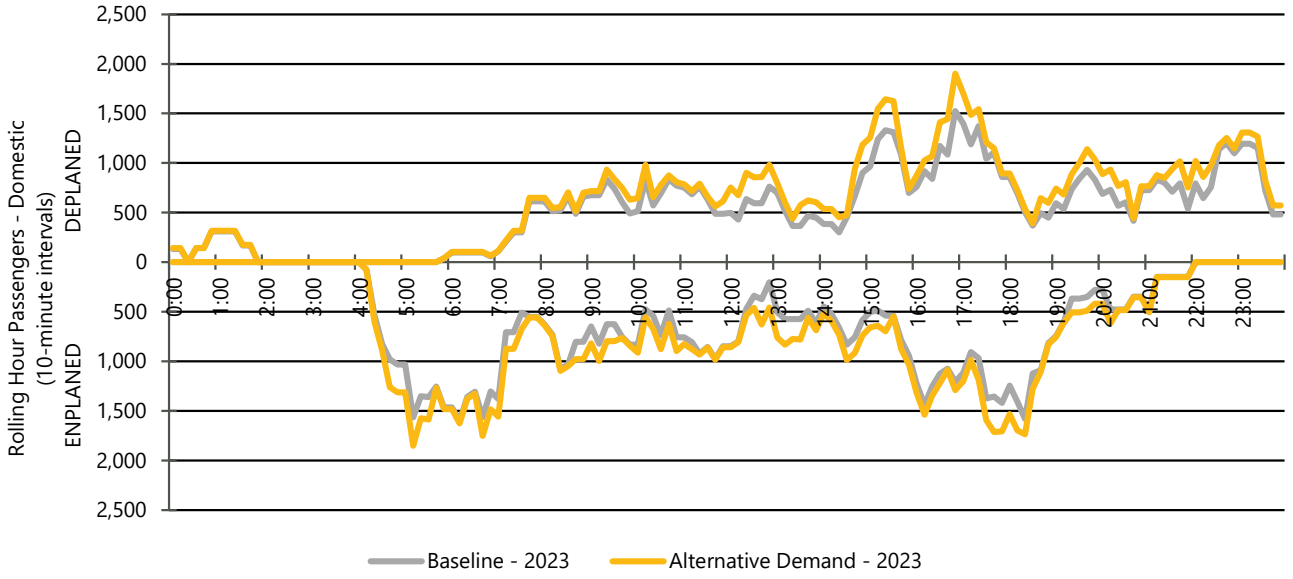
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-29 ROLLING HOUR PASSENGERS – DOMESTIC (ALTERNATIVE DEMAND SCENARIO)



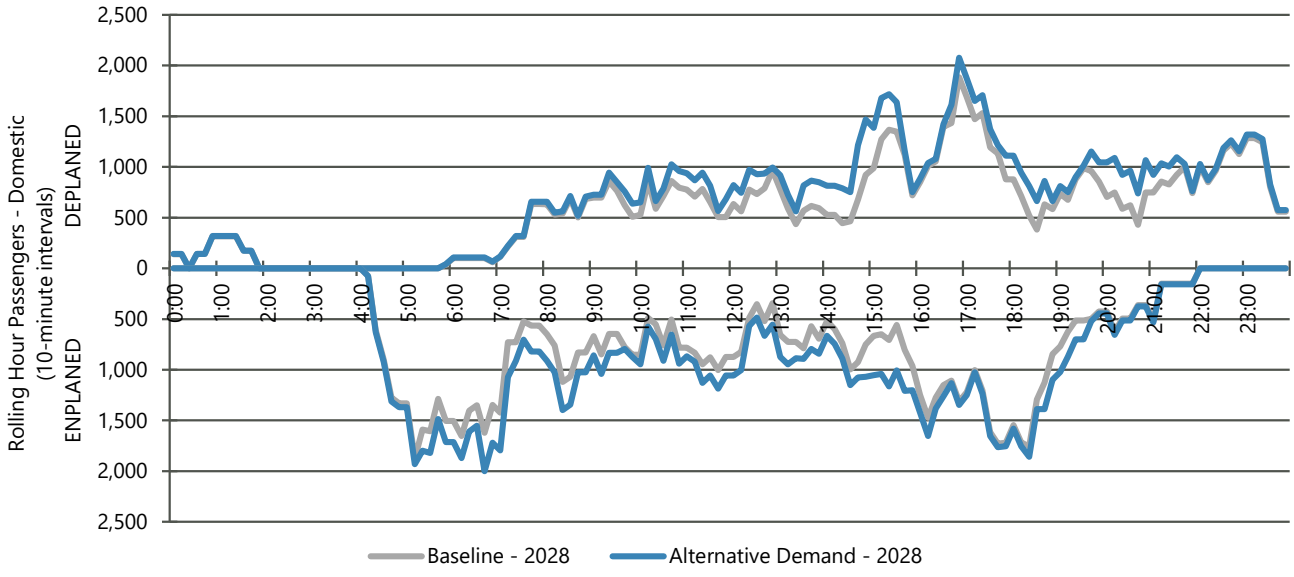
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-30 ROLLING HOUR PASSENGERS – DOMESTIC 2023 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



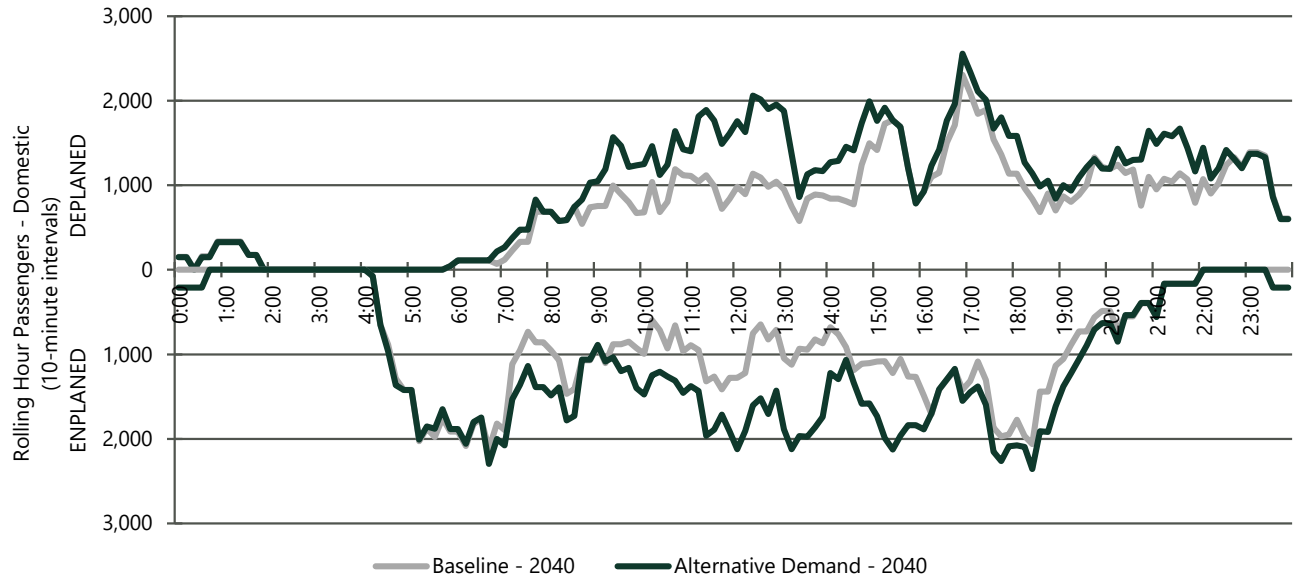
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-31 ROLLING HOUR PASSENGERS – DOMESTIC 2028 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



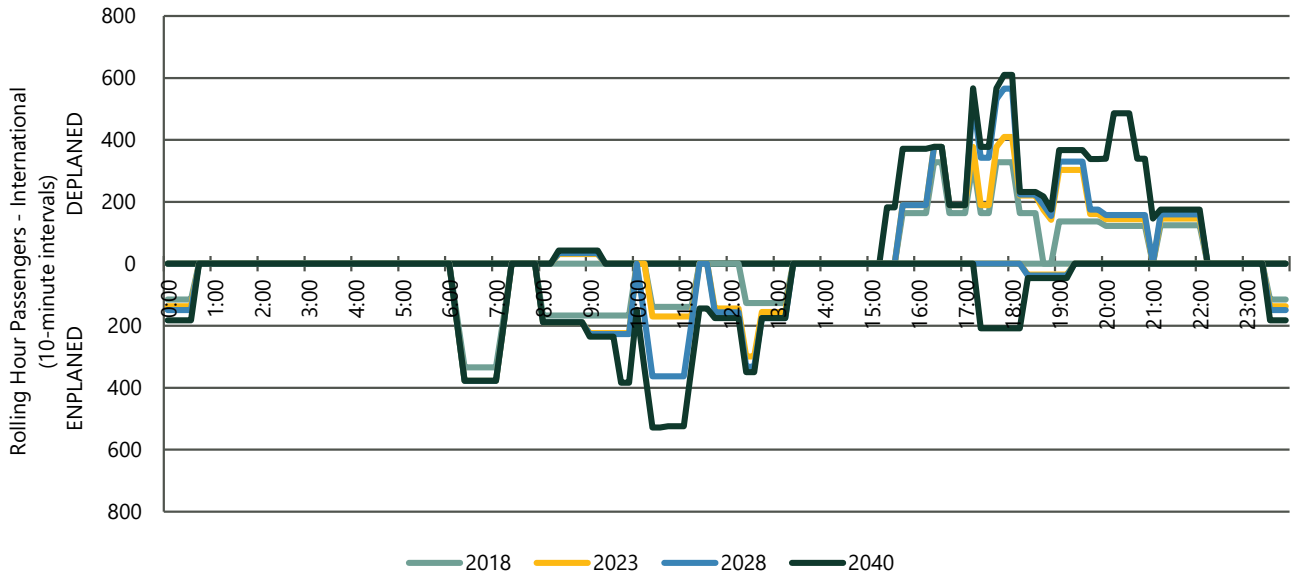
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-32 ROLLING HOUR PASSENGERS – DOMESTIC 2040 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



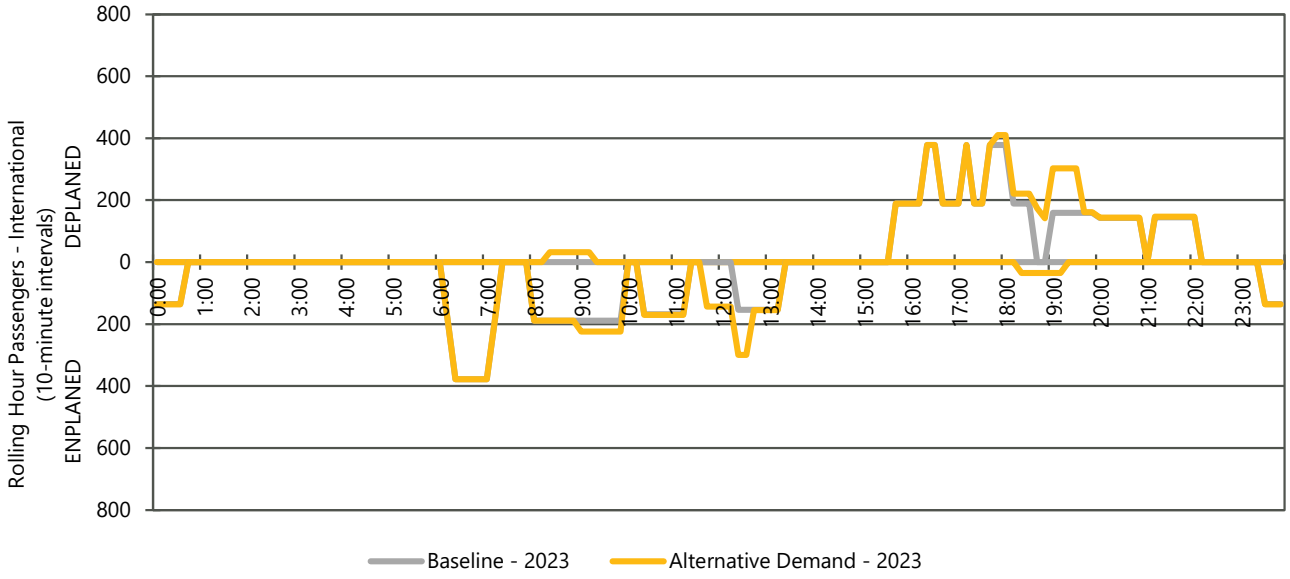
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., March 2019.

EXHIBIT 3-33 ROLLING HOUR PASSENGERS –INTERNATIONAL (ALTERNATIVE DEMAND SCENARIO)



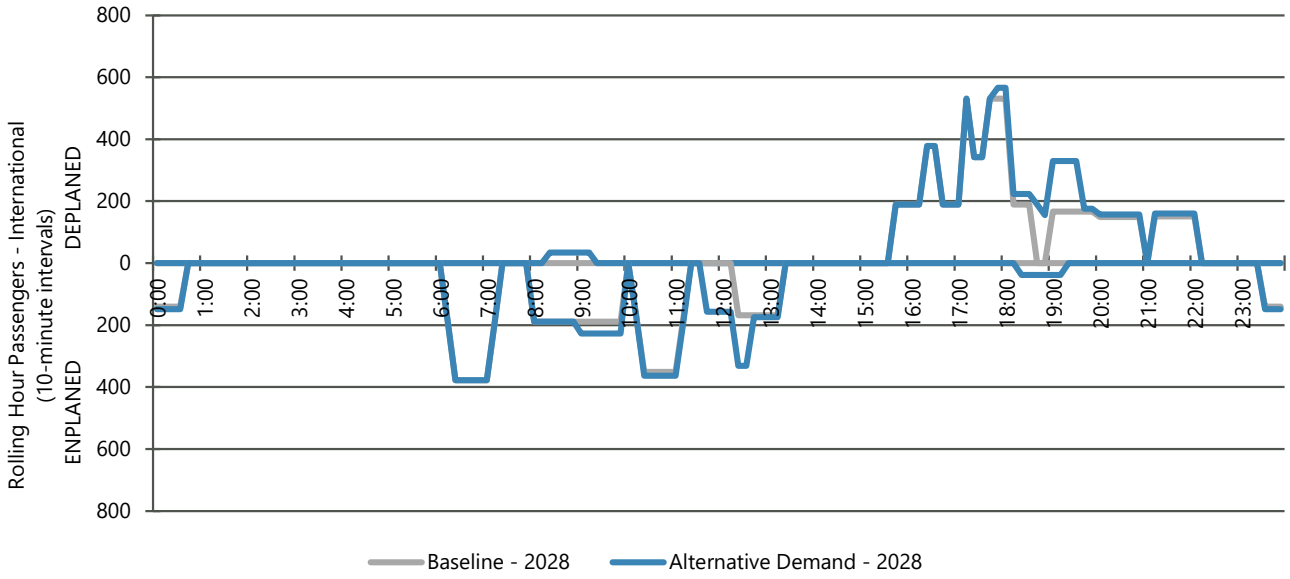
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-34 ROLLING HOUR PASSENGERS – INTERNATIONAL 2023 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



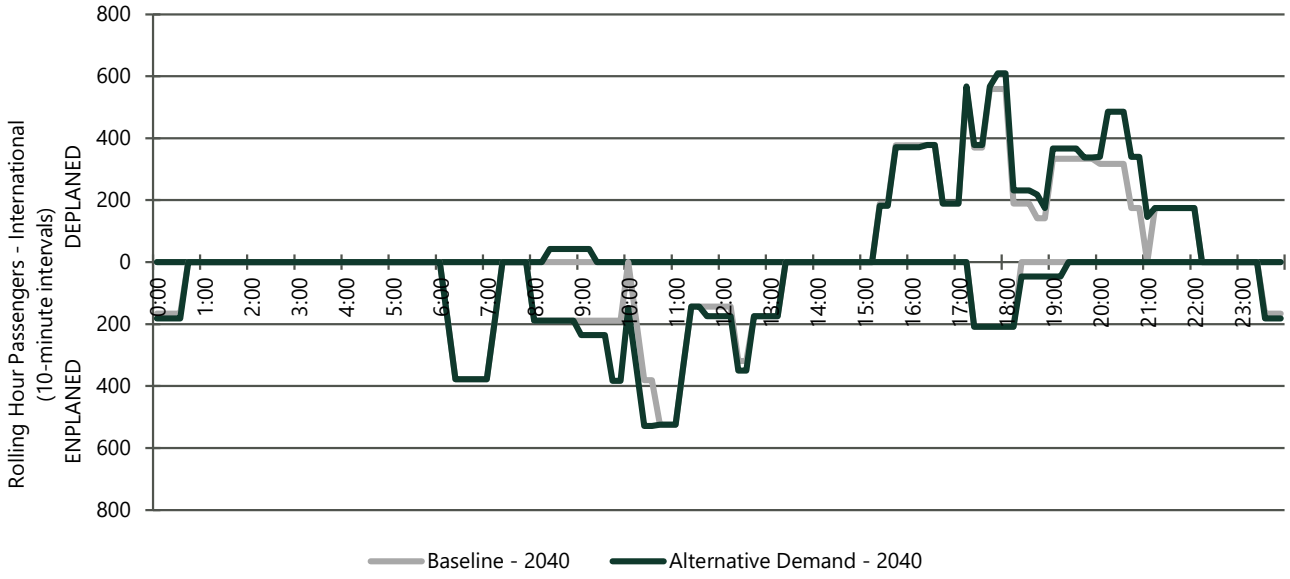
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-35 ROLLING HOUR PASSENGERS – INTERNATIONAL 2028 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



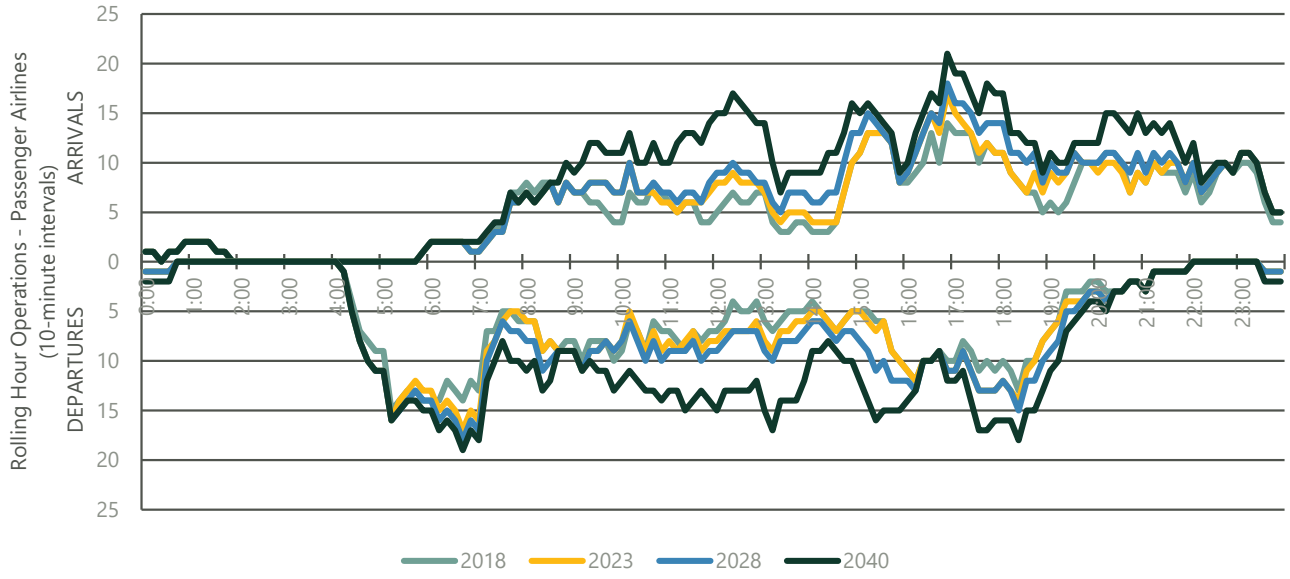
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-36 ROLLING HOUR PASSENGERS – INTERNATIONAL 2040 (BASELINE FORECAST VS ALTERNATIVE DEMAND SCENARIO)



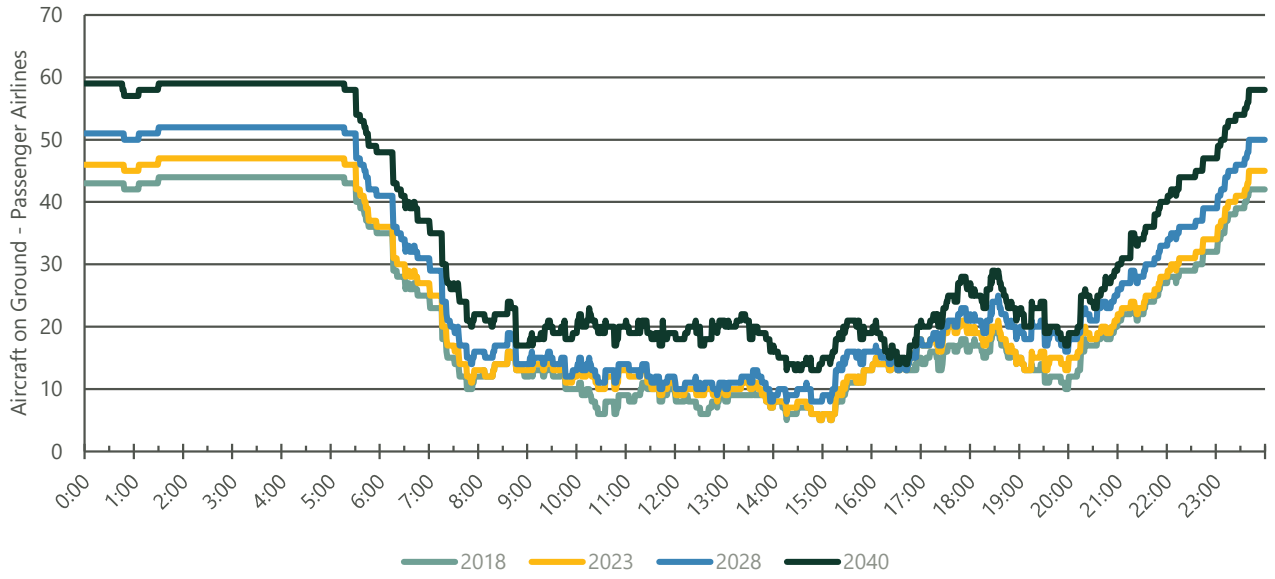
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-37 ROLLING HOUR PASSENGERS AIRLINE OPERATIONS – ALTERNATIVE DEMAND SCENARIO



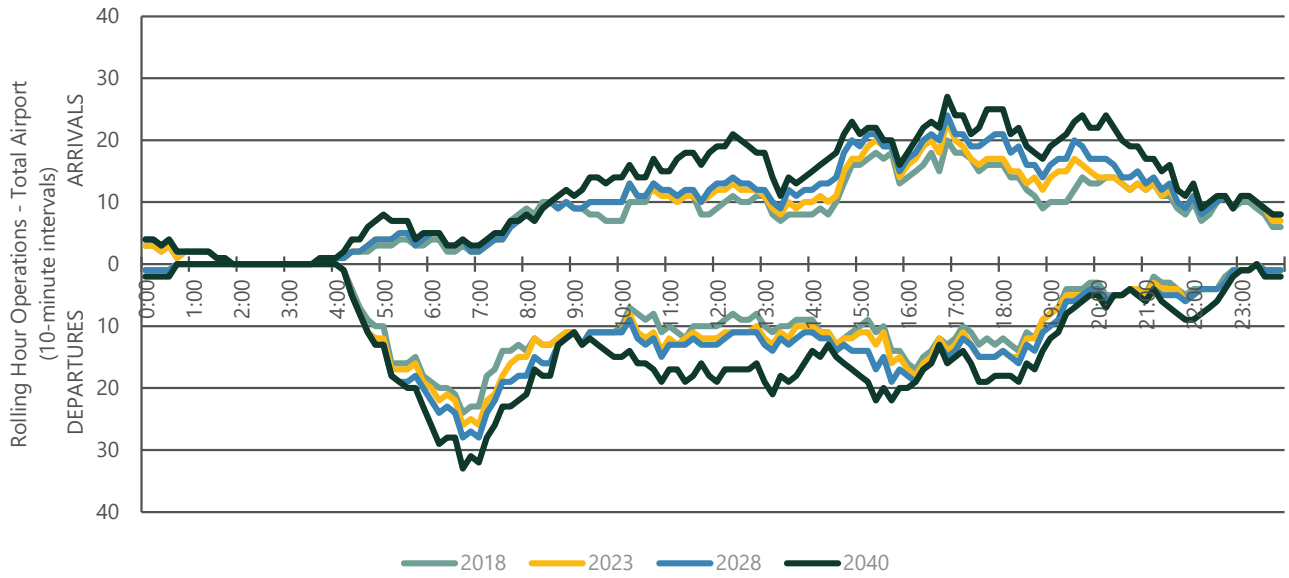
SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-38 AIRCRAFT ON GROUND– PASSENGER AIRLINES (ALTERNATIVE DEMAND SCENARIO)



NOTE: Aircraft on ground is not a direct correlation to gate demand.
SOURCES: Innovata; Ricondo & Associates, Inc., May 2019.

EXHIBIT 3-39 ROLLING HOUR AIRPORT OPERATIONS – ALTERNATIVE DEMAND SCENARIO



SOURCES: Innovata; U.S. DOT T100; Ricondo & Associates, Inc., May 2019.

3.10 CRITICAL AIRCRAFT DETERMINATION

The critical aircraft determination establishes dimensional requirements on an airport (e.g., the separation distance between taxiways and runways) and the size of specific areas intended for the safety of aircraft operations. The critical aircraft determination is based on the most demanding aircraft or grouping of aircraft with similar characteristics that regularly use the runways, taxiways, and apron areas at the Airport. Regular use is defined as 500 or more annual operations (an operation is a takeoff or a landing).

A review of the Baseline Forecast and the Design Day Flight Schedule results indicates that MKE is served and would continue to be served by scheduled aircraft as large as Airplane Design Group (ADG) IV (wingspan of 118 feet or greater but less than 171 feet and tail height of 45 feet or greater but less than 60 feet) over the planning horizon. Representative ADG IV aircraft include the Airbus A300-600 and the Boeing MD11. Aircraft activity by ADG IV aircraft at MKE included 2,580 cargo operations in 2018, as documented in Table 3-19.

Fleet evolution, coupled with activity growth, over the planning horizon is forecast to increase the annual operations by aircraft classified as ADG IV and to incorporate scheduled operations by aircraft classified as ADG V (wingspan of 171 feet or greater but less than 214 feet and tail height of 60 feet or greater but less than 66 feet). It is forecast that the Boeing 787 and the Boeing 777, each classified as ADG V aircraft, will both be operating at MKE over the planning horizon. **Table 3-77** summarizes the forecast annual operations by existing and future critical aircraft by airplane design group and identifies the critical aircraft for each intermediate planning horizon.

TABLE 3-77 FORECAST ANNUAL OPERATIONS BY EXISTING AND FUTURE CRITICAL AIRCRAFT

YEAR	ADG IV ANNUAL OPERATIONS	ADG V ANNUAL OPERATIONS	CRITICAL AIRCRAFT
2018	2,580	0	MD-11
2023	3,222	0	MD-11
2028	3,677	424	MD-11
2040	4,011	1,184	B777F

NOTES:
1 ADG: Airplane Design Group
2 Forecast annual operations include scheduled cargo and passenger activity.
SOURCES: Milwaukee Mitchell International Airport; Innovata; Ricondo & Associates, Inc., March 2019.

FAA guidance requires the designation of the most demanding critical aircraft for each runway.[20] While this is often chronicled in the forecast documentation, the FAA recognizes that alternatively the critical aircraft designation can be made later in the planning process as part of the Airport Layout Plan submittal. The existing and future critical aircraft determinations for MKE presented in this section are applicable to the air carrier-capable runways at the Airport. It is recognized that additional analysis is needed during the planning process to fully identify the critical aircraft for individual runways that appear on the Airport Layout Plan. This additional analysis and the resulting critical aircraft determinations, by runway, will be confirmed and presented in the Airport Layout Plan narrative report and drawing set.

[20] FAA Advisory Circular 150/5000-17, *Critical Aircraft Determination*, June 20, 2017.

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