No two markets fly the same

• The air cargo industry remains challenged from a volume standpoint, yet global biologic and e-commerce sales growth projections favor the industry’s long-term outlook.

• Our study reveals airport-near real estate is commanding high rent premiums in mature logistics corridors, while the opposite can be said for emerging markets. Seaports and airports also appear to be competing, which is impacting rents around some of the nation’s busiest airports.
‘Maturity’ is synonymous with ‘a history,’ meaning established markets have track records as it relates to how vacancies and rents fluctuate. Their airport-centric product deems investors’ attention.
In this report

Airports play a major role in the movement of goods within the country and around the world. From the newest fashions flown in bulk from China to the one pair of shoes overnighted to your door, airports make the modern economy possible. However, today’s environment is challenging for airports and owners of aviation-centric real estate. High fuel costs, stringent security requirements and regulations have buffeted the market, causing overall volume to remain flat. Still, the United States’ major cargo hubs remain potent generators of real estate demand; short-term growth prospects may be muted, but in the long run they are critical assets that should not be ignored by investors, especially as consumer buying patterns change.

In this report
Key takeaways
Air cargo’s current state of affairs (and the future)
Industrial real estate: supply and demand drivers
Markets to watch and core investment opportunities
Look beyond the fence
Behind the curtain: inside the gates
PAGI Airport score methodology

Select top U.S. airports and property market indicators
O’Hare International Airport (ORD)
Miami International Airport (MIA)
Los Angeles International Airport (LAX)
Memphis International Airport (MEM)
Indianapolis International Airport (IND)
Dallas-Fort Worth International Airport (DFW)
Louisville International Airport (SDF)
John F. Kennedy International Airport (JFK)
Ted Stevens International Airport (ANC)
Newark Liberty International Airport (EWR)
Hartsfield-Jackson Atlanta International Airport (ATL)
Oakland International Airport (OAK)
Port, Airport & Global Infrastructure report authors

Port, Airport & Global Infrastructure

Transportation hubs evolve and grow as fast as the world turns. Emerging populations and shifting patterns in the global movement of goods and cargo have accelerated new trends in logistics, technology, transportation and security. Plus, the demand for worldwide shipping environmental sustainability will only continue to grow. All of which magnify the importance of real estate to international distribution channels, and dictate that yesterday’s approaches won’t solve tomorrow’s challenges.

Our experienced team of aviation and maritime real estate experts draw upon deep, real-time knowledge of the trends, challenges and opportunities surrounding seaport and airport infrastructure and their connectivity to the real estate equation. Working alongside the firm’s integrated service lines, our Port, Airport & Global Infrastructure practice brings leadership, strategic relationships and service excellence to port and airport interests worldwide.

Industrial and Logistics

From manufacturing plants to distribution centers, industrial real estate is at the backbone of the global economy. Today’s financial and competitive pressures demand that industrial property—whether leased or owned—deliver maximum flexibility and efficiency. Our logistics and industrial professionals understand the current business environment and offer innovative, profitable strategies for supply chain optimization, site selection, sales, leasing, acquisition, financing, construction, project management, and property and facility management.

Our experts know all the issues that impact industrial real estate decisions and apply proven best practices to address such challenges as skyrocketing energy, transportation, and labor costs; heightened security needs; environmental requirements; and profound changes in global supply chains. Because of our depth of in-house talent, we can quickly assemble the right team. Regardless of the size and scope of the assignment, you’ll have a single point of contact who manages all service delivery and is responsible for producing the measurable results that are agreed to up front.
Key takeaways

- Air freight comprises only 2.0 percent of total cargo volume being shipped on a global basis. However, it represents 35.0 percent of the value of all commodities ($6 trillion in all) being shipped throughout global supply chains.

- Perishable items make a case for the higher cost of air freight, and biologics are helping drive momentum. Cold storage space needs are on the rise.

- How consumers shop is causing the global marketplace to become increasingly ‘connected.’ International order fulfillment will benefit the industry and elevate demand for airport-centric industrial space.

- Not all airport markets are created equal, and this can be traced to an overall market’s maturity. Rent premiums are more common in in-fill markets than emerging logistics corridors.

- Chicago O’Hare earns our highest index score and is the airport with the best near-term prospects for real estate. The greater market offers six major railroad connections, and is a one-day drive time to nearly a third of North America’s consumers.
Air cargo’s current state of affairs (and the future)

Mixed news
World trade is growing at a swifter pace than demand for air cargo, and this is presenting a challenge for both airports and airline carriers, especially as shippers take a step back to reevaluate transit modes as a means to cut costs. In surveys conducted in August and September of last year, Wolfe Research polled nearly 100 shippers and 35.0 percent of respondents planned to divert cargo from air to ocean transport, a jump from the 19.0 percent who indicated in the spring they planned to do so. Many shippers are also funneling small package volume from domestic air express to ground transport.

Air freight, while the swiftest transportation mode, is also the costliest when compared to ocean, rail and road transport—a hard selling point since global freight traffic is on pace to expand by 3.0 percent, overall costs (excluding jet fuel) will rise by 3.8 percent and jet fuel remains doggedly high at $2.96 per gallon. Time-sensitive goods such as food, perishables and high-end pharmaceuticals will continue to propel the air cargo segment, yet, for other items the question becomes this: Is expedited time-to-market really a priority? Based on freight shifts the answer appears to be ‘not necessarily’: Deferred air freight is on the rise, while priority shipments are declining.

Total air cargo volume of the 12 airports surveyed in this report was 18.8 million metric tons in 2013, a 0.3 percent increase from one year ago. Growth projections are flat for 2014.

Jet fuel prices are 196% higher than 10 years ago

Source: U.S. Department of Energy: Energy Information Administration

Case study | Big business in drugs

High-value commodities from the life sciences industry and air freight are intertwined. According to Evaluate, a life sciences market research company, global biologic sales are forecasted to grow 6.0 percent per year to $208 billion by 2017 and will comprise 23.0 percent of the global pharmaceutical market in dollar terms. In 2012, the FDA approved 15 new biological products, all of which require cold-chain storage and handling.

This directly impacts space needs for airport-near facilities, especially in markets that house major population centers. Baby Boomers (U.S. citizens born from 1946 to 1964) comprise an estimated 72 million of the nation’s population, and embody the largest generation to-date that is currently retiring (or will soon retire) from the workplace. They, as a generation segment, make up 22.6 percent of the U.S. population.

Florida is already a beneficiary of this momentum with Miami International serving as a conduit point: From 2012-2013, the airport imported 69.7 percent of the nation’s perishables, and this, in turn, caused a dramatic two-year decrease in vacancy rates in refrigeration and cold facilities within reasonable proximity to the airport. Yet, most of the perishables imported through MIA are actually taken up to Philadelphia since Philadelphia offers more cold storage facility space. Items then later return to South Florida as they enter the consumer market. This is hardly efficient from a transportation costs standpoint, meaning cold storage speculative development will increase in Miami.
Evolving consumer habits
Global business to consumer (B2C) e-commerce sales have increased sharply over recent years, driven by a growing online population and changes in consumer buying patterns. Total global sales topped $1.0 trillion for the first time in 2012, and estimates have 2013 at $1.2 trillion; 33.7 percent of global sales were based in the United States.

U.S. online sales are projected to grow around 11.4 percent per annum through 2017, while China’s digital landscape is becoming increasingly wired—expected to enjoy 36.4 percent per annum growth over the same time period. All world economies (albeit developed or emerging) have growth estimates that vastly outpace total retail sales projections. Retail as we know it is increasingly evolving into an international marketplace where consumers are directly transacting with businesses. For businesses that may have customers spanning the globe, air freight presents a mode to connect countries and expedite order fulfillment; having quicker shipment times than a competing retailer is a competitive advantage.

Today’s air freight generally comprises high-value goods, but this will change as the global marketplace becomes increasingly ‘connected.’ Larger e-tailers such as Alibaba (now seeking an IPO) will establish massive fulfillment centers in their top retail markets as a means to reduce shipping costs and hasten item transit times. Smaller international retailers will be reliant on air freight, which, domestically speaking, is good news for freight forwarders near the U.S.’s busiest airports.

International freight volumes are expected to grow 17.0 percent over the next five years, according to the International Air Transport Association’s “2013-2017 Airline Industry Forecast”, and U.S. airports (and industrial real estate) stand to benefit.

Case study | The Alibaba Group

The Alibaba Group, which primarily operates in the People’s Republic of China, is a privately owned group of Internet-based e-commerce businesses that includes B2C online web portals and online retail and payment services. In 2012, two of its web portals posted $170 billion in sales, more than competitors eBay and Amazon.com combined.

One of those portals is AliExpress, which is an online retail service made up of mostly smaller sellers offering products to online buyers. The site has registered users and buyers in more than 220 countries, and the U.S. easily ranks in the top three; the company, however, lacks a physical U.S. presence.

Items are shipped by deferred air freight and in bulk to minimize costs. They are also lightweight, ranging from clothing to handheld electronics, which also helps to control costs. Consumers can take advantage of free shipping with, granted, long delivery windows, or can elect for priority shipments at an out-of-pocket cost.

Global e-commerce sales reached $1.2 trillion in 2013
Annual sales growth and estimated online buyer penetration

Source: eMarketer (February 2014)
Volume or maturity?
The number of requirements for airport-centric industrial real estate is shaped by cargo volumes, and its proximity to major population centers—while this rings true to a certain degree, where a greater market is in its development and maturity cycle is even more important. ‘Maturity’ is synonymous with ‘a history,’ meaning in-fill markets such as Los Angeles and Chicago have established track records as it relates to where and how vacancies and rents fluctuate. Supply is generally fixed in these markets and there is rhyme and reason as to how market fundamentals shift. Miami, which has an average building age of 36 years, is established though is not yet in this in-fill categorization. It does, however, have a history.

Asking rents for airport-near space in Los Angeles, Chicago and Miami were 58.3, 41.0 and 28.4 percent, respectively, higher than their respective total market rents. Unsurprisingly, vacancies for this product are well below market averages. All three house JLL’s top airports.

Up-and-comers and the ever-growing
The opposite can be said for emerging logistics corridors such as Memphis and Louisville where ‘rent premiums’ are really discounts to the tune of 9.1 and 1.4 percent, respectively. Ironic, since MEM and SDF rank first and third in U.S. air cargo volume and are “SuperHubs”—one for FedEx, the other for UPS. Yet they, as industrial markets, are still in their early teens; development in these markets generally consists of large-box build-to-suits away from the airports (where large tracts of land are more readily available), and new product impacts market rents. The rent upticks though can be marginal, since users have options when land sites are abundant: Supply is hardly fixed.

A secondary market such as an Indianapolis, where requirements for modern-gen Chicago space often spillover, is more built-out than Memphis, has a track record, is within a reasonable drive time to a major population center and offers entitled land sites. Asking rents for airport-near space are 10.2 percent higher than the greater market’s, even though its air cargo volume was ranked seventh compared to other airports in this study. Dallas—hardly a secondary market, but still with room to grow its footprint—has an 11.6 percent rent premium.

Playing tug-of-war
Airport markets near major cargo seaports round out our fourth category, which is somewhat of an outlier. Oakland and Newark are based in dense, mature markets, for instance, while Atlanta is a major gateway corridor (like New Jersey) and has room to expand its industrial footprint. Asking rents for airport real estate are 6.1, 7.5, and 5.8 percent, respectively, below their individual market averages. JFK was a bit of surprise with a 6.2 percent premium.

Of the 12 airports tracked in this study, these four had the steepest 10-year air cargo volume declines, with an average drop of 21.9 percent. Three of the four airports—Oakland, Atlanta and Newark—are also ranked near the bottom in terms of their 2013 cargo traffic, meaning volume fluctuations are more pronounced here than at other airports. All have strong passenger counts, however.

Shippers remain fixated on cutting costs as the economy measuredly improves while the Ports of Oakland, Savannah and New York/New Jersey enhance their existing infrastructure to accommodate larger vessels and improve turnaround times. On the surface, it appears these airports and their corresponding seaports are competing, suggesting less time-sensitive goods are being funneled through more cost-effective channels.

### Greater industrial markets

<table>
<thead>
<tr>
<th>Greater market</th>
<th>Larger market avg. building construction date</th>
<th>Primary airport</th>
<th>Airport rent premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater market size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los Angeles</td>
<td>687,277,506</td>
<td>LAX</td>
<td>58.3%</td>
</tr>
<tr>
<td>Chicago</td>
<td>1,129,299,073</td>
<td>ORD</td>
<td>41.0%</td>
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<td>Miami</td>
<td>123,946,241</td>
<td>MIA</td>
<td>28.4%</td>
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<td>Memphis</td>
<td>208,037,264</td>
<td>MEM</td>
<td>-9.1%</td>
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<td>Louisville</td>
<td>139,672,640</td>
<td>SRD</td>
<td>-1.4%</td>
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<td>Indianapolis</td>
<td>300,673,634</td>
<td>IND</td>
<td>10.2%</td>
</tr>
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<td>Dallas / Fort Worth</td>
<td>508,978,185</td>
<td>DFW</td>
<td>11.6%</td>
</tr>
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<td>Oakland / East Bay</td>
<td>110,234,463</td>
<td>OAK</td>
<td>-6.1%</td>
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<td>Northern New Jersey</td>
<td>354,137,046</td>
<td>JFK</td>
<td>-7.5%</td>
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<tr>
<td>Atlanta</td>
<td>506,238,246</td>
<td>JFK</td>
<td>-5.8%</td>
</tr>
<tr>
<td>NYC / Long Island</td>
<td>220,847,629</td>
<td>JFK</td>
<td>6.2%</td>
</tr>
<tr>
<td>Anchorage</td>
<td>11,631,192</td>
<td>ANC</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

Source: JLL Research
Markets to watch and core investment opportunities

From an investor’s perspective, the markets we like have strong trade ties to regions expected to experience faster than average growth over the next decade and markets that have key success factors for e-commerce distribution.

Chicago tops our scoring index this year. Both its air cargo and real estate score increased by 9.1 and 5.4 points, respectively, from last year’s report. Industrial facilities within a three-mile radius from ORD command a substantial rent premium when compared to the greater market, and space is available for aspiring occupiers. Although space obsolescence is often an issue, current rents make in-fill development pencil out. ORD currently has two general cargo areas; one on the south side of the airport, which accommodates more than 80.0 percent of all cargo flights and is spread over 2.0 million square feet of facilities. The airport also features additional warehouses on its north side. New cargo facilities are planned, which will have both airside and landside access.

Miami scores second highest in our index, down from the top position in last year’s report. The drop can be attributed to a slight decline in the air cargo score, while the real estate score ticked up from 2013. The airport and surrounding businesses control the food and flower trade and the lack of a single dominant carrier makes room for enhanced competition and demand for real estate. Incidentally, MIA moves an astounding 71.2 percent of all U.S. perishables, due to its connection with Central and South America. The market’s biggest concern remains land availability, which has driven up prices. Over the long run, however, we anticipate the increased cost to dampen the threat of overbuilding and keep supply in check.

Los Angeles moved up in the rankings from last year’s report, and now ranks third. The commercial real estate component of the score was up 4.3 points, which is largely attributed to the 58.3 percent rent premium airport-near facilities command. The immediate vacancy rate was 3.0 percent during the fourth quarter of 2013, substantially lower than the greater market’s 5.1 percent average. Although space is available near LAX, obsolescence is a challenge (similar to Chicago), yet in-fill development is always an option, given current rents. Freight-forwarders were especially active near the airport in 2013, while, countywide, logistics providers, consumer nondurables and food & beverage requirements were notable. China remains LAX’s largest trading partner, followed by Japan, Hong Kong, Thailand and South Korea; goods that enter through this access point help serve Los Angeles County’s 10 million-strong populace.
Look beyond the fence
Nontraditional revenue sources can improve airports’ financial picture

by Kurt Little and Brian Carroll

An airport’s financial performance has ripple effects throughout the larger economy. Higher operating costs for the airport, measured as cost per enplaned passenger (CPE), translate to increased usage fees charged to airlines, which in turn pass that cost on to consumers. Consumers may then adjust their travel, resulting in a blow to tourism income and tax revenues for the metro area served by the airport.

Airports typically focus on lowering their CPE by reducing traditional operational costs like facilities management and human resources expenses, or increasing advertising revenues. However, airports rarely fully capitalize on the significant income-generating assets right in their own backyard. By tapping into these revenue sources, whether traditional or nontraditional, airports can fully leverage all available sources of income, lowering their CPE and gaining a competitive edge in the market.

Consider the Aerotropolis
The “airport city” concept, or Aerotropolis, is the future of airport commercial development plans. Much like the relationship between an urban core and its suburbs, the Aerotropolis model illustrates how airports serve as a Central Business District–like hub for economic activity that then extends to surrounding areas.

Cargo/logistics
Airports that are located near major highways or rail corridors should take advantage of the role that these linkages provide in attracting cargo operators and distributors like FedEx, Amazon and UPS. For example, Oakland International Airport, which has a lower passenger share than nearby San Francisco International Airport (4.9 million enplanements in 2013 versus 22.4 million, respectively), enjoys a larger share of cargo shipping and services due primarily to its proximity to Interstate 5, and therefore, large portions of California’s population.

Public/private partnerships
Most airports cannot by law convey their properties on a fee simple basis. They must structure some form of public/private partnership. Public/private partnerships offer a balance of risk and reward to each party and encompass a variety of structures that can be utilized depending on the specific goals, objectives, and risk profile of a particular airport.

Bottom line
Airports will always be a key economic engine for the area in which they serve. Focusing on real estate planning and development increases airport revenue, which gives airports the ability to lower their costs of doing business. This increases competitiveness and generates economic benefits such as tax revenue, job creation, tourism and private capital inflows.

Globally, airport revenue profiles have shifted from primarily relying on airline revenues toward leveraging commercial real estate assets, with some airports seeing over 60 percent of their revenue derived from non-airline sources. This has come in the form of leveraging commercial land uses for logistics, hotels and other real estate facilities.

An experienced consultant such as JLL can help airport executives look at development options based on market and financial feasibility, as well as use location intelligence as part of an objective, holistic toolbox to quickly evaluate how their real estate assets would stack up as candidates for various forms of revenue enhancement.

Kurt Little and Brian Carroll lead the JLL Airport Consulting platform, based in Chicago, IL, which focuses on land utilization, development consulting and the landside revenue maximization of airport authorities.
Behind the curtain: inside the gates
Understanding cost comparisons and lease structures of airside leasing

by Tom Turley and Jordan Kissel

Varying approaches
There are two primary airside leasing structures: 1) direct to a tenant or 2) indirect to a developer, who in turn leases to a tenant. The direct lease structure is similar to a landside lease with a traditional landlord-tenant relationship. The indirect model typically has a longer term length to the developer, and is usually a ground lease where the developer often constructs improvements to the site, whether it is a hangar, office, shop, ramp/pavement, etc. Term lengths vary with ground leases, but they are generally 20-30 years.

Commercial airports often utilize a mix of the two leasing structures, such as LAX, whose portfolio is approximately 70-30: Seventy percent of its facilities are leased direct to tenants, while 30 percent consists of ground leases to developers. General aviation airports, conversely, favor ground leases.

Leasehold structures differ airport to airport in both scenarios, and most airports have unique rent and pricing-points for their airside land improvements. In the case of pavement, some airports even differentiate pricing for aviation-rated or non-aviation-rated pavement. Larger airports may assign various rental rates for different types of building improvements (hangar, shop, etc.) as well as ramp/pavement improvements, including the pavement in the building. So, a 50,000-square-foot hangar/shop building on 75,000 square feet of aviation-rated pavement could have a lease rate for the building and another lease rate for the pavement—total rent would be a combination of the two.

Leases types and uses
Each lease agreement is unique, and there are various types. The variance between rent structures may depend upon the tenant type (commercial versus a private individual), the location of the leasehold and the activity to take place on-site. All factors must be carefully weighed in order to protect an airport’s financial, development and regulatory needs.

Land leases
Land leases are among the most common types of airport leases. It is an agreement whereby the airport authority leases a parcel of land for a stated term and the tenant, or developer, is responsible for making on-site improvements.

Cargo/freight leases
Shipping companies, commercial airlines’ air freight divisions and third-party shipping/logistics companies are all typical tenants for cargo/freight leases. These leases include hangar and ramp space and may also include office/administrative space as well as shop/support space.

FBO leases
Fixed-Based Operators (FBOs) provide a variety of aviation services to the general public, including fuel sales, aircraft storage, car parking and other services. Most general aviation airports require an FBO to provide services that are defined by the airport. FBO’s have the right to sell retail fuel to their customers, which is often the main component of an FBO’s revenue model.

SASO leases
Specialized Aviation Service Operations (SASOs) are single-service providers. Examples include interior upgrades, avionics repair, flight kitchens, etc. but they are not allowed to sell retail fuel. They may operate under a lease agreement with the airport or as a subtenant of an FBO. A corporate jet fleet hangar may be under a SASO lease since its purpose is a commercial operation where in-house maintenance and fueling activity may be taking place, but fuel can only be sold to their customers.

MRO leases
MRO’s (Maintenance, Repair and Overhaul) specialize in repairing mechanical or electrical devices and they also provide scheduled and preventative maintenance. MROs are often affiliated to the plane manufacturer (similar to an auto dealership mechanic for specific automobile types) or a commercial airline. But there are also independent MRO’s who can provide services across multiple manufacturers and airlines.

Bottom line
In short, it is important for airports and airport tenants to understand the elements of different lease structures, the best balance of direct versus ground leases, and how these factors will help each entity achieve their respective objectives.

Tom Turley and Jordan Kissel are based in Los Angeles, CA, and many of their clients are airport operators or tenants. They are members of JLL’s Ports, Airports and Global Infrastructure group.
The PAGI score was created to provide a quick snapshot of U.S. airports from the vantage point of the real estate stakeholder – those who invest in, develop or occupy industrial properties in airport-centric locations.

We based the index on 13 measurable performance metrics divided into two major categories: air cargo operations and real estate market factors. The resulting index score is then a combination of the performance metrics and provides a subjective measure of an airport’s value to JLL’s clients and their customers.

The real estate metrics taken into consideration include the total amount of industrial real estate stock within three miles of airport boundaries, the total stock within the broader industrial market served by each airport, the vacancy rate of properties within the three-mile buffer, the amount of available square footage within the three-mile buffer, and the rent premium (or discount) for properties within the three-mile buffer compared to the broader market. For this segment of the score, Chicago O’Hare (ORD) scored the highest, followed by Dallas/Fort Worth International Airport (DFW) and Miami (MIA).

The air cargo operations metrics are designed to capture the health and growth of the airports as well as their functionality and connectivity. Our measures score the total volume of cargo traffic (measured in metric tons), short- and long-term growth in volume, flight operations capacity, runway length, the number of operational cargo airlines and the population reachable within one day’s drive from the airport. Memphis International (MEM) has the highest air cargo operations score in our study followed by Louisville International Airport (SDF) and MIA.

To produce our final airport index score, the two components are weighted and then combined. It is important to note that all individual components of index are scored by percentile; hence the scores are relative to the best and worst performing airports in the group. This year’s highest ranked airport is ORD with a score of 138, followed by MIA at 124 and LAX with a 112.
Select top U.S. airports and property market indicators

<table>
<thead>
<tr>
<th>Call sign</th>
<th>Cargo traffic, 2013 (metric tons)</th>
<th>Cargo volume, annual change</th>
<th>North American cargo market share, 2012</th>
<th>Passenger volume, 2013</th>
<th>Immediate market size (m.s.f.)</th>
<th>Population within 500 miles (millions)</th>
<th>Current vacancy</th>
<th>Absorption, 2013 (m.s.f.)</th>
<th>Average asking rents (NNN)</th>
<th>Comments</th>
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<tr>
<td>Memphis</td>
<td>MEM</td>
<td>4,138,644</td>
<td>3.0%</td>
<td>16.2%</td>
<td>4,598,186</td>
<td>46.5</td>
<td>86.7</td>
<td>18.0%</td>
<td>0.4</td>
<td>$2.20</td>
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<td></td>
<td></td>
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<td></td>
<td>The main FedEx global “SuperHub”; handles over 1,250 pure cargo flights per week</td>
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<tr>
<td>Anchorage</td>
<td>ANC</td>
<td>2,438,534</td>
<td>-1.9%</td>
<td>9.9%</td>
<td>4,959,344</td>
<td>3.8</td>
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<td></td>
<td>Major hub for FedEx and UPS; serves as customs processing and refueling center</td>
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<td>Louisville</td>
<td>SDF</td>
<td>2,216,079</td>
<td>2.2%</td>
<td>8.7%</td>
<td>3,404,080</td>
<td>30.4</td>
<td>117.4</td>
<td>9.2%</td>
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<td></td>
<td></td>
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<td></td>
<td>Worldwide air hub for UPS; also home to two airline maintenance complexes</td>
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<td>Los Angeles</td>
<td>LAX</td>
<td>1,926,050</td>
<td>-1.5%</td>
<td>7.2%</td>
<td>66,667,619</td>
<td>14.9</td>
<td>45.9</td>
<td>3.2%</td>
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<td>$10.45</td>
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<td></td>
<td></td>
<td>Major hub for United Airlines and American Airlines; focus city for Southwest and Virgin; also international gateway for Delta Airlines; 2 million square feet of cargo facilities</td>
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<td>Miami</td>
<td>MIA</td>
<td>1,864,269</td>
<td>1.5%</td>
<td>7.8%</td>
<td>20,201,503</td>
<td>60.7</td>
<td>20.4</td>
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<td>0.8</td>
<td>$6.74</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Largest gateway between U.S. and Latin America; handled most international cargo in the U.S. in 2012; dominant in flower and perishable food trade</td>
</tr>
<tr>
<td>Chicago O'Hare</td>
<td>ORD</td>
<td>1,434,377</td>
<td>-0.6%</td>
<td>5.1%</td>
<td>66,909,638</td>
<td>100.2</td>
<td>82.2</td>
<td>8.5%</td>
<td>2.9</td>
<td>$6.02</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Main hub for United Airlines; redevelopment of airfield will entail replacement of primary cargo hub</td>
</tr>
<tr>
<td>New York-Kennedy</td>
<td>JFK</td>
<td>1,288,582</td>
<td>0.6%</td>
<td>5.2%</td>
<td>50,423,765</td>
<td>9.8</td>
<td>90.7</td>
<td>6.5%</td>
<td>0.1</td>
<td>$12.54</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Base of operations for JetBlue Airways; international gateway hub for American Airlines and Delta Airlines; major cargo flows from UK and Northern Europe</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>IND</td>
<td>1,092,652</td>
<td>7.4%</td>
<td>5.2%</td>
<td>7,217,051</td>
<td>57.2</td>
<td>112.3</td>
<td>8.7%</td>
<td>0.4</td>
<td>$3.24</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Domestic hub for FedEx</td>
</tr>
<tr>
<td>Dallas-Fort Worth</td>
<td>DFW</td>
<td>652,303</td>
<td>-1.8%</td>
<td>2.4%</td>
<td>60,436,739</td>
<td>57.5</td>
<td>46.0</td>
<td>7.7%</td>
<td>3.7</td>
<td>$4.14</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Primary and largest hub for American Airlines and primary hub for American Eagle; Asia and Europe cargo account for 80 percent of cargo traffic</td>
</tr>
<tr>
<td>Newark-Liberty</td>
<td>EWR</td>
<td>650,541</td>
<td>-12.6%</td>
<td>3.0%</td>
<td>35,016,236</td>
<td>62.4</td>
<td>93.0</td>
<td>6.7%</td>
<td>0.0</td>
<td>$5.44</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FedEx’s third largest cargo hub with 2 million square feet in operations; regional hub for United Airlines</td>
</tr>
<tr>
<td>Atlanta</td>
<td>ATL</td>
<td>616,365</td>
<td>-5.9%</td>
<td>2.6%</td>
<td>94,431,224</td>
<td>41.6</td>
<td>79.6</td>
<td>13.2%</td>
<td>0.6</td>
<td>$2.91</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delta hub is the world’s largest airline hub; busiest passenger airport in the world; major international gateway</td>
</tr>
<tr>
<td>Oakland</td>
<td>OAK</td>
<td>504,019</td>
<td>0.9%</td>
<td>1.9%</td>
<td>9,742,887</td>
<td>35.0</td>
<td>40.4</td>
<td>5.7%</td>
<td>0.1</td>
<td>$5.65</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Major hub for FedEx and UPS, as well as Ameriflight; Terminal 1 is undergoing a $200 million expansion and renovation</td>
</tr>
</tbody>
</table>

Notes: Cargo volumes include mail - not included elsewhere in report. Real estate statistics based on properties within three-mile buffer from airport boundaries. Sources: Air cargo international, U.S. Bureau of Transportation Statistics, Individual airports, JLL Research
**Airports**

18.8 million
metric tons of air cargo shipped through airports in our study during 2013

11.2%
The average rent premium for airport-near industrial space compared to the overall market

**Biologics & e-commerce**
will increase air freight volumes

**Half**
of total costs for air cargo carriers is jet fuel

5.8%
is the 10-year average air cargo growth rate of those airports highlighted in our study
Summary

Capital investments
- Aeroterm recently broke ground on a 476,000-square-foot build-to-suit for DHL on land immediately adjacent to the tarmac on Upper Express Drive. The location will be a bonded container freight station and foreign trade zone, and is expected to be TAPA-A-certified. DHL also plans to establish the facility as a Life Science Cold Chain Certified Competency Center for shipping of pharmaceutical, biotech and medical devices that need to be in a temperature-controlled environment.
- Work commenced in October 2013 on the 12-year, $3.4 billion Elgin-O’Hare western access. The existing expressway segment of the route will be extended to the east, providing access to the west edge of the airport at a new interchange at York Road.

Carrier news
- As a result of the merger with US Air, American will divest two of the 69 gates it controls at ORD. This opening will allow additional penetration by low-cost airlines and other lines with a smaller presence in Chicago.

Market conditions
- Freight forwarders and 3PLs want access to the tarmac, while manufacturers are drawn to the area because of the strong workforce availability and public transit.
- Tenants are willing to pay a premium to be in close proximity to the airport; however, a pricing dichotomy exists between Cook County on the east side and DuPage County to the west.

Development
- Duke Realty’s 229,000-square-foot build-to-suit for Yusen Logistics was the largest delivery in 2013 in O’Hare.
- Bridge Development has been the most active speculative developer around O’Hare, completing a 124,000-square-foot facility by year-end 2013, while making progress toward a first quarter delivery of a 150,000-square-foot project.
- Much of the O’Hare product is functionally obsolete and less than ideal for modern distribution users. Developers, however, must be able to secure lease rates in line with their proforma in order to justify redevelopment.

Outlook
- Expect speculative development to dial back if leasing commitments are not secured at the right price on the area’s newest deliveries.
- Investors will continue to be drawn to the area as demand across a broad range of users—from cargo to manufacturers—are active around ORD.

Cargo vital facts
- Cargo volume (thru December 2013): 1,434,377 (metric tons)
- Annual cargo volume change: -0.6%
- North American market share (2012): 5.1%
- Passenger count (thru December 2013): 66,909,638
- Annual passenger volume change: 0.1%
- Number of runways | Length of longest: 8 | 13,000 feet
- Population within 500 miles: 82,200,000
- Hub operators: United Airlines, American Airlines
## O’Hare International Airport (ORD)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
<th>Annual change</th>
<th>Immediate market size</th>
<th>Vacancy rate</th>
<th>Availability rate</th>
<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,434,377</td>
<td>-0.6%</td>
<td>100.2 m.s.f.</td>
<td>8.5%</td>
<td>13.9%</td>
<td>2.9 m.s.f.</td>
<td>2.9%</td>
<td>$6.02</td>
<td>66.9 m</td>
</tr>
</tbody>
</table>

**Market Size and Key Figures**

- **Vacancy Rate**: 8.5%
- **Availability Rate**: 13.9%
- **Net Absorption Thru 4Q 13**: 2.9 m.s.f.
- **Absorption as % of Stock**: 2.9%
- **Average Asking Rents (NNN)**: $6.02
- **2013 Passenger Volume Thru December**: 1,434,377

**Notable Features**

- **Passenger Terminals & Concourse**
- **Elgin-O’Hare Expressway Future Extension**
- **New Terminal Growth Opportunity**
- **Runway Extension**
- **FedEx Building**
- **United Airlines Cargo**
- **Aeroterm LEED Certified 476,000 Square Foot Built-to-Suit for DHL Global Forwarding**
- **Proposed Perishable Cargo Center**
- **Customs and Border Patrol Field Office**
- **Fumigation Facility**
- **Southwest Cargo Facility**

**Highway Miles**

- **MKE**
- **IND**
- **DTW**
- **STL**
- **MSP**

- **0** 100 200 300 400 500 600 700 800
Summary

Capital investments
- MIA’s $6.4 billion Capital Improvement Program was completed in early 2013. The program includes the widening of Central Boulevard, new service roads, wider bridges and improved access to parking facilities as well as the construction of the 25th Street viaduct, which provides direct access between MIA’s cargo facilities and the nearby industrial submarket.
- Opened in 2007, the South Terminal added 1.7 million square feet to MIA. In addition, the North Terminal, which reached substantial completion in early 2013, added an additional 1.3 million square feet to the airport. The remaining work on the Baggage Handling System’s international-to-domestic transfer is slated for completion in early 2014.

Carrier news
- Some of the top commodities distributed to/from MIA are perishable products, hi-tech commodities, telecom equipment, textiles, pharmaceuticals and industrial machinery.
- In 2012, American Airlines, GOL and Swiss Air were some of the airlines that expanded their services at MIA.

Market conditions
- Airport West, the largest industrial submarket in Miami, contains over 34 million square feet of industrial space (buildings 30,000 square feet and greater). The cargo exit from MIA, i.e. NW 25th Street, is the prime industrial corridor and runs through the heart of this submarket.
- Proximity to both Port Miami and MIA, as well as continued growth of cargo volumes, are the major drivers of demand in Airport West.
- Because of Airport West’s ideal location, it is home to some of the top Fortune 500 companies such as DHL global logistics, FedEx and UPS. Additionally, freight forwarders, aviation services, food & beverage distributors and import/export companies comprise its major tenant industries.

Development
- There is approximately 918,000 square feet under construction in Airport West by Prologis, Flagler Development and Prudential Real Estate, with an additional 1.2 million square feet proposed over the next two to five years. The most notable is the South Florida Logistics Center, Flagler’s intermodal transfer hub which is directly adjacent to MIA, offering easy access for the movement of cargo.

Outlook
- Miami’s economy is expected to experience positive growth in 2014. With the residential housing boom will come a rise in demand for building supplies and consumer goods. As a result, MIA may see an increase in passenger and air cargo traffic. Finally, demand for Class A space in proximity to the airport will potentially drive up pricing.

Historical airport submarket conditions

Cargo volumes versus airport market occupancy

Airport vital facts

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo volume (thru December 2013)</td>
<td>1,864,269 (metric tons)</td>
</tr>
<tr>
<td>Annual cargo volume change</td>
<td>1.5%</td>
</tr>
<tr>
<td>North American market share (2012)</td>
<td>7.8%</td>
</tr>
<tr>
<td>Passenger count (thru December 2013)</td>
<td>20,201,503</td>
</tr>
<tr>
<td>Annual passenger volume change</td>
<td>4.3%</td>
</tr>
<tr>
<td>Largest cargo carriers by volume (2013)</td>
<td>UPS, Lan-Chile Airlines, American Airlines, Tradewinds Airlines, FedEx</td>
</tr>
<tr>
<td>Number of runways</td>
<td>Length of longest</td>
</tr>
<tr>
<td>Population within 500 miles</td>
<td>20,400,000</td>
</tr>
<tr>
<td>Hub operators</td>
<td>Centurion Air Cargo, American Airlines, FedEx, UPS</td>
</tr>
</tbody>
</table>
Summary

Capital investments
- Projected capital improvements and expenditures over the next five years total approximately $4 billion, including the completion of the Bradley West International Terminal Project, LAX Terminal 4 Connector, various improvements to LAX’s existing terminals, LAX Taxiway T Construction, LAX Midfield Satellite Concourse and runway safety area improvements.
- Phase I of the $1.9 billion New Tom Bradley International Terminal (TBIT) project was completed in September 2013, adding eight new gates and approximately 1.2 million square feet, doubling the size of the existing terminal to maintain LAX’s competitive edge as the premier U.S. international gateway.

Carrier news
- LAX ranked fourteenth in the world and fifth in the U.S. in air cargo tonnage processed in 2012. It also ranked as the sixth busiest commercial passenger airport in the world and third busiest in the U.S.
- The extensive air-cargo-handling network of LAX coupled with modern facilities that are convenient for shippers, forwarders and airlines are essential as many of the largest industrial companies headquartered in the state are located in the greater Los Angeles area.
- Top carriers in 2013 included FedEx (a 19.9 percent market share) followed by American Airlines.

Market conditions
- The industrial vacancy rate in the immediate area is 3.0 percent, 210 basis points lower than Los Angeles County’s average. The average asking rental rate is $10.45 per square foot—notably higher than the county’s $6.60. Class A rents in particular have realized measured gains as newer inventory continues to be highly in demand, based upon limited availability.
- Class B space is seeing sustained demand and has recorded rent gains because of the lack of alternatives.
- Tenant demand continues to be driven by logistics providers, consumer non-durables, and food and beverage requirements.

Development
- The nearest development site is located 11 miles from LAX at 19310 Pacific Gateway Drive in Torrance with 142,053 square feet of warehouse space.
- Top landlords in the immediate vicinity, a three-mile boundary around the airport, include: Penwood Real Estate Investment Management, Prologis and DCT Industrial Trust.

Outlook
- With ongoing infrastructure, central plant, mobility, and access improvements focused on sustainability and the long-term competitiveness of LAX, expect the airport to remain a premier cargo destination for decades to come.
### Los Angeles International Airport (LAX)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
<th>Annual change</th>
<th>Immediate market size</th>
<th>Vacancy rate</th>
<th>Availability rate</th>
<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,926,050</td>
<td>-1.5%</td>
<td>14.9 m.s.f.</td>
<td>3.0%</td>
<td>5.7%</td>
<td>0.1 m.s.f.</td>
<td>0.9%</td>
<td>$10.45</td>
<td>66.7 m</td>
</tr>
</tbody>
</table>

- **Tom Bradley International Terminal (TBIT) project**
- **FedEx cargo**
- **Korean Air Cargo & Japan Airlines cargo**
- **Polar Air cargo**
- **South Airfield improvement project**
- **Qantas Freight & NCA cargo**
- **Eva Airways Corporation**

**Highway miles**

- SD
- SF
- PHX

- **Terminals 1-8**
- **Century Cargo complex**
- **UPS Cargo**
- **American Airlines cargo**
- **United Airlines**
- **Delta Air Logistics**
- **Imperial Cargo complex**
- **South Cargo complex - East**
- **South Cargo complex - West**
Memphis International Airport (MEM)

Summary

Capital investments
- Memphis calls itself America’s “aerotropolis,” referring to a 2011 book of the same title, which argues that cities of the future will be increasingly built around airports. The greater market ranks high as a shipping destination due to its access via rail, runway, roads and the Mississippi River.
- The airport is ranked first in North America for total air cargo handled, and second in the world behind Hong Kong.
- MEM held the top global spot in cargo volumes from 2010-2011.
- The Memphis-Shelby County Airport Authority is in the process of purchasing select property contiguous to the airport that could be used for future taxiway and ramp expansion.

Carrier news
- Cargo volumes is the airport’s selling point, and much of this can be traced to FedEx’s SuperHub. MEM’s cargo traffic was up 22.0 percent from 10 years prior. Passenger counts, however, continue to falter, dropping 58.3 percent over the same time period.
- Delta shuttered its Memphis hub in 2013, citing fallen passenger demand and persistently high jet fuel prices, while other airlines have reduced flight schedules.

Market conditions
- As e-commerce sales volumes continue to grow, activity at FedEx’s SuperHub will only increase. The facility is a magnet and proximity near it is a competitive advantage for distributors and suppliers.
- Greater Memphis’ posted three million square feet of net absorption in 2013; the highest annual gain since 2007.

Development
- FedEx broke ground on a $25 million temperature-controlled cooling facility for sensitive and cold storage packages. Totaling 88,000 square feet, the rooms inside will have precise temperature and humidity controls for transporting medical products; completion is slated for autumn.
- Greater Memphis delivered 3.3 million square feet of industrial product in 2013; 1.2 million square feet was under construction by year-end. Build-to-suits were common, and developers are expected to pursue speculative groundbreakings in 2014.

Outlook
- Memphis offers access to five Class I railroads (220 trains travel through Memphis each day) and six rail yards with intermodal capabilities. With single system shipments to all 48 contiguous U.S. states, Alaska, Mexico and Canada, and large tracts of land available for development, Memphis has the potential to evolve into a primary logistics corridor.

Cargo vital facts
- Cargo volume (thru December 2013): 4,138,644 (metric tons)
- Annual cargo volume change: 3.0%
- North American market share (2012): 16.2%
- Passenger count (thru December 2013): 4,598,186
- Annual passenger volume change: -31.9%
- Number of runways | Length of longest: 4 | 11,120 feet
- Population within 500 miles: 86,700,000
- Hub operators: FedEx
**Memphis International Airport (MEM)**

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
<th>Annual change</th>
<th>Immediate market size</th>
<th>Vacancy rate</th>
<th>Availability rate</th>
<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,138,644</td>
<td>3.0%</td>
<td>46.5 m.s.f.</td>
<td>18.0%</td>
<td>25.5%</td>
<td>0.4 m.s.f.</td>
<td>0.8%</td>
<td>$2.20</td>
<td>4.6 m</td>
</tr>
</tbody>
</table>

### Major Tenants

- **FedEx aircraft maintenance**
- **FedEx Logistics & Network Service**
- **FedEx cargo sorting & aircraft terminals**
- **FedEx office complex**
- **FedEx warehouses**
- **FedEx USPS sort area**

###Playable Highlights

- **UPS Oakhaven Hub**
- **Tennessee Air National Guard**
- **Memphis International Airport Cargo Central**
- **Passenger Terminal C**
- **Passenger Terminal B**
- **USPS**
- **Passenger Terminal A**

---

**Highway miles**

- CH
- DET
- ATL

---

*Source: JLL United States | Airport Outlook | 2014*
Indianapolis International Airport (IND)

**Summary**

**Capital investments**
- Indianapolis International Airport introduced ParkIND Plus, one of the first frequent parker programs at any major airport. Benefits include free enrollment, convenient ticketless entry and exit from the Terminal Garage and Economy Lot, and the chance to earn free parking.
- There is a new service plaza open at the airport. The complex includes a Circle K convenience store and a 24-hour Shell fueling station.

**Carrier news**
- In early 2014, United Airlines added a direct IND to SFO route.
- American Airlines and U.S. Airways merged in late 2013, creating the world’s largest airline.
- Air Canada was named the best long-haul airline for 2014 by airlineratings.com.

**Market conditions**
- The overall vacancy rate in IND’s airport-centric industrial market was 8.7 percent at the end of 2013. This was 90 basis points lower than the rate for greater Indianapolis.
- While airport-near asking rents have been steadily declining over the past few quarters, they remain substantially higher than the macro market at a 10.2 percent premium.

**Development**
- FedEx’s second largest distribution hub is at IND, and they are constructing two more facilities, which will add more than 600,000 square feet near the airport between the two buildings.
- There is more than one million square feet of ongoing construction, and 1.6 million square feet of product has been delivered.

**Outlook**
- After being landlord-favorable for a few years, the market has started to become more tenant-favorable as seen by the decreasing rental rate. This trend is expected to continue in 2014.
- The continued recovery of the U.S. economy will see an increase in construction activity as businesses expand. Investors and developers will continue to acquire land for future construction and decrease the availability of large tracts, which are already scarce.

**Historical airport submarket conditions**

**Cargo volumes versus airport market occupancy**

**Airport vital facts**

- **Cargo volume (thru December 2013):** 1,092,652 (metric tons)
- **Annual cargo volume change:** 7.4%
- **North American market share (2012):** 4.0%
- **Passenger count (thru December 2013):** 7,217,051
- **Annual passenger volume change:** -1.6%
- **Largest cargo carriers by volume (2013):** FedEx, Delta Airlines, Southwest Airlines, United Airlines, US Airways
- **Number of runways | Length of longest:** 3 | 11,200 feet
- **Population within 500 miles:** 112,300,000
- **Hub operators:** FedEx, Republic Airways
Indianapolis International Airport (IND)

<table>
<thead>
<tr>
<th>Highway miles</th>
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</thead>
<tbody>
<tr>
<td>CRH</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

- **Rolls-Royce operations**
- **Aviation Technology Center (Purdue University and Vincennes University)**
- **Concourse B**
- **Long-term parking lot**
- **Economy parking lot**
- **New 770,000 s.f. speculative bulk/distribution building under construction**

### 2013 passenger volume thru December (metric tons)
- **1,092,652**

### 2013 volume thru December (metric tons)
- **1,092,652**

### Annual change
- **7.4%**

### Immediate market size
- **57.2 m.s.f.**

### Vacancy rate
- **8.7%**

### Availability rate
- **12.0%**

### Net absorption thru 4Q 13
- **0.4 m.s.f.**

### Absorption as % of stock
- **0.8%**

### Average asking rents (NNN)
- **$3.24**

### 2013 passenger volume thru December
- **7.2 m**
Dallas-Fort Worth International Airport (DFW)

Summary

Capital investments
- In January 2013, DFW celebrated its 40th anniversary. DFW now hosts 23 airlines, five terminals, and 155 gates.
- DFW is one of the physically largest airports in the U.S., covering 27 square miles, or 18,000 acres (12,000 acres for aviation and 6,000 acres for logistics-related commercial development).
- DFW is one of the busiest in the U.S. and it has the highest capacity of any airport in the country.
- The airport is in the midst of its $2.3 billion Terminal Renewal & Improvement Program to renovate the four oldest terminals, as well as upgrade runways (planned through 2017).
- Dallas’ DART rapid rail is expected to start operations to DFW in 2014.

Carrier news
- American Airlines is the dominant carrier that hubs at DFW and American’s largest hub.
- AA exited bankruptcy and closed their merger with US Airways; they will continue to operate as separate airlines.
- DFW expects service to China to begin in 2014.
- New carriers, Etihad Air and Qatar Air, plan to launch new flights to Abu Dhabi and Doha.
- DFW has added 10 new airlines and 20 international destinations in the past three years.
- The DFW – Central America connection is an important market.

Market conditions
- Strong demand for industrial, but essentially built-out, except for land controlled by DFW.
- Most industrial absorption of any submarket and tied for the highest rental rate in DFW at the end of 2013.
- Some deals being pushed to neighboring submarkets, like NW Dallas and nearby Coppell.

Development
- Select sales have taken place. Lone Star Funds bought a mixed portfolio from ORIX that included Parc 114, a 400,000-square-foot complex and Trader Joe’s bought a 729,000-square-foot building from Panattoni for $27.2 million ($35 per square foot). Amazon sold its BTS in Alliance, although the new DFW asset is still on the market.
- JLL completed a forecast study, covering 4,000 acres and 42 million square feet of commercial development.
- First ground leases are now expiring and few physical limitations on growth exist.

Cargo vital facts
- Cargo volume (thru December 2013): 652,303 (metric tons)
- Annual cargo volume change: -1.8%
- North American market share (2012): 2.4%
- Passenger count (thru December 2013): 60,436,739
- Annual passenger volume change: 3.2%
- Number of runways | Length of longest: 7 | 13,400 feet
- Population within 500 miles: 46,000,000
- Hub operators: American Airlines, Spirit
Summary

Capital investments
- Work continues on the SDF’s North Connector phase of its three-phase Crittenden Drive Relocation Project, allowing for the continued construction of Taxiway “A.” Deemed a crucial airfield improvement to allow the airport to handle newer, larger, long-range commercial aircraft, it is now 75.0 percent complete.
- When complete, Taxiway “A” will be almost two miles long and as wide as a 10-story building is high.
- The airport began construction on Taxiway “E” in 2013. This new route will conserve fuel, enhance airfield safety by virtually eliminating the need for aircraft to cross an active runway, add airfield capacity and improve air traffic control efficiencies. Completion is slated for 2014.

Carrier news
- SDF is home to UPS Airlines, one of the world’s foremost cargo carriers, and its global air hub, WorldPort; World Port is the largest fully automated package handling facility in the world, with 70 aircraft docks and 155 miles of conveyors. In a single day, it turns over 130 aircraft and processes an average of 1.6 million packages.
- SDF is the nation’s third busiest cargo airport, behind Memphis and Anchorage, respectively.

Market conditions
- The UPS WorldPort facility continues to drive distribution leasing activity around the airport, but greater Louisville has also benefitted from growing diversity amongst the industries looking to locate there.
- The Renaissance South Business Park (RSPB) – located two miles south of SDF – has attracted several notable companies including UPS and Ford Motor Company, as it is ideal for light manufacturing and warehousing/logistics operations with ties to the airport.

Development
- Agreements were entered to sell 112 acres for warehouse and distribution facilities at RSPB, while Ford Motor Company leased an additional 3.8 acres—expanding its vehicle convoy-and-staging lot to 18 acres, leaving more than 230 acres for development.
- Much of the newer, modern “big box” space in greater Louisville has pushed well south and west of the airport, where land is more readily available, in submarkets down the 65 corridor to Shepherdsville and to the east.

Outlook
- Nearly one-third of Louisville’s total industrial market is concentrated around SDF. Greater Louisville, as a whole, is an evolving (and young) logistics hub with available land to accommodate the market’s expanding footprint.
- Rents and per-square-foot values throughout the metro area stabilized in 2013, both are anticipated to post gains in 2014. Development activity will primarily stem from owner-built and build-to-suit construction.
Louisville International Airport (SDF)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
<th>Annual change</th>
<th>Immediate market size</th>
<th>Vacancy rate</th>
<th>Availability rate</th>
<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,216,079</td>
<td>2.2%</td>
<td>30.4 m.s.f.</td>
<td>9.2%</td>
<td>10.0%</td>
<td>0.2 m.s.f.</td>
<td>-0.8%</td>
<td>$3.41</td>
<td>3.4 m</td>
</tr>
</tbody>
</table>

The recently opened South Terminal has added 1.7 million square feet to MIA. In addition, the North Terminal, which completed renovations in 2013, has added an additional 1.3 million.

For more information, please contact:
200 East Pratt Street, Ste. 1250
Baltimore, MD 21202
tel +1 443 451 2600
Summary

Capital investments
- The Port Authority is finalizing the development of a trucking center that will enable vehicles to be staged off the roadway system while waiting for cargo pickup. This will speed up cargo operations and increase revenues; it will include concessions and restaurants, a fueling facility and layover space for approximately 50 tractor trailers.
- A new $32 million animal care facility in cargo Zone D will be able to handle over 70,000 animals per year.
- The Port Authority is planning a new air cargo handling facility in the near future.
- The $457 million redevelopment of Runway 4L-22R will complete in 2014.

Carrier news
- Freight volumes were flat through December 2013, down 0.1 percent, while mail volume increased 9.6 percent. This is attributed to a 0.5 percent decline in international freight while domestic volumes increased 1.5 percent.
- JFK airport is home to 18 cargo-only freight carriers. Evergreen Aviation Ground Logistics Enterprises, Inc. recently went out of business.

Market conditions
- In the surrounding industrial market high demand has decreased vacancy rates to 6.5 percent in the fourth quarter of 2013 from 7.5 percent in the fourth quarter of 2012. Average rental rates have steadily increased to $12.54 per square foot NNN in 2013.
- Currently JFK airport’s top trading partner in cargo exports is the United Kingdom with a 9.2 percent market share. China follows with an increasing 7.4 percent export market share, while Germany’s market share increased to 6.3 percent in 2013. JFK airport’s top importer by tonnage is China with an increasing 27.8 percent market share.

Development
- The Queens market can be characterized by a lack of inventory which holds true since the mid 2000s. Vacant land is scarce at best, small parcels for rent that supply parking to industrial buildings range between $3.00 and $5.00 per square foot net, for dirt or pavement. Assembling enough land to purchase for parking or a build-to-suit typically is not a cost effective scenario, nor is it readily available depending upon location and access to JFK.
- A speculative, Class A approximately 131,000 square foot warehouse building at 145-68 228th Street in Springfield Gardens was completed with occupancy in 2014.

Outlook
- The lack of available land near JFK has driven several big players in the airport and freight industry east into Nassau County by default, creating the JFK Nassau County submarket of today.
- Although 2013 proved to be flat, we expect a continued recovery in the industrial market over the next several years.
John F. Kennedy International Airport (JFK)

| Cargo Area B | Foreign-Trade Zone 111 | Cargo Area A | Port Authority administration building | Terminal 8 | Port Authority police station | Terminal 1 | Terminal 2 | Terminal 3 | Cargo Area D | Cargo Area C | 5.2-acre development site | New Truck service center | Terminal 7 | Terminal 6 | Terminal 5 | Terminal 4 |

Highway miles:
- PHI
- BOS
- DC

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
<th>Annual change</th>
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<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,228,582</td>
<td>0.6%</td>
<td>9.8 m.s.f.</td>
<td>6.5%</td>
<td>12.4%</td>
<td>0.1 m.s.f.</td>
<td>1.0%</td>
<td>$12.54</td>
<td>50.4 m</td>
</tr>
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</table>

2013 passenger volume thru December:

- 2013 volume thru December (metric tons)
- Annual change
- Immediate market size
- Vacancy rate
- Availability rate
- Net absorption thru 4Q 13
- Absorption as % of stock
- Average asking rents (NNN)
- 2013 passenger volume thru December

- Cargo Area B
- Foreign-Trade Zone 111
- Cargo Area A
- Port Authority administration building
- Terminal 8
- Port Authority police station
- Terminal 1
- Terminal 2
- Terminal 3
- Cargo Area D
- Cargo Area C
- 5.2-acre development site
- New Truck service center
- Terminal 7
- Terminal 6
- Terminal 5
- Terminal 4

- Highway miles:
  - PHI
  - BOS
  - DC

- 0 100 200 300 400 500
Capital investments
- Sluggish air cargo and passenger growth is stalling capital expenditures. As a workaround, airport officials are taking a “demand-dependent” approach, which will be over-hauled every five to seven years.
- Phase I will minimize new development and ensure current facilities are retrofitted to meet current FAA standards. The second phase, assuming airport demand grows, will optimize ANC’s existing runways and consolidate its terminals, while Phase III includes upgrades and funneling some cargo to the interior city of Fairbanks.
- The final and fourth phase calls for a new runway, but development is easily a decade away.

Carrier news
- FedEx and UPS operate major hubs for cargo heading to and from the Far East.
- ANC is less than 9.5 hours from 90.0 percent of the industrialized hemisphere. The airport is ranked second in North America by air cargo traffic, and fifth in the world (behind Hong Kong, Memphis, Shanghai and Incheon).
- More than any other airport in our survey, ANC is most directly impacted by seasonality and weather. This affects everything from flight schedules and service to field and equipment maintenance and stockpiling of supplies.

Market conditions
- Greater Anchorage's industrial base is the smallest of all markets highlighted in this report, with 11.6 million square feet. A third of the market's base is concentrated near the airport.
- Asking rents for airport-adjacent (and near) facilities have an 8.6 percent premium over the total market; the majority of tenant activity is relatively close to the airport, and not farther inland.
- Larger blocks of quality space are nominal for new tenants in the market, and there are no existing spaces available over 100,000 square feet.
- Three spaces in excess of 50,000 square feet were available during the fourth quarter of 2013.
- The average building size in the greater market is 29,000 square feet.

Development
- Annual rent growth will be close to zero for the greater Anchorage in 2014. This, paired with minimal leasing activity, does not support speculative development. New construction near the airport will be contingent on air cargo growth projections, and current forecasts call for flat growth.
- New construction in excess of 10,000 square feet is currently nonexistent in Anchorage.

Outlook
- There are numerous global logistics efficiencies inherent in an Anchorage location for manufacturers and 3PLs. Anchorage is a suitable location for central customer service and repair hubs and final product assembly, packaging, testing and distribution operations. Current market dynamics, however, call for flat growth.
### Ted Stevens International Airport (ANC)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
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<th>Immediate market size</th>
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<th>Availability rate</th>
<th>Net absorption thru 4Q 13</th>
<th>Absorption as % of stock</th>
<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
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</thead>
<tbody>
<tr>
<td>2,438,534</td>
<td>-1.9%</td>
<td>3.8 m.s.f.</td>
<td>3.2%</td>
<td>5.2%</td>
<td>0.0 m.s.f.</td>
<td>-0.1%</td>
<td>$11.30</td>
<td>5.0 m</td>
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</table>

- **Everts Air Cargo**
- **FedEx**
- **UPS Air Cargo**
- **FedEx Air Cargo**
- **USPS**
- **FAA Complex**
- **North Passenger Terminal**
- **South Passenger Terminal**
- **Whitney Foods**
- **Delta Air Cargo**

### Highway miles

<table>
<thead>
<tr>
<th>Highway miles</th>
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</thead>
<tbody>
<tr>
<td>Seward</td>
</tr>
<tr>
<td>Homer</td>
</tr>
<tr>
<td>Valdez</td>
</tr>
</tbody>
</table>

| 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 |

- **Ted Stevens International Airport (ANC)**
Newark Liberty International Airport (EWR)

Summary

Capital investments
- The Port Authority of New York and New Jersey has embarked on a $97.3 million rehabilitation program that aims to cut down on Newark Airport's delays and heavy congestion. The program, which is slated to begin in April, is focused on improving and refurbishing Runway 4L-22R. The airport's principal runway is at the end of its useful life and will be repaired, repaved and have new lighting systems installed. At 11,000 feet, it handles roughly half of all airplane movements at Newark Airport.
- Additionally, the rehabilitation program entails the construction of four new high-speed taxiways. Three of the new taxiways are designed to allow multiple planes to line up for departure at the north end of Runway 4L-22R, while the fourth new taxiway is designed to allow planes to exit the runway more efficiently.
- The aforementioned capital improvements are estimated to save approximately 30 seconds per flight, amounting to $9.4 million annually in cost savings, according to Port Authority projections.

Carrier news
- Kalitta Air, a military mail carrier, recently restructured and will no longer operate at Newark Airport. The carrier was responsible for nearly 3.0 percent of the airport's total cargo volume in 2012.

Market conditions
- Cargo volumes were flat year-over-year as of November 2013, negatively impacted by depressed export volumes with the United Kingdom and Germany, the two largest trade partners with EWR carriers. China, EWR's third-largest export trade partner, exhibited a 25.0 percent year-over-year decrease in export tonnage from 2011 to 2012. This is likely attributable to China's halted economy, which has consequently slowed demand for domestic goods.
- Buoyed by the improved local economy, EWR import volumes increased nearly 4.0 percent from 2012 to 2013 through November. Three of the four largest international trade partners reported double-digit gains in that time.

Development
- The pipeline for industrial development sites was robust in 2013 as Clarion Partners delivered a speculative project just south of EWR on Dowd Avenue, while four other projects were under construction nearby.

Outlook
- EWR's proximity to the heavily populated tri-state region and the Port of New York and New Jersey, the largest seaport on the East Coast, are the primary drivers of cargo volume.
- The local economy's positive outlook may help to accelerate cargo volume imports; however, the continued economic uncertainty of select EWR trade partners may temper short-term overall volume expectations.
- The Runway 4L-22R rehabilitation program may temporarily slow cargo inflows and outflows until its completion in Q1 2015. The other two runways, 4R-22L and 11-29, will remain operational while 4L-22R undergoes repairs.
### Newark Liberty International Airport (EWR)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
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<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>650,541</td>
<td>-12.6%</td>
<td>62.4 m.s.f.</td>
<td>6.7%</td>
<td>10.9%</td>
<td>0.0 m.s.f.</td>
<td>0.0%</td>
<td>$5.44</td>
<td>35.0 m</td>
</tr>
</tbody>
</table>

- **U.S. Customs and Border Protection**
- **Police station**
- **Air cargo facilities**
- **Terminal C**
- **Terminal B – International Arrivals**
- **Terminal A**
- **USPS**
- **UPS**
- **FedEx**
- **Multitenant air cargo facility**
- **Clarion Partners new construction – Dowd Avenue**

- **Air cargo facilities**
- **Wide-body hangar site**
- **Route 27 airport corridor**
- **Port Newark Container Terminal**
- **Foreign-Trade Zone 49**
- **Port Elizabeth Container Terminal**
- **Ikea development site**
- **Ikea development site**
- **Ikea development site**
- **Prologis development site – 700 Kapkowski Road**
- **Prologis development site – 0 North Avenue East**

### Newark Liberty International Airport (EWR) Key Statistics

- **2013 volume thru December (metric tons)**: 650,541
- **Annual change**: -12.6%
- **Immediate market size**: 62.4 m.s.f.
- **Vacancy rate**: 6.7%
- **Availability rate**: 10.9%
- **Net absorption thru 4Q 13**: 0.0 m.s.f.
- **Absorption as % of stock**: 0.0%
- **Average asking rents (NNN)**: $5.44
- **2013 passenger volume thru December**: 35.0 m
Hartsfield-Jackson Atlanta International Airport (ATL)

Summary

Capital investments
- ATL and USDA opened a new 16,000-square-foot facility, which will expedite import inspections safely and increase the volume of perishable cargo; over two million plants are imported per year.
- Central Passenger Terminal Complex improvements are geared toward passenger efficiency but also include the expansion of air cargo and aircraft maintenance facilities. Upgrades and renovations are now complete.
- Recently completed major projects include the fifth runway, the Consolidated Rental Car Agency Center (CONRAC), the ATL SkyTrain that connects CONRAC to the main terminal, expanded parking facilities and the Maynard H. Jackson Jr. International Terminal with access via new entrance off of Interstate 75.
- Structural improvements to accommodate oversized aircraft such as the double-deck, wide-body Airbus A380: This includes a 500-foot expansion of runway five to accommodate take-offs in hot temperatures.
- Another air cargo facility, adding 100,000 square feet to the current 1.3 million square feet of on-site warehouse space.

Carrier news
- Atlanta-based Delta Airlines is 2014’s Airline of the Year by Air Transport World magazine. The award includes excellence in leadership, innovation and strong financial discipline.
- Atlanta is one of three locations that Lufthansa Cargo will target for the introduction of its new Boeing 777 freighters. These new “Triple Sevens” are able to remain in the air for 10.5 hours with 103 tons of cargo.

Market conditions
- Amazon is locating to a 300,000-square-foot warehouse facility, which will house its high-demand products.
- Airport cargo volume is closely correlated with demand for space in nearby industrial assets. As cargo tonnage has fluctuated over recent quarters, absorption figures have also.
- Vacancy and availability both reached a low for the year, and even though net absorption was down in the fourth quarter from three months ago, it was positive, which differs from negative net absorption in 2012.

Development
- Majestic Realty announced plans to break ground on Majestic Airport Center III, a 560,000-square-foot speculative distribution center located four miles from Hartsfield-Jackson.

Outlook
- With Atlanta being ranked globally the most efficient airport since 2008 by the Air Transport Research Society, expect to see Atlanta airport operations sustain positive growth. Continual improvements by the City of Atlanta’s Department of Aviation bode well for the future. Both passenger and cargo traffic are expected to increase.

Cargo vital facts
- Cargo volume (thru December 2013): 616,365 (metric tons)
- Annual cargo volume change: -5.9%
- North American market share (2012): 2.6%
- Passenger count (thru December 2013): 94,431,224
- Annual passenger volume change: -1.1%
- Largest cargo carriers by volume (2013): Delta Air Lines, FedEx, UPS, Korean Air, Lufthansa, German Airlines, China Airlines
- Number of carriers: 5
- Hub operators: Delta Air Lines, UPS
### Hartsfield-Jackson Atlanta International Airport (ATL)

<table>
<thead>
<tr>
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<th>Average asking rents (NNN)</th>
<th>2013 passenger volume thru December</th>
</tr>
</thead>
<tbody>
<tr>
<td>616,365</td>
<td>-5.9%</td>
<td>41.6 m.s.f.</td>
<td>13.2%</td>
<td>17.0%</td>
<td>0.6 m.s.f.</td>
<td>1.4%</td>
<td>$2.91</td>
<td>94.4 m</td>
</tr>
</tbody>
</table>

- North cargo facility
- USDA perishable complex
- Aircraft maintenance facility
- North & South passenger terminals & Concourse T
- Food preparation & waste disposal operations
- Future passenger terminal or runway six
- Recently constructed runway five

**Highway miles**

- BHM
- CLT
- MIA

- 0 100 200 300 400 500 600 700 800

**North & South passenger terminals & Concourse T**

- Aircraft maintenance facility
- USDA perishable complex
- North cargo facility
- Food preparation & waste disposal operations
- Future passenger terminal or runway six
- Recently constructed runway five
**Oakland International Airport (OAK)**

### Summary

**Capital investments**
- The completion of Terminal 2 in 2008 added five new gates to the airport. The building was awarded LEED Silver Certification in 2010, the first passenger terminal in the United States to earn the certification. Terminal 1 is undergoing a $200 million renovation to be complete in 2015.
- Construction of the new air traffic control tower completed in November 2013. The LEED Gold tower replaced the north and south towers that were in operation for more than 40 years. Funding was provided by the American Recovery and Reinvestment Act of 2009.

**Carrier news**
- FedEx will begin using hydrogen fuel cell-powered tow tractors in 2014. The tractors will be retrofitted by Plug Power in New York, and will support OAK’s continued sustainability efforts. The hub operator also began work on a $30 million upgrade to its facilities.
- Several passenger carriers added new routes in 2013, including Allegiant and Hawaiian Airlines.

**Market conditions**
- Demand continues to outpace existing supply for warehouse/distribution space along the 880 corridor. The overall vacancy rate is approaching pre-recession levels last seen in 2006.
- The market surrounding the airport has one of the lowest vacancy rates within the entire East Bay industrial market, but much of the product is less than desirable for sophisticated distribution purposes.

**Development**
- Goodman-Birtcher is in the final stages of construction for their Oakland Airport Logistics Center, the first Class A distribution facility to enter the market in over a decade. The 375,000-square-foot property is expected to achieve LEED status, and should be completed by the end of the first quarter in 2014.
- Prologis and California Capital Group’s development plans for the conversion of the Oakland Army Base have been approved. When completed, the development will yield one million square feet of new warehousing space in addition to other port side improvements.
- The Oakland Airport Connector project is currently under way, linking the BART directly to the airport. The $484 million project will be completed by Fall 2014.

**Outlook**
- The Bay Area’s economy is expected to see continued strong growth through 2014, helping drive increased asking and contract rents for warehouse space as well as positive net absorption in the East Bay industrial market. OAK will benefit from increased inbound and outbound cargo volumes stemming from the growing retail distribution and e-commerce network that serves the greater Northern California region.

**Airport vital facts**
- **Cargo volume (thru December 2013):** 504,019 (metric tons)
- **Annual cargo volume change:** 0.9%
- **North American market share (2012):** 1.9%
- **Passenger count (thru December 2013):** 9,742,887
- **Annual passenger volume change:** -3.0%
- **Largest cargo carriers by volume (2013):** FedEx, UPS, Ameriflight, WestAir
- **Number of runways | Length of longest:** 4 | 10,000 feet (expandable to 11,600 feet)
- **Population within 500 miles:** 40,435,023
- **Hub operators:** FedEx
## Oakland International Airport (OAK)

<table>
<thead>
<tr>
<th>2013 volume thru December (metric tons)</th>
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</thead>
<tbody>
<tr>
<td>504,019</td>
<td>0.9%</td>
<td>35.0 m.s.f.</td>
<td>5.7%</td>
<td>7.0%</td>
<td>0.07 m.s.f.</td>
<td>0.2%</td>
<td>$5.65</td>
<td>9.7 m</td>
</tr>
</tbody>
</table>

- **North Field (general aviation)**
- **Maintenance hangar**
- **UPS cargo facility**
- **FedEx cargo facility**
- **Southwest cargo facility**
- **SART Airport Connector extension track (est. Fall 2014)**
- **New LEED control tower to replace north and south towers**
- **$300M terminal 2 expansion completed in 2008**
- **South Field (commercial and cargo uses)**

**Highway miles**
- SFO
- SJO
- LAX

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Since world trade is growing faster than demand for air freight, the industry is presently challenged. Its future, however, will come from the needs of an aging populace and e-commerce sales projections.
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