

APPENDIX B

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## Air Cargo Master Plan Study



# Sioux Falls Regional Airport Air Cargo Master Plan Study

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# 1 INTRODUCTION

## 1.1 Background and Objectives

In recent years, the air cargo industry has experienced transformative changes that have impacted supply chains and the way goods are shipped and received. These include structural changes related to e-commerce and the use of belly cargo as well as episodic changes related to the COVID-19 pandemic. With these changes, air cargo has taken on a new level of importance at many airports. The growth in e-commerce has been particularly impactful on the air cargo industry and has led to increasing activity by new and existing operators at U.S. airports of all types. In turn, new airport infrastructure and facilities are often needed to accommodate rising air cargo demand.

From a planning perspective, airports must understand the drivers of air cargo demand, the types of goods flowing through their facilities and the requirements for efficient movement on both the airside and the landside. With this understanding and a perspective on future growth, effective plans can be developed. Due to the changes in all air cargo segments (general cargo, integrated express, e-commerce) and the general lack of detailed, publicly available air cargo data, formal market studies are conducted to provide the necessary inputs for airport planning.

In August 2021, the Sioux Falls Regional Airport (“FSD” or “the Airport”) engaged Mead & Hunt to complete a Master Plan update. Given the rapidly changing environment for air cargo in the U.S., the Airport placed special emphasis on the Master Plan’s air cargo elements. To address these topics, Mead & Hunt partnered with Hubpoint Strategic Advisors, LLC – an aviation industry consultancy with deep experience in the air cargo sector. Hubpoint led the Air Cargo Master Plan Study (“the Study”) to accomplish the following major objectives:

1. Assess the current situation for air cargo at FSD;
2. Analyze the regional air cargo market; and
3. Determine the future implications for air cargo at FSD in terms of infrastructure and facilities requirements.

This report describes the methodology and results of Hubpoint’s work. Further, the report provides contextual information on the air cargo industry and relevant markets in order to put the findings and analytical output in proper perspective. Ultimately, the Study will enable development of an informed forecast of air cargo activity levels expected at FSD. Mead & Hunt will then utilize the forecasts to determine the future needs at the Airport related to air cargo.

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## 1.2 Methodology and Approach

Any airport seeking to plan for its developing air cargo business must have an understanding of the relevant markets as well as the macro-trends shaping the industry. To provide this information in the case of the Sioux Falls Regional Airport, Hubpoint analyzed the regional market employing both primary and secondary research techniques.

Hubpoint's secondary research included reviews of air cargo industry trade press as well as FSD's prior Master Plan and historic operational statistics. Air cargo databases from the U.S. Department of Transportation's (U.S. DOT) T-100 reports and the U.S. Census Bureau's Foreign Trade Statistics were also utilized to enable valuable quantitative analysis. The T-100 reports provide monthly data by air carrier and by direction for air freight and mail at U.S. airports. As a complement to the T-100 data, Hubpoint also referenced annual cargo tonnage statistics for airports reported by Airports Council International – North America (ACI-NA). The Foreign Trade Statistics provide information on international air cargo flows by U.S. state, foreign countries, and gateway airports.

From Hubpoint's experience with other airport studies, it is clear that a true air cargo market analysis must include primary research. While secondary research via database analysis is valuable and necessary, it cannot provide the micro-level detail required to understand the dynamics of individual markets. Further, publicly available air cargo data lacks the type of detail and transparency that is often found in other parts of the aviation industry such as the robust data that is available for passenger air travel. Importantly, primary research (particularly in the form of stakeholder interviews) allows the consulting team to test hypotheses and validate assumptions.

For this study, Hubpoint conducted interviews with stakeholders including FSD airport management, current and potential FSD air carriers at both the local and headquarters levels, air cargo service providers, fixed base operators, local companies and organizations as well as industry consultants and third-party developers of cargo facilities. The meetings and interviews yielded valuable information specific to the Sioux Falls Regional Airport and the relevant air cargo market.

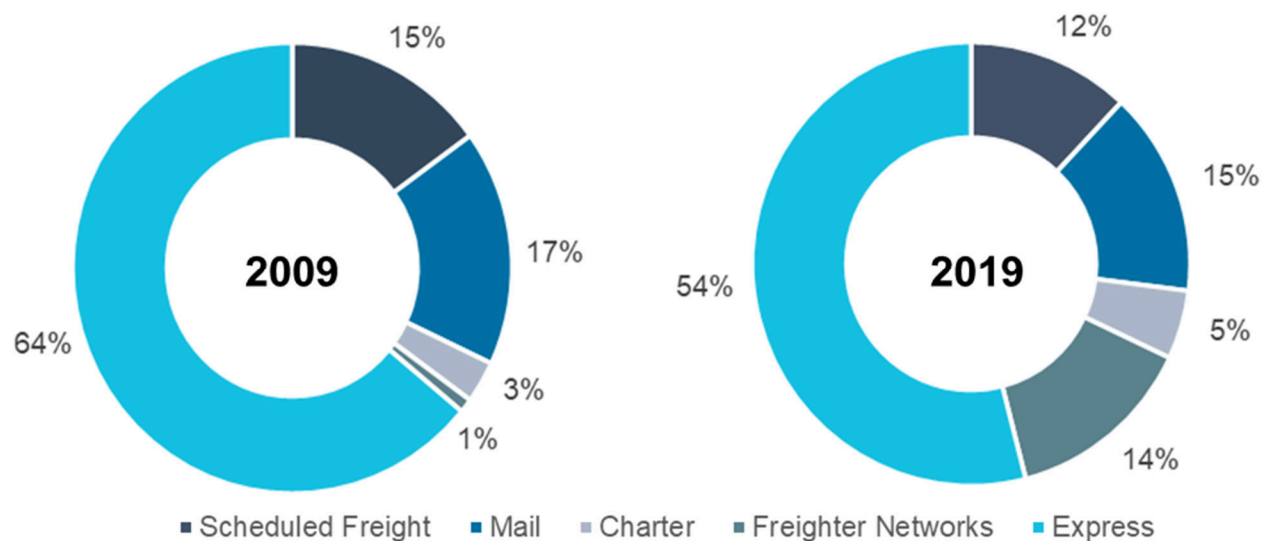
## 2 AIR CARGO INDUSTRY TRENDS

To provide proper context for this report, it is helpful to describe air cargo industry trends that may impact the Sioux Falls Regional Airport. While some of the trends are related to the global pandemic, others pre-date 2020. It is very likely that many of these industry trends will continue well into the future and, therefore, they are relevant to consider in airport planning.

### 2.1 Projected Growth of U.S. Domestic Air Cargo

In recent history, the U.S. domestic air cargo (freight and mail) market had been in an overall state of low growth. The U.S. was characterized as a mature market for air cargo which was primarily served by the duopoly of FedEx Express and UPS. However, in the 2017-2018 period the increasing influence of e-commerce was evident as domestic air cargo volumes rose sharply. This also coincided with new entrant Amazon Air gaining scale with an expanding aircraft fleet and network of U.S. airports. The influence of Amazon Air on the domestic air cargo environment can be observed in the market share gains by “Freighter Networks” between 2009 and 2019 (see Exhibit 2.1). These share shifts are almost completely attributable to Amazon Air and have particularly come at the expense of the integrated express carriers.

**Exhibit 2.1**  
**U.S. Air Cargo Market Share by Carrier Category**



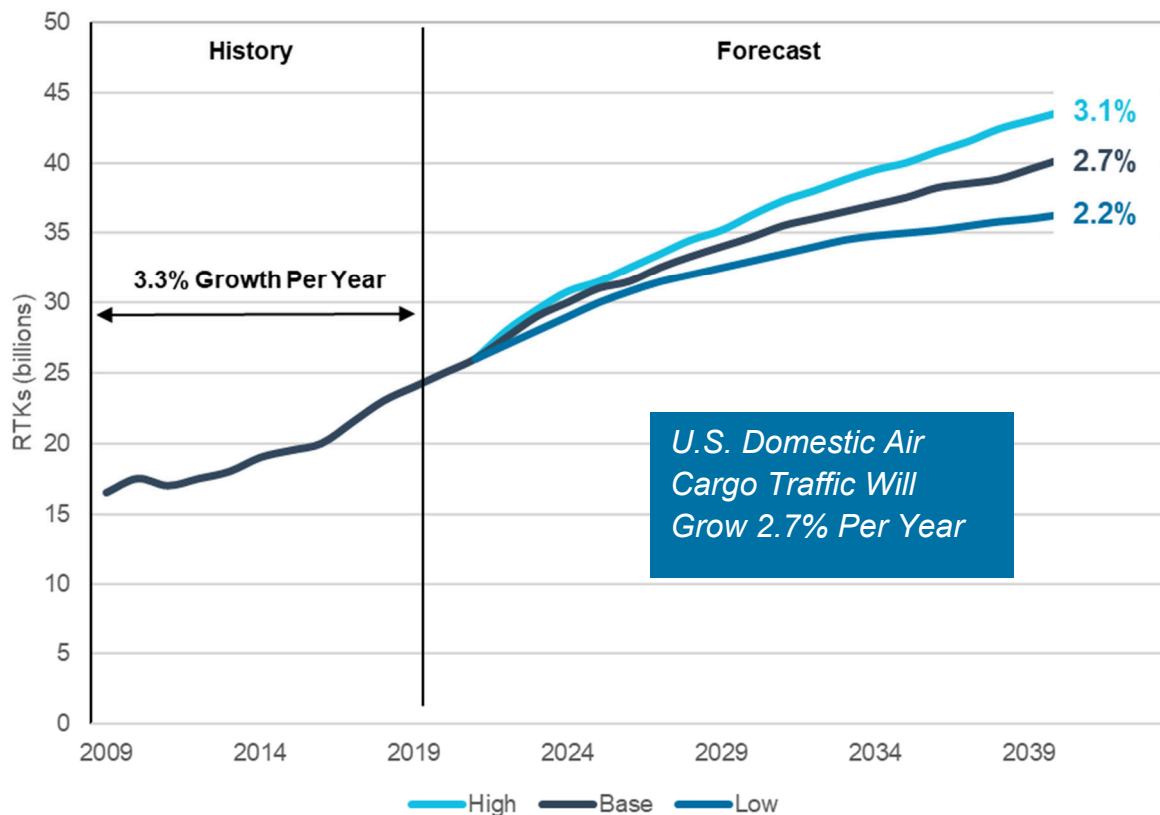
Note: Express category refers to integrated express carriers (e.g. FedEx, UPS)

Source: Boeing

The Boeing World Air Cargo Forecast (WACF) is a standard industry reference tool for estimating future air cargo growth in various global markets, including the U.S. domestic market. In the latest WACF published in November 2020, the U.S. domestic market is expected to grow

at an average annual rate of 3.9% from 2020-2029 and an average of 2.7% for the 20-year full forecast 2020-2039 (see Exhibit 2.2). The higher growth rate through 2029 is expected due to the rapid rise of e-commerce in the U.S. This contrasts with the prior 10-year period 2009-2019 when domestic cargo traffic grew at an average annual rate of 3.3%. That period included a recovering U.S. economy following the Great Recession in 2009-2010, as well as the U.S. foreign tariffs and trade wars of 2018-2019 which negatively impacted domestic and international cargo traffic.

**Exhibit 2.2**  
**U.S. Domestic Annual Air Cargo Traffic (2009-2039F)**



Source: Boeing

Finally, it should be noted that the large, resilient U.S. domestic air cargo market not only survived during the pandemic, but thrived. Again, this is largely a result of e-commerce where health concerns and social distancing led consumers to avoid brick-and-mortar stores and shop online instead. In fact, in the first year of the pandemic, a statistical report produced by the ACI-NA showed that for the approximately 200 U.S. airports analyzed, 100% experienced negative growth in passenger air travel compared to 2019. Meanwhile, in terms of air cargo tonnage, over 42% of the U.S. airports analyzed showed positive year-over-year growth in 2020.



## 2.2 E-Commerce

The impact of e-commerce on the U.S. air cargo industry cannot be understated. E-commerce has permanently changed consumer behavior and continues to have transformative effects on transportation networks. In the mid-1990s, as e-commerce truly gained momentum with companies like eBay and Amazon, it quickly became clear that fast, reliable and inexpensive shipping was a key differentiator for online sellers. In those early days of modern e-commerce, start-up companies accepted a lack of profits to gain market share. With that mindset, delivery costs for shipments to individual consumers were subsidized with the capital companies raised from investors.

The major U.S. integrated express carriers, FedEx and UPS, were ideally positioned to serve the growing e-commerce market. Over the prior decades, the express carriers had invested heavily in facilities, equipment and technology to compete and better serve customers. So, by the mid-1990s, the integrators were able to offer the kinds of services e-commerce companies and their customers demanded. These services included door-to-door delivery involving a variety of transportation modes, package tracking, and return processes for unwanted orders.

As e-commerce evolved and grew exponentially, delivery promises of online sellers and the sheer volume of shipments began to cause problems for the integrators. Their air and land transportation networks were overwhelmed and had difficulty keeping up with peak demand periods. This was particularly true around the year-end holidays of 2013. Since then, additional investments and closer cooperation with online sellers has allowed FedEx and UPS to maintain service levels which, in turn, has fueled further e-commerce growth.

Clearly, air cargo has been critical to the growth of e-commerce, and vice versa. Given consumer expectations for deliveries and the often-vast distances between fulfillment centers and individual addresses, e-commerce companies must incorporate air transportation in their businesses to survive. Evidence of this is readily seen in Amazon Air's U.S. network which, in just seven years, has assembled a fleet of 88 aircraft serving 50 domestic markets.

Importantly, Amazon Air is just one company flying e-commerce packages in the U.S. FedEx and UPS continue to prioritize e-commerce in their air networks and passenger airlines also often carry e-commerce for their freight forwarder customers. The U.S. Postal Service is also contracted by e-commerce companies to deliver shipments by air (often via its partner FedEx). Finally, more competitors may eventually enter the market. In October 2020, news articles reported that Walmart had been in talks with various air carriers to control its own U.S. freighter network to compete with Amazon. While the talks ended without an agreement, it is likely that Walmart and other large retailers continue to assess potential strategies related to air cargo services.

Of course, during the pandemic, e-commerce growth has only accelerated. Airports wishing to participate in this growth should be aware of the opportunities and challenges that e-commerce air cargo can create. From a planning perspective, this involves understanding potential e-commerce air services and the associated infrastructure and facilities required to support those activities.

## 2.3 Pandemic-induced Global Supply Chain Constraints and Labor Shortages

Another trend for air cargo relates to the global supply chain constraints and labor shortages induced by the ongoing pandemic. The trend is especially meaningful because the issues, while stemming from the pandemic, are expected to be long-lasting.

The current supply chain issues relate to the unpredictable factory closings from COVID outbreaks and government health restrictions requiring suspension of certain business activities. In many cases, these disruptions to normal business resulted in an inability to plan even basic manufacturing processes and led to worker layoffs. The situation was further exacerbated by the standard global sourcing of parts and components where countries were affected by and reacted to the growing pandemic in different ways. This imbalanced and mistimed flow of supplier shipments often shut down production lines for weeks at a time.

On the demand side, many manufacturers and retailers, faced with unknown consequences of COVID-19 on businesses and consumers, canceled existing orders and severely reduced future orders. In the early months of the pandemic, this appeared to be prudent. However, as economies adjusted and government stimulus was distributed, consumer demand proved steady and, in many cases, was supercharged. People working from home and incurring few of their normal expenses had money to spend and sought purchases to accommodate their new pandemic-driven circumstances.

However, as manufacturers understood the resilience of demand, they were unable to quickly rehire workers and restart normal distribution processes. At the same time, transportation and logistics networks were (and continue to be) severely hampered by labor shortages, backlogged shipments and debilitating port congestion.

The result of this complex situation has been rising inflation as the cost of most inputs to the supply chain have increased markedly over the past two years, including higher fuel and labor costs. The significant mismatches in supply and demand for transportation and logistics services has pushed ocean container rates to all-time highs. Shippers seeking relief from delays and uncertainty then shifted some demand to air cargo and those rates also rose accordingly.

Although air cargo provides speed advantages over ocean containers, air cargo companies are experiencing their own capacity shortages due to lacking belly capacity from passenger aircraft as well as massive congestion at traditional U.S. cargo gateway airports. Further, cargo ground handlers, truckers and other service providers at these U.S. airports face significant challenges with handling more freighters (including passenger freighters), lack of warehouse space and long delays to process shipments.

Many industry experts are predicting that the supply chain constraints will remain in place until sometime in 2023. Meanwhile, the Biden Administration is seeking to enact policies and regulations to return the systems to a more normal, predictable state. Air cargo will undoubtedly play a critical role in the solutions to this problem. Therefore, U.S. airports of all types should prepare for extraordinary air cargo activity for the foreseeable future. This will likely entail flexible planning, air cargo investments and management attention to ensure that airports are as efficient as possible and free of bottlenecks found in other parts of the supply chain.

## 2.4 Use of Alternative Cargo Airports in the U.S.

Traditionally, the U.S. air cargo market has been dominated by a limited number of international gateway airports and integrated carrier hubs. This is because the business models of airlines and freight forwarders favor consolidation at fewer points and the economies of scale found at large airports. Most other airports have played supporting roles for air cargo, but few have grown beyond that profile and control their own destinies.

For many years, Rickenbacker International Airport (LCK) in Ohio and Huntsville International Airport (HSV) in Alabama have successfully served shippers, freight forwarders and airlines with strategic geographic locations and welcoming air cargo environments. These airports provided a blueprint for other alternative cargo airports to follow, leading to successful international cargo operations at Chicago-Rockford International Airport (RFD) and Greenville-Spartanburg International Airport (GSP). LCK, HSV, RFD and GSP have sustained and grown their cargo activities over time, but overall, they remain niche airports for cargo. While none of these airports offers substantial service with passenger belly cargo to truly challenge the large gateway airports, that is not the objective. Their air cargo operations serve select international markets well and the business has diversified the airports' revenue streams and contributed positively to regional economic development.

Since Amazon Air commenced operations in 2016, it has designated key roles for some domestic airports that can be considered alternative cargo airports. These include Lehigh Valley International Airport (ABE) in Pennsylvania and Lakeland Linder International Airport (LAL) in Florida. Each of these airports had modest air cargo activity prior to Amazon Air, but have transformed their infrastructure and operating models to allow for cargo growth. In turn, parent company Amazon has invested in these communities with additional fulfillment centers leading to more jobs which then support other local businesses.

In general, alternative cargo airports offer low costs, efficient airside and landside movement of cargo, and ready access to markets by truck and air. As these alternate airports have proven to be viable, there is more acceptance within the air cargo community to consider their added value in the supply chain. Moving forward, as Amazon Air continues to build its U.S. network and traditional cargo gateway airports struggle with congestion and high costs, cargo operators are expected to increasingly turn to alternative U.S. airports for solutions.

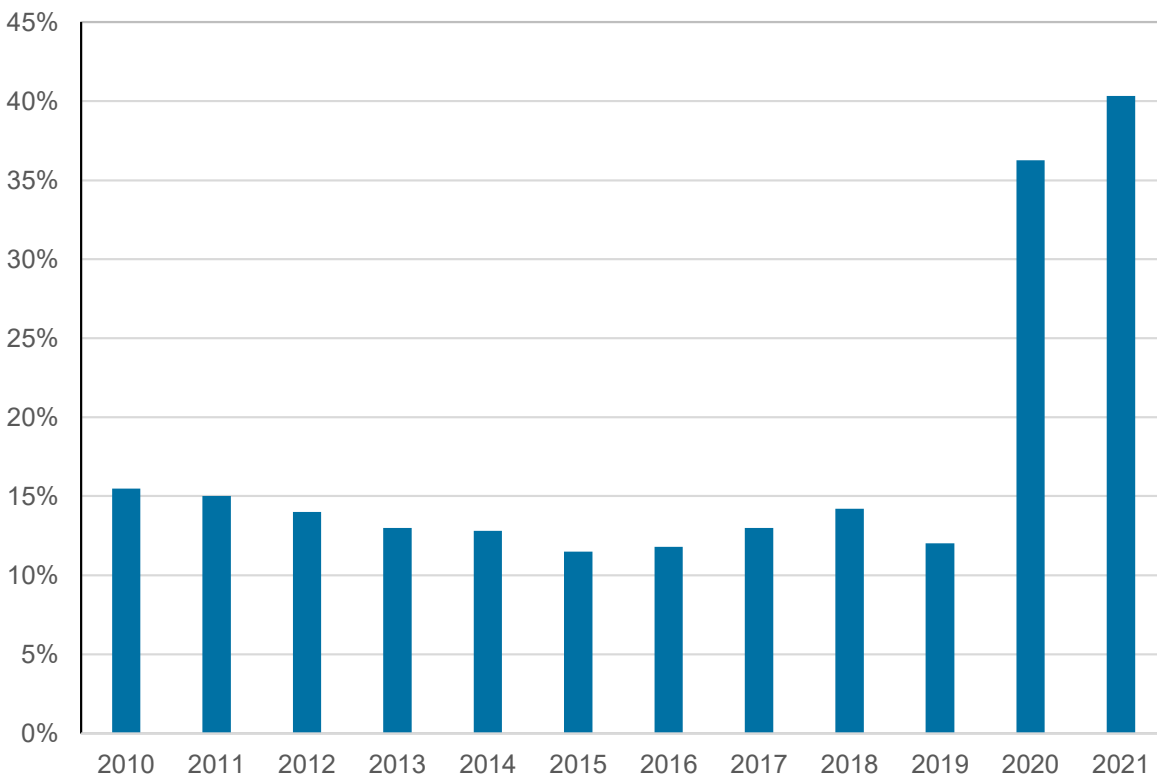
## 2.5 Elevated Importance of Cargo to Passenger Airlines

Another notable trend related to the pandemic involves the elevated importance of cargo to U.S. passenger airlines. It is well-documented that COVID-19 has led to a devastating loss in air travel demand, particularly for international markets. This situation has been particularly impactful to the air cargo industry where approximately 50% of air cargo is transported in the bellies of passenger airlines – especially on cargo-friendly widebody aircraft that typically fly intercontinental routes.

To generate revenue and utilize aircraft and crews during the slow return of passenger air travel, airlines (including U.S. carriers) have re-purposed some of their passenger aircraft fleet to exclusively carry cargo. These passenger freighter flights have been critical to the delivery of

Personal Protective Equipment (PPE) as well as other commodities. During the pandemic, American Airlines, United Airlines, Delta Airlines and Southwest Airlines have all operated passenger aircraft as freighters with much success. The cargo operations materially improved airlines' financial standing. In Q3 2021, American Airlines cited that its air cargo revenue increased 62% versus its Q3 2019 level. In a June 2022 report, the International Air Transportation Association (IATA) found that air cargo accounted for 40% of global airline revenue in 2021. See Exhibit 2.3.

**Exhibit 2.3**  
**Global Airline Industry Cargo Revenue as a Percentage of Total Operating Revenue**



Source: IATA Economic Airlines Financial Forecast update, June 2022

Of course, these cargo revenue shares are calculated on lower total revenue for airlines. As passenger travel returns, cargo's share of total revenue will naturally normalize. However, airline management now fully realize the impact that air cargo can have on airline route economics and several leading U.S. airlines have stated that the focus on air cargo will remain elevated even after the pandemic ends. This includes decisions related to new and existing routes where cargo can make the difference between profitable and unprofitable operations.

The new attention devoted to air cargo by U.S. airlines will likely lead to a more competitive market environment where costs, service levels, and operational efficiencies are scrutinized. Airports will surely be integral and influential to these changes. Therefore, airports should be

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prepared for additional belly cargo volume and the increased demands that will have on both airside and landside activities.

## **2.6 Summary**

The past five years have been extraordinarily active for air cargo in the U.S. This includes Amazon Air's market entry and the impacts related to the ongoing pandemic. The once stagnant, duopoly-controlled domestic market is now in positive motion with the influx of competition and the need to innovate. The pandemic has brought its own opportunities and challenges and some of the resulting effects may prove to be permanent fixtures of the air cargo industry. The trends outlined above are notable because they likely touch airports of all sizes, including smaller airports like Sioux Falls Regional Airport. Although air cargo dynamics at smaller airports have been relatively stable in the recent past, a new environment exists which deserves the attention of airport management and planners. The pace of air cargo activity and developments has accelerated and prepared airports will be well-positioned to capitalize on available opportunities.

### 3 CURRENT SITUATION FOR AIR CARGO AT SIOUX FALLS REGIONAL AIRPORT

#### 3.1 Overview of Air Cargo at FSD

Located in Eastern South Dakota, FSD is a convenient airport for the City of Sioux Falls and many other South Dakota cities, as well as communities in bordering states of Nebraska, Minnesota and Iowa. In 2021, over 1.0 million passengers utilized FSD, making it South Dakota's busiest airport for passenger traffic<sup>1</sup>. The vast majority of passenger carrier operations at FSD are performed with narrowbody and regional jet equipment. These smaller passenger aircraft have little belly capacity to carry cargo, leaving all-cargo carriers FedEx and UPS to handle most of the air freight at FSD. Exhibit 3.1 provides a comparison of FSD to select Midwest airports in terms of cargo volumes handled in 2021.

**Exhibit 3.1**  
**2021 Air Cargo Tonnage Comparison among Select Midwest Airports**

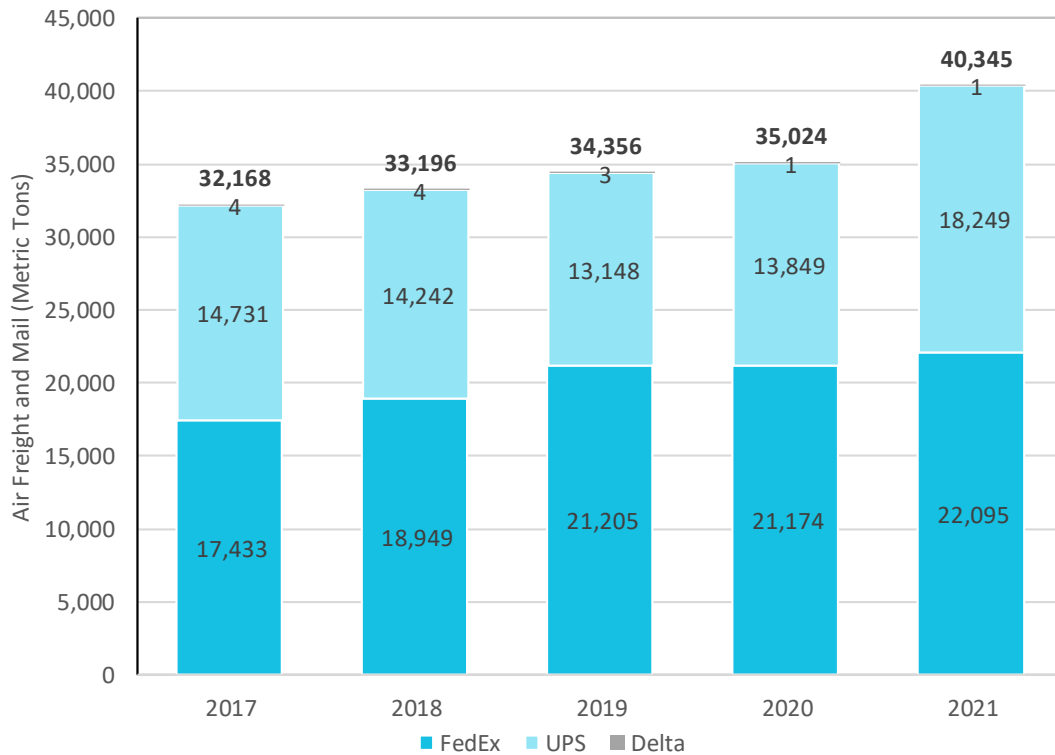
Airport Code	City/State	Airport Name	Total Cargo (Metric Tons)	Change 2020-2021
MSP	Minneapolis, MN	Minneapolis/St Paul International Airport	234,746	15.2%
MCI	Kansas City, MO	Kansas City International Airport	111,479	24.0%
STL	St Louis, MO	Lambert-St Louis International Airport	106,921	27.6%
OMA	Omaha, NE	Eppley Airfield	67,845	-3.4%
DSM	Des Moines, IA	Des Moines International Airport	43,337	-17.6%
FSD	Sioux Falls, SD	Sioux Falls Regional Airport	40,345	15.5%
CID	Cedar Rapids, IA	The Eastern Iowa Airport	34,551	8.0%
FAR	Fargo, ND	Hector International Airport	33,769	4.9%
ICT	Wichita, KS	Wichita Mid-Continent Airport	28,369	10.6%
SGF	Springfield, MO	Springfield-Branson National Airport	15,680	14.1%
BIS	Bismarck, ND	Bismarck Municipal Airport	1,848	0.9%

Source: Hubpoint analysis of Airports Council International North America (ACI-NA) data and U.S. DOT, T-100 carrier reports.

<sup>1</sup> U.S. DOT, T-100 carrier reports.

Between 2017 and 2021, air cargo tonnage at FSD grew over 25% to 40,345 metric tons (Exhibit 3.2). Growth during this period has been steady overall with yearly growth rates typically in the 2-3% range. As with many airports, FSD experienced tonnage increases even in 2020 and 2021 during the peaks of the pandemic.

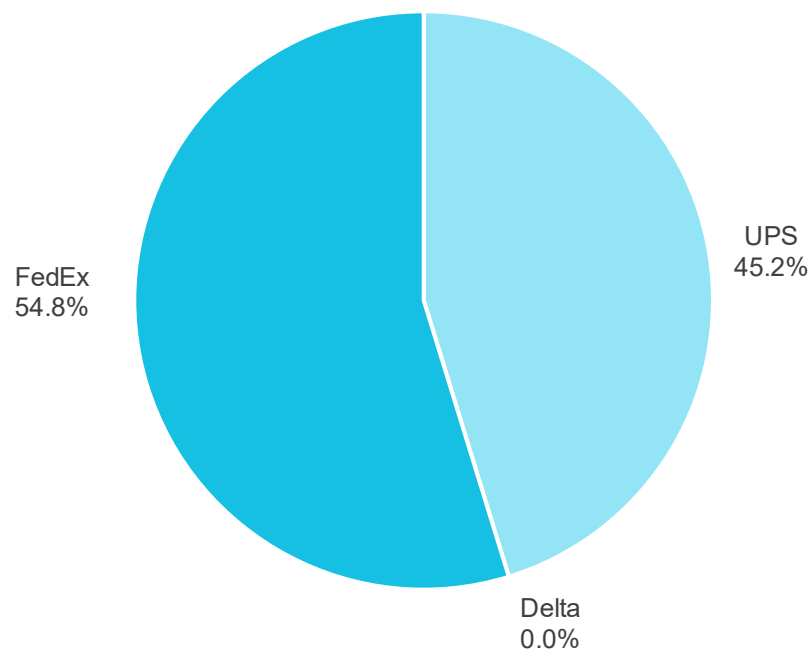
**Exhibit 3.2**  
**FSD Air Freight and Mail by Carrier (CY 2017-2021)**



Source: Hubpoint analysis of FSD Airport Data

As shown in Exhibit 3.3, air freight at FSD is dominated by all-cargo carriers – namely FedEx and UPS. In 2021, the two integrated express carriers accounted for essentially 100% of the total air freight handled at the Airport. FedEx is the largest FSD cargo carrier and handles 55% of the Airport’s volume, while UPS carries the remaining 45% of volume. Aside from the integrated express carriers, Delta Air Lines is the only air carrier handling a material amount of freight at FSD. Finally, during the course of any given year, a modest number of small aircraft charters operate at FSD carrying urgent freight related to regional companies. Due to the size of the aircraft and the limited operations, the freight associated with these charters tends to be de minimis.

**Exhibit 3.3**  
**Carrier Market Shares of Total FSD Freight and Mail (CY 2021)**



Note: Delta makes up 0.002% of total share through belly cargo

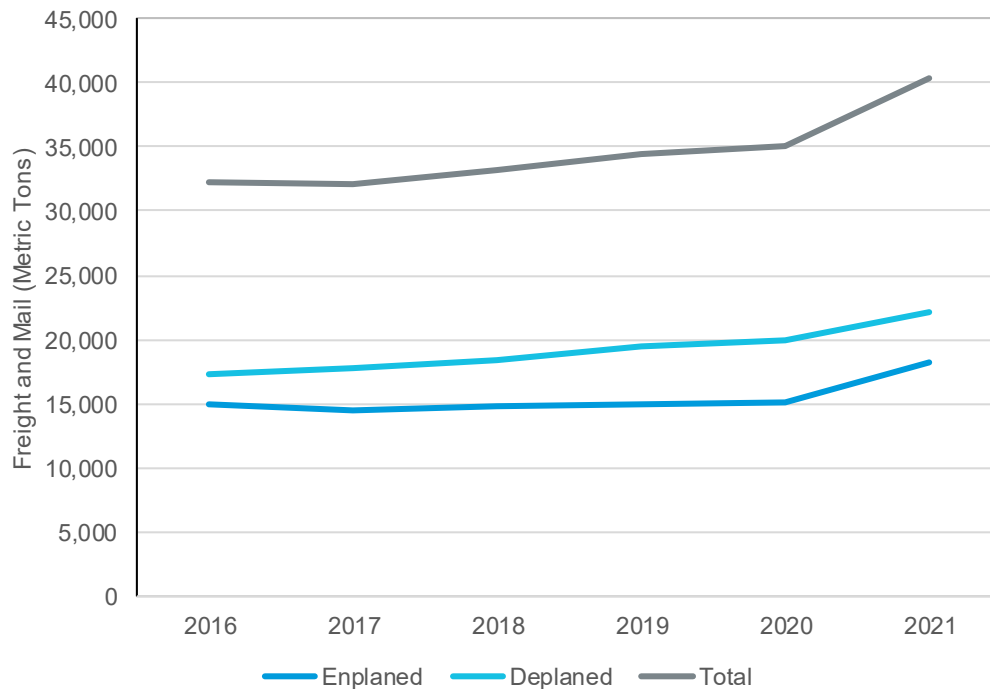
Source: Hubpoint analysis of FSD Airport Data

In terms of the directionality of freight and mail flows at FSD, the market is characterized by a higher amount of inbound volume (deplaned freight and mail) compared to outbound volume (enplaned freight and mail) as reflected in Exhibit 3.4. For 2021, deplaned freight and mail accounted for 55% of the total, while enplaned freight and mail comprised the remaining 45%. This characterization of the market was also confirmed through primary research with various air cargo stakeholders. The directional flows of the market have been very consistent over time.



When the new Amazon small sortables facility eventually opens, increased e-commerce shipments could potentially grow outbound cargo volumes from FSD, which could create a more balanced distribution of inbound and outbound air cargo moving forward. Air cargo stakeholders generally prefer more balanced directional flows as that translates to higher utilization of assets leading to more efficient and successful operations.

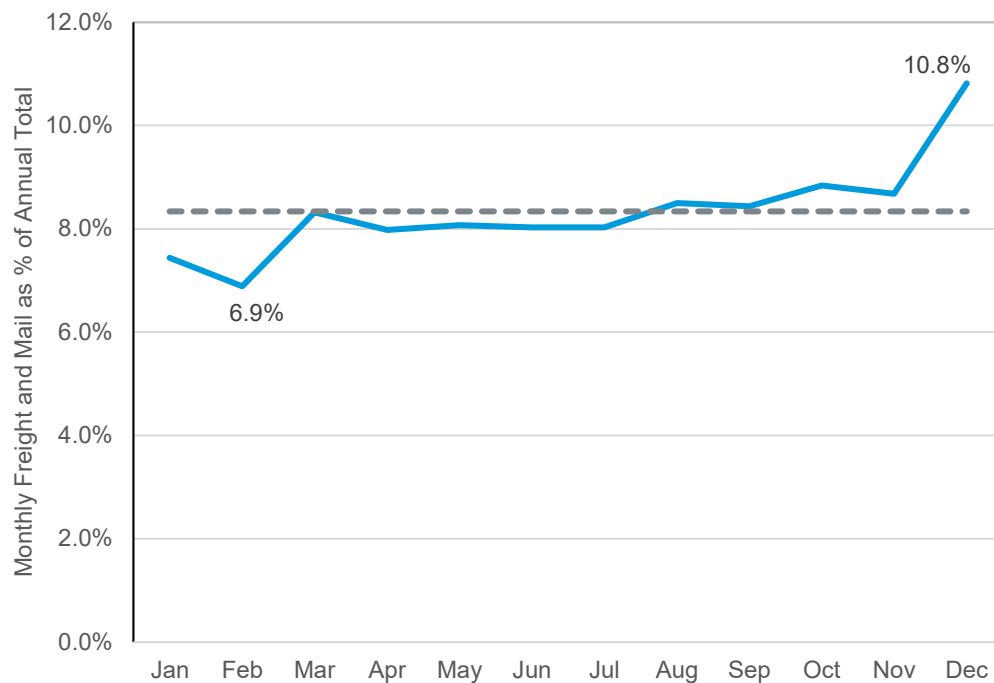
**Exhibit 3.4**  
**FSD Freight and Mail (CY 2016-2021)**



Source: Hubpoint analysis of FSD Airport Data

The seasonality of the FSD market is not atypical compared to trends observed in other U.S. markets. As shown in Exhibit 3.5, FSD air cargo volumes experience a peak in the December period, which accounted for 10.8% of the total freight and mail when viewing 2016-2021 on an aggregated basis, compared to the pro rata average of 8.3% per month. Air cargo volumes are lowest during the February period, which accounted for just 6.9% of the annual totals for FSD freight and mail. From August through December, air cargo volumes remain above the annual monthly average, which may be related to companies stocking inventories to prepare for the holiday season. Notably, the increase in e-commerce occurring during the pandemic, and which is expected to continue, may contribute to a more extreme concentration of cargo activity in the fourth quarter moving forward.

**Exhibit 3.5**  
**Seasonality for FSD Total Freight and Mail (2016-2021 aggregated)**



Source: Hubpoint analysis of FSD Airport Data

### 3.2 Air Cargo Operations at FSD

Several companies at the Airport conduct activities related to air cargo – either as a primary function of their daily operations or as part of a larger portfolio of services they provide to customers. In describing the current situation for air cargo at FSD, it is helpful to understand what these companies do and how they interact with air cargo.

#### FedEx and UPS

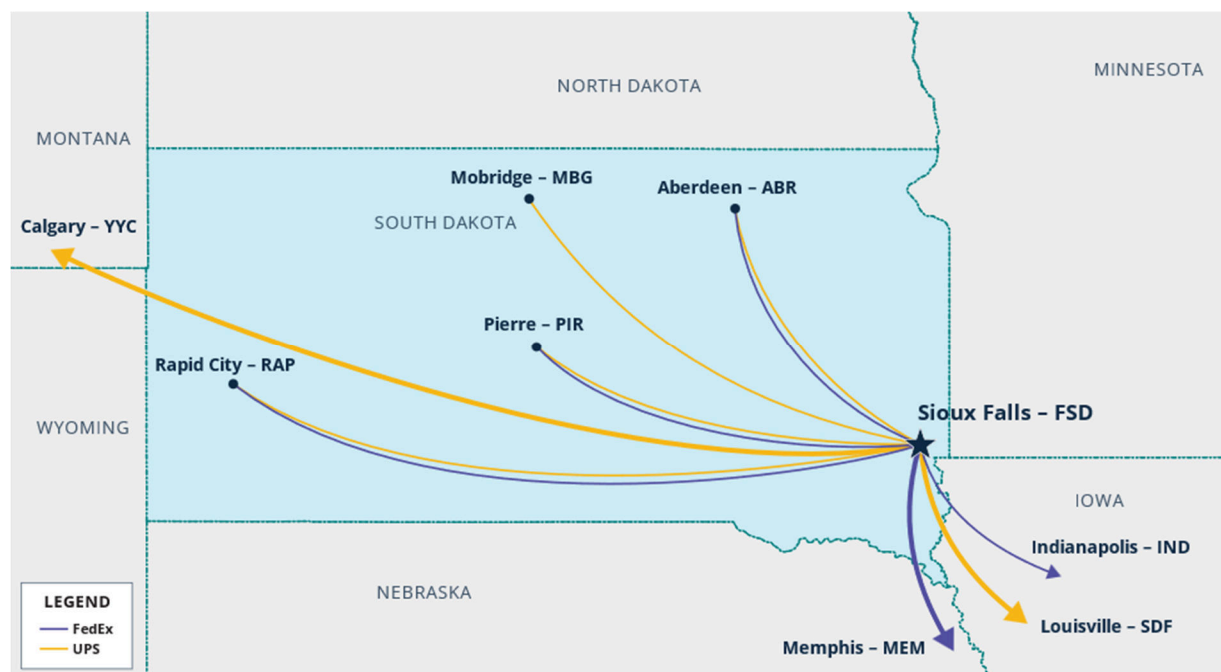
As described above, the major air cargo operators at FSD are FedEx and UPS. These integrated express carriers are best known for their reliable door-to-door services for both businesses and consumers utilizing an array of transportation modes, technologies and human resources to pick up and deliver goods. In the U.S., both companies have established national and regional hub airports to efficiently move goods from origin to destination. The FedEx Express World Hub located at the Memphis International Airport (MEM) is the workhorse of its U.S. network. Likewise, UPS flows much of the volume in its network through its Worldport hub at the Louisville International Airport (SDF).

On a typical day, two FedEx mainline jet aircraft (including A300Fs, B767Fs and B757Fs) operate between FSD and MEM. One flight is an early morning arrival at FSD followed by a mid-morning departure directly back to MEM. The other flight arrives at FSD early evening and departs mid-evening for MEM. The FedEx jets typically stay on the ground at FSD for 1-2 hours.

The FedEx mainline aircraft are complemented by smaller turboprop feeder aircraft that serve smaller airport stations in South Dakota from FSD. Currently, these feeders are operated by FedEx partner airlines flying Cessna Caravans and ATR42s designed to carry cargo. The feeder flight schedules are synchronized with the FedEx mainline jets – often departing FSD within one hour of the morning jet arrival and arriving at FSD within one hour of the evening jet departure to MEM. The FedEx feeders serve the South Dakota markets of Aberdeen, Pierre and Rapid City. On a regular basis, another FedEx partner operates larger turboprop aircraft (ATR72s) between FSD and the FedEx Indianapolis hub typically carrying two-day mail and other small packages.

UPS operates in a similar manner as FedEx at FSD, albeit with a higher level of daily mainline jets (including A300Fs, B767Fs and B757Fs). UPS typically handles three jet aircraft rotations per day – one early morning arrival/departure and two evening arrivals/departures. The FSD morning aircraft arrival from SDF is shared with Canada’s Calgary International Airport (YYC). This jet departs FSD for YYC in the morning hours and then cycles back through FSD with a late day arrival from YYC followed by a final FSD departure to SDF. A separate jet aircraft then operates directly between UPS’s SDF hub and FSD with evening flights. Exhibit 3.6. below shows the current routes at FSD operated by FedEx and UPS.

**Exhibit 3.6**  
**Routes Map for FedEx and UPS at FSD**



Source: Hubpoint analysis

UPS also has feeder aircraft flights at FSD which are timed to meet arriving and departing mainline aircraft. The UPS feeders are flown by contracted carriers and serve the South Dakota markets of Aberdeen, Mobridge, Pierre and Rapid City. These aircraft include Cessna turboprops operated by Encore Air Cargo and Beechcraft 1900s operated by Alpine Air Express. Notably, both Encore and Alpine have maintenance hangars and full-time staff at FSD.

Importantly, the UPS feeder network at FSD has changed materially over the past three years. During this time, UPS re-assigned its feeder aircraft serving eight North Dakota markets from FSD to Fargo's Hector International Airport (FAR). The changes enabled UPS to serve the smaller North Dakota markets more efficiently from FAR while FSD retained all UPS's South Dakota feeder markets. UPS had also recognized that its FSD facility was overburdened with volume, so re-assigning the North Dakota markets had a near term positive impact on its FSD processing capabilities.

### **Delta Air Lines**

Delta Air Lines is the only scheduled passenger carrier at FSD that carries a measurable amount of air cargo. In 2020, Delta carried approximately 0.5 metric tons of cargo while no other passenger airline recorded any cargo. Delta's cargo is particularly related to its use of narrowbody equipment (including A319s, A320s and B737s) for its Atlanta and Minneapolis-St. Paul flights. Other network carriers at FSD primarily utilize regional jets which have negligible cargo carrying capabilities. Further, while ultra-low-cost carriers Allegiant and Frontier operate narrowbody aircraft at FSD, their internal policies and business models do not permit carrying cargo.

### **Signature Flight Support and Maverick Air Center**

Signature Flight Support and Maverick Air Center are the two Fixed Base Operators (FBOs) located at the Sioux Falls Regional Airport. While these companies are primarily focused on supporting corporate and private aviation, passenger charters and aircraft fueling, they are also occasionally involved in air cargo charter services. This includes performing typical aircraft services and handling freight. Neither Signature nor Maverick has specialized air cargo equipment like main deck K-loaders, but both have indicated that equipment and staff investments can be made should they be warranted by customer demand. In the meantime, both FBOs can handle certain air cargo charters with belt loaders and existing staff, as necessary.

Signature Flight Support is located in the center of the East General Aviation area of FSD with direct access to the large ramp. The Signature building has excellent roadway access on the landside and a nearby gate allows authorized vehicles to enter the airside ramp area through the fence for loading and unloading certain types of air freight. On a semi-regular basis, the company handles smaller aircraft carrying time-sensitive shipments of commodities like auto parts, manufacturing components, electronics and medical samples.

Maverick Air Center's operations are located in the West General Aviation area of FSD. Maverick is owned and operated by the for-profit arm of Sanford Health – a large multi-state hospital system headquartered in Sioux Falls and known for its progressive business models. Sanford Health has multiple fixed wing and rotor aircraft based at FSD which are utilized for its air medical program and corporate flight department. In addition to managing the Sanford aviation assets, Maverick is also committed to entrepreneurial ventures not related to the health company. Like Signature, Maverick supports corporate and private aviation, passenger charters and aircraft fueling. Sports teams utilizing B737s and similar jet aircraft commonly utilize the FBO. Maverick also provides maintenance services and has a staff of full-time mechanics.

From an air cargo perspective, Maverick currently handles charters carrying time-sensitive shipments such as auto parts, medical samples and other components related to manufacturing processes. Although the company's ramp is rated at Category 2 and can accommodate large aircraft up to a B767, most of the cargo charters involve smaller aircraft like Falcons and Embraers. Further, Maverick is aware that land parcels close to its location in the West General Aviation area have been identified as potential air cargo areas. The company has an interest in potentially developing facilities and managing air cargo operations in that area, especially given the proximity to its current FBO business activities.

### **Same Day Express**

Same Day Express is a niche courier business operating in the East Cargo Area. The company's facility is adjacent to FedEx and it shares space with U.S. Postal Service contractor, Matheson Flight Extenders. Same Day Express handles a variety of goods, but has particular competence in moving lab samples for the healthcare sector. This includes time-sensitive blood and tissue samples and, during the pandemic, COVID-19 tests. Other common shipments include auto parts, fresh flowers, specialty components used in manufacturing, and electronics.

While the company had originally utilized commercial airlines to move its shipments, the increasing use of smaller aircraft became prohibitive for the courier business. Small aircraft charters are more commonly used to transport the Same Day Express freight. Currently, only about 25% of the company's business involves aircraft, with the remainder moving exclusively on trucks and vans. Its coverage area is generally the state of South Dakota for driver pick-ups and deliveries. Further, the company's facility in Minneapolis-St. Paul is involved in many of the lab sample shipments, which can then move onward to other areas of the U.S.

### **Matheson Flight Extenders**

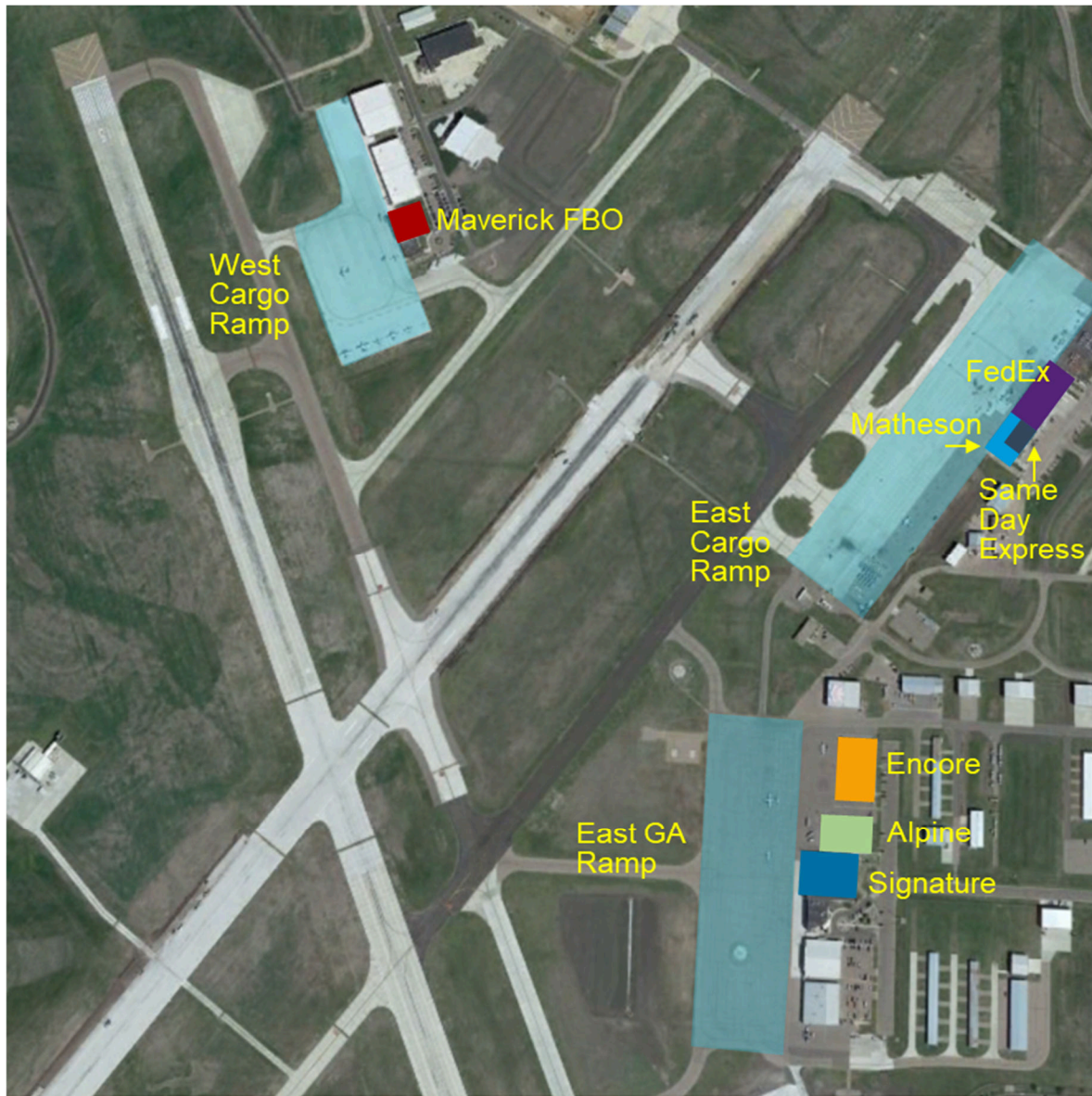
As mentioned, Matheson Flight Extenders also operates from the main FSD air cargo building adjacent to the FedEx space. This location is especially convenient as Matheson is a national contractor for the U.S. Postal Service and is involved in the preparation of mail and packages that are tendered to FedEx. For decades, FedEx has held the primary domestic air transportation contract for the U.S. Mail, Priority Mail, and Priority Mail Express.

In Sioux Falls, Matheson is responsible for transporting mail between FSD and the Postal Service's large regional Processing and Distribution Center located on 4<sup>th</sup> Avenue, less than two miles from Matheson's airport facility. At the FSD facility, Matheson loads and unloads mail on FedEx aircraft containers and notifies FedEx when the containers are ready for the arriving or departing aircraft. Currently, much of the Postal Service volumes are comprised of e-commerce shipments.

### **3.3 FSD Air Cargo Infrastructure**

Air cargo operations of the companies described above are made possible due to infrastructure available at the Sioux Falls Regional Airport. This includes runways, taxiways, cargo ramp space, air cargo buildings, loading docks, truck parking and staging areas, and on-airport access roads. See Exhibit 3.7. Further, FSD's close proximity to the intersection of I-29 (north-south interstate) and I-90 (east-west interstate) provides excellent access to important markets and trucking routes for freight.

### Exhibit 3.7 FSD Cargo Areas



Source: Google Earth and Hubpoint

The Airport has one on-tarmac building dedicated to air cargo which houses FedEx, Same Day Express and Matheson Flight Extenders. This 40,000 square foot building was constructed by FSD and is adjacent to a large 9-acre cargo ramp. FedEx leases approximately 20,000 square feet in the building, which includes 18,000 square feet of warehouse space for storing and sorting cargo as well as 2,000 square feet of office space. FedEx's space includes six truck docks and two larger overhead doors. The remaining 20,000 square feet in the building is shared by Same Day Express (7,000 square feet) and Matheson (13,000 square feet). The Matheson space includes two truck docks and one larger overhead door. The landside of the

building includes a large paved parking lot adequate for large trucks as well as employee and customer vehicles. FedEx Ground Service Equipment (“GSE”) is stored on the tarmac just north of the cargo building.

A second air cargo building is located off-tarmac in the East General Aviation area and is utilized by UPS. This building is over 30 years old and is leased to UPS by Signature Flight Support. The building is 9,300 square feet and includes warehouse space (7,300 square feet) and office space (2,000 square feet). The UPS building is undersized for the volume handled by UPS at FSD and the staff employed there. The conditions of the warehouse are particularly spartan and not adequate for a modern air cargo operation. A parking lot in front of the building is sometimes used to store GSE equipment and there is a small parking lot to the side of the building for employee and customer parking. Due to the lack of space around the building, additional UPS GSE dollies and aircraft containers are stored on a nearby paved roadway in the General Aviation area.

It is notable that the off-tarmac location of the UPS facility necessitates regular activity through a nearby gate to access the airfield. This applies to full-time UPS staff and their equipment as well as UPS contractors and their vehicles. As part of the day-to-day operation, it is common for tugs, dollies, UPS package vans and larger semi-trucks to access the airfield through the gate on the East Cargo Area ramp. In accordance with security standards, all personnel entering the gate are either badged or accompanied by badged escorts.

To maximize the efficiency of its FSD feeder aircraft operations, UPS utilizes a small structure known as a Portable Distribution Center (“PDC”) on the ramp near its jet aircraft. Package vans and dollies with aircraft containers can then pull up to the PDC and perform a small cross-dock operation. This avoids the need to bring certain freight related to the feeder markets into the UPS off-tarmac facility. Further, the UPS feeder aircraft operate from different parts of the airfield. On a typical day, five feeder aircraft are processed on the East Air Cargo ramp while two other feeder aircraft are processed on the East General Aviation area ramp. This split operation on two different ramps, while overall suboptimal, is convenient for feeders coming from nearby maintenance hangars and also frees space on the East Air Cargo ramp for other activities.

Trucking is an integral part of any successful air cargo operation, so airports must have adequate space for truck parking and staging as well as easy access to air cargo areas via on-airport roadways. Currently, trucks and vans coming from N. Minnesota Avenue can access the East Cargo Area readily via N. John Orr Drive or Knapp Brown Drive. As mentioned, trucks related to FedEx, Same Day Express and Matheson Flight Extenders have a large paved lot at their cargo building to park, turn and process freight. The UPS building cannot easily accommodate large trucks and larger semi-trucks typically park along Knapp Brown Drive or the road behind the UPS building awaiting entry to the airfield. The other potential areas of the airport that could accommodate future cargo growth, including the West Cargo Area or the West General Aviation area, are not readily accessible via truck. This would likely negate their viability for many air cargo operators unless roadway improvements are made. As air cargo continues to



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grow at a rapid pace, on-airport truck traffic will increase in a proportional manner. This would include more trucks and larger trucks accessing FSD cargo areas over time.

For Signature's FBO operation, certain infrastructure at FSD limits its ability to handle more and different types of air cargo. Depending on the season, the ramp adjoining the East General Aviation area can only accommodate 60,000 – 75,000 pounds which negates handling of larger aircraft and heavier cargo. Despite the weight restrictions, Signature is able to handle air cargo charters with smaller aircraft, including ATR72s and ATR42s. Further challenging Signature is the hangar and warehousing space available for sorting in that area of FSD is viewed as very limited. Also, the gate providing access to Signature's ramp area is narrow with enough clearance for passenger vehicles, but larger trucks that carry cargo are unable to pass through.

Finally, there is no current facility at FSD designated for handling belly cargo associated with commercial passenger aircraft. This situation is likely due to the types of aircraft and airlines operating at the airport and their overall lack of belly cargo. While Delta currently carries some cargo on its narrowbody aircraft, it is possible that during the coming years more airlines will operate larger aircraft at FSD. This was validated in interviews with FSD's passenger airlines who foresee increased use of larger aircraft across their respective networks in coming years. Further, as will be discussed in this report, during the pandemic, passenger airlines have realized the importance of air cargo to route economics and many have vowed to focus more on belly cargo moving forward. FSD should be prepared for a potential increase in belly cargo both from an infrastructure and facilities perspective and also from a ground handling perspective.

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## 4 REGIONAL MARKET OVERVIEW

To develop reliable development plans for air cargo at the Sioux Falls Regional Airport, it is important to define and analyze the relevant air cargo market. Analysis is conducted via both primary and secondary research to obtain information about demand drivers, commodity flows and the market's future outlook. Traditional market research and historic data adds additional context to validate the primary research findings. Interviews with regional stakeholders is particularly useful due to the lack of transparency in the industry. Further, industry stakeholders offer forward-looking perspectives based on their own business activities in the region.

Ultimately, the market analysis is meant to determine current and forward-looking demand levels in the Sioux Falls region for air cargo services. While not all demand will be captured by FSD, the analytic output will provide insights as to the market's potential. Forecasts can then be developed with reasonable assumptions on FSD cargo air services and other cargo activities to inform future airport planning.

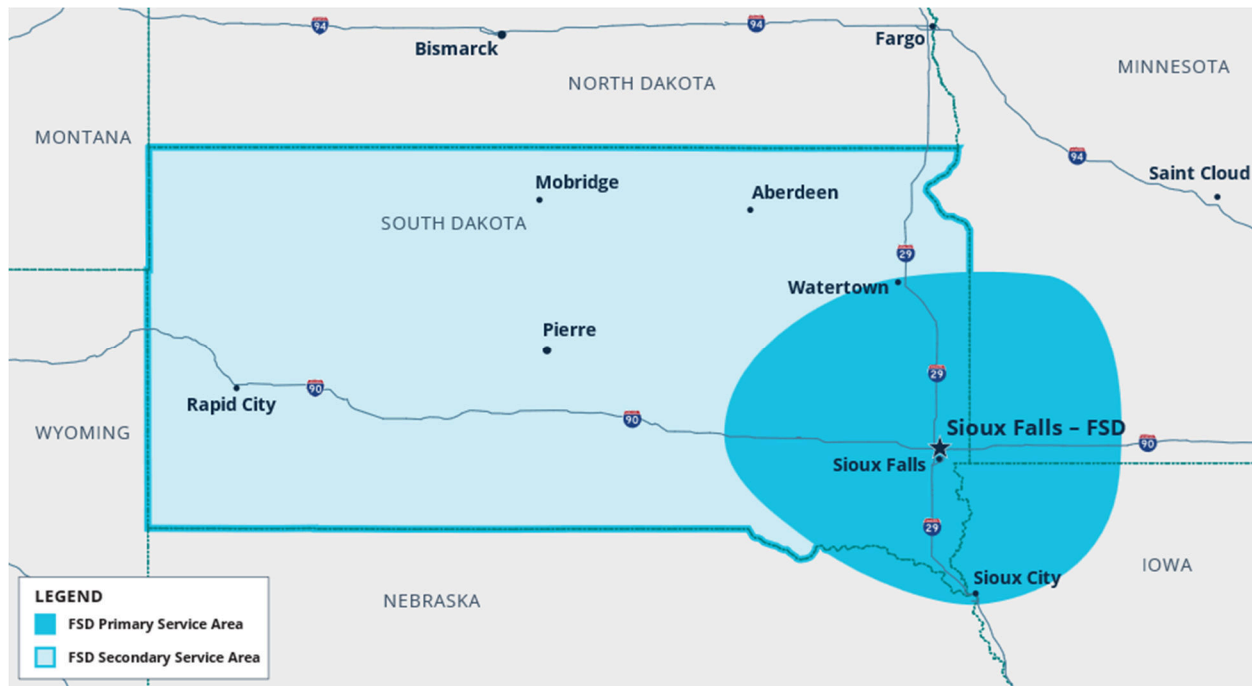
### 4.1 FSD Cargo Market Area Definition

The Sioux Falls Regional Airport is the main commercial airport in South Dakota and serves a large market area in the surrounding region. The closest commercial airports to FSD with substantive air services are Hector International Airport (FAR) to the north in Fargo, Eppley Airfield (OMA) to the south in Omaha, and Minneapolis-St. Paul International Airport (MSP) to the northeast. These airports are 3.0 - 3.5 hours away via truck on interstate highways. This distance from competing airports creates a natural area around FSD where shippers are more likely to use the Airport versus FAR, OMA or MSP. Indeed, based on input from current FSD air cargo operators, the Primary Service Area is defined as an approximately 1.5-hour drive time radius around the Airport.

The Primary Service Area reaches north to Watertown, east to Spirit Lake, south to Sioux City and west to Plankinton. This area includes a total of 53 counties in the states of South Dakota, Minnesota, Iowa and Nebraska. Total population for the area is almost 1.0 million residents and the per capita income level is approximately \$55,000. The Primary Service Area has over 58,000 business establishments which employ approximately 856,000 people. With these indicators, it is reasonable to conclude that demand for air cargo services exists in the region, whether it is serviced by FSD or other airports.

The entire state of South Dakota makes up the remaining service area for the Airport. Exhibit 4.1 provides a graphical depiction of the FSD air cargo market area. The area includes air cargo markets served via truck as well as feeder aircraft which then connect with other air cargo services at FSD.

### Exhibit 4.1 FSD Air Cargo Market Area



Source: Hubpoint analysis

## 4.2 Demand Drivers in the Relevant Market Area

Demand for FSD air cargo services is driven by both business and consumer activity in the relevant market area. Businesses often ship and receive parts, finished goods, small packages and documents utilizing air transportation. Consumers often receive small packages shipped by air. Traditionally, air-eligible shipments tended to be high in value, relatively low in weight, and time-sensitive. While these descriptors are still generally applicable, e-commerce shipments break many of the traditional rules of air cargo. Still, air cargo is a premium-priced service with some limitations, making it more relevant to certain business and consumer shipments than others.

There are a variety of companies in the FSD air cargo market area which fit the profile of companies known to ship by air. These businesses relate to motorized vehicles and vehicle parts, electronics, healthcare, pharmaceuticals, industrial and electrical machinery, plastics and textiles. In interviews with local companies, it was understood that air cargo shipments at FSD commonly include e-commerce, auto parts, pharmaceuticals, medical samples, and electrical components. Information on the types of goods being shipped by all transportation modes is also helpful as it identifies core business activities in the region. The 2017 Commodity Flow Survey administered by the Bureau of Transportation Statistics provides weight and value data for commodity shipments originating in South Dakota. Exhibits 4.2 and 4.3 show that the majority of South Dakota's products are being transported by modes other than air.

**Exhibit 4.2**  
**Leading Commodity Shipments Originating in South Dakota, Ranked by Value**

Commodity Description	Value (USD Millions)	Percent of Total
Cereal grains (includes seed)	\$3,766	10.1%
Agricultural products (excludes animal feed, cereal grains, and forage products)	\$3,715	10.0%
Machinery	\$2,642	7.1%
Mixed freight	\$2,376	6.4%
Other prepared foodstuffs and fats and oils	\$2,268	6.1%
Other chemical products and preparations, not elsewhere classified	\$2,150	5.8%
Plastics and rubber	\$2,066	5.5%
Gasoline and aviation turbine fuel	\$2,064	5.5%
Electronic and other electrical equipment and components, and office equipment	\$1,883	5.1%
Motorized and other vehicles (includes parts)	\$1,860	5.0%
<b>Top 10 commodities</b>	<b>\$24,790</b>	<b>66.5%</b>
Other commodities	\$12,488	33.5%
<b>Grand Total</b>	<b>\$37,278</b>	<b>100.0%</b>

Source: Bureau of Transportation Statistics, 2017 Commodity Flow Survey

**Exhibit 4.3**  
**Leading Commodity Shipments Originating in South Dakota, Ranked by Weight**

Commodity Description	Tons (thousands)	Percent of Total
Cereal grains (includes seed)	25,901	32.5%
Agricultural products (excludes animal feed, cereal grains, and forage products)	11,521	14.4%
Animal feed, eggs, honey, and other products of animal origin	10,381	13.0%
Non-metallic mineral products	7,429	9.3%
Gravel and crushed stone (excludes dolomite and slate)	4,205	5.3%
Gasoline and aviation turbine fuel	3,861	4.8%
Other non-metallic minerals, not elsewhere classified	3,745	4.7%
Other prepared foodstuffs and fats and oils	2,430	3.0%
Fertilizers	1,179	1.5%
Natural sands	1,052	1.3%
<b>Top 10 commodities</b>	<b>71,704</b>	<b>89.9%</b>
Other commodities	8,088	10.1%
<b>Grand Total</b>	<b>79,792</b>	<b>100.0%</b>

Source: Bureau of Transportation Statistics, 2017 Commodity Flow Survey

Heavy, dense, lower value goods like agricultural products, minerals, oils and fuels are more likely be transported by surface modes, including trucking and railroads. However, other South Dakota originating commodities may utilize air cargo, including motor vehicle parts, plastics and electronics. The Commodity Flow Survey also provides data on the transportation modes utilized by South Dakota’s shippers. Over 75% of the commodities transported from the state, by value, used trucks. Air cargo accounted for only 0.4% of shipments, by value. Parcel, USPS and Courier modes include some movements by air, but the Commodity Flow Survey does not provide separate information on the air cargo component. It is important to note that the Truck mode likely has some air cargo value and weight embedded in its data. However, the survey’s modal categories do not include Truck and Air as a Multiple Mode. So, for instance, South Dakota air cargo moving by truck to airports in Chicago are recorded in the Single Mode Truck category. (See Exhibit 4.4)

**Exhibit 4.4**  
**Shipment Characteristics by Mode of Transportation for South Dakota**

Mode of Transportation	Value (USD)		Weight (tons)	
	Number (Millions)	Percent of Total	Number (thousands)	Percent of Total
Total shipments, all modes	\$37,728	100.0%	79,792	98.6%
<b>Single Mode</b>				
Truck	\$28,218	75.7%	53,119	66.6%
Rail	\$3,827	10.3%	18,351	23.0%
Air (including truck and air)	\$136	0.4%	-	0.0%
<b>Multiple Modes</b>				
Parcel, USPS, or courier	\$2,684	7.2%	54	0.1%
Truck and rail	\$1,956	5.2%	7,098	8.9%
Truck and water	\$330	0.9%	49	0.1%
Rail and water	\$126	0.3%	-	0.0%
<b>Other Modes</b>				
Other Modes	\$1	0.0%	1,121	1.4%

Source: Bureau of Transportation Statistics, 2017 Commodity Flow Survey

Independent research and guidance from the Sioux Falls Development Foundation yielded several companies expected to have some level of demand for air cargo services. Exhibit 4.5 below lists these local companies and their primary business activities. Even in this small sample, a diverse mix of businesses are represented. From interviews, it is also known that the usage of air cargo services varies widely within this group of companies, ranging from daily outbound shipments to sporadic use that may average one air shipment per quarter.

**Exhibit 4.5**  
**Profiles of Select Sioux Falls Area Companies**

Company Name	Primary Business Activity	Location
MedVantx	Medical e-commerce, online pharmacy	Sioux Falls
U.S. Postal Service	Regional mail processing and distribution center	Sioux Falls
Raven Industries	Agriculture, aerospace and defense solutions	Sioux Falls
Daktronics	Manufacturer of audio and visual communication systems	Brookings
Weisser Distributing	E-commerce coordinator and distributor	Tea
Sonofi, Inc.	Global biopharmaceutical company	Sioux Falls
Sencore, Inc.	Develops high-quality signal transmission solutions	Sioux Falls
Twin City Fan	Global air moving equipment manufacturer	Brookings
Rotary Power	Hydraulic equipment supplier	Sioux Falls
Weisser Distributing	Fulfillment services for automotive, industrial, recreational brands	Tea
Avera Hospital	Integrated health system	Sioux Falls
Sanford Health	Integrated health system	Sioux Falls
Sullivan, Inc.	Home décor	Sioux Falls
Good Samaritan	Rehabilitation and long-term care	Sioux Falls
Malloy, Inc.	Electrical, motors, mechanical industrial services	Sioux Falls
Tiger Corporation	Farm equipment supplier	Sioux Falls
Midco, Inc.	Internet service provider	Sioux Falls
Renew Energy Maintenance	Wind and solar power maintenance	Sioux Falls
Sioux Corporation	Manufactures steam cleaners, water heaters and water chillers	Beresford
CCL, Inc.	Global specialty packaging and printing	Sioux Falls
AmesburyTruth	Window and door manufacturer	Sioux Falls

As a further indicator of the types of activities that drive air cargo demand at FSD, the concentration of industries in the Sioux Falls area was assessed. For the analysis, location quotients were calculated for more than twenty industries operating locally. Location quotients measure the relative employment levels for metropolitan areas by industry against national averages. A location quotient of 1.0 for a particular industry means that the industry's regional employment level compared to overall employment is equal to that of the U.S. average. Location quotients greater than 1.0 indicate regional employment for an industry exceeds the U.S. average for that industry.

Certain industries are known to be correlated to air cargo demand, including Transportation and Warehousing. The Sioux Falls location quotient for Transportation and Warehousing is 0.8, meaning that Sioux Falls' employment and activities in this sector are well below the U.S. average, suggesting that the area is not a significant demand center for those services, including air cargo. Exhibit 4.6 below shows the location quotients for the Top 20 Industries in the Sioux Falls MSA.

**Exhibit 4.6**  
**Sioux Falls MSA Employment Concentration by Industry (2021)**

Industry	Location Quotient	Total Employment (thousands)
Finance and Insurance	1.9	22.3
Health Care and Social Assistance	1.4	33.9
Wholesale Trade	1.3	9.0
Farm	1.2	3.2
Retail Trade	1.2	24.9
Construction	1.1	12.8
Arts, Entertainment, and Recreation	1.1	5.6
Manufacturing	1.1	15.2
Management of Companies and Enterprises	1.0	2.9
Real Estate, Rental and Lease	1.0	10.0
Federal Civilian	0.9	2.7
Educational Services	0.9	4.7
Accommodation and Food Services	0.9	14.1
Information	0.9	3.1
Other Services, except Public Administration	0.8	9.6
Transportation and Warehousing	0.8	8.0
Forestry, Fishing, and Related Activities	0.8	0.8
Federal Military	0.8	1.5
Professional and Technical Services	0.7	10.6
Utilities	0.7	0.4
<b>Top 20 Total</b>		<b>195.2</b>
Other		21.1
<b>Total</b>		<b>216.3</b>

Source: Hubpoint analysis of Woods & Poole Economics data, 2021 version for the 2021 year

The lack of Transportation and Warehousing focus in the Sioux Falls area is validated by other observations gathered during this study. For instance, there is a lack of air cargo-oriented freight forwarder presence at or around FSD. Freight forwarders are critical to the movement of general (non-integrated) air cargo which primarily moves by commercial passenger and freighter aircraft. Freight forwarders involved in air cargo shipments typically establish sales offices

where there are concentrations of manufacturing and shipping of air-eligible goods. Likewise, Road Feeder Services (RFS) are scheduled trucking services for air cargo that operate between airports. In the U.S., Forward Air is the largest RFS company with offices and trucking services nationwide. Forward Air publishes its RFS schedules online and, while Midwest markets like Omaha and Cedar Rapids are listed, FSD does not appear in the schedule. This, along with the lack of freight forwarding presence near the airport, signals a lack of critical mass and historical demand for general air cargo around Sioux Falls.

### **4.3 South Dakota's International Air Cargo**

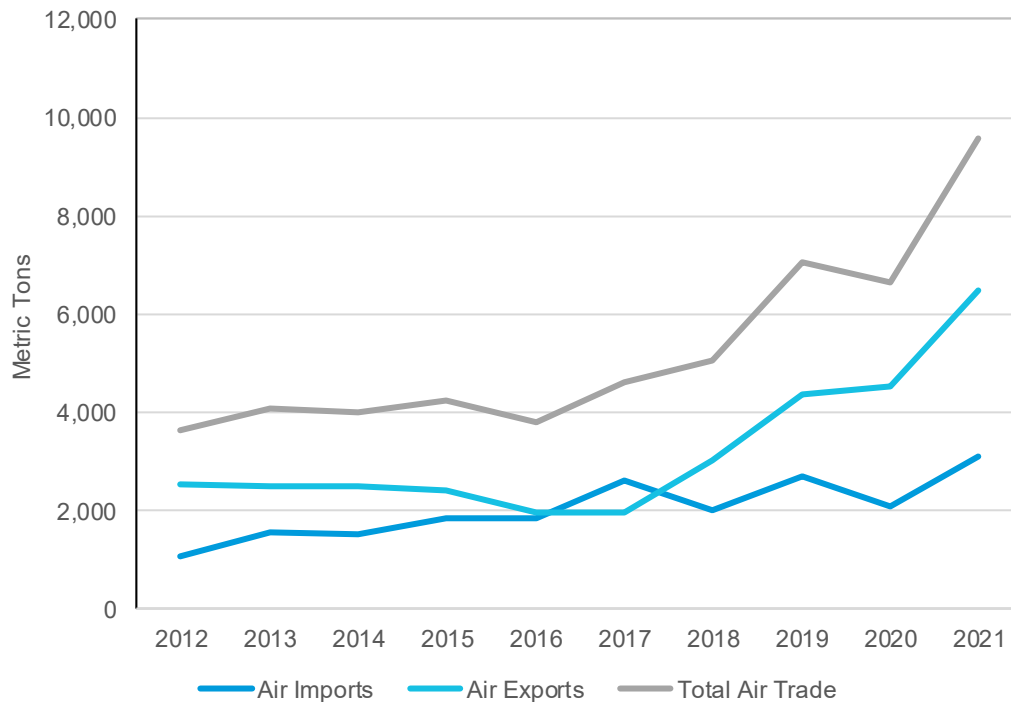
Analyzing South Dakota's international air cargo flows provides additional insights on the FSD air cargo market. While it is not anticipated that direct international cargo flights will operate at FSD during the planning horizon, international traffic regularly moves on integrated express carriers via their major U.S. hub airports. Therefore, international volumes can be a driver of demand and activity at FSD.

International air trade statistics are reported by the U.S. Census Bureau's Foreign Trade Division offering very good information on air imports and exports on a U.S. state and foreign country basis. For air trade, it is possible to analyze South Dakota's international commodities, foreign trading partners and shipment volumes by both weight and value on a monthly basis. This complements the Commodity Flow Survey data by providing even more detail on FSD's air cargo market reported at regular intervals and allowing for meaningful trend analysis.

As shown in Exhibit 4.7, South Dakota's international air trade (measured in metric tons) grew substantially between 2016 and 2021, recording a 151% increase. Much of this growth is attributable to the state's air exports during the pandemic in 2020 and 2021. Meanwhile, South Dakota's air imports have also experienced robust growth, almost tripling in volume over the 10-year period 2012-2021.



**Exhibit 4.7**  
**South Dakota Air Trade Trends (CY 2012-2021)**



Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics

Commodity detail for South Dakota's 2021 air imports and exports are provided in Exhibits 4.8 and 4.9. Imports heavily skew toward traditional air cargo commodities like computers and electric machinery, representing almost 50% of the state's total air import weight. Exports are dominated by specialty dyes and textiles as well as more common agricultural products of the state, including dairy products and meats. The statistics are notable for the overall similarities between the imported and exported commodity types. While the rankings and weights differ between the lists, the consistency suggests there may be some core South Dakota businesses that are both importing and exporting products by air.

**Exhibit 4.8**  
**South Dakota Top Air Imports by Weight (2021)**

Rank	Commodity	Air Weight (Metric Tons)	% Share of Total
1	Electric Machinery; Sound and TV Equipment; Parts	1,120	36.2%
2	Industrial Machinery, including Computers	773	25.0%
3	Aluminum and Aluminum Articles	188	6.1%
4	Vehicles and Parts	156	5.0%
5	Plastics and Plastic Articles	148	4.8%
6	Wadding, Felt; Spooled Yarn; Twine, Ropes	107	3.5%
7	Toys, Games & Sports Equipment	82	2.6%
8	Optical, Photographic, Medical or Surgical Instruments	69	2.2%
9	Iron or Steel Articles	49	1.6%
10	Special Classification Provisions	36	1.2%
	All Other	370	11.9%
	<b>Total South Dakota Air Imports</b>	<b>3,098</b>	<b>100.0%</b>

Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics, CY 2021

**Exhibit 4.9**  
**South Dakota Top Air Exports by Weight (2021)**

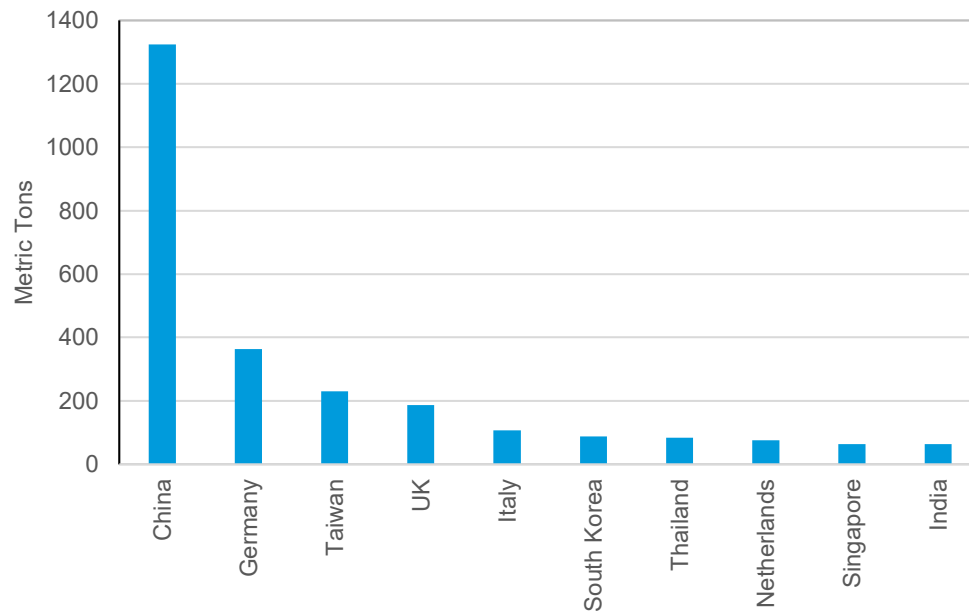
Rank	Commodity	Air Weight (Metric Tons)	% Share of Total
1	Plastics and Plastic Articles	1,195	18.4%
2	Miscellaneous Chemical Products	1,005	15.5%
3	Meat and Edible Meat Offal	793	12.2%
4	Impregnated Textile Fabrics; Textile Art for Industry	420	6.5%
5	Wadding, Felt; Spooled Yarn; Twine, Ropes	403	6.2%
6	Industrial Machinery, including Computers	358	5.5%
7	Pharmaceutical Products	269	4.2%
8	Live Animals	263	4.1%
9	Dairy Products, Bird Eggs, Honey	253	3.9%
10	Electric Machinery; Sound and TV Equipment; Parts	224	3.5%
	All Other	1,298	20.0%
	<b>Total South Dakota Air Exports</b>	<b>6,481</b>	<b>100.0%</b>

Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics, CY 2021

In terms of South Dakota's trading partners, it is not surprising that China dominates the state's air imports, a trend that exists for most states. China also leads all countries for air exports in 2021, but historically, Germany and the United Kingdom were the leading trading partners.

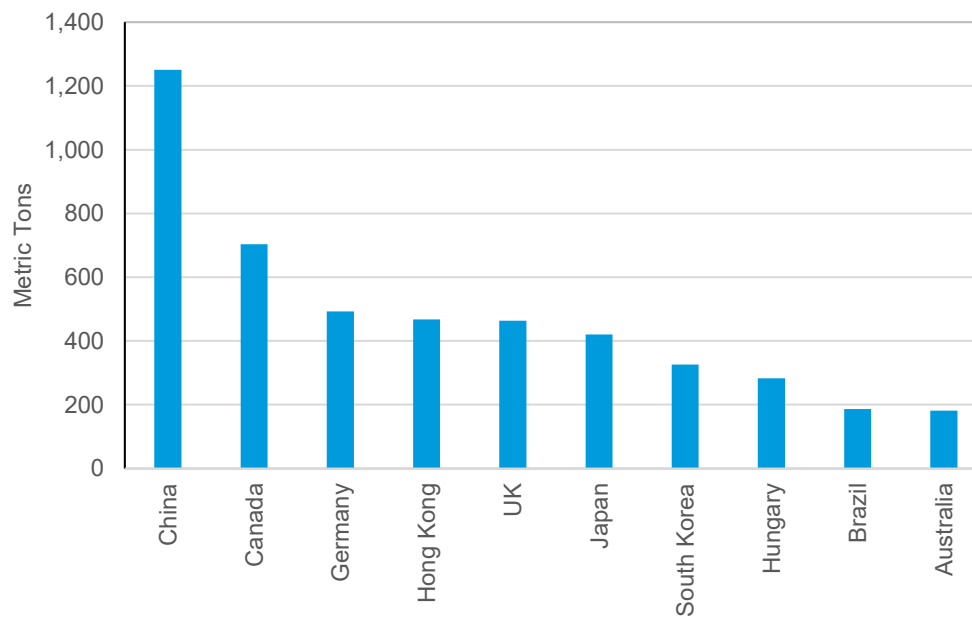
Interestingly, the top country trading partners for South Dakota represent a variety of continents, including Asia, Europe, North America, and South America. See Exhibits 4.10 and 4.11. This diversity should translate positively over time as it helps minimize sensitivity to the economic variations of a particular world region.

**Exhibit 4.10**  
**South Dakota Air Imports by Country – CY 2021**



Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics, CY 2021

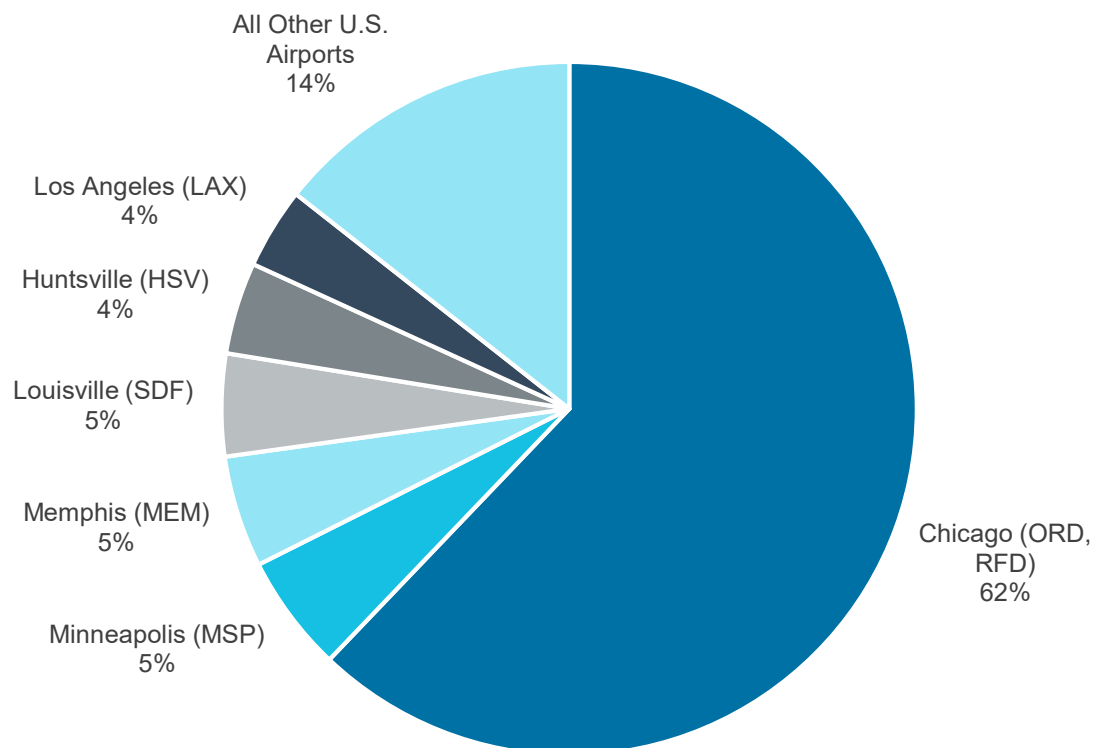
**Exhibit 4.11**  
**South Dakota Air Exports by Country – CY 2021**



Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics, CY 2021

Finally, it is helpful to understand the routings of South Dakota’s international air cargo shipments. For each state, the Foreign Trade data reports information on the last U.S. airport utilized for outbound international shipments (U.S. airport of exit) as well as the first U.S. airport for inbound international shipments (U.S. airport of entry). Exhibit 4.12 shows the distribution of South Dakota’s international air trade (imports and exports combined) in 2020 by airport of entry/exit. As expected, the Chicago airports (O’Hare and Rockford) account for the majority (62%) of the state’s air cargo shipments directly before and after the international flights. Chicago is followed by the Minneapolis-St. Paul airport, FedEx’s Memphis hub and UPS’s Louisville hub, with each accounting for 5% of the South Dakota’s international air trade. Certainly, some of the volumes handled by the integrated express carriers are transiting FSD on the way to and from international markets. However, large volumes of South Dakota air imports and exports are moving by truck to competing U.S. airports where they are loaded on aircraft to begin the air portion of their international journey.

**Exhibit 4.12**  
**South Dakota Air Imports and Exports by Airport of Entry / Exit - CY 2021**



Source: Hubpoint analysis of U.S. Census Bureau, Foreign Trade Statistics, CY 2021

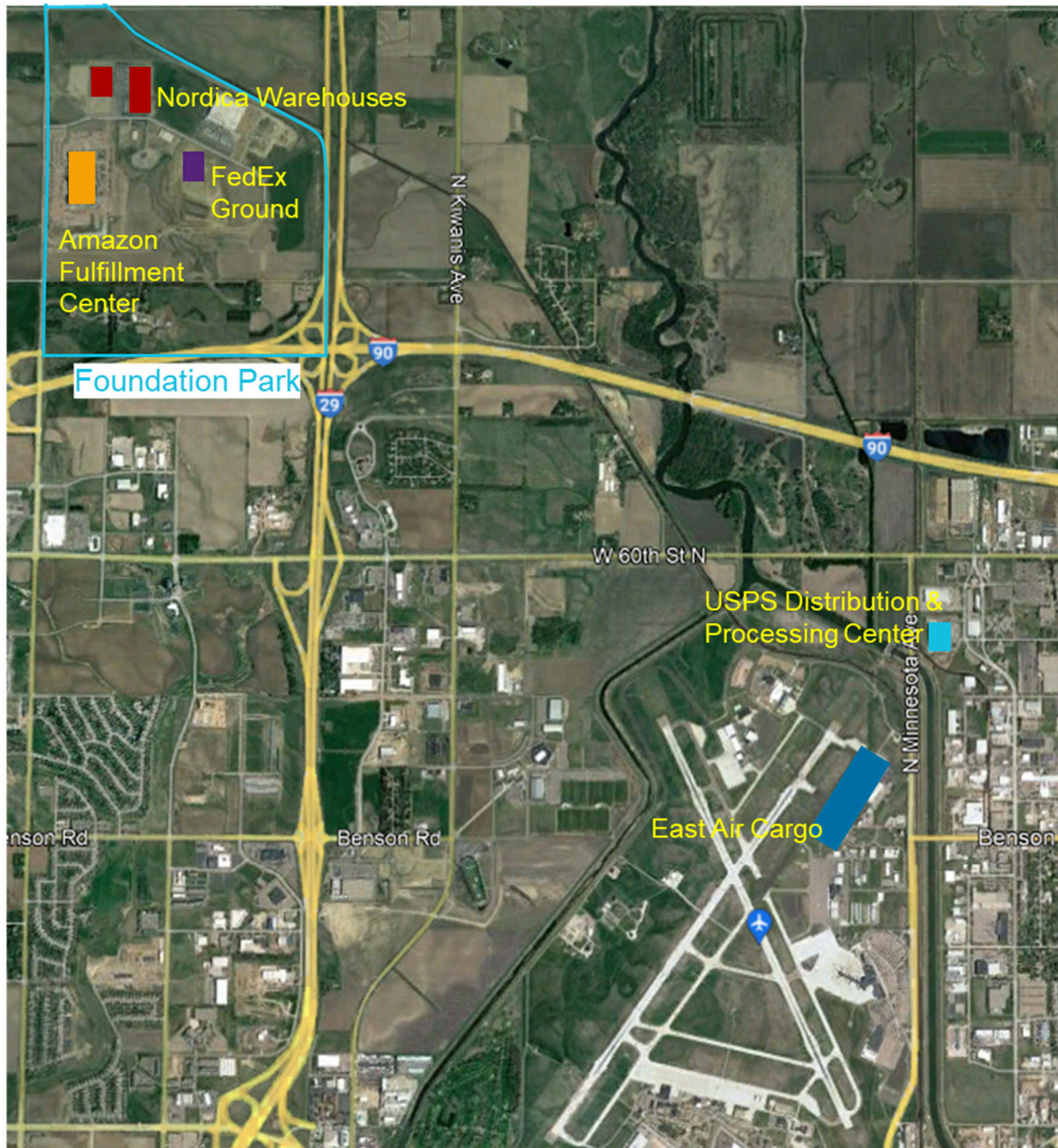
#### 4.4 Market Outlook

Based on input from stakeholders and other research, it is clear that the outlook for the FSD air cargo market will be highly influenced by regional economic development and e-commerce. Accordingly, the market impacts (positive or negative) will be primarily driven by demand of the region's businesses and consumers. However, supply (in the form of FSD cargo services and infrastructure) will determine the Airport's ability to handle that demand versus ceding the activity to competing airports and/or other modes.

Economic development relates to factors like business growth, expansion and retention in the market area as well as demographic changes like population and income growth. Importantly, the types of businesses operating in the market will be critical to improving the outlook. The current development of the Amazon fulfillment center in Foundation Park just minutes from FSD has the potential to be transformative to the Airport's air cargo business. This large five-story facility, scheduled to open in late 2022, will have a footprint of 640,000 square feet and will provide more than 3 million square feet of usable space. This will be one of Amazon's larger facilities and is designated as a small sortables fulfillment center. Importantly, small sortables include the types of goods that are considered air-eligible due to their size, weight and value characteristics. Examples of small sortable goods include books, toys, housewares, electronics, and watches. This contrasts with Amazon's large sortable fulfillment centers which typically house larger items that may fit into one box per shipment.

While there is reason for optimism that the new Amazon facility will lead to increasing air cargo activity at FSD, it should be noted that there are over 260 active Amazon fulfillment/distribution centers and nearly 940 currently active facilities across the U.S. Most of these locations do not have direct interaction with the respective local airports or Amazon Air. Further, it is notable that Foundation Park is strategically located at the intersection of I-29 and I-90, two of the nation's key north-south, east-west interstate highways. See Exhibit 4.13. While these highways provide easy access to Sioux Falls and FSD, from a cargo perspective, they simultaneously provide easy access away from and through Sioux Falls. In this manner, the Amazon facility will have excellent trucking options from Foundation Park to reach a large part of the region quickly via roadways versus airports. It is extremely difficult to predict the ultimate outcome and impact of the new Amazon fulfillment center, especially since it has yet to open. However, it is important to understand that Amazon (like most other businesses) uses air transportation as a last resort. If the new facility in Sioux Falls can operate successfully and serve customers with promised service levels without using air cargo, Amazon will readily utilize trucks which are less costly and usually highly reliable.

### Exhibit 4.13 FSD and Foundation Park



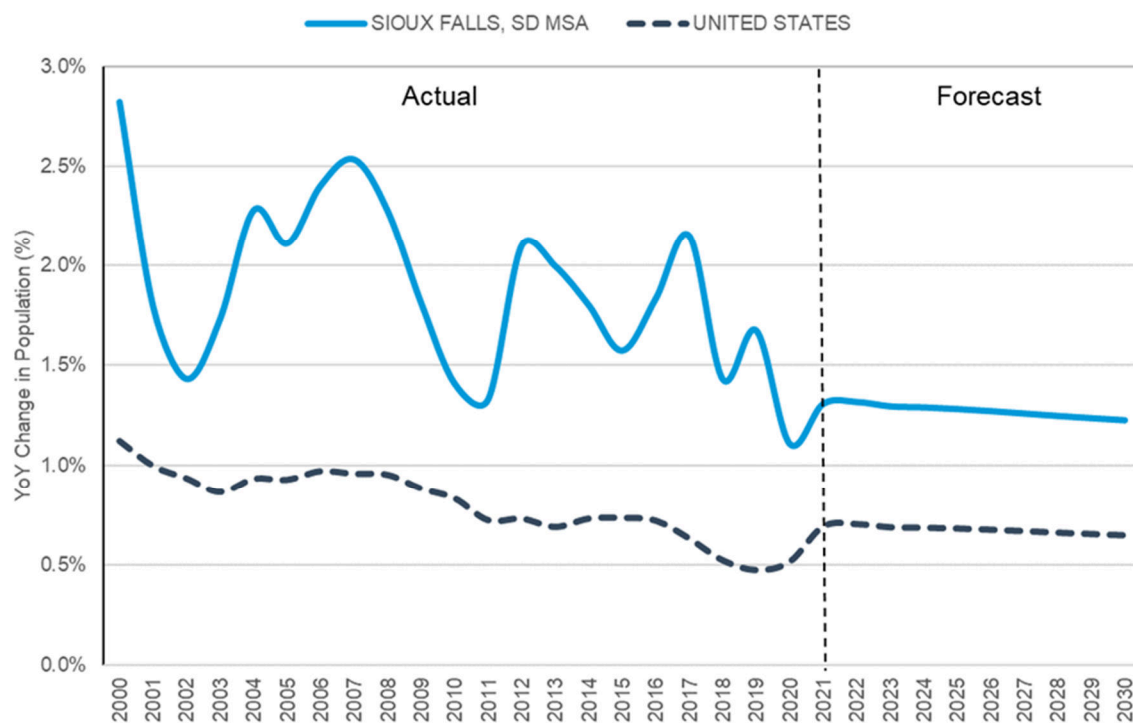
Foundation Park is also home to a new FedEx Ground facility, just behind the Amazon fulfillment center. FedEx Ground has operated at multiple locations in Sioux Falls which it has outgrown. As with Amazon, the new site provides for efficient operations and excellent market access via I-29 and I-90. The FedEx Ground facility is sized at 330,000 square feet. FedEx noted that the site was chosen due to its ease of access to highways, proximity to customers' distribution centers and a strong local community workforce for recruiting employees. The

current FedEx Ground facility has more than 100 full and part-time employees. It is not yet known how many employees the new facility will have.

Notably, FedEx Ground’s business model has changed substantially in recent years. Previously, FedEx Ground operated completely independent from FedEx Express. This was largely due to the origins of the Ground unit via numerous acquisitions of trucking companies and no meaningful interaction with expedited air express shipments. However, as e-commerce has blossomed, so has the need to connect FedEx’s e-commerce business customers with individual (often residential) addresses to fulfill orders. This evolved to the point where FedEx Ground and FedEx Express vans were offering overlapping services which increased costs. As a result of an ongoing re-engineering of the two business units, there is much more coordination and interaction and this is expected to continue and strengthen moving forward.

Beyond economic development from a business perspective, there is development from a demographic perspective. It is well-established that population and income are highly correlated with retail sales and e-commerce demand. In South Dakota, a growing population is leading to higher levels of consumer demand in all facets of the regional economy. As Exhibit 4.14 illustrates, the Sioux Falls area’s historic and future population growth consistently exceeds that of the overall U.S. Over time, this situation will certainly attract higher levels of activity that can have direct impacts on air cargo demand at FSD.

**Exhibit 4.14**  
**Population YoY Change for Sioux Falls MSA versus U.S. Average (2000-2030F)**



Source: Hubpoint analysis of Woods & Poole Economics data, 2021

## 4.5 Summary

The Sioux Falls Regional Airport serves a broad geographic area to include the entire state of South Dakota and parts of Minnesota, Iowa and Nebraska. This defined air cargo market has a large potential base of air cargo demand and the Primary Service Area is fairly insulated from competition from other airports in the region, particularly for shipments on the integrated express carriers. The anticipated growth in the region and some of the recent business activities are positive signs for air cargo demand.



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## 5 COMPETITIVE AIRPORTS

Like most U.S. airports, the Sioux Falls Regional Airport operates in a very competitive environment related to air cargo. Unlike passenger air travel, air cargo typically moves long distances by truck to airports well away from the initial origin or ultimate destination. This is especially true for international shipments where the ground movements are a minor portion of the overall journey, but, depending on the type of shipment, this practice can occur in the U.S. domestic market as well. At many U.S. airports, FedEx and/or UPS provide excellent services and timely access to markets around the world. Further, the integrated express services are homogeneous at most airports, thereby making the closest airport the most likely choice for shippers. For general cargo, involving many different stakeholders (e.g., freight forwarders, ground handlers, trucking companies, airlines and warehouse operators), shipper decisions for choosing airports are much more complex and can vary widely based on critical factors like pricing, timing and reliability.

For these reasons, airports like FSD must consider many more airports as competition for cargo than it typically considers as competition for passengers.

For this Study, the following airports were included in the competitive analysis:

1. Hector International Airport (FAR) in Fargo, ND
2. Eppley Airfield (OMA) in Omaha, NE
3. Des Moines International Airport (DSM) in Des Moines, IA
4. Eastern Iowa Airport (CID) in Cedar Rapids, IA
5. Minneapolis–Saint Paul International Airport (MSP) in Minneapolis, MN
6. Kansas City International Airport (MCI) in Kansas City, MO
7. O'Hare International Airport (ORD) in Chicago, IL
8. Chicago-Rockford International Airport (RFD) in Rockford, IL

The competitive analysis will enable FSD to gain a perspective on how it is positioned relative to other airports. Each airport is profiled in terms of its location, accessibility, cargo air services, facilities, infrastructure and cargo volumes. A map of the airports reviewed is shown in Exhibit 5.1.

### Exhibit 5.1 Airports Reviewed for FSD Competitive Analysis



Source: Hubpoint analysis

#### 5.1 Hector International Airport (FAR)

The Hector International Airport (FAR) is a FAA small hub airport located in Fargo, North Dakota, approximately 250 miles northwest of Minneapolis and 240 miles north of the Sioux Falls Regional Airport (FSD). Positioned near the intersection of interstate highways I-29 and I-94, the airport offers air cargo service to the immediate region through integrated carriers FedEx and UPS along with charter flights on other airlines.

Typical operations for FedEx at FAR include two daily flights with B757Fs and four daily flights with Cessna Caravans. FedEx's schedule generally consists of morning feeder flights (with Cessna Caravans) departing to other rural North Dakota and northern Minnesota airports followed by a mid-morning flight with a B757F to the main hub at Memphis, TN (MEM). The regional feeder flights return to FAR in the afternoon, where the cargo is then transferred onto the MEM evening flight. For historical context, in 2016, FedEx relocated its regional air cargo distribution center for North Dakota to FAR from the Grand Forks International Airport (GFK). To

account for the additional operations, a hangar was constructed to store smaller feeder aircraft such as the Cessna Caravan 208, which supports mainline freighter operations. Recent data shows that FedEx is currently operating up to 25 daily flights at FAR. The dedicated FedEx facility at FAR is approximately 20,000 square feet in size.

Excluding regional feeder flight operations, UPS is operating approximately four daily flights to/from the Louisville, KY (SDF) hub with mostly B757Fs. The schedules from SDF generally consist of early morning and evening inbound flights from SDF and two evening outbound flights back to SDF. The current UPS regional feeder operations follow a similar schedule to the FedEx regional feeder flights, scheduled to connect to the FAR-SDF evening outbound flight. Prior to 2018, the smaller North Dakota cities were managed from FSD. However, UPS subsequently relocated its North Dakota feeder operations to FAR, in order to serve the market more efficiently. In September 2021, UPS opened a new facility at FAR as it had operated near maximum capacity at the former facility. The new 63,000 square foot UPS facility can process 3,000 packages per hour, doubling its throughput capacity at FAR.

The Fargo MSA includes a population of 254,000 (-8% vs Sioux Falls MSA) with a gross regional product of \$14.6 billion (-31% vs. Sioux Falls MSA) and GDP per capita of \$57,656 (-25% vs. Sioux Falls MSA). The wholesale and retail trade industries have an outsized presence compared to the national average which is a positive signal for air cargo demand in Fargo.

FAR has three runways, including a 9,000-foot runway capable of supporting widebody aircraft. The airport has approximately 900,000 square feet of cargo apron space adjacent to the FedEx and UPS facilities.

FAR ranked 83rd among U.S. airports for cargo volumes in 2021, based on U.S. DOT data, with FedEx and UPS capturing the large majority of share.

## 5.2 Eppley Airfield (OMA)

Eppley Airfield (OMA) is a FAA medium hub airport located 3 miles northeast of downtown Omaha, 185 miles southeast of FSD via I-29, and covers 2,650 acres. In close proximity to three major highways including I-80, I-680, and I-29, the airport offers scheduled air cargo service on integrated carriers FedEx and UPS. Other OMA cargo carriers include Atlas Air, Southern Air and Northern Air Cargo which, in addition to flying charters, appear to operate on behalf of major carriers such as UPS and DHL.

The FedEx operation at OMA typically includes two daily departures and arrivals between the MEM hub with a mix of A300F, B757F and B767F aircraft. These flights are also supported by morning and evening Cessna Caravan feeder operations to rural Nebraska cities Grand Island (GRI), Kearney (EAR), North Platte (LBF), and McCook (MCK). UPS generally operates one daily evening departure and a morning arrival between the Louisville (SDF) hub with an A300F.

DHL is operating from OMA to St. Louis (STL) via Mesa Airlines with B737F aircraft. Additionally, the Southern Air and Northern Air Cargo operations may be related to the DHL operation given the destination airports in Cincinnati (CVG), Kansas City (MCI) and St. Louis

(STL), all of which have an existing DHL presence. Notably, DHL is undergoing a significant expansion in the Americas totaling \$360 million for additional facilities and new air capacity to support e-commerce growth. The Midwest is a significant area of focus for the company. The increased investment in the region may facilitate more e-commerce growth at OMA.

The Omaha-Council Bluffs, NE-IA MSA has a population of 962,000 (2.5 times the size of the Sioux Falls MSA) with a gross regional product of \$60.9 billion (1.9 times the size of the Sioux Falls MSA) and GDP per capita of \$63,275 (-18% vs. Sioux Falls MSA). The transportation and warehouse industry has an outsized presence compared to the national average. Recent flight tracking data shows increased air cargo operations, particularly by FedEx and UPS, which likely relate to increased e-commerce volumes.

OMA has three runways, with the longest being 9,502 feet and currently supporting aircraft as large as the B767F and A300F. It is estimated that OMA has approximately 125,000 square feet of cargo warehouse space. Tenants UPS, FedEx, DHL, and Cargo Force have dedicated space along with a separate area for the processing of belly cargo for passenger carriers such as Southwest. Additionally, OMA has approximately 500,000 square feet of cargo apron space.

OMA ranked 58th among U.S. airports in 2021 air cargo volumes based on U.S. DOT data. Nearly all cargo was handled by FedEx and UPS.

### **5.3 Des Moines International Airport (DSM)**

The Des Moines International Airport (DSM) is a FAA small hub airport located five miles southwest of downtown Des Moines, 290 miles southeast of FSD via I-29 and I-80, and covering 2,600 acres. The airport offers scheduled air cargo service to the immediate region via FedEx and UPS.

The typical operation for FedEx consists of an early morning arrival from the MEM hub followed by a late evening departure back to MEM with an A300F. UPS follows very similar schedules, however, its B767F aircraft is shared with Cedar Rapids, IA (CID) as the flights do not operate directly to the Louisville (SDF) hub. In 2017, UPS moved most of the DSM operation to its Rockford, Illinois (RFD) hub. The intention was to move 13 flights per week from DSM to RFD. However, UPS continues to operate one nightly flight from DSM in order to offer next-day delivery services.

In November 2021, Amazon Air initiated new daily service to DSM with the ATR-72F turboprop aircraft. The carrier will lease 8,052 square feet of existing warehouse space for its on-airport sortation. With this service, DSM became one of the launch airports for the Amazon Air turboprops.

The Des Moines-West Des Moines, IA MSA has a population of 711,000 (1.6 times the size of the Sioux Falls MSA) with a gross regional product of \$51.0 billion (1.4 times the size of the Sioux Falls MSA) and GDP per capita of \$71,695 (-7% vs. Sioux Falls MSA).

DSM has two runways; the longest is 9,004 feet and currently supports aircraft as large as the A300F and B767F. DSM has approximately 100,000 square feet of cargo warehouse space.

FedEx has a dedicated building on airport. It is unknown how much space UPS continues to use after relocating much of their cargo operation to RFD. Finally, DSM has approximately 1.0 million square feet of cargo apron space.

DSM ranked 94th among U.S. airports in 2021 cargo volumes based on U.S. DOT data, which were mainly carried by FedEx and UPS.

#### **5.4 Eastern Iowa Airport (CID)**

The Eastern Iowa Airport (CID) is a FAA small hub airport located in Cedar Rapids, IA on 3,288 acres. It is located two miles west of I-80 and offers scheduled air cargo service by FedEx and UPS as well as DHL (operated by Kalitta).

FedEx generally operates two daily departures from CID with B757F aircraft, one to MEM hub in the late evening and another to Madison, WI (MSN) in the early morning. The MSN aircraft arrives at CID from FedEx's Indianapolis, IN (IND) hub early in the morning, and then makes other stops after departing CID before returning to the MEM hub. This is a common scheduling practice when there is not enough cargo volume to fill an entire aircraft from one city. Between CID and IND, FedEx also operates morning inbound and evening outbound flights via contract carrier Mountain Air Cargo with ATR-72F turboprop aircraft.

UPS typically operates two daily inbound and outbound flights at CID. The first inbound flight is a B757F arriving from the Rockford, Illinois (RFD) hub in the early morning. It then returns shortly thereafter. The second flight, a B767-300F, arrives from the SDF hub in the early morning, then departs to DSM and returns back to CID at night. It then returns to SDF with air cargo from both CID and DSM.

Finally, Kalitta is operating approximately one daily B737-400F flight on behalf of DHL to and from CID. Generally, the flights arrive early in the morning from DHL's Cincinnati, OH (CVG) hub and depart to Kansas City, MO (MCI) shortly thereafter. Recent flight tracking data shows DHL is operating twice per day in some cases, with an additional flight to and from the CVG hub.

The Cedar Rapids, IA MSA includes a population of 277,000 (nearly the same size as the Sioux Falls MSA) with a gross regional product of \$18.5 billion (-13% vs. the Sioux Falls MSA) and GDP per capita of \$67,068 (-13% vs. Sioux Falls MSA). Cedar Rapids has multiple industries with an outsized presence compared to the national average that are generally considered facilitators of air cargo, including the manufacturing, farm, transportation and warehousing, retail trade, and wholesale trade industries.

CID has two runways; the longest is 8,600 feet and currently supports operations as large as B767F aircraft. CID has over 110,000 square feet of cargo warehouse space divided among three buildings. FedEx occupies a building with 78,000 square feet on the west side of the airport, while there is also a 34,000 square foot building on the east side of the airport that is likely for general use.

In July 2021, UPS opened a new 53,800 square foot building on the west side of the airport that required an \$18 million investment. It is about eight times larger than the former UPS facility and can process 4,000 packages per hour.

Additionally, there is an estimated 111,000 square feet of cargo apron space connected to the east cargo facility and 215,000 square feet adjacent to the west cargo facilities.

In 2021, CID ranked 82nd among U.S. airports in air cargo based on U.S. DOT data. Approximately 85% of cargo volumes were attributed to FedEx and UPS, while Kalitta Charters (mostly DHL) carried the remaining cargo.

## **5.5 Minneapolis–Saint Paul International Airport (MSP)**

The Minneapolis International Airport (MSP) is a FAA large hub airport located within 10 miles of downtown Minneapolis/Saint Paul and proximate to several major highways (I-35, I-94, I-494, and I-394). The airport occupies 2,930 acres and is 265 miles northeast of FSD via I-35 and I-90.

MSP is a passenger hub for Delta Air Lines and its SkyTeam partners, providing substantial access to belly cargo capacity on both narrowbody and widebody aircraft to domestic and international destinations. The airport also offers scheduled air cargo service by FedEx and UPS, along with daily flights by Amazon Air. Prior to Amazon Air's announcement of DSM service in November 2021, MSP was the closest airport to FSD with service by the e-commerce carrier.

FedEx operations are characterized by four daily flights to/from hubs at IND and MEM with B767Fs and one daily flight to/from Duluth, MN (DLH) with the Beechcraft 18F. UPS typically operates five daily inbound and outbound flights with a mix of aircraft (MD11F, B757F, and A300F) to and from its SDF and RFD hubs. Other UPS operations at MSP include service to Philadelphia, PA (PHL), Dallas Ft. Worth, TX (DFW), and Winnipeg, Manitoba (YWG).

Current Amazon Air service includes Sun Country-operated flights with the B737F to Lakeland, FL (LAL) and Ft. Worth, TX (AFW). The flights generally arrive into MSP late at night and depart in the mid-morning hours to accommodate Amazon's two-day shipping from the region.

The Minneapolis-St. Paul-Bloomington, MN-WI MSA has a population of 3.7 million (12 times the size of the Sioux Falls MSA) with a gross regional product of \$262.1 billion (over 11 times the size of the Sioux Falls MSA) and GDP per capita of \$70,822 (-8% vs. Sioux Falls MSA).

MSP has four runways, including an 11,000-foot runway capable of handling the largest widebody aircraft. There is an estimated 245,000 square feet of cargo warehouse space in two buildings. FedEx occupies a 193,000 square foot facility and DHL likely shares a separate 52,000 square foot facility with other tenants. The total cargo apron is estimated at over 2 million square feet, with FedEx utilizing the 1.5 million square foot cargo apron on the infield and DHL utilizing the 640,000 square foot west cargo apron.

MSP ranked 30th among U.S. airports in 2021 for air cargo volumes, based on U.S. DOT data. Approximately 80% of air cargo volumes were handled by FedEx and UPS, while Delta carried 10% as belly cargo. Amazon Air likely carried the remaining balance via its contracted carriers.

## 5.6 Kansas City International Airport (MCI)

The Kansas City International Airport (MCI) is a FAA medium hub airport located 15 miles northwest of downtown Kansas City, 350 miles southeast of FSD via I-29, and covering 10,680 acres. MCI is conveniently accessed via I-29 to I-70 and I-35. The airport offers scheduled cargo service to the immediate region mainly via FedEx and UPS. Other cargo flights are operated by Amazon Air and DHL (Kalitta). There is also belly cargo capacity available from the U.S. network carriers (American, Delta, United) and some low-cost carriers such as Southwest.

FedEx operations generally consist of early morning inbound flights from hubs at MEM, IND, and AFW. These are followed by late evening outbound flights returning to the hubs with mostly B767F and B757F aircraft. UPS follows a similar schedule, but operates flights to its hubs at SDF and RFD with a comparable mix of freighter aircraft. These schedules enable UPS to complete overnight deliveries from the region.

In contrast, Amazon Air inbound flights from hubs at Lakeland, FL (LAL) and San Bernardino (SBD) arrive in the late evening, remain overnight at MCI, and depart early the following day. The LAL flights are being operated by Sun Country with B737Fs while Air Transport International (ATI) is among the contract carriers operating SBD service with B767Fs.

The DHL flight patterns are similar to the FedEx and UPS operations, with inbound flights from Cedar Rapids (CID) generally arriving in the morning followed by late evening outbound flights with the B737F.

In mid-2021, DHL announced a significant expansion in the Americas totaling \$360 million for additional facilities and new air capacity to support e-commerce growth; it is expected to grow overall North and South America capacity by 30%. A significant part of the investment involves Kansas City where DHL is moving to a \$5 million facility near MCI that will be twice the capacity of the existing facility.

The Kansas City, MO MSA includes a population of 2.2 million (over 6 times the size of the Sioux Falls MSA) with a gross regional product of \$129.0 billion (over 5 times the size of the Sioux Falls MSA) and GDP per capita of \$58,834 (-23% vs. Sioux Falls MSA). Major industries include wholesale trade and transportation and warehousing.

MCI has three runways, including one at 10,800 feet. The airport has an estimated 191,000 square feet of cargo warehouse space spread across three buildings. FedEx occupies a building with 76,000 square feet, DHL occupies another 60,000 square foot facility, and UPS is in a separate 55,000 square foot building. In 2021, Amazon Air started new service to MCI and is now leasing 34,000 square feet of cargo space from one of the existing buildings. Total cargo apron space is estimated at around 658,000 square feet, with 308,000 square feet adjacent to

the FedEx facility, 245,000 square feet near the DHL facility, and 105,000 square feet near the UPS facility.

MCI ranked 44th among U.S. airports in 2021 for air cargo volumes based on U.S. DOT data. Approximately 90% of the cargo was handled by FedEx and UPS, while Kalitta (mostly DHL), Southwest and Delta carried the majority of the remaining balance. Moving forward, Amazon Air (via contractor Sun Country and potentially other operators) is expected to carry significant volumes with its B737-800F aircraft.

## 5.7 O'Hare International Airport (ORD)

The Chicago O'Hare International Airport (ORD) is a FAA large hub airport located 14 miles northwest of the Chicago business district, 560 miles east of FSD via I-90, and covering 7,627 acres. In addition to I-90, ORD also has convenient access to I-94 and I-294. ORD is a major international gateway for both passenger and cargo flights. The airport's passenger service is dominated by hub carriers American and United. From a cargo perspective, there are over a dozen airlines offering scheduled and non-scheduled cargo freighter service to domestic and international points (particularly Asia). There is also an abundance of domestic and international belly cargo capacity available due to ORD's dual network carrier hub status. Amazon Air uses ORD to complement its regional hub in nearby Rockford, IL (RFD) to provide complete coverage for Prime customers in the area. Additionally, as mentioned, ORD captures the majority of South Dakota's international imports and exports.

The Chicago-Naperville-Elgin, IL-IN-WI MSA includes a population of 9.6 million (nearly 34 times the size of the Sioux Falls MSA) with a gross regional product of \$677.9 billion (over 30 times the size of the Sioux Falls MSA) and GDP per capita of \$70,759 (-8% vs. Sioux Falls MSA). The transportation and warehousing industry has a substantial presence in the Chicago area, which supports ORD's position as a leading air cargo gateway in the U.S.

ORD has eight runways, including one at 13,000 feet, capable of handling any type of aircraft. The airport has over 2 million square feet of cargo warehouse space and 2 million square feet of cargo apron space. Despite the substantial amount of on-airport cargo warehouse space, record e-commerce and pandemic-related cargo volumes have caused significant congestion at the airport.

A trend to monitor from 2021 due to the congestion at ORD included the relocation of on-airport cargo facilities to off-airport locations. For example, ground handlers Alliance Ground International and Maestro International Cargo opened large off-airport transfer facilities near ORD to enable faster pickup of import cargo. This will enable cargo handlers to move as much inbound cargo as possible to off-airport facilities and prioritize on-airport space for outbound shipments. Some freight forwarders have even started to relocate capacity to nearby Rockford, IL (RFD) due to lack of space and facilities at ORD. This trend could continue where smaller secondary airports gain additional capacity and cargo volumes at the expense of larger congested gateway airports.



ORD ranked 6th among U.S. airports in 2021 in cargo volumes based on U.S. DOT data. ORD is highly diversified in terms of market share by cargo carriers, with no carrier having more than a 10% share.

## 5.8 Chicago-Rockford International Airport (RFD)

The Chicago-Rockford International Airport (RFD) is a FAA non-hub airport located 4 miles south of Rockford, 85 miles northwest of Chicago, 500 miles east of FSD, and covering 2,900 acres. RFD has direct interstate access to both I-90 and I-39. The airport has minimal passenger service, but is an air cargo hub for both UPS and Amazon Air. In 2020, UPS averaged approximately 20 daily flights each way at its RFD hub while Amazon Air is estimated to operate 10-15 flights each day.

The Rockford, IL MSA includes a population of 340,000 (~20% larger than the Sioux Falls MSA) with a gross regional product of \$16.1 billion (-24% vs. the Sioux Falls MSA) and GDP per capita of \$47,509 (-38% vs. Sioux Falls MSA). Employment related to air cargo with particularly high concentrations in the area include the manufacturing, transportation and warehousing, and wholesale trade industries.

RFD has two runways; the longest is 10,000 feet. The airport is estimated to have over 1 million square feet of cargo warehouse space distributed among four buildings. UPS occupies a building with 670,000 square feet while Amazon Air is operating from a 212,000 square foot facility. Another 72,000 square foot facility is utilized by other cargo carriers. Additionally, there is over 4 million square feet of cargo apron space available at RFD.

In early 2021, RFD announced a large expansion of its cargo facilities, with two additional cargo buildings and more parking space for freighters. The \$42 million International Cargo Center was scheduled to open in 2021 in two phases, with a 90,000 square foot facility to open in July and a 100,000 square foot facility to open in November. Additionally, RFD will create ramp space for six additional aircraft large enough to accommodate 747 freighter aircraft.

Senator International expanded charter cargo service between Hahn, Germany and Greenville-Spartanburg to RFD on a weekly basis with plans to use RFD as its Midwest U.S. hub. RFD has also received interest from other international forwarders and cargo carriers planning to implement freighter service. The two new cargo buildings are expected to handle much of this new activity as two-thirds of one building will be operated by ground handler Emery Air and leased to Senator. RFD is considering further expansion options as cargo volumes continue to grow at a rapid pace.

RFD ranked 20th among U.S. airports in 2021 air cargo volumes based on U.S. DOT data. Over 70% of cargo was handled by UPS, while Amazon Air contract carriers Air Transport International, Southern Air, and Atlas Air carried the majority of the remaining balance.

## 5.9 Summary

A competitive review for the Sioux Falls Regional Airport includes eight airports with varying levels of air cargo volumes capabilities and relevance to FSD. Exhibit 5.2. summarizes key cargo and demographic metrics for these airports and their communities. Chicago O'Hare is, by far, the largest airport in proximity to FSD and its plentiful air services and infrastructure enable it to attract cargo from the entire Midwest region. In particular, ORD's international capacity is attractive to South Dakota businesses generating demand for air imports and exports. Meanwhile, Chicago-Rockford is successfully adding air cargo services and infrastructure which establishes it as a growing force in the area.

The competing airports of similar size and operational profile as FSD tend to also have similar types of cargo services. FedEx and UPS serve each of these competing airports and some also have operations by DHL and Amazon Air. Overall, for U.S. domestic air cargo, the Sioux Falls Regional Airport offers competitive service levels for the region's demand. With rapid changes occurring in the U.S. cargo market, it is likely that each of the airports reviewed will continue to evolve their cargo businesses.

**Exhibit 5.2**  
**Competitive Airport Summary**

Airport	Cargo - Metric Tons (2021)	Est'd Cargo Facilities (Sq. Ft.)	MSA Population (2021)	GRP (billions USD)
ORD	2,536,576	2,000,000	961,992	\$670.3
RFD	456,329	1,000,000	710,943	\$16.0
MSP	237,746	245,000	2,185,689	\$261.4
MCI	111,479	191,000	337,344	\$131.7
OMA	67,845	125,000	2,815,174	\$62.2
DSM	43,337	100,000	3,691,183	\$50.3
FSD	40,345	49,000	274,759	\$22.5
CID	34,551	111,500	251,333	\$17.8
FAR	33,769	83,000	1,580,569	\$14.8

Source: Hubpoint analysis of ACI-NA data, Woods & Poole Economics data 2021, Google Earth

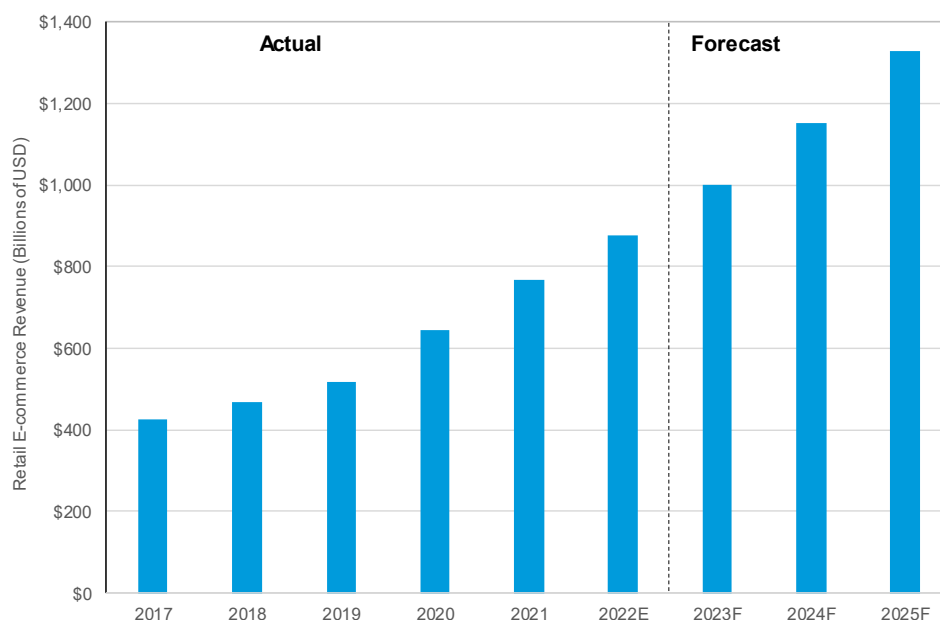
## 6 AMAZON AIR AND IMPLICATIONS FOR FSD

### 6.1 Introduction

Over the past decade, the most important trend in air cargo, by far, has been the global growth of e-commerce. The ease of ordering, massive selection and convenient delivery of e-commerce has attracted customers and their spending at historic levels. The impacts of e-commerce are evident in every developed country and, in many cases, air cargo plays a significant role in the fulfillment of customer orders. In the U.S., e-commerce has grown unabated since the mid-1990s. In more recent years, U.S. e-commerce sales passed the \$500 billion mark in 2019 and, by the end of 2022, sales are expected to reach almost \$900 billion. See Exhibit 6.1.

Notably, e-commerce growth has been super-charged during the ongoing COVID-19 pandemic where lockdowns and social-distancing made the retail sales platform even more attractive. From the onset of the pandemic in 2019 through 2021, the U.S. experienced almost 50% growth in e-commerce sales. E-commerce growth coupled with higher service commitments (in the form of shorter order delivery times) has led to the increasing use of air transportation for goods movements. From a transportation perspective, the primary beneficiaries of e-commerce growth in the U.S. were FedEx and UPS. The integrated express carriers were ideal enablers of e-commerce due to their scale, technologies and door-to-door delivery capabilities. However, the legacy business models of both FedEx and UPS were severely tested as e-commerce volumes grew and customer requirements increased.

**Exhibit 6.1**  
**Annual U.S. Retail E-commerce Sales (2017-2025F)**



Source: Statista

## 6.2 Origin of Amazon Air

As the world leader in e-commerce, Amazon has been at the forefront of innovation and performance in the sector. From its early days, Amazon realized the importance of reliable shipping to its business model. Free shipping and two-day deliveries have been mainstays of the Amazon brand which led to high market share and created barriers to entry for competitors. Amazon's emphasis on customer deliveries made partnering with FedEx and UPS a natural decision as its business evolved beyond books and into every product imaginable.

For almost 20 years, Amazon and the integrated express carriers grew in concert and served customers well. However, strains in the relationships became public during the peak holiday season of 2013. In that year, e-commerce volumes exceeded the capacity of FedEx and UPS, leading to many delayed customer deliveries. Due to the late deliveries, Amazon was forced to issue refunds to customers and repair its brand reputation. More importantly, this was the seminal moment where Amazon determined that it needed more control over the critical delivery function of its rapidly growing business.

In 2015, Amazon entered into discussions to lease 20 B767F aircraft to augment the capacity of its transportation partners, FedEx and UPS. The leased aircraft were to be operated by U.S. cargo airlines, including Atlas Air and Air Transport Services Group (ATSG). By 2016, Amazon's plans to manage its own air network became public. The network was initially centered in southwest Ohio at Wilmington Air Park (ILN), the prior home of Airborne Express and DHL's domestic U.S. air carrier. Amazon stated that its air operation, initially branded as Prime Air and later named Amazon Air, was meant to assist FedEx and UPS deliveries in peak periods. However, over time, more aircraft were leased and the Amazon Air "experiment" was judged a success – allowing for faster customer deliveries and more freedom from the legacy business practices of the integrated express carriers.

Although FedEx and UPS remained partners to Amazon, the imminent threat to their future business with the e-commerce company was clear. In June 2019, FedEx proactively ended its contract with Amazon for providing air transportation services. Two months later, FedEx completed its separation from Amazon by canceling its contracts for ground delivery services. FedEx had become frustrated with the continued growth of Amazon Air and determined its better long-term strategy would be to focus on assisting other e-commerce companies with their transportation and logistics needs. UPS did not follow FedEx's lead and, in fact, benefited from the exit of a competitor for Amazon's business. In 2019, UPS reported that Amazon represented approximately 20% of its U.S. revenue. To this day, UPS and Amazon remain partners and co-exist, even as Amazon Air's fleet and network expand.

## 6.3 Business Model

In its current form, Amazon Air exists solely to serve Amazon. This allows the air group to be extraordinarily focused on one entity and executing on a defined set of objectives to ensure the success of Amazon. Because Amazon Air is not available for use by the general public or by other companies, there are no requirements to serve every address or make random customer pick-ups. Further, unlike FedEx and UPS, the Amazon Air group is not motivated by revenue

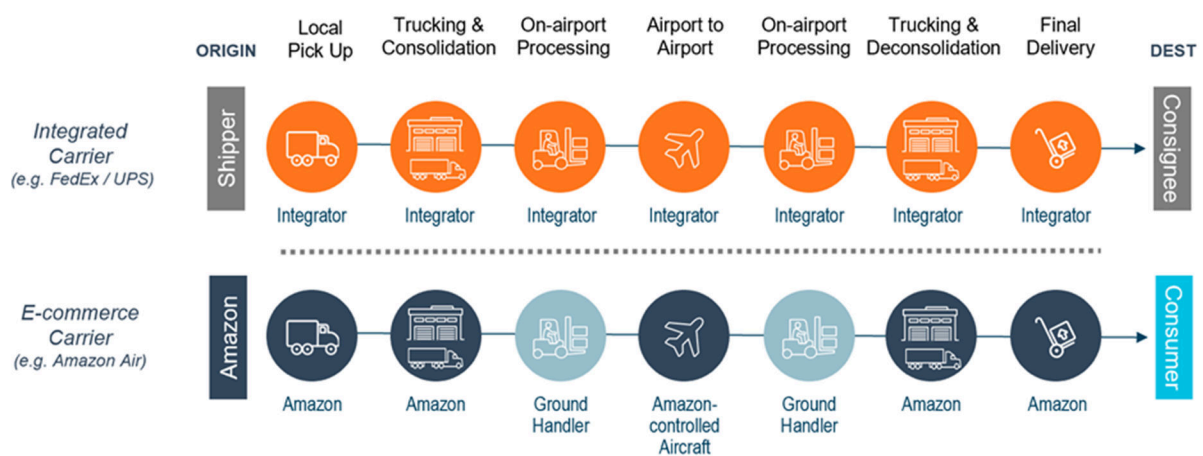
targets or the profitability of its transportation services. Rather, it is the performance of the larger Amazon entity that matters.

By analyzing flight schedules, it is clear that Amazon Air’s business model is very different from FedEx and UPS. Amazon has historically focused on meeting two-day delivery commitments, while the main drivers for the FedEx and UPS aviation networks center around overnight shipping. FedEx and UPS construct their respective schedules to meet next day deliveries, which generally involve morning departures from the hubs at Memphis, TN (MEM) and Louisville, KY (SDF) to the outstations, like FSD. These operations are then followed by late evening return flights back to the hubs. The cargo can then be sorted at the hubs and placed on departing aircraft or trucks for next day delivery.

In contrast, Amazon Air flights generally depart from the regional hubs in the morning and return the same morning or afternoon, depending on an airport’s role in the Amazon network. The e-commerce orders are then sorted at the respective hubs and flown to other Amazon Air cities where Amazon has up to two days to complete deliveries. Further, the Amazon Air network still includes point-to-point flights between large markets which bypass established hubs. Finally, Amazon Air is not only utilized to facilitate customer deliveries, it is also critical to the repositioning of Amazon inventory around the U.S. based on real-time trends. Therefore, ideally, Amazon Air points of service involve markets with not only adequate levels of consumer demand, but also established fulfillment centers where inventory can be sourced and delivered.

Exhibit 6.2 provides a diagram of the door-to-door journey of cargo utilizing an integrated carrier such as FedEx or UPS compared to an e-commerce carrier such as Amazon Air.

**Exhibit 6.2**  
**Door-to-Door Journey for Integrated Carrier vs. E-Commerce Carrier**



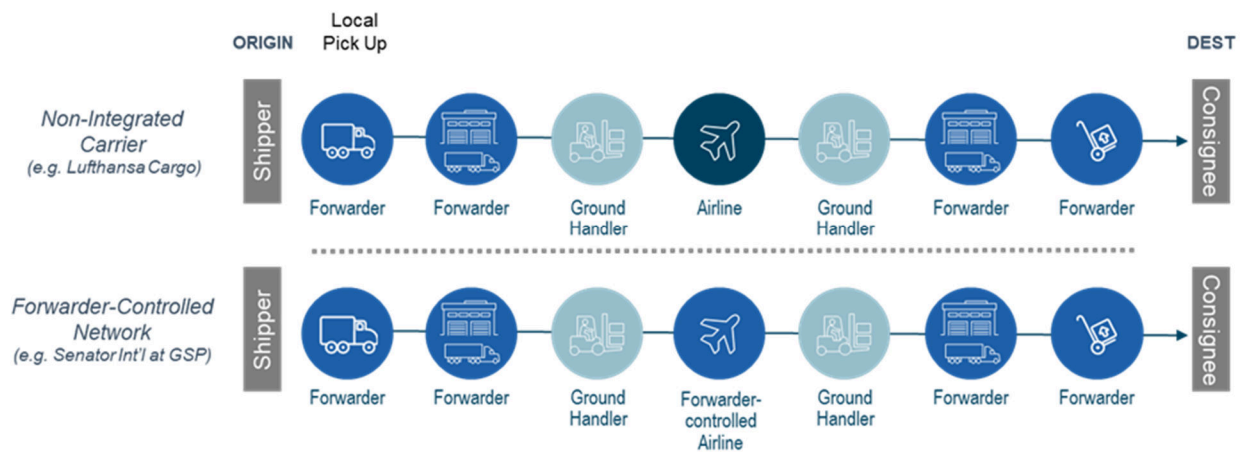
Source: Hubpoint analysis

Although there are many similarities between integrated carriers and an e-commerce carrier like Amazon, the primary differences relate to Amazon’s control of the ordering process, its

outsourcing of airport ground handling and its contracting with air carriers to operate leased aircraft. Of these, the control of the customer order process is most impactful because it allows for complete visibility of the required order fulfillment process at the earliest time possible. Conversely, integrated carriers often know about an orders' details once it is tendered to them by a customer. The early notification to Amazon Air of demand levels, product details and delivery locations enables optimal logistics planning.

It is also useful to compare Amazon Air's door-to-door journey to those of non-integrated carriers and forwarder-controlled networks, as depicted in Exhibit 6.3. These carrier models are particularly employed for general cargo shipments, as opposed to express package and e-commerce shipments. Non-integrated carriers primarily perform the basic airport-to-airport transportation function, but do not offer door-to-door services. Freight forwarders serve shippers and contract with non-integrated carriers to fly cargo shipments to the intended destination airport. Forwarders also ensure that all involved parties are coordinated to move goods from origin to destination. The emphasis of this business model is on cost, flexibility, and customized solutions. Forwarder-controlled networks are very similar to non-integrated carrier models, but the key difference is that the freight forwarder charts the aircraft and, therefore, controls the airport-to-airport transportation function. This enables the forwarder to dictate where and when aircraft fly in order to provide unique services to key customers.

**Exhibit 6.3**  
**Door-to-Door Journey for Integrated Carrier vs. E-Commerce Carrier**



*Note: Icons of same color indicate activities controlled by same entity*

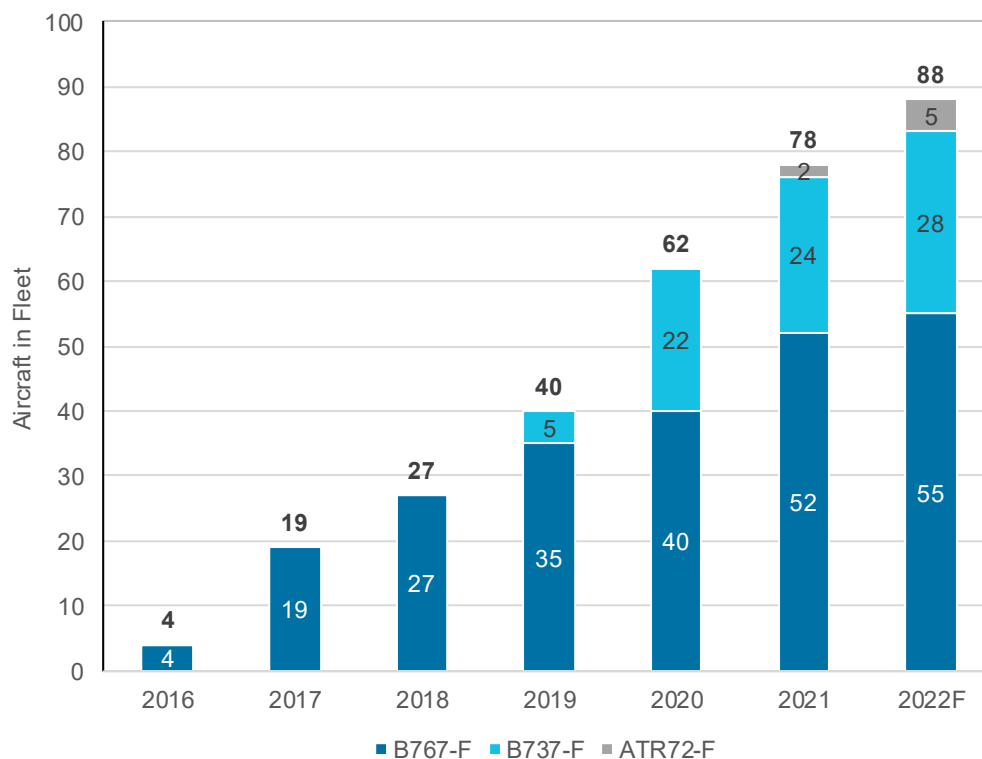
Source: Hubpoint analysis

## 6.4 Fleet Expansion

Since its initial 2016 lease of 20 B767F aircraft, Amazon Air's fleet has grown to nearly 90 aircraft. Exhibit 6.4 details Amazon's fleet trends over time. Through 2018, all aircraft remained B767Fs operated by Atlas Air and ATSG. In 2019, B737 freighters were added to the fleet mix

and operated by partner Sun Country Airlines. Until recently, Amazon Air has leased all of the aircraft utilized in its network. However, in early 2021, Amazon Air purchased 11 used B767 aircraft from Delta and WestJet which it will convert to freighters. Despite now owning some aircraft, Amazon Air is expected to continue using third-party crews to operate the fleet. In Summer 2021, Amazon announced the introduction of a third aircraft type to its fleet - the ATR-72 turboprop freighter. Amazon Air currently has five ATRs, all of which will be operated by its partner Silver Airways.

**Exhibit 6.4**  
**Amazon Air Fleet (2016-2022F)**



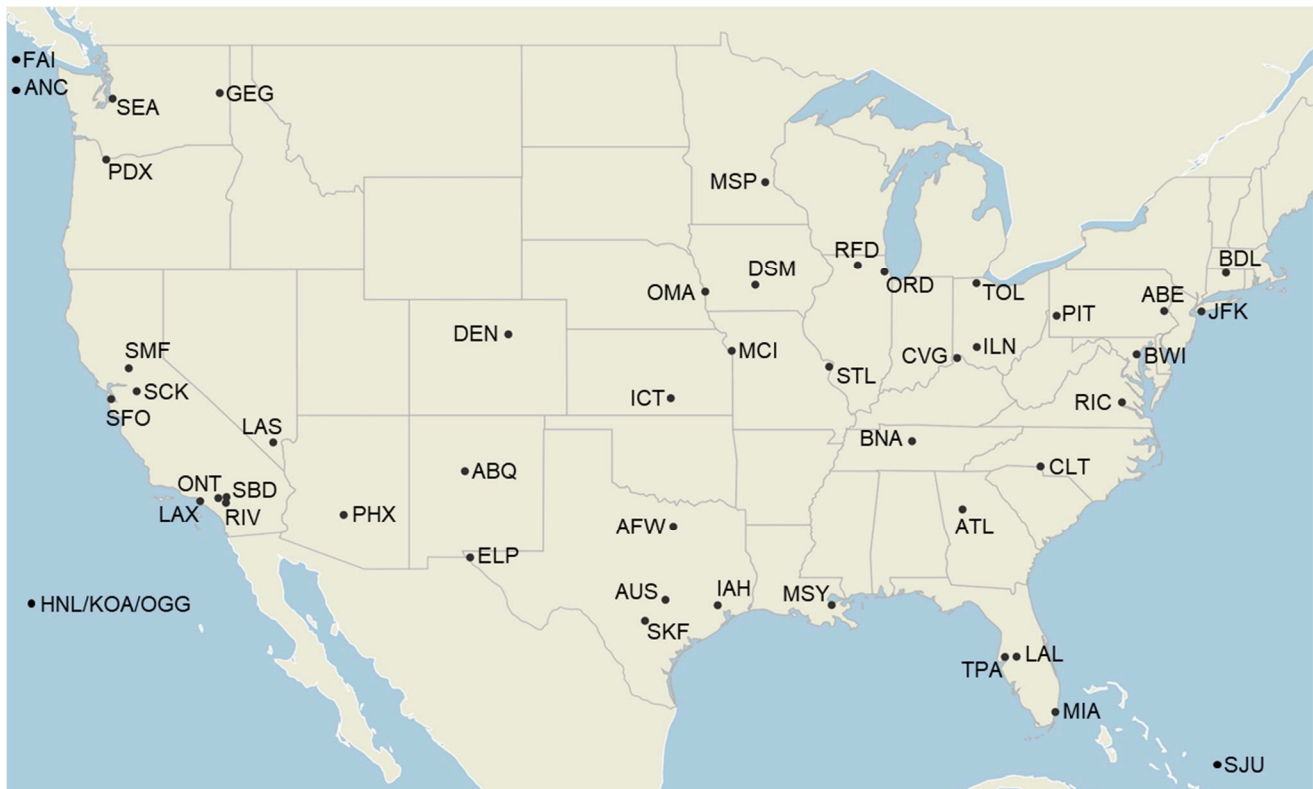
Source: Hubpoint analysis of press releases and planespotters.net data

The growth and diversification of the Amazon Air fleet is a clear sign that the air network is a key part of the company's forward-looking strategy. While aircraft are costly to operate and add complexity to the distribution of goods, they also provide unmatched speed advantages which can enable the next major step in Amazon's customer service levels – next-day and same-day deliveries. Further, as movable assets, aircraft can be placed in any market on a short-term basis, as needed, to meet the needs of Amazon. Amazon Air's growth is expected to continue with some estimating a fleet of over 200 aircraft by 2028.

## 6.5 Network Evolution

As Amazon Air's fleet has grown, so have the number of points in its network. Currently, Amazon Air serves 49 U.S. stations with daily flights. Additionally, the airline operates intra-Canada flights as well as intra-Europe flights via partner air carriers. Exhibit 6.5 provides a view to Amazon Air's existing domestic U.S. network. The changing fleet mix has also led to a change in terms of the types of airports and communities served. More small markets, including markets with similar profiles as Sioux Falls, are being added and that trend is expected to continue.

**Exhibit 6.5**  
**Amazon Air Network Map (September 2022)**



Source: Hubpoint analysis of Flightradar24 data, U.S. DOT T-100 data, various press releases

Starting in 2016, Amazon Air focused on serving large metropolitan areas like New York City, Los Angeles, San Francisco and Seattle. This strategy was likely driven by high e-commerce demand levels and high concentrations of Amazon Prime members. While the large metro areas were targeted for service, the carrier often utilized smaller, secondary airports rather than the major airports in a region. For instance, to serve New York City, Amazon Air initiated services at Allentown-Bethlehem, PA (ABE) and to serve San Francisco, it based operations at Stockton, CA (SCK). At these smaller airports, Amazon Air realized uncongested operations and ready access to the major metro areas via interstate highways. As the largest metro areas



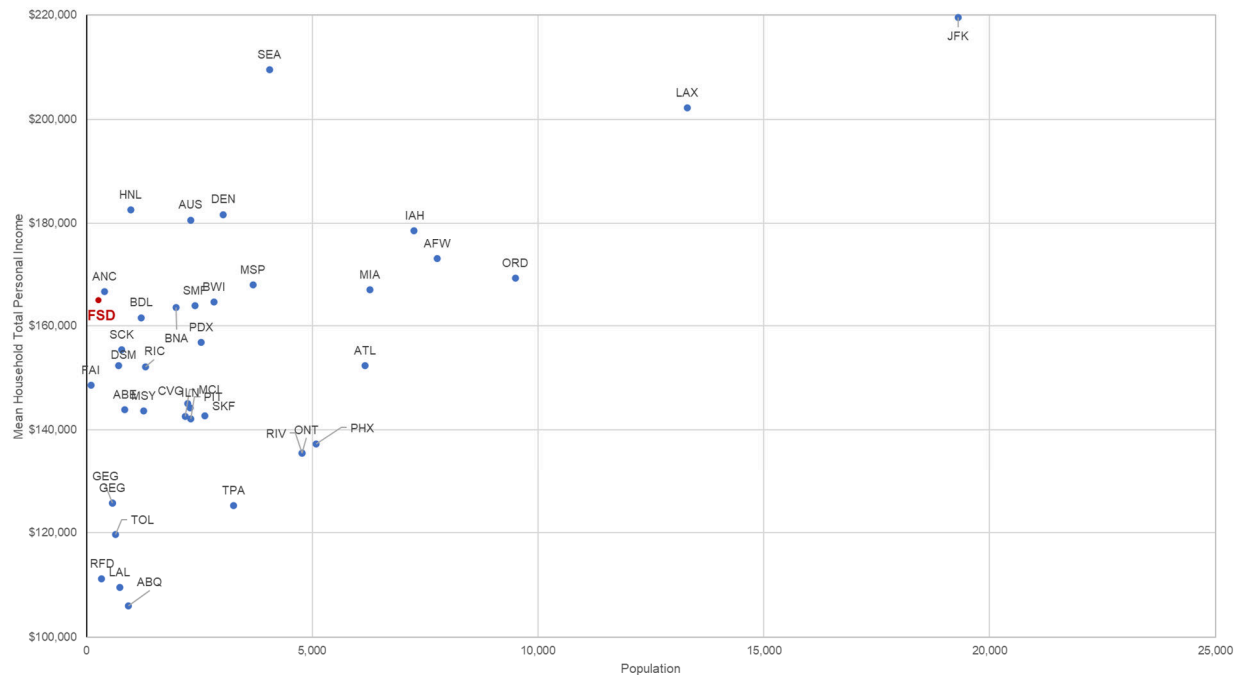
have become well-served, Amazon Air has added a mix of medium and small cities to its network. This strategy has been enabled by the introduction of smaller aircraft that are right-sized for the cities and the e-commerce volumes they generate.

The most recent additions to the U.S. network include El Paso, TX (ELP), Las Vegas, NV (LAS), Wichita, KS (ICT), Des Moines, IA (DSM), and Albuquerque, NM (ABQ). Each of these can be defined as small- to medium-sized markets and, indeed, they are mainly served by Amazon Air's B737Fs and ATR72s. Importantly, the ATR72 airports (ICT, DSM and ABQ) are in rural areas, relatively isolated geographically and located in close proximity to large Amazon fulfillment centers.

In August 2021, Amazon opened a \$1.5 billion hub on a 600-acre campus at the Cincinnati / Northern Kentucky International Airport (CVG), which will serve as Amazon Air's primary U.S. hub and further enable Amazon's faster delivery plans. The CVG operation is expected to employ over 2,000 Amazon workers and process millions of packages every week. Amazon's CVG hub has the capacity to handle 100 aircraft and an estimated 200 daily flights. As of September 2022, CVG operations totaled almost 44 daily flights with aircraft scheduled in tightly organized arrival and departure banks. Much of the growth at CVG has occurred since March 2022 as the re-engineered network has taken on a clearer shape.

As shown in Exhibit 6.6, Sioux Falls compares favorably to some existing Amazon Air communities, including Des Moines, IA; Albuquerque, NM; Spokane, WA; and Toledo, OH in terms of key demographics - population and mean household total personal income. Beyond demographics and other economic indicators, the presence of Amazon fulfillment and distributions centers close to an airport is clearly preferred by Amazon Air. For large metro areas, Amazon often serves multiple airports to efficiently serve different geographic segments of the population base. Smaller metro areas are expected to be served by Amazon Air with just one airport.

### Exhibit 6.6 Demographics Comparison among Amazon Air Stations



Source: Hubpoint analysis of Woods & Poole Economics data and Flightradar24 data

## 6.6 Criteria for Potential Amazon Air Service

Based on research and analysis of the Amazon Air network, Hubpoint has identified several criteria that are considered for airports to attract service. While the criteria are flexible in some ways, they provide a baseline for understanding an airport's eligibility for inclusion in the network. The common criteria for airport selection include:

- **Presence of existing Amazon fulfillment or distribution centers in close proximity to an airport**
  - o Amazon Air not only serves local e-commerce consumer demand with its aircraft, but also links Amazon's large warehouses for inventory management purposes. This operational dynamic leads to a natural two-way flow of goods which increases aircraft utilization and optimizes the value of its vast warehouse assets.
  - o In effect, the ideal markets for Amazon Air have strong inbound demand (for customer order fulfillments) as well as strong outbound demand (for sourcing of products needed elsewhere in the network).

- **Access to a significant labor force**
  - o Labor supply continues to be a major issue across all industries during the COVID-19 pandemic. This problem is especially acute for the hourly workers sought by Amazon to staff its facilities, drive delivery vehicles and load/unload aircraft.
  - o Areas with relatively high levels of potential employees are attractive because they allow Amazon's complex multi-modal distribution networks to operate efficiently and deliver customer orders on time.
  
- **Strategic location and market access**
  - o As the Amazon Air network of cities grows, it is important to find pockets of demand that can be served better with air transportation. In practice, these areas are identified by Amazon and passed on to the air group for consideration. Again, while certain economic indicators may signal potential for Amazon Air operations, ultimately, Amazon determines where the greatest needs exist.
  - o Having noted this, it is logical to conclude that new airports to the network should be sufficiently distanced from existing Amazon Air airports and serve a distinct strategic purpose.
  - o An airport's location also dictates market access via highways and, preferably, in an omnidirectional manner.
  
- **Lack of environmental entitlements and shovel-ready on-airport sites**
  - o In cases where Amazon Air wants to add service, but requires additional on-airport facilities and/or infrastructure, there is a high preference to have sites that do not have environmental entitlements and can be developed in the near-term.
  - o The key point is that Amazon and Amazon Air move at a fast pace and once decisions are made, it is important to execute in a timely manner.
  - o Environmental studies not only consume enormous amounts of time, they also have unknown outcomes. These situations increase the risk profile of a potential operation and have been known to cause Amazon Air to suspend interest in various U.S. airports.
  - o Similarly, sites that require little land preparation and zoning approvals allow Amazon Air to quickly move forward with cargo facilities development, as required.
  
- **Risk-sharing and airport incentives**
  - o Amazon and Amazon Air are known to be expert negotiators in their business transactions. This environment certainly extends to its dealings with airports regarding fees, incentives and development.
  - o Historically, Amazon Air has insisted on short-term contracts with its airline partners as well as its airports. The goal is maximum flexibility and an ability to pivot in a different direction with minimal risk and exit costs. Over time and as Amazon Air has become more of a permanent fixture in the company, this

position has softened somewhat, but there are still vestiges of these business practices in their airport deals.

- While Amazon Air has invested directly in certain airport development projects, its preference has typically been to: 1) have airports directly fund required developments or 2) partner with third-party developers who assume more of the long-term risk.

- **Airport-specific capabilities**

- Depending on the circumstances, Amazon Air has been known to require airports to have CAT III ILS runway capabilities. This has been particularly important for airports in the U.S. that experience regular weather events that can potentially lead to flight delays and cancellations. Amazon Air exists to add time advantages to Amazon and if there are regular service interruptions at airports, the value of the operation is negatively impacted. The CAT III systems help to ensure that Amazon Air's flights operate on-time, regardless of the weather conditions in a region.
- In the past, Amazon Air has also prioritized airports with capabilities to handle Group IV aircraft. This would ensure that the B767Fs could take off and land at any airport in their network. The importance of this criteria has likely been reduced as smaller aircraft have entered the fleet. However, a Group IV capable airport would allow Amazon Air to grow in a market by upgauging its aircraft and it also provides additional flexibility within the operation, even if B767Fs are only used sporadically at an airport.

## 6.7 Typical Operations of Amazon Air

Understanding Amazon Air's typical operations in the U.S. allows prospective airports to properly plan and make proactive decisions relevant to the carrier. Dozens of airports are now being utilized by Amazon Air with differing profiles of geographic location, market size, network mission, aircraft usage and flight frequencies. A summary of these operations is provided herein with particular emphasis on those cases similar to Sioux Falls and the Sioux Falls Regional Airport.

Generally, Amazon Air has at least one daily inbound and outbound departure for airports where it has committed to scheduled service. Other airports may receive unscheduled operations as needed during peak periods such as holidays and other times of the year when e-commerce volumes are surging. An analysis of recent Amazon Air operations shows smaller markets with 2-4 daily flight operations (defined as takeoffs and landings), medium-sized markets with 6-10 daily flight operations and regional hubs with 12-15 daily flight operations. Amazon Air's primary U.S. hub at CVG has almost 44 daily flight operations.

In smaller markets, Amazon Air typically arrives in the very early morning hours (12:00 – 2:00 AM) and then depart a few hours later (4:00 – 8:00 AM). Medium-sized cities tend to have schedules with early to late evening arrivals followed by late morning departures. As demand warrants, Amazon Air has shown a preference to increasing frequencies versus upgauging aircraft in small- and medium-sized markets. For example, just three months after initiating new

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once daily service at Pittsburgh International Airport (PIT) in May 2021, it increased to a second frequency on the B737F. It is yet to be determined how Amazon Air will add capacity in smaller markets that begin services with ATR72 turboprops.

A critical element of any air cargo operation involves the ground handlers at each airport. Ground handlers are responsible for the loading and unloading air cargo containers in the cargo facility, loading and unloading containers at the aircraft and operating handling equipment such as forklifts, main-deck loaders, tugs and dollies. At many airports, Amazon Air outsources this function to qualified ground handlers already working on the airport. At hubs like CVG, Fort Worth, TX (AFW) and Lakeland, FL (LAL), Amazon Air self-handles cargo with its own staff and ground handling equipment.

Air cargo facilities vary widely amongst Amazon Air's airports depending on the specific network mission and e-commerce volumes handled. Airport stations which added Amazon Air service in 2021 include Kansas City International Airport (MCI), Pittsburgh International Airport (PIT), Albuquerque International Support (ABQ), and Des Moines International Airport (DSM). Medium-sized markets MCI and PIT have leveraged existing 34,000 and 50,000 square foot facilities, respectively, to be used for on-airport sortation of e-commerce packages. Smaller markets ABQ and DSM have on-airport cargo facilities of 31,000 square feet and 8,000 square feet, respectively. Again, these markets are supported by Amazon Air's ATR72s, so smaller facilities would seem appropriate for that level of operation. Exhibit 6.7 provides an overview of Amazon Air's operations at select small- and medium-sized cities.

The majority of the smaller airports that Amazon Air has entered utilized existing on-airport cargo facilities. Exceptions to this relate to new facilities at ABQ which is being completely funded by Amazon and Spokane International Airport (GEG) which attracted funding from S3R3 Solutions – a Spokane-based economic development group which leverages public-private partnerships to invest in impactful projects.

**Exhibit 6.7**  
**Amazon Air Service Comparison (2022)**

Airport	Facility Size (Sq Ft)	New/ Existing Facility	Initial Flights	Current Flights	Approximate Flight Schedules	Population	Additional Relevant Information
ABQ	31,000	New	1x daily ATR-72F	1x daily ATR-72F	1:15 AM arrival, 4:00 AM departure	933,573	- New facility financed by Amazon - Launch market for ATR-72
DSM	8,052	Existing	1x daily ATR-72F	1x daily ATR-72F	2:15 AM arrival, 4:00 AM departure	710,943	- Launch market for ATR-72
GEG	30,750	New	1x daily 737-800F	1x daily 737-800F	2:00 AM arrival, 10:00 AM departures	576,712	- Also renting 5,200 sq ft of office space - Facility will have 10 truck docks and 90 parking stalls
MCI	34,000	Existing	1x daily 737-800F	2x daily 737-800F	1:45 AM and 9:45 PM arrivals, 7:00 AM and 8:00 AM departures	2,185,689	- Prior to DSM, it was closest station to FSD with Amazon Air
PIT	50,000	Existing	1x daily 737-800F	2x daily 737-800F	4:20 PM and 11:00 PM arrivals, 9:00 AM and 7:00 PM departures	2,309,927	- Increased from 1x to 2x daily flights 3 months after launch
TOL	65,000	Existing	1x daily 737-800F	2x daily 737-800F	8:00 AM and 12:00 PM arrivals, 10:00 AM and 3:30 PM departures	640,931	- Airport funded \$1.7 million in renovations to prepare facility for Amazon Air

Source: Various press releases, Flightradar24 data for October 3-5, 2022.

## 6.8 Implications for Sioux Falls Regional Airport

Ultimately, from a planning perspective, this review of Amazon Air is meant to provide some guidance of what may be required at Sioux Falls Regional Airport in the event that the carrier decides to operate at the Airport. With knowledge of the fleet types, operational practices and facility standards, FSD may choose to incorporate relevant details in its Master Plan.

Amazon currently operates a 60,000 square foot delivery station for bulk and heavy items in Sioux Falls. In late 2022, Amazon will open a 640,000 square foot small sortables fulfillment center in Foundation Park. As a multi-story building, it is estimated that more than 3 million

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square feet of usable space will be available inside the facility. While Amazon has not mentioned potential interactions with between the fulfillment center and FSD, the proximity and the types of goods planned for the facility would certainly seem to increase the chances of using air transportation. It is also possible that UPS could be employed to service the new fulfillment center without the need for direct Amazon Air flights. However, as discussed, the current UPS facility at FSD has obvious limitations in terms of the volumes and growth it can support.

From a regional perspective, it would seem that FSD provides some advantages for Amazon Air. Amazon operates a large non-sortable fulfillment center (1 million square feet) in Fargo, North Dakota which opened in September 2021. However, the Fargo facility handles larger items including patio furniture, outdoor equipment and rugs, which are generally not shipped via air. Minnesota has a heavy presence of Amazon fulfillment and distribution centers and Amazon Air already serves MSP with multiple daily flights. However, the four-hour drive time between Sioux Falls and MSP negates any speed advantages of using air transportation. Finally, Amazon has existing warehouse facilities in both Iowa and Nebraska. Amazon Air's new service at DSM will serve the Des Moines region and, potentially, the entire state of Iowa, while Nebraska's airports do not currently host any Amazon Air operations.

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## 7 SWOT ANALYSIS

### 7.1 Introduction

An analysis of the Sioux Falls Regional Airport’s **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats (“SWOT”) related to air cargo is a useful tool to identify areas where the Airport may focus attention to ensure the success of its air cargo business. On the following page, a SWOT matrix is presented to summarize each element. Notably, Strengths and Weaknesses are considered to be Internally-oriented – meaning they can be influenced by the Airport or they relate to factors on or near the Airport. On the other hand, Opportunities and Threats are considered to be Externally-oriented – meaning they are largely outside the influence of the Airport and relate more to the macro-environment.



## 7.2 Air Cargo SWOT Analysis Matrix for Sioux Falls Regional Airport

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>• Strong, stable scheduled cargo carriers (FedEx/UPS)</li> <li>• Feeder aircraft hub for distant SD markets</li> <li>• Feeder aircraft maintenance centers (Encore, Alpine Air)</li> <li>• Growing logistics presence near airport at Foundation Park, incl. future Amazon fulfillment center, FedEx Ground hub, Nordica</li> <li>• Airport management committed to air cargo business</li> <li>• On-going Master Plan will consider alternative cargo development options</li> <li>• Large air cargo market area covering SD and parts of three other nearby states</li> <li>• FBOs interested in servicing air cargo operations</li> <li>• Easy interstate highway access (I-29, I-90)</li> <li>• Remote location and vast distances between population centers skews to air cargo</li> </ul>	<ul style="list-style-type: none"> <li>• Constraints on available land for potential new cargo development</li> <li>• Sub-optimal operating environment related to UPS off-tarmac facility</li> <li>• Lack of carrier diversification - FedEx/UPS comprise 99% of cargo volumes</li> <li>• Lack of belly cargo capacity on most passenger aircraft serving FSD</li> <li>• No cargo ground handler; no available cargo facility or equipment</li> <li>• Limited and indirect truck access to proposed West Cargo Area</li> <li>• Lack of areas for truck parking and staging</li> <li>• Lack of airport or community funds to invest in air cargo development</li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• Rapid e-commerce growth in U.S.; air cargo shipping provides competitive advantages</li> <li>• Growth by FedEx/UPS at FSD esp. related to e-commerce</li> <li>• Amazon Air continuing fleet and network expansion – including at airports in smaller communities</li> <li>• Sioux Falls attracting high profile logistics operations creates momentum for further sector growth</li> <li>• Diverse regional manufacturing generates air cargo demand</li> <li>• Growing population in FSD air cargo market area creates economic development and increased demand for air cargo</li> <li>• Passenger airlines prioritizing air cargo in network planning decisions translates to potential for more belly cargo</li> <li>• Third-party facilities developers seeking to deploy capital investments at U.S. airports</li> <li>• Federal infrastructure bill includes funding for airport projects</li> </ul>	<ul style="list-style-type: none"> <li>• UPS has indefinitely suspended capital spending at airports</li> <li>• Amazon Air accelerated decision-making processes favor airports with ready plans and solutions</li> <li>• FAR positioned for growth with new UPS facility and expanded cargo area</li> <li>• Lack of air cargo-oriented freight forwarding community at/around FSD</li> <li>• Lack of large manufacturers of air-eligible goods in market area</li> <li>• Work-arounds (internal/external) for UPS situation at FSD prolong sub-optimal operating environment</li> <li>• Amazon Air began service (Nov. 2021) at DSM ~ 4 hours from FSD</li> <li>• FSD Market perceived as small and inbound-oriented</li> </ul>

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## 8 SYNTHESIS

Based on the findings of this Study, outlined below are four air cargo-related matters for consideration by the Sioux Falls Regional Airport in its current Master Plan process. These matters have been prioritized to reflect the impact they may have on FSD's future cargo growth and development.

### 1. UPS relocation to an on-tarmac location at FSD

- UPS has growing volumes at FSD, especially with e-commerce being carried for Amazon as well as its own customers.
- Based on the outlook for e-commerce and cargo growth in the Sioux Falls area, the UPS facility is not sustainable in its current form.
- The increasing volumes are stressing the UPS facility at FSD which is sub-optimal due to its off-tarmac location, small size, age/condition and accessibility for associated trucks, vans and other cargo support vehicles.
- There are also potential safety and security implications related to the heavy use of a through-the-fence operation. Over time, it is anticipated that the gate to the East Cargo ramp used by UPS will experience even more activity as cargo volumes grow.
- UPS trucking and package van operations are also expected to increase as cargo volumes grow.
- UPS has recently opened new, state-of-the-art airport facilities at Fargo and Cedar Rapids.
- However, UPS corporate leadership has indefinitely suspended capital spending at U.S. airports.
- UPS prefers for airports to fund capital investments in air cargo facilities, but third-party air cargo facilities developers are also actively investing at U.S. airports.
- An on-tarmac facility would consolidate all UPS operations at FSD to a central area, reduce various vehicular movements and increase safety and security for the Airport and its users.
- Finally, a larger, more modern facility would allow for unconstrained future growth of UPS's air cargo business at FSD.

## **2. FSD should prepare for growing e-commerce activity, including possible services by Amazon Air**

- As discussed, e-commerce is the primary driving force for air cargo growth at FSD.
- While FedEx and UPS are currently handling all the FSD e-commerce volumes of their customers for the Sioux Falls market area, it is foreseeable that their current capacity at the airport will be unable to accommodate additional volume over time.
- FSD capacity constraints may involve cargo facility space, ramp space, GSE storage and maintenance space, truck parking, and employee parking.
- The situation may be further challenged with the entry of a new air carrier to the airport, possibly to include Amazon Air. Should that occur, lack of adequate infrastructure and cargo facility space would complicate activities and likely necessitate additional through-the-fence operations.
- Further, a third-party ground handler would be required to assist any new cargo operators with loading/unloading, fueling and other aircraft services.
- Even in the current environment, the early morning hours at FSD are extremely active on the East Cargo ramp with multiple large jet aircraft as well as the turboprop feeders. Should another cargo airline want to operate at FSD, it is likely that every cargo carrier would be negatively impacted due to space constraints and congestion at various airside and landside areas.
- FSD should prepare for these situations to promote efficiency of air cargo operations, thereby enabling further growth of its cargo business.

## **3. Anticipate growing interactions between FedEx Express and FedEx Ground leading to increased on-airport truck traffic related to growing cargo volumes**

- While e-commerce growth at FSD may challenge all facets of cargo carrier operations, FedEx is likely best positioned to accommodate the increases given its large facility, prime location on the tarmac, and available space for GSE.
- Issues for FedEx may more likely relate to the landside where increased trucking frequencies and truck size can lead to congestion and create inefficiencies.
- This is even more likely as FedEx Express and FedEx Ground operations intertwine.
- Currently at FSD, the FedEx operation almost exclusively handles 22-foot straight trucks. At many U.S. air cargo facilities, 53-foot tractor trailers are commonly used.
- As more cargo volume is handled at FSD, it will add the need for more trucking capacity and likely in the form of larger trucks.
- The requirements for parking, turning and staging large tractor trailers are very different than for straight trucks.
- This situation should be considered with adequate landside infrastructure.

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**4. As passenger airlines focus on air cargo and possibly operate larger aircraft at FSD, the Airport should be prepared to handle more belly cargo**

- Currently, less than 1% of cargo at FSD is handled by commercial passenger airlines, with Delta being the sole carrier to report cargo tonnage.
- As discussed, cargo's profile has been elevated within airlines due to the revenue it can generate.
- While smaller regional jet aircraft have very little cargo carrying capabilities, narrowbody aircraft can handle substantial amounts of loose loaded cargo in their bellies.
- As the Sioux Falls air travel market grows, it is possible that airlines will upgauge their aircraft from regional jets to mainline, narrowbody equipment.
- With those fleet changes, belly air cargo will become more common at FSD.
- Due to the low belly cargo volumes historically at FSD, there has been no need for cargo-specific ground handling capabilities (including trained staff, special equipment or cargo-related facilities).
- To prepare for additional belly cargo volumes, FSD should investigate available options for adding air cargo handling capacity both on the airside and the landside.

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## 9 FSD MASTER PLAN – AIR CARGO FORECASTS

### 9.1 Baseline Scenario

Along with scheduled passenger operations, air cargo is one of the primary aviation activities at most commercial airports. Cargo can be carried by both all-cargo freighter operators and passenger airlines. Typically, air cargo activity at airports is measured in terms of total tonnage and it is widely considered a good indicator of facilities and infrastructure needs. Cargo tonnage data also allows for meaningful trend analysis and relative comparisons of airports as it is a commonly reported statistic available in the public realm.

Air cargo forecasts provide forward-looking views of expected tonnage levels at FSD and related all-cargo aircraft operations. The forecasts were developed based on FSD's past air cargo experience, primary research in the form of interviews with key air cargo operators and secondary research utilizing available industry data and information. Past work by the project team suggested time series modeling would likely be the preferred methodology for air cargo forecasts at the individual airport level, but regression analysis was also assessed for possible use. The following section summarizes the FSD air cargo forecast methodologies and the key findings.

#### Air Cargo Tonnage - Regression Forecast

Regression analyses were performed to determine potential relationships between FSD's historic air cargo tonnage and several independent variables. The independent variables for the Sioux Falls Metropolitan Statistical Area (MSA) assessed in the regression models included population, employment personal income, retail sales and gross regional product. Simple linear regression was used for each of the independent variables and, separately, multi-variable regression was used for different combinations of independent variables.

Regression analyses produced poor results and no statistically significant relationship between FSD's air cargo tonnage and the tested independent variables. Each regression model produced very low R-squared values and, in the case of the multi-variable regression models, numerous instances of wrong signs for the independent variable coefficients. Prior assessments of regression analysis for airport-level air cargo forecasts suggest that the modeling is not typically appropriate due to factors such as: 1) air cargo industry dynamics where trucking to other (potentially distant) airports is common; 2) lacking visibility of the true origins and destinations of air cargo shipments and 3) lag effects where the drivers of air cargo activity may not match the usage of air cargo services in the same time periods.

Despite the poor output of the regression models, the results are reported herein. The two variables with the highest correlations to annual air cargo tonnage at FSD were gross regional product and retail sales. A regression model was created for each of these variables and the projected air cargo tonnage from these models are summarized in Exhibit 9.1.

**Exhibit 9.1**  
**Air Cargo Tonnage Forecast (metric tons) – Select Regression Analysis Output**

Regression Variable	Historical	Forecast					CAGR (2022-2041)
		2021	2022	2026	2031	2036	
Gross Regional Product	40,356	34,973	35,915	37,137	38,403	39,713	0.7%
Retail Sales	40,356	35,138	36,665	38,540	40,494	42,612	1.0%

CAGR = Compounded Annual Growth Rate

Source: Hubpoint analysis

### Air Cargo Tonnage – Time Series Forecast

For air cargo forecasts at the individual airport level, it is important to explicitly consider past air cargo tonnage levels, particularly when air cargo operations at an airport have been relatively consistent over time. Further, recent trends at an airport should be weighted more heavily when those trends are expected to continue into the future. Time series models allow for these methods and, therefore, can produce reliable air cargo forecasts for individual airports. For the FSD air cargo tonnage forecasts, time series modeling using data from 2001 to 2021 predicts a CAGR of 3.8 percent totaling 89,361 metric tons by 2041. Faster growth is anticipated in the first five years of the forecast as e-commerce and supply chain challenges are expected to continue generating high demand for air cargo services. This constitutes the baseline air cargo tonnage forecast where a status quo environment for air cargo is assumed at the Airport. This includes expectations that current cargo airlines will continue serving FSD with similar operations as they have in the past and no new entrant cargo carriers initiate regular service at the Airport.

Notably, in contrast to depressed air travel demand at FSD (and globally) during the COVID-19 pandemic, air cargo demand did not experience a similar downturn. In fact, over the past two years, many airports have recorded higher growth for air cargo than in prior years. Therefore, the FSD time series models considered the cumulative growth during the 2020-2021 period as relevant and representative of important air cargo trends that are expected to continue.

## Preferred Baseline Air Cargo Tonnage Forecast

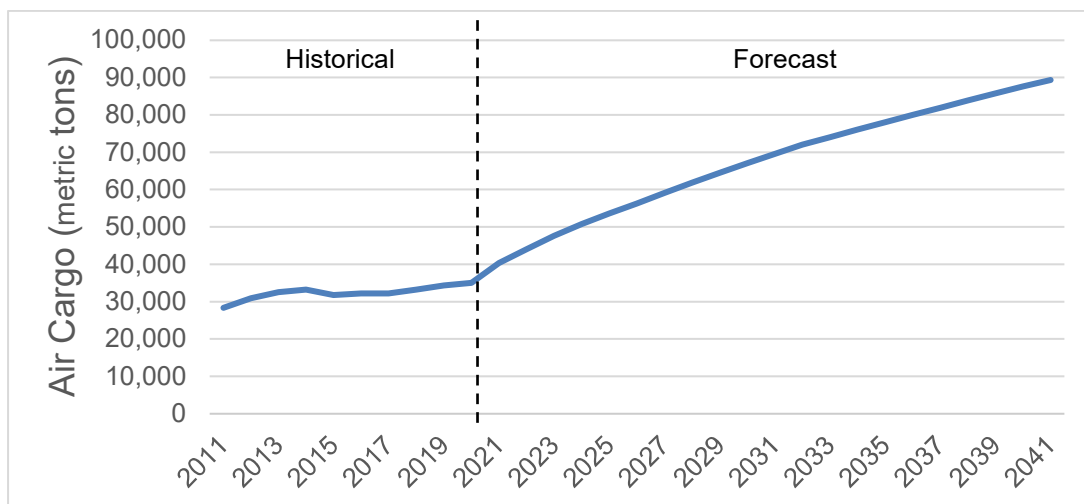
After testing several iterations of the forecast model and applying professional judgment, a preferred baseline air cargo tonnage forecast was developed for FSD. This forecast incorporated direct input from key air cargo stakeholders and intelligence regarding the outlook of the U.S. domestic air cargo market. Prior to beginning the forecast work, the project team conducted intensive interviews with FSD's existing cargo carriers and several shippers in the Sioux Falls region regarding the outlook for air cargo activity at the Airport. These interviews enabled further refinements to the air cargo forecasting model and the development of specific assumptions.

A review of the tonnage forecast shows that expected growth rates are well within a reasonable range of historic growth rates actually experienced at FSD, albeit at higher levels of base tonnage. As mentioned, e-commerce is a major driver of FSD's growing air cargo activity and this is expected to continue for the next several years. The region's business and manufacturing activity also contribute to air cargo growth with shipments of commodities including auto parts, electronics, healthcare, pharmaceuticals, industrial machinery, plastics and textiles. The projected values for the time series models are summarized in Exhibit 9.2 and graphically presented in Exhibit 9.3.

**Table 9.2**  
**Air Cargo Tonnage Forecast – Baseline**

	Historical	Forecast					CAGR
	2021	2022	2026	2031	2036	2041	(2022-2041)
Air Cargo (metric tons)	40,356	44,021	56,288	69,553	80,008	89,361	3.8%

**Exhibit 9.3**  
**Air Cargo Tonnage Forecast – Baseline**



Source: Hubpoint analysis

## AIR CARGO OPERATIONS FORECASTS

### Cargo Airline Fleet Mix and Utilization

The air cargo operations forecast is based on the air cargo tonnage forecast and assumptions about future aircraft fleet mix and utilization rates measured in tons per movement. In general, it is expected that the fleet mix will trend to larger aircraft (both mainline jets and turboprop feeders) during the forecast period. This assumption was validated through cargo carrier interviews regarding their plans to upgauge aircraft over time as volumes grow in various markets. Exhibit 9.4 presents the FSD's activity by all-cargo mainline jets for 2017, 2019 and 2021.

**Exhibit 9.4**  
**Historical Air Cargo Fleet Mix – Mainline Jets**

Cargo Aircraft Type	Percent of Mainline Jet Operations		
	2017	2019	2021
A300F	9%	27%	34%
B757F	18%	36%	33%
B767F	34%	37%	33%
B727F	39%	0%	0%

Source: Sioux Falls Regional Airport and Hubpoint analysis

While B757Fs comprise the largest fleet type for both FedEx and UPS, both cargo carriers are adding larger mainline jets, including B767Fs, B777Fs and B747-8Fs. The B757Fs will continue operating for many more years, but the trend toward larger aircraft is clear and addresses growing cargo volumes grow and constrained resources (e.g., pilots). As larger aircraft become available to FedEx and UPS, it is expected that B757Fs will be gradually displaced at FSD, particularly by the B767F. Input gathered from FedEx and UPS as well as other industry research confirmed this assumption.

The forecast air cargo fleet distribution for mainline jets is presented in Exhibit 9.5.

**Table 9.5**  
**Forecast Air Cargo Fleet Mix – Mainline Jets**

Cargo Aircraft Type	Percent of Operations			
	2026	2031	2036	2041
A300F	36%	30%	27%	24%
B757F	32%	32%	30%	27%
B767F	32%	38%	43%	49%

Source: Hubpoint analysis



In addition to the mainline cargo jets serving FSD, there is robust activity by turboprop feeder aircraft operating on behalf of FedEx and UPS. Currently, airlines contracted by the integrated express carriers serve the South Dakota markets of Rapid City, Pierre Aberdeen and Mobridge with multiple flights per week from FSD. Separately, a FedEx feeder operates between FSD and Indianapolis, IN several times per week. The services are flown with a variety of aircraft, including Cessna Caravans, ATR42s, ATR72s, and Beechcraft 1900s.

The forecast did not explicitly consider the fleet mix for turboprop feeders at FSD. In general, turboprop feeders in the U.S. are expected to grow in size to accommodate containerized cargo leading to more efficient operations as volumes related to outstations increase. FedEx is already taking deliveries of new ATR-72Fs and Cessna SkyCourier 408s. Input from the FSD feeder aircraft operators suggests a status quo environment moving forward in terms of the number of annual operations and markets served from FSD - even if the aircraft types change over time.

The forecast distribution for mainline jet and turboprop feeder operations is presented in Exhibit 9.6.

**Exhibit 9.6**  
**Forecast Air Cargo Fleet Mix – Mainline Jets and Turboprop Feeders**

Cargo Aircraft Category	Historical	Forecast			
	2021	2026	2031	2036	2041
Mainline Jets	29%	31%	33%	33%	32%
Turboprop Feeders	71%	69%	67%	67%	68%

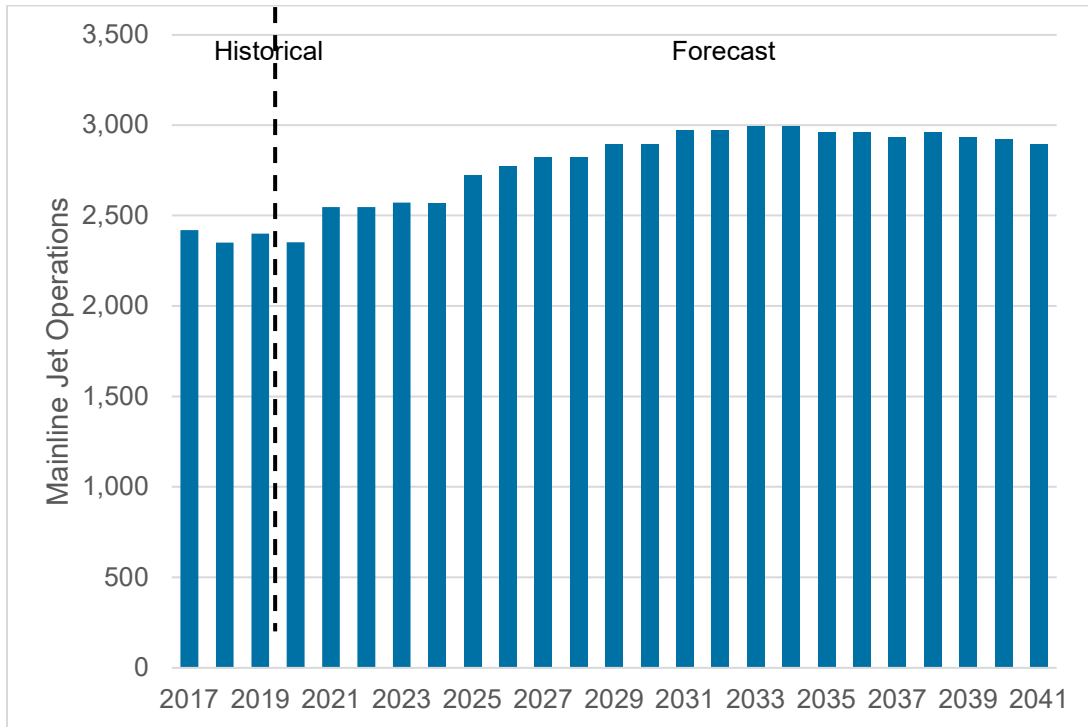
Source: Hubpoint analysis

Utilization rates of cargo aircraft are also expected to increase over time at FSD. This results in higher tonnage levels per aircraft movement. Importantly, this dynamic occurs not just between fleet types as larger aircraft replace smaller aircraft, but also within fleet types as capacity is optimized. During the forecast period, tons per movement within types of mainline jets is estimated to grow by up to 55.0 percent. Even with this growth in utilization, the tons per movement figures in 2041 remain below observed historical maximum tonnage levels for the respective aircraft types.

### Preferred Baseline Air Cargo Operations Forecast

Forecast FSD air cargo tonnage is converted to air cargo operations, by fleet type, by applying the assumptions outlined above. The results for mainline jets are shown in Exhibit 9.7. Mainline jet aircraft operations are relatively flat during the forecast period, generally remaining within a tight range of approximately 2,500 - 3,000 annual operations. Much of the net growth in jet aircraft operations will occur between 2025 and 2031. Larger aircraft, along with higher utilization rates, enable significantly more air cargo to be handled at FSD with only modest increases in air cargo aircraft operations. Meanwhile, turboprop feeder operations are assumed to be flat during the forecast period with approximately 6,100 annual operations.

**Exhibit 9.7**  
**Air Cargo Operations by Mainline Jets – Baseline**



Source: Hubpoint analysis

## 9.2 Amazon Air Scenario

The Amazon Air forecast scenario for FSD was developed based on the e-commerce company's rapid expansion into multiple U.S. airports over the last several years using a primarily contracted aircraft fleet. It represents a "what-if" proposition should Amazon Air choose to initiate FSD service which can then be factored into airport planning decisions. Service at FSD is a realistic possibility given the growth of e-commerce and Amazon Air. Both factors have been major drivers of recent U.S. domestic air cargo activity and this trend is expected to continue. Further, a large Amazon fulfillment center located close to the Airport is scheduled to open in 2022. While the presence of such a facility nearby does not guarantee the need for Amazon Air, it does materially increase the chance for Amazon to interact with air cargo service providers at FSD.

While Amazon Air's initial entry into the U.S. domestic market utilized widebody freighters (767-200F and 767-300F) flying in and out of major distribution hubs, its more recent growth has focused on narrowbody (737-800F) and turboprop (ATR-72F) freighter operations. These have allowed it to expand its geographical reach and economically serve smaller and mid-size U.S. market areas. Recent examples of the company's ATR-72F expansion include operations at Des Moines, IA (DSM), Albuquerque, NM (ABQ), Omaha, NE (OMA) and Wichita, KS (ICT).

Although historical references are limited given Amazon Air's rapid growth, several realistic assumptions for potential approach, operational impacts, and volumes for FSD can be made based upon observations at similar Amazon U.S. airports, including Austin, TX (AUS), Kansas City, MO (MCI), Pittsburgh, PA (PIT), Richmond, VA (RIC), and Toledo, OH (TOL).

Amazon Air's cargo tonnage and aircraft operations in this scenario would be additive to the Baseline air cargo forecast for FSD.

Key assumptions of the Amazon Air scenario for FSD include:

- A March 2025 startup with daily service using an ATR-72F to an Amazon Air hub, resulting in two operations per day (i.e., one arrival and one departure)
- A second daily flight with an ATR-72F is added in July 2025 to an Amazon Air hub, for a total of four daily operations
- Schedule development for FSD aligns with patterns seen at other Amazon Air startup airports with additional flights initiated to and from hubs within a relatively short period of time
- Using a time-series approach, annual traffic growth rates for Amazon Air run consistently higher each year throughout the forecast period than the composite FedEx/UPS annual growth rate used for the Baseline forecast
- Payload capacity for the ATR-72F is based on analysis of other U.S. operators and adjusted for lower Amazon shipment density
- Amazon Air upgauges to the larger capacity 737-800F in 2032 with a single daily round trip as continued volume growth approaches maximum capacity on the ATR-72Fs
- By 2039, continued traffic growth approaches the 737-800F capacity limits, requiring Amazon Air to add a second daily 737-800F round trip to its FSD schedule

Amazon hubs for potential FSD service include Cincinnati, OH (CVG), Fort Worth, TX (AFW), Lakeland, FL (LAL), Rockford, IL (RFD), and San Bernardino, CA (SBD).

From an operations perspective, the Amazon Air scenario results in the annual combined aircraft departures and arrivals shown in Exhibit 9.8.

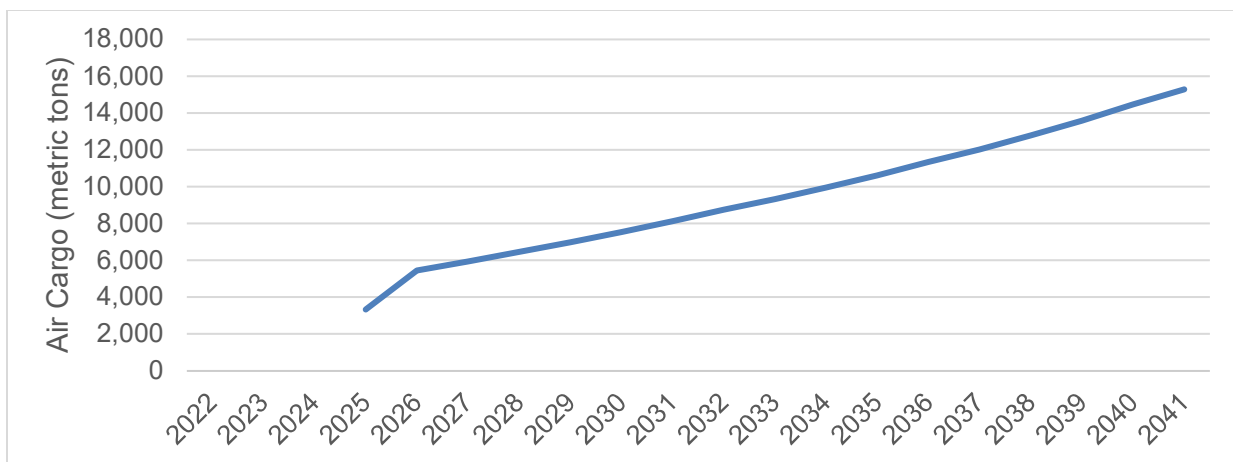
**Exhibit 9.8**  
**Amazon Air – Annual Aircraft Operations Forecast**

	2025	2026-2031	2032-2038	2039-2041
<b>ATR-72F</b>	978	1,460	0	0
<b>737-800F</b>	0	0	730	1,460

Source: Hubpoint analysis

A robust tonnage forecast for enplaned and deplaned cargo on Amazon Air flights at FSD is depicted below in Exhibit 9.10. This shows air cargo tonnage growing from 5,440 metric tons in 2025 to 15,285 metric tons in 2041.

**Exhibit 9.9**  
**Amazon Air – Air Cargo Tonnage Forecast**



Source: Hubpoint analysis

Amazon Air’s tonnage growth is summarized in Exhibit 9.10 in terms of CAGRs for select annual periods.

**Exhibit 9.10**  
**Amazon Air – Forecast Growth Rates of Air Cargo Tonnage**

	2026-2031	2026-2036	2026-2041
<b>CAGR</b>	8.3%	7.6%	7.1%

Note: CAGRs begin as of 2026 to normalize for full year volumes

Source: Hubpoint analysis

A key observation of the Amazon Air forecast scenario is that a modest increase in flight activity along with larger aircraft can drive significant increases in overall cargo volumes handled at FSD. In this forecast scenario, Amazon Air cargo volumes could triple within a 15-year time frame. This net new activity would help diversify FSD’s business and generate economic benefits to the broader Sioux Falls region.

### 9.3 General Scenario

#### Air Cargo Forecast Scenario: FSD New Entrant General Cargo Freighter

A second cargo forecast scenario for FSD was developed based on industry trends and intelligence pointing to the potential start of a scheduled, General Cargo Freighter operation serving the U.S. Domestic market and carrying heavy freight. This type of operation would likely serve the freight forwarder community and would not compete directly with integrated express carriers like FedEx and UPS.

Multiple general cargo airlines (e.g., Kitty Hawk Cargo, BAX Global, Emery Worldwide) used to serve the U.S. Domestic market, but ceased operations for a variety of reasons in the early 2000s. Since then, the heavy freight market has largely been served by trucking companies and some smaller charter airlines. With continuing supply chain challenges, truck driver shortages and high demand for reliable air cargo services, it is possible that there will be a revival of the types of general cargo airlines that served the U.S. market prior to 2011.

With FSD’s geographic location in the Upper Midwest and the overall lack of nearby heavy freight air cargo services, the Airport could be an attractive candidate for a general cargo freighter operation.

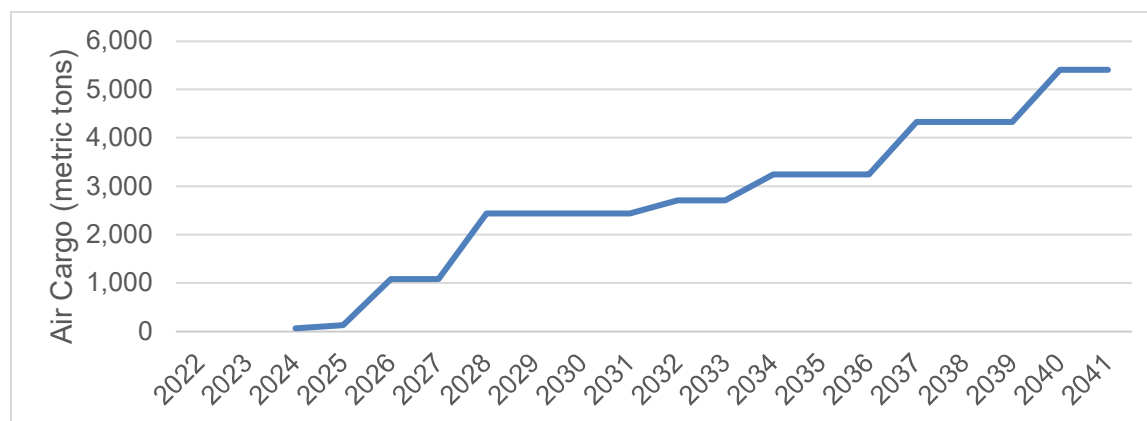
Key assumptions of the General Cargo Freighter scenario include:

- A B757-200F operation at FSD which will increase weekly frequencies over the forecast period
- Freighter aircraft will operate on multi-stop itineraries with only a portion of the aircraft allocated to each airport
- A 2024 start of services at FSD with four seasonal flights; followed by eight seasonal flights in 2025
- Scheduled services commence in 2026 with two weekly flights and growing to four weekly flights by 2041
- Estimated FSD aircraft allocations (i.e., the portion of the entire aircraft capacity devoted to FSD) are conservative - ranging from 20% in 2026 to 50% in 2041
- The General Cargo Freighter scenario output would be additive to the Baseline forecast

With these assumptions and following a step-wise growth pattern with increasing FSD flight frequencies and successively higher aircraft allocations over time, forecasts of air cargo tonnage and aircraft operations were developed.

A tonnage forecast for enplaned and deplaned cargo on a general cargo freighter service at FSD is depicted below in Exhibit 9.11. This shows air cargo tonnage growing from 62 metric tons in 2025 to 5,408 metric tons in 2041. In terms of air cargo tonnage, this forecast scenario a CAGR 11.3% for the period 2026-2041.

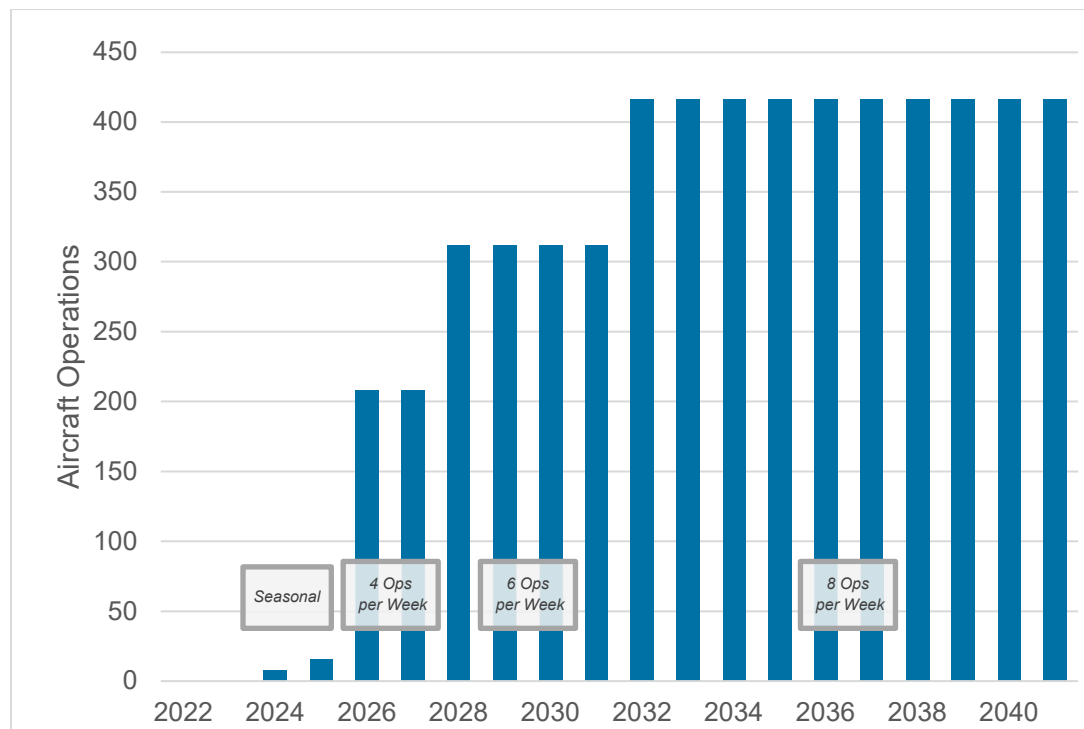
**Exhibit 9.11**  
**General Cargo Freighter Service – Air Cargo Tonnage Forecast**



Source: Hubpoint analysis

The general cargo freighter scenario results in the forecast aircraft operations shown in Exhibit 9.12. In the first years of regular, scheduled service (2026-2027), 208 annual operations are forecast. The forecast assumes a maximum of eight weekly operations - equating to 416 annual operations between 2032 and 2041. Again, during the forecast period, it is anticipated that FSD will experience gradual increases in aircraft allocations. Therefore, even as aircraft operations are at fixed levels for multiple years, the tonnage carried can vary.

**Exhibit 9.12**  
**General Cargo Freight Service – Annual Aircraft Operations Forecast**



Source: Hubpoint analysis

A key observation of the General Cargo Freight forecast scenario comes from a comparison to the Amazon Air forecast scenario. In the Amazon Air scenario, cargo grows to over 15,000 metric tons in 2041 after a projected start of service in 2025. Meanwhile, the General Cargo Freight forecast scenario produces 5,408 metric tons in 2041 after a projected start of service in 2024. Although the General Cargo Freight scenario assumes use of a much larger B757F aircraft compared to Amazon Air's ATR-72F and the B737F, there is a substantial discrepancy in forecast tonnage. Clearly, a true daily service with the entire aircraft capacity dedicated to FSD (i.e., the Amazon Air service) will generate higher levels of cargo than a lower frequency service that allocates only a portion of the aircraft to FSD.

