Confidential – Limited circulation

Detroit Region Aerotropolis Benchmarking Report

John D. Kasarda, Ph.D.
Director
john_kasarda@unc.edu

and

Stephen J. Appold
appold@unc.edu

Kenan Institute of Private Enterprise
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599-3440
U.S.A.

7 January 2008

Revised 15 February 2008

Proprietary and Confidential

Detroit Region Aerotropolis Benchmarking Report

III. The Detroit region compared to national standards and global best practices

III. A. Benchmarking of U.S./regional advantages/weaknesses

Regional Resources

Workforce skills base and availability
Geographic location
Available land for development
Foreign Trade Zone presence

Airport and Infrastructure Capacity

Airport infrastructure
Air cargo handling facilities
Surface infrastructure and inter-modal interfaces
Customs/regulatory preparedness
Freight forwarders and logistics service providers
Fuel costs
Airport passenger service

Air Transport Service

Regional passenger and cargo bases
Airline hub status and type of service
Air travel times and costs
Current excess cargo capacity at Willow Run Airport

Airport Performance in Regional Context

Airport Costs
Employment creation

III. B. Global best practice issues

Best international governance practice

Governance structures
Uniform permitting, zoning, code and other regulatory requirements

Best international finance practice

Financing of annual operating expenses
Financing of major infrastructure capital expenses
Financial and other incentives to attract customers
Incremental tax revenue sharing practices for local governmental units

Best international development practice

Technology and infrastructure platforms needed to make Detroit Region Aerotropolis world-class
Commitments to "green" building

Detroit Region Aerotropolis Benchmarking Report

The idea for a Detroit Region Aerotropolis originated when the Wayne County Airport Authority acquired 1,300 acres just south of Detroit Metro Wayne County Airport (DTW) for noise mitigation required by the construction of DTW's fifth runway. Plans were drawn up to use this as a contemporary image-building gateway to DTW signaling Detroit's emergence into the new 21st century economy. Designated as the Pinnacle AeroPark, its physical layout, green space, and commercial facilities were to provide an appealing and contemporary "front door" to the Detroit region for air travelers (see Exhibit 1.1). Shortly thereafter, 25,000 undeveloped acres were identified between DTW and Willow Run airports that could serve as the future commercial core of a greater Detroit Area Aerotropolis. The Pinnacle was viewed as the central business district of the broader Aerotropolis commercial core. Exhibit 1.2 illustrates the potential land use between and around the two airports.

The project was initially designed with the physical features, site amenities, and support services to attract and support clusters of research and high-tech firms, Class A office buildings, value-adding logistics and transformation centers as well as exhibition, education, and meeting facilities in an aesthetically pleasing and functionally integrated fashion. Amenities and support services proposed included, among others, luxury hotels, conference facilities, fitness centers, a championship golf course, jogging and biking trails, upscale shopping, restaurants, and a high-speed telecommunications infrastructure. Despite a strong start, the project became mired in property acquisition issues that stalled the project in court for several years. A significantly scaled down Pinnacle project has only recently been restarted.

In early 2006, the Detroit Region Aerotropolis vision was significantly reformed and expanded when the University of Michigan School of Architecture and Design along with participation from the MIT and Wharton design and business schools conducted a Detroit Region Aerotropolis Charrette, involving over 100 faculty and graduate students. Each team developed an urban design vision for the 25,000 undeveloped acres and its transportation network. Exhibits 1.3 to 1.6 are summary renderings of the outcome of the charette. Outcomes include recommendations for: (1) cross-jurisdictional planning with emphasis on green space/aesthetics and building standards, especially gateways and along major airport connecting roads, (2) clearly defined aerotropolis subareas for developing or redeveloping with a few early successes generated, (3) aviation-themed public art at gateways, (4) emphasis on cluster rather than strip commercial development along airport corridors, and (5) preservation or reclamation of green space. Where possible multi-use live/work environments were also recommended to foster sense of neighborhood or community with efficient public transit (including regional commuter rail) to add convenience and reduce road congestion, and define the aerotropolis core area.

In several ways, the Detroit Region Aerotropolis project is unprecedented. Its scale is large and it is one of the few planned airport-centered developments that is spread

over multiple parcels and multiple jurisdictions: two airports, two counties, at least seven municipalities, and countless stakeholders all have interests in the project.

While few Aerotropolis projects face coordination issues of this scale, not many other regions have hoped to gain as much either. The Detroit Region Aerotropolis has, from the beginning, been conceived of as a real estate development in support of thorough-going regional economic reform. The Detroit Region Aerotropolis is only the visible part of the renewal restoring the Detroit Region's competitiveness in the 21st century economy.

This report follows on the outcomes of the 2006 charette and subsequent work completed by Wayne County officials and stakeholders. It attempts to tackle a set of the questions that must be answered before development can proceed. The report has four main sections. First, we develop the value proposition for the Detroit Region Aerotropolis. In doing so, we identify the need and goals for the Aerotropolis, basing these in contemporary trends in the increasing use of air transport 1) for the supply and distribution of goods and 2) for business travel. The impact of such trends on the Detroit Region is discussed. The potential impact of the Detroit Region Aerotropolis on regional employment trends is identified. Subsequent sections provide commercial lessons learned from Aerotropolis experiences elsewhere, benchmark the region and Detroit Metro Wayne Airport against competitor regions, identify best practice in a number of important areas, and assess the viability of a Detroit Region Aerotropolis.

This report is comprised of original research and analysis based on systematic datasets compiled over time by the Bureau of Transportation Statistics, the U.S. Census, the Federal Aviation Administration, Airports Council international, and other sources and on the cumulative knowledge bank of the Kenan Institute at the University of North Carolina which has had extensive experience with Aerotropolis developments around the world over the past decade.

I. The Detroit Region Aerotropolis Value Proposition

The value of a Detroit Region Aerotropolis is based on contemporary business strategies and trends the movement of goods and personnel that are, in part, caused by improvements in air transportation and the consequent impact on the way firms compete. These can be summarized in four key terms: globalization (far-flung producers and consumers), speed (time-based competition), agility (customization), and connectivity (enterprise networks). This section of the report articulates the value proposition by discussing the need for the Detroit Region Aerotropolis, the growing importance of air transport in competitive success, the regional economic impact, and the role of the Aerotropolis.

The Need and Goals for the Detroit Region Aerotropolis

Simply put, the goals for the Detroit Region Aerotropolis are to leverage Metro and Willow Run airports to drive economic transformation throughout all parts of the Detroit region generating renewed competitive advantage, well-paying jobs, and greater prosperity for citizens at all rungs of the socioeconomic ladder. Doing so will require creating a positive social and architectural environment enhanced by sustainable urban design. The need for the Detroit Region Aerotropolis is rooted in both practical experience and regional economic development theory.

Exhibit 1.7 identifies the fundamental reciprocally causal relationship between regional employment and regional air service. Metropolitan regions with large employment bases, particularly those dependent upon long distance supply and distribution chains and those whose industries rely heavily on air travel, develop superior air service. At the same time, superior air service is a critical location factor for the growing number of industries that rely heavily on air transport and a contributing factor for many others – thereby attracting firms and contributing to their growth. Experience over the past several decades shows that employment growth causes air service to improve and improved air service causes employment to increase.

This reciprocal causal relationship can set off a virtuous cycle of growth. In fact, recent improvements in commercial air transportation, including more efficient aircraft, de-regulation, and industry restructuring, has done just that – setting off a virtuous cycle of economic growth in many regions. Some of these regions are reviewed below in the second section of the report.

Unfortunately, the same reciprocal causal relationship can set a vicious circle of decline in motion. A loss of employment brings about a decrease in air service as struggling regions no longer justify a full level of air service. Even below average employment growth can cause air service to fall behind relative to other cities, resulting in sub-optimal growth. As will be seen below, in the third section of the report, several Midwestern regions, former or still airline hubs, appear to be a downward spiral. The Detroit Region is not – but it is nearing a turning point.

What affects the direction of the spiral? Both regional employment and air service are affected by a range of systematic and idiosyncratic forces from interest rates to political events to the (mis)management of a single firm and beyond. Sometimes – possibly often – these other factors determine whether the reciprocal causal relationship becomes a vicious circle of decline or a virtuous cycle of prosperity. Many of these causal factors are beyond the control of any single actor or small group of stakeholders. Others are not. These are policy levers.

The planned development of an Aerotropolis is one such, potentially powerful, policy lever. This report provides an assessment of the economic benefits of a Detroit Region Aerotropolis. It benchmarks the Detroit Region against competitor regions and

against global best practices in Aerotropolis and Air Logistics Hub development.[1] The report provides the foundation for a strategic development plan to create a Detroit Region Aerotropolis.

The Detroit Region, despite its reputation to much of the American public, actually has a strong set of resources to offer the American and global economy. Our assessments, and those of complementary studies elsewhere, indicate that the Detroit Region has a transitioning economy that is holding its own in the face of a restructuring automobile industry but that it may need to add to its "export base" if it is to continue to survive and grow. The region has suffered from down-sizing that should help the automobile industry to be more competitive in the future but at a lower level of regional employment.

One way to steer the direction of the reciprocal employment-air service relationship is to foster an Aerotropolis. Real estate investments, no matter how ambitious, are not generally thought to be critical factors in regional economic development. Nevertheless, in some cases they are.

As will be discussed at various points throughout the report, the Amsterdam Zuidas development with its excellent airport and ground access (visited by a Wayne County delegation last spring), was a critical component of the Netherlands' concerted efforts to improve the competitiveness of the Amsterdam region. Amsterdam had been caught in a sluggish economy along with the rest of the Netherlands despite excellent human capital and air connectivity. Institutional issues improving the investment climate and freeing the labor market were addressed by a series of Dutch governments. Despite the competitive improvements, the Amsterdam region lacked the kind of facilities with good inter-regional air access that domestic and international firms needed. The region lost out on investment opportunities as a result.

Zuidas was created as a new multi-use urban center to capture the demand for Amsterdam facilities. Concurrently, office development on Schiphol Airport grounds is also providing a growing array of facilities while an aggressive building program in areas to the southeast of the airport facilitate the recruitment of freight forwarders who maximize cargo throughput. The axis formed by these facilities is now the strongest growth pole in the Netherlands. Without these facilities, businesses with a potential interest in a location near Schiphol or in Amsterdam might have otherwise passed over the region. Additional cases of focused real estate investment in support of regional economic development are provided below.

Real estate development near the airport won't change the trajectory of the Detroit Region economy by itself. The Zuidas and related properties in the Netherlands did not accomplish that either. A Detroit Region Aerotropolis can:

[1] Throughout this report, we will use the broader term, "Aerotropolis."

- provide the appropriate commercial space, residential opportunities, regional access, and air transport centrality that is needed by a growing number of firms in an expanding set of industries,
- thereby allowing the considerable regional assets to exercise their attraction on business location decisions, and
- concretely symbolize the Region's commitment to facing the challenges of the 21st century head on.

In what follows, we identify the trends towards greater air transport of goods and passengers. Supply chains have radically changed since Henry Ford built the immense River Rouge automobile plant. While goods may have once entered a production facility as raw materials and left as a totally finished complex product, today's production processes are often so fragmented that it is sometimes impossible to know where a product was produced and which firm produced it. The Detroit Region will be impacted by these trends whether it embraces them or not. Such changes in production processes require a new approach to regional economic development.

We will provide and discuss concrete examples of airport-centered development and the importance of these developments for their regions. Some of these surround major airline hubs, others not. We will also attempt to identify the factors responsible for their success or failure. There are, however, too few cases for the causes of apparent failure to be discussed with certainty. In some cases, the fundamental growth factors appear to be strong but the timing of development may be pre-mature. In other cases, the airports lack adequate surface transportation links and are still too far from the metropolitan labor force and centers of production. The attraction of airports is strong but the location of the labor shed is also important. In other cases, the region may not be sufficiently large to support a critical threshold of aviation-dependent business activity.

We begin the value proposition with a basic discussion of the competitive forces leading to the emergence of the Aerotropolis.

The Business Case for the Aerotropolis

In his influential book, *The World Is Flat: A Brief History of the Twenty-first Century,* Thomas Friedman makes it clear that an increasingly fast-paced, globally networked economy is changing the rules of business location. These rules are being altered by a catalytic convergence of digitalization, globalization, aviation, and time-based competition. Speed, agility, and connectivity have become the mantra of many of the world's most successful firms.

The combined importance of these factors is creating a new economic geography with major commercial airports driving and shaping business location and urban development in the 21st century as much as highways did the 20th century, railroads in the 19th and river and seaports in the 18th. Today, these airports and their surrounding areas have become key nodes and magnets for time-critical manufacturing, distribution,

entertainment, tourism and corporate enterprises that require speedy connectivity to distant suppliers, customers, clients and partners nationally and globally. Aviation networks operate as the new physical Internet connecting supply chains, business people, and tourists among others quickly and efficiently across distant airport nodes. As a result, airport development, business development and regional economic development are going hand-in-hand throughout the U.S. and around the world.

Driving much of this development process is the growing importance of fast-cycle logistics, especially that which utilizes air express and more traditional air cargo. In fact, the 21st century is becoming the "Fast Century". Customers in both U.S. and international markets are demanding speedy and reliable delivery of products, often with distinctive features. An industrial advantage is thus being gained by firms that respond flexibly and rapidly to their domestic and global customers, delivering lower cost, higher-quality (often customized) products quickly and efficiently over great distances.

For example, high-tech manufacturers must be able to access national and global networks of suppliers of materials, components and sub-assemblies in order to obtain the best-quality components at the lowest possible price. Likewise, contract drug and medical testing often requires 24-hour turnaround from source to test site and often back to source, the latter usually done electronically.

At the same time, increased flows of information worldwide are leading to rapid changes in customer demands. Companies that can detect these changes, design and produce the desired products and services, and deliver them more quickly than their competitors will capture market share. Since speed also reduces warehousing and inventory costs, stock-outs and remaindered goods, the speed advantage becomes a cost advantage as well.

Fast-cycle logistics as new competitive tool is being further validated by marketing research which shows that, worldwide, consumer tastes and product demands are changing much more swiftly today than was the case in prior decades. Indications are that such shifts will accelerate even faster in the decades ahead, resulting in situations where products that are "hot" one month may become obsolete just a few months later. Such is already happening in the fashion clothing industry and with digitized devices like iPhones where delivery time to the retail shelf (or now directly to the customer) frequently separates market winners from losers.

The implications of these trends for fast-cycle logistics strategies are already evident. Adapting to growing market demands for flexibility and speed, companies such as Boeing, Dell, Honda, Medtronics, Nokia, and Siemens are reengineering their sourcing and distribution systems to become much more agile and customer responsive. They now compete not only on price and quality but also on the basis of speedy, reliable delivery, and after-sales support (including repair and return) of their products. They manage complex networks that encompass the entire value chain of suppliers, distributors, and customers often across national borders.

Mandating such changes are rapid and relentless worldwide technological, political, and economic transformations. Modern transportation, telecommunications, and goods-producing technologies have spread throughout the globe. Trade policies are being liberalized and new markets opened. Communist/socialist and former socialist countries such as China, Russia, Poland, and Vietnam have entered the capitalist marketplace with vigor. Huge wage differences between advanced industrial and developing countries have resulted in much wider geographic dispersion of component manufacturing sites, places of assembly, and of final sale. With rising workforce skills in developing nations and rapid cross-border technology transfer, countries such as Brazil, China, India, Malaysia and Poland have achieved much greater levels of economic output and now produce highly sophisticated products.

International customers have also become far more sophisticated and demanding. They have available an unparalleled variety of products from all over the world. They are able to assess and identify value, and are therefore highly selective in purchasing. They expect quality, competitive pricing, and reliable delivery. They also want customization of the products they buy, and they want these customized products right away, not in two to six months. For many purchases, not even two to six weeks is fast enough.

E-Commerce and Order Fulfillment

The rise of e-commerce further heightened time-based competition and the importance of airports. As late as 1995, sales through the Internet were essentially zero. By 1999, U.S. Internet-based business-to-consumer (B2C) sales alone had grown to nearly $7 billion, skyrocketing to over $93 billion in 2005, a more than threefold increase over 2000 compared to a 25 percent increase in total U.S. retail sales.[2] According to Forrester Research, 166 million packages were shipped in 1999 by Internet retailers (e-tailers), with approximately 70 percent going by expedited delivery. By 2003, e-tailers were shipping 1.1 billion packages annually. This had grown to nearly 2 billion packages in 2006.

These statistics reflect the growth on on-line sales. On-line retail sales in the U.S. alone were $172 billion in 2005 and are expected to grow to $329 billion in 2010, according to Forrester Research. Many of the products that Forrester sees as growing in popularity are likely shipped by air such as health products and consumer electronics. Even the U.S. Postal Service is benefitting from the boom in B2C shipments. With email and on-line bill-paying cutting significantly into revenues, e-commerce fulfillment has helped the Postal Service achieve five straight years of strong profits between 2003 and 2007, along with a rapid growth in USPS subcontracting to air express and air cargo carriers.

Despite the death of thousands of "dot-coms" between 2001 and 2004, it is near consensus among economic and business forecasters that e-commerce will flourish in the future. Most of this explosive growth is expected to be business-to-business (B2B),

[2] U.S. Census *E-stats*, May 2007; Table 7.

supply-chain transactions where materials and components will be ordered through the Internet and quickly shipped to next-stage producers. Manufacturers already are able to electronically access an international network of suppliers in order to acquire the best-quality materials and parts at the lowest possible price. The introduction of e-marketplaces (auctions, aggregators, bid systems, and exchanges) is greatly expanding B2B e-commerce: Forrester Research estimates that e-marketplaces currently account for up to two-thirds of B2B supply-chain transactions, depending on the industry, capturing 42 percent of online industrial trade and an average 28 percent of all business-to-business trade. Many suggest that with the wide-spread introduction of Enterprise Resource Planning (ERP), these e-commerce figures will go much higher in the near future. According to e-markets, B2B e-commerce which stood at $551 billion in 2003 expected to reach $1.3 trillion in 2008.

The expansion of the B2B e-commerce and direct-to-customer Internet orders has placed a particular premium on speed and reliability in the delivery process. To meet these new imperatives in order fulfillment, e-commerce distribution centers are being built near air express hubs that have speedy, reliable shipping networks. Air express hubs actually extend the business day for e-commerce and other forms fulfillment by allowing shippers to take orders for expedited national or global delivery as late as 11:00PM. Dozens of such e-retailers have located their fulfillment centers near Memphis International Airport to leverage FedEx's world-wide air express services. The same trend holds for Louisville International Airport and Indianapolis, where numerous companies have also sited e-commerce and other fulfillment centers near these air express hubs.

Complementing airport-linked fulfillment centers are flow-through facilities for perishables (either in the physical or economic sense), just-in-time supply-chain and emergency parts provision centers, and reverse logistics facilities for the repair and upgrade of high-tech products such as notebook computers and mobile phones. The clustering of such time-critical goods facilities near air-express airports is stimulating further expansion of air cargo, less-than-load (LTL) trucking, freight forwarders, and third party logistics providers (3PLs) along major highways with quick accessibility to these airports.

Speedy, reliable delivery of products over long distances has become so critical to the new economy that air commerce is quickly becoming its logistical backbone. According to The International Air Cargo Association, forty percent of the value of world trade now goes by air, and the percentage is steadily rising. Air logistics, which includes air cargo, air express, and their supporting logistics services represented a $250 billion industry in 2006. It is expected to nearly triple by 2025, while international air-express shipments are expected to increase at least four-fold during this period.[3]

Already, air cargo and air express are the preferred modes of international shipping of higher value to weight B2B transactions in microelectronics, medical instruments, mobile telephones, high-end fashion clothing, pharmaceuticals, optics and

[3] (Boeing Company, 2006)

small precision manufacturing equipment, as well as many perishables such as seafood and fresh cut flowers. (See the global supply-chain model of Dell Computer's Texas facilities in Exhibit 1.8.) Even lower value to weight B2B product distribution including fashion apparel and seasonal toys are becoming time-sensitive and increasingly shipped by air.

The growing importance of air commerce to the U.S. economy is illustrated in Exhibit 1.9. It shows that by 2005, the value of U.S. exports by air substantially exceeded the value of exports by vessel. When detailed industry groups were broken out, new economy sectors such as microelectronics, pharmaceuticals, and medical devices had more than 80 percent transported globally by air. Such industries, as will be described later, are increasingly gravitating to major airport areas.

The Importance of Air Passenger Service

It's not just impatient boxes that cluster around airports. As the world's service economy also shifts into fast-forward, these airports are becoming magnets for regional corporate headquarters, trade representative offices, and professional associations that require executives and staff to undertake frequent long-distance travel. Airport access is likewise a powerful attraction to information-intensive industries such as consulting, advertising, legal, medical, and financial services, data processing, accounting and auditing, which often send out professionals to distant customers' sites or bring in their clients by air. This has been particularly the case at larger commercial airline hubs which offer greater choice of flights and destinations, more frequent service, and more flexibility in rescheduling.

With the shortest time between two distant locations being a non-stop flight, the accessibility of commercial air passenger hubs has become essential to attracting business meetings and conventions, trade shows, exhibitions and merchandise marts. Such long-distance accessibility has made them attractive locations for large venue tourism and entertainment venues (e.g., theme parks, Formula 1 race tracks, etc.).

High-tech professional workers and airports also increasingly reinforce each other. With intellectual capital supplanting physical capital as the primary factor in 21st century wealth creation, time has taken on heightened importance for today's knowledge workers as has the mobility of these workers over long distances. Research in the U.S. has shown that high-tech professionals travel by air 400 percent more frequently than other professionals, giving rise to the term "nerd birds" for aircraft connecting techie capitals such as Austin, Boston, Raleigh-Durham and San Jose.[4]

Some observers have suggested that advances in Internet access, videoconferencing, and other distributed communications technologies will diminish the need for air travel. The evidence indicates that telecommunications advances often promote additional air travel by substantially expanding long-distance business and personal networking that lead to future face-to-face meetings. (See *Business Week*,

[4] (Erie, Kasarda, McKenzie, and Molloy, 1999)

August 20–27, 2007 cover story "The Future of Work" for illustration of this.) In point of fact, every significant advance in telecommunications technology has led to greater travel beginning with Alexander Graham Bell's first words over his newly minted telephone: "Watson, come here, I need you."

Others have suggested that prolonged global economic downturns exacerbated by catastrophic events such as 9/11 and the constant threat of terrorism, along with contagious disease outbreaks such as SARS will permanently diminish air commerce, in general, and passenger travel, in particular. This does not seem likely since the business imperatives giving rise to the growth of air commerce and business travel (speed, mobility and global access) are increasing in importance. From 2004 to 2006, air cargo and air passenger travel rebounded strongly from their 2001 to 2003 cyclical dips and, as will be noted in a moment, are forecasted to grow substantially in the decades ahead.

There are also those that contend that rising jet fuel prices or greenhouse gases will limit future growth in commercial aviation and, hence, airport-linked development. This has not happened thus far and is unlikely to slow forecasted aviation growth. Moreover, significant advances are in the works on more fuel efficient jet engines which reduce emissions while aircraft manufacturers, airlines, and airports have commence all-out efforts to reduce aviation's carbon footprint.

The current 4.1 billion passengers traveling annually world-wide are thus conservatively forecasted to grow to over 8 billion within 15 years, with air cargo projected to grow at even faster, nearly tripling in this time period. In the U.S., the FAA forecasts that over 1 billion passengers will board commercial aircraft annually by 2015 (compared to approximately half that in 2006). With likely growth of air taxis and very light jets, there is strong reason to believe that the 21st century will indeed become known not just as the Fast Century but also as the Aviation Century. The FAA estimates that in the next dozen years, general aviation will rise substantially.

A Quick Overview of Economic Impact and Job Creation at and Around Airports

Nowhere is the impact of airports becoming greater than the centerpiece of the new economy—high-tech. With this sector's supply-chains and employees increasingly geared to speed, connectivity, mobility, and global access, extensive air service has become essential to the location of many information and communications technology (ICT) firms and other high-tech facilities. Clusters of ICT and high-tech companies are therefore locating along major airport corridors, such as those along the Washington, D.C. Dulles Airport access corridor in Northern Virginia and the expressways leading into and out of Chicago's O'Hare International Airport. Dulles's and O'Hare's experiences are being replicated across the U.S., and throughout the world with centrality in aviation networks (i.e., serving as a major hub) becoming a primary predictor of an area's high-tech job growth.

Regarding overall economic development, numerous studies from the U.S. and around the world document the remarkable impact of larger airports on urban economies. To note just a sample, some of which will be elaborated later:

- Los Angeles International Airport (LAX) is responsible for over 400,000 jobs in the five-country Los Angeles region; 80 percent of which are in LA County, where one in 20 jobs was found to be tied to LAX. The airport generates $61 billion in regional economic activity, which translates to $7 million per hour. A recently (August 2007) conducted study on the economic impact of overseas flights alone on LAX revealed that such flights add $82.1 billion annually to LA firms and account for 363,700 jobs in the LA area.
- Dallas-Ft. Worth International Airport has become the primary driver of Metroplex's fast-growing economy. Major commercial development has occurred around the airport's peripheries and outward. For example, the number of companies located within the dynamic Las Colinas area, just to the east of the airport, has expanded to more than 2,000 and includes Abbott Laboratories, AT&T, Exxon-Mobil, GTE, Hewlett-Packard, and Microsoft.
- Memphis International Airport (world headquarters of FedEx) is responsible for over 160,000 jobs in the metropolitan area. One of four jobs in the Region is tied to the airport, which has an annual economic impact of $22 billion. Air cargo and air express operations account for 95 percent of the airport's economic impact and regional job generation.
- In the 26-mile commercial corridor linking Washington, D.C.'s two major airports—Reagan National and Dulles International—employment grew from 50,000 in 1970 to nearly 1 million by 2006. Among the companies located along the airport corridor near Dulles are America Online, Computer Associates, Nextel Communications, Cisco Systems, and EDS. So substantial has development been around the airport that the metropolitan Washington Airport Authority recently purchased 400 acres outside the fence but adjacent to its 400 acre air cargo complex for joint development with a private master developer.
- Ontario California International Airport, which is the west coast regional air express hub for UPS, with a strong FedEx presence as well, has been the engine of major growth in Southern California's Inland Empire. Over 10 million square feet of logistics and distribution space have been added annually around the airport and along nearby I-10 and I-15 Interstates. Now class A office clusters and tourist attractions are following.
- Indianapolis International Airport is FedEx's second largest hub. The hub has had a growing impact on the Indianapolis Region. So successful has this hub been that in early 2006 FedEx announced a $214 million expansion of its operations there which will add over 600,000 square feet to its existing 1.9 million square foot facility. When finished in 2008, FedEx will be employing nearly 5,000 workers in Indianapolis, up from just 368 employees when the hub opened in 1998.
- In the Philippines, Subic Bay Freeport is rapidly expanding around a former U.S. naval air base that was converted to commercial use in 1993. Since FedEx located its Asia/Pacific regional hub at Subic Bay in 1995, over 200 firms—

employing 54,000 workers—have located there, generating almost $2.5 billion in investment. Between 1995 and 2005 the annual value of exports from Subic Bay jumped from $24 million to $1.3 billion. Acer has opened its largest personal computer assembly facility in the world at Subic Bay; the facility relies heavily on air freight for its supply-chain management. Nearer to Manila, the former U.S. Clark Air Base is attracting tens of thousands of information and communications technology and other high-tech manufacturing jobs, as UPS is growing its Southeast Asia regional air express hub there.

- In Penang, Malaysia air cargo has created a "Silicon Island" contributing immensely to job creation near the airport. Dell Inc. manufactures 100 percent of its laptops in Malaysia. The company relies heavily on air express in its Malaysian facility sourcing and exports, having over 2,000 employees alone there, with $5 billion in its sales originating from Penang. Its firm clustering impact has also been huge as 70 Dell suppliers have either manufacturing centers or distribution centers at Penang, providing parts and components.
- Viracopos Airport in Campinas, Brazil, is a major regional air express hub with a substantial FedEx presence; 10 percent of all Brazilian air imports arrive though air cargo facilities there. Viracopos has greatly contributed to Campinas becoming the second fastest growing high-tech area in all of Latin and South America, with investments in microelectronics and information and communications technology (ICT) totaling $7 billion in the past 10 years. Fifty Fortune 500 companies have located high-tech manufacturing facilities in Campinas, including IBM, Motorola, Lucent/Alcatel, Samsung, and Texas Instruments making it the Silicon Valley of South America.

The impact of airport-induced job growth on land use in the vicinity of airports is likewise substantial. Recent research at UNC's Kenan Institute of employment growth in the suburban rings of U.S. metropolitan areas showed that areas within six miles of airports are adding jobs much faster than the overall job-growth rate of the suburban ring within which the airport was located. While most of the employment is concentrated near the airport or along major connecting highways within 15 to 20 minutes of the airport, research at Massachusetts Institute of Technology's International Center for Air Transportation documents that impacts occur up to 60 miles from airports with air connections significantly facilitating a region's access to suppliers, markets, ideas and capital.[5]

The Rise of the Aerotropolis

Emerging corridors, clusters, and spines of aviation-linked businesses are giving rise to a new urban form—the Aerotropolis—an airport-integrated region. The airport functions as a multi-modal transportation hub and commercial nexus of this diffuse urban region, analogous to the function central business districts (CBDs) play in the traditional metropolis (see Exhibit 1.10 for a generic illustration). Indeed, under the rubric of Airport Cities, some of these airports have assumed the very same roles of metropolitan

[5] (EconSouth, 2003)

CBDs by becoming regional intermodal surface transportation nodes and significant employment, shopping, meeting and entertainment destinations in their own right.

Reflecting the new economy's demands for connectivity, speed and reliability, the Aerotropolis is optimized by corridor and cluster development, wide lanes, and fast movements.

Although most aerotropolises have so far evolved largely spontaneously—with insufficient transportation infrastructure or previous nearby development often creating arterial bottlenecks—in the future many will be improved through strategic infrastructure planning. For example, at full future development, (as illustrated in the exhibit), dedicated expressway links (aerolanes) and commuter rail (aerotrains) will efficiently connect airports to nearby and more distant business and residential clusters. Special truck-only lanes should be added to airport air cargo areas, airport expressways and nearby interstate highways, as should be improved highway interchanges to reduce congestion. Seamlessly connected multi-modal infrastructure will accelerate transfers of goods and people, improving transport system effectiveness and further influencing land values, business development, and resulting urban form.

Community and neighborhood mixed use residential clusters following new urbanism will evolve within the greater aerotropolis. They will be built to enhance social interaction and provide a sense of human scale in the larger airport-linked urban complex.

The metric for determining future land value and particular business locations will be time-cost access to the airport and the airport's connectivity to distant markets. Over time, firms of various types will bid against each other for airport accessibility predicated on the utility each gives to the related combination of time and cost of moving people and products to and from the airport and the extensiveness of the airport's flight networks to national and global markets. Land values, lease rates, and commercial use will no longer be measured by traditional bid-rent functions that decline linearly with spatial distance from the primary node (here, the airport) but by the time and cost of moving goods and people to and from the airport from alternative sites via connecting highway and high-speed rail arteries.

To many, this new land use and structure may appear simply as additional sprawl along main airport transportation corridors. Yet, the aerotropolis is actually a highly reticulated system based on time-cost access gradients radiating outward from the airport. In short, the three "A's" (accessibility, accessibility, accessibility) will replace the three "L's" (location, location, location) as the most important industrial and business location organizing principles. Of course, accessibility and location are closely related with optimal business location determined by frequency of use of the airport.

Airport-linked commercial clusters and spines are already taking on distinct spatial form around major international gateway airports such as Chicago O'Hare, Dallas-Ft. Worth, Miami, New York Kennedy, Washington-Dulles, Hong Kong International, Korea's Incheon, London Heathrow, Paris Charles de Gaulle, Amsterdam Schiphol, and

Dubai International. In the United States, even small and mid-size airports—such as Alliance Airport, near Ft. Worth, Texas (FedEx), and Ontario, California Airport (UPS)—are generating mini-aerotropolises in the form of airport-linked business cluster and spine development. For example, Alliance Airport alone has attracted over $4 billion in commercial investments since 1994 to its 16,000-acre development area. Similar development is beginning at Hahn Industrial Airport about 100 miles west of Frankfurt, Germany. Both will be elaborated later in this report.

Those in the air express and air cargo industry know that the battle for air freight is won on the ground—not the air—with good highway connections key. This is why most of the leading air express and air cargo airports also have excellent expressway links and on-site or nearby truck cross-docking facilities. These highway/air cargo synergies are often reinforced by excellent nearby intermodal rail facilities and sometimes by good waterborne movements, making a handful of airport regions like Hong Kong, Korea's Inchon, and Memphis quadramodal (air, highway, rail, and water transit). In the following case summaries we briefly describe the multi-modal air logistics/Aerotropolis synergies utilizing specific cases of airport-driven development in the U.S., Asia, Europe and the Middle-East.

Exhibit 1.1
AERIAL VIEW OF THE PINNACLE AEROPARK

Exhibit 1.2
DETROIT REGION AEROTROPOLIS CONCEPTUAL MODEL

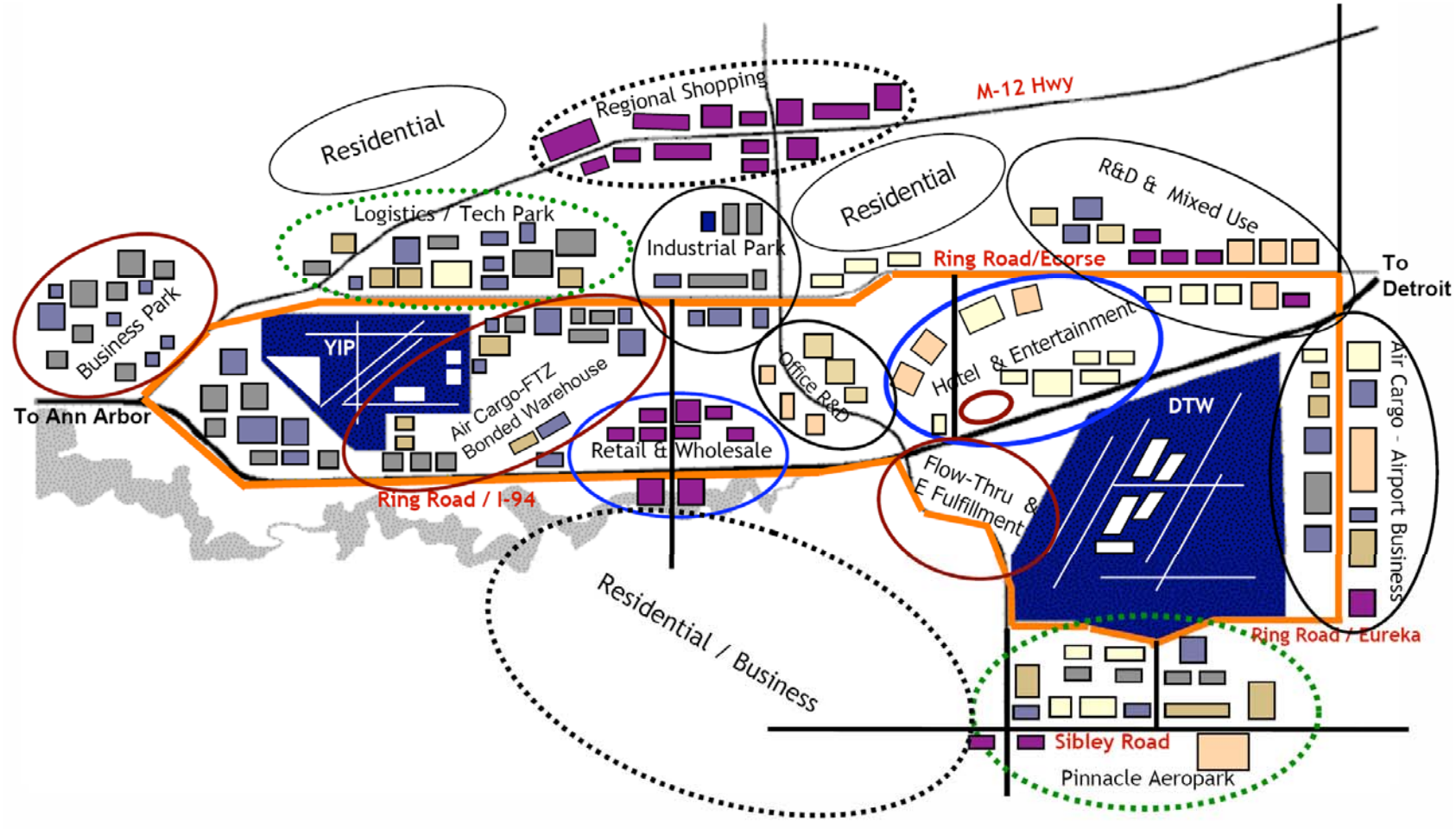


Exhibit 1.3
2006 AEROTROPOLIS CHARRETTE VISIONS

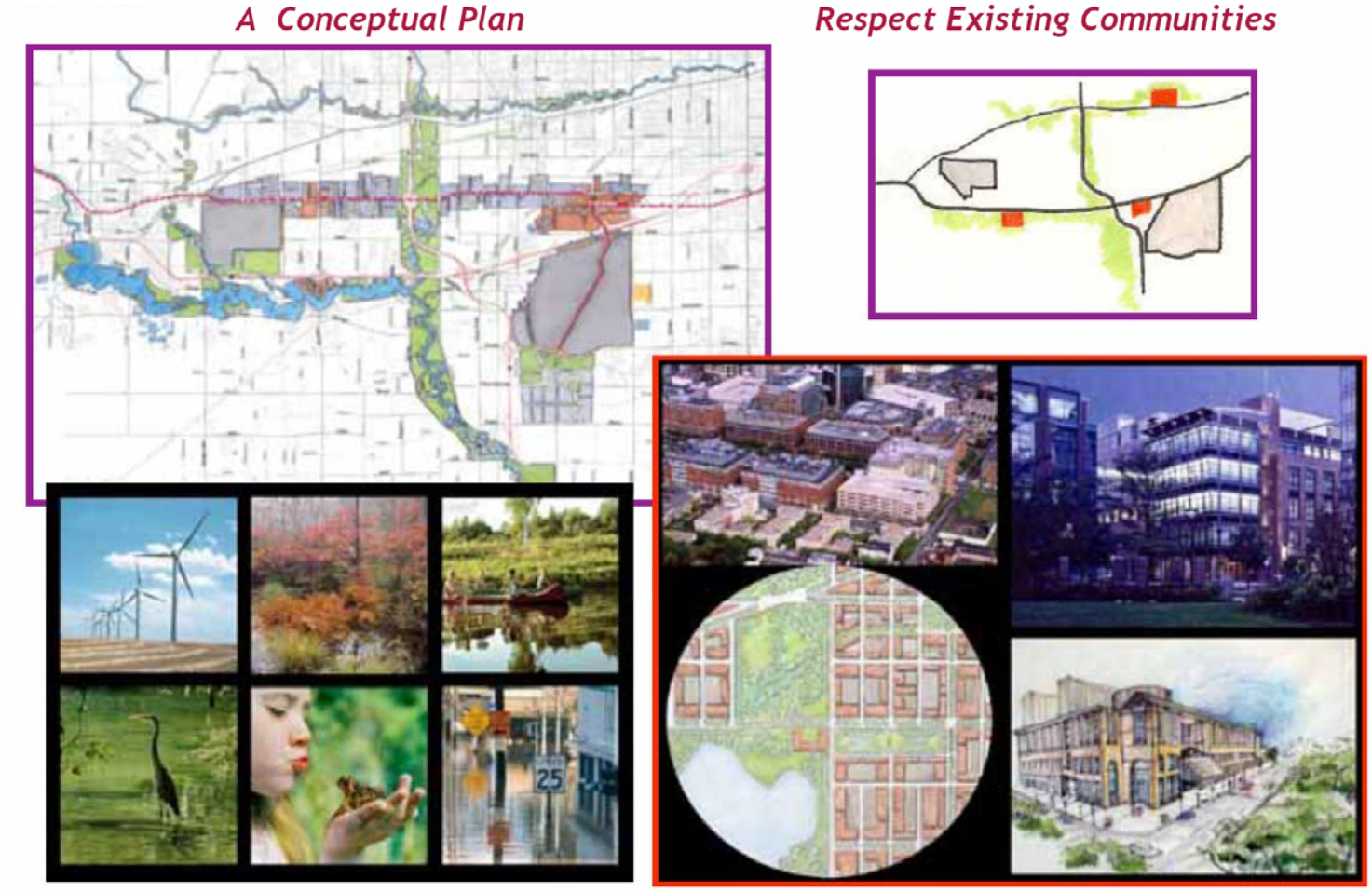
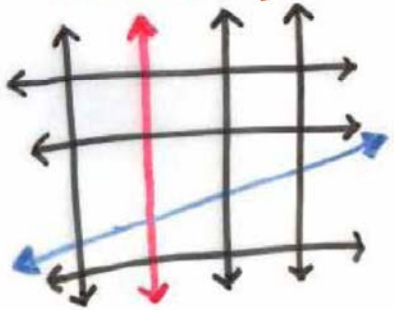


Exhibit 1.4
2006 AEROTROPOLIS CHARRETTE VISIONS

Improve Transit Linkages

Integrate Mobility & Sustainability



Build a Variety of Sustainable Uses and Designs - Including Green Building Design

Exhibit 1.5
2006 AEROTROPOLIS CHARRETTE VISIONS

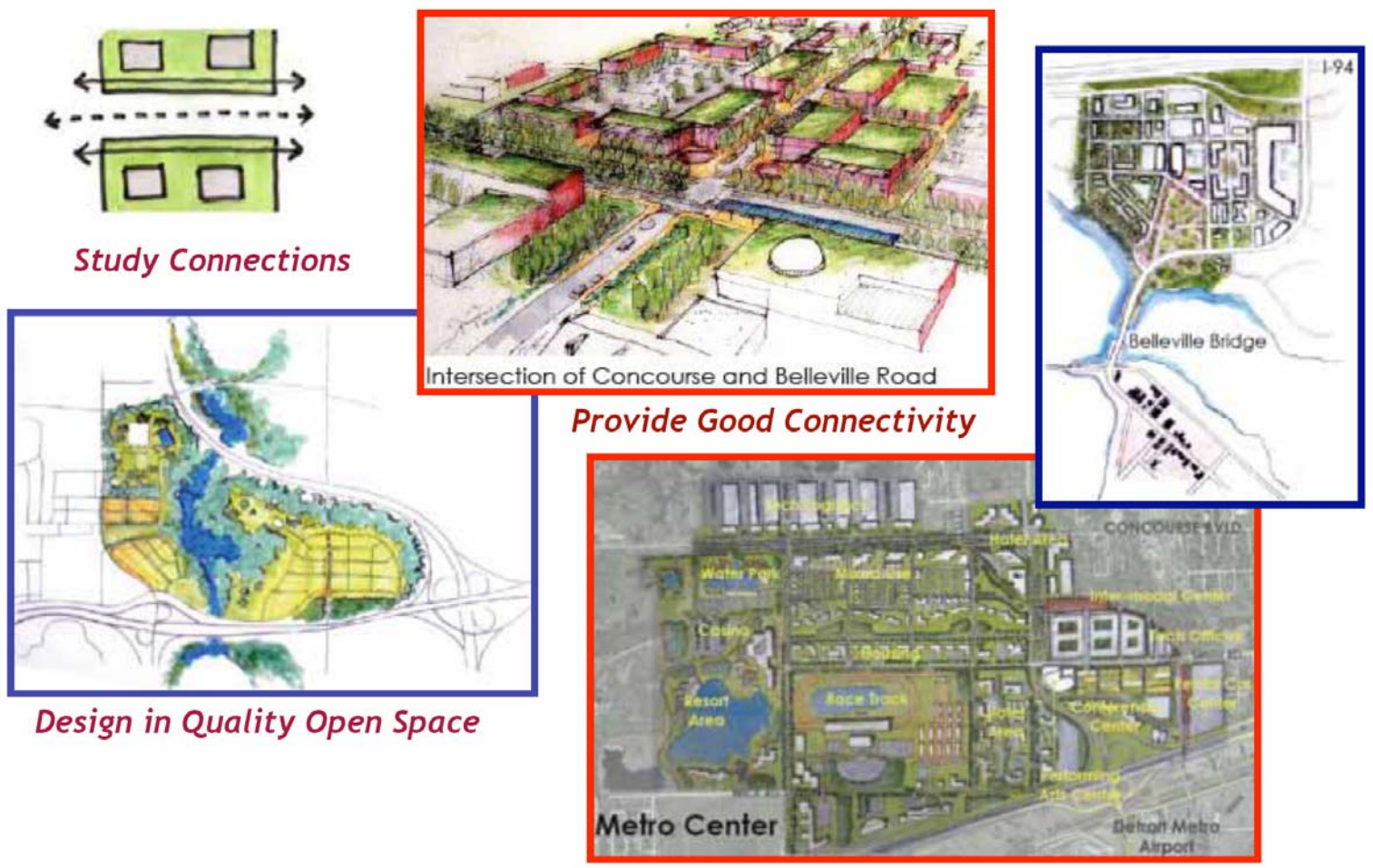


Exhibit 1.6
2006 AEROTROPOLIS CHARRETTE VISIONS

The Pinnacle AeroPark

The Concourse along Ecorse

A Vision of Things to Come?

Exhibit 1.7

The fundamental relationship underlying the Aerotropolis

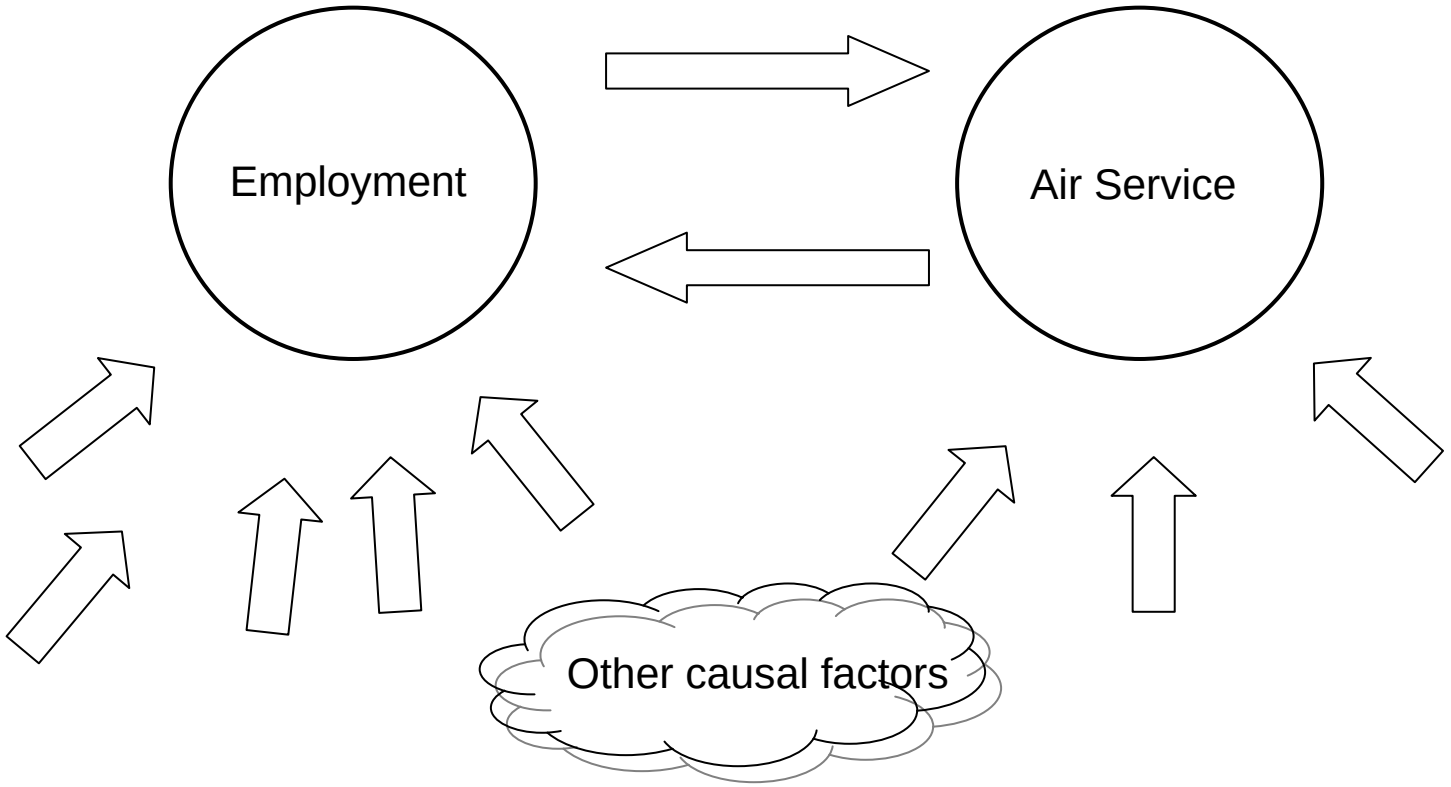
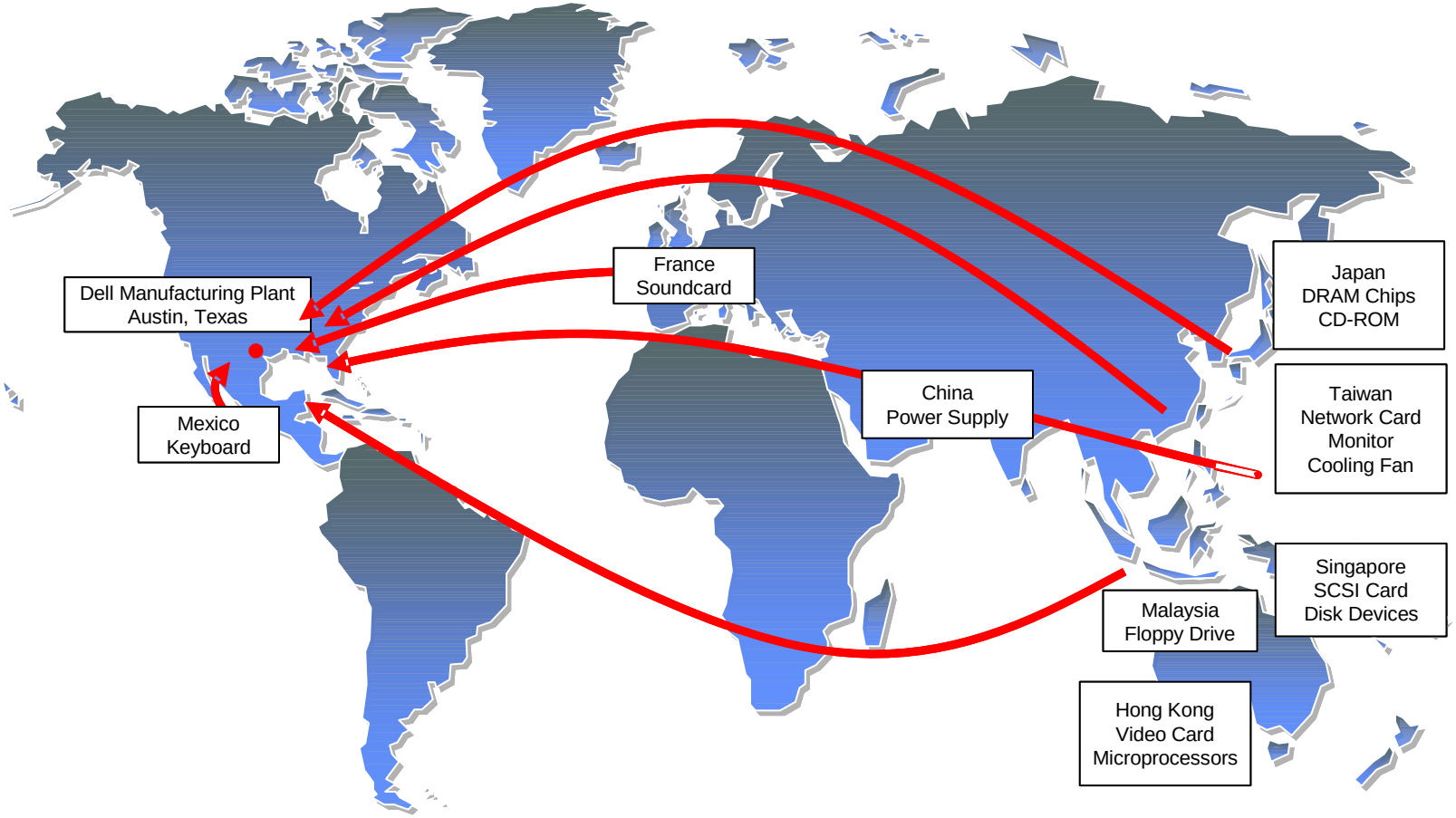


Exhibit 1.8
GLOBAL SUPPLY CHAIN—DELL COMPUTER TEXAS FACILITIES



Source: Abbey, Twist and Koonmen. 2001

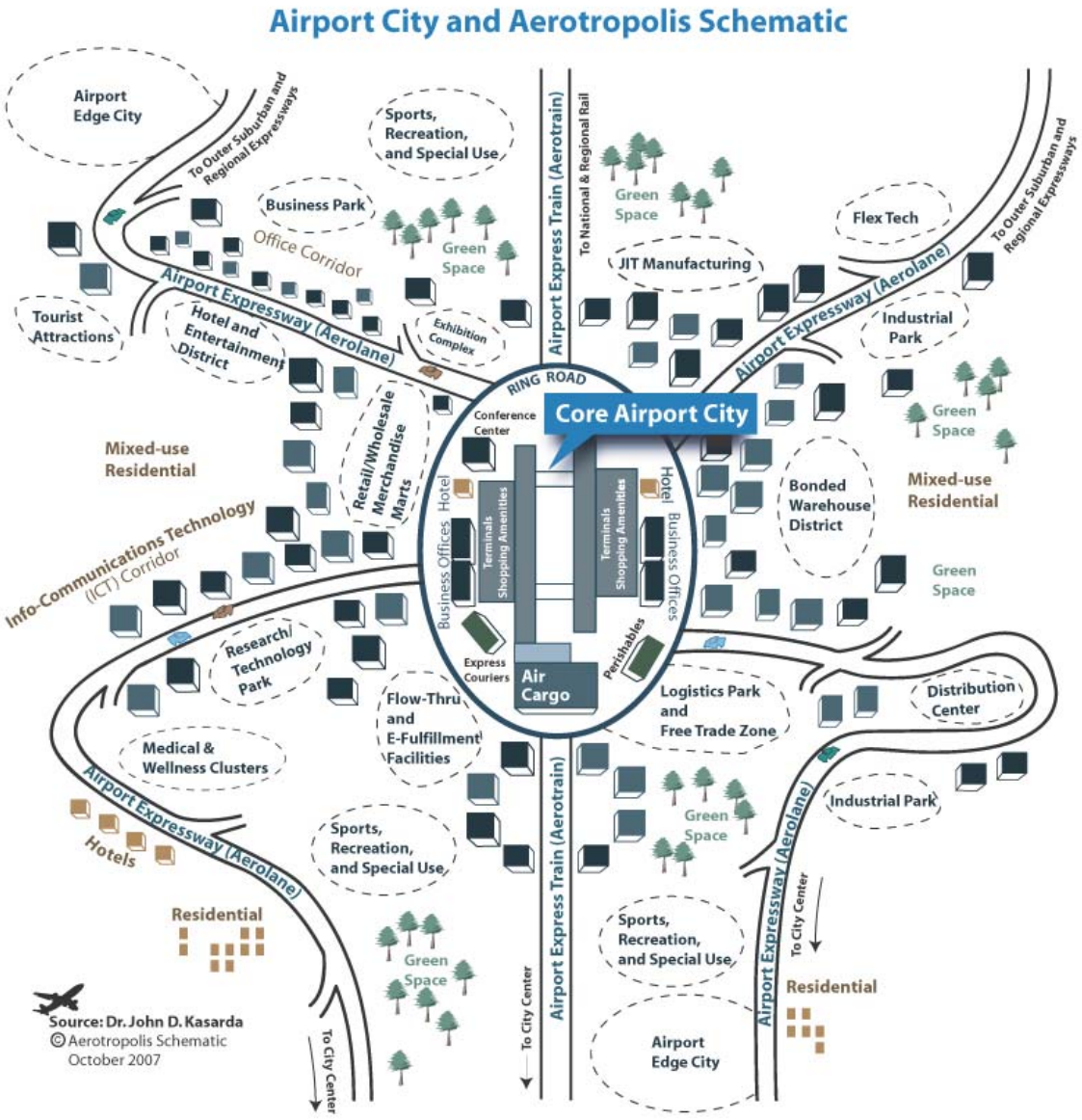
Exhibit 1.9
UNITED STATES TOTAL AIR AND VESSEL EXPORTS FOR 1990, 1997 AND 2005, BY VALUE (IN MILLIONS OF US$)

	1990	1997	2005
TOTAL VALUE	$260,927	$444,127	$554,489
AIR VALUE	$110,321	$219,751	$292,970
VESSEL VALUE	$150,605	$224,376	$261,519

GROWTH	90–97	97–05	90–05
TOTAL VALUE	70.2%	24.8%	112.5%
AIR VALUE	99.2%	33.3%	165.6%
VESSEL VALUE	49.0%	16.6%	73.6%

Source: U.S. Department of Commerce
Merchandise Trade Files.

Exhibit 1.10


Airport City and Aerotropolis Schematic
Airport Edge City
To Outer Suburban and Regional Expressways
Sports, Recreation, and Special Use
Business Park
Office Corridor
Green Space
Airport Express Train (Aerotrain)
To National & Regional Rail
Green Space
Flex Tech
JIT Manufacturing
To Outer Suburban and Regional Expressways
Airport Expressway (Aerolane)
Tourist Attractions
Hotel and Entertainment District
Exhibition Complex
RING ROAD
Conference Center
Core Airport City
Airport Expressway (Aerolane)
Industrial Park
Green Space
Mixed-use Residential
Retail/Wholesale Merchandise Marts
Hotel
Terminals Shopping Amenities
Terminals Shopping Amenities
Hotel
Business Offices
Business Offices
Bonded Warehouse District
Mixed-use Residential
Green Space
Info-Communications Technology (ICT) Corridor
Express Couriers
Air Cargo
Perishables
Research/ Technology Park
Flow-Thru and E-Fulfillment Facilities
Logistics Park and Free Trade Zone
Distribution Center
Medical & Wellness Clusters
Airport Expressway (Aerolane)
Hotels
Sports, Recreation, and Special Use
Green Space
Industrial Park
Residential
Green Space
Airport Express Train (Aerotrain)
Airport Expressway (Aerolane)
To City Center
Sports, Recreation, and Special Use
To City Center
Residential
Airport Edge City
Source: Dr. John D. Kasarda
© Aerotropolis Schematic
October 2007
To City Center

II. Commercial Development Lessons Learned from Aerotropolis Experiences Elsewhere

This section is basically meant to (1) identify specific commercial components and support facilities of aerotropolis/air logistics hub developments around the world, (2) specify commercial successes and reasons for their success, (3) discuss development effort failures and reasons for their failure. This section begins with a series of brief overviews of the commercial developments surrounding selected airports. A consideration of the factors determining success or failure follows.

U.S. Airport-centered Commercial Development

The overview of commercial developments surrounding airports begins with a tour of selected U.S. airports. Many of these airports and regions are part of the more systematic benchmarking in a subsequent section. Overseas developments follow.

Dallas–Fort Worth

DFW, opened in 1974, is the cornerstone of Metroplex, the fastest growing region of Texas (see Exhibit 2.1). Its regional economic impact is estimated to be $19 billion in 2006. The airport property itself is enormous—18,000 acres, covering parts of 4 cities and two counties, and exceeding the size of Manhattan Island. Airport officials now plan to take advantage of the airport's vast size by developing nearly 6,000 acres that cannot be used for aviation for commercial use over the next 20 years – for an on-airport commercial land absorption rate of 300 acres per year.

Airport property development is targeted to six key areas as shown in Exhibit 2.2. Two are for planned air cargo expansion (East Air Cargo, which has hundreds of developable acres, and West Air Cargo which anchors most current cargo facilities). With DFW's 2006 cargo throughput standing at 758,000 metric tons, it has a long way to go to catch up with Memphis' 3.7 annual metric tons, but it is pursuing cargo growth aggressively. In particular, airport management is pressing hard for additional wide-body passenger and cargo flights to Asia (especially China) and to Europe. They have also formed partnerships with commercial real estate firms such a Trammell Crow and air cargo oriented REITs such as AMB to construct "high velocity flow-thru" cargo facilities in the west cargo area. Such large commercial real estate companies not only have expertise in state-of-the-art cargo facility development, but they also bring with them a rich network of potential cargo and other commercial tenants.

International Commerce Park (see Exhibit 2.3) is targeted to light industrial, freeway commercial, and flex office development. It currently has 264 acres leased with 115 remaining for industrial/commercial development.

A retail/hospitality/entertainment complex is planned on the northwest corner of the airport. Covering nearly 200 acres it will contain mixed use retail, restaurants, garden offices, a hotel and entertainment facilities (see Exhibit 2.4).

Bear Creek Office Park is an 1,800 acre tract with open space amenities being marketed primarily as a corporate campus site (see Exhibit 2.5). Because of natural streams and floodplain in this park, substantial open space must be maintained. The land-use plan thus calls for two 18 hole championship golf courses along with wildflower meadows and heavy tree cover. It is felt that this environment will be optimal for office development just minutes from the airport terminals, with open-space amenities desired by today's knowledge workers. A smaller amount of shielded light industrial and mixed use development may also be in this large tract's future.

Passport Park is a 600 acre hybrid development at the southeastern end of the airport (see Exhibit 2.6). Designed to be DFW's southern gateway this mixed-use development is proposed to accommodate everything from big box retailers to supporting specialty retail and restaurants to light industrial and garden office development. Like other airport property that falls in municipalities (here Irving and Euless) property taxes are shared between the airport and the municipalities. Plans calls for an aesthetic, natural environment between buildings with established trees and native landscaping.

In addition to a substantial amount of terminal retail, hotels have become pivotal to DFW's airport city environment. These include the Hyatt Regency DFW and the new Grand Hyatt attached directly to its largest passenger terminal. A third Hyatt is planned for Passport Park. Today, 65 percent of DFW's revenue comes from non-aeronautical activities.

Large airport hotels featuring meeting rooms and concierge business support services are increasingly acting as virtual headquarters for new economy firms and are shaping a new urban style. This is highlighted from the following paragraph extracted from the August 20-27, 2007, issue of *Business Week* on the future of work.

> The fact that virtual connections still need to be balanced with face-to-face contact places the airport squarely in the path of modern urbanism. Consider the experience of Sage Software Inc., a $1 billion company which sells software to help businesses run better. It has 30 locations throughout the U.S., the result of a nine-year acquisition spree, but no headquarters. So its eight-member executive team, scattered from Tampa, Fla., to Irvine, Calif., fly once a month to Dallas. There they check into the Grand Hyatt DFW in Terminal D for two days of meetings. Everyone can get there for a 1 p.m. start, work until 6 p.m., get dinner together, and then work all day the next day until 5 p.m., when they run for the next flight home.

While DFW is evolving as a new urban core of Metroplex, its economic reach and impact extends many miles out along nearby Interstates and expressways. Two excellent examples of this are Market Center (opened in 1957) and the nearby data and telecom

center, Infomart (opened in 1980, both developed by Trammel Crow), both of which are located on the I-35 corridor to DFW. Market Center—a cluster of six large buildings that contain nearly seven million square feet of display space for fashion clothing and home merchandise—is the world's largest wholesale merchandise mart. Hundreds of thousands of buyers and vendors fly into Dallas annually to conduct business at Infomart and Market Center. In 2005, Market Center alone attracted buyers and vendors from all 50 U.S. states and 84 countries, who purchased 300,000 airline seats and filled 720,000 nearby hotel rooms while conducting an estimated $7.5 billion in wholesale transactions.

The airport has been a major factor in attracting nearly 20 Fortune 500 corporate headquarters to the broader airport region including five major Fortune 500 headquarters to Las Colinas just east of DFW. This 12,000 acre airport-linked community has 21 million sq. ft. of class A office space, 8.5 million sq. ft. of light industry, 1.3 million sq. ft. of retail, over 13,000 single- and multi-family residences, 3,700 luxury and business-class hotel rooms, 75 restaurants, and 2 championship golf courses. Dedicated light rail to DFW and to downtown Dallas is being developed.

Future regional passenger rail to DFW will be an important and integrating feature of the broader airport region with longer-term sustainability implications to reduce airport area congestion. Exhibit 2.7 illustrates planned routes of future light rail, commuter rail and high-speed rail lines that will feed into DFW's terminal stations.

Denver International Airport

DIA is the nation's newest major airport, opened in 1995 in the middle of 300 square miles of mostly undeveloped open prairie. The airport itself covers 33,000 acres (53 square miles) and is the third most spacious in the world. The objective of its planners from the start was not just to construct a world-class airport, but to have it drive economic development throughout its vast surrounding airport area as well as be a major factor in revitalizing downtown Denver. This surrounding area, according to the DIA Partnership, a public-private consortium promoting and facilitating airport region development, is to have it evolve into a full-service city ("Aeropolitan" as the Partnership dubs it) complete with office, medical, research, retail, hospitality and entertainment components.

With excellent highway access to downtown Denver (24 miles to the southwest) and other growing regional economic nodes, the broad airport area is already the home to over 300,000 residents and 184,000 workers, with an annual payroll of over $7 billion. Exhibit 2.8 shows current and planned developments in the DIA airport area.

Most of DIA's 33,000 acres are criss-crossed with existing and planned taxiways and runways (including an existing runway three miles in length) so relatively little development has occurred on its property. Most is concentrated in the southern portion, home to DIA's passenger and cargo terminals. Its Jeppesen passenger terminal provides a wide range of retail services and restaurants and bids are just being let for a 600 room luxury hotel connected to the terminal.

Despite being a hub for both United Airlines and Frontier Airlines and served by all major air express carriers, DIA has had difficulty being competitive for air cargo. In fact, over the past six years DIA's cargo tonnage has dropped consistently from 500,000 tons in 2000 to just over 300,000 tons in 2006. Such is not the case for passenger traffic which has risen rapidly over the past ten years to 47 million enplanements in 2006, making the airport the fifth busiest in the U.S. and the tenth in the world.

Commercial development in the area near the airport, however, has not been as fast as planners initially expected. Small clusters of hotels, retail and offices have formed along airport corridors along with the $4.7 billion Fitzsimmons Bioscience campus eleven miles away. Significant commercial developments closest to the airport are either beginning or currently being planned.

The first, known as High Point, is a 1,700 acre mixed-use commercial and residential complex just outside the southwest boundary of the airport. High Point will contain 10 million sq. ft. of office space, over half a million sq. ft. of upscale retail, and a 505 room, $185 million conference resort. The 12-story conference center, constructed of stone, stucco and glass, will be designed "Rocky Mountain-style" with natural plateaus and rock outcroppings. In addition, an 18 hole championship golf course will be developed at High Point along with 1,600 houses, 1,400 of which will be "new urbanism" style multi-family row residences. Plans also include a substantial medical/educational campus and a community civic center. Exhibit 2.9 presents the master plan for the 1,700 acre High Point project.

The second illustrative project in the works is presently designated DIA 1287. It covers 1,287 acres directly south of DIA's cargo and air express complex and is being planned to leverage this complex. Current plans call for the property to house third-party logistics, flextech, and e-commerce fulfillment facilities, plus separate sections for retail, hospitality and offices.

There are numerous other 1,000+ acre undeveloped tracts of land surrounding or quite near DIA that will likely be developed over the next 10 to 20 years as airport-linked commercial clusters. In fact, given that the airport area is largely undeveloped and in the path of the Denver metropolitan area eastward expansion, the 300 square mile DIA airport area is forecasted to grow at a rate at least double that of the overall metropolitan area with a forecasted population of 558,000 in 2025 and a total employment base of 427,000.

Facilitating this expected expansion will be a commuter rail line (FasTracks) connecting downtown Denver and other east Denver County economic nodes directly to DIA's passenger terminal. FasTracks is expected to be operational in 2014 and, if properly routed, to provide a major boost to airport region commercial development (see Exhibit 2.10).

Memphis

In less than 30 years, FedEx has transformed Memphis from a sleepy mid-size southern city into a global distribution center. Its Memphis hub is the largest, fastest, and most connected air logistics complex in the world. In 2005, the airport handled 3.6 million metric tons of cargo, 94 percent due to FedEx which processed over 2 million packages per night on average. With 300 daily national international non-stop flights, the hub covers the globe. This air connectivity is further enhanced by superior interstate highway and rail access as well as by excellent passenger service. Northwest Airlines offers 279 daily scheduled departures to 89 U.S. cities and to Amsterdam.

As a result of the FedEx presence, the economic impact of Memphis International Airport is immense. According to a 2005 study by the University of Memphis, the airport had a $22 billion impact on the metropolitan economy, $19.5 billion resulting from air cargo activities. A total of 166,000 jobs in the metro area are tied to the airport (40,000 employed by FedEx alone) which constitutes over 1 in 4 jobs in the Region. Almost half of the businesses in the Memphis area feel that their economic future is linked to the airport.

Because of the high employment multiplier effects of air express and air cargo activities (e.g., trucking, logistics, and distribution centers, time-sensitive assembly, repair and testing, etc.). Memphis International Airport has an economic impact greatly disproportionate to its passenger numbers and population base (see Exhibit 2.11). For example, while Phoenix Sky Harbor Airport has nearly four times the annual passengers and its metropolitan population base is three times larger than Memphis, Memphis International has an economic impact that is 50 percent larger than Phoenix Sky Harbor airport.

A substantial aerotropolis is evolving at and around Memphis International Airport. In addition to logistics and distribution facilities, hotels, office parks, retail and entertainment complexes are locating along airport corridors. The FedEx hub has attracted major arterial clusters and strings of logistics and distribution facilities (see Exhibits 2.12 and 2.13). These include:

- World's largest laptop computer repair depot—Solectron Repairs 5,000 laptops every night
- World's largest cornea bank—The National Eye Bank Center
- World's largest DVD distribution center—Thomson Technicolor ships 1.2 million DVDs per day (½ of DVDs purchased in the U.S.)
- Largest overnight drug testing center in the U.S.—Advanced Toxicology runs 5,000 lab tests per night for next day delivery.

Major national distribution facilities for Flextronics, Hewlett-Packard, Sharp, Cingular, Jabil Global, Pfizer, Baxter, GlaxoSmithKline, Medtronic, and many others have located in Memphis largely because of the FedEx hub. Some of these such as Sears

logistics services, Hewlett-Packard, Nike, Williams-Sonoma and Thomson Technicolor operate distribution facilities that exceed two million square feet.

Kansas City

Kansas City International Airport (KCI) encompasses 10,200 acres in a low density suburban setting, 20 miles northwest of downtown Kansas City. In 2006, the airport had just over 10 million passengers and handled about 130,000 metric tons of cargo; small by major city airport standards.

For the three decades since KCI opened it has been counted upon to attract business and drive economic development in the northern part of the metropolitan area. Yet, in the eyes of many, results have been disappointing. Airport-linked commercial development has been slow to evolve. Most of the 10,000 acres that fall within KCI's boundaries remains vacant despite the fact that nearly the entire airport has been designated as a Foreign Trade Zone. Moreover, even with its excellent highway connectivity, only a handful of distinct KCI-linked business clusters can be identified in its outlying reaches.

Initial planning for a KCI aerotropolis three years ago included combining existing commercial development just east of the airport with proposed new development that will constitute the KCI Business District, or core Airport City (see Exhibit 2.13).

With the KCI Business District (Airport City) established, clusters of hotel, retail, office, industrial logistics, and residential units are anticipated to develop outward from the airport along nearby interstates and state highways. According to Kansas City area officials, there are approximately 10,400 acres of industrial/office park development (off-airport) in the airport area recommended land use plan. Development proposals are in place on 3,200 acres and these plans provide: 14.5 million square feet of office, 17.8 million square feet of logistics/industrial and 2.6 million square feet of retail. Hotel clusters and mixed-use residential are also planned. Combined commercial and industrial development is expected to employ 90,000 workers. Exhibit 2.14 illustrates the type of Aerotropolis development which would be expected to occur near KCI over the next five to ten years.

A major inside-the-fence business park, known as KCI Business AirPark, has also been planned and is going to be developed by Trammell Crow on 640 acres in the southeastern sector of the airport (see Exhibit 2.15). It is designed to simultaneously leverage the aviation and air cargo infrastructure of KCI along with its nearby highway systems to provide time-sensitive manufacturers, distributors, and logistics service providers with efficient sourcing, production, and distribution. Initial industry targets are high-tech (especially semiconductors), aerospace components, cargo distribution and third-party logistics providers.

The site is divided into four development areas. The first two (the airfreight and hanger areas) were directly tied to the primary airport functions. As such, they are

purposely isolated from other uses to provide a greater measure of security. The other two areas provide for a more standard office distribution and industrial development. The site area, building area and building type are illustrated and detailed in Exhibits 2.16 and 2.17.

At present, master developer Trammell Crow is still evaluating target firms and, to our knowledge, none have been sited. While optimism remains with airport management and local officials, the thirty-year history of limited airport area development shows that aerotropolis formation does not always occur at and around airports, even if sufficient open land exists. In particular, aviation connectivity to national and international markets must reach a critical mass for substantial airport-driven development to occur and be sustained. This has proven to be the case in numerous other locations in the U.S., especially cargo-oriented airports such as North Carolina's Global TransPark and the Southern California Logistics Airport in Victorville, about 100 miles east of Los Angeles, both discussed below.

Ontario, California

Commercial growth surrounding Southern California's Ontario Airport—an emerging air logistics hub that cornerstones a major urban complex 40 miles east of Los Angeles—offers an excellent contemporary illustration of multi-modal logistics and aerotropolis development synergies. The airport (recently renamed LA/Ontario International Airport) is at the nexus of major east-west and north-south interstate highways I-10 and I-15, with the Burlington Northern–Santa Fe intermodal rail yards nearby. The ports of Los Angeles and Long Beach are connected by interstate highways and rail lines. Between 2000 and 2006, over 60 million square feet of warehouse, distribution, and light industrial space were added adjacent to the airport and along Interstates 10 and 15 radiating out from it, led by e-commerce fulfillment and distribution facilities ranging up to 1 million square feet in floor space. With commercial clusters rapidly developing around the airport and outward along I-10 and I-15, Ontario is emerging into a full-fledged aerotropolis.

Enhancing Ontario's air logistics and aerotropolis development is the growth of air express transportation services at and around Ontario Airport. During 2005, UPS, whose west coast regional hub is at Ontario Airport, handled nearly 700 million pounds of freight while FedEx carried over 100 million pounds. This express service was boosted by another 100 million combined pounds carried by BAX Global, Menlo Worldwide and Airborne (now DHL/ABX) Express. Ontario's development as a regional air express airport has greatly contributed to making its broader "Inland Empire" area one of the fastest growing employment regions in the United States, where tens of thousands of jobs are being created annually.

Alliance, Texas

Another regional air express airport/aerotropolis example is Fort Worth (Texas) Alliance Industrial Airport, where a commercial development of 15,000 acres spans two

counties and includes portions of four cities. Promoted as the nation's first industrial airport by Ross Perot's company, development began in 1988 with the objective of serving business and commercial users rather than passengers. From the beginning, multi-modality was emphasized, especially quick and efficient access to regional and national markets via interstate highways and intermodal rail connections. A major development driver was put in place in 1997 when FedEx opened its southwest regional hub at Alliance. Cargo processing is now almost one-third of that handled by nearby Dallas-Fort Worth Airport. Since then, over 100 major companies (33 from the Global 500 largest) have located at and around Alliance; such as AT&T, Nokia, BFGoodrich Aerospace, Bell Helicopters, Gulfstream, Zenith Electronics, Nestle Distribution, and Dell Inc. Alliance offers a Foreign Trade Zone, an enterprise zone with further city and state incentives, a world trade center, state-of-the-art fiber optics and telecommunications, and a special inventory tax exemption, as well as efficient U.S. customs services.

As a result of its wide variety of present and expected future tenants and users, such as time-sensitive manufacturers and distributors, third-party logistics providers, retailers, international firms and aviation-related companies, Alliance is partitioned into geographic sectors geared to different tenant needs and requirements. These developments include:

- Alliance Center, a 2,600-acre high-density business complex that encircles the airport and is geared primarily towards aviation-related enterprises that require direct taxiway access.
- Alliance Commerce Center, a 300-acre business park for manufacturing and high-tech firms, which has served as a starting point for several small and mid-sized companies that have expanded into larger facilities throughout Alliance.
- Alliance Air Trade Center, a 52-acre air cargo development with direct access to the Alliance Airport runway system, direct access to Interstate 35W, and nearly adjacent to the BNSF intermodal facility. It has over 250,000 square feet of warehouse space available for intermodal cargo and international air freight companies.
- Alliance Gateway, a 2,400-acre distribution, manufacturing and office sector which provides parcels of land for constructing large-scale facilities such as warehouses and is designed to accommodate large distribution and industrial firms. It also has convenient access to Dallas/Fort Worth International Airport via State Highway 170.
- Alliance Advanced Technology Center, a 1,400-acre complex that is becoming one of the nation's premier technology hubs for major companies from around the world.
- Heritage Reserve at Alliance, which is integrated into a woodlands greenbelt and offers locations for research and development facilities in a natural setting.
- Westport at Alliance, a 1,500-acre industrial and distribution sector located directly adjacent to Burlington Northern Santa Fe Railway's main north/south line and Intermodal Center. It caters to shippers needing rail access and other multi-modal transportation options.

- Alliance Crossing, a 170-acre retail complex that is designed to accommodate retailers, restaurants and other service-oriented firms needed to service the areas increasing population base as well as employees and visitors of Alliance.

Alliance's commercial success has been attributed to its excellent multi-modality, a variety of economic incentives it provides to tenants, its attracting a substantial number of third-party logistics (3PL) providers who offer manufacturers, distributors and retail shippers with value-added services including packaging, labeling, inventory management, transportation and transportation tracking as well as returns management. Alliance also provides educational and technical training facilities for companies located at its complex, including conference and teleconference facilities.

All firm recruitment and real estate development is managed by a private company, Hillwood Development. Of the $4.8 billion invested in Alliance thus far, 97 percent has been from private sources. According to the Alliance website, this translates into over 20,000 permanent jobs at the complex and $150 million annually in local property taxes generated.

Rickenbacker, Ohio

A former U.S. air force base, Rickenbacker went into service as a commercial air cargo airport in 1980. Despite being the 1980's hub for the air cargo firm, Flying Tigers (now part of FedEx), Rickenbacker did not obtain success until the 1990s when a new public-private management model was put in place and a new marketing strategy developed based on the "Inland Port" concept.

Rickenbacker's success thereafter rested largely with efficient and cost-effective handling and distribution of supplies and finished goods, in contrast to more costly, less efficient handling at alternative (often larger) airport complexes that lacked multi-modality and as efficient logistics operations. The airport is strategically located to serve national markets, and it has excellent access to major interstate highways and intermodal rail facilities. Like Alliance, Rickenbacker operates in a Foreign Trade Zone. It also has special state and federal tax exemptions such as those on inventory, abatement on real estate taxes for improvements to land and buildings as well as a subsidy of $3 million per year from local governments. In addition, the State of Ohio has committed $65 million in revenue bonds for future facility improvements.

Economic development around Rickenbacker since the early 1990s has been remarkable. The airport serves as the logistics hub of a 15,000-acre development zone (nearly identical to Alliance), called the Rickenbacker Area. This area contains over 20 million square feet of state-of-the-art logistics and distribution space, employing 15,000 workers. Despite the national and global downturn in air cargo between 2001 and 2003, Rickenbacker continued to experience robust air cargo growth.

Rickenbacker provides tenants and users with a 500,000-square-foot cargo terminal (which is being continuously expanded), modern materials handling equipment

and logistics services, and direct airfield access to freight forwarders, third-party logistics providers and time-sensitive manufacturers and distributors who are advantaged by airside access. As one example, Excel Logistics, one of the world's largest supply chain management companies, operates a 230,000 square foot one-stop shop facility that includes customs brokerage, airfreight forwarding, intermodal operations, value-adding logistics services, and warehousing. Rickenbacker's logistics and fulfillment firms are undergirded by state-of-the-art fiber optic loops, high-speed data circuits, and teleconference facilities.

To further spur commercial development, Rickenbacker formed a partnership with Duke Realty in late 2005 to develop 1,300 acres of prime industrial land in the airport area. The partnership will also help with the development of Rickenbacker Global Logistics Park which will be near the new Rickenbacker Intermodal Facility scheduled to open early in 2008.

As mentioned above, Rickenbacker's development success can be attributed in large part to its management strategy implemented in 1991 with the establishment of the Greater Columbus Inland Port Commission to promote trade through developing and leveraging logistics services and intermodal infrastructure. The Inland Port Commission is an exemplary public-private partnership made up of city, county, state and federal representatives from the public sector and the Greater Columbus Chamber of Commerce and individual manufacturers, shippers, logistics providers, and others from the private sector. Cost-benefit analyses have shown that for every U.S. dollar of public investment in Rickenbacker, three dollars in private investment have resulted with twenty-five dollars in regional economic impact, estimated to be nearly $3 billion in 2006.

North Carolina Global TransPark

The North Carolina Global TransPark (GTP) was conceptualized as a multi-modal industrial airport designed to support manufacturing, distribution, agribusiness, and transportation-related companies. A comprehensive planning effort was completed in 1994 with the objective of fully integrating air, rail, road, and nearby sea transportation capabilities to serve the logistics requirements of industrial and distribution tenants and users.

The GTP encompasses 5,000 acres in eastern North Carolina, 70 miles east of the Research Triangle Park and 40 miles from the Atlantic coast. At full infrastructure build-out (forecasted to be around 2025), the project was planned to have two long-range parallel runways, a state-of-the-art central cargo processing area, an intermodal rail terminal, a dedicated system for transporting cargo throughout the GTP, internal road networks, and upgraded connections to regional road and rail systems. Two deepwater ports are located approximately one hour away by rail and highway. Thousands of acres within the GTP are currently available for private, industrial, manufacturing and distribution facilities.

As of March 2007, less than 500 people are employed at the GTP which is disappointing to many. Locational problems created severe constraints. As noted, the North Carolina Authority selected a relatively isolated low-income region of the state as the site of the GTP in part to spur job growth, income and overall economic development of a declining region. This location has posed a number of liabilities. First, the highway system and related transportation and telecommunications infrastructure were not well developed to the site. The GTP is over 40 miles from the nearest interstate highway and developing limited access connectors to the interstate will take at least a decade. The lack of interstate highway accessibility dissuaded a number of early targeted manufacturing firms from locating at the GTP. In addition, the runway at the Kinston Jetport (the GTP) was only 8,000 feet long, and therefore unable to handle the take-offs and landings of large cargo aircraft.

Securing the environmental approvals and federal and state financing to extend the runway to 11,500 feet took four and a half years. These approvals and financing came in late 1997 and 1998 and the runway extension was completed in late 2002 which was the middle of a major air cargo downturn period. Without federal environmental approvals (which, as noted previously, involved a full EIS) and a sufficient runway length for fully loaded all cargo aircraft to land and take-off, it was impossible to recruit major cargo airlines and therefore the firms that would use them.

The lack of a nearby developed industrial base in the poorest part of the state further discouraged a number of air cargo firms. The North Carolina GTP found itself in a chicken and egg situation that is now only beginning to be resolved through transfer of activities and responsibility to a major private sector commercial real estate development firm (Duke Realty) and private sector development consultants and logisticians (Longistics).

Southern California Logistics Airport

Another effort to create an air cargo/industrial airport that has faced similar difficulties is Southern California Logistics Airport (SCLA) located at the former George Air Force Base in Victorville approximately 100 miles northeast of Los Angeles. The developer of SCLA, Sterling Enterprise, has entitled 64 million square feet for commercial and industrial development. Thus far, the firm has leased out 1 million square feet to air cargo and logistics providers, as well as for distribution facilities of major companies such as Boeing and General Electric.

The former air base, like the GTP, has faced a number of challenges. It is considered too isolated for air express activity and its local industrial base is not strong enough to provide sufficient origin and destination air cargo. There is also intense competition from other nearby "Inland Empire" airports, including Ontario, San Bernardino, and March Air Base. Los Angeles International and Ontario have a solid grip on freight forwarders, who are reluctant to move to SCLA, despite its cost advantages and major incentives provided. Since freight forwarders account for the vast

majority of traditional (non-express) air cargo, this has proven to be a liability that SCLA has yet to overcome.

Asia's Airport Cities and Aerotropolises

Asia is leading the way in airport city and aerotropolis development. One key reason is that their airports are newer with many constructed on greenfield sites. This enables officials to design and develop them and their surrounding areas consistent with the new roles of airports in the local and global economy. Asian airports also can be planned by powerful government bodies that simultaneously control the development process of the airport and its environs with few social or environmental constraints.

Hong Kong International Airport

Hong Kong International Airport (HKIA) is an exemplary airport citiy and aerotropolis in evolution. Its 1,258 hectare (2,700 acre) site was created in the mid-1990s by leveling two small islands and reclaiming land from the sea. The airport opened in July 1998 with a total project cost of US$20 billion, including a 26 miles multi-lane expressway and modern airport express train to both Kowloon and Hong Kong Island.

Three commercial districts adjacent to or near HKIA's terminal and runways are well along in development (see Exhibit 2.18). The 70 acre South Commercial District is composed of logistics facilities, including (1) Tradeport Hong Kong Ltd., constructed and operated by an international consortium of Asia and European Partners, (2) HACTL's Super Terminal 1 (the world's largest stand-alone air-cargo and air-express facility with a gross area of 2.7 million sq. ft), (3) the 2 million sq. ft. Asia Air Freight Terminal, and (4) a 1.4 million sq. ft. mixed-use freight-forwarding warehousing and office complex. DHL has just opened its Asia air express hub in this zone, as well, with Cathay City (a major aviation-linked office complex) developing nearby, (see Exhibit 2.19 showing Cathay City under construction next to the HACTL super cargo terminal and Tung Chung New Town in the background).

The 52 acre East Commercial District is being developed as an office park. It will have gross floor area of 3 million sq. ft. targeted to regional corporate offices and air travel-intensive professionals. The 125 acre North Commercial District is the Airport City's signature development zone, known as SkyCity. The 10 million sq. ft. commercial development is adjacent to the passenger terminal and served by the airport express train. SkyCity's master planner, Skidmore, Owings & Merrill, designed it as a commercial destination for working, shopping, meeting and trading (see Exhibit 2.20).

SkyCity's first phase opened in late 2006, eight years after the airport opened, and contains SkyPlaza, a multipurpose commercial complex connected to the passenger terminal and the airport express train station. The lower floors of SkyPlaza provide a 300,000 sq. ft. retail center, including an IMAX 3D theater (see Exhibit 2.21). Above

this podium is class A office space with a total gross floor area of another 300,000 square feet.

SkyCity's first phase development also includes a 2 million sq. ft. international exhibition center (Asia World Expo) with full-time trade rep offices, a China cross-boundary ferry terminal, a 600-room hotel, and a 9-hole golf course that will go commercial in future phases (see Exhibit 2.22). These future phases will consist of a business park, hotels, and leisure and entertainment facilities developed in a pedestrian friendly and public-transit integrated way (see Exhibits 2.23 and 2.24). Another 500-room hotel opened last year adjacent to HKIA's passenger terminal, which houses 30 high-end clothing designer shops along with over 100 other retail, food and beverage, and service outlets.

SkyCity will be the multimodal Central Business District of a far reaching Hong Kong Aerotropolis. In addition to its Hong Kong Island and Kowloon connections, it will be linked by the express train and highway to the nearby Disney Theme Park that also opened on the airport's island in 2006, about 10 minutes from the SkyCity (see Exhibit 2.25). The airport express train connects as well within 5 minutes to Tung Chung, a massive new town housing 45,000 airport workers and their families, complete with schools, churches, shopping and medical facilities.

SkyCity is also seamlessly connected through high-speed turbo jet ferries to the economically booming Pearl River Delta in southern coastal China. These high-speed ferries shuttle passengers, shoppers, workers, and tourists back and forth between SkyCity and key Delta locations in 30 to 40 minutes. Such connectivity to the mainland also exists from the South Commercial District where logistics ferries link the District to the Delta's main manufacturing centers, shuttling parts and finished goods back and forth between the airport and the mainland.

Further integrating HKIA with both Hong Kong and the Delta will be a new expressway and rail bridge and tunnel linking Hong Kong to Macau and Zhuhai on the mainland. This combination express/rail bridge is planned to connect through the airport island (Lantau). It will not only enhance SkyCity's role as a destination for shoppers, tourists, traders and other business people from Hong Kong and Mainland China but also solidify HKIA's role as the multimodal nexus of a highly expansive and growing Hong Kong aerotropolis.

Incheon: Korea's Air City

One of the most ambitious efforts to develop an airport city and Aerotropolis is taking place around South Korea's new Incheon International Airport. At its core is Air City, a set of multimodal commercial complexes being developed with all the features of a modern metropolitan center: retail areas, office buildings, logistics and high-tech manufacturing facilities, ICT functions and leisure activities, a conference and exhibition center, as well as a mixed-use new town. Elaborate expressways, bridges and tunnels connect the airport to Seoul (42 miles to the North) and to nearby islands, the latter

forming an expansive commercial and residential complex. A high-speed commuter rail line between downtown Seoul and Incheon International Airport is under construction.

The airport property (15,000 acres) is considerably larger than most in Asia. Opened in March 2001, Incheon was immediately among Asia's major airports in passengers and cargo. Its current master plan (with a 15-year horizon) has commercial and residential development evolving through three phases, creating an ever broadening and deepening urban expanse (see Exhibit 2.26). The first phase (already complete) is an Airport Support Community consisting of airport-related industries (primarily logistics), commercial services, and housing for airport area employees and their families, which total 100,000. The second phase (in process) involves expanding (both spatially and functionally) the Airport Support Community while transforming it into an International Business City. Around the airport, a 360 acre international business center composed of four office complexes, a shopping mall, convention and exhibition facility and two five-star hotels opened this year.

An additional 220 acre commercial project under development is the Airport Free Zone. This international logistics and manufacturing zone became fully operational in 2006. Both the International Business Center and Airport Free Zone are planned to double in space in the coming five years with the population of Air City doubling, as well, to 200,000.

The third and most ambitious stage (The International Free Trade City) is a full-blown aerotropolis tied together by an extended international free enterprise zone (IFEZ). The IFEZ will encompass three islands, connected by expressway bridges (man-made Songdo and Cheongra, along with Yeongjong where the airport is located). A pivotal component in the Republic of Korea's plan to transform the country into the commercial and trading center of Northeast Asia, IFEZ is being promoted as "Pentaport"—a combined airport, business port, seaport, teleport, and leisure port.

The greater Incheon Aerotropolis has dual urban growth poles. The first, Yeongjong Island, is its Air City, with development around the airport focusing on aviation-oriented office functions, hotel, trade and exhibition facilities, logistics, and tourism and leisure activities (see Exhibit 2.27). Two of the largest are a 384-acre water park and a 250-acre fashion island immediately south of the airport. The latter, being developed at a cost of $1 billion, is planned to be the fashion mecca of Asia with state-of-the-art luxury outlets, hotels, and exhibition space (see Exhibit 2.28).

Songdo Island will host the aerotropolis' second urban growth pole, New Songdo City, being created from scratch entirely on reclaimed land by Gale International of New York City and Posco (South Korea's largest steel producer) in partnership with the Korean Government with financing through Morgan Stanley, the World Bank, ABN Amro and Kookmin Bank. This 1,500-acre, $20+ billion project is the largest private development project currently underway in the world. At full build-out in 2016, New Songdo City will have over 15 million square feet of office and commercial space, more than 9,000 residences (mostly condominium and town houses), a convention center, a

cultural center, a central park greenway, an 18-hole golf course designed by Jack Nicklaus, a state-of-the-art medical facility, and an international school for children of expatriate workers being planned by Harvard (see Exhibit 2.29).

Phase I of this mega-project commenced in 2005 and will include a 1 million sq. ft. retail complex, a 1,000 room hotel, a 65-story trade center, and 2,360 homes by the end of 2008. As an incentive to its developers, the Korean government has agreed to construct a six-mile, six-lane bridge from New Songdo City directly to Incheon International Airport and provide all utilities.

From the start of Air City crossing the airport property line to the development of New Songdo City six miles away, the Korean government is actively soliciting private-sector participation and foreign investment. Tax holidays and other generous financial incentives along with the provision of extensive infrastructure throughout the greater Incheon airport region are likely to catalyze considerably more private-sector development throughout this emerging Korean Aerotropolis.

Singapore Changi International Airport

Since commencing operation in 1981, Singapore Changi, 16 miles from downtown Singapore, has been considered among the most efficient and aesthetically pleasing airports in the world. The opening of its swank Terminal 2 in 1991 positioned Changi as an Asian leader in infusing passenger facilities with modern retail and service functions. The Civil Aviation Authority of Singapore (CAAS) has invested continuously to upgrade its two terminals and establish them as commercial and leisure nodes of a relatively compact Changi Airport City. A third terminal, costing $1.8 billion, is scheduled to open in 2008, promising to have an even more extensive array of commercial and leisure services.

Branding Singapore and providing a memorable experience to airport users are key objectives to the ongoing modernization of the passenger terminals. More than 100 retail outlets, many with Singapore or South East Asia themes, line Changi's concourses in a free-flow manner. Artwork and waterfalls exhibit a sense of local history and natural beauty. Coffee shops and food outlets also provide a local flavor, modeled after the facades of 1960s Chinatown, while restaurants have open kitchens where passengers can observe cooks preparing Singaporean dishes along with a variety of other international cuisines.

At the same time, Changi's passenger terminals are state-of-the-art technologically and in service amenities. They were among the world's first to offer Wi-Fi access to passengers with laptops and high-quality surround sound lounge seats with plasma and liquid crystal video equipment. Small group movie theaters, sports and news viewing lounges, in-transit passenger sleeping, massage and shower facilities, along with health and fitness clubs round-out terminal commercial amenities. Passengers with a 5-hour layover can even take a 2 ½-hour off-airport tour, including the downtown financial

district and a bum boat ride on the Singapore River. More than 60 percent of the airport's revenues come from non-aeronautical activities.

The limited amount of land surrounding Changi's 2,600 acre airport property has constrained landside commercial development. Connectivity to downtown Singapore has therefore been enhanced by a newly opened subway line that transfers travelers to the airport in about 20 minutes and a beautified tropical expressway with excellent taxi service between the airport and the downtown. The airport, airport expressway, and downtown are pristine, giving visiting business people and tourists a highly favorable impression of the Singapore city-state, a factor often noted in attracting international corporations. To spice up its sometimes staid image, a large casino, hotel and entertainment cluster is being constructed on reclaimed land near the expressway and close to downtown.

As one of Asia's leading tradeports, logistics is big business in Singapore, accounting for 7 percent of the nation's GDP. In 2001, CAAS along with Singapore's Economic Development Board and the local government authority created a 60 acre Free Trade Zone at the airport. Known as Airport Logistics Park of Singapore (ALPS), the zone has been developed to house value-adding third-party logistics providers, firms involved in assembling high-tech products, and e-commerce fulfillment. With direct airfield access, a considerable number of the world's top logistics firms already have located in the zone, most in multi-story facilities, given the airport's limited developable land.

The airport is minutes away from large wafer fabrication and disk-drive manufacturing facilities that rely on Changi's sophisticated and rapid international air cargo handling. Reclaimed open land lies to the east of the airport and to the west is an industrial park with an aeronautical focus.

Aggressive wide-lane highway development ensures that all of Singapore's industrial, office, hotel and exhibition space is in quick and easy access to the airport. The most distant industrial estate, for example, is still within 40 minutes of Changi. Because of the great importance of international air passengers and air cargo for Singapore's economy, Changi has become the pivotal transportation node in what is essentially an island-wide aerotropolis.

Dubai: United Arab Emirates

The leaders of Dubai have been visionary in their use of air commerce to foster investment and development in the emirate. Recognizing that the emirate's position halfway between Asia and Europe could make it an important transit point for passenger and cargo traffic, a decision was made in the mid-1980s to fully liberalize its air cargo and passenger access for development purposes.

This put air cargo at Dubai International Airport on a rapid trajectory. By 1998, the airport was handling 300,000 tons annually in its Cargo Village, with another 120,000

tons flowing through temporary areas. Dubai's air cargo has continued its rapid trajectory in recent years to 1.5 million tons in 2006, up from 940,000 tons in 2003. With cargo growth at the airport continuing at a breakneck pace, new facilities have followed suit. The first phase of a Mega Cargo Terminal with annual capacity in 2018 expected to be 5 million tons has been completed along with a state-of-the-art fresh flower facility.

Dubai's airport is within a free trade zone, which makes it even more attractive to companies looking to invest in the Emirate. The Dubai Airport Free Zone (DAFZ) has 1.2 million square meters of space for offices, warehouses and distribution centers and manufacturing plants. Its benefits, including 100 percent foreign ownership of companies in the Zone, tax-free status for up to 30 years and no personal income tax, are designed to attract those companies producing high value-to-weight goods and shipping them by air. There are over 330 companies in the DAFZ, including Bang & Olufsen, Boeing, Chanel, Diageo, Johnson & Johnson, LVMH, Mitsubishi, Caterpillar, Porsche, Rolls Royce and Wyeth Pharmaceuticals.

So successful has development been at and around Dubai International Airport, that the emirate's leaders are currently constructing a second massive airport complex 10 years earlier than planned. The new Dubai World Central Airport (JXB), expected to open in 2008, will be an example of the Airport City/Aerotropolis model. It will include planned clusters of industries in logistics, high technology, financial services and tourism whose needs are served by aviation. The entire Airport City complex, when fully built out, will cover 140 square kilometers (54 square miles), including an airport operating area composed of six parallel runways and three passengers terminals with extensive shopping and entertainment arcades. The first commercial zone will be Dubai Logistics City, located adjacent to the airport operating area and next to the Jebel Ali Free Zone.

A fully-integrated multimodal platform covering nearly 10 square miles, Dubai Logistics City (DLC) is designed to eventually support an annual air cargo capacity of 12 million tons annually—over three times that of the current world leader, Memphis (3.7 million tons in 2006). DLC will also operate as a free trade zone and offer the complete complement of logistics, transportation and supply chain management services. An express light rail system and dedicated road network will link DLC to Dubai International Airport 40 kilometers away via a special customs-bonded highway and railway.

Dubai Logistics City tenants will include light manufacturers and assemblers, importers, exporters, freight forwarders, third-party logistics providers and other companies requiring air cargo services and complex supply-chain management. By early 2007, more than 80 regional and international operators have reserved in excess of 26 million square feet of DLC land, including such logistics heavyweights and Kuehne + Nagle, Danzas, and Panalpina.

In DCL, logistics service providers can operate (1) within flexible shared facilities, such as DLC shared forwarder warehouses and offices, (2) within self-built or turnkey multi-client facilities on a DLC long-term lease, providing large-scale

multimodal and logistics services, (3)within facilities dedicated to contract logistics services defined by key customers, or (4) a combination of the above scenarios.

DLC tenants will also benefit from a custom-designed, dedicated road system that separates professional cargo flows from public traffic, exclusive access to terminal facilities and the freedom to choose whether to break and build air pallets in-house or to outsource handling to third-party service providers.

DCL is thus designed as a highly efficient location for logistics service providers to meet their local and regional business needs. Air cargo from the existing Dubai International Airport will be linked to DLC via a bonded and professionally operated shuttle service. This scheduled resource will operate round-the-clock, several times an hour, delivering cargo directly to the heart of the DLC business community.

In addition to logistics and distribution service providers, Dubai Logistics City is targeting manufacturers and supplies of high-tech and electronics, pharmaceuticals, health care and life sciences, consumer goods and fashion, spare parts and after-sales services, and disaster relief aid facilities.

Tenants can build their own customized facilities on DLC land under long-term lease and establish dedicated operations, such as distribution centers and regional head offices to manage their core business. Alternatively, tenants can establish themselves in advanced business units provided by DLC such as distribution centers, light industrial units and offices. Operations can also be outsourced to contract logistics companies and even manufacturers.

Along with Dubai Logistics City, other airport city components of Dubai World Central will include (1) Commercial City which will Dubai World Central's business and financial hub with more than 85 towers ranging from six to seventy-five stories in height and expected to employ around 130,000 people, along with up to twenty-five hotels, ranging from three-star to five-star deluxe, (2) Enterprise Park targeting advanced materials manufacturing and the home of research institutions, conference venues, pavilions, and a medium-size science park with its own specialized university, and (3) Residential City to house up to 250,000 people in a mix of two-story villas and luxury apartments in blocks reaching up to twenty-four stories in height. Residential City will also include three hotels, an international school, medical facilities, and a large shopping mall.

Exhibit 2.30 is a rendering of Dubai World Central International Airport and its adjacent airport cities. Scheduled build-out is 2017; exceptionally fast by world standards, but not by Dubai's construction and implementation standards.

Subic Bay, Philippines

In the prior section, we noted how establishing the FedEx regional hub at Subic Bay accelerated the development of the area around it. Within months of the opening of

the regional hub in 1995 with only 15 daily flights, substantial investment in time-sensitive industries began flowing into industrial parks at and around the air express hub. As the FedEx hub expanded, many more firms were attracted to the airport region. These included, among numerous others, South Korea's Anam Group, one of the world's largest producers of computer chips. Anam invested US $400 million in its Subic Bay plant that now turns out 50 million chips per month, equivalent to nearly half the production of South Korea. Also from South Korea, Poongsan constructed a $100 million facility to make components for chip boards. Taiwan's Wistron (Acer's manufacturing subsidiary/spin-off) was attracted to Subic Bay's fast-cycle logistics and rapid response distribution time, investing $120 million in its computer assembly facility there. Other major microelectronics firms, such as Taiwan's TEMIC Semiconductor, Japan's Omran, and U.S.A.'s Sanjo Allow, were attracted to Subic Bay for the same reason.

Between 1995 and 2000, 150 firms located around the airport, constituting US $2.5 billion in commercial investments. During the same period, as stated previously, exports increased from US $24 million annually to over US $1 billion annually. By 2005, exports exceeded $1.3 billion with airport-linked employment estimated to be 56,400. The UPS regional air hub at the former Clark Air Base (now known as the Clark Aerotropolis) is having a similar impact, drawing time-sensitive manufacturing and fulfillment centers from throughout Asia.

European Airport City and Aerotropolis Experiences

Europe has been a pioneer in the airport city model, with Amsterdam Schiphol first introducing this approach to airport and airport area development in the late 1980s. Others have followed and are beginning to expand their airport cities into full fledged aerotropolises. Here we describe Amsterdam Schiphol and Frankfurt as exemplary. Considerable airport-driven commercial development is also occurring around Paris' Charles de Gaulle Airport and London's Heathrow, the latter exhibiting the most expensive industrial space in the world around it.

Amsterdam Schiphol

Amsterdam Schiphol is the leading European airport city and is clearly driving a greater Aerotropolis. Its grounds employ 62,000 people daily—far more than the 50,000 resident criteria to attain metropolitan central city status in the U.S. Two major expressways link the airport to downtown Amsterdam and the broader urban area. A modern train station, directly under the air terminal, efficiently connects travelers to the city center and the rest of the Netherlands.

Schiphol's passenger terminal, incorporating modern retail plaza design elements, contains expansive, well-appointed shopping and entertainment arcades accessible both to travelers and the general public. By combining terminal design with mall design, Schiphol has substantially increased revenues through concession rents and passenger

purchases. In fact, the airport often attracts Amsterdam residents who come to shop and relax in its public section, especially on Sundays when most city retail stores are closed. Schiphol's terminal even has a a branch of the Rijksmuseum where passengers can view famous Dutch Masters' paintings.

A 100,000 sq. ft. multimedia aviation theme park (Dreamport Schiphol) is being developed on the terraces of Schiphol terminal. Partnering and co-branding with KLM and Boeing, Dreamport Schiphol will highlight aviation progress and be a leisure experience for travelers and airport visitors.

Directly across from Schiphol's passenger terminal, on airport grounds, is the 4 million sq. ft. World Trade Center with meeting and commercial facilities and regional headquarters of such firms as Thomson-CFS and Unilever. A Sheraton and a Hilton hotel adjoin this complex (Exhibit 2.31). Surrounding Schiphol (near the airport fence) are large tracts of land being developed for office, leisure, light industrial, and logistics purposes (see Exhibit 2.32). These include Schiphol South-East and Schiphol Logistics Park for cargo distribution and 3PLs; Anthony Fokker Business Park and Schiphol Eizenhof with 1.4 million sq. ft. and 1.8 million sq. ft. of offices, respectively; Schiphol-Rijk for time-sensitive light industrial and the Schiphol Golf and Business Center for sports, golf and leisure activities that are to complement a corporate office campus on the site.

Providing further logistical advantage, the A4 and A9 high-speed motorways are both within a mile and a half of the airport center. Radiating from Schiphol along these motorways are strings and clusters of business parks, logistics parks, high-tech industrial parks, distribution centers, information and telecommunication complexes, and wholesale merchandise marts such as the famous Aalsmeer Flower Auction Market—all of which are airport-intensive users. Exhibit 2.33 illustrates the synergies between Schiphol's Airport City and its broader regional Aerotropolis.

An excellent example of airport-Aerotropolis development synergy is Amsterdam Zuidas within a southern reaches of the city of Amsterdam, about six minutes by airport expressway or airport express train to Schiphol's passenger terminal. Zuidas is a 21st century airport "edge city" containing over 10 million sq. ft. of class A office space and retail, along with a large mixed-use commuter rail terminal with a World Trade Center above it. This airport edge city is the home of the world headquarters of both ABN Amro and ING banks and numerous regional corporate headquarters that heavily rely on Schiphol airport. In good measure because of the airport and its multimodal commercial mix, over 1,000 international companies have chosen the Amsterdam region as a place to invest and create jobs, many of which located in downtown Amsterdam, not just Zuidas.

Schiphol's experience illustrates that as the aerotropolis forms and evolves, it is a reinforcer of downtown investment and business vitality, rather than a competitor. We have seen this in Asia (Hong Kong, Singapore, etc.), the U.S. (Atlanta, Chicago, Miami, etc.) and throughout Europe. As one concrete U.S. example, Boeing located its world corporate headquarters in downtown Chicago, rather than the O'Hare area, even though

most of its commercial activities it deals with, including the headquarters of United Airlines, are in the immediate airport area.

Yet, the airport area (if properly developed and maintained) has become so attractive to office and time-sensitive industries that it often commands the highest commercial rents in the metropolitan region. This can be seen in Exhibits 2.34 and 2.35 which present the office rents (Eu/m2/yr) and industrial rents for 2006 in the immediate Schiphol area compared to those of Amsterdam city center and other outlying locations.

Frankfurt International Airport

Fraport, as it is known, is the most international hub in the world with 129 different scheduled airlines flying to 304 destinations in 112 countries. Every single day the airport handles over 140,000 passengers (54 percent of whom are transfers), 40,000 meters and greeters, 6,000 metric tones of cargo, 1,300 aircraft and 380 terminal-linked passenger trains (both short and long-distance).

Its international hub status brings in tens of millions foreign passengers annually who eat, shop, and other participate in Fraport's upscale street-scapes of commercial establishments. These include 17 duty-free shops, 97 specialty retail stores, 52 food and beverage establishments, and 44 service establishments including a medical clinic serving 36,000 patients annually and a casino. Together, these terminal retail and services facilities brought Fraport over US$200 million in profit in 2006.

Because Fraport is surrounded by protected green areas on the one side and noise-sensitive communities on the other, it has been constrained in its outward growth. Fraport management has therefore had to be innovative in its approach to airport city development. It has therefore followed a strategy of commercial development based on the principles of best use and highest value, maintaining top international standards

Connected by pedestrian walkways to Terminals 1 and 2, respectively, are Frankfurt Airport Center 1 and 2. These 1 million+ sq. ft. complexes contain offices, banks, a 1,008-room Sheraton convention hotel with a 1,400-person congress center and an executive tower with all business services. The two airport centers office complexes are targeted to companies engaged in aviation and tourist-related businesses as well as for business meetings and trade shows. They are less than a five minute walk from the public section of the airport's terminals and to the local and regional commuter rail station under Terminal 2 as well as to the long-distance ICE train station with 174 daily connections throughout Germany and Western Europe.

The Airrail Center Frankfort, currently under construction, above the airport's long-distance train station is a nine story complex more than two football fields long (see Exhibit 2.36). With covered pedestrian access to Terminal 1, it comprises nearly 2 million sq. ft. of class A office space, high-end retail, restaurants of all types, a wellness center and a Hilton Hotel with conference facilities. Airrail Center is scheduled to open in late 2008.

Near Airport Center is a development just getting underway called Gateway Gardens (see Exhibit 2.37). This 3.5 million sq. ft. project is being position as a management hub and civic plaza for international business. Designed with cutting-edge architectural style Gateway Gardens will offer trend-setting corporate office buildings, hotels, restaurants and entertainment facilities with "new urbanism" civic plazas and a central park (see Exhibits 2.38 and 2.39). In addition to business offices and their supporting urban services, an International Trade Center with meeting and conference facilities is planned. Development, which is being financed through a public-private partnership including Fraport, is expected to be market-driven and incremental, commencing this year through projected build out in 2016.

The third major development, near the other end of the airport, is a 240 acre mixed-use project called the Mönchhof site. This site will be adapted to a range of commercial facilities from logistics companies to large-scale retailers to airport-related enterprises and is being led by the real estate division of Fraport. Like Gateway Gardens, quality construction and aesthetics will be emphasized at the Mönchhof site.

Vatry

Vatry Cargo Airport in the Champagne Region of France, about 100 miles north of Paris, is a smaller cargo-oriented airports using air logistics to attract industry. It has been trying to position itself as a logistics hub and third airport of the greater Paris Region. Vatry commenced operations in March 2000 following a seven million euro investment by local authorities and advertised itself as "the first multimodal 100 percent cargo center in Europe." In 2002, Vatry handled 6,100 tons of freight and had a total of 10,300 aircraft movements. It is near the center of major trucking in Europe linked to the French motorway network (A26 and A4). Prologis, a major U.S. real estate investment trust focusing on logistics and distribution centers is building a substantial complex at Vatry. Overall, development at Vatry has been slower than many anticipated with the primary reason given as its distance from Paris and paucity of freight forwarders and 3PLs in the vicinity.

Frankfurt Hahn

A rising cargo airport in Germany at Hahn, about 100 miles from Frankfurt, is likewise positioning itself as an industrial airport. This former U.S. airbase has consistently raised its freight tonnage from just 5,500 tons in 1997 when it opened to over 130,000 tons in 2004. Frankfurt AG (now known as FraPort) has taken a major equity stake (65 percent) in Hahn with the state of Hesse taking a 17.5 percent stake in the airport and the state of Rhineland-Palatinate holding the remaining 17.5 percent share. These three shareholders have committed themselves to investing 42 million Euros (about 80 million dollars) from 2005 to 2009 to improve airport infrastructure and further expand cargo and passenger capacity.

A number of 3PLs are active at Frankfurt-Hahn. The airport features a five-lane road feeder system with integrated truck cross-docking facilities along with complete logistics services including all documentation and processing of special cargo. The airport also features 24/7 operation and is the German base of a number of air cargo charter companies, including the Western European hub of Volga-Dnepr Heavy Lift. It likewise serves as the European hub for Antonov (Russia) and as the German base for low-cost passenger carrier Ryanair.

Frankfurt-Hahn received a major boost in September 2004 when British Airways commenced weekly B747F flights to Johannesburg, Africa and Hong Kong. In November 2005, it added two more weekly flights to Hong Kong. Russia's Aeroflot has also made Hahn its European cargo hub with four DC10Fs stationed there currently offering 12 weekly fights to Moscow, Beijing, Shanghai, and Tokyo. Scheduled cargo flights are also now offered by Egypt Air, Air Armenia, Iran Air, Turkey's MNG Airlines, and Royal Jordanian.

Hahn's success in attracting air cargo companies, which is driving nearby airport-linked industrial development, is due to its fast and efficient cargo handling and lower costs compared to Frankfurt International Airport and other large European airports. Hahn also has the advantage of being located within four to six hours trucking time of major European markets.

Once Hahn's air cargo traffic began to boost airport-related industrial development, additional air passenger demand was created. Annual passenger traffic expanded from just 29,000 in 1998 to 1.5 million in 2002, to 2.8 million passengers in 2004, and on up to 3.7 million passengers in 2006. Much of this passenger growth resulted from Irish low-cost carrier RyanAir establishing Hahn as its German hub and a number of other new European carriers have started passenger service at Hahn, as well, over the past three years.

Reasons for Commercial Success or Failure

Judging particular commercial developments successes or failures is inherently risky. There are too many stakeholders and too many criteria to allow a simple assessment. The North Carolina Global TransPark which has generated little employment and processed little cargo is sometimes judged at least a partial success for becoming a rallying point for Eastern North Carolina economic development efforts while the Las Colinas development was not profitable for its original owner and is said to struggle even now with high debt levels. Memphis, despite the high employment impact of air logistics still struggles with unemployment and poverty rates that are twice the national average. Further, any assessments must be provisional. Reversals in fortune could occur. Many factors are involved and the number of thoroughly-studied cases limited.

Exhibit 2.40 summarizes our broad assessments of the success and failure of the airport cities just surveyed. In general, if the airport is not successful, the airport city is not successful. The area can be successful, however. With the help of road and rail logistics, the Fort Worth Alliance development itself has been successful even though the airport, despite being home to FedEx' Texas hub, has only a fraction of the air cargo processed at nearby Dallas-Fort Worth, however. Similarly, most of the commercial development surrounding Ontario Airport, which is located in the heart of one of the nation's most rapidly growing metropolitan areas, is a consequence of ocean-based logistics, not air logistics.

The success of some airports, such as Ontario and Frankfurt Hahn, is driven by capacity constraints at nearby major hubs, LAX and Fraport, respectively. Frankfurt Hahn received a huge cargo boost from FraPort's restrictions on night flights – restrictions that angered FraPort's main tenant, Lufthansa, because it increased operating costs and necessitated additional capital investments. The Southern California Logistics Airport and Vatry have been less successful because nearby airports, located more conveniently to regional population and employment centers, have sufficient capacity for present needs.

The planned Kansas City development is beset by a number of issues. First, the region may not be sufficiently strong to support a critical threshold of aviation-dependent business activity nor is the airport sufficiently central in air routes to generate appreciable levels of activity. Second, the airport is sufficiently distant from densely-populated residential areas to make labor recruitment difficult for businesses located near the airport. Third, although the Kansas City economy is strong, there is not a large need for new commercial space. That that exists is more suitably served by piecemeal developments in and near the city itself. Similar factors apply even more to the North Carolina Global TransPark.

Denver's airport appears to be set for development. The airport is well-served and generates a large volume of passenger traffic. Nearby Aurora is the most rapidly-growing city in Colorado. Nevertheless, the airport, barely ten years old in its new greenfield location is still beyond the rapidly approaching crabgrass frontier. The major commercial developments surrounding other airports, including O'Hare and Dulles, needed to wait on suburbanizing residences and a surge in the demand for office space that resulted in the formation of edge cities. As Joel Garreau points out in his 1991 book, edge cities tend to develop between the airport and the central city. Similar factors affected the pace of growth near Dallas-Fort Worth with the difference that a single large developer was able to accommodate much of the demand for real estate and coordinate building.

The Asian airports surveyed are unique in that each is a relatively new greenfield airport, with Singapore's Changi at just over 25 years being the oldest among them. Each was built because of capacity constraints at existing airports and each was a central component of national strategies to maintain global competitiveness in the face of increased pressure from other regions. Rapid processing of passengers and cargo along

with attractive terminals has helped Changi maintain its position in the face of a less-than-ideal location and competing hubs in Malaysia and Thailand. The same has helped Hong Kong International Airport maintain its, and Hong Kong's, threatened role as gateway to China. Similarly, Incheon and the surrounding developments are part of a strategy to help Korea become a mere flyover zone in Northeast Asia.

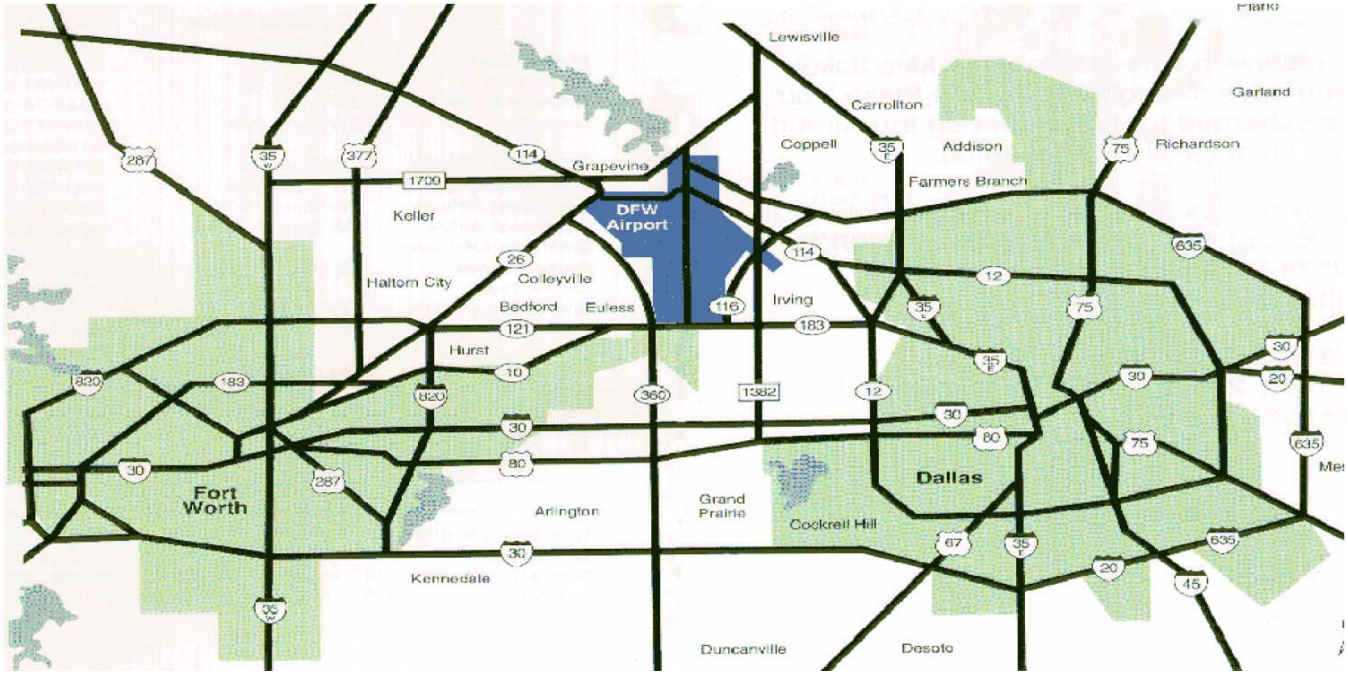
Unlike many other regions, Dubai is purely a product of air transport. It acts as a central place and intermediary on one of the largest cargo flows in the world – Asia to Europe – and a passenger hub connecting first and second tier cities in Europe and Asia. The generous tax forgiveness programs for business operators at both airports, discussed above, is an indicator both of the level of government concern for future national economic development and of the somewhat limited attraction of some, even large, airports. Operating in increasingly competitive arenas, airport operating efficiency will be critical to their success. Exhibit 2.41 illustrates the efficiency needed for airports to be competitive.

The two major European airports mentioned have largely followed the Asian lead. Frankfurt and Schiphol are two of the four major European airline hubs. Frankfurt and Amsterdam are probably the less competitive cities of the four major hubs. Their national governments have, therefore, been willing to think systematically about the role of their airports in national competitiveness to a degree not yet seen in London and Paris.

A successful airline partner is often the critical success factor driving nearby commercial growth. Memphis and Louisville are both almost exclusively dependent upon a single carrier to deliver cargo. Those cities have successful commercial developments largely because FedEx and UPS have developed large successful airlines. Rickenbacker's success is also the product of a single airline. Commercial developments surrounding two airports, Dayton and Cincinnati, almost collapsed after the cargo airlines serving those cities were either absorbed or closed. All successful airports examined are major bases for successful airlines.

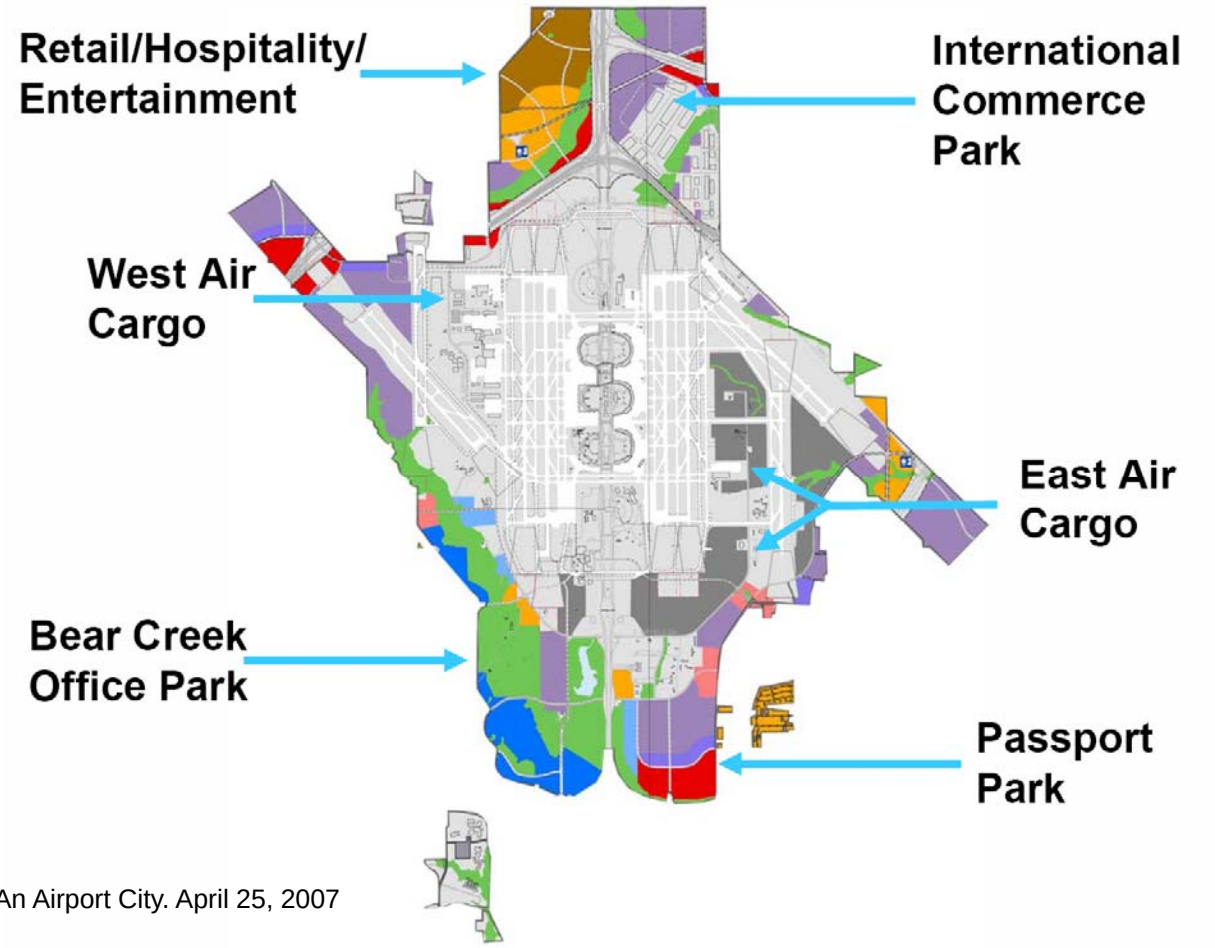
[This page is intentionally blank]

Exhibit 2.1
DFW AIRPORT OVERVIEW—DFW AIRPORT IS LOCATED IN BETWEEN THE CITIES OF DALLAS AND FORT WORTH, AND IS LARGER THAN MANHATTAN ISLAND



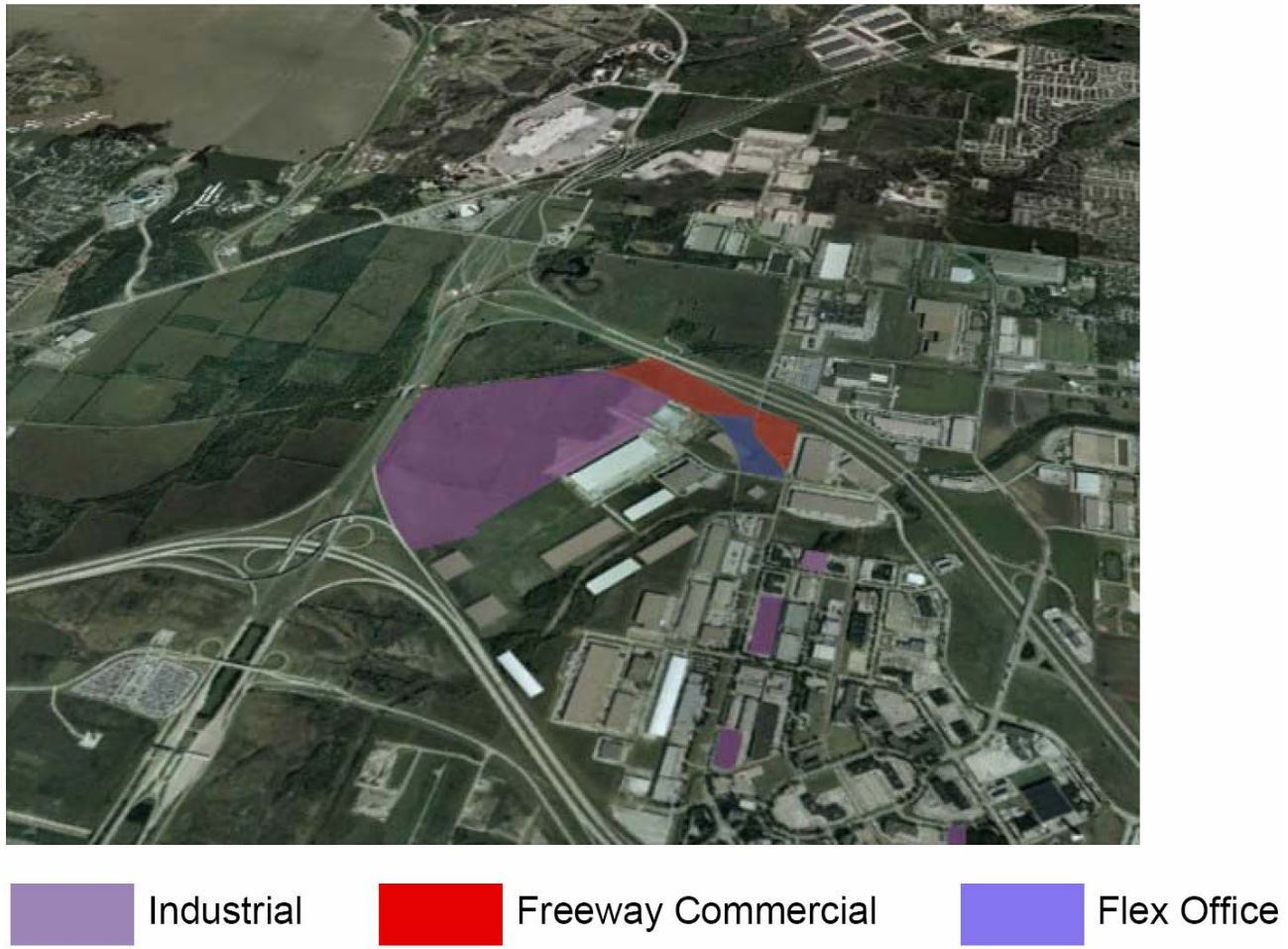
Source: DFW—An Airport City. April 25, 2007

Exhibit 2.2
DFW AS AN AIRPORT CITY—DFW IS FOCUSED ON SIX KEY AREAS OF COMMERCIAL DEVELOPMENT



Source: DFW—An Airport City. April 25, 2007

Exhibit 2.3
DFW AS AN AIRPORT CITY—INTERNATIONAL COMMERCE PARK

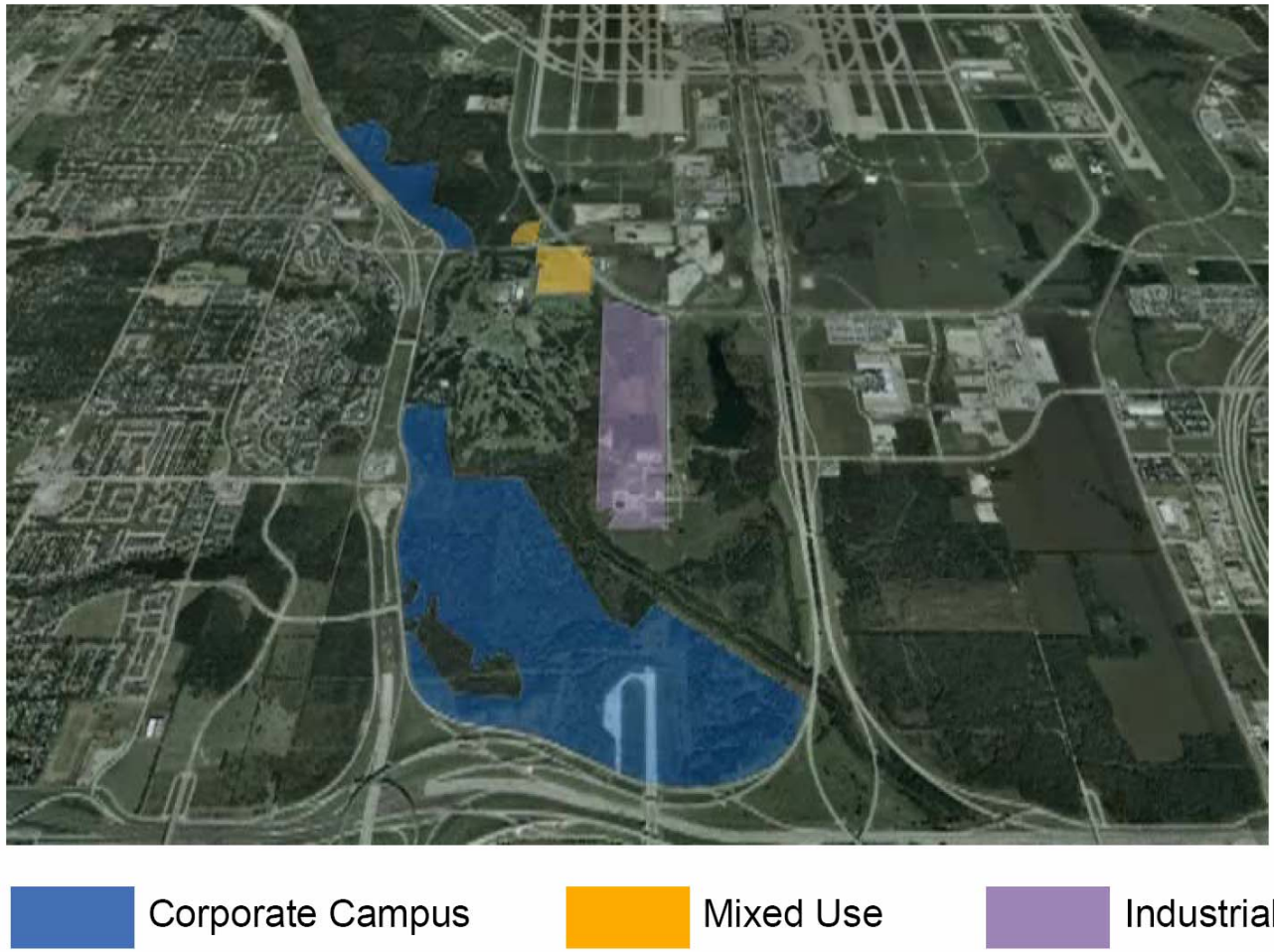


Source: DFW—An Airport City. April 25, 2007

Exhibit 2.4
DFW AS AN AIRPORT CITY—RETAIL/HOSPITALITY/ENTERTAINMENT

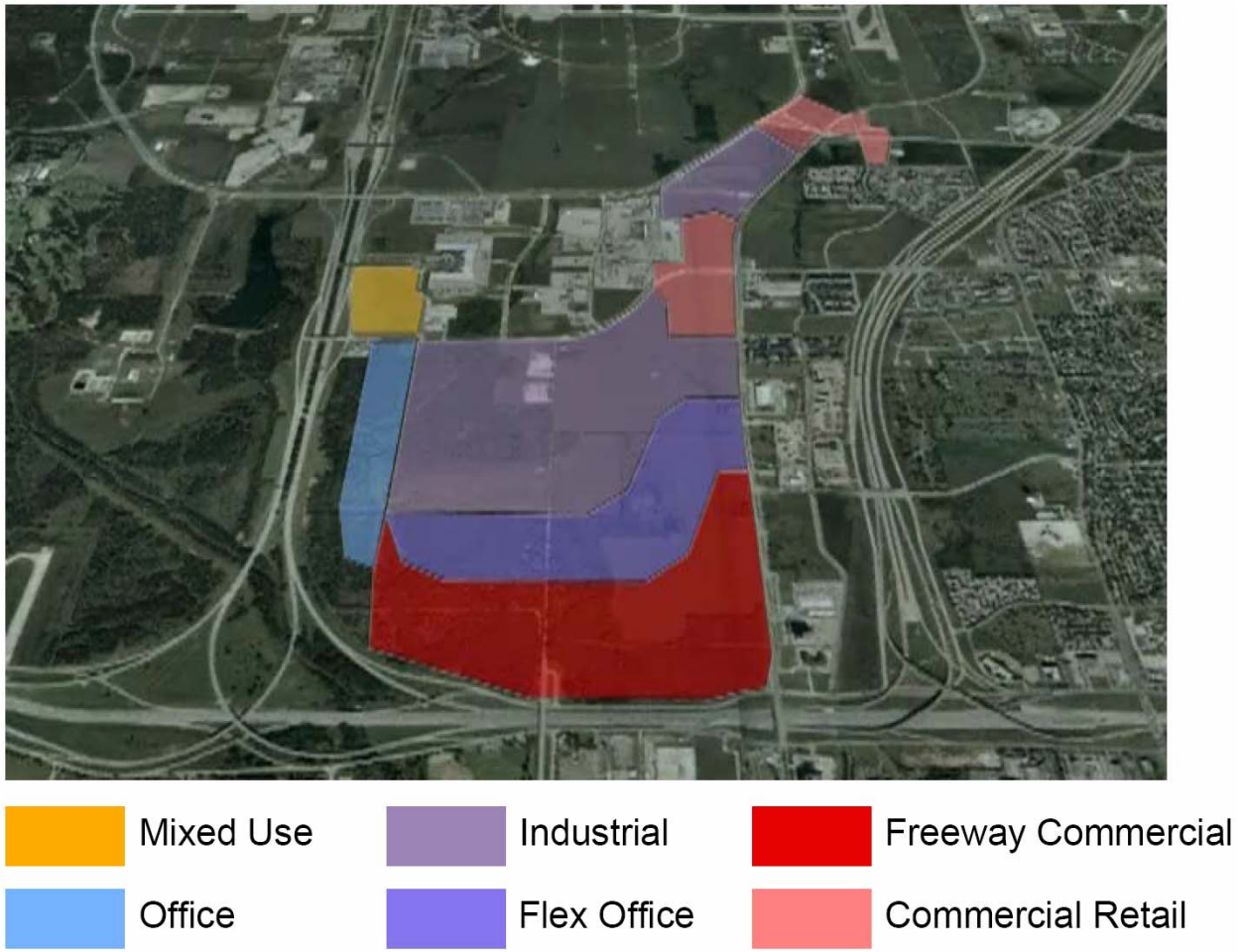
Source: DFW—An Airport City. April 25, 2007

Exhibit 2.5
DFW AS AN AIRPORT CITY—BEAR CREEK OFFICE PARK



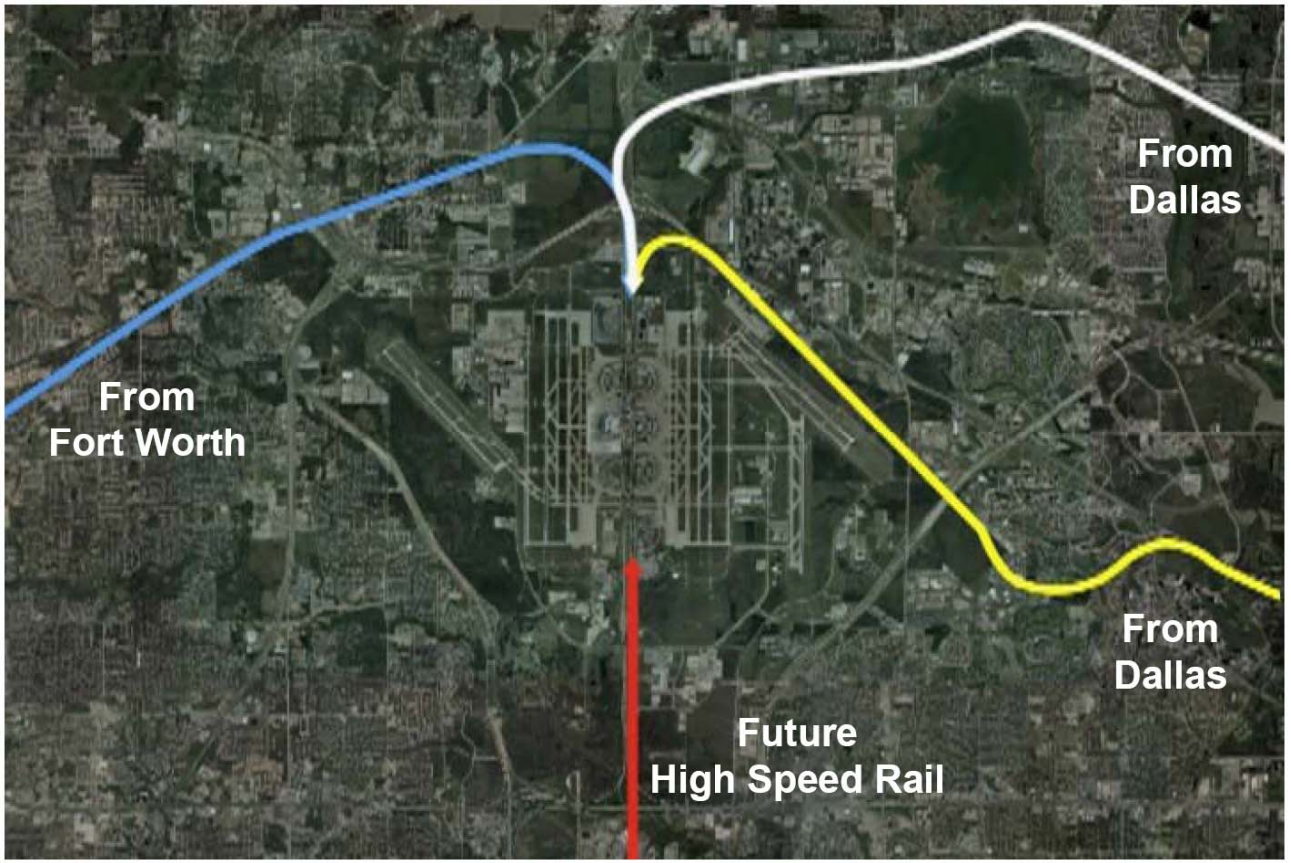
Source: DFW—An Airport City. April 25, 2007

Exhibit 2.6
DFW AS AN AIRPORT CITY—PASSPORT PARK



Source: DFW—An Airport City. April 25, 2007

Exhibit 2.7
DFW AS AN AIRPORT CITY—FUTURE LIGHT RAIL, COMMUTER RAIL AND HIGH-SPEED RAIL LINES WILL FEED INTO NEW STATIONS



Source: DFW—An Airport City. April 25, 2007

Exhibit 2.8
CURRENT AND PLANNED DEVELOPMENT IN THE DIA AIRPORT AREA.

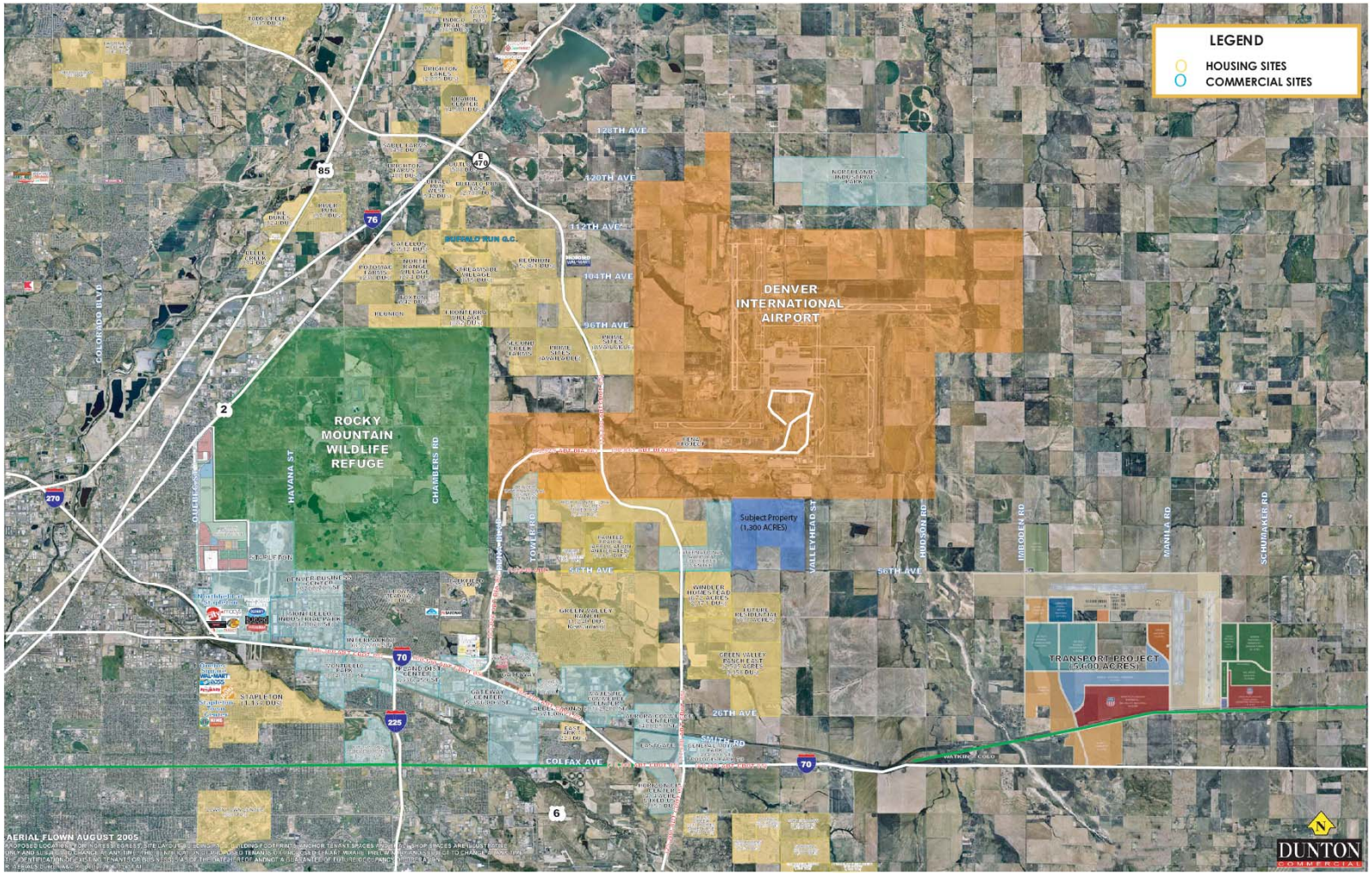


Exhibit 2.9
PROPOSED 1,700-ACRE DEVELOPMENT (IN PROGRESS) AT DIA SOUTHWEST BOUNDARY

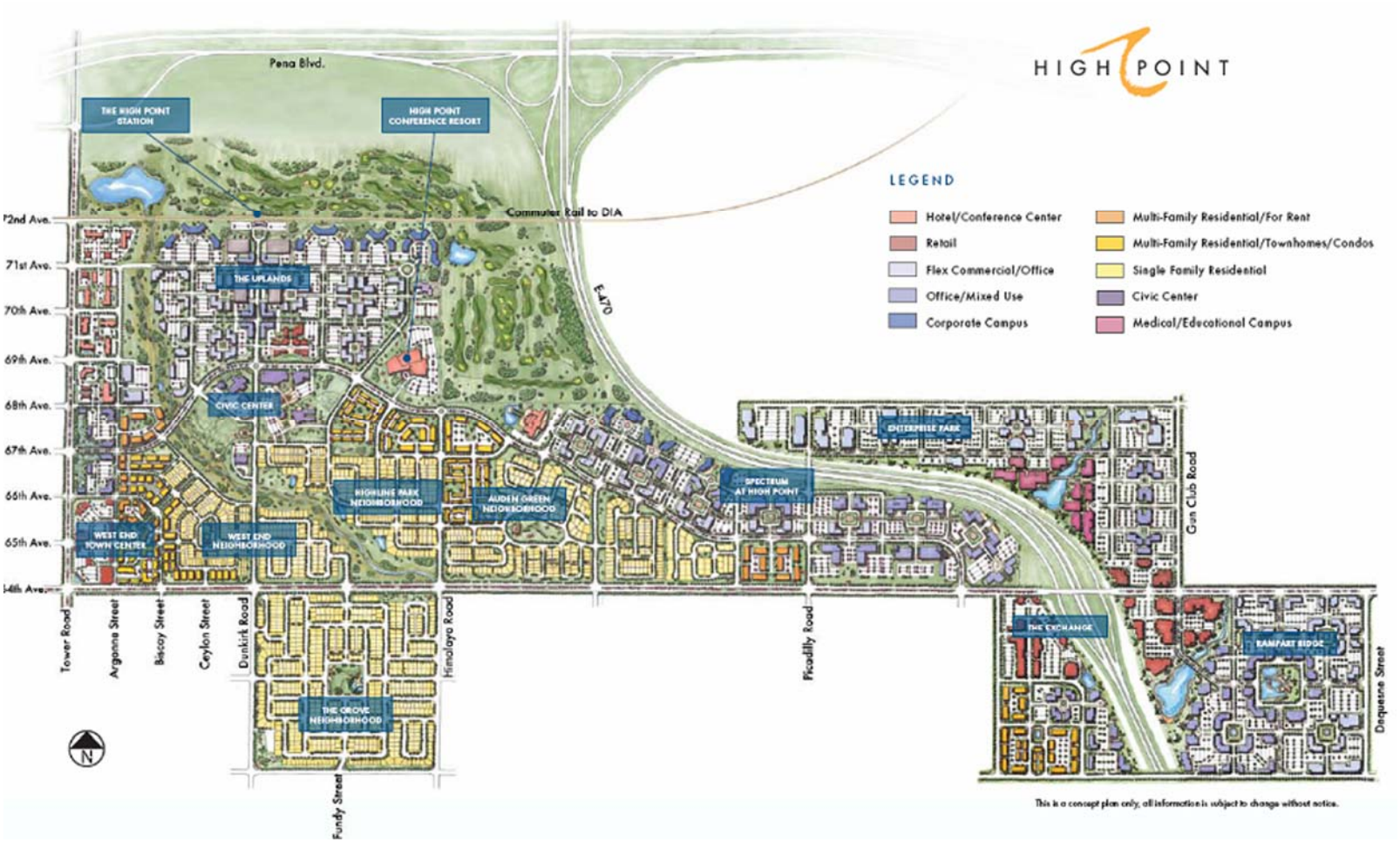


Exhibit 2.10
FASTRACKS ACCESS TO DIA 1287 (POSSIBLE ULTMATE CONFIGURATOIN)

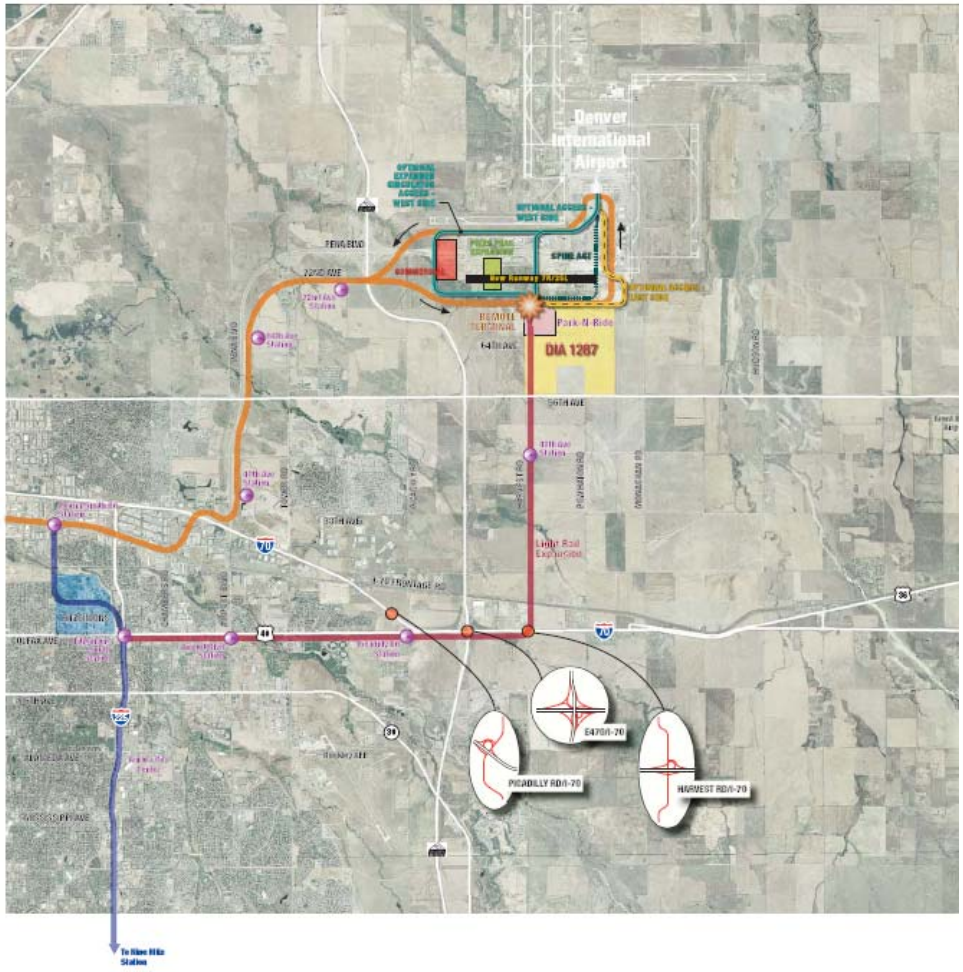


Exhibit 2.11
COMPARATIVE ECONOMIC IMPACT OF AIRPORTS

Airport/City	2004 Passengers	Metro Population	Economic Impact
Memphis	10,883,759	1,250,293	$21 Billion
Denver	42,393,766	2,330,146	$17 Billion
Phoenix	39,504,898	3,715,360	$14 Billion
Minneapolis	36,713,173	3,116,206	$11 Billion

Source: Memphis-Shelby County Airport Authority, 2005.

Exhibit 2.12
MEMPHIS AEROTROPOLIS
LOGISTICS AND DISTRIBUTION CLUSTERS, 2005

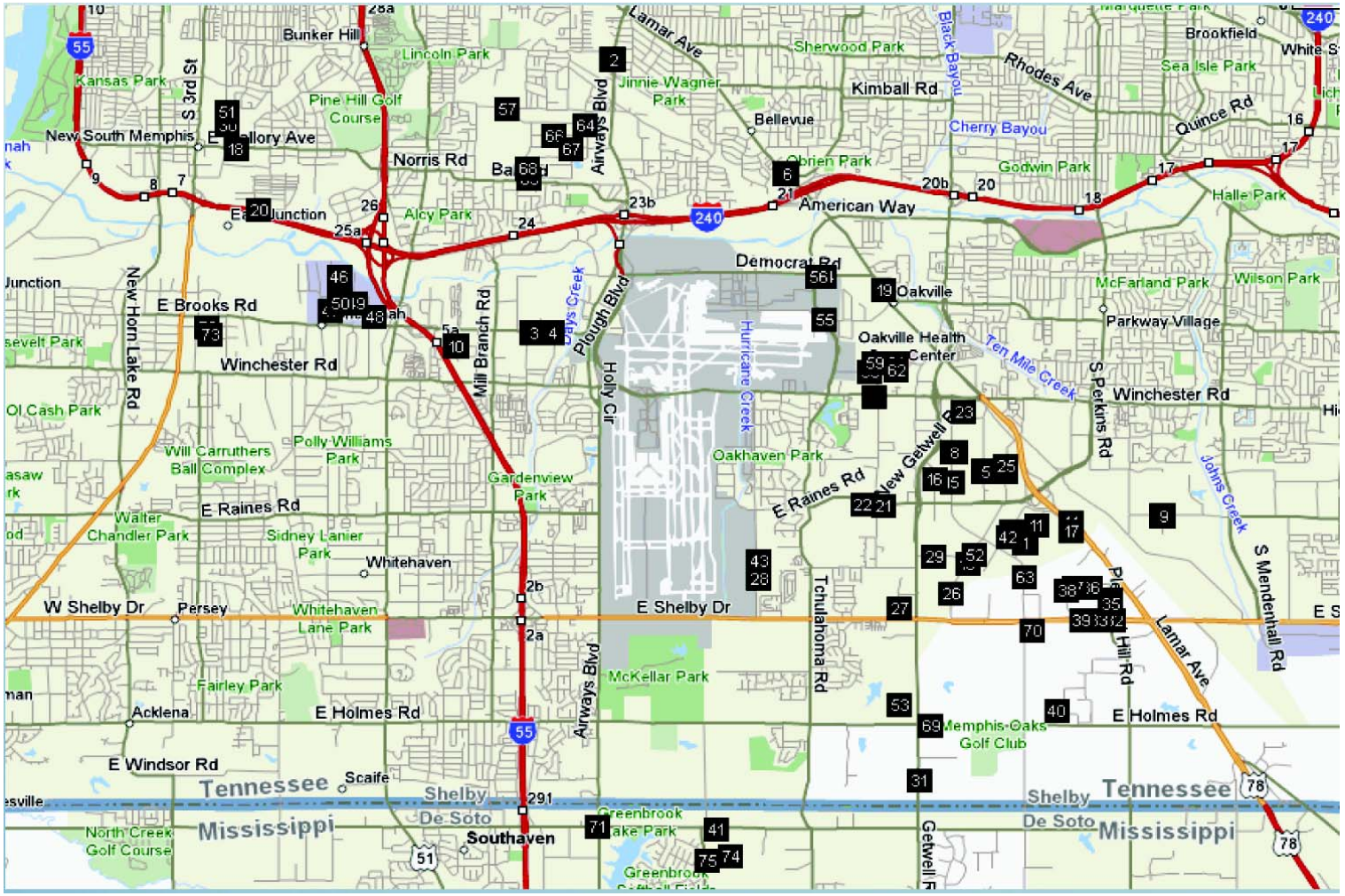


Exhibit 2.13
KCI BUSINESS DISTRICT & ECONOMIC DEVELOPMENT INCENTIVES

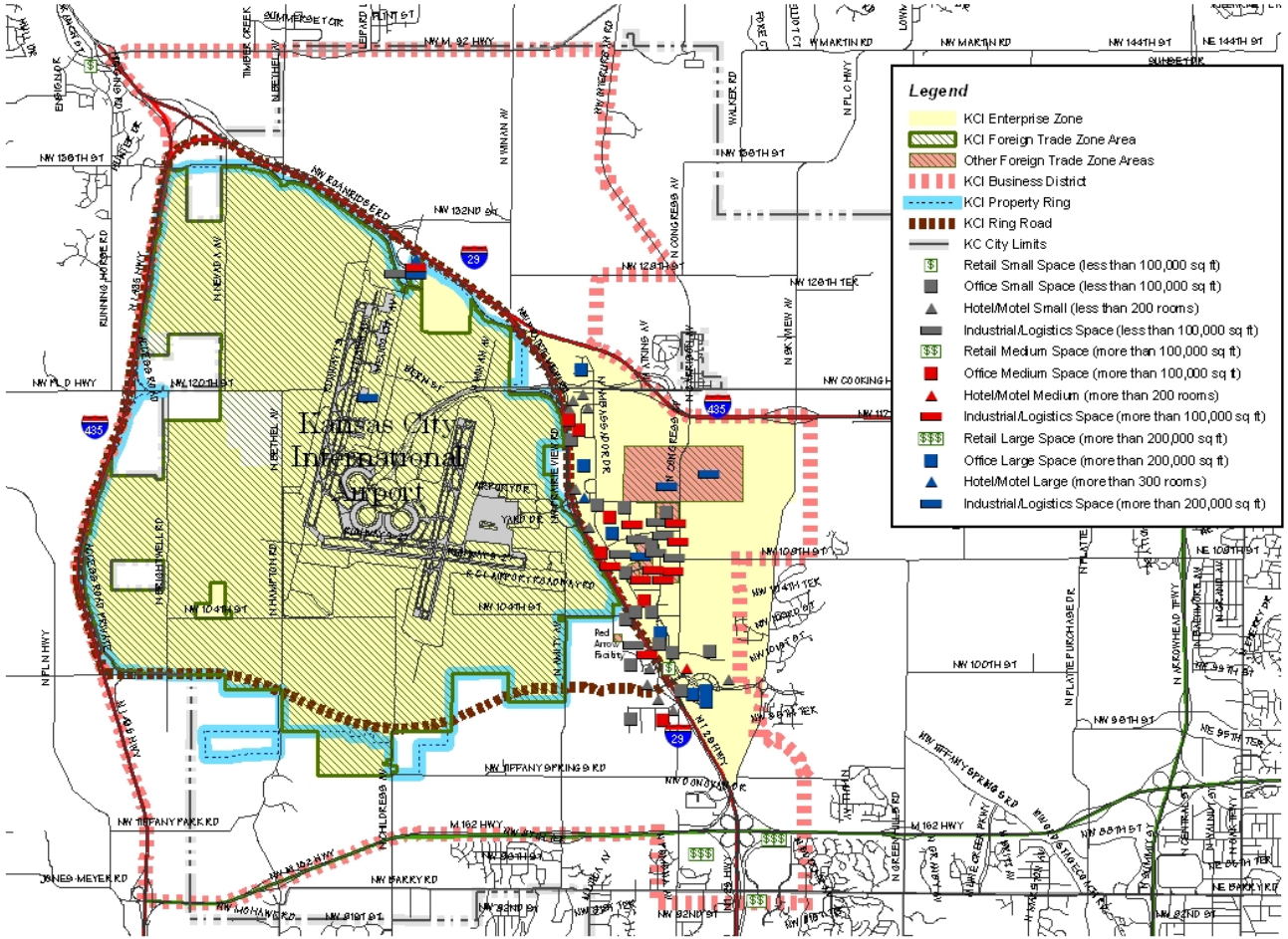


Exhibit 2.14
KCI AIRPORT PROPERTY AND SURROUNDING AREA WITH PROPOSED CLUSTERS

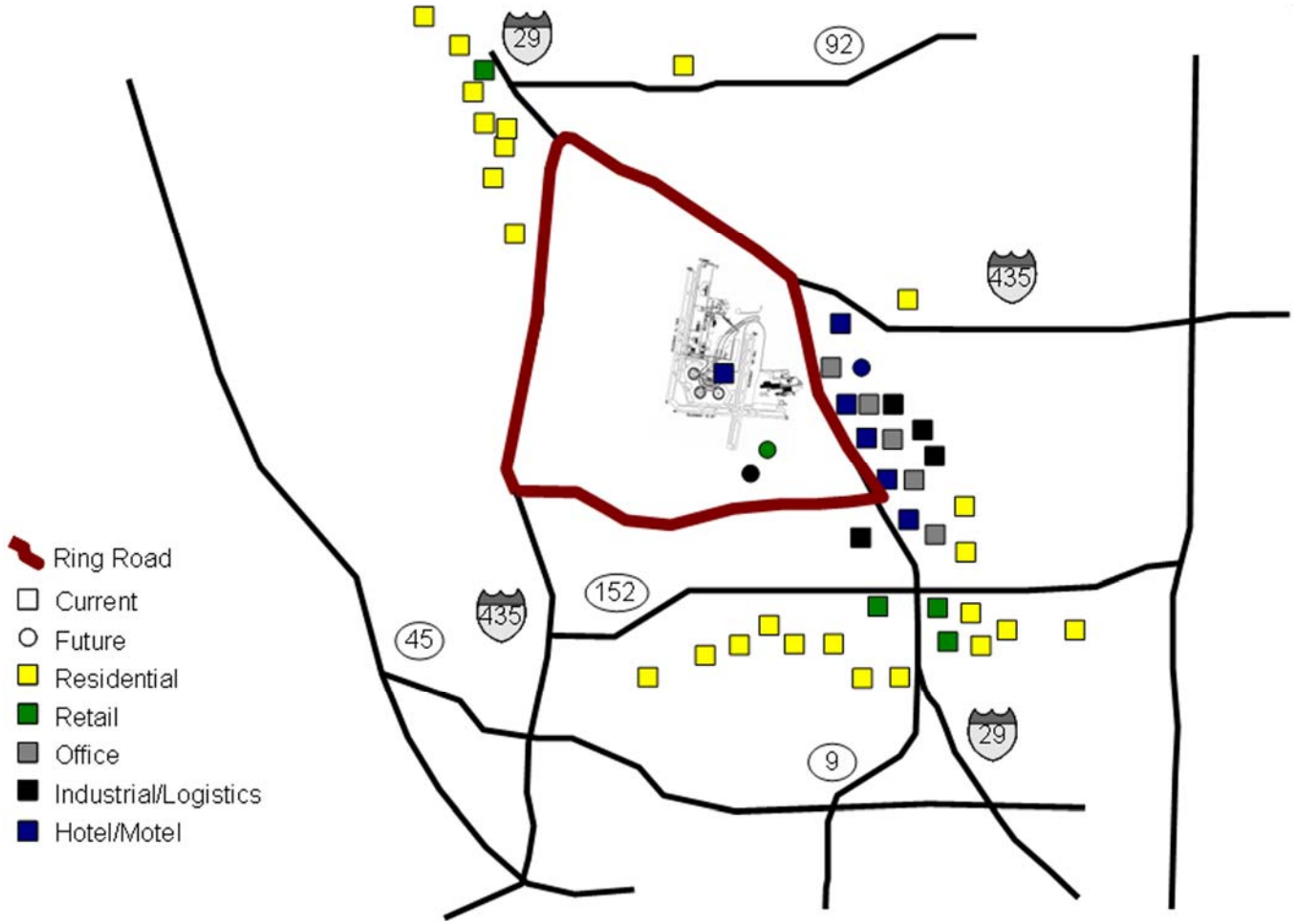


Exhibit 2.15
LOCATION OF KCI BUSINESS AIRPARK

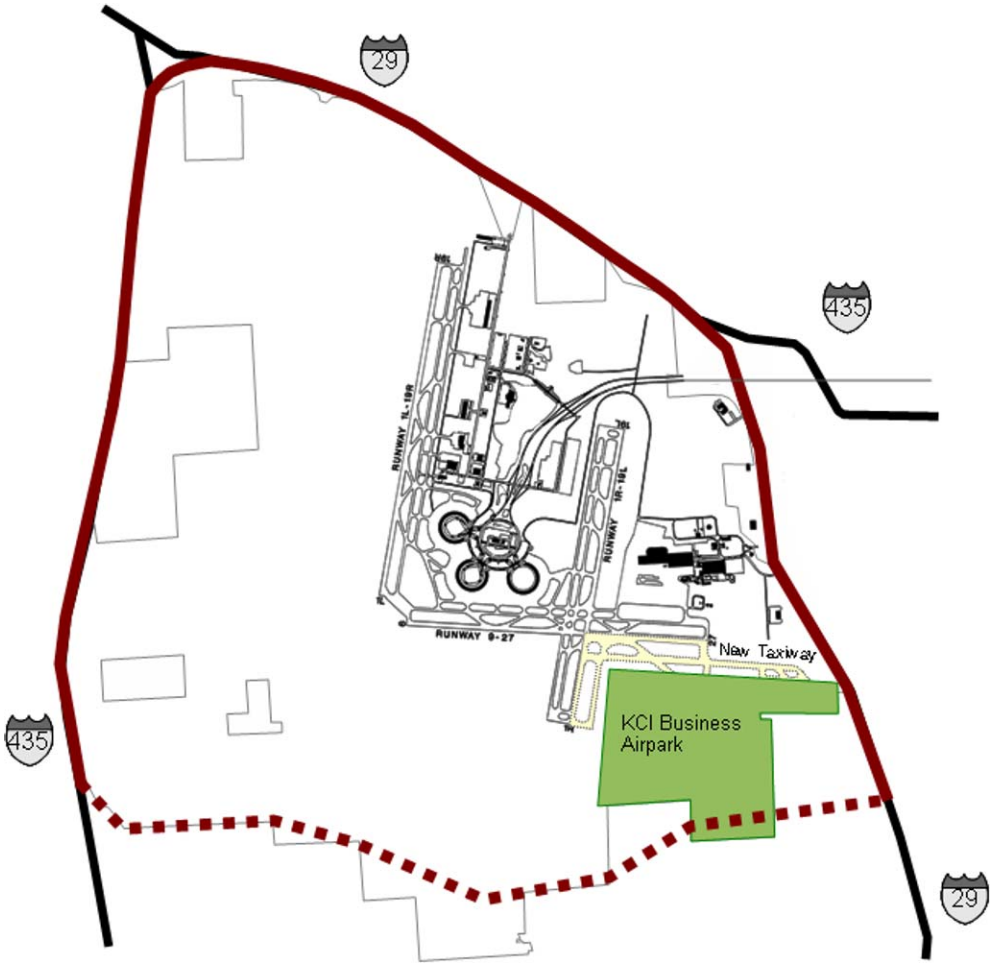


Exhibit 2.16
LOCATION OF KCI BUSINESS AIRPARK CONCEPTUAL MASTER PLAN

Exhibit 2.17
TYPE OF DEVELOPMENT PLANNED IN KCI BUSINESS AIRPARK

Development type	Site area	Building area	Building type
Airfreight	300 acres	2,240,000 sq. ft.	2 story
Maintenance/Hanger	65 acres	462,000 sq. ft.	1 story
Office/Distribution/Industrial	207 acres	1,763,300 sq. ft.	1 story
Office	69 acres	1,254,500 sq. ft.	2 & 3 story

Exhibit 2.18
HONG KONG INTERNATIONAL AIRPORT

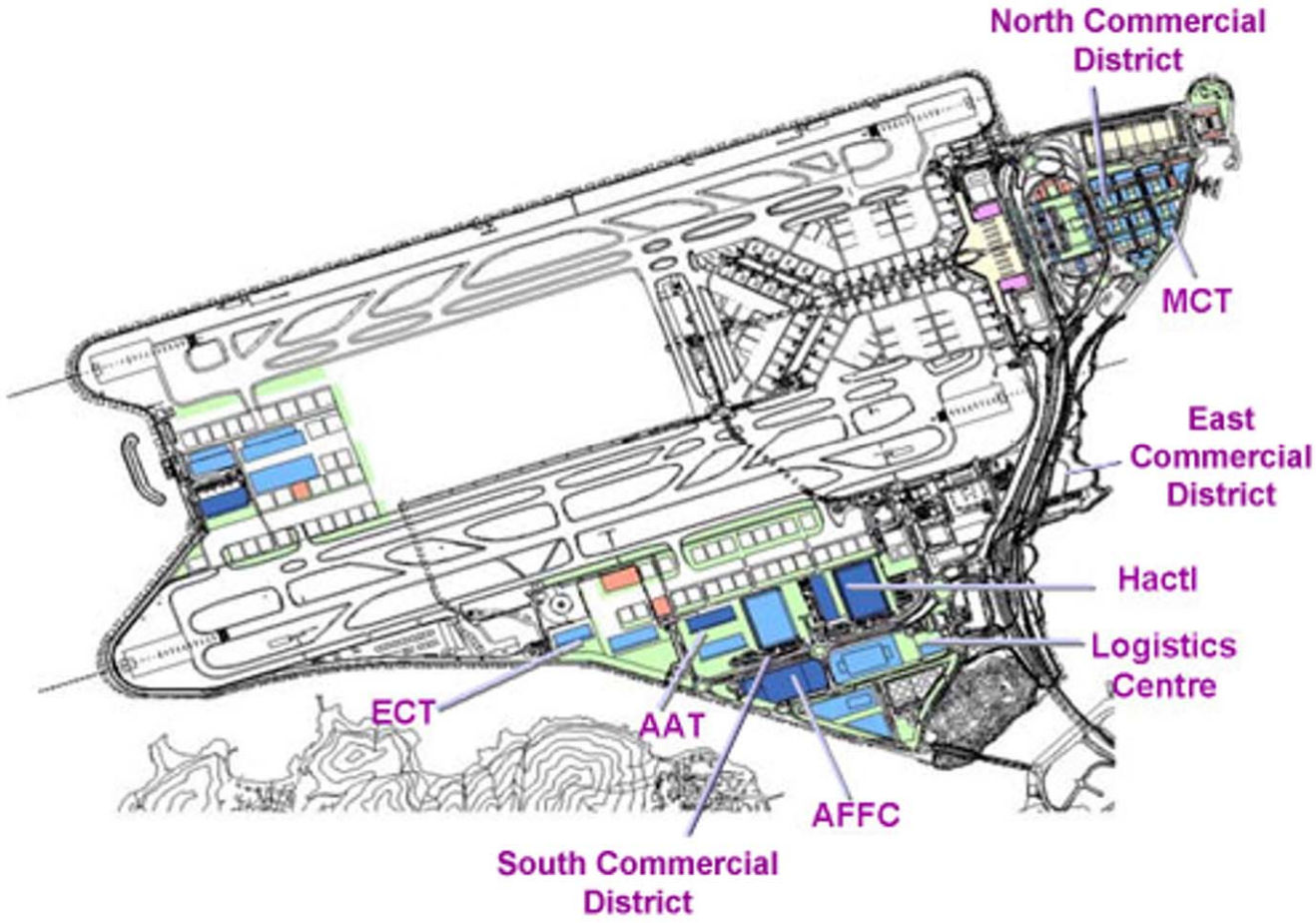


Exhibit 2.19
OFFICE AND RESIDENTIAL DEVELOPMENT
NEAR HONG KONG INTERNATIONAL AIRPORT MAJOR CARGO TERMINAL

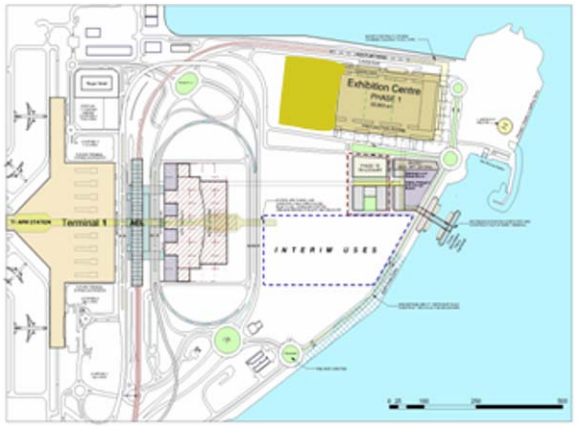
Exhibit 2.20
HKIA SKYCITY, PHASE I

Source: SOM.

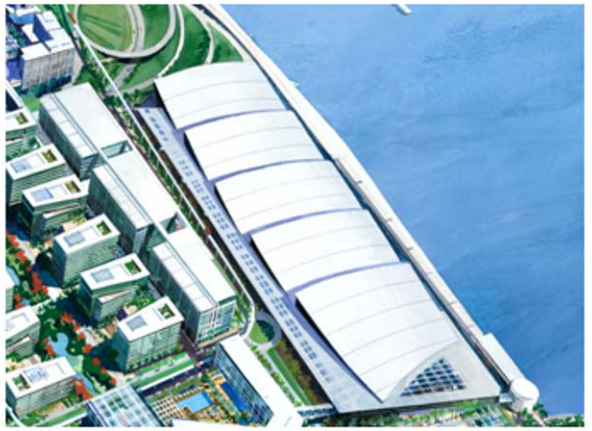
Exhibit 2.21
TERMINAL 2 / SKYPLAZA

Source: SOM.

Exhibit 2.22
SKYCITY – PHASE 1



Phase 1



International Exhibition Center

SkyPlaza

Cross Boundary Ferry Terminal

Source: HKIA.

Exhibit 2.23
SKYCITY ULTIMATE DEVELOPMENT PHASING CONCEPT

Source: SOM.

Exhibit 2.24
SKYCITY AS A PEDESTRIAN PRECINCT

Source: SOM.

Exhibit 2.25
SKYCITY AND HONG KONG DISNEYLAND

Exhibit 2.26
INCHEON INTERNATIONAL AIRPORT (SEOUL, KOREA)

Exhibit 2.27
IIAC AIR CITY DEVELOPMENT CONCEPT

Source: IIAC.

Exhibit 2.28
INCHEON AIRPORT FASHION ISLAND PROJECT

- **Area** : IBC-I Phase 2(81.7 Acres) / The railway station area (98 Acres)
- **Total Expense** : US $ 1 billion
- **Basic Development Plan**
  - Develop the area as the fashion mecca in Asia with state-of-art convention, hotels, shopping malls, luxury outlets and retails
- **Present Status**
  - MOU signed with a world leading fashion association (March 31, 2006)
  - Master Plan is being developed by project leaders

A World Best Air Hub

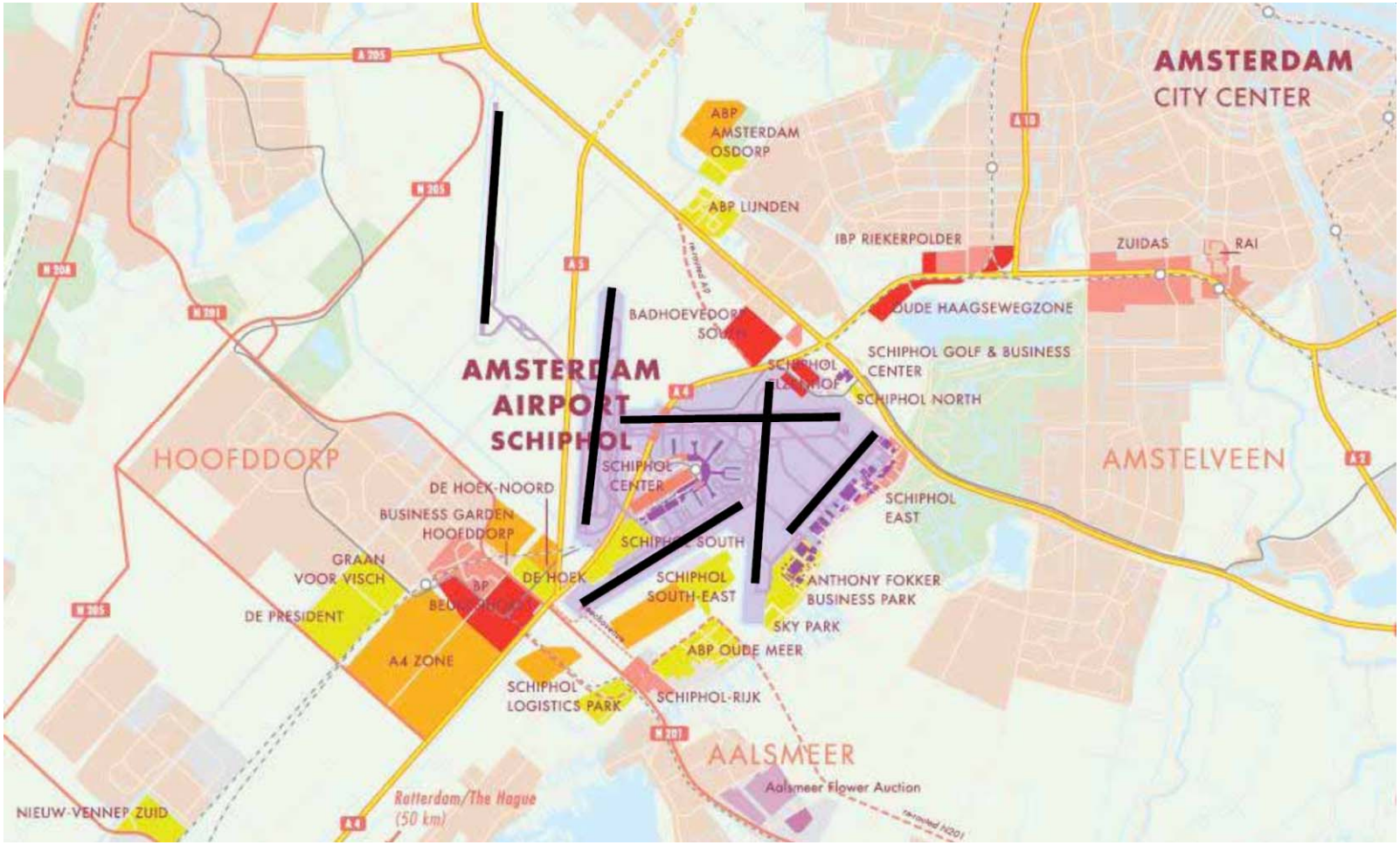
Source: IIAC.

Exhibit 2.29
NEW SONGDO CITY (CONCEPTUAL PLAN)

Exhibit 2.30
DUBAI WORLD CENTRAL INTERNATIONAL AIRPORT AND ITS ADJACENT AIRPORT CITIES

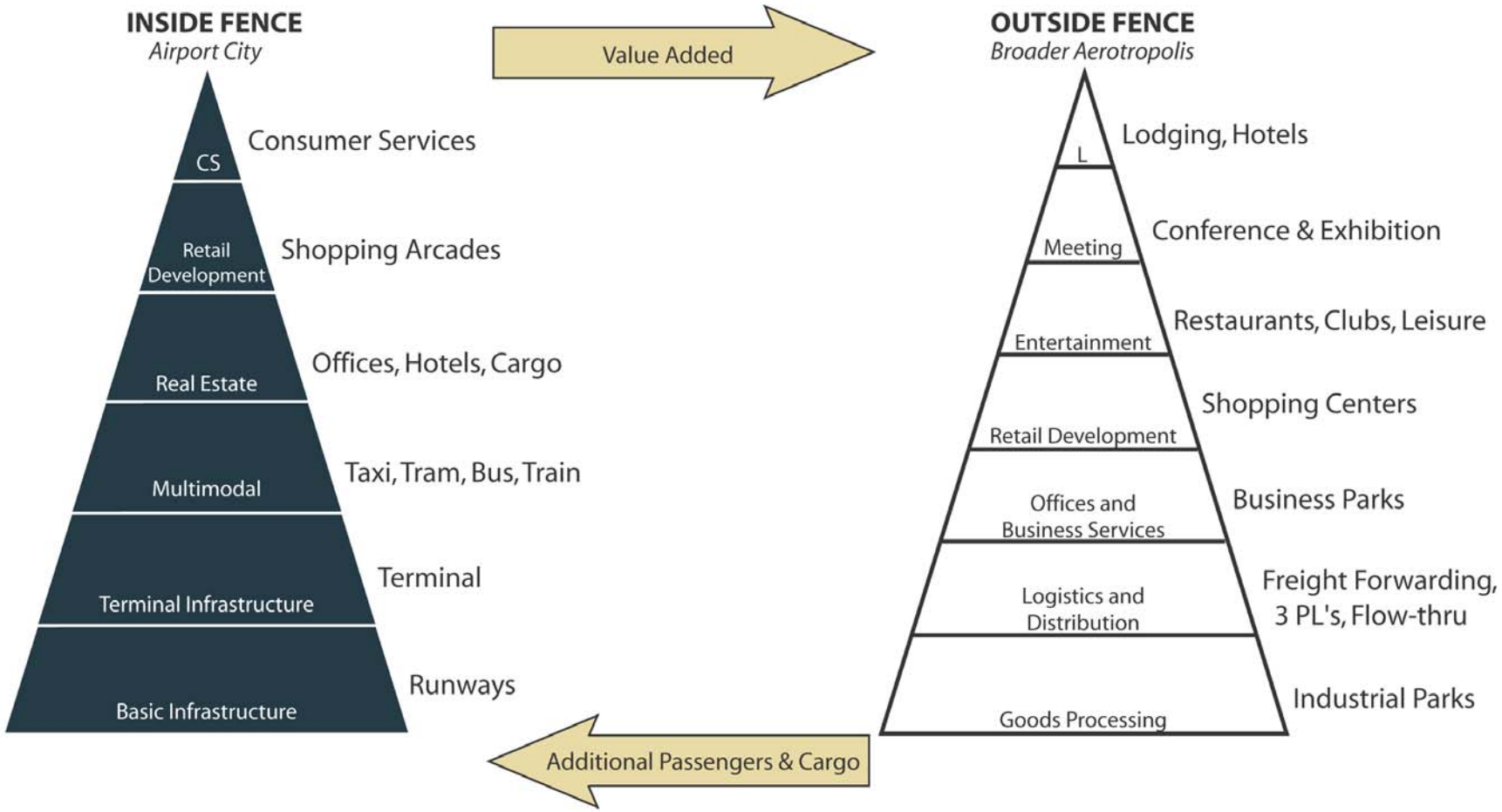
Exhibit 2.31
AMSTERDAM SCHIPOL—WOLRD TRADE CENTER

Exhibit 2.32
AMSTERDAM SCHIPOL AREA COMMERCIAL CLUSTERS



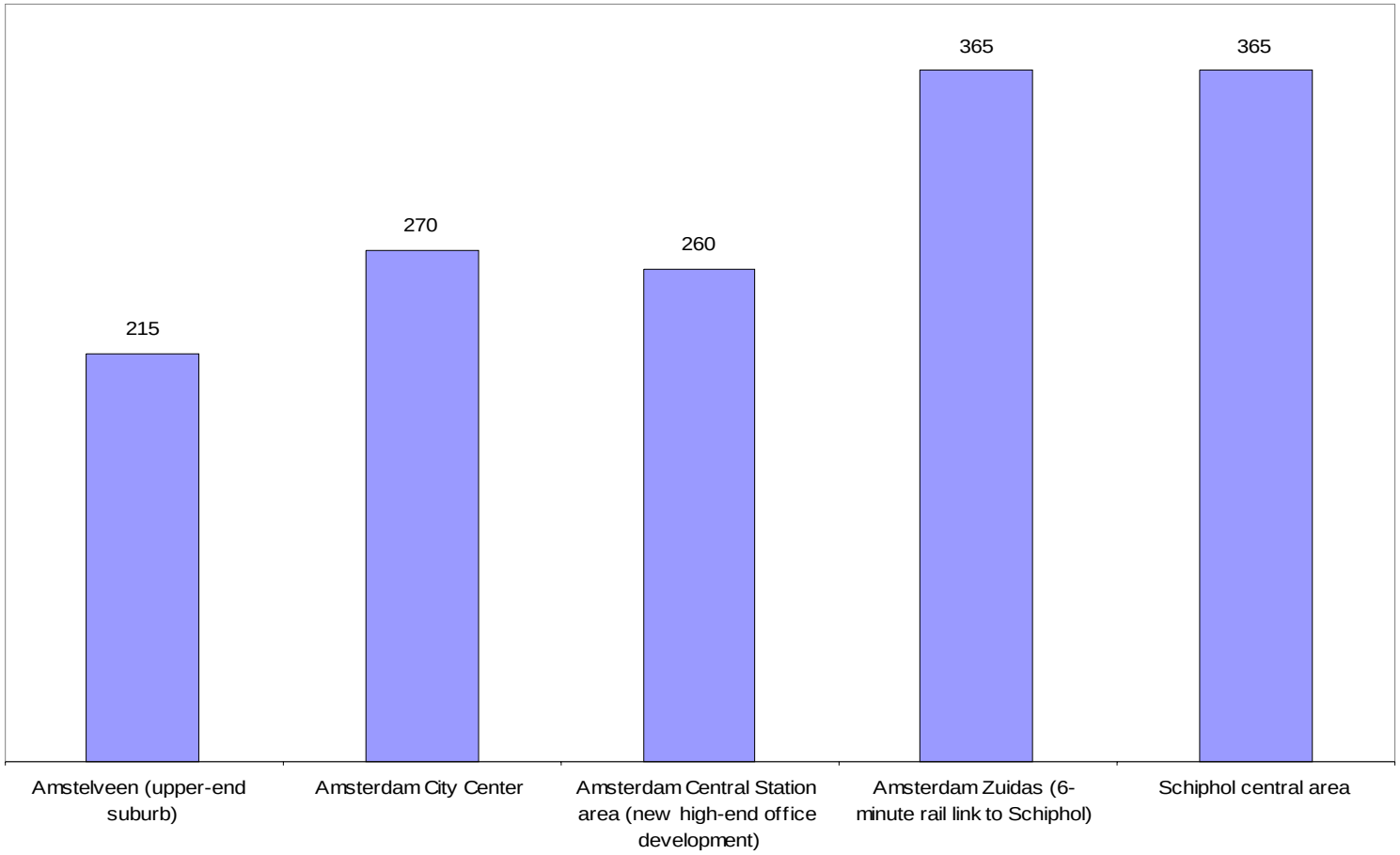
Source: NACO.

Exhibit 2.33
AMSTERDAM SCHIPOL AIRPRTY CITY – AEROTROPOLIS SYNERGIES



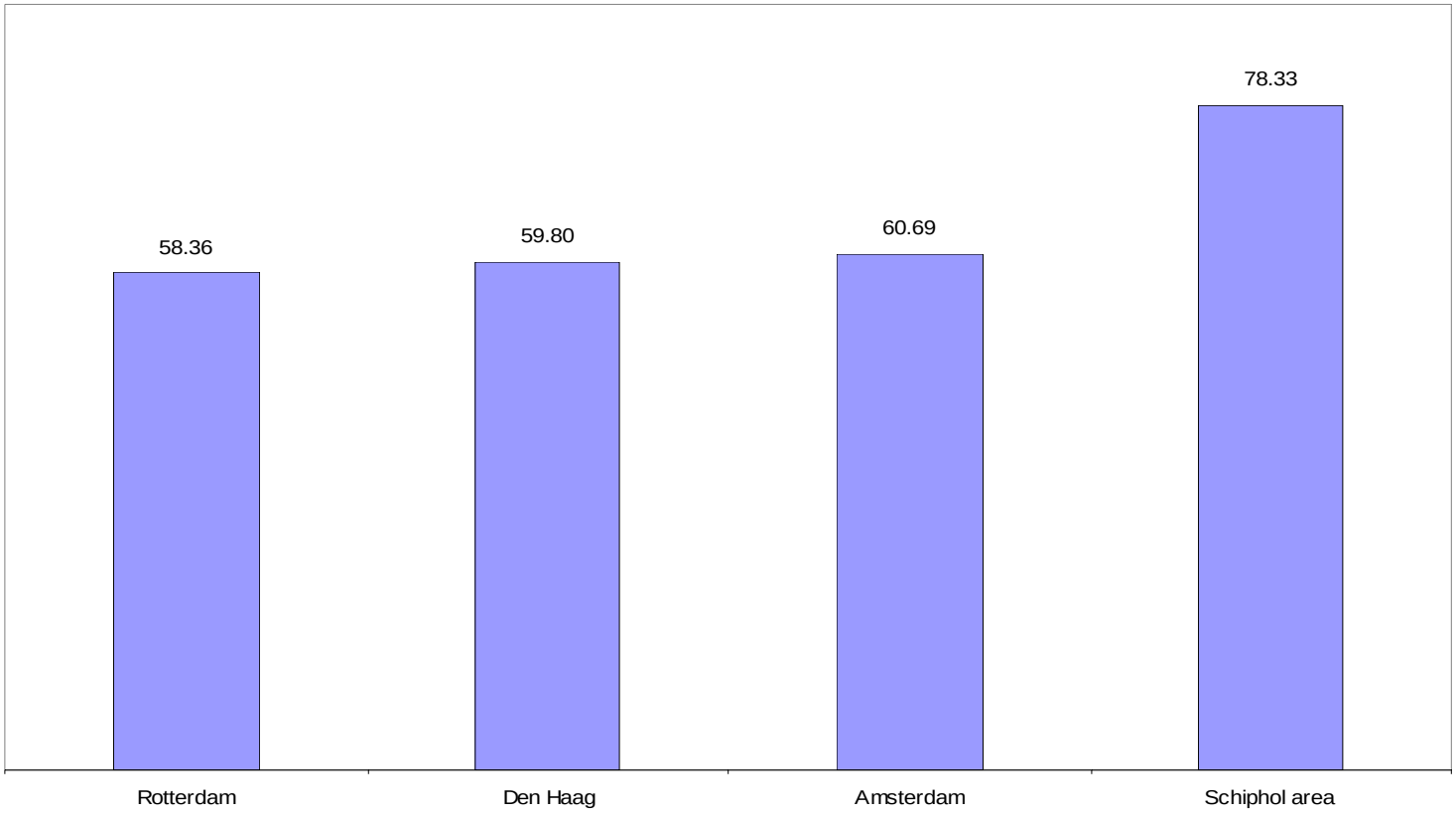
Source: Schiphol Group and Dr. John D. Kasarda

Exhibit 2.34
AMSTERDAM COMPARATIVE OFFICE RENTS (2006) EU/M^2/YR



Source: DTZ Zadelhoff

Exhibit 2.35
NETHERLANDS COMPARATIVE INDUSTRIAL PROPERTY RENTS (2006) EU/M^2/YR

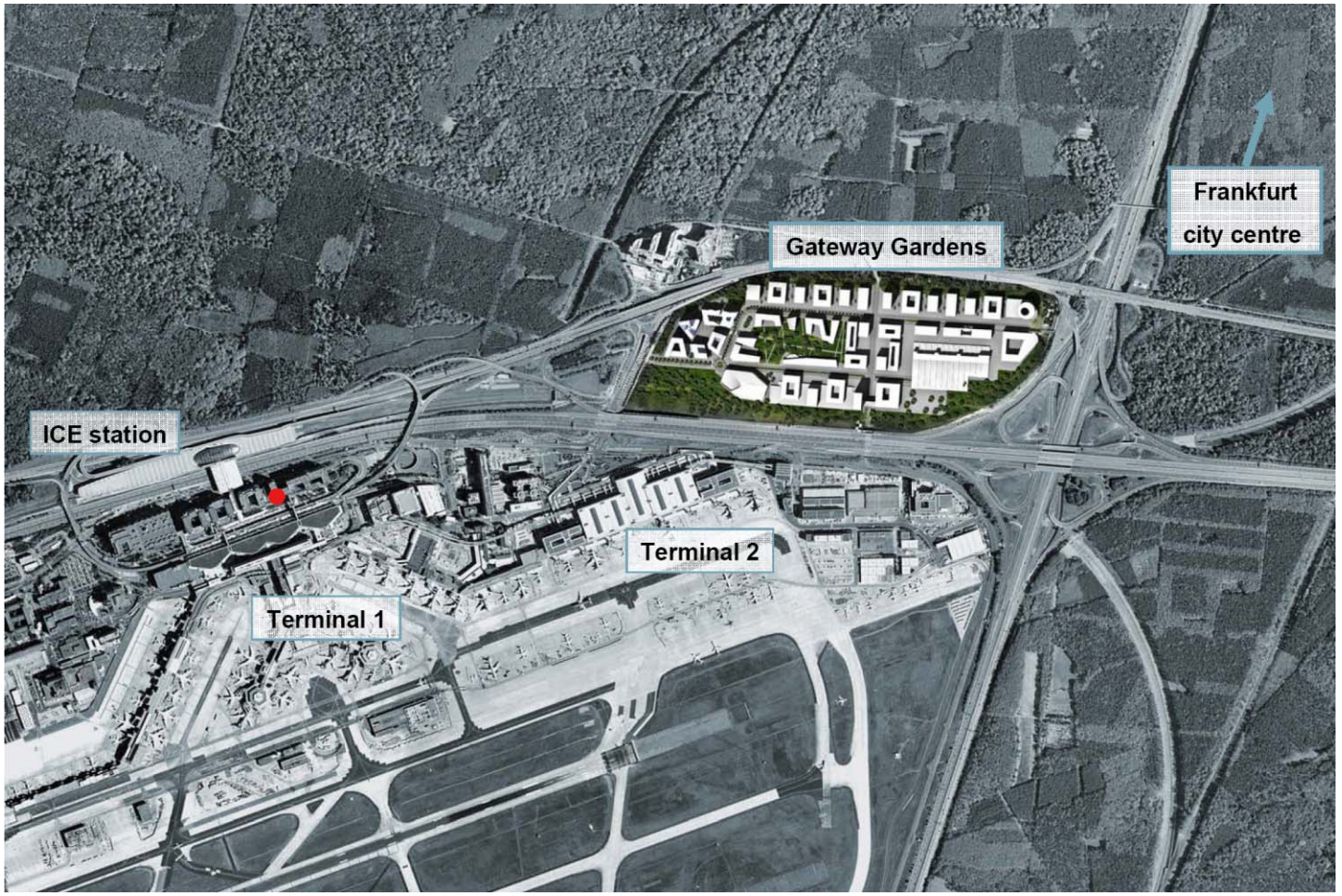


Source: DTZ Zadelhoff

Exhibit 2.36
AIRRAIL CENTER FRANKFURT

Source: Fraport.

Exhibit 2.37
GATEWAY GARDENS LOCATION



Source: Fraport.

Exhibit 2.38
GATEWAY GARDENS PLANNED LAYOUT

Source: Fraport.

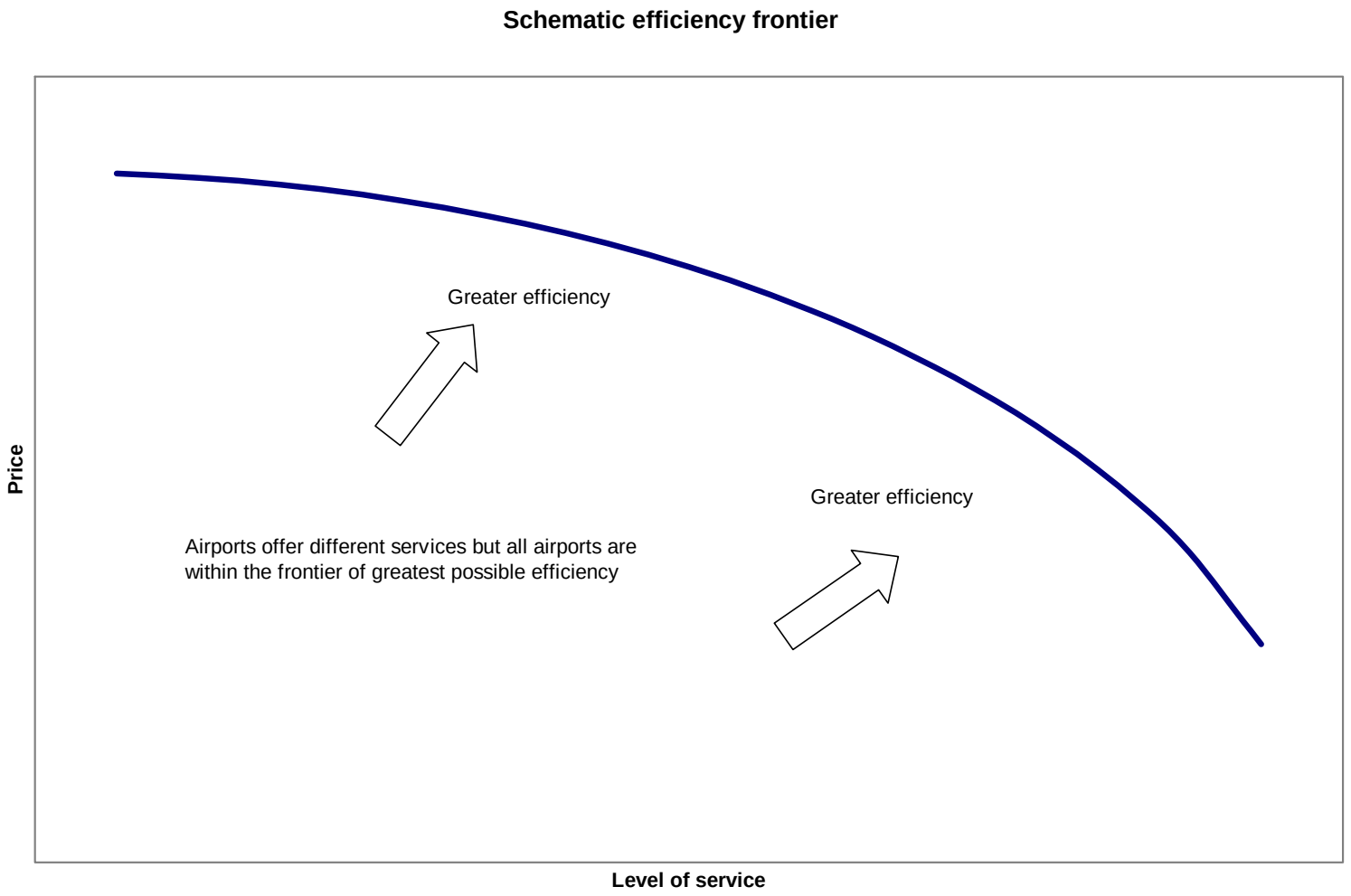
Exhibit 2.39
GATEWAY GARDENS URBAN SPACES

Source: Fraport.

Exhibit 2.40 Overview of Initial Informal Assessment of the Success of selected Aerotropolises

	Airport Success		Airport City/Aerotropolis Success	
U.S. Airport Cities and Aerotropolises				
Dallas-Fort Worth	Yes		Yes	Benefited from growing suburbanization
Denver International Airport	Yes		Not yet, but promising	The labor shed is rapidly approaching the airport
Memphis	Yes		Yes	Much of the commercial development is not related to the airport; logistics development aided by mid-continent location for trucking
Kansas City	Modest		No	Modest regional attractions; airport is too far from the labor shed
Ontario, California	Yes	LAX overflow	Mixed	Much of the commercial development is not related to the airport; logistics development boosted by ocean port overflow
Southern California Logistics Airport	No		No	Too far from regional destinations
Alliance, Texas	Modest		Mixed	Much of the commercial development is not related to the airport; logistics development boosted by NAFTA ground transport
Rickenbacker, Ohio	Yes		Modest	In the central Midwest air cargo belt
North Carolina Global TransPark	No		No	Weak regional resources
Asia's Airport Cities and Aerotropolises				
Hong Kong International Airport	Yes		Yes	Airport services and efficcincy helps maintain its status as the gateway to/from most industrialized part of China
Incheon: Korea's Air City	Yes			There is a rising tide in all Asia but Korea is squeezed; aided by expansion of Seoul connurbation
Singapore Changi International Airport	Yes	Relentless attention to competitiveness	Yes	
Dubai: United Arab Emirates	Yes	Builds on growing Asia-Europe traffic	Yes, and much more on the way	One of two inter-continental hubs
Subic Bay, Philippines	Initially	Losing FedEx hub	Yes	
European Airport City and Aerotropolis Experiences				
Amsterdam Schiphol	Yes		Yes	London overflow
Frankfurt International Airport	Yes		Small but promising	Excellent ground transportation aids traditional city centers
Vatry	Modest		Modest	
Frankfurt Hahn	Modest	FRA overflow	Modest	

Exhibit 2.41
PUSHING TOWARDS THE EFFICIENCY FRONTIER



[This page is intentionally blank]

III. The Detroit region compared to national standards and global best practices

The resources of the Detroit Region and Detroit Metro Wayne Airport and selected critical airport-related practices were compared to those of several competing and complementary regions and airports.[1] Three overlapping sets of benchmark regions and airports were examined. First, the most populous 25 U.S. metropolitan regions (Combined Statistical Areas) and their principal airports were examined in order to assess the broad resources available in each. These regions and their airports serve as a reference group. Second, several airports selected on the basis of their proximity to Detroit and the volume of passengers and cargo carried were examined more closely. The regions and the principal airports described include Detroit, Atlanta, Chicago, Dallas-Fort Worth, Houston, Kansas City, Memphis, Indianapolis, and Louisville. These are DTW's more direct competitors.

Third, the practices of and related to prominent air passenger and cargo hubs world-wide were examined in order to distill strategic managerial "best practices" or exemplary actions to inform Detroit Region Aerotropolis strategies. The airports examined included Amsterdam, Beijing, Dubai, Hong Kong, Seoul, and Singapore. Selected aspects of each of these were reviewed in the previous section. Our aim here is to focus on particular aspects of their development to distill strategic lessons. For a few points, we need to look beyond airports to U.S. regional development practice.

While each of these airports is well-run and integrated closely with its immediate region, differences in the operational and legal environments in the U.S. and overseas means that their practices are not always directly transferable to Detroit. Airport benchmarking is, in general, fraught with comparability issues that point towards cautious interpretation of results. Nevertheless, the comparisons among airports and airport regions point the way towards optimal practices in the Detroit Region.

III. A. Benchmarking of U.S./regional advantages/weaknesses

The Detroit Region was benchmarked against the reference and competitor regions listed above with respect to four main areas: 1) regional resources, 2) airport and infrastructure capacity, 3) air transport service, and 4) airport performance. Exhibit 3.1 presents a schematic view of the relationships between regional resources, infrastructure capacity, and service. These general factors tend to be mutually correlated. Under specific circumstances, each of the factors can affect the other two. All three impact airport performance in a regional context. The Detroit Region Aerotropolis effort is an attempt to invest some of the region's resources in enhanced infrastructure capacity and in encouraging greater air service in the attempt to attract the economic activity that adds to regional resources.

[1] This is a slight reversal of the order in the work plan but it helps focus attention on the issues specific to Detroit.

Benchmarking for design concentrates on capacity.[2] We concentrate on the expensive, difficult-to-create physical resources, such as the airport itself, ground access infrastructure, and the availability of developable land and on the region's human resources. The major physical resources and the constellation of human resources, firms, and labor market institutions are the basic building blocks of sustained regional advantage. Many of the easily duplicated competitive resources are more effectively considered at a later stage of the development process.

Regional Resources

Regions offer a wide range of resources to businesses. The firm location decision is one of selecting the region in which productivity (for a particular firm) would be highest. In the growing sectors of the contemporary knowledge-based economy, the critical resource is often human capital. Therefore, workforce skills and availability are examined. Geographical location is also important. Some airports have grown based on their central location with respect to national markets. All firms also require physical space. For the firms with national and global reaches, land with convenient access to a well-connected airport is often critical. Therefore, the availability of land near selected mid-continent benchmark airports is examined. The existence of a Foreign Trade Zone, allowing favorable treatment on import duties, can boost the economic productivity of some firms significantly, making their presence an important location consideration.

Workforce skills base and availability

The basic demographics of the 25 largest and three selected additional metropolitan areas containing the overlapping sets of reference and competitor benchmark airports were examined. Data from the latest (2006) American Community Survey using the current Census definitions of (Consolidated) Metropolitan Statistical Areas were used because that set of definitions most closely approximates the catchment areas served by major airports even when multiple airports are present. Information on the 25 most populous U.S. regions and three additional mid-continent regions with prominent airports is presented in Exhibit 3.2.

With over five and a half million and a rank of 11, the Detroit Region, as measured by CSA population, is slightly below average in size for the set of reference metropolitan regions. Several of these regions, such as New York and Los Angeles, are such extensive agglomerations of major population centers that it is sometimes difficult to conceive of them as single regions. They, including the Detroit Region, are not single commuting zones. Nevertheless, for the purposes of air transport, they act as interdependent areas. Anticipated a later discussion, even with the overlap in the set of regions, the sites of specialized air cargo airports, several of them hubs – including

[2] de Neufville, Richard and Javier Rojas Guzman, (1998), "Benchmarking for Design of Major Airports Worldwide," *Journal of Transportation Engineering* 124: 391-395.

Memphis, Louisville, Indianapolis, Columbus, and Toledo – have significantly smaller populations than the major regions listed in the main body of the panel.

Exhibit 3.2 also shows the population size at the time of the 2000 Census and the percentage population growth between 2000 and 2006. The Detroit Region has grown slightly, not keeping pace with national and major metropolitan trends. Several other mid-continent regions, Cleveland and Saint Louis, have lost population, however. Other regions, including San Francisco, Boston, Philadelphia, and New York, barely outpaced Detroit's population growth.

Although possibly not imminent, demographers are beginning to predict a revival of mid-continent population growth in selected metropolitan areas. Escalating housing prices in coastal areas have pushed up wages for labor-intensive knowledge-based sectors. Firms in emerging industries, such as bio-technology and other research-intensive fields, are searching for lower cost locations both in the U.S. and abroad (mainly Asia and Eastern Europe) even as knowledge workers are looking for affordable locations that offer a high quality of life. The localities and regions that can offer employment opportunities and a high quality of life, will likely benefit the most.

The population of the Detroit Region is in many respects unique and an asset to build upon. The Detroit Region has the largest concentration of people from Middle East and growing Chinese, Hispanic, and Indian populations, among others. In fact, some communities are labeled according to their ethnicity base – Hamtramck as being Bangladesh and several other ethnics, Canton as being Indian and Chinese, SW Detroit as Hispanic (Mexican Town), Dearborn as Arab. With the broad, growing interest in urban tourism, Detroit's ethnic heritage is an unexpected economic resource.

While some aspects of the region's population composition are sometimes held to be stumbling blocks for economic development, benchmarking the region against others reveals that the Detroit Region occupies a mainly intermediate position on most measures. Exhibit 3.3 presents summary measures of regional population composition for the largest 25 regions and the three additional specialist air cargo regions. The Detroit Region has a relatively high proportion of native-born residents, suggesting that it is not yet a large-scale immigrant destination. Yet, compared to a half dozen other mainly Midwestern regions, the proportions of immigrants and non-citizens (tapping the more recent immigrants) are not low. The same holds for Hispanics.

The exhibit also summarizes the racial composition of the regions. Despite its reputation, Detroit takes an intermediate position on the proportions of blacks and whites. Only one-in-five regional residents are black. Atlanta, Charlotte, and Washington D.C., each with prosperous modern economies, have a higher proportion of black residents. With respect to the proportion of residents that is white, Detroit occupies the exact mid-point among the regions.

The Detroit region (Metropolitan Statistical Area) is highly segregated along racial lines, however. Exhibit 3.4 lists the black-white dissimilarity index for the

centermost metropolitan district in each of the benchmark regions. Census 2000 definitions and data are used. The dissimilarity index is the percentage of the population that would need to move to another Census tract in order for full residential integration to be achieved. Detroit has the highest level of residential segregation of all the benchmark regions. There are indications that this is changing as an increasing number of middle class blacks are finding a welcome in the suburbs. Nevertheless, in attempting to attract new economy employers, the Detroit Region will need to address common perceptions.

The Detroit Region has a slightly lower percentage of university graduates than the other major metropolitan areas. Nevertheless, there are over one million college graduates, those most likely to need to fly regularly, in the region – giving it a ranking of the tenth largest population of college graduates among metropolitan areas. Exhibit 3.5 summarizes the educational qualifications of the benchmark regions for those aged 25 and over. Perhaps equally important, Detroit's representation of those without a high school diploma is below average.

Not surprisingly, Detroit has a higher proportion of its labor force in manufacturing than any of the other benchmark regions. Nearly one in five works in the sector. Exhibit 3.6 illustrates the sectoral distribution of the regional workforces over broad sectors. With a few aberrations, the distribution of employees across sectors is largely similar. The Detroit Region may have a slightly below average representation of some professional services but many of such functions may be handled by the large manufacturing firms internally.

Also not surprisingly, production workers are substantially over-represented in the Detroit Region compared to the other major metropolitan areas. Many of those in the manufacturing labor force are managers, professionals, and technicians, however, and the Detroit Region has a large body of those with specialized skills. In critical ways, the Detroit economy has kept pace with the knowledge-based economy. Exhibit 3.7 summarizes the occupational distribution of those in the benchmark regions.

The age distribution of the population can have a significant impact on social costs. Young people need to be schooled and older people disproportionately need health care. Exhibit 3.8 illustrates the age-sex distribution of the U.S. population. Women are on the right and men on the left. The population is arrayed vertically in five-year age groups. The broadest band, representing the highest proportion of the population, is 45-49, part of the aging baby-boom generation. The band at 30-35 is the narrowest adult age group, past of the baby-bust generation.

Exhibit 3.9 pictures the age-sex distribution of the Detroit Region. With the exception of a somewhat narrower "waist" for young adults, the Detroit Region is similar to the U.S. as a whole. The under-representation of young adults suggests a significant leakage of regional human capital that could be tapped for renewed economic growth. The Detroit Region has only a somewhat higher proportion of older people than the country as a whole and it has an if not overwhelming, then ample, supply of young

people to replace the active labor force as it ages. Exhibit 3.10 summarizes the age distributions of all benchmark regions.

The region's population and employment growth has been moderate over the past several decades. Exhibit 3.11 and 3.12 chart the long-term population and employment trends, respectively, in Wayne County, the Detroit CSA, and the State of Michigan. These graphs provide rough measures of the need for new facilities. Despite the employment dislocations of the past decades, population and employment have been fairly steady, suggesting unmeasured counteracting growth. The Detroit Region Aerotropolis may be able to leverage and accelerate that growth.

Exhibits 3.13 and 3.14 detail the population and employment data in the previous two exhibits. The data in the two tables, although both from Federal sources, include somewhat different sets of establishments leading the employment figures to the same year to diverge slightly. The employment numbers in the first table are categorized according to the older Standard Industrial Classification (SIC) and thus are available for a longer time period. Those in Exhibit 3.14 use the newer North American Industry Classification System (NAICS) and thus more suited to tracking contemporary employment changes, particularly in the service sector. Unfortunately, such data are not available for the years prior to 1990. Both sets of data lead to the same conclusions.

Exhibit 3.13 presents population and employment data from 1970 to 2005 in five year intervals for the State of Michigan, the Detroit CSA, the Detroit MSA, and Wayne County. All population and employment figures are in thousands. Towards the right side of the table, the absolute change in population and employment, the percent change, and the average annual growth rate are presented. At the bottom right of the table, the population and employment that would have occurred if Wayne County had grown at the rate of the relatively circumscribed Detroit MSA is included. These last figures are a measure of the competitiveness of Wayne County compared to the counties immediately surrounding.

The State of Michigan, as is true for much of the Midwest, has grown more slowly than the nation as a whole over the past three and a half decades. The state's population did grow by 14 percent, however, and employment in the state increased by over 50 percent. Michigan, as a state, has lost a net of over one-quarter of a million manufacturing jobs during that period. If more data detailing the manufacturing data were examined, they would show that even more jobs were lost. The manufacturing decline in specific manufacturing sectors were counter-balanced by new jobs in different manufacturing sub-sectors and by services. The state employment in services (SIC categorization) began to outnumber employment in manufacturing over 20 years ago. While manufacturing is still critical to Michigan's economy – and may always be – an economic restructuring has been occurring in the state for the last several decades that parallels the industrial decline.

The state's performance has not been shared by all portions of the state, however. Looking down the table in Exhibit 3.13, the progressively lower population growth rates

for the Detroit CSA, the Detroit MSA, and, finally, Wayne County are visible. Wayne County has lost population even as the Detroit CSA and Detroit MSA have held approximately even. Surprisingly, aggregate employment grew fairly steadily in the Detroit MSA until about 2000 before tapering off somewhat.

Wayne County's experience is different. While the Detroit MSA grew modestly, Wayne County lost almost 20 percent of its jobs over the 1970-2005 time period. Wayne County, in fact, lost more (net) manufacturing jobs than the entire state. That is, while new manufacturing jobs partially replaced those disappearing in other parts of the state, the supply of replacement jobs in Wayne County was substantially lower. In this time period, the Detroit MSA maintained its population but Wayne County lost one-quarter of its population.

Wayne County's competitiveness issues are more significant than those of the Midwest, the State of Michigan, Southeast Michigan – or even those of nearby counties. In the right-most column of the table are estimates of what 2005 Wayne County employment would have been if it had shared the economic setbacks of the immediate Detroit Metropolitan Statistical Area but had matched the attractions of its neighbors. Our estimate is that under these conditions, Wayne County would have had almost 700,000 more jobs in 2005 than it actually did. It would have had 114,000 more manufacturing jobs than it actually did and 257,000 more service jobs than it did.

Exhibit 3.14 repeats the analysis in the pervious exhibit using the newer sectoral classification. As noted above, such data are unfortunately only available back to 1990. Because they data stem from different Federal data collection programs which define employment somewhat differently, the figures in the two exhibits differ somewhat. As in the previous exhibit, Wayne County loses employment between 1990 and 2005 even as the Detroit MSA posted net gains. The Detroit MSA lost a substantial proportion of its manufacturing jobs – approximately 20 percent of the 1990 number. Wayne County lost over one-third. Wayne County did show growth in employment in professional and business services. This has been a major new economy growth sector and it shows that Wayne County can attract growing industries. Wayne County growth in this sector was outpaced by the Detroit MSA, however.

The overall population and employment trends are reflected in measures of competitiveness. The indicators chosen are often controversial but they do reflect an aspect of the underlying reality. Exhibit 3.15 shows the overall and selected component rankings from the latest Milken Institute *Best Performing Cities* report. The Detroit Region ranks 197 out of 200 overall in an assessment that relies heavily on employment and wage growth. A bright spot is provided by the relatively high ranking in the geographic concentration (location quotient) of high technology output. Yet, as Exhibit 3.14 indicates, high technology employment has not grown in Wayne County. [3]

[3] We defined technology-based employment in terms of the representation of technology-oriented workers. Daniel E. Heckler, "High-technology employment: A NAICS-based update," *Monthly Labor Review*, July 2005, pages 57-72.

The Detroit Region is not the most rapidly-growing region in the U.S. nor is it the largest. There are no major demographic issues that could hinder regional competitiveness. More importantly, the region has a significant population, labor force, and skill base that can both take advantage of and help support air transport-oriented development. The region has the human resources needed but has not managed them well. Wayne County itself has a significant competitiveness problem that cannot be wholly explained by national, sectoral, or regional adversities. If Wayne County can successfully identify and address the issues that have led to population and employment setbacks that are disproportionate to the region, it may benefit from an impending revival of heartland population growth that has so far mainly affected Chicago. The Detroit Region Aerotropolis can be a central tool in addressing the County's competitiveness problem by creating a "growth-friendly" functional and physical space within county boundaries.

Geographic location

Major airports are the new metropolitan, regional, national, and, sometimes, global central locations. Therefore, geographic location is important to the success of particular airports as cargo and passenger hubs. Exhibit 3.16 illustrates the locations of the benchmark airports. The locations of benchmark the airports are marked with red, eight-pointed stars. Several of the larger benchmark regions are along the east and west coasts. Among these, New York, Los Angeles, and San Francisco are not only large origin-destinations but have also have traditionally served as international passenger and cargo gateways. The airports have grown, in part, by serving that function. As large metropolitan areas have become increasingly congested, population growth has shifted outward to sites such as the "Inland Empire," Las Vegas and Sacramento, which has, in turn, driven air passenger growth. Some of the benchmark airports, including Ontario Airport, act as overflow airports, absorbing the excess cargo shipments that regional primary airports could not handle. For much of the following discussion, the focus will be on selected mid-continent airports.

Eight to ten of the largest metropolitan areas (depending upon where the boundaries are drawn) are in the northern half of the middle of the continent. These regions represent a population of more than 30 million. Exhibit 3.17 focuses in one demarcation of the Great Lakes mega-region and the benchmark airports located in or near this region. While Chicago dominates this large area in terms of population, employment, and business activity, Detroit is the second-largest metropolitan area in this mega-region. Despite its size, Chicago may be disadvantaged for serving the broader region by its location to one side of the Great Lakes mega-region. The major specialized integrated cargo hub airports in Memphis, Louisville, and Indianapolis are located towards the periphery of the region. Chicago, therefore, has the most populous passenger catchment area but Detroit may be the most well-placed to serve the inter-modal cargo needs of the broad mega-region.

In addition, the ascendance of air cargo has given a tremendous boost to several mid-continent airports and their regions. The approximated mean population-weighted

center of the U.S., is now located in Phelps County, Missouri, is indicated by the lavender four-pointed star. The median population center of the United States in now in Daviess County, Indiana, 90 miles west northwest of Louisville and 105 miles southwest of Indianapolis. Median flight distance is a key consideration in locating an express hub. Specialized cargo airports that are used as hubs by integrated cargo carriers, such as Memphis, Indianapolis, and Louisville, were selected in part because of their central continental location. Their air service is out of proportion to the regional air cargo market. In addition, Columbus, Toledo, and, to some extent, Dallas-Fort Worth have benefited from their central location. Some of these have become national air cargo central places, with a consequent regional employment boost.

The inter-modal nature of air passenger and cargo transport means that road and rail connections will be increasingly important in the further development Aerotropolis regions. Over the past several years, time-definite freight shipments have increased as a level of service intermediate to express shipments and traditional air freight with its delays (discussed below). The inter-continental segment of the shipment is by air to a national or regional gateway and the remainder of the journey is by truck. Exhibit 3.18 maps the location of each of the mid-continent benchmark airports in the national system of highway freight corridors. In this exhibit, the benchmark airports are indicated by light blue eight-pointed stars. Several of the benchmark airports, including Detroit, Atlanta, Chicago, Dallas, Fort Worth, Indianapolis, and Louisville, are located at nodes in dense networks of freight corridors.

Detroit Metro Wayne Airport is excellently placed on I-75, I-94, and I-96. It is also near the I-80-I-90 east-west route. These Interstate highways contribute to the region's attractiveness as an intermodal air hub. Most of the mid-continent benchmark airports are also on or near major National Highway System routes. Atlanta airport is also on I-75 and on I-85 with I-20 nearby. Chicago's O'Hare Airport is centrally located on or near I-55, I-57, I-65, I-80, I-88, I-90, and I-94. Dallas-Fort Worth Airport and Alliance Airport is on or near I-20, I-30, and I35 East and West. Denver Airport is located near the intersection of I-25, I-70, and I-76. Houston's Bush Airport is I-10 and I-45. Kansas City Airport has ready access to I-29, I-35, and I-70. Memphis International Airport has access to I-40 and I-55. Memphis' central geographical location has made it a national truck transportation hub. Indianapolis Airport is on or near I-65, I-69, and I-70. Louisville Airport has access to I-64, I-65, and I-71.

Rail seems destined to play a growing role in inter-modal air cargo shipments. The increasingly crowded highways and the rush of imports already results in much ship container traffic making part of its journey by rail. Exhibit 3.19 graphs the increasing congestion on U.S. Interstate highways. Overall highway congestion contributes to the attractiveness of rail. The trend towards the concentration of international air cargo in relatively few busy hubs, detailed below, suggests that rail will increase in importance in inter-modal air cargo shipments. Exhibit 3.20 maps the location of each of the benchmark airports in the national system of rail cargo corridors.

A Norfolk Southern rail line runs adjacent to Detroit Airport's northern fence. An air-rail cargo connection, such as the one already in use at Fraport, is physically possible at DTW. Many other mid-continent airports are similarly advantaged. A CSX rail line is located near the western edge of Atlanta airport. Many of the mid-continent benchmark airports also have potential rail access. Chicago O'Hare Airport is almost surrounded by rail lines with a Wisconsin Central rail line just to the east of the airport, a Chicago and Northwestern line near the western airport fence, and Soo Line tracks to the south. The Southern Pacific crosses Dallas-Fort Worth Airport on the north. Union Pacific and Southern Pacific rail lines pass within a mile on either side of Houston's Bush Airport. A Union Pacific rail line passes a few miles to the south of Denver Airport while a busier Burlington Northern route is several miles to the north. A Burlington Northern rail line passes about a mile to the west of Kansas City Airport. Alliance Airport is bounded on its northwest side by a line of the Atchison, Topeka, and Santa Fe. A Burlington Northern Santa Fe intermodal hub is within the Alliance development complex. A Burlington Northern rail line passes Memphis' airport directly on its northeast border. A CSX rail line runs along the northwest fence of Indianapolis Airport. Louisville Airport is located just northeast of a CSX rail yard. Rickenbacker Airport in Columbus is opening an intermodal facility in cooperation with Norfolk Southern in early 2008.

Being on or adjacent to a rail line does not guarantee expedient national connectivity. Railroad delivery schedules are erratic, making air-rail inter-modality impractical at the present time. Moreover, railroads are still struggling with inter-line transfers. While the trends in shipments and congestion favor the increased use of rail for cargo shipments, significant institutional and operational reforms in the rail transport industry are still necessary. Similar reforms have recently revolutionized air and road shipping. The U.S. Department of Transportation is actively promoting rail upgrading as a partial solution to the increasing congestion along many major freight lanes. Fast-cycle railroad shipping could become a reality within a few years.

Rail inter-modalism is important for another reason. Airports are rapidly becoming the anchors for a broad range of surface-based logistics activities that are cross-subsidized by the presence of trucking firms, freight expediters, customs agents, and other related specialists. As discussed in a previous section and in more detail below, Memphis and Ontario Airports are at the center of extensive logistics complexes that only partially rely on the airport. Yet, without the respective airports, the areas would likely not have the same concentrations of logistics activity.

Unfortunately, both road and rail data rely on weight, rather than value, in measuring the flow of traffic. This skews the indicators above towards heavy, low value goods. While the long distance trucking measures are probably indicative of relative value, the rail measures are dominated by the shipments of coal and gravel. Selected rail routes are already being upgraded to allow trains to carry ocean containers, which are sometimes stacked, at greater speeds from ports to destinations. That upgrading will facilitate the emergence of air-rail time-definite cargo.

The Detroit occupies an intermediate position with respect to the major air cargo airports. Several of the largest cargo airports serve regional hinterlands with significant shipment and/or delivery demand. Others are essentially wayports with little initial regional demand (although these airports have become attractions for firms that require a central location for shipping) but convenient locations. Detroit's location within the Great Lakes mega-region and within the continental U.S. and very near Canada may lead to it becoming a combination mid-continent secondary hub and central gateway for the broader region. Memphis has become increasingly strained, leading FedEx to develop a second mid-continent hub in Indianapolis, which as also becoming congested. As air cargo volumes continue to grow and demand "thickens," express services will expand their reliance on multiple cargo sort hubs.

The Detroit Metro Airport has a favorable location in the national system of road and rail freight corridors. This potential advantage is shared by many, but not all, major airports. Detroit has a relatively central mid-continent location and, more importantly, a central location in the emerging Great Lakes mega-region. The latter affords the Detroit Region Aerotropolis a significant passenger and cargo catchment area. The Detroit Region can leverage its airports, the NAFTA highway, and rail lines to become a truly multi-modal logistics hub.

Available land for development

Detroit is uniquely positioned for a metropolitan area of its size to benefit from a trend to locate facilities near airports. An examination of satellite photographs suggests that Detroit Metro Wayne Airport is one of several major mid-continent airports with significant nearby developable land. Exhibit 3.21 through Exhibit 3.31 shows satellite photographs of the benchmark airport areas. Exhibit 3.21 shows the Detroit Metro Wayne Airport-Willow Run Airport area. There is a large swath of potentially developable land between the two airports and to the south. This is the Aerotropolis site now under consideration. Development is approaching the area, however.

Several of the areas are discussed in a pervious section. Exhibit 3.22 shows that Atlanta airport still has some developable land nearby, mainly on the south. The Atlanta Airport area is increasingly developed, however. Exhibit 3.23 shows that O'Hare airport has long had an effect on land use in the Chicago area and is increasingly congested as nearby buildable land becomes exhausted. As shown in Exhibit 3.24, the immediate Dallas-Fort Worth airport area is approaching buildout. The airport itself still has large tracts of land that cannot be used for aeronautical development and is beginning to develop those parcels. Denver Airport, as seen in Exhibit 3.25, has a very large supply of land available for expansion. City services are available on only a minority of that land. Nevertheless, ample room for the accelerating development is available. Exhibit 3.26 shows that Fort Worth's Alliance Airport has large tracts of available land on and near the Alliance development site. Houston's Bush Airport is the center of a major employment complex. Nevertheless, Exhibit 3.27 shows that there may still be some developable land relatively close to the airport. As seen in Exhibit 3.28, Kansas City Airport has a large amount of nearby vacant land. Memphis' airport area is nearly built

out, as shown in Exhibit 3.29, but there are some large vacant parcels owned by the airport to the south and southeast of the airport proper. The city is beginning to work on rationalizing land ownership and land use near the airport. Exhibit 3.30 shows that much of Indianapolis Airport is hemmed in by development, there is still land that has not been built up to the southwest. Exhibit 3.31 shows that Louisville Airport is largely surrounded, leaving little land for additional airport users.

A more extensive survey of the land available for development near Detroit Metro airport is now underway by the broader project team. The preliminary investigations by the team and the comparative analysis outlined here suggest that the availability of prime airport-adjacent land is an advantage not widely duplicated by other regions. Moreover, those airports with large supplies of developable land are quite distant from Detroit.

Land price will be an important factor in aerotropolis development. Logistics activities, despite their importance to regional economies, are often unable to meet the costs of available land. In order to ensure the efficient operation of Schiphol Airport, the Dutch government has reserved land near Schiphol for airport-linked logistics activities only. Moreover, office rents must be sufficiently low to be competitive with other locations which may be more conveniently located with respect to the labor pool. Exhibit 3.32 presents information on asking office and industrial rents in three metropolitan areas. Two of those metropolitan areas, Washington D.C. and Charlotte, are home to airline hubs. Raleigh-Durham (not a benchmark region) is not. Raleigh-Durham International Airport is near the now mature Research Triangle Park and in the center of the regional labor market. Commuting times and costs may have a large impact on the viability of airport-linked office development.[4] In addition to these considerations, while the real estate market will rise with development, costs for the first occupants must be sufficiently low to compensate for the initial lack of amenities.

We emphasize that available land is an enabling factor – not a strong attraction in and of itself. As noted above and in the case studies in a previous section, many airports are surrounded by extensive vacant land. Despite concerted efforts in a few regions, these have not yet become successful aerotropolises. Available land, combined with the regional resources discussed above does make an attractive combination, however.

Foreign Trade Zone presence

Foreign-Trade Zones (FTZs) are secure areas under U.S. Customs and Border Protection (CBP) supervision that are generally considered outside CBP territory. [5] Authority for establishing these facilities is granted by the Foreign-Trade Zones Board under the Foreign-Trade Zones Act of 1934. Foreign and domestic merchandise may be moved into zones for operations, including storage, exhibition, assembly, manufacturing,

[4] The Netherlands experience differs substantially because Schiphol and Zuidas are conveniently located with respect to the labor shed and transportation options.

[5] Source of basic information for this section:
http://www.cbp.gov/xp/cgov/import/cargo_control/ftz/about_ftz.xml

and processing. Foreign-trade zone sites are subject to the laws and regulations of the United States as well as those of the states and communities in which they are located.

The usual CBP entry procedures and payments of duties are not required on the foreign merchandise unless and until it leaves the Foreign-Trade Zone territory for domestic consumption, at which point the importer generally has the choice of paying duties at the rate of either the original foreign materials or the finished product. Domestic goods moved into the zone for export may be considered exported upon admission to the zone for purposes of excise tax rebates and drawback.

Qualifying public or private corporations may operate the facilities themselves or contract for the operation sponsors foreign-trade zones. The operations are conducted on a public utility basis, with published rates. A typical general-purpose zone provides leasable storage/distribution space to users in general warehouse-type buildings with access to various modes of transportation. Many zone projects include an industrial park site with lots on which zone users can construct their own facilities. Subzones are normally remote private plant sites authorized by the Board and sponsored by a grantee for operations that usually cannot be accommodated within an existing general-purpose zone.

Exhibit 3.33 lists the general-purpose Foreign Trade Zones near selected benchmarked airports. Not all of these zones are in the immediate airport vicinities. The sub-zones are generally heavy industry and off-site, at a previously-existing facility of the sub-zone operator. Several airport authorities own or administrate Foreign Trade Zones. The degree of air transport dependence of the Foreign Trade Zones cannot be directly measured.

Some airports effectively use Foreign Trade Zones. As discussed below, New York's Kennedy Airport and others have their entire cargo terminal area declared a Foreign Trade Zone. Oakland and Dulles have also designated their cargo terminals as Foreign Trade Zones. Even when owned by airport, Foreign Trade Zones are not always effectively used, however. MSP's Foreign Trade Zone is reportedly used mainly to help Northwest Airlines save on a portion of its fuel taxes.

There are close to 300 general-purpose Foreign Trade Zones in the U.S. and significantly more sub-zones associated with them. The application procedure can be somewhat lengthy (estimated to be 18 months or more for a general zone and 12 months or more for a special-purpose sub-zone). The number of Foreign Trade Zones suggests that the presence of a zone may yield a slight competitive advantage to a region but that the absence of a Foreign Trade Zone could be a significant disadvantage. More importantly, only a minority of Foreign Trade Zones are effectively used. The presence of a Foreign Trade Zone *per se* is an advantage that can be relatively easily duplicated. Effective use of a Foreign Trade Zone requires detailed discussion with specific potential users.

Airport and Infrastructure Capacity

The previous section on regional resources tapped the regional demand and capacity for passenger and cargo air transport services. This section catalogues the facilities available at the benchmark airports.[6] Particular economic activities agglomerate near transportation infrastructure in order to take advantage of the shared infrastructure that creates operational economies. This infrastructure is not necessarily attractive to all economic activities. The sectors that depend upon air transport, either for frequent long-distance personal travel to meet with suppliers, customers, and collaborators, or for rapid-response logistics, have been drawn to major airports. In addition, selected busy cargo airports, such as Memphis, Alliance, and Ontario, have become centers for much surface-based logistics. Key aspects of inter-modal air transport infrastructure are reviewed below and, where possible, related to regional needs.

Over 10,000 airports are located in the United States. Most of these are small privately owned airstrips. Approximately 3,300 airports are included in the National Plan of Integrated Airport Systems. (State airport systems include a few additional airfields.) The airports included in this benchmark report are from the small minority that is large or medium-sized hubs. Commercial air traffic is concentrated in a relatively small number of airports with the busiest 67 accounting for 89 percent of all passenger air travel. Air cargo concentration is discussed below. Exhibit 3.34 categorizes the nation's airports.

Runways and passenger terminals are the largest capital investments. A new runway might cost $150 million and a new terminal at a major airport from $100 million to over $1 billion. Moreover, the lead time between identifying the need for a new runway and its being brought into service is at least a decade and has sometimes taken more than twice as long. Therefore, runway capacity is the critical factor in allowing aerotropolis growth.[7] Passenger terminal capacity might follow in importance. Cargo facilities, on the other hand, are significantly less expensive, less politically-charged, and can more easily be financed by the potential users of the terminal. Many are privately-owned by airlines or freight forwarders. Parking facilities are also relatively easily financed where there is a need. Ground access facilities have often proven more difficult to improve. Airport area road congestion is therefore a major environmental and competitiveness issue.

The infrastructure just mentioned is relatively stable. Several services, which can be considered infrastructure from the point of the users, can be critical to the competitiveness of airport regions. Many of these – such as customs and ground-handling services – are more a matter of pro-active operational management than of strategic investment. These can – and should – be efficiently run no matter which region

[6] In some cases, particularly where specialized infrastructure is concerned, reliable information was not available.

[7] Taxiway capacity has emerged as a critical bottleneck at several very busy airports. There are no systematic assessments of taxiway capacity, however.

is under consideration.[8] Expensive capital investments, improperly implemented and managed, undermine forward-thinking regional planning. Such factors can vary quickly. Therefore, airports and their regions need to carefully cultivate a reputation for consistently excellent service.

Airport infrastructure

Airport infrastructure helps speed the processing of goods and people. Exhibit 3.35 provides basic comparative information on airport capacity for the major airports in the 25 most-populous metropolitan areas and for the three additional specialized cargo airports. Land area provides a rough measure of total potential airport capacity and of the availability of on-airport development space. In that regard, Detroit Metro Wayne Airport is moderately large at 6,700 acres. The Detroit airport has a larger land area than all but 10 of the more than forty benchmark airports. Denver International Airport is easily the largest airport with 33,000 acres. Dallas-Fort Worth follows with 18,000 acres. The next largest airports in size have more or less comparable land areas.

There is a rough correlation between the year the airport was first brought into service, distance from the primary center city of the metropolitan area, and size of the airport. Aircraft and the demands placed upon airports have increased over the years. The space needed for contemporary airports and their surrounding commercial developments has long been difficult to find near central cities.

Major airframe and powerplant repairs are available at many of the benchmark airports. According to the FAA Airport Master File data, only minor repairs are available at Detroit Metro Wayne Airport. Two airports have conditional approval to use airspace.

Some of the airports are built out approximately to capacity. Others have room for expansion. As noted above, runways are the most expensive infrastructure, followed by terminals. Detroit Metro Wayne Airport can rely on six runways, four of which are parallel and the longest of which is 12,000 feet. Exhibit 3.36 shows the layout of Detroit Metro Wayne County Airport. The airport has a what, by now, has become a fairly standard layout. Parallel runways, directed into the most common prevailing wind, enhance capacity. These, in comparison to the older multi-directional layout, also simplify air traffic control and the use of nearby airspace. Midfield passenger terminals reduce taxiing time. As in other airports, general aviation, cargo terminals, and maintenance facilities tend to be sited towards the periphery of the airport site.

Several mature airports have been reformed to the parallel runway structure, as has Detroit Metro. O'Hare is now in the process of a $6.8 billion runway modernization program that will continue over the next several years. When complete, the project will have increased O'Hare's runway capacity significantly. Exhibit 3.37 illustrates the present and future runway configuration. We focus here on O'Hare because Detroit has

[8] Despite the great importance of efficient services for competitive airport regions, these are not critical to benchmarking for design of an aerotropolis because the need for them is a constant and because they can and should be duplicated by every airport.

the potential to become a reliever for that airport, much as Munich acts as a reliever for Frankfurt, and because O'Hare construction creates a window of opportunity for the Detroit Region.

Exhibit 3.38 lists the details of the benchmark airport runway facilities, aircraft capacities, and instrument flight capabilities. Runways are identified by the compass readings of their directional headings with the last digit omitted. Thus an east-west runway is named 9/18. "L" and "R" identify parallel runways. Third and fourth parallel runways are identified by adding or subtracting one from the first number in the runway identifier. Heliport identifiers begin with an "H." Exhibit 3.36 includes the runway identifiers for Detroit Metro. Many older airports have runways that are no longer in active service. These are not included in the exhibit. Only four other airports have as many or more runways than Detroit: Dallas-Fort Worth (7), Boston, Chicago, and Denver (6).

Approximately half the runways at the benchmarked airports are longer than 9,000 feet, sufficient for a fully-loaded Boeing 737 to take-off. A third are longer than 10,000 feet, sufficient for a fully-loaded Airbus-380 and just long enough for a fully-loaded Boeing 747. Three of Detroit Metro's runways are longer than 10,000 feet. Five airports have runways that are significantly longer than the longest at Detroit Metro. These are Denver (16,000 feet), Kennedy (14,572 feet), Las Vegas (14,510), Dallas-Fort Worth (four runways of 13,400 feet), and O'Hare (13,000 feet). Unfortunately, two of Detroit Airport's long runways have pavement that is rated as in only "fair" condition. Almost all runways have been grooved or otherwise treated to improve safety.

Exhibit 3.39 compares runway capacity under marginal weather conditions (as calculated by the FAA) to average hourly aircraft movements. Benchmark airports in large metropolitan areas for which capacity has been calculated are included. The relationship between aircraft movements and capacity will vary from the summary here because each of the airports included serve as airline hubs. Usage during peak hours and during incoming and outgoing banks can be much higher than average.

Detroit Metro Wayne Airport has the fifth highest runway capacities in the country. Among the benchmark airports for which runway capacities have been calculated, Detroit Metro Wayne stands out for its relative under-utilization. Indeed the two most intensively-used airports are in the process of expanding their runway capacity in order to keep pace with demand. In fact, one of the airports, O'Hare, has been operating under a cap on movements. Exhibit 3.40 presents recent FAA projections of aircraft movements at selected large airports. Detroit is expected to become significantly busier over the next two decades but still avoid becoming congested.

Aside from runways, terminals often become bottlenecks in the processing of passengers and cargo. Exhibit 3.41 presents the numbers of gates at each airport and, as a rough measure of utilization, the number of movements per gate. Neither measure is exact. Gates are sometimes added to or removed from service in accordance with demand and maintenance and upgrading schedules. Aircraft vary in size so that a gate

serving larger aircraft may be more intensively used than one serving smaller planes. Additional benchmark information about airbridges (not all gates, especially those serving regional jets, include an airbridges), check-in counters, and parking space is provided where available.

The gates and other passenger facilities at Detroit Metro Wayne Airport are not used as intensively as those at the other major benchmark airports. The combination of runway utilization and terminal utilization suggests that the airport could expand service with little additional investment. The renovations underway at O'Hare and other large capital investments elsewhere, while needed to create needed capacity, often increase costs to airport users significantly placing airlines, passengers, and shippers under stress.

Air cargo handling facilities

Cargo and logistics facilities are more difficult to track than passenger facilities. The information is less likely to be published because the number of interested parties is fewer and, when published, may not be complete. Passenger facilities generally belong to the airport but cargo facilities are more often privately-owned and thus not included with the airport's own facilities. Freight forwarders and cargo airlines sometimes own facilities on airport grounds. These are not assets of the airport and thus not always reported.

With those caveats, the paragraphs below and Exhibit 3.42 present the available information on selected benchmark airport cargo and logistics facilities. Portions of this information were discussed in a previous section. The descriptions are in descending order of cargo processed. The amount of space needed is a function of the volume and type of cargo and of the efficiency of handling.

Memphis International Airport is the home of FedEx' primary sort facility and the firm is headquartered nearby. FedEx dominates the cargo business at the Memphis International Airport, transporting approximately 95 percent of all cargo handled at the Memphis International Airport. Memphis leases a total of 4.1 million square feet of space, including maintenance facilities, in 27 buildings spread out over 122 non-contiguous acres. The airport is constructing a new 159,000 square foot common-use cargo terminal, CargoCentral, to serve the needs of other shippers. The first phase will consist of 36,000 square feet with additional phases adding 61,500 square feet each. At buildout, the total ramp area will be 1.5 million square feet.

United Parcel Service (UPS) began a new overnight-delivery business with hub operations at Louisville's airport in 1981. UPS built a 35-acre apron for parking aircraft and initially employed 135. A new, $84.5 million, 653,000-square-foot heavy freight facility was added to the existing operations in Louisville in June 2006 after UPS closed the Dayton, Ohio facility that it has acquired when it purchased Menlo Worldwide Forwarding. In May 2006, before the facility opened, UPS announced a $1 billion expansion that will increase sorting capacity over the next five years and create more than 5,000 additional jobs. The expansion plan calls for the addition of three aircraft

load/unload "wings" to the hub building followed by the installation of high-speed conveyor and computer control systems. While the configuration has yet to be finalized, work has begun and will be complete by 2010. The not-yet-built additions will increase UPS' Worldport, which is the home base of UPS Airlines, by 1.1 million square feet to 5.1 million square feet. Exhibit 3.43 provides an overview of the planned facility.

Los Angeles Airport has 2.1 million square-feet developed for cargo on 194 acres. Its handling facilities are the 98-acre Century Cargo Complex, the 57.4-acre Imperial Complex, the Imperial Cargo Center and a number of terminals on the south side of the airport. Much of the cargo space is new. In 1997, Qantas opened its own 54,000 square-foot air cargo facility valued at $7 million. Mercury Air Cargo opened a new facility in March 1998. Singapore Airlines opened a new air cargo building in 1999. United Airlines opened an 180,000 square foot cargo building in 2002. Virgin Atlantic Airways and Asiana Airlines also opened a new cargo building with 122,000 square feet. Four million square-feet are being used for cargo processing in the immediate vicinity of the airport. Lufthansa, Japan Airlines, Korean Air, Federal Express, China Airlines, Delta, Air Canada and Cargo Services Center (a provider to several air carriers) are located in the newer Imperial Cargo Complex. The airport's customs office is in this area. American, United, Virgin Atlantic, Asiana, Alaska Airlines, British Airways, Southwest Airlines and US Airways are located in the Century Cargo Complex, the airport's first air cargo area.

Kennedy Airport has more than one million square feet of office and warehouse space dedicated to broker, freight forwarder, and container freight station operators. Space is available for storage, inspection, and assembly. The entire air cargo area is a Foreign-Trade Zone that operates 24 hours per day. Foodstuffs, fresh fish and medicines are handled in climate-controlled areas and chilled cargo facilities. Shipment of bulky and over-sized cargo are routinely handled. In 2002, Kennedy was named North America's best cargo airport in a prestigious survey of industry officials across Asia.

JFK's Air Cargo Center consists of cargo handling and service buildings, including a Vetport (an animal care facility designed to accommodate and care for animals ranging from domestic pets to zoo animals), and a U.S. Post Office Airport Mail Facility. Japan Airlines' 260,000 square-foot, $115 million cargo building is the most advanced cargo facility at JFK. The new Nippon Cargo Airlines Facility, consisting of 175,000 square-feet, cost approximately $40 million to build and can accommodate two 747 freighters.

The Airis Cargo Facilities, completed in 2003 at an estimated cost of $9.5 billion, consist of two new buildings, on adjacent sites in the airport's South Cargo Area. These provide state-of-the-art cargo space for their four tenants: Lufthnasa Cargo, Alliance Ailines, Cargo Services Center and Lufthansa Technik. Details of the project include: 434,615 square feet of building area (including 343,855 square feet of cargo warehouse, 87,670 square feet of office and 3,090 square feet of ground service equipment maintenance facility) on 42 acres. Each of the two buildings has 24-foot high ceilings with a 150-foot wide column-free span for unimpeded cargo movement. A 496,109

square foot aircraft ramp is able to accommodate six Boring 747 freighters. On the landside, 101 truck docks provide fast and efficient service and relieve vehicular congestion.

Korean Air opened its advanced $102 million, 220,000 square-foot cargo facility in October 2000. Northwest Airlines moved into its 90,000 square-foot cargo facility in 1999. Air Express International (now DHL Danzas Air + Ocean) completed its 90,000 square-foot building in October 1998.

On November 20, 1997, United opened a 98,500 square-foot Cargo Transfer Center (CTC) at JFK. The CTC, in conjunction with the new 65,000 square-foot Administration Building which opened in March 1998, represents an investment of $35 million and replaces older facilities. The CTC is equipped to handle bulk containerized shipments as well as provide 2,000 square-feet of cooler space, 500 square-feet of security area and 13,500 square-feet of office space.

AMB's 225,000 square-foot Cargo Center opened in June 1992. U.S. Customs Service has consolidated all of its JFK office operations into approximately 110,000 square-feet of the facility.

Chicago O'Hare Airport contains two main cargo areas that include warehouse, build-up/tear-down and aircraft parking facilities. The Southwest Cargo Area, adjacent to Irving Park Road, accommodates over 80 percent of the airport's all-cargo flights, divided among nine buildings in two tiers. The North Cargo Area, which is a modest conversion of the former military base (the 1943 Douglas plant area), also receives air freighters. It is adjacent to the northern portion of Bessie Coleman Drive. Two satellite cargo areas have warehouse and build-up/tear down facilities, but lack aircraft parking space. Freight is trucked to/from aircraft on other ramps. The South Cargo Area is along Mannheim Road. The East Cargo Area, adjacent to Terminal 5, has now mostly evolved into an airport support zone.

Indianapolis Airport is the site of FedEx's second-largest sorting hub. The 1.9 million square foot FedEx facility is in the process of being expanded by more than 600,000 square feet, including a 400,000 square foot expansion of the existing building, the construction of a 175,000 secondary sort building, and two maintenance buildings totaling 48,000 square feet. The Indianapolis Airport Authority is building five wide-body gates (with the possibility of nine more) which will be leased back to FedEx. As part of the expansion agreement, FedEx extended its airport lease until 2028 and will pay higher landing fees to finance the expansion.

In addition to the FedEx facility, Indianapolis accommodates a weekly Cargolux flight from Luxemburg which mainly moves medical equipment for Roche Diagnostics in unused space in the airport's former United Airlines maintenance base. The building is still used for aircraft maintenance by AAR Corporation and may not be able to accommodate more than the 24 tons per flight that it now handles.

The airport is also home to a 337,000-square-foot U.S. Postal Service mail sorting hub. The facility has been sitting idle since 2001 when the post office out-sourced the mail processing to FedEx. The post office's lease doesn't expire until 2012.

Indianapolis Airport managers are aggressively courting cargo airlines and freight forwarders to capture a larger share of the growing international cargo market. Having discovered that lower costs – they cite $7 million savings in taxi fuel costs and $240,000 savings in landing fees annually for a Boeing 747 cargo freighter – is not sufficient to lure either, they are actively considering building a new specialized cargo facility of between 20,000 and several hundred thousand square feet. That facility might be located on the site of the soon-to-be-vacated old passenger terminal, in the former mail sort facility, or on a fresh site on the airport.

Newark Liberty International Airport (EWR) claims to be the overnight small package center for the entire New York metropolitan area. Newark Liberty offers climate-controlled warehouse areas and cold storage to accommodate the routine handling of perishable items including fresh flowers, fruits and vegetables, fresh fish and medicines. The airport is near the Port Authority's Port Newark and Elizabeth Marine Terminal where Foreign-Trade Zone No. 49 is housed. The airport expanded its cargo capacity in 2004 with the opening of a 142,000 square-foot facility, which combined with United and Continental's cargo buildings, increases cargo space at the airport to 1.3 million square feet.

The original $3.4 million North Area Cargo Center consisted of four buildings, 150- 153, including three cargo terminal buildings and a cargo service building, and was completed in December 1959. Two of the four buildings, 150 and 153, have been demolished to make way for a new ARFF (emergency response) and Administration Building (Bldg. 1), which opened mid 2002. Construction of an additional multi-tenant air cargo terminal building, 154, was completed on the site of the old fuel farm. In April, 2001, Continental Airlines dedicated its state-of-the-art cargo handling facility. The new cargo building greatly increased cargo processing with a sophisticated materials handling system to provide Continental and its customers with a highly efficient means of handling air cargo. In March 2001, United Airlines opened a new state-of-the-art cargo handling facility.

A new multi-tenant international Air Cargo Center has been built by the Airis Corporation on the site of the former North Terminal. The larger building, 340, is 192,000 square-feet and was completed in January 1998. The smaller building, 339, is 76,000 square-feet and opened for occupancy on April 16, 1999. In 1995 FedEx completed a $60 million expansion of a state-of-the-art automated sort facility at its Newark Regional Hub, which now includes Buildings 347, 156 and most of 155. In September 1987, UPS constructed and opened an $11 million, 28-acre package handling and distribution center in the South Area of the airport (Bldg. 350).

Dallas-Forth Worth Airport has more than two million square feet of cargo warehouse space, almost three million square feet, including ramp parking for 11 747-

400 aircraft and, once service begins, for the A-380. The airport claims no operational constraints such as slot controls and curfews, so an airline's arrivals and departures can be optimally timed. In a recent survey by Air Cargo World, Dallas-Fort Worth ranked as "The Best Cargo Airport in the World." Most shipments clear U.S. Customs within four hours of arrival; 98 percent of all international perishable shipments are cleared within two hours by the U.S. Department of Agriculture, according to airport records.

Atlanta Hartsfield-Jackson Airport has three main air cargo complexes, North, Midfield, and South, which contain more than 1.5 million square feet (135,000 square meters) of cargo handling space. The total on-airport air cargo warehouse space totals two million square feet. In addition to the main cargo complexes, Hartsfield-Jackson houses a U.S. Department of Agriculture approved Perishables Complex, the only one of its kind in the Southeast U.S., featuring on-site distribution and transport capabilities, USDA inspection services and a USDA approved fumigation chamber. The airport has been designated as a U.S. Fish & Wildlife Port of Entry. The North and South Cargo Complexes maintain independent refueling and support systems, which allow quick turnaround for airport cargo operators. A 250-acre Foreign Trade Zone, FTZ # 26, is adjacent to the airport.

Oakland International Airport has five cargo terminals with a capacity of 200,000 tons (440,920,000 pounds). The cargo terminal area is a Foreign Trade Zone with 4,305,564 square feet of warehouse space. The aiport offers bonded warehouse space, refrigerated storage, facilities for dangerous goods, out-sized cargo, and it has an express courier center. The airport can dock three Boeing 747 freighters simultaneously.

San Francisco International Airport's 12 cargo facilities provide approximately 1,018,638 square feet of warehouse and office space. An airmail facility accounts for another 263,000 square feet and a cargo by-pass facility a further 86,273 square feet. Cargo service is available from 57 airlines, including 17 cargo-only airlines. Services offered by cargo tenants include: refrigeration/cooler facilities, dangerous goods handling, valuable goods handling, and bonded storage. In 2006 SFO was selected by the Department of Homeland Security as one of three pilot airports to test the use of explosive detection technology for the screening of cargo. The $15 million project is being coordinated by Lawrence Livermore National Laboratory, with the system design and installation under the guidance of the airport's Division of Design and Construction.

Philadelphia International Airport maintains a Cargo City on airport grounds. It can handle dangerous goods and outsized cargo. The airport has an express courier center. The United Airlines Cargo Terminal C-4 was renovated and outfitted with ground support equipment by AMEC in 2003. PHL's first dedicated 45,000 square foot cargo terminal was opened in 1955.

LA/Ontario International Airport (ONT) is served primarily by United Parcel Service, which handles more than 70 percent of the airport's cargo. The airport's cargo operations were previously conducted in Chaffey Hangar, which is no longer adequate for the increasing cargo operations. A former Lockheed aircraft hangar at ONT was

recently converted into a new facility for air cargo operations. The new air cargo facility accommodates up to three tenants. The project includes new office spaces, utilities to support the offices, a truck loading dock, and additional modifications such as roll-up doors in the existing hangar doors.

Given the rapid expansion of cargo, a $125 million air cargo center will be built at Ontario International Airport under terms of a 40-year lease approved recently. The 1-million-square-foot facility will be built in five phases over 13 years. Construction should begin by mid-2008 on 94 acres of land northwest of the passenger terminal. Los Angeles World Airports, the regional airport authority, may gain as much as $81 million in additional revenue as a result of the expansion.

The Houston Airport System opened the $125 million, 550,000 square foot George Bush Intercontinental CargoCenter in January 2003. The new facility can handle up to 20 wide-body aircraft at one time. The CargoCenter has its own separate Federal Inspection Facitilty that houses Customs, United States Citizenship and Immigration Services, United States Department of Agriculture, and United States Health Inspection Services. The planned International Air CargoCenter II, will be an approximately 60,000 square foot perishable cargo handling facility. It will be located in the IAH CargoCenter and offer direct ramp access for cargo airlines as well as importers and distributors of perishable goods. Air Cargo World has granted Bush Intercontinental Airport the ACE Award for Excellence in the category of airports with less than 500,000 tons of air cargo annually at least twice.

Washington Dulles's state-of-the-art cargo facilities include nearly 515,000 square feet of cargo warehouse space and nearly one million square feet of cargo ramp. Undeveloped land is available for rent for cargo operators and related businesses. Dulles claims one of the lowest pilferage rates of any major airport in the world. Refrigerated and heated areas accommodate perishable shipments. Facilities for the special handling of live animals are present, as are security areas for the short-term storage of high value shipments. The airport has foreign trade zone and bonded storage capabilities.

A comparison of the efficiency of airport and airport area logistics reveals some surprises. As noted earlier, comparisons are fraught with incomparablilities. Different airports handle different types of cargo and international and out-sized cargo requires special processing. Exhibit 3.44 presents a preliminary comparison of the productivity of on and off airport cargo processing efficiency. JFK and LAX, particularly the former, both international cargo gateways, have the highest throughput per square foot of all the airports surveyed. Memphis, dominated by FedEx, follows closely. The apparent low productivity of some airports' cargo terminals may be due, in part, to pro-active expansion in anticipation of future growth. Matching throughput and capacity, coordinating investment and need, is an important strategic management task for capital-intensive operations such as airports. We return to that topic later.

We have data for comparatively few airport cities and that which we have is incomplete. The measures are skewed because, as noted in a pervious section, much of the warehouse and logistics space near some airports is not related to air transport.

The need for space is related to the volume of cargo. Exhibit 3.45 calculates the expected productivity of cargo facilities at Incheon Airport in Seoul when used to capacity. Expansion plans are already in place. Stepped expansion, triggered by usage levels, minimizes idle capital investment.

Space may be less important than they way it is used. Exhibit 3.46 provides an overview of some of the recent cargo handling performance targets at Hong Kong International Airport. These set rather stringent deadlines to increase the efficiency of the use of airport space and to reduce cargo dwell time that adds to airport and shipper capital costs. Seaport operators, limited by space constraints, are now attempting to develop "agile ports" wherein containers never touch the concrete but are immediately either loaded or whisked away. Agile airports would reduce the capital investment needed for cargo processing but require well-designed institutions and performance-oriented organizations.

Due to recent consolidations in the air cargo industry, two large air cargo facilities are sitting unused in Dayton and Cincinnati. As discussed above, integrated carrier networks may be reaching a new equilibrium that relies more heavily on regional centers and more extensive trucking. Due to the consolidation of traditional air cargo in particular gateways, discussed below, international connections are increasing at airports that are not traditional gateways. Several of these may be related to the needs of specific shippers.

Surface infrastructure and inter-modal interfaces

The connections of each of the benchmark airports to the national highway grid and the railroad freight lines were discussed above. Each of the benchmark airports has a limited access highway connection. Many of these are Interstate highways but Dallas-Fort Worth and Houston Bush airports are connected to Interstates by state highways. None of the benchmark airports now offers a seamless air-rail cargo connection.

If airport accessibility has replaced location as the new metric, good regional transportation can flatten the rent gradient around airports. Americans are at their most likely to use public ground transportation when they are away on air trips. Unfortunately, public transportation at airports leaves much to be desired. With important exceptions, service is infrequent and often not to the destinations most air travelers want. Consequently, public transit usage at U.S. airports rarely reaches as high as 15 percent.

Atlanta, O'Hare, San Francisco, and Washington Reagan National Airports provide direct connections to metropolitan train systems.[9] In each case, the airport line

[9] Detroit Metro Wayne Airport, Atlanta Airport, O'Hare Airport, Dallas-Fort Worth Airport and Houston Bush Airport have different forms of automated on-airport people movers.

leads directly downtown. The two largest New York airports have been struggling to provide train service. Neither can provide "one-seat" service to a center city. JFK's AirTrain offers free service between terminals and fare service to a nearby subway station and to the Long Island Railroad at Jamaica which has commuter rail service to Long Island and Manhattan. AirTrain's end points are quite distant from most passenger destinations. Newark's provides free service to a commuter rail station with service to Manhattan. In either case, a trip to a center city destination is likely to entail two transfers and the accompanying waiting time. Dallas-Fort Worth offers shuttle service to a commuter rail station. Other airports offer bus connections to center cities and other destinations. A service frequency of once per hour is not uncommon, largely undermining demand. Exhibit 3.47 summarizes basic information on airport ground access at selected airports. Exhibit 3.48 charts the modal share of public transportation at selected airports circa 1999. The improvements in access to New York area airports are not included in the exhibit.

Large airports have extensive catchment areas that sometimes span state borders. Nevertheless, an examination of the data available for large airports indicates that these airports draw a large minority of their passengers from geographically-concentrated areas.[10] Exhibit 3.49 shows the geographic distribution of passenger ground destinations and originations for ten large U.S. airports. Small areas generate between 20 to 50 percent of the total passengers for each of these airports. The concentration ratios (percent of passengers divided by percent of geographic catchment area) for these airports is often in the triple digits.

In some cases, passenger origins and destinations are quite close to airports already. Fully 15 percent of the non-resident air travelers in Los Angeles begin their return trips to the airport in the RADAM zone (an aggregate of the Traffic Analysis Zones used by transportation planners) that immediately surrounds the airport. Adding the four contiguous RADAM zones brings the total to 32 percent – all of which are closer than downtown.[11] Frequent fliers, especially, are likely to begin or end their air travel with a short ground trip. Data from the San Francisco Bay area indicates that, among the most frequent travelers, median airport access time is a third less than that for occasional flyers.

The available data suggest that airport ground access could be substantially improved by designing and implementing appropriate forms of public transit. Americans are most likely to use public transit when they are at their air travel destinations. Because ground travel is fairly patterned – often merely between the hotel and the airport – public transit could be a realistic alternative to automobile rental and the use of taxis. Air pollution would be reduced by decreasing the number of vehicle-miles and be decreasing the number of vehicles on the road and congestion.

---

[10] Transportation Research Board. (2002) *Strategies for Improving Public Transportation Access to Large Airports*. Transit Coopertive Research Program (TCRP) Report 83. Washington D.C.: National Academy Press.

[11] Applied Management and Planning Group. (2004) *2001 Air passenger survey final report, Los Angeles International Airport*. Los Angeles.

Perhaps with the exceptions of Atlanta's MARTA stop, San Francisco's BART station, and Washington Nationals' metro station, the public transportation connections are less than convenient. The primary market for airport rail appears to be passengers who are travelling to well-served areas (generally downtown), are travelling alone with little baggage, and who are already familiar with the transportation system, that is, mostly residents and frequent fliers. Information on visitors to Detroit is not available but DTW surveys reveal that Oakland County supplies a greater number of air passengers than Wayne County and at a greater *per capita* rate. Bus or shared van service may be most appropriate for DTW.

Airport ground access has become a nationally-recognized problem. Ground traffic near some airports is a larger source of air pollution than the jets on the airport. Sufficiently few airports are addressing the issue effectively, that the Federal government is considering actively intervening. If the Detroit Region were able to effectively address the need for airport ground access, public transit might provide a competitive advantage.

Customs/regulatory preparedness

Kenan Institute investigations suggest that each of the major benchmark airports can offer 24-hour Customs Service. In some cases, prior arrangements would be needed. But while Customs service might be available around the clock, several reports suggest that the freight forwarders which facilitate the shipments of cargo via all but integrated cargo operators, submit entries mainly during normal weekday working hours. They may not be filed in a timely manner.

Customs Service processing may only take one or two hours but it might be three to four days before the claims are filed. A recent study of cargo processing at Minneapolis Airport found that the customs entry is filed on the day of arrival for only 13 percent of all shipments.[12] Airport dwell time for inbound international freight averaged 4.73 days.

Freight forwarders and logistics service providers

Studies of international air cargo shipments have found door-to-door processing time to average six and a half days.[13] That processing time has not improved over the past 30 years even though those same studies suggest that 90 percent or more of international air cargo shipments could be processed in 72 hours or less (which accounts for the rise in integrated cargo operators). As much as 90 percent of the door-to-door time taken by regular air freight shipments is spent sitting still.

A mid-1990s study following the progress of 2,000 international shipments found that the fastest shipment time was 42.5 hours, the longest was 22 days, and the average more than 6 days. They found that:

---

[12] Minneapolis-Saint Paul Air Cargo Study, SITA Logistics Solutions, Geneva, 2001.

[13] IATA CART Report ,1973; UNISYS Study, 1996, CARGO2000 Study, 1999; SITA Study, 2001.

- An average piece of freight is handled 36 times
- An average piece of loose cargo is counted or checked approximately 16 times
- An average piece of loose freight is stored in at least eight different locations
- An average piece of cargo generates 12 pieces of paper
- The airway bill of lading was lost 1.5 percent of the time

Except for the increasing market share of integrators, there is little evidence to suggest that the situation has improved. The study of the Minneapolis airport, cited above, found that even though over 70 percent of the shipments were eligible for paperless Customs release, in less than one-third of the cases did the broker use that facility to immediately expedite processing. Progress in that area is rapid and benchmarking is soon out-of-date, especially with the incentive the government is using to encourage usage. This is discussed further below.

Data gathering strongly suggests that the locations of freight forwarders and logistics service providers are closely tied to the number and destinations of airline routes. Since a large proportion of cargo travels in the belly holds of passenger aircraft, busy international passenger routes are a major attraction for freight forwarders and therefore all-cargo airlines. Busy general cargo airports may boast hundreds of specialized service providers which sometimes specialize in a particular geographic region or in a specific type of cargo.

A relatively few freight forwarders are active in a large number of locations. Even among the large freight forwarders, cargo might be handled at one end of its journey by an agent, rather than an employee of the same firm. Exhibit 3.50 provides a list of the more prominent U.S.-based freight forwarders.

Over recent years, international air cargo has not only increased in volume but changed in its institutional and geographic pattern. First, integrated cargo providers, such as FedEx, UPS, DHL, and others have grown immensely in importance. Second, international air cargo has become increasingly concentrated in a few geographic centers. Some of the concentration is due to the rise of the integrators but the evidence suggests that the freight forwarders which facilitate cargo on passenger and cargo airlines have also moved towards using specific gateway airports in order to facilitate the consolidation of cargo.

Exhibit 3.51 lists the major cargo air carriers carrying freight that lands at U.S. airports. In this compilation, cargo is counted each time it lands. The integrated cargo providers, primarily FedEx and UPS, figure prominently in this group both domestically and in the most important international routes. The integrators are heavily oriented towards their principal hubs, Memphis and Louisville, respectively but both are developing secondary hubs across the U.S. Anchorage is FedEx' primary Asia gateway. Newark is its most important European gateway and Indianapolis is its second-most

important mid-continent hub. FedEx also operates a smaller hub at Alliance airport and is establishing one in Greensboro, North Carolina. As noted above, UPS operates a regional hub at Ontario Airport.

Exhibit 3.52 ranks the main international cargo gateways for non-integrated air cargo. Memphis and Louisville do not figure prominently in this listing because the integrated providers are excluded. Without those major sorting hubs and the integrators cargo, the remaining prominent airports are highlighted. Los Angeles, Chicago, New York, Atlanta, Miami, San Francisco, and Dallas-Fort Worth rank highly overall and in the domestic routes. These are both important cargo gateways and major origins and destinations in and of themselves.

Asia is the largest non-domestic source of air cargo. Anchorage dominates as an Asian gateway with approximately three-fourths of the non-integrated cargo tonnage. Los Angeles, San Francisco, and Chicago follow at a significant distance as Asian Gateways. Anchorage and Dubai are the world's two major international intermediary cargo hubs. Anchorage is a major re-fueling and sorting point for cargo to and from Asia. A large minority of the cargo is not off-loaded but, since many freighters are older planes without sufficient range to reach many important Asian destinations, re-fueling is necessary. Inbound cargo may, or may not, clear customs in Anchorage.

The exhibit also shows that non-integrated cargo that lands at Anchorage often continues to Los Angeles, Chicago, New York, Dallas-Fort Worth, and Atlanta. Much of the integrator Asian cargo also travels via Anchorage. It may be shipped to central hubs, but much is shipped to destinations similar to those of non-integrated cargo.

European cargo is dispersed among a number of gateways. New York, Chicago, Atlanta, Newark, Washington D.C., and Los Angeles each receive noticeable shares. Note that although Detroit Metro Wayne Airport occupies a higher rank as an Asian gateway, it receives more cargo from Europe. Detroit does not receive a large proportion of Anchorage's freight. Miami dominates as the Latin American gateway.

The Detroit Region Aerotropolis needs to overcome the significant advantages of scale enjoyed by some other airports if it is to become a major international cargo processor. Capturing automobile industry electronics shipments may play a large role in doing so. On the other hand, it may be able to benefit from capacity constraints at the busier hubs. The concentration of cargo in the major gateways and the continuing increase in air cargo traffic have resulted in a search for new, generally mid-continent, gateways. Strategies for overcoming obstacles are discussed in the final section of the report.

Fuel costs

Fuel costs are second only to labor costs in airline operating expenses. The International Civil Aviation Organization (ICAO) recommends that whether airports sell fuel to airlines or concessionaires do, that only a modest fee be charged for doing so. As

seen in Exhibit 3.80 below by their payment of fuel taxes, only a few benchmark airports sell fuel directly.

Exhibit 3.53 lists recent prices for Jet-A fuel at selected benchmark airports. These are spot-market prices from fixed base operators. The lowest recent price at each airport was selected when more than one supplier was found. Although not shown, the variation in price at individual airports sometimes rivals the variation among airports.

Large airlines do not generally buy their fuel on the spot market at particular airports but have long-term contracts with vendors. The terms of those agreements may vary according to the volume of fuel purchased. When multiple vendors are present, airlines can make competitive arrangements for fuel. Exhibit 3.54 shows prices to IATA members throughout the world. The prices are much lower than those quoted by the fixed base operators shown in the previous exhibit.

The volatility of fuel costs has severely impacted airlines in the past several years. Some airlines have been able to shield themselves against unexpected fuel cost increases by purchasing options to buy fuel in the future at specified prices. In recent years, how fuel is bought has been more important than where it is bought. As noted above, Northwest Airlines has been able to save on fuel tax by storing it the Minneapolis Foreign Trade Zone. No other similar cases were found, however.

Airport passenger service

Airports have long surveyed passenger satisfaction. They rarely share that information. Attempts are increasingly made to comparatively benchmark the level of service from the standpoint of passengers. Airports Council International – North America and others have promoted such efforts. To date, an insufficient number and presumably highly self-selected set of airports (including Detroit Metro Wayne) have participated in such efforts. Such efforts are appropriate for performance benchmarking but not central to design benchmarking performed here. The impetus to improve can be seen in the increasing interest of airports in attaining ISO 9000 certification for passenger and cargo service.

The Detroit Region is relatively well-endowed with an advanced major airport. The facilities offered by Detroit Metro Wayne Airport compare favorably to those of many major airports and are competitive with those at the best U.S. airports. Most of the facilities where Detroit Metro Wayne Airport might lag behind some of the leaders, such as in cargo processing infrastructure, can be added as needed with relatively little lead time.

Air Transport Service

The previous two sections benchmarked important basic aspects of regional resources, including the population and labor force, land availability, and the availability

of Foreign Trade Zones, and critical aspects of aviation infrastructure, most centrally runways and terminals. This section will benchmark the degree to which the infrastructure and the resources are utilized. To a significant extent, aviation infrastructure is a product of the level of service in the past. The same holds for regional resources also.

Regional passenger and cargo bases

According to ACI data, Detroit Metro Wayne Airport is the 11th-busiest passenger airport in the U.S. The airport's passenger count has been rising over the period examined and the airport has been maintaining its relative ranking. In Exhibit 3.55, Detroit Metro Wayne's position and passenger count are marked in bold. The corresponding information for the other benchmark airports is italicized. Exhibit 3.56 graphs the number of passengers processed by selected mid-continent benchmark airports over time. Detroit Metro Wayne Airport has not enjoyed the rapid growth seen at Atlanta but it seems to have been more resilient than other large airports to the shocks earlier this decade.

Detroit Metro Wayne is also the 28th-busiest cargo airport in the U.S. according to ACI data. Despite maintaining its ranking over the last several years, the tons of cargo processed has fallen. Exhibit 3.57 compares the rankings and weight of the cargo processed for the benchmark airports. A comparison of the cargo processed by Detroit and O'Hare suggests that Detroit has been losing ground relative to Chicago's airport. In 2006, Detroit processed approximately 14 percent as much cargo as O'Hare. A decade earlier, it processed over one-fourth as much as O'Hare. Exhibit 3.58 illustrates the trends over time for selected benchmark airports. The growth of integrated cargo carriers can be seen at their hubs. O'Hare has been growing as a cargo processing center.

As suggested above, an analysis of ACI data reveals that, in general, cargo has been concentrating in the busiest airports over time. Throughout the time period examined, Exhibit 3.59 shows that the busiest 25 airports accounted for approximately 80 percent of all U.S. air cargo. The busiest five cargo airports accounted for just under one-third of all air cargo in 1991. By 2006, the busiest cargo airports processed over forty percent of U.S. air cargo. Anecdotal evidence, reported in many articles in trade journals and in several reports and studies, suggests that cargo dwell times are significantly shorter at the major airports. Several airports, disappointed in their ability to maintain cargo volume, have reviewed and benchmarked their airports. Generally, they find that little of the delay is caused by airport services.

Interviews with those active in the industry suggest that much of the delay in shipping outgoing freight can be attributed to freight forwarders waiting to accumulate sufficient cargo for a particular destination in order to qualify for a higher volume-based discount on the airfare. Given the higher flow-through at the busier cargo airports, the trigger thresholds are reached more quickly there, leading to a gradual increase in shipper routing decisions that favor them.

The level of passenger traffic and cargo was compared to the population of each major region. An argument could be made that the labor force might be a more appropriate metric. Given the higher propensity of the more skilled component of the labor force, professionals, managers, and technicians, to fly both for business and leisure, passenger traffic and air cargo was also compared the number in that group. Exhibit 3.60 summarizes the results of the analysis using all three bases. Because several regions are served by multiple airports, the passengers and cargo processed by each major airport were aggregated to the regional level. Smaller airports were not included in the analysis.

The Detroit Region's propensity to fly is somewhat lower than the average for the top 25 metropolitan areas as a whole – approximately 90 percent as high – despite the busy Northwest hub. The ratio of the regional propensity to fly compared to an aggregation of the 25 large metropolitan areas remains relatively steady regardless of the base: population, labor force, or professional, managerial, and technical workers (although the differential slowly diminishes across the bases). The busier hubs may have higher propensities to fly but those metropolitan areas with the highest ratios are the tourism-dependent centers.

Examining the propensity of the region to generate air traffic on its own – with transfer passengers omitted – confirms that result. Regardless of the base, those in the Detroit Region are approximately 60 percent as likely to fly as those in the top 25 metropolitan regions on average.

The Detroit Region's propensity to either send or receive air cargo is significantly lower than that of almost all of the regions larger than itself. The low propensity to ship by air is shared by Cincinnati, Cleveland, Pittsburgh, and St. Louis but not by Chicago. Chicago's propensity to ship by air is approximately four times that of Detroit. The strong performance of Chicago as a cargo hub has an apparent dampening effect throughout the Midwest. Indianapolis is FedEx' second-largest hub and it is growing.

Airline hub status and type of service

Since Airline Deregulation began in 1978, some airports have developed into busy passenger hubs while others have not. More recently, some airports have developed into cargo hubs. A somewhat larger number of airports act as international cargo gateways. The passenger and cargo hubs tend to serve a larger number of routes and may serve a broader international market.

Exhibit 3.61 cross-classifies airlines with the airports used as passenger hubs. Several airlines maintain multiple hubs. Southwest and United maintain five hubs. Delta and USAir maintain four. American, Northwest, and Continental each maintain three passenger hubs. In some cases, one hub is significantly more important to the airline than the others. Only three airports in the U.S., O'Hare, Phoenix, and Las Vegas, are used as hubs by more than one major airline. There are another five that house a major airline and a somewhat smaller airline. Detroit Metro Airport is one of those. In some cases, the smaller airlines are growing quickly and may soon become a major airline. Some airlines

prefer not to use the term "hub" because it implies the ability to make seamless connections.

Passenger hubs tend to serve a larger number of destinations. Exhibit 3.62 presents information on the number of total and international hubs, the percent of departures that are international, the percent of passengers that are travelling internationally, and the percent of destinations that are international. The second set of columns provides similar data for cargo with the addition of the percent of the cargo volume that is carried by integrated cargo service providers.

Detroit Metro Wayne Airport ranks ninth in both the number of total passenger destinations and in the number of international destinations. It ranks tenth in the percentage of passengers travelling internationally. Seven percent of its passenger departures are headed to international destinations as are ten percent of the passengers. The traditional gateway airports, especially in New York and Los Angeles, are significantly more internationally-oriented. Detroit lags behind Chicago's O'Hare Airport in almost every respect, but not always by a large gap.

With respect to cargo operations, Detroit Metro Wayne Airport ranks eleventh in the number of total cargo destinations and 12th in the number of international cargo destinations. It ranks 13th in the percentage of cargo shipped internationally. Almost two-thirds of DTW's cargo is shipped via integrated carriers. There is a larger difference between Detroit and its nearby competitors on cargo service than on passenger service.

Air travel times and costs

As just described, Detroit Metro Wayne Airport, as a major hub for Northwest Airlines and port of call for several others, offers frequent service to many domestic and international destinations. Hub airports are often busy, however, and flights are often delayed. Exhibit 3.63 summarizes data on mean distance travelled, time in-transit, taxi out time, and delay. Detroit Metro Wayne Airport ranks 20th (of almost 40) in mean time lost due to departure delay. Given that the airport is the 11th-busiest in the country, the on-time performance is notable. Detroit Airport ranks somewhat higher (14th) on the proportion of flights delayed at least 15 minutes and 16th on flights delayed at least a half hour. That is, Detroit flights are delayed less frequently and especially less long than might be expected on the basis of the passenger traffic processed.

Detroit Metro Wayne Airport ranks 10th in the amount of time spent taxiing out to the runway for take-off, however. Taxi out times are examined because taxi in times tend to be shorter. An average DTW flight spends over 18 minutes from the time the aircraft first moves under its own power (after being pushed back from the gate) until take-off. Some of this taxi time is spent covering the distance between the gate and the runway; some is delay. The major New York airports, Philadelphia, Houston Bush, Atlanta, O'Hare, Charlotte, and Boston require more taxi time than Detroit Metro Wayne Airport.

Taxi time is important for several reasons. First, it is unproductive time spent not travelling. Detroit passengers spend, on average, one-fifth as much time taxiing out as they do in the air. Second, taxi time is an unproductive cost since aircraft are burning fuel on the ground. Third, because jet engines are designed to be most efficient at altitude, emissions are disproportionately high during taxi and take-off.

Travel time is related to travel distance. The average flight originating at Detroit Metro Wayne Airport lasts approximately two hours. Just over an hour and a half of that is spent in the air.

The cost of air travel at hub airports has been a controversial topic. Flying generally costs more at hub airports but the nature and number of the destinations may account almost totally for any cost increment. Exhibit 3.64 presents a summary of the analysis of air passenger ticket data for 2006. Round-trip single-person tickets are analyzed. Results for selected benchmark cities are shown. Detroit ranks eighth in terms of total ticket costs per mile traveled. Cincinnati is the most expensive of the benchmarked airport with a cost per mile that is over 40 percent higher than Detroit's. As the exhibit shows, Detroit Metro Wayne Airport, slightly less costly than O'Hare, falls into the broad range of mid-priced airports.

Current excess cargo capacity at Willow Run Airport

Seven miles from DTW is Willow Run Airport that has become a significant air cargo airport that is home to numerous charter cargo airlines, including the nation's leading on-demand heavy-lift cargo carrier. Willow Run Airport is continuously staffed and has five runways. The longest of these is just over 7,500 feet and has all-weather ILS capabilities. Three of the runways are shorter than 7,000 feet.

Willow Run Airport has ample capacity to expand as either a base for an integrated cargo airline or as a base for charter airlines carrying out-size cargo. Neither of those types of operations is dependent upon the belly holds of wide-body passenger aircraft. Given the capacity availability at Detroit Metro Wayne Airport, the operation of Willow Run implies a degree of duplication and extra cost that need to be counter-balanced by special advantages.

Exhibit 3.65 shows the volume of cargo processed over the past decade and a half through Willow Run Airport, according to ACI data. While actual capacity depends upon the type of cargo handled and the airport dwell time of the cargo, past performance does provide a guide to capacity with existing facilities. The high peak of processing in the late 1990s and the beginning of this decade was due to special circumstances in the operations of a single shipper. Those conditions are unlikely to repeat themselves. The future trajectory of cargo processing at Willow Run will likely depend upon the fortunes of any air cargo airline that chooses it as a home base, the demands of a specific customer (such as those of Roche Diagnostics in Indianapolis), and the ability of Willow Run to serve their respective needs.

Airport Performance in Regional Context

Two aspects of airport performance were benchmarked: the cost efficiency of airport processing of passengers and cargo and the ability of busy airports to create employment. Each of these measures has its strengths and weaknesses. The preliminary analysis presented here provides an initial basis for comparison.

Airport Costs

As noted above, benchmarking the performance of airports is fraught with comparability issues. Not all passengers, cargo, and flights are equivalent. Nevertheless, several accounting ratios can yield a broad picture of how airport performance compares. Exhibit 3.66 compares five accounting ratios measuring cost performance for selected benchmark airports.[14] The first column of numbers is the ratio of landing fees plus passenger terminal rental charges divided by the number of departing passengers. Landing fees are typically only a portion of airport-based costs. This is an adaptation of a commonly used measure of airport cost. Our preliminary analysis indicates that such costs range from $1.20 to almost $19 per passenger, with a mean cost of $ $7.57. Detroit Metro Wayne Airport costs approximately $5.90 per departing passenger. Nearby airports are often more expensive: Cleveland averages $11.38, O'Hare is $7.57 and Indianapolis $8.19. The second column of numbers is the ratio of airport aeronautical revenue divided by the number of total passengers processed. A similar pattern is seen.

Both of those measures are indicators of airline costs. The third column of numbers, the ratio of operating expenses divided by the number of total passengers, is a measure of airport efficiency. The average cost per passenger is $ $5.75. Detroit's cost is $5.05. Some nearby airports are more expensive: Cleveland's is $5.54 and Indianapolis' $6.15. O'Hare's is $4.43.

None of those measures account for cargo. Airport benchmarkers sometimes use "work load units" (WLU) to account for both. To do so, they equate one passenger to 100 kg of cargo for a WLU – a fairly arbitrary metric. The last two columns show the general operating ratios accounting for cargo processing. Detroit occupies an intermediate position on these measures.

These measures should be interpreted with caution for several reasons. First, airport operation entails tremendous fixed costs. An airport that is over-crowded will appear cost efficient but airport users will need to pay for the difference in delay (discussed above) and inconvenience. Second, small planes use almost as much runway and terminal capacity as large planes, meaning that fleet mix – and therefore service frequency and destination – affects average costs. Third, passenger mix affects costs. International passengers, for example, are more likely to check baggage and therefore create additional costs, boosting the capital investment needed. They also need extra waiting room for both departure and arrival. Similar considerations apply to cargo.

[14] These results are very preliminary.

Express freight, out-sized shipments, and belly cargo all have different cost structures. Moreover, passengers and shippers have additional costs, such as parking and ground transportation, which are not reflected in these calculations.

Employment creation

Two types of measures of employment creation are examined. The first come from airport economic impact studies. These vary widely in coverage and quality. Exhibit 3.67 presents available measures of airport economic impact. Generally, these measure the costs of air transport service provision.[15] Hub airports tend to register disproportionate impacts because air crews are based in hub cities. Maintenance facilities also add to the economic impact. In some cases, visitor spending is included.

Employment directly servicing air travel can reach into the tens of thousands at the largest airports. Over 55,000 are employed on-site at Atlanta's Hartsfield-Jackson airport, exceeding the U.S. Census definition of a metropolitan area central city. Exhibit 3.68 shows that employment at the airports included in the analysis averages 26,000 employees (compiled from airport annual reports) – comparable to that in many major central business districts. Airlines along with security and support organizations are responsible for much of that employment but increasing numbers are working in the non-aeronautical functions (e.g., retail) that contribute approximately half of total revenues to large U.S. airports.

Airports often become urban centers because of the volume of passenger traffic and the on-airport employment directly supporting that movement. They also attract related and unrelated employment to their vicinities. Some of that employment, such as in the hotel sector, may service air travelers. Some of that employment, such as in producer services, may be heavy consumers of air travel,[16] and other nearby employment may have no discernible link to air travel but be attracted nevertheless.

In order to systematically assess the impact of airports on contemporary employment distribution across metropolitan areas, we use the 2002 and 1995 Zip Business Pattern (ZBP) data (the latest and earliest available, respectively). Similar data have been used previously to explore the spatial distribution of metropolitan employment.

In addition to the information on airports themselves, Exhibit 3.68 shows that 2.8 million jobs (2.56 percent of U.S. employment) are located within a 2.5 mile radius of the center of the busiest 25 passenger airports. Over seven million jobs (6.48 percent of U.S. employment) are located within a five mile radius of the center of those same airports while 18.3 million jobs (16.57 percent of the total) are within ten miles (vs. .13 percent of the land area). Data on wages and salaries offer an indirect method of assessing the

[15] In equilibrium, costs and benefit would be equal but this indicator of impact has the perverse effect of measuring a decline in impact and benefit when services are provided more efficiently.

[16] Erie, S.P., Kasarda, J.D., McKenzie, A.M., and Malloy, M.A. (1999). "A New Orange County Airport at El Toro: Catalyst for High-Wage, High-Tech Economic Development." Orange County Business Council.

quality of jobs. The respective percentages for the payroll are 3.21, 7.83, and 20.90 – each higher than the respective percentage of employment – indicating that employment near the major airports is relatively well-paid.

The variation in employment and payroll among the airport areas is substantial but 18 of these 25 airport areas provide sufficient employment within 2.5 miles to populate an entire metropolitan area on their own and employment sometimes ranges up to a quarter of a million. Employment tops 70,000 within a five-mile radius for each of the sampled airports. With U.S. air travel expected to double within 15 years, the employment attraction of airports, as central transportation nodes of inter-modal transfer, will likely increase.

Results of studies of specific metropolitan areas, when available and generally for earlier time periods when air travel was not as common as it is now, corroborate these findings using different data sources and methods. The Los Angeles airport has been found to impact the growth of employment independent of road accessibility. The same has been found for Atlanta, Chicago, and Minneapolis. The airport forms the nucleus for Miami's largest concentration of office space.

In some cases, the five-mile radius around the airport contains or nears a central business district but even when the airport is quite distant from the city center, employment can be quite large. Older airports may support a centralized urban pattern. Logan International Airport, founded in 1923, is one mile from Boston's CBD. Among the airports included in the analysis, those founded before the Second World War average a 6.8 mile distance from their respective CBDs. Those founded after that war are located an average of 13.2 miles from their respective CBDs. Denver International Airport, opened in 1995, is 16 located (aerial) miles from Denver's CBD. (See also the discussion above.) When airports are distant from city centers, they tend to become the focus of employment clusters of their own. Downtown business and real estate interests have, in fact, long resisted the development of greenfield airports because distant airports pull employment away from downtown, impacting real estate values.

Chicago's O'Hare Airport, 14 miles from the Loop, contains over half a million jobs within a radius of five miles. Dallas-Fort Worth Airport, 12 miles from downtown Dallas, is at the center of over 400,000 jobs. Over 200,000 jobs are located within five miles of Dulles International Airport which is 20 miles from Washington D.C. Houston Intercontinental Airport, 23 miles from downtown, has attracted 140,000 jobs. Detroit's Metro Wayne County Airport, 15 miles from the city center, holds over 90,000 jobs within a five-mile radius.

Airports differ in their employment generating performance. Exhibit 3.69 presents one rough accounting ratio – the employment generated per million work load units (WLUs). Both direct on-airport employment and the employment attracted to the immediate vicinity are considered. DTW has generated and attracted less employment per WLU than our selected sub-sample of benchmark airports.

Sectors are differentially attracted to the vicinities of airports. In order to explore the sectoral distribution of employment near airports, we aggregate the data. Exhibit 3.70 shows the employment within the collective 2.5, 5, and 10-mile radii of the airports for selected aggregated North American Industry Classification System (NAICS) sectors. As noted above, some of these sectors, such as transportation and warehousing and accommodation and food services, are partially linked to the provision of the transport of goods or people by air. Others may be heavy consumers of air transport. Still other may not be functionally related to air transport as suppliers or consumers. Total national employment for each sector is included in the table as a basis for comparison.

Manufacturing is less tied to airports than employment as a whole. While 6.48 percent of U.S. employment is within five miles of one of the 25 busiest passenger airports, only 3.81 percent of manufacturing employment is. We have not included the specialized cargo-intensive airports that might be attractive to some manufacturers, however. Wholesale trade is more tightly agglomerated around airports than average. Fully 9.84 percent of the nation's employment in transportation and warehousing is within 2.5 miles of these airports and the relative concentration continues at least as far as the ten-mile radius. E-commerce fulfillment centers are reportedly especially likely to locate near airports.

Perhaps the biggest surprise is the degree to which sectors that are supposedly confined to the central business districts of the largest cities because of their need for face-to-face interaction are actually clustered around these busy airports. Finance and insurance is only slightly less likely than employment as a whole to be within 2.5 miles of an airport but information industries, professional services, administrative and support services, and even the management of companies and enterprises – the Census Bureau's terminology for corporate headquarters – are more likely than employment as a whole to be within 2.5, 5, and 10 miles of a major airport. Las Colinas, a 12,000 acre planned airport-linked city just to the east of Dallas-Fort Worth Airport discussed above, has 25,000 residents, hosts more than 98,000 employees in 21.4 million square feet of office space, including the world headquarters of ExxonMobil, and 8.5 million square feet of light industrial and distribution space. Conference facilities supporting interaction among knowledge workers, such as the Donald E. Stephens Convention Center which is less than 2.5 miles from O'Hare's terminals, locate near airports to facilitate same-day return trips by air travelers.

Accommodation and food services are more likely than average to be concentrated very close to major airports but somewhat less likely than the baseline to be within the larger radii. Few large airports are without a hotel belt, such as that just outside Baltimore-Washington International Airport, which is even identified as such by highway signs. The largest agglomeration of hotels on the West Coast surrounds Los Angeles International Airport. There are 49 hotels within 2.5 miles of Atlanta's airport terminal with the heaviest concentration 1-1.5 miles away. Fifty-one hotels are located within 2.5 miles of Atlanta's city center. Las Vegas hotels are moving progressively closer to the city's airport with some large casino hotels sited barely one thousand feet from the airport back fence. The first new luxury hotel in Detroit in decades, which

opened just a few years ago, is connected directly to the main passenger terminal, attracting many non-flying as well as flying customers. Other new hotels are finally opening downtown. The final row of the exhibit shows the percentage change in the circles with the respective radii. Airports were clearly core areas of employment growth over the period for which data are available.

Compared to central cities, the employment surrounding airports is substantial but not all-encompassing. To provide a rough basis for comparison, Exhibit 3.71 repeats the analysis reported in Exhibit 3.70 basing the rings on the centers of the 24 largest central cities that the 25 airports serve (Newark and Baltimore cities were included in this analysis). Taken as an aggregate, employment within 2.5 miles of the airports is 75 percent as large as that within 2.5 miles of the city centers. In some sectors, such as corporate headquarters and professional, technical, and scientific services, employment levels are 55 and 41 percent of central city levels, respectively. These sectors are said to be attracted to central cities but their employees are also frequent flyers. The second-to-last row of the table indicated that employment growth centered on the CBD was substantially lower than that in the vicinities of airports over the 1995-2002 time period that we are able to estimate. Unfortunately, the change in sectoral classification from SIC to NAICS does not allow for robust estimates of the employment changes in the most relevant sectors at this level of spatial detail. The last row of the table, separating urban areas into concentric zones, indicates that although employment growth was higher in suburban areas than in central cities, the growth around airports is not merely a manifestation of the suburbanization of employment. Nor, since each of the metropolitan areas examined has an extensive network of limited access highways, is the employment growth simply a result of a need for roadway access. Despite the large amount of space consumed by runways, taxiways, hangars, and mandated open space, airports are important employment centers in themselves and they serve as the major foci for employment growth, at least partially anchoring the spatial structure of what is often seen as unpatterned sprawl.

III. B. Global best practice issues

Business and governance practices are a key factor in the success of airports and airport regions. Unfortunately, as an extensive literature shows, good practice is a rare exception and "best practice" is often not very good. Conflicts over airport use, expansion, and land use are common. Those conflicts, instead of being quickly resolved, sometimes last for decades.

A stylized view of railroad infrastructure will be used to outline one view of best practice for aerotropolis development. In the 19th century, when the U.S. government was attempting to extend rail service to the interior, railroads were often granted a corridor of land in which to lay tracks. The infrastructure (tracks, bridges, and other facilities) could be financed by selling the land near the tracks to those wishing to use the services of the railroad. The railroad could decide on the level of investment in

infrastructure based on anticipated demand. It could decide on the appropriate level of service and, by locating the stations, the intensity of land use.

Since an entire system of transportation and land use was under the control of a single owner, governance and investment decisions could potentially be optimized.[17] With respect to air transport, the situation is much more complex. Airlines make decisions about the frequency and quality of service. These are not necessarily coordinated with airport infrastructure investment decisions. Neither frequency of service nor the level of capital investment is necessarily coordinated with nearby land use decisions. It is analogous to the railroad right-of-way, the nearby land, and the railroad service provider having separate owners. Each maximizes its own benefit but the potential positive economic externalities may not be generated when each party's ability to capture the gains is attenuated. As a partial example of the strategic coordination difficulties, in recent years, investments in hub airport facilities have sometimes been followed by airline decisions to withdraw service.

Similarly, land use decisions may or may not be coordinated with decisions about infrastructure and service. Furthermore, in contrast to the railroad case, many land use decisions were made after the airport was built but before air transport use was as common as it now is. Independent land owners, either not seeing the long term value of their land or not being able to wait longer for a return, often subdivided and developed prematurely. While housing may have once been the highest and best use of land near airports when air transport was less commonly used, it became a constraint on further service and the ensuing land use patterns have resulted in excess ground movement. High individual returns do not always coincide with maximum social returns.

With the possible exception of Dubai, where a greenfield airport has been built in order to serve a new city, no major airport or aerotropolis has been developed under the optimal institutional and organizational conditions enjoyed by early U.S. railroads. For the most part, the boundaries of the land parcel determine the limits of coordinated planning. To the extent that off-airport land use is coordinated with airport development, it is often the result of a happy coincidence aided by informal mechanisms.

Alliance Aiport's development may approach the synchronized governance ideal capturing the positive economic externalities. Although legally separate, Hillwood's development, AllianceTexas, near Alliance Airport, outside of Fort Worth, was coordinated with the establishment of the airport. The airport is owned by the City of Fort Worth but managed by Hillwood, a firm controlled by the Perot family. AllianceTexas, described above, is a 17,000 acre master-planned development (not all of which is contiguous with the airport). As noted in an earlier section, the airport is part of a large multi-modal logistics hub that includes an inland port, two Class I rail lines with an inter-modal yard, and Interstate highway connections. The development encompasses

[17] Despite frequent accusations of the abuse of monopoly power with respect to farmers, economic historians point out that railroads had every incentive to keep farming along their tracks profitable. Without profitable farmers, railroad investments in infrastructure would decrease in value because railroads would lose customers. Railroads unfortunately were frequently unprofitable.

28 million square feet of building space, over 150 corporate residents, 27,000 employees and more than 6,200 single-family homes.

In many other cases, the airport parcel delimits coordinated planning and development. Hong Kong International Airport was the result of very special circumstances. In the 1990s, the Hong Kong government held large cash reserves which it wanted to allocate and invest in order to reduce the chances that the mainland government would claim them after the handover in 1997. At the same time, seeing the increasing economic growth on the mainland, the Hong Kong government wished to ensure a continuing economic role for Hong Kong after the handover. The new airport and the train line from the center of the city both absorbed a substantial proportion of the government's surplus and helped lay the foundation for a continuing role as a broker for the labor-rich mainland suppliers and the cash-rich European and North American customers.

The planning and coordination of Hong Kong's very impressive airport city, named Sky City, is delineated by airport boundaries. The airport parcel was designed to allow space for large facilities in separate zones for passenger processing and other people-oriented services, such as office buildings, cargo processing and logistics facilities, and aircraft maintenance. Should an additional runway be needed, new land will be created for the purpose in the adjacent bay. The airport's remote location minimizes the degree of noise and pollution disamenity. An international firm, Skidmore, Owings, and Merrill was selected to plan and oversea the development of Sky City and two other large parcels on airport property that are cargo and aircraft maintenance zones, respectively.

The airport is operated as if it were a private firm and empowered to act accordingly. Its board of governors is made up of prominent businessmen. Airport land development can be used to subsidize air service which would, in turn, benefit those with Hong Kong-based businesses and solidify Hong Kong's regional pre-eminence.

Nearby land developments occur without input from the airport. The nearby new town unfortunately lacks amenities and those wishing to reside near the airport do so in a settlement of approximately 100,000 without a library or public swimming pool. Some residents expect that it may be decades before the Hong Kong government provides many of the basic public amenities enjoyed by almost every other neighborhood in the SAR. The lack of coordination unfortunately undermines potential efficiencies.

A similar situation holds with respect to development on and around Korea's Incheon Airport. Three large independently managed parcels will become the Aerotropolis. Incheon is responsible for developing its own airport city, Air City. A subsidiary of POSCO Steel owns a nearby large parcel of land that will become New Songdo City. One parcel will become the entire city. The single ownership allows coordinated planning for the whole development. POSCO and their partner, Gale International, have enlisted the services of architects Kohn Petersen Fox to plan and

develop a 1,500 acre airport-related business district. The developments are not directly coordinated.

In the U.S., the circumstances are similar. Las Colinas, perhaps the oldest and most well-developed airport-oriented development is a single site assembled by cattle ranching millionaire Ben H. Carpenter. The site was a family weekend getaway that was given new possibilities by the construction of Dallas-Fort Worth Airport and progressing suburbanization. Although Las Colinas was airport-oriented in conception and construction, it was developed without the direct participation of either Dallas-Fort Worth Airport or an airline. (American Airlines is the largest user of DFW and their service essentially constitutes the attraction of the airport.) Carpenter lost control of the planned new town in the 1980s after a real estate downturn and a long legal battle.

Schiphol has become the center of a multi-owner, multi-municipality aerotropolis despite a legal situation which is not entirely favorable. Progress has been due to a lot of coordinative effort and a special sense of urgency that has encouraged cooperation. Schiphol, which is perhaps one of the most-developed mature aerotropolises, has recently benefited from a combination of a unique legal jurisdiction and political climate. In almost all countries, the national government regulates air transportation as a means of ensuring inter-state (provincial) and international commerce. In most cases, land use regulation falls to the localities. U.S. law, for example, maintains a strong divide between Federal control of the airways and local control of land use. Federal land use control extends to ensuring safe and environmentally-sustainable aviation.

Dutch law requires that the national government be involved in spatial planning. Although much of the detail has in recent years been left to the provincial government, national government involvement means that economic, and not only amenity, considerations are given full hearing. In many countries, airport noise is the prime local concern, almost to the exclusion of other issues. The involvement of the Dutch national government also means that ground transportation is coordinated with airport capacity enhancement and with land use. Thus, the Zuidas development on the south side of Amsterdam was coordinated with new housing development, mainly in Almere, and with transportation directly to Schiphol Airport. Because of national government involvement, the Zuidas development could be planned to compete with alternative sites in London, Paris, and Frankfurt. It is unlikely that a lower level of government would be able to support such a far-ranging strategy or be able to bring the level of resources required for coordinated infrastructure investment to bear.

Besides the official planning bodies, there are a myriad of non-bureaucratic consultation organizations. The Commission for Regional Discussion Schiphol (abbreviated CROS in Dutch) consists of representatives from the air transport sector, regional government, and citizens. Schiphol Airport, the Dutch air traffic control organization and the three airlines, KLM, Transavia, and Martinair, represent the air transport industry. Three provinces, North Holland, South Holland, and Utrecht, and 26 municipalities send government representatives. There is also one citizen representative for each municipality. Because some of the municipalities are distant from Schiphol, the

commission is sub-divided into nine geographic clusters. The commission provides an on-going forum to discuss safety, noise, pollution, and other issues but it provides a framework for broader conversations about the development of the airport region. Exhibit 3.72 maps out the CROS region.

In general, the airport-related real estate developments occurring near the major hubs surveyed and discussed occurred under conditions of substantial latent demand. In some cases, such as Munich, commercial real estate development began in anticipation of the airport being opened. The situation for the Detroit Region Aerotropolis is different. The Detroit Region Aerotropolis is the product of a far-reaching vision and ambitious plans on the part of an entrepreneurial state. The Detroit Region has been holding its own despite severe setbacks over the last several decades but it is not a national or international growth pole like those of Hong Kong, Seoul, Dallas-Fort Worth, or Atlanta. Best practice in the Detroit Region Aerotropolis case may differ substantially from that in other regions. The Schiphol and, to a lesser extent, Frankfurt experiences may be the best overall guides for Detroit Region Aerotropolis development. (Both have been visited by a Wayne County Aerotropolis study delegation.)

Best international governance practice

This section begins with a discussion of airport governance structures before proceeding to discuss Aerotropolis regional governance issues. Some aspects of regional governance were discussed above. Formal governance structures have been generally found to be insufficient, even in the rare cases where regional government exists. A range of informal and partial governance structures has emerged to fill coordination needs.

Governance structures

Two levels of governance are relevant to the Detroit Region Aerotropolis. The first is the governance structure of the airport itself. The second is the governance of the significantly larger Aerotropolis development area.

Airport Governance

Eight basic airport owner/operator arrangements have been identified internationally.[18]

1) Owned by a combination of national, regional, and/or local governments and operated by a branch of the national government

   Dubai and Singapore airports operate successfully with this owner/operator model.

[18] From Richard de Neufville and Amedeo Odoniu (2003) Airport Systems: Planning, Design, and Management, New York: McGraw-Hill.

2) Owned by a combination of national, regional, and/or local governments and managed and operated by a branch of a local or regional government

Many U.S. airports, including benchmark airports O'Hare, Denver, and LAX operate under this model. Service provision at many of these airports is out-sourced via a competitive process that increases operational efficiency. Pressures from airlines and consumers plus the legal requirement that airport finances be treated independent of other local finances may help increase efficiency.

3) Owned by a combination of national, regional, and/or local governments and, possibly, of private interests and operated under a management contract by a publicly or privately owned company

The benchmark airport in Indianapolis follows this owner/operator model with its contract to BAA. Alliance Airport in Fort Worth has a similar arrangement. This arrangement may become increasingly common as airports grow in complexity and the requisite operational knowledge becomes more difficult to accumulate. In the U.S. detailed knowledge is often spread by the movement of personnel among airports.

4) Owned by a combination of national, regional, and/or local governments and managed and operated as an autonomous airport authority

Several benchmark airports operate under this owner/operator model, including those in the New York area, San Francisco airport, and Boston Logan Airport. Operating as an autonomous airport authority may effectively insulate airport operations from direct political intervention.

5) Owned in the majority by a combination of national, regional, and/or local governments with minority shareholders and no publicly traded shares; managed and operated as an autonomous airport authority

Hochtief, a large construction company, owns a substantial minority interest in Athens International Airport (Greece). Several corporatized airport authorities have obtained minority interests in distant airports. They also have a management interest.

6) Owned in the majority by a combination of national, regional, and/or local governments with minority shareholders and some portion of the shares publicly traded; managed and operated as an autonomous airport authority

Several large airports internationally maintain a majority government ownership with a minority share acquired by a strategic partner with expertise in airport operations, such as Singapore Changi Airport or Aeroports de Paris, and the rest sold to the public.

7) Owned fully or in the majority by private investors, with no publicly traded shares, and operated as an autonomous airport authority

   The Argentine airports were in this category with the owners operating the airports.

8) Owned fully or in the majority by private investors, with some or all shares publicly traded, and operated as an autonomous airport authority

   Until its takeover, BAA, the privatized former British Airports Authority, was the most prominent example of this owner/operator arrangement. London Luton Airport, Belfast International, and Cardiff airports are owned and operated by TBI which is 90 percent owned by Abertis, a Spanish infrastructure firm, and ten percent by Aena Internacional, owned by Madrid Airport.

As just noted, U.S. practice is concentrated in only a few of these possibilities. Special purpose governments, such as school boards, water and sewer districts, or library districts, are common in the U.S. Despite their prevalence, few airports either are themselves or are owned by such special-purpose governments.[19] That is, despite the name, airport authorities are not generally authorities in the sense that sewers are often managed by authorities. Airport authorities have no power to tax and must finance their activities by user fees. This issue is returned to below.

Exhibit 3.35 above shows the owners of each of the benchmark airports. Most of the airports are owned by municipalities. A few are owned by counties. Sometimes the airports are owned by an airport authority which is, in turn, owned by one or more public bodies. All large airports in the U.S. are publicly owned. Approximately a decade ago, the Federal government allowed public bodies to privatize airports. To date, only one, the former Stewart Air Force Base in New York, has been sold to a private investor and it has recently been transferred back to public ownership.

The requirement that all proceeds from the sale of an airport must be re-invested in aviation and cannot be used for other purposes is a key stumbling block to full privatization. That legal requirement means that only those airport authorities owning multiple airports would find privatization attractive. They could use the proceeds of the sale of one airport to finance the expansion and improvement of another. For that reason, Chicago's Midway Airport is often seen as a candidate for sale. Wayne County might also have a potential interest. The disadvantage of such a sale is that the airports could then become true competitors. The only case in which one locality has two competing airports under different management is Dallas Love Field and Dallas-Fort Worth Airport.

[19] Hunter Bacot and Jack Christine (2006) "What's So 'Special' About Airport Authorities? Assessing the Administrative Structure of U.S. Airports." *Public Administration Review* 66: 241-251.

(The airports share an owner.) Their relationship has been contentious and Love Field is barred from full competition with DFW by federal law.[20]

Over the last several decades, there has been an increasing level of discussion about airport governance reform with some form of partial or full privatization being at the center of debate. While there are no fully privatized airports in the U.S., several airport authorities, including those in Pittsburgh, Baltimore, and Indianapolis, have contracted with private firms to manage their terminals. Many others effectively privatize retail operations to management firms which sometimes further sublet to concessionaires. Security is, of course, now out-sourced to the Transportation Security Administration.

Internationally, corporatization is more common than in the U.S. but full privatization is relatively rare. The British Airport Authority was privatized under former Prime Minister Margaret Thatcher's program of reform. The BAA managed Heathrow and other major London Airports. The firm has recently been bought by Spanish infrastructure specialist Grupo Ferrovial.

Macquarie Bank and Hochtief, a large construction company, operate multiple airports. Several corporatized airport authorities, including those of Schiphol, Singapore Changi, and Hong Kong, either own stakes in or have long-term management contracts with other airports. Australia has effectively privatized its airports by taking bids for 50-year leases which can have the option of a 49-year extension. Hochtief engages in Build-Operate-Transfer agreements which reduce the initial public infrastructure burden.

This debate continues and it is unclear whether or in what form, privatization can benefit regions. From a theoretical point of view, the three most common forms of privatization have specific strengths.[21] Management contracts, properly managed, have the potential to increase operational efficiency. Long-term contracting with a private operator may help improve operations and allow for improved financing. Full or partial privatization might have a positive impact on operations, financing, and strategic positioning.

Aerotropolis Governance

The alignment of airport and regional interests and incentive underlies the choice of an airport governance model. While efficient airport operations would always be a benefit, maximizing airport operator revenue does not necessarily maximize regional benefit. At least one U.K. locality has repurchased a privatized airport – at a substantial premium – because the airport operator found that it was more profitable to extract high

[20] Boston Logan, Manchester, and Providence are sometimes cited as another case but the degree of overlap in the passenger sheds is unclear. In all likelihood, someone headed to Boston proper would not seriously consider the other airports. The Boston metropolitan region is, however, sprawled across parts of four states.

[21] Michael Carney and Keith Mew (2003) "Airport Governance Reform: A Strategic Management Perspective." Journal of Air Transport Management 9: 221-232.

service fees from a limited number of passengers than it was to provide inexpensive service to a larger number. Residents and businesses protested as air travel costs became prohibitive, forcing the costly repurchase. As noted above, airlines are highways in the sky that bring customers and suppliers to the region and allow for resident travel. In that sense, an airport that operated at a loss, might still be a net regional benefit if the positive economic spillovers in terms of business revenues and employment generated, especially the so-called "catalytic effects," were greater than the operating deficit.

The potential for positive economic spillovers in terms of gains to business efficiency and employment generation – catalytic effects – raises the issue of broader Aerotropolis governance. This issue remains mostly hidden because major airports generally create surplus revenue and because the costs of sub-optimal broader governance are mainly in the form of potential revenues foregone, rather than fiscal costs. An optimal aerotropolis governance structure would encourage the maximization of regional benefit. As noted above, the geographic extent of aerotropolis governance is mainly delimited by the size of the development parcel. The Detroit Region Aerotropolis development area consists of many parcels spread over two counties, at least seven municipalities, and a large number of owners.

Formal Governance Structures

In perhaps only one case has there been a plan to create a formal government for an aerotropolis. Suvarnabhumi City Province was planned to regulate the region surrounding the new Bangkok Airport. The city was planned to have an estimated initial population of 240,709 in and area of 380.61 square kilometers carved from the Bangkok Metropolitan Area and neighboring Samut Prakarn Province. Most of the area was to be to on the far side of the airport on the south and west. Suvarnabhumi City itself was to be a 34 square kilometer area immediately to the west of the airport and bordering Bangkok on the other side.

The purpose of the new province/city was to regulate land development in the immediate airport area, providing a safety and noise buffer surrounding the airport, encourage appropriate development, and efficiently administer the needed infrastructure. It was felt that a separate, unified government unit would be the most efficient and effective.

Thailand periodically subdivides provinces when population growth suggests a separate governmental and administrative structure may be warranted. A provisional structure was chosen with an Administrative oversight committee in charge of policy, regulation, and project approval and an executive organization in charge of the technical aspects of planning. Several pre-existing local-level government units were to continue their work as citizen service centers. The plan was to have the Suvarnabhumi City Provincial government be delegated special powers having to do with its unique mandate to implement the Suvarnabhumi Airport master development plan and thereby build on a cornerstone of the Thai economy. The Ministry of the Interior was to have effective veto power over the decisions of the Suvarnabhumi City government. With the change in the

Thai national government in September 2006, the plans to create a separate province have been abandoned.

In response to the general aversion to regional government and to adding additional layers of government, forms of informal governance have arisen in the U.S. and elsewhere. In fact, even in countries where regional governments have the requisite powers, informal bodies are an essential component of aerotropolis governance.

Regional partnerships for economic development have been increasing in number, creating what have been sometimes termed, "virtual regions." These vary considerably in form and mission. Sometimes virtual regions develop in the form of narrowly-circumscribed horizontal (municipality to municipality or county to county) inter-local agreements. More often, a form of public-private partnership, such as that developing for the Detroit Region Aerotropolis, emerges.

These virtual governments share several characteristics. They focus on areas of substantive strategic concern. They seek the development of government *capacity*, not the expansion of government. They are directly or indirectly fueled by coalitions of interest groups from public, private, and non-profit sectors and they frequently employ a facilitated procedure to develop a shared vision and means of collaboration.[22]

Many of these virtual regions engage primarily in information gathering and dissemination to promote their respective regions to potential investors. Others pool public labor and expertise to allow the development of a degree of specialized knowledge that would otherwise not be practical. For example, a virtual region surrounding Bremen, in Northwest Germany, cooperates to offer local services and reduce costs. Similar to large consulting companies, the services are locally delivered but the expert know-how supporting that service might reside anywhere among the cooperating partners. Virtual regions might also cooperate to acquire matching funds from higher levels of government and create joint platforms for public tenders.

The Detroit region already has a foundation for cooperative Aerotropolis governance. Southeastern Michigan has created a special-purpose virtual region in order to win a WIRED grant. This organization includes many of the prominent partners in the Detroit Region Aerotropolis effort.

Informal Governance Structures

Special purpose regional cooperative agreements sometimes become vehicles for a broader coordinative purpose. Two of such formations have been active in the development of Germany's new (opened in 1992) Munich International Airport. The Progressive Nordallianz was formed to represent and develop the area between Munich city and the Munich airport. Eight communities participate in this organization.

[22] Julia Olberding (2002) "Diving into the 'Third waves' of Regional Governance and Economic development Strategies: A Study of Regional Partnership for Economic Development in U.S. Metropolitan Areas." Economic Development Quarterly 16: 251-272.

AirfolgsRegion (a play on the German word for "success") Erding-Friesing is a regional marketing initiative of two regional district (county) governments, the two district cities, and Munich International Airport. The steering committee consists of the two county heads, the two mayors of the primary cities in the region, and an ombudsman. An operational working group consists of their representatives. External consultants perform much of the work. One person runs the office. At present, AirfolgsRegion is concentrating on the immediate realization of smaller projects in order to build the credibility that will allow it to mount larger, long-term efforts. Exhibit 3.73 illustrates the organizational structure of the Munich Airport neighborhood forum, a vehicle for citizen involvement in airport decisions that affect local land use.

The DIA Partnership and the Memphis Aerotropolis Development Corporation, both discussed in a previous section, are both examples of the informal governance structures that have developed in several regions. Neither of these groups has legal authority over any decisions but they become pressure groups that represent the interests of airport area land owners and developers. In addition, several areas have developed regional logistics councils. These informal groups become for a for policy discussion and pressure groups representing the interests of those who involved in shipping, warehousing, and storing goods. Regional chambers of commerce, CEO clubs, and similar organizations often represent the needs of business travelers. One such group was instrumental in pushing O'Hare's modernization program over its legislative and administrative hurdles.

A key aspect of the emergence of virtual regions in a need to cooperate combined with an inability to come to an overall consensus regarding policy. Virtual regions are a manifestation of Charles Lindblom's concept of muddling through. The specialized inter-governmental agreements facilitate policy implementation and service delivery while the public-private partnerships serve as discussion fora allowing a long-range strategic vision to emerge and be articulated.

Uniform permitting, zoning, code and other regulatory requirements

Uniform permitting and zoning has so far not been an issue in Aerotropolis growth. As noted above, planned Aerotropolis growth has been largely confined to single parcels, where the developer can impose standards. Unplanned airport area growth, such as that reviewed above, has not been coordinated. The result has been that while some major airports have become employment magnets, they have also become congested, inefficient, and unattractive.

Regional planning has historically been hampered by a lack of enabling legislation. Virtual regions similar to those discussed above have been instrumental in the evolution of multi-municipality zoning in some states where a formal enabling mechanism does not already exist. In the absence of an empowered supra-municipal government body, uniform permitting, zoning, and regulation will remain a matter of negotiation.

The State of Michigan is in the process of restructuring the regional planning laws which reach back as far as 1945. Recent efforts (PA 110 of 2006 and SB 683) have been directed towards consolidating local zoning acts to make city, township, and county laws consistent with one another. Additional work may still be needed to make the laws and regulations horizontally consistent. In addition to the zoning laws, conservation and infrastructure legislation also allow for regional coordination.

To ensure that the Detroit Region Aerotropolis grows in a unified and expedient manner, all jurisdictions with in the Aerotropolis district should consider adopting coordinated future land use and transportation plans. Perhaps one of the more effective strategies for ensuring compatibility, if not absolute consistency, in local regulations would be to form an informal regional partnership to work out the Detroit Region Aerotropolis vision. Beginning with the broad design visions recently produced by the University of Michigan at Ann Arbor charettes, economic, social, and fiscal plans could be outlined. As a consensus emerges on the broad outlines of the vision, specific zoning and regulation could be enacted to support that collective vision. Not only will such coordinated plans ensure consistent development in consonance with the general plans outlined in the regional Aerotropolis vision, detailed plans will expedite the development approval process, eliminating much of the cost of contemporary real estate development.

In addition to land use codes and zoning that coordinate with present and planned transportation infrastructure, many regions are considering adopting form-based codes. While a consistent Aerotropolis "look and feel" is desirable, there is no reason development form must be entirely consistent throughout the region – or even throughout a particular municipality. Form-based codes help localities implement their specific visions. They are a mechanism for informing potential developers of the expectations, avoiding one of the major stumbling blocks to real estate development, and maximizing overall benefit. Such codes complement widespread zoning attention to permitted uses for particular sites and the separation of incompatible uses – which is especially important in airport-linked development.

Form-based codes might include 1) a plan or map of the regulated area designating the locations where different building form standards apply, 2) regulations controlling the configuration, features, and functions of buildings, 3) specifications for sidewalks, travel lanes, street trees, and other public features, 4) regulations controlling external architectural materials and quality, and 5) a clearly defined application and project review process. Some form-based codes address factors such as: building facades, the form and mass of buildings, the types and scales of streets and blocks, the physical characteristics of streets and rights-of-way, and the location, size, and physical characteristics of designated public spaces. The combination of approved land uses, design standards, and a clear application and review process can be important in gaining both resident and developer approval for the Detroit Region Aerotropolis.

Coordinated plans are essential to achieving the aesthetic standards that are increasingly needed to make large-scale real estate developments competitive. Flexibility is critical, however. Schiphol's aerotropolis strategy emerged only after significant

private investments, deviating from earlier plans, were already in place. SEMCOG provides an excellent forum for the discussion of regional planning issues at the strategic and operational levels. These efforts could dove-tail regional revenue-sharing discussed below.

Best international finance practice

This section examines financial practice among the benchmark airports beginning with a focus on the continuing operations of airports and then broadening attention to airport capital investments. Attention is then shifted to Aerotropolis building where two specific topics are covered: business incentives and incremental tax sharing. Both are controversial topics to which no final resolution is offered. Both, in one form or another, are common development tools.

Financing of annual operating expenses

Airport revenues and expenditures are complex and difficult to compare fairly. The structure of the revenues is sometimes driven by historical factors and may be affected by accounting approaches. U.S. airports are split between two methods of allocating costs and revenues, the compensatory and residual systems. Under the compensatory system of accounting (analogous to the dual-till approach abroad), aeronautical charges are set sufficient to cover the services to airlines. Further revenues from non-aeronautical sources accrue to the airport itself. Under the residual approach (analogous to the single-till approach abroad), airlines with long-term leases only need to pay charges for expenses not covered by all other sources, including non-aeronautical revenue. These "signatory" airlines have a say in important investment decisions but also need to assume a portion of the financial risk. When non-aeronautical revenues are high, the residual approach can result in an absolute decrease in aeronautical revenues because the non-aeronautical revenues are used to subsidize airline operations.

Exhibit 3.74 provides a broad overview of the finances of the benchmark airports. The figures shown are an average for each airport over the three most-recent complete fiscal years, 2004-2006. Operating revenues, expenditures, depreciation, and the net proceeds are shown towards the left of the table. Net proceeds as a percentage of revenues vary quite widely. Further to the right, capital expenditures are shown. Detroit Metro Wayne's operating expenses exceeded its operating income in the period examined. Capital expenditures as a percentage of the net proceeds also vary substantially. Debt repayments also vary. The net operating surplus can be an important source of capital funds eliminating the need to use the capital markets or apply for Federal, state, or local grants or appropriations.

Exhibit 3.75 details the level and structure of benchmark airport revenue. Not all subcategories of revenue are shown. Aeronautical revenues, those generated by the basic operations of the airside of the airport, can account for up to close to two-thirds of airport revenues. Landing fees are a primary source of aeronautical revenue. Typically, these

are weight-based although there are many specific formulas. They are meant to help defray the costs of building, operating, and maintaining the airfield plus pay for services such as firefighting, snow removal, and security. Additional revenues stem from airline rental of passenger and terminal space. (Airlines sometimes own passenger terminals.) Airlines may also pay additional fees for parking aircraft but these charges are sometimes subsumed under landing fees and terminal rentals.

Non-aeronautical revenues, those generated landside with the exceptions of terminal rents, can also range nearly as high as a percentage of revenue. On average, these have grown in importance over recent years as passenger volumes have increased. The growth of non-aeronautical revenues over the past several decades is sometimes said to be a form of income diversification that helps airports avoid risks. That is not the case since almost all non-aeronautical income is dependent upon passenger air traffic. The shift in revenues is evidence of a changing business model whereby aeronautical fees are kept low and passenger services, such as catering, are shifted from airline to airport. Detroit Metro Wayne's non-aeronautical income is somewhat higher than benchmark average.

Terminal concessions for retail operations and advertising space are the most well-known source of revenue but parking and the leasing of space to automobile rental firms frequently eclipses terminal-based revenue. A few airports have been reluctant to improve ground access public transportation because of its possible effect on the latter source of revenue. Typically, even under the most favorable circumstances, public transportation's share of passenger ground access doesn't rise above 15 percent, however.

Non-operating revenues, such as Passenger Facility Charges and, especially when major construction is underway, grants, can also be important sources of funding. Grants come from a common pool while Passenger Facility Charges are generated and spent locally. Both add to ticket prices and are frequently scrutinized by airlines.

The Airport Improvement Program (AIP) funds airport planning and projects that enhance the capacity, safety, and security or minimize noise disamenity. The AIP is supported by The Airport and Airway Trust Fund which is financed by a set of excise taxes on air travel. These taxes are on ticket purchases, segments flown, international departures, cargo waybills, and aviation fuel. The level and structure of recent charges are listed in Exhibit 3.76. The legislation authorizing these taxes is currently under discussion. Over 3,000 airports are eligible for funding under this program. Large airports may receive only about 10 percent of their funding capital from this program.

In order to supplement AIP funds, airports are allowed to levy Passenger Facility Charges (PFC). Over 200 airports in the U.S. now do so. Exhibit 3.77 lists the current PFCs at benchmark airports. PFC funding is used to pay for airside improvements (18 percent), landside improvements (35 percent), ground access facilities (6 percent), noise mitigation (5 percent), and interest payments (31 percent). In order to be granted permission to levy Passenger Facility Charges, airports must relinquish their rights to a

portion of AIP funds. Detroit Metro Wayne PFC charges are in line with those of other airports.

The structure of expenditures depends largely on the degree to which services are out-sourced. Exhibit 3.78 provides a comparison among the benchmark airports. Those of Detroit Metro Wayne are roughly similar to those of other benchmark airports.

Some airport investments are quite "lumpy" with new runways and terminals being both expensive and long-lived. Capital expenditures will reflect current large projects. Exhibit 3.79 provides an overview of the broad distribution of capital expenditures among the benchmark airports. These are split between airside, terminal, parking, ground access, and miscellaneous other expenditures. The use of AIP and PFC funds are limited to investments directly related to air transport. Given the recent activity at Detroit Metro Wayne, the capital spending on terminal facilities is unsurprising.

Airports make a variety of payments to Federal, state, and local governments. Exhibit 3.80 provides an overview of these payments for 2006. Airports sometimes pay for services, including law enforcement and firefighting. Many U.S. airports operate as departments of local government with relatively small staffs. They therefore also sometimes rely on their local governments for professional services. A very few airports make payments in lieu of taxes or pay impact fees. A number also pass on taxes on commercial activity such as retail sales or parking. Accounting practices are not fully standardized among airports so that the categorizations of payments are not always consistent. Nevertheless, the payments that Detroit Metro Wayne Airport makes to local governments are below those of equivalent airports. The low payments may become salient if additional subsidy is requested.

Financing of major infrastructure capital expenses

Airport capital investments can be a long and tortured process. Runways can take decades to plan, get approved, be constructed, and be brought into service. The FAA's Operational Evolution Partnership reports that estimates that 13 of the nation's 35 busiest airports, many of which are benchmark airports, have commissioned new runways since 2000 and that eight OEP airports now have capacity expansion projects underway. Nevertheless, six benchmark airports will need additional capacity in 2015, even if all planned enhancements are carried out on schedule. Fourteen OEP airports, many of them benchmark airports, will need additional capacity by 2025. Given the long lead times for expansion, a shortage of runway capacity is a serious bottleneck to traffic growth. Passenger terminals are also expensive but usually require a somewhat shorter lead time.

Major airport investments in the U.S. are financed through a mix of AIP grants, specific Federal, state, and local appropriations, and loans. The loans are most often in the form of tax-free government airport revenue bonds which are then repaid out of operating revenues and PFCs. Capital markets can potentially act as a strong discipline on airport capital spending but, since major investments are frequently partially supported by grants, the discipline is somewhat weakened. Airlines can also act as a brake on

investment. The recent critical financial situation of U.S. airlines has made them scrutinize major capital investments carefully for their potential to improve revenues. Since airport revenue bonds are backed by the traffic generated by airlines, financial markets have grown wary of some investments, particularly those serving the hubs of fragile carriers. Exhibit 3.81 graphs the sources of capital for airport capital improvements and anticipated development needs. Exhibit 3.82 does the same for investments in ground access improvements.

Commercial aviation is a mature business and is expected to be largely self-financing and self-sufficient. For example, the excise taxes collected by Airport Improvement Trust Fund account for a large proportion of FAA funding. On the other hand, diversions of airport revenues are proscribed. Airports and airport cities can also benefit from other Federal sources, however. Several pieces of legislation authorize highway and other funds to improve transportation and cargo processing. The exact sources have been fluid over the past several years. Exhibit 3.83 lists the most prominent sources of Federal ground access funding circa 2003.

This review, however, omits the informal channels of airport-related infrastructure finance. Only about half of the public capital funding for Alliance Airport came through formal channels. Even when formal channels are used, political support at the Federal level is often a key ingredient in successful development. On the other hand, a lack of support from critically-placed political leaders was central in the long delay in O'Hare upgrading.

Entrepreneurial regions that stand to gain from the expansion of air traffic may decide to provide additional support to aviation. The added investments might be repaid by the additional taxes generated by the added employment. A portion of the additional taxes might be captured as real estate taxes, particularly if a special aerotropolis district with its own set of levies can be formed. That option is discussed below.

Financial and other incentives to attract customers

The benchmarking above indicates that the Detroit Region Aerotropolis has considerable resources which are attractive to many firms. The primary resources that firms have at their disposal include Detroit's central location in the emerging Great Lakes mega-region and the accompanying position in river, rail, and road networks, Detroit Airport, Northwest Airlines that increase accessibility by using the airport as a passenger hub, and the existing firms that already leverage these resources. These resources have helped maintain economic output in the region. Nevertheless the Detroit Region suffers from several drawbacks which work to decrease the overall competitiveness of the Detroit Region Aerotropolis by increasing business costs.

Business incentives are and will likely remain a controversial issue and any statement of "best practice" is likely to elicit well-grounded critique. Although there is an active literature evaluating the effectiveness of incentives, the research is plagued by

methodological shortcomings.[23] Critics point to displacement effects and the incentives for businesses to seek political rents, rather than creating value in the marketplace. On the whole, the literature has failed to find clear evidence of regional benefit.

It might be thought that the availability of infrastructure that reduces business costs and improves profits would be sufficient to attract firms and employment. That would be true if infrastructure was in short supply. As long as infrastructure is operating at less than capacity and as long as regions value additional employment, there will be pressure to grant incentives.

There is little formal research on the optimal level of incentives and none on the optimal mix of regional investment in infrastructure and incentive. There is an extensive body of research on the use of fiscal incentives and their general lack of effectiveness. Rather than eschewing the use of incentives, policy analysts are now developing guidelines for their judicious use. We can outline some of the key features of this emerging logic of incentives.

First, no firm will intentionally make a location decision that is harmful to its interests. The firm location problem is one of finding a location that maximizes productivity. Some firms are heavily dependent upon the site and situation advantages of particular locations. Others can reasonably choose from a wide range of options. A region does not need to grant location incentives to a firm if it already is the best choice location and it needs to grant incentives no larger than that sufficient to make it the best choice location.

Second, since some firms perform a key regional export function, increasing overall regional income, they generate economic externalities. They might like to claim a portion of those externalities. Incentives might be granted up to, but not beyond, the value of the externalities generated.

Third, to the extent that urbanization economies help regions attract firms and add employment, the firms that make a disproportionate contribution to the creation of those economies might like to be compensated for their public service.

Although abstract, these three points might be used as conceptual guidelines in formulating an incentive policy. These are incomplete. The counter-claims of a region that grants incentives are not included. The experience of Louisville in using incentives may be instructive.

Kentucky provides a number of incentives for businesses. The Kentucky Economic Development Finance Authority (KEDFA) promotes economic development, business expansion, and job creation by providing financial support through financial assistance and tax credit programs. These include investment incentives provided under

[23] Terry Buss (2001) "The Effect of State Tax Incentives on Economic Growth and Firm Location Decisions: An Overview of the Literature" Economic Development Quarterly 15: 90-105.

the Kentucky Industrial Development Act and the Kentucky Economic Opportunity Zone Program and subsidized loans.

These programs were important in cementing UPS' now on-going and announced expansions of its Louisville International Airport hub. The latest expansion will create over 5,000 jobs and add another 1.1 million square feet of logistics facility, add three wings to the main hub building, and lengthen the conveyor belt system to 197 miles. State and local officials offered a $51.6 million subsidy package, the largest in Kentucky's history. The latest incentives package offered to UPS includes as much as $31.6 million under the Kentucky Jobs Development Act (KJDA), which was created to promote white-collar technology and service-related expansions. In addition, UPS will get as much as $20 million in benefits through the Kentucky Enterprise Initiative Act (KEIA).

Business incentive programs in Louisville, as elsewhere, have been criticized for their costs and lack of clear, demonstrable benefit. Tellingly, the programs have not been criticized for supporting the key logistics firm, UPS. This firm has become part of the regional infrastructural fabric that enhances the competitiveness of the Louisville region while generating employment across skill levels. To a large extent, UPS creates the centrality advantages that attract additional firms in a way that additional investment in airport infrastructure would not. Moreover, UPS began to create regional advantage at a time when the airport itself offered little advantage. Critically, with large capital investments of their own, UPS and other such logistics firms are not likely to re-locate after incentives expire.

Perhaps the main lesson learned from recent studies of business incentives is that localities need to carefully calculate the costs and benefits of granting incentives to *particular* firms. Firms that generate large local spin-off effects or that generate large indirect benefit are prime targets for performance-based incentives. Those that generate less economic impact correspondingly should be less likely beneficiaries. Given that the maintenance and expansion of passenger service and the expansion of cargo service is critical to the Detroit Region Aerotropolis, firms that increase flights and cargo throughput would be prime candidates for incentives.

As noted elsewhere in this report, the key location incentives appear to be capacity and throughput efficiency. The attractiveness of the local area as an origin or destination plays a critical role but in those regions with multiple airports in the U.S. and abroad (e.g., Hong Kong and more broadly Southeast Asia), the ability to deliver service appears to compensate for cost differentials. As noted below, the superior processing capability often leaves the secondary airports under-utilized.

Incremental tax revenue sharing practices for local governmental units

Regional tax-base or revenue sharing involves each participating community designating some part of its assessed value base, or of a stream of tax revenues, for inclusion in a regional pool that is then divided among all localities in the pool by some

formula, usually involving total population and perhaps other variables. The assessed values or revenue streams to be included in the base from which the shared pool is derived could potentially include only those added to each community subsequent to the date at which this arrangement is adopted by the state legislature.[24]

For each property developed after the date of agreement, some percentage of the assessed value is retained by the locality where the property is built, and the remainder is placed in a regional pool of assessed values. This arrangement implies that incremental development revenues are shared but those stemming from the existing municipal bases are not. That apportionment process implies that localities with large, established tax bases are not unfairly burdened.

The basic purposes of sharing tax bases are (1) to reduce competition among communities for non-residential properties to add to their tax bases, since such properties added to any community also add to the pool shared by all communities; (2) to create a fairer distribution of tax benefits from properties created in each community that impose costs upon surrounding communities too; (3) to reduce disparities in assessed values per capita among communities within the same region so as to provide more equalized (but not equal) bases for financing local government services, including education; and (4) to permit regional land-use planning across a territory that contains parts of several different municipalities, each of which would not receive equal shares of future developments if rational plans were adopted for the region as a whole.

The Twin Cities region of Minnesota has the most extensive experience with regional tax-base sharing. Only non-residential properties created after the program's initiation date are included in the revenue-sharing. The program does not affect local residential tax-bases or the original, past non-residential tax bases of the communities involved. Sixty percent of added assessed values are retained by the community where the new properties are located, and 40 percent are placed in the pool to be shared by all communities. This division recognizes that the place where the new property is built must bear most of the added costs of servicing that property, but also that other communities may have to bear some added costs also.

Other tax-base-sharing arrangements could involve residential values as well. It is also possible to include sales tax receipts in a similarly-shared pool, as Montgomery County, Ohio, has done concerning a one-percent add-on sales tax.

In the Dayton, Ohio, region, this technique has made it possible for multiple municipalities to cooperate in promoting the economic development of the entire region, including the provision of affordable housing and cultural facilities serving the entire region.

---

[24] This section relies on a summary of the relevant literature and experience by the National Association of Industrial and Office Properties (http://www.naiop.org/governmentaffairs/growth/rtbrs.cfm). Gerald R. Ford School of Public Policy, University of Michigan (2006) "Detroit Metro Aerotropolis Governance Models and Options" reviews an overlapping set of finance arrangements.

In the Hackensack Meadows District, in New Jersey, this technique has made it possible for a regional body to develop a land-use plan that is rational from the broader perspective of an entire region, even though that region encompasses parts of 14 municipalities and two counties, without causing fiscal disadvantages to any of the those 16 legal entities.

In Rochester, New York, the city is able to collect more funds from the local option sales tax that flows through the county government than it could if it charged that tax only within its own boundaries.

Revenue-sharing can reduce competition among localities for non-residential properties, provide fairer sharing of taxable assessed value bases among all those communities with costs increased by the creation of new properties located in just one of them, create greater equality among per-capita assessed value bases across the entire region, and can make possible land-use planning that is more rational from the viewpoint of the entire region encompassed.

Regional tax-base sharing tends to redistribute assessed value bases from communities that initially have high such bases per capita to those that initially have low such bases per capita. Since this imposes costs upon residents of the localities that are "net tax base losers" in the arrangements adopted, they must either be able to see compensating advantages, perhaps in the form of "a smaller slice of a larger pie" or must be compelled to join by the state legislature. In either case, considerable political negotiation will be required.

Tax-base sharing reduces the bargaining power of developers in relation to individual communities where the developers might locate new projects. It is harder for a developer to "play off" one community against another in order to gain concessions from them if the new project could possibly be located in two or more such communities.

The State of Michigan has long practiced a form of revenue sharing. The State Revenue Sharing program distributes sales tax collected by the State of Michigan to local governments as unrestricted revenues. The distribution of funds is authorized by the State Revenue Sharing Act, Public Act 140 of 1971, as amended (MCL 141.901).[25] Funding for the State Revenue Sharing program originate in a constitutional allocation of 15 percent of the 4 percent gross collections of the state sales tax and a statutory allocation of 21.3 percent of the 4 percent gross collections of the state sales tax. The act authorizes the appropriation and distribution of state General Fund-General Purpose revenues when local governments qualify for certain supplemental payments. Sales tax revenues are distributed to cities, villages, and townships according to four formulae: statutory payments in fiscal year 1998 (being phased out), taxable value per capita, population size group, and a tax yield equalization formula. Under the State Revenue Sharing Act, counties receive revenue generated by the sales tax. Of the total amount of sales tax available for distribution to local governments, counties receive 25.06 percent of the 21.3 percent.

[25] http://www.michigan.gov/treasury/1,1607,7-121-1751_2197-5658--,00.html

Not all revenue-sharing is based on formal agreements. Many major airports are located near or across municipal and/or county boundaries. In many cases, tacit agreements are reached allowing one locality a development advantage in exchange for allowing airport construction or expansion. That is, a locality that might be disadvantaged by the negative externalities of airport expansion – through aircraft noise or ground traffic – is allowed preferential access to the positive airport externalities, possibly through an informal arrangement not to approve competing real estate projects for a specified period of time.

The State of Michigan has long-term experience with vertical revenue-sharing. The state legislature may give a special Detroit Region Aerotropolis horizontal revenue-sharing district a sympathetic hearing. Not all financing vehicles entail revenue-sharing. Van Buren Township created a Local Development Financing Authority to fund the infrastructure improvements needed for the Visteon campus. The Authority sold $29 million in bonds which are being repaid by real estate taxes on the Visteon campus.

Best international development practice

Developing an Aerotropolis requires finding common interests for competing parties. Airports, as noted above, are under pressure to utilize expensive fixed capital investments. Land owners would like to maximize the value of their land. Airlines would like to maximize yields. Regional governments strive to maximize regional well-being. Aside from the coordination issues, there are technical issues.

Technology and a range of types of infrastructure are needed. "Green" development and airports may seem to be antithetical but airports and aviation are embracing conservation. Partnerships among nearby airports will always be filled with competitive tension. Yet they may be becoming more common. The tensions of finding common ground may be nowhere stronger than in marketing the Aerotropolis.

Technology and infrastructure platforms needed to make Detroit Region Aerotropolis world-class

Connectivity, speed, and agility have become the 21st century mantra for commercial success. The ability of Detroit Region companies to respond rapidly and flexibly to market opportunities will depend not only on internal management and operational changes but also on the maintenance and improvement of an external business environment that makes time-critical commercial practices effective. Exhibit 3.84 identifies the key resource needs for a successful time-critical business environment at DTW and the broader Detroit Aerotropolis Region.

First, logistics success in an aerotropolis depends on multi-modal transportation systems for fast and flexible supply chain management. Seamlessly connected multi-modal transportation systems have become a key to efficient business logistics. Raw

materials, perishables, manufacturing inputs, and finished products must flow among geographically dispersed firms in a continuous and synchronized fashion. Air cargo facilities that are integrated closely with good highways and railways are needed to support the development of logistics providers, industrial parks, distribution centers, and to more efficiently link them to their sourcing, production and customer networks. For example, the ability of agribusiness firms, restaurants, and supermarkets to get fresh fish, produce, and meat products to and from distant markets quickly and reliably requires cross-docking facilities that link regional surface transport with aircraft serving national and international markets. Similarly, microelectronics manufacturers require truck cross-docking facilities that bring parts, components, and semifinished goods efficiently to production sites, and facilitate the rapid shipment of assembled products to customers, nationally and globally.

Second, the Detroit Region Aerotropolis and regional logistics system require an integrated telecommunications network to obtain information on markets and orders, trace, track and manage materials and inventory, and control movements of goods to customers. Such a network is also essential to assisting, supporting, and attracting additional sophisticated third-party logistics (3PL) companies and 4PLs (advanced logistics integrators) to the Detroit region that can provide state-of-the-art logistics services to Detroit Region Aerotropolis users and tenants. The Detroit Region Aerotropolis telecommunications system should feature information technologies served by fiber optics loops, RFID, Wi-Fi, and GPS satellite linkages that connect companies in the airport area and throughout the region to their suppliers and customers and to their own branches, offices, and partners around the country and the world. A teleport with advanced information and telecommunications management systems can serve customer premises equipment, including rapid worldwide communication, electronic data interchange (EDI) systems, B2B exchanges, and video conferencing equipment through broadcasting and communications satellite networks. Operations research is showing that telecommunications infrastructure external to a firm now heavily influences the effectiveness and efficiency of internal firm processes.

As international air express and international air cargo continues to evolve, this telecommunications system must also support express customs clearance and efficient trade data processing. Automated, paperless customs clearance is a key attribute of the air logistics hub concept. DTW should be used as a laboratory for new expedited customs clearance procedures and electronic data interchange to achieve high-speed, barrier-free international flows of parts and components, and manufactured goods. In the future, to speed customs clearance, the Aerotropolis should build upon a DTW automated customs environment and accelerate inspections and, through joint determination with U.S. Customs and Border Protection (US CBP) of appropriate technology, procedures, and staffing levels, it should take the lead in creating the nation's most efficient and effective express customs clearance, 24 hours a day, 7 days a week. In particular, U.S. Customs and Border Protection is implementing an Automated Commercial Environment (ACE) which is supplanting the Automated Commercial System with a unified procedure across transport modes. With ACE, account holders can pay duties and fees on a monthly, rather than transaction, basis, reducing one of the factors causing excess cargo

dwell, identified elsewhere in this report. e-Manifests are already being implemented for air cargo and the system should be fully operational by the end of 2011.

IATA has just begun (as of November 2007) a five country pilot of an e-freight effort that involves airlines, forwarders, ground handling agents, government agencies, and industry associations. The IATA effort is largely complementary to the U.S. project and, by 2010, will have achieved paperless shipments where legal considerations allow. These two efforts will eventually merge, making air cargo more efficient and facilitating eased inter-modality. The sales proposition of the Detroit Region Aerotropolis will be speed and agility in moving high value-to-weight components and products to and from the region, enhancing Detroit's competitive edge in fast-cycle logistics with respect to other potential hubs.

Third, the new business environment requires modern commercial services support. Globally-linked manufacturers, assemblers, and distributors must have access to foreign trade zones operators and in-transit bonded warehouses at and near the airport, financial institutions, marketing, sales and employment agencies, and legal services. As noted above, expedited customs procedures are required to streamline and accelerate the import of raw materials, parts and components and the export of finished goods. One-stop government service centers (combining federal, state, and local agency requirements) are also necessary to expeditiously provide foreign investors with all required licenses, permits, and investment promotion privileges. In addition, investors' ability to attract professional managers and highly-skilled younger workers requires a full array of community amenities including modern housing, quality public schools, good shopping and restaurants, nightlife, recreational, and cultural facilities. Addressing these issues is essential to attracting and holding the new "creative class" of knowledge workers.

Fourth, many high-tech and other new economy industries need access to knowledge resources that can generate or stimulate innovation and provide a reliable source of trained workers and managers. Among the most important knowledge-based organizations on which innovative businesses depend are top-notch colleges and universities providing well-educated professionals and research capacities, and consultancy organizations that help commercialize technology, develop new products, and service local, national, and foreign firms more effectively. Such knowledge resources have proven to be a strong asset in meeting these objectives as well as fermenting technology clusters geared toward the development of growing export industries, such as medical devices. Likewise, a DTW distance education and training facility drawing on the Aerotropolis' telecommunications network could provide real-time audio, video and tactile worker training on-site (or distributed education and training to facilities throughout the greater Detroit region) from training centers in distant headquarter firm locations around the world. This distance education and training facility should tie into the entire community college network in the region.

Commitments to "green" building

Environmental sustainability is increasingly an important business and regional economic development concern in addition to being a scientific and moral concern. Businesses and regions are increasingly looking to a "triple bottom line" of financial and economic performance, social equity, and environmental sustainability. Airports are concerned about each and have active programs of environmental management. U.S. airports are required to file periodic environmental impact statements. Large-scale real estate developments are also beginning to become increasingly environmentally aware.

A lack of consensus on environmental standards and inadequate measurements hamper systematic comparative benchmarking. Airports and property developers are therefore focusing on creating organizations that can continually improve their environmental performance whenever new standards are set and whenever new concerns arise. Most of these follow the Deming "Plan, Do, Check, Act" model. A few of the organizations, including benchmark airports Boston Logan and Denver International, have achieved ISO 14001 certification. Dallas-Fort Worth and others have Environmental Management Systems to monitor compliance with Environmental Protection Agency guidelines. Encouraged by the U.S. Environmental Protection Agency, airports are now increasingly following green principles in major construction projects. The O'Hare runway realignment project, for instance, is following green construction process principles.

Airports and other organizations are increasingly adopting methodologies that help them identify environmental concerns. One of these is "life-cycle analysis" which follows through the entire process from development to final destruction or dissipation. Life-cycle analysis together with organizational procedures create goal-directed learning organizations that can reduce the environmental footprint of airports and real estate developments.

The U.S. Environmental Protection Agency sets guidelines for specific air and water emissions. Although the Environmental Protection Agency often does not pay special attention to airports even in air quality non-attainment zones, airports do monitor their environmental performance to the Federal Aviation Administration and, with the help of the FAA, take steps to reduce their environmental footprint. For the most part, efforts have so far concentrated on reducing the emissions of air and landside ground vehicles, including aircraft tugs and terminal area busses.

The two major sources of airport area ground emissions are aircraft and highway traffic. The relative contribution of each varies by airport. Airspace redesign promises to reduce airport ground emissions be reducing taxi delays. Jet aircraft engines are inefficient at ground level so taxiing aircraft produce emissions that are disproportionate to fuel use. Delays waiting for take-off add to the airside emissions.

Emissions from highway traffic have, so far, been a more difficult problem to address. Investments in additional urban Interstate highway capacity have lagged

significantly behind use. Available Interstate highway capacity may become a significant competitive advantage.

Airports are the origins of other environmental hazards. Water quality is a significant concern and many airports now have runoff recapture systems for their aircraft de-icing facilities.

Noise is the perhaps the most-often discussed airport environmental concern. The FAA has well-developed guidelines and procedures that apply to all airports. A portion of Airport Improvement Funds are used for noise abatement, including purchasing property that cannot be adequately insulated.

Aerotropolises are becoming increasingly environmentally sensitive also. Given the disparities in scale and scope, comparative benchmarking has not yet been attempted. Nor are there established criteria to measure. The kernel of the aerotropolis idea, however, is based on the minimization of ground movement, and therefore environmental impact, while maximizing economic output. Exhibit 3.85 list the general sustainable development guidelines adopted by Dallas-Fort Worth Airport.

The U.S. Green Building Council has just started a pilot project for Neighborhood Development (LEED-ND) certification. This will likely develop into the first national standard for green neighborhood design. The effort attempts to move beyond green buildings, which are an important component of the neighborhood development project, to include reduced impact locations and local transportation, including through residential proximity to work, schools, shopping, and community and cultural services. Given the variety of occupations and skill levels needed in air transport-dependent sectors, that implies a diversity of housing types and price points. The entire 1,500 acre New Songdo City International Business District Greenfield development near Incheon Airport in Korea has been accepted as a pilot project and partner.

Development partnerships with local airports

For an industry that as wrapped up in global connectivity as it is, airports are remarkably insular. As noted above, almost all are locally-owned and operated. Only a few are owned by an agency or authority that manages more than one airport. Partnerships, local or otherwise, are rare.

Most local partnerships among airports have historical roots and do not necessarily build on potential synergies between the airports. In many cases in the U.S. and sometimes abroad, a municipal or state airport authority might own several airports in close proximity. Often, as in the case of Detroit, these airports operated sequentially as the main city airport. In few other cases, such as in the San Francisco area, the Los Angeles area, and the New York area, airports were brought under common control by strong regional forces.

The central management problem of major airports is the efficient management of expensive capital investments, leading to high fixed costs. Even when there are few inter-airline transfers, operational economies in the use of the runways, terminal buildings, air traffic control, airspace, and ground access systems seem to lead to the concentration of service at a single airport. More-intensive use of these facilities leads to lower average costs.

The most common and apparently the most mutually-beneficial arrangement is for one airport to concentrate on commercial service and the remaining airports to specialize in general aviation. General aviation can be adequately accommodated by lower cost facilities, especially shorter runways, than commercial airlines. General aviation also requires significantly less terminal space and less extensive ground access facilities. Since general aviation can take up more airspace and runway capacity than larger aircraft, mainly due to their slower speed, once capacity begins to be constrained, general aviation at major airports is often relegated to nearby reliever airports.

Several of the largest metropolitan areas are served by multiple commercial airports. Airlines, passengers, and airport authorities all seem to prefer the "Atlanta solution" to the "New York option." Local airport systems are almost always a result of capacity constraints at the main airport. Such constraint have led Lufthansa to develop a second hub in Munich and, more recently and against their wishes, a cargo operation at Frankfurt-Hahn. Multiple airports force regions and airlines to make additional capital investments in duplicate infrastructure that is less than efficiently used. Similar constraints have led to the dual airports in Tokyo: Narita and Haneda. Capacity constraints have led to the emergence of four airports in London, Heathrow, Gatwick, Stansted, and London City. Despite the many inconveniences on the ground, Heathrow remains the dominant airport and the others are relatively under-utilized.

Low cost carriers are often held to prefer secondary airports to large primary airports. That is only partially the case. As just mentioned, some centrally-placed primary airports operate under severe capacity constraints, pushing operating costs upward. At others, established airlines sometimes act singly or in concert to exclude competitive threats from their bases of operation, stymieing what might well be the preferred alternative for low cost carriers. In other cases, the large sprawling spatial reach of large metropolitan areas implies that some areas are inadequately served by a region's primary airport. Low cost carriers sometimes take advantage of the under-served market. An additional important consideration is that all airlines are pressuring aeronautical charges. All airlines seek lowered charges and, where necessary, compete on price.

Low cost airlines have found niches serving previously under-served markets under near-monopoly conditions. Passengers at busy hub airports are often served by multiple airlines, particularly on the main trunk routes. Low cost carriers may have little to add in such markets. The confluence of under-served mainly suburban and smaller satellite city markets and under-utilized runways may sometimes create a viable market niche for certain carriers. There is, however, little evidence to suggest that low-cost

carriers create implicit partnerships with low-cost airports. Indeed, some of the least expensive airports have the most expensive flights.[26]

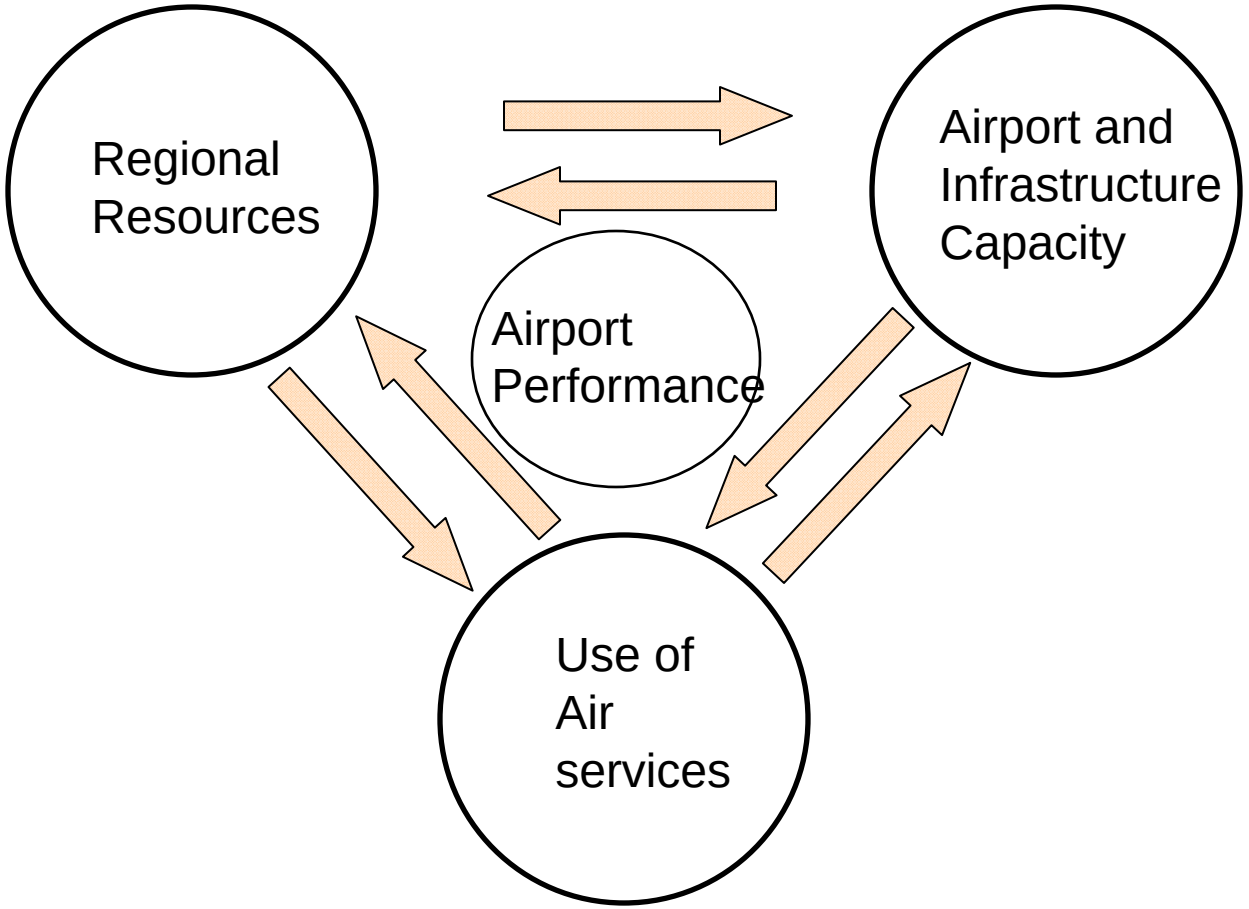
Even if a commercial basis for cooperation is often lacking, airports sometimes do form associations such as the virtual regions discussed above. Hong Kong International Airport has established the A5 Forum for the five Pearl River Delta airports – HKIA, Guangzhou Baiyun International Airport, Macau International Airport, Shenzen Baoan International Airport, and Zhuhai Airport.[27] Exhibit 3.86 illustrates the location of the airports. This arrangement is somewhat tense given that the airports compete for routes and passengers. Nevertheless, the forum allows the airports to discuss issues of common concern, such as airspace congestion, and cooperate on technical issues, such as emergency support, efficient passenger and cargo processing, joint promotion, safety and security, and training and development.

Given the unused capacity at Detroit Metro Wayne Airport, the most mutually-beneficial division of labor in the Detroit region may be for Willow Run to specialize in general aviation and heavy lift air cargo that would not rely on shared central cargo facilities in any case.

[26] Robert A. Hazel (2004) "How Much Do Airport Costs Matter?" Eclat Consulting.
[27] Chan Chun Kit provided much of this information.

Exhibit 3.1

Relationship between Regions, Infrastructure, and Usage



Proprietary and Confidential

Exhibit 3.2 Airport Usage with Regional Population Size and Growth

Rank	Region / City	Airport	Code	Airport Annual Total 2006 Passengers	Airport Annual Total 2006 Cargo	Metropolitan Total 2006 Passengers	Metropolitan Total 2006 Cargo	Population July 1, 2006	Census 2000	Growth
1	New York-Newark-Bridgeport, NY-NJ-CT-PA					107,057,595	2,629,200	21,976,224	21,361,797	2.88%
	New York, New York	JF Kennedy Intl	JFK	43,762,282	1,636,357					
	Newark, New Jersey	Newark Liberty Intl	EWR	36,724,167	974,961					
	New York, New York	La Guardia	LGA	26,571,146	17,882					
2	Los Angeles-Long Beach-Riverside, CA					86,152,163	2,520,952	17,775,984	16,373,645	8.56%
	Los Angeles, California	Los Angeles Intl	LAX	61,041,066	1,907,497					
	Santa Ana, California	John Wayne	SNA	9,613,540	21,684					
	Ontario, California	Ontario Intl	ONT	7,049,904	493,952					
	Burbank, California	Bob Hope	BUR	5,689,291	52,292					
	Long Beach, California	Long Beach	LGB	2,758,362	45,527					
3	Chicago-Naperville-Michigan City, IL-IN-WI					95,708,797	1,572,963	9,725,317	9,312,255	4.44%
	Chicago, Illinois	O'Hare Intl	ORD	77,028,134	1,558,235					
	Chicago, Illinois	Midway Intl	MDW	18,680,663	14,728					
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV					62,542,832	478,392	8,211,213	7,572,647	8.43%
	Washington, District Of Columbia	Washington Dulles Intl	IAD	22,813,067	350,826					
	Baltimore/Washington, Maryland	Baltimore/Washington Intl Thurgood Marshall	BWI	21,184,208	123,954					
	Washington, District Of Columbia	R Reagan Washington National	DCA	18,545,557	3,612					
5	Boston-Worcester-Manchester, MA-RI-NH					31,621,975	404,849	7,465,634	7,298,695	2.29%
	Boston, Massachusetts	Logan Intl	BOS	27,725,443	324,859					
	Manchester, New Hampshire	Manchester-Boston Regl.	MHT	3,896,532	79,990					
6	San Jose-San Francisco-Oakland, CA					58,975,747	1,354,722	7,228,948	7,092,596	1.92%
	San Francisco, California	San Francisco Intl	SFO	33,574,807	594,857					
	Oakland, California	Oakland Intl	OAK	14,692,875	668,217					
	San Jose, California	Norman Mineta San Jose Intl	SJC	10,708,065	91,648					
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD					31,768,272	532,163	6,382,714	6,207,223	2.83%
	Philadelphia, Pennsylvania	Philadelphia Intl	PHL	31,768,272	532,163					
8	Dallas-Fort Worth, TX					67,100,855	1,008,334	6,359,758	5,487,956	15.89%
	Forth Worth, Texas	Forth Worth Alliance	AFW		250,478					
	Dallas/Ft Worth, Texas	Dallas/Ft Worth Intl	DFW	60,226,138	757,856					
	Dallas, Texas	Love Field	DAL	6,874,717						
9	Houston-Baytown-Huntsville, TX					51,099,721	417,596	5,641,077	4,815,122	17.15%
	Houston, Texas	G Bush Intercontinental	IAH	42,550,432	409,122					
	Houston, Texas	WP Hobby	HOU	8,549,289	8,474					
10	Atlanta-Sandy Springs-Gainesville, GA-AL					84,846,639	746,502	5,478,667	4,548,344	20.45%
	Atlanta, Georgia	Hartsfield-Jackson Atlanta Intl	ATL	84,846,639	746,502					
11	Detroit-Warren-Flint, MI					35,972,673	214,140	5,410,014	5,357,538	0.98%
	Detroit, Michigan	Detroit Metro Wayne County	DTW	35,972,673	214,140					
12	Seattle-Tacoma-Olympia, WA					29,979,097	341,952	3,876,211	3,604,165	7.55%
	Seattle, Washington	Seattle Tacoma Intl	SEA	29,979,097	341,952					
13	Minneapolis-St. Paul-St. Cloud, MN-WI					35,612,133	275,041	3,502,891	3,271,888	7.06%
	Minneapolis/St Paul, Minnesota	Minneapolis/St Paul Intl	MSP	35,612,133	275,041					
14	Denver-Aurora-Boulder, CO1					47,325,016	281,921	2,927,911	2,629,980	11.33%
	Denver, Colorado	Denver Intl	DEN	47,325,016	281,921					
15	Cleveland-Akron-Elyria, OH					11,321,050	92,331	2,917,801	2,945,831	-0.95%
	Cleveland, Ohio	Cleveland Hopkins Intl	CLE	11,321,050	92,331					
16	St. Louis-St. Charles-Farmington, MO-IL					15,205,944	85,551	2,858,549	2,754,328	3.78%
	St Louis, Missouri	Lambert-St Louis Intl	STL	15,205,944	85,551					
17	Pittsburgh-New Castle, PA					9,987,310	84,684	2,462,571	2,525,730	-2.50%
	Pittsburgh, Pennsylvania	Pittsburgh Intl	PIT	9,987,310	84,684					
18	Sacramento--Arden-Arcade--Truckee, CA-NV					10,362,800	67,674	2,211,790	1,930,149	14.59%
	Sacramento, California	Sacramento Intl	SMF	10,362,800	67,674					
19	Charlotte-Gastonia-Salisbury, NC-SC					29,693,949	148,463	2,191,604	1,897,034	15.53%
	Charlotte, No Carolina	Charlotte/Douglas Intl	CLT	29,693,949	148,463					
20	Cincinnati-Middletown-Wilmington, OH-KY-IN					16,244,962	43,289	2,147,617	2,050,175	4.75%
	Cincinnati, Ohio (Hebron, Kentucky)	Cincinnati/No Kentucky Intl	CVG	16,244,962	43,289					
21	Orlando-The Villages, FL					34,640,451	198,009	2,053,623	1,697,906	20.95%
	Orlando, Florida	Orlando Intl	MCO	34,640,451	198,009					
22	Kansas City-Overland Park-Kansas City, MO-KS					11,237,480	134,948	2,034,796	1,901,070	7.03%
	Kansas City, Missouri	Kansas City Intl	MCI	11,237,480	134,948					
23	Indianapolis-Anderson-Columbus, IN					8,085,394	987,449	1,984,644	1,843,588	7.65%
	Indianapolis, Indiana	Indianapolis Intl	IND	8,085,394	987,449					
24	Columbus-Marion-Chillicothe, OH					6,744,087	122,308	1,953,575	1,835,189	6.45%
	Columbus, Ohio	Port Columbus Intl	CMH	6,738,348	8,594					
	Columbus, Ohio	Rickenbacker Intl	LCK	5,739	113,714					
25	Las Vegas-Paradise-Pahrump, NV					46,193,329	101,369	1,820,232	1,408,250	29.25%
	Las Vegas, Nevada	McCarran Intl	LAS	46,193,329	101,369					
Regional Average						41,019,211	593,792	5,463,975	5,108,924	6.95%
						0.88	0.36	0.99	1.05	0.14

Exhibit 3.3 Population Composition of Selected Benchmark Regions

	Total Population	Not a citizen of the U.S.	Foreign born	Native born	Hispanic	Race includes black	Race includes white
Major U.S. Regions							
Detroit	5,632,909	3.84	7.91	92.09	3.40	20.95	74.29
Altanta	5,001,233	9.18	13.37	86.63	9.24	32.16	58.35
Boston	6,180,754	7.53	14.12	85.88	7.10	6.50	84.91
Charlotte	1,765,663	6.17	8.79	91.21	8.27	22.52	71.73
Chicago	9,604,252	9.77	17.73	82.27	19.10	18.37	65.31
Cincinnati	2,162,589	1.88	3.41	96.59	1.55	12.08	85.89
Cleveland	2,918,314	2.07	5.02	94.98	3.11	17.97	79.43
Columbus	1,690,690	3.91	5.95	94.05	2.80	15.14	81.07
Dallas-Fort Worth	6,260,891	12.68	17.44	82.56	26.11	14.33	70.50
Denver	2,887,930	8.89	12.74	87.26	21.68	5.27	82.25
Houston	5,489,343	14.50	21.35	78.65	32.85	17.71	63.48
Indianapolis	1,746,116	3.54	5.34	94.66	4.56	15.10	81.23
Kansas City	2,093,173	3.72	5.60	94.40	6.76	12.31	82.81
Las Vegas	1,950,149	13.22	20.56	79.44	25.98	10.08	74.40
Los Angeles	17,780,000	17.75	30.84	69.16	43.69	7.69	56.99
Minneapolis--St. Paul	3,496,526	4.53	8.17	91.83	4.31	6.86	87.11
New York	22,160,000	12.80	25.88	74.12	19.70	17.24	63.77
Orlando	1,984,409	8.86	16.16	83.84	21.87	16.50	71.93
Philadelphia	6,370,823	4.48	8.75	91.25	6.91	20.88	71.57
Pittsburgh	2,433,170	1.30	2.88	97.12	0.93	9.03	89.81
Sacramento	2,067,111	9.92	17.20	82.80	17.90	8.51	70.34
St. Louis	2,699,869	1.94	4.04	95.96	1.97	19.56	78.38
San Francisco	7,173,017	14.68	29.31	70.69	22.07	7.51	59.72
Seattle	3,952,142	7.50	14.46	85.54	6.88	5.81	80.68
Washington DC	8,556,389	8.50	14.96	85.04	8.25	26.76	63.35
Total (average)	134,057,462	7.73	13.28	86.72	13.08	14.67	73.97
Additional Mid-Continent Regions							
Louisville	1,146,519	2.13	3.52	96.48	2.53	14.30	83.77
Memphis	1,173,986	2.99	4.56	95.44	3.34	45.14	51.04
Toledo	612,267	1.45	2.76	97.24	5.16	14.60	81.88

Exhibit 3.4 Indexes of Black-White Residential Dissimilarity for Selected Benchmark Central Metropolitan Areas

	Central Metropolitan Area	Black-White dissimilarity	Rank
1	New York, NY PMSA	81.8	2
2	Los Angeles-Long Beach, CA PMSA	67.5	10
3	Chicago, IL PMSA	80.8	3
4	Washington, DC-MD-VA-WV PMSA	63.1	15
5	Boston, MA-NH PMSA	65.7	13
6	San Francisco, CA PMSA	60.9	17
7	Philadelphia, PA-NJ PMSA	72.3	7
8	Dallas, TX PMSA	59.4	18
9	Houston, TX PMSA	67.5	11
10	Atlanta, GA MSA	65.6	14
11	Detroit, MI PMSA	84.7	1
12	Seattle-Bellevue-Everett, WA PMSA	49.6	23
13	Minneapolis-St. Paul, MN-WI MSA	57.8	19
14	Denver, CO PMSA	61.8	16
15	Cleveland-Lorain-Elyria, OH PMSA	77.3	4
16	St. Louis, MO-IL MSA	74.3	6
17	Pittsburgh, PA MSA	67.3	12
18	Sacramento, CA PMSA	56.0	21
19	Charlotte-Gastonia-Rock Hill, NC-SC MSA	55.2	22
20	Cincinnati, OH-KY-IN PMSA	74.8	5
21	Orlando, FL MSA	57.0	20
22	Kansas City, MO-KS MSA	69.1	9
23	Indianapolis, IN MSA	70.7	8
25	Las Vegas, NV-AZ MSA	43.3	24
	Memphis, TN-AR-MS MSA	68.7	
	Louisville, KY-IN MSA	64.5	
	Toledo, OH MSA	69.1	

Source: http://mumford.albany.edu/census/WholePop/WPdownload.html

Exhibit 3.5 Educational Achievement in Selected Benchmark Regions

	Total adult (25+) Population	Less than High School	High School Graduate	High School Plus	College Graduate	Advanced degree	College plus
Major U.S. Regions							
Detroit	4,126,187	12.94	30.07	31.87	15.71	9.41	25.12
Altanta	3,597,453	14.16	26.94	27.45	21.19	10.26	31.45
Boston	4,662,326	11.27	28.18	25.09	21.33	14.13	35.46
Charlotte	1,287,581	15.97	26.89	30.19	19.06	7.89	26.95
Chicago	6,960,481	15.21	27.33	28.05	18.75	10.66	29.41
Cincinnati	1,585,036	13.58	33.74	27.69	16.47	8.52	24.99
Cleveland	2,176,317	12.86	33.88	29.24	15.30	8.72	24.02
Columbus	1,240,191	11.50	31.96	27.35	19.32	9.87	29.19
Dallas-Fort Worth	4,444,211	19.02	26.18	28.32	18.37	8.11	26.48
Denver	2,123,124	12.90	23.21	29.62	22.32	11.94	34.26
Houston	3,862,209	20.82	27.06	26.96	16.85	8.31	25.16
Indianapolis	1,265,798	13.23	31.20	28.24	17.66	9.66	27.32
Kansas City	1,535,974	9.96	28.96	31.25	20.16	9.67	29.83
Las Vegas	1,422,976	16.91	33.24	31.46	12.53	5.85	18.38
Los Angeles	12,660,000	22.01	24.79	28.49	16.60	8.10	24.70
Minneapolis--St. Paul	2,572,564	8.52	27.16	32.17	22.56	9.60	32.16
New York	16,540,000	15.48	28.55	23.51	19.67	12.78	32.45
Orlando	1,478,389	13.28	30.18	30.66	18.18	7.70	25.88
Philadelphia	4,712,351	13.66	32.36	25.19	18.42	10.37	28.79
Pittsburgh	1,889,881	10.31	37.36	26.56	16.89	8.88	25.77
Sacramento	1,516,038	13.08	24.52	35.06	18.43	8.91	27.34
St. Louis	1,988,051	12.73	29.39	30.78	17.20	9.91	27.11
San Francisco	5,414,617	13.69	20.34	28.11	23.42	14.44	37.86
Seattle	2,974,654	9.48	25.09	33.28	21.31	10.83	32.14
Washington DC	6,352,711	11.83	25.02	25.13	21.26	16.76	38.02
Total	98,389,120	13.78	28.54	28.87	18.76	10.05	28.81
Additional Mid-Continent Regions							
Louisville	854,802	15.51	33.00	29.27	13.63	8.59	22.22
Memphis	835,135	17.42	30.37	29.45	14.58	8.17	22.75
Toledo	452,886	12.21	33.72	32.27	14.04	7.76	21.80

Exhibit 3.6 Sectoral Composition of the Labor force in Selected Benchmark Regions

	Total Labor Force	Primary	Construction	Manufacturing	Wholesale	Retail	Transportation plus	Information	FIRE	Professional Services	Education, Health, … Services	Recreation	Other Services	Public Administration	Military
Major U.S. Regions															
Detroit	3,303,982	0.39	5.73	18.67	2.94	11.66	3.96	2.08	6.12	10.47	20.50	9.67	4.64	3.10	0.06
Altanta	3,082,658	0.36	8.66	8.84	4.27	12.02	6.76	3.52	7.87	12.91	16.77	9.07	4.75	4.02	0.20
Boston	3,916,013	0.39	6.77	10.71	2.99	11.70	3.82	2.94	7.92	12.21	23.58	8.82	4.31	3.68	0.17
Charlotte	1,115,187	0.27	8.79	12.65	4.89	11.81	5.12	2.41	9.91	9.77	17.82	9.68	4.56	2.25	0.07
Chicago	5,716,344	0.32	6.86	12.89	3.95	11.12	5.86	2.47	8.11	11.71	19.63	9.04	4.78	3.02	0.25
Cincinnati	1,324,699	0.68	6.59	14.82	3.85	12.31	5.04	2.20	7.32	10.33	19.67	10.06	4.16	2.92	0.06
Cleveland	1,765,571	0.51	6.02	15.54	3.50	11.24	4.18	2.08	7.76	9.52	21.92	9.60	4.73	3.34	0.08
Columbus	1,068,477	0.71	6.20	9.30	3.53	12.65	5.01	2.73	9.24	10.94	20.42	9.75	4.40	4.97	0.15
Dallas-Fort Worth	3,792,942	1.01	9.03	11.07	3.99	12.53	5.90	3.21	8.23	11.39	16.83	8.58	5.31	2.78	0.14
Denver	1,844,805	1.05	8.72	7.21	3.63	11.67	4.88	4.25	8.73	13.45	16.84	10.26	5.36	3.75	0.20
Houston	3,222,255	2.60	9.90	9.87	3.79	11.54	5.87	1.71	6.26	12.04	18.56	9.33	5.52	2.90	0.10
Indianapolis	1,074,348	0.54	7.97	13.67	3.62	11.57	5.91	2.08	7.55	9.99	19.48	8.98	4.95	3.51	0.17
Kansas City	1,330,111	0.82	7.05	9.27	3.60	11.99	5.55	3.66	8.18	10.75	20.44	9.64	4.39	4.33	0.33
Las Vegas	1,183,816	1.68	11.74	3.69	2.64	10.57	4.46	1.84	7.03	10.46	12.47	24.89	3.90	3.91	0.72
Los Angeles	10,090,000	0.70	7.55	11.96	4.10	11.85	4.87	3.27	7.49	11.18	18.01	9.71	5.73	3.29	0.30
Minneapolis--St. Paul	2,276,623	1.47	6.67	14.01	3.68	11.72	4.52	2.32	8.44	10.74	20.53	8.50	4.34	2.93	0.13
New York	12,960,000	0.24	6.27	7.53	3.41	11.13	5.40	3.63	9.26	11.86	23.40	8.72	5.11	3.92	0.12
Orlando	1,224,250	0.73	9.54	5.28	3.16	12.96	4.78	2.61	8.00	12.25	15.56	16.60	4.96	3.52	0.06
Philadelphia	3,818,294	0.53	6.29	9.61	3.54	12.29	4.72	2.07	8.22	11.48	22.79	9.42	4.37	4.42	0.26
Pittsburgh	1,451,408	1.07	6.76	10.41	2.69	12.45	5.44	2.14	7.04	10.22	24.72	9.13	4.81	3.00	0.12
Sacramento	1,240,562	1.09	8.87	6.22	3.14	12.37	3.95	2.55	7.85	11.29	18.89	9.80	5.19	8.46	0.33
St. Louis	1,640,843	0.66	6.44	11.39	3.20	11.41	5.24	2.69	7.66	10.67	20.99	10.51	4.85	3.77	0.51
San Francisco	4,382,429	0.95	6.93	11.17	2.96	11.19	4.10	3.61	7.77	14.95	19.00	8.94	4.78	3.43	0.19
Seattle	2,506,972	1.04	7.72	11.28	3.24	11.53	4.78	3.23	6.68	11.82	18.27	8.99	4.87	4.95	1.59
Washington DC	5,465,985	0.53	7.11	4.47	2.08	10.06	4.07	3.16	6.55	16.85	19.29	8.42	5.50	10.87	1.05
Total	80,798,574	0.81	7.61	10.46	3.46	11.73	4.97	2.74	7.81	11.57	19.46	10.24	4.81	4.04	0.29
Additional Mid-Continent Regions															
Louisville	691,909	0.85	7.25	13.52	3.46	11.50	6.67	1.55	8.15	8.89	20.64	9.10	4.75	3.50	0.16
Memphis	683,476	0.47	7.08	10.71	4.34	12.28	10.26	1.78	5.94	9.12	18.24	9.28	5.70	4.47	0.33
Toledo	377,035	0.77	5.95	17.06	2.75	13.11	5.77	1.61	4.56	8.27	22.67	9.75	4.68	2.84	0.20

Exhibit 3.7 Occupational Distribution of the Labor Force in Selected Benchmark Regions

	Total Labor Force	Man-Prof-Tech	Service	Sales-Office Occs	Construction	Production
Major U.S. Regions						
Detroit	3,302,674	32.25	18.57	25.00	8.28	15.67
Altanta	3,078,958	34.96	15.08	28.05	10.17	11.57
Boston	3,911,779	39.01	17.22	25.83	7.78	9.91
Charlotte	1,114,675	31.55	16.16	27.96	10.32	13.72
Chicago	5,707,270	33.28	16.23	27.70	8.30	14.36
Cincinnati	1,324,228	31.35	17.04	27.62	8.81	14.82
Cleveland	1,764,413	31.21	18.22	27.29	7.87	15.20
Columbus	1,067,665	34.66	17.27	27.93	7.73	12.20
Dallas-Fort Worth	3,789,941	32.20	15.87	27.95	10.78	12.86
Denver	1,842,313	36.35	16.44	27.02	9.95	9.94
Houston	3,220,760	31.56	17.30	26.52	11.76	12.64
Indianapolis	1,073,277	33.17	15.49	26.80	9.80	14.57
Kansas City	1,327,276	34.01	16.13	28.69	8.89	12.13
Las Vegas	1,180,305	24.82	25.96	26.43	12.94	9.58
Los Angeles	10,070,000	31.18	17.36	27.77	9.45	13.80
Minneapolis--St. Paul	2,275,013	35.82	15.67	27.10	8.05	12.77
New York	12,950,000	36.28	18.81	27.44	7.64	9.68
Orlando	1,223,579	30.65	19.55	29.23	10.76	9.29
Philadelphia	3,812,429	34.65	17.89	28.48	7.97	10.69
Pittsburgh	1,450,312	33.51	18.35	26.94	8.90	12.06
Sacramento	1,239,184	34.63	17.21	28.12	10.08	9.43
St. Louis	1,637,686	33.28	18.19	27.01	8.71	12.58
San Francisco	4,377,199	41.00	15.84	25.49	8.05	8.98
Seattle	2,487,319	37.04	16.21	25.81	8.98	11.36
Washington DC	5,434,964	43.50	15.95	24.61	8.08	7.62
Total (average)	80,663,219	34.08	17.36	27.15	9.20	11.90
Additional Mid-Continent Regions						
Louisville	691,571	31.06	16.01	26.68	8.98	16.89
Memphis	682,778	27.97	17.76	28.60	9.74	15.78
Toledo	376,543	26.89	19.80	25.69	8.70	18.59

Exhibit 3.8

U.S. Population by Age and Sex

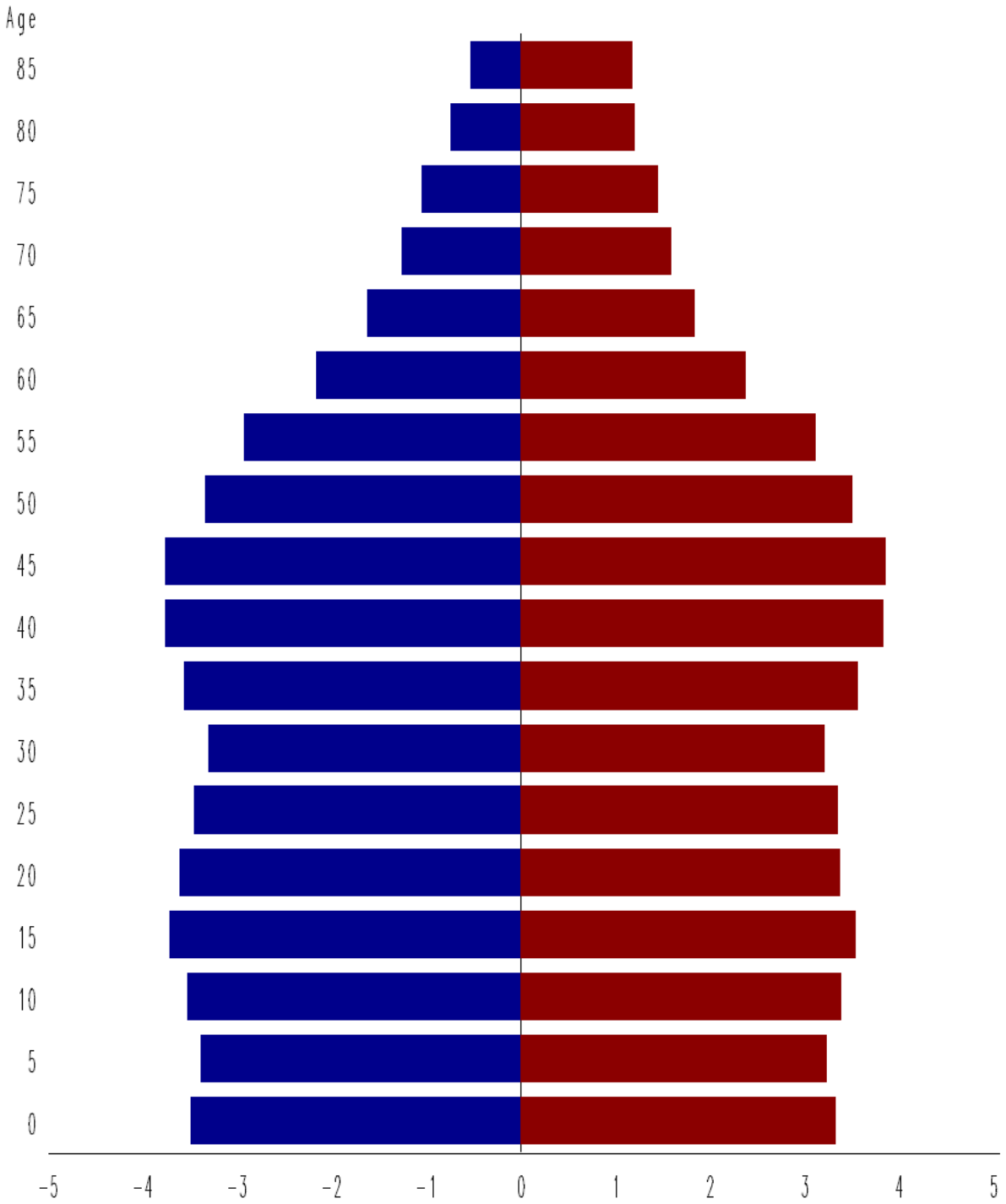


Exhibit 3.9

Detroit Region Population by Age and Sex

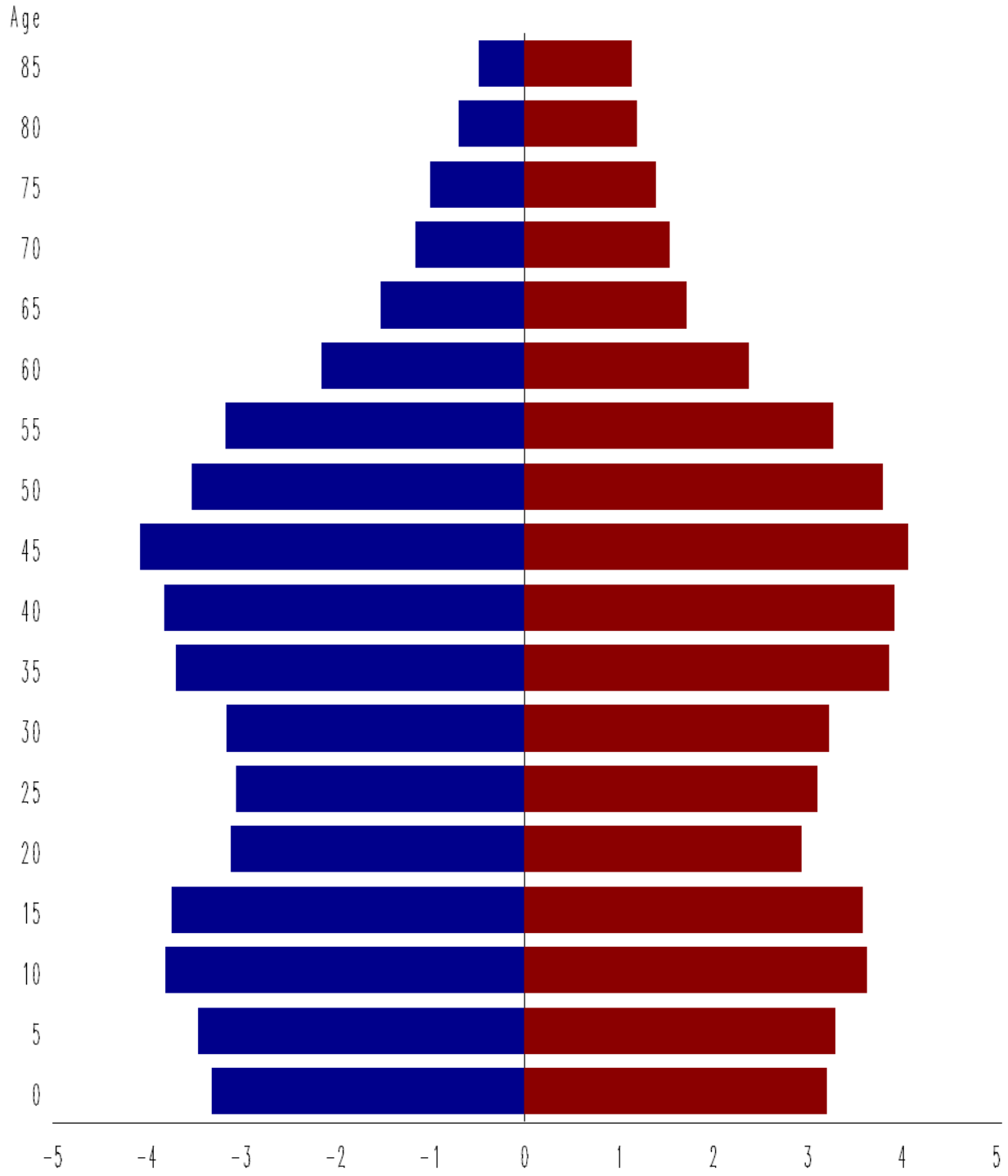


Exhibit 3.10 Population Age Distributions in Selected Benchmark Regions

Region	Dependent children (0-18)	Young adults (19-25)	Early career (25-34)	Mature career (35-64)	Seniors (65+)	Total
Detroit	1,506,722	409,896	705,955	2,346,217	664,119	5,632,909
	26.75	7.28	12.53	41.65	11.79	
Atlanta	1,403,780	375,831	748,239	2,085,524	387,859	5,001,233
	28.07	7.51	14.96	41.70	7.76	
Boston	1,518,428	499,228	779,360	2,608,548	775,190	6,180,754
	24.57	8.08	12.61	42.20	12.54	
Charlotte	478,082	130,741	255,856	728,892	172,092	1,765,663
	27.08	7.40	14.49	41.28	9.75	
Chicago	2,643,771	771,182	1,326,749	3,828,072	1,034,478	9,604,252
	27.52	8.03	13.81	39.86	10.77	
Cincinnati	577,553	173,434	278,930	879,531	253,141	2,162,589
	26.70	8.02	12.90	40.67	11.71	
Cleveland	741,997	214,780	336,832	1,211,705	413,000	2,918,314
	25.42	7.36	11.54	41.52	14.15	
Columbus	450,499	146,451	251,103	674,227	168,410	1,690,690
	26.64	8.66	14.85	39.88	9.96	
Dallas-Ft. Worth	1,816,680	502,761	994,678	2,415,579	531,193	6,260,891
	29.02	8.03	15.89	38.58	8.48	
Denver	764,806	230,974	448,022	1,181,303	262,825	2,887,930
	26.48	8.00	15.51	40.90	9.10	
Houston	1,627,134	453,904	819,151	2,155,337	433,817	5,489,343
	29.65	8.27	14.92	39.26	7.90	
Indianapolis	480,318	121,827	252,552	705,151	186,268	1,746,116
	27.51	6.98	14.46	40.38	10.67	
Kansas City	557,199	176,530	279,547	840,595	239,302	2,093,173
	26.62	8.43	13.36	40.16	11.43	
Las Vegas	527,173	141,130	306,225	769,171	206,450	1,950,149
	27.03	7.24	15.70	39.44	10.59	
Los Angeles	5,119,069	1,571,206	2,576,087	6,708,592	1,801,350	17,780,000
	28.80	8.84	14.49	37.74	10.13	
Minneapolis	923,962	286,666	476,358	1,449,997	359,543	3,496,526
	26.42	8.20	13.62	41.47	10.28	
New York	5,619,232	1,716,743	2,830,720	9,175,554	2,817,579	22,160,000
	25.36	7.75	12.77	41.41	12.71	
Orlando	506,020	155,961	289,958	785,465	247,005	1,984,409
	25.50	7.86	14.61	39.58	12.45	
Philadelphia	1,658,472	499,643	762,729	2,614,380	835,599	6,370,823
	26.03	7.84	11.97	41.04	13.12	
Pittsburgh	543,289	185,502	255,603	1,032,612	416,164	2,433,170
	22.32	7.62	10.50	42.44	17.10	
Sacramento	551,073	176,391	308,795	792,992	237,860	2,067,111
	26.66	8.53	14.94	38.36	11.51	
San Francisco	1,758,400	549,694	965,420	3,061,054	838,449	7,173,017
	24.52	7.66	13.46	42.67	11.69	
Seattle	977,488	299,751	557,205	1,691,803	425,895	3,952,142
	24.73	7.58	14.10	42.81	10.78	
St. Louis	711,818	219,073	333,202	1,097,843	337,933	2,699,869
	26.36	8.11	12.34	40.66	12.52	
Washington D.C.	2,203,678	666,714	1,169,615	3,613,881	902,501	8,556,389
	25.76	7.79	13.67	42.24	10.55	
Total	35,666,643	10,676,013	18,308,891	54,454,025	14,948,022	134,057,462
	26.61	7.96	13.66	40.62	11.15	
Detroit ratio	1.01	0.91	0.92	1.03	1.06	
Louisville	291,717	83,052	153,869	478,766	139,115	1,146,519
	25.44	7.24	13.42	41.76	12.13	
Memphis	338,851	94,898	155,835	467,513	116,889	1,173,986
	28.87	8.08	13.27	39.82	9.96	
Toledo	159,381	62,596	73,470	241,154	75,666	612,267
	26.03	10.22	12.00	39.39	12.36	

Exhibit 3.11

Michigan and Detroit Region Population Trends

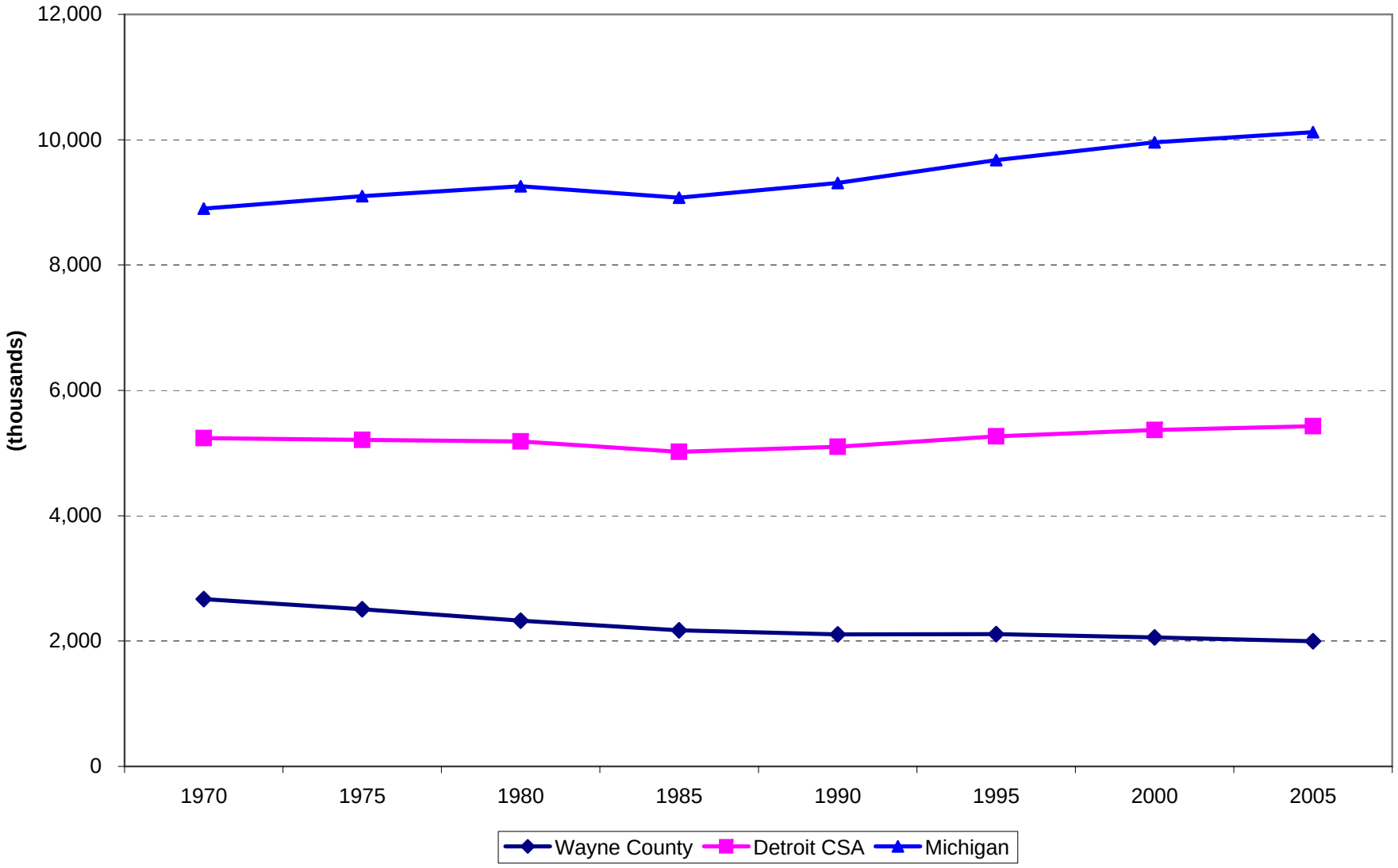


Exhibit 3.12

Michigan and Detroit Region Employment Trends

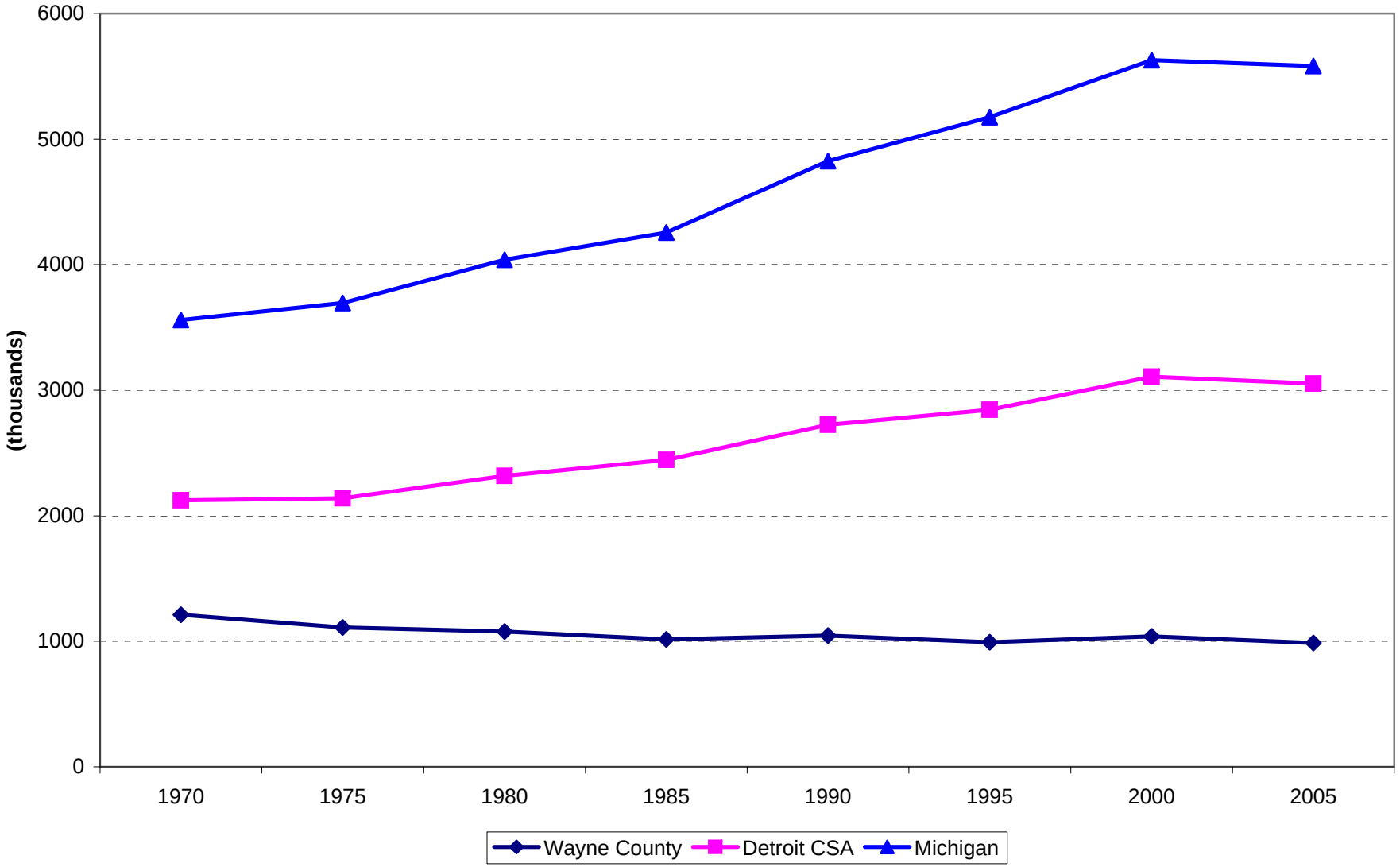


Exhibit 3.13: Population and Employment by Sector in Michigan and the Detroit Region, 1970-2005

MICHIGAN	1970	1975	1980	1985	1990	1995	2000	2005	Change 1970-2005 Number	Change 1970-2005 Percent	Average growth rate	Predicted employment	Difference
TOTAL POPULATION (THOUSANDS)	8,899.07	9,100.37	9,256.64	9,076.30	9,311.32	9,676.21	9,956.11	10,120.86	1,221.80	13.73%			
TOTAL EMPLOYMENT (THOUSANDS) ...	3,558.47	3,694.69	4,039.43	4,256.86	4,824.73	5,174.60	5,629.50	5,582.12	2,023.66	56.87%	0.0129		
PRIMARY PRODUCTION	129.85	128.88	131.58	134.70	133.46	139.53	141.65	144.65	14.80	11.39%	0.0031		
CONSTRUCTION	150.77	142.45	155.77	154.48	212.09	235.16	296.27	283.81	133.05	88.25%	0.0181		
MANUFACTURING	1,082.04	975.70	993.19	1,003.20	961.40	1,003.85	1,005.16	844.34	(237.70)	-21.97%	-0.0071		
TRANSPORT, COMM. & PUBLIC UTIL	158.76	154.33	165.60	161.16	180.05	190.68	209.22	203.35	44.59	28.08%	0.0071		
WHOLESALE TRADE	158.20	164.12	169.49	179.41	217.28	229.12	254.51	243.64	85.44	54.01%	0.0123		
RETAIL TRADE	555.00	602.89	677.04	720.98	854.49	911.66	964.41	950.65	395.65	71.29%	0.0154		
FINANCE, INS. & REAL ESTATE ..	208.80	227.34	258.09	257.79	324.06	344.14	371.88	405.65	196.85	94.28%	0.0190		
SERVICES	600.53	721.08	865.60	1,052.43	1,286.12	1,467.73	1,688.17	1,796.39	1,195.85	199.13%	0.0313		
GOVERNMENT	514.52	577.91	623.10	592.72	655.77	652.74	698.24	709.66	195.14	37.93%	0.0092		
DETROIT-WARREN-FLINT, MI	1970	1975	1980	1985	1990	1995	2000	2005					
TOTAL POPULATION (THOUSANDS)	5,239.90	5,209.89	5,187.39	5,020.19	5,099.80	5,268.56	5,366.15	5,428.00	188.11	3.59%			
TOTAL EMPLOYMENT (THOUSANDS) ...	2,122.68	2,139.23	2,318.27	2,445.32	2,725.40	2,843.79	3,106.50	3,051.83	929.15	43.77%	0.0104		
PRIMARY PRODUCTION	23.81	24.09	26.49	29.50	32.44	35.29	39.35	40.26	16.45	69.11%	0.0150		
CONSTRUCTION	88.27	76.69	80.25	83.24	108.61	117.34	150.96	141.95	53.68	60.81%	0.0136		
MANUFACTURING	679.77	601.08	598.53	596.11	542.50	551.37	548.08	456.18	(223.60)	-32.89%	-0.0114		
TRANSPORT, COMM. & PUBLIC UTIL	102.52	96.96	100.55	98.31	110.53	111.39	124.87	119.48	16.95	16.54%	0.0044		
WHOLESALE TRADE	109.74	105.38	109.98	114.77	134.70	141.14	157.04	147.59	37.85	34.49%	0.0085		
RETAIL TRADE	335.50	347.13	387.92	408.69	474.61	480.34	502.86	492.95	157.45	46.93%	0.0110		
FINANCE, INS. & REAL ESTATE ..	132.53	140.09	154.91	156.36	202.28	206.00	218.67	238.79	106.26	80.18%	0.0168		
SERVICES	369.96	436.83	521.59	641.61	777.32	867.53	1,011.56	1,053.99	684.03	184.89%	0.0299		
GOVERNMENT	280.58	311.00	338.06	316.74	342.42	333.40	353.09	360.65	80.08	28.54%	0.0072		
DETROIT-WARREN-LIVONIA, MI	1970	1975	1980	1985	1990	1995	2000	2005					
TOTAL POPULATION (THOUSANDS)	4,439.62	4,387.38	4,339.05	4,195.99	4,250.99	4,399.75	4,458.38	4,488.34	48.71	1.10%			
TOTAL EMPLOYMENT (THOUSANDS) ...	1,819.81	1,808.27	1,926.39	2,024.56	2,262.28	2,355.06	2,587.44	2,532.33	712.52	39.15%	0.0094		
PRIMARY PRODUCTION	16.53	17.01	19.02	21.21	24.24	25.97	29.21	29.50	12.97	78.43%	0.0165		
CONSTRUCTION	77.06	66.01	68.59	70.63	91.49	98.73	126.52	118.80	41.74	54.17%	0.0124		
MANUFACTURING	575.50	500.33	487.48	482.81	444.40	456.95	467.54	388.26	(187.23)	-32.53%	-0.0112		
TRANSPORT, COMM. & PUBLIC UTIL	92.21	86.91	87.92	85.38	96.51	96.01	108.55	104.90	12.69	13.76%	0.0037		
WHOLESALE TRADE	96.37	93.12	95.90	98.70	119.20	125.84	139.42	130.57	34.19	35.48%	0.0087		
RETAIL TRADE	290.95	298.30	329.73	346.95	395.35	396.33	415.37	407.25	116.30	39.97%	0.0096		
FINANCE, INS. & REAL ESTATE ..	119.15	124.95	135.71	137.76	180.08	182.38	192.77	209.80	90.65	76.08%	0.0162		
SERVICES	326.55	379.13	448.13	549.53	660.99	736.75	855.79	887.10	560.55	171.66%	0.0286		
GOVERNMENT	225.50	242.52	253.90	231.59	250.03	236.10	252.28	256.16	30.65	13.59%	0.0036		
WAYNE COUNTY, MI	1970	1975	1980	1985	1990	1995	2000	2005					
TOTAL POPULATION (THOUSANDS)	2,669.88	2,507.57	2,324.74	2,172.79	2,107.92	2,111.31	2,059.29	1,998.22	(671.66)	-25.16%			
TOTAL EMPLOYMENT (THOUSANDS) ...	1,211.18	1,110.23	1,077.73	1,015.49	1,044.59	993.01	1,038.70	985.93	(225.24)	-18.60%	-0.0059	1,682.78	697
PRIMARY PRODUCTION	3.55	3.51	4.12	4.09	5.53	5.95	7.20	7.72	4.17	117.64%	0.0222	6.30	-1
CONSTRUCTION	42.10	30.16	28.68	29.50	31.20	30.39	38.03	34.74	(7.37)	-17.49%	-0.0055	64.73	30
MANUFACTURING	381.61	326.60	297.33	246.37	208.04	195.31	188.06	143.37	(238.24)	-62.43%	-0.0280	256.88	114
TRANSPORT, COMM. & PUBLIC UTIL	71.30	63.31	60.94	53.92	66.20	59.75	67.55	64.45	(6.85)	-9.60%	-0.0029	81.09	17
WHOLESALE TRADE	73.66	60.44	54.14	52.24	53.76	50.98	54.34	47.53	(26.13)	-35.47%	-0.0125	99.67	52
RETAIL TRADE	188.75	171.33	163.19	157.18	170.28	159.81	160.14	151.83	(36.92)	-19.56%	-0.0062	263.78	112
FINANCE, INS. & REAL ESTATE ..	84.91	73.84	69.21	65.94	73.80	64.55	61.62	62.47	(22.43)	-26.42%	-0.0088	148.83	86
SERVICES	223.68	233.61	249.28	271.48	297.25	298.84	328.33	342.20	118.52	52.99%	0.0121	599.19	257
GOVERNMENT	141.63	147.43	150.85	134.77	138.54	127.44	133.43	131.62	(10.01)	-7.07%	-0.0021	160.85	29

Exhibit 3.14 Sectoral Employment Trends in Michigan and the Detroit Region

		Year				Change 1990-2005				
		1990	1995	2000	2005	Absolute	Percent	Average growth rate	Predicted employment	Difference
Michigan	naics									
	Total, all industries	3,784,365	4,106,409	4,416,389	4,297,017	512,652	13.55%	0.0085		
	Natural Resources and Mining	26,385	28,570	30,283	31,053	4,668	17.69%	0.0109		
	Construction	138,593	149,283	201,052	182,320	43,727	31.55%	0.0183		
	Manufacturing	831,106	868,541	883,473	673,300	-157,806	-18.99%	-0.0140		
	Trade, Transportation, and Utilities	769,722	809,980	859,495	828,524	58,802	7.64%	0.0049		
	Information	69,497	66,408	72,677	67,653	-1,844	-2.65%	-0.0018		
	Financial Activities	189,595	190,410	195,346	205,303	15,708	8.29%	0.0053		
	Professional and Business Services	395,041	511,787	590,530	591,891	196,850	49.83%	0.0270		
	Education and Health Services	689,747	750,851	809,203	904,698	214,951	31.16%	0.0181		
	Leisure and Hospitality	321,087	360,968	391,824	402,903	81,816	25.48%	0.0151		
	Other Services	119,238	131,478	133,482	133,053	13,815	11.59%	0.0073		
	Public Administration	138,899	138,782	145,569	188,498	49,599	35.71%	0.0204		
Detroit CSA	Total, all industries	2,204,499	2,320,312	2,497,395	2,337,601	133,102	6.04%	0.0039		
	Natural Resources and Mining	4,792	4,274	4,420	4,297	-495	-10.33%	-0.0073		
	Construction	72,816	77,834	108,145	95,838	23,022	31.62%	0.0183		
	Manufacturing	450,496	450,158	462,351	335,070	-115,426	-25.62%	-0.0197		
	Trade, Transportation, and Utilities	454,726	463,088	484,898	442,878	-11,848	-2.61%	-0.0018		
	Information	43,647	42,212	47,712	42,294	-1,353	-3.10%	-0.0021		
	Financial Activities	125,435	119,627	120,253	124,079	-1,356	-1.08%	-0.0007		
	Professional and Business Services	291,937	366,739	424,876	401,915	109,978	37.67%	0.0213		
	Education and Health Services	411,901	435,948	465,224	509,738	97,837	23.75%	0.0142		
	Leisure and Hospitality	177,835	188,659	206,459	214,497	36,662	20.62%	0.0125		
	Other Services	69,702	73,046	72,949	70,029	327	0.47%	0.0003		
	Public Administration	87,955	83,889	86,845	92,857	4,902	5.57%	0.0036		
Detroit msa	Total, all industries	1,835,312	1,931,109	2,092,440	1,952,062	116,750	6.36%	0.0041		
	Natural Resources and Mining	3,985	3,327	3,085	3,092	-893	-22.41%	-0.0169		
	Construction	62,282	66,398	91,898	81,123	18,841	30.25%	0.0176		
	Manufacturing	359,698	364,066	391,563	283,833	-75,865	-21.09%	-0.0158		
	Trade, Transportation, and Utilities	388,037	394,972	414,629	375,928	-12,109	-3.12%	-0.0021		
	Information	39,059	36,389	40,039	35,862	-3,197	-8.19%	-0.0057		
	Financial Activities	113,119	107,260	107,405	110,945	-2,174	-1.92%	-0.0013		
	Professional and Business Services	260,975	326,249	371,773	357,316	96,341	36.92%	0.0209		
	Education and Health Services	312,140	328,309	351,744	381,875	69,735	22.34%	0.0134		
	Leisure and Hospitality	149,202	157,658	174,658	180,117	30,915	20.72%	0.0126		
	Other Services	60,109	62,874	62,595	59,064	-1,045	-1.74%	-0.0012		
	Public Administration	77,728	73,353	74,786	80,123	2,395	3.08%	0.0020		
Wayne County	Total, all industries	879,560	839,944	865,158	787,654	-91,906	-10.45%	-0.0074	935,393	147,739
	Natural Resources and Mining	1,678	1,238	1,269	1,111	-567	-33.79%	-0.0275	1,299	188
	Construction	21,635	20,233	28,011	24,056	2,421	11.19%	0.0071	28,115	4,059
	Manufacturing	155,552	148,190	149,270	102,897	-52,655	-33.85%	-0.0276	122,512	19,615
	Trade, Transportation, and Utilities	192,996	181,293	183,895	156,215	-36,781	-19.06%	-0.0141	186,967	30,752
	Information	20,678	16,836	14,657	15,923	-4,755	-23.00%	-0.0174	18,981	3,058
	Financial Activities	55,478	42,609	36,765	36,502	-18,976	-34.20%	-0.0279	54,411	17,909
	Professional and Business Services	114,902	116,136	125,472	129,150	14,248	12.40%	0.0078	156,809	27,659
	Education and Health Services	171,606	169,468	172,177	174,131	2,525	1.47%	0.0010	209,663	35,532
	Leisure and Hospitality	63,236	67,631	78,103	78,158	14,922	23.60%	0.0141	76,249	-1,909
	Other Services	32,006	30,438	28,555	24,555	-7,451	-23.28%	-0.0177	31,449	6,894
	Public Administration	47,797	44,112	46,656	44,892	-2,905	-6.08%	-0.0042	49,268	4,376

Exploring the Quarterly Census of Employment and Work -- Michigan

		Year				Change 1990-2005				
		1990	1995	2000	2005	Absolute	Percent			
Michigan	hitech									
	High-Technology	123,058	148,504	173,319	153,559	30,501	24.79%	0.0148		
	Mid-technology	29,346	32,025	45,230	45,655	16,309	55.57%	0.0295		
	Technology	152,404	180,529	218,549	199,214	46,810	30.71%	0.0179		
Detroit CSA	High-Technology	108,159	129,186	149,832	123,758	15,599	14.42%	0.0090		
	Mid-technology	22,270	23,935	34,015	29,754	7,484	33.61%	0.0193		
	Technology	130,429	153,121	183,847	153,512	23,083	17.70%	0.0109		
Detroit msa	High-Technology	94,829	114,515	126,039	108,136	13,307	14.03%	0.0088		
	Mid-technology	20,022	22,107	31,057	25,378	5,356	26.75%	0.0158		
	Technology	114,851	136,622	157,096	133,514	18,663	16.25%	0.0100		
Wayne County	High-Technology	34,101	40,290	35,016	35,367	1,266	3.71%	0.0024	38,864	3,497
	Mid-technology	9,452	9,872	11,284	8,214	-1,238	-13.10%	-0.0094	11,958	3,744
	Technology	43,553	50,162	46,300	43,581	28	0.06%	0.0000	50,592	7,011

Source: Quarterly Census of Employment and Work

Exhibit 3.15 Milken Institute Competitiveness Rankings for Central Benchmar Metropolitan Areas
(Selected dimensions shown)

2007 Rank	2005 Rank	City	Job Growth 2001-2006 Rank	Wages Growth 2000-2005 Rank	Relative high tech GDP Growth 2001-2006 Rank	High-Tech GDP LQ Rank	# of HT GDP LQs over 1 Rank	Overall index
148	161	New York-White Plains-Wayne, NY-NJ (MD)	162	156	152	101	96	564.56
109	124	Los Angeles-Long Beach-Glendale, CA (MD)	150	126	78	25	17	456.75
152	183	Chicago-Naperville-Joliet, IL (MD)	169	172	161	85	36	572.97
37	7	Washington-Arlington-Alexandria, DC-VA-MD-WV (MD)	36	40	59	15	28	274.03
153	157	Boston-Quincy, MA (MD)	180	166	156	88	79	577.41
97	173	San Francisco-San Mateo-Redwood City, CA (MD)	197	197	164	22	28	428.08
142	128	Philadelphia, PA (MD)	156	116	157	44	52	553.78
59	125	Dallas-Plano-Irving, TX (MD)	123	165	140	19	7	330.3
32	129	Houston-Sugar Land-Baytown, TX (MSA)	66	79	118	80	151	254.38
86	118	Atlanta-Sandy Springs-Marietta, GA (MSA)	97	138	143	50	52	400.88
197	192	Detroit-Livonia-Dearborn, MI (MD)	198	194	145	81	115	784.66
77	127	Seattle-Bellevue-Everett, WA (MD)	126	187	179	7	62	381.53
151	83	Minneapolis-St. Paul-Bloomington, MN-WI (MSA)	125	128	108	69	62	568.22
106	105	Denver-Aurora, CO (MSA)	153	163	155	16	17	447.67
193	194	Cleveland-Elyria-Mentor, OH (MSA)	188	185	163	143	151	774.69
125	144	St. Louis, MO-IL (MSA)	145	142	94	59	36	509.3
176	141	Pittsburgh, PA (MSA)	174	147	133	75	36	633.16
25	34	Sacramento--Arden-Arcade--Roseville, CA (MSA)	39	30	64	60	62	234.84
23	69	Charlotte-Gastonia-Concord, NC-SC (MSA)	70	75	50	97	115	230.98
167	149	Cincinnati-Middletown, OH-KY-IN (MSA)	117	119	126	110	151	608.16
5	6	Orlando-Kissimmee, FL (MSA)	12	13	31	72	79	121.93
116	126	Kansas City, MO-KS (MSA)	132	143	91	32	62	470.82
120	104	Indianapolis-Carmel, IN (MSA)	92	129	47	35	79	484.6
154	135	Columbus, OH (MSA)	137	122	139	94	79	579.9
9	11	Las Vegas-Paradise, NV (MSA)	4	5	25	181	173	154.09
141	159	Memphis, TN-MS-AR (MSA)	114	114	89	179	173	550.48
169	151	Louisville-Jefferson County, KY-IN (MSA)	136	140	149	169	173	614.53
196	196	Toledo, OH (MSA)	185	179	190	195	198	780.61

Rank out of a total of 200 Metropolitan areas
Source: http://www.milkeninstitute.org/publications/publications.taf?function=detail&ID=38801017&cat=ResRep

Exhibit 3.16

Location of benchmark airports

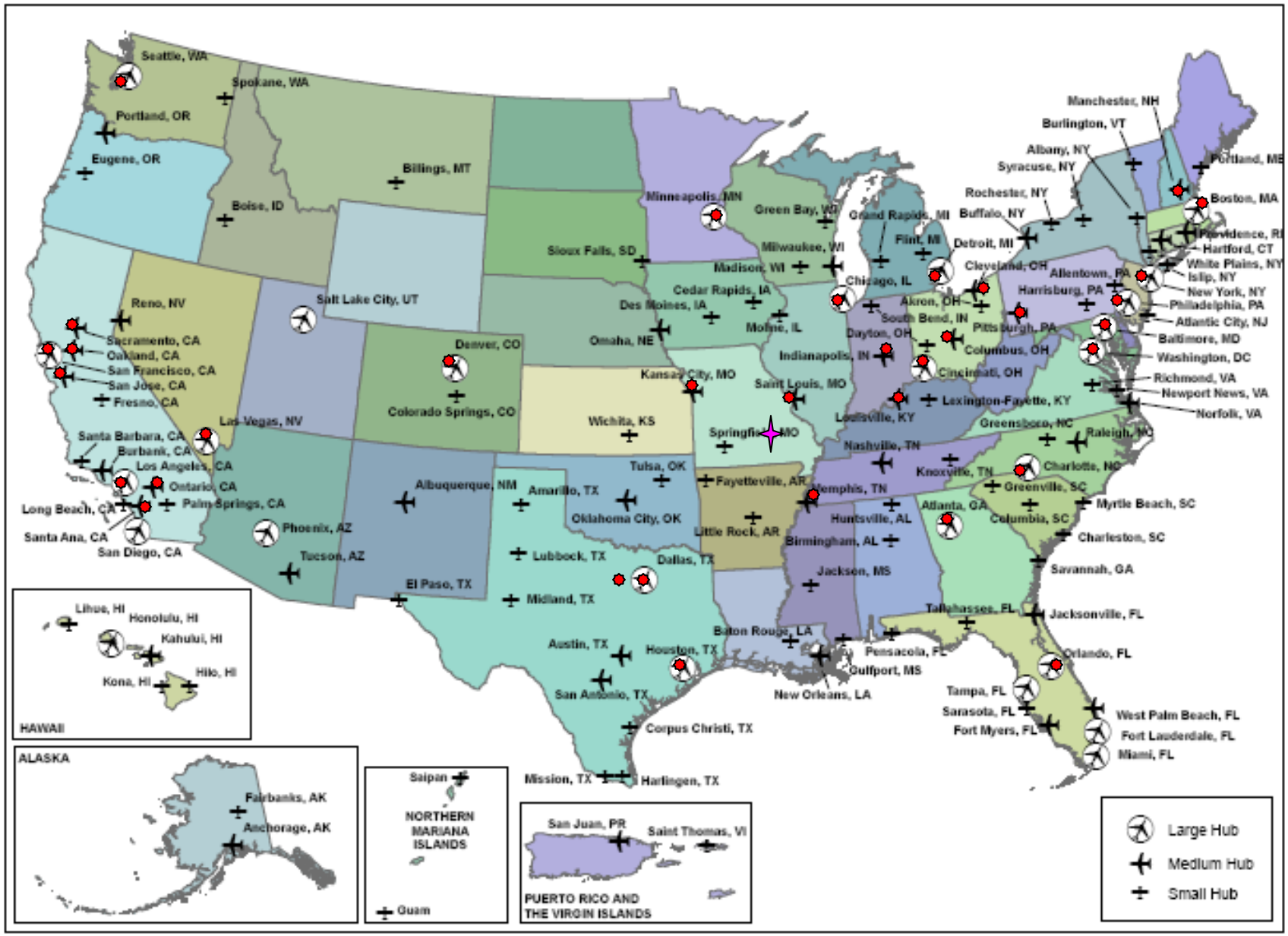
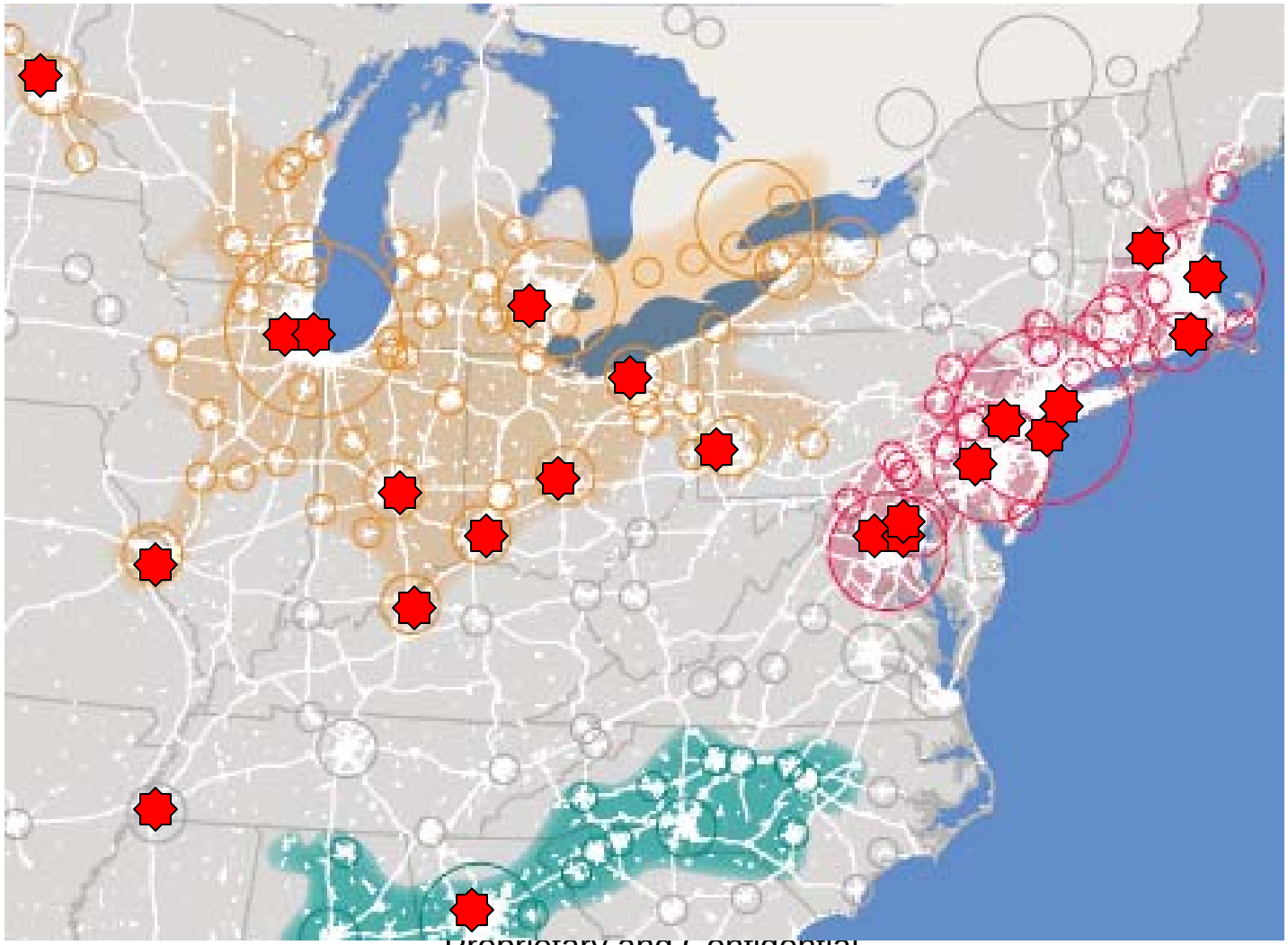


Exhibit 3.17

Detroit: Centrally located within the Great Lakes Mega-region



Proprietary and Confidential

Source: America 2050

Exhibit 3.18

National freight road corridors

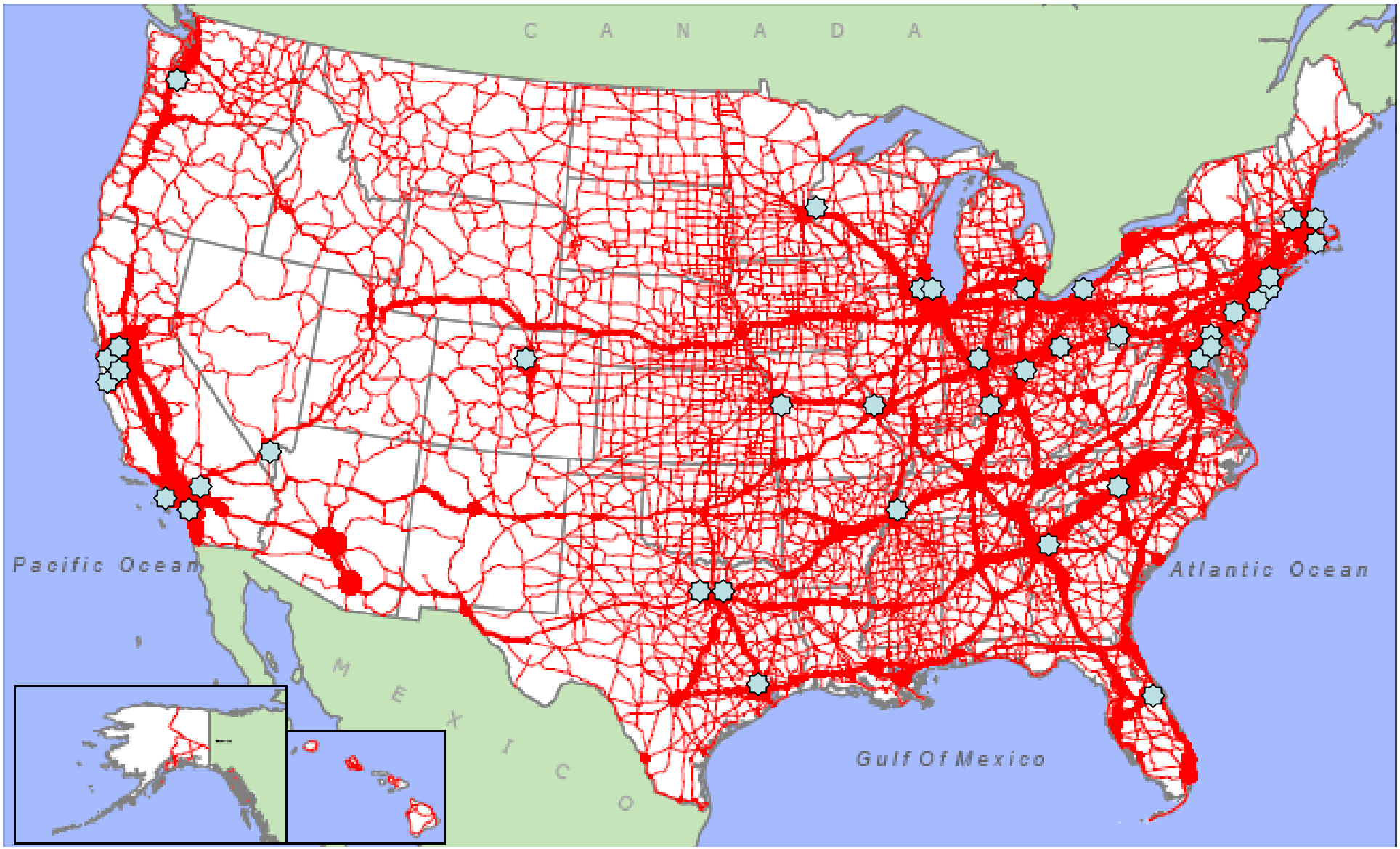


Exhibit 3.19

Vehicle-Miles Traveled (VMT) per Lane-Mile, 1980-2005

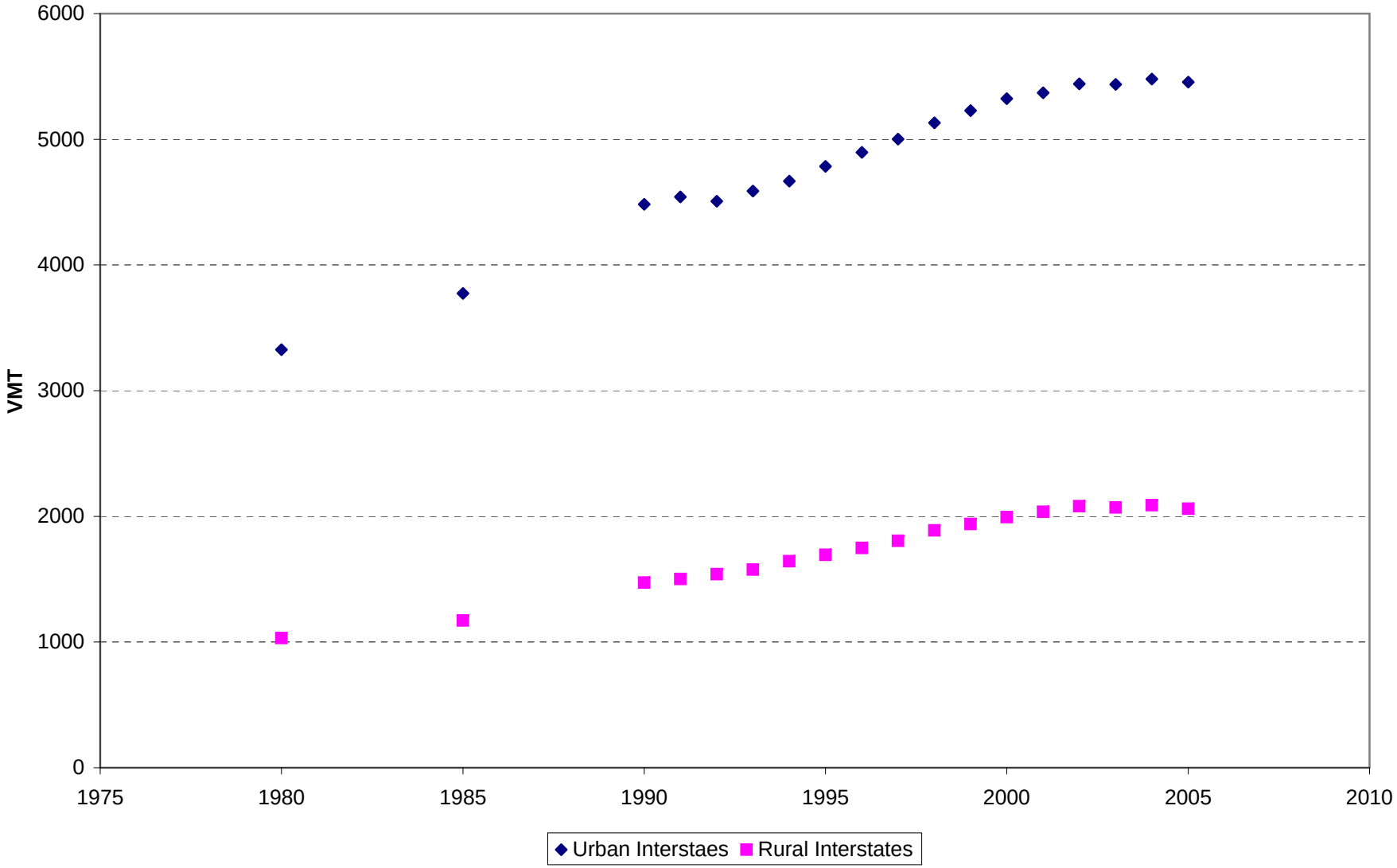
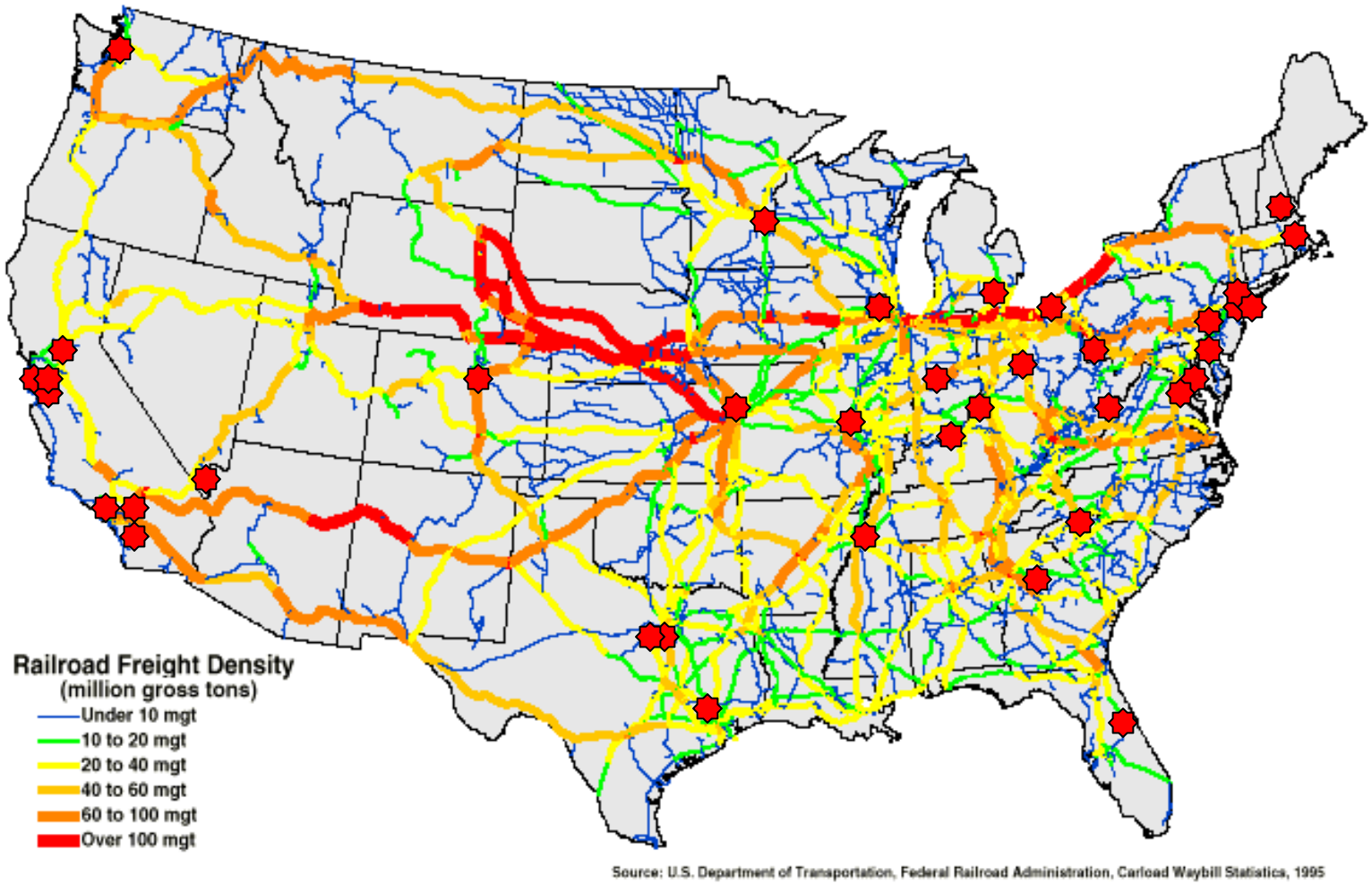


Exhibit 3.20

U.S. rail freight line traffic density -- 1995



Proprietary and Confidential

Exhibit 3.21

Detroit area airport land availability

Google Maps

Exhibit 3.22

Atlanta airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.23

Chicago airport land availability

Exhibit 3.24

Dallas-Fort Worth airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.25

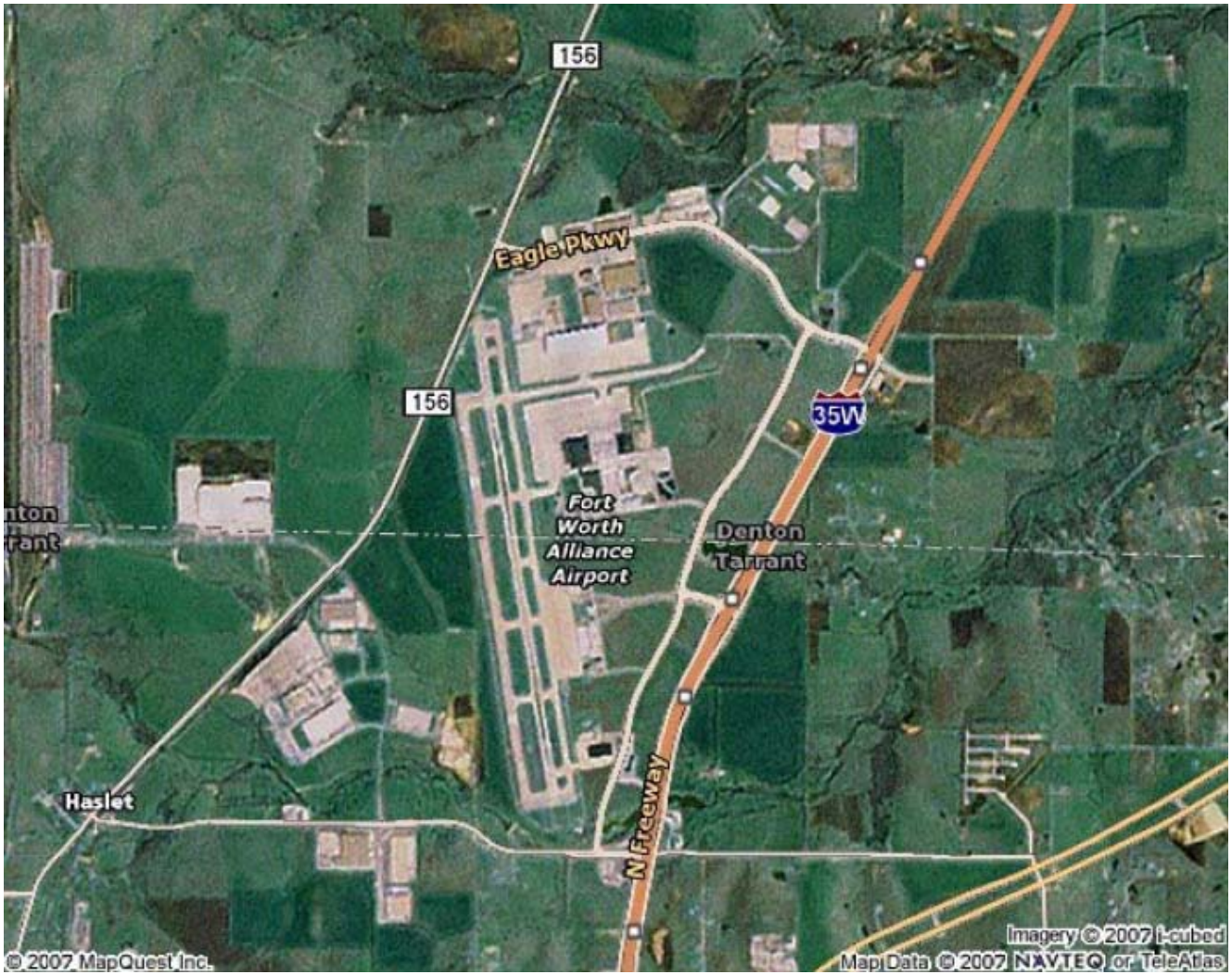
Denver airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.26

Fort Worth-Alliance Airport land availability



Google Maps

Proprietary and Confidential

Exhibit 3.27

Houston airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.28

Kansas City Airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.29

Memphis airport land availability

Proprietary and Confidential

Exhibit 3.30

Indianapolis airport land availability

Google Maps

Proprietary and Confidential

Exhibit 3.31

Louisville airport land availability

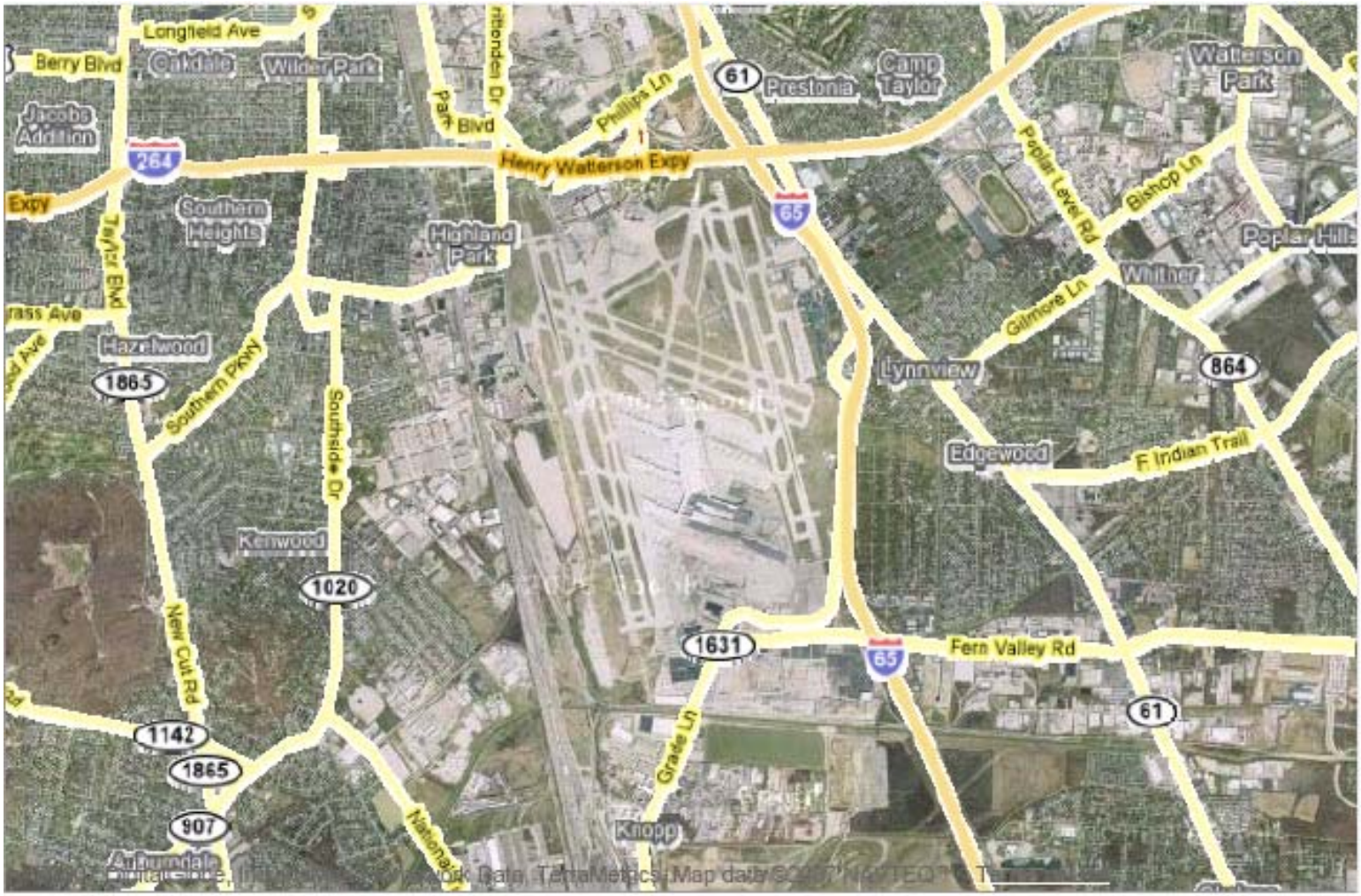


Exhibit 3.32: Metropolitan Office and Industrial Real Estate Market Stock and Quoted Rental Rates

	# of buildings		Total RBA		Quoted rates	
Washington D.C.						
Office market						
Downtown DC	316	4%	86,367,467	21%	$48.00	141%
Dulles Corridor	695	10%	47,473,213	12%	$29.61	87%
Total	7,133		406,981,041		$33.97	
(Downtown DC is the most expensive market)						
Industrial market						
District of Columbia Ind	400	9%	12,767,123	7%	$12.88	123%
Dulles Corridor Ind	577	13%	31,372,576	17%	$10.84	104%
Total	4,535		185,682,583		$10.46	
(Bethesda/Silver Spring is the most expensive market)						
Charlotte						
Office market						
CBD	132	6%	19,896,088	29%	$21.83	118%
Airport	294	14%	11,308,086	16%	$16.83	91%
Total	2,165		69,725,935		$18.50	
(Midtown/Randolph Rd. is the most expensive market)						
Industrial market						
CBD Ind	49	1%	1,223,871	1%	$5.19	118%
Airport/West Ind	384	8%	13,121,057	6%	$4.57	104%
Total	5,080		226,473,797		$4.39	
(Cabarrus County Ind is the most expensive market)						
Raleigh						
Office market						
Downtown Raleigh	79	4%	4,151,798	7%	$21.42	113%
RTP/RDU	201	9%	11,395,403	19%	$17.77	94%
Total	2,140		59,928,444		$18.90	
(Downtown Raleigh is the most expensive market)						
Industrial market						
West Raleigh Ind	92	6%	1,867,481	3%	$8.15	136%
RTP/RDU Ind	238	16%	19,398,909	32%	$6.78	113%
Total	1,487		61,545,132		$5.98	
(Orange County Ind is the most expensive market)						

Source: CoStar

Exhibit 3.33: Foreign Trade Zones in Selected Benchmark Cities and at Selected non-Benchmark Airports by State

STATE	ZONE	SUBZONES	CBP PORT OF ENTRY
CALIFORNIA	FTZ No. 3 San Francisco Grantee: San Francisco Port Commission	3A Lilli Ann 3B Chevron 3C Tesoro Refining	San Francisco
	FTZ No. 18 San Jose Grantee: City of San Jose	18B NUMMI 18C Cirrus Logic 18D Hewlett-Packard 18E Space Systems/Loral, Inc.	San Jose
	FTZ No. 56 Oakland Grantee: City of Oakland Operator: Pacific American Warehousing & Trucking Co	56A Mazda	San Francisco
	FTZ No. 143 West Sacramento Grantee: Port of Sacramento	143A C. Ceronix 143B Hewlett-Packard 143C Gymboree Corporation	San Francisco
	FTZ No. 202 Los Angeles Grantee: Board of Harbor Commissioners of the City of Los Angeles	202A 3M 202B Chevron USA, Inc. 202C ConocoPhillips 202D IKEA Wholesale, Inc. 202E Sony Electronics, Inc.	Los Angeles/ Long Beach
COLORADO	FTZ No. 123 Denver Grantee: City and County of Denver	123A Storage Technology 123B Artesyn Technologies 123C Eastman Kodak Company	Denver
FLORIDA	FTZ No. 42 Orlando Grantee/Operator: Greater Orlando Aviation Authority	42A Mitsubishi Power Systems	Orlando
GEORGIA	FTZ No. 26 Atlanta Grantee: Georgia Foreign Trade Zone, Inc.	26A GM 26C Ford 26D Yamaha 26E Pratt & Whitney 26F Precision Components 26G Roper Corporation 26H Ricoh Electronics, Inc. 26I Inflation Systems, Inc 26J Eastman Kodak Company	Atlanta
ILLINOIS	FTZ No. 22 Chicago Grantee: Illinois International Port District	22B Ford 22F Abbott Laboratories 22G sanofi-aventis U.S. LLC 22H BP Pipeline North America 22I Citgo Petroleum Corp. 22J EXXON Mobil 22K Henkel Corporation 22L Premcor Refining Group 22M Northrop Grumman Corporation 22N Michelin North America, Inc.	Chicago

INDIANA	FTZ No. 72 Indianapolis Grantee: Indianapolis Airport Authority	72A GM 72B Eli Lilly 72F DaimlerChrysler 72G DaimlerChrysler 72H Subaru of Indiana Automotive 72I Alpine 72J Endress & Hauser Flowtec AG 72K Onkyo 72L Thomson Multimedia, Inc. 72M Fujitsu Ten 72N Alfa Laval Distribution, Inc. 72O Tetra Pak Parts Americas 72P SMC Pneumatics 72Q Rolls-Royce Corporation 72R Decatur Mold Tool & Engineering	Indianapolis
KENTUCKY	FTZ No. 29 Louisville Grantee/Operator: Louisville & Jefferson County Riverport Authority	29B Ford 29C GE 29D Lexmark 29E Toyota Motor Manufacturing 29F Hitachi 29G Ascent Power Tech. Corp. 29H ISP Chemicals	Louisville
	FTZ No. 47 Boone County Grantee/Operator: Greater Cincinnati FTZ, Inc.	47A Clarion 47B Marathon Petroleum Company LLC 47C GE Engine Services Distribution	Cincinnati
MARYLAND	FTZ No. 73 BWI Airport Grantee: Maryland Dept. of Transportation	73A Rotorex 73B Northrop Grumman	Baltimore
	FTZ No. 74 Baltimore Grantee: City of Baltimore		Baltimore
MASSACHUSETTS	FTZ No. 27 Boston Grantee: Massachusetts Port Authority	27C Lawrence Textile 27D GM 27E Polaroid 27F Polaroid 27H Polaroid 27I Polaroid 27J Polaroid 27K Polaroid 27L AstraZeneca LP 27M Reebok International	Boston
MICHIGAN	FTZ No. 70 Detroit Grantee: Greater Detroit Foreign-Trade Zone, Inc.	70A Ford 70B DaimlerChrysler 70C Ford 70D Ford 70E Ford 70F GM 70G GM	Detroit

		70H DaimlerChrysler 70I Mazda 70J DaimlerChrysler 70K GM 70L GM 70M GM 70N DaimlerChrysler 70P DaimlerChrysler 70Q DaimlerChrysler 70R DaimlerChrysler 70S BASF 70T Marathon Petroleum Company LLC 70U Wacker Chemical Corporation	
MINNESOTA	FTZ No. 119 Minneapolis-St. Paul Grantee: Greater Metropolitan Area FTZ Commission	119B Wirsbo 119D Wisconsin Dairies 119E Plastic Products 119F Artesyn Technologies	Minneapolis
MISSOURI	FTZ No. 15 Kansas City Grantee/Operator: Greater Kansas City FTZ, Inc., River Market Office Building	15A Ford 15C Yulshin USA Ltd. 15D Bayer Corporation 15E Kawasaki Motors Manufacturing 15G Pfizer, Inc. 15H Midwest Quality Gloves, Inc.	Kansas City
	FTZ No. 102 St. Louis Grantee/Operator: St. Louis County Port Authority, 121 South Meramec, Suite 900	102A Ford 102B GM 102C Florsheim Shoe Company 102D Bayer Cropscience LP	St. Louis
NEVADA	FTZ No. 89 Clark County Grantee: Nevada Development Authority		Las Vegas
NEW JERSEY	FTZ No. 49 Newark/Elizabeth Grantee/Operator: Port Authority of NY and NJ	49B GM 49C Bristol-Myers Squibb 49D Merck 49E ConocoPhillips 49F Chevron Corp. 49G Hewlett-Packard 49H Firmenich 49I AZ Electronic Materials USA Corp. 49J Movado Group	New York/ Newark
NEW YORK	FTZ No. 111 JFK Intl. Airport Grantee: The City of New York		New York/ Newark
NORTH CAROLINA	FTZ No. 57 Mecklenburg County Grantee: North Carolina Department of Commerce	57A IBM 57B Volvo Construction Equipment 57C DNP IMS America Corp.	Charlotte

OHIO	FTZ No. 8 Toledo Grantee: Toledo-Lucas County Port Authority	8A Jeep 8B DaimlerChrysler 8C DaimlerChrysler 8E Giant Products 8F BP Products North America 8G Lima Refining Company 8H Sunoco, Inc.	Toledo-Sandusky
	FTZ No. 40 Cleveland Grantee: Cleveland Cuyahoga County Port Authority	40A Ford 40B GM 40C Ford 40D Lincoln Electric 40E Mr. Coffee 40G Ben Venue Labs 40H Motch Corp.	Cleveland
	FTZ No. 46 Cincinnati Grantee/Operator: Greater Cincinnati FTZ, Inc	46A General Electric Aircraft Engines 46B Honda 46D Honda 46E Nine West Distribution Corp. 46F Pioneer Industrial Components	Cincinnati
	FTZ No. 138 Franklin County Grantee: Columbus Regional Airport Authority	138D Globe Metallurgical 138E Avaya, Inc. 138F E.I. du Pont de Nemours & Co.	Columbus
PENNSYLVANIA	FTZ No. 33 Pittsburgh Grantee: Regional Industrial Development Corporation of Southwestern Pennsylvania	33B Verosol 33C Sony Technology Center-Pittsburgh 33D Mitsubishi Electric Power Products, Inc.	Pittsburgh
	FTZ No. 35 Philadelphia Grantee: Philadelphia Regional Port Authority	35B Merck 35C Sun Company 35D ConocoPhillips 35E Aker Philadelphia Shipyard	Philadelphia
TENNESSEE	FTZ No. 77 Memphis Grantee: The City of Memphis	77A Sharp 77B Brother 77C Komatsu America	Memphis
	FTZ No. 223 Memphis Grantee: Memphis International Trade Development Corporation		Memphis
TEXAS	FTZ No. 39 Dallas/Fort Worth Grantee/Operator: Dallas/Fort Worth International Airport Board	39B GM 39C Sanden 39E Fossil Partners 39F Zale Corporation 39G Maxtor Corporation 39H American Eurocopter LLC 39I Turbomeca U.S.A.	Dallas/Fort Worth
	FTZ No. 84 Harris County Grantee: Port of Houston Authority	84C DuPont 84E Gulf Coast Maritime 84F Valero Refining 84H Shaffer, Inc. 84I Tuboscope Vetco Int'l	Houston

		84J Shell Oil Co.	
		84K Dril-Quip	
		84L Tadiran Microwave Networks	
		84M Hydril	
		84N Pasadena Refining System, Inc.	
		80O EXXON Mobil	
		84P Houston Refining LP	
		84Q Equistar Chemicals	
		84R Michelin North America, Inc.	
		84S Academy Sports & Outdoors	
	FTZ No. 168 Dallas/Fort Worth	168A B&F Systems	Dallas/Fort Worth
	Grantee: Metroplex International Trade	168B Ultrak	
	FTZ No. 196 Fort Worth		Dallas/Fort Worth
	Grantee: Alliance Corridor, Inc.		
VIRGINIA	FTZ No. 137 Washington Dulles International Airport		Washington-Dulles
	Grantee: Washington Dulles Foreign-Trade Zone		
WASHINGTON	FTZ No. 5 Seattle		Puget Sound
	Grantee/Operator: Port of Seattle Commission		

Foreign Trade Zones Located at Non-Benchmark Airports

CALIFORNIA	FTZ No. 237 Santa Maria Grantee: Santa Maria Public Airport District		San Luis
	FTZ No. 243 Victorville Grantee: Southern California Logistics Airport Authority	243A Black & Decker Corp.	Victorville
FLORIDA	FTZ No. 215 Sebring Grantee: Sebring Airport Authority		Port Manatee
	FTZ No. 217 Ocala Grantee: Economic Development Council, Inc Operator: Ocala Regional Airport		Ocala
	FTZ No. 241 Fort Lauderdale Grantee: City of Fort Lauderdale c/o Fort Lauderdale Executive Airport		Port Everglades
	FTZ No. 250 Seminole County Grantee: Sanford Airport Authority		Sanford
GEORGIA	FTZ No. 104 Savannah Grantee/Operator: Savannah Airport Commission	104A Merck 104B Wal-Mart 104C CITGO Asphalt 104D Tumi, Inc.	Savannah
ILLINOIS	FTZ No. 176 Rockford Grantee: Greater Rockford Airport Authority	176A Milk Specialties 176C DaimlerChrysler 176D Nissan Industrial Engine 176E Nissan Forklift Corporation	Rockford
INDIANA	FTZ No. 125 South Bend Grantee: St. Joseph County Airport Authority	125D Audiovox Specialized Applications	Chicago
	FTZ No. 239 Terre Haute Grantee: Terre Haute International Airport Authority		Terre Haute
NORTH CAROLINA	FTZ No. 214 Lenoir County Grantee: North Carolina Global TransPark Authority	214A Consolidated Diesel	Morehead City/Beaufort
TEXAS	FTZ No. 94 Laredo Grantee: City of Laredo Operator: Laredo International Airport		Laredo
	FTZ No. 165 Midland Grantee: City of Midland c/o Midland International Airport	165A WRB Refining LLC	Midland
VIRGINIA	FTZ No. 207 Richmond Grantee: Capital Region Airport Commission	207B Hewlett-Packard Company 207C A. Wimpfheimer & Bro., Inc.	Richmond-Petersburg
WASHINGTON	FTZ No. 203 Moses Lake Grantee: Moses Lake Public Corporation Port of Moses Lake, Grant County Airport, 7810 Andrews St. NE, Suite 200	203A TK Holdings Inc.	Port of Moses Lake
	FTZ No. 224 Spokane Grantee: Spokane Airport Board		Spokane

Source: http://ia.ita.doc.gov/ftzpage/letters/ftzlist.html

Exhibit 3.34

Overview of U.S. Airports

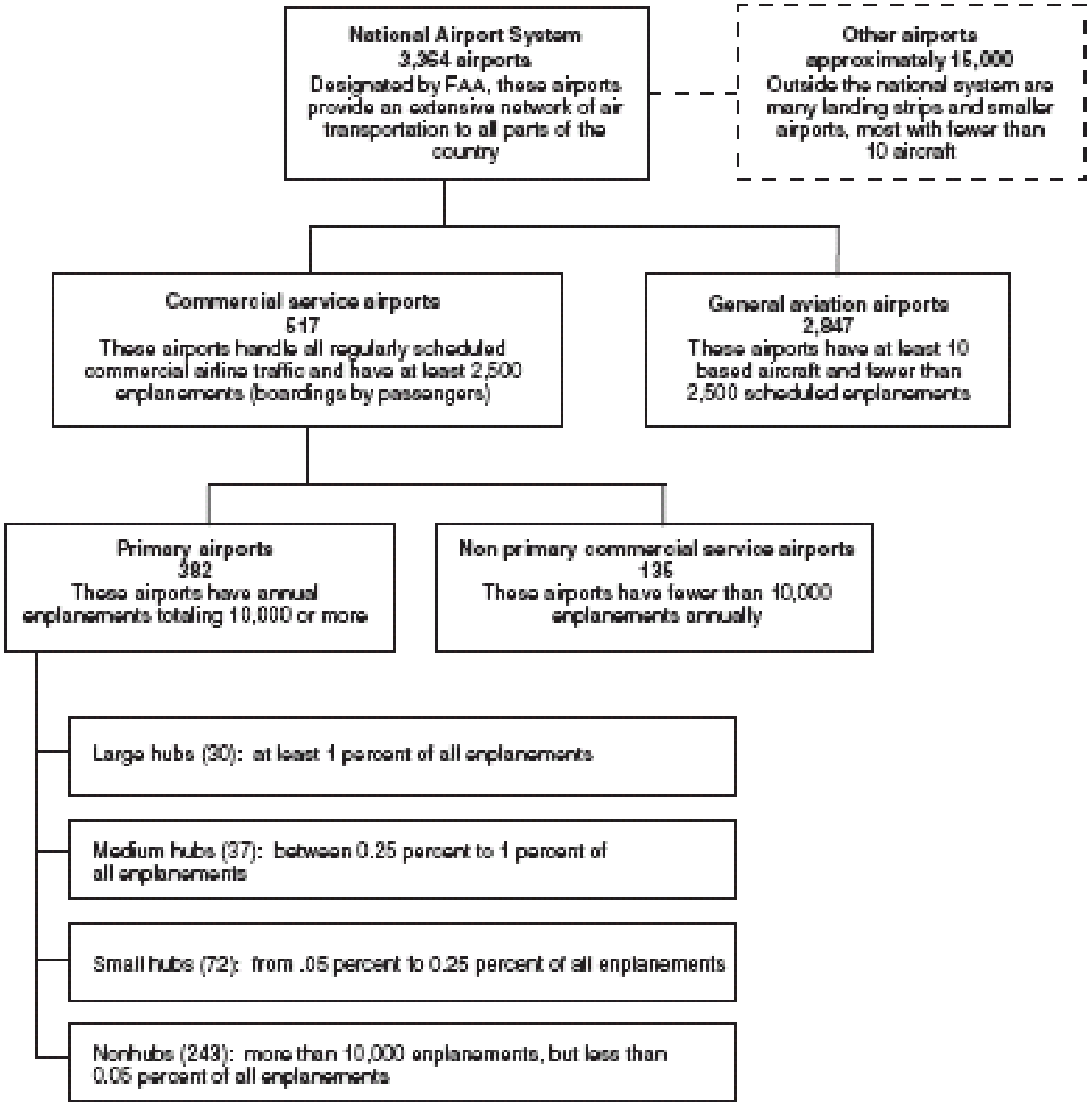
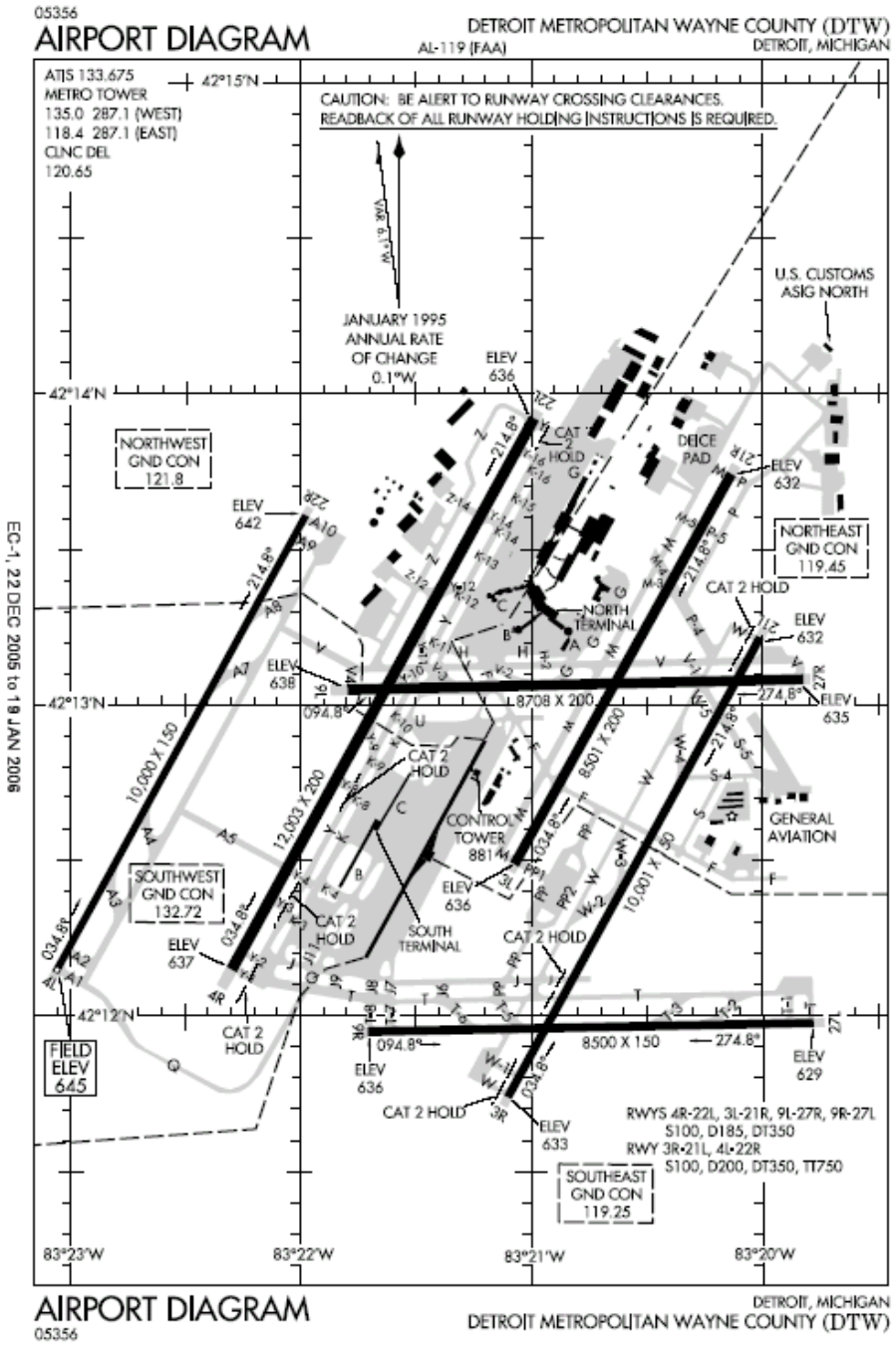


Exhibit 3.35 Basic Characteristics of Selected Benchmark Airports

Rank	Region	Airport	Code	Owner	Distance	Fr Direction	Fr Land Area	C Year of Serv	Airspace determi	Airframe re	Powerplant repair
1	New York-Newark-Bridgeport, NY-NJ-CT-PA										
		JF Kennedy Intl	JFK	Port Authority Of New York & N.J.	13	SE	5,200	1939	No Objection	Major	Major
		Newark Liberty Intl	EWR	Port Authority Of New York & N.J.	3	S	2,027	1939	No Objection	Major	Major
		La Guardia	LGA	Port Authority Of New York & N.J.	4	E	680		Not Analyzed	Major	Major
2	Los Angeles-Long Beach-Riverside, CA										
		Los Angeles Intl	LAX	City Of Los Angeles	9	SW	3,500	1940	No Objection	Major	Major
		John Wayne	SNA	Orange County	4	S	504	1941	No Objection	Major	Major
		Ontario Intl	ONT	City Of Los Angeles	2	E	1,700	1940	No Objection	Major	Major
		Bob Hope	BUR	Burbank-Glendale-Pasadena Apt	3	NW	610	1942	Not Analyzed	Major	Major
		Long Beach	LGB	City Of Long Beach	3	NE	1,166	1940	No Objection	Major	Major
3	Chicago-Naperville-Michigan City, IL-IN-WI										
		O'Hare Intl	ORD	City Of Chicago	14	NW	7,280	1944	No Objection	Major	Major
		Midway Intl	MDW	City Of Chicago	9	SW	650	1940	No Objection	Major	Major
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV										
		Washington Dulles Intl	IAD	Metro Wash Arpt Authority	20	W	13,000	1962	No Objection	Major	Major
		Baltimore/Washington Intl Thurgood Marshall	BWI	State Of Maryland	9	S	3,160	1950	No Objection	Major	Major
		R Reagan Washington National	DCA	Metro Wash Arpt Authority	3	S	861	1941	Not Analyzed	Minor	Minor
5	Boston-Worcester-Manchester, MA-RI-NH										
		Logan Intl	BOS	Mass Port Authority	1	E	2,384	1940	Conditional	Major	Major
		Manchester-Boston Regl.	MHT	City Of Manchester	3	S	1,500	1943	Not Analyzed	Major	Major
6	San Jose-San Francisco-Oakland, CA										
		San Francisco Intl	SFO	Cty & Co Of San Francisco	8	SE	5,207	1940	No Objection	Major	Major
		Oakland Intl	OAK	Port Of Oakland	4	S	2,600	1940	No Objection	Major	Major
		Norman Mineta San Jose Intl	SJC	City Of San Jose	2	NW	1,050	1946	No Objection	Major	Major
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD										
		Philadelphia Intl	PHL	City Of Philadelphia	5	SW	2,302	1940	No Objection	Major	Major
8	Dallas-Fort Worth, TX										
		Forth Worth Alliance	AFW	City Of Fort Worth	14	N	1,198	1989	Conditional	Major	Major
		Dallas/Ft Worth Intl	DFW	Cities Of Dallas And Ft Worth	12	NW	18,076	1974	No Objection		
		Love Field	DAL	City Of Dallas	5	NW	1,300	1937	No Objection	Major	Major
9	Houston-Baytown-Huntsville, TX										
		G Bush Intercontinental	IAH	City Of Houston	15	N	10,000	1963	No Objection	Major	Major
		WP Hobby	HOU	City Of Houston	8	SE	1,304	1939	No Objection	Minor	Minor
10	Atlanta-Sandy Springs-Gainesville, GA-AL										
		Hartsfield-Jackson Atlanta Intl	ATL	City Of Atlanta	7	S	4,700	1942	No Objection	Major	Major
11	Detroit-Warren-Flint, MI										
		Detroit Metro Wayne County	DTW	Wayne County, Michigan	15	S	6,400	1940	No Objection	Minor	Minor
12	Seattle-Tacoma-Olympia, WA										
		Seattle Tacoma Intl	SEA	Port Of Seattle	10	S	2,500	1944	Not Analyzed	None	None
13	Minneapolis-St. Paul-St. Cloud, MN-WI										
		Minneapolis/St Paul Intl	MSP	Metro Arpt Cmsn	6	SW	2,930	1940	No Objection	Major	Major
14	Denver-Aurora-Boulder, CO1										
		Denver Intl	DEN	City & County Of Denver	16	NE	33,422	1993	No Objection	Major	Major
15	Cleveland-Akron-Elyria, OH										
		Cleveland Hopkins Intl	CLE	City Of Cleveland	9	SW	1,900	1938	No Objection	Major	Major
16	St. Louis-St. Charles-Farmington, MO-IL										
		Lambert-St Louis Intl	STL	City Of St Louis	10	NW	2,800	1940	No Objection	Major	Major
17	Pittsburgh-New Castle, PA										
		Pittsburgh Intl	PIT	Allegheny Co Arpt Authority	12	NW	10,000	1944	Not Analyzed	Minor	Minor
18	Sacramento--Arden-Arcade--Truckee, CA-NV										
		Sacramento Intl	SMF	County Of Sacramento	10	NW	5,500	1962	No Objection		
19	Charlotte-Gastonia-Salisbury, NC-SC										
		Charlotte/Douglas Intl	CLT	City Of Charlotte	4	W	5,000	1937	Not Analyzed	Major	Major
20	Cincinnati-Middletown-Wilmington, OH-KY-IN										
		Cincinnati/No Kentucky Intl	CVG	Kenton County Arpt Board	8	SW	7,000	1944	Not Analyzed	Major	Major
21	Orlando-The Villages, FL										
		Orlando Intl	MCO	Greater Orlando Aviation Authority	6	SE	13,302	1941	No Objection	Minor	Minor
22	Kansas City-Overland Park-Kansas City, MO-KS										
		Kansas City Intl	MCI	City Of Kansas City	15	NW	10,200	1956	No Objection	None	None
23	Indianapolis-Anderson-Columbus, IN										
		Indianapolis Intl	IND	Indianapolis Airport Auth	7	SW	7,700	1940	No Objection	Major	Major
24	Columbus-Marion-Chillicothe, OH										
		Port Columbus Intl	CMH	Columbus Regional Airport Auth	6	E	2,189	1937	No Objection	Major	Major
		Rickenbacker Intl	LCK	Columbus Regional Airport Auth	10	S	4,342	1943	No Objection	Major	Major
25	Las Vegas-Paradise-Pahrump, NV										
		McCarran Intl	LAS	Clark County	5	S	2,800	1947	No Objection	Major	Major
		Memphis	MEM	Memphis Shelby Cnty Arpt Auth	3	S	3,900	1937	No Objection	Major	Major
		Louisville	SDF	Louisville Regional Arpt Auth	4	S	1,200	1942	Not Analyzed	Major	Major
		Toledo	TOL	Toledo - Lucas Co. Port Auth.	10	W	2,345	1955	No Objection	Major	Major

Exhibit 3.36

Detroit Metro Wayne Airport Runway Layout



Proprietary

Exhibit 3.37

Present and Future Runway Layout for O’Hare Airport

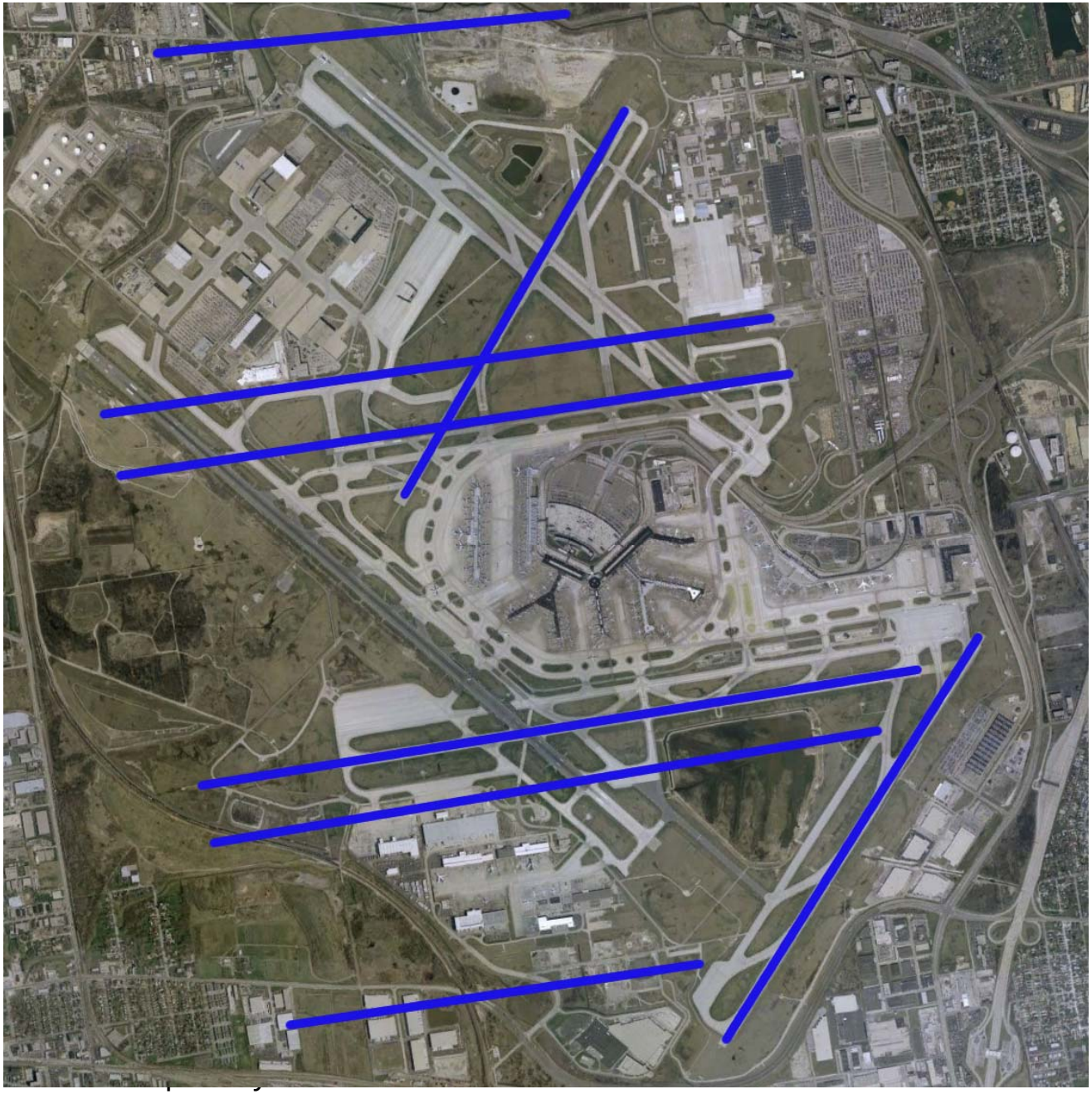


Exhibit 3.38 Characterisitcs of Runways at Selected Benchmark Airports

Rank	Region	Airport	Code	RunwayID	RunwayLe	RunwaySurfaceTy	RunwaySu	RunwayWe	RunwayWe	RunwayWe	RunwayWeigl	BaseEndIL	BaseEndM	BaseEndTI	BaseEndV	BaseEndR	BaseEndAl	BaseEndPart7	RecipEndIl	RecipEndM	RecipEndT	RecipEndV	RecipEndR	RecipEndAl	RecipEndPart77Categ
1	New York-Newark-Bridgeport, NY-NJ-CT-PA																								
		JF Kennedy Intl	JFK	04L/22R	11,351	ASPH-CONC-G	GRVD		185	550	823	ILS/DME	PIR	12	P4L	T		PIR	ILS/DME	PIR	13	T		PIR	
				04R/22L	8,400	ASPH-G	GRVD		185	550	823	ILS/DME	PIR	13		T	ALSF2	PIR	ILS/DME	PIR	13	P4R	T	ALSF2	PIR	
				13L/31R	10,000	ASPH-G	GRVD		185	550	823	ILS/DME	PIR	13	V12	T	ALSF1	PIR	ILS/DME	PIR	13		T	MALSR	PIR	
				13R/31L	14,572	ASPH-CONC-G	GRVD		185	550	823		PIR	13	V12	T	LDIN	C	ILS	PIR	13		T		PIR	
				H1	60	ASPH																			
				H2	60	ASPH-G																			
				H3	60	ASPH-G																			
				H4	60	ASPH-G																			
		Newark Liberty Intl	EWR	04L/22R	11,000	ASPH-CONC-G	GRVD		191	358	873	ILS/DME	PIR	10	P4L	T	MALSR	PIR	ILS/DME	PIR	10	P4L	T	MALSR	PIR	
				04R/22L	10,000	ASPH-G	GRVD		191	358	873	ILS/DME	PIR	11	P4L	T	ALSF2	PIR	ILS/DME	PIR	10	P4L	T	MALSR	PIR	
				11/29	6,800	ASPH-G	GRVD		191	358	873	LOC/GS	PIR	18	V4L			PIR		NPI	10	P4R			B(V)	
				H1	40	CONC-G																			
		La Guardia	LGA	4/22	7,001	ASPH-CONC-G	GRVD	80	170	360		ILS	PIR	21	P4R	T	MALSR	PIR	ILS	PIR	12	V4L	T	ALSF1	PIR	
				13/31	7,003	ASPH-CONC-G	GRVD	80	170	360		ILS/DME	PIR	12	V4L	T	MALSR	PIR	LOC/DME	PIR	7	V16	T		C	
				H1	60	ASPH-G																			
				H2	60	ASPH-G																			
2	Los Angeles-Long Beach-Riverside, CA																								
		Los Angeles Intl	LAX	06L/24R	8,925	CONC-G	GRVD	175	225	400	900	ILS/DME	PIR	117	P4L	T	MALSR	PIR	ILS/DME	PIR	120	P4L	T	ALSF2	PIR	
				06R/24L	10,285	CONC-G	GRVD	175	225	400	900	ILS/DME	PIR	114	P4L	T	MALSR	PIR	ILS/DME	PIR	121	P4R	T	MALSR	PIR	
				07L/25R	12,091	CONC-G	GRVD	175	225	400	900	ILS/DME	PIR	126	P4L	T	MALSR	PIR	ILS/DME	PIR	102		T	MALSR	PIR	
				07R/25L	11,095	CONC-G	GRVD	175	225	400	900	ILS/DME	PIR	125	P4L	T	MALSR	PIR	ILS/DME	PIR	104		T	ALSF2	PIR	
				H3	63	CONC-G		15																	
		John Wayne	SNA	01L/19R	5,701	ASPH-G	GRVD	70	95	152			PIR	56	V4L			C	ILS/DME	PIR	55	V4L	T	MALSR	PIR	
				01R/19L	2,887	ASPH-G	PFC	25	60				BSC					A(V)		BSC		V4L			A(V)	
		Ontario Intl	ONT	08L/26R	12,197	CONC-G	GRVD	30	200	560	850	ILS	PIR	944		T	MALSR	PIR	ILS/DME	PIR	932	P4L	T	MALSR	PIR	
				08R/26L	10,200	CONC-G	GRVD	30	200	560	850		PIR	936	PSIL	T		B(V)	ILS/DME	PIR	926	P4L	T	ALSF2	PIR	
		Bob Hope	BUR	8/26	5,801	ASPH-E	GRVD	30	180	300		ILS	PIR	727	P4L	T	MALSR	PIR		NPI	716				B(V)	
				15/33	6,886	ASPH-E	GRVD	30	180	300			NPI	768	V4L			B(V)		NPI	736	P4L			B(V)	
		Long Beach	LGB	07L/25R	6,192	ASPH-F	PFC	30	70	110			NPI	53				B(V)		NPI	48	V4L			B(V)	
				07R/25L	5,423	ASPH-G		30	75				NPI	53				B(V)		NPI	41	P4L			B(V)	
				12/30	10,000	ASPH-G	GRVD	30	200	300			PIR	53	V4L	R		B(V)	ILS	PIR	38	P4L	T	MALSR	PIR	
				16L/34R	4,267	ASPH-G		12.5					BSC	40				B(V)		BSC	39				B(V)	
				16R/34L	4,470	ASPH-G		12.5					BSC	50	V4L			B(V)		BSC	47				B(V)	
3	Chicago-Naperville-Michigan City, IL-IN-WI																								
		O'Hare Intl	ORD	04L/22R	7,500	ASPH-G	GRVD	100	185	350		LOCALIZE	PIR	658		T		C	ILS	PIR	651	P4L	T	MALSR	PIR	
				04R/22L	8,075	ASPH-G	GRVD	100	200	350		ILS	PIR	661		T	MALSR	PIR	ILS	PIR	654		T	MALSR	PIR	
				09R/27L	7,967	ASPH-CONC-G	GRVD	100	210	350		ILS/DME	PIR	660	P4L	T	MALSR	PIR	ILS/DME	PIR	653	P4R	T	ALSF2	PIR	
				10/28	10,144	ASPH-CONC-G	GRVD	100	185	350		ILS/DME	PIR	666	P4L	T	MALSR	PIR	ILS/DME	PIR	651	P4L	T	ALSF2	PIR	
				14L/32R	10,005	ASPH-G	GRVD	100	185	350		ILS/DME	PIR	653	P4L	T	ALSF2	PIR	ILS	PIR	653		T	MALSR	PIR	
				14R/32L	13,000	ASPH-CONC-G	GRVD	100	185	350		ILS/DME	PIR	668	P4R	T	ALSF2	PIR	ILS/DME	PIR	654		T		PIR	
				H1	200	CONC																			
		Midway Intl	MDW	04L/22R	5,507	ASPH-G	GRVD	60	120				NPI	617	V4R			C		NPI	614	V4L			C	
				04R/22L	6,446	ASPH-CONC-G	GRVD	95	165	250		ILS	PIR	619	P4L			PIR		PIR	611	P4R			C	
				13C/31C	6,522	CONC-G	GRVD	95	165	250		ILS/DME	PIR	611	P4R	T	LDIN	PIR	ILS/DME	PIR	613	V4L		LDIN	PIR	
				13L/31R	5,141	ASPH-G	GRVD	80	125				NPI	608				C		NPI	609				C	
				13R/31L	3,859	CONC-G		12.5					BSC	612				A(V)		BSC	613				A(V)	
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV																								
		Washington Dulles Intl	IAD	01L/19R	11,501	CONC-G	GRVD	200	250	450	875	ILS	PIR	287	P4L	T	MALSR	PIR	ILS	PIR	272	P4R	T	ALSF2	PIR	
				01R/19L	11,500	CONC-G	GRVD	200	250	450	875	ILS/DME	PIR	312	P4R	T	ALSF2	PIR	ILS/DME	PIR	302	P4L	T	MALSR	PIR	
				12/30	10,501	CONC-G	GRVD	200	250	450	875	ILS	PIR	310	P4R	T	MALSR	PIR		PIR	288	P4L	T		B(V)	
		Baltimore/Washington Intl Thurgood Marshall	BWI	4/22	6,000	ASPH-F	GRVD	100	220	500	728		NPI	146	V4L			C		NPI	143	V4L			C	
				10/28	10,502	ASPH-F	GRVD	100	220	500	790	ILS	PIR	143		T	ALSF2	PIR	ILS	PIR	142	V4L	T	MALSR	PIR	
				15L/33R	5,000	ASPH-F	GRVD	30	60			ILS	PIR	142		T		PIR	ILS	PIR	124	P4L	T	MALSR	PIR	
				15R/33L	9,501	ASPH-F	GRVD	100	220	500	790	ILS	PIR	139		T	MALSR	PIR	ILS	PIR	142	V4L		MALSR	PIR	
				H1	100	ASPH-F																			
		R Reagan Washington National	DCA	1/19	6,869	ASPH-G	GRVD	110	200	360		ILS/DME	PIR	14		T	ALSF2	PIR	LDA/DME	PIR	13	V12	T	MALSF	C	
				4/22	4,911	ASPH-G	GRVD	110	200	360			NPI	14				C		NPI	14	V4L			B(V)	
				15/33	5,204	ASPH-G	GRVD	110	200	360			NPI	15	P4L			C		NPI	13	V4L			C	
5	Boston-Worcester-Manchester, MA-RI-NH																								
		Logan Intl	BOS	04L/22R	7,861	ASPH-G	GRVD	200	200	400	800		PIR	14	P4L	T		B(V)		PIR	15	P4L	T		B(V)	
				04R/22L	10,005	ASPH-G	GRVD	200	200	400	800	ILS/DME	PIR	18	P4L	T	ALSF2	PIR	ILS/DME	PIR	16	P4L	T	MALSF	PIR	
				9/27	7,000	ASPH-G	GRVD	200	200	400	800		PIR	17		T		B(V)	ILS/DME	PIR	17	P4L	T		PIR	
				14/32	5,000	ASPH-G	GRVD	75	200	400	875									PIR	20	P4L			A(NP)	
				15L/33R	2,557	ASPH-G		200	200	400	800		BSC	15				A(V)		BSC	14				A(V)	
				15R/33L	10,083	ASPH-G	GRVD	200	200	400	800	ILS/DME	PIR	17	P4L	T	MALSR	PIR	ILS/DME	PIR	16	P4R	T	MALSR	PIR	
		Manchester-Boston Regl.	MHT	6/24	7,150	ASPH-E	GRVD	200	300	350		ILS	PIR	225	P4L	T		PIR		NPI	238	P4L	T		B(V)	
				17/35	9,250	ASPH-E	GRVD	200	300	350		ILS/DME	PIR	229	P4R	T	MALSR	PIR	ILS/DME	PIR	265	P4L	T	ALSF2	PIR	
6	San Jose-San Francisco-Oakland, CA																								

	San Francisco Intl	SFO	01L/19R	7,500	ASPH-CONC-G	GRVD	60	170	270	710		NPI	11		T		B(V)		NPI	10	P4L	T		C
			01R/19L	8,648	ASPH-G	GRVD	60	195	325	710		PIR	12		T		B(V)	ILS/DME	PIR	11	P4L	T	SSALS	PIR
			10L/28R	11,870	ASPH-G	GRVD	60	200	355	710		PIR	7	P4L	T		B(V)	ILS/DME	PIR	13	P4L	T	ALSF2	PIR
			10R/28L	10,602	ASPH-G	GRVD	60	200	355	710		PIR	9	V6L	T		B(V)	ILS/DME	PIR	13	P4L	T	SSALR	PIR
	Oakland Intl	OAK	09L/27R	5,454	ASPH-G	GRVD	75	115	180			PIR	6	V4L			C	ILS	PIR	7			MALSR	PIR
			09R/27L	6,212	ASPH-G	PFC	75	210	500	900		PIR	9	V4L			C		PIR	9	V4L			PIR
			11/29	10,000	ASPH-G	GRVD	75	210	500	900	ILS	PIR	9		T	MALSR	PIR	ILS	PIR	9		T	ALSF2	PIR
			15/33	3,372	ASPH-G		12.5					BSC	5				A(V)		BSC	5				A(V)
	Norman Mineta San Jose Intl	SJC	11/29	4,599	ASPH-G		60					BSC	49	P4L			A(V)		BSC	52	P4L			A(V)
			12L/30R	11,000	CONC-G	GRVD	220	250	605			PIR	44	P4R			C		PIR	55	P4L			C
			12R/30L	11,000	CONC-G	GRVD	220	250	605	875	ILS/DME	PIR	46	P4R		MALSR	PIR	ILS/DME	PIR	57	P4L		MALSR	PIR
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD																							
	Philadelphia Intl	PHL	8/26	5,000	ASPH-G	GRVD			60			BSC	20		T		B(V)	ILS/DME	PIR	36	P4R	T	MALSR	PIR
			09L/27R	9,500	ASPH-G	GRVD	100	210	350		ILS/DME	PIR	13	P4L	T	MALSR	PIR	ILS/DME	PIR	11	P4L	T	MALSR	PIR
			09R/27L	10,506	ASPH-G	GRVD	200	210	350		ILS/DME	PIR	21		R	ALSF2	PIR	ILS/DME	PIR	10	P4R	T	MALSR	PIR
			17/35	5,460	ASPH-G	GRVD	100	170	300		ILS	PIR	10	P4L	T	MALSR	PIR		PIR	10	V4L	T		C
8	Dallas-Fort Worth, TX																							
	Forth Worth Alliance	AFW	16L/34R	9,600	CONC-G	GRVD		200	400	870	ILS/DME	PIR	715		T	ALSF2	PIR	ILS/DME	PIR	681		T	MALSR	PIR
			16R/34L	8,220	CONC-G	GRVD		200	400	870		BSC	714	P4L			B(V)		BSC	686	P4L			B(V)
	Dallas/Ft Worth Intl	DFW	13L/31R	9,000	CONC-G	GRVD	120	200	600	850		NPI	553	P4L	T		B(V)	ILS/DME	PIR	523	P4L	T	MALSR	PIR
			13R/31L	9,301	CONC-G	GRVD	120	200	600	850	ILS/DME	PIR	591	P4L	T	MALSR	PIR		NPI	581	P4L	T		B(V)
			17C/35C	13,401	CONC-G	GRVD	120	200	600	850	ILS/DME	PIR	562	P4L	T	ALSF2	PIR	ILS/DME	PIR	563	P4L	T	ALSF2	PIR
			17L/35R	8,500	CONC-G	GRVD	120	200	600	850	ILS/DME	PIR	545	P4L	T	ALSF2	PIR	ILS/DME	PIR	575	P4R	T	ALSF2	PIR
			17R/35L	13,401	CONC-G	GRVD	120	200	600	850	ILS/DME	PIR	567	P4L	T	MALSR	PIR	ILS/DME	PIR	564	P4L	T	MALSR	PIR
			18L/36R	13,400	CONC-G	GRVD	120	200	600	850	ILS/DME	NPI	602	P4L	T	MALSR	PIR	ILS/DME	PIR	581	P4L	T	MALSR	PIR
			18R/36L	13,400	CONC-G	GRVD	120	200	600	850	ILS/DME	PIR	607	P4L	T	ALSF2	PIR	ILS/DME	PIR	588	P4L	T	MALSR	PIR
			H1	158	CONC-G																			
	Love Field	DAL	13L/31R	7,752	CONC-G	GRVD	100	200	350		ILS/DME	PIR	485		T	MALSR	PIR	ILS/DME	PIR	487	V4L	T	MALSR	PIR
			13R/31L	8,800	CONC-G	GRVD	100	200	350		ILS/DME	PIR	478	V4L			PIR	ILS/DME	PIR	476		T	MALSR	PIR
			18/36	6,147	ASPH-G		50	74	138			NPI	481	V4L			B(V)		NPI	482	V4L			B(V)
9	Houston-Baytown-Huntsville, TX																							
	G Bush Intercontinental	IAH	08L/26R	9,000	CONC-G	GRVD	75	210	409	873	ILS/DME	PIR	96		T	ALSF2	PIR	ILS/DME	PIR	97		T	ALSF2	PIR
			08R/26L	9,402	CONC-G	GRVD	75	210	498	873	ILS/DME	PIR	97	P4L	T	MALSR	PIR	ILS/DME	PIR	97	P4R	T	ALSF2	PIR
			9/27	10,000	ASPH-G	GRVD	75	190	400	850	ILS/DME	PIR	91	P4R	T	MALSR	PIR	ILS/DME	PIR	86	P4L	T	ALSF2	PIR
			15L/33R	12,001	CONC-G	GRVD	100	200	400	800	LOCALIZE	NPI	97	P4R	T		B(V)	ILS	PIR	89		T	MALSR	PIR
			15R/33L	9,999	CONC-G	GRVD	75	200	400	873	LOC/GS	PIR	97	P4L	T	MALSR	PIR		NPI	91	P4R	T		B(V)
	WP Hobby	HOU	4/22	7,602	CONC-G	GRVD	75	200	400		ILS/DME	PIR	44	P4R	T	ALSF2	PIR	LOC/DME	PIR	41	V4L	T	MALS	D
			12L/30R	5,148	CONC-F	GRVD	30	45	80			BSC	45	P4L			B(V)		BSC	44				B(V)
			12R/30L	7,602	ASPH-G	GRVD	75	195	220		ILS/DME	PIR	46	P4R	T	MALSR	PIR	ILS/DME	PIR	43	P4L	T		PIR
			17/35	6,000	ASPH-CONC-G	GRVD	75	121	195			NPI	46	V4L			C		NPI	46	V4R			C
10	Atlanta-Sandy Springs-Gainesville, GA-AL																							
	Hartsfield-Jackson Atlanta Intl	ATL	08L/26R	9,000	CONC-G	GRVD	120	200	360		ILS/DME	PIR	1015	P4L	T	ALSF2	PIR	ILS/DME	PIR	990	P4L	T	MALSR	PIR
			08R/26L	10,000	CONC-G	GRVD	120	200	360		ILS/DME	PIR	1024	P4L	T		PIR	ILS/DME	PIR	995	P4L	T	MALSR	PIR
			09L/27R	11,890	CONC-G	GRVD	120	200	360		ILS/DME	PIR	1019	P4R	T	MALSR	PIR	ILS/DME	PIR	985	P4R	T	MALS	PIR
			09R/27L	9,001	CONC-G	GRVD	120	200	360		ILS/DME	PIR	1026	P4L	T	ALSF2	PIR	ILS/DME	PIR	999	P4R	T	MALSR	PIR
			10/28	9,000	CONC-G	GRVD	75	209	600	900	ILS/DME	PIR	1000		T	ALSF2	PIR	ILS/DME	PIR	998		T	ALSF2	PIR
			H1	52	ASPH																			
11	Detroit-Warren-Flint, MI																							
	Detroit Metro Wayne County	DTW	03L/21R	8,501	ASPH-CONC-F	GRVD	100	185	350			NPI	636	P4R	T		C		NPI	634	P4L	T		B(V)
			03R/21L	10,001	CONC-F	GRVD	100	200	350	750	ILS	PIR	633	P4R	T	ALSF2	PIR	ILS	PIR	632	P4L	T	MALSR	PIR
			04L/22R	10,000	CONC-G	GRVD	100	200	350	750	ILS/DME	PIR	645		T	ALSF2	PIR	ILS/DME	PIR	642		T	MALSR	PIR
			04R/22L	12,003	CONC-F	GRVD	100	185	350		ILS/DME	PIR	638		T	ALSF2	PIR	ILS/DME	PIR	637		T	MALSR	PIR
			09L/27R	8,708	ASPH-CONC-F	GRVD	100	185	350			PIR	640		M		B(V)	ILS	PIR	635	P4L		MALSR	PIR
			09R/27L	8,500	CONC-G	GRVD	100	185	350			PIR	636				B(V)	ILS	PIR	630	P4L	T	MALSR	PIR
12	Seattle-Tacoma-Olympia, WA																							
	Seattle Tacoma Intl	SEA	16C/34C	9,426	CONC-G	GRVD	100	200	350	800	ILS/DME	PIR	430	P4L	T	ALSF2	PIR	ILS/DME	PIR	387	P4L	T	MALSR	PIR
			16L/34R	11,901	ASPH-G	GRVD	100	200	357	888	ILS/DME	PIR	433	P4L	T	ALSF2	PIR	ILS/DME	PIR	372	P4L	T	MALSR	PIR
13	Minneapolis-St. Paul-St. Cloud, MN-WI																							
	Minneapolis/St Paul Intl	MSP	4/22	11,006	CONC-F	GRVD	100	200	400	850	ILS	PIR	832	P4L	T	MALSR	PIR	LOCALIZE	PIR	828	P4L	T	MALSR	D
			12L/30R	8,200	ASPH-CONC-F	GRVD	100	200	400	850	ILS/DME	PIR	839	P4L	T	ALSF2	PIR	ILS/DME	PIR	823	P4L	T		PIR
			12R/30L	10,000	ASPH-CONC-F	GRVD	100	200	400	850	ILS/DME	PIR	841	P4L	T	ALSF2	PIR	ILS/DME	PIR	823	P4L	T	ALSF2	PIR
			17/35	8,000	CONC-G	GRVD	100	200	400	850	LOC/DME	NPI	840	P4R	T		C	ILS/DME	PIR	834	P4L	T	ALSF2	PIR
14	Denver-Aurora-Boulder, CO1																							
	Denver Intl	DEN	7/25	12,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5348	P4R	T	MALSR	PIR	ILS/DME	PIR	5352	P4L	T	MALSR	PIR
			8/26	12,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5351	P4L	T	MALSR	PIR	ILS/DME	PIR	5306	P4L	T	MALSR	PIR
			16L/34R	12,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5354	P4L	T	MALSR	PIR	ILS/DME	PIR	5351	P4L	T	ALSF2	PIR
			16R/34L	16,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5323	P4R	T	MALSR		ILS/DME	PIR	5324	P4L	T	ALSF2	
			17L/35R	12,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5335	P4L	T	MALSR	PIR	ILS/DME	PIR	5367	P4R	T	ALSF2	PIR
			17R/35L	12,000	CONC-G	GRVD	100	200	380	850	ILS/DME	PIR	5388	P4L	T	MALSR	PIR	ILS/DME	PIR	5431	P4R	T	ALSF2	PIR
15	Cleveland-Akron-Elyria, OH																							
	Cleveland Hopkins Intl	CLE	06C/24C	7,096	CONC-F	GRVD	170	180	290			NPI	778	P4L			C		NPI	784				C
			06L/24R	9,000	CONC-G	GRVD	75	200	400		ILS/DME	PIR		P4L	T	ALSF2	PIR	ILS/DME	PIR		P4R	T	ALSF2	PIR
			06R/24L	8,999	CONC-F	GRVD	100	185	340		ILS	PIR	777	P4L	T	ALSF2	PIR	ILS/DME	PIR	786	P4L	T	MALSR	PIR

		10/28	6,017	ASPH-CONC-F	GRVD	155	200	400			NPI	782	P4L			C	ILS	PIR	791	P4R	T	MALSR	PIR
16 St. Louis-St. Charles-Farmington, MO-IL																							
Lambert-St Louis Intl	STL	6/24	7,602	CONC-G	GRVD	75	176	280	660	ILS/DME	PIR	551	P4R	T	MALSR	D	ILS/DME	PIR	534	P4L	T	MALS	PIR
		11/29	9,001	CONC-E	GRVD	75	200	325	700	ILS/DME	PIR	618	P4R		ALSF2	PIR	ILS/DME	PIR	580	P4L		ALSF2	PIR
		12L/30R	9,003	CONC-G	GRVD	75	200	350	760	LDA/DME	PIR	541	P4R	T	ALSF2	PIR	ILS/DME	PIR	605	P4R	T	ALSF2	PIR
		12R/30L	11,019	CONC-G	GRVD	75	200	350	760	ILS	PIR	540	P4L	T	MALSR	PIR	ILS	PIR	583	P4R	T	MALSR	PIR
17 Pittsburgh-New Castle, PA																							
Pittsburgh Intl	PIT	10C/28C	9,709	ASPH-CONC-G	GRVD	100	149	260		LOC/GS	PIR	1141	P4L	T		C	LOC/GS	PIR	1134	P4L	T		C
		10L/28R	10,502	ASPH-CONC-G	GRVD	100	225	400		ILS	PIR	1203	P4L	T	ALSF2	PIR	ILS	PIR	1174	P4L	T	MALSR	PIR
		10R/28L	11,500	CONC-G	GRVD	100	225	350		ILS	PIR	1135	P4L	T	ALSF2	PIR	ILS	PIR	1125	P4L	T	MALSR	PIR
		14/32	8,101	CONC-G	GRVD	100	225	410			PIR	1148	P4L	T		C	ILS	NST	1123	P4L	T	MALSR	PIR
		H1	60	CONC-G																			
18 Sacramento--Arden-Arcade--Truckee, CA-NV																							
Sacramento Intl	SMF	16L/34R	8,601	CONC-G	GRVD	100	209	407	850	ILS/DME	PIR	27	P4L		MALSR	PIR		NPI	24	P4L			C
		16R/34L	8,600	ASPH-G	PFC	100	209	407	850	ILS/DME	PIR	25	P4R	T	ALSF2	PIR	ILS/DME	PIR	24	V4L	T	MALSR	PIR
19 Charlotte-Gastonia-Salisbury, NC-SC																							
Charlotte/Douglas Intl	CLT	5/23	7,502	ASPH-CONC-G	GRVD	200	350	650		ILS	PIR	716	V4L		MALSR	PIR	ILS/DME	PIR	747	V4R			C
		18L/36R	8,676	ASPH-CONC-G	GRVD	140	200	350	650	ILS	PIR	748	V6R	T		C	ILS/DME	PIR	727	P4R	T	ALSF2	PIR
		18R/36L	10,000	CONC-F	WC	140	200	350	650	ILS	PIR	742	P4R	T	MALSR	PIR	ILS	PIR	707	P4L	T	ALSF2	PIR
20 Cincinnati-Middletown-Wilmington, OH-KY-IN																							
Cincinnati/No Kentucky Intl	CVG	9/27	12,000	ASPH-CONC-E	GRVD	75	210	400	850	ILS/DME	PIR	883	P4L		MALSR	PIR	ILS	PIR	875	V4L		MALSR	PIR
		18C/36C	11,000	ASPH-CONC-G	GRVD	75	210	400	850	ILS/DME	PIR	875	V4R	T	SSALR	PIR	ILS/DME	PIR	851	P4L	T	ALSF2	PIR
		18L/36R	10,000	CONC-G	GRVD	75	210	400	850	ILS/DME	PIR	889	P4R	T	MALSR	PIR	ILS/DME	PIR	896	P4R	T	ALSF2	PIR
		18R/36L	8,000	CONC-G	GRVD	75	210	400	850	ILS/DME	PIR	868		T	ALSF2	PIR	ILS/DME	PIR	873		T	ALSF2	PIR
21 Orlando-The Villages, FL																							
Orlando Intl	MCO	17L/35R	9,000	CONC-G	GRVD	75	210	420	900	ILS/DME	PIR	90	P4L	T	ALSF2	PIR	ILS/DME	PIR	90	P4R	T	ALSF2	PIR
		17R/35L	10,000	CONC-G	GRVD	75	210	400		ILS/DME	PIR	90		T	ALSF2	PIR	ILS/DME	PIR	88		T	ALSF2	PIR
		18L/36R	12,005	ASPH-CONC-G	GRVD	165	200	400			PIR	96	V6L	T		C	ILS/DME	PIR	92		T	ALSF2	PIR
		18R/36L	12,004	CONC-G	GRVD	100	200	400		ILS/DME	PIR	94		T	MALSR	PIR		PIR	93	V6L	T		C
		H1	44	CONC																			
22 Kansas City-Overland Park-Kansas City, MO-KS																							
Kansas City Intl	MCI	01L/19R	10,801	CONC-G	GRVD	75	204	400	450	ILS	PIR	1011	P4L	T	MALSR	PIR	ILS	PIR	989	P4R	T	ALSF2	PIR
		01R/19L	9,500	CONC-G	GRVD	75	204	400	450	ILS/DME	PIR	1017	P4R	T	ALSF2	PIR	ILS/DME	PIR	994		T	MALSR	PIR
		9/27	9,500	ASPH-G	GRVD	75	125	180	260	ILS/DME	PIR	1015		T	MALSR	PIR	ILS/DME	PIR	1026	P4L	R	MALSR	D
23 Indianapolis-Anderson-Columbus, IN																							
Indianapolis Intl	IND	05L/23R	11,200	CONC-G	GRVD	145	300	550		ILS/DME	PIR	748		T	ALSF2	PIR	ILS/DME	PIR	783		T	MALSR	PIR
		05R/23L	10,000	CONC-G	GRVD	145	300	550		ILS/DME	PIR	791		T	ALSF2	PIR	ILS/DME	PIR	790			MALSR	PIR
		14/32	7,280	ASPH-G		145	300	550		ILS	PIR	797	P4L		MALSR	PIR	ILS	PIR	792	P4L	T	MALSR	PIR
24 Columbus-Marion-Chillicothe, OH																							
Port Columbus Intl	CMH	10L/28R	8,000	ASPH-G	GRVD	100	160	275		ILS/DME	PIR	815	P4L	T	MALSR	PIR	ILS/DME	PIR	813	P4R		MALSR	PIR
		10R/28L	10,125	ASPH-G	GRVD	100	200	325		ILS/DME	PIR	810	P4R		MALSR	PIR	ILS/DME	PIR	814		T	MALSR	PIR
Rickenbacker Intl	LCK	05L/23R	11,937	ASPH-F	GRVD	75	120	240	700	ILS/DME	PIR	744	P4L		MALSR	B(V)		PIR	743	P4L			B(V)
		05R/23L	12,102	ASPH-CONC-G	GRVD	75	120	380	800	ILS/DME	PIR	736	P4L	T	ALSF2	PIR	ILS	PIR	739	P4L	T	MALSR	PIR
25 Las Vegas-Paradise-Pahrump, NV																							
McCarran Intl	LAS	01L/19R	8,985	CONC-G	GRVD	30	145	460	833	ILS/DME	NPI	2176	P4L		MALSF	B(V)		NPI	2117	P4L			B(V)
		01R/19L	9,775	CONC-G	GRVD	23	220	633	877		NPI	2170	P4L			C		NPI	2113	P4L			B(V)
		07L/25R	14,510	ASPH-G	PFC	23	220	633	877		PIR	2155	P4L			B(V)	ILS/DME	PIR	2067	P4L		MALSR	PIR
		07R/25L	10,526	ASPH-G	PFC	23	220	633	914		NPI	2157	P4L			B(V)	LOC/GS	PIR	2069	P4L		MALSF	PIR
	MEM	9/27	8,946	ASPH-G	GRVD	125	178	602	870	ILS	PIR	259		T	MALSR	PIR	ILS	PIR	292	P4L	T	MALSR	PIR
	MEM	18C/36C	11,120	CONC-G	GRVD	125	210	458	873	ILS	PIR	290		T	MALSR	PIR	ILS/DME	PIR	341		T	ALSF2	PIR
	MEM	18L/36R	9,000	CONC-G	GRVD	125	210	458	873	ILS/DME	PIR	301		T	MALSR	PIR	ILS/DME	PIR	335		T	ALSF2	PIR
	MEM	18R/36L	9,320	CONC-G	GRVD	125	210	458	873	ILS	PIR	295		T	MALSR	PIR	ILS/DME	PIR	321	P4L	T	ALSF2	PIR
	SDF	11/29	7,250	CONC-G	WC	75	170	360	850		BSC	478				B(V)	LOCALIZE	PIR	480		T	MALSR	PIR
	SDF	17L/35R	8,579	CONC-G	GRVD	75	207	360	850	ILS/DME	NST	499	P4L	T	MALSR	PIR	ILS/DME	NST	480	P4R	T	ALSF2	PIR
	SDF	17R/35L	11,890	CONC-G	GRVD	75	207	360	850	ILS/DME	PIR	486	P4L	T	MALSR	PIR	ILS/DME	PIR	464	P4L	T	ALSF2	PIR
	TOL	7/25	10,600	ASPH-G	GRVD	100	174	300	550	ILS	PIR	683		T	ALSF2	PIR	ILS	PIR	678	V4L		MALSR	PIR
	TOL	16/34	5,599	ASPH-F	GRVD	100	174	300			NPI	674	P4L			C		NPI	668				C

Exhibit 3.39

Airport Capacity Utilization

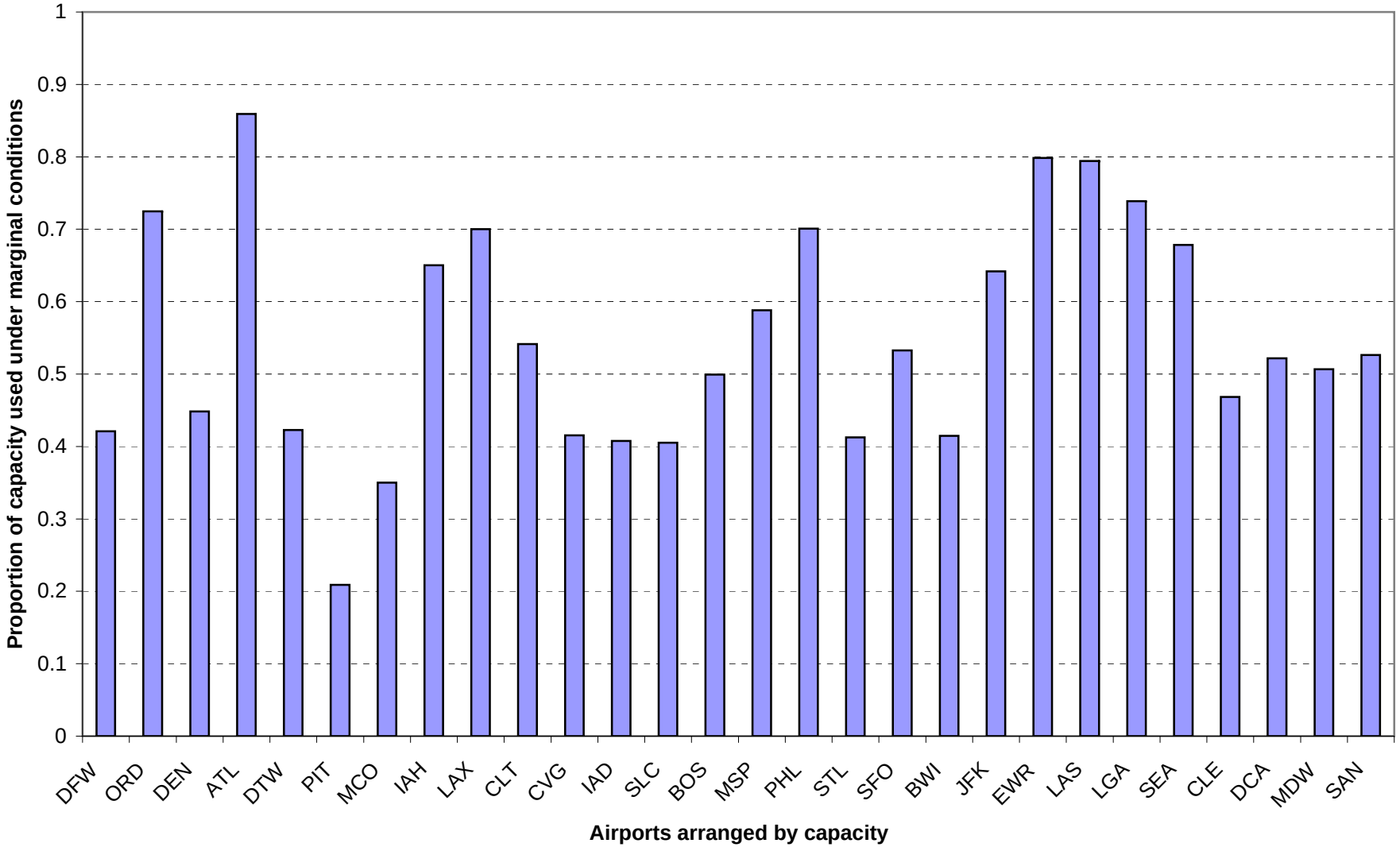


Exhibit 3.40: Airport Operations at The 35 OEP Airports, 2005-2025
(in Thousands)

								Airport Ranking	
Loc ID	Reg	Airport Name	2005	2005 Percent*	2006	2010	2025	2005	2025
ATL	ASO	HARTSFIELD - JACKSON ATLANTA INTL	984	0.84	963	1,091	1,462	1	1
ORD	AGL	CHICAGO OHARE INTL P	980	0.84	962	1,046	1,398	2	2
DFW	ASW	DALLAS/FORT WORTH INTERNATIONAL	740	0.63	704	773	1,051	3	4
LAX	AWP	LOS ANGELES INTL	654	0.56	653	753	1,153	4	3
LAS	AWP	MC CARRAN INTL	605	0.52	619	687	1,020	5	5
IAD	AEA	WASHINGTON DULLES INTERNATIONAL	589	0.5	435	495	899	6	9
DEN	ANM	DENVERINTL	566	0.48	601	693	981	7	7
PHX	AWP	PHOENIX SKY HARBOR INTL	560	0.48	552	600	926	8	8
IAH	ASW	GEORGE BUSH INTERCONTINENTALIHOUSTON	552	0.47	597	675	1,011	9	6
MSP	AGL	MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN/	544	0.46	482	527	825	10	11
PHL	AEA	PHILADELPHIA INTL	535	0.45	520	583	881	11	10
DTW	**AGL**	**DETROIT METROPOLITAN WAYNE COUNTY**	**532**	**0.45**	**486**	**535**	**731**	**12**	**13**
CVG	ASO	CINCINNATI/NORTHERN KENTUCKY INTERNATIONAL	519	0.44	367	400	592	13	17
GLT	ASO	CHARLOTTE/DOUGLAS INTL	518	0.44	607	568	768	14	12
SLC	ANM	SALT LAKE CITY INTL	447	0.38	426	465	593	15	16
EWR	AEA	NEWARK LIBERTY INTL	441	0.37	447	497	701	16	14
BOS	ANE	GENERAL EDWARD LAWRENCE LOGAN INTL	429	0.36	412	455	557	17	19
LGA	AEA	LA GUARDIA	409	0.35	406	421	421	18	28
MEM	ASO	MEMPHIS INTL	396	0.34	391	422	549	19	21
MIA	ASO	MIAMI INTL	387	0.33	384	411	546	20	22
JFK	AEA	JOHN F KENNEDY INTL	360	0.3	376	469	680	21	16
MCO,	ASO	ORLANDO INTL	358	0.3	360	377	556	22	20
SFO	AWP	SAN FRANCISCO INTERNATIONAL	351	0.3	358	397	564	23	18
SEA	ANM	SEATTLE-TACOMA INTL	347	0.29	339	374	501	24	24
FLL	ASO	FORT LAUDERDALEA40LLYWOOD INTL	336	0.28	300	327	457	25	27
HNL	AWP	HONOLULU INTL	335	0.28	318	372	468	26	26
BW1	AEA	BALTIMOREIWASHINGTON INTL THURGOOD MARSH/	313	0.26	305	333	495	27	25
MDW	AGIL	CHICAGO MIDWAY INTL	302	0.25	296	341	523	28	23
STL	ACE	LAMBERT-ST LOUIS INTL	297	0.25	286	306	3115	29	31
PIT	AEA	PITTSBURGH INTERNATIONAL	278	0.23	238	237	266	30	35
DCA	AEA	RONALD REAGAN WASHINGTON NATIONAL	277	0.23	278	291	304	31	34
TPA	ASO	TAMPA INTL	269	0.23	258	270	376	32	32
CLE	AGL	CLEVELAND-HOPKINS INTL	262	0.22	251	277	386	33	30
PDX	ANM	PORTLAND INTL	261	0.22	261	285	393	34	29
SAN	AWP	SAN DIEGO INTL	225	0.19	232	256	356	35	33
Totals			15,958	13.52	15,369	17,009	23,775		
*Percent of total US operations.									
DTW share			0.0333		0.0316	0.0315	0.0307		

Exhibit 3.41 Passenger Service Facilities of Selected Benchmark Airports

Rank	Region	Airport	Code	Affiliated airports	Owner type	Acres	Passenger terminals	Passenger gates	Parking spaces	Passenger capacity	Check-in desks	Airbridges	Baggage claim belts	Airport hotels	Terminal space
1	New York-Newark-Bridgeport, NY-NJ-CT-PA														
		JF Kennedy Intl	JFK	3	City	4,930	7	7	11,400						
		Newark Liberty Intl	EWR	3	City	2,027	3	111	18,768						
		La Guardia	LGA	3	City	680		73	9,470						
2	Los Angeles-Long Beach-Riverside, CA														
		Los Angeles Intl	LAX	3	City	3,706	9	168	20,082						
		John Wayne	SNA	0	Single County	501	1	14	7,906						
		Ontario Intl	ONT												
		Bob Hope	BUR	0	Other	1,700	2	0	3,418						
		Long Beach	LGB												
3	Chicago-Naperville-Michigan City, IL-IN-WI														
		O'Hare Intl	ORD	1	City	7,000	4	186	22,730						
		Midway Intl	MDW	1	City	760	1		7,171						
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV														
		Washington Dulles Intl	IAD	1	Airport Auth. & Fed. (	11,000	1	129	25,253						
		Baltimore/Washington Intl Thurgood Marshall	BWI	1	State	3,500	1	81	28,375						
		R Reagan Washington National	DCA	0	Airport Auth. & Fed. (	860	3	44	7,655						
5	Boston-Worcester-Manchester, MA-RI-NH														
		Logan Intl	BOS	2	Port Authority	2,400	4	72	10,861						
		Manchester-Boston Regl.	MHT	0	City	1,300	1	14	10,400						
		T.F. Green	PVD	5	State	1,100	1								
6	San Jose-San Francisco-Oakland, CA														
		San Francisco Intl	SFO	0	Multiple Jurisdictions	6,171	4	85	10,655						
		Oakland Intl	OAK	0	Multiple Jurisdictions	2,500	2	24	7,950						
		Norman Mineta San Jose Intl	SJC	0	City	1,000	3	33	6,953						
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD														
		Philadelphia Intl	PHL	1	City	2,302	7		18,000						
8	Dallas-Fort Worth, TX														
		Forth Worth Alliance	AFW												
		Dallas/Ft Worth Intl	DFW	0	Other	18,076	4	150	32,431	65,000,000	27	121		1	
		Love Field	DAL	1		1,300	1		4,554						
9	Houston-Baytown-Huntsville, TX														
		G Bush Intercontinental	IAH	2	City	10,250	4	126	22,852	26,460,192				1	
		WP Hobby	HOU	2	City	1,490	1	25	4,060						
10	Atlanta-Sandy Springs-Gainesville, GA-AL														
		Hartsfield-Jackson Atlanta Intl	ATL	0	City	4700	6	179	29,550	63,303,171	124	180	17	21	5.8 msf
11	Detroit-Warren-Flint, MI														
		Detroit Metro Wayne County	DTW	1	County	6,700	3	139	20,000						
12	Seattle-Tacoma-Olympia, WA														
		Seattle Tacoma Intl	SEA	0	Port Authority	3,000	1		11,200						
13	Minneapolis-St. Paul-St. Cloud, MN-WI														
		Minneapolis/St Paul Intl	MSP	6	Multiple Jurisdictions	3,100	2	125	18,300						
14	Denver-Aurora-Boulder, CO1														
		Denver Intl	DEN	0	Multiple Jurisdictions	34,000	3	90	34,450						
15	Cleveland-Akron-Elyria, OH														
		Cleveland Hopkins Intl	CLE	1	City	2,045	1	63	6,144						
16	St. Louis-St. Charles-Farmington, MO-IL														
		Lambert-St Louis Intl	STL	0	City	2,162	2	87	8,726						
17	Pittsburgh-New Castle, PA														
		Pittsburgh Intl	PIT	1	Single County	10,000	3	97	10,950						
18	Sacramento--Arden-Arcade--Truckee, CA-NV														
		Sacramento Intl	SMF	3	Single County	6,000	3	28	12,546						
19	Charlotte-Gastonia-Salisbury, NC-SC														
		Charlotte/Douglas Intl	CLT	0	City	6,000	5	84	15,096						
20	Cincinnati-Middletown-Wilmington, OH-KY-IN														
		Cincinnati/No Kentucky Intl	CVG	5	Regional/Airport Autl	7,000	6	119	13,900						
21	Orlando-The Villages, FL														
		Orlando Intl	MCO	1	Multiple Jurisdictions	14,000	1	90	17,588						
22	Kansas City-Overland Park-Kansas City, MO-KS														
		Kansas City Intl	MCI	1	City	10,004	3	62	23,213	16,000,000	68	41	23		
23	Indianapolis-Anderson-Columbus, IN														
		Indianapolis Intl	IND	5	Regional/Airport Autl	12,000	1	35	12,845		68	34	10	1	673,000
24	Columbus-Marion-Chillicothe, OH														
		Port Columbus Intl	CMH												
		Rickenbacker Intl	LCK	2	Regional/Airport Autl	5000	2	5	350						
25	Las Vegas-Paradise-Pahrump, NV														
		McCarran Intl	LAS	5	Single County	2,820	2	92	14,000						
			MEM				1	83						2	
			SDF	1	Regional/Airport Autl	1,823	1	19	5,550			17		2	360,000
			TOL		City	1,735	1	8	1,500						

Exhibit 3.42 Cargo Service Facilities of Selected Benchmark Airports

Rank	Region	Airport	Code	Cargo terminals	Aircraft stands	Cargo capacity (tons)	Total cargo terminal space (square feet)	Freighter docks	Notes
1	New York-Newark-Bridgeport, NY-NJ-CT-PA								
		JF Kennedy Intl	JFK		37		1,000,000		
		Newark Liberty Intl	EWR		11		1,300,000		
		La Guardia	LGA		2				
2	Los Angeles-Long Beach-Riverside, CA								
		Los Angeles Intl	LAX		24		2,100,000		
		John Wayne	SNA		0				
		Ontario Intl	ONT						
		Bob Hope	BUR		1				
		Long Beach	LGB						
3	Chicago-Naperville-Michigan City, IL-IN-WI								
		O'Hare Intl	ORD		15				
		Midway Intl	MDW		0				
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV								
		Washington Dulles Intl	IAD		6		515,000		
		Baltimore/Washington Intl Thurgood Marshall	BWI		8				
		R Reagan Washington National	DCA		1				
5	Boston-Worcester-Manchester, MA-RI-NH								
		Logan Intl	BOS		9				
		Manchester-Boston Regl.	MHT		3				
		T.F. Green	PVD						
6	San Jose-San Francisco-Oakland, CA								
		San Francisco Intl	SFO		11		1,018,638		
		Oakland Intl	OAK		5		4,305,564		
		Norman Mineta San Jose Intl	SJC		1				
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD								
		Philadelphia Intl	PHL		8				
8	Dallas-Fort Worth, TX								
		Forth Worth Alliance	AFW						
		Dallas/Ft Worth Intl	DFW		30	150	594,433	2,000,000	20 x 747
		Love Field	DAL						
9	Houston-Baytown-Huntsville, TX								
		G Bush Intercontinental	IAH		26	20	454000	550,000	6 x 747
		WP Hobby	HOU		1				
10	Atlanta-Sandy Springs-Gainesville, GA-AL								
		Hartsfield-Jackson Atlanta Intl	ATL		12		350,541	1,500,000	22 x 747
11	Detroit-Warren-Flint, MI								
		Detroit Metro Wayne County	DTW						
12	Seattle-Tacoma-Olympia, WA								
		Seattle Tacoma Intl	SEA		17				
13	Minneapolis-St. Paul-St. Cloud, MN-WI								
		Minneapolis/St Paul Intl	MSP		4				
14	Denver-Aurora-Boulder, CO1								
		Denver Intl	DEN		5				
15	Cleveland-Akron-Elyria, OH								
		Cleveland Hopkins Intl	CLE		6				
16	St. Louis-St. Charles-Farmington, MO-IL								
		Lambert-St Louis Intl	STL		6				
17	Pittsburgh-New Castle, PA								
		Pittsburgh Intl	PIT		5				
18	Sacramento--Arden-Arcade--Truckee, CA-NV								
		Sacramento Intl	SMF		2				
19	Charlotte-Gastonia-Salisbury, NC-SC								
		Charlotte/Douglas Intl	CLT		15				
20	Cincinnati-Middletown-Wilmington, OH-KY-IN								
		Cincinnati/No Kentucky Intl	CVG		8				
21	Orlando-The Villages, FL								
		Orlando Intl	MCO		16				
22	Kansas City-Overland Park-Kansas City, MO-KS								
		Kansas City Intl	MCI		6	62	322,917		
23	Indianapolis-Anderson-Columbus, IN								
		Indianapolis Intl	IND		5	34	1,925,000		
24	Columbus-Marion-Chillicothe, OH								
		Port Columbus Intl	CMH						
		Rickenbacker Intl	LCK						
25	Las Vegas-Paradise-Pahrump, NV								
		McCarran Intl	LAS		3				
			MEM				4,136,000		
			SDF		2		4,000,000		
			TOL		2				

Exhibit 3.43

UPS' Louisville Worldport is laid out like a passenger terminal

Proprietary and Confidential

Exhibit 3.44: Initial calculations of Aerotropolis cargo-processing efficiency

Airport name	Code	Metric Tons of Cargo Processed in 2006	Cargo Terminal Space on Airport (square feet)			Airport Area Warehousing and Logistics Space (square feet)	Space productivity (tons of cargo processed by air/square foot/year)	
			General cargo	Integrated providers	Total cargo terminal space		On airport	Airport area
MEMPHIS INTL	MEM	3,692,081	36,000	4,100,000	4,136,000	90,024,443 *	0.8927	0.0410
LOUISVILLE INTL	SDF	1,983,032		4,000,000	4,000,000		0.4958	
LOS ANGELES INT	LAX	1,907,497			2,100,000		0.9083	
JF KENNEDY INTL	JFK	1,636,357			1,000,000		1.6364	
INDIANAPOLIS IN	IND	987,449	25,000	1,900,000	1,925,000		0.5130	
NEWARK LIBERTY	EWR	974,961			1,300,000		0.7500	
DALLAS/FT WORTH	DFW	757,856			2,000,000	8,500,000 **	0.3789	0.0892
HARTSFIELD-JACK	ATL	746,502			1,500,000		0.4977	
OAKLAND INTL	OAK	668,217			4,305,564		0.1552	
SAN FRANCISCO I	SFO	594,857			1,018,638		0.5840	
ONTARIO INTL	ONT	493,952				60,000,000 ***		0.0082
G BUSH INTERCON	IAH	409,122	550,000		550,000		0.7439	
TOLEDO EXPRESS	TOL	353,508						
WASHINGTON DULL	IAD	350,826	515,000		515,000		0.6812	
RICKENBACKER IN	LCK	113,714				20,000,000		0.0057

* Calculated from Shelby County official records
** Las Colinas industrial space only
*** Logistics space added since 2000

Exhibit 3.45: Calculated Cargo Terminal Space Productivity at Incheon Airport

Section		Total Area (m^2)	Scale (m x m)	Handling Capacity (10,000 ton/yr)	Tons per year per square meter at cpacity	Free Use Period
Korean Airlines						
(A Terminal)	Terminal	57,863	130*360(130*420)	103	17.80	20 years
	Agency	7,810	62*30			
	Fumigator	237	-			
	Subtotal	65,910	-		15.63	
		(73651)		(120)		
Asiana Airlines						
(B Terminal)	Terminal	39,433	120-270(120-420)	71	18.01	20 years
	Agency	8,222	64*30			
	Subtotal	47,655	-		14.90	
Foreign Carrier		'(61,640)		(111)		
(C Terminal)	Terminal	66,954	120*420	52	7.77	12 years
	Agency	6,459	64*30			
	Subtotal	73,413	-		7.08	
Misc.						
(Hazardous Goods Warehouse)	Hazardous Goods Warehouse 1	659	18*36	-		20 years
	Hazardous Goods Warehouse 2	659	18*36			
	Management	161	18*9			
	Canopy	654	15*45			
	Sub Total	2,133	-			
Cargo Warehouse	2 buildings	15,842	115*42 per building	10	6.31	20 years
Total		204,953	-	170	8.29	
		(226,679)		(215)		

Buildout figures in parentheses

Source: http://www.airport.or.kr/iiacms/pageWork.iia?_scode=C1207020300&fake=1191820589832

Exhibit 3.46: Cargo Terminal Performance Benchmark Targets at Hong Kong International Airport

	Indicator	Performance	HKIA Target
Landside			
	Truck Queuing Time	30 mins	96%
	Export Cargo Reception	15 mins	96%
	Import Cargo Collection	30 mins	96%
	Empty ULD Release	30 mins	96%
In-Terminal	Cargo Breakdown		
	- General		
	Passenger Aircraft	ATA+5 hrs.	96%
	Freighter Aircraft	ATA+8 hrs.	96%
	- Perishable	ATA+120/105 mins	96%
	- Express	ATA+120/90 mins	96%
	Mishandling Rates	1.5 in 10,000 shipments	N/A
	Late-positioning	1 unit/1,000 Flts	N/A

	Indicator	Pledge
Landside	Export Cargo Reception - Cut Off Time	STD - 3 hrs

Definition

1. Truck Queuing Time - The waiting time of a truck at the parking area to truck dock assigned.

2. Export Cargo Reception - The waiting time of a consignor/ shipper/ trucker, after registered at CTO reception points, to be served for the first piece of cargo.

3. Import Cargo Collection - The waiting time of a consignee/ trucker, after submitted Shipment Release Form (SRF) at import collection points, to receive the first piece of cargo.

4. Empty ULD Release Time - The waiting time of a trucker, after submitted Unit Release Form (URF) at the ULD collection points, to receive the first empty unit loading device.

5. Cargo Breakdown Time

General Cargo - Time to complete the breakdown of general cargo on passenger/ freighter after fligh
Perishable Cargo - Time to complete the breakdown of perishable cargo after flight actual time of arr
Express Cargo - Time to complete the breakdown of express cargo after flight actual time of arrival

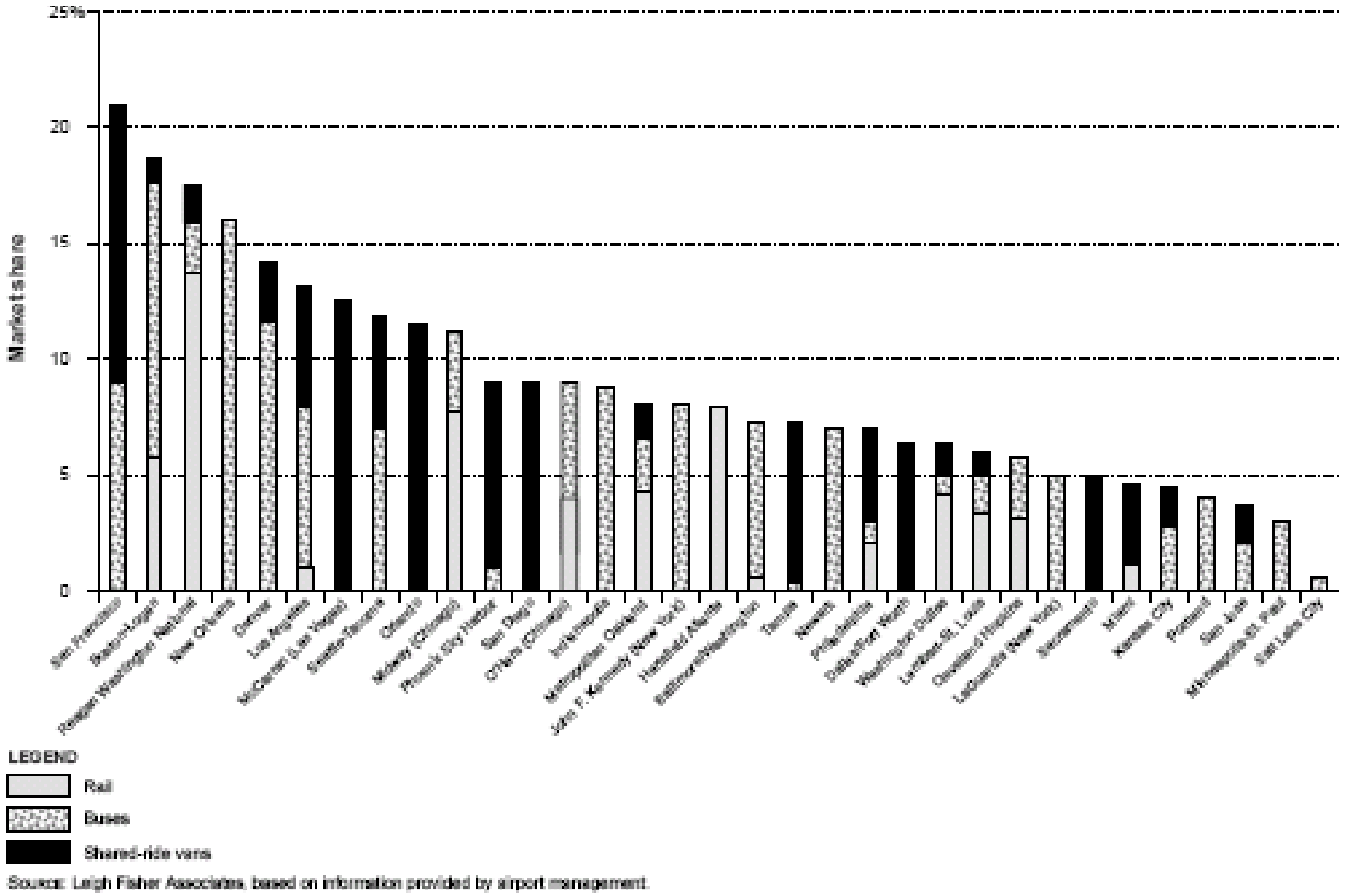
6. Mishandling Rates include wrongly forwarded, short-shipped and unlocated cargo.
7. Late Positioning - Late handover of the export unit to ramp handling operators causing shutout.
8. STD - Schedule Time of Departure.

Exhibit 3.47: Intermodal ground access facilities and connections available at selected benchmarch airports

		Presence of interconnecting:				
		Bus	Inter-city rail	Transit rail	Ferry	# of modes
Hartsfield-Jackson Atlanta Int'l Airport	ATL	1	0	1	0	2
General Edward Lawrence Logan Int'l	BOS	1	0	1	1	3
Bob Hope Airport	BUR	1	1	0	0	2
Baltimore-Washington International Thurgood	BWI	1	1	1	0	3
Charlotte Douglas Int'l	CLT	0	0	0	0	0
Chicago Midway Int'l	MDW	1	0	1	0	2
Chicago O'hare Int'l	ORD	1	1	1	0	3
Cleveland Hopkins Int'l	CLE	1	0	1	0	2
Port Columbus Int'l	CMH	1	0	0	0	1
Cincinnati/Northern Kentucky Int'l	CVG	1	0	0	0	1
Dallas Love Field	DAL	1	0	0	0	1
Dallas/Fort Worth Int'l	DFW	1	1	0	0	2
Denver International	DEN	1	0	0	0	1
Detroit Metropolitan	DTW	1	0	0	0	1
George Bush Intercontinental	IAH	1	0	0	0	1
William P. Hobby	HOU	1	0	0	0	1
Indianapolis Int'l	IND	1	0	0	0	1
Kansas City Int'l	MCI	1	0	0	0	1
Mc Carran Int'l	LAS	1	0	0	0	1
Long Beach/Daugherty Field	LGB	1	0	0	0	1
Los Angeles Intl	LAX	1	0	1	0	2
Louisville Int'l-Standiford Field	SDF	1	0	0	0	1
Manchester Boston Regional	MHT	1	0	0	0	1
Memphis Int'l	MEM	0	0	0	0	0
La Guardia	LGA	1	0	0	0	1
John F Kennedy Int'l	JFK	1	0	1	0	2
Newark Liberty International Airport	EWR	1	1	0	0	2
Metropolitan Oakland	OAK	1	1	1	0	3
Ontario Intl	ONT	1	0	0	0	1
Orlando Int'l	MCO	1	0	0	0	1
Philadelphia International	PHL	1	1	0	0	2
Pittsburgh International	PIT	1	0	0	0	1
Sacramento Intl	SMF	1	0	0	0	1
San Francisco Int'l	SFO	1	0	1	0	2
Norman Y. Mineta San Jose Int'l	SJC	1	0	0	0	1
John Wayne Airport - Orange County	SNA	1	0	0	0	1
Seattle-Tacoma Int'l	SEA	1	0	0	0	1
Lambert-St. Louis Int'l	STL	1	0	1	0	2
Minneapolis-St. Paul Intl/Wold-Chamberlain/	MSP	1	0	1	0	2
Toledo Express	TOL	0	0	0	0	0
Ronald Reagan Washington National Airport	DCA	0	0	1	0	1
Washington Dulles Int'l	IAD	1	0	0	0	1

Exhibit 3.48

Public Transportation Market Share at Selected U.S. Airports circa 1999



Source: Leigh Fisher Associates, based on information provided by airport management.

Exhibit 3.49: Structurte of Airport Catchment Areas for Selected Large Airports

		Trip-End Density Category	Land Area in Square Miles		Number of Average Daily Air Passengers Represented		Average Trip-End Density Within Category	
		Trip-End Density Category	Land Area in Square Miles	Proportion of Catchment Area	Number of Average Daily Air Passengers Represented	Proportion of Passengers	Average Trip-End Density Within Category	Area Concentration ratio
New York LaGuardia		.01-09	2,490	0.3288	130	0.0055	0.05	0.02
	1997	.1-4	4,340	0.5730	3,700	0.1563	0.85	0.27
		5-49	715	0.0944	8,150	0.3442	11.00	3.65
		50+	29	0.0038	11,700	0.4941	409.00	129.04
New York JFK		.01-09	3,400	0.3019	200	0.0084	0.05	0.03
	1997	.1-4	7,240	0.6429	5,400	0.2269	0.70	0.35
		5-49	588	0.0522	7,750	0.3256	13.00	6.24
		50+	34	0.0030	10,450	0.4391	310.00	145.44
San Francisco								
	1998	.01-09	4,100	0.3578	200	0.0063	0.05	0.02
		.1-4	6,600	0.5759	5,120	0.1624	0.80	0.28
		5-49	681	0.0594	8,200	0.2602	12.00	4.38
		50+	79	0.0069	18,000	0.5711	225.00	82.84
Boston-Logan		.01-09	1,972	0.2263	100	0.0038	0.05	0.02
	1999	.1-4	5,800	0.6654	5,700	0.2176	1.00	0.33
		5-49	900	0.1033	11,100	0.4237	12.00	4.10
		50+	44	0.0050	9,300	0.3550	210.00	70.31
Newark		.01-09	2,605	0.2129	120	0.0042	0.04	0.02
	1997	.1-4	8,200	0.6703	6,900	0.2419	0.80	0.36
		5-49	1,400	0.1144	15,300	0.5365	11.00	4.69
		50+	29	0.0024	6,200	0.2174	215.00	91.71
Seattle-Tacoma		.01-09	12,100	0.6115	400	0.0242	0.03	0.04
	1996	.1-4	7,050	0.3563	4,000	0.2424	0.60	0.68
		5-49	600	0.0303	7,400	0.4485	12.00	14.79
		50+	37	0.0019	4,700	0.2848	126.00	152.33
Denver		.01-09	5,050	0.3731	200	0.0067	0.04	0.02
	1998	.1-4	7,600	0.5615	9,100	0.3054	1.20	0.54
		5-49	800	0.0591	11,900	0.3993	15.00	6.76
		50+	86	0.0064	8,600	0.2886	100.00	45.42
Los Angeles		.01-09	2,393	0.2585	90	0.0023	0.04	0.01
	1993	.1-4	5,315	0.5740	5,030	0.1285	1.00	0.22
		5-49	1,382	0.1493	21,040	0.5377	15.00	3.60
		50+	169	0.0183	12,970	0.3315	77.00	18.16
Tampa		.01-09	819	0.1537	50	0.0041	0.06	0.03
	1997	.1-4	4024	0.7554	2,800	0.2300	0.70	0.30
		5-49	460	0.0864	6,300	0.5175	14.00	5.99
		50+	24	0.0045	3,025	0.2485	126.00	55.15
Portland		.01-09	14,390	0.6620	450	0.0469	0.03	0.07
	1996	.1-4	6,921	0.3184	3,390	0.3529	0.50	1.11
		5-49	415	0.0191	5,115	0.5325	12.00	27.89
		50+	10	0.0005	650	0.0677	66.00	147.09
Reagan National		.01-09	2,322	0.3532	130	0.0069	0.06	0.02
	1998	.1-4	3,769	0.5732	3,270	0.1730	0.87	0.30
		5-49	439	0.0668	5,665	0.2997	13.00	4.49
		50+	45	0.0068	9,840	0.5205	216.00	76.05
Dulles		.01-09	2,775	0.3833	135	0.0094	0.05	0.02
	1998	.1-4	3,950	0.5456	3,170	0.2214	0.80	0.41
		5-49	476	0.0657	6,730	0.4701	14.00	7.15
		50+	39	0.0054	4,280	0.2990	110.00	55.50
Baltimore-Washington		.01-09	706	0.0925	40	0.0028	0.06	0.03
	1998	.1-4	6,324	0.8289	5,825	0.4058	0.92	0.49
		5-49	590	0.0773	6,625	0.4615	11.00	5.97
		50+	9	0.0012	1,865	0.1299	205.00	110.13

Source: Transportation Research Board. (2002) Strategies for Improving Public Transportation Access to Large Airports. Transit Coopertive Research Program (TCRP) Report 83. Washington D.C.: National Academy Press.

Exhibit 3.50: Prominent U.S.- based Air Freight Forwarders
(Provisional list)

		Services Managed		Web Services		Special Services									Services Other than Air Freight forwarding				
	Asset or Non-asset-based	Customs Clearance	Compliance	Rate Quotes	Real-Time Tracking	Documents	Heavy Freight	HazMat	Door-to-Door	Perishible	Overnight	Next Flight Out	Charter	High Value	NVOCC	Ocean	Customs Broker	Consolidator	Logistics
A.M. Deringer	N	X	X		X	X	X	X	X										
Agility	B	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X
AIT Worldwide	N	X	X		X		X	X	X	X	X	X	X		X	X	X	X	X
BDP International	N	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Bellair Expediting	B	X	X	X	X	X	X		X		X	X	X	X				X	X
CFF World Freight	B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Concert Group Logistics	N				X	X	X		X		X	X	X	X	X	X		X	X
DHL Global Forwarding	N	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X
Dimerco Express Group	N	X	X		X	X	X	X	X				X	X	X	X	X	X	X
EA Logistics	N	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X
EGL Eagle Global Logistics	N	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Expeditors International	N	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hassett Air Express	N	X	X		X		X		X		X	X	X			X			X
ICAT Logistics	N	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
IJS Global	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kintetsu World Express	N	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Kuehne + Nagel	N	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lyoden Air Freight	N	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Mach1 Global Services	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OIA Global Logistics	N	X	X		X		X		X	X		X			X	X	X	X	X
Panther Expeditied Services	N		X	X	X		X	X	X		X	X	X	X					X
Pegasus Logistics Group	N	X	X		X		X	X	X		X	X	X	X					X
Phoenix International	N	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Pilot Air Freight	B	X	X		X		X	X	X	X	X	X	X	X			X	X	X
Priority Worldwide Services	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schenker/BAX Global	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SDV International Logistics	N	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X
SEKO Worldwide	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Service By Air	N	X	X	X	X	X	X		X		X	X	X		X	X	X		X
Target Logistic Service	N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Team Worldwide	B	X	X		X		X	X	X		X	X	X	X	X	X	X	X	X
U-Freight America	N	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X
UPS	B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
US Express Freight Systems	B	X	X	X	X	X	X		X		X	X	X	X		X	X	X	X
Worldwide Express	A	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X
WPX Delivery Solutions	B		X	X	X			X	X		X	X			X	X		X	X

N = Non-Asset-Based
A = Asset-Based
B = Both
Compliance: shipments comply with government, security, and trade regulations
Documents: Shippers can book/create customs or import/export documents online

Source: Inbound Logistics, June 2007, pp. 34-37, Who's Who in Airfreight Forwarding

Exhibit 3.51: Major Carriers of Air Cargo Landing at U.S. Airports

	All cargo			Domestic cargo			Cargo from Asia			Cargo from Europe			Cargo from Latin America		
	Total	42,608,034,237		Total	30,724,927,798	100	Total	5,426,134,175	100	Total	3,480,765,726	100	Total	1,903,429,616	100
	Carrier			Carrier	72.11%		Carrier	12.74%		Carrier	8.17%		Carrier	4.47%	
1	Federal Express Corporation	12,686,025,407	29.77%	Federal Express Corporation	11,854,304,218	38.58%	Korean Air Lines Co. Ltd.	590,430,511	10.88%	Lufthansa German Airlines	325,437,836	9.35%	Transportes Aereos Mercantile	198,636,202	10.44%
2	United Parcel Service	7,198,607,688	16.89%	United Parcel Service	6,423,727,306	20.91%	China Airlines Ltd.	443,479,997	8.17%	British Airways Plc	292,588,722	8.41%	Cielos De Peru	162,814,749	8.55%
3	Korean Air Lines Co. Ltd.	1,364,526,188	3.20%	Abx Air, Inc.	1,105,041,206	3.60%	Eva Airways Corporation	442,097,064	8.15%	Compagnie Nat'l Air France	236,271,848	6.79%	United Parcel Service	134,310,965	7.06%
4	Abx Air, Inc.	1,137,893,720	2.67%	Korean Air Lines Co. Ltd.	755,787,249	2.46%	Federal Express Corporation	398,923,287	7.35%	American Airlines Inc.	222,691,525	6.40%	American Airlines Inc.	130,793,566	6.87%
5	American Airlines Inc.	1,064,874,485	2.50%	China Airlines Ltd.	618,814,532	2.01%	United Parcel Service	355,124,322	6.54%	Federal Express Corporation	200,021,154	5.75%	Lan-Chile Airlines	129,896,491	6.82%
6	China Airlines Ltd.	1,062,294,529	2.49%	Astar Air Cargo Inc.	602,886,559	1.96%	Northwest Airlines Inc.	324,228,679	5.98%	United Air Lines Inc.	169,534,990	4.87%	Centurion Cargo Inc.	111,442,517	5.85%
7	Eva Airways Corporation	925,373,329	2.17%	American Airlines Inc.	561,323,666	1.83%	Japan Air Lines Co. Ltd.	283,470,277	5.22%	Delta Air Lines Inc.	165,246,123	4.75%	Martinair Holland N.V.	104,610,510	5.50%
8	Northwest Airlines Inc.	889,204,846	2.09%	Northwest Airlines Inc.	494,683,208	1.61%	Cathay Pacific Airways Ltd.	257,645,750	4.75%	United Parcel Service	163,110,985	4.69%	Arrow Air Inc.	100,762,392	5.29%
9	United Air Lines Inc.	834,805,067	1.96%	Eva Airways Corporation	483,276,265	1.57%	Asiana Airlines Inc.	255,898,823	4.72%	Atlas Air Inc.	160,357,821	4.61%	Gemini Air Cargo Airways	73,585,075	3.87%
10	Atlas Air Inc.	765,906,438	1.80%	United Air Lines Inc.	461,394,017	1.50%	Singapore Airlines Ltd.	221,292,450	4.08%	Martinair Holland N.V.	128,055,000	3.68%	Atlas Air Inc.	69,937,599	3.67%
11	Cathay Pacific Airways Ltd.	717,267,314	1.68%	Southwest Airlines Co.	445,984,987	1.45%	Polar Air Cargo Airways	211,162,890	3.89%	Continental Air Lines Inc.	116,554,450	3.35%	Polar Air Cargo Airways	64,807,847	3.40%
12	Delta Air Lines Inc.	664,652,990	1.56%	Delta Air Lines Inc.	425,141,398	1.38%	Atlas Air Inc.	164,310,365	3.03%	Virgin Atlantic Airways	114,873,566	3.30%	Lan Ecuador	63,345,539	3.33%
13	Japan Air Lines Co. Ltd.	652,679,601	1.53%	Cathay Pacific Airways Ltd.	414,975,318	1.35%	United Air Lines Inc.	163,485,115	3.01%	Cargolux Airlines Int'l S.A	113,737,867	3.27%	Florida West Airlines Inc.	60,442,132	3.18%
14	Astar Air Cargo Inc.	621,969,327	1.46%	Japan Air Lines Co. Ltd.	360,759,578	1.17%	Nippon Cargo Airlines	146,378,166	2.70%	Klm Royal Dutch Airlines	111,917,551	3.22%	Omega Air Holdings d/b/a Focu	54,906,280	2.88%
15	Asiana Airlines Inc.	591,597,031	1.39%	Atlas Air Inc.	340,907,517	1.11%	Southern Air Inc.	140,814,905	2.60%	Gemini Air Cargo Airways	84,138,149	2.42%	ABSA-Aerolinhas Brasileiras	52,153,825	2.74%
16	Polar Air Cargo Airways	492,080,618	1.15%	Asiana Airlines Inc.	335,698,208	1.09%	Air China	128,151,368	2.36%	Alitalia-Linee Aeree Italia	73,521,414	2.11%	Delta Air Lines Inc.	48,507,799	2.55%
17	Singapore Airlines Ltd.	481,155,395	1.13%	Kalitta Air LLC	332,445,793	1.08%	World Airways Inc.	114,964,748	2.12%	Northwest Airlines Inc.	69,020,311	1.98%	Tradewinds Airlines	42,836,136	2.25%
18	Continental Air Lines Inc.	477,553,058	1.12%	Nippon Cargo Airlines	289,420,521	0.94%	China Cargo Airline	87,567,215	1.61%	US Airways Inc.	62,498,712	1.80%	Federal Express Corporation	36,446,745	1.91%
19	Kalitta Air LLC	447,157,296	1.05%	Kitty Hawk Aircargo	286,805,824	0.93%	American Airlines Inc.	74,673,723	1.38%	Singapore Airlines Ltd.	56,991,388	1.64%	Continental Air Lines Inc.	34,536,214	1.81%
20	Southwest Airlines Co.	445,984,987	1.05%	Air Transport International	275,015,105	0.90%	Evergreen Int'l Inc.	71,654,164	1.32%	Kalitta Air LLC	55,533,727	1.60%	Air Transport International	30,594,609	1.61%
21	Nippon Cargo Airlines	435,798,687	1.02%	Continental Air Lines Inc.	254,080,640	0.83%	All Nippon Airways Co.	62,786,288	1.16%	Swiss International Airlines	55,170,982	1.59%	Transportes Aeros Meridiona	24,077,836	1.26%
22	Southern Air Inc.	380,693,659	0.89%	Southern Air Inc.	239,662,571	0.78%	Cargo 360, Inc.	56,595,812	1.04%	Scandinavian Airlines Sys.	54,113,938	1.55%	DHL Aero Expresso	23,201,496	1.22%
23	Lufthansa German Airlines	339,565,608	0.80%	Capital Cargo International	219,204,896	0.71%	Qantas Airways Ltd.	52,408,808	0.97%	Polar Air Cargo Airways	50,595,260	1.45%	Lan Peru Airlines	22,296,216	1.17%
24	Air Transport International	316,221,147	0.74%	Tradewinds Airlines	218,610,652	0.71%	Kalitta Air LLC	51,947,795	0.96%	Air Atlanta Icelandic	45,127,154	1.30%	Aerovias Nac'l De Colombia	18,944,473	1.00%
25	British Airways Plc	302,373,212	0.71%	Singapore Airlines Ltd.	202,871,557	0.66%	Jalways Co. Ltd.	43,176,584	0.80%	Global Supply System	31,553,940	0.91%	United Air Lines Inc.	18,775,397	0.99%

Exhibit 3.52: Non-integrated Air Cargo Landed at U.S. Airports by Point of Origin

inward shipments from ANC

	All cargo			Domestic cargo			Cargo from Asia			Cargo from Europe			Cargo from Latin America			Cargo shipped via Anchorage	
	Total	22,101,431,815		Total	11,844,009,715	100	Total	4,672,086,566	100	Total	3,117,618,714		Total	1,732,671,906			3,591,450,303	
					53.59%			21.14%			14.11%			7.84%				
1	ANC	4,934,562,876	22.33%	LAX	1,440,197,046	12.16%	ANC	3,463,284,238	74.13%	JFK	830,501,171	26.64%	MIA	1,439,962,805	83.11%	LAX	1,001,900,000	27.90%
2	LAX	2,164,169,714	9.79%	ANC	1,391,102,272	11.75%	LAX	377,782,867	8.09%	ORD	517,848,789	16.61%	JFK	68,858,771	3.97%	ORD	905,960,000	25.23%
3	JFK	2,037,456,655	9.22%	ORD	1,301,664,841	10.99%	SFO	251,094,314	5.37%	ATL	238,796,732	7.66%	SJU	67,588,854	3.90%	JFK	606,530,000	16.89%
4	ORD	1,997,824,959	9.04%	JFK	937,920,421	7.92%	ORD	161,995,657	3.47%	EWR	205,874,298	6.60%	ATL	52,265,781	3.02%	DFW	346,110,000	9.64%
5	MIA	1,946,421,655	8.81%	ATL	569,450,985	4.81%	HNL	95,677,464	2.05%	IAD	165,881,563	5.32%	LAX	28,140,025	1.62%	ATL	231,260,000	6.44%
6	ATL	902,531,660	4.08%	DFW	557,494,368	4.71%	JFK	73,356,402	1.57%	LAX	159,534,402	5.12%	IAH	23,849,027	1.38%	LCK	73,604,638	2.05%
7	SFO	753,593,863	3.41%	ILN	469,479,973	3.96%	SEA	46,201,987	0.99%	MIA	138,490,127	4.44%	DFW	17,695,034	1.02%	MIA	67,275,882	1.87%
8	DFW	672,762,387	3.04%	SFO	417,349,187	3.52%	EWR	29,443,921	0.63%	BOS	110,307,889	3.54%	IAD	13,065,609	0.75%	BNA	61,473,762	1.71%
9	ILN	504,834,160	2.28%	HNL	370,413,957	3.13%	DFW	27,221,874	0.58%	IAH	105,613,732	3.39%	EWR	10,811,320	0.62%	ILN	54,246,542	1.51%
10	HNL	491,826,523	2.23%	MIA	252,118,037	2.13%	**DTW**	24,733,826	0.53%	PHL	76,071,431	2.44%	ORD	5,000,303	0.29%	BET	47,719,869	1.33%
11	EWR	445,453,409	2.02%	SEA	180,071,475	1.52%	GUM	22,711,327	0.49%	SFO	67,209,415	2.16%	FLL	1,466,505	0.08%	SFO	26,958,315	0.75%
12	IAH	301,632,149	1.36%	TOL	173,218,535	1.46%	IAD	17,321,191	0.37%	DFW	61,204,393	1.96%	MEM	1,336,334	0.08%	OME	22,037,105	0.61%
13	IAD	274,219,750	1.24%	EWR	154,901,507	1.31%	ATL	15,161,959	0.32%	**DTW**	56,924,874	1.83%	NYC	550,368	0.03%	OTZ	16,332,283	0.45%
14	SEA	265,063,809	1.20%	PHX	135,978,373	1.15%	IAH	10,457,536	0.22%	HSV	51,767,919	1.66%	CLT	516,122	0.03%	DLG	14,215,558	0.40%
15	SJU	206,705,143	0.94%	FWA	128,288,935	1.08%	FAI	10,382,904	0.22%	SEA	38,341,440	1.23%	MCO	277,915	0.02%	FAI	12,298,514	0.34%
16	TOL	188,940,000	0.85%	IAH	123,073,644	1.04%	SPN	6,737,939	0.14%	ILN	31,041,061	1.00%	ANC	149,751	0.01%	SEA	10,287,294	0.29%
17	BOS	166,107,540	0.75%	DEN	110,163,289	0.93%	SJC	6,344,839	0.14%	SJU	27,532,641	0.88%	NUQ	147,070	0.01%	JNU	8,923,753	0.25%
18	PHL	153,059,528	0.69%	SJU	108,297,051	0.91%	MSP	5,331,071	0.11%	MCO	26,639,461	0.85%	SVN	119,746	0.01%	AKN	7,324,847	0.20%
19	PHX	142,033,033	0.64%	BNA	107,803,407	0.91%	FL3	5,233,686	0.11%	CLT	22,687,631	0.73%	SAN	98,763	0.01%	ANI	6,513,915	0.18%
20	FWA	128,304,683	0.58%	PDX	94,841,908	0.80%	PDX	4,704,017	0.10%	CVG	20,893,146	0.67%	SFO	84,833	0.00%	UNK	6,208,513	0.17%
21	DEN	126,082,065	0.57%	LAS	82,253,611	0.69%	SUU	3,078,227	0.07%	WRI	19,906,293	0.64%	PBI	80,566	0.00%	ADQ	5,025,424	0.14%
22	**DTW**	122,257,169	0.55%	LCK	75,832,733	0.64%	KOA	2,966,993	0.06%	MSP	15,567,797	0.50%	NGU	79,831	0.00%	SCC	4,913,687	0.14%
23	BNA	107,803,407	0.49%	PHL	75,457,733	0.64%	LAS	2,544,485	0.05%	DEN	14,111,823	0.45%	NZY	79,831	0.00%	EMK	3,961,048	0.11%
24	PDX	106,140,383	0.48%	IAD	74,092,241	0.63%	MIA	2,411,306	0.05%	DAY	11,797,765	0.38%	BOS	74,289	0.00%	IND	3,843,931	0.11%
25	MCO	97,189,630	0.44%	MCO	70,124,167	0.59%	UAM	2,036,160	0.04%	IND	10,617,868	0.34%	CHS	72,459	0.00%	RDB	3,746,337	0.10%

Exhibit 3.53 Cost of Jet-A Fuel at Selected Benchmark Airports

Rank	Region	Airport	Code	Jet-A price per gallon	
1	New York-Newark-Bridgeport, NY-NJ-CT-PA				
		JF Kennedy Intl	JFK	$5.37	
		Newark Liberty Intl	EWR	$7.12	
		La Guardia	LGA	$6.98	
2	Los Angeles-Long Beach-Riverside, CA				
		Los Angeles Intl	LAX	$5.96	
		John Wayne	SNA	$6.72	
		Ontario Intl	ONT	$5.58	
		Bob Hope	BUR	$5.30	
		Long Beach	LGB	$4.23	
3	Chicago-Naperville-Michigan City, IL-IN-WI				
		O'Hare Intl	ORD	$7.27	
		Midway Intl	MDW	$6.09	
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV				
		Washington Dulles Intl	IAD	$6.75	
		Baltimore/Washington Intl Thurgood Marshall	BWI	$7.53	
		R Reagan Washington National	DCA	$7.33	
5	Boston-Worcester-Manchester, MA-RI-NH				
		Logan Intl	BOS	$7.05	
		Manchester-Boston Regl.	MHT	$5.46	
			PVD	$4.86	
6	San Jose-San Francisco-Oakland, CA				
		San Francisco Intl	SFO	$6.85	
		Oakland Intl	OAK	$5.15	
		Norman Mineta San Jose Intl	SJC	$5.50	
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD				
		Philadelphia Intl	PHL	--	
8	Dallas-Fort Worth, TX				
		Dallas/Ft Worth Intl	DFW	$4.79	
		Love Field	DAL	$5.15	
9	Houston-Baytown-Huntsville, TX				
		G Bush Intercontinental	IAH	$5.84	
		WP Hobby	HOU	$4.69	
10	Atlanta-Sandy Springs-Gainesville, GA-AL				
		Hartsfield-Jackson Atlanta Intl	ATL	--	
11	Detroit-Warren-Flint, MI				
		Detroit Metro Wayne County	DTW	$5.97	
			YIP	$4.25	
12	Seattle-Tacoma-Olympia, WA				
		Seattle Tacoma Intl	SEA	$6.08	
13	Minneapolis-St. Paul-St. Cloud, MN-WI				
		Minneapolis/St Paul Intl	MSP	$6.68	
14	Denver-Aurora-Boulder, CO1				
		Denver Intl	DEN	$6.78	
15	Cleveland-Akron-Elyria, OH				
		Cleveland Hopkins Intl	CLE	$5.92	
16	St. Louis-St. Charles-Farmington, MO-IL				
		Lambert-St Louis Intl	STL	$5.70	
17	Pittsburgh-New Castle, PA				
		Pittsburgh Intl	PIT	--	
18	Sacramento--Arden-Arcade--Truckee, CA-NV				
		Sacramento Intl	SMF	$6.25	
19	Charlotte-Gastonia-Salisbury, NC-SC				
		Charlotte/Douglas Intl	CLT	$5.17	
20	Cincinnati-Middletown-Wilmington, OH-KY-IN				
		Cincinnati/No Kentucky Intl	CVG	$4.77	
21	Orlando-The Villages, FL				
		Orlando Intl	MCO	$6.76	
22	Kansas City-Overland Park-Kansas City, MO-KS				
		Kansas City Intl	MCI	$5.75	
23	Indianapolis-Anderson-Columbus, IN				
		Indianapolis Intl	IND	$5.73	
24	Columbus-Marion-Chillicothe, OH				
		Port Columbus Intl	CMH	$5.40	
		Rickenbacker Intl	LCK	$4.94	
25	Las Vegas-Paradise-Pahrump, NV				
		McCarran Intl	LAS	$7.12	not up-to-date

Source: http://www.airnav.com/fuel/local.html

	MEM	$6.08
	SDF	$4.52
	TOL	$4.25

Exhibit 3.54: Recent Average Fuel Costs by World Region

23-Nov-07	Share in World Index	cents/ gallon	$/barrel	$/mt	Index Value 2000= 100	vs. 1 week ago	vs. 1 month ago	vs.1 yr ago
Jet Fuel Price	100%	281.4	118.2	$931.60	323.1	4.50%	15.90%	58.20%
Asia & Oceania	22%	277.3	116.5	$920.00	332.7	5.10%	17.90%	56.30%
Europe & CIS	28%	287.0	120.5	$949.80	324.7	4.20%	16.20%	59.70%
Middle East & Africa	7%	275.5	115.7	$912.80	345.5	4.80%	16.50%	58.00%
North America	39%	280.8	117.9	$930.50	313.5	4.40%	14.70%	58.10%
Latin & Central America	4%	280.1	117.7	$906.00	325.9	4.50%	14.90%	60.10%

Source: http://www.iata.org/whatwedo/economics/fuel_monitor/price_analysis.htm

Exhibit 3.55: Relative ranking of major U.S.airports by total passangers processed

	1991			1996			2001			2006		
Rank	Airport name	Code	Passengers	Airport name	Code	Passengers	Airport name	Code	Passengers	Airport name	Code	Passengers
1	*O'HARE INTL*	*ORD*	*59,852,330*	*O'HARE INTL*	*ORD*	*69,153,528*	*HARTSFIELD ATLA*	*ATL*	*75,858,500*	*HARTSFIELD-JACK*	*ATL*	*84,846,639*
2	*DALLAS/FT WORTH*	*DFW*	*48,174,344*	*HARTSFIELD ATLA*	*ATL*	*63,303,171*	*O'HARE INTL*	*ORD*	*67,448,064*	*O'HARE INTL*	*ORD*	*77,028,134*
3	LOS ANGELES INT	LAX	45,668,204	*DALLAS/FT WORTH*	*DFW*	*58,034,503*	LOS ANGELES INT	LAX	61,606,204	LOS ANGELES INT	LAX	61,041,066
4	*HARTSFIELD ATLA*	*ATL*	*37,915,024*	LOS ANGELES INT	LAX	57,974,559	*DALLAS/FT WORTH*	*DFW*	*55,150,693*	*DALLAS/FT WORTH*	*DFW*	*60,226,138*
5	SAN FRANCISCO I	SFO	31,197,209	SAN FRANCISCO I	SFO	39,251,942	DENVER INTL	DEN	36,092,806	DENVER INTL	DEN	47,325,016
6	DENVER INTL	DEN	28,285,189	MIAMI INTL	MIA	33,504,579	PHOENIX SKY HAR	PHX	35,439,031	MCCARRAN INTL	LAS	46,193,329
7	MIAMI INTL	MIA	26,591,415	DENVER INTL	DEN	32,296,174	MCCARRAN INTL	LAS	35,180,960	JF KENNEDY INTL	JFK	43,762,282
8	JF KENNEDY INTL	JFK	26,229,068	JF KENNEDY INTL	JFK	31,155,411	*G BUSH INTERCON*	*IAH*	*34,803,580*	*G BUSH INTERCON*	*IAH*	*42,550,432*
9	NEWARK INTL	EWR	22,276,396	**DETROIT METRO W**	**DTW**	**30,610,993**	SAN FRANCISCO I	SFO	34,632,474	PHOENIX SKY HAR	PHX	41,436,737
10	HONOLULU INTL	HNL	22,224,594	MCCARRAN INTL	LAS	30,459,965	MINNEAPOLIS/ST	MSP	34,308,389	NEWARK LIBERTY	EWR	36,724,167
11	PHOENIX SKY HAR	PHX	22,140,598	SKY HARBOR INTL	PHX	30,411,852	**DETROIT METRO W**	**DTW**	**32,294,121**	**DETROIT METRO W**	**DTW**	**35,972,673**
12	LOGAN INTL	BOS	21,451,858	NEWARK INTL	EWR	29,107,459	MIAMI INTL	MIA	31,668,450	MINNEAPOLIS/ST	MSP	35,612,133
13	**DETROIT METRO W**	**DTW**	**21,308,022**	MINNEAPOLIS/ST	MSP	28,771,750	NEWARK INTL	EWR	30,558,000	ORLANDO INTL	MCO	34,640,451
14	MINNEAPOLIS/ST	MSP	20,601,177	LAMBERT-ST LOUI	STL	27,274,846	JF KENNEDY INTL	JFK	29,349,000	SAN FRANCISCO I	SFO	33,574,807
15	MCCARRAN INTL	LAS	20,171,557	*G BUSH INTERCON*	*IAH*	*26,484,079*	ORLANDO INTL	MCO	28,253,248	MIAMI INTL	MIA	32,533,974
16	LA GUARDIA	LGA	19,654,344	ORLANDO INTL	MCO	25,587,773	SEATTLE TACOMA	SEA	27,036,073	PHILADELPHIA IN	PHL	31,768,272
17	LAMBERT-ST LOUI	STL	19,151,278	LOGAN INTL	BOS	25,167,741	LAMBERT-ST LOUI	STL	26,695,019	SEATTLE TACOMA	SEA	29,979,097
18	ORLANDO INTL	MCO	18,411,945	HONOLULU INTL	HNL	24,326,737	LOGAN INTL	BOS	24,199,930	CHARLOTTE/DOUGL	CLT	29,693,949
19	*G BUSH INTERCON*	*IAH*	*18,117,113*	SEATTLE TACOMA	SEA	24,324,596	PHILADELPHIA IN	PHL	23,953,052	LOGAN INTL	BOS	27,725,443
20	CHARLOTTE/DOUGL	CLT	16,876,779	CHARLOTTE/DOUGL	CLT	21,849,879	CHARLOTTE/DOUGL	CLT	23,177,555	LA GUARDIA	LGA	26,571,146
21	PITTSBURGH INTL	PIT	16,735,015	SALT LAKE CITY	SLC	21,088,478	LA GUARDIA	LGA	21,933,000	WASHINGTON DULL	IAD	22,813,067
22	SEATTLE TACOMA	SEA	16,313,289	LA GUARDIA	LGA	20,699,136	BALTIMORE/WASHI	BWI	20,369,923	SALT LAKE CITY	SLC	21,557,656
23	PHILADELPHIA IN	PHL	15,041,936	PITTSBURGH INTL	PIT	20,533,660	HONOLULU INTL	HNL	20,151,936	FT LAUDERDALE/H	FLL	21,369,787
24	R REAGAN WASHIN	DCA	14,863,063	PHILADELPHIA IN	PHL	19,317,220	PITTSBURGH INTL	PIT	19,945,246	BALTIMORE/WASHI	BWI	21,184,208
25	SALT LAKE CITY	SLC	12,323,875	CINCINNATI/NO K	CVG	18,864,206	SALT LAKE CITY	SLC	18,914,891	HONOLULU INTL	HNL	20,067,871
26	SAN DIEGO INTL	SAN	11,423,067	R REAGAN WASHIN	DCA	15,095,923	WASHINGTON DULL	IAD	17,860,750	TAMPA INTL	TPA	18,867,541
27	WASHINGTON DULL	IAD	10,808,690	SAN DIEGO INTL	SAN	13,788,725	CINCINNATI/NO K	CVG	17,270,475	MIDWAY INTL	MDW	18,680,663
28	CINCINNATI/NO K	CVG	10,126,819	BALTIMORE/WASHI	BWI	13,431,922	FT LAUDERDALE/H	FLL	16,407,927	R REAGAN WASHIN	DCA	18,545,557
29	BALTIMORE/WASHI	BWI	9,885,615	TAMPA INTL	TPA	13,001,091	TAMPA INTL	TPA	15,888,436	SAN DIEGO INTL	SAN	17,481,942
30	TAMPA INTL	TPA	9,488,137	DULLES INTL	IAD	12,774,715	MIDWAY INTL	MDW	15,681,966	CINCINNATI/NO K	CVG	16,244,962
31	RALEIGH-DURHAM	RDU	9,381,556	PORTLAND INTL	PDX	12,593,013	SAN DIEGO INTL	SAN	14,216,225	LAMBERT-ST LOUI	STL	15,205,944
32	NASHVILLE INTL	BNA	8,846,267	HOPKINS INTL	CLE	11,582,164	R REAGAN WASHIN	DCA	13,170,196	OAKLAND INTL	OAK	14,692,875
33	CLEVELAND HOPKI	CLE	8,142,644	FT LAUDERDALE/H	FLL	11,163,852	MINETA SAN JOSE	SJC	13,088,997	PORTLAND INTL	PDX	14,043,489
34	*MEMPHIS INTL*	*MEM*	*8,072,286*	*KANSAS CITY INT*	*MCI*	*10,454,857*	PORTLAND INTL	PDX	12,703,676	CLEVELAND HOPKI	CLE	11,321,050
35	FT LAUDERDALE/H	FLL	8,045,712	SAN JOSE INTL	SJC	10,009,027	*KANSAS CITY INT*	*MCI*	*12,032,943*	*KANSAS CITY INT*	*MCI*	*11,237,480*
36	WP HOBBY	HOU	7,650,005	*MEMPHIS INTL*	*MEM*	*9,922,211*	CLEVELAND HOPKI	CLE	11,875,194	*MEMPHIS INTL*	*MEM*	*11,176,460*
37	MIDWAY INTL	MDW	7,245,709	MIDWAY	MDW	9,839,283	*MEMPHIS INTL*	*MEM*	*11,808,247*	NORMAN MINETA S	SJC	10,708,065
38	*KANSAS CITY INT*	*MCI*	*7,108,081*	OAKLAND INTL	OAK	9,734,859	OAKLAND INTL	OAK	11,713,225	SACRAMENTO INTL	SMF	10,362,800
39	MINETA SAN JOSE	SJC	7,044,942	NEW ORLEANS INT	MSY	8,483,453	RALEIGH-DURHAM	RDU	9,654,027	PITTSBURGH INTL	PIT	9,987,310
40	LOUIS ARMSTRONG	MSY	6,589,904	WP HOBBY	HOU	8,387,434	LOUIS ARMSTRONG	MSY	9,567,651	NASHVILLE INTL	BNA	9,663,386
41	PORTLAND INTL	PDX	6,360,370	JOHN WAYNE	SNA	7,307,750	WP HOBBY	HOU	8,637,150	JOHN WAYNE	SNA	9,613,540
42	OAKLAND INTL	OAK	6,181,251	SAN ANTONIO INT	SAT	7,135,291	NASHVILLE INTL	BNA	8,473,617	RALEIGH-DURHAM	RDU	9,422,112
43	ONTARIO INTL	ONT	5,791,818	NASHVILLE INTL	BNA	7,099,103	SACRAMENTO INTL	SMF	8,012,581	WP HOBBY	HOU	8,549,289
44	*INDIANAPOLIS IN*	*IND*	*5,696,213*	SACRAMENTO INTL	SMF	7,090,735	AUSTIN-BERGSTRO	AUS	7,362,188	AUSTIN-BERGSTRO	AUS	8,261,310
45	LOVE FIELD	DAL	5,582,533	*INDIANAPOLIS IN*	*IND*	*7,069,039*	JOHN WAYNE	SNA	7,324,557	*INDIANAPOLIS IN*	*IND*	*8,085,394*
46	JOHN WAYNE	SNA	5,345,284	LOVE FIELD	DAL	7,064,515	*INDIANAPOLIS IN*	*IND*	*7,238,789*	SAN ANTONIO INT	SAT	8,031,405
47	PALM BEACH INTL	PBI	4,944,075	RENO/TAHOE INTL	RNO	6,742,532	SAN ANTONIO INT	SAT	6,901,431	SOUTHWEST FLORI	RSW	7,643,217
48	ALBUQUERQUE INT	ABQ	4,938,431	ALBUQUERQUE INT	ABQ	6,618,751	BRADLEY INTL	BDL	6,888,031	GENERAL MITCHEL	MKE	7,299,294
49	KAHULUI	OGG	4,741,901	RALEIGH-DURHAM	RDU	6,478,776	ONTARIO INTL	ONT	6,702,400	ONTARIO INTL	ONT	7,049,904

Source: ACI data compilations

Exhibit 3.56

Passengers processed at selected benchmark airports

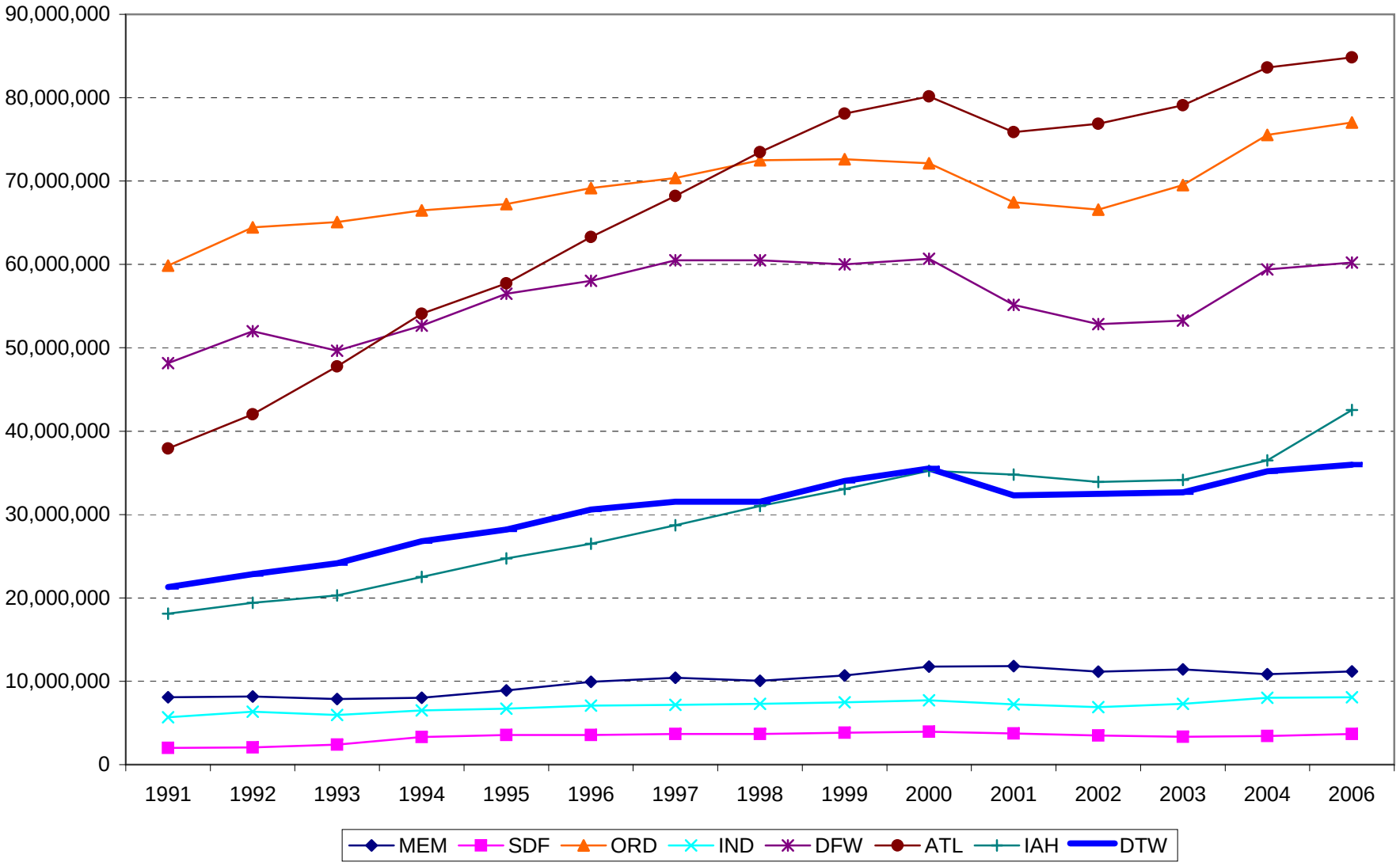


Exhibit 3.57: Relative rankings of the busiest U.S. cargo airports by total tonnage handled in each year

	1991			1996			2001			2006		
Rank	Airport name	Code	Cargo	Airport name	Code	Cargo	Airport name	Code	Cargo	Airport name	Code	Cargo
1	JF KENNEDY INTL	JFK	1,257,069	*MEMPHIS INTL*	*MEM*	*1,933,846*	*MEMPHIS INTL*	*MEM*	*2,631,631*	*MEMPHIS INTL*	*MEM*	*3,692,081*
2	*MEMPHIS INTL*	*MEM*	*1,226,996*	LOS ANGELES INT	LAX	1,719,449	T STEVENS ANCHO	ANC	1,873,750	T STEVENS ANCHO	ANC	2,691,395
3	LOS ANGELES INT	LAX	1,141,196	MIAMI INTL	MIA	1,709,906	LOS ANGELES INT	LAX	1,774,402	*LOUISVILLE INTL*	*SDF*	*1,983,032*
4	*O'HARE INTL*	*ORD*	*987,280*	JF KENNEDY INTL	JFK	1,636,497	MIAMI INTL	MIA	1,639,760	LOS ANGELES INT	LAX	1,907,497
5	MIAMI INTL	MIA	877,479	*LOUISVILLE INTL*	*SDF*	*1,368,520*	*LOUISVILLE INTL*	*SDF*	*1,468,837*	MIAMI INTL	MIA	1,830,591
6	*LOUISVILLE INTL*	*SDF*	*756,525*	*O'HARE INTL*	*ORD*	*1,259,858*	JF KENNEDY INTL	JFK	1,430,727	JF KENNEDY INTL	JFK	1,636,357
7	*HARTSFIELD ATLA*	*ATL*	*599,674*	NEWARK INTL	EWR	958,267	*O'HARE INTL*	*ORD*	*1,299,628*	*O'HARE INTL*	*ORD*	*1,558,235*
8	SAN FRANCISCO I	SFO	579,778	*HARTSFIELD ATLA*	*ATL*	*800,181*	*INDIANAPOLIS IN*	*IND*	*1,115,272*	*INDIANAPOLIS IN*	*IND*	*987,449*
9	*DALLAS/FT WORTH*	*DFW*	*545,396*	*DALLAS/FT WORTH*	*DFW*	*774,947*	NEWARK INTL	EWR	795,584	NEWARK LIBERTY	EWR	974,961
10	NEWARK INTL	EWR	484,974	DAYTON INTL	DAY	767,255	*DALLAS/FT WORTH*	*DFW*	*784,085*	*DALLAS/FT WORTH*	*DFW*	*757,856*
11	DAYTON INTL	DAY	441,417	SAN FRANCISCO I	SFO	711,877	*HARTSFIELD ATLA*	*ATL*	*739,927*	*HARTSFIELD-JACK*	*ATL*	*746,502*
12	*INDIANAPOLIS IN*	*IND*	*394,175*	OAKLAND INTL	OAK	615,298	SAN FRANCISCO I	SFO	636,006	OAKLAND INTL	OAK	668,217
13	HONOLULU INTL	HNL	382,167	*INDIANAPOLIS IN*	*IND*	*609,450*	OAKLAND INTL	OAK	593,634	SAN FRANCISCO I	SFO	594,857
14	PHILADELPHIA IN	PHL	351,059	PHILADELPHIA IN	PHL	493,532	PHILADELPHIA IN	PHL	536,270	PHILADELPHIA IN	PHL	532,163
15	LOGAN INTL	BOS	347,736	HONOLULU INTL	HNL	436,165	DAYTON INTL	DAY	532,306	ONTARIO INTL	ONT	493,952
16	SEATTLE TACOMA	SEA	347,666	LOGAN INTL	BOS	405,581	ONTARIO INTL	ONT	419,039	HONOLULU INTL	HNL	443,560
17	DENVER INTL	DEN	303,540	ONTARIO INTL	ONT	396,485	SEATTLE TACOMA	SEA	400,499	*G BUSH INTERCON*	*IAH*	*409,122*
18	FT WAYNE INTL	FWA	284,239	DENVER INTL	DEN	389,900	LOGAN INTL	BOS	395,126	TOLEDO EXPRESS	TOL	353,508
19	MINNEAPOLIS/ST	MSP	268,114	SEATTLE TACOMA	SEA	388,218	DENVER INTL	DEN	358,631	WASHINGTON DULL	IAD	350,826
20	ONTARIO INTL	ONT	256,280	MINNEAPOLIS/ST	MSP	361,448	MINNEAPOLIS/ST	MSP	339,676	SEATTLE TACOMA	SEA	341,952
21	OAKLAND INTL	OAK	253,478	TOLEDO EXPRESS	TOL	344,976	*G BUSH INTERCON*	*IAH*	*337,842*	LOGAN INTL	BOS	324,859
22	*G BUSH INTERCON*	*IAH*	*230,311*	**DETROIT METRO W**	**DTW**	**326,288**	HONOLULU INTL	HNL	337,631	PHOENIX SKY HAR	PHX	286,798
23	**DETROIT METRO W**	**DTW**	**210,788**	*G BUSH INTERCON*	*IAH*	*310,325*	WASHINGTON DULL	IAD	330,914	PEASE INTL TRAD	PSM	285,267
24	CINCINNATI/NO K	CVG	168,634	DULLES INTL	IAD	309,251	CINCINNATI/NO K	CVG	321,917	PORTLAND INTL	PDX	283,773
25	PORTLAND INTL	PDX	166,544	CINCINNATI/NO K	CVG	288,823	TOLEDO EXPRESS	TOL	320,565	DENVER INTL	DEN	281,921
26	WASHINGTON DULL	IAD	163,823	SKY HARBOR INTL	PHX	283,665	PHOENIX SKY HAR	PHX	283,337	MINNEAPOLIS/ST	MSP	275,041
27	CHARLOTTE/DOUGL	CLT	153,230	PORTLAND INTL	PDX	265,083	PORTLAND INTL	PDX	242,967	FORTH WORTH ALL	AFW	250,478
28	ORLANDO INTL	MCO	145,119	SALT LAKE CITY	SLC	227,913	**DETROIT METRO W**	**DTW**	**240,763**	**DETROIT METRO W**	**DTW**	**214,140**
29	PHOENIX SKY HAR	PHX	136,458	ORLANDO INTL	MCO	206,755	BALTIMORE/WASHI	BWI	225,083	ORLANDO INTL	MCO	198,009
30	BALTIMORE/WASHI	BWI	134,466	CHARLOTTE/DOUGL	CLT	184,069	ORLANDO INTL	MCO	223,545	SAN DIEGO INTL	SAN	188,649
31	SALT LAKE CITY	SLC	133,043	BALTIMORE/WASHI	BWI	168,321	SALT LAKE CITY	SLC	216,590	SALT LAKE CITY	SLC	181,375
32	BRADLEY INTL	BDL	129,483	*KANSAS CITY INT*	*MCI*	*163,217*	FORTH WORTH ALL	AFW	208,228	BRADLEY INTL	BDL	168,575
33	PITTSBURGH INTL	PIT	126,243	PITTSBURGH INTL	PIT	156,622	FT LAUDERDALE/H	FLL	181,907	DAYTON INTL	DAY	151,119
34	LA GUARDIA	LGA	108,777	FT LAUDERDALE/H	FLL	156,531	CHARLOTTE/DOUGL	CLT	177,654	CHARLOTTE/DOUGL	CLT	148,463
35	LAMBERT-ST LOUI	STL	105,416	BRADLEY INTL	BDL	151,532	BRADLEY INTL	BDL	154,473	FT LAUDERDALE/H	FLL	148,161
36	GENERAL MITCHEL	MKE	94,357	LAMBERT-ST LOUI	STL	131,436	AUSTIN-BERGSTRO	AUS	145,702	*KANSAS CITY INT*	*MCI*	*134,948*
37	TAMPA INTL	TPA	88,277	TAMPA INTL	TPA	123,439	MINETA SAN JOSE	SJC	143,914	SAN ANTONIO INT	SAT	128,854
38	*KANSAS CITY INT*	*MCI*	*84,065*	STEWART INTL	SWF	117,184	*KANSAS CITY INT*	*MCI*	*142,563*	BALTIMORE/WASHI	BWI	123,954
39	FT LAUDERDALE/H	FLL	82,647	HOPKINS INTL	CLE	116,168	PITTSBURGH INTL	PIT	139,054	FT WAYNE INTL	FWA	116,978
40	STEWART INTL	SWF	78,098	GENERAL MITCHEL	MKE	111,844	SAN DIEGO INTL	SAN	134,689	RICKENBACKER IN	LCK	113,714
41	CLEVELAND HOPKI	CLE	74,064	DES MOINES INTL	DSM	111,795	FT WAYNE INTL	FWA	132,124	TAMPA INTL	TPA	109,132
42	DES MOINES INTL	DSM	72,022	COLUMBIA METRO	CAE	111,263	LAMBERT-ST LOUI	STL	122,184	RALEIGH-DURHAM	RDU	107,970
43	RALEIGH-DURHAM	RDU	70,481	EPPLEY AIRFIELD	OMA	103,170	COLUMBIA METRO	CAE	116,599	AUSTIN-BERGSTRO	AUS	104,196
44	TOLEDO EXPRESS	TOL	69,905	ROBERT MUELLER	AUS	101,334	RALEIGH-DURHAM	RDU	107,910	GENERAL MITCHEL	MKE	101,889
45	LOUIS ARMSTRONG	MSY	66,179	RALEIGH-DURHAM	RDU	98,666	CLEVELAND HOPKI	CLE	102,007	MCCARRAN INTL	LAS	101,369
46	MINETA SAN JOSE	SJC	61,390	SAN DIEGO INTL	SAN	92,980	MATHER	MHR	99,162	COLUMBIA METRO	CAE	97,098
47	R REAGAN WASHIN	DCA	59,432	SAN JOSE INTL	SJC	91,798	EPPLEY AIRFIELD	OMA	99,061	LINCOLN MUNICIP	LNK	93,847
48	SAN DIEGO INTL	SAN	55,776	SAN ANTONIO INT	SAT	87,335	SAN ANTONIO INT	SAT	98,699	DES MOINES INTL	DSM	93,091
49	EPPLEY AIRFIELD	OMA	54,979	LA GUARDIA	LGA	86,765	RICKENBACKER IN	LCK	96,759	CLEVELAND HOPKI	CLE	92,331
			0.2135			0.2590			0.1853			0.1374

Exhibit 3.58

Cargo Processed by Selected Benchmark Airports

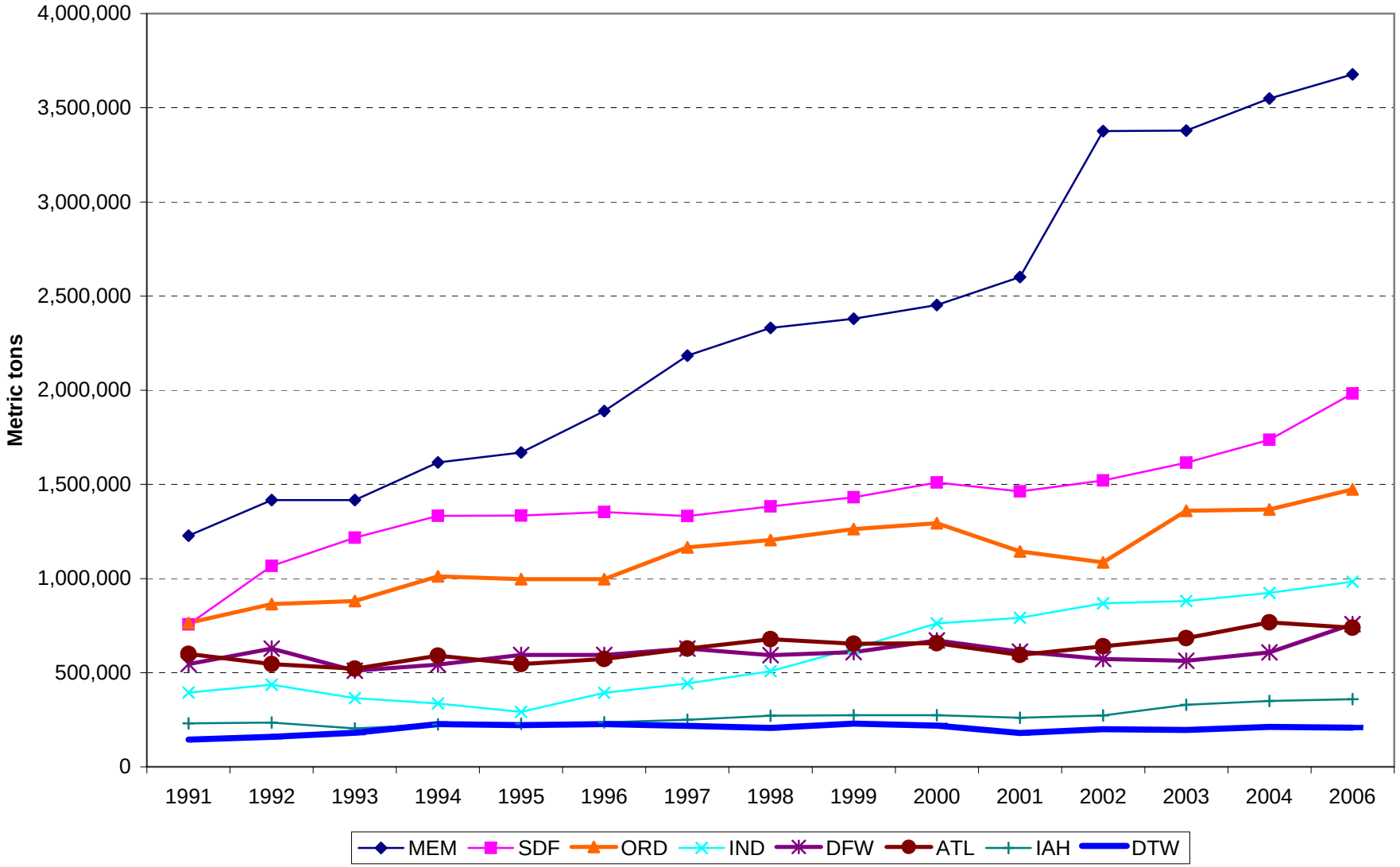


Exhibit 3.59 Increasing Concentration of Air Cargo Processing in the Busiest Cargo Airports

	1991	1996	2001	2006
Metric tons of air cargo processed in U.S. airports	16,086,260	21,021,688	24,491,740	29,172,166
Percent of total processed by:				
Top five cargo airports	32.74%	37.71%	37.23%	41.06%
Top ten cargo airports	51.18%	55.88%	55.98%	60.42%
Top fifteen cargo airports	63.09%	67.01%	66.82%	70.44%
Top twenty cargo airports	72.17%	74.51%	73.59%	76.31%
Top twenty-five cargo airports	78.28%	80.18%	78.85%	81.04%
Top thirty cargo airports	82.72%	84.52%	83.00%	84.72%

Exhibit 3.60 Regional Population Size and Air transport Intensity

		Metropolitan Total 2006			per capita			per worker			per PMT		
Rank	Region City	Passengers	-D Passenge	Cargo	Passenger	O-D Pass	Cargo	Passenger	O-D Pass	Cargo	Passenger	O-D Pass	Cargo
1	New York-Newark-Bridgeport, NY-NJ-CT-PA	107,057,595	90,407,031	2,629,200	4.87	4.11	0.12	8.27	6.98	0.20	22.79	19.24	0.56
2	Los Angeles-Long Beach-Riverside, CA	86,152,163	71,018,932	2,520,952	4.85	4.00	0.14	8.56	7.05	0.25	27.44	22.62	0.80
3	Chicago-Naperville-Michigan City, IL-IN-WI	95,708,797	50,361,016	1,572,963	9.84	5.18	0.16	16.77	8.82	0.28	50.39	26.51	0.83
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV	62,542,832	56,808,999	478,392	7.62	6.92	0.06	11.51	10.45	0.09	26.45	24.03	0.20
5	Boston-Worcester-Manchester, MA-RI-NH	31,621,975	30,311,521	404,849	4.24	4.06	0.05	8.08	7.75	0.10	20.72	19.86	0.27
6	San Jose-San Francisco-Oakland, CA	58,975,747	50,057,162	1,354,722	8.16	6.92	0.19	13.47	11.44	0.31	32.86	27.89	0.75
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD	31,768,272	21,876,860	532,163	4.98	3.43	0.08	8.33	5.74	0.14	24.05	16.56	0.40
8	Dallas-Fort Worth, TX	67,100,855	30,816,945	1,008,334	10.55	4.85	*0.16*	17.70	8.13	0.27	54.98	25.25	0.83
9	Houston-Baytown-Huntsville, TX	51,099,721	24,442,979	417,596	9.06	4.33	0.07	15.87	7.59	0.13	50.27	24.05	0.41
10	Atlanta-Sandy Springs-Gainesville, GA-AL	84,846,639	29,030,938	746,502	15.49	5.30	*0.14*	27.56	9.43	0.24	78.82	26.97	0.69
11	Detroit-Warren-Flint, MI	35,972,673	17,013,778	214,140	6.65	3.14	0.04	10.89	5.15	0.06	33.77	15.97	0.20
12	Seattle-Tacoma-Olympia, WA	29,979,097	22,745,292	341,952	7.73	5.87	0.09	12.05	9.14	0.14	32.54	24.69	0.37
13	Minneapolis-St. Paul-St. Cloud, MN-WI	35,612,133	16,439,044	275,041	10.17	4.69	0.08	15.65	7.23	0.12	43.70	20.17	0.34
14	Denver-Aurora-Boulder, CO1	47,325,016	26,685,250	281,921	16.16	9.11	0.10	25.69	14.48	0.15	70.67	39.85	0.42
15	Cleveland-Akron-Elyria, OH	11,321,050	8,205,781	92,331	3.88	2.81	0.03	6.42	4.65	0.05	20.56	14.90	0.17
16	St. Louis-St. Charles-Farmington, MO-IL	15,205,944	6,496,175	85,551	5.32	2.27	0.03	9.29	3.97	0.05	27.90	11.92	0.16
17	Pittsburgh-New Castle, PA	9,987,310	4,528,527	84,684	4.06	1.84	0.03	6.89	3.12	0.06	20.55	9.32	0.17
18	Sacramento--Arden-Arcade--Truckee, CA-NV	10,362,800	10,362,800	67,674	4.69	4.69	0.03	8.36	8.36	0.05	24.15	24.15	0.16
19	Charlotte-Gastonia-Salisbury, NC-SC	29,693,949	26,724,554	148,463	13.55	12.19	0.07	26.64	23.98	0.13	84.43	75.99	0.42
20	Cincinnati-Middletown-Wilmington, OH-KY-IN	16,244,962	14,620,466	43,289	7.56	6.81	0.02	12.27	11.04	0.03	39.13	35.22	0.10
21	Orlando-The Villages, FL	34,640,451	33,116,849	198,009	16.87	16.13	0.10	28.31	27.07	0.16	92.37	88.31	0.53
22	Kansas City-Overland Park-Kansas City, MO-KS	11,237,480	9,860,424	134,948	5.52	4.85	0.07	8.47	7.43	0.10	24.89	21.84	0.30
23	Indianapolis-Anderson-Columbus, IN	8,085,394	7,276,855	987,449	4.07	3.67	*0.50*	7.53	6.78	0.92	22.71	20.44	2.77
24	Columbus-Marion-Chillicothe, OH	6,744,087	6,069,678	122,308	3.45	3.11	0.06	6.32	5.69	0.11	18.22	16.40	0.33
25	Las Vegas-Paradise-Pahrump, NV	46,193,329	40,330,082	101,369	25.38	22.16	0.06	39.14	34.17	0.09	157.68	137.67	0.35
Regional Average		26,632,126	28,224,317	593,792	4.87	5.17	0.11	8.25	8.75	0.18	23.65	25.07	0.53
		1.35		0.36	1.36	0.61	0.36	1.32	0.59	0.35	1.43	0.64	0.38

Exhibit 3.61 Major U.S. Airline Hubs

		AirTran Airways (FL)	Alaska Airlines (AS)	American Airlines (AA)	ATA Airlines (TZ)	Continental Airlines (CO)	Delta Air Lines (DL)	Frontier Airlines (F9)	JetBlue Airways (B6)	Midwest Airlines (YX)	Northwest Airlines (NW)	Skybus Airlines (SX)	Spirit Airlines (NK)	Southwest Airlines (WN)	Sun Country Airlines (SY)	United Airlines (UA)	US Airways (US)
Ted Stevens Anchorage International Airport	ANC		x														
Hartsfield-Jackson Atlanta International Airport	ATL	x					x										
Logan International Airport	BOS								minor								
Baltimore/Washington International Thurgood Marshall	BWI	secondary												x			
Cleveland Hopkins International Airport	CLE					x											
Charlotte/Douglas International Airport	CLT																x
Port Columbus International Airport	CMH											x					
Cincinnati-Northern Kentucky International Airport	CVG						x										
Dallas Love Field Airport	DAL													x			
Denver International Airport	DEN							x								x	
Dallas-Fort Worth International Airport	DFW			x													
Detroit Metropolitan Wayne County Airport	DTW										x		x				
Newark Liberty International Airport	EWR					x											
Fort Lauderdale-Hollywood International Airport	FLL												x				
Honolulu International Airport	HNL				x												
Washington Dulles International Airport	IAD															x	
George Bush Intercontinental Airport	IAH					x											
John F. Kennedy International Airport	JFK						x		x								
Las Vegas's McCarran International Airport	LAS													x			x
Los Angeles International Airport	LAX		x				minor									x	
Kansas City International Airport	MCI									x							
Orlando International Airport	MCO	secondary															
Chicago Midway Airport	MDW				x									x			
Memphis International Airport	MEM										x						
Miami International Airport	MIA			x													
Milwaukee's General Mitchell International Airport	MKE									x							
Minneapolis-Saint Paul International Airport	MSP										x				x		
Oakland International Airport	OAK				focus												
Chicago's O'Hare International Airport	ORD			x												x	
Portland International Airport	PDX		x														
Philadelphia International Airport	PHL																x
Phoenix Sky Harbor International Airport	PHX													x			x
Pittsburgh International Airport	PIT																minor
Seattle-Tacoma International Airport	SEA		x														
San Francisco International Airport	SFO															x	
San Juan's Luis Muñoz Marín International Airport	SJU			x													
Salt Lake City International Airport	SLC						x										
Lambert-Saint Louis International Airport	STL			x													

Exhibit 3.62 Destinations and Service at Selected Benchmark Airports

Rank	Region	City	Airport	Code	Passengers Destinations Total	Passengers Destinations Internat'l	Passengers Percent that is international Departures	Passengers Percent that is international Passengers	Passengers Percent that is international Destinations	Cargo Destinations Total	Cargo Destinations Internat'l	Cargo Percent that is international Departures	Cargo Percent that is international Cargo	Cargo Percent that is international Destinations	Percent Integrated
1	New York-Newark-Bridgeport, NY-NJ-CT-PA														
		New York, New York	JF Kennedy Intl	JFK	251	134	32.4%	45.3%	53.4%	229	132	38.5%	51.5%	57.6%	10.6%
		Newark, New Jersey	Newark Liberty Intl	EWR	247	101	19.5%	27.5%	40.9%	222	88	16.8%	30.6%	39.6%	67.0%
		New York, New York	La Guardia	LGA	152	10	5.7%	5.1%	6.6%						
2	Los Angeles-Long Beach-Riverside, CA														
		Los Angeles, California	Los Angeles Intl	LAX	232	83	17.0%	27.2%	35.8%	217	86	19.3%	31.2%	39.6%	23.5%
		Santa Ana, California	John Wayne	SNA	70	1	0.0%	0.0%	1.4%						
		Ontario, California	Ontario Intl	ONT	71	10	2.3%	2.2%	14.1%	83	5	1.2%	0.0%	6.0%	93.6%
		Burbank, California	Bob Hope	BUR	39	2	0.0%	0.0%	5.1%	20	0	0.0%	0.0%	0.0%	93.8%
		Long Beach, California	Long Beach	LGB	27	1	0.0%	0.0%	3.7%	27	2	0.2%	0.1%	7.4%	80.0%
3	Chicago-Naperville-Michigan City, IL-IN-WI														
		Chicago, Illinois	O'Hare Intl	ORD	266	79	9.9%	15.3%	29.7%	228	79	11.5%	35.0%	34.6%	19.1%
		Chicago, Illinois	Midway Intl	MDW	123	14	0.7%	1.0%	11.4%	200	34	3.6%	7.3%	17.0%	98.8%
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV														
		Washington, District Of Columbia	Washington Dulles Intl	IAD	212	62	11.8%	22.9%	29.2%	132	52	18.0%	48.2%	39.4%	31.5%
		Baltimore/Washington, Maryland	Baltimore/Washington Intl Thurgood Marshall	BWI	143	26	2.7%	2.6%	18.2%	96	9	1.1%	2.0%	9.4%	61.4%
		Washington, District Of Columbia	R Reagan Washington National	DCA	111	4	3.0%	1.9%	3.6%						
5	Boston-Worcester-Manchester, MA-RI-NH														
		Boston, Massachusetts	Logan Intl	BOS	193	49	9.2%	13.8%	25.4%	133	25	7.9%	21.1%	18.8%	57.9%
		Manchester, New Hampshire	Manchester-Boston Regl.	MHT	61	3	3.2%	0.5%	4.9%	34	0				
6	San Jose-San Francisco-Oakland, CA														
		San Francisco, California	San Francisco Intl	SFO	159	45	14.2%	24.3%	28.3%	133	43	17.9%	33.8%	32.3%	12.2%
		Oakland, California	Oakland Intl	OAK	102	13	1.3%	1.3%	12.7%	84	4	1.2%	0.6%	4.8%	96.0%
		San Jose, California	Norman Mineta San Jose Intl	SJC	86	11	1.8%	2.5%	12.8%	52	5	1.1%	3.1%	9.6%	71.7%
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD														
		Philadelphia, Pennsylvania	Philadelphia Intl	PHL	193	48	7.7%	11.2%	24.9%	166	38	7.3%	21.4%	22.9%	79.7%
8	Dallas-Fort Worth, TX														
		Forth Worth, Texas	Forth Worth Alliance	AFW						48	6	0.2%	0.1%	12.5%	98.3%
		Dallas/Ft Worth, Texas	Dallas/Ft Worth Intl	DFW	239	60	7.3%	9.0%	25.1%	207	52	6.6%	15.1%	25.1%	41.2%
		Dallas, Texas	Love Field	DAL	78	5	0.0%	0.0%	6.4%						
9	Houston-Baytown-Huntsville, TX														
		Houston, Texas	G Bush Intercontinental	IAH	232	80	15.7%	17.4%	34.5%	229	84	14.0%	43.8%	36.7%	33.4%
		Houston, Texas	WP Hobby	HOU	82	4	0.0%	0.0%	4.9%						
10	Atlanta-Sandy Springs-Gainesville, GA-AL														
		Atlanta, Georgia	Hartsfield-Jackson Atlanta Intl	ATL	310	93	7.2%	10.0%	30.0%	288	91	6.6%	29.7%	31.6%	23.2%
11	Detroit-Warren-Flint, MI														
		Detroit, Michigan	Detroit Metro Wayne County	DTW	217	52	6.7%	10.3%	24.0%	162	32	6.3%	20.1%	19.8%	63.4%
12	Seattle-Tacoma-Olympia, WA														
		Seattle, Washington	Seattle Tacoma Intl	SEA	146	22	9.5%	7.4%	15.1%	144	25	8.4%	30.0%	17.4%	33.5%
13	Minneapolis-St. Paul-St. Cloud, MN-WI														
		Minneapolis/St Paul, Minnesota	Minneapolis/St Paul Intl	MSP	245	39	5.8%	7.1%	15.9%	177	28	4.2%	6.2%	15.8%	76.2%
14	Denver-Aurora-Boulder, CO1														
		Denver, Colorado	Denver Intl	DEN	223	21	3.4%	4.0%	9.4%	130	17	2.8%	3.7%	13.1%	65.8%
15	Cleveland-Akron-Elyria, OH														
		Cleveland, Ohio	Cleveland Hopkins Intl	CLE	139	10	3.2%	2.4%	7.2%	103	3	1.6%	0.2%	2.9%	88.5%
16	St. Louis-St. Charles-Farmington, MO-IL														
		St Louis, Missouri	Lambert-St Louis Intl	STL	148	12	1.2%	1.6%	8.1%	90	5	0.0%	0.1%	5.6%	68.6%
17	Pittsburgh-New Castle, PA														
		Pittsburgh, Pennsylvania	Pittsburgh Intl	PIT	159	16	2.4%	1.6%	10.1%	94	2	0.9%	0.1%	2.1%	87.6%
18	Sacramento--Arden-Arcade--Truckee, CA-NV														
		Sacramento, California	Sacramento Intl	SMF	77	5	1.2%	1.1%	6.5%	65	4	0.7%	0.0%	6.2%	67.8%
19	Charlotte-Gastonia-Salisbury, NC-SC														
		Charlotte, No Carolina	Charlotte/Douglas Intl	CLT	189	28	4.2%	6.8%	14.8%	155	25	2.7%	11.7%	16.1%	53.5%
20	Cincinnati-Middletown-Wilmington, OH-KY-IN														
		Cincinnati, Ohio (Hebron, Kentucky)	Cincinnati/No Kentucky Intl	CVG	182	18	3.4%	5.8%	9.9%	145	10	2.4%	26.5%	6.9%	40.3%
21	Orlando-The Villages, FL														
		Orlando, Florida	Orlando Intl	MCO	189	49	5.0%	6.0%	25.9%	138	27	3.2%	11.7%	19.6%	59.6%
22	Kansas City-Overland Park-Kansas City, MO-KS														
		Kansas City, Missouri	Kansas City Intl	MCI	130	9	0.9%	0.6%	6.9%	110	11	0.0%	0.0%	10.0%	62.3%
23	Indianapolis-Anderson-Columbus, IN														
		Indianapolis, Indiana	Indianapolis Intl	IND	130	9	1.1%	0.6%	6.9%	110	7	1.3%	5.7%	6.4%	96.2%
24	Columbus-Marion-Chillicothe, OH														
		Columbus, Ohio	Port Columbus Intl	CMH	121	7	1.6%	0.7%	5.8%						
		Columbus, Ohio	Rickenbacker Intl	LCK						37	2	0.1%	0.1%	5.4%	75.1%
25	Las Vegas-Paradise-Pahrump, NV														
		Las Vegas, Nevada	McCarran Intl	LAS	197	35	4.1%	4.3%	17.8%	129	12	1.7%	2.4%	9.3%	44.3%

Exhibit 3.63: Delay, Cancellation, and Diversion Indicators for Selected Benchmark Airports

Rank	Region	Airport	Code	Elapsed time (mean)	Air time (mean)	Departure delayed: 15 min. (prop)	Departure delayed: 30 min. (prop)	Deaprture Delay (mean)	Distance (mean)	Taxi out time (mean)	Cancelled (prop)	Diverted (prop)	Carrier Delay (mean)	Weather Delay (mean)	NAS Delay (mean)	Security Delay (mean)	Late Aircraft (mean)
1	New York-Newark-Bridgeport, NY-NJ-CT-PA																
		JF Kennedy Intl	JFK	187.90	148.74	0.23	0.14	14.58	1,196.37	32.40	0.02	0.00	5.16	1.51	7.60	0.04	4.68
		Newark Liberty Intl	EWR	169.92	133.52	0.25	0.17	17.03	907.24	29.10	0.03	0.00	3.91	0.70	6.56	0.08	8.48
		La Guardia	LGA	137.31	103.12	0.22	0.14	13.63	673.71	25.77	0.04	0.00	2.81	1.25	6.13	0.04	6.31
2	Los Angeles-Long Beach-Riverside, CA																
		Los Angeles Intl	LAX	146.86	126.07	0.18	0.10	10.07	983.07	14.73	0.01	0.00	3.47	0.19	1.97	0.03	3.55
		John Wayne	SNA	122.36	102.72	0.16	0.09	8.58	747.50	12.97	0.01	0.00	1.72	0.14	2.10	0.12	3.68
		Ontario Intl	ONT	94.91	78.32	0.17	0.09	8.91	537.22	10.47	0.01	0.00	1.91	0.27	1.40	0.02	4.36
		Bob Hope	BUR	103.17	85.99	0.17	0.10	9.13	530.17	11.56	0.01	0.01	1.42	0.33	1.86	0.03	4.52
		Long Beach	LGB	230.65	209.68	0.12	0.06	7.26	1,157.21	14.08	0.01	0.00	1.58	0.21	2.35	0.07	2.38
3	Chicago-Naperville-Michigan City, IL-IN-WI																
		O'Hare Intl	ORD	125.71	100.44	0.28	0.19	18.70	707.09	19.08	0.03	0.00	4.68	0.77	3.99	0.01	9.55
		Midway Intl	MDW	128.42	110.43	0.27	0.16	15.16	784.93	12.09	0.01	0.00	2.93	0.80	3.30	0.02	6.41
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV																
		Washington Dulles Intl	IAD	143.15	118.18	0.23	0.16	16.22	840.47	17.75	0.02	0.00	5.99	0.58	4.02	0.05	5.66
		Baltimore/Washington Intl	BWI	124.91	106.84	0.20	0.11	11.48	711.50	12.13	0.01	0.00	2.57	0.43	2.76	0.04	4.71
		R Reagan Washington National	DCA	116.75	93.07	0.15	0.09	9.52	593.92	16.24	0.03	0.00	2.27	0.67	4.55	0.02	3.57
5	Boston-Worcester-Manchester, MA-RI-NH																
		Logan Intl	BOS	146.23	120.31	0.20	0.13	13.07	812.29	18.42	0.03	0.00	2.85	1.01	4.83	0.04	5.10
		Manchester-Boston Regl.	MHT	126.43	106.83	0.19	0.12	12.35	649.04	13.01	0.01	0.00	2.90	0.83	4.46	0.03	4.11
6	San Jose-San Francisco-Oakland, CA																
		San Francisco Intl	SFO	156.13	133.68	0.22	0.14	13.50	1,052.04	15.90	0.02	0.00	5.46	0.20	2.09	0.02	5.10
		Oakland Intl	OAK	129.65	113.68	0.20	0.10	10.19	773.27	10.62	0.01	0.00	2.20	0.11	1.29	0.05	4.37
		Norman Mineta San Jose Intl	SJC	114.29	96.19	0.16	0.09	8.78	678.37	11.93	0.01	0.00	1.65	0.19	1.41	0.05	4.19
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD																
		Philadelphia Intl	PHL	159.02	129.17	0.26	0.16	16.37	886.46	23.28	0.02	0.00	3.93	0.52	5.44	0.02	7.54
8	Dallas-Fort Worth, TX																
		Dallas/Ft Worth Intl	DFW	129.34	106.66	0.22	0.14	12.55	776.27	16.70	0.02	0.00	3.81	1.21	3.13	0.01	4.33
		Love Field	DAL	64.18	50.56	0.17	0.09	9.25	303.25	9.22	0.02	0.00	1.67	0.31	1.32	0.02	4.74
9	Houston-Baytown-Huntsville, TX																
		G Bush Intercontinental	IAH	137.30	109.52	0.19	0.11	12.07	800.68	21.51	0.01	0.00	3.28	1.38	4.21	0.14	3.64
		WP Hobby	HOU	93.04	79.66	0.23	0.13	12.24	547.92	8.61	0.02	0.00	2.79	0.40	1.45	0.02	5.42
10	Atlanta-Sandy Springs-Gainesville, GA-AL																
		Hartsfield-Jackson Atlanta Intl	ATL	120.47	83.42	0.27	0.16	15.20	655.01	20.13	0.02	0.00	5.05	1.69	3.83	0.03	4.64
11	Detroit-Warren-Flint, MI																
		Detroit Metro Wayne County	DTW	120.49	94.50	0.21	0.12	11.79	632.42	18.39	0.02	0.00	5.25	1.15	4.66	0.03	2.50
12	Seattle-Tacoma-Olympia, WA																
		Seattle Tacoma Intl	SEA	174.29	152.57	0.21	0.12	12.01	1,185.25	14.95	0.01	0.00	4.65	0.19	3.04	0.07	3.89
13	Minneapolis-St. Paul-St. Cloud, MN-WI																
		Minneapolis/St Paul Intl	MSP	139.98	114.98	0.18	0.10	10.09	831.68	17.32	0.01	0.00	4.36	0.95	3.89	0.01	1.92
14	Denver-Aurora-Boulder, CO1																
		Denver Intl	DEN	130.21	109.70	0.20	0.12	11.91	810.11	14.52	0.02	0.00	3.43	0.56	2.57	0.01	5.26
15	Cleveland-Akron-Elyria, OH																
		Cleveland Hopkins Intl	CLE	109.29	86.09	0.16	0.10	10.17	561.86	16.25	0.01	0.00	2.20	0.43	4.41	0.01	3.81
16	St. Louis-St. Charles-Farmington, MO-IL																
		Lambert-St Louis Intl	STL	120.51	101.78	0.18	0.11	10.64	703.35	11.93	0.02	0.00	1.98	0.42	3.30	0.01	4.40
17	Pittsburgh-New Castle, PA																
		Pittsburgh Intl	PIT	122.08	99.14	0.18	0.11	11.60	648.56	15.22	0.02	0.00	2.12	0.62	5.93	0.01	4.46
18	Sacramento--Arden-Arcade--Truckee, CA-NV																
		Sacramento Intl	SMF	109.91	94.15	0.18	0.10	9.63	687.23	9.99	0.01	0.00	2.03	0.13	1.49	0.04	4.52
19	Charlotte-Gastonia-Salisbury, NC-SC																
		Charlotte/Douglas Intl	CLT	115.00	89.96	0.21	0.12	12.07	598.38	18.48	0.01	0.00	3.73	0.40	4.20	0.00	3.88
20	Cincinnati-Middletown-Wilmington, OH-KY-IN																
		Cincinnati/No Kentucky Intl	CVG	108.12	86.91	0.14	0.08	7.58	574.14	14.83	0.01	0.00	3.15	0.70	3.10	0.01	0.91
21	Orlando-The Villages, FL																
		Orlando Intl	MCO	147.97	127.71	0.18	0.11	10.83	909.89	13.31	0.01	0.00	2.26	0.45	3.94	0.02	3.94
22	Kansas City-Overland Park-Kansas City, MO-KS																
		Kansas City Intl	MCI	115.83	97.59	0.18	0.11	10.68	674.02	11.28	0.01	0.00	2.18	0.32	2.96	0.01	4.67
23	Indianapolis-Anderson-Columbus, IN																
		Indianapolis Intl	IND	120.60	98.07	0.15	0.09	9.17	654.90	14.46	0.01	0.00	1.93	0.41	4.32	0.01	3.46
24	Columbus-Marion-Chillicothe, OH																
		Port Columbus Intl	CMH	110.34	89.62	0.20	0.13	13.09	572.46	12.99	0.02	0.00	3.23	0.87	5.47	0.03	4.42
25	Las Vegas-Paradise-Pahrump, NV																
		McCarran Intl	LAS	142.14	119.83	0.24	0.13	12.74	920.08	16.38	0.01	0.00	3.19	0.16	2.39	0.05	5.45
			MEM	111.42	86.43	0.18	0.11	10.87	582.64	16.43	0.02	0.00	3.71	0.99	4.48	0.01	3.02
			SDF	99.42	78.96	0.21	0.13	13.19	486.66	13.02	0.01	0.00	2.65	0.68	5.45	0.03	4.88
			TOL	75.73	56.05	0.15	0.10	10.32	298.69	11.80	0.02	0.00	3.37	0.71	4.88	0.00	3.17

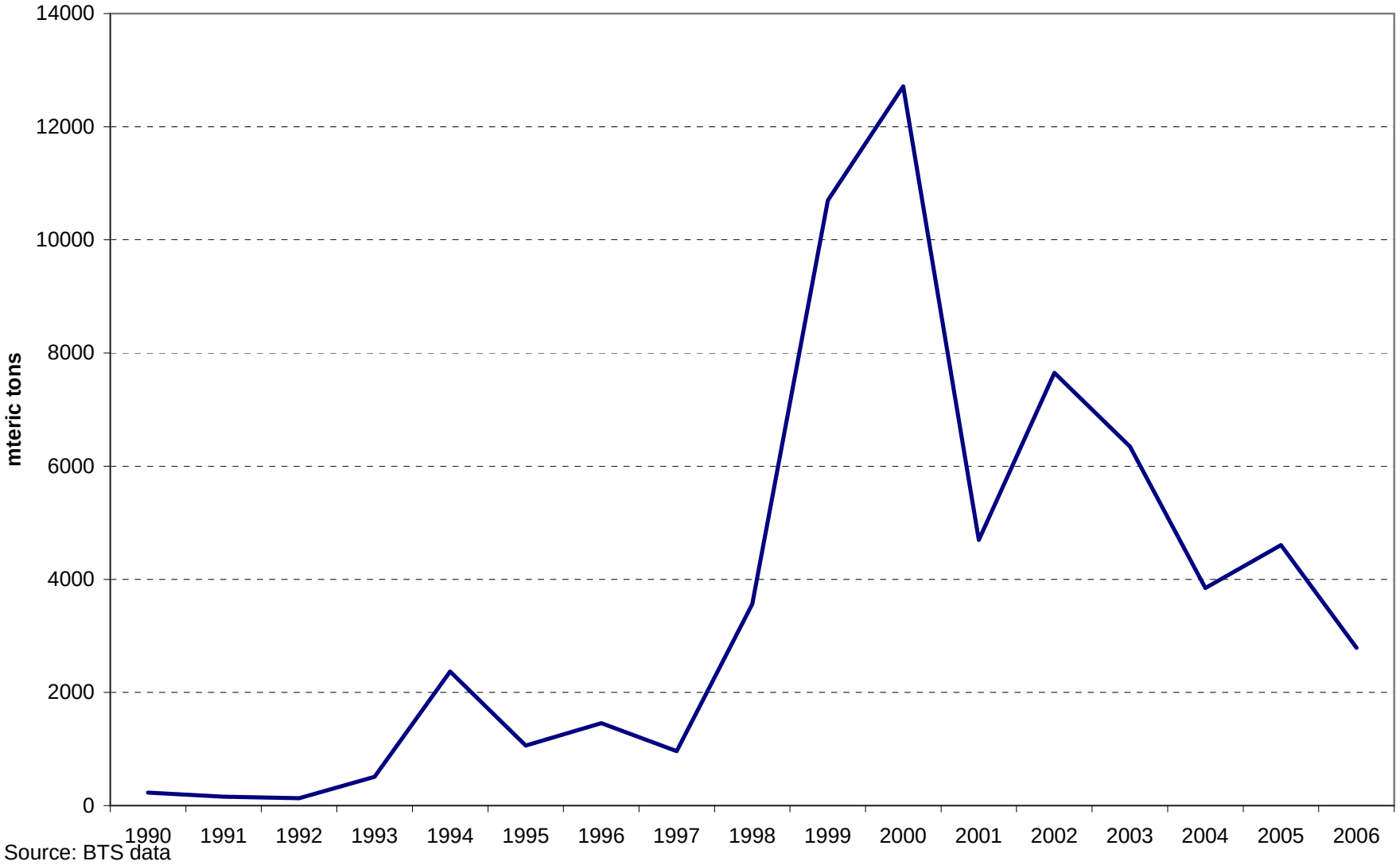
Exhibit 3.64 Cost of Air Travel at Selected Benchmark Airports

Rank	Region / Airport	Code	Itinerary Yield (mean)	Itinerary Fare (mean)	Distance (mean)	Miles Flown (mean)
1	New York-Newark-Bridgeport, NY-NJ-CT-PA					
	JF Kennedy Intl	JFK	0.17	559.08	4,147.52	4,119.00
	Newark Liberty Intl	EWR	0.24	528.55	3,239.06	3,184.75
	La Guardia	LGA	0.25	428.83	2,520.09	2,504.49
2	Los Angeles-Long Beach-Riverside, CA					
	Los Angeles Intl	LAX	0.15	492.07	3,960.44	3,937.34
	John Wayne	SNA	0.17	481.21	3,473.65	3,456.72
	Ontario Intl	ONT	0.15	430.70	3,441.82	3,429.41
	Bob Hope	BUR	0.18	411.27	2,914.37	2,903.66
	Long Beach	LGB	0.15	433.72	3,645.12	3,637.18
3	Chicago-Naperville-Michigan City, IL-IN-WI					
	O'Hare Intl	ORD	0.27	434.12	2,379.89	2,346.63
	Midway Intl	MDW	0.17	324.77	2,401.35	2,385.87
4	Washington-Baltimore-Northern Virginia, DC-MD-VA-WV					
	Washington Dulles Intl	IAD	0.22	495.01	3,257.53	3,234.58
	Baltimore/Washington Intl Thurgood Marshall	BWI	0.17	396.53	3,247.66	3,234.97
	R Reagan Washington National	DCA	0.26	434.87	2,582.49	2,569.12
5	Boston-Worcester-Manchester, MA-RI-NH					
	Logan Intl	BOS	0.19	462.02	3,408.13	3,389.25
	Manchester-Boston Regl.	MHT	0.18	395.47	3,019.09	3,009.36
6	San Jose-San Francisco-Oakland, CA					
	San Francisco Intl	SFO	0.17	535.35	4,118.62	4,091.53
	Oakland Intl	OAK	0.14	426.25	3,759.19	3,745.03
	Norman Mineta San Jose Intl	SJC	0.15	436.97	3,695.80	3,680.23
7	Philadelphia-Camden-Vineland, PA-NJ-DE-MD					
	Philadelphia Intl	PHL	0.22	426.70	2,990.00	2,967.91
8	Dallas-Fort Worth, TX					
	Dallas/Ft Worth Intl	DFW	0.26	522.60	2,474.16	2,442.09
	Love Field	DAL	0.21	281.06	1,748.68	1,729.70
9	Houston-Baytown-Huntsville, TX					
	G Bush Intercontinental	IAH	0.23	472.21	2,583.23	2,541.20
	WP Hobby	HOU	0.18	348.41	2,335.68	2,326.11
10	Atlanta-Sandy Springs-Gainesville, GA-AL					
	Hartsfield-Jackson Atlanta Intl	ATL	0.31	466.84	2,188.04	2,147.31
11	Detroit-Warren-Flint, MI					
	Detroit Metro Wayne County	DTW	0.25	433.13	2,675.75	2,649.32
12	Seattle-Tacoma-Olympia, WA					
	Seattle Tacoma Intl	SEA	0.14	452.07	3,888.50	3,866.22
13	Minneapolis-St. Paul-St. Cloud, MN-WI					
	Minneapolis/St Paul Intl	MSP	0.25	478.30	2,538.91	2,507.39
14	Denver-Aurora-Boulder, CO1					
	Denver Intl	DEN	0.20	428.01	2,668.53	2,641.56
15	Cleveland-Akron-Elyria, OH					
	Cleveland Hopkins Intl	CLE	0.24	417.23	2,651.00	2,626.15
16	St. Louis-St. Charles-Farmington, MO-IL					
	Lambert-St Louis Intl	STL	0.24	433.41	2,414.63	2,398.47
17	Pittsburgh-New Castle, PA					
	Pittsburgh Intl	PIT	0.24	398.08	2,581.09	2,566.98
18	Sacramento--Arden-Arcade--Truckee, CA-NV					
	Sacramento Intl	SMF	0.14	434.34	3,780.78	3,766.38
19	Charlotte-Gastonia-Salisbury, NC-SC					
	Charlotte/Douglas Intl	CLT	0.29	444.24	2,322.93	2,302.44
20	Cincinnati-Middletown-Wilmington, OH-KY-IN					
	Cincinnati/No Kentucky Intl	CVG	0.36	524.24	2,241.76	2,210.87
21	Orlando-The Villages, FL					
	Orlando Intl	MCO	0.16	386.91	3,038.13	3,024.78
22	Kansas City-Overland Park-Kansas City, MO-KS					
	Kansas City Intl	MCI	0.19	379.02	2,440.64	2,430.72
23	Indianapolis-Anderson-Columbus, IN					
	Indianapolis Intl	IND	0.20	371.62	2,522.37	2,512.73
24	Columbus-Marion-Chillicothe, OH					
	Port Columbus Intl	CMH	0.21	383.01	2,589.17	2,579.70
	Rickenbacker Intl	LCK	0.09	330.00	3,516.00	3,516.00
25	Las Vegas-Paradise-Pahrump, NV					
	McCarran Intl	LAS	0.15	398.40	3,370.69	3,359.28
		MEM	0.28	467.84	2,286.88	2,271.61
		SDF	0.22	383.30	2,397.21	2,389.00
		TOL	0.27	423.96	2,112.38	2,103.58

origin-destination Survey Ticket data
roundtrip, single-person tickets

Exhibit 3.65

Cargo Arriving and Departing Willow Run Airport



Source: BTS data

Exhibit 3.66: Per unit costs of selected benchmank Airports

AIRPORT	CODE	Aeronautical revenue/ passenger	Aeronautical revenue/ Work Load Unit	Operating expense/ passenger	Operating expense/ Work Load Unit	Landing fees and termonal rental/ departing passenger
HARTSFIELD-JACKSON ATLANTA INTL	ATL	$0.95	$0.87	$1.11	$1.02	$1.21
O'HARE INTL	ORD	$4.01	$3.33	$4.43	$3.69	$7.57
LOS ANGELES INTL	LAX	$3.75	$2.86	$6.76	$5.15	$7.14
DALLAS/FT WORTH INTL	DFW	$3.29	$2.92	$4.31	$3.83	$6.57
DENVER INTL	DEN	$6.57	$6.20	$4.99	$4.71	$12.55
MCCARRAN INTL	LAS	$2.47	$2.41	$2.89	$2.83	$4.31
JF KENNEDY INTL	JFK	$12.62	$9.18	$13.16	$9.58	$16.81
G BUSH INTERCONTINENTAL	IAH	$4.45	$4.06	$3.60	$3.29	$8.90
NEWARK LIBERTY INTL	EWR	$11.83	$9.34	$9.88	$7.81	$18.95
DETROIT METRO WAYNE COUNTY	**DTW**	**$2.91**	**$2.75**	**$5.05**	**$4.76**	**$5.92**
MINNEAPOLIS/ST PAUL INTL	MSP	$2.64	$2.45	$3.06	$2.84	$4.63
ORLANDO INTL	MCO	$2.65	$2.51	$4.63	$4.38	$4.62
SAN FRANCISCO INTL	SFO	$8.69	$7.38	$8.18	$6.95	$15.39
PHILADELPHIA INTL	PHL	$4.80	$4.11	$4.73	$4.05	$8.60
SEATTLE TACOMA INTL	SEA	$5.77	$5.18	$5.09	$4.57	$10.89
CHARLOTTE/DOUGLAS INTL	CLT	$1.46	$1.39	$1.46	$1.39	$2.69
LOGAN INTL	BOS	$7.66	$6.85	$7.61	$6.81	$11.74
LA GUARDIA	LGA	$6.35	$6.31	$8.01	$7.95	$11.30
WASHINGTON DULLES INTL	IAD	$6.07	$5.26	$7.36	$6.38	$10.97
BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL	BWI	$3.06	$2.89	$5.80	$5.48	$5.34
MIDWAY INTL	MDW	$2.52	$2.50	$4.77	$4.73	$3.81
R REAGAN WASHINGTON NATIONAL	DCA	$5.08	$5.07	$5.75	$5.74	$10.38
CINCINNATI/NO KENTUCKY INTL	CVG	$2.87	$2.80	$3.68	$3.58	$4.60
LAMBERT-ST LOUIS INTL	STL	$4.82	$4.57	$5.28	$5.00	$9.21
OAKLAND INTL	OAK	$4.09	$2.81	$6.50	$4.47	$5.40
CLEVELAND HOPKINS INTL	CLE	$5.98	$5.53	$5.54	$5.12	$11.38
KANSAS CITY INTL	MCI	$2.14	$1.91	$4.74	$4.23	$3.10
NORMAN MINETA SAN JOSE INTL	SJC	$3.12	$2.88	$9.12	$8.40	$5.13
SACRAMENTO INTL	SMF	$2.97	$2.78	$6.61	$6.21	$4.94
PITTSBURGH INTL	PIT	$8.61	$7.93	$7.35	$6.78	$12.43
JOHN WAYNE	SNA	$4.21	$4.12	$5.54	$5.42	$6.39
WP HOBBY	HOU	$4.25	$4.21	$4.93	$4.88	$7.22
INDIANAPOLIS INTL	IND	$4.84	$2.18	$6.15	$2.77	$8.19
ONTARIO INTL	ONT	$5.85	$3.44	$9.81	$5.77	$11.19
LOVE FIELD	DAL	$1.42	$1.42	$3.32	$3.32	$1.24
PORT COLUMBUS INTL	CMH	$3.11	$3.07	$5.62	$5.54	$4.80
BOB HOPE	BUR	$2.31	$2.11	$4.41	$4.04	$1.84
MANCHESTER-BOSTON REGL.	MHT	$3.24	$2.69	$6.09	$5.05	$5.79
LONG BEACH	LGB	$3.57	$3.06	$6.84	$5.87	$2.18
RICKENBACKER INTL	LCK	$434.11	$2.18	$861.91	$4.33	--

Exhibit 3.67: Preliminary Benchmarking of Economic Impacts of Selected Major Airports

CODE	AIRPORT	Metropolitan Area Population (2006)	YEAR	Total economic impact	Total employment
ATL	Hartsfield Atlanta International Airport	5,138,223	2001	$16.8 billion	.
ORD	Chicago, O'hare	9,505,748	1999		.
LAX	Los Angeles	12,950,129	1992	$82.1 billion	363,700
DFW	Dallas-Ft Worth	6,003,967	2006	$16.6 billion	305,018
DEN	Denver	2,408,750	1998	$17 Billion	148,786
LAS	McCarran International Airport	1,777,539	1990	$15.3 buillion	.
PHX	Phoenix Sky Harbor	4,039,182	2004	$14 Billion	
JFK	John F. Kennedy	18,818,536	1998	$27.0 billion	244,700
MSP	Minneapolis/St. Paul International	3,175,041	1999	$11 Billion	68,124
IAH	Bush Intercontinental (Houston)	4,468,966	2006	$10.9 billion	201,876
DTW	Detroit-Wayne International airport	4,468,966	2006	$7.6 billion	71,695
EWR	Newark	18,818,536	1998	$10.3 billion	129,000
SFO	San Francisco	4,180,027	1993	$21.1 billion	473,013
MCO	Orlando Sanford	1,984,855	1999	$2.4 billion	26,764
SEA	Seattle-Tacoma International Airport	3,263,497	2000		5,880
PHL	Philadelphia	5,826,742	1993	$1.4 billion	30,307
BOS	Boston	4,455,217	1996	$5.3 billion	.
CLT	Charlotte	1,583,016	1998	$4.0 billion	71,393
LGA	LaGuardia	18,818,536	1998	$5.7 billion	72,180
IAD	Dulles	5,290,400	2002	$6.2 billion	93,096
CVG	Cinncinatti-Northern Kentucky	2,104,218	1998	$1.8 billion	69,083
BWI	Baltimore-washington International Airport	2,658,405	1995	$5.1 billion	53,170
MEM	Memphis International Airport	1,274,704	2004	$20.8 Billion	166,000
SDF	Louisville	1,222,216	2004	$4.5 billion	43,589

Exhibit 3.68: Preliminary Benchmarking of Nearby Employment and Payroll Effects of Selected Major Airports

	Airport	ID	Employment on-airport**	Total employment within radius of:***			Total payroll (in thousands) within radius of:***		
				2.5 miles	5 miles	10 miles	2.5 miles	5 miles	10 miles
1	Atlanta, GA: Hartsfield-Jackson	ATL	56,000	115,650	161,625	515,453	$4,818,972	$6,330,416	$19,436,447
2	Chicago, IL: O Hare	ORD	51,000	193,106	552,227	1,255,962	$8,617,615	$22,953,992	$51,614,870
3	Los Angeles, CA: Los Angeles International	LAX	59,000	224,606	391,173	1,455,801	$11,272,882	$18,049,896	$60,864,834
4	Dallas/Ft.Worth, TX: Dallas/Ft Worth International	DFW		226,633	415,864	986,817	$11,377,342	$17,899,711	$38,451,828
5	Denver, CO: Denver International	DEN	30,000	16,499	72,543	190,528	$828,270	$2,752,061	$6,538,373
6	Las Vegas, NV: Mc Carran International	LAS	15,000	216,888	444,293	607,072	$7,117,694	$14,018,353	$18,913,582
7	Phoenix, AZ: Sky Harbor International	PHX	31,437	145,418	436,092	875,844	$5,137,376	$15,383,302	$29,075,340
8	New York, NY: Kennedy International	JFK	39,110	122,922	236,247	578,391	$4,282,374	$7,840,754	$18,773,436
9	Minneapolis/St. Paul, MN: Minneapolis St Paul International	MSP	28,545	75,099	321,438	868,931	$3,030,832	$11,925,581	$35,253,395
10	Houston, TX: Houston Intercontinental	IAH	28,559	48,723	140,105	293,443	$1,929,195	$5,330,949	$10,239,443
11	Detroit, MI: Detroit Metro Wayne County	DTW	18,000	37,372	91,928	358,382	$1,797,570	$3,728,161	$13,347,348
12	Newark, NJ: Newark Liberty International	EWR	29,810	176,427	350,489	1,005,097	$7,143,990	$13,032,402	$44,018,465
13	San Francisco, CA: International	SFO		55,108	132,349	748,090	$2,304,397	$6,380,153	$41,706,910
14	Orlando, FL: Orlando International	MCO	16,600	24,320	123,041	422,101	$749,493	$3,652,632	$13,282,822
15	Miami, FL: Miami International	MIA	31,786	215,157	473,256	721,654	$6,013,125	$15,693,820	$22,348,777
16	Seattle, WA: Seattle/Tacoma International	SEA	19,017	72,091	165,679	517,461	$2,592,930	$7,448,734	$22,054,018
17	Philadelphia, PA: Philadelphia International	PHL	21,000	52,448	194,379	735,223	$2,006,923	$7,480,777	$28,347,493
18	Boston, MA: Logan International	BOS	15,000	288,222	616,658	992,409	$16,054,791	$31,950,808	$45,728,919
19	Charlotte, NC: Douglas Municipal	CLT	16,500	36,048	162,358	369,765	$1,483,788	$6,202,534	$13,306,139
20	New York, NY: La Guardia	LGA	12,920	172,757	795,254	2,784,154	$6,248,576	$37,545,128	$165,196,369
21	Washington, DC: Dulles International	IAD	18,800	121,010	217,753	325,777	$6,574,221	$10,806,059	$14,729,653
22	Covington, KY: Cincinnati/ Northern Kentucky International	CVG	15,000	4,301	105,361	309,165	$97,292	$3,367,935	$11,194,981
23	Baltimore, MD: Baltimore/Washington International	BWI	12,030	76,925	133,018	560,025	$3,310,488	$5,282,366	$21,597,205
24	Fort Lauderdale, FL: Fort Lauderdale International	FLL	7,500	54,858	184,824	537,392	$1,835,274	$6,185,073	$17,078,423
25	Honolulu, HI: Honolulu International	HNL		53,418	241,581	291,128	$1,906,221	$8,070,215	$9,380,161
			26,028	2,826,006	7,159,535	18,306,065	$118,531,631	$289,311,812	$772,479,231
	Percent of national total			2.56%	6.48%	16.57%	3.21%	7.83%	20.90%
	National total			110,467,450			$3,696,165,985		

Source: Authors' analysis and as follows:

* Bureau of Transportation Statistics

** Airport reports (where available)

*** Zip Business Pattern data

Exhibit 3.69: Comparative Employment Generation per Work Load Unit

Airport	Code	Employment per million Work Load Units: Employment on-airport**	Total employment within radius of:*** 2.5 miles	5 miles	10 miles
HARTSFIELD-JACKSON ATLANTA INTL	ATL	606.64	1,252.82	1,750.86	5,583.83
O'HARE INTL	ORD	550.69	2,085.14	5,962.90	13,561.77
LOS ANGELES INTL	LAX	736.43	2,803.51	4,882.58	18,171.16
DALLAS/FT WORTH INTL	DFW		3,342.44	6,133.26	14,553.81
DENVER INTL	DEN	598.27	329.03	1,446.69	3,799.60
MCCARRAN INTL	LAS	317.75	4,594.40	9,411.59	12,859.78
JF KENNEDY INTL	JFK	650.47	2,044.41	3,929.21	9,619.67
G BUSH INTERCONTINENTAL	IAH	612.31	1,044.62	3,003.86	6,291.44
NEWARK LIBERTY INTL	EWR	641.44	3,796.27	7,541.65	21,627.19
DETROIT METRO WAYNE COUNTY	**DTW**	**472.27**	**980.53**	**2,411.92**	**9,402.88**
MINNEAPOLIS/ST PAUL INTL	MSP	744.09	1,957.61	8,378.95	22,650.51
ORLANDO INTL	MCO	453.30	664.11	3,359.89	11,526.35
SAN FRANCISCO INTL	SFO		1,394.31	3,348.63	18,927.79
PHILADELPHIA INTL	PHL	566.19	1,414.08	5,240.75	19,822.73
SEATTLE TACOMA INTL	SEA	569.39	2,158.50	4,960.65	15,493.49
CHARLOTTE/DOUGLAS INTL	CLT	529.21	1,156.18	5,207.36	11,859.58
LOGAN INTL	BOS	484.28	9,305.28	19,908.87	32,040.03
LA GUARDIA	LGA	482.99	6,458.21	29,729.16	104,080.66
WASHINGTON DULLES INTL	IAD	714.25	4,597.41	8,272.87	12,376.92
BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL	BWI	536.48	3,430.51	5,932.01	24,974.64
CINCINNATI/NO KENTUCKY INTL	CVG	899.40	257.89	6,317.42	18,537.46
Mean		587.68	2,622.25	7,006.24	19,417.20

Exhibit 3.70: Preliminary Benchmarking of Sectoral Employment within Airport-centric Rings

NAICS sector	Sectoral employment within radius of: 2.5 miles	5 miles	10 miles	Total national sectoral employment
Total employment	2,826,006	7,159,535	18,306,065	110,467,450
	2.56%	6.48%	16.57%	
Manufacturing	134,043	358,427	922,945	9,397,147
	1.43%	3.81%	9.82%	
Wholesale trade	118,774	312,762	767,344	4,003,381
	2.97%	7.81%	19.17%	
Transportation and warehousing	211,323	321,348	502,717	2,146,858
	9.84%	14.97%	23.42%	
Information industries	70,767	176,188	517,812	2,375,451
	2.98%	7.42%	21.80%	
Finance and insurance	105,615	265,146	888,233	4,166,924
	2.53%	6.36%	21.32%	
Professional, scientific, and technical services	122,641	336,836	1,027,736	4,735,593
	2.59%	7.11%	21.70%	
Management of companies and enterprises	47,465	125,006	378,211	1,839,833
	2.58%	6.79%	20.56%	
Administrative and support services	156,975	389,269	977,373	4,991,893
	3.14%	7.80%	19.58%	
Accommodation and food services	182,230	435,699	1,055,911	6,953,719
	2.62%	6.27%	15.18%	
Wages and salaries	$118,531,631	$289,311,812	$772,479,231	$3,696,165,985
	3.21%	7.83%	20.90%	
Employment change 1995-2002	15.98%	12.05%	10.07%	

Source: Authors' analysis of Zip Business Pattern data

Exhibit 3.71: Preliminary Benchmarking of Airport Area and Center-city Employment

	Sectoral employment within CBD-centric rings Sectoral employment within radius of:				Airport area employment as a percentage of CBD-centric employment Sectoral employment within radius of:		
NAICS sector	2.5 miles	5 miles	10 miles	Total national sectoral employment	2.5 miles	5 miles	10 miles
Total employment	3,759,600 3.40%	9,281,949 8.40%	20,084,559 18.18%	110,467,450	75.17%	77.13%	91.14%
Manufacturing	116,750 1.24%	317,683 3.38%	856,328 9.11%	9,397,147	114.81%	112.83%	107.78%
Wholesale trade	98,939 2.47%	280,842 7.02%	730,117 18.24%	4,003,381	120.05%	111.37%	105.10%
Transportation and warehousing	70,515 3.28%	173,845 8.10%	453,103 21.11%	2,146,858	299.69%	184.85%	110.95%
Information industries	126,029 5.31%	318,161 13.39%	613,488 25.83%	2,375,451	56.15%	55.38%	84.40%
Finance and insurance	209,411 5.03%	557,393 13.38%	1,053,839 25.29%	4,166,924	50.43%	47.57%	84.29%
Professional, scientific, and technical services	297,510 6.28%	717,903 15.16%	1,278,992 27.01%	4,735,593	41.22%	46.92%	80.36%
Management of companies and enterprises	87,023 4.73%	198,961 10.81%	413,767 22.49%	1,839,833	54.54%	62.83%	91.41%
Administrative and support services	182,252 3.65%	482,827 9.67%	1,084,335 21.72%	4,991,893	86.13%	80.62%	90.14%
Accommodation and food services	239,377 3.44%	537,833 7.73%	1,161,153 16.70%	6,953,719	76.13%	81.01%	90.94%
Wages and salaries	$161,626,470 4.37%	$427,771,534 11.57%	$847,733,453 22.94%	$3,696,165,985	73.34%	67.63%	91.12%
Employment change 1995-2002 (within cumulative radii)	2.31%	3.35%	6.25%				
(within core and concentric bands)	2.31%	4.07%	8.88%				

Source: Authors' analysis of Zip Business Pattern data

Exhibit 3.72

Schiphol's CROS Discussion Region

Exhibit 3.73

Munich Airport's "neighborhood forum"

Source: Drosz and de Jong (2007)

Proprietary and Confidential

Exhibit 3.74: Overview of Selected Benchmark Airport Finances

Airport	Code	Operating income	Operating expenditures	Depreciation	Net operating income	Net income as a percent of operating income	Total financial proceeds	Total capital expenditures	Capital expenditures compared to net operating income	Debt repayments	Debt repayments compared to net operating income	Total debt	Net assets	Debt/ net assets
Hartsfield-Jackson Atlanta International	ATL	$418,144,066	$174,355,874	$50,802,333	$192,985,859	46.15%	$727,968,191	$246,214,326	127.58%	$52,354,697	27.13%	$2,549,550,667	$2,918,530,500	87.36%
GENERAL EDWARD LAWRENCE LOGAN	BOS	$467,409,835	$273,442,143	$107,396,380	$86,571,312	18.52%	$1,155,667	$215,744,003	249.21%	$102,279,479	118.14%	$1,452,518,333	$1,316,772,333	110.31%
BURBANK-GLENDALE-PASADENA	BUR	$61,305,445	$35,434,162	$8,006,936	$17,864,347	29.14%	$28,923,107	$24,475,725	137.01%	$10,950,000	61.30%	$49,561,565	$321,655,544	15.41%
BALTIMORE-WASHINGTON INTL	BWI	$204,710,192	$146,252,073	$29,129,901	$29,328,218	14.33%		$48,640,114	165.85%	$28,905,063	98.56%	$702,370,000	$1,030,925,467	68.13%
CLEVELAND-HOPKINS INTL	CLE	$162,113,736	$104,523,344	$45,637,200	$11,953,192	7.37%	$286,072,654	$76,425,493	639.37%	$9,880,229	82.66%	$962,577,290	$399,402,988	241.00%
CHARLOTTE/DOUGLAS INTL	CLT	$102,157,500	$74,962,001	$24,580,000	$2,615,500	2.56%	$9,156,000	$36,109,500	1380.60%	$44,827,500	1713.92%	$509,699,000	$472,699,500	107.83%
PORT COLUMBUS INTL	CMH	$91,419,294	$44,502,874	$18,718,931	$28,197,489	30.84%	$14,377,835	$38,247,746	135.64%	$11,079,743	39.29%	$121,910,415	$390,185,764	31.24%
CINCINNATI/NORTHERN KENTUCKY	CVG	$98,159,229	$67,982,745	$30,176,484		0.00%	$76,646,666	$61,323,500		$18,451,034		$359,362,069	$567,293,185	63.35%
DALLAS LOVE FIELD	DAL	$36,776,046	$24,859,355	$10,144,498	$1,772,192	4.82%	$13,268,749	$10,680,735	602.68%	$6,378,833	359.94%	$42,405,275	$312,691,036	13.56%
RONALD REAGAN WASHINGTON NATIONAL	DCA	$230,128,155	$145,321,523	$46,180,638	$38,625,994	16.78%	$222,010,870	$13,072,223	33.84%	$22,478,593	58.20%	$1,259,267,771	$416,404,066	302.41%
DENVER INTL	DEN	$652,275,064	$461,008,703	$174,700,145	$16,566,216	2.54%	$26,645,305	$55,963,627	337.82%	$303,042,630	1829.28%	$3,996,336,554	$675,908,417	591.25%
DALLAS/FORT WORTH INTL	DFW	$602,622,967	$386,562,333	$140,459,797	$75,600,837	12.55%	$222,787,667	$486,829,625	643.95%	$276,735,000	366.05%	$4,047,485,667	$1,462,778,333	276.70%
DETROIT METRO WAYNE	**DTW**	**$321,227,465**	**$271,088,592**	**$100,243,625**	**-$50,104,752**	**-15.60%**	**$280,469,445**	**$118,724,817**	**-236.95%**	**$106,460,244**	**-212.48%**	**$2,082,757,813**	**$680,890,915**	**305.89%**
NEWARK INTL	EWR	$716,713,000	$413,531,000	$125,323,000	$177,859,000	24.82%	$27,385,124	$66,874,071	37.60%					
WILLIAM P HOBBY	HOU	$66,008,861	$55,746,502	$13,377,219	-$3,114,860	-4.72%	$3,849,255	$29,022,723	-931.75%	$23,044,603	-739.83%	$406,446,084	$156,911,278	259.03%
WASHINGTON DULLES INTERNATI	IAD	$374,713,814	$235,378,382	$84,388,901	$54,946,531	14.66%	$382,205,918	$472,835,366	860.54%	$38,979,740	70.94%	$2,195,533,808	$416,404,067	527.26%
GEORGE BUSH INTERCONTINENTAL	IAH	$343,081,116	$213,364,827	$92,730,584	$36,985,706	10.78%	$18,729,568	$213,878,212	578.27%	$102,521,258	277.19%	$1,789,138,504	$881,776,520	202.90%
INDIANAPOLIS INTL	IND	$185,035,401	$85,718,449	$43,401,912	$55,915,040	30.22%	$375,431,243	$158,298,628	283.11%	$99,307,280	177.60%	$940,736,510	$770,095,758	122.16%
JOHN F KENNEDY INTL	JFK	$876,335,000	$631,295,667	$122,050,333	$122,989,000	14.03%	$178,972,667	$285,383,000	232.04%		0.00%			
MC CARRAN INTL	LAS	$391,640,472	$214,181,952	$44,882,482	$132,576,037	33.85%	$125,288,236	$433,182,734	326.74%	$75,424,497	56.89%	$1,943,280,333	$1,090,824,156	178.15%
LOS ANGELES INTL	LAX	$637,658,150	$437,837,426	$61,571,063	$138,249,661	21.68%	$4,779,503	$118,503,129	85.72%	$40,159,323	29.05%	$595,034,222	$2,027,123,780	29.35%
RICKENBACKER INTERNATIONAL	LCK	$17,124,120	$5,175,213	$3,998,749	$7,950,158	46.43%	$12,244,112	$11,302,465	142.17%	$1,139,137	14.33%	$3,169,022	$88,375,167	3.59%
LAGUARDIA	LGA	$329,652,333	$229,712,667	$26,977,000	$72,962,667	22.13%	$69,056,333	$71,122,333	97.48%					
LONG BEACH /DAUGHERTY FIELD	LGB	$41,293,716	$19,615,269	$2,616,577	$19,061,869	46.16%	$1,020,000	$17,635,567	92.52%	$1,917,933	10.06%	$13,351,738	$76,727,786	17.40%
KANSAS CITY INTL	MCI	$118,041,643	$68,743,458	$39,056,354	$10,241,832	8.68%	$35,277,241	$79,724,939	778.42%	$30,808,333	300.81%	$395,935,000	$460,135,219	86.05%
ORLANDO INTL	MCO	$390,615,000	$231,183,000	$88,250,667	$71,181,333	18.22%	$72,050,000	$97,154,667	136.49%	$68,889,000	96.78%	$1,331,360,667	$651,104,573	204.48%
CHICAGO MIDWAY INTERNATIONAL	MDW	$152,510,559	$134,865,537	$31,521,385	-$13,876,363	-9.10%	$121,879,553	$99,040,646	-713.74%	$7,125,000	-51.35%	$1,263,015,536	$313,270,002	403.17%
MEMPHIS INTL	MEM	$130,117,495	$77,644,589	$43,743,727	$8,729,179	6.71%	$46,359,609	$43,028,671	492.93%	$64,414,630	737.92%	$673,742,959	$315,274,583	213.70%
MANCHESTER	MHT	$61,379,299	$37,020,756	$14,063,952	$10,294,591	16.77%	$8,893,918	$23,144,286	224.82%	$11,273,333	109.51%	$260,260,000	$163,021,007	159.65%
MINNEAPOLIS-ST PAUL INTL	MSP	$356,276,449	$196,289,430	$96,089,452	$63,897,567	17.93%	$186,326,333	$137,310,931	214.89%	$201,852,667	315.90%	$1,960,306,667	$1,291,153,000	151.83%
OAKLAND INTL	OAK	$181,270,213	$104,950,828	$26,094,996	$50,224,388	27.71%	$10,750,000	$95,174,489	189.50%	$11,118,973	22.14%	$278,038,903		
ONTARIO INTL	ONT	$92,960,321	$78,045,596	$13,548,566	$1,366,160	1.47%	$9,871,548	$20,487,697	1499.66%	$10,379,436	759.75%	$134,837,988	$358,157,006	37.65%
CHICAGO O'HARE INTL	ORD	$744,786,495	$540,555,459	$140,525,504	$63,705,533	8.55%	$833,677,649	$481,286,644	755.49%	$44,254,015	69.47%	$4,970,926,060	$562,604,691	883.56%
PHILADELPHIA INTL	PHL	$298,789,481	$206,885,930	$69,270,448	$22,633,104	7.57%	$143,903,054	$63,600,099	281.00%	$35,679,994	157.65%	$1,128,606,104	$654,539,758	172.43%
PITTSBURGH INTERNATIONAL	PIT	$183,430,667	$110,311,004	$63,739,799	$9,379,865	5.11%	$44,019,374	$44,877,741	478.45%	$73,949,912	788.39%	$609,237,989	$329,799,759	184.73%
LOUISVILLE INTL	SDF	$97,903,200	$53,199,618	$27,128,204	$17,575,379	17.95%	$50,282,137	$47,449,987	269.98%	$32,997,288	187.75%	$425,538,333	$354,591,426	120.01%
SEATTLE-TACOMA INTL	SEA	$502,931,514	$260,167,977	$90,512,258	$152,251,279	30.27%	$226,275,429	$412,974,000	271.25%	$50,847,552	33.40%	$2,602,063,855	$319,840,497	813.55%
SAN FRANCISCO INTL	SFO	$576,269,616	$501,008,223	$161,587,361	-$86,325,968	-14.98%	$364,176,706	$79,470,683	-92.06%	$422,111,667	-488.97%	$4,111,868,333	$376,376,377	1092.49%
SAN JOSE INTERNATIONAL	SJC	$137,765,095	$102,949,145	$18,975,730	$15,840,220	11.50%	$160,895,302	$62,671,396	395.65%			$510,975,000	$1,554,791,538	32.86%
SACRAMENTO METRO	SMF	$134,493,514	$79,678,769	$17,287,816	$37,526,928	27.90%	$26,679,267	$60,125,290	160.22%	$13,748,291	36.64%	$270,196,666	$354,756,256	76.16%
JOHN WAYNE AIRPORT-ORANGE C	SNA	$108,013,550	$61,581,315	$18,596,531	$27,835,704	25.77%	$5,716,131	$12,140,938	43.62%	$18,405,952	66.12%	$123,558,083	$282,403,353	43.75%
LAMBERT-ST LOUIS INTL	STL	$211,601,589	$123,482,838	$31,083,425	$57,035,326	26.95%	$1,373,222	$184,604,667	323.67%	$33,058,333	57.96%	$904,116,928	$1,072,508,223	84.30%
TOLEDO EXPRESS	TOL	$9,614,918	$6,067,656	$4,773,083	-$1,225,821	-12.75%	$8,103,628	$8,739,621	-712.96%	$2,318,317	-189.12%	$24,380,791	$104,486,665	23.33%
		$277,127,339	$179,685,679	$55,891,720	$42,539,225	15.17%	$130,117,958	$124,732,490	262.34%	$64,347,423	191.00%	$1,200,036,463	$666,492,064	213.79%

Exhibit 3.75: Level and Structure of Benchmark Airport Revenues

Airport	Code	Total Income	Percent Aeronautical	Landing fees	Facility rental	Non-aeronautical	non-Terminal rental	Retail concessions	Auto-related	non-Operating income	Grant	PFC
Hartsfield-Jackson Atlanta International	ATL	$418,144,066	**19.27%**	5.49%	10.22%	**35.68%**	3.65%	9.63%	19.94%	**45.05%**	24.65%	32.78%
GENERAL EDWARD LAWRENCE LOGAN	BOS	$467,409,835	**45.42%**	15.81%	23.18%	**37.45%**	3.95%	4.15%	23.44%	**17.12%**	37.99%	8.31%
BURBANK-GLENDALE-PASADENA	BUR	$61,305,445	**21.42%**	5.15%	15.03%	**45.68%**	2.25%	4.27%	38.26%	**32.90%**	30.69%	18.49%
BALTIMORE-WASHINGTON INTL	BWI	$204,710,192	**31.62%**	14.72%	15.62%	**26.23%**	0.26%	4.34%	18.54%	**42.15%**	17.80%	20.02%
CLEVELAND-HOPKINS INTL	CLE	$162,113,736	**41.76%**	21.26%	19.01%	**25.61%**	2.19%	3.54%	17.89%	**32.63%**	35.84%	13.92%
CHARLOTTE/DOUGLAS INTL	CLT	$102,157,500	**42.46%**	10.95%	31.31%	**43.32%**	2.91%	13.77%	26.63%	**14.22%**	0.00%	17.72%
PORT COLUMBUS INTL	CMH	$91,419,294	**22.89%**	9.00%	12.35%	**40.71%**	0.58%	3.69%	33.69%	**36.40%**	47.93%	15.96%
CINCINNATI/NORTHERN KENTUCKY	CVG	$98,159,229	**47.52%**	21.40%	23.21%	**38.10%**	1.12%	8.63%	25.00%	**14.38%**	0.00%	10.90%
DALLAS LOVE FIELD	DAL	$36,776,046	**26.63%**	5.13%	17.05%	**56.98%**	8.44%	9.32%	36.49%	**16.40%**	72.37%	0.00%
RONALD REAGAN WASHINGTON NATIONAL	DCA	$230,128,155	**40.93%**	13.45%	27.48%	**37.22%**	3.58%	7.45%	23.24%	**21.85%**	11.64%	15.00%
DENVER INTL	DEN	$652,275,064	**47.66%**	14.10%	31.09%	**27.62%**	0.54%	4.72%	20.92%	**24.73%**	21.47%	13.27%
DALLAS/FORT WORTH INTL	DFW	$602,622,967	**32.85%**	25.76%	6.21%	**32.50%**	4.44%	6.03%	18.67%	**34.65%**	24.07%	18.72%
DETROIT METRO WAYNE	**DTW**	**$321,227,465**	**32.58%**	**23.02%**	**9.56%**	**34.96%**	**0.00%**	**8.93%**	**19.91%**	**32.46%**	**12.07%**	**21.42%**
NEWARK INTL	EWR	$716,713,000	**60.59%**	24.61%	27.24%	**30.58%**	0.07%	4.04%	15.87%	**8.83%**	21.31%	6.95%
WILLIAM P HOBBY	HOU	$66,008,861	**55.07%**	22.82%	30.61%	**33.07%**	1.35%	4.97%	26.43%	**11.86%**	94.80%	0.00%
WASHINGTON DULLES INTERNATI	IAD	$374,713,814	**36.96%**	11.85%	20.88%	**38.75%**	3.35%	8.25%	22.28%	**24.28%**	28.26%	12.66%
GEORGE BUSH INTERCONTINENTAL	IAH	$343,081,116	**55.20%**	19.93%	34.72%	**26.22%**	2.81%	4.39%	17.97%	**18.57%**	78.02%	0.00%
INDIANAPOLIS INTL	IND	$185,035,401	**21.14%**	10.16%	10.59%	**27.97%**	5.17%	2.69%	17.42%	**50.89%**	30.20%	9.31%
JOHN F KENNEDY INTL	JFK	$876,335,000	**63.00%**	26.74%	23.61%	**27.06%**	0.38%	4.18%	9.40%	**9.95%**	29.35%	7.03%
MC CARRAN INTL	LAS	$391,640,472	**29.09%**	7.35%	18.17%	**39.38%**	4.67%	22.00%	12.30%	**31.53%**	20.20%	17.88%
LOS ANGELES INTL	LAX	$637,658,150	**35.94%**	21.95%	12.13%	**41.81%**	11.75%	11.92%	16.61%	**22.24%**	0.00%	17.53%
RICKENBACKER INTERNATIONAL	LCK	$17,124,120	**14.55%**	8.02%	4.81%	**10.59%**	0.38%	0.01%	1.02%	**74.86%**	93.18%	0.00%
LAGUARDIA	LGA	$329,652,333	**51.18%**	30.99%	14.73%	**31.93%**	0.04%	3.89%	17.72%	**16.89%**	29.12%	11.97%
LONG BEACH /DAUGHERTY FIELD	LGB	$41,293,716	**23.83%**	6.74%	16.22%	**35.38%**	5.62%	2.21%	27.97%	**40.80%**	72.91%	9.90%
KANSAS CITY INTL	MCI	$118,041,643	**20.40%**	8.45%	10.73%	**41.92%**	3.20%	3.12%	36.11%	**37.69%**	38.42%	13.49%
ORLANDO INTL	MCO	$390,615,000	**23.54%**	6.41%	16.95%	**44.86%**	0.96%	7.93%	24.83%	**31.60%**	39.00%	11.15%
CHICAGO MIDWAY INTERNATIONAL	MDW	$152,510,559	**30.90%**	10.86%	15.06%	**31.05%**	0.11%	7.96%	22.88%	**38.06%**	35.54%	16.11%
MEMPHIS INTL	MEM	$130,117,495	**58.87%**	31.74%	20.58%	**19.56%**	1.72%	4.70%	14.75%	**21.57%**	79.83%	0.00%
MANCHESTER	MHT	$61,379,299	**20.55%**	9.14%	10.07%	**50.88%**	1.55%	2.19%	42.84%	**28.57%**	55.16%	9.13%
MINNEAPOLIS-ST PAUL INTL	MSP	$356,276,449	**26.42%**	11.59%	14.75%	**34.28%**	1.61%	6.70%	22.51%	**39.30%**	20.73%	19.37%
OAKLAND INTL	OAK	$181,270,213	**33.17%**	8.78%	21.67%	**37.08%**	1.94%	3.41%	27.07%	**29.75%**	30.28%	16.17%
ONTARIO INTL	ONT	$92,960,321	**44.37%**	14.04%	28.22%	**40.97%**	5.02%	2.97%	31.88%	**14.66%**	0.00%	9.73%
CHICAGO O'HARE INTL	ORD	$744,786,495	**41.46%**	20.01%	18.50%	**26.63%**	0.73%	8.26%	15.58%	**31.91%**	18.72%	19.42%
PHILADELPHIA INTL	PHL	$298,789,481	**51.06%**	16.98%	30.93%	**21.36%**	0.19%	5.87%	13.88%	**27.58%**	20.81%	16.11%
PITTSBURGH INTERNATIONAL	PIT	$183,430,667	**46.85%**	9.07%	30.97%	**25.05%**	0.66%	4.25%	15.29%	**28.10%**	47.94%	10.91%
LOUISVILLE INTL	SDF	$97,903,200	**24.66%**	16.50%	8.09%	**26.92%**	5.15%	2.04%	19.27%	**48.42%**	66.04%	5.27%
SEATTLE-TACOMA INTL	SEA	$502,931,514	**34.37%**	9.24%	24.75%	**26.41%**	1.82%	5.01%	16.03%	**39.22%**	56.97%	11.08%
SAN FRANCISCO INTL	SFO	$576,269,616	**50.60%**	15.97%	34.21%	**31.25%**	1.38%	12.11%	17.76%	**18.15%**	16.57%	10.44%
SAN JOSE INTERNATIONAL	SJC	$137,765,095	**24.26%**	7.66%	14.51%	**42.34%**	0.68%	9.72%	31.36%	**33.39%**	40.37%	15.94%
SACRAMENTO METRO	SMF	$134,493,514	**22.85%**	11.57%	9.69%	**44.97%**	2.56%	3.46%	36.95%	**32.18%**	36.76%	16.72%
JOHN WAYNE AIRPORT-ORANGE C	SNA	$108,013,550	**37.50%**	9.57%	24.17%	**51.37%**	0.14%	7.75%	43.28%	**11.13%**	52.83%	0.00%
LAMBERT-ST LOUIS INTL	STL	$211,601,589	**34.67%**	21.35%	13.09%	**19.85%**	1.88%	4.15%	10.28%	**45.48%**	57.95%	14.50%
TOLEDO EXPRESS	TOL	$9,614,918	**60.12%**	16.27%	41.53%	**20.94%**	0.00%	0.00%	20.51%	**18.94%**	0.00%	12.39%
		$277,127,339	36.89%	14.69%	19.62%	34.01%	2.34%	6.01%	22.57%	29.10%	35.99%	12.27%

Exhibit 3.76 Airport and Airway Trust Fund (AATF) Aviation Excise Tax Structure

(Taxpayer Relief Act of 1997, Public Law 105-35)

Aviation Taxes	Comment	Tax Rate
		PASSENGERS
Domestic Passenger Ticket Tax	Ad valorem tax	7.5% of ticket price (10/1/99 through 9/30/2007)
Domestic Flight Segment Tax	"Domestic Segment" = a flight leg consisting of one takeoff and one landing by a flight	Rate is indexed by the Consumer Price Index starting 1/1/02 $3.40 per passenger per segment during CY2007
Passenger Ticket Tax for Rural Airports	Assessed on tickets on flights that begin/end at a rural airport.	7.5% of ticket price (same as passenger ticket tax) Flight segment fee does not apply.
	Rural airport: <100K enplanements during 2nd preceding CY, and either 1) not located within 75 miles of another airport with 100K+ enplanements, 2) is receiving essential air service subsides, or 3) is not connected by paved roads to another airport	
International Arrival & Departure Tax	Head tax assessed on pax arriving or departing for foreign destinations (& U.S. territories) that are not subject to pax ticket tax.	Rate is indexed by the Consumer Price Index starting 1/1/99 Rate during CY2007 = $15.10
Flights between continental U.S. and Alaska or Hawaii		Rate is indexed by the Consumer Price Index starting 1/1/99 $7.50 international faciltiies tax + applicable domestic tax rate (during CY07)
Frequent Flyer Tax	Ad valorem tax assessed on mileage awards (e.g., credit cards)	7.5% of value of miles
		FREIGHT / MAIL
Domestic Cargo/Mail		6.25% of amount paid for the transportation of property by air
		AVIATION FUEL
General Aviation Fuel Tax		Aviation gasoline: $0.193/gallon Jet fuel: $0.218/gallon
Commercial Fuel Tax		$0.043/gallon

Updated 2/7/07
Source: http://www.faa.gov/about/office_org/headquarters_offices/aep/aatf/media/Simplified_Tax_Table.xls

Exhibit 3.77: Overview of Passenger Facility Charges at Selected Benchmark Airports

City	Airport Name	Code	Level	Duration	Start Date	Est. Expir. Date
Atlanta	Hartsfield-Jackson Atlanta Internatiional	ATL	$4.50	7y6m	4/1/2001	10/1/2008
Boston	General Edward Lawrence Logan International	BOS	$4.50	5y4m	10/1/2005	2/1/2011
Burbank	Bob Hope	BUR	$4.50	4y9m	4/1/2003	1/1/2008
Baltimore	Baltimore/Washington International Thurgood Marshal	BWI	$4.50	13y2m	11/1/2002	1/1/2016
Cleveland	Cleveland-Hopkins International	CLE	$4.50	6y8m	8/1/2004	4/1/2011
Charlotte	Charlotte/Douglas International	CLT	$3.00	13y3m	11/1/2004	2/1/2018
Columbus	Port Columbus International	CMH	$4.50	5y2m	10/1/2004	12/1/2009
Covington	Cincinnati/Northern Kentucky International	CVG	$4.50	8y3m	8/1/2003	11/1/2011
Arlington	Ronald Reagan Washington National	DCA	$4.50	6y5m	6/1/2005	11/1/2011
Denver	Denver International	DEN	$4.50	25y9m	4/1/2001	1/1/2026
Dallas-Ft Worth	Dallas/Ft Worth International	DFW	$4.50	14y8m	7/1/2002	3/1/2017
Detroit	Detroit Metropolitan Wayne County	DTW	$4.50	24y7m	10/1/2001	5/1/2026
Newark	Newark Liberty International	EWR	$4.50	4y11m	4/1/2006	3/1/2011
Chantilly	Washington Dulles International	IAD	$4.50	11y9m	8/1/2005	5/1/2017
Indianapolis	Indianapolis International	IND	$4.50	20y10m	10/1/2001	9/1/2022
New York	John F. Kennedy International	JFK	$4.50	4y11m	4/1/2006	3/1/2011
Las Vegas	McCarran International	LAS	$4.00	2y6m	1/1/2007	7/1/2009
Los Angeles	Los Angeles International	LAX	$4.50	4y7m	12/1/2005	7/1/2010
New York	LaGuardia	LGA	$4.50	4y11m	4/1/2006	3/1/2011
Long Beach	Long Beach/Daugherty Field	LGB	$3.00	15y4m	8/1/2003	12/1/2018
Kansas City	Kansas City International	MCI	$4.50	9y3m	8/1/2005	11/1/2014
Orlando	Orlando International	MCO	$4.50	11y7m	4/1/2007	11/1/2018
Chicago	Chicago Midway International	MDW	$4.50	5y11m	1/1/2007	11/1/2012
Manchester	Manchester	MHT	$3.00	28y11m	1/1/1993	12/1/2021
Minneapolis	Minneapolis-St Paul International	MSP	$4.50	15y10m	4/1/2003	2/1/2019
Oakland	Metropolitan Oakland International	OAK	$4.50	7y	9/1/2003	9/1/2010
Ontario	Ontario International	ONT	$4.50	5y6m	11/1/2007	5/1/2013
Chicago	Chicago O'Hare International	ORD	$4.50	18y5m	2/1/2006	7/1/2024
Philadelphia	Philadelphia International	PHL	$4.50	11y10m	4/1/2001	2/1/2013
Phoenix	Phoenix Sky Harbor International	PHX	$4.50	10y1m	7/1/2002	8/1/2010
Pittsburgh	Pittsburgh International	PIT	$4.50	16y6m	9/1/2006	3/1/2023
Providence	Theodore Francis Green State	PVD	$4.50	1y11m	9/1/2006	8/1/2008
Louisville	Louisville International - Standiford Field	SDF	$3.00	11y4m	10/1/2006	2/1/2018
Seattle	Seattle-Tacoma International	SEA	$4.50	11y5m	1/1/2003	6/1/2014
San Francisco	San Francisco International	SFO	$4.50	15y3m	10/1/2001	1/1/2017
San Jose	Norman Y. Mineta San Jose International	SJC	$4.50	23y8m	4/1/2003	12/1/2026
Sacramento	Sacramento International	SMF	$4.50	7y6m	9/1/2003	3/1/2011
Santa Ana	John Wayne Airport -Orange County	SNA	$4.50	15y6m	7/1/2006	1/1/2022
St Louis	Lambert-St Louis International	STL	$4.50	12y1m	12/1/2001	1/1/2014
Toledo	Toledo Express	TOL	$4.50	5y11m	1/1/2004	12/1/2010
			$4.33			

Exhibit 3.78: Level and Structure of Operational Costs at Selected Benchmark Airports

		Total operating expenditure	Personnel compensation	Communications & Utilities	Supplies & Materials	Repairs & Maintenance	Contractual Services
Hartsfield-Jackson Atlanta International	ATL	$94,442,540	49.98%	3.80%	3.84%	23.25%	12.10%
GENERAL EDWARD LAWRENCE LOGAN	BOS	$210,984,143	39.20%	9.86%	3.44%	1.73%	20.92%
BURBANK-GLENDALE-PASADENA	BUR	$25,083,317	8.45%	6.36%	1.07%	12.45%	56.12%
BALTIMORE-WASHINGTON INTL	BWI	$122,962,194	27.15%	8.39%	2.59%	7.54%	50.30%
CLEVELAND-HOPKINS INTL	CLE	$62,676,431	35.80%	11.38%	6.37%	6.31%	25.54%
CHARLOTTE/DOUGLAS INTL	CLT	$43,279,501	30.78%	11.24%	10.93%	6.91%	25.06%
PORT COLUMBUS INTL	CMH	$37,837,136	57.98%	6.72%	5.24%	5.46%	18.36%
CINCINNATI/NORTHERN KENTUCKY	CVG	$59,754,158	48.59%	13.54%	0.55%	13.48%	15.56%
DALLAS LOVE FIELD	DAL	$22,811,764	29.33%	14.22%	3.29%	5.11%	46.43%
RONALD REAGAN WASHINGTON NATIONAL	DCA	$106,700,170	42.86%	8.14%	3.66%	8.30%	29.27%
DENVER INTL	DEN	$236,163,352	39.60%	17.80%	6.91%	11.59%	22.56%
DALLAS/FORT WORTH INTL	DFW	$259,560,000	47.30%	10.83%	7.30%	0.00%	29.06%
DETROIT METRO WAYNE	**DTW**	**$181,568,800**	**35.09%**	**11.40%**	**2.32%**	**18.07%**	**20.65%**
NEWARK INTL	EWR	$362,745,333	24.50%	3.96%	33.55%	0.00%	18.51%
WILLIAM P HOBBY	HOU	$42,159,286	49.39%	7.65%	3.42%	6.71%	31.24%
WASHINGTON DULLES INTERNATI	IAD	$167,976,728	37.59%	10.00%	4.93%	8.05%	33.89%
GEORGE BUSH INTERCONTINENTAL	IAH	$153,229,979	41.28%	13.26%	2.97%	11.15%	29.60%
INDIANAPOLIS INTL	IND	$49,740,181	51.41%	13.24%	6.93%	3.20%	20.12%
JOHN F KENNEDY INTL	JFK	$575,729,667	19.31%	14.40%	22.94%	0.00%	15.56%
MC CARRAN INTL	LAS	$133,551,129	45.19%	11.56%	6.76%	2.47%	29.11%
LOS ANGELES INTL	LAX	$412,503,883	48.97%	6.24%	0.56%	7.40%	35.09%
RICKENBACKER INTERNATIONAL	LCK	$4,946,480	57.75%	9.11%	5.84%	7.35%	8.84%
LAGUARDIA	LGA	$212,704,333	28.43%	4.81%	20.34%	0.00%	13.36%
LONG BEACH /DAUGHERTY FIELD	LGB	$18,863,756	30.84%	4.31%	4.06%	29.95%	28.99%
KANSAS CITY INTL	MCI	$53,246,105	42.13%	10.06%	5.14%	5.70%	33.51%
ORLANDO INTL	MCO	$160,394,000	28.60%	8.13%	2.03%	21.87%	35.44%
CHICAGO MIDWAY INTERNATIONAL	MDW	$89,047,034	24.18%	6.18%	0.85%	34.71%	26.36%
MEMPHIS INTL	MEM	$42,534,601	42.83%	8.67%	6.14%	5.19%	29.34%
MANCHESTER	MHT	$23,736,100	22.81%	15.06%	3.89%	3.75%	49.86%
MINNEAPOLIS-ST PAUL INTL	MSP	$108,885,039	50.13%	12.84%	1.07%	17.02%	1.33%
OAKLAND INTL	OAK	$95,442,098	19.41%	4.80%	0.85%	17.19%	39.34%
ONTARIO INTL	ONT	$69,140,606	46.28%	7.40%	0.98%	6.39%	22.70%
CHICAGO O'HARE INTL	ORD	$341,459,919	33.42%	8.30%	2.59%	21.54%	27.10%
PHILADELPHIA INTL	PHL	$150,151,970	33.25%	9.84%	3.10%	11.17%	38.59%
PITTSBURGH INTERNATIONAL	PIT	$73,419,760	36.81%	15.28%	4.85%	12.77%	27.04%
LOUISVILLE INTL	SDF	$20,892,190	48.12%	10.41%	4.91%	8.89%	22.81%
SEATTLE-TACOMA INTL	SEA	$152,553,051	42.10%	9.70%	3.80%	1.21%	17.11%
SAN FRANCISCO INTL	SFO	$274,599,356	52.95%	8.02%	2.47%	6.86%	28.23%
SAN JOSE INTERNATIONAL	SJC	$97,631,160	30.43%	3.65%	1.88%	0.96%	44.06%
SACRAMENTO METRO	SMF	$68,517,750	39.65%	5.31%	4.53%	2.66%	41.76%
JOHN WAYNE AIRPORT-ORANGE C	SNA	$53,257,159	22.13%	5.71%	3.08%	9.27%	54.87%
LAMBERT-ST LOUIS INTL	STL	$80,239,158	45.30%	7.67%	5.72%	15.31%	16.01%
TOLEDO EXPRESS	TOL	$4,795,476	55.64%	18.01%	0.91%	14.62%	6.65%
		$129,253,879	38.21%	9.47%	5.32%	9.62%	27.87%

Exhibit 3.79: Level and Distribution of Capital Expenditures at Selected Benchmark Airports

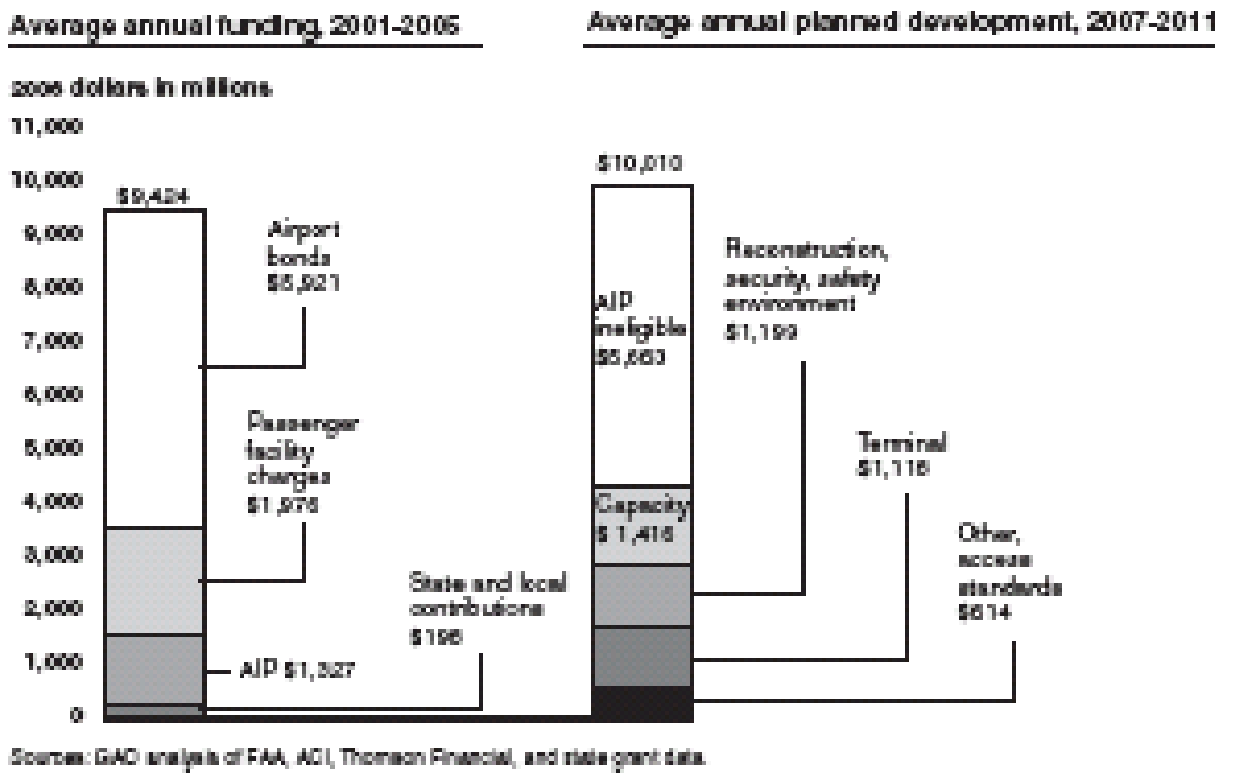
Airport	Code	Total capital expenditure	Airfield	Terminal	Parking	Ground access	Other
Hartsfield-Jackson Atlanta International	ATL	$246,214,326	50.08%	31.18%	0.86%	1.94%	15.94%
GENERAL EDWARD LAWRENCE LOGAN	BOS	$215,744,003	26.91%	22.25%	27.74%	15.84%	7.25%
BURBANK-GLENDALE-PASADENA	BUR	$24,475,725	8.65%	14.54%	8.50%	0.10%	68.28%
BALTIMORE-WASHINGTON INTL	BWI	$48,640,114	38.13%	44.12%	5.17%	-0.02%	12.60%
CLEVELAND-HOPKINS INTL	CLE	$76,425,493	77.59%	9.82%	2.18%	1.00%	9.75%
CHARLOTTE/DOUGLAS INTL	CLT	$36,109,500	0.00%	99.26%	0.00%	0.00%	0.74%
PORT COLUMBUS INTL	CMH	$38,247,746	54.16%	16.44%	8.84%	3.97%	16.60%
CINCINNATI/NORTHERN KENTUCKY	CVG	$61,323,500	82.95%	2.34%	1.54%	1.94%	11.24%
DALLAS LOVE FIELD	DAL	$10,680,735	37.33%	30.01%	22.97%	0.22%	9.62%
RONALD REAGAN WASHINGTON NATIONAL	DCA	$13,072,223	2.60%	66.03%	2.63%	1.41%	29.55%
DENVER INTL	DEN	$55,963,627	16.84%	49.62%	10.31%	10.37%	12.86%
DALLAS/FORT WORTH INTL	DFW	$486,829,625	7.51%	44.81%	4.68%	14.68%	28.32%
DETROIT METRO WAYNE	**DTW**	**$118,724,817**	**5.84%**	**69.76%**	**1.81%**	**0.47%**	**22.12%**
NEWARK INTL	EWR	$66,874,071	0.00%	0.00%	0.00%	0.00%	100.00%
WILLIAM P HOBBY	HOU	$29,022,723	52.02%	44.19%	0.26%	0.00%	3.53%
WASHINGTON DULLES INTERNATI	IAD	$472,835,366	16.68%	29.45%	0.39%	37.60%	15.89%
GEORGE BUSH INTERCONTINENTAL	IAH	$213,878,212	23.27%	57.19%	1.55%	1.03%	16.96%
INDIANAPOLIS INTL	IND	$158,298,628	56.26%	20.60%	0.43%	0.01%	22.70%
JOHN F KENNEDY INTL	JFK	$285,383,000	0.00%	0.00%	0.00%	0.00%	100.00%
MC CARRAN INTL	LAS	$433,182,734	20.40%	41.60%	0.79%	3.72%	35.25%
LOS ANGELES INTL	LAX	$118,503,129	65.08%	26.84%	0.00%	3.01%	5.07%
RICKENBACKER INTERNATIONAL	LCK	$11,302,465	54.37%	2.00%	1.01%	35.66%	19.52%
LAGUARDIA	LGA	$71,122,333	0.00%	0.00%	0.00%	0.00%	100.00%
LONG BEACH /DAUGHERTY FIELD	LGB	$17,635,567	80.92%	14.26%	1.35%	0.00%	10.40%
KANSAS CITY INTL	MCI	$79,724,939	15.24%	46.57%	15.42%	20.38%	9.18%
ORLANDO INTL	MCO	$97,154,667	20.67%	65.91%	0.98%	7.71%	4.73%
CHICAGO MIDWAY INTERNATIONAL	MDW	$99,040,646	7.46%	47.35%	16.14%	1.01%	28.04%
MEMPHIS INTL	MEM	$43,028,671	72.42%	23.13%	3.26%	2.57%	3.76%
MANCHESTER	MHT	$23,144,286	27.13%	31.91%	11.02%	14.75%	15.19%
MINNEAPOLIS-ST PAUL INTL	MSP	$137,310,931	48.93%	25.08%	4.49%	8.80%	12.70%
OAKLAND INTL	OAK	$95,174,489	21.26%	54.42%	12.37%	5.93%	6.01%
ONTARIO INTL	ONT	$20,487,697	81.86%	11.51%	1.52%	3.74%	9.37%
CHICAGO O'HARE INTL	ORD	$481,286,644	14.11%	40.50%	0.42%	3.71%	41.27%
PHILADELPHIA INTL	PHL	$63,600,099	28.06%	64.57%	0.00%	1.21%	6.16%
PITTSBURGH INTERNATIONAL	PIT	$44,877,741	52.18%	23.18%	9.35%	1.14%	17.26%
LOUISVILLE INTL	SDF	$47,449,987	13.25%	28.36%	0.11%	1.94%	57.03%
SEATTLE-TACOMA INTL	SEA	$412,974,000	45.35%	41.67%	1.47%	0.58%	10.93%
SAN FRANCISCO INTL	SFO	$79,470,683	41.70%	44.86%	2.10%	11.03%	0.94%
SAN JOSE INTERNATIONAL	SJC	$62,671,396	37.51%	44.28%	0.00%	6.42%	11.78%
SACRAMENTO METRO	SMF	$60,125,290	11.36%	14.74%	31.53%	5.08%	38.98%
JOHN WAYNE AIRPORT-ORANGE C	SNA	$12,140,938	15.67%	37.65%	0.58%	9.16%	40.00%
LAMBERT-ST LOUIS INTL	STL	$184,604,667	83.33%	6.00%	3.99%	0.00%	20.05%
TOLEDO EXPRESS	TOL	$8,739,621	40.56%	31.50%	0.00%	30.49%	7.62%

Exhibit 3.80: Summary of Benchmark Airport Payments to State and Local Governments

Code	Total payments	Law Enforcement	Firefighting	Legal Services	Engineering	Mayor and City Council	General Cost of Government	Centra Services	Payments in Lieu of Tax	Impact Fees	Utilities	Fleet Services	Promotion and Marketing	Repayment of Contributions	Repayment of Loans	Lobbying Fees	Ground Access Projects	Community Services	Grandfathered Payments	Land and Facility Rental	Parking and Sales Tax	Aviation Fuel Tax	Other
ATL	$4,684,263	$1,626,326	$619,275	$127,751	--	$626,019	$1,228,662	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$456,230
BOS	$32,131,522	--	--	--	--	--	--	--	$16,051,000	--	--	--	--	--	--	--	--	--	$14,556,663	--	--	--	$1,523,859
BUR	$4,628,213	$21,742	--	--	--	$184,421	--	$184,421	--	--	$1,735,738	--	--	--	--	--	--	$6,800	--	$33,000	$2,273,522	--	$188,569
BWI	$24,439,084	$16,514,539	$34,119	$1,058	$827,896	$797,243	--	$3	--	--	$686,071	--	$41,005	--	--	--	--	--	--	--	--	--	$5,537,150
CLE	$14,702,320	$4,957,014	--	--	--	$598,478	--	$2,251,126	$637,892	--	$653,359	$379,333	--	--	--	--	--	--	--	--	--	--	$5,225,118
CMH	$4,490,277	--	--	--	--	$364,353	--	$208,143	--	--	$1,013,229	--	--	--	--	--	--	--	--	$2,520	--	--	$2,902,032
CVG	$5,143,098	--	--	--	$23,365	$1,758,374	--	$1,758,374	--	$5,495	$1,109,043	--	--	--	--	--	$182,055	--	--	--	$179,045	--	$127,347
DAL	$10,592,286	$5,135,365	$3,357,924	--	--	--	--	$755,667	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$1,343,330
DCA	$7,600,624	--	--	--	$6,200	$3,280,521	--	$3,397,441	--	--	$915,380	--	--	--	--	--	--	--	--	--	--	--	$1,082
DEN	$55,338,713	$14,128,266	$10,088,904	$1,162,262	$101,811	$3,597,416	$12,516,399	$250,220	--	$9,202	$184,229	$8,263	--	--	--	--	--	--	--	--	$128,352	$12,714,361	$449,028
DFW	$54,290,806	$220,233	--	$648,611	--	$4,781,320	--	$4,772,320	--	--	$35,343,426	--	$950	--	--	--	--	--	--	--	$7,070,352	--	$1,453,594
DTW	**$4,713,171**	**--**	**--**	**--**	**--**	**$2,018,766**	**--**	**$2,018,766**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**$675,639**
EWR	$26,250,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$26,250,000	--	--	--
HOU	$9,670,934	$4,611,059	$2,823,967	--	--	$209,924	$494,809	$345,232	--	--	$360,741	--	--	--	--	--	--	--	--	--	$825,202	--	--
IAD	$10,454,533	--	--	--	$4,361,633	$2,408,002	--	$2,575,202	--	--	$1,108,614	--	--	--	--	--	--	--	--	--	--	--	$1,082
IAH	$31,649,973	$13,472,021	$9,100,794	--	--	$94,164	$1,853,875	$605,615	--	--	$2,854,510	--	--	--	--	--	--	--	--	--	$3,668,994	--	--
IND	$68,445,081	--	--	--	--	$23,165,792	--	$23,165,792	--	--	$224,090	--	--	--	--	--	--	--	--	--	$14,465	--	$21,874,942
JFK	$69,396,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$69,396,000	--	--	--
LAS	$27,531,290	$10,570,858	$6,042,666	$449,000	--	--	$2,210,369	$1,093,522	--	--	--	$1,049,932	--	--	--	--	--	--	--	$1,478,943	--	$4,636,000	--
LAX	$50,441,317	$14,130,520	$24,306	--	$19,106	--	$427,377	$7,694,566	--	--	$19,836,611	--	--	--	--	--	$1,503,579	$48,593	--	--	$6,756,659	--	--
LCK	$1,180,941	--	--	--	--	$319,838	--	$319,838	--	--	$3,725	--	--	--	$74,450	--	--	--	--	--	--	--	$463,090
LGA	$24,104,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$24,104,000	--	--	--
LGB	$9,404,652	$1,727,759	$4,035,843	--	$385,968	--	$2,038,174	$164,270	--	--	$87,827	$351,755	--	--	--	$23,008	--	--	--	$449,709	--	--	$140,339
MCI	$41,494,659	--	$2,379,759	$197,901	--	$755,416	$2,882,260	$438,564	--	--	$570,759	--	--	--	$34,270,000	--	--	--	--	--	--	--	--
MCO	$36,779,156	$7,898,135	--	--	--	$2,049,660	$19,333	$2,124,269	--	--	$13,830,711	--	$6,602	$162,451	$2,000,000	--	--	--	--	--	--	--	$8,687,995
MDW	$24,563,032	$6,368,066	$6,180,489	$259,050	--	$905,603	--	$905,603	--	--	--	$2,323,807	--	--	--	--	--	--	--	--	$2,351,916	--	$5,268,498
MEM	$10,847,644	--	$3,049,310	$14,432	--	--	--	--	--	--	$3,994,466	--	--	--	$3,789,436	--	--	--	--	--	--	--	--
MHT	$2,580,840	$1,704,305	$8,760	--	--	--	$77,049	$16,357	$541,488	--	$84,722	--	$2,500	--	--	--	$2,643	--	--	--	--	--	$143,016
MSP	$10,618,199	$147,847	--	--	--	$168,893	$2,128	--	--	--	$2,109,975	--	$436,266	--	--	--	--	--	--	--	--	--	$7,753,090
OAK	$41,446,530	$13,801,994	$5,590,462	--	--	$2,365,399	--	$12,019,342	--	--	--	--	$43,110	--	--	--	--	--	--	$191,815	$6,769,701	$187	$664,520
ONT	$6,866,574	--	--	--	$150,000	--	$961,778	$477,396	--	--	$411,535	--	--	--	--	--	--	--	--	--	$4,865,865	--	--
ORD	$219,213,087	$21,069,368	$21,628,169	$570,605	--	$3,805,385	--	$4,098,010	--	--	--	$13,487,882	--	--	--	--	--	--	--	--	$5,661,843	--	$148,891,825
PHL	$57,903,467	$17,841,601	$7,352,681	$1,620,711	--	$3,612,711	$362,664	$5,534,934	$1,030,556	$1,260	$14,488,404	$3,055,786	--	--	--	$77,210	--	--	--	$120,417	--	--	$2,804,532
PIT	$7,923,324	$7,601,881	--	--	--	$144,331	--	$144,331	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$32,781
SDF	$4,291,855	$73,969	--	--	$10,618	$1,521,647	--	$1,724,324	--	--	--	--	--	--	--	--	--	$847,169	--	--	--	--	$114,128
SEA	$100,795,155	--	$37,157	--	--	--	--	$17,159,175	--	$1,091,498	$9,856,111	--	$207,904	--	--	--	--	--	--	--	$10,023,858	--	$62,419,452
SFO	$102,617,953	$32,792,058	$13,357,024	$5,850,021	$1,166,199	--	--	$27,982,640	--	--	$18,574,382	--	--	--	--	--	--	$758,939	--	$75,000	--	--	$2,061,690
SJC	$24,353,573	$9,401,345	$4,090,273	$940,831	$3,700,841	$867,370	$5,076,134	--	--	--	--	$190,028	--	--	--	$28,500	--	$58,251	--	--	--	--	--
SMF	$21,297,365	$7,056,032	--	$355,915	$93,810	$1,107,645	$725,738	$3,044,886	--	$34,990	--	--	$39,830	--	--	--	$44,100	--	--	--	$49,415	--	$8,745,004
SNA	$22,796,516	$12,448,516	$3,992,517	$360,308	$495,324	$31,087	$72,894	$4,919,037	--	--	$178,301	$298,532	--	--	--	--	--	--	--	--	--	--	--
STL	$8,063,278	--	$368,942	$498,473	--	$26,579	--	$1,267,284	--	--	--	--	--	--	--	--	--	--	$5,407,386	--	--	--	$494,614
TOL	$44,036	--	$4,200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$39,836	--	--	--	--	--

Exhibit 3.81

Sources of larger airports recent funding and planned near-term capital investment



Sources: GAO analysis of FAA, ADI, Thomson Financial, and state grant data.

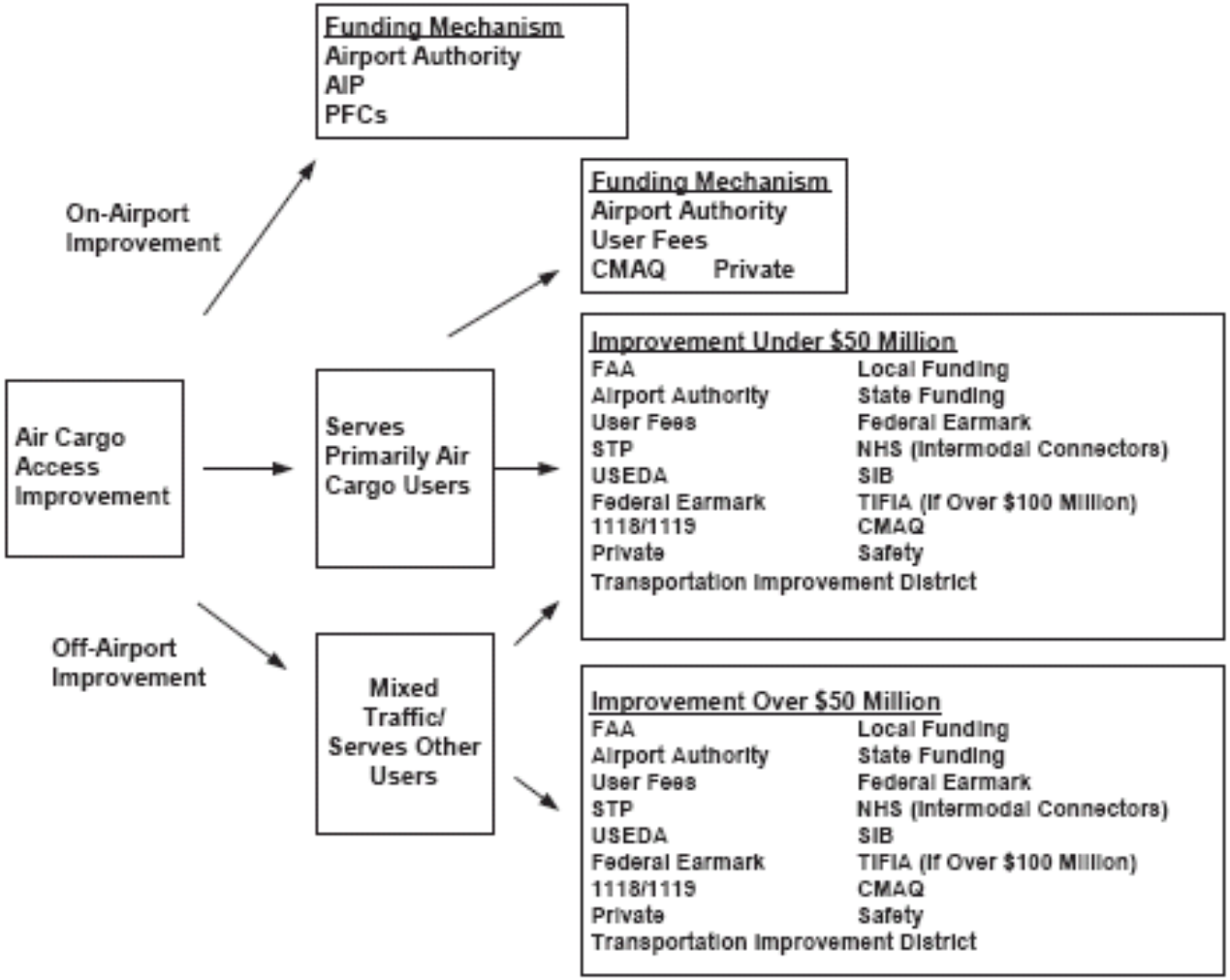
Note: Totals may not add up due to rounding.

Proprietary and Confidential

Source: GAO-07-885

Exhibit 3.82

Potential funding mechanism for air cargo, airport, and Aerotropolis ground access improvement



Source: Transportation Research Board: Financing and Improving Land Access to U.S. Intermodal Cargo Hubs

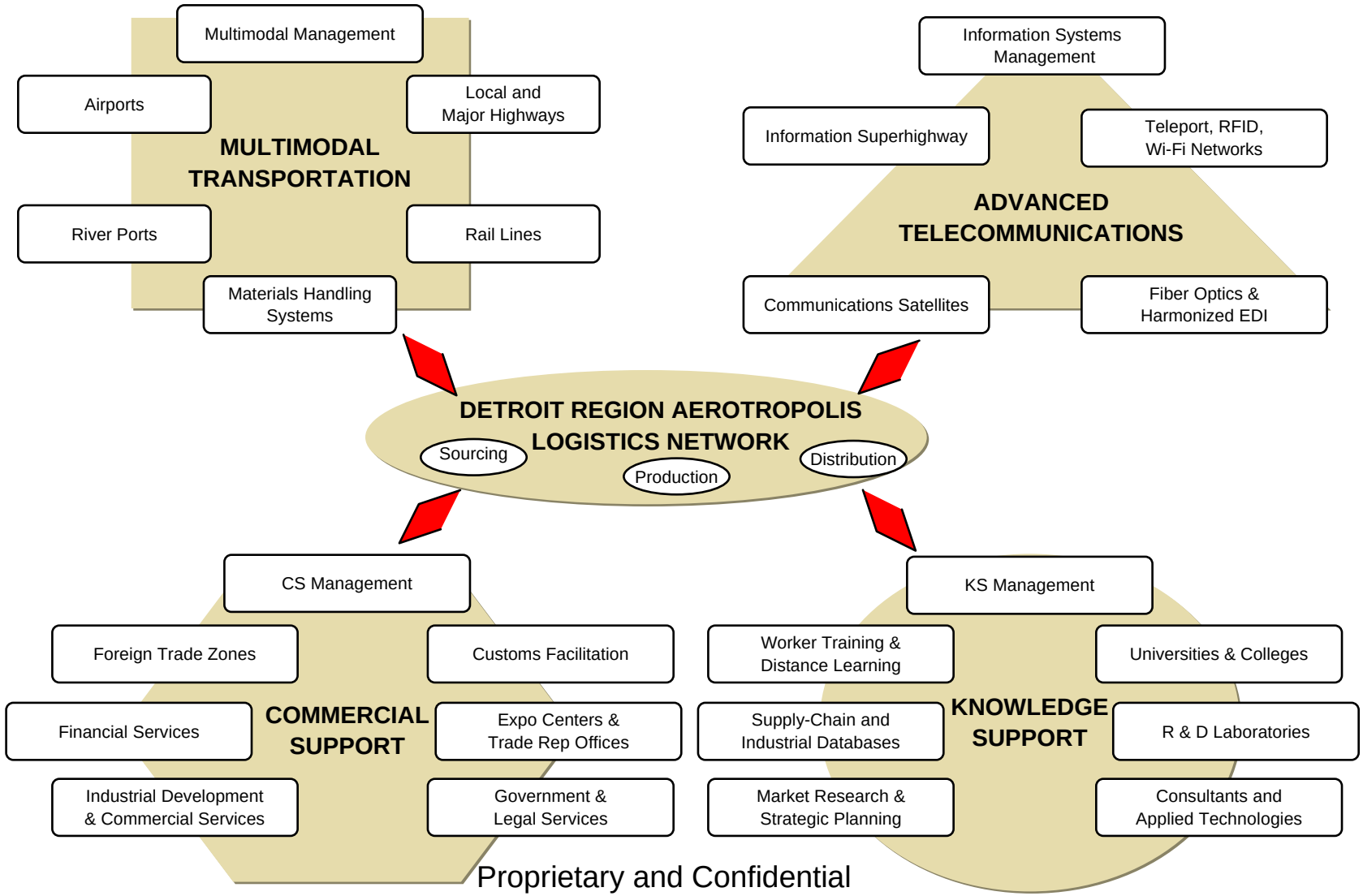
Proprietary and Confidential

Exhibit 3.83: Federal Funding Sources for Airport and Aerotropolis Ground Transportation Improvements circa 2003

1. FHWA Surface Transportation Program (STP)
2. FHWA Congestion Mitigation and Air Quality (CMAQ) Improvement Program
3. FAA Airport Improvement Program (AIP)
4. Demonstration Projects/High-Priority Projects
5. FHWA Transportation Infrastructure Finance and Innovation Act of 1998
6. FHWA State Infrastructure Banks (SIB)
7. FHWA National Highway System (NHS)
8. FHWA Section 130 (Highway–Railroad Grade Crossings Program)
9. FHWA Borders/Corridors Program (Section 1118 or 1119)
10. (Department of Commerce) Economic Development Administration (EDA) Funds
11. FHWA Transportation and Community and System Preservation Pilot (TCSP)
12. FRA Railroad Rehabilitation Program and Railroad Rehabilitation and Improvement Financing (RRIF) Program
13. FHWA Grant Anticipation Revenue Vehicle (GARVEE) Bonds

Source: Transportation Research Board (2003) *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs.*

Exhibit 3.84
PROPOSED BUSINESS ENVIRONMENT FOR THE DETROIT AEROTROPOLIS LOGISTICS NETWORK



Proprietary and Confidential

Exhibit 3.85: Integrated Sustainability Design Concepts

Sustainable Sites: No net increase in storm water runoff

This development will retain the rain water that falls on it for use in watering plants through the summers and even possibly to flush toilets. This application could reduce water usage up to 30% or more.

Sustainable Sites: No increase in pollution coming from the site and contaminating the surrounding areas

This development will catch any particulate contaminants and suspended solids that come from on-site storm water by holding the water long enough for particulates to settle and be filtered out. The development will not displace polluted water to adjacent properties.

Sustainable Sites: Further reduce heat island effects

This development will not contribute to the heat island effects that DFW is having. Highly reflective materials, such as concrete, will be used on the site while living roofs and light-colored roofing will be used on the buildings. In combination, the overall temperature of the site can be reduced by as much as 10 degrees. Additionally, peak cooling loads of buildings can be reduced along with the size of mechanical systems to decrease operating costs.

Sustainable Sites: Light pollution reduction

All site lighting will not bleed out of the site and will save energy by maximizing their efficiency and use.

Water Efficiency: Water use reduction

By using native vegetation, the water reduction can be significant. Also, the use of grey water drip irrigation in lieu of potable water sprinklers can have an impact on the reduction of site water usage.

Energy & Atmosphere: High energy performance buildings

Through energy modeling software we gain the ability to study the design extensively for energy efficiency. Buildings will be placed with optimal solar orientation in mind. This design also uses building shading devices to limit solar gain. Energy modeling allows building HVAC systems to be reduced, creating a lower operating cost for the building owners and their occupants.

Energy & Atmosphere: Local materials

This site should use as many local materials as possible so that the impact on the local economy is greater. This methodology also reduces the transit distances of materials and thus their impact on the environment.

Energy & Atmosphere: On-site energy production

Additional to Wind Turbines the potential for PV cells placed on buildings as well as Bio-mass generation will further reduce the demand on the electrical grid and electrical production.

Energy & Atmosphere: Green power

Remaining electrical needs can be bought from renewable energy sources from many of the providers in Texas.

Materials & Resources: Construction waste management

Construction waste generated on site can be diverted from landfills back to recycling depots so no material is wasted during the construction process.

Materials & Resources: Recycled content

Many of the elements in the development, from steel to concrete to gypsum and carpet will contain recycled content

Indoor Environmental Quality: Daylight and views

The buildings will be orientated so that their occupants get natural claylighting and views of the site and surrounding areas.

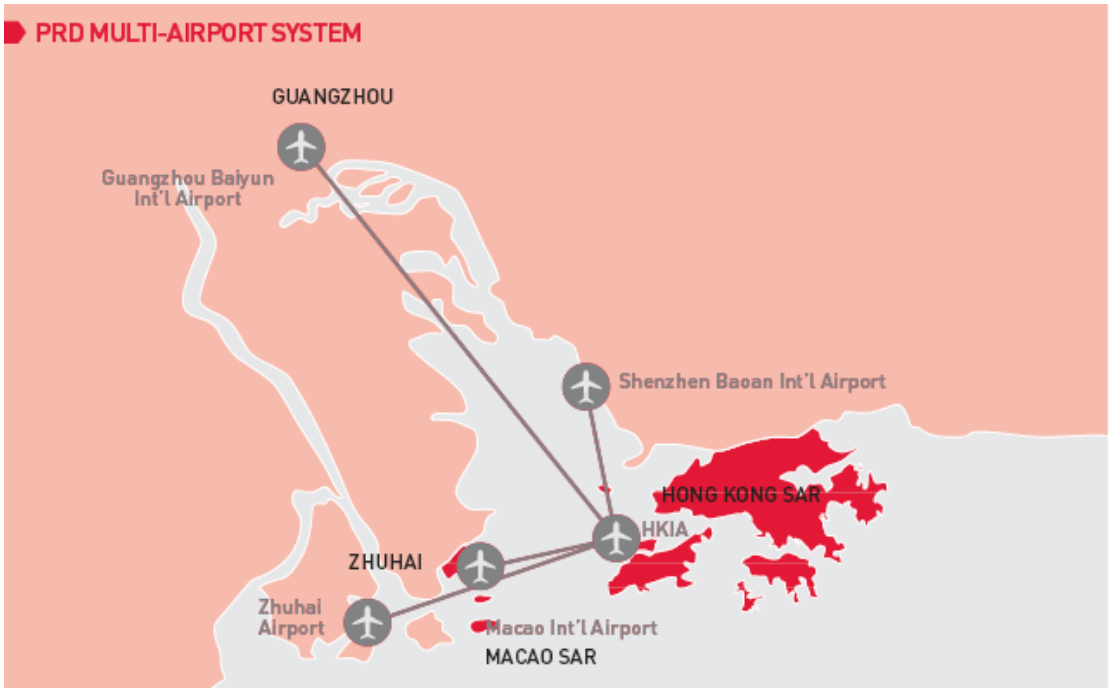
Indoor Environmental Quality: Low VOC materials

Through the use of low VOC materials we will reduce the health implications of chemical interactions with building occupants.

Source: DFW Airport

Exhibit 3.86

Pearl River Delta A5 Forum Participants



Proprietary and Confidential

[This page is intentionally blank]

IV. The Credibility and Viability of a Detroit Region Aerotropolis

This section of the report assesses the credibility and viability of a Detroit Region Aerotropolis as a strategic economic development tool. An overview of marketing strategies follows. A four part marketing strategy is recommended entailing a process of envisioning, a process of formulating a framework for public investment decision-making, a process of recruiting key partners and building regional development coalitions, and a process of targeting firms and sectors.

Strategic Considerations in Assessing a Detroit Region Aerotropolis

We assess the credibility and viability of a Detroit Region Aerotropolis first by reviewing regional strengths and weaknesses followed by an assessment of the opportunities and threats posed by the wider context of economic development. These assessments rely on our review of the broad general trends in commercial development, the systematic comparison to reference and competitor benchmark regions, and the survey of international best practice. Many strengths and weaknesses were discussed in earlier sections of this report. Only a few of the most relevant are mentioned here. This assessment is only a preliminary consideration based on the benchmarking effort. A more thorough investigation of the Detroit Region is needed before its strengths and weaknesses can be definitively stated.

Regional Strengths

The Detroit Region Aerotropolis can build on a strong base. First, the cornerstone airport, Detroit Metro Wayne, offers excellent facilities. The airside is among the best in the nation with runways that can accommodate any commercial aircraft. The McNamara terminal has recently opened and another new terminal is due to open soon. The McNamara terminal is recognized as one of the most advanced and passenger-friendly in the nation.

Second, the airport is well-served by Northwest Airlines and other carriers which help make it into the 11th busiest passenger airport in the country with connections to 145 nonstop destinations in the U.S., Europe, Asia, and Latin America. The Detroit Region is accessible.

Third, airport costs are manageable. The available capacity at Detroit Metro is with little precedent among airports that are as busy. The expansion of air traffic will not swiftly result in the need for expensive capital improvements.

Fourth, the airport area offers a large amount of developable land. As the residential frontier approaches, airport area development becomes more practicable. Regional spatial patterns suggest that the airport area may be the next expansion zone. The Aerotropolis site is large and varied, with the potential to accommodate and satisfy many clients.

Fifth, recent leisure developments in central Detroit increase the attractiveness of the region as a whole and support one of several complementarities between Aerotropolis and downtown growth. These may generate $1.3 billion in gaming revenues alone this year, approximately one-fifth of which stem from out-of-town visitors. The leisure traffic helps increase the attractiveness of the Detroit region to businesses.[1]

Sixth, the airport is centrally-located in the emerging Great Lakes mega-region and well-connected to the National Highway System. Whether of not the NAFTA highway ever gets built, with the two largest land cargo gateways right in Detroit, the two Detroit area airports are right on the route.

More broadly and more importantly, with strong regional education and research institutions and excellent supply of human capital, the region could be a destination of choice for those seeking support for an increasingly knowledge-based economy. The world's economy is and will remain primarily a goods economy. Detroit's knowledge base is key to this economy.

Regional Weaknesses

Despite its significant strengths there are a number of weaknesses that need to be dealt with in order for an Aerotropolis development to succeed. First, despite excellent service, area exports do not attract the expected level of cargo processing. Cargo processing has increasingly concentrated in a few hub or gateway airports. The rise of integrators has been responsible for some of this. Their networks of hubs may be set for the medium term. Much of the concentration, however, is due to problems in the shipper-forwarder-airline interface. In order to win back cargo throughput, Detroit, in cooperation with its major carriers, will need to solve some of the institutional problems in the air cargo industry that led to the concentration.

Second, the political and fiscal climate of the State of Michigan and the Detroit Region is uncertain. The capacity of state and local governments to meet their obligations and to invest in the future is unknown. This discourages private investment. Further, the region has a history of poor labor relations which, without strong steps to correct, is a further deterrent to investment.

Third, regional employment growth has been sluggish and, although changing, still has a less than ideal sectoral and occupational mix. Even if output grows, efficiency gains may reduce employment increase and the aggregate demand for commercial space. The Detroit Region needs to attract and grow new industries and new activities. The Aerotropolis is a component of that effort.

---

[1] http://www.michigan.gov/mgcb/0,1607,7-120-1395_1469_7138---,00.html; Omar Moufakkir and Donald F. Holecek (2003) "Impacts of Detroit's Casinos on the Local Community" Travel, Tourism and Recreation Resource Center, Michigan State University.

Most immediately, the evidence suggests that commercial space and the wider environments appropriate to contemporary business is lacking in the Detroit Region. While some with deep pockets and ample patience, such as Visteon, may build their own environments, few firms are able or need to build on that scale. A larger number of firms are seeking environments that they can leverage, rather than build from scratch. A supply of available space (or ready-to-build), especially that which projects a desired image would allow more firms to make the location choice that Detroit Regional fundamental strengths pull them to. The Detroit Aerotropolis will probably need to recruit one or more large anchor tenants before office development can accelerate.

Threats in the Wider Economic Environment

There are, of course, many. We focus on four. First, as the review in the second section of this report suggests, competition among regions for aviation-dependent business and the accompanying commercial real estate development has become quite intense. The first-mover advantages have all been claimed. Subsequent developments will need to build on airport and regional efficiencies to a larger degree than the preceding developments.

Second, the fast-cycle logistics industry is possibly nearing the end of a restructuring that has led to greater reliance upon trucking than was previously the case. This has led to the rise of new cargo hubs and the decline of others. The window of opportunity for the Detroit Region to influence the nature of the evolving cargo network may be drawing to a close.

Third, the airline industry has not been consistently profitable in recent years. Mergers and bankruptcies have occurred even among the largest carriers. Airports that depend upon a single carrier for much of their traffic, especially hub airports, are therefore at risk. Among the smaller cargo airports, low profitability can lead to the termination of all service. Among hub airports, low carrier profitability can lead to route realignments and curtailment of hub activities. A strong carrier is critical to Aerotropolis growth.

Finally, the health of local employers is critical to Aerotropolis growth. An Aerotropolis is essentially an alliance among an airline, an airport, and a small number of major users. The air traffic between London and New York (and thus the financial health of the airlines and airports serving that route) depends critically on the health of the global finance industry and its several major firms. Therefore, an Aerotropolis is not only a critical tool supporting regional competitiveness, it depends upon regional competitiveness as well. The Detroit Region Aerotropolis will depend crucially on decisions made within the automobile industry.

Opportunities Presented by the Broader Environment

The business environment also offers opportunities for action. First, the air-dependence of business is very likely to increase over the long term despite periodic

reversals due to cost, the business cycle, disease, and political unrest. The underlying demand for airport area real estate developments will remain strong.

Second, the growing international traffic in general and DTW's route structure in particular transform global economic growth into Detroit opportunities. Components of the Chinese automobile industry have already expressed interest in having Detroit as their gateway to America and as an American marketplace for the Chinese automobile industry.

Third, Asian investors are likely to look very quickly to the U.S. for increased real estate investment opportunities. Cash-rich Chinese and Europeans may take advantage of favorable exchange rates to lock in long-term returns.

Fourth, Detroit's main competitor as a mid-continent gateway, Chicago, is congested. O'Hare has been operating under a flight cap for several years. The massive runway modernization project is likely to keep O'Hare in a knot for years. At the same time, appropriate commercial space has grown scarce as have suitable building sites. A Detroit Region Aerotropolis offers an alternative to the cost, congestion, and chaotic development of the O'Hare area.

Summary

The underlying Aerotropolis concept is sound and can be beneficially applied to the Detroit Region. There are, however, a number of significant hurdles that have effectively delayed airport area commercial development until now. A detailed analysis of business costs in southeast Michigan and Wayne County, in particular, would help specify the important roadblocks. Some of these can be overcome with sufficient regional leadership in creating the appropriate financial and governance structures. Some of the options for these are reviewed above. Others can be addressed by a coordinated marketing and capital investment strategy that builds on the financial and governance structures.

Aerotropolis Marketing Strategies

At least four distinct processes will be involved in marketing the Detroit Region Aerotropolis. These are a process of envisioning, a process of formulating a framework for public investment decision-making, a process of recruiting key partners and building regional development coalitions, and a process of targeting firms and sectors. A few suggestions for the timing of marketing efforts is also included.

Envisioning the Aerotropolis

At this point, the Detroit Region Aerotropolis is a broad idea. The first marketing step would be to engage in a visioning process whereby the position of the Detroit Aerotropolis in the regional, national, and global economy was further specified. In order

to be successful, the Detroit Region Aerotropolis needs to solve one or more imminent and long-term business problems. The Detroit Region Aerotropolis will likely not be a duplicate of another existing air logistics hub. Many of these, such as those in East and Southeast Asia, develop as portals to and from demographically vital growing, competitive economies. These Aerotropolises are expressions of growing regions, not causes of them. A Detroit Region Aerotropolis will need to build on the specific strengths of the greater Detroit region and possibly exploit weaknesses in other regions.

Ultimately, the Detroit Region Aerotropolis probably will be more of an origin and destination than an intermediary point. Detroit Metro Wayne Airport already is a busy passenger hub. It may become a cargo gateway that serves a significant proportion of the Great Lakes mega-region's air freight needs. Barring the emergence of a new integrated cargo carrier, the airport is unlikely to become a cargo hub similar to Memphis or Louisville. The aerotropolis and the region's employment will co-evolve over the coming decades with cutting-edge air transport and logistics supporting firms that race out ahead of the business frontier. A more refined picture of how needs to be worked out in order to effectively position the Detroit Region Aerotropolis.

A framework for decision-making

A framework for regional decision-making needs to be constructed. Development of the Detroit Region Aerotropolis will likely require substantial public investment over several decades. Without a set of strategic guidelines and without a model of airport-driven regional growth, the value of particular investments cannot be evaluated. As noted above, perhaps the Schiphol case is the best available model of how to use airport-oriented development to strengthen the economy of a region grappling with competitiveness issues. Their experience can be the basis of a framework.

For years, the Netherlands suffered from de-industrialization, structural unemployment, and a generally uncompetitive economy. The process of regional restructuring began with the exploration of four possible long-term scenarios – in the Dutch case, "Strong Europe," "Globalizing Economy," Trans-Atlantic Market," and "Regional Community," each with a specific constellation of trade and governance characteristics, and a consideration of how local social trends would be affected under each of them. This resulted in the realization that many of those trends were untenable and a search for renewed competitiveness. The most important adjustments made were institutional but infrastructure and property development proved to be essential also.

The Dutch government decided to further support the most competitive sectors of its economy, which were producer services and logistics, and strive to make, especially Amsterdam, an internationally competitive business location. With one of the busiest seaports in the world and with extensive experience in road-based logistics, that sector was a natural choice. The Netherlands also had significant strengths in knowledge-intensive service fields.

The efforts were possibly helped by the reviving London property market and the ensuing escalation of rents and congestion that sent many international NGOs and firms searching for alternative locations. The Zuidas development in Amsterdam was meant to satisfy the need of Dutch firms for office space but also to attract firms that might otherwise not consider Amsterdam as a viable alternative to London, Paris, or Frankfurt. With fast frequent train service to Schiphol, which has air service to London every ten minutes for much of the day, Amsterdam becomes a viable office location for European and globally-oriented businesses and organizations. Exhibit 4.1 places Schiphol in the context of supporting regional employment and population centers.

The Detroit case is, of course, different in many respects. The Detroit Region, however, suffers from a similar malaise to the Dutch. Like the Netherlands, the region also has a formidable supply of knowledge-intensive firms with globally competitive skills. At the same time, several U.S. metropolitan areas have experienced real estate bubbles that might undermine their competitiveness and have, in any case, sent firms searching for regions where a combination of air connections, costs, and quality of life would lower costs while maintaining or increasing revenues.

The central point here, however, is that the comprehensive Dutch approach to planning their Aerotropolis, which is based on a thorough analysis of the region's economic position, directed towards improving regional well-being and builds on regional strengths, may be appropriate to the Detroit Region. Decisions about land use, transportation, and investment can then be made in the context of value to the region.

Recruiting key partners and building coalitions

As indicated at several points in this report, a successful Aerotropolis is the result of cooperation among several parties whose interests do not always coincide. Successful marketing will depend upon recruiting key partners and building coalitions among them. At the very least, as suggested by the railroad example cited above, cooperation among four key partners are required: the airlines who provides passenger and cargo air service, the airport that provides the most critical piece of infrastructure, the land owners who provide the basis for business facilities, and, of course, the users of those facilities. Each of those partners is actually composed of many parties. Land developers and real estate specialists support the land owner function. Handling agents and freight forwarders support airline functions.

A thorough analysis of the air transport business process would help improve the competitiveness of the Detroit Region Aerotropolis. We give just two examples. First, as noted above, frictions in the freight forwarder-airline interface has contributed to the disproportionate concentration of air cargo in particular gateway airports. Addressing that problem might be a key factor in increasing DTW cargo throughput. One possibility might be to purchase all available cargo space in Northwest Airlines aircraft on international trunk routes and resell it at a fixed rate regardless of shipment size. Doing so would reduce the motivation for over-consolidation and make sure existing resources were optimally used. At least one airline has made such an arrangement with a freight

forwarder. Recent and imminent advances in air cargo EDI will help facilitate a realignment of interest in the air freight industry. Negotiating such an agreement may be above and beyond the normal tasks of public bodies but it would create an immediate competitive advantage. If a way can be found to get air freight efficiently and cost-effectively on board Detroit-based flights, the Detroit Region Aerotropolis will be able to build on its central geographic location in the Great Lakes mega-region.

Previous surveys have indicated that charter air cargo operators (e.g., Atlas Air, Cargolux, Evergreen, and Polar) serve airports where they can be assured of a significant volume of airfreight. A key to building a critical mass of cargo demand will be to focus on promoting the Detroit Region Aerotropolis to all industries within a 150-mile radius that are airfreight dependent. The intent here will not be to persuade the firms to relocate to the Detroit Region or nearer to DTW or YIP, but to use Detroit airports rather than trucking their freight to O'Hare or elsewhere. They might be motivated to do so, if they could be assured of a faster flow-through. To capture a significant portion of regional air cargo close working relationships with major freight forwarders and third-party logistics service providers may be required.

Initial marketing targets should focus on 3PL's, freight forwarders and shippers of time-sensitive products in the 150 mile radius of Detroit. The automobile industry is a likely sector. Marketing strategies should emphasize the value-added that Detroit airports can mean in terms of lower cost and more efficient shipment services.

Second, as Detroit's experience shows, land price and parcel assembly is critical to successful Aerotropolis development. A few uncooperative actors can send even the most determined investors scurrying to another region. The Region might consider a quasi-public land development company to assemble parcels and make them available as the market demands. These may also falter on any hint of impropriety. In recent years the San Diego Airport Authority was suspected of supplying sinecures to the politically-connected. As a result, the Airport Authority lost credibility in its search for a new airport. Maintaining public trust is an essential component of coalition-building.

Most Likely Target Sectors – The "Low Hanging Fruit"

At every stage of marketing, Wayne County's and the Detroit Region Aerotropolis' promotional strategies should be grounded in solid business research and planning. This will involve market research of a generic nature on likely DTW and Willow Run tenants and users as well as market research specific to the Detroit Aerotropolis Region. Research on commercial shippers from around the world points to five generic types of shipments where air transport is the consignees' mode of first choice. These are when:

- Flexible and customized production is the norm
- The high value of the product compared to its weight justifies the extra cost of airfreight
- The product is highly perishable—either in the physical or economic sense

- Short production cycles and/or "just-in-time" inventories require fast delivery
- Immediate delivery of spare parts, time sensitive documents or products is required

Target industry analysis for air logistics hubs conducted by UNC's Kenan Institute of Private Enterprise identified twelve industrial groups that are most likely to utilize the air express and air cargo facilities. Most of these would no doubt also be the best target industries for the Detroit Region. They include:

- Logistics service providers
- Semi-conductor and computer chip manufacturers
- Pharmaceuticals and contract biotech and pharmaceutical lab testing facilities
- Computer and electronic sub-assembly manufacturers
- Optics and small precision equipment manufacturers
- Aircraft assembly, aircraft parts suppliers and aircraft maintenance services
- Scientific and medical instruments manufacturers,
- Suppliers of small volumes of high value products, for example aromatics
- Suppliers of perishable products—for example, fresh seafood, live animals, fresh fruit and flowers
- Digital automotive component manufacturers and emerging spare parts suppliers
- Fashion, garments and accessory suppliers
- Jewelry and watch manufacturers.

In addition, our Aerotropolis benchmarking shows that airports readily attract flex-tech and e-commerce fulfillment facilities, trade and exhibition complexes, hospitality and entertainment clusters, and office parks housing air travel-intensive managers and professionals, as well as a full range of food and beverage establishments and retail.

In targeting these and other industries noted above, there are a number of services that need to be highlighted in a marketing plan for the Detroit Region Aerotropolis. Many have already been discussed and some already exist, a summary list of the key support services to be implemented and leveraged in marketing the Detroit Region Aerotropolis is in order.

- Expedited customs clearance and pre-clearance procedures
- Full electronic data interchange capability
- Foreign Trade Zone, FTZ operators, and bonded warehouses
- Streamlined roadway and rail access to DTW
- State-of-the-art materials handling services
- Reliable utility services (e.g., electricity, water, sewer)
- Industrial support services such as repair and maintenance and machine shops
- Quality of life—good housing, schools, recreation, nightlife, low crime
- Knowledge and education support, including a distance education and worker training facility at or near the Aerotropolis

- Enhanced one-stop servicing for foreign investors
- Expedited site and building permit approvals

All of the above need to be woven into both the business plan and the implementation plan for greater success of the Detroit Region Aerotropolis. They are not only essential to the marketing effort, but also to developing an effective multi-modal air logistics hub and regional network.

Aerotropolis Marketing Timing

Driven away by high costs, knowledge-intensive industries have long been spilling out of California, most recently towards Las Vegas and Idaho. Some demographers now predict that population pressure on the bi-coastal economy will find relief in the middle of the continent. Chicago, in fact, has already grown as a reasonably-priced Asian gateway to America.[2] Chicago's real estate prices have increased. The city's major airport, already stressed and beset by frequent delays, will be under construction for the next several years.

With a Northwest hub, Detroit can offer high quality access to almost all U.S. destinations and to many Asian and European destinations. With a few more international routes, Detroit's gateway status would be solidified. The recent tourism developments in center-city Detroit and the interest of Chinese investors in the city could be complemented by a supply of commercial development that allowed swift access to the airport to accommodate the need for outward business travel and inward business visitors. The low-hanging fruit for Detroit is to follow up on established and regional strengths – the automotive industry, destination tourism, and possibly bio-technology. These should be exploited immediately.

In the medium-term, developing new international flights will be key to growing the cargo and passenger sides of the Aerotropolis. These flights will create the flow that eases further firm locations and employment growth. The increased service and passenger flow will help Detroit become an international marketplace.

The Aerotropolis will not be sufficient to grow the Detroit Region economy. It will be a very credible symbol that Detroit is "open for business" in the 21st century and it is willing to remake its institutions and make substantial investments in infrastructure to be competitive. The Visteon development illustrates strengths and weaknesses of the present situation. There are firms willing to make substantial investments in the Detroit Region in order to tap into local resources and opportunities. Such decisions would be eased if appropriate facilities were available.

[2] "Globocity" Survey of Chicago 16 March 2006 *The Economist*.

In summary, these basic points that have emerged from our analysis:

1. Detroit possesses all the ingredients for a world-class aerotropolis: location; multimodal infrastructure (including superior NAFTA highways); integrated telecommunications; commercial support and knowledge support.

2. There are gaps in a number of critical ingredients requiring attention.

3. Considerable development will continue to occur around Detroit Metro and Willow Run Airports. It is the responsibility of Detroit Region pubic and private leadership to ensure that such growth occurs intelligently, guided by local and regional aerotropolis principles.

4. This will not occur without coordinated cross-jurisdictional planning.

5. Airport City and Aerotropolis development will complement and not compete with downtown development or needed development in other parts of the Detroit region.

6. Inside the fence and outside the fence airport-linked development are inextricably interwoven and mutually interdependent.

7. Airport planning, urban planning (including regional infrastructure planning), and business site planning must be integrated. They cannot be done independently of each other.

8. Although competition is increasing, few airport areas in the world are doing this, so Detroit has a special opportunity to do it right for the mutual benefit of the airport and the region's municipalities and counties.

9. The ultimate objective is to make the Detroit Region Airport City and the greater Detroit Region Aerotropolis economically efficient, aesthetically pleasing and environmentally and socially sustainable (i.e., bring about transformation).

10. The result: better business, better environment, better quality of life, and Detroit Region leadership in Aerotropolis development.

Exhibit 4.1

Schiphol in Regional Context