

**GROWTH TRENDS IN THE METROPORT CITIES:  
IMPLICATIONS FOR TRAFFIC CONGESTION, THE  
'FUNNEL,' AND DFW AIRPORT**

Prepared for

**The Metroport Transportation Partnership**

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## EXECUTIVE SUMMARY

For the past 20 years, the Dallas-Fort Worth Metroplex has been the fastest-growing major metropolitan area in the nation. With a current population of about 5 million, DFW is expected to expand to 6.4 million residents over the next 20 years. The Metroplex has also been adding jobs at a furious clip—628,000 during the past decade, more than any other metropolitan region including seven with larger populations. Employment in the Metroplex is projected to grow from 2.7 million to 3.7 million by the year 2020.

Because of its location and industrial mix, the Dallas-Fort Worth region relies heavily on air transportation for the movement of people and freight. DFW International Airport is one of the busiest in the U.S. while Alliance Airport in Ft. Worth is emerging as a major inter-modal transportation center. DFW currently serves more than 60 million passengers annually and is building and planning for 100 million passengers by 2025, which will make it the busiest in the world. DFW is also a major cargo hub, currently handling 900,000 tons of freight with a value of \$12 billion. Within 15 years, cargo volumes are projected to more than double.

The Metroport cities of northeast Tarrant and southern Denton Counties, close to the north entrance of DFW Airport, have been the fastest growing sub-market within the Metroplex for the past decade, and this trend will continue for the foreseeable future. Indeed, the Metroport communities are expected to record a 45 percent population gain by the year 2020 compared to 29 percent for the entire Metroplex. Similarly, employment growth in Metroport cities is projected at 82 percent over the next 20 years compared to 37 percent for the Dallas-Fort Worth region overall. Coupled with

escalating passenger and cargo traffic at DFW International, this growth has created serious road congestion at the north entrance to the airport—commonly referred to as the “funnel”—that is increasing commute times, degrading the region’s air quality, and inhibiting passenger and cargo access to DFW Airport.

The tremendous population, employment and traffic growth expected over the next two decades, in tandem with anticipated passenger and cargo expansions at DFW International Airport, will make the funnel virtually impassable, unless new roadways and interchanges are constructed that can separate commuters from airport-bound traffic. What’s more, the potential for DFW to become the world’s premier commercial gateway may be imperiled if steps aren’t taken quickly to improve road access for passengers and shippers. With the ongoing explosion of domestic and international commerce, improving ground access to DFW Airport has become an economic development imperative for the region, state and nation.

## **Background and Overview**

The Dallas-Fort Worth Metropolitan Area, with a population of 5 million, is currently the 8th largest urban region in the nation. What's more, since 1980 DFW's population has increased more than 50 percent, making it the fastest growing major metropolitan area in the U.S. Projections by the U.S. Department of Commerce as well as the North Central Texas Council of Governments foresee population continuing to grow at about three percent annually for the next twenty years, at which time the Metroplex population will exceed 6.4 million.

In tandem with its burgeoning population, the DFW Metroplex has become a major national and international business center. Over the past decade, the Metroplex has recorded more corporate expansions and relocations and added more jobs—628,000—than any other metropolitan area in the U.S. The region boasts one of the largest and most diversified economies in the nation and is fortunately endowed with a broad range of fast-growing and competitive industries, especially in the information technology sector. Not only can DFW claim one of the largest concentrations of computer, electronics, telecommunications, and software companies in the world, the region is also among the biggest trade and distribution centers in the country.

At present, about 2.7 million persons are gainfully employed in the region, a number that is expected to grow to 3.7 million by the year 2020 according to a recent forecast prepared by the North Central Texas Council of Governments. Indeed, the DFW region is projected to add jobs at a faster rate than all other regions of the state except Austin. With 25 percent of Texas' population, the DFW region will account for 35 percent of the job growth statewide over the next two decades.

Importantly, the DFW Metroplex sits astride the NAFTA Highway (Interstate 35) which links Mexico with the Midwest and Canada. According to the Texas Department of Economic Development, Texas' bilateral trade with Mexico currently exceeds \$80 billion annually while two-way trade with Canada is about \$20 billion. More than half of Texas' NAFTA trade is in high technology products, and much of this trade originates or is received in the Dallas-Fort Worth region.

Because of its location in the center of the country and the diversity of its industrial mix, the Dallas-Fort Worth region relies heavily on air transportation for the movement of people and freight. What is more, most of the high tech products and components manufactured or received in the Metroplex are transported via airfreight. DFW International Airport is one of the busiest in the world, both in terms of passenger boardings and airfreight, while Alliance Airport in Ft. Worth is positioning itself to become a major industrial park with inter-modal connections to rail and truck.

As discussed below, a disproportionate share of the region's population and employment growth over the past decade has occurred in northeast Tarrant County and southern Denton County. Coupled with rapidly escalating passenger and cargo traffic at DFW Airport, this growth has created serious road congestion at the north entrance to DFW. Commonly referred to as "the funnel," the confluence of I-635 and state highways 114, 121, 161, 360 and 26, and FM 2499 and FM 1709 has become one of the Metroplex's most serious bottlenecks, especially during the morning and evening rush hours. Not only is this congestion increasing commute times and worsening the region's air quality, it is also interfering with passenger and cargo access to DFW Airport because of the intermingling of airport-bound and commuter traffic.

The tremendous population and job growth projected for the next two decades in northeast Tarrant and southern Denton Counties, in tandem with anticipated passenger and cargo expansions at DFW International Airport, will make the funnel virtually impassable, unless new roadways and interchanges are constructed that can segregate commuters from airport-bound traffic. More seriously, the potential for DFW International Airport to become America's premier national and global commercial gateway may be imperiled if steps aren't taken quickly to improve road access for passengers and shippers.

## **Population and Economic Growth in Metroport Communities**

Since 1990, Metroport communities have experienced a population explosion. As Table 1 shows, between 1990 and early 1999, the number of residents in these cities grew by 48.9 percent, almost 2-1/2 times the Metroplex's<sup>1</sup> 20.4 percent growth rate. Averaging 5.6 percent per year, population growth in Metroport cities is about 5 times faster than the national average. Among Metroport cities, Flower Mound and Southlake both posted average gains of more than 20 percent per year for the 1990-1999 period. Coppell's population almost doubled in size during this period. In total, the population of the Metroport area increased by some 148,000 in the first nine years of the decade.

**Table 1. Population Growth by City (1990-1999)**

<b>City</b>	<b>Census 4/1/90</b>	<b>Population 1/1/99</b>	<b>Absolute Growth 1990-1999</b>	<b>Average Growth 1990-1999</b>	<b>Annual Rate 1990-1999</b>	<b>Total Rate 1990-1999</b>
Colleyville	12,724	19,250	6,526	746	5.9%	51.3%
Coppell	16,881	33,050	16,169	1,848	11.0%	95.8%
Flower Mound	15,527	47,300	31,773	3,631	23.4%	204.6%
Grapevine	29,198	38,750	9,552	1,092	3.7%	32.7%
Haslet	795	1,150	355	41	5.1%	44.7%
Irving	155,037	183,350	28,313	3,236	2.1%	18.3%
Keller	13,683	24,350	10,667	1,219	8.9%	78.0%
Lewisville	46,521	74,700	28,179	3,220	6.9%	60.6%
Roanoke	1,616	2,150	534	61	3.8%	33.0%
Southlake	7,082	21,050	13,968	1,596	22.5%	197.2%
Trophy Club	3,922	6,200	2,278	260	6.6%	58.1%
Westlake	185	250	65	8	4.3%	35.1%
<b>Total</b>	<b>303,171</b>	<b>451,550</b>	<b>148,379</b>	<b>16,958</b>	<b>5.6%</b>	<b>48.9%</b>
DFW	4,057,580	4,885,584	828,004	92,000	2.3%	20.4%

Source: North Central Texas Council of Governments

<sup>1</sup> The Dallas/Fort Worth Metroplex or Consolidated Statistical Area (CSA) includes the following counties: Collin, Dallas, Denton, Ellis, Henderson, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall and Tarrant.

This rapid population expansion in Metroport communities is reflected in the growth in housing units for the area. Total housing units, including single-family and multi-family units, increased almost 40 percent between 1990 and 1999 (see Table 2). The 4.4 percent average annual growth in housing units for Metroport communities dwarfs the 1.8-percent average growth rate for the DFW region. Based on estimates from the U.S. Department of Energy, adding more than 50,000 housing units to the Metroport area between 1990 and 1999 probably increased the number of vehicles traveling on Metroport roads by at least 90,000, just counting new residents.<sup>2</sup> While new housing units have brought additional residents to Metroport communities, a great deal of business development has also occurred in the area, further adding vehicles to local thoroughfares.

**Table 2. Housing Unit Growth by City (1990-1999)**

City	Housing Units 4/1/90	Housing Units 1/1/99	Absolute Growth	Annual Growth	Annual Growth Rate	Total Growth Rate
Colleyville	4,309	6,210	1,901	217	5.0%	44.1%
Coppell	6,404	12,076	5,672	648	10.1%	88.6%
Flower Mound	5,366	15,659	10,293	1,176	21.9%	191.8%
Grapevine	11,907	15,185	3,278	375	3.1%	27.5%
Haslet	274	385	111	13	4.6%	40.5%
Irving	71,059	80,271	9,212	1,053	1.5%	13.0%
Keller	4,792	8,232	3,440	393	8.2%	71.8%
Lewisville	19,724	31,159	11,435	1,307	6.6%	58.0%
Roanoke	792	952	160	18	2.3%	20.2%
Southlake	2,445	6,338	3,893	445	18.2%	159.2%
Trophy Club	<u>1,583</u>	<u>2,292</u>	<u>709</u>	<u>81</u>	<u>5.1%</u>	<u>44.8%</u>
<b>Total</b>	<b>128,655</b>	<b>178,759</b>	<b>50,104</b>	<b>5,726</b>	<b>4.5%</b>	<b>38.9%</b>
DFW*	1,554,664	1,801,759	247,095	28,239	1.8%	15.9%

Source: North Central Texas Council of Governments \* Includes cities population >1,000 only.

<sup>2</sup> Assumes an average of 1.8 vehicles per household.

Much has been made of the dramatic performance of the Dallas-Fort Worth economy during recent years. As shown in Table 3, between 1990 and 1998, the latest full year for which data are available, almost 72,000 jobs were created in Metroport communities, an increase of about 44 percent or an average growth rate of 5 percent. Impressively, this exceeds the exceptional average job growth rate of 3.4 percent for the entire DFW region. Flower Mound and Keller saw average annual employment gains of 15 percent and 23 percent, respectively. Even the more established communities of Irving, Grapevine and Lewisville each increased their employment base by over 40 percent during the 1990-1998 period. It is important to note that while many of the Metroport communities have experienced exceptional employment growth, over two-thirds of these jobs are concentrated around DFW Airport and thus impact traffic in the “funnel” area.

**Table 3. Employment Growth by City (1990-1998)**

City	1990 Employment	1998 Employment	Absolute Growth	Annual Growth	Annual Growth Rate	Total Growth Rate
Colleyville	1,850	2,900	1,050	120	6.5%	56.8%
Coppell	6,350	10,250	3,900	446	7.0%	61.4%
Flower Mound	1,550	3,600	2,050	234	15.1%	132.3%
Grapevine	27,100	39,100	12,000	1,371	5.1%	44.3%
Irving	106,600	149,450	42,850	4,897	4.6%	40.2%
Keller	950	2,850	1,900	217	22.9%	200.0%
Lewisville	15,650	22,800	7,150	817	5.2%	45.7%
Southlake	3,450	4,300	850	97	2.8%	24.6%
<b>Total</b>	<b>163,500</b>	<b>235,250</b>	<b>71,750</b>	<b>8,200</b>	<b>5.0%</b>	<b>43.9%</b>
DFW	2,082,844	2,707,621	624,777	71,403	3.4%	30.0%

Source: North Central Texas Council of Governments, U.S. Department of Commerce

Will this, and can this, growth continue? The simple answer is yes. Both business and housing expansion should continue at a fairly rapid pace into the foreseeable future. Surveys conducted by the North Central Texas Council of Governments during 1998 found that more than 6 million square feet of new commercial and office space had

been completed or was under construction in Metroport communities (see Table 4). In addition, during 1998 more than 9 million square feet of office and commercial development was announced.<sup>3</sup> 1,270 hotel rooms were being added in Metroport communities with an additional 3,100 rooms planned. Opryland, Bass Pro, Grapevine Mills and other venues are transforming much of the area around the north entrance of DFW Airport into an entertainment and recreation destination in its own right, further exacerbating local traffic congestion.

**Table 4. New Commercial Real Estate Development  
Metroport Communities (1998)**

<b>Total Square Feet Completed or Under Construction</b>	<b>Total Additional Square Feet Announced</b>	<b>Hotels Rooms Completed or Under Construction</b>	<b>Additional Hotel Rooms Announced</b>
6,102,755	9,024,236	1,270	3,133

Source: North Central Texas Council of Governments

The most recent land use surveys also suggest there is sufficient acreage available in the Metroport region to support additional residential commercial and industrial development over the next several decades (see Table 5). These developments, in turn, will create thousands of new jobs for Metroport cities. Total employment in Metroport communities is projected to rise from 235,250 in 1998 to more than 365,000 by 2010 and 428,000 by 2020 (see Table 6). This represents a growth rate of 82 percent over the 22-year period, compared to an estimated growth rate or 37 percent for the Metroplex as a whole.

<sup>3</sup> The authors caution that all “announced” construction is rarely realized.

**Table 5. Land Use by City (1995)**

City	Single Family	Multi-Family	Other Resident	Industrial	Commercial	Institutional	Infra-structure	Dedicated Land	Under Construction	Water	Vacant	Total Acres	% Vacant
Colleyville	3,917	13	2	73	186	185	4	85	28	433	3,478	8,403	41.4%
Coppell	2,561	56	40	272	133	537	302	266	70	144	5,031	9,412	53.5%
Flower Mound	4,489	18	98	112	113	203	80	921	175	343	13,892	20,443	68.0%
Grapevine	3,352	182	81	460	533	1,921	6,270	2,655	2,349	215	4,230	22,248	19.0%
Haslet	1,046	0	0	2	5	72	85	0	0	0	1,995	3,205	62.2%
Irving	9,728	2,001	213	2,462	2,946	1,615	7,484	2,142	613	815	13,525	43,544	31.1%
Keller	3,998	1	43	138	92	188	57	94	20	77	6,947	11,653	59.6%
Lewisville	3,455	354	293	950	1,024	409	1,160	2,095	3,804	166	12,806	26,515	48.3%
Roanoke	282	3	20	177	41	14	75	0	0	0	1,452	2,064	70.3%
Southlake	3,644	0	67	312	157	171	220	421	183	528	8,262	13,964	59.2%
Trophy Club	586	11	3	0	6	25	30	352	10	0	1,347	2,370	56.8%
Westlake	19	1	0	0	74	1	169	5	72	3	3,623	3,967	91.3%
<b>Total</b>	<b>37,077</b>	<b>2,640</b>	<b>860</b>	<b>4,958</b>	<b>5,310</b>	<b>5,341</b>	<b>15,936</b>	<b>9,036</b>	<b>7,324</b>	<b>2,724</b>	<b>76,588</b>	<b>167,788</b>	<b>45.6%</b>

Source: North Central Texas Council of Governments

**Table 6. Employment Projections**

Area	1998	2005	2010	2020	% Change 1998-2020
Metroport Cities	235,250	344,495	365,844	428,542	82.2 %
DFW	2,707,621	3,031,100	3,261,400	3,715,625	37.2

Source: North Central Texas Council of Governments, UNTCEDAR.

Using projections from the NCTCOG and our own analyses, we expect population growth in Metroport communities to exceed 144,000 (32 percent) between 1999 and 2020. This is a slightly faster growth rate than is projected for the NCTCOG region at 29 percent (see Table 7).<sup>4</sup> When we remove the nearly built-out City of Irving from these projections, the growth rate over the 21-year period increases to more than 45 percent. In either scenario, a rapidly growing population base coupled with increasing employment opportunities will attract thousands upon thousands of additional vehicles onto the roadways traversing the funnel.

<sup>4</sup> The NCTCOG region is slightly different than the DFW CMSA, not including Henderson, Hood and Hunt counties in the projections noted in this report.

Other areas of northeast Tarrant County, in particular those recently incorporated into the northern reaches of the City of Fort Worth, will also witness rapid population and employment growth over the next two decades. Alliance Airport, Alliance Gateway, the Circle T Ranch and other commercial and industrial projects will attract tens of thousands of new jobs to Ft. Worth during the next 20 years and perhaps as many as 62,000 new residents. Without doubt, many of these businesses and residents will be shipping or commuting through the funnel at DFW Airport.

**Table 7. Population Projections by City**

City	4/1/90	1/1/99	2010	2020	% Change 1999-2020
Colleyville	12,724	19,250	25,762	27,451	42.6%
Coppell	16,881	33,050	32,345	42,230	27.8%
Flower Mound	15,527	47,300	51,198	73,949	56.3%
Grapevine	29,198	38,750	48,611	54,530	40.7%
Haslet	795	1,150	1,500	1,850	60.9%
Irving	155,037	183,350	188,410	205,810	12.2%
Keller	13,683	24,350	31,592	38,146	56.7%
Lewisville	46,521	74,700	82,070	105,051	40.6%
Roanoke	1,616	2,150	3,204	4,125	91.9%
Southlake	7,082	21,050	25,224	32,109	52.5%
Trophy Club	3,922	6,200	7,397	10,087	62.7%
Westlake	<u>185</u>	<u>250</u>	<u>320</u>	<u>390</u>	<u>56.0%</u>
<b>Total</b>	<b>303,171</b>	<b>451,550</b>	<b>497,633</b>	<b>595,728</b>	<b>31.9%</b> <b>(45.4%*)</b>
NCTCOG Region	4,111,750	4,963,064	5,529,650	6,401,300	29.0%

Source: Texas Water Development Board, NCTCOG, UNTCEDAR \* Not including City of Irving.

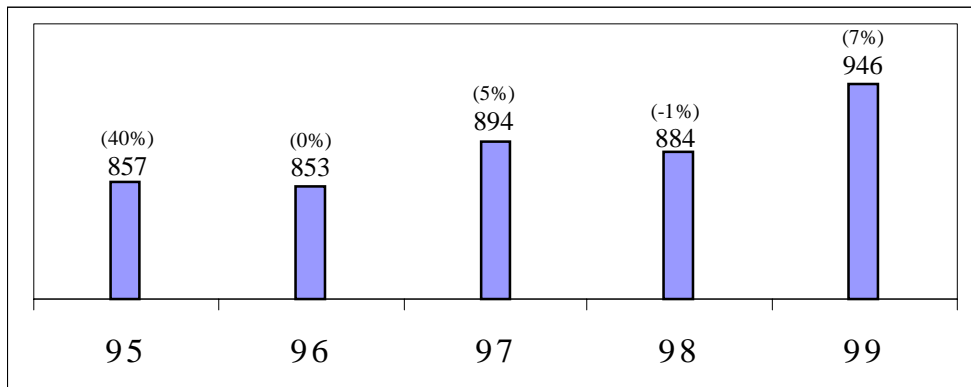
**Dallas-Fort Worth International Airport: An Economic Asset for the Region, the State and the Nation**

*The evolution of DFW Airport*

Dallas-Fort Worth International Airport, which opened 26 years ago, has evolved into the world's third busiest in total operations (about 850,000 take-offs and landings) and currently serves more than 60 million passengers per year. DFW's carriers fly to 153 cities worldwide, including nonstop and direct service to 38 international destinations.

DFW Airport is also one of the world's major cargo hubs. In 1999, the airport handled more than 900,000 U.S. tons of freight with a value of \$12 billion, representing 50 percent of all the air cargo in Texas (see Figure 1). Within the next 15 years, cargo volumes are projected to reach 1.9 million U.S. tons.

**Figure 1. DFW Airport Cargo Growth, 1995-1999**



(in thousands of U.S. tons, percentage growth)

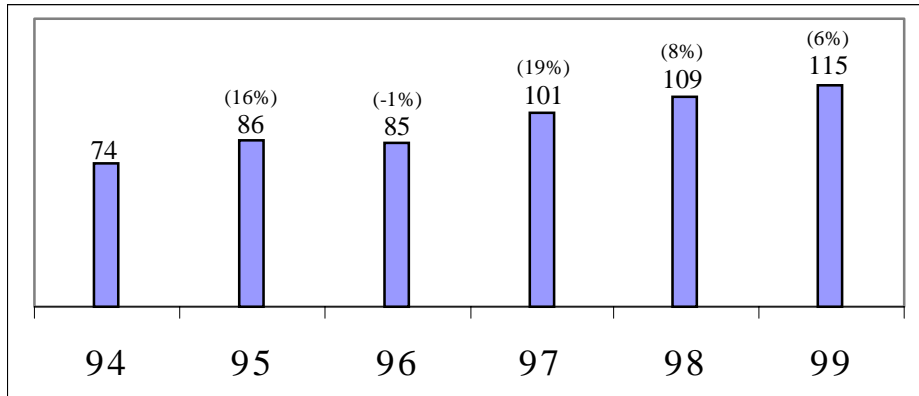
Source: DFW Airport

*DFW Airport, Alliance, and global commerce*

With two separate cargo areas providing runway access, as well as a foreign trade zone, DFW Airport has been a key factor linking the state of Texas to the rapidly expanding global economy. For example, international cargo volume was up 6 percent in

1999 following increases of 8 percent in 1998 and 19 percent in 1997 (see Table 2). International cargo shipments to and from DFW are expected to more than double over the next decade.

**Figure 2. DFW Airport International Cargo**



*(in thousands of U.S. tons, percentage growth)*  
Source: DFW Airport

However, DFW Airport does not stand alone. Alliance Airport, located less than 20 road miles northwest of DFW, complements the activities at the big airport. Just now coming into its own, Alliance is an industrial airport with manufacturing, distribution and aviation services companies on site. It is also part of a multi-modal shipping complex that includes a huge rail switching yard and truck terminals. With TexDOT's assistance, state highway 170 was opened several years ago to connect Alliance with DFW Airport and help create what might be called a "global transportation complex" in northeast Tarrant County.

Without question, because of its central location and easy accessibility, DFW Airport is benefiting passengers and businesses through the state of Texas and the nation. This is especially the case for America's burgeoning information technology industries, which have been Texas's economic engines for the past decade and will continue to be so for the foreseeable future. High-value products and components, such as semiconductors,

integrated circuits, communications equipment and computers, are typically shipped by air. What's more, just-in-time inventory—the hallmark of build-to-order high tech manufacturing—is heavily dependent on airfreight. As indicated in Table 8, the lion's share of freight moving in and out of DFW Airport consists of high technology products and components. High tech shipments to and from DFW should increase rapidly in the years ahead.

**Table 8. Imports and Exports through DFW Airport: 1997**

<b>Top 10 Imported Commodities (Ranked by Value)</b>		<b>Top 10 Exported Commodities (Ranked by Value)</b>	
	Thousands of U.S. Dollars		Thousands of U.S. Dollars
Office Machinery	\$1,078,533	Semiconductors and Integrated Circuits	\$727,839
Computer Equipment and Parts	596,158	Audio/Video Media	470,329
Semiconductors and Integrated Circuits	557,952	Photo, Science, and Medical Instruments	452,500
Audio/Video Media	458,391	Aircraft, Spacecraft, and Parts	419,959
Telephone Equipment and Parts	402,144	Electric Machinery and Parts	357,156
Special Classification Provisions	375,578	Computer Equipment and Parts	325,113
Electronic Components	248,888	Reactors, Boilers, and Engines	267,446
Photo, Science, and Medical Instruments	199,905	Office Machinery	183,773
Aircraft, Spacecraft, and Parts	151,039	Chemical Products	147,047
		Metalworking Machinery	145,949

Source: U.S. Department of Commerce

In 1999, U.S. imports and exports totaled almost \$2 trillion, equivalent to 20 percent of the nation's gross domestic product, up from 15 percent a decade ago. And an increasing share of the nation's global trade is shipped by air. The Seattle anti-WTO

demonstrations notwithstanding, global commerce will become an increasingly important factor in determining Texas's and the nation's future economic health. Put differently, if international trade and investment continue to expand, the Metroplex, Texas and the nation all stand to benefit. Aviation is a critical complement to expanded global commerce, and DFW International is one of the nation's premier cargo hubs serving shippers and receivers nationwide.

***Current and future economic impacts of DFW Airport***

The economic impact of DFW on the region and state is enormous. About 42,000 airline and support employees work at DFW proper, including more than 1,600 Airport Board employees. A study commissioned two years ago by the Airport Board found that DFW was generating \$11.2 billion in economic activity annually for the state of Texas and supporting some 211,000 jobs throughout the region and state. Today, the airport's economic impact is probably closer to \$13 billion supporting about 250,000 jobs statewide.

The original investment at DFW, including facilities and land, totaled \$700 million. Since the 1974 opening, several hundred millions of additional investments in terminals, runways and taxiways have been expended. Over the next seven years, DFW plans to spend \$2.5 billion to expand and improve its infrastructure, facilities and service including an eighth runway, an international terminal, and a people mover. According to airport studies, these projects will generate \$34 billion in new direct and indirect revenue while creating 77,000 jobs, including construction. Over the next 25 years, the airport plans to invest \$5.5 billion in new plant and equipment enabling it to serve more than 100

million travelers per year and 1.4 million flight operations. DFW's long-term goal is to become the world's number one airport in terms of flight operations.

***Will DFW's promise become reality?***

DFW International Airport is arguably one of Texas' major economic assets, and its long-term potential is unlimited. But the long-term success of this facility is inexorably entwined with road accessibility. At present, traffic converging in the "funnel" is restricting access to the northern entrances of DFW's passenger terminals and cargo areas and imposing costly delays on air travelers and shippers. During morning and evening rush hours, traffic often backs up for miles. The situation will only get worse in the years ahead because of the tremendous population, employment and traffic growth predicted for northeast Tarrant County and southern Denton County as well as Irving/Las Colinas. The maturation of Alliance Airport, along with new developments underway or planned for the Alliance Gateway and northern Ft. Worth, will feed additional traffic into the funnel.

It is essential that new roadways and interchanges be constructed that will segregate airport-bound road traffic from other travelers and thereby facilitate the flow of passengers and cargo through the northern entrances to DFW. These investments will not only help commuters and businesses in the Metroplex but will convey benefits to the entire state of Texas and, indeed, the nation. As discussed above, DFW Airport serves businesses and shippers throughout the U.S. With the expected explosion of domestic and international commerce in the decades ahead, improving ground access to DFW Airport has become an economic development imperative.