

NYMTC Regional Freight Plan Update 2015-2040 Interim Plan

Task 2.1.4 Air Cargo Network and Infrastructure

PREPARED BY

Cambridge Systematics, Inc.

WITH

AECOM, Inc.



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technical memorandum

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prepared for

New York Metropolitan Transportation Council

prepared by

Cambridge Systematics, Inc.
38 East 32nd Street, 7th Floor
New York, NY 10016

with

AECOM, Inc.
Arch Street Communications, Inc.

date

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1.0 Introduction

1.1 AIR CARGO AS PART OF THE GLOBAL SUPPLY CHAIN

Air cargo is a vital part of the global trade and logistics supply chain. It is linked to the other modes of transportation - road, rail, and water transport - but differentiates itself by the time of travel, the value and time-sensitivity of the goods being transported, the value of that shorter travel time, security of the goods en route, and the guarantee of delivery.

While air cargo originated in the development of passenger traffic and mail delivery, air cargo has grown beyond an integrated part of passenger air transportation into an independent operation. Some in the cargo industry, however, would prefer to look at air transportation from a cargo-centric basis with a twist in viewing passengers as self-loading cargo. Based on population centers and seaport infrastructure, air cargo trade lanes have initially followed sea shipping trade lanes but have evolved to match airport to airport global routes and aircraft flight ranges. The air cargo market in a country or region has developed differently based on the manufacturing strength of the country or region, the cargo operator's base of operations, the nature of the market, and the infrastructure available. It also differentiates itself among the other modes of transportation for cargo.

Air cargo competes with road transportation depending on the travel time, distance and guarantee of delivery time, but road transportation more often complements the air cargo networks. Rail and road transportation also can have a similarly linked relationship to each other based on the distance, time definite requirement, size of cargo and cost. Sea and rail are linked as well and also compete via landbridges for containerized traffic. Water transportation, based on the continental geography, represents the best choice for long-distance shipments between countries. All of the transportation modes however, except for some bulk products, are dependent in some way on road transportation.

What defines air cargo and the demand for it is the time-sensitive nature of the cargo as the value is often defined by having something next-day or second-day delivery, which is different from time-definite cargo arriving somewhere at a set date in the future. Time-sensitive cargo also can be handled by truck as an express shipment but air cargo volumes are specifically defined as those utilizing aircraft for delivery. While air cargo was once defined by an assumption of a smaller size of cargo, heavy-lift and perishable air cargo are now a major aspect of air cargo.

Besides its value as a commodity, the time-sensitive nature of air cargo has the additional dimension of the value of time. Air cargo by its nature carries the

extra guarantee and risk of meeting an agreed-to deadline. For flowers and fresh produce, arriving late affects its quality and marketability and therefore its value to the consumer. Pharmaceuticals have value in terms of their cost but the ability to administer a drug sooner or ship emergency medicines faster is greater than its market value, especially to the end-users. At the other end of this time sensitivity, the business side of the time factor, invoicing and payment also occur sooner, so while the cost of air cargo is typically higher than other modes, the value of receiving the money sooner, just like the patient receiving a medication sooner, is important to the manufacturer. The speed of air cargo also allows the shipper to retain less inventory thereby reducing their costs for distribution. However, the air cargo industry continues to struggle with dwell time due to administrative paperwork and inefficiencies in the sequence of shipment handling.

While air cargo may represent a small fraction of global freight in terms of weight or volume, it represents more than 30 percent of the value of freight transported each year.¹ The United States by itself accounts for one-fifth of the global air imports and over one-seventh of the air exports. Air cargo currently is mostly a northern hemisphere activity but that is changing, based on development in South America and Africa.²

Air cargo express operations such as FedEx or UPS, which can be likened to a very advanced form of the post office networks of the past, have come to dominate certain markets, based on their efficiency and ability to facilitate logistics supply chains. It is estimated that 10-15 percent of international air cargo is handled by air express integrated carriers, but air express integrators handle approximately 70 percent of the U.S. domestic market.²

Currently, the air cargo industry is in a difficult position where the value of the cargo traveling by air is increasing but the revenue generated for the air cargo operators is declining, which emphasizes the delicate financial balance between capacity and the yield from that capacity. The cost fluctuations of fuel and the slow growing world economy combine to make a difficult situation more unpredictable. Typically, some small percentage of annual growth is predicted for air cargo, but according to the International Air Transport Association (IATA), air cargo traffic declined by 0.6 percent in 2011 and by 1.5 percent in 2012.³

It is estimated that the cost of air freight averages approximately six times the cost of ocean container freight. Therefore, balancing revenue for inbound and

¹ Role of the Air Cargo Industry, Global Air Cargo Advisory Group web site.

² The Impact of the Air Cargo Industry on the Global Economy, prepared by John D. Kasarda, Stephen J. Appold and Makato Mori for The International Air Cargo Association Air cargo Forum, 2006.

³ International Air Transport Association web site.

outbound routes is critical for air carriers forcing them to anticipate multiple forward-sequential movements to avoid an empty return on a roundtrip flight.

Security procedures also impose costs on air cargo. Currently, the U.S. is pursuing the goal of screening 100 percent of all air cargo entering the country, which means that the origin countries have to develop and certify security screening and known shipper programs. This requirement introduces cost and administrative time to maintain the global supply chain and to harmonize all of the different Customs and security regimes among the various trading partners.

Economic development activity and air cargo parallel each other. Air cargo can act as a barometer of economic activity in general and at special times of the year. Revenue from air cargo is often the financial “kicker” to the rates charged for passenger tickets, the economic viability of certain routes, and the revenues going to the bottom line of air carriers. The passenger component of air travel receives a lot of the attention, but about 15 percent of airport jobs are air cargo related, plus the downstream multiplier effects.⁴

In developed markets, it is easy to take the cargo delivery modes – road, rail, sea, and air – for granted, but the link to the outside world for emerging countries via air transport is critical for economic development, especially where the road and rail infrastructure is less developed and secure. While air cargo currently has a large role in providing luxury goods to developing countries in Africa for example, the market will gradually deepen and diversify based on more traffic and lower transportation costs. Air cargo singularly allows countries with airport infrastructure to take economic advantage of the time savings of air cargo transport over traditional ocean transport combined with road or rail.

The countries in the Middle East have understood the importance of their location on trade lanes and are investing in significant airport infrastructure. Countries in Africa are making advances in connecting to these networks for the development of their economies beyond natural resources. The Far East, based on the large distances over ocean between population centers and the inadequacy of road and rail, has based their economies on air cargo, especially in the time-sensitive markets of electronics.

The airports of the New York/Newark metropolitan area, due to their advanced infrastructure, developed trade lanes, and continental gateway status; have a large economic impact on the region due to air cargo traffic. Air cargo growth depends on the investment and maintenance of airport infrastructure in a region as cargo operators can shift their operations to surrounding airports due to lack of political support, traffic congestion, or better economic conditions.

⁴ Role of the Air Cargo Industry, Global Air Cargo Advisory Group web site.

1.2 AIR CARGO OPERATIONS

Air cargo involves airports, airlines, aircraft, cargo facilities, and the ground transportation that transports the product from the shipper to the end-user. Each of these entities acts as a key element in the air cargo supply chain.

Airports

Air cargo operations have certain infrastructure requirements at airports for the larger air cargo aircraft and suitable airside and landside properties for cargo facilities. There are benefits in locating the cargo area close to the passenger terminal as air cargo also travels by passenger aircraft. Often an air cargo area takes advantage of the airport-perimeter enclosure or adjacent areas as an opportunity for establishing a foreign trade zone.

Passenger traffic focuses on larger airports and then supplemental regional airports, and air cargo follows this pattern due to the transportation of air cargo by the lower deck of passenger aircraft (bellyhold cargo). It is estimated that around 60 percent of all air cargo travels on passenger aircraft.⁵ Some cargo operators, however, target regional airports close to large population centers for their operations to benefit from lower operator costs, less congestion, and more control over their operations.

Consequently, air cargo follows large international airports such as John F. Kennedy International Airport, and also regional airports with long runways and appropriate landing systems, such as Rockford International Airport in Illinois. Newark Liberty Airport covers both of these aspects and has attracted express air cargo integrators like FedEx and UPS. Converted military airfields also often serve as air cargo airports. An example of this case is Stewart International Airport, which previously served as a cadet aviation training facility for the U.S. Military Academy at West Point.

Cargo Operators

Operators for air cargo include integrators (FedEx and UPS), air cargo aircraft operators (Polar Express and CargoLux), airline-cargo-specific operators with dedicated aircraft service (Lufthansa Cargo and Emirates Cargo), passenger airline cargo operations (United Airlines and American Airlines), and freight forwarders (Kuehne + Nagel and DB Schenker).

Integrators combine air cargo aircraft operations with freight forwarder operations, road service, pick-up and delivery, and supply chain management. Air cargo aircraft operators and airline-cargo-specific operators with dedicated aircraft typically provide scheduled air-transport service for consistency but they also can provide charters for humanitarian, military, or heavy lift cargo

⁵ Role of the Air Cargo Industry, Global Air Cargo Advisory Group web site.

operations. Heavy-lift operators who might transport aircraft wings, military vehicles, or light rail cars are a special class of airline-cargo-specific operators using very large aircraft or customized freighter aircraft. Freight forwarders consolidate air freight and broker the cargo demand to aircraft operators at competitive pricing but operate no aircraft.

All of these operators have a business models that establish their airport destinations, routes, aircraft selection, cargo facility type, and logistics software platform. Based on supply and demand, they both compete and cooperate with each other. Air cargo capacity is determined by the aircraft type and the frequency of the flights. Air cargo demand is determined by the shippers, consumers, and global economics. Air cargo yield is the amount and value of actual air cargo being transported compared to the air cargo capacity available, determining cost versus revenue of the service.

All operators of the aircraft and those paying for a shipment have a vested interest in flying aircraft full to capacity. Airlines with passenger and cargo operations need to balance the value and weight of the passenger traffic and cargo traffic, with passenger traffic typically having priority over air cargo. As an aircraft is booked for passengers and their baggage, an air cargo shipment may be deferred to enable the passenger component to fly due to weight and space restrictions. This balance between accommodating passengers and cargo, which also involves fuel weight and distance to be traveled, becomes more sensitive at high-altitude airports where air density affects the aircraft lift and the length of runway used.

Another aspect for air trade routes, affecting air cargo aircraft operators, is the ability to balance the backhaul cargo with the outbound cargo. If there is no backhaul, then the revenue received has to pay for the roundtrip flight. Consequently, the operators look for opportunities to attract backhaul cargo or to continue on sequential routes where they are consistently loading outbound cargo for the onward flight. Heavy lift operators transporting oil drilling or mining equipment to remote locations for delivery face a particular challenge in finding backhaul.

Aircraft

Similar to sea transportation, air cargo shipments have been unitized into air containers or consolidated on pallets (both considered unit load devices or ULDs), and loaded on to aircraft after individual air cargo consignments are consolidated into a grouped bundle, based on destination. The ULDs are configured into different shapes depending on the aircraft and whether it is on the main deck or lower deck (bellyhold). Generally, large widebody aircraft are used for air cargo, maximizing the volume available for cargo and taking advantage of the size of the lower deck of both passenger and cargo aircraft. This fleet includes Boeing B747-400, the new B747-8F and B747-8i, B777, and Airbus A330, with some of these being produced in original freighter versions. Boeing B757 and other narrowbody aircraft that have served their useful life as

passenger aircraft are being converted to all freighter combinations. An all freighter version of the Airbus A380 has not been produced and despite its size, the passenger version is not recognized as an optimized air cargo bellyhold aircraft.

Cargo Facilities

At one extreme, the best air cargo facility is the one that is not necessary as air cargo efficiency depends on the simple transfer from landside to airside. The need for the facility is triggered by some inefficiency in holding the cargo or preparing it for shipment. Some cargo arrives prepacked in ULDs to the airport, precleared by Customs and security, and can be pushed through the facility on a by-pass operation.

The cargo facilities match the requirements of the cargo operators in scale, layout, site plan, and level of sophistication of cargo handling and sortation equipment. The main purpose of the facility is moving cargo to and from landside to airside, from truck to aircraft efficiently, based on the differences in truck frames and air-cargo dollies.

- **Integrator Operations** are highly automated customized facilities with dedicated loading and aircraft positions. FedEx's main U.S. hub is at Memphis and UPS's main U.S. hub is at Louisville.
- **General Cargo Facilities**, whether single tenant use or multitenant, are generally large warehouse facilities, sometimes with high-bay ULD storage and automated sort and retrieval storage systems (ASRS). General arrangement for the facilities is rectangular with truck docks and air cargo docks on the long sides of the rectangle. These can be multistory megaterminals or single-story simple warehouse buildings.
- **Freight Forwarder** operations are combinations of cargo warehouse functions and office space for the various cargo brokers with typically less air cargo handling equipment and more subdivision of the areas.
- **Logistics Centers and Value Added Facilities** accommodate additional logistics and supply chain functions, sometimes including other cargo modes. Value added operations make improvements to the product or packaging at the facility beyond just preparation for shipping such as installing a customer-specific part.
- **Mail Centers** can be stand alone or operations within cargo facilities and involve sortation equipment on various levels.

Depending on the operational mode of the facility, accommodation and installation of equipment for Customs operations and security screening varies. If the facility straddles the airport operations fence, the line separating airside and landside will be demarcated in the facility with various levels of sophistication, from a simple painted line to a controlled access automated enclosure.

Security screening for air cargo is evolving to protect both freighter and passenger aircraft. The security measures currently being employed represent a layered approach, including registering secure “known shippers,” and profiling higher risk cargo, x-ray/digital scanning, and physical inspections. Parallel to security, Customs operations also review, preclear, and inspect cargo for contraband and illegal shipments.

Information technology provides an underlying backbone to the cargo processing and delivery process. Facilities and operators will have cargo management hardware and software to track shipments. This can be linked to Customs and security authorities information systems such that a cargo operator can know if Customs has cleared a package or if there is a security alert for a shipment. The goal is to develop an integrated universal system for cargo processing that is paperless with an accessible platform for registered users and shippers.

Closely linked to the facility operations and location on the airport is the local road network and interstate highway connectivity. For integrators with their guaranteed delivery time services and fleet of delivery vehicles, uncongested access to the facility from the road network is critical, and some “air express freight” may move by truck only. Rush hour conditions, cargo delivery cut-off times, flight schedules, and truck staging areas all need to be addressed through the airport master plan, traffic planning, and cargo facility site plan.

Cargo

Air cargo has a wide array of containment forms. Loose bulk cargo can be collected and efficiently consolidated in unit load devices (ULD) or onto flat pallets for use on widebody passenger or freighter aircraft. ULDs and built-up pallets can range vastly in footprint size depending upon the type and size of ULD. The typical footprint dimensions for larger ULDs are 125” by 96” and typical heights are 64” and 96”, depending upon the cargo location on the aircraft. Loose bulk cargo also can be carried similar to baggage on narrowbody domestic aircraft. Air mail is typically collected into small containers or mail bags and travels via passenger airlines which are appropriate for the multicity destination requirements. Heavy Lift cargo includes heavy weight and oversize objects, and requires special aircraft and handling conditions for the transportation of light rail cars, generators, piping, and aircraft assembly components.

Perishables, such as fruits and flowers, and pharmaceuticals, represent a specialized air cargo because of their time-sensitive nature and high value. Climate controlled facilities and specialized containers that monitor the conditions are used, and managed ground handling procedures are required. The transportation of livestock also is a special niche of air cargo where air cargo is tailored to the needs of the animals.

2.0 Air Cargo Network in NYMTC Region

2.1 INTRODUCTION: AIRPORTS IN THE NEW YORK METROPOLITAN REGION

Of the New York area airports in New York Metropolitan Transportation Council - John F. Kennedy International Airport (JFK), LaGuardia Airport (LGA), Westchester County Airport (HPN), Long Island MacArthur Airport (ISP) and Republic Airport (FRG); only JFK has significant air cargo activity and it is ranked among one of the top air cargo gateways in the country. LGA, while handling significant domestic passenger traffic, does not handle any significant amount of air cargo. HPN is a regional commercial and general aviation airport and any cargo is incidental to the passenger and charter services operated there.

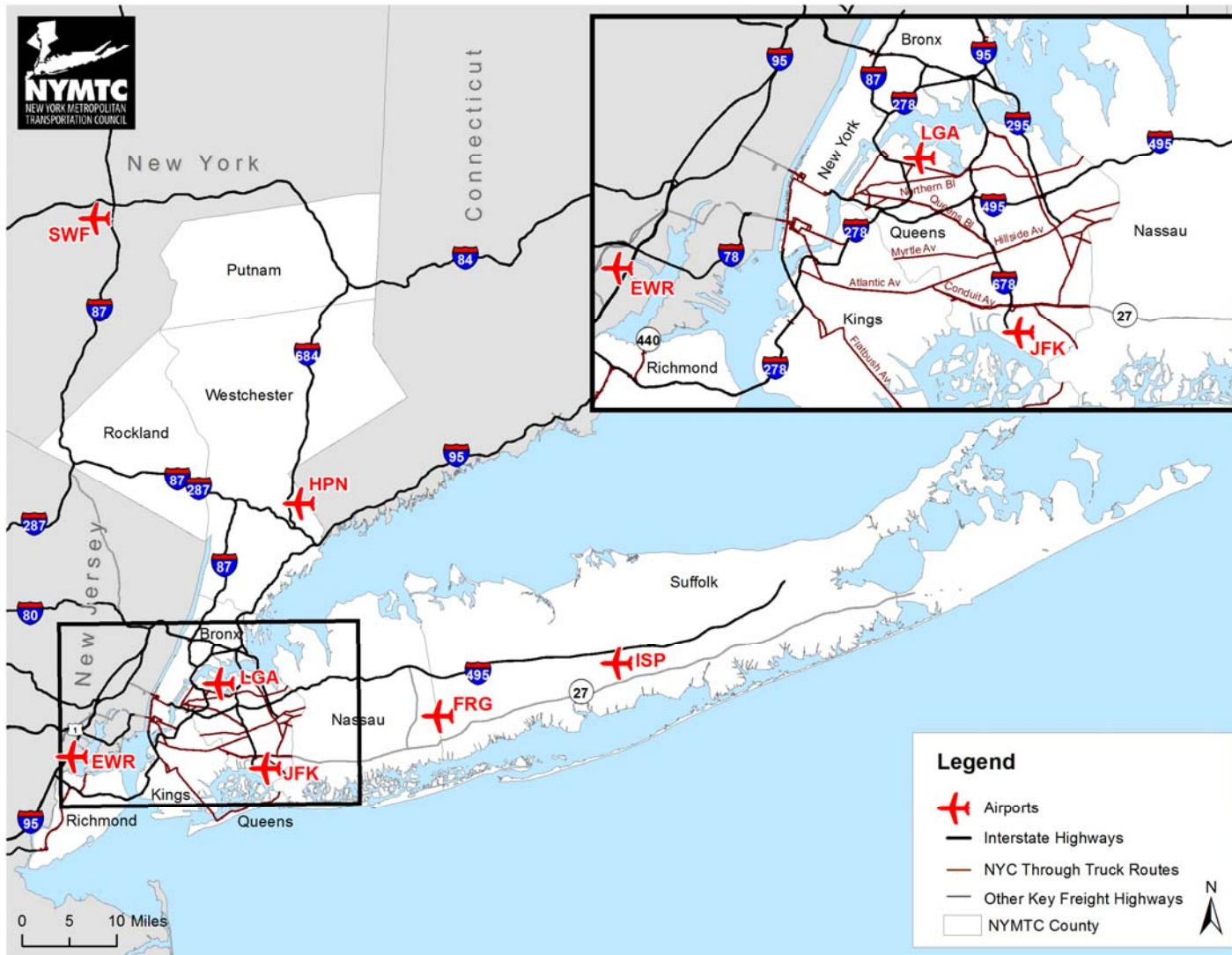
As part of the New York metropolitan area, Stewart International Airport (SWF), and Newark Liberty International Airport (EWR) are key components of the international and domestic air traffic around New York City. Both airports have significant air cargo volumes.

As shown in Table 2.1 and Figure 2.2, cargo tonnage for year 2012 fell for the second year in a row, declining by 6 percent following a 2.5 percent decline in 2011 with only SWF registering an increase due to FedEx activity. Cargo tonnage was down 8.8 percent and 4.6 percent at EWR and JFK respectively. The decline is attributed to slow economic growth, substitution of truck for air transport, weakened competitive position due to airline initiatives to expand operations at other airports, and strategic decisions by operators to shift to the Midwest and West to improve proximity to Asian markets for westbound traffic. Other impacts are fuel surcharges for air shipping, recession in the Eurozone economy, and a further shift from air to sea transport.⁶

For 2011, domestic cargo was approximately 813,000 tons and international cargo was approximately 1,410,000 tons. Europe and Asia were the two largest markets for international cargo by weight and these were approximately equal in the import/export movements. Top air trade commodities by weight for import/export were machinery, electrical machinery, optical-medical instruments, plastic,

⁶ Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey.

Figure 2.1 Major Airports In and Near the NYMTC Region



woven apparel, fish/seafood, knit apparel, pharmaceutical products, iron and steel, and vehicles (nonrailway).⁷

In the year 2012, passenger traffic increased by 3.3 percent for the PANYNJ airports with JFK reaching its highest level of passenger traffic of 49.3 million passengers and the most international passengers with 25.1 million. Airline rankings by passenger volume placed United Airlines first, followed by Delta, JetBlue, and American. All airports recorded growth in year 2012 except SWF. LGA was the fastest-growing airport for the region in 2012 with 25.7 million passengers, an increase of 6.6 percent. EWR had 1 percent growth and handled 34 million passengers. International traffic increased to Central and South America while transatlantic traffic declined. SWF experienced an 11.8 percent decline in passenger traffic in 2012 due to routes being eliminated and a downgrade in aircraft size.⁸

For year 2013, passenger growth of 2.5 percent and a cargo growth of 1 percent are forecast. According to a PANYNJ forecast, with a 2010 base year and 2019 forecast year, the New York-New Jersey region under a moderate growth scenario indicates domestic growth rate of 2.2 percent per year for domestic and 3.2 percent per year for international cargo growth.⁹

Apart from the FedEx and UPS operations hubs in Memphis and Louisville, respectively, the New York metropolitan area is the largest air cargo hub in the United States. As discussed in greater detail in Section 4, competing metropolitan areas are not far behind, and could offer air cargo customers in some markets cheaper and more reliable service than airports in this region. Capitalizing on the region's established international trade lanes, maintaining efficient on-airport operations, and improving landside access are key to maintaining this region's competitive advantage.

⁷ 2011 Airport Traffic Report, The Port Authority of New York and New Jersey, April 2, 2012 (excludes Teterboro).

⁸ Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey.

⁹ Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey; and Year Long Range Forecast 2010-2019, Moderate Growth Scenario, PANYNJ.

Figure 2.2 Change in Cargo Volume (Tons) by Airport, 2011-2012

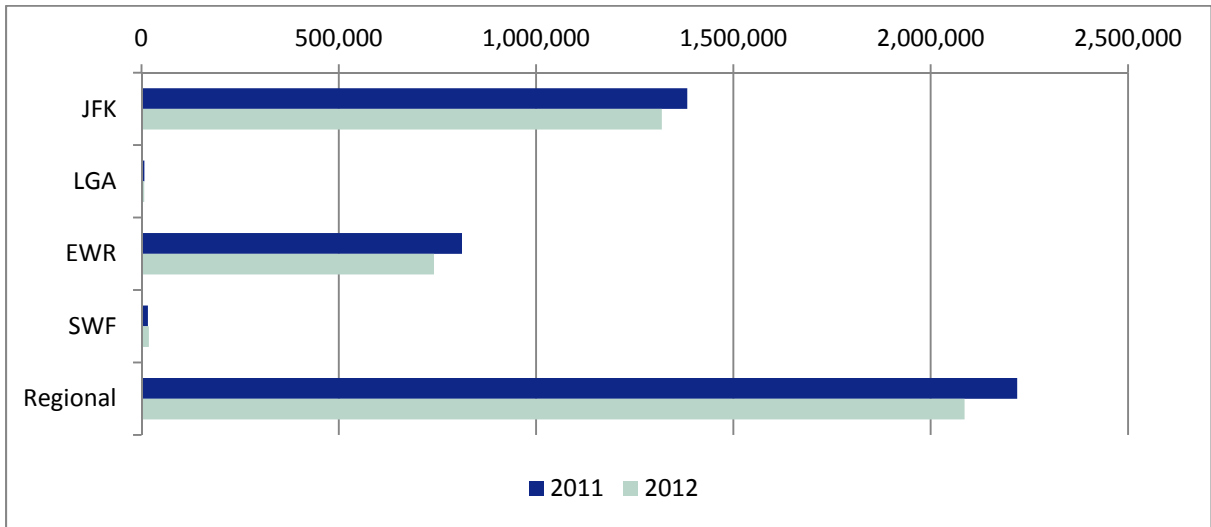


Table 2.1 Regional Historical Data and 2013 Forecast

Year	2006	2007	2008	2009	2010	2011	2012	2013
Passenger Growth/Loss	4.3%	4.8%	-2.7%	-4.8%	2.1%	1.8%	3.3%	2.5%
Cargo Growth/Loss	-0.3%	-2.7%	-10%	-18%	16.8%	-2.3%	-6%	1%

3.0 Airport Profiles

The following paragraphs describe the layout, runway lengths and orientations, and air cargo handling capabilities at each of the major airports in the NYMTC Region and at Stewart International Airport in Orange County and Newark Liberty International Airport in New Jersey. Federal Aviation Administration airport diagrams are included in Appendix A.

3.1 JOHN F. KENNEDY INTERNATIONAL AIRPORT (JFK)¹⁰

Airport Description

John F. Kennedy International Airport (JFK) is a major continental gateway for international travel and provides medium and long-distance flights to domestic and international markets. JFK is one of the largest international airports in the world handling narrowbody and widebody aircraft, domestic and international passenger, and cargo traffic, including freighters.

Table 3.1 Basic Airfield Infrastructure
John F. Kennedy International Airport, 2011

Owner/Operator: NY City/PANYNJ	
Land Areas	4,930 acres
Runway 1 (13R/31L)	14,572 x 200 feet
Runway 2 (4R/22L)	8,400 x 200 feet
Runway 3 (4L/22R)	11,351 x 150 feet
Runway 4 (13L/31L)	10,000 feet x 150 feet
Gates	125
Cargo Area Rentable Area	4,000,000 square feet

Description of Major Planned Infrastructure Improvements

Recent passenger terminal redevelopment has included existing terminal renovation and new terminal development. This work includes JetBlue's new Terminal 5 and American Airlines Terminal 8. A new Terminal 4 is being

¹⁰Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey; and 2011 Airport Traffic Report, The Port Authority of New York and New Jersey, April 2, 2012 (excludes Teterboro).

constructed for Delta Airlines. The Bay Runway (Runway 1) also was recently reconstructed.

Major Air Cargo Carriers

Major air cargo operators include:

- ABX Air;
- Air China Cargo;
- Air France Cargo;
- Asiana Airlines Cargo;
- Atlas Air;
- Cargolux;
- Cathay Pacific Cargo;
- China Airlines Cargo;
- DHL, DHL Global Forwarding;
- El Al Cargo;
- EVA Air Cargo;
- Evergreen International;
- FedEx;
- Kalitta;
- Korean Air, Korean Air Cargo;
- Lufthansa Cargo;
- Nippon Cargo;
- Polar Air;
- Saudia Cargo;
- TNT Airways;
- United/Continental; and
- UPS

All operate from cargo facilities at the airport, including a number of multitenant buildings at the airport controlled by AMB and Aeroterm.

Airport Role

In 2011, JFK was the busiest international passenger gateway airport to the U.S. The airport handled approximately 47.7 million passengers making it the 17th busiest airport in the world and the 6th busiest in the U.S. in terms of passenger traffic. JFK also is a critical economic engine for the entire region. About 36,000 people are employed at the airport. JFK also supports an additional 224,000 indirect jobs and \$11.3 billion in annual wages and salaries throughout the New York/New Jersey region.¹¹

Over 90 airlines operate out of JFK and it has scheduled flights to all 6 inhabited continents. Top carriers at the airport are JetBlue, Delta, and American. The top three busiest international routes are London, Paris and Madrid; and the top three domestic routes are Los Angeles, San Francisco, and Orlando.

JFK also is the leading U.S. freight gateway by value of shipments, and handles approximately 65 percent of the New York and New Jersey Region's air cargo,

¹¹ "Facts and Information, John F. Kennedy International Airport," available from <http://www.panynj.gov/airports/jfk-facts-info.html>.

with international cargo representing approximately 70 percent of the that amount. Nearly 100 cargo carriers operate out of JFK with American Cargo, FedEx, Lufthansa Cargo, Korean Air Cargo, and Air China Cargo being the largest operators. The JFK air cargo area is a Foreign Trade Zone, which allows for special financial incentives and operating conditions to foster international trade. The three top trade lanes are London, Brussels, and Frankfurt.

According to statistics published by PANYNJ, JFK ranked 7th among U.S. airports in terms of air cargo weight handled in 2011 and 19th among airports worldwide. In 2011, JFK handled over 1.39 million short-tons with a substantial majority of the total cargo handled outbound or inbound from international destinations. Domestic air cargo volumes at JFK have remained at a level of 253,000 short-tons for the last two years. Domestic air cargo has been increasingly transported by dedicated freighters at JFK, and FedEx accounted for the largest share of domestic air cargo. Domestic cargo is handled by a relatively few number of operators whereas international cargo is handled by a larger number of airlines and operators.

JFK has dominated U.S. international air cargo operations due to its large amount of widebody traffic and freighter activity spread over many carriers. This scale of operations facilitates backhaul volumes, return trips, and transshipments. JFK is expected to remain the main international passenger and air cargo gateway for the U.S. on the eastern seaboard with a focus on Europe and Middle East and transshipment to East Asia. Longer-range freighter aircraft will enable more diversity in routing as demand requires. An animal handling facility was recently developed, and initial planning is beginning for a 400,000 square-foot multitenant cargo facility being redeveloped on existing property for existing and new tenants. The airfield at JFK has been made capable of efficiently handling large B747-8F freighter aircraft, which could offer an opportunity for JFK to attract more international air cargo.

On the other hand, road congestion and truck restrictions on the highways leading to JFK cause connectivity and operational issues for shippers, cargo operators and the receiving agents. Airport congestion in terms of air space is being managed through improvements in air traffic management and airfield traffic management.

3.2 LAGUARDIA AIRPORT (LGA)¹²

Airport Description

LaGuardia Airport (LGA) functions as the center for short-haul domestic business trips, with the majority of the passengers originating or destined for the metropolitan region. It is host to approximately 12 scheduled airlines serving more than 90 nonstop destinations. The airport is the busiest airport in the U.S. without any nonstop service to and from Europe. It serves as a domestic hub for Delta, with American Airlines/American Eagle also having a large presence. Cargo traffic is limited to incidental belly cargo.

Table 3.2 Basic Airfield Infrastructure
LaGuardia Airport

Owner/Operator: NY City/PANYNJ	
Land Areas	680 acres
Runway 1 (4/22)	7,001 x 150 feet
Runway 2 (13/31)	7,003 x 150 feet
Gates	72
Cargo Area Rentable Area	60,000 square feet

Description of Major Planned Infrastructure Improvements

Planning is underway for a \$2.4 billion redevelopment of Terminal B and a \$1.2 billion investment in airport infrastructure. Delta Airlines is planning an investment of \$100 million in Terminal D.

Major Air Cargo Carriers Operating

No major cargo operations exist at LGA beyond loose bulk cargo or mail that may be carried by the airlines as part of their package service. Two hangars (Hangars 2 and 5) are available for cargo purposes.

Airport Role

In 2011, the airport handled approximately 24 million passengers making it the 20th busiest airport in the U.S. LaGuardia Airport employs approximately 10,000 people directly and is responsible for 103,000 indirect jobs and \$4.9 billion in

¹²Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey; and 2011 Airport Traffic Report, The Port Authority of New York and New Jersey, April 2, 2012 (excludes Teterboro).

annual wages and salaries.¹³ Over 12 main airlines plus their associated regional airline companies operate out of LGA. The three busiest routes by passenger volume are to Chicago, Atlanta, and Fort Lauderdale. Cargo traffic for 2011 was 7,291 short-tons with Delta providing the majority of the capacity.

LGA has a minimal cargo role with general support for package and mail operations through existing airline carriers. Southwest Airlines has a growing air cargo service that benefits from its point to point operations and national network. A rationale for increased air cargo activity would have to focus on a unique route connections or airline network services that are not redundant with other operations at surrounding airports. Also, land would have to be available for cargo facilities and hardstands.

3.3 STEWART INTERNATIONAL AIRPORT (SWF)¹⁴

Airport Description

Stewart International Airport (SWF) serves an important general aviation and commercial service market with joint military use in Orange County in southeast New York State. Previously a U.S. Army and U.S. Air Force aviation training facility, Stewart received funding from FAA, via the Military Airport Program, for rehabilitation and upgrades in preparation for transformation to a joint civil-military airport in the 1990s. Stewart Air National Guard Base remains in operation on the site. The State of New York leased the airport to National Express Group in 2000 for a term of 99 years. In 2007, PANYNJ acquired the remaining term of the lease. Aircraft utilizing the airport include regional jets, turboprop, and general aviation aircraft. It serves business needs for aviation and nonaviation companies and organizations. Aviation-related companies include rental car agencies, corporate aviation departments, Federal and state government agencies, aircraft charter, flight training, and aircraft maintenance. Nonaviation operations in the industrial zone include Anheuser-Busch, Epicor Software, Bank of America, and the New York State Police.

Table 3.3 Basic Airfield Infrastructure
Stewart International Airport

Owner/Operator: PANYNJ, operated by AFCO

¹³ "Facts and Information, LaGuardia Airport," available from <http://www.panynj.gov/airports/lga-facts-info.html>.

¹⁴Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey; and 2011 Airport Traffic Report, The Port Authority of New York and New Jersey, April 2, 2012 (excludes Teterboro).

Land Areas	2,400 acres
Runway 1 (6/27)	11,817 x 150 feet (displaced threshold for landing)
Runway 2 (16/34)	6,004 x 150 feet
Gates	7
Cargo Area Rentable area	536,800 square feet

Description of Major Planned Infrastructure Improvements

In 2011, approval was given for a \$20 million expansion of the airport's passenger terminal. The long runway is an asset that could be more fully utilized without landing threshold displacements. It has potential for additional uses for long-haul widebody charter flights or international air cargo aircraft.

Major Air Cargo Carriers Operating

FedEx and UPS (plus JetBlue passenger traffic) operate at SWF with FedEx being the largest by cargo tonnage. Stewart has the potential to become a cargo-focused airport, based on runway length, available land, and interstate highway access. The airport handles a variety of cargo, including oversized, express packages, and livestock. FedEx and U.S. Post Office maintain a large distribution presence outside of the airport, including the USPS's main general mail facility for the mid-Hudson region. Imports of plant and animal products also operate out of Stewart through the New York Animal Import Center, a USDA inspection facility that provides mandatory import quarantine services for animals entering the U.S.

Airport Role

According to the PANYNJ, in 2011 more than 413,000 passengers traveled through the airport representing a growth rate of 4.8 percent. Stewart International Airport employs 1,100 people directly, and supports an additional 5,500 indirect jobs and \$750 million in annual economic activity.¹⁵ Top carriers at the airport are JetBlue, Delta, and U.S. Airways, and the top three busiest routes by passenger count are to Orlando, Fort Lauderdale, and Atlanta. Cargo traffic for 2011 was 16,264 short-tons with FedEx providing the majority of the capacity. Stewart Airport has a legacy for military aviation use and retains an Air National Guard presence. The airport now serves as an economical and convenient passenger service alternative to the New York metropolitan airports.

The airport will continue to service commercial passenger traffic; private helicopter shuttle to midtown Manhattan; corporate jet market; and as a reliever airport for JFK, LGA, and EWR. Incidental air cargo traffic using commercial air

¹⁵ "Facts and Information, Stewart International Airport," available from <http://www.panynj.gov/airports/swf-facts-info.html>.

service and charters can be expected. FedEx operations are the main potential for air cargo growth. Incentives are in place for international service and ground handling, and capital improvements for runways and terminal are planned. The airport has runway length infrastructure but some of that potential will depend on the landing threshold restrictions currently in place due to flight path obstructions requiring the landing thresholds to be located in from the ends of the runways.

3.4 WESTCHESTER COUNTY AIRPORT (HPN)¹⁶

Airport Description

Westchester Airport (HPN) is a County-owned facility which provides commercial service to passengers in the greater New York metropolitan area, is one of the most active corporate aviation facilities in the U.S., and has a very large heavy (> 12,500 lbs) and light (< 12,500 lbs) general aviation community. It has six commercial airlines with scheduled service flying to 16 destinations. HPN is categorized as a Commercial Service, Primary Small Hub airport. In 2009, New York State Department of Transportation (NYSDOT) estimated that approximately \$735 million was associated with total combined impact of aviation-related businesses, commercial service and general aviation visitor output (including direct and indirect impacts).¹⁷ Aviation and non-aviation related businesses benefit from the airport, including: CitiGroup, IBM, JP Morgan Chase, McGraw-Hill, Pepsico, Philip Morris, and Xerox.

Table 3.4 Basic Airfield Infrastructure
Westchester County Airport

Owner/Operator	Westchester County, NY
Land Areas	702 acres
Runway 1 (16/34)	6,549 x 150 feet
Runway 2 (11/29)	4,451 x 150 feet (1,292 ft displaced threshold on R/W 29)
Gates	
Cargo Area Rentable Area	Not applicable

¹⁶Federal Aviation Authority Calendar Year 2011 Statistics, www.faa.gov, and Airport web sites.

¹⁷ *New York Statewide Airport Economic Impacts Study: 2010 Technical Report*, May 2011. New York State Department of Transportation, Office of Integrated Modal Services, Aviation Bureau, Albany, N.Y.

Description of Major Planned Infrastructure Improvements

The airport is currently undertaking a Master Plan study and an Airport Layout Plan (ALP) Update. Planned infrastructure improvements will result from this process.

Major Air Cargo Carriers Operating

No major air cargo operations exist, but commercial airlines such as JetBlue, Cape Air, American Eagle Connection, United Express, and U.S. Airways can provide incidental break bulk air cargo or air mail traffic. Human remains have also been identified as one air cargo shipment type.

Airport Role

In 2011, there were 972,385 scheduled commercial enplanements that moved through the main passenger terminal at Westchester County Airport.¹⁸ The airport supports approximately 6,300 direct and indirect jobs, \$334 million in annual salaries and wages, and \$736 million in annual economic activity in the region.¹⁹ Current commercial air carriers that operate at the airport are jet Blue, Cape Air, Delta, American Airlines, United, and U.S. Airways.

However, commercial service accounts for only approximately 20% of the airport's total operations. Westchester County Airport has a robust and active corporate and general aviation community which accounts for the remaining 80% of operations at the airport.

The airport will continue to service commercial passengers, corporate and heavy and light general aircraft, flight training, and military patrol aircraft use with incidental air cargo traffic using commercial air service and charters.

3.5 LONG ISLAND MACARTHUR AIRPORT (ISP)²⁰

Airport Description

Long Island MacArthur Airport (ISP) is a public airport located in the Town of Islip 45 miles from midtown Manhattan. It serves the residents of Nassau and Suffolk County as well as commercial passengers in the area or wishing to avoid congestion at JFK or LGA. The FAA designated the airport as an official Metro Airport. It has commercial service with Southwest Airlines, offering nonstop service to several Florida cities and Baltimore, and U.S. Airways. A Town-owned Foreign Trade Zone is located adjacent to the airport with numerous

¹⁸ Federal Aviation Administration CY2011 Air Carrier Activity Information System (ACAIS), *Enplanements by Air Carrier for Calendar Year 2011 for Westchester County Airport*.

¹⁹ New York Statewide Airport Economic Impacts Study, 2011.

²⁰Federal Aviation Authority Calendar Year 2011 Statistics, www.faa.gov, and Airport web sites.

warehouse/distribution facilities; additional industrial operations and facilities exist at the airport. A Long Island Railroad (LIRR) station is adjacent to the airport but remote from the existing terminal.

Table 3.5 Basic Airfield Infrastructure
Long Island MacArthur Airport

Owner/Operator: Town of Islip, New York	
Land Areas	1,311 acres
Runway 1 (6/24)	7,006 x 150 feet
Runway 2 (15R/33L)	5,186 x 150 feet
Runway 3 (10/28)	5,034 x 150 feet
Runway 4 (15L/33R)	3,175 x 75
Gates	n/a
Cargo Area Rentable Area	n/a

Description of Major Planned Infrastructure Improvements

Commercial aviation passenger terminals, general aviation and corporate hangar facilities exist at the airport. A master plan process was conducted in year 2012 reviewing airfield capacity increases, passenger terminal expansion and landside developments. Increasing commercial passenger traffic and accommodation of that increase are the major focus. No major improvements currently are planned.

Major Air Cargo Carriers Operating

No cargo operations occur at the airport except for incidental commercial service cargo through Southwest Airlines.

Airport Role

Commercial service, general aviation and charter activity occur at the airport with aircraft movements in Calendar Year 2011 of 781,396 enplanements. No airport cargo operations are present. Long Island MacArthur Airport supports approximately 6,000 direct and indirect jobs, \$229 million in annual salaries and wages, and \$577 million in economic activity in the region.²¹

3.6 REPUBLIC AIRPORT (FRG)²²

Airport Description

Republic Airport (FRG) is a state-owned public use airport located in East Farmingdale on Long Island, 29 miles from midtown Manhattan. It is designated as a reliever airport by the FAA.

²¹ New York Statewide Airport Economic Impacts Study, 2011.

²² Federal Aviation Authority Calendar Year 2011 Statistics, www.faa.gov, and Airport web sites.

Table 3.6 Basic Airfield Infrastructure
Republic Airport

Owner/Operator: New York State Department of Transportation	
Land Areas	526 acres
Runway 1 (14/32)	6,833 x 150 feet
Runway 2 (1/19)	5,516 x 150 feet
Gates	n/a
Cargo Area Rentable Area	n/a

Description of Major Planned Infrastructure Improvements

General aviation and corporate hangar facilities exist at the airport.

Major Air Cargo Carriers Operating

No cargo operations occur at the airport except for any incidental corporate express cargo.

Airport Role

Only general aviation and charter activity occur at the airport with aircraft movements in Calendar Year 2011 of 8,638 enplanements, an increase of 210 percent over CY 2010. FRG is a reliever airport per FAA designation. No commercial service is anticipated and no airport cargo operations are present. FRG will remain a convenient general and corporate aviation airport supporting Long Island and New York private pilots and some corporate aircraft. The airport is responsible for supporting nearly 1,400 direct and indirect jobs, \$78 million in annual salaries and wages, and \$214 million in annual economic activity in the region.²³

3.7 NEWARK LIBERTY INTERNATIONAL AIRPORT (EWR)²⁴

Airport Description

Although Newark Liberty International Airport (EWR) is located outside the NYMTC Region, it complements operations at both JFK and LGA with a mix of short-haul/long-haul flights for domestic and international destinations. With

²³ New York Statewide Airport Economic Impacts Study, 2011.

²⁴Year in Review: Traffic and Cargo Activity at the Port Authority Airports in 2012, The Port Authority of New York and New Jersey; 2011 Airport Traffic Report, The Port Authority of New York and New Jersey, April 2, 2012 (excludes Teterboro).

passenger counts and cargo counts for these three airports combined, EWR accounts for about one-third of the traffic historically of the three large metro airports. It is a major hub for United/Continental for both domestic and international routes, one-third in size behind Houston and Chicago O'Hare.

FedEx and UPS both have substantial operations at the airport. FedEx, with its third largest hub at the airport, has two million square feet of building area. Integrator operator activity at EWR from UPS and FedEx, plus United/Continental international flights, complement the cargo activity at JFK.

Table 3.7 Basic Airfield Infrastructure
Newark Liberty International Airport

Owner/Operator: City of Newark/PANYNJ	
Land Areas	2,027 acres
Runway 1 (4L/22R)	11,000 x 150 feet
Runway 2 (4R/22L)	10,000 x 150 feet
Runway 3 (11/29)	6,800 x 150 feet
Gates	114
Cargo Area Rentable Area	1,300,000 square feet

Description of Major Planned Infrastructure Improvements

Terminal B renovation is nearing completion and a possible new Terminal A has been discussed. A United Airlines hangar currently is under construction.

Major Air Cargo Carriers Operating

EWR is a major hub for express carriers and is conveniently located near the Port Newark and the Elizabeth-Port Authority Marine Terminal for sea-air connections, as well as having good rail and highway connectivity. Climate controlled warehouses exist for perishables and pharmaceuticals. United, Continental, FedEx, and UPS all have facilities at the airport, and there also is a multitenant cargo facility. Cargo operations are located on 290 acres of land with an adjacent Foreign Trade Zone. FedEx, UPS, DHL/Airborne, United/Continental Cargo, Lufthansa, British Airways Cargo, and Kalitta all operate out of the airport with FedEx carrying almost half of the total cargo amount.

Airport Role

According to statistics published by PANYNJ, EWR ranked 14th among U.S. airports in terms of passengers handled in 2011 and 37th among airports worldwide. Newark Liberty International Airport employs 21,000 people direct, and contributes \$20.2 billion in economic activity to the New York/New Jersey

region, including \$7.3 billion in wages and salaries and 143,000 indirect jobs.²⁵ Forty scheduled carriers operate out of the airport. The top carriers at the airport are United/Continental, Delta, and JetBlue. The busiest international routes by passenger count are London, Toronto, Tel Aviv, Frankfurt, and Paris; and busiest domestic routes are to Orlando, Chicago, Fort Lauderdale, Houston, and Los Angeles.

While EWR handles substantially less cargo than JFK, it still ranks as one of the major air cargo airports in the world. It is the predominant overnight small package airport for the metropolitan region. In 2011, EWR handled over 810,000 short-tons of cargo and is ranked 9th among U.S. airports in terms of cargo handled in 2011, and 26th among airports worldwide. While international cargo represents a minority of the air cargo, this volume has been growing, based on increased widebody international flights with United/Continental as the major airline for the traffic. Domestic air cargo volumes at EWR represent the majority of the air cargo activity with 536,000 short-tons carried in 2011. Integrated air carriers, including FedEx, UPS, and DHL/Airborne accounted for the majority of the traffic, with 66 percent handled by dedicated freighter aircraft.

EWR was the New York metropolitan area's first airport and was at one time the world's busiest airport. EWR has traditionally competed for domestic operations with LGA and for international destinations with JFK, offering unique routings from EWR to international destinations as a differentiator to JFK such as a direct flight to Mumbai. EWR is expected to continue its cargo focus for the local catchment area for small package cargo via FedEx, UPS, and other express carriers as well as benefitting from belly cargo flying on United/Continental. The airport's proximity to the seaport makes a potential sea-air intermodal connection possible.

²⁵ "Facts and Information, Newark Liberty International Airport," available from <http://www.panynj.gov/airports/ewr-facts-info.html>.

4.0 Air Cargo Challenges and Opportunities

The New York City metropolitan area's four main airports - JFK, LGA, EWR, and SWF - form the largest airport system in the U.S., second in the world in terms of passenger traffic and first in the world in terms of total flight operations. Although JFK alone ranks eighth among U.S. airports in air cargo volume, the sum of air cargo volume through all of the metropolitan area's airports exceeds the combined sum of air cargo traveling through any other major metropolitan area (with the exception of Memphis and Louisville, which are the main integrator hubs for FedEx and UPS, respectively), as Table 4.1 shows. While some other airports have scale as single airport metropolitan area airports such as Miami, Atlanta, and Houston (George Bush Intercontinental in this case) (ranked 4, 13, and 17 for cargo tonnage in 2011), they do not compare in complexity to the airport system of the New York metropolitan area or its strategic location along an established air- and sea-trade lane. The gap between the New York City metropolitan area and Los Angeles and Chicago, the next two largest metropolitan areas by air cargo volume, is not large, and is at risk of being overcome. A 2013 joint NYCEDC/PANYNJ JFK cargo industry assessment foresees significant growth potential if plans are implemented to upgrade on-airport cargo facilities and address longstanding impediments to efficient truck access on the regional roadway network.

4.1 SUMMARY OF AIR CARGO CONDITIONS RELATIVE TO OTHER MAJOR AIR CARGO HUBS

Airports and multiple-airport systems can achieve competitive advantages based on cost and/or special handling considerations for specific cargo types. The New York region has the advantage of a large local population, which supplies a concentration of passenger and air cargo demand that airports in other parts of the country cannot match. Many airlines, however, are able to offer lower-cost options for many shippers and receivers by using hub airports in other parts of the country and ground transportation of cargo to or from the ultimate origin or destination. Shippers and logistics providers must also consider commodity-specific handling considerations. For example, a shipper based in Pennsylvania, who ships perishables must decide whether his product should be routed through Miami, Houston, or Atlanta with subsequent delivery by truck to Pennsylvania, or to fly to New York and transport his product a shorter distance by truck. Factors including cost, level of service at the airport, and landside transportation reliability influence this decision-making process.

Table 4.1 Comparison of Air Cargo Volume Among Major Metropolitan Regions, 2011

Metropolitan Area	Commercial Airports	Air Cargo Statistics	
		U.S. Ranking	Approximate Short-Tons (rounded)
New York	John F. Kennedy (JFK)	8	1,972,000
	Newark Liberty (EWR)	10	1,525,000
	LaGuardia (LGA)	Na	
	Stewart (SWF)	105	65,000
			3,562,000
Dallas-Fort Worth	Dallas-Fort Worth (DFW)	9	1,532,000
	Dallas Love Field (DAL)	Na	
	Fort Worth Alliance (AFW)	25	449,000
			1,981,000
Chicago	O'Hare (ORD)	6	2,184,000
	Midway (MDW)	Na	
	Rockford (RFD)	26	444,000
	Gary/Chicago (GYY)	Na	
			2,628,000
Los Angeles	Los Angeles (LAX)	7	2,022,000
	Ontario (ONT)	14	1,328,000
	John Wayne (SNA)	Na	
	Van Nuys (VNY)	124	136
			3,350,136

^a Based on FAA information for Calendar Year 2011.²⁶

Role in the Global Trade Lanes

New York and Los Angeles are coastal gateways for both aviation and ocean transportation with container and bulk seaports as part of the transportation infrastructure. New York has a location advantage with the seaport (New Jersey)

²⁶ Federal Aviation Administration, 2011, available from: http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy11_cargo.pdf.

being located quite close to the airport for the possibility of sea-air transportation that would develop beyond the road/rail transportation that could support time-sensitive deliveries. Sea-air, or railroad landbridges for sea containers, are alternatives to the air-only mode which may reduce cost. A possible scenario would be cargo is shipped by sea to the Newark port and then distributed just in time via the integrators at EWR or JFK.

Chicago, Dallas, and Houston have the advantage of a more central location in North America with established road and rail trade lanes running through them. Some air cargo activities, such as perishables, can take full advantage of the range of new aircraft and the ability to deliver perishable cargo closer to the flower or fish markets in an inland metropolitan area.

Depending on the growth and changes in the world economy, the Far East and Southeast Asia have the most growth potential for cargo at the current time, which benefits both LAX and JFK with direct route connections to both Japan and China in comparable timeframe with JFK possibly benefitting more from transshipment traffic through Europe and the Middle East. There also are new emerging markets in Eastern Europe, Africa, and the Middle East for which New York is better positioned geographically. Both LAX and JFK have access to the South American markets with JFK benefitting from having American Airlines hubs at JFK and Miami.

Connectivity of the Airports

Compared to other major metropolitan areas, the New York metropolitan area's airports are located close to population and manufacturing centers. As more densely populated urban centers, both New York, Los Angeles, and Chicago are impacted by highway congestion, with New York also dependent on more bridge and tunnel infrastructure which can create bottlenecks.

New York, however, has the unique problem of lacking redundancy in the landside access network. Truck access to JFK is limited to the Van Wyck Expressway which is congested for long periods of the day. Incidents on the Van Wyck Expressway can effectively stop the movement of air cargo to or from JFK, as there is no suitable alternative route available. Nighttime congestion is less frequent or severe, but the ability to take advantage of nighttime highway capacity depends on scheduled deliveries and on the cut-off cargo delivery times for nighttime cargo flights. There also are limits on truck length that impact the trucking companies and their anticipated costs of JFK deliveries.

In contrast, truck access to EWR is good with Interstate 95/New Jersey Turnpike alongside the airport. EWR also has good rail access, which could allow for the establishment of a railroad intermodal yard near the airport, such as Alliance or Port of San Antonio (formerly KellyUSA).

Airport Capacity

The ability for an airport to develop and grow is often a function of available land conveniently located on the airport property. As air cargo travels also as belly cargo in passenger aircraft, the proximity of the passenger terminal and the dedicated air cargo area have a close relationship for the expediting of cargo transfer and handling.

DFW by itself has seven runways and ORD will have eight runways in its ultimate build-out. The combined total of JFK, LGA, and EWR is only nine runways. The ability to develop an additional airport to replace or supplement the existing airports is limited by availability of suitable land and by political and environmental constraints. The possibility of adding a runway at JFK and EWR is being studied as one way to expand capacity. The addition of runways, however, puts additional constraints on land for other uses such as expanding ancillary facilities like air cargo buildings and hangars.

ORD and DFW have large land areas for the development of air cargo areas. JFK has room for new cargo operations by using existing developed land for new more efficient facilities. JFK also has an animal handling facility under development, which will serve as a specialized market differentiator. EWR has some limited ability for expansion of the existing integrator facilities.

Initiatives to increase airport capacity through changing the navigation systems for aircraft and airports instead of the physical airfield infrastructure are being tested and implemented with NextGen navigation for the New York Metropolitan areas.

Environmental Issues

All airport systems have initiatives to make the airport and its impact on the surrounding areas more environmentally responsive and sustainable, whether it is relates to noise, general pollution, stormwater management, recycling, fuel consumption, etc. The Chicago Department of Aviation has been a national leader for the Airports Going Green initiative in terms of sustainable ideas and practices, with the Sustainable Airport Manual (SAM) being a guideline linked to a Green Airplane Certification rating. PANYNJ has a sustainability policy for all airports under its control with published Sustainable Management Plans for Stewart International Airport, and Newark Liberty International Airport. The FAA has a Sustainable Master Plan Pilot Program and is developing guidance information on airport sustainability planning. Airports listed as participants are DFW and EWR.

4.2 SUMMARY OF OPPORTUNITIES AND CHALLENGES

The New York metropolitan airports have the advantage for air cargo (focus on JFK, EWR, and SWF) of:

- Largest hub of passenger and cargo operations in North America;
- A dominant continental coastal gateway with close access to seaport and rail operations;
- Close proximity to population centers and industrial/manufacturing development;
- Proximity of the various airports to each other as a defined airport system with intra-airport connectivity, and managed congestion;
- Complementary functions for passenger and cargo operations at the airports;
- Airport redevelopment initiatives and ongoing capital investment;
- Planned Cargo area expansion and redevelopment possibilities with ongoing passenger terminal redevelopment at the airports for handling increased traffic;
- A main controlling public authority for the three main airports and related seaports; and
- A proactive approach to environmental issues.

The New York metropolitan airports have the disadvantage for air cargo (focus on JFK, EWR and SWF) of:

- Airports located in various directions from center of metropolitan area;
- Location in congested traffic areas involving bridges and tunnels for circulation (easier ground-access to JFK is an important corollary to on-airport cargo improvements);
- Two separate main air cargo operations at JFK and EWR;
- Restricted and congested road access to JFK in particular;
- LGA does not have any air cargo role in the airport system;
- Airport property (with the exclusion of SWF) are developed, landlocked airports with limited greenfield development opportunity;
- Aging infrastructure in certain facilities, utilities and transportation;
- Higher labor costs and costs of doing business than other airport systems; and
- Some restrictions on airspace based on close proximity of multiple airports.

A. Appendix

This appendix includes airport runway diagrams for the seven airports discussed in Section 3 of the Task 2.1.4 Technical Memorandum. The airport runway diagrams were prepared by the Federal Aviation Administration.²⁷

²⁷ Federal Aviation Administration airport runway diagrams are available from: http://www.faa.gov/airports/runway_safety/diagrams/