

## Chapter 2. Forecast

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## Chapter 2 Forecast

### 2.1 OVERVIEW OF THE FORECAST PROCESS AND OBJECTIVES

In February 2019, the Metropolitan Airports Commission (MAC) began developing forecasts of aviation demand to inform its 2040 Long-Term Plan (LTP). The effort was completed in July 2020, but the resulting forecasts did not account for the potential effects of widespread disruptions in air service due to the COVID-19 pandemic. In October 2021, the MAC updated the forecasts and incorporated COVID-19 pandemic impacts into the forecast of aviation demand, retaining calendar year 2018 as its base year. The forecasts were developed for both passenger-related activity (passenger volumes and aircraft operations) and non-passenger-related activity (air cargo, general aviation (GA) / air taxi, and military aircraft operations) by year between 2018 and 2040.

The overall objective for the 2040 LTP forecasts was to identify a potential range of demand scenarios for aviation services in a manner that would facilitate a meaningful evaluation of facility performance. This chapter reviews the forecasts and serves as the basis for formulating the facility requirements analysis presented in Chapter 3.

This chapter is divided into two sections: **Sections 2.2** through **2.8** discuss the original forecasts, and **Sections 2.9** through **2.10** present the post-pandemic aviation activity forecast updates.

#### 2.1.1 Forecast Process

**Exhibit 2-1** illustrates the high-level forecast process, which is described in the following subsections. The process began with the data collection and market analysis phase, which presented an opportunity to research the factors that have historically influenced the Airport's activity and understand how those factors may evolve and ultimately shape future activity. As part of this phase, a group of internal and external stakeholders was engaged, either directly or indirectly, to inform the research and subsequently provide feedback throughout the forecast process including:

- MAC staff and board members;
- passenger airlines;
- cargo airlines; and
- local community, including the Metropolitan Council (Met Council).

**Exhibit 2-1: Forecast Process**



SOURCE: Ricondo & Associates, Inc. 2019

The forecast process resulted in annual forecasts of both passenger-related activity and non-passenger-related activity between 2018 and 2040. The percentage of aircraft operations generated by each category in 2018 were passenger airline (91%), GA/Air Taxi (5%), Air Cargo (4%), and Military (less than 1%).

Annual forecasts were originally prepared for a baseline scenario (the expected outcome), as well as a single high and a single low scenario. In addition to the annual forecasts, design day flight schedules (DDFSs) representing single days of Airport activity were created for the baseline scenario for 2018 and years 2025, 2030, and 2040. For each year, DDFSs were developed for both the summer and spring peak activity periods experienced at the Airport. The forecasts (both the annual and DDFSs) were not constrained by any assumptions regarding the availability of Airport facilities, such as additional gates that would be needed to accommodate demand.

### **2.1.2 Forecast Objectives**

The overall objective for the 2040 LTP forecasts was to identify a likely range of demand levels for aviation services in a manner that would facilitate a meaningful evaluation of facility performance. More specifically, the parameters used to develop the forecast included:

- a level of detail that informs the development of facilities necessary to meet future demand levels, provide high levels of customer service, and maximize economic benefit;
- a reasonable range of possible forecast activity outcomes, considering the inherent uncertainty in the forecasting process, which enables facility planning and promotes operational efficiency and flexibility; and
- engaging stakeholders to provide insights and input into the forecast development, as well as to review and comment on forecast results.

### **2.1.3 COVID-19 Pandemic Impact on Forecasts**

The pandemic has disrupted the relationships between passenger volumes and drivers traditionally used to forecast demand, such as employment, personal income, and other socioeconomic factors. Passenger travel has more recently been influenced by factors such as travel restrictions, fear of illness, or work policies that have emerged since the onset of the pandemic.

As the effects of the pandemic subside, passenger demand is expected to return to pre-pandemic levels. However, the return to that point will not be immediate, and the timing will depend on factors such as regional economic recoveries, seat capacity allocation decisions by airlines, and local or national travel restrictions. The return to pre-pandemic growth will likely be uneven across markets and passenger types. As such, pre-pandemic factors used in aviation activity forecasting were used rather than pandemic-related concerns. These factors included qualitative and quantitative elements regarding:

- airline capacity and load factor recovery at MSP;
- airline capacity recovery at airports served by MSP and in the industry overall;
- economic recovery projected for the region and in regions served from MSP;
- historical revenue produced by passengers in the individual markets served from MSP; and
- other forecasts developed for the Airport and the industry.

Using a combination of these factors, the return to pre-pandemic levels was estimated on a passenger-by-passenger basis according to the origin and destination of their travel. As modeled, pandemic-related influences continue to impact certain segments of passenger activity through 2026 (although growth continues during that period), after which traditional forecast influences prevail throughout the remainder of the forecast period. A more aggressive forecast of recovery to traditional drivers was also developed that considered more favorable economic conditions and airline response. In the more aggressive scenario, pandemic-related influences were modeled to cease by the end of 2024. The more aggressive results are presented as the updated forecasts that serve as the basis of the DDFS development and that are compared to the Federal Aviation Administration’s (FAA’s) Terminal Forecast (TAF) results.

## 2.1.4 Chapter Organization

This chapter is organized as follows:

- Original forecast (**sections 2.2 through 2.8**)
  - Data collection and market analysis of historical activity
  - Forecast of underlying passenger demand and factors shaping future passenger activity
  - Forecast of non-passenger aircraft operations
  - Comparison to other forecasts
  - Forecast scenarios
  - DDFS development
  - Original forecast and DDFS tables
- Post-COVID revised forecast (**sections 2.9 and 2.10**)
  - Aviation activity forecast review and update
  - Revised baseline forecast and DDFS tables

## 2.2 DATA COLLECTION AND MARKET ANALYSIS OF HISTORICAL ACTIVITY

### 2.2.1 Data and Information Sources

The 2040 LTP forecasts incorporated data from several sources traditionally used to illustrate historical activity and/or provide insight into potential future activity. The primary sources of information used were:

- MSP data reports: MAC-reported activity data specific to MSP;
- MAC Noise and Operations Monitoring System (MACNOMS) data: MAC-reported data with granular detail of actual operations, including gate use, runway times, and gate times;
- U.S. Department of Transportation (USDOT) Airline Origin and Destination (O&D) Survey (DB1B): passenger ticket information with data specific to passenger journeys, including routing, carriers, and airfares;
- USDOT T-100: flight segment report with details of passenger flights to or from U.S. airports, including carrier, aircraft type, passenger volumes, and available seats;
- Published airline schedules;
- economic projections provided by the Met Council and Woods & Poole Economics, Inc. (Woods & Poole);



- FAA Aerospace and Terminal Area Forecasts (TAFs); and
- Inputs and feedback from airlines and other users of the Airport.

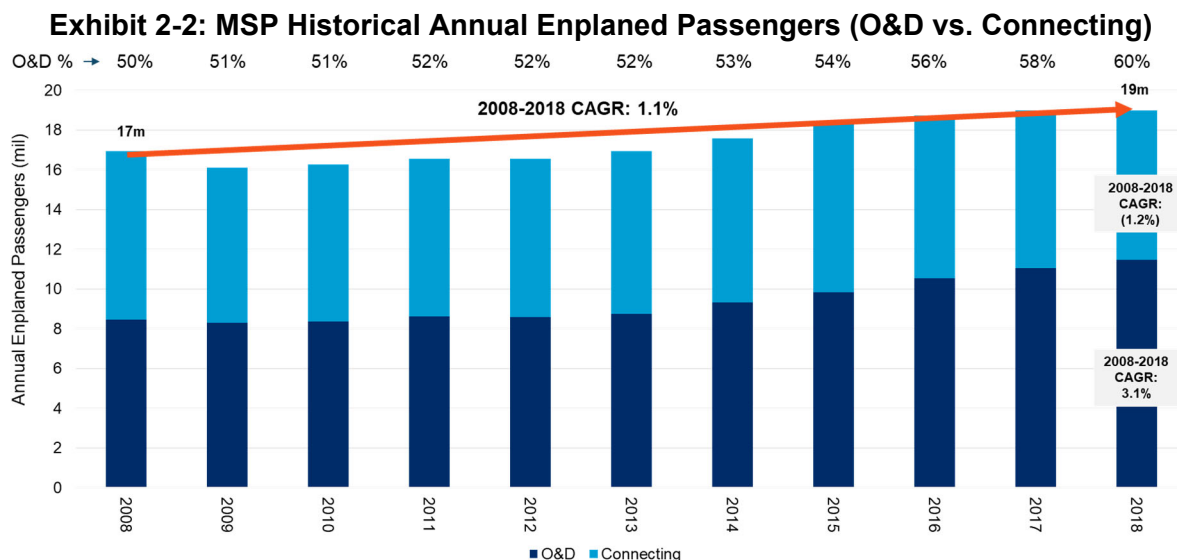
## 2.2.2 Review of Historical Passenger-Related Activity

### 2.2.2.1 Types and Volumes of Passengers Using the Airport

In 2018, the base year for the 2040 LTP forecasts, MSP served approximately 38 million passengers (both revenue and non-revenue passengers) arriving at and departing from the Airport. Historical passengers were analyzed to understand the characteristics of the travelers the Airport serves.

### 2.2.2.2 Origin and Destination Versus Connecting

In 2018, MSP served as an origin or a destination point for approximately 60% of the passengers using the Airport (O&D passengers) and as a waypoint on a journey between two other airports for the remaining 40% (connecting passengers). **Exhibit 2-2** shows the growth of annual enplaned passengers since 2008, with the corresponding annual percentage of O&D passengers. Between 2008 and 2018, annual enplaned passengers at MSP grew from approximately 17 million to 19 million, a compound annual growth rate (CAGR) of 1.1%. During this time, the O&D share of passengers grew from 50% to 60%, with the connecting percentage falling from 50% to 40%, due mainly to the effects of the route network optimization undertaken by Delta following its merger with Northwest. Connecting passengers declined at a rate of 1.2% during this period.



NOTES: O&D – Origin and Destination; CAGR – Compound Annual Growth Rate

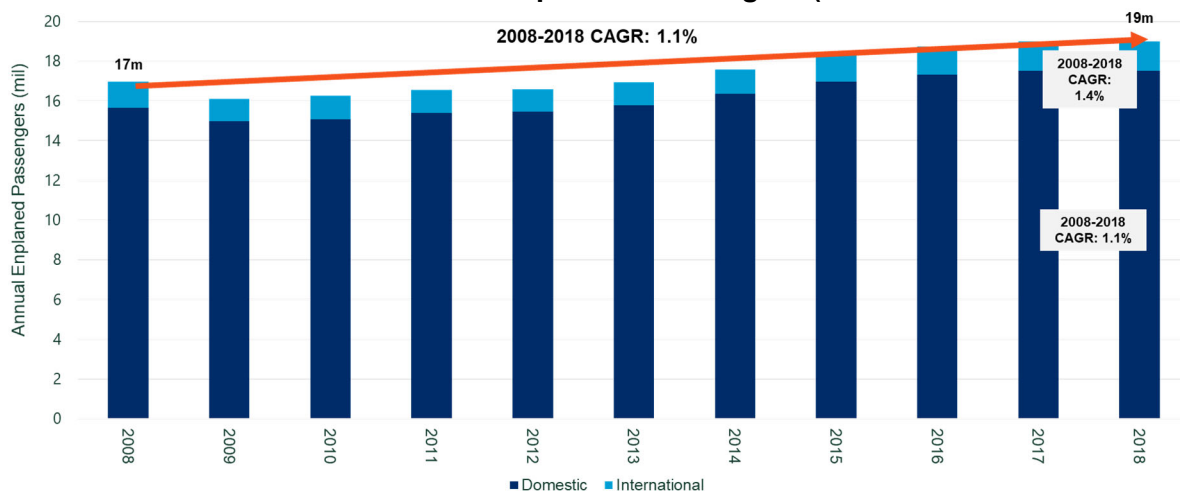
SOURCES: U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; MAC Activity Reports.

### 2.2.2.3 Domestic Versus International

**Exhibit 2-3** presents enplaned passenger growth during the period 2008 to 2018, with passengers categorized as domestic or international based on the destination point of their nonstop flight from MSP. A portion of passengers shown as domestic may ultimately be on journeys to international points. During the period, the domestic share of nonstop passengers

remained constant at approximately 92%, albeit with modestly higher growth on international flight segments.

**Exhibit 2-3: MSP Historical Annual Enplaned Passengers (Domestic vs. International)**



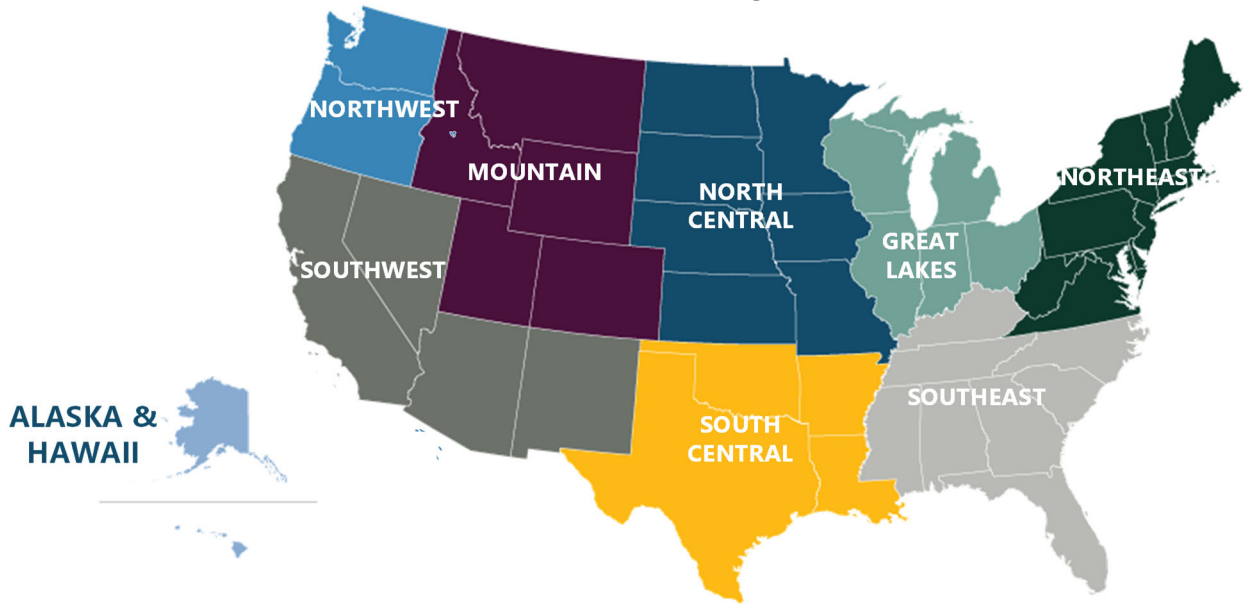
NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: U.S. Department of Transportation, T-100, 2019; MAC Activity Reports.

#### 2.2.2.4 Identification of Passenger Journeys Served

For analytical purposes, O&D and connecting passengers were subsequently grouped by passenger flow according to the region-to-region starting and ending points of their respective journeys. The O&D points for each passenger were placed into one of 19 regions (9 domestic U.S. regions and 10 international regions), as illustrated in **Exhibits 2-4** and **2-5**. In 2018, 84% of MSP passenger journeys were between domestic regions, while 16% of MSP passenger journeys involved travel to or from an international region.

**Table 2-1** lists the Airport’s passenger flows that experienced the greatest change between 2008 and 2018 including, where applicable, specific flows to or from MSP. Passenger declines reflect the reduced connecting percentage of passenger volumes served at the Airport following the merger of Delta and Northwest. The decline also reflects the increase of competition presented by other competing hubs and the growth of low-cost carriers (LCCs) offering new nonstop services to many passenger markets otherwise served on a connecting basis at MSP. Larger, growing flows reflect the Airport’s increased volume of O&D passengers served by Delta, Sun Country, and the Airport’s growing contingent of LCCs.

**Exhibit 2-4: Domestic Regions**



SOURCE: Ricondo & Associates, Inc., 2020.

**Exhibit 2-5: International Regions**



SOURCE: Ricondo & Associates, Inc., 2020.

**Table 2-1: Top Growing and Declining Passenger Flows**

Top Growing Passenger Flows 2008–2018			Top Declining Passenger Flows 2008–2018		
From	To	% of Gains	From	To	% of Losses
MSP	Southwest	15%	Great Lakes	Southwest	22%
MSP	Southeast	15%	North Central	Northeast	9%
MSP	Great Lakes	11%	Great Lakes	Northwest	8%
MSP	Northeast	9%	North Central	Southwest	7%
MSP	Mountain	8%	Great Lakes	Mountain	7%
MSP	South Central	7%	Canada	Southeast	6%
MSP	Europe	5%	Alaska and Hawaii	Great Lakes	5%
Northeast	Southwest	4%	Mountain	Northeast	4%
MSP	Northwest	4%	Alaska and Hawaii	Northeast	4%
Southeast	Southwest	3%	North Central	Northwest	3%
Total Top 10		81%	Total Top 10		76%

NOTE: Figures may not add due to rounding.

SOURCES: U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; MAC Activity Reports.

### 2.2.2.5 Airlines Serving the Airport

In 2018, 16 passenger airlines served the Airport: 5 foreign-flag airlines, 2 airlines (Delta and Sun Country) with a hub or primary base of operations at the Airport, and a mix of low-cost and full-service airlines. **Table 2-2** shows the passenger airlines and their shares of scheduled departing seat capacity since 2008.

Airline departing seat capacity at MSP decreased between 2008 and 2012, which was a common trend across the industry. During this period, the airline industry underwent significant changes, ultimately leading to improved overall financial performance after the Great Recession. These changes included consolidation among several airlines, enhanced airline partnerships to make more efficient use of resources and regional strengths, and a focus on revenue growth through higher fares rather than passenger volumes. From 2008 to 2018, Delta’s share of seat capacity at MSP declined approximately 10 percentage points, from 81% to 71%. This coincided with the period after the Delta/Northwest merger, when the consolidated airline subsequently reworked its overall route network. In addition, several LCCs commenced or increased service at the Airport during the period which coincided with growth for that airline segment industry wide.

**Table 2-2: MSP Historical Passenger Airline Scheduled Seat Shares**

Airline Type	Airline	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Domestic	Delta Air Lines	81.10%	78.80%	79.00%	78.10%	76.00%	74.00%	73.40%	72.40%	70.90%	69.90%	71.00%	
	Sun Country Airlines	4.00%	3.10%	3.00%	3.50%	3.90%	4.80%	5.30%	6.00%	6.20%	6.50%	6.20%	
	American Airlines	6.60%	6.70%	6.10%	6.20%	6.70%	6.70%	6.20%	6.20%	6.70%	6.60%	6.00%	
	Southwest Airlines	1.60%	3.60%	5.00%	5.60%	5.90%	6.10%	5.90%	5.50%	5.80%	5.90%	5.40%	
	United Airlines	5.00%	5.20%	4.60%	4.20%	4.40%	3.90%	3.80%	4.40%	4.60%	4.70%	4.20%	
	Spirit Airlines					0.70%	1.90%	3.00%	3.00%	3.50%	3.60%	3.30%	
	Frontier Airlines	1.40%	1.60%	1.40%	1.50%	1.00%	0.90%	1.20%	1.20%	0.90%	0.90%	1.30%	
	Alaska Airlines	0.10%	0.60%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.70%	0.90%	0.90%	
	JetBlue Airways											0.00%	0.50%
	Air Choice One											0.10%	0.00%
	Boutique Air										0.00%	0.00%	0.00%
	Bemidji Aviation	0.00%	0.00%	0.00%									
	Great Lakes Airlines				0.00%	0.60%	0.70%	0.10%	0.10%	0.00%			
	Subtotal		99.70%	99.80%	99.70%	99.60%	99.60%	99.40%	99.40%	99.30%	99.30%	99.10%	98.90%
International	Air Canada	0.10%	0.10%	0.20%	0.20%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.40%	
	Icelandair	0.20%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.20%	0.20%	0.30%	0.30%	
	KLM Royal Dutch Airlines										0.10%	0.20%	
	Air France						0.10%	0.10%	0.20%	0.20%	0.20%	0.20%	
	Condor									0.10%	0.10%	0.10%	
	Subtotal		0.30%	0.20%	0.30%	0.40%	0.40%	0.60%	0.50%	0.60%	0.70%	0.90%	1.10%
	Departing Seats (mil)		21.3	20.6	20.3	20.1	19.9	20.5	20.6	21.1	22	22.5	22.3

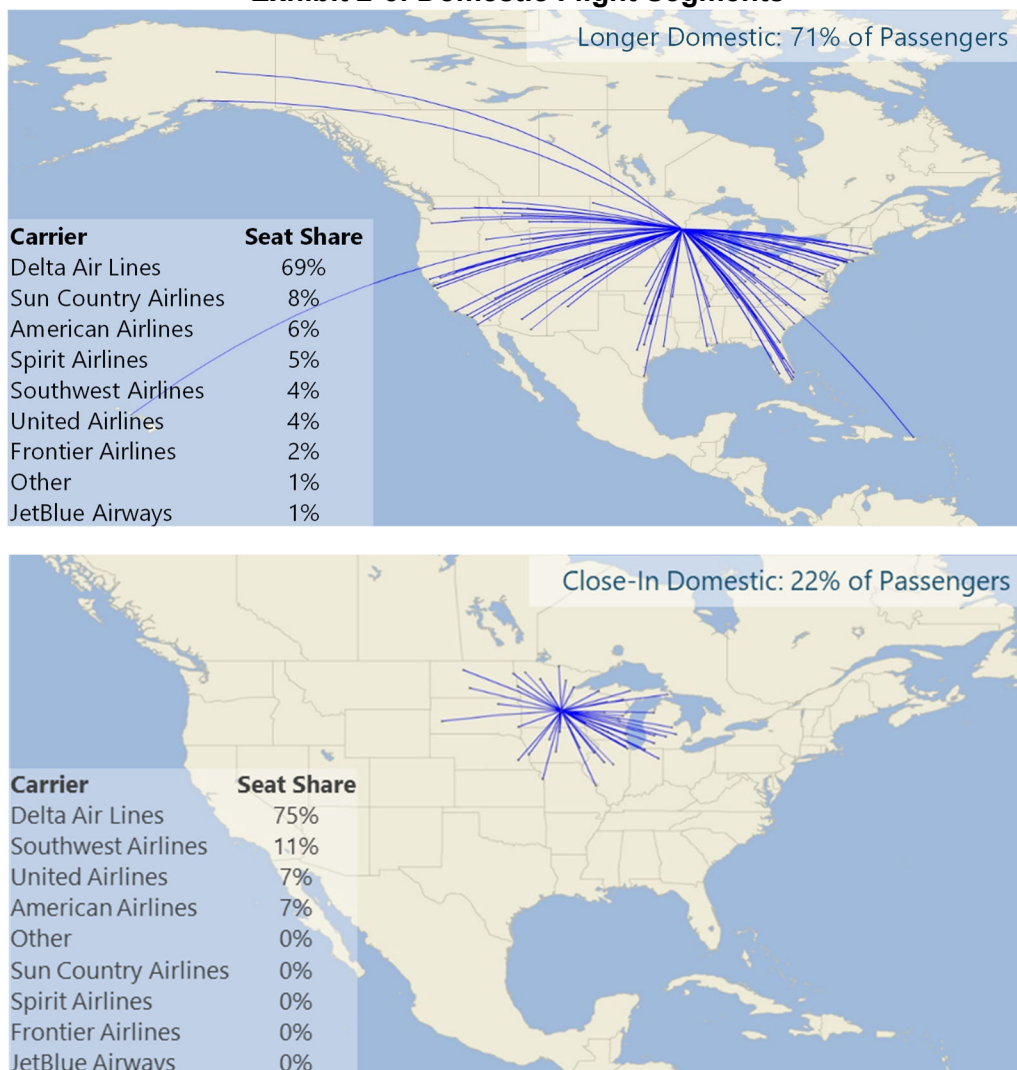
NOTE: Figures may not add due to rounding.  
SOURCE: Cirium, 2019 (schedule data).

### 2.2.2.6 Flight Segments Used by Passengers

The Airport’s 38 million passengers in 2018 traveled to, from, or connected in MSP through a network of flights served by its various airlines. For analytical purposes, nonstop passenger airline flight segments served at MSP in 2018 were grouped into four categories:

- Domestic Flight Segments (Two categories as shown in **Exhibit 2-6**)
  - Longer domestic flights to U.S. destinations beyond 500 miles of MSP: 71% of enplaned passengers flew on longer domestic flights, with Delta providing 69% of the available seats.
  - Close-in domestic flights to U.S. destinations within 500 miles of MSP: 22% of enplaned passengers flew on close-in domestic segments, with Delta providing 75% of the available seats.

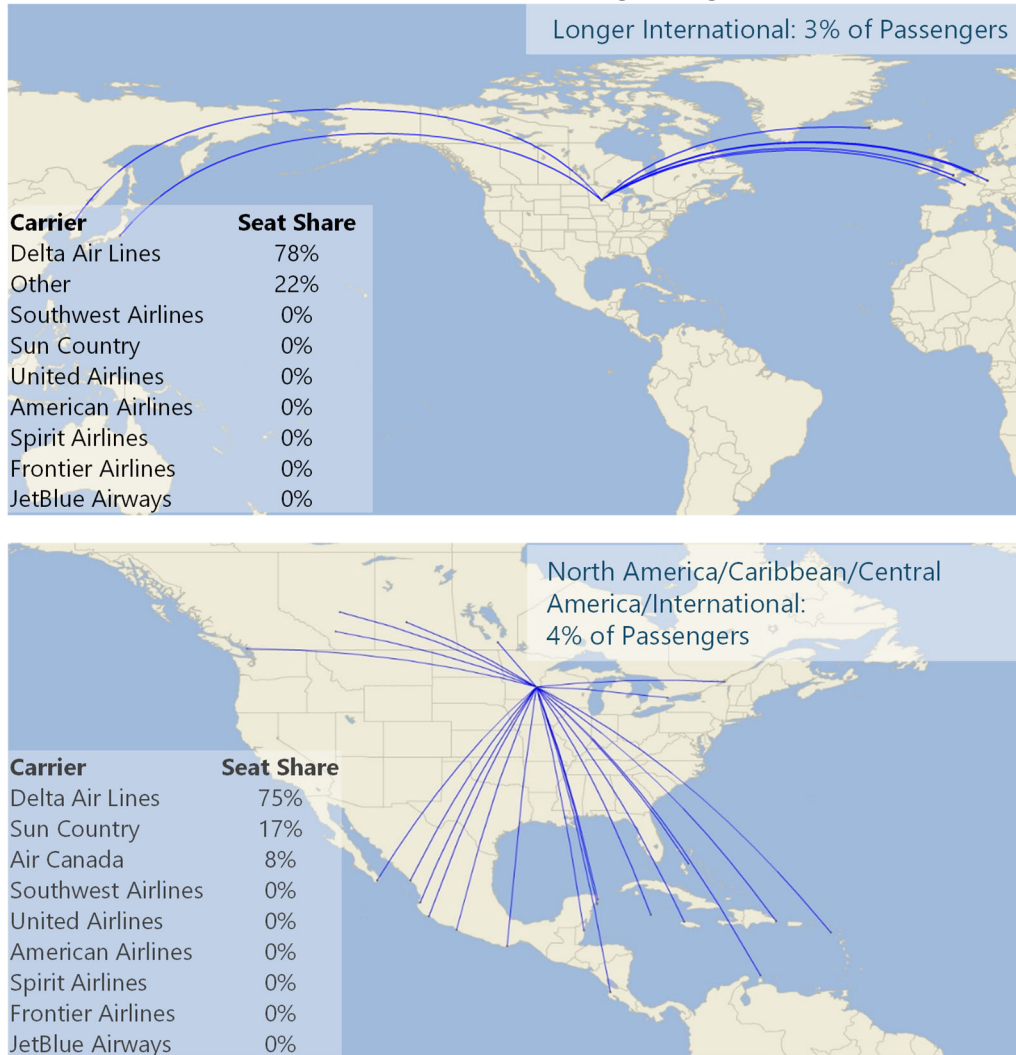
**Exhibit 2-6: Domestic Flight Segments**



SOURCES: Cirium, 2019 (schedule data); U.S. Department of Transportation, T-100, 2019.

- International Flight Segments (Two categories as shown in **Exhibit 2-7**)
  - Longer international flights from MSP to points in Asia and Europe: 3% of enplaned passengers flew on these services, with Delta providing 78% of available seats.
  - North American/Caribbean/Central American flights from MSP (closer-in international points): 4% of enplaned passengers flew on these services, with Delta providing 75% of available seats.

**Exhibit 2-7: International Flight Segments**

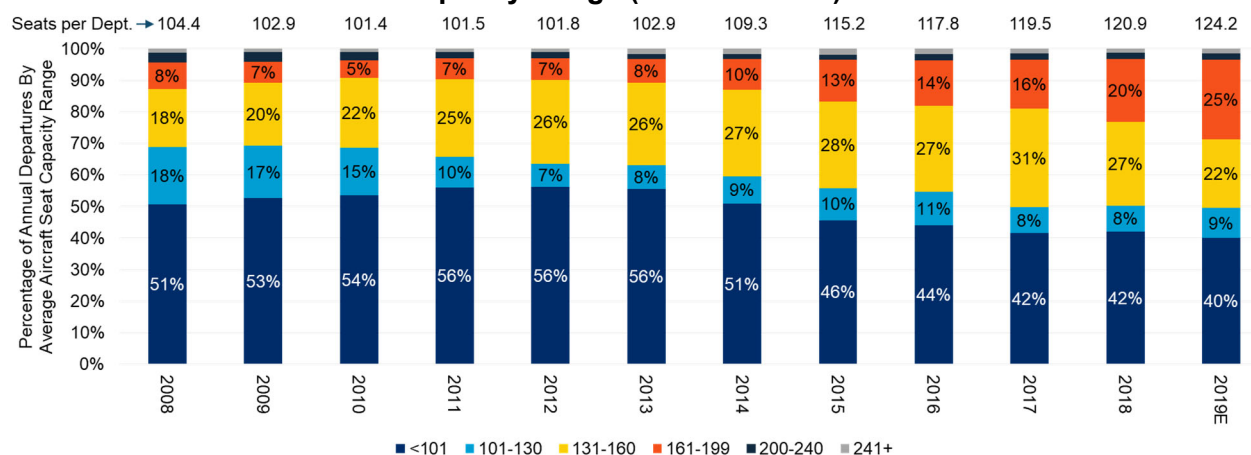


SOURCES: Cirium, 2019 (schedule data); U.S. Department of Transportation, T-100, 2019.

### 2.2.2.7 Passenger Aircraft Fleet Evolution

To efficiently serve the flight segments previously identified, the Airport's airlines have used a variety of aircraft of different sizes and operational capabilities, ranging from an 8-seat turboprop Cessna Caravan to a 296-seat Boeing 777-200. Since 2008, the average seat capacity per aircraft has been increasing, from approximately 104 seats in 2008 to approximately 124 seats in 2019 (as scheduled). During this period, airlines reduced their use of smaller aircraft, such as the 50-seat Canadair CRJ, and smaller narrowbody aircraft, such as the McDonnell Douglas MD-88, and increased flying in larger aircraft, including the Boeing 737-900 and Airbus A321. In addition, the airlines added seat capacity in several aircraft types. **Exhibit 2-8** illustrates the percentage of the Airport's annual scheduled passenger airline aircraft operations by ranges of average seat capacity.

**Exhibit 2-8: MSP Historical Percentage of Passenger Aircraft Operations by Seat Capacity Range (As Scheduled)**



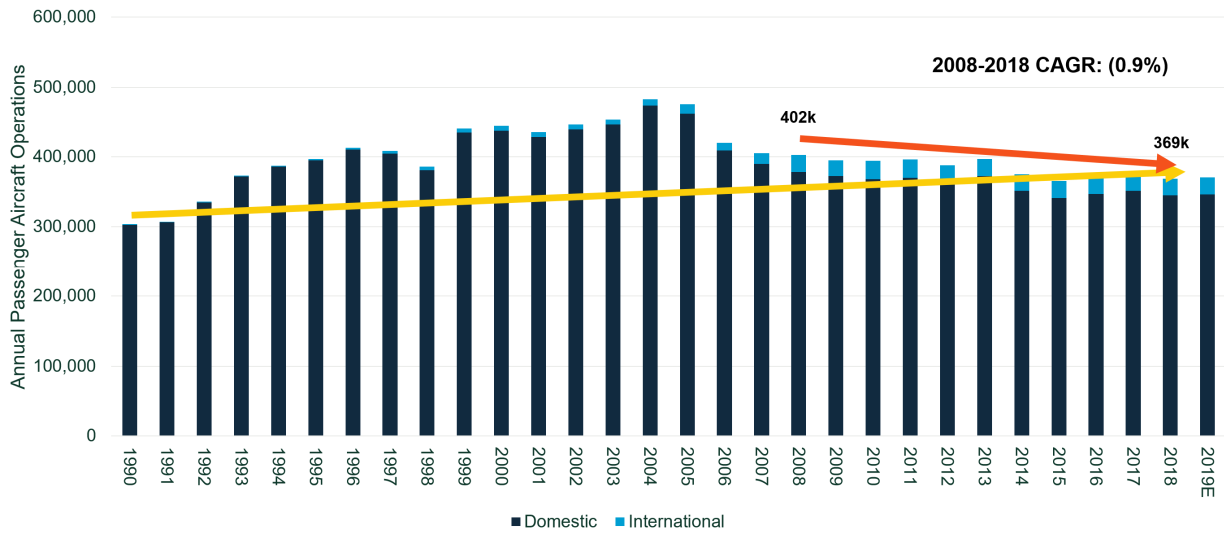
NOTE: 2019E – Estimated 2019 Values  
SOURCE: Cirium, 2019 (schedule data).

### 2.2.2.8 Passenger Aircraft Operations and Seat Capacity Levels

**Exhibit 2-9** illustrates the Airport's annual passenger aircraft operations since 1990, split by international and domestic nonstop flight segments. Passenger aircraft operations peaked in 2004 and generally declined in the years following. Beginning in 2008, annual passenger aircraft operations declined at a rate of 0.9% per year. Despite the decrease in passenger aircraft operations since 2008, total airline seat capacity grew at a CAGR of 0.7% in the years between 2008 and 2019 (as scheduled), due to the increase in average aircraft seat capacity, as illustrated in **Exhibit 2-10**.



**Exhibit 2-9: MSP Passenger Aircraft Operations Since 1990**

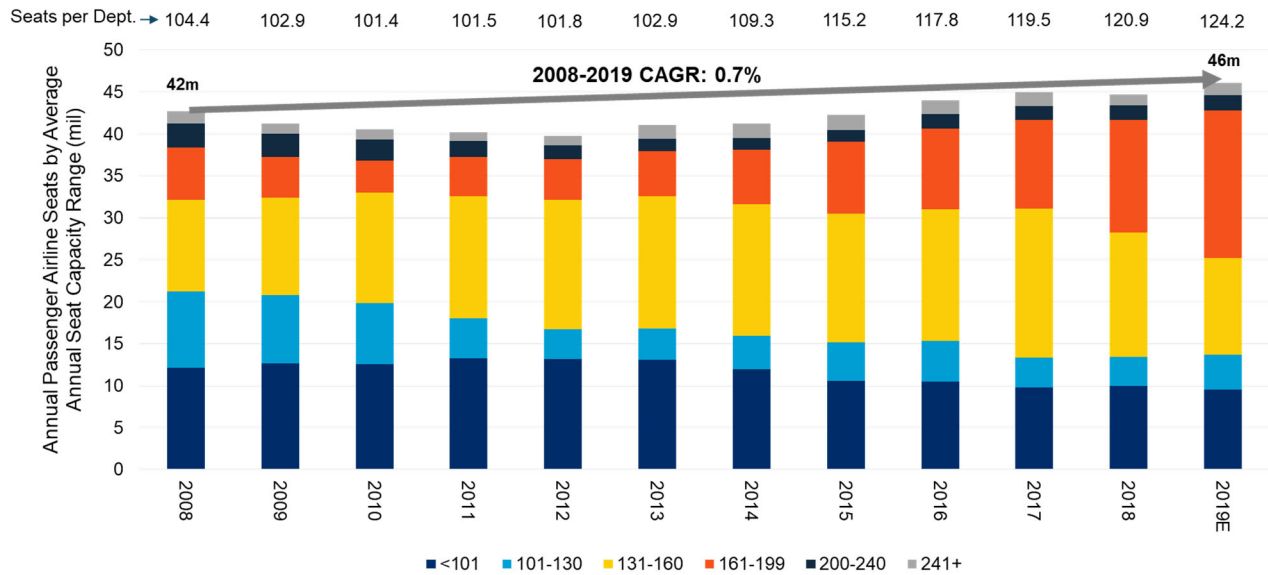


NOTES: 2019E – Estimated 2019 Values

Prior to 2008, some Canadian operations were counted as domestic. The 2019E data are based on scheduled operations as of March 2019.

SOURCES: MAC Activity Reports; Cirium, 2019 (schedule data).

**Exhibit 2-10: MSP Historical Passenger Aircraft Seat Capacity**



NOTES: CAGR – Compound Annual Growth Rate; 2019E – Estimated 2019 Values

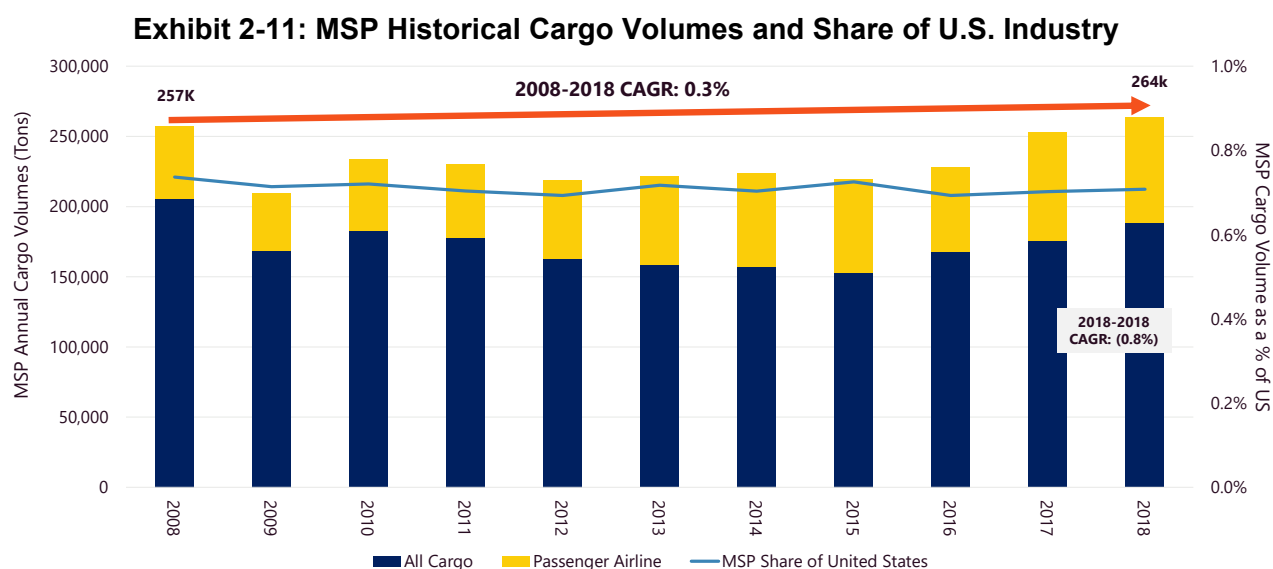
SOURCE: Cirium, 2019 (schedule data).

## 2.2.3 Review of Historical Non-Passenger Aircraft Operations

The following subsections describe the Airport’s historical non-passenger airline activity, including air cargo, GA and air taxi, and military.

### 2.2.3.1 Air Cargo Volumes and Operations

MSP has maintained a relatively constant share of air cargo volumes relative to U.S. industry levels since 2008, at approximately 0.7%, as measured by revenue cargo tons. Between 2008 and 2018, cargo volumes at MSP grew at a CAGR of 0.3%. However, a significant portion of that cargo volume growth was attributable to the cargo carried by passenger airline aircraft. Cargo volume growth carried by dedicated cargo aircraft decreased during that period at an annual rate of 0.8%. **Exhibit 2-11** illustrates the Airport’s historical air cargo volumes and the split between passenger and dedicated air cargo carriers along with the Airport’s historical share of U.S. cargo volumes.



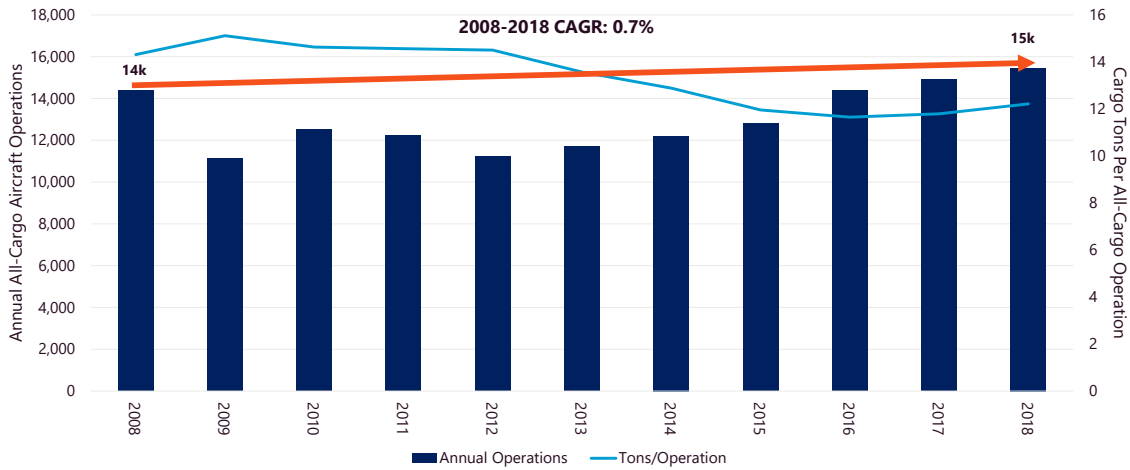
NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019.

In 2018, cargo volumes flown by dedicated air cargo carriers were served by a fleet spanning a wide payload range, from a Cessna Caravan to a Boeing 747-400. Between 2008 and 2018, the average cargo volume carried per operation declined, as illustrated in **Exhibit 2-12**. FedEx and UPS, for example, increased their use of lower payload Boeing 757 aircraft in place of higher capacity Airbus A300 and McDonnell Douglas DC-10 aircraft. Thus, despite the decrease in cargo volumes carried by dedicated air cargo carriers, air cargo operations increased at a CAGR of 0.7%.

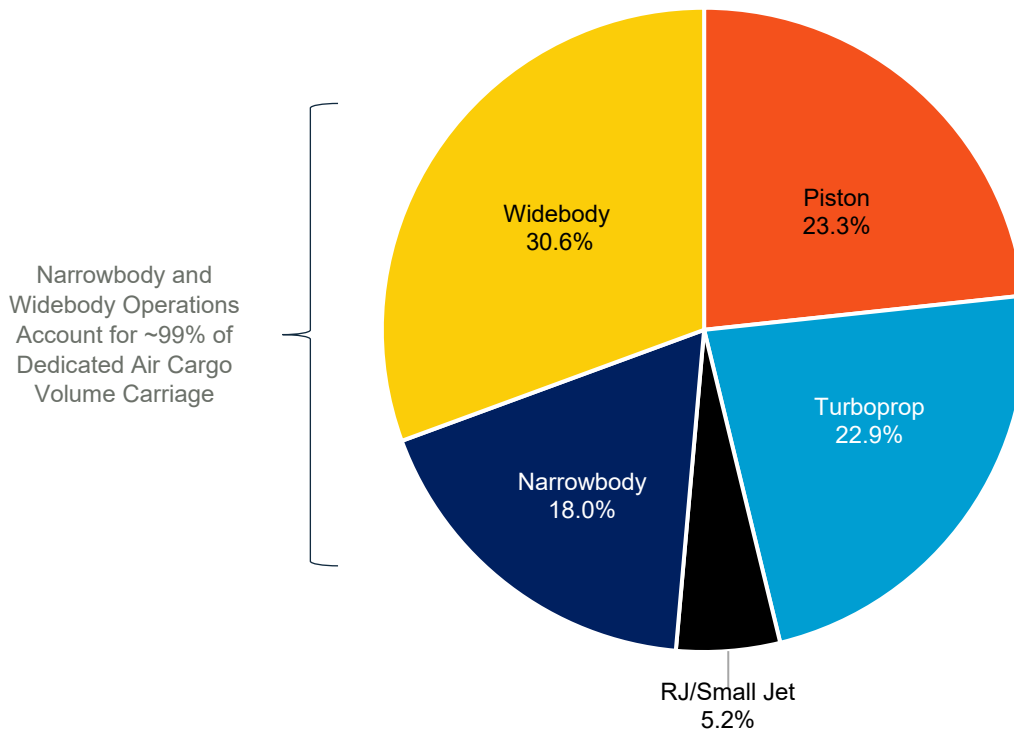
In 2018, nearly 99% of dedicated air cargo carrier volume was carried by narrowbody and widebody aircraft, which together accounted for nearly 50% of dedicated air cargo operations, as illustrated in **Exhibit 2-13**.

**Exhibit 2-12: MSP Historical All-Cargo Aircraft Operations and Per-Aircraft Volume Trends**



NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019.

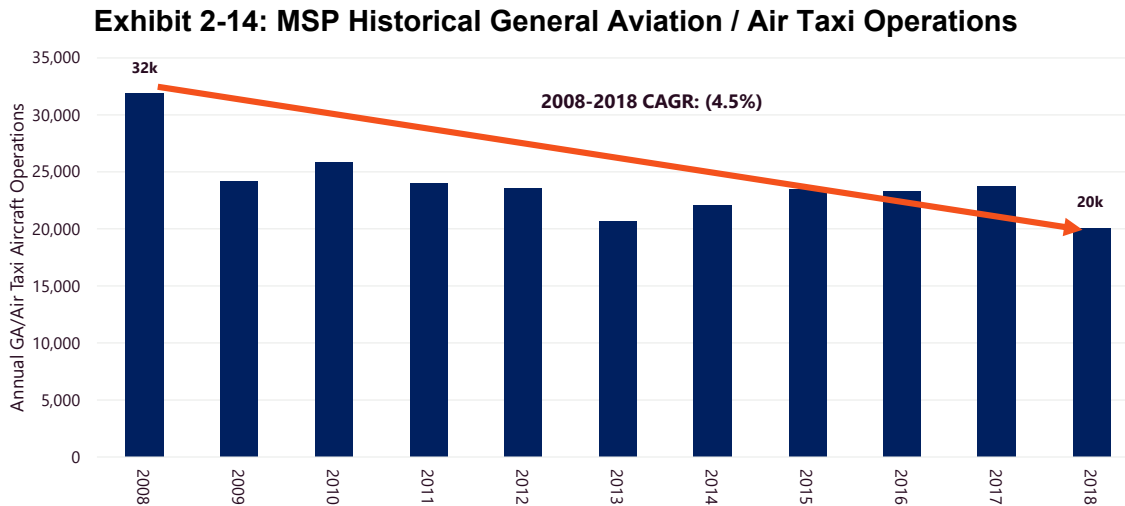
**Exhibit 2-13: Share of 2018 All-Cargo Operations by Aircraft Type**



NOTE: RJ – Regional Jet  
SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019.

### 2.2.3.2 General Aviation and Air Taxi

As illustrated in **Exhibit 2-14**, GA/air taxi activity at MSP decreased at an annual rate of 4.5% between 2008 and 2018. A significant portion of this category’s decline came in 2009, due, in large part, to the impact of the Great Recession, a trend experienced nationwide. After 2009, the Airport’s annual GA and air taxi activity remained between approximately 20,000 and 26,000 operations.

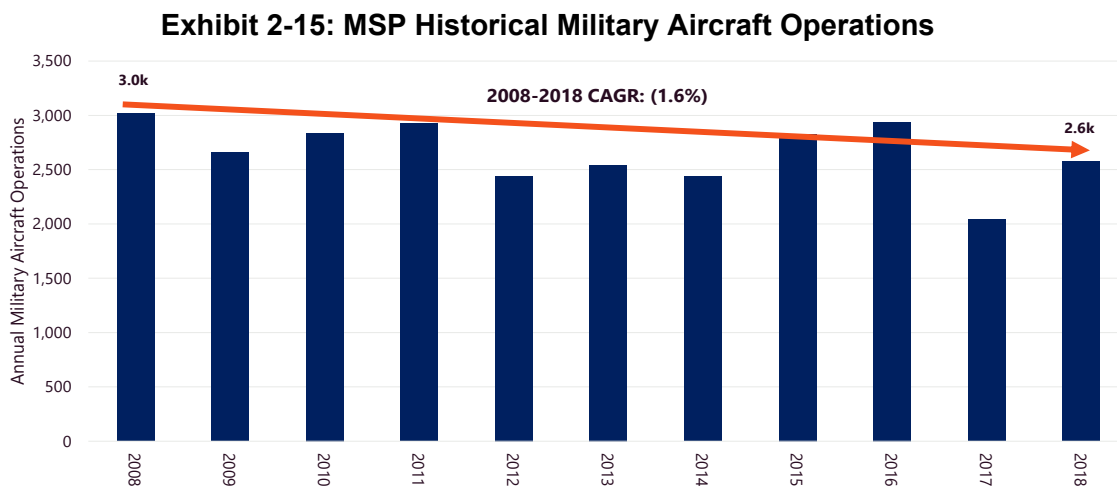


NOTES: GA – General Aviation; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019.

### 2.2.3.3 Military

Military activity constitutes less than 1% of aircraft operations at MSP. The Airport is home to the Minnesota Air National Guard (MNANG) 133rd Airlift Wing, which operates a fleet of C-130 cargo aircraft. Between 2008 and 2018, military operations declined at a rate of 1.6% per year, as illustrated in **Exhibit 2-15**.

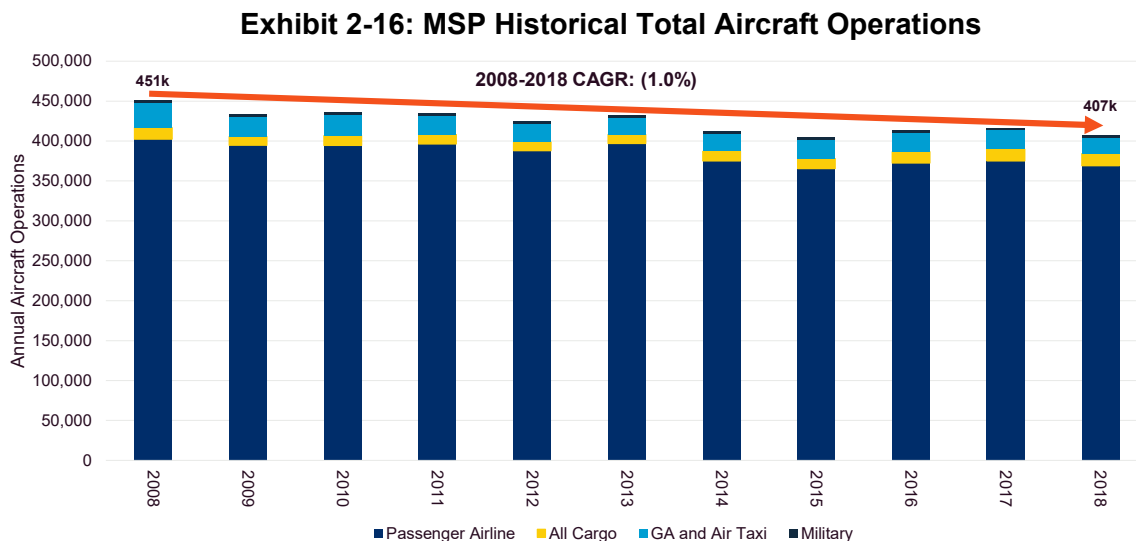


NOTE: CAGR – Compound Annual Growth Rate

SOURCE: U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019.

## 2.2.4 Total Aircraft Operations

**Exhibit 2-16** illustrates the total historical aircraft operations at MSP. Total operations declined at a CAGR of 1.0% during the period shown, due primarily to the decline in passenger airline operations.



NOTES: GA – General Aviation; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019.

## 2.3 FORECAST OF UNDERLYING PASSENGER DEMAND AND FACTORS SHAPING FUTURE PASSENGER ACTIVITY

### 2.3.1 Determination of Underlying Demand

The individual region-to-region passenger flows discussed earlier in this document were analyzed alongside socioeconomic data to identify possible predictive statistical relationships between socioeconomic growth and the growth of passenger volumes. This resulted in a series of statistical equations (regression models) that enabled the forecasting of passenger demand in conjunction with independent projections of several socioeconomic metrics.

To inform the statistical analysis of O&D passenger flows, socioeconomic data were sourced from the Met Council (data for the 7-county region surrounding MSP) and Woods & Poole (data for the 21-county Minneapolis–Saint Paul combined statistical area and the greater United States). **Table 2-3** summarizes the data from these sources and **Exhibit 2-17** shows the counties included in the two sources of regional statistical data. These two sources provide independent projections of several common socioeconomic statistics for the MSP region that were used in the development of forecasts of underlying demand. Woods & Poole provides data for the United States as well. The regional projections are directionally similar; however, the Met Council’s outlook on regional personal income and gross domestic product (GDP) growth is more aggressive than that provided by Woods & Poole. Woods & Poole is more aggressive in its projection of regional population and non-farm employment growth.

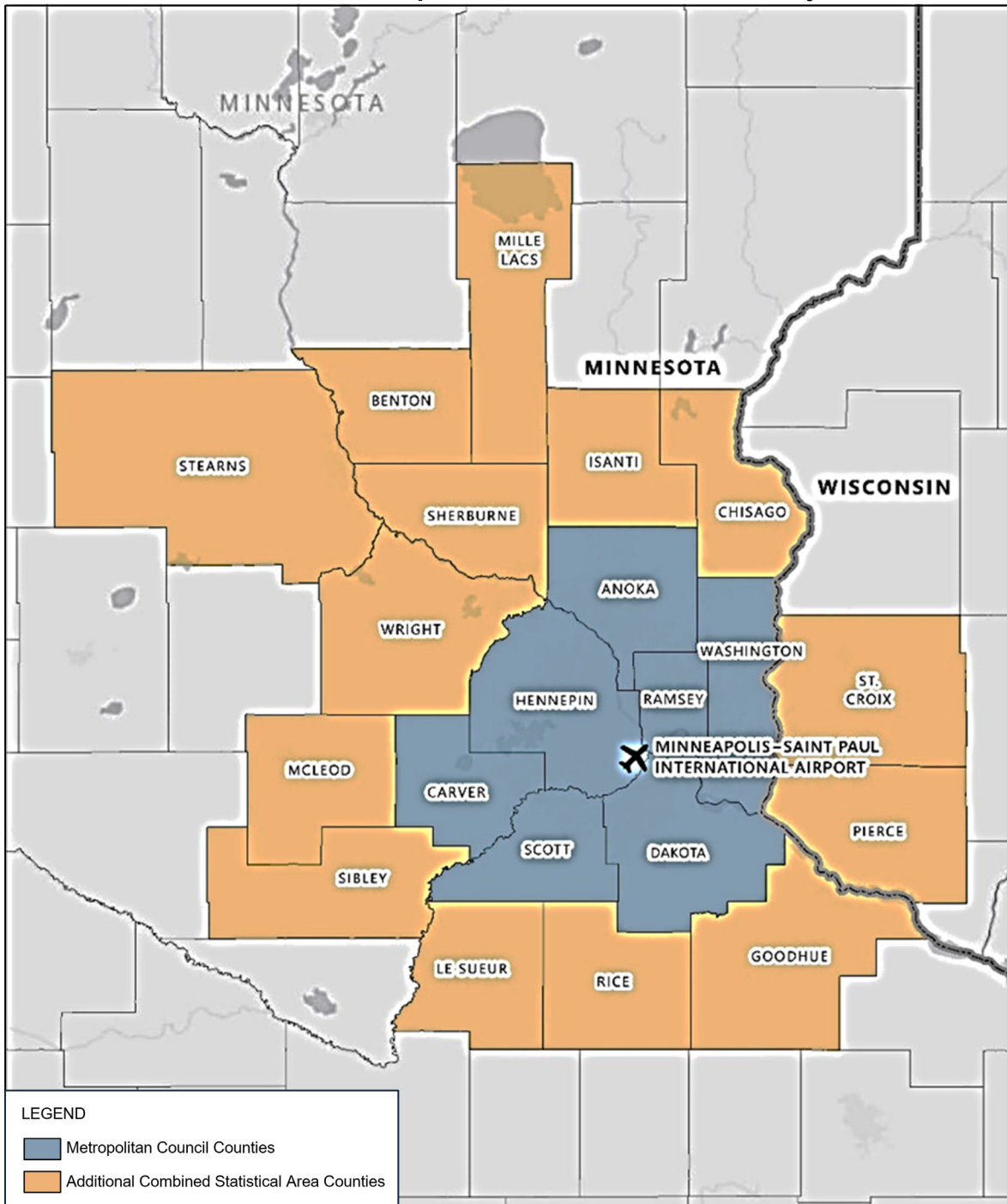
**Table 2-3: Comparative Socioeconomic Projections (20-Year CAGR)**

Socioeconomic Value	Area	Woods & Poole Economics, Inc.	Metropolitan Council
<b>Population</b>	U.S.	0.90%	
	Region	1.00%	0.80%
<b>Non-Farm Employment</b>	U.S.	1.20%	
	Region	1.30%	0.60%
<b>Non-Farm Earnings</b>	U.S.	1.70%	
	Region	1.70%	
<b>Personal Income</b>	U.S.	1.80%	
	Region	1.90%	2.20%
<b>Net Earnings</b>	U.S.	1.70%	
	Region	1.80%	
<b>Per-Capita Personal Income</b>	U.S.	0.90%	
	Region	0.80%	
<b>Gross Domestic Product</b>	U.S.	1.60%	
	Region	1.70%	2.20%

NOTE: CAGR – Compound Annual Growth Rate

SOURCES: Metropolitan Council, 2017; Woods & Poole Economics, Inc., 2019.

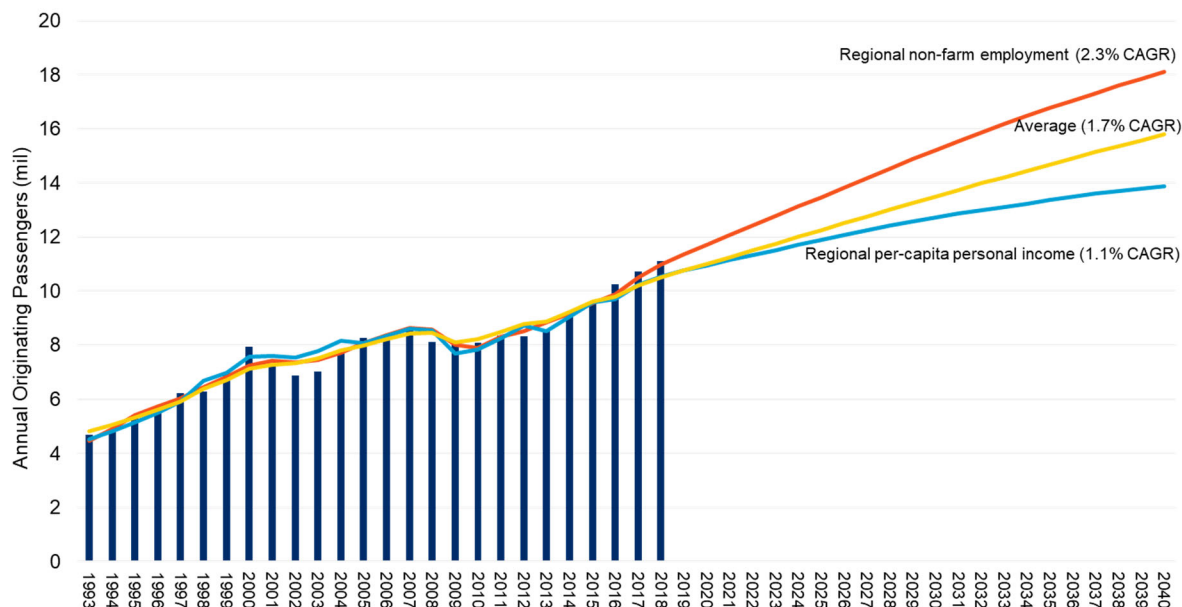
**Exhibit 2-17: Counties Represented in Socioeconomic Projections**



SOURCES: Metropolitan Council, 2019; Woods & Poole Economics, Inc., 2019.

Statistical analysis of O&D passenger flows incorporated a blend of regional and national socioeconomic inputs and generated a forecast range of total O&D passenger growth between 2018 and 2040, from a high of 2.3% per year to a low of 1.1% per year, and an average of 1.7%, as illustrated in **Exhibit 2-18**.

**Exhibit 2-18: Forecast Range of Origin and Destination Demand Growth Generated by Socioeconomic Drivers**



NOTE: CAGR – Compound Annual Growth Rate

SOURCES: BTS RITA data; Metropolitan Council, 2017; Woods & Poole Economics, Inc., 2019; Ricondo & Associates, Inc., 2019 (analysis).

Connecting passenger demand growth was modeled using a similar approach to that used for O&D passengers. However, because MSP competes for these passengers with other connecting hubs and nonstop services, the total of all passengers in each flow (regardless of historical routing) was modeled to size the market potential that might be served by the Airport, with assumptions subsequently made on the allocation of passengers among competing hubs and nonstop services.

For several region-to-region passenger flows, statistical modeling was not a valid option alone for predicting future growth due to a low sample size or a lack of a strong statistical relationship between passenger volumes and socioeconomic factors. In those cases, data sets were aggregated where possible and estimated using a broader statistical relationship (for example, if a passenger flow from Asia to a particular region in the United States did not have a strong statistical relationship with socioeconomic factors, then that flow might have been blended with all Asia-to-U.S. activity for a stronger statistical model). Additionally, other forecasts developed by the FAA and other industry groups (for example, aircraft manufacturers) were referenced to help validate predictions of future growth.

This process produced a forecast of underlying demand at a more granular level than traditionally provided. Activity forecasts are usually conducted at a level of detail that estimates growth at four broad levels: domestic and international O&D passengers, and domestic and international connections. For this effort, forecasts at the passenger-flow level provided details that were helpful for determining the destinations and timings of future flight segments, providing more robust data to inform the airport planning process.



## 2.3.2 Factors Shaping Future Activity at the Airport

Several factors were examined to help estimate the portion of underlying demand that might materialize as future activity at MSP, considering that not all passenger demand growth would necessarily be accommodated by the airlines serving the Airport.

### 2.3.2.1 Supportability of Growth by Airlines Serving the Airport

In addition to forecasts of underlying passenger demand, individual passengers were examined for the value they contribute to the airlines that carry them, including estimates of the revenue they provide and the cost the airlines must expend to serve them. Each passenger was categorized as one of the following: driving capacity growth by airlines (the airline would add capacity to accommodate future demand growth of that passenger type), or as supplemental (airlines would accommodate those passenger types provided the seat capacity exists to carry those passengers without adding additional seats). For forecasting purposes, the number of available seats per capacity-driving passenger type was estimated based on historical ratios, which resulted in the number of available seats capable of accommodating supplemental passengers, considering assumptions of load factors (the percentage of available seats the airlines would choose to fill with passengers).

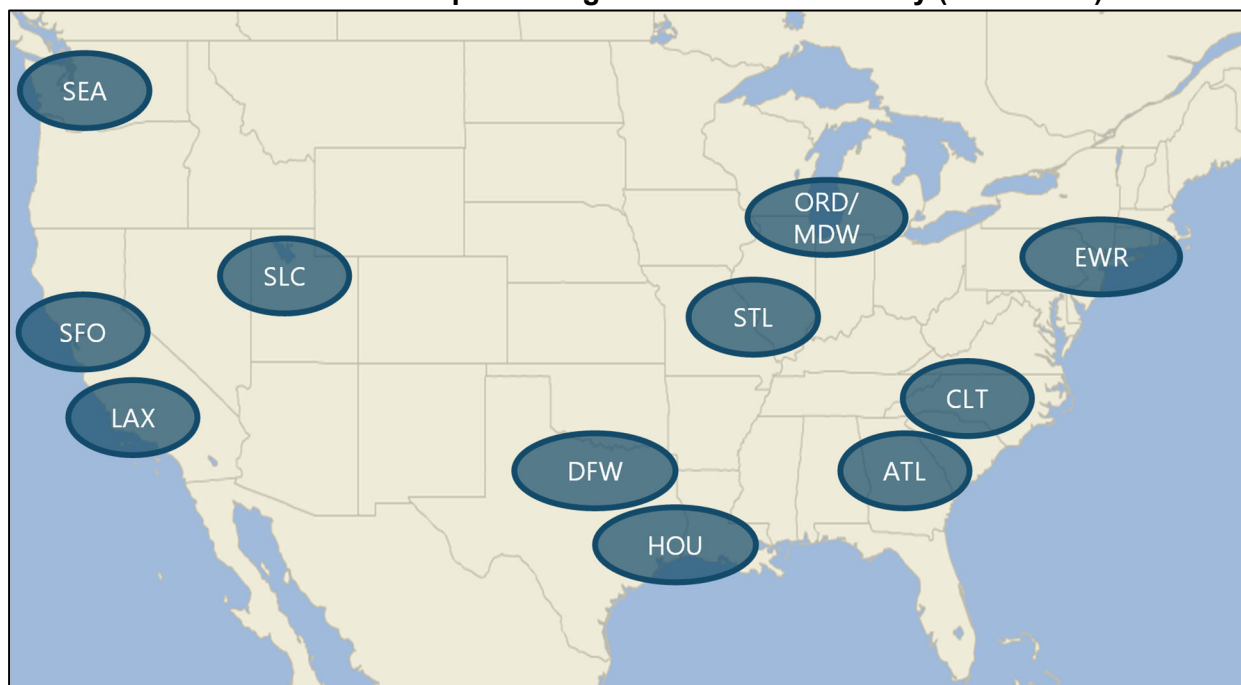
### 2.3.2.2 Leakage Considerations for Origin and Destination and Connecting Passengers

Leakage refers to the potential for passengers to choose among competing airports for their travel. Passenger leakage was examined for all passenger types, with analysis of the potential for these passengers to either leak to or leak away from the Airport. O&D passengers were examined for possible leakage to or from other area airports, while connecting passengers were evaluated for their likelihood to choose among MSP and other hub airports as a connecting point on their journeys. Regional commercial airports within a 4-hour drive of MSP were examined for potential competition with MSP for O&D passengers. Various analyses, including an analysis of O&D passenger share relative to income-weighted population share among these airports, suggested that any leakage among the airports was to the benefit of MSP.

MSP competes for connecting passengers with a group of domestic and international hub airports. With the merger of Northwest and Delta in 2008 and their subsequent network optimization, a decline of connecting passengers occurred at MSP in the last decade. Several U.S. hubs were the primary beneficiaries of leakage from MSP. **Exhibit 2-19** illustrates those airports. Since 2008, domestic connecting passengers traveling through these hubs increased by 16% in total but declined at MSP.

Several aviation industry trends or expected developments at competing hubs could have an impact on the Airport's future connecting demand levels, both positively and negatively, as displayed in **Table 2-4**.

**Exhibit 2-19: Hubs Experiencing Increased Connectivity (2008–2018)**



NOTES: ATL – Hartsfield-Jackson Atlanta International Airport, CLT – Charlotte Douglas International Airport, DFW – Dallas/Fort Worth International Airport, EWR – Newark Liberty International Airport, HOU – William P. Hobby International Airport, LAX – Los Angeles International Airport, MDW – Chicago Midway International Airport, ORD – Chicago O’Hare International Airport, SEA – Seattle-Tacoma International Airport, SFO – San Francisco International Airport, SLC- Salt Lake City International Airport, STL – St. Louis Lambert International Airport.

SOURCE: U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019 (domestic itineraries).

**Table 2-4: Impacts of Industry Trends and Development**

Negative Impact	Positive Impact
Gates will be added at Chicago O’Hare International Airport, which could increase airline capacity competing with MSP.	Chicago Midway International Airport is becoming full and may not be able to sustain growth in connecting passengers.
Ultra-low-cost carriers are growing and may overfly MSP.	Delta Air Lines’ growth at Seattle-Tacoma International Airport has slowed, reducing the growth of competing flights.
Canadian carriers are offering connections between the United States and international points at Canadian airports.	

SOURCE: Ricondo & Associates, Inc., 2019.

**2.3.2.3 Primary Assumptions Underpinning the Forecasts**

The assumptions for the forecasts are based on input from airline and Airport officials, previous studies, relevant literature, and professional experience. Forecasting is not an exact science, and departures from projected levels in the local and national economies and airline business environment may have a significant effect on the aviation activity forecasts presented herein. The forecasts should be periodically compared with actual Airport activity levels, and Airport plans and policies should be adjusted accordingly. The 2040 LTP forecasts incorporated a set of assumptions surrounding the factors previously noted that could shape demand growth at MSP through 2040. The primary assumptions are the following:

- Projections of socioeconomic variables (e.g., GDP growth, personal income, population) will materialize as presented by Woods & Poole and the Met Council and will not be subject to major shocks.
- The statistical relationships identified between passenger flows and socioeconomic variables will remain intact through the forecast period.
- Airlines will continue to seek a level of profitability similar to that achieved in recent years; airfares and airline costs will grow in line with inflation.
- MSP will continue to garner a similar share of connecting passenger demand in the passenger flows it has experienced in the last year; connecting passenger reductions due to the Northwest/Delta merger have fully ended.
- Airlines will increase capacity to accommodate supportable demand growth and will accommodate others if capacity exists, assuming reasonable load factors.

### 2.3.3 Enplaned Passenger Forecast Results

**Exhibit 2-20** presents the forecast of enplaned passengers split by O&D versus connecting journeys, while **Exhibit 2-21** presents the forecast of enplaned passengers split by domestic and international flight segments (based on the nonstop destination from MSP). Total passenger growth is forecast to grow at a CAGR of 1.8% between 2018 and 2040, from approximately 19 million enplaned passengers to approximately 28 million. Connecting passengers are expected to grow at a faster rate than O&D passengers (2.0% CAGR versus 1.7% CAGR, respectively). This is due, in part, to a higher forecast of U.S.–international passenger flows overall for the industry, many of which use the Airport on a connecting basis. Further indication of the influence of international passenger growth is illustrated in **Exhibit 2-21**, which shows international enplaned passengers are expected to grow at a CAGR of 2.7%, versus 1.7% for domestic enplaned passengers. Components of growth by passenger journey type are detailed in **Table 2-5**, which shows international passengers, and particularly those on connecting journeys at MSP, are forecast to grow more rapidly than domestic passenger types.

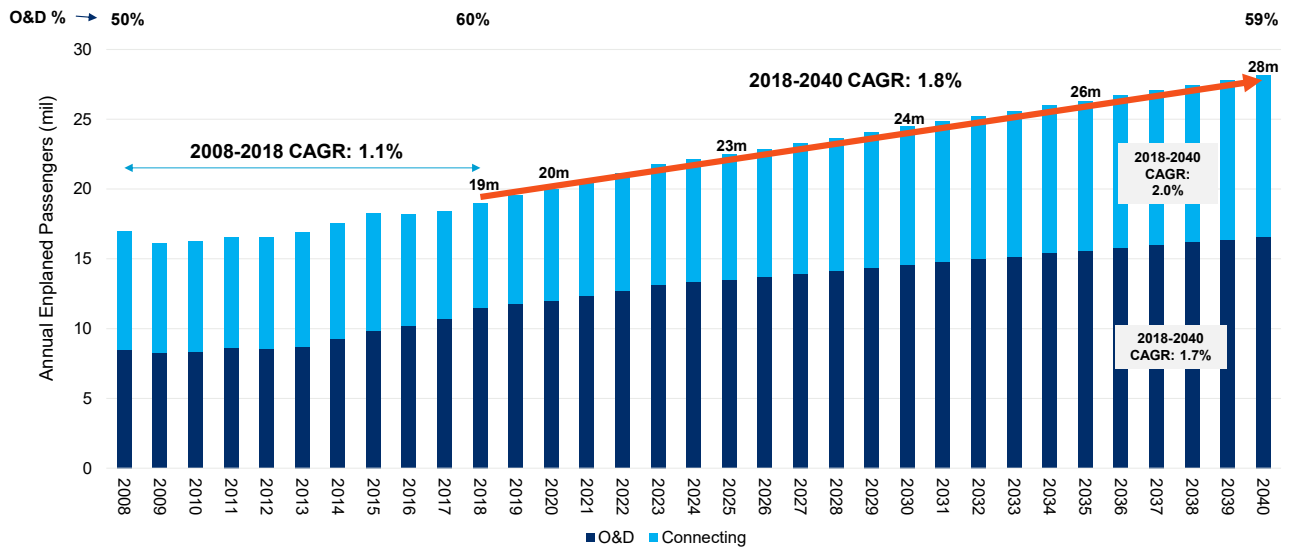
**Table 2-5: Forecast of Total Growth by Passenger Type (2018–2040)**

Passenger Journey Type	Share of 2018 Passengers	Forecast Increase 2018–2040
Domestic O&D	53%	36%
Domestic Connection	32%	38%
International O&D	7%	58%
International Connection	8%	68%

NOTE: O&D – Origin and Destination

SOURCES: U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; Ricondo & Associates, Inc., 2019 (forecast).

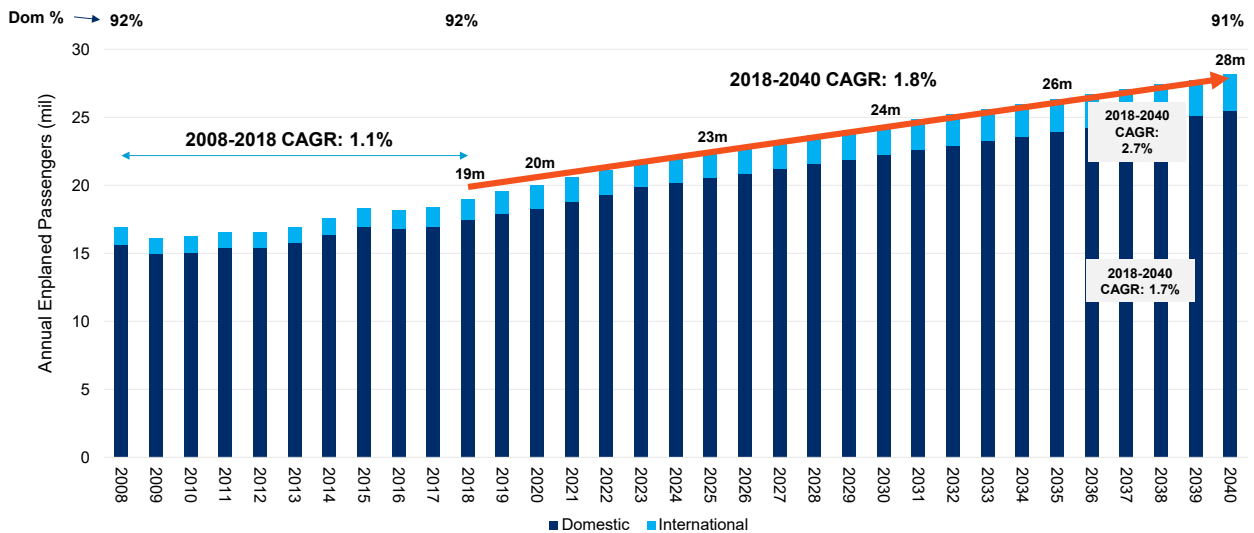
**Exhibit 2-20: Forecast of Enplaned Passengers (O&D vs. Connecting)**



NOTES: CAGR – Compound Annual Growth Rate; O&D – Origin and Destination

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; Ricondo & Associates, Inc., 2019 (forecast).

**Exhibit 2-21: Forecast of Enplaned Passengers (Domestic vs. International)**



NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecast).

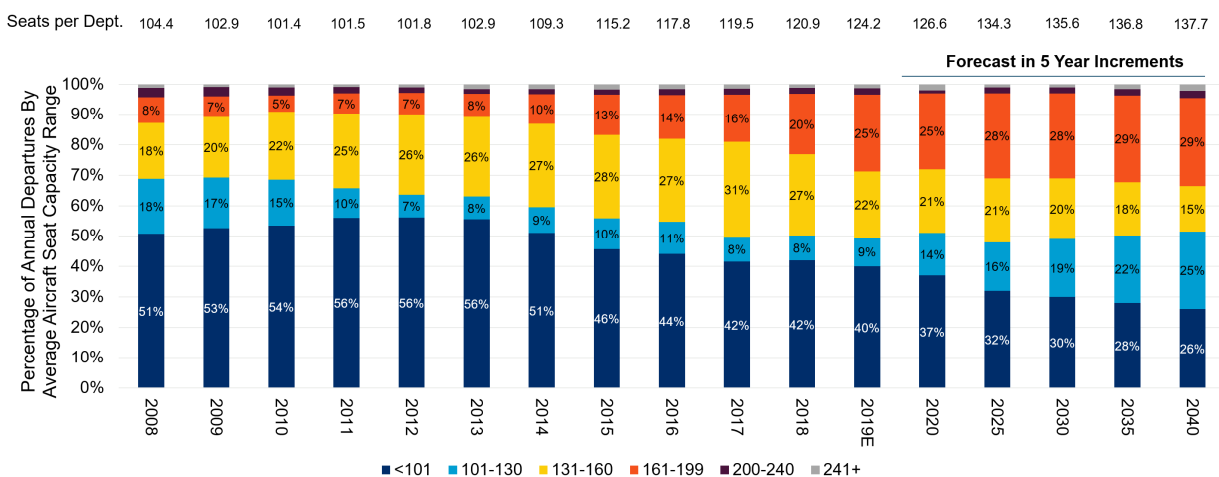
### 2.3.4 Passenger Aircraft Operations Forecast

The forecast of passenger airline operations was developed using the enplaned passenger forecast and an analysis of airline schedule completion rates, load factors, and published and estimated airline fleet plans. Long-term passenger growth was forecast to be accommodated primarily through a combination of higher average seats per departure and growth in operations to both existing and new markets.

#### 2.3.4.1 Future Fleet

The passenger airline fleet mix was informed by published airline fleet plans, future aircraft orders, and expected retirements of certain aircraft. In general, it is expected that the average aircraft size at MSP will continue to grow over the forecast period, as airlines continue to implement up gauging throughout their networks. **Exhibit 2-22** presents the forecast passenger airline fleet mix by aircraft seat capacity range, as considered in the forecast (note: the values between 2008 and 2019E are shown as scheduled).

**Exhibit 2-22: Forecast Percentage of Passenger Aircraft Fleet by Aircraft Seat Capacity Range**



NOTE: 2019E – Estimated 2019 Values

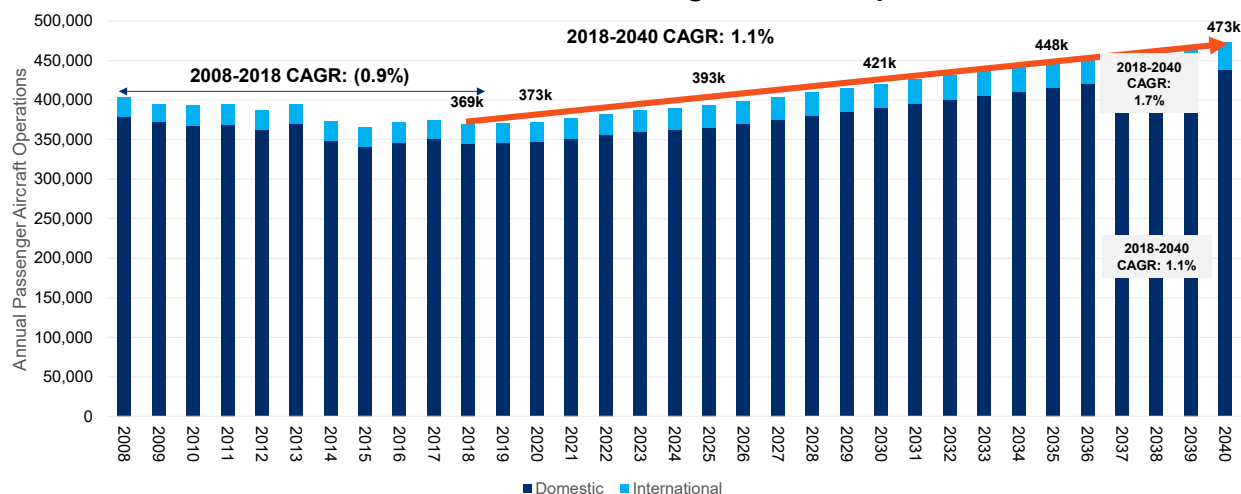
SOURCES: Cirium, 2019 (schedule data); Ricondo & Associates, Inc., 2019 (forecast).

Average seats per aircraft are forecast to increase from approximately 121 in 2018 to approximately 138 in 2040, with much of that growth occurring between 2018 and 2025. Over the forecast period, an exchange of flying in smaller capacity aircraft types to larger types is expected to occur as airlines up gauge flying from regional jet aircraft to aircraft such as the Airbus A220-100 and 300 types.

#### 2.3.4.2 Passenger Aircraft Operations Forecast Results

**Exhibit 2-23** illustrates the forecast of passenger aircraft operations through 2040. Operations are forecast to increase from approximately 369,000 in 2018 to approximately 473,000 in 2040, a CAGR of 1.1%. Higher growth of international passenger demand results in a higher growth rate of nonstop international operations, having a 1.7% CAGR compared to a 1.1% CAGR for domestic operations.

**Exhibit 2-23: Forecast of Passenger Aircraft Operations**



NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecast).

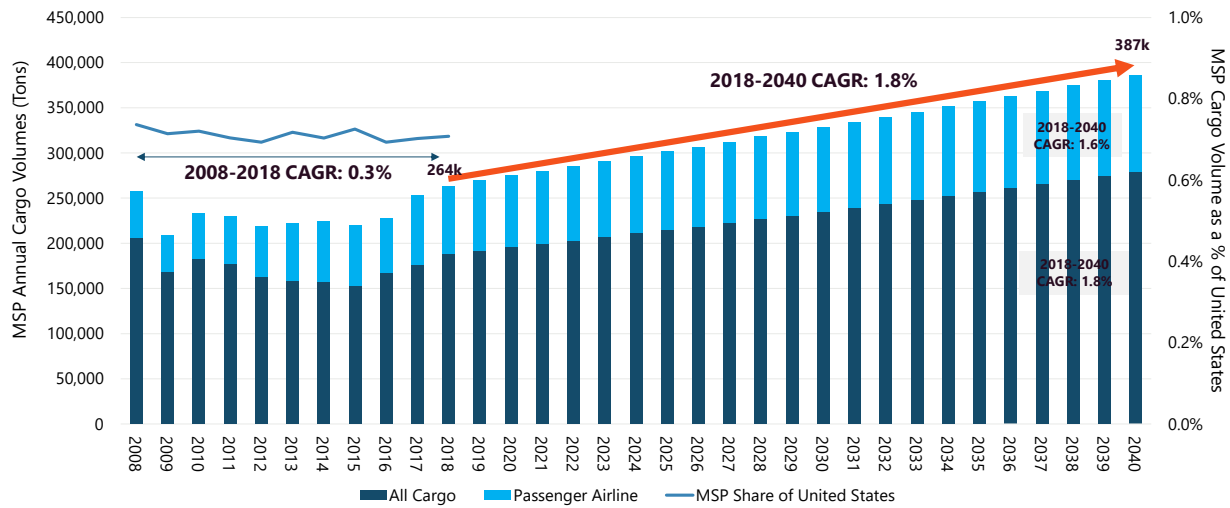
## 2.4 FORECAST OF NON-PASSENGER AIRCRAFT OPERATIONS

### 2.4.1 Forecast of Air Cargo Volumes and Operations

Historical cargo volumes were analyzed to explore statistical relationships with socioeconomic data; however, no meaningful predicative statistical relationships were identified. The Airport’s cargo volume share relative to the U.S. market was explored as an alternative approach, and it was found that the Airport in total has maintained a relatively constant market share of approximately 0.7% of total U.S. air cargo volumes. For forecasting purposes, it was assumed that this market share would remain constant, and the Airport’s cargo volumes would grow in line with U.S. industry air cargo volumes (measured in revenue ton miles [RTMs]) as forecast in the FAA’s *Aerospace Forecast Fiscal Years 2018–2038* (extrapolated to 2040). When adjusted for the relative domestic and international components specific to MSP, this equates to a CAGR of 1.9%.

This forecast was further refined, considering that all-cargo carrier volumes at MSP have lost share to other airports in the United States, and the Airport’s relatively steady share of U.S. cargo has been supported by passenger carrier cargo volume growth. Passenger carrier cargo volumes at the Airport grew in relation to forecast seat capacity growth, and the resulting cargo volume not attributable to passenger aircraft was considered the forecast of all-cargo carrier volumes. The overall cargo volume forecast resulted in a CAGR of 1.8%, with a similar growth rate for all-cargo carriers. **Exhibit 2-24** shows the results of the forecast of cargo volumes.

**Exhibit 2-24: Forecast of Cargo Volumes (Passenger vs. All-Cargo)**

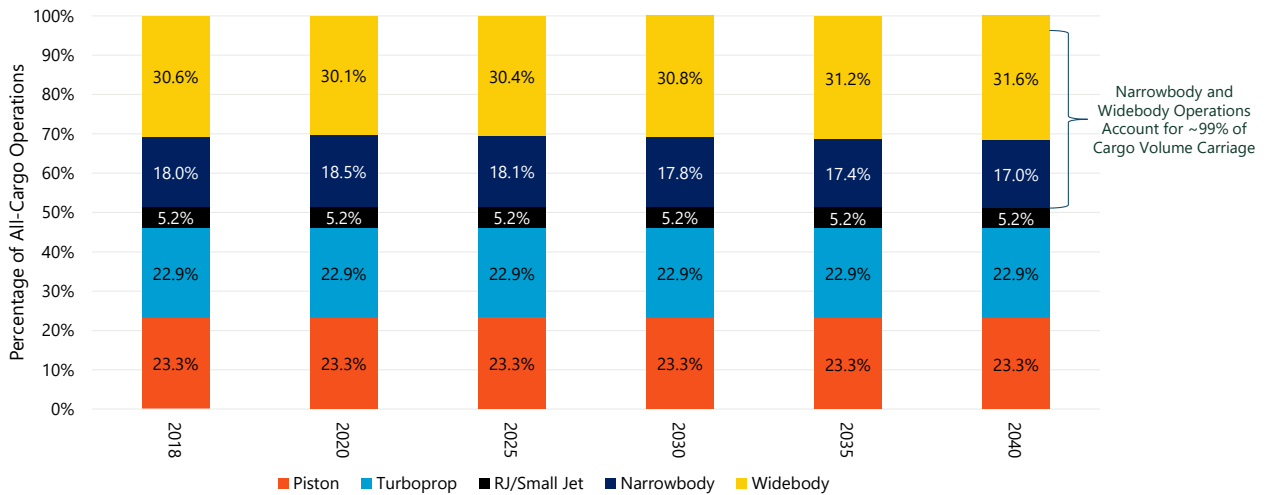


NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (analysis and forecast).

The all-cargo carrier fleet at MSP is forecast to transition to a slightly higher proportion of widebody aircraft capable of carrying a higher per-operation volume, as depicted in **Exhibit 2-25**. Considering the higher volume per operation, all-cargo carrier aircraft operations are forecast to increase from approximately 15,000 in 2018 to approximately 19,000 in 2040, a CAGR of 0.9%, as illustrated in **Exhibit 2-26**.

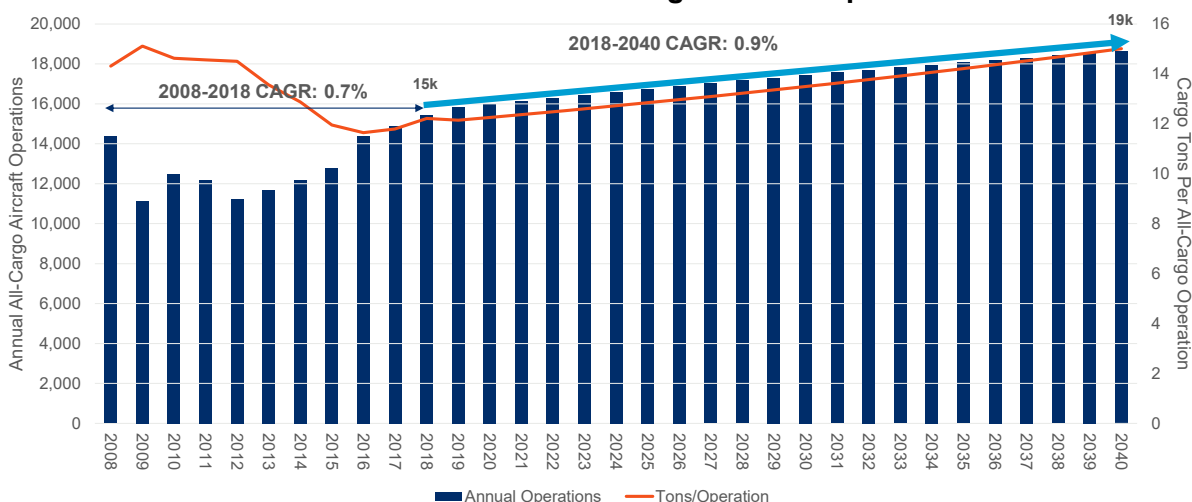
**Exhibit 2-25: Forecast of All-Cargo Operations by Aircraft Category**



NOTE: RJ – Regional Jet

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecast).

**Exhibit 2-26: Forecast of All-Cargo Aircraft Operations**

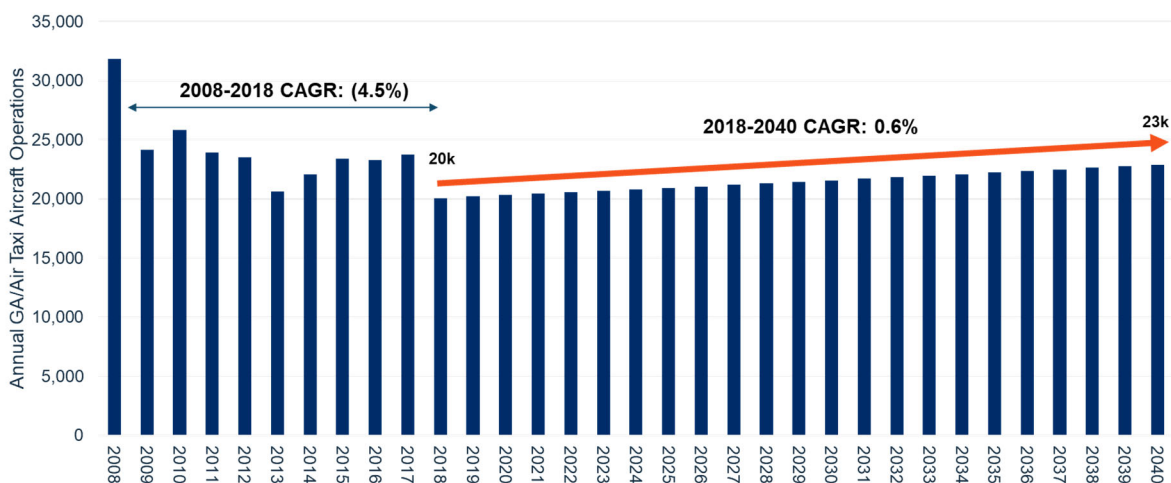


NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecast).

### 2.4.2 General Aviation and Air Taxi

MSP GA and air taxi operations are forecast to grow at a 0.6% CAGR, a rate slightly lower than that forecast for the approximate period for GA and air taxi hours in the FAA’s *Aerospace Forecast Fiscal Years 2018–2038*. **Exhibit 2-27** presents the forecast of GA and other air taxi operations.

**Exhibit 2-27: Forecast of General Aviation and Air Taxi Operations**



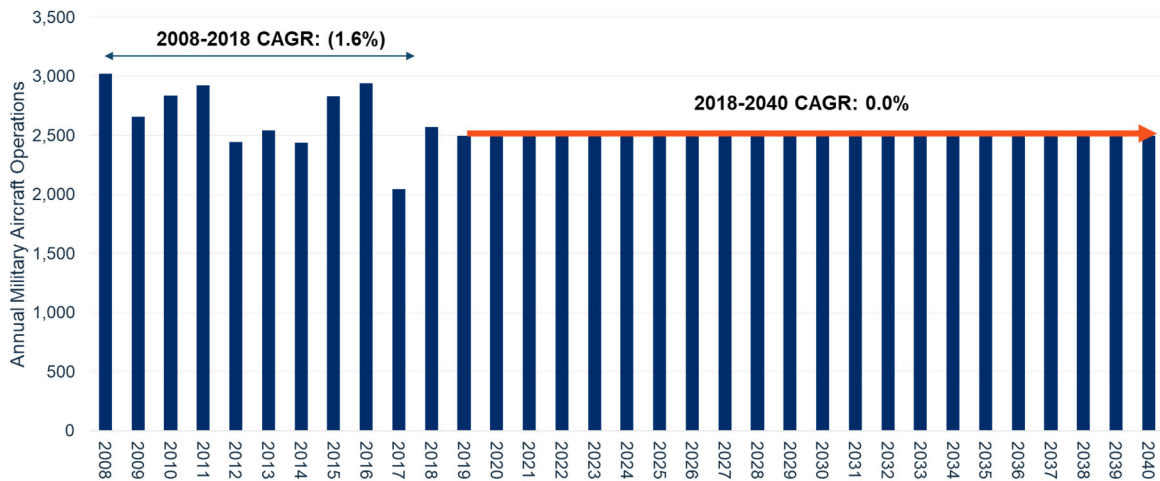
NOTES: CAGR – Compound Annual Growth Rate; GA – General Aviation  
SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019; Ricondo & Associates, Inc., 2019 (forecast).

### 2.4.3 Military

The U.S. Department of Defense determines future levels of military aircraft operations, but it does not publish guidance on future activity levels. The forecast of military aircraft operations is based on the FAA’s 2018 TAF for the Airport, which reflects no growth for the period, as illustrated on **Exhibit 2-28**.



**Exhibit 2-28: Forecast of Military Aircraft Operations**



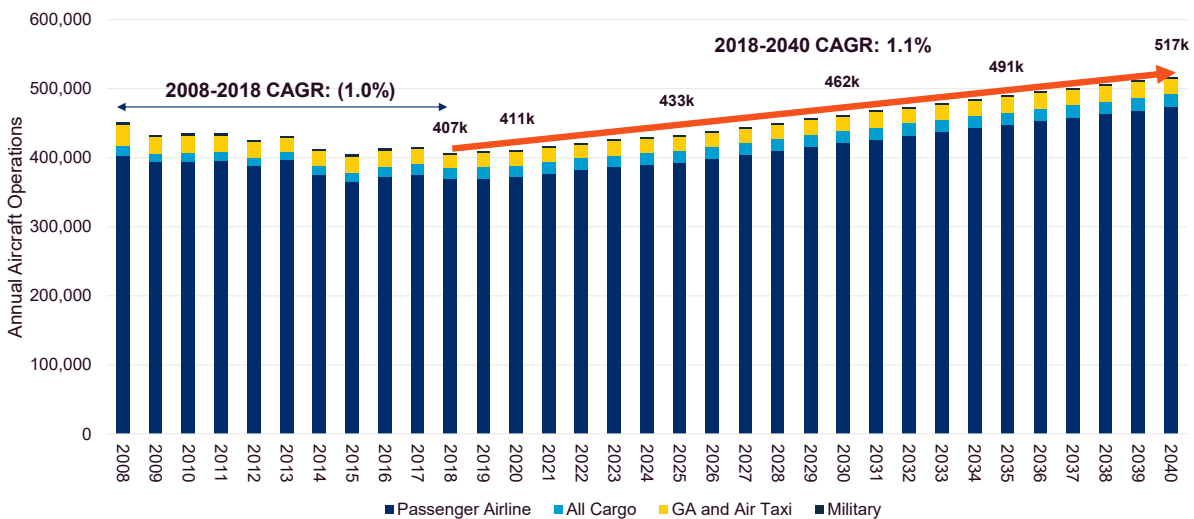
NOTE: CAGR – Compound Annual Growth Rate

SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019 (actual); U.S. Department of Transportation, Federal Aviation Administration, *Terminal Area Forecast*, 2019 (forecast).

### 2.4.4 Total Operations Forecast

As illustrated in **Exhibit 2-29**, total aircraft operations at MSP are forecast to increase from approximately 407,000 in 2018 to approximately 517,000 in 2040, a CAGR of 1.1%. The passenger airline operations share of total operations remains consistent throughout the period at approximately 91%.

**Exhibit 2-29: Forecast of Total Aircraft Operations**



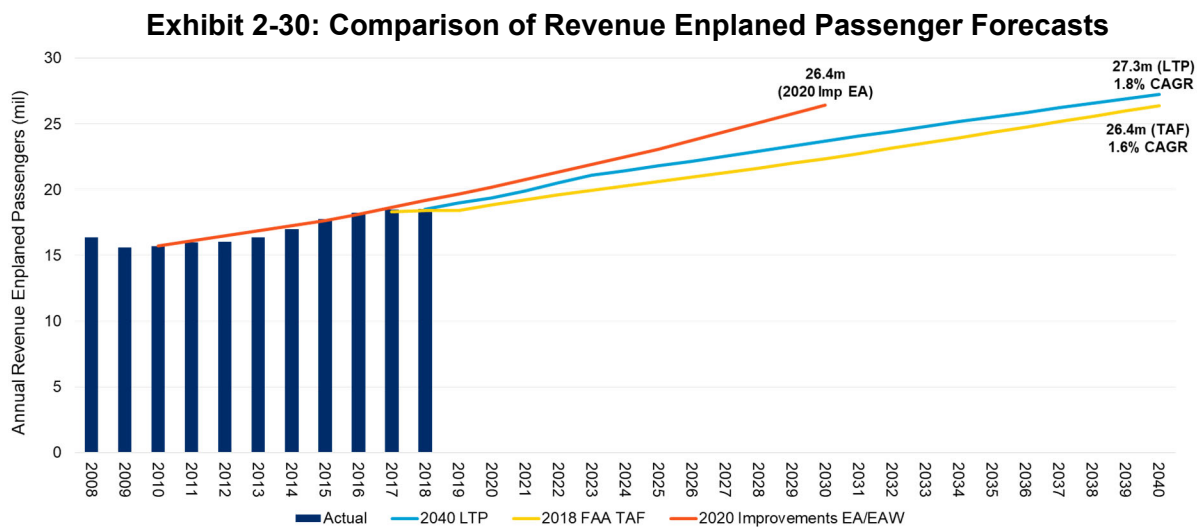
NOTES: CAGR – Compound Annual Growth Rate; GA – General Aviation

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; U.S. Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019; Ricondo & Associates, Inc., 2019 (forecast).

## 2.5 COMPARISON TO OTHER FORECASTS

The results of the 2040 LTP forecast were compared to the 2020 Improvements EA/EAW forecast (completed in June 2012) and the FAA’s 2018 TAF for the Airport. **Exhibit 2-30** compares revenue enplaned passengers. The 2040 LTP forecast anticipates 27.3 million revenue enplaned passengers in 2040, reflecting a CAGR of 1.8%. In comparison, the 2018 TAF anticipates 26.4 million revenue enplaned passengers for 2040, a CAGR of 1.6%. The 2020 Improvements EA/EAW forecast anticipates 26.4 million revenue enplaned passengers in 2030, the last year of that forecast. Revenue enplaned passengers are compared to be consistent with TAF reporting.

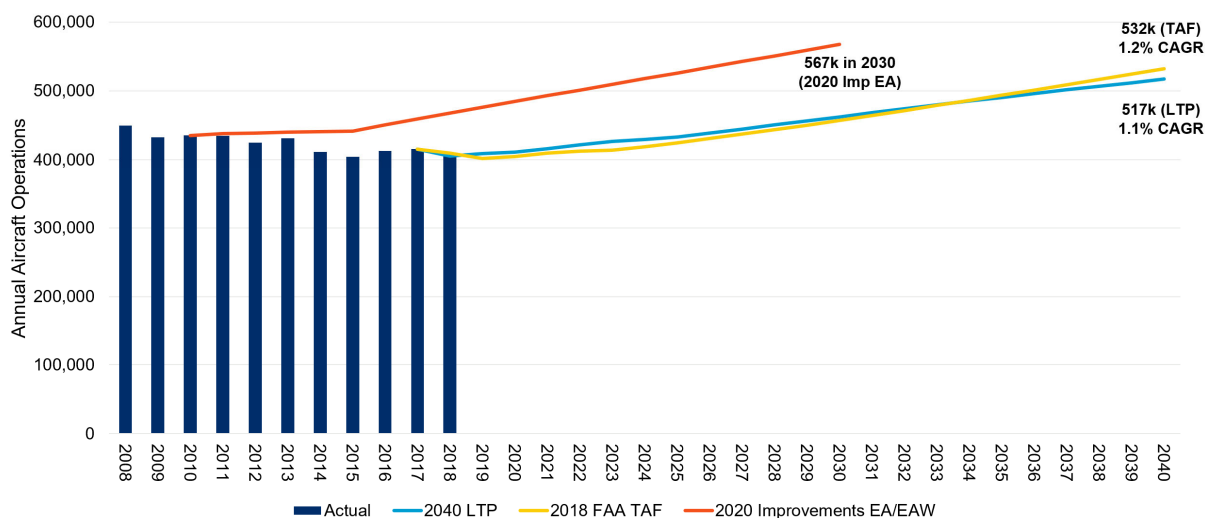
The 2040 LTP forecasts approximately 517,000 annual aircraft operations in 2040, a CAGR of 1.1%. This compares to approximately 532,000 operations forecast in the 2018 TAF and 567,000 operations (in 2030) in the 2020 Improvements EA/EAW forecast, as illustrated in **Exhibit 2-31**.



NOTES: LTP – Long-Term Plan; FAA – Federal Aviation Administration; TAF – Terminal Area Forecast; EA – Environmental Assessment; EAW – Environmental Assessment Worksheet; CAGR – Compound Annual Growth Rate  
The TAF is for the 12 months ending September (federal fiscal year).

SOURCES: As shown for individual elements. Ricondo & Associates, Inc., 2019

**Exhibit 2-31: Comparison of Total Aircraft Operations Forecasts**



NOTES: LTP – Long-Term Plan; FAA – Federal Aviation Administration; TAF – Terminal Area Forecast; EA – Environmental Assessment; EAW – Environmental Assessment Worksheet; CAGR – Compound Annual Growth Rate  
The TAF is for the 12 months ending September (federal fiscal year).  
SOURCES: As shown for individual elements Ricondo & Associates, Inc., 2019

## 2.6 FORECAST SCENARIOS

In addition to the baseline forecast, two scenarios were modeled to reflect comparatively higher and lower activity.

### 2.6.1 High Scenario

The high-growth scenario incorporated the Met Council’s projection of gross regional product (GRP) / GDP as the single driver of O&D demand. The high scenario assumes the stronger local demand environment will support additional seat capacity, enabling MSP to take a larger share of the underlying industry connecting passenger demand. The percentage of O&D and connecting passengers is modeled to be similar to that in the baseline forecast, albeit with higher volumes. Cargo volumes were also modeled to grow at a higher rate with the higher GDP growth assumption. No changes were made to the assumptions regarding GA/air taxi or military aircraft operations.

### 2.6.2 Low Scenario

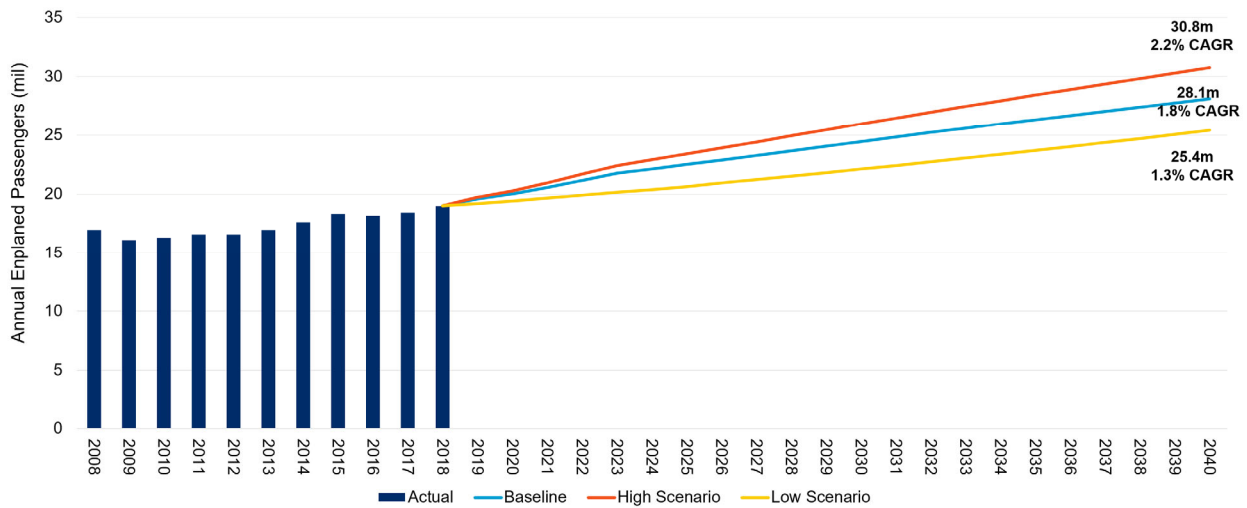
The low-growth scenario considered the *Draft 2019 Financial Feasibility Forecast* developed by Landrum & Brown, Inc., as the basis of the lower growth scenario. The draft feasibility forecast was developed through 2025 and assumed lower passenger growth at the Airport as a result of reduced passenger connections. Passenger volumes were subsequently extrapolated through 2040 using guidance provided by Landrum & Brown, Inc.

**Exhibit 2-32** compares the baseline, high, and low scenario enplaned passenger forecasts, and **Exhibit 2-33** compares the respective aircraft operations forecasts. The more aggressive socioeconomic metric used to model the high scenario resulted in an enplaned passenger forecast of approximately 31 million in 2040, which is 9% higher than the baseline forecast.

Increased passenger and cargo volumes helped drive total high-scenario aircraft operations of approximately 555,000 in 2040.

Low-scenario modeling impacted the passenger-related activity only. Low-scenario enplaned passengers in 2040, approximately 25 million, are nearly 10% lower than the amount reflected in the baseline forecast. As a result of lower passenger volumes, total operations are approximately 56,000 fewer than the baseline forecast.

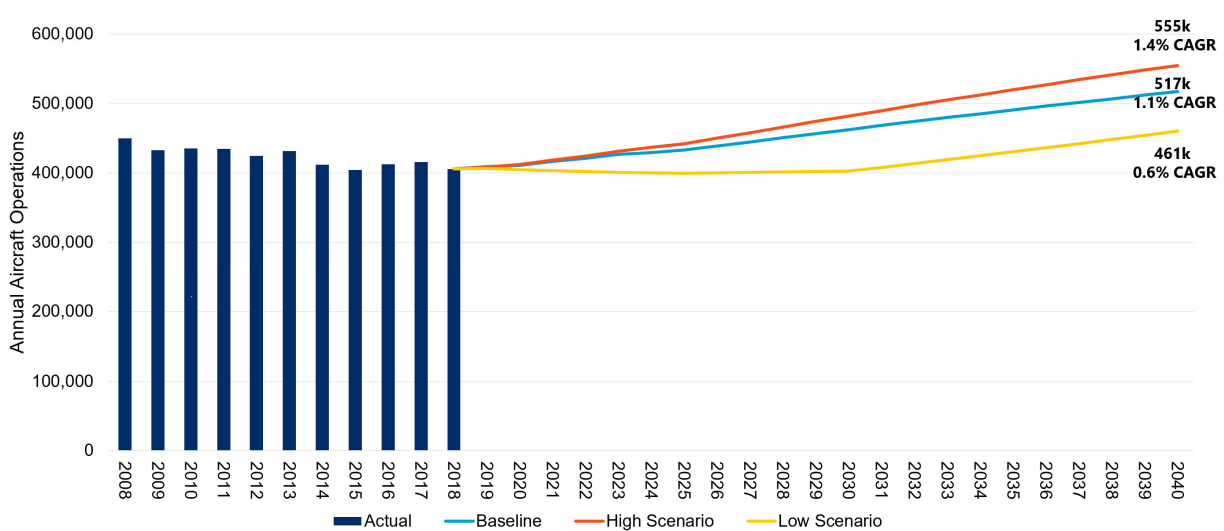
**Exhibit 2-32: Scenario Forecasts of Enplaned Passengers**



NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Landrum & Brown, Inc., *Draft 2019 Feasibility Forecast*, 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Exhibit 2-33: Scenario Forecasts of Total Aircraft Operations**



NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2019; Landrum & Brown, Inc., *Draft 2019 Feasibility Forecast*, 2019; Ricondo & Associates, Inc., 2019 (forecasts).

## 2.7 DESIGN DAY FLIGHT SCHEDULE DEVELOPMENT

The Airport experiences two primary peak periods throughout the year: the summer months and the spring break period. These two periods represent two different profiles of activity that were deemed to warrant separate DDFS development for purposes of future planning around these profiles. Representative daily schedules for the spring and summer periods were developed for the base year (2018), and for years 2025, 2030, and 2040 for the baseline forecast for all segments of Airport activity. Schedules were also developed to represent the high and low scenarios for 2030 and 2040.

DDFSs were developed considering the overall forecast growth of individual passenger flows, as well as the flight segments and timings those passengers may demand. With demand growth, capacity was added in the form of larger aircraft and/or additional flight frequencies to accommodate that demand. Flight frequencies were added in accordance with traditional airline planning techniques (for passenger airline flights), as well as patterns of service identified for non-passenger flight operations. DDFSs were developed with guidance provided by several of the Airport's larger carriers, and results were ultimately shared and discussed with those carriers.

## 2.8 ORIGINAL FORECAST AND DESIGN DAY FLIGHT SCHEDULE TABLES

**Tables 2-6** through **2-15** present the original historical and forecast data in relation to enplaned passengers, passenger activity, air cargo, and aircraft operations. Additionally, these tables present high and low scenario passenger metrics, as well as peak day and peak hour metrics.

**Table 2-6: Historical and Forecast Enplaned Passengers**

	Year	Enplaned Passengers (mil)						
		Total	O&D	Connecting	% O&D	Domestic	International	% Domestic
<b>Actual</b>	2008	17.0	8.5	8.5	49.9%	15.7	1.3	92%
	2009	16.1	8.3	7.8	51.4%	15.0	1.1	93%
	2010	16.3	8.4	7.9	51.4%	15.1	1.2	93%
	2011	16.5	8.6	7.9	52.1%	15.4	1.1	93%
	2012	16.6	8.6	8.0	51.7%	15.5	1.1	93%
	2013	16.9	8.8	8.2	51.7%	15.8	1.2	93%
	2014	17.6	9.3	8.3	53.0%	16.4	1.2	93%
	2015	18.3	9.8	8.5	53.8%	17.0	1.3	93%
	2016	18.7	10.5	8.2	56.2%	17.3	1.4	92%
	2017	19.0	11.0	8.0	58.1%	17.5	1.5	92%
	2018	19.0	11.5	7.5	60.4%	17.5	1.5	92%
<b>Forecast</b>	2019	19.6	11.8	7.8	60.3%	17.9	1.6	92%
	2020	20.0	12.0	8.0	59.8%	18.3	1.7	91%
	2021	20.6	12.3	8.2	60.0%	18.8	1.8	91%
	2022	21.2	12.7	8.4	60.2%	19.3	1.8	91%
	2023	21.8	13.1	8.6	60.3%	19.9	1.9	91%
	2024	22.1	13.3	8.8	60.2%	20.2	1.9	91%
	2025	22.5	13.5	9.0	60.1%	20.5	2.0	91%
	2026	22.9	13.7	9.2	60.0%	20.9	2.0	91%
	2027	23.3	13.9	9.3	59.9%	21.2	2.1	91%
	2028	23.7	14.1	9.5	59.7%	21.6	2.1	91%
	2029	24.0	14.3	9.7	59.6%	21.9	2.2	91%
	2030	24.4	14.6	9.9	59.6%	22.2	2.2	91%
	2031	24.8	14.8	10.1	59.5%	22.6	2.2	91%
	2032	25.2	15.0	10.2	59.4%	22.9	2.3	91%
	2033	25.6	15.2	10.4	59.4%	23.2	2.3	91%
	2034	26.0	15.4	10.6	59.3%	23.6	2.4	91%
	2035	26.3	15.6	10.7	59.2%	23.9	2.4	91%
	2036	26.7	15.8	10.9	59.1%	24.2	2.5	91%
	2037	27.1	16.0	11.1	59.1%	24.5	2.5	91%
	2038	27.4	16.2	11.2	59.0%	24.8	2.6	91%
	2039	27.8	16.4	11.4	58.9%	25.2	2.6	91%
	2040	28.1	16.5	11.6	58.8%	25.5	2.7	91%
<b>CAGR</b>								
<b>2008–2018</b>		1.1%	3.1%	-1.2%		1.1%	1.4%	
<b>2018–2040</b>		1.8%	1.7%	2.0%		1.7%	2.7%	

NOTES: O&D – Origin and Distribution; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-7: (1 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown)**

	Year	Domestic (Both Directions)				International (Both Directions)				Total (Both Directions)			
		Ops (000)	Pax (mil)	Avg. Seats	LF	Ops (000)	Pax (mil)	Avg. Seats	LF	Ops (000)	Pax (mil)	Avg. Seats	LF
<b>Actual</b>	2008	378.4	31.3	103	80.1%	24.0	2.6	134.4	80.6%	402.3	33.9	105	80.2%
	2009	372.2	29.9	102	78.7%	22.5	2.3	127.3	79.1%	394.6	32.2	104	78.8%
	2010	367.9	30.2	100	81.7%	26.5	2.4	111.8	79.7%	394.4	32.5	101	81.6%
	2011	369.8	30.8	100	83.1%	26.2	2.3	108.5	80.4%	396.0	33.1	101	82.9%
	2012	362.7	30.9	102	83.8%	25.0	2.2	106.6	83.8%	387.7	33.1	102	83.8%
	2013	372.2	31.5	102	82.7%	24.5	2.3	112.1	85.3%	396.7	33.9	103	82.8%
	2014	351.0	32.7	109	85.6%	24.1	2.4	119.4	84.6%	375.1	35.2	110	85.5%
	2015	341.0	33.9	115	86.6%	24.3	2.7	126.5	86.5%	365.3	36.6	116	86.6%
	2016	346.8	34.6	117	85.3%	25.5	2.8	132.3	84.3%	372.3	37.5	118	85.2%
	2017	351.0	35.0	118	84.6%	24.0	3.0	145.2	85.8%	375.0	38.0	120	84.7%
	2018	344.8	35.0	119	85.6%	24.0	3.0	149.1	83.6%	368.8	38.0	121	85.2%
<b>Forecast</b>	2019	346.3	35.9	122	84.7%	24.4	3.3	159.2	84.2%	370.7	39.2	124	85.2%
	2020	347.6	36.6	124	84.7%	24.9	3.4	161.4	85.6%	372.5	40.0	127	84.8%
	2021	351.9	37.6	126	84.8%	25.5	3.5	162.0	85.7%	377.4	41.1	128	84.9%
	2022	355.9	38.6	128	85.0%	26.2	3.7	163.3	85.7%	382.1	42.3	130	85.1%
	2023	360.2	39.7	130	85.1%	26.9	3.8	164.5	85.7%	387.0	43.5	132	85.1%
	2024	362.4	40.4	131	85.2%	27.4	3.9	164.5	85.8%	389.8	44.3	133	85.2%
	2025	364.8	41.1	132	85.2%	28.0	4.0	164.3	85.9%	392.8	45.0	134	85.3%
	2026	370.0	41.7	132	85.3%	28.4	4.0	164.8	86.0%	398.4	45.8	135	85.3%
	2027	375.1	42.4	133	85.3%	28.8	4.1	165.3	86.1%	403.9	46.5	135	85.4%
	2028	380.5	43.1	133	85.4%	29.3	4.2	166.3	86.2%	409.7	47.3	135	85.5%
	2029	385.8	43.8	133	85.5%	29.8	4.3	167.5	86.3%	415.5	48.1	135	85.6%
	2030	390.7	44.5	133	85.6%	30.2	4.4	168.7	86.4%	420.9	48.9	136	85.6%
	2031	395.9	45.2	133	85.6%	30.6	4.5	169.6	86.5%	426.5	49.7	136	85.7%
	2032	401.0	45.8	133	85.7%	31.1	4.6	170.5	86.5%	432.1	50.4	136	85.8%
	2033	405.9	46.5	134	85.8%	31.5	4.7	171.4	86.6%	437.5	51.2	136	85.9%
	2034	410.7	47.2	134	85.9%	32.0	4.8	172.4	86.7%	442.7	51.9	137	85.9%
	2035	415.4	47.8	134	85.9%	32.4	4.9	173.3	86.8%	447.8	52.7	137	86.0%
	2036	420.3	48.4	134	86.0%	32.8	5.0	174.1	86.8%	453.1	53.4	137	86.1%

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-7: (2 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown)**

Year	Domestic (Both Directions)				International (Both Directions)				Total (Both Directions)			
	Ops (000)	Pax (mil)	Avg. Seats	LF	Ops (000)	Pax (mil)	Avg. Seats	LF	Ops (000)	Pax (mil)	Avg. Seats	LF
2037	425.0	49.1	134	86.1%	33.3	5.1	174.9	86.9%	458.3	54.1	137	86.1%
2038	429.6	49.7	134	86.1%	33.7	5.1	175.7	87.0%	463.3	54.8	137	86.2%
2039	434.1	50.3	134	86.2%	34.1	5.2	176.4	87.1%	468.3	55.5	137	86.3%
2040	438.6	50.9	135	86.3%	34.5	5.3	177.2	87.1%	473.1	56.3	138	86.4%
<b>CAGR</b>												
<b>2008–2018</b>	-0.9%	1.1%	1.4%		0.0%	1.4%	1.0%		-0.9%	1.1%	1.4%	
<b>2018–2040</b>	1.1%	1.7%	0.6%		1.7%	2.7%	0.8%		1.1%	1.8%	0.6%	

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecasts).



**Table 2-8: Historical and Forecast Air Cargo Volumes and Operations**

	Year	Cargo Volume (000 Tons)			Air Cargo Operations (000)	Cargo Tons Per Air Cargo Operation
		Air Cargo	Passenger	Total		
<b>Actual</b>	2008	205.5	51.6	257.1	14.4	14.3
	2009	168.4	40.7	209.1	11.1	15.1
	2010	182.8	50.8	233.6	12.5	14.6
	2011	177.7	52.3	230.0	12.2	14.6
	2012	162.9	56.1	219.0	11.2	14.5
	2013	158.7	63.2	221.9	11.7	13.6
	2014	157.1	66.8	223.9	12.2	12.9
	2015	152.8	66.9	219.7	12.8	12.0
	2016	167.7	60.4	228.1	14.4	11.6
	2017	175.9	77.1	252.9	14.9	11.8
	2018	188.8	75.0	263.8	15.5	12.2
<b>Forecast</b>	2019	192.4	77.8	270.1	15.8	12.1
	2020	196.0	79.4	275.4	16.0	12.3
	2021	199.7	80.7	280.4	16.1	12.4
	2022	203.4	82.2	285.6	16.3	12.5
	2023	207.2	83.6	290.8	16.4	12.6
	2024	211.1	85.0	296.0	16.6	12.7
	2025	215.0	86.4	301.3	16.7	12.8
	2026	218.9	87.8	306.7	16.9	13.0
	2027	222.9	89.2	312.1	17.0	13.1
	2028	227.0	90.7	317.6	17.2	13.2
	2029	231.1	92.1	323.2	17.3	13.4
	2030	235.2	93.5	328.7	17.4	13.5
	2031	239.4	94.9	334.4	17.6	13.6
	2032	243.7	96.3	340.0	17.7	13.8
	2033	248.0	97.7	345.7	17.8	13.9
	2034	252.4	99.0	351.4	17.9	14.1
	2035	256.8	100.4	357.2	18.1	14.2
	2036	261.3	101.7	363.0	18.2	14.4
	2037	265.8	103.0	368.8	18.3	14.5
	2038	270.4	104.3	374.6	18.4	14.7
	2039	275.0	105.5	380.5	18.5	14.8
	2040	279.7	106.8	386.5	18.6	15.0
<b>CAGR</b>						
<b>2008–2018</b>		-0.8%	3.8%	0.3%	0.7%	-1.6%
<b>2018–2040</b>		1.8%	1.6%	1.8%	0.9%	0.9%

NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-9: Historical and Forecast Aircraft Operations**

		Annual Aircraft Operations (000)							
		Passenger			Non-Passenger				
	Year	Domestic	International	Total	Air Cargo	GA / Air Taxi	Military	Total	Total
<b>Actual</b>	2008	378.4	24.0	402.3	14.4	31.9	3.0	49.2	451.6
	2009	372.2	22.5	394.6	11.1	24.2	2.7	38.0	432.6
	2010	367.9	26.5	394.4	12.5	25.9	2.8	41.2	435.6
	2011	369.8	26.2	396.0	12.2	23.9	2.9	39.1	435.1
	2012	362.7	25.0	387.7	11.2	23.5	2.4	37.2	424.9
	2013	372.2	24.5	396.7	11.7	20.6	2.5	34.9	431.6
	2014	351.0	24.1	375.1	12.2	22.1	2.4	36.7	411.8
	2015	341.0	24.3	365.3	12.8	23.4	2.8	39.0	404.4
	2016	346.8	25.5	372.3	14.4	23.3	2.9	40.6	412.9
	2017	351.0	24.0	375.0	14.9	23.7	2.0	40.7	415.7
	2018	344.8	24.0	368.8	15.5	20.1	2.6	38.1	406.9
<b>Forecast</b>	2019	346.3	24.4	370.7	15.8	20.2	2.5	38.5	409.3
	2020	347.6	24.9	372.5	16.0	20.3	2.5	38.8	411.3
	2021	351.9	25.5	377.4	16.1	20.4	2.5	39.1	416.5
	2022	355.9	26.2	382.1	16.3	20.6	2.5	39.4	421.5
	2023	360.2	26.9	387.0	16.4	20.7	2.5	39.6	426.7
	2024	362.4	27.4	389.8	16.6	20.8	2.5	39.9	429.7
	2025	364.8	28.0	392.8	16.7	20.9	2.5	40.2	433.0
	2026	370.0	28.4	398.4	16.9	21.1	2.5	40.4	438.9
	2027	375.1	28.8	403.9	17.0	21.2	2.5	40.7	444.6
	2028	380.5	29.3	409.7	17.2	21.3	2.5	41.0	450.7
	2029	385.8	29.8	415.5	17.3	21.4	2.5	41.2	456.8
	2030	390.7	30.2	420.9	17.4	21.6	2.5	41.5	462.4
	2031	395.9	30.6	426.5	17.6	21.7	2.5	41.8	468.3
	2032	401.0	31.1	432.1	17.7	21.8	2.5	42.0	474.1
	2033	405.9	31.5	437.5	17.8	22.0	2.5	42.3	479.7
	2034	410.7	32.0	442.7	17.9	22.1	2.5	42.5	485.3
	2035	415.4	32.4	447.8	18.1	22.2	2.5	42.8	490.6
	2036	420.3	32.8	453.1	18.2	22.4	2.5	43.0	496.2
	2037	425.0	33.3	458.3	18.3	22.5	2.5	43.3	501.6
	2038	429.6	33.7	463.3	18.4	22.6	2.5	43.5	506.9
	2039	434.1	34.1	468.3	18.5	22.8	2.5	43.8	512.1
	2040	438.6	34.5	473.1	18.6	22.9	2.5	44.0	517.2
<b>CAGR</b>									
<b>2008–2018</b>		-0.9%	0.0%	-0.9%	0.7%	-4.5%	0.0%	-2.5%	-1.0%
<b>2018–2040</b>		1.1%	1.7%	1.1%	0.9%	0.6%	0.0%	0.7%	1.1%

NOTES: GA – General Aviation; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-10: (1 of 2) Passenger Metrics for High and Low Scenarios (Passengers Shown in Both Directions)**

	Year	Baseline Forecast			High Scenario			Low Scenario		
		Pax (mil)	% Domestic	% O&D	Pax (mil)	% Domestic	% O&D	Pax (mil)	% Domestic	% O&D
<b>Actual</b>	2008	33.9	92%	49.9%	33.9	92%	49.9%	33.9	92%	49.9%
	2009	32.2	93%	51.4%	32.2	93%	51.4%	32.2	93%	51.4%
	2010	32.5	93%	51.4%	32.5	93%	51.4%	32.5	93%	51.4%
	2011	33.1	93%	52.1%	33.1	93%	52.1%	33.1	93%	52.1%
	2012	33.1	93%	51.7%	33.1	93%	51.7%	33.1	93%	51.7%
	2013	33.9	93%	51.7%	33.9	93%	51.7%	33.9	93%	51.7%
	2014	35.2	93%	53.0%	35.2	93%	53.0%	35.2	93%	53.0%
	2015	36.6	93%	53.8%	36.6	93%	53.8%	36.6	93%	53.8%
	2016	37.5	92%	56.2%	37.5	92%	56.2%	37.5	92%	56.2%
	2017	38.0	92%	58.1%	38.0	92%	58.1%	38.0	92%	58.1%
	2018	38.0	92%	60.4%	38.0	92%	60.4%	38.0	92%	60.4%
<b>Forecast</b>	2019	39.2	92%	60.3%	39.4	92%	60.3%	38.4	92%	60.3%
	2020	40.0	91%	59.8%	40.5	91%	59.8%	38.8	92%	60.6%
	2021	41.1	91%	60.0%	41.9	91%	60.0%	39.3	91%	60.8%
	2022	42.3	91%	60.2%	43.3	91%	60.2%	39.8	91%	61.0%
	2023	43.5	91%	60.3%	44.8	91%	60.3%	40.3	91%	61.2%
	2024	44.3	91%	60.2%	45.8	91%	60.2%	40.8	91%	61.3%
	2025	45.0	91%	60.1%	46.8	91%	60.1%	41.3	91%	61.5%
	2026	45.8	91%	60.0%	47.8	91%	59.9%	41.9	91%	61.7%
	2027	46.5	91%	59.9%	48.8	91%	59.8%	42.4	90%	61.9%
	2028	47.3	91%	59.7%	49.8	91%	59.7%	43.0	90%	62.1%
	2029	48.1	91%	59.6%	50.9	91%	59.6%	43.6	90%	62.3%
	2030	48.9	91%	59.6%	51.9	91%	59.5%	44.2	90%	62.5%
	2031	49.7	91%	59.5%	52.9	91%	59.5%	44.8	90%	62.7%
	2032	50.4	91%	59.4%	53.9	91%	59.4%	45.4	90%	62.9%
	2033	51.2	91%	59.4%	54.9	91%	59.3%	46.1	89%	63.0%
	2034	51.9	91%	59.3%	55.9	91%	59.2%	46.7	89%	63.2%
	2035	52.7	91%	59.2%	56.9	91%	59.2%	47.4	89%	63.4%
	2036	53.4	91%	59.1%	57.8	91%	59.1%	48.0	89%	63.6%

NOTES: O&D – Origin and Destination; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-10: (2 of 2) Passenger Metrics for High and Low Scenarios (Passengers Shown in Both Directions)**

Year	Baseline Forecast			High Scenario			Low Scenario		
	Pax (mil)	% Domestic	% O&D	Pax (mil)	% Domestic	% O&D	Pax (mil)	% Domestic	% O&D
2037	54.1	91%	59.1%	58.8	91%	59.0%	48.7	89%	63.8%
2038	54.8	91%	59.0%	59.7	91%	58.9%	49.4	89%	64.0%
2039	55.5	91%	58.9%	60.6	90%	58.8%	50.1	89%	64.2%
2040	56.3	91%	58.8%	61.5	90%	58.7%	50.8	88%	64.4%
<b>CAGR</b>									
<b>2008–2018</b>	1.1%			1.1%			1.1%		
<b>2018–2040</b>	1.8%			2.2%			1.3%		

NOTES: O&D – Origin and Destination; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2019; U.S. Department of Transportation, T-100, 2019; Sabre, Market Information Data Tapes (MIDT), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-11: (1 of 2) Aircraft Operations Metrics for High and Low Scenarios**

	Year	Baseline Forecast Operations (000)			High Scenario Operations (000)			Low Scenario Operations (000)		
		Passenger	Cargo	Total	Passenger	Cargo	Total	Passenger	Cargo	Total
<b>Actual</b>	2008	402.3	14.4	451.6	402.3	14.4	451.6	402.3	14.4	451.6
	2009	394.6	11.1	432.6	394.6	11.1	432.6	394.6	11.1	432.6
	2010	394.4	12.5	435.6	394.4	12.5	435.6	394.4	12.5	435.6
	2011	396.0	12.2	435.1	396.0	12.2	435.1	396	12.2	435.1
	2012	387.7	11.2	424.9	387.7	11.2	424.9	387.7	11.2	424.9
	2013	396.7	11.7	431.6	396.7	11.7	431.6	396.7	11.7	431.6
	2014	375.1	12.2	411.8	375.1	12.2	411.8	375.1	12.2	411.8
	2015	365.3	12.8	404.4	365.3	12.8	404.4	365.3	12.8	404.4
	2016	372.3	14.4	412.9	372.3	14.4	412.9	372.3	14.4	412.9
	2017	375.0	14.9	415.7	375.0	14.9	415.7	375.0	14.9	415.7
	2018	368.8	15.5	406.9	368.8	15.5	406.9	368.8	15.5	406.9
<b>Forecast</b>	2019	370.7	15.8	409.3	370.7	16.1	408.7	368.2	15.8	406.7
	2020	372.5	16.0	411.3	372.8	16.5	412.1	366.1	16.0	405.0
	2021	377.4	16.1	416.5	378.8	16.8	418.5	364.3	16.1	403.4
	2022	382.1	16.3	421.5	384.2	17.1	424.4	362.7	16.3	402.1
	2023	387.0	16.4	426.7	391.1	17.4	431.6	361.2	16.4	400.8
	2024	389.8	16.6	429.7	395.8	17.6	436.7	360.4	16.6	400.3
	2025	392.8	16.7	433.0	400.8	17.8	442.0	359.6	16.7	399.8
	2026	398.4	16.9	438.9	408.4	18.1	450.1	359.8	16.9	400.2
	2027	403.9	17.0	444.6	415.9	18.3	457.9	360.0	17.0	400.7
	2028	409.7	17.2	450.7	423.7	18.5	466.1	360.4	17.2	401.3
	2029	415.5	17.3	456.8	431.5	18.8	474.2	360.8	17.3	402.0
	2030	420.9	17.4	462.4	438.8	19.0	481.9	361.3	17.4	402.8
	2031	426.5	17.6	468.3	446.3	19.3	489.8	366.4	17.6	408.1
	2032	432.1	17.7	474.1	453.7	19.5	497.5	371.5	17.7	413.6
	2033	437.5	17.8	479.7	460.9	19.7	505.1	376.8	17.8	419.1
	2034	442.7	17.9	485.3	467.9	20.0	512.5	382.2	17.9	424.7

NOTES: Other operations not shown in table, but are included in the Scenario totals; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-11: (2 of 2) Aircraft Operations Metrics for High and Low Scenarios**

Year	Baseline Forecast Operations (000)			High Scenario Operations (000)			Low Scenario Operations (000)		
	Passenger	Cargo	Total	Passenger	Cargo	Total	Passenger	Cargo	Total
2035	447.8	18.1	490.6	474.8	20.2	519.7	387.6	18.1	430.4
2036	453.1	18.2	496.2	481.7	20.5	527.0	393.2	18.2	436.3
2037	458.3	18.3	501.6	488.5	20.7	534.2	398.9	18.3	442.2
2038	463.3	18.4	506.9	495.1	21	541.2	404.7	18.4	448.2
2039	468.3	18.5	512.1	501.7	21.2	548.1	410.6	18.5	454.4
2040	473.1	18.6	517.2	508.1	21.5	554.9	416.6	18.6	460.6
<b>CAGR</b>									
<b>2008–2018</b>	-0.90%	0.70%	-1.00%	-0.90%	0.70%	-1.00%	-0.90%	0.70%	-1.00%
<b>2018–2040</b>	1.10%	0.90%	1.10%	1.50%	1.50%	1.40%	0.60%	0.90%	0.60%

NOTES: Other operations not shown in table, but are included in the Scenario totals; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation; U.S. Department of Transportation, T-100, 2019; Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2019; Ricondo & Associates, Inc., 2019 (forecasts).

**Table 2-12: Selected Design Day Flight Schedule Daily Metrics**

Year	Passengers	Aircraft Operations						Total
		Passenger Airlines	Air Taxi	Cargo	Charter	General Aviation	Military	
<b>Spring Design Day</b>								
<b>Base</b>	119,214	1,113	14	36	20	26	3	1,212
<b>2025</b>	141,409	1,176	14	38	20	28	3	1,279
<b>2030</b>	156,516	1,270	16	42	20	30	3	1,381
<b>2040</b>	178,107	1,422	18	50	20	34	3	1,547
<b>2030 Low</b>	137,663	1,126	16	42	20	30	3	1,237
<b>2030 High</b>	168,959	1,358	16	46	20	30	3	1,473
<b>2040 Low</b>	154,662	1,248	18	50	20	34	3	1,373
<b>2040 High</b>	191,987	1,548	18	62	20	34	3	1,685
<b>Summer Design Day</b>								
<b>Base</b>	127,661	1,186	39	66	13	64	12	1,380
<b>2025</b>	156,558	1,278	43	71	13	64	12	1,481
<b>2030</b>	171,316	1,370	43	74	13	68	12	1,580
<b>2040</b>	194,786	1,542	45	80	13	74	12	1,766
<b>2030 Low</b>	145,707	1,168	43	74	13	68	12	1,378
<b>2030 High</b>	177,656	1,414	43	80	13	68	12	1,630
<b>2040 Low</b>	171,967	1,352	45	80	13	74	12	1,576
<b>2040 High</b>	205,000	1,652	45	92	13	74	12	1,888

NOTE: Passenger totals include revenue and non-revenue passengers.

SOURCE: Ricondo & Associates, Inc., 2019.

**Table 2-13: Design Day Flight Schedule Peak Hour Metrics (Outbound)**

Year	Enplaned Passengers	Aircraft Departures	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>Base</b>	6,397	68	68
<b>2025</b>	6,766	63	63
<b>2030</b>	7,615	63	64
<b>2040</b>	9,091	74	74
<b>2030 Low</b>	6,713	57	57
<b>2030 High</b>	8,694	71	72
<b>2040 Low</b>	7,797	60	69
<b>2040 High</b>	9,868	81	83
<b>Summer Design Day</b>			
<b>Base</b>	7,419	65	74
<b>2025</b>	7,911	60	70
<b>2030</b>	8,699	65	72
<b>2040</b>	9,801	83	88
<b>2030 Low</b>	8,273	65	68
<b>2030 High</b>	9,190	70	77
<b>2040 Low</b>	9,695	80	85
<b>2040 High</b>	10,160	86	91

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
SOURCE: Ricondo & Associates, Inc., 2019.



**Table 2-14: Selected Design Day Flight Schedule Peak Hour Metrics (Inbound)**

Year	Deplaned Passengers	Aircraft Arrivals	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>Base</b>	6,848	68	72
<b>2025</b>	7,211	60	64
<b>2030</b>	8,044	67	71
<b>2040</b>	8,768	68	72
<b>2030 Low</b>	6,879	58	62
<b>2030 High</b>	9,243	68	71
<b>2040 Low</b>	8,090	61	63
<b>2040 High</b>	9,841	76	78
<b>Summer Design Day</b>			
<b>Base</b>	8,385	74	77
<b>2025</b>	7,674	64	68
<b>2030</b>	7,724	65	69
<b>2040</b>	10,453	79	88
<b>2030 Low</b>	7,531	62	66
<b>2030 High</b>	8,527	69	73
<b>2040 Low</b>	9,840	73	82
<b>2040 High</b>	10,453	79	88

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
 SOURCE: Ricondo & Associates, Inc., 2019.

**Table 2-15: Selected Design Day Flight Schedule Peak Hour Metrics (Combined Peak)**

Year	Passengers	Aircraft Operations	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>Base</b>	9,027	85	95
<b>2025</b>	10,655	94	104
<b>2030</b>	12,226	97	107
<b>2040</b>	14,234	111	113
<b>2030 Low</b>	10,874	89	91
<b>2030 High</b>	13,099	101	107
<b>2040 Low</b>	11,923	94	102
<b>2040 High</b>	15,170	125	129
<b>Summer Design Day</b>			
<b>Base</b>	9,855	99	111
<b>2025</b>	13,363	104	117
<b>2030</b>	12,681	105	118
<b>2040</b>	15,160	127	140
<b>2030 Low</b>	13,227	103	111
<b>2030 High</b>	14,247	111	124
<b>2040 Low</b>	13,626	108	117
<b>2040 High</b>	15,639	131	144

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
SOURCE: Ricondo & Associates, Inc., 2019.

## 2.9 AVIATION ACTIVITY FORECAST REVIEW AND UPDATE

Considering the COVID-19 pandemic and its impact on the aviation industry overall and at MSP, three primary tasks were conducted in September and October 2021:

- a review and update of the original baseline forecast completed in 2020, including an estimate of the recovery from the COVID-19 impact on demand;
- the development of a more aggressive pandemic recovery scenario; and
- a revision of the baseline 2025, 2030, and 2040 DDFSs.

After updating activity metrics to reflect the most recent actual information, the review and update of the baseline forecast consisted of several steps:

- review of the baseline forecast’s model for activity growth in the longer-term period of the forecast horizon to assess the reasonability and continued applicability of that approach for all activity segments (passenger, cargo, GA, and military);
- if reasonable and applicable, update of the inputs used for that model to revise the longer-term outlook of activity;
- analysis of shorter-term drivers related to the pandemic’s effect on activity to model the duration and impact of those drivers on enplaned passengers at MSP;
- review and update of the fleet and load factor assumptions developed for the baseline forecast; and

- based on changes previously identified, update of the baseline forecast of aircraft operations for each activity segment.

The following subsections summarize the approach to these tasks. See **Section 2.10** for tables reflecting the revised forecasts.

### **2.9.1 Longer-Term Enplaned Passenger Forecast Model Validation**

As previously described, the baseline enplaned passenger forecast was developed using a methodology that first estimated underlying demand in both O&D and connecting markets potentially served at MSP. Statistical relationships of those passenger types to socioeconomic factors, such as personal income and employment, were identified through regression analysis. These relationships, in the form of statistical equations, were coupled with projections of socioeconomic factors to forecast future potential passenger volumes. Additional factors, including the airline business decision (or ability) to serve the various segments of passenger demand and the influence of air service at other competing airports, were subsequently used to estimate the portion of underlying future demand that would be carried at MSP. In the forecast review and update, possible changes to these factors and their effects were explored.

**Table 2-16** compares the local and national socioeconomic factors used to predict demand, as sourced for the original forecast, and more recently for the forecast revision. The outlook for most factors has improved (as indicated in green), while several remain unchanged from the prior forecast (as indicated in gray). The forecast of local and national population growth has been reduced, as has area net earnings and non-farm employment (per Woods & Poole Economics, Inc.).

Delta's financial performance and the relative importance of MSP as part of the airline's route network was reviewed, with the conclusion that the airline will continue to be a strong competitor relative to its peers, and that the airline will continue to use MSP as a critical element of its network to serve both O&D and connecting passengers. **Exhibit 2-34** illustrates the share of Delta's scheduled domestic seat capacity offered at its hubs in 2019 (before the onset of the COVID-19 pandemic) and in 2021, during which MSP has maintained a similar share of capacity. Also of note is Salt Lake City International Airport (SLC), which has generated a higher share of Delta's domestic seat capacity from its hubs due, in part, to that hub's geographic location and its unique use by the airline during the pandemic to consolidate seat capacity there and conserve costs to provide connections to smaller West Coast markets.

**Exhibit 2-35** presents the domestic capacity for the industry at selected U.S. hubs that generally compete for similar east–west passenger traffic.

**Table 2-16: Comparison of Socioeconomic Forecast Inputs**

Factor	2017 Forecast CAGR (2018–2040)	2021 Forecast CAGR (2018–2040)
<b>MSP Area<sup>1</sup></b>		
Non-Farm Earnings	1.8%	1.8%
Non-Farm Employment	1.4%	1.0%
Gross Regional Product	1.7%	1.8%
Net Earnings	1.9%	1.8%
Per-Capita Personal Income	0.9%	1.3%
Personal Income	1.9%	2.0%
Population	1.0%	0.7%
<b>National<sup>1</sup></b>		
Non-Farm Earnings	1.7%	2.0%
Non-Farm Employment	1.2%	1.2%
Gross Domestic Product	1.7%	2.0%
Net Earnings	1.8%	2.0%
Per-Capita Personal Income	1.0%	1.6%
Personal Income	1.8%	2.2%
Population	0.9%	0.6%
<b>Metropolitan Council (MSP Area)</b>		
	<b>2017 Forecast CAGR (2020–2040)</b>	<b>2021 Forecast CAGR (2020–2040)</b>
Non-Farm Employment	0.6%	1.4%
Gross Regional Product	2.2%	3.1%
Personal Income	2.1%	2.2%
Population	0.8%	0.8%

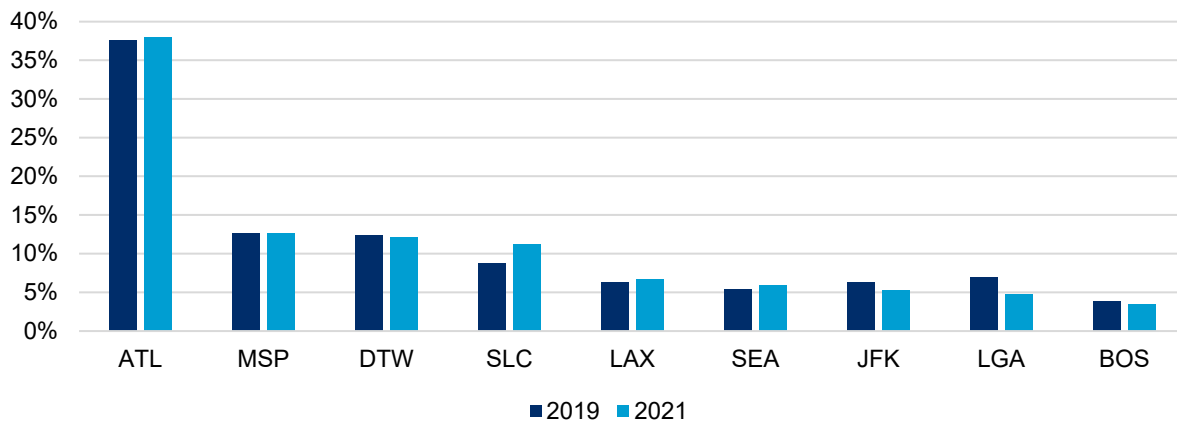
NOTES: CAGR – Compound Annual Growth Rate

When the baseline forecast was originally developed, 2017 was the most recent year of Metropolitan Council data.

<sup>1</sup> Data from Woods & Poole Economics, Inc.

SOURCES: Metropolitan Council, 2021; Woods & Poole Economics, Inc., 2021.

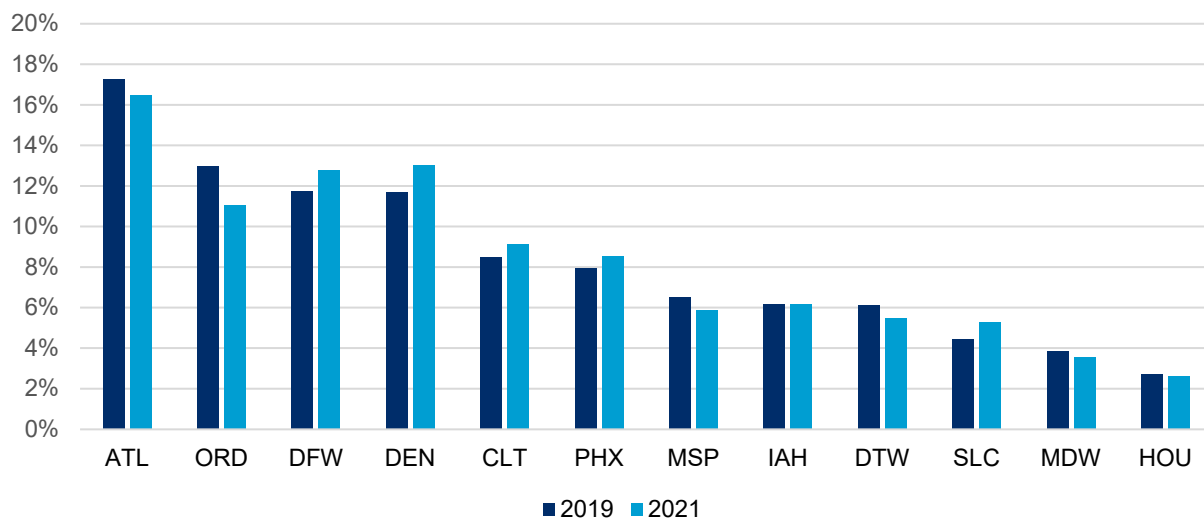
**Exhibit 2-34: Share of Domestic Seat Capacity at Delta Air Lines’ Hubs in 2019 and 2021**



NOTES: ATL – Hartsfield-Jackson Atlanta International Airport, DTW – Detroit Metropolitan Wayne County Airport, SLC- Salt Lake City International Airport, LAX – Los Angeles International Airport, SEA – Seattle-Tacoma International Airport, JFK – John F. Kennedy International Airport, LGA – LaGuardia Airport, BOS – Boston Logan International Airport.

SOURCE: Cirium, 2021.

**Exhibit 2-35: Share of Domestic Seat Capacity Among Selected Hubs in 2019 and 2021**



NOTES:ATL – Hartsfield-Jackson Atlanta International Airport; ORD – Chicago O’Hare International Airport, DFW – Dallas/Fort Worth International Airport, DEN – Denver International Airport, CLT – Charlotte Douglas International Airport, PHX – Phoenix Sky Harbor International Airport, IAH – Houston Intercontinental Airport, DTW – Detroit Metropolitan Wayne County Airport, SLC- Salt Lake City International Airport, MDW – Chicago Midway International Airport, HOU – William P. Hobby International Airport.  
SOURCE: Cirium, 2021.

While the Airport’s share has fallen slightly, that is largely due to the increased share of capacity at other hubs, namely Dallas Fort Worth International Airport (DFW), Denver International Airport (DEN), Charlotte Douglas International Airport (CLT), Phoenix Sky Harbor International Airport (PHX), and SLC, all of which experienced an increase in share during the pandemic due to their proximity to regions that have retained a relatively high amount of demand. Airlines have leveraged these airports to serve those regions more efficiently during the pandemic, and it was assumed that as pandemic-related influences subside, the share of capacity across U.S. hubs will normalize.

### 2.9.2 Modeling of Shorter-Term Passenger Recovery

The pandemic has disrupted the relationships between passenger volumes and drivers traditionally used to forecast demand, such as employment, personal income, and other socioeconomic factors. Passenger travel has more recently been influenced by factors such as travel restrictions, fear of illness, or work policies that have emerged since the onset of the pandemic.

As the effects of the pandemic subside, passenger demand is expected to be influenced again by traditional drivers. However, the return to that point will not be immediate, and the timing will likely be different based on factors such as regional economic recoveries, seat capacity allocation decisions by airlines, and local or national travel restrictions. The return to traditional drivers of growth will likely be uneven across markets and passenger types. As such, the path back to a point where demand is influenced by traditional factors, rather than pandemic-related concerns, was modeled using a methodology that considers both qualitative and quantitative factors.

The methodology considered the following:

- airline capacity and load factor recovery at MSP
- airline capacity recovery at airports served by MSP and in the industry overall
- economic recovery projected for the region and in regions served from MSP
- historical revenue produced by passengers in the individual markets served from MSP
- other forecasts developed for the Airport and the industry

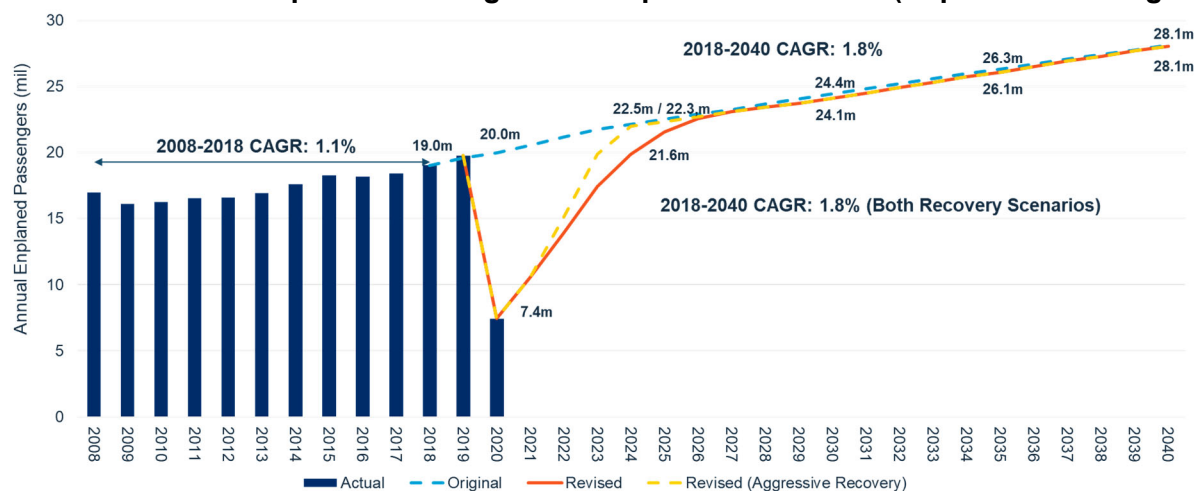
Using a combination of these factors, the return to traditional influences was estimated on a passenger-by-passenger basis according to the O&D of their travel. As modeled, pandemic-related influences continue to impact certain segments of passenger activity through 2026 (although growth continues during that period), after which traditional influences prevail throughout the remainder of the forecast period.

A more aggressive forecast of recovery to traditional drivers was also developed, which considered more favorable economic conditions and airline response. In the more aggressive scenario, pandemic-related influences were modeled to cease by the end of 2024.

### 2.9.3 Revised Enplaned Passenger Metrics

Exhibit 2-36 presents these updated enplaned passenger forecasts, shown as both revised and revised (aggressive recovery) alongside the original baseline forecast. Forecast annual enplaned passenger values revert to traditional drivers of activity, as previously described, and subsequently follow a similar path as the original baseline forecast through 2040, primarily as a result of the updated independent projections of socioeconomic drivers.

**Exhibit 2-36: Comparison of Original and Updated Forecasts (Enplaned Passengers)**



NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: MAC Activity Reports (actual); Ricondo & Associates, Inc., 2021 (forecast).

### 2.9.4 Passenger Aircraft Operations Forecast Revision

The fleet assumptions for the original baseline forecast were reviewed and updated for pandemic-influenced changes to inform an updated passenger aircraft operations forecast. Delta’s systemwide fleet changes comprise most of those adjustments:

- Retirement of certain aircraft immediately in 2020:
  - MD90
  - B777-200
  - B737-700 (not relevant to MSP)
  - MD88 (not relevant to MSP)
- Retirement of 50-seat regional jets by 2023
- Retirement of certain aircraft by 2025:
  - B717 (50% of fleet retired immediately in 2020)
  - B767-300 (40% of fleet retired immediately in 2020)

In certain instances, retired aircraft were assumed to be replaced on a one-for-one basis with other aircraft in the revised future fleet:

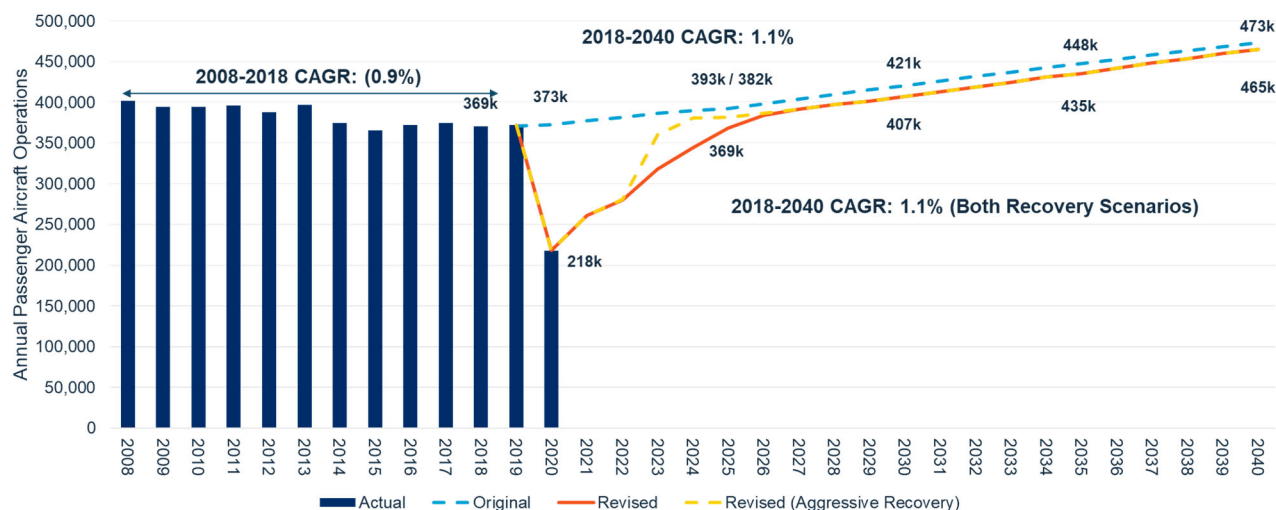
- MD90 aircraft replaced with A320-family aircraft
- B777-200 aircraft replaced with a combination of A330-300/900 and A350 aircraft
- B717 aircraft replaced with A220-family aircraft

In addition, certain aircraft were modeled to be replaced with other aircraft on a percentage basis:

- CRJ-200 aircraft replaced with CRJ900 aircraft on a 70% of operations basis
- B767-300 aircraft replaced with A330-900 aircraft on a 75% of operations basis

The revised fleet was modeled to accommodate the updated passenger forecast volumes, resulting in an updated passenger aircraft operations forecast, as reflected in **Exhibit 2-37** (shown for both recovery scenarios, and as compared to the original baseline forecast).

**Exhibit 2-37: Comparison of Original and Updated Forecasts (Passenger Aircraft Operations)**

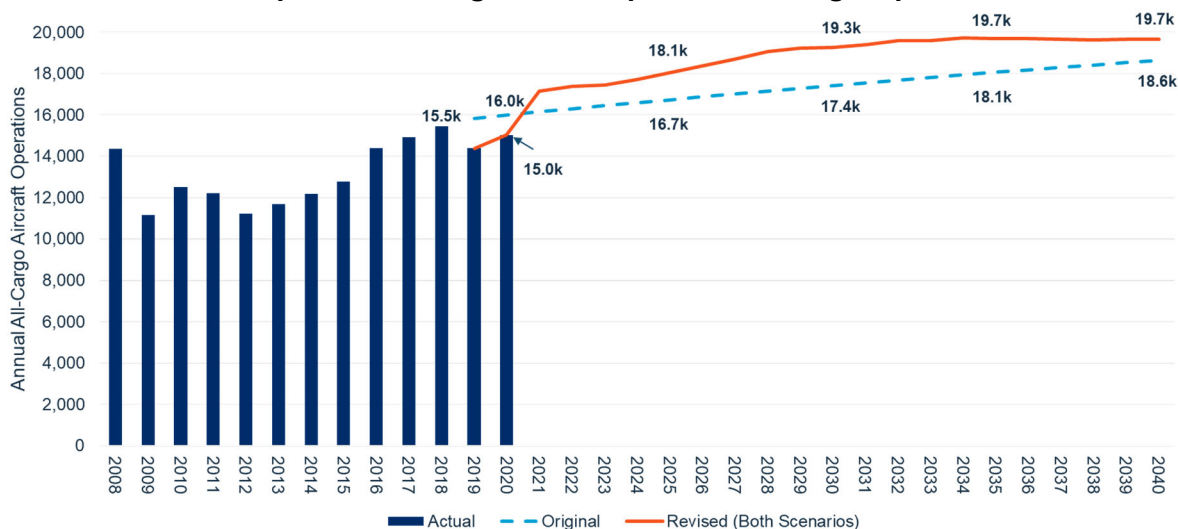


NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: MAC Activity Reports (actual); Ricondo & Associates, Inc., 2021 (forecast).

## 2.9.5 Cargo Volume and All-Cargo Aircraft Operations Forecast Revision

The forecast of cargo volumes was reviewed for possible adjustments to both the passenger-related and all-cargo carrier components. Passenger carrier cargo volumes were adjusted according to the revised forecast of passenger operations, while the all-cargo carrier portion was revised to consider changes in the FAA’s outlook of air cargo, as provided in the *Aerospace Forecast Fiscal Years 2021–2041*. The *Aerospace Forecast Fiscal Years 2018–2038* was used to inform the original baseline forecast values. A slightly higher industry-wide forecast of all-cargo carrier volume growth (translating to slightly higher all-cargo carrier cargo volumes at MSP) was coupled with minor increases to the forecast of average all-cargo aircraft capacity, resulting in a higher forecast of all-cargo operations. **Exhibit 2-38** compares the original baseline all-cargo carrier operations forecast with the revised forecast. Note: the all-cargo carrier forecast does not change in the aggressive recovery scenario.

**Exhibit 2-38: Comparison of Original and Updated All-Cargo Operations Forecasts**



SOURCES: MAC Activity Reports (actual); Ricondo & Associates, Inc., 2021 (forecast).

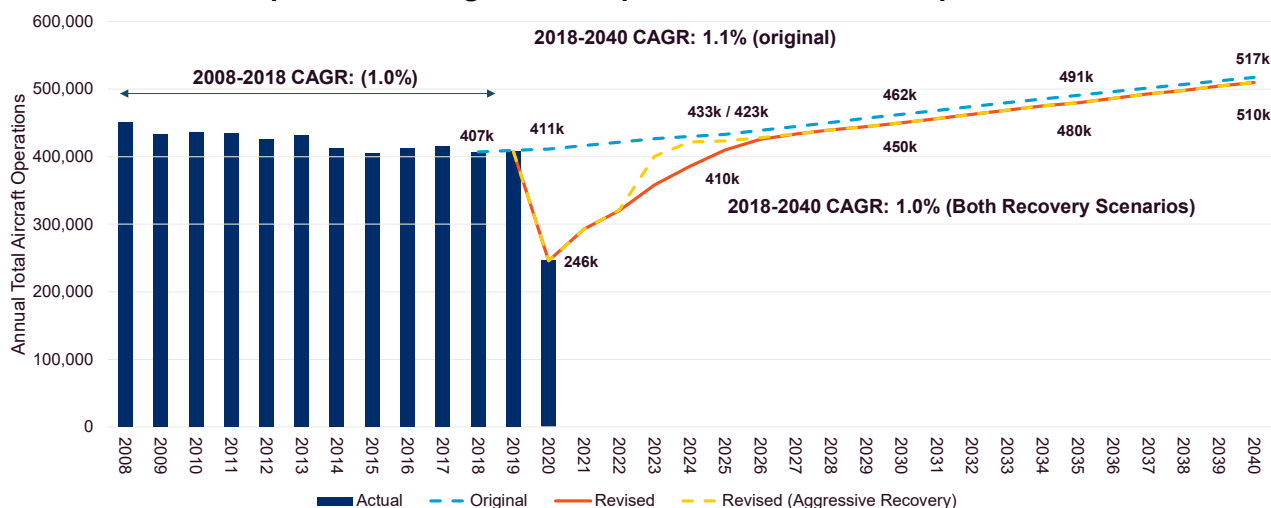
## 2.9.6 General Aviation and Military Operations Forecast Revision

GA operations forecasts were reviewed and ultimately unchanged, given the FAA’s similar, albeit slightly higher, growth guidance provided in its *Aerospace Forecast Fiscal Years 2021–2041* relative to its 2018 report. Military aircraft operations were revised slightly downward, as published in the 2020 TAF. As explained in the original report, military aircraft operations forecasts are taken directly from the TAF, as military aircraft operations are determined by the U.S. Department of Defense which does not publish guidance on future activity levels.

**Exhibit 2-39** compares the total aircraft operations forecasts.



**Exhibit 2-39: Comparison of Original and Updated Total Aircraft Operations Forecasts**



NOTE: CAGR – Compound Annual Growth Rate  
SOURCES: MAC Activity Reports (actual); Ricondo & Associates, Inc., 2021 (forecast).

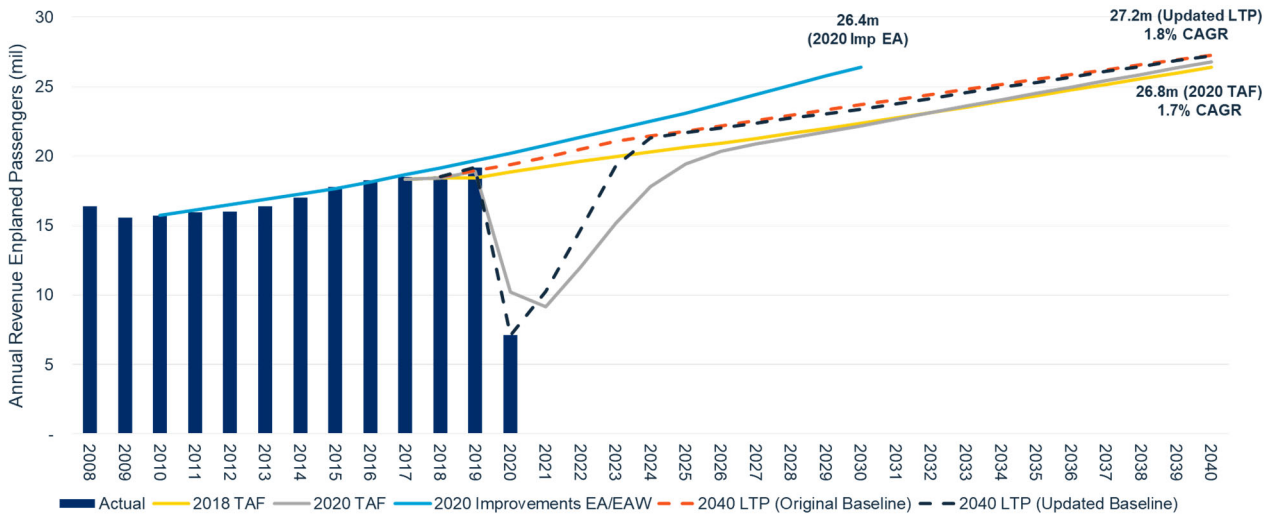
### 2.9.7 Design Day Flight Schedule Revision

The original baseline DDFSs for the spring and summer peaks were revised to reflect, as appropriate, changes in the annual forecast of the various segments of activity at MSP. As the enplaned passenger forecasts were similar in the outer years of the revised forecast compared to the original baseline forecast, changes to the passenger activity DDFS in 2030 and 2040 related mainly to changes in operations resulting from adjusted fleet plans. For 2025, the more aggressive recovery scenario was modeled in the DDFSs. That scenario reflected 2025 annual passenger volumes similar to the results in the original baseline forecast, and thus the updated 2025 DDFS also reflected changes mainly in the prevailing fleet. Other segments of capacity in the DDFSs were left largely unchanged, as it was assumed that the original baseline DDFS values remained reflective of those operations in the respective peak periods, with increases or decreases in off-peak periods. However, additional all-cargo operations were added to the spring DDFSs for all future years. Revised DDFS metrics for the spring and summer periods are included in the tables in **Section 2.10**.

### 2.9.8 Comparison to TAF Forecasts

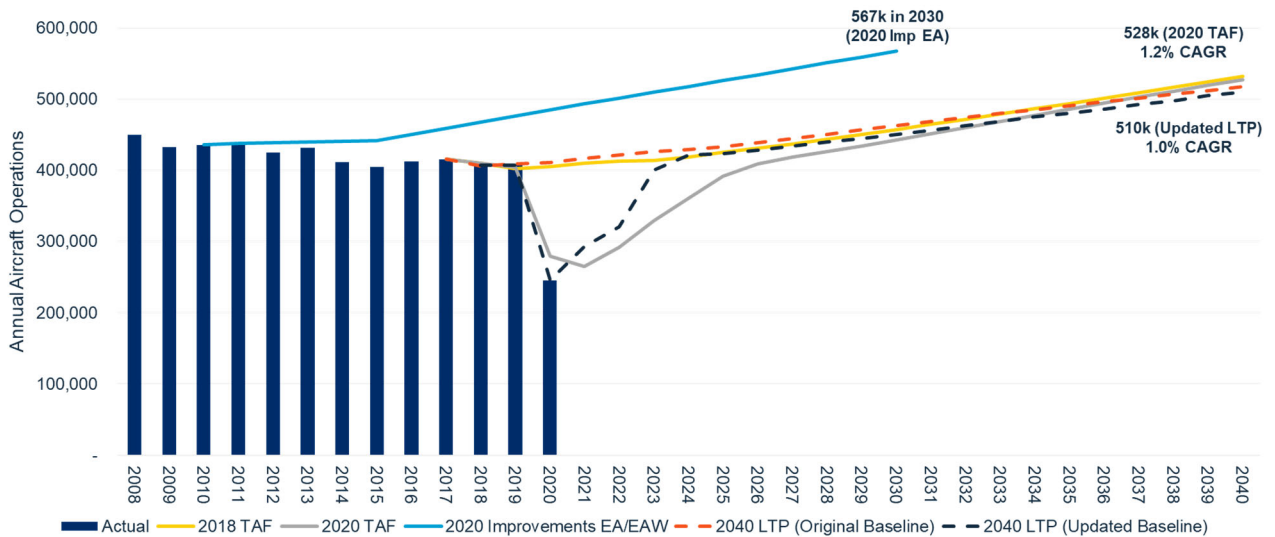
The results of the revised (aggressive recovery) 2040 LTP forecast were compared to the original 2040 LTP baseline forecast and the FAA’s 2018 and 2022 TAFs for the Airport. **Exhibits 2-40** and **2-41** compare the revenue enplaned passengers and total aircraft operations forecasts. The updated 2040 LTP forecast anticipates 27.0 million revenue enplaned passengers in 2040, reflecting a CAGR of 1.8%. In comparison, the 2022 TAF anticipates 26.3 million revenue enplaned passengers in 2040, a CAGR of 1.6%. Revenue enplaned passengers are compared to be consistent with TAF reporting. Forecasts have also been adjusted to reflect federal fiscal year (FFY – the 12 months ending September) to be consistent with the TAF standard. Additional comparisons are presented in **Tables 2-17** and **2-18**, comparing the revised (aggressive recovery) forecast and the 2022 TAF both in federal fiscal year and revenue passenger terms.

**Exhibit 2-40: Comparison of Selected Enplaned Passenger Forecasts**



NOTES: EA – Environmental Assessment; EAW – Environmental Assessment Worksheet; CAGR – Compound Annual Growth Rate; LTP – Long-Term Plan; TAF – Terminal Area Forecast  
The Federal Aviation Administration’s Terminal Area Forecasts reflect the federal fiscal year (October through September).  
SOURCES: MAC Activity Reports (actual); Ricondo & Associates, Inc., 2021 (Long-Term Plan forecasts); U.S. Department of Transportation, Federal Aviation Administration, 2022 *Terminal Area Forecast*, 2023.

**Exhibit 2-41: Comparison of Selected Aircraft Operations Forecasts**



NOTES: EA – Environmental Assessment; EAW – Environmental Assessment Worksheet; CAGR – Compound Annual Growth Rate; LTP – Long-Term Plan; TAF – Terminal Area Forecast  
The Federal Aviation Administration’s Terminal Area Forecasts reflect the federal fiscal year (October through September).  
SOURCES: MAC Activity Reports (actual and 2020 Improvements EA/EAW forecasts); Ricondo & Associates, Inc., 2021 (Long-Term Plan forecasts); U.S. Department of Transportation, Federal Aviation Administration, *Terminal Area Forecast*, 2022.

## 2.10 REVISED BASELINE FORECAST AND DESIGN DAY FLIGHT SCHEDULE TABLES

**Tables 2-17** through **2-31** present the revised historical and forecast data in relation to enplaned passengers, passenger activity, air cargo, and aircraft operations. Additionally, these tables present peak hour and daily metrics.

Regarding Planning Activity Levels (PALs), annual forecasts are often used to create planning timelines that correlate improvement projects with specific calendar years. Using PALs instead of forecast years removes timeframes from the analysis and focuses on implementing projects when the Airport reaches certain activity levels. For most planning purposes, the timing for capacity-related improvements should correlate to activity levels. In the original forecast, PALs were identified for the activity levels at years 2025, 2030, and 2040 (PALs 1, 2, and 3, respectively). Because the post-pandemic update to the forecast also included updates to the DDFSs developed for years 2025, 2030, and 2040, PALs 1, 2, and 3 have been re-established as the activity as forecast in those years. **Table 2-31** illustrates those levels.

**Table 2-17: Historical and Forecast Enplaned Passengers – Revised**

	Year	Enplaned Passengers (mil)						
		Total	O&D	Connecting	% O&D	Domestic	International	% Domestic
<b>Actual</b>	2008	17.0	8.5	8.5	49.9%	15.7	1.3	92%
	2009	16.1	8.3	7.8	51.4%	15.0	1.1	93%
	2010	16.3	8.4	7.9	51.4%	15.1	1.2	93%
	2011	16.5	8.6	7.9	52.1%	15.4	1.1	93%
	2012	16.6	8.6	8.0	51.7%	15.5	1.1	93%
	2013	16.9	8.8	8.2	51.7%	15.8	1.2	93%
	2014	17.6	9.3	8.3	53.0%	16.4	1.2	93%
	2015	18.3	9.8	8.5	53.8%	17.0	1.3	93%
	2016	18.7	10.5	8.2	56.2%	17.3	1.4	92%
	2017	19.0	11.0	8.0	58.1%	17.5	1.5	92%
	2018	19.0	11.5	7.5	60.4%	17.5	1.5	92%
	2019	19.8	12.1	7.7	60.9%	18.2	1.6	92%
	2020	7.4	4.7	2.8	62.8%	7.0	0.4	94%
<b>Forecast</b>	2021	10.6	6.6	4.0	62.2%	10.3	0.3	97%
	2022	13.9	8.7	5.3	62.2%	13.2	0.7	95%
	2023	17.4	10.8	6.6	62.2%	16.3	1.1	94%
	2024	19.9	12.1	7.8	60.8%	18.4	1.5	92%
	2025	21.6	13.1	8.5	60.7%	19.9	1.7	92%
	2026	22.6	13.7	8.9	60.6%	20.7	1.9	92%
	2027	23.1	14.0	9.1	60.6%	21.2	1.9	92%
	2028	23.4	14.2	9.3	60.5%	21.5	2.0	92%
	2029	23.7	14.3	9.4	60.4%	21.7	2.0	92%
	2030	24.1	14.6	9.6	60.4%	22.1	2.0	92%
	2031	24.5	14.8	9.7	60.3%	22.4	2.1	91%
	2032	24.9	15.0	9.9	60.2%	22.8	2.1	91%
	2033	25.3	15.2	10.1	60.1%	23.1	2.2	91%
	2034	25.7	15.4	10.3	60.0%	23.5	2.2	91%
	2035	26.1	15.6	10.4	59.9%	23.8	2.3	91%
	2036	26.5	15.8	10.6	59.8%	24.1	2.3	91%
	2037	26.9	16.1	10.8	59.7%	24.5	2.4	91%
	2038	27.3	16.2	11.0	59.6%	24.8	2.4	91%
	2039	27.7	16.5	11.2	59.5%	25.2	2.5	91%
	2040	28.1	16.7	11.4	59.4%	25.5	2.5	91%
<b>CAGR</b>								
<b>2008–2018</b>		1.1%	3.1%	-1.2%		1.1%	1.4%	
<b>2018–2040</b>		1.8%	1.7%	1.9%		1.7%	2.4%	

NOTES: O&D – Origin and Destination; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2021; U.S. Department of Transportation, T-100, 2021; Sabre, Market Information Data Tapes (MIDT), 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-18: Historical and Forecast Enplaned Passengers – Revised and Aggressive Recovery**

	Year	Enplaned Passengers (mil)						
		Total	O&D	Connecting	% O&D	Domestic	International	% Domestic
<b>Actual</b>	2008	17.0	8.5	8.5	49.9%	15.7	1.3	92%
	2009	16.1	8.3	7.8	51.4%	15.0	1.1	93%
	2010	16.3	8.4	7.9	51.4%	15.1	1.2	93%
	2011	16.5	8.6	7.9	52.1%	15.4	1.1	93%
	2012	16.6	8.6	8.0	51.7%	15.5	1.1	93%
	2013	16.9	8.8	8.2	51.7%	15.8	1.2	93%
	2014	17.6	9.3	8.3	53.0%	16.4	1.2	93%
	2015	18.3	9.8	8.5	53.8%	17.0	1.3	93%
	2016	18.7	10.5	8.2	56.2%	17.3	1.4	92%
	2017	19.0	11.0	8.0	58.1%	17.5	1.5	92%
	2018	19.0	11.5	7.5	60.4%	17.5	1.5	92%
	2019	19.8	12.1	7.7	60.9%	18.2	1.6	92%
	2020	7.4	4.7	2.8	62.8%	7.0	0.4	94%
<b>Forecast</b>	2021	10.6	6.6	4.0	62.2%	10.3	0.3	97%
	2022	15.1	9.4	5.7	62.1%	14.2	0.9	94%
	2023	19.9	12.1	7.7	61.0%	18.5	1.4	93%
	2024	22.0	13.3	8.6	60.7%	20.3	1.7	92%
	2025	22.3	13.6	8.8	60.7%	20.6	1.8	92%
	2026	22.7	13.8	9.0	60.6%	20.8	1.9	92%
	2027	23.1	14.0	9.1	60.6%	21.2	1.9	92%
	2028	23.4	14.2	9.3	60.5%	21.5	2.0	92%
	2029	23.7	14.3	9.4	60.4%	21.7	2.0	92%
	2030	24.1	14.6	9.6	60.4%	22.1	2.0	92%
	2031	24.5	14.8	9.7	60.3%	22.4	2.1	91%
	2032	24.9	15.0	9.9	60.2%	22.8	2.1	91%
	2033	25.3	15.2	10.1	60.1%	23.1	2.2	91%
	2034	25.7	15.4	10.3	60.0%	23.5	2.2	91%
	2035	26.1	15.6	10.4	59.9%	23.8	2.3	91%
	2036	26.5	15.8	10.6	59.8%	24.1	2.3	91%
	2037	26.9	16.1	10.8	59.7%	24.5	2.4	91%
	2038	27.3	16.2	11.0	59.6%	24.8	2.4	91%
	2039	27.7	16.5	11.2	59.5%	25.2	2.5	91%
	2040	28.1	16.7	11.4	59.4%	25.5	2.5	91%
<b>CAGR</b>								
<b>2008–2018</b>		1.1%	3.1%	-1.2%		1.1%	1.4%	
<b>2018–2040</b>		1.8%	1.7%	1.9%		1.7%	2.4%	

NOTES: O&D – Origin and Destination; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, Airline Origin and Destination Survey (DB1B), 2021; U.S. Department of Transportation, T-100, 2021; Sabre, Market Information Data Tapes (MIDT), 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-19: (1 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown) – Revised**

	Year	Domestic (Both Directions)					International (Both Directions)					Total (Both Directions)				
		Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF
<b>Actual</b>	2008	378	31.3	82.8	103.3	80.1%	24	2.6	108.3	134.4	80.6%	402	33.9	84.3	105.1	80.2%
	2009	372	29.9	80.5	102.2	78.7%	22	2.3	100.8	127.3	79.1%	395	32.2	81.6	103.6	78.8%
	2010	368	30.2	82.0	100.4	81.7%	27	2.4	89.1	111.8	79.7%	394	32.5	82.5	101.1	81.6%
	2011	370	30.8	83.3	100.3	83.1%	26	2.3	87.2	108.5	80.4%	396	33.1	83.5	100.8	82.9%
	2012	363	30.9	85.2	101.7	83.8%	25	2.2	89.3	106.6	83.8%	388	33.1	85.5	102.1	83.8%
	2013	372	31.5	84.7	102.5	82.7%	24	2.3	95.7	112.1	85.3%	397	33.9	85.4	103.1	82.8%
	2014	351	32.7	93.3	108.9	85.6%	24	2.4	101.0	119.4	84.6%	375	35.2	93.8	109.6	85.5%
	2015	341	33.9	99.5	114.9	86.6%	24	2.7	109.4	126.5	86.5%	365	36.6	100.1	115.6	86.6%
	2016	347	34.6	99.9	117.1	85.3%	25	2.8	111.5	132.3	84.3%	372	37.5	100.7	118.2	85.2%
	2017	351	35.0	99.8	118.0	84.6%	24	3.0	124.5	145.2	85.8%	375	38.0	101.3	119.7	84.7%
	2018	345	35.0	101.5	118.7	85.6%	24	3.0	124.7	149.1	83.6%	369	38.0	103.0	121.0	85.2%
	2019	347	36.4	104.9	122.1	85.9%	25	3.2	125.2	154.3	81.2%	372	39.6	106.3	124.3	85.5%
	2020	210	14.0	66.6	118.5	56.2%	8	0.9	107.3	147.5	72.7%	218	14.9	68.1	119.6	57.0%
<b>Forecast</b>	2021	255	20.5	80.6	123.6	65.2%	7	0.6	91.2	171.6	53.2%	261	21.1	80.9	124.8	64.8%
	2022	267	26.5	99.2	125.6	79.0%	14	1.4	101.6	163.3	62.2%	280	27.8	99.3	127.4	78.0%
	2023	301	32.7	108.6	127.7	85.1%	17	2.2	126.7	164.5	77.0%	318	34.9	109.6	129.7	84.5%
	2024	324	36.8	113.7	133.5	85.2%	21	3.0	141.2	164.5	85.8%	345	39.8	115.4	135.4	85.2%
	2025	343	39.7	115.8	135.2	85.6%	25	3.4	134.0	164.3	81.6%	369	43.1	117.1	137.2	85.3%
	2026	358	41.4	115.7	135.7	85.3%	26	3.7	141.9	164.8	86.0%	384	45.1	117.5	137.7	85.3%
	2027	365	42.3	116.1	136.1	85.3%	27	3.8	142.4	165.3	86.1%	391	46.2	117.9	138.1	85.4%
	2028	370	43.0	116.2	136.1	85.4%	27	3.9	143.4	166.3	86.2%	397	46.9	118.1	138.1	85.5%
	2029	374	43.5	116.3	136.0	85.5%	28	4.0	144.5	167.5	86.3%	401	47.5	118.2	138.2	85.6%
	2030	379	44.2	116.5	136.1	85.6%	28	4.1	145.7	168.7	86.4%	407	48.2	118.5	138.4	85.6%
	2031	384	44.8	116.6	136.2	85.6%	28	4.2	146.7	169.6	86.5%	413	49.0	118.7	138.5	85.7%
	2032	390	45.5	116.8	136.3	85.7%	29	4.3	147.6	170.5	86.5%	419	49.8	118.9	138.7	85.8%
	2033	395	46.3	117.0	136.4	85.8%	30	4.4	148.5	171.4	86.6%	425	50.6	119.2	138.8	85.9%
	2034	401	47.0	117.2	136.5	85.9%	30	4.5	149.4	172.4	86.7%	431	51.5	119.4	139.0	85.9%
	2035	405	47.5	117.4	136.6	85.9%	30	4.6	150.3	173.3	86.8%	435	52.1	119.7	139.2	86.0%

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-19: (2 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown) – Revised**

Year	Domestic (Both Directions)					International (Both Directions)					Total (Both Directions)				
	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF
2036	411	48.3	117.5	136.6	86.0%	31	4.7	151.2	174.1	86.8%	442	53.0	119.9	139	86.1%
2037	417	49.1	117.6	136.7	86.1%	31	4.8	152.0	174.9	86.9%	448	53.8	120.1	139	86.1%
2038	421	49.6	117.8	136.8	86.1%	32	4.9	152.8	175.7	87.0%	453	54.5	120.3	140	86.2%
2039	428	50.4	118.0	136.8	86.2%	32	5.0	153.6	176.4	87.1%	460	55.4	120.5	140	86.3%
2040	432	51.0	118.1	136.9	86.3%	33	5.1	154.4	177.2	87.1%	465	56.1	120.7	140	86.4%
<b>CAGR</b>															
<b>2008–2018</b>	-0.9%	1.1%	2.1%	1.4%		0.0%	1.4%	1.4%	1.0%		-0.9%	1.1%	2.0%	1.4%	
<b>2018–2040</b>	1.0%	1.7%	0.7%	0.7%		1.5%	2.4%	1.0%	0.8%		1.1%	1.8%	0.7%	0.7%	

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-20: (1 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown) – Revised and Aggressive Recovery**

	Year	Domestic (Both Directions)					International (Both Directions)					Total (Both Directions)				
		Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF
<b>Actual</b>	2008	378.4	31.3	82.8	103.3	80.1%	24.0	2.6	108.3	134.4	80.6%	402.3	33.9	84.3	105.1	80.2%
	2009	372.2	29.9	80.5	102.2	78.7%	22.5	2.3	100.8	127.3	79.1%	394.6	32.2	81.6	103.6	78.8%
	2010	367.9	30.2	82.0	100.4	81.7%	26.5	2.4	89.1	111.8	79.7%	394.4	32.5	82.5	101.1	81.6%
	2011	369.8	30.8	83.3	100.3	83.1%	26.2	2.3	87.2	108.5	80.4%	396.0	33.1	83.5	100.8	82.9%
	2012	362.7	30.9	85.2	101.7	83.8%	25.0	2.2	89.3	106.6	83.8%	387.7	33.1	85.5	102.1	83.8%
	2013	372.2	31.5	84.7	102.5	82.7%	24.5	2.3	95.7	112.1	85.3%	396.7	33.9	85.4	103.1	82.8%
	2014	351.0	32.7	93.3	108.9	85.6%	24.1	2.4	101.0	119.4	84.6%	375.1	35.2	93.8	109.6	85.5%
	2015	341.0	33.9	99.5	114.9	86.6%	24.3	2.7	109.4	126.5	86.5%	365.3	36.6	100.1	115.6	86.6%
	2016	346.8	34.6	99.9	117.1	85.3%	25.5	2.8	111.5	132.3	84.3%	372.3	37.5	100.7	118.2	85.2%
	2017	351.0	35.0	99.8	118.0	84.6%	24.0	3.0	124.5	145.2	85.8%	375.0	38.0	101.3	119.7	84.7%
	2018	344.8	35.0	101.5	118.7	85.6%	24.0	3.0	124.7	149.1	83.6%	368.8	38.0	103.0	121.0	85.2%
	2019	347.0	36.4	104.9	122.1	85.9%	25.2	3.2	125.2	154.3	81.2%	372.1	39.6	106.3	124.3	85.5%
	2020	209.7	14.0	66.6	118.5	56.2%	8.3	0.9	107.3	147.5	72.7%	218.1	14.9	68.1	119.6	57.0%
<b>Forecast</b>	2021	254.5	20.5	80.6	123.6	65.2%	6.6	0.6	91.2	171.6	53.2%	261.1	21.1	80.9	124.8	64.8%
	2022	266.6	28.5	106.8	125.6	85.0%	14.4	1.8	125.8	163.3	77.0%	281.0	30.3	107.7	127.6	84.5%
	2023	340.1	37.0	108.6	127.7	85.1%	20.1	2.8	138.2	164.5	84.0%	360.3	39.7	110.3	129.8	85.0%
	2024	357.4	40.6	113.7	133.5	85.2%	23.4	3.3	141.2	164.5	85.8%	380.8	44.0	115.4	135.4	85.2%
	2025	357.1	41.2	115.3	135.2	85.2%	25.0	3.5	141.2	164.3	85.9%	382.1	44.7	117.0	137.1	85.3%
	2026	360.0	41.7	115.7	135.7	85.3%	26.5	3.8	141.9	164.8	86.0%	386.5	45.4	117.5	137.7	85.3%
	2027	364.7	42.3	116.1	136.1	85.3%	26.7	3.8	142.4	165.3	86.1%	391.4	46.2	117.9	138.1	85.4%
	2028	370.0	43.0	116.2	136.1	85.4%	27.2	3.9	143.4	166.3	86.2%	397.2	46.9	118.1	138.1	85.5%
	2029	373.9	43.5	116.3	136.0	85.5%	27.5	4.0	144.5	167.5	86.3%	401.4	47.5	118.2	138.2	85.6%
	2030	379.1	44.2	116.5	136.1	85.6%	28.0	4.1	145.7	168.7	86.4%	407.1	48.2	118.5	138.4	85.6%
	2031	384.4	44.8	116.6	136.2	85.6%	28.5	4.2	146.7	169.6	86.5%	412.9	49.0	118.7	138.5	85.7%
	2032	389.9	45.5	116.8	136.3	85.7%	29.0	4.3	147.6	170.5	86.5%	418.9	49.8	118.9	138.7	85.8%
	2033	395.4	46.3	117.0	136.4	85.8%	29.5	4.4	148.5	171.4	86.6%	424.9	50.6	119.2	138.8	85.9%
	2034	401.0	47.0	117.2	136.5	85.9%	30.0	4.5	149.4	172.4	86.7%	431.0	51.5	119.4	139.0	85.9%
	2035	405.1	47.5	117.4	136.6	85.9%	30.4	4.6	150.3	173.3	86.8%	435.5	52.1	119.7	139.2	86.0%

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).



**Table 2-20: (2 of 2) Historical and Forecast Passenger Activity Metrics (Average Seats as Flown) – Revised and Aggressive Recovery**

Year	Domestic (Both Directions)						International (Both Directions)						Total (Both Directions)					
	Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF		Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF		Ops (000)	Pax (mil)	Pax/Flt	Avg. Seats	LF	
2036	411.0	48.3	117.5	136.6	86.0%		30.9	4.7	151.2	174.1	86.8%		441.9	53.0	119.9	139.3	86.1%	
2037	417.0	49.1	117.6	136.7	86.1%		31.5	4.8	152.0	174.9	86.9%		448.5	53.8	120.1	139.4	86.1%	
2038	421.5	49.6	117.8	136.8	86.1%		31.9	4.9	152.8	175.7	87.0%		453.4	54.5	120.3	139.5	86.2%	
2039	427.5	50.4	118.0	136.8	86.2%		32.5	5.0	153.6	176.4	87.1%		460.0	55.4	120.5	139.6	86.3%	
2040	432.0	51.0	118.1	136.9	86.3%		32.9	5.1	154.4	177.2	87.1%		465.0	56.1	120.7	139.8	86.4%	
<b>CAGR</b>																		
<b>2008–2018</b>	-0.9%	1.1%	2.1%	1.4%			0.0%	1.4%	1.4%	1.0%			-0.9%	1.1%	2.0%	1.4%		
<b>2018–2040</b>	1.0%	1.7%	0.7%	0.7%			1.5%	2.4%	1.0%	0.8%			1.1%	1.8%	0.7%	0.7%		

NOTES: CAGR – Compound Annual Growth Rate; LF – Load Factor

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-21: Historical and Forecast Air Cargo Volumes and Operations – Revised**

	Year	Cargo Volume (000 Tons)			Air Cargo Operations (000)	Cargo Tons Per Air Cargo Operation
		Air Cargo	Passenger	Total		
<b>Actual</b>	2008	205.5	51.6	257.1	14.4	14.3
	2009	168.4	40.7	209.1	11.1	15.1
	2010	182.8	50.8	233.6	12.5	14.6
	2011	177.7	52.3	230.0	12.2	14.6
	2012	162.9	56.1	219.0	11.2	14.5
	2013	158.7	63.2	221.9	11.7	13.6
	2014	157.1	66.8	223.9	12.2	12.9
	2015	152.8	66.9	219.7	12.8	12.0
	2016	167.7	60.4	228.1	14.4	11.6
	2017	175.9	77.1	252.9	14.9	11.8
	2018	188.8	75.0	263.8	15.5	12.2
	2019	198.5	53.6	252.1	14.4	13.8
	2020	198.2	25.9	224.1	15.0	13.2
<b>Forecast</b>	2021	227.3	54.3	281.6	17.2	13.2
	2022	231.1	59.0	290.1	17.4	13.3
	2023	232.6	67.4	300.1	17.4	13.3
	2024	237.1	76.4	313.5	17.7	13.4
	2025	242.5	82.8	325.3	18.1	13.4
	2026	247.6	86.6	334.1	18.4	13.5
	2027	253.2	88.5	341.7	18.7	13.5
	2028	259.0	89.9	348.9	19.1	13.6
	2029	262.0	90.9	352.8	19.2	13.6
	2030	263.4	92.3	355.7	19.3	13.7
	2031	266.4	93.7	360.1	19.4	13.7
	2032	269.8	95.2	364.9	19.6	13.8
	2033	272.9	96.7	369.5	19.6	13.9
	2034	277.3	98.2	375.4	19.7	14.1
	2035	279.8	99.3	379.1	19.7	14.2
	2036	282.9	100.9	383.7	19.7	14.4
	2037	285.7	102.5	388.2	19.7	14.5
	2038	288.0	103.7	391.7	19.6	14.7
	2039	291.8	105.3	397.0	19.7	14.8
	2040	295.3	106.5	401.8	19.7	15.0
<b>CAGR</b>						
<b>2008–2018</b>		-0.8%	3.8%	0.3%	0.7%	-1.6%
<b>2018–2040</b>		2.1%	1.6%	1.9%	1.1%	0.9%

NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-22: Historical and Forecast Air Cargo Volumes and Operations – Revised and Aggressive Recovery**

	Year	Cargo Volume (000 Tons)			Air Cargo Operations (000)	Cargo Tons Per Air Cargo Operation
		Air Cargo	Passenger	Total		
<b>Actual</b>	2008	205.5	51.6	257.1	14.4	14.3
	2009	168.4	40.7	209.1	11.1	15.1
	2010	182.8	50.8	233.6	12.5	14.6
	2011	177.7	52.3	230.0	12.2	14.6
	2012	162.9	56.1	219.0	11.2	14.5
	2013	158.7	63.2	221.9	11.7	13.6
	2014	157.1	66.8	223.9	12.2	12.9
	2015	152.8	66.9	219.7	12.8	12.0
	2016	167.7	60.4	228.1	14.4	11.6
	2017	175.9	77.1	252.9	14.9	11.8
	2018	188.8	75.0	263.8	15.5	12.2
	2019	198.5	53.6	252.1	14.4	13.8
	2020	198.2	25.9	224.1	15.0	13.2
<b>Forecast</b>	2021	227.3	54.3	281.6	17.2	13.2
	2022	231.1	59.2	290.3	17.4	13.3
	2023	232.6	76.4	309.1	17.4	13.3
	2024	237.1	84.4	321.5	17.7	13.4
	2025	242.5	85.8	328.3	18.1	13.4
	2026	247.6	87.1	334.7	18.4	13.5
	2027	253.2	88.5	341.7	18.7	13.5
	2028	259.0	89.9	348.9	19.1	13.6
	2029	262.0	90.9	352.8	19.2	13.6
	2030	263.4	92.3	355.7	19.3	13.7
	2031	266.4	93.7	360.1	19.4	13.7
	2032	269.8	95.2	364.9	19.6	13.8
	2033	272.9	96.7	369.5	19.6	13.9
	2034	277.3	98.2	375.4	19.7	14.1
	2035	279.8	99.3	379.1	19.7	14.2
	2036	282.9	100.9	383.7	19.7	14.4
	2037	285.7	102.5	388.2	19.7	14.5
	2038	288.0	103.7	391.7	19.6	14.7
	2039	291.8	105.3	397.0	19.7	14.8
	2040	295.3	106.5	401.8	19.7	15.0
<b>CAGR</b>						
	<b>2008–2018</b>	-0.8%	3.8%	0.3%	0.7%	-1.6%
	<b>2018–2040</b>	2.1%	1.6%	1.9%	1.1%	0.9%

NOTE: CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-23: Historical and Forecast Aircraft Operations – Revised**

		Annual Aircraft Operations (000)							Overall Total
		Passenger			Non Passenger				
Year		Domestic	International	Total	Air Cargo	GA / Air Taxi	Military	Total	
<b>Actual</b>	2008	378.4	24.0	402.3	14.4	31.9	3.0	49.2	451.6
	2009	372.2	22.5	394.6	11.1	24.2	2.7	38.0	432.6
	2010	367.9	26.5	394.4	12.5	25.9	2.8	41.2	435.6
	2011	369.8	26.2	396.0	12.2	23.9	2.9	39.1	435.1
	2012	362.7	25.0	387.7	11.2	23.5	2.4	37.2	424.9
	2013	372.2	24.5	396.7	11.7	20.6	2.5	34.9	431.6
	2014	351.0	24.1	375.1	12.2	22.1	2.4	36.7	411.8
	2015	341.0	24.3	365.3	12.8	23.4	2.8	39.0	404.4
	2016	346.8	25.5	372.3	14.4	23.3	2.9	40.6	412.9
	2017	351.0	24.0	375.0	14.9	23.7	2.0	40.7	415.7
	2018	344.8	24.0	368.8	15.5	20.1	2.6	38.1	406.9
	2019	347.0	25.2	372.1	14.4	18.7	2.2	35.3	407.5
	2020	209.7	8.3	218.1	15.0	10.5	2.2	27.8	245.9
<b>Forecast</b>	2021	254.5	6.6	261.1	17.2	12.2	2.2	31.6	292.7
	2022	266.6	13.6	280.2	17.4	20.6	2.2	40.2	320.4
	2023	300.6	17.3	317.9	17.4	20.7	2.2	40.4	358.3
	2024	323.6	21.2	344.8	17.7	20.8	2.2	40.8	385.6
	2025	343.1	25.4	368.5	18.1	20.9	2.2	41.2	409.8
	2026	357.6	26.3	383.9	18.4	21.1	2.2	41.7	425.6
	2027	364.7	26.7	391.4	18.7	21.2	2.2	42.2	433.6
	2028	370.0	27.2	397.2	19.1	21.3	2.2	42.6	439.8
	2029	373.9	27.5	401.4	19.2	21.4	2.2	42.9	444.3
	2030	379.1	28.0	407.1	19.3	21.6	2.2	43.1	450.1
	2031	384.4	28.5	412.9	19.4	21.7	2.2	43.4	456.3
	2032	389.9	29.0	418.9	19.6	21.8	2.2	43.7	462.5
	2033	395.4	29.5	424.9	19.6	22.0	2.2	43.8	468.7
	2034	401.0	30.0	431.0	19.7	22.1	2.2	44.1	475.1
	2035	405.1	30.4	435.5	19.7	22.2	2.2	44.2	479.6
	2036	411.0	30.9	441.9	19.7	22.4	2.2	44.3	486.2
	2037	417.0	31.5	448.5	19.7	22.5	2.2	44.4	492.9
	2038	421.5	31.9	453.4	19.6	22.6	2.2	44.5	497.9
	2039	427.5	32.5	460.0	19.7	22.8	2.2	44.7	504.7
	2040	432.0	32.9	465.0	19.7	22.9	2.2	44.8	509.8
<b>CAGR</b>									
<b>2008–2018</b>		-0.9%	0.0%	-0.9%	0.7%	-4.5%	-1.6%	-2.5%	-1.0%
<b>2018–2040</b>		1.0%	1.5%	1.1%	1.1%	0.6%	-0.6%	0.7%	1.0%

NOTES: GA – General Aviation; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Department of Transportation, Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-24: Historical and Forecast Aircraft Operations – Revised and Aggressive Recovery**

		Annual Aircraft Operations (000)							
		Passenger			Non Passenger				
	Year	Domestic	International	Total	Air Cargo	GA / Air Taxi	Military	Total	Overall Total
<b>Actual</b>	2008	378.4	24.0	402.3	14.4	31.9	3.0	49.2	451.6
	2009	372.2	22.5	394.6	11.1	24.2	2.7	38.0	432.6
	2010	367.9	26.5	394.4	12.5	25.9	2.8	41.2	435.6
	2011	369.8	26.2	396.0	12.2	23.9	2.9	39.1	435.1
	2012	362.7	25.0	387.7	11.2	23.5	2.4	37.2	424.9
	2013	372.2	24.5	396.7	11.7	20.6	2.5	34.9	431.6
	2014	351.0	24.1	375.1	12.2	22.1	2.4	36.7	411.8
	2015	341.0	24.3	365.3	12.8	23.4	2.8	39.0	404.4
	2016	346.8	25.5	372.3	14.4	23.3	2.9	40.6	412.9
	2017	351.0	24.0	375.0	14.9	23.7	2.0	40.7	415.7
	2018	344.8	24.0	368.8	15.5	20.1	2.6	38.1	406.9
	2019	347.0	25.2	372.1	14.4	18.7	2.2	35.3	407.5
	2020	209.7	8.3	218.1	15.0	10.5	2.2	27.8	245.9
<b>Forecast</b>	2021	254.5	6.6	261.1	17.2	12.2	2.2	31.6	292.7
	2022	266.6	14.4	281.0	17.4	20.6	2.2	40.2	321.2
	2023	340.1	20.1	360.3	17.4	20.7	2.2	40.4	400.6
	2024	357.4	23.4	380.8	17.7	20.8	2.2	40.8	421.6
	2025	357.1	25.0	382.1	18.1	20.9	2.2	41.2	423.3
	2026	360.0	26.5	386.5	18.4	21.1	2.2	41.7	428.2
	2027	364.7	26.7	391.4	18.7	21.2	2.2	42.2	433.6
	2028	370.0	27.2	397.2	19.1	21.3	2.2	42.6	439.8
	2029	373.9	27.5	401.4	19.2	21.4	2.2	42.9	444.3
	2030	379.1	28.0	407.1	19.3	21.6	2.2	43.1	450.1
	2031	384.4	28.5	412.9	19.4	21.7	2.2	43.4	456.3
	2032	389.9	29.0	418.9	19.6	21.8	2.2	43.7	462.5
	2033	395.4	29.5	424.9	19.6	22.0	2.2	43.8	468.7
	2034	401.0	30.0	431.0	19.7	22.1	2.2	44.1	475.1
	2035	405.1	30.4	435.5	19.7	22.2	2.2	44.2	479.6
	2036	411.0	30.9	441.9	19.7	22.4	2.2	44.3	486.2
	2037	417.0	31.5	448.5	19.7	22.5	2.2	44.4	492.9
	2038	421.5	31.9	453.4	19.6	22.6	2.2	44.5	497.9
	2039	427.5	32.5	460.0	19.7	22.8	2.2	44.7	504.7
	2040	432.0	32.9	465.0	19.7	22.9	2.2	44.8	509.8
<b>CAGR</b>									
	<b>2008–2018</b>	-0.9%	0.0%	-0.9%	0.7%	-4.5%	-1.6%	-2.5%	-1.0%
	<b>2018–2040</b>	1.0%	1.5%	1.1%	1.1%	0.6%	-0.6%	0.7%	1.0%

NOTES: GA – General Aviation; CAGR – Compound Annual Growth Rate

SOURCES: MAC Activity Reports; U.S. Department of Transportation, T-100, 2021; Federal Aviation Administration, Air Traffic Activity Data System (ATADS), 2021; Ricondo & Associates, Inc., 2021 (forecasts).

**Table 2-25: Selected Design Day Flight Schedule Daily Metrics (Revised)**

<b>Spring Design Day</b>								
<b>2025</b>	141,927	1,154	14	42	20	28	3	1,261
<b>2040</b>	178,505	1,406	18	54	20	34	3	1,535
<b>Base</b>	127,661	1,186	39	66	13	64	12	1,380
<b>2030</b>	171,821	1,350	43	74	13	68	12	1,560

NOTE: Passenger totals include revenue and non-revenue passengers.  
SOURCE: Ricondo & Associates, Inc., 2021.

**Table 2-26: Selected Design Day Flight Schedule Peak Hour Metrics (Outbound)**

Year	Enplaned Passengers	Aircraft Departures	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>Base</b>	6,397	68	68
<b>2025</b>	6,821	63	63
<b>2030</b>	7,669	63	64
<b>2040</b>	9,067	73	74
<b>Summer Design Day</b>			
<b>Base</b>	7,419	65	74
<b>2025</b>	8,011	60	69
<b>2030</b>	8,791	65	71
<b>2040</b>	9,896	83	88

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
SOURCE: Ricondo & Associates, Inc., 2021.

**Table 2-27: Selected Design Day Flight Schedule Peak Hour Metrics (Inbound)**

Year	Deplaned Passengers	Aircraft Arrivals	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>2025</b>	7,293	58	62
<b>2040</b>	8,815	68	72
<b>Base</b>	8,385	74	77
<b>2030</b>	7,707	65	69

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
SOURCE: Ricondo & Associates, Inc., 2021.

**Table 2-28: Selected Design Day Flight Schedule Peak Hour Metrics (Combined Peak)**

Year	Passengers	Aircraft Operations	
		Passenger/Charter Airlines	Total
<b>Spring Design Day</b>			
<b>Base</b>	9,027	85	95
<b>2025</b>	10,772	93	103
<b>2030</b>	12,115	96	103
<b>2040</b>	14,273	111	113
<b>Summer Design Day</b>			
<b>Base</b>	9,855	99	111
<b>2025</b>	13,443	102	114
<b>2030</b>	12,738	103	116
<b>2040</b>	15,283	124	137

NOTE: Passenger totals include revenue and non-revenue passengers for both scheduled and charter flights.  
SOURCE: Ricondo & Associates, Inc., 2021.

**Table 2-29: Summary of Forecast Results**

	2018	2025	2030	2040
	Base Year	PAL 1	PAL 2	PAL 3
<b>Annual</b>				
Passenger Aircraft Operations (000)	369	382	407	465
Total Aircraft Operations (000)	407	423	450	510
Total Passengers (mil)	38	44.7	48.2	56.1
Enplaned Passengers (mil)	19	22.3	24.1	28.1
<b>Summer Design Day</b>				
Daily Passenger Aircraft Operations	1,186	1,254	1,350	1,526
Peak Hour Passenger Aircraft Operations	99	102	103	124
Total Daily Passengers (000)	128	157	172	195
Total Peak Hour Passengers (000)	9.9	13.4	12.7	15.3
<b>Spring Design Day</b>				
Daily Passenger Aircraft Operations	1,113	1,154	1,256	1,406
Peak Hour Passenger Aircraft Operations	85	93	96	111
Total Daily Passengers (000)	119	142	157	179
Total Peak Hour Passengers (000)	9	10.8	12.1	14.3

NOTES: PAL – Planning Activity Level

The base year spring design day is in 2018.

Sources: MAC Activity Reports; U.S. Department of Transportation, 2021; Ricondo & Associates, Inc., 2021.