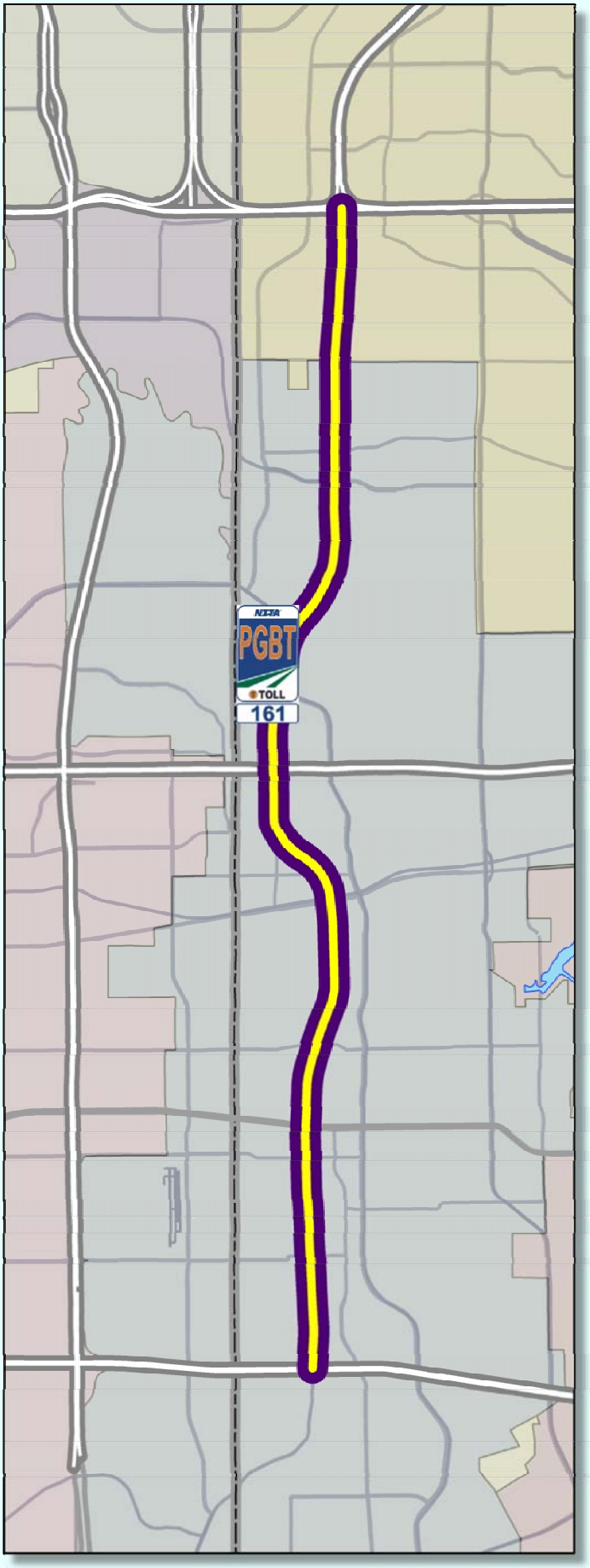

Investment Grade Traffic and Toll Revenue Study

President George Bush Turnpike

Western Extension

NTTA®

NORTH TEXAS TOLLWAY AUTHORITY

ENGINEERS
PLANNERS
ECONOMISTS

WilburSmith
ASSOCIATES

December 2010

Investment Grade Traffic and Toll Revenue Study

President George Bush Turnpike

Western Extension

Prepared For:

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Prepared By:

ENGINEERS
PLANNERS
ECONOMISTS
WilburSmith
ASSOCIATES

In Association With:

Baez
Consulting, LLC

December 2010

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December 31, 2010

Mr. Allen Clemson
Executive Director
North Texas Tollway Authority
5900 West Plano Parkway, Suite 100
Plano, TX 75093

Re: President George Bush Turnpike – Western Extension
Investment Grade Traffic and Toll Revenue Study

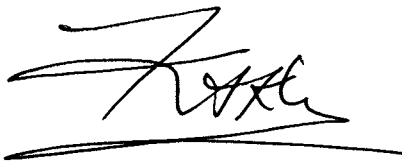
Dear Mr. Clemson:

Wilbur Smith Associates (WSA) is pleased to submit this report of our traffic and toll revenue study for the President George Bush Turnpike – Western Extension (PGBT-WE, formerly SH 161). The report summarizes the results of the study, which included development of traffic and toll revenue estimates for a fifty-one year period. The purpose of this study was to conduct an Investment Grade Traffic and Toll Revenue evaluation for the PGBT-WE.

Our project team, including Michael Copeland, Phani Jammalamadaka, Justin Winn, Worapong Hirunyanitiwattana, Yagnesh Jarmarwala, Naveen Mokkapati, Gustavo Baez (Baez Consulting) and other subconsultants, gratefully acknowledge the assistance and cooperation received from NTTA as well as others contacted during the course of the study. WSA sincerely appreciates the opportunity to have participated in this important project.

Respectfully submitted,

WILBUR SMITH ASSOCIATES



Kamran A. Khan
Senior Vice President

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DISCLAIMER

Results, findings, conclusions and recommendations found in this report are the direct result of the application of current state-of-the-practice processes and procedures in traffic and toll revenue forecasting. WSA believes that projections and other forward-looking statements contained within this report are based on reasonable assumptions as of the date of this report. However, there is considerable uncertainty inherent in forecasting traffic and revenue for any toll facility. There may sometimes be differences between forecasted and actual results caused by events and circumstances beyond the control of the forecasters. These differences could be material. Also, it should be recognized that traffic and revenue forecasts in this document reflect the overall estimated long-term trend. Actual experience in any given year may vary due to changing economic conditions or other factors.

In developing these forecasts, WSA has reasonably relied upon the accuracy and completeness of information provided (both written and oral) by North Texas Tollway Authority staff and consultants, North Central Texas Council of Governments (NCTCOG) staff and other local and state agencies. WSA has also relied upon the reasonable assurances of some independent parties and is not aware of any facts that would make such information misleading. Determination of several key variables impacting the traffic and revenue forecasts are the result of WSA's professional qualitative judgment based upon years of industry experience. These variables must be considered together as a whole rather than as discrete variables. Misleading or inaccurate conclusions could result without appropriate consideration of the intent or application of these variables or the underlying methodologies used to obtain the results.

WSA traffic and revenue forecasts rely heavily on the metropolitan transportation plan (MTP) and demographic forecasts produced by NCTCOG, which are updated periodically, and the most recent versions of each were used in this study. However, updates to either the MTP or the demographic forecasts (as they become available) could potentially have significant impacts to future traffic and revenue forecasts. If an updated MTP or demographic forecast is adopted, an update to this investment grade traffic and revenue study would be warranted to ensure the best possible traffic and revenue estimates.

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EXECUTIVE SUMMARY

This Investment Grade Traffic and Toll Revenue report reflects all current efforts requested of Wilbur Smith Associates (WSA) by the North Texas Tollway Authority (NTTA) to estimate traffic and toll revenue for the proposed President George Bush Turnpike – Western Extension (PGBT-WE, formerly SH 161) project in Dallas County. The study evaluated the traffic and revenue potential of the proposed PGBT-WE corridor between IH 20 and SH 183. The facility is assumed to open to traffic in phases, with the last phase opening in October 2012.

This study was conducted at an investment grade level and is considered suitable for use in project financing. The study utilized the latest North Central Texas Council of Governments (NCTCOG) 2030 Mobility Plan: 2009 Update, which includes the most recently approved future transportation improvement assumptions. The demographics datasets from the NCTCOG Mobility 2030 Plan: 2009 Update were updated based on the independent economic reviews that were performed along the existing NTTA system corridors, Southwest Parkway/Chisholm Trail Parkway corridor, Trinity Parkway corridor and along the PGBT-WE corridor by Insight Research Corporation (IRC), Research and Demographic Solutions (RDS) and Weinstein, Clower and Associates (WCA). The traffic and revenue estimates on the PGBT-WE were developed by using the trip tables that were generated using these updated demographics datasets.

The study effort involved the following key elements:

- **Data Collection Program** – This project relied heavily on data collected by the Texas Department of Transportation (TxDOT) and provided to NTTA. The data collected by TxDOT included traffic counts at specific locations around the PGBT-WE corridor, speed and delay runs on the potential competing routes, an origin/destination survey and a stated preference survey. Additional traffic counts and speed and delay data were also taken as part of this study. With this data, WSA evaluated the traffic trends and the travel time characteristics along the PGBT-WE corridor. Results from the stated preference survey were used to

estimate values of time for the PGBT-WE corridor and were subsequently used in the traffic and revenue estimation.

- **Corridor Growth Analysis** – Using the most recently approved demographics included by NCTCOG in their latest Mobility 2030 Plan: 2009 Update, WSA evaluated the socioeconomic conditions along the PGBT-WE corridor as described in Chapter 4. This included a review of the historical population and employment growth trends, as well as the future growth projections of these two major socioeconomic characteristics along the PGBT-WE corridor. A summary of the independent economic reviews performed by IRC and WCA along the PGBT-WE corridor is also presented in Chapter 4. Reports detailing the results of the IRC and WCA reviews are presented in Appendices A and B.
- **Traffic and Toll Revenue Forecasts** – WSA developed the traffic and revenue forecasts between 2011 and 2061 for PGBT-WE, as detailed in Chapter 6. The traffic and toll revenue forecasts were made based on the demographics trip tables, which were developed based on the latest independent economic reviews that were done along the PGBT-WE corridor and other DFW toll road corridors.

The toll sensitivity analyses for the PGBT-WE, as described in Chapter 6, show that the current and planned toll charges on the PGBT-WE are below the theoretical revenue maximization points. This demonstrates that, if needed, there is considerable potential for revenue enhancement through toll increases above those assumed for traffic and revenue forecasting purposes.

Table ES-1 presents the estimated annual transactions and annual toll revenue on the PGBT-WE. The annual transactions and annual revenue have been adjusted to reflect "ramp-up" during the first several years of operation. The annual transactions are expected to increase from 68.1 million in 2015 to 101.8 million in 2030 representing a 2.7 percent average annual growth between 2015 and 2030. Annual transactions are estimated to be 163.3 million in 2061, with an average annual growth rate of 1.5 percent between 2030 and 2061. Annual toll revenue is expected to be approximately $54.7 million in year 2015 and is expected to reach $127.5 million by 2030. This translates to an approximate 5.8 percent annual growth between 2015 and 2030. Annual revenue is anticipated to grow at an annual rate of 4.4 percent between 2030 and 2061, reaching $483.5 million in 2061.

Table ES-1
Estimated PGBT-WE Transactions and Revenue

Calendar Year	Annual Transactions	Annual Revenue
2011	13,277,000	$8,106,900
2012	23,390,200	$15,004,800
2013	52,451,900	$38,521,200
2014	62,477,500	$48,282,600
2015	68,052,500	$54,743,500
2016	70,781,900	$58,846,700
2017	73,641,600	$63,058,800
2018	76,637,100	$67,723,000
2019	80,081,500	$72,976,300
2020	85,759,900	$81,075,600
2021	87,783,600	$85,652,200
2022	89,858,700	$90,474,900
2023	91,986,900	$95,257,600
2024	94,169,200	$100,433,900
2025	89,847,900	$97,434,400
2026	92,091,300	$102,712,600
2027	94,400,900	$108,265,100
2028	96,779,700	$114,224,100
2029	99,229,000	$120,613,300
2030	101,751,700	$127,521,700
2031	112,213,300	$145,927,200
2032	115,075,500	$154,268,100
2033	118,022,900	$163,126,000
2034	121,058,600	$172,641,200
2035	124,185,600	$182,235,700
2036	125,800,000	$189,819,700
2037	127,435,500	$197,326,100
2038	129,092,100	$205,296,300
2039	130,770,400	$213,525,600
2040	132,470,000	$222,203,900
2041	133,794,900	$230,307,800
2042	135,133,000	$238,846,800
2043	136,484,500	$248,149,800
2044	137,849,300	$258,000,800
2045	139,227,700	$267,466,900
2046	140,620,000	$277,545,700
2047	142,026,100	$288,185,900
2048	143,446,500	$299,411,500
2049	144,880,900	$310,006,500
2050	146,329,800	$321,246,900
2051	147,792,800	$333,345,800
2052	149,270,800	$346,188,100
2053	150,763,500	$359,201,400
2054	152,271,400	$372,958,000
2055	153,793,900	$387,019,700
2056	155,331,600	$401,898,100
2057	156,885,000	$416,709,700
2058	158,454,000	$432,515,500
2059	160,038,600	$449,026,900
2060	161,638,800	$466,470,100
2061	163,255,300	$483,499,700

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CHAPTER 1 INTRODUCTION

This comprehensive traffic and revenue report reflects all current efforts requested of Wilbur Smith Associates (WSA) by the North Texas Tollway Authority (NTTA) to estimate the traffic and toll revenue potential for the President George Bush Turnpike – Western Extension (PGBT-WE, formerly SH 161) in Dallas County.

BACKGROUND AND AUTHORITY FOR STUDY

In 2007, WSA began work on a preliminary traffic and toll revenue (T&R) study for NTTA. Work on the project was halted during the market valuation negotiations between NTTA and the Texas Department of Transportation (TxDOT). After the completion of the initial market valuation negotiations in December 2007, WSA was tasked with upgrading the preliminary T&R study to an investment grade T&R study. An investment grade study report was completed in October 2008 by WSA. Due to the economic downturn, changes to the NTTA System toll rate schedules, update to the regional mobility plan, revenue recovery assumption changes and PGBT-WE phasing changes, NTTA authorized WSA to update the PGBT-WE investment grade T&R study again in 2009. A draft investment grade report summarizing that work was completed in August 2009. Since then, key project assumptions have changed again, and WSA has revisited the traffic and revenue forecasts for PGBT-WE. The results of the current investment grade study are summarized in this report. This study builds upon the previous work to generate updated investment grade traffic and toll revenue estimates that are suitable for financing purposes.

OBJECTIVE AND SCOPE OF STUDY

The purpose of this study was to develop investment grade traffic and toll revenue forecasts for the proposed PGBT-WE project extending from IH 20 in Dallas County to SH 183. The proposed tollway alignment is approximately 11.5 miles long and passes through the cities of Irving and Grand Prairie.

The following outlines the general structure of the report:

CHAPTER 2 – EXISTING TRAFFIC TRENDS AND CHARACTERISTICS

This chapter illustrates the historical traffic trends in the PGBT-WE study area. Traffic characteristics such as traffic counts, speed and delay, vehicle classification and others are detailed in this chapter. This section also summarizes the origin-destination and stated preference surveys that were used in the investment grade analysis.

CHAPTER 3 – DALLAS-FORT WORTH AREA TRANSPORTATION CHARACTERISTICS

This section contains a broad overview of the transportation system in the Dallas-Fort Worth region and outlines the region-wide characteristics that may impact the North Texas Tollway Authority System (NTTAS) and the PGBT-WE. The Mobility 2030 Plan: 2009 Update transportation commitments are described in this chapter.

CHAPTER 4 – DEMOGRAPHIC GROWTH

This chapter provides an overview of the methodology used to develop the official future socioeconomic datasets for the Dallas-Fort Worth Metropolitan Area (DFWMA) created by NCTCOG and approved by the NCTCOG Executive Board in 2003. NCTCOG's official demographic projections were evaluated throughout the area surrounding the PGBT-WE. This chapter also summarizes the independent economic reviews of NCTCOG's demographics that were performed.

CHAPTER 5 – TRAVEL DEMAND MODEL DEVELOPMENT

This chapter describes the databases utilized as part of this analysis and highlights the methodologies implemented to calibrate the travel demand model. The model is used to estimate future traffic on toll facilities, and it is calibrated and validated using current traffic to ensure that future projections are consistent with observed traffic characteristics along the corridor.

CHAPTER 6 – PGBT-WE ESTIMATED TRANSACTIONS AND TOLL REVENUE

The toll sensitivity analyses performed as part of the study are described in detail in this chapter. Also included is the analysis of the daily and annual transactions and toll revenues anticipated on the PGBT-WE, and sensitivity tests performed for the T&R estimates.

APPENDICES A & B – INDEPENDENT ECONOMIC REVIEWS

These appendices contain the documentation of the independent economic reviews as provided by Insight Research Corporation and Weinstein, Clower and Associates.

CHAPTER 2

EXISTING TRAFFIC TRENDS AND CHARACTERISTICS

This chapter provides background information regarding the existing traffic conditions for the highway infrastructure in and around the PGBT-WE corridor in Dallas County and Tarrant County. The corridor runs north/south between IH 20 in Grand Prairie and SH 183 in Irving. The information in this chapter provides a historical overview of traffic in the vicinity of the PGBT-WE corridor and was used as input to the traffic and toll revenue forecasting process.

DESCRIPTION OF EXISTING CORRIDOR FACILITIES

The PGBT-WE toll facility runs through the cities of Irving and Grand Prairie in a north/south direction and intersects several east/west arterial streets. There are also several potential north/south competing routes parallel to the PGBT-WE corridor. The study corridor is shown in Figure 2-1.

The PGBT-WE corridor is approximately 11.5 miles long and runs from IH 20 in Grand Prairie to SH 183 in Irving. The corridor crosses several major east/west highways and arterials including SH 183, IH 30, SH 180 and IH 20. Spur 303/Pioneer Parkway, which connects directly to the Mountain Creek Lake Toll Bridge, also crosses the PGBT-WE corridor. Additionally, SH 360, FM 157/Collins Road in Arlington, Carrier Parkway and Belt Line Road in Grand Prairie and Irving, and Loop 12/Spur 408 in Dallas are potential north/south competing routes.

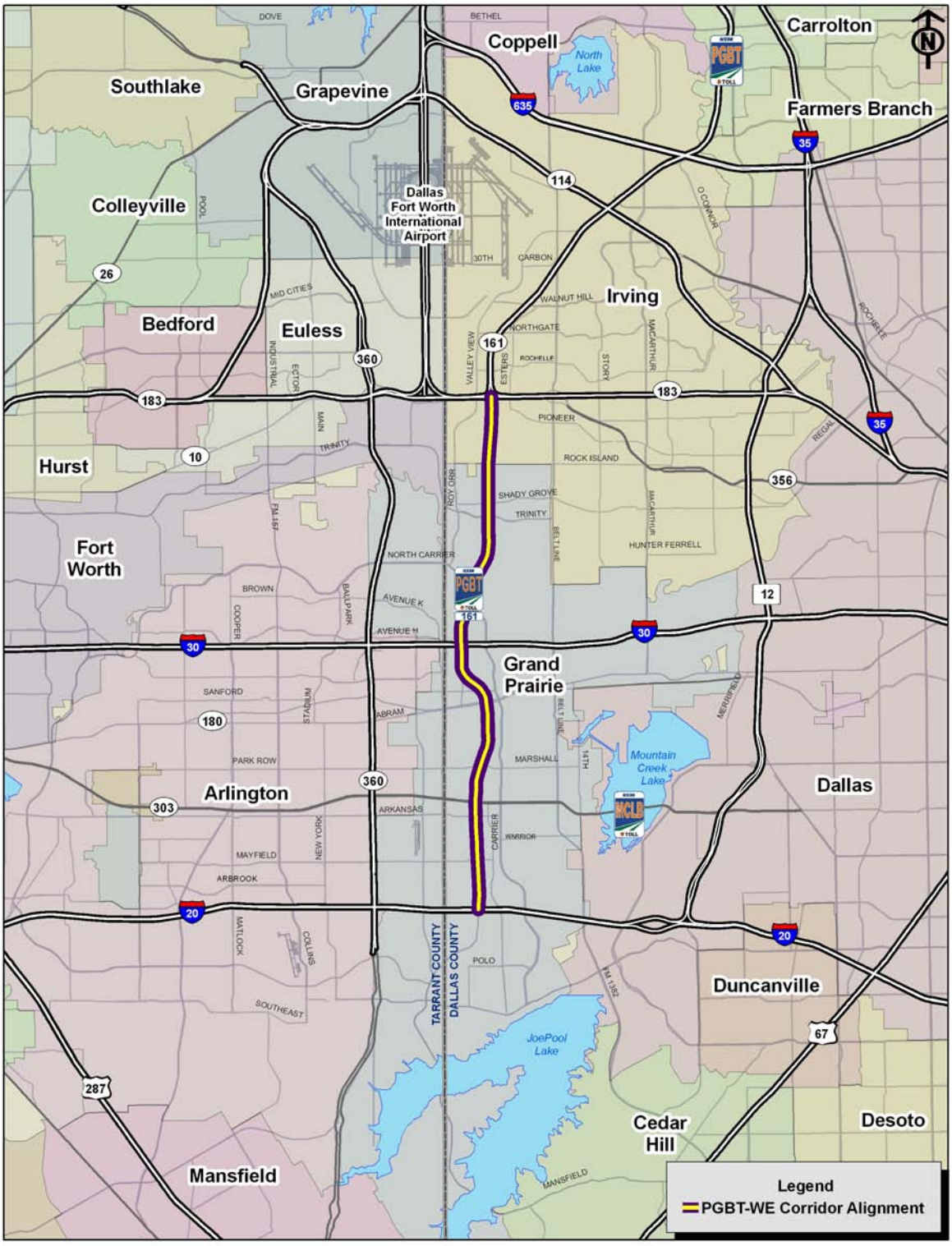


Figure 2-1. PGBT-WE Corridor Alignment

DATA COLLECTION EFFORT

The Texas Department of Transportation (TxDOT) hired WSA to conduct a comprehensive data collection effort in 2006. This effort consisted of traffic counts, speed-delay runs, an origin-destination survey and a stated preference survey. A detailed summary of the data collection can be found in the report *Data Collection: SH 161 Between IH 20 and SH 183*. This report as well as all collected data was provided to NTTA and its consultants by TxDOT via their FTP site in October 2007. This information provided the primary input data for this investment grade study. In addition to the data provided by TxDOT, WSA reviewed historic traffic counts and collected additional traffic counts and speed and delay data in the PGBT-WE corridor.

TRAFFIC COUNTS

The traffic counts commissioned by TxDOT were collected in November 2006 throughout the PGBT-WE corridor along eight screenlines. The screenlines and traffic count locations are shown in Figures 2-2 and 2-3, respectively. Most of the counts were 48-hour counts conducted on interior weekdays (Tuesday, Wednesday and Thursday). Several week-long (168-hour) counts were also included, as well as vehicle classification counts. The results of the traffic counts are shown in Figure 2-4 and reported as average weekday traffic. As shown in the figure, SH 360 carries a large portion of the screenline traffic throughout the corridor. Collins Road and Belt Line Road are also major north/south routes. Screenline traffic directionality profiles for each of the eight screenlines are shown in Figures 2-5 through 2-12. The profiles indicate that in the PGBT-WE corridor, traffic is heavier in the northbound direction during the morning peak period and in the southbound direction during the evening peak period. This strong directionality of traffic in the corridor is expected on the PGBT-WE toll facility.

SUPPLEMENTAL TRAFFIC COUNTS

As a supplement to the traffic data provided by TxDOT, NTTA conducted additional traffic counts in November 2007 on Screenlines 2, 5 and 8. In June and July 2009, counts were collected on Screenlines 2 and 5 and at several locations on the PGBT-WE frontage roads. The locations of the additional counts collected in 2007 and July 2009 are shown in Figure 2-13. In November 2009, counts were collected on Screenlines 2, 5, 7, and on the direct connections between SH 183 and the PGBT-WE which were opened in August 2009. In January 2010, counts were made along three screenlines (2, 3 and 5) and at some locations on Screenline 7. Three of the screenlines were extended to the east to include Loop 12 and Spur 408. A new screenline, Screenline 9, along the county line between IH 20 and SH 183 was added to count the traffic traveling east and west across the corridor. The locations of these additional counts and the average weekday volumes recorded in 2010 are shown in Figure 2-14. Each count was taken for a consecutive 48-hour period on interior weekdays. Figure 2-15 shows a schematic of the portion of the PGBT-WE mainlanes that is currently open to traffic, the average daily transactions on the facility since opening in August 2009, and the average weekday transactions in March 2010 (before the opening of Phase 3), May 2010 (after the opening of Phase 3), and October 2010.

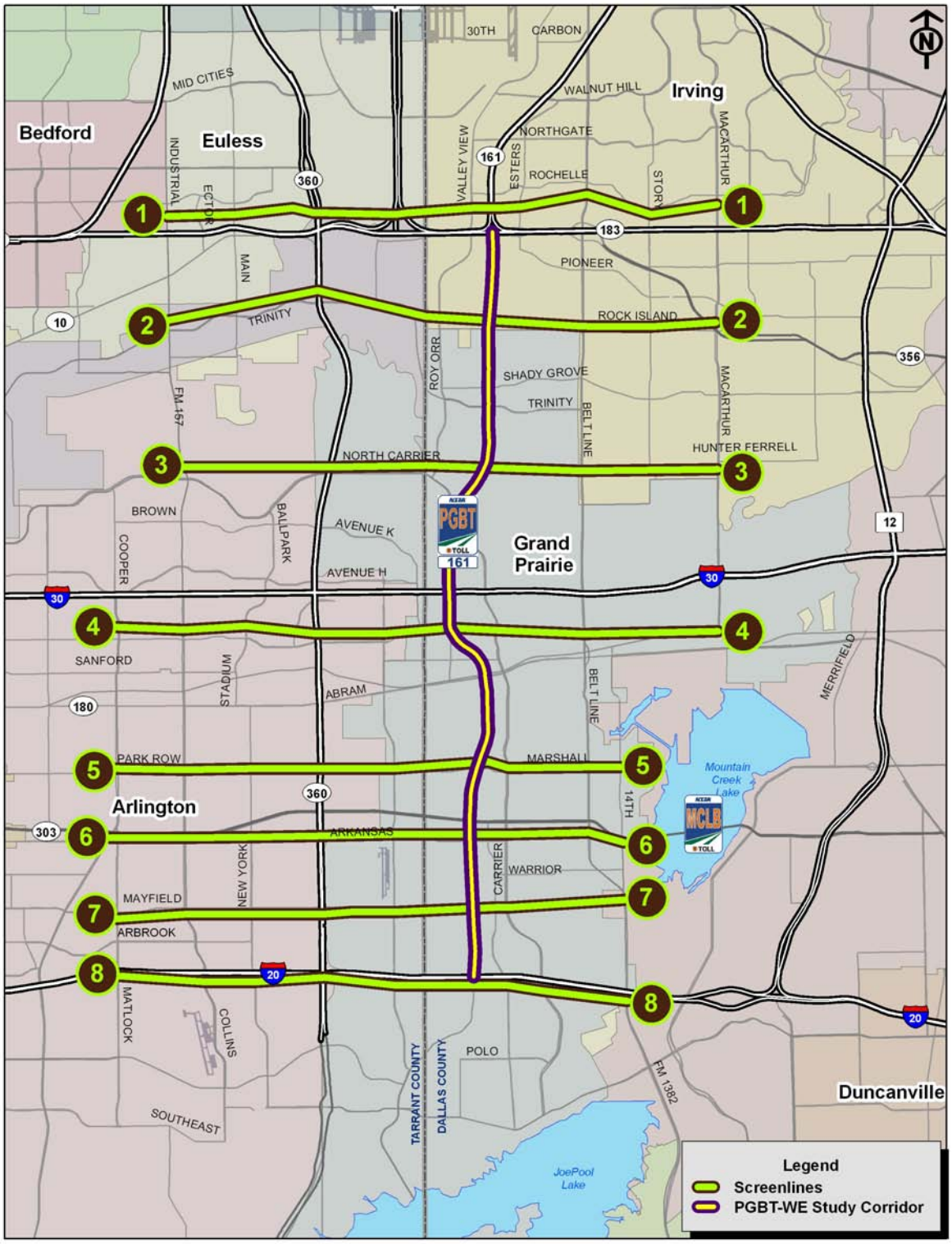


Figure 2-2. PGBT-WE Screenlines (TxDOT Data Collection Effort)

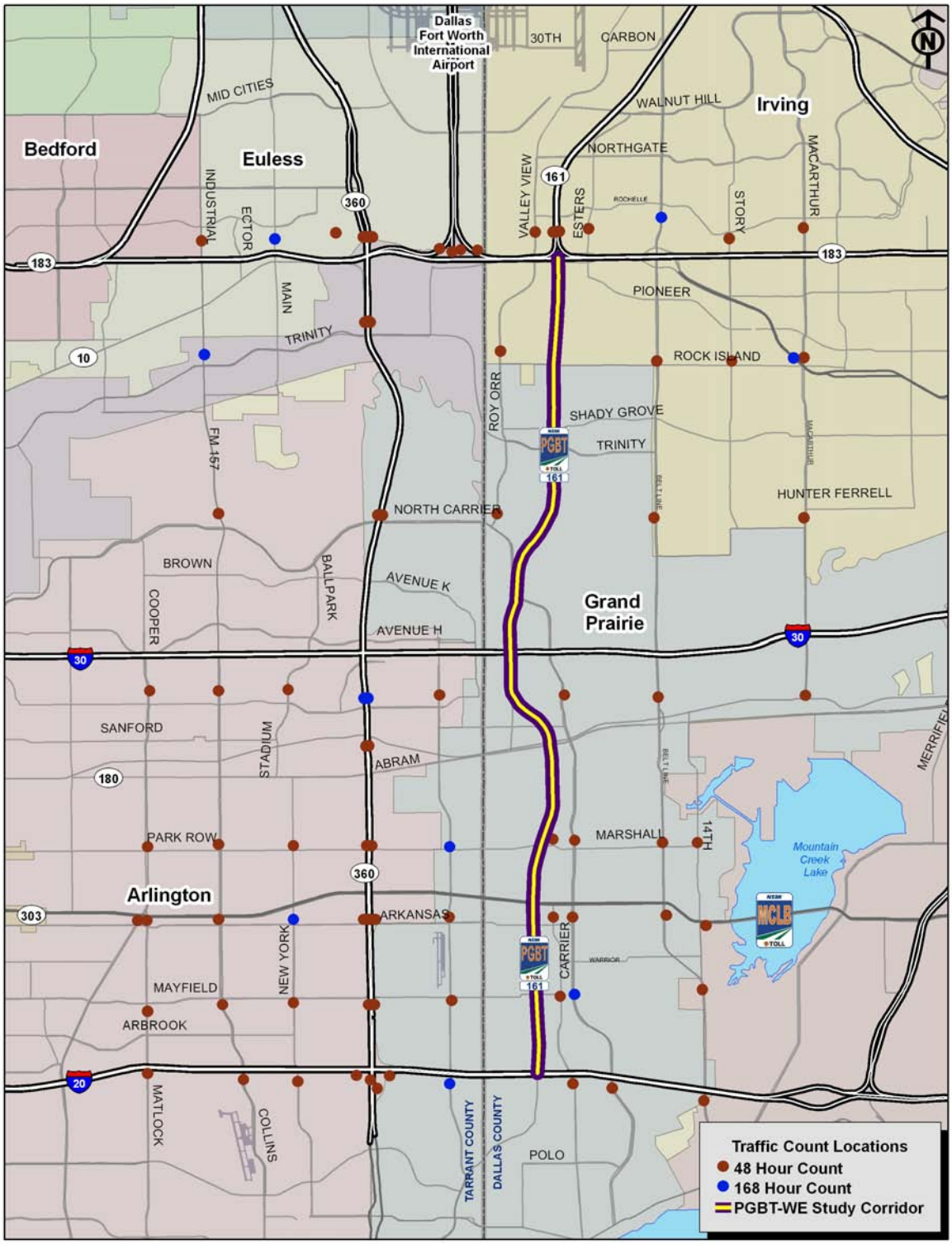


Figure 2-3. PGBT-WE Traffic Count Locations
(TxDOT Data Collection, November 2006)

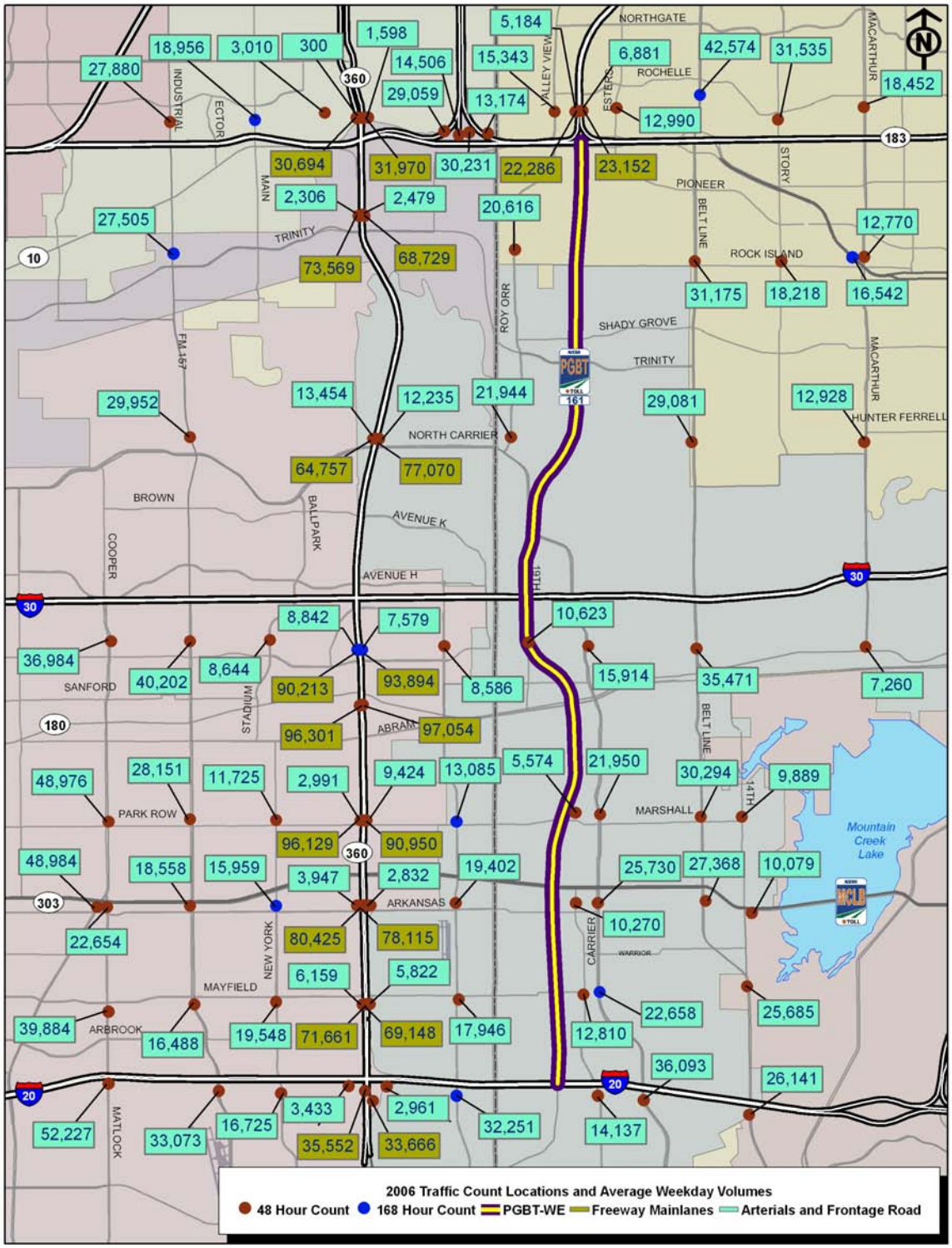


Figure 2-4. PGBT-WE Traffic Count Results
(TxDOT Data Collection, November 2006)

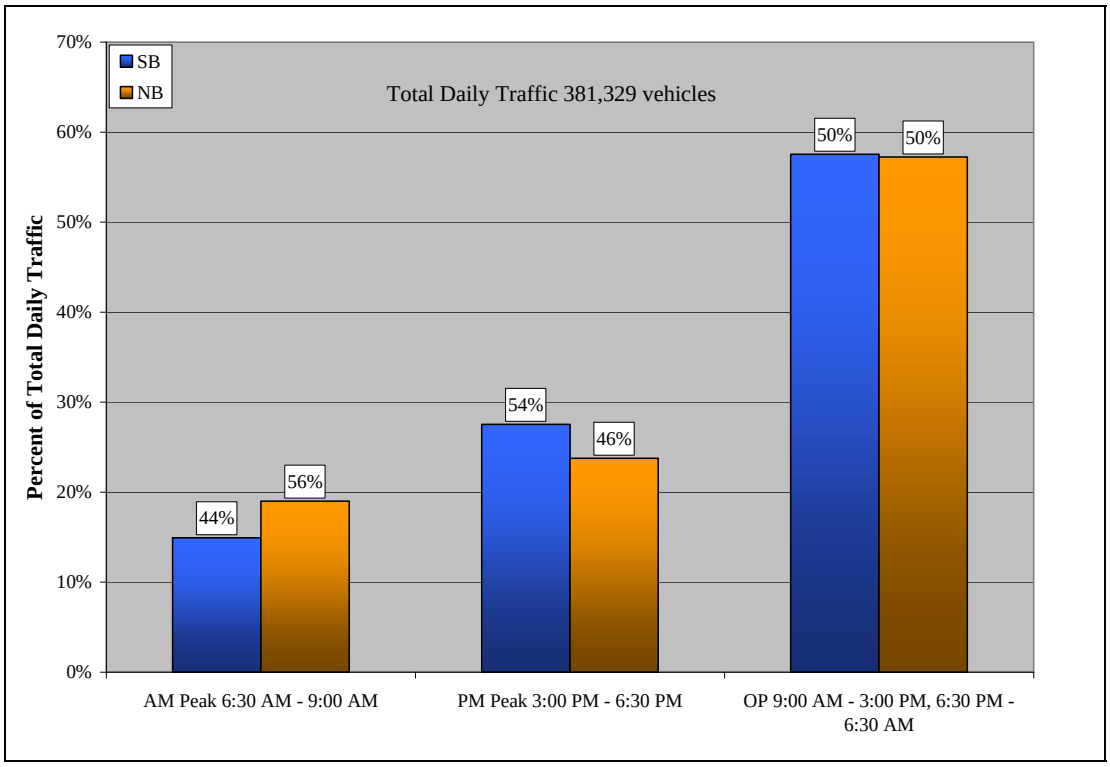


Figure 2-5. Screenline 1 Traffic Profile

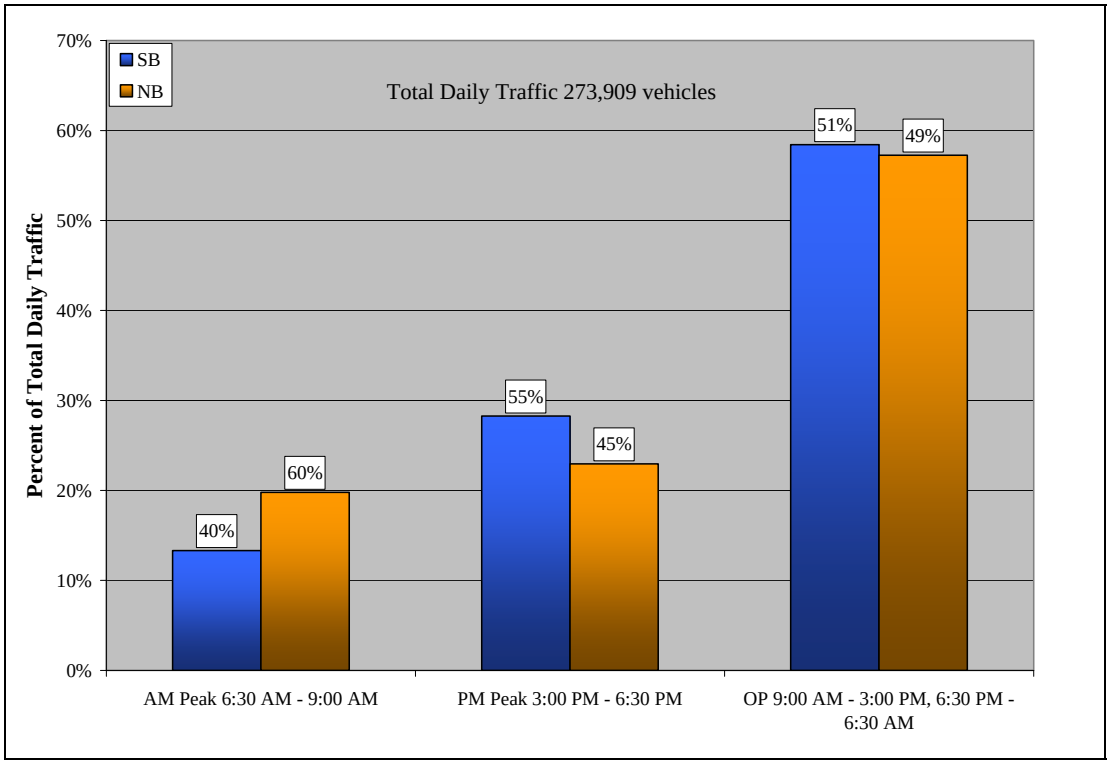


Figure 2-6. Screenline 2 Traffic Profile

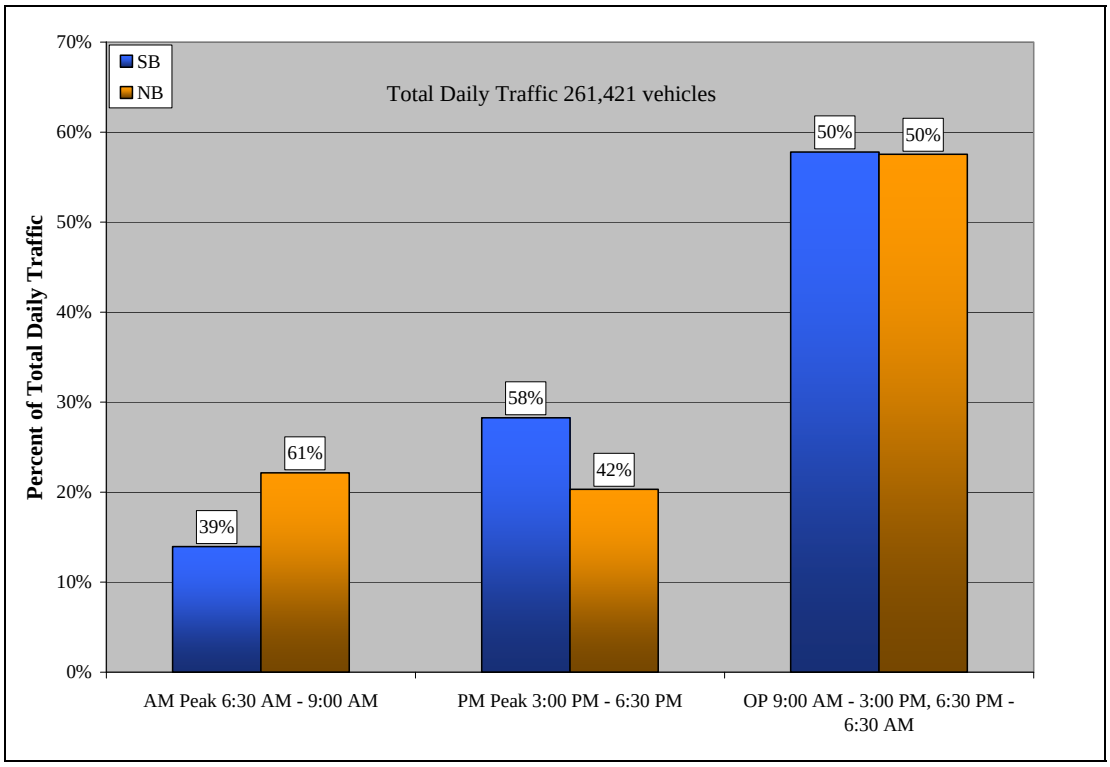


Figure 2-7. Screenline 3 Traffic Profile

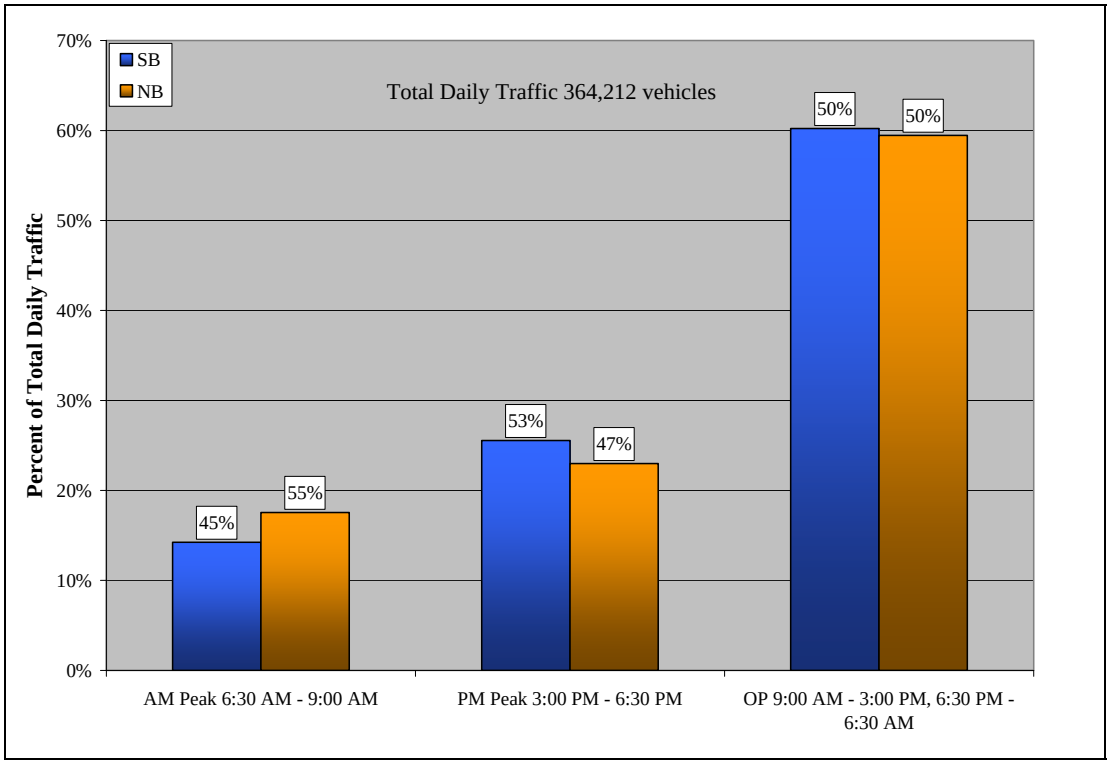


Figure 2-8. Screenline 4 Traffic Profile

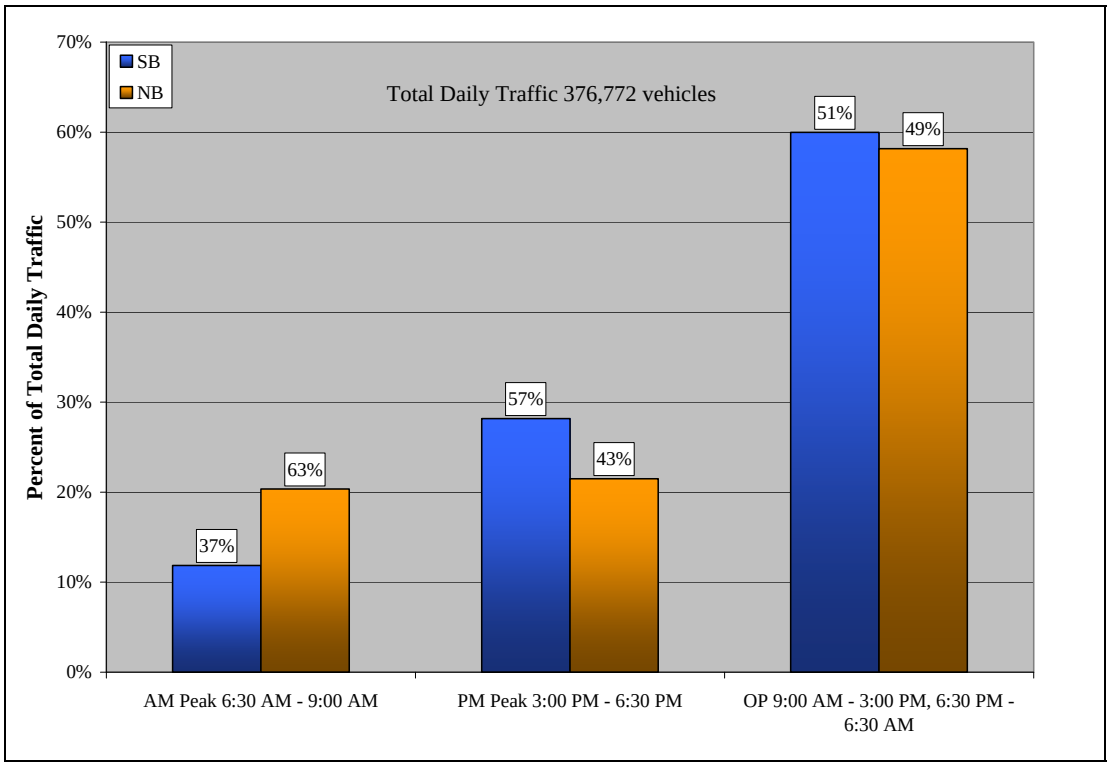


Figure 2-9. Screenline 5 Traffic Profile

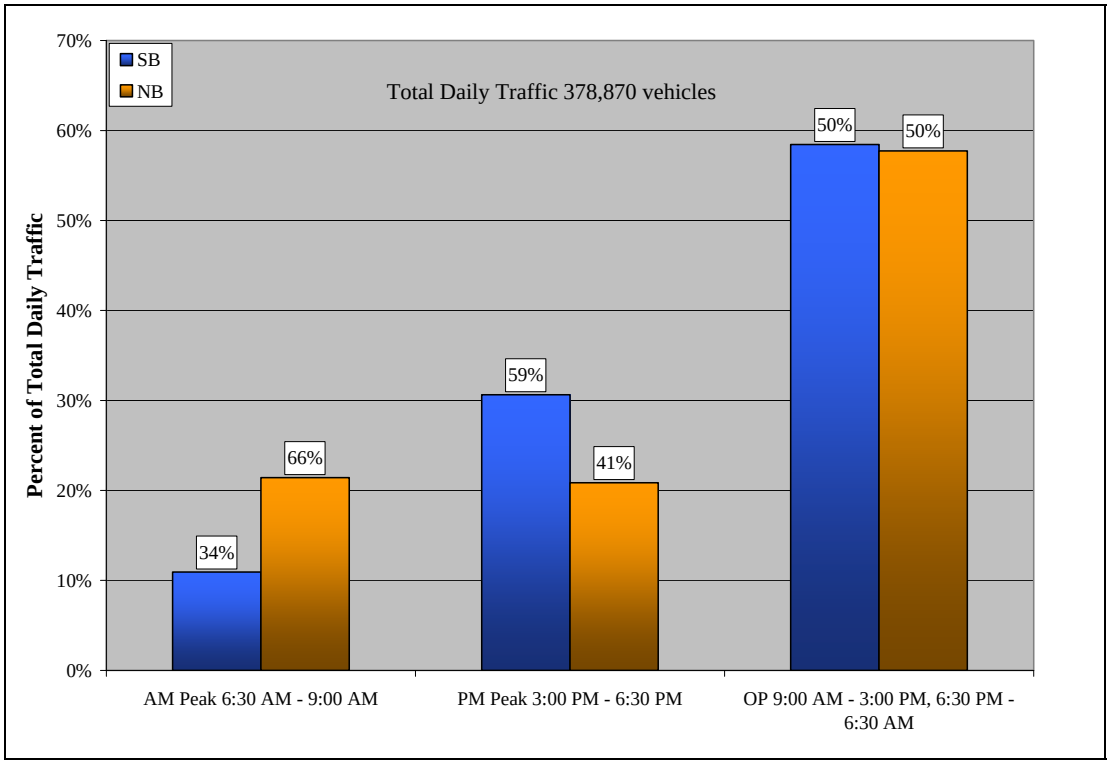


Figure 2-10. Screenline 6 Traffic Profile

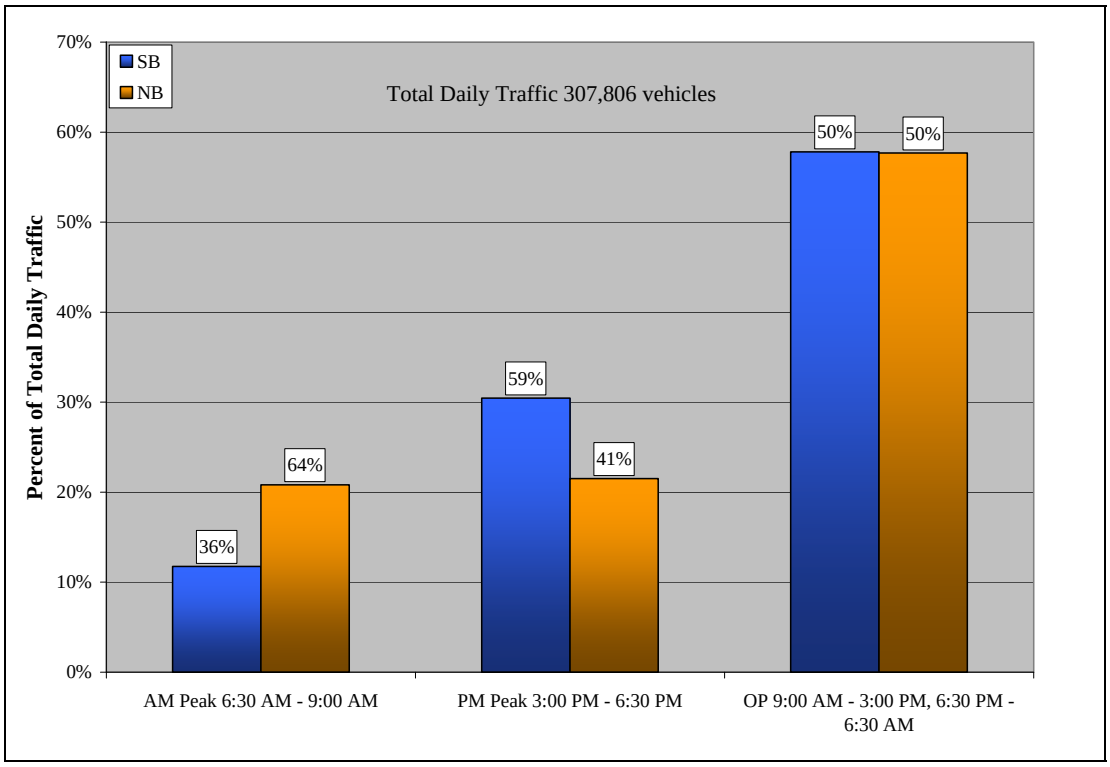


Figure 2-11. Screenline 7 Traffic Profile

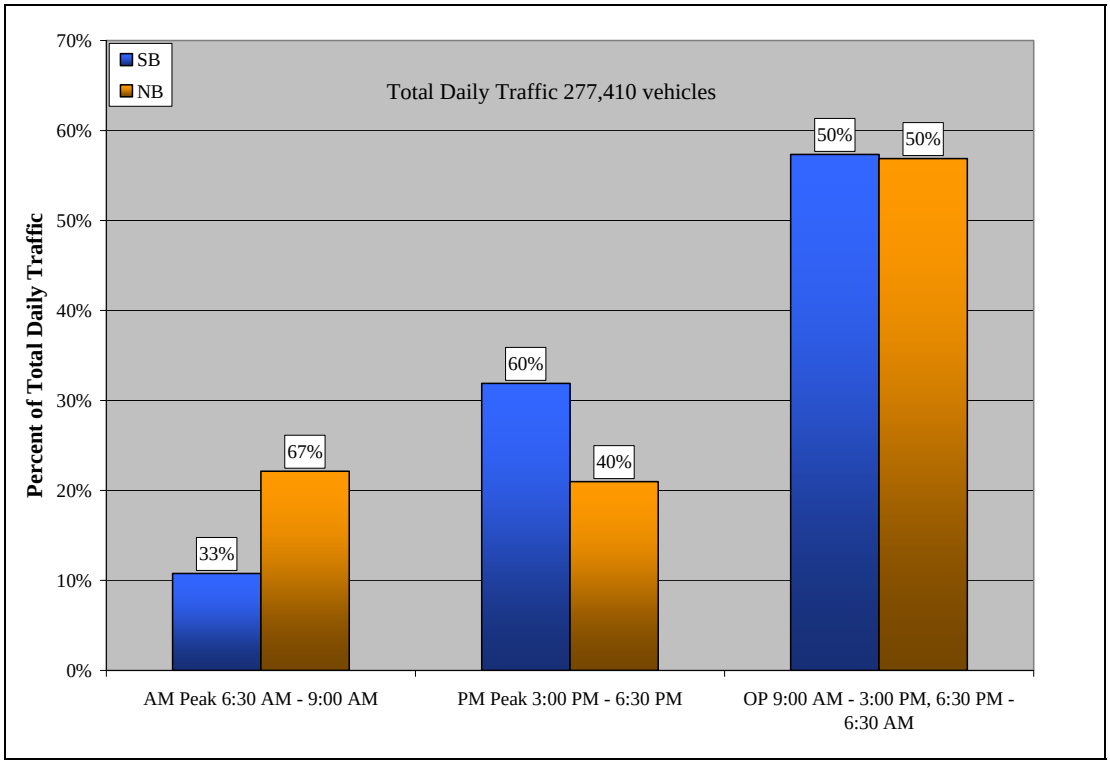


Figure 2-12. Screenline 8 Traffic Profile

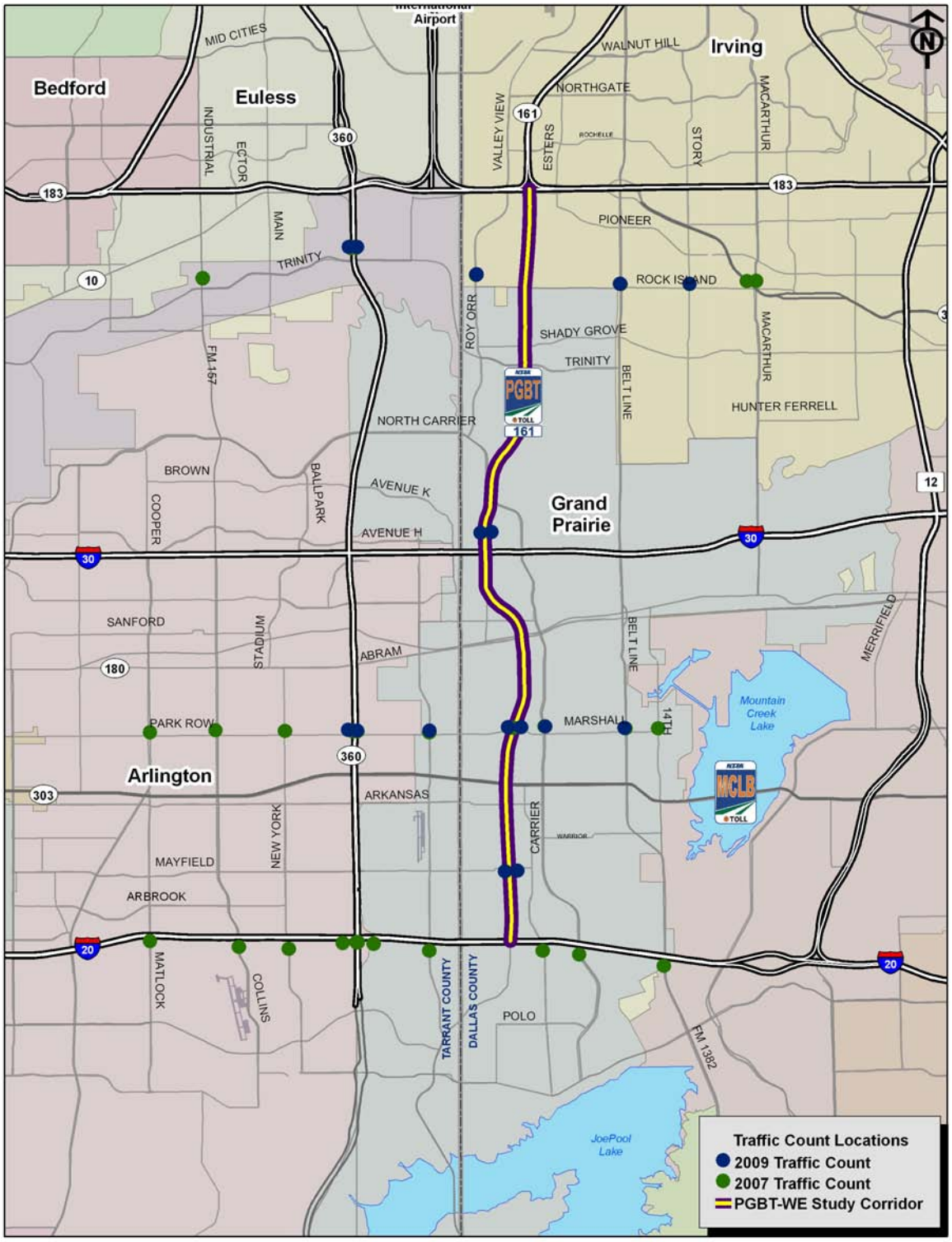


Figure 2-13. PGBT-WE Traffic Count Locations
(WSA Data Collection 2007 & 2009)

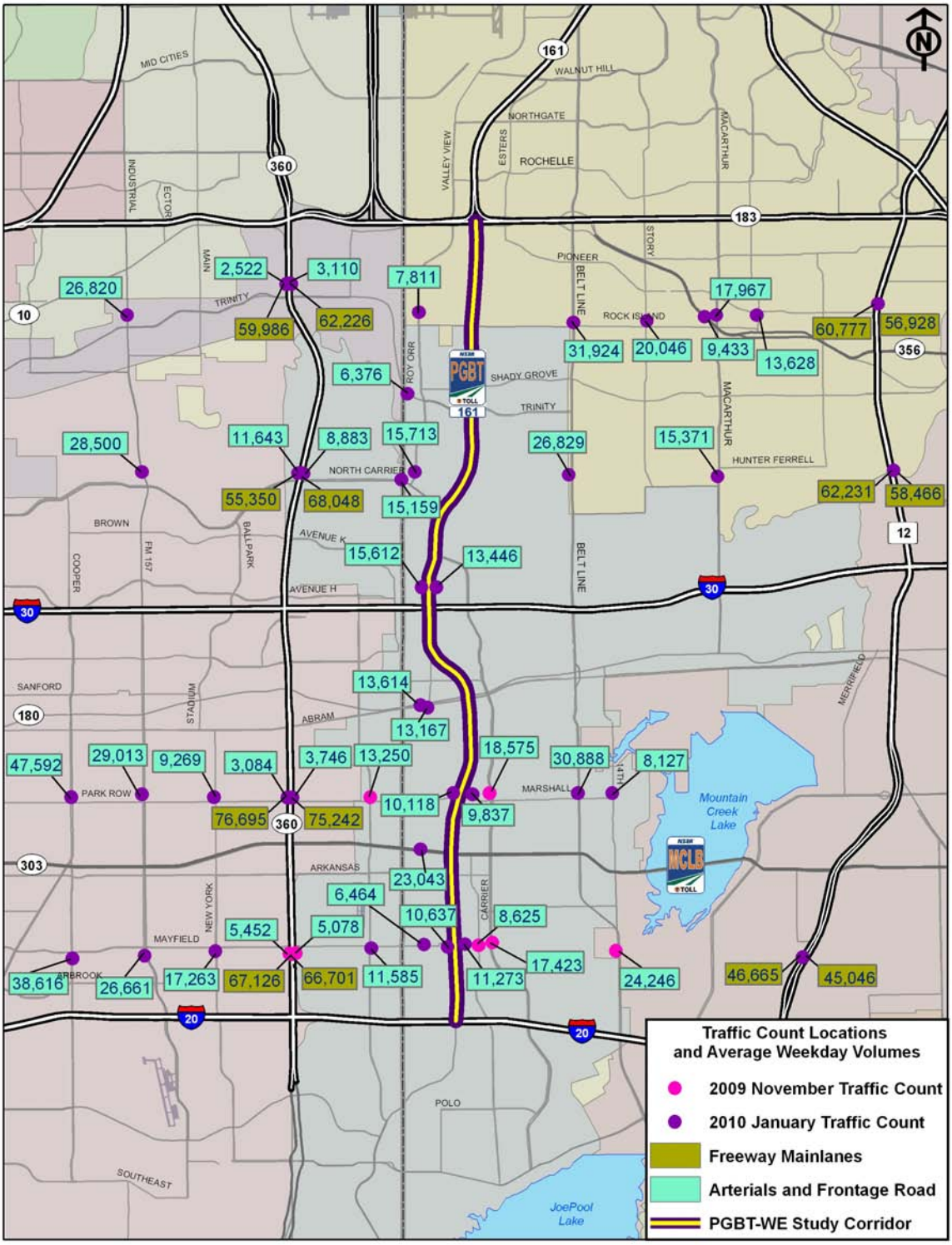
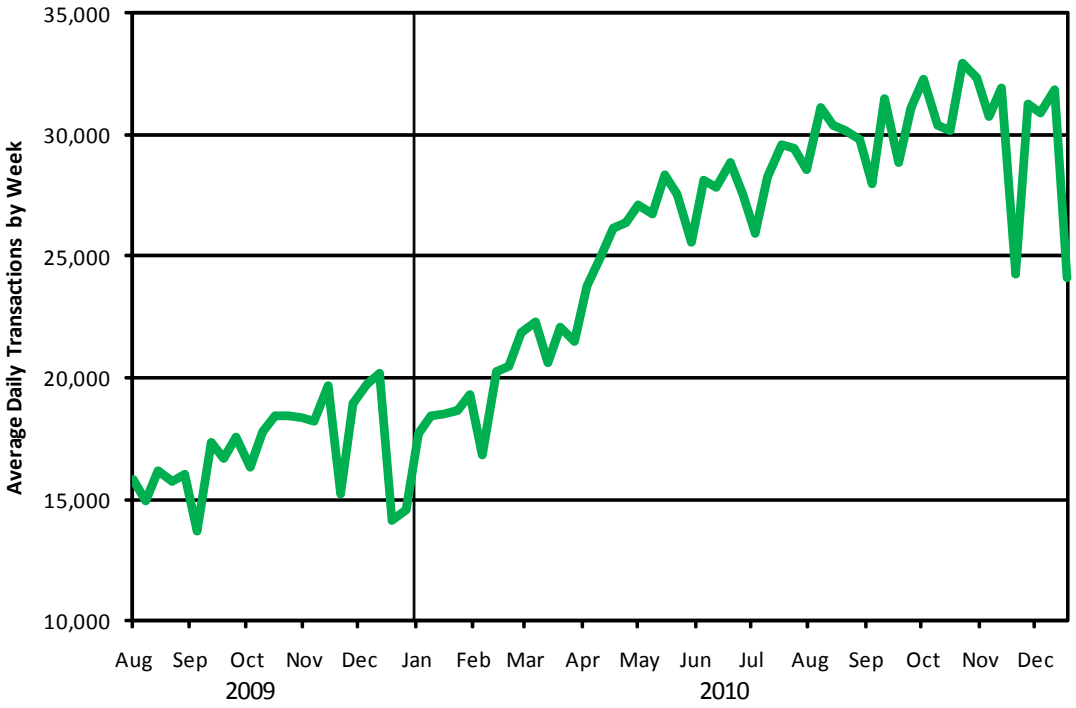
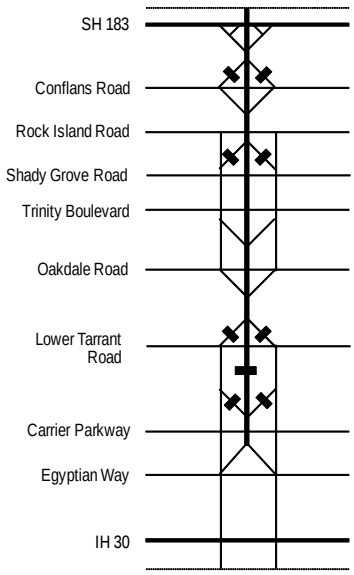


Figure 2-14. PGBT-WE Traffic Count Locations
(WSA Data Collection: 2009 & 2010)



Average Weekday Transactions



Plaza	March 2010 (Before Phase 3)	May 2010 (After Phase 3)	October 2010
Conflans Ramps	3,011	2,659	2,765
Shady Grove Ramps	---	2,681	3,561
Lower Tarrant Ramps (North)	---	1,902	3,852
Lower Tarrant MLG	21,916	24,392	25,320
Lower Tarrant Ramps (South)	---	189	97
Total	**24,927**	**31,824**	**35,595**

Figure 2-15. PGBT-WE Transaction Trends

HISTORIC TRAFFIC COUNTS

The Texas Department of Transportation (TxDOT) records the annual average daily traffic (AADT) at several locations on all state roadways and the volumes are shown on district and county maps. WSA obtained AADT values for several locations along and adjacent to the PGBT-WE corridor for the eighteen year period between 1991 and 2008. The compounded annual traffic growth between 1991 and 2008 at the historic traffic count locations is shown in Table 2-1. Over this period, most of the locations in the PGBT-WE corridor had a positive traffic growth in AADT. The locations of the AADT counts are shown in Figure 2-16. Figures 2-17 through 2-20 show the historic traffic count profiles.

Table 2-1
Historic Traffic Counts

Location Number	Location	1991 Volume	2008 Volume	Annual Growth
1	SH 360 South of 183	98,000	161,000	3.0%
2	SH 183 East of Tarrant County Line	109,000	178,000	2.9%
3	SH 161 North of SH 183	19,500	72,000	8.0%
4	SH 360 North of IH 30	108,000	172,000	2.8%
5	IH 30 East of Tarrant County Line	86,000	121,000	2.0%
6	SH 360 South of SH 180	123,000	188,000	2.5%
7	SH 180 West of Belt Line	18,000	13,200	-1.8%
8	Beltline South of SH 180	17,100	25,000	2.3%
9	Spur 303 West of Tarrant County Line	25,000	22,000	-0.7%
10	SH 360 South of Spur 303	90,000	171,000	3.8%
11	Spur 303 West of Belt Line	24,000	24,000	0.0%
12	SH 360 South of IH 20	19,400	86,000	9.2%
13	IH 20 East of Tarrant County Line	86,000	161,000	3.8%
14	Belt Line North of IH 20	14,400	21,000	2.2%

Note: Volumes are average annual daily traffic (AADT). The AADT includes freeway and frontage road volumes for both directions at that location.

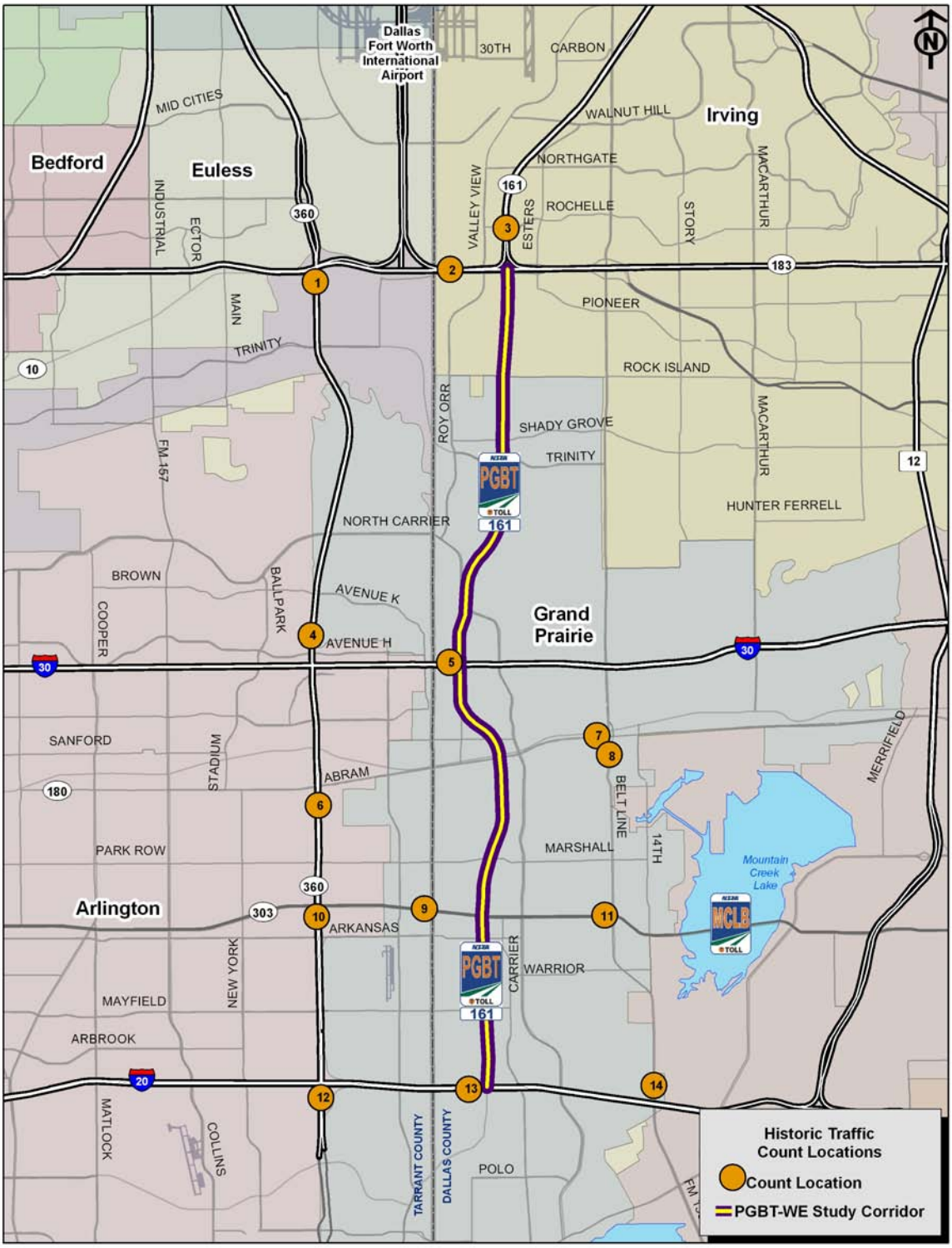


Figure 2-16. PGBT-WE Corridor Historic Traffic Counts

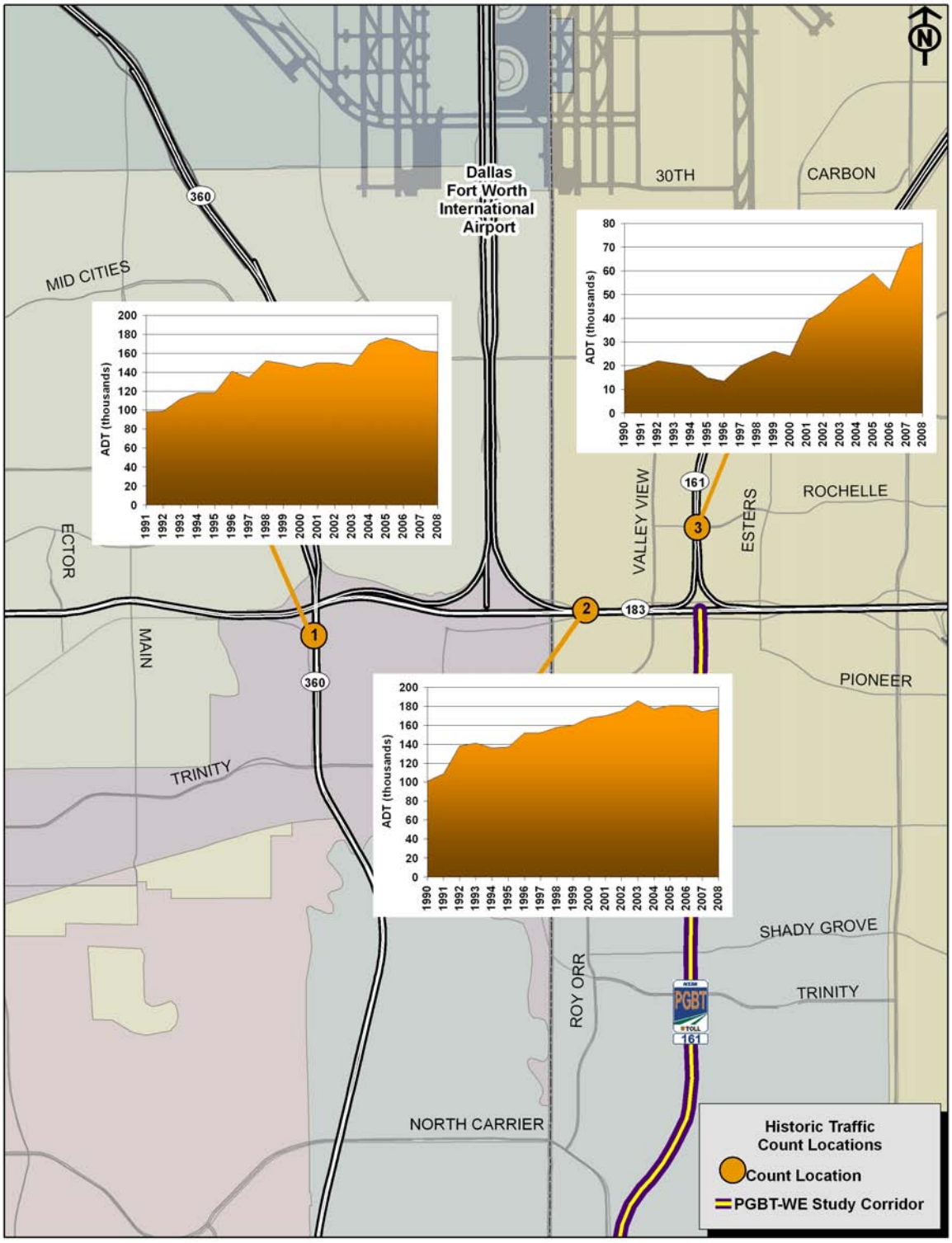


Figure 2-17. PGBT-WE Corridor Historic Traffic Count Profiles

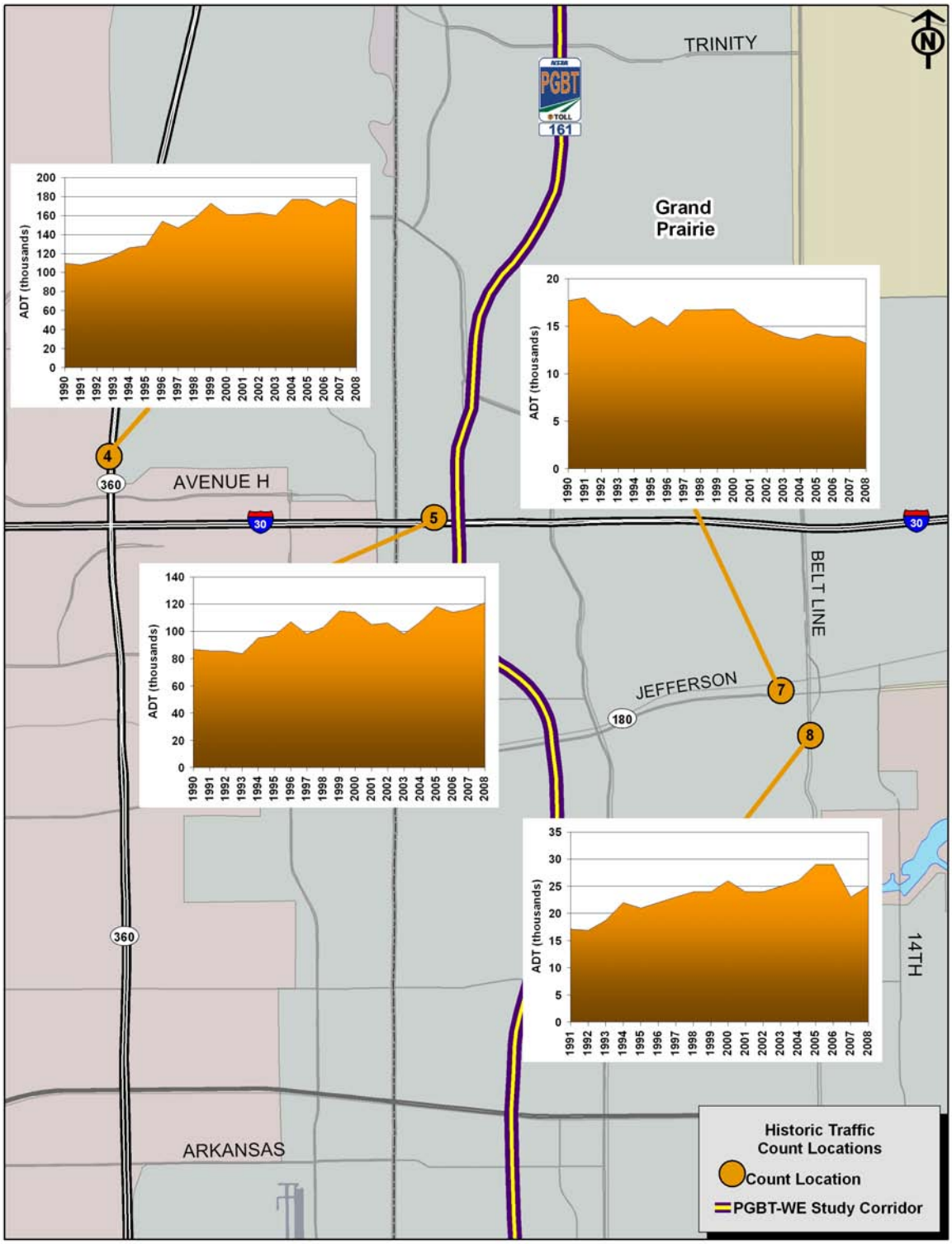


Figure 2-18. PGBT-WE Corridor Historic Traffic Count Profiles

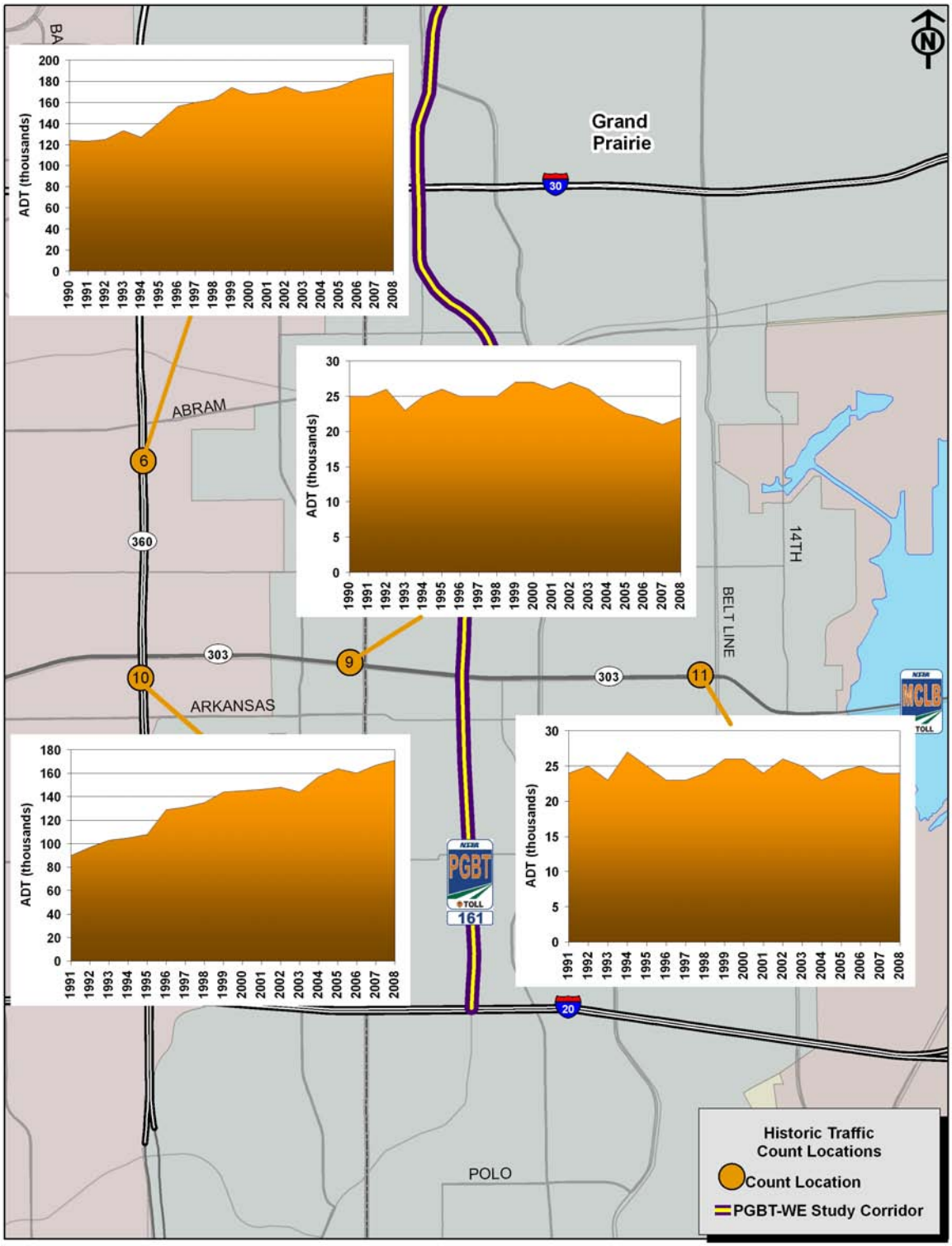


Figure 2-19. PGBT-WE Corridor Historic Traffic Count Profiles

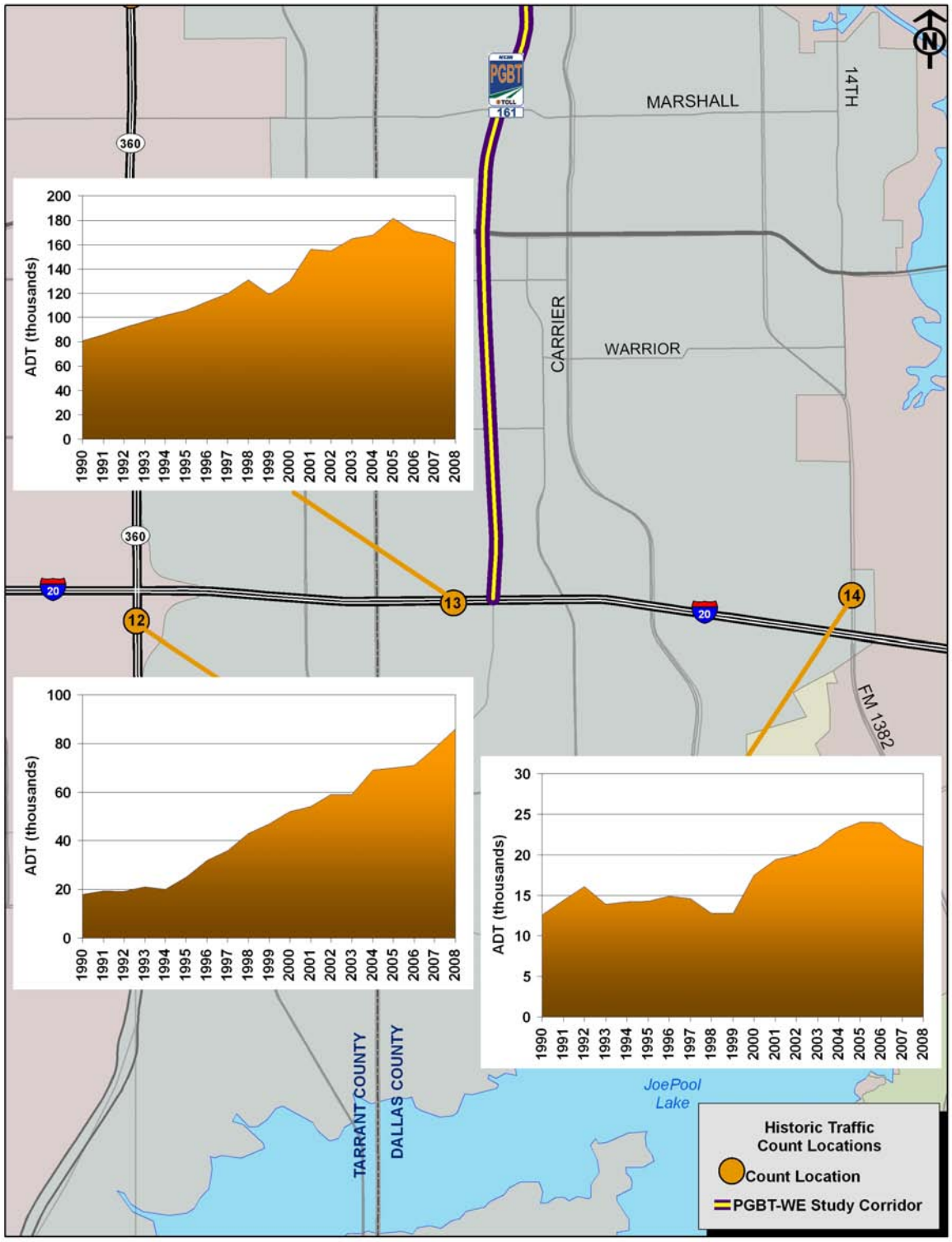


Figure 2-20. PGBT-WE Corridor Historic Traffic Count Profiles

SPEED AND DELAY CHARACTERISTICS

TxDOT's data collection efforts in 2006 also included the collection of speed and delay information. These data were collected by driving on select routes in the PGBT-WE corridor during the morning and evening peak periods. Figure 2-21 illustrates the routes driven for the speed and delay studies. Global Positioning System (GPS) units recorded the vehicle's location and current time every tenth of a mile. These data were then used to generate speed profiles along several routes in the PGBT-WE corridor for both the AM and PM peak periods.

The results of the speed and delay runs for the AM and PM peak periods are shown in Figures 2-22 through 2-25. Figures 2-22 and 2-23 show the speed and delay results for the arterial routes, and Figures 2-24 and 2-25 show the results for the runs on SH 360. During the AM peak period, most of the arterial routes had average speeds around 30 mph, with significant delay at some locations in the northbound direction. SH 360 operated above 50 mph in the southbound direction but showed significant delay in the northbound direction. During the PM peak period, much of the delay was in the southbound direction, particularly on SH 360, New York Avenue, and Macarthur Boulevard. In both peak periods, the greatest delay on SH 360 was seen as traffic approached IH 30. One probable factor contributing to this delay is the lack of a fully directional interchange at SH 360 and IH 30.

SUPPLEMENTAL SPEED AND DELAY DATA

To ensure that the most accurate traffic information is being used for the WSA travel demand model, supplemental speed and delay data was obtained in the PGBT-WE tollway corridor. Data was collected on three of the routes from the TxDOT data collection effort: SH 360, Valley View / Roy Orr / Carrier Parkway, and Belt Line Road, and along the now opened PGBT-WE corridor. The supplemental speed and delay data was collected in February 2010. Each route was traveled between SH 183 and IH 20. Figure 2-26 illustrates the routes driven for the supplemental speed and delay studies.

The results of the supplemental speed and delay runs are shown in Figures 2-27 through 2-30. The observed speed profiles on SH 360, Valley View / Roy Orr / Carrier Parkway, and Belt Line Road were similar to the speeds observed in 2006. In the northbound direction of SH 360 in the AM peak period it appeared that congestion had decreased, likely due to the diversion of some of the traffic to the newly opened PGBT-WE mainlanes north of IH 30. However, the PM peak period congestion on Southbound SH 360 appeared worse, probably due to construction at the SH 180 interchange and the Union Pacific Railroad (UPRR) crossing. In the off peak directions (southbound in the AM and northbound in the PM), traffic continued to travel at free flowing speeds on SH 360. Congestion observed previously on Belt Line Road had been relieved by the opening of the grade separation over Jefferson, the UPRR, and Main Street. The route along the PGBT-WE corridor required a detour at the UPRR in both directions due to the fact that the frontage roads did not cross the railroad. Despite this, the observed speeds in the PM peak period in the southbound direction of the PGBT-WE were higher than the observed speeds on southbound SH 360.

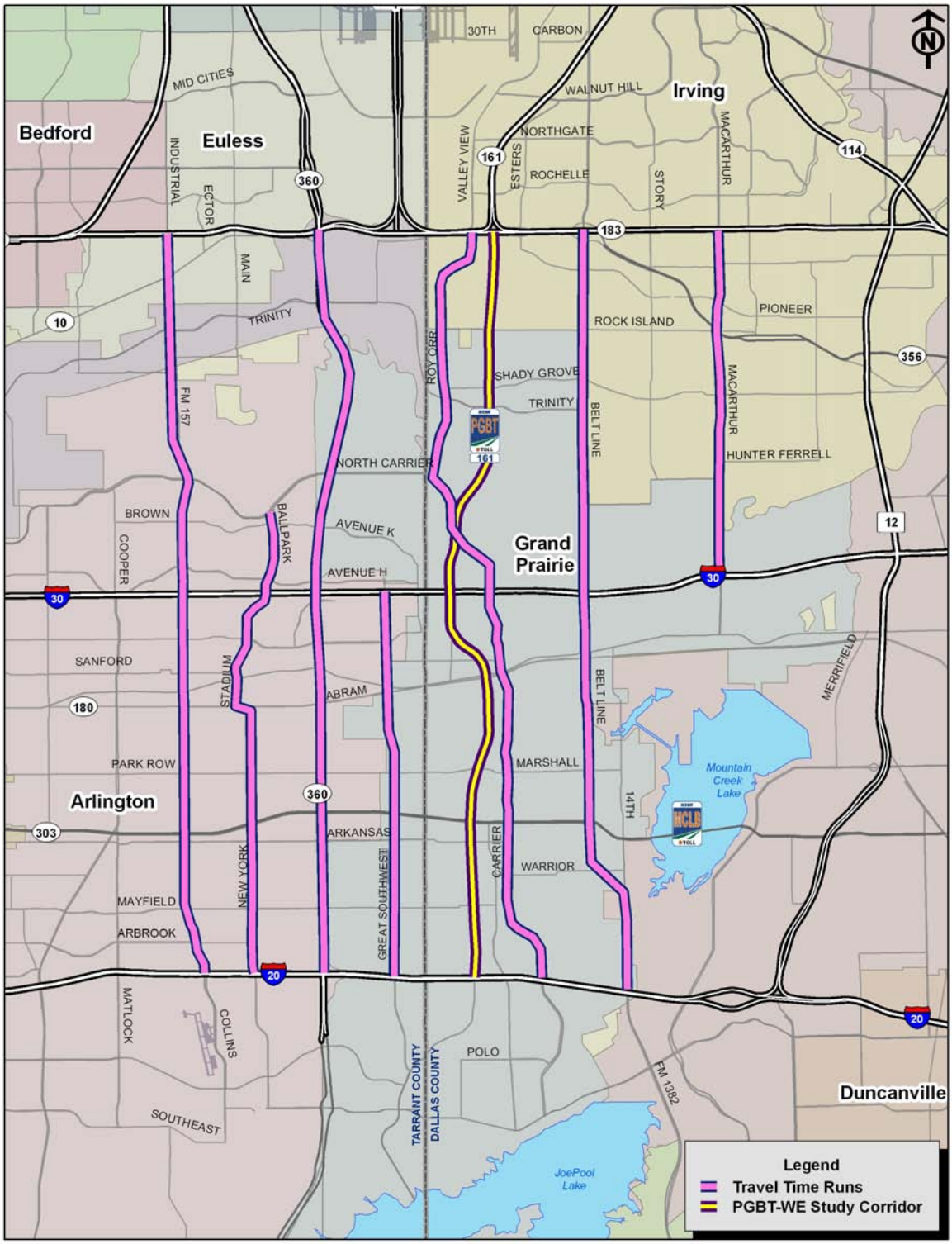


Figure 2-21. PGBT-WE Speed-Delay Run Locations (2006)

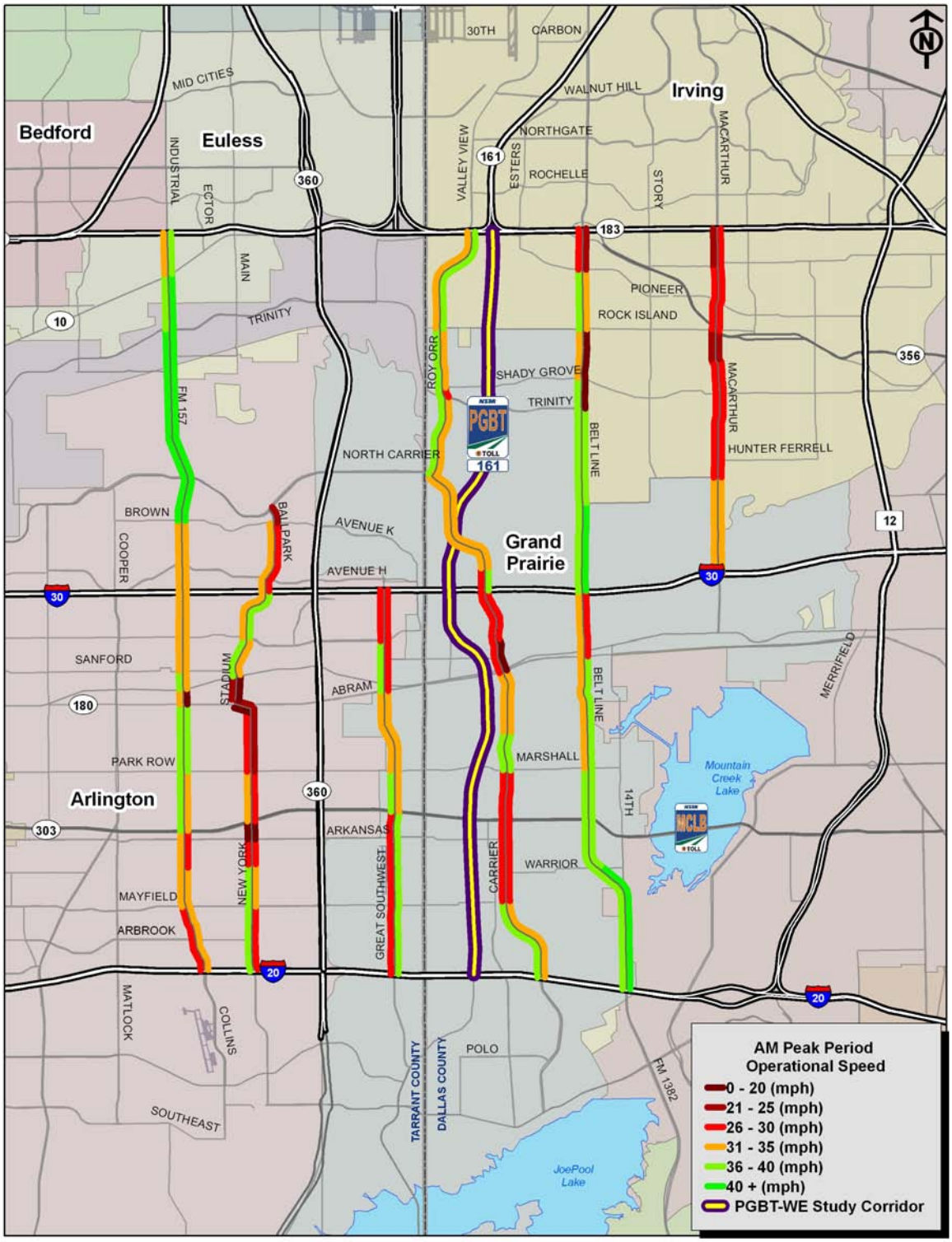


Figure 2-22. 2006 Speed-Delay Results: AM Peak Period (Arterials)

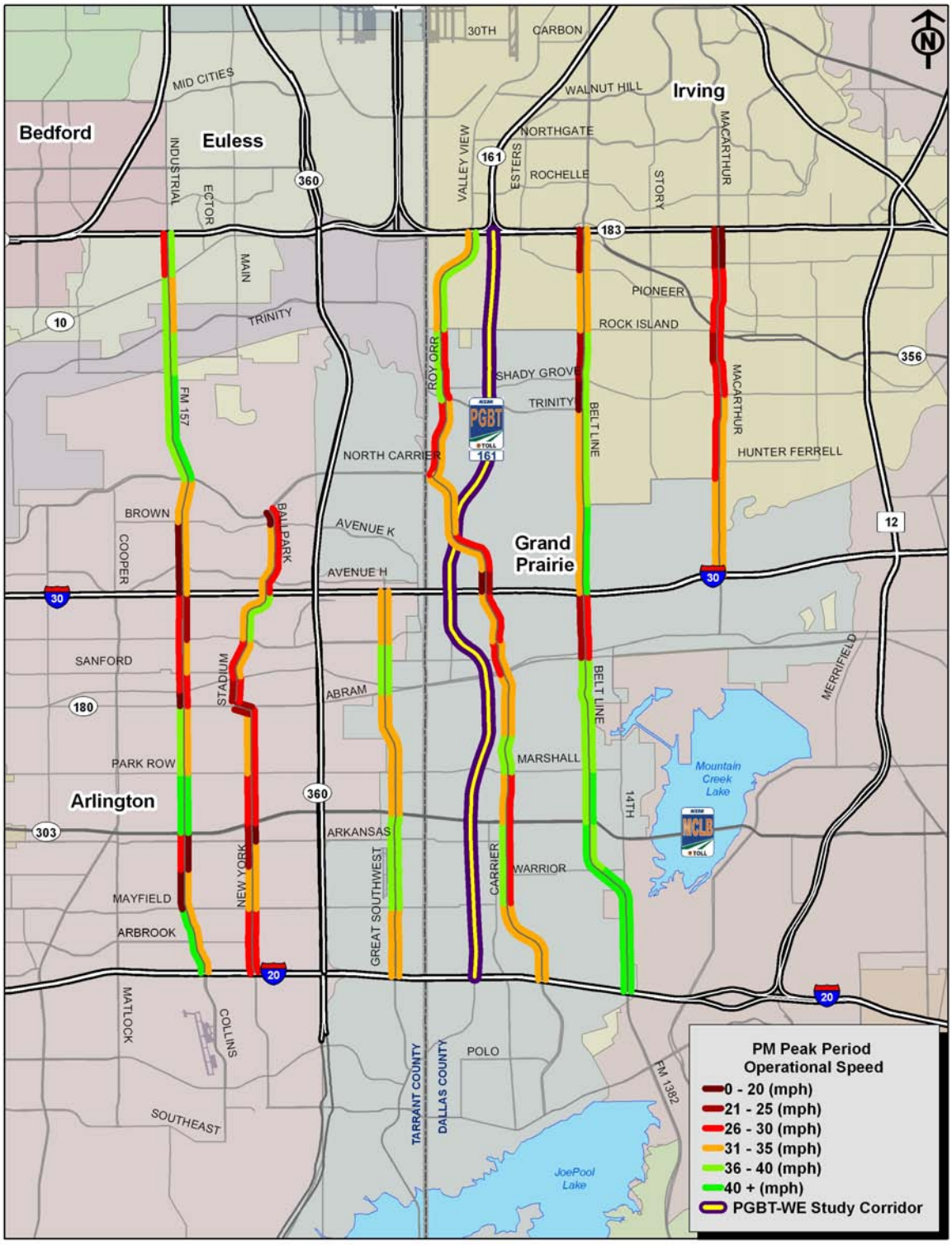


Figure 2-23. 2006 Speed-Delay Results: PM Peak Period (Arterials)

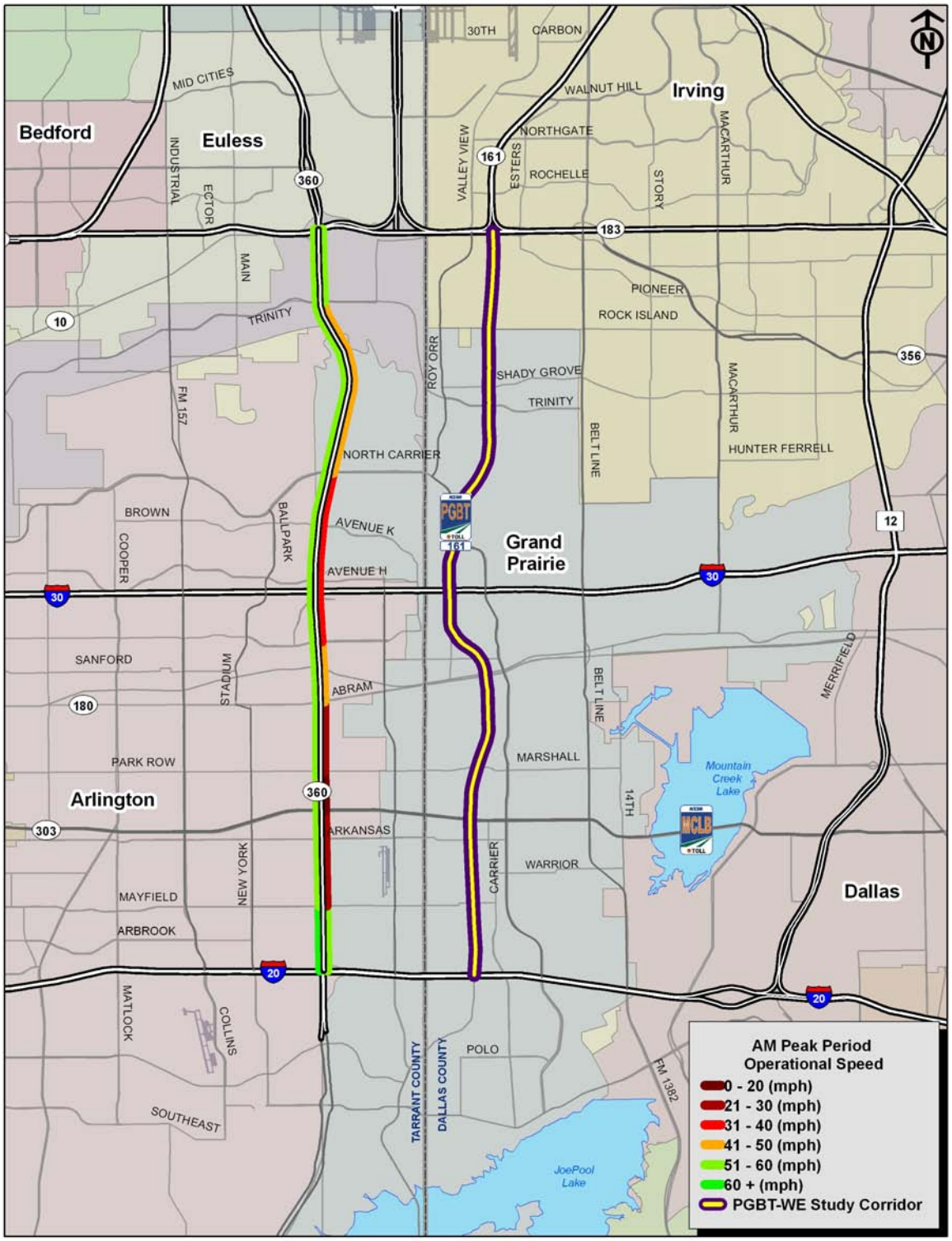


Figure 2-24. 2006 Speed-Delay Results: AM Peak Period (SH 360)

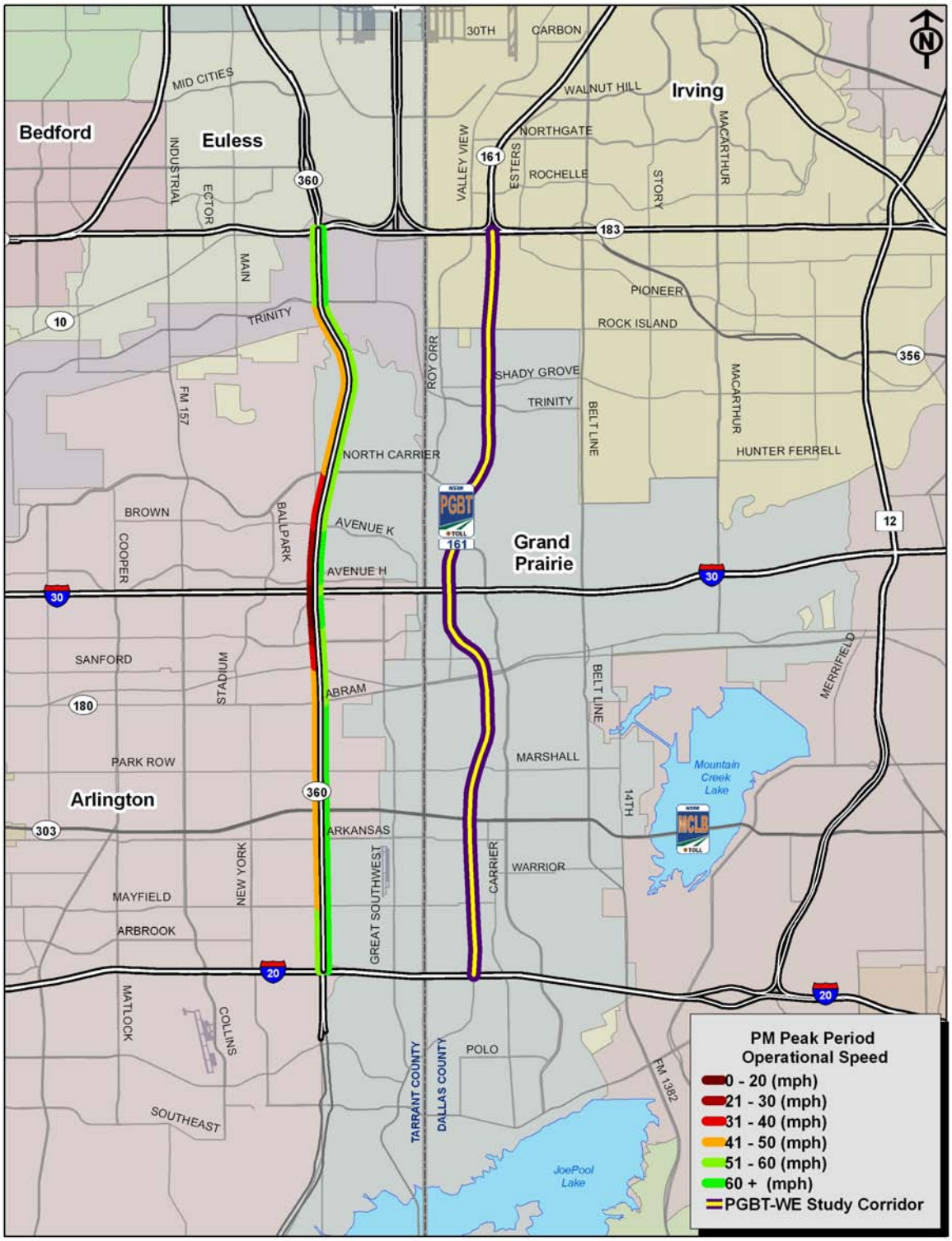


Figure 2-25. 2006 Speed-Delay Results: PM Peak Period (SH 360)

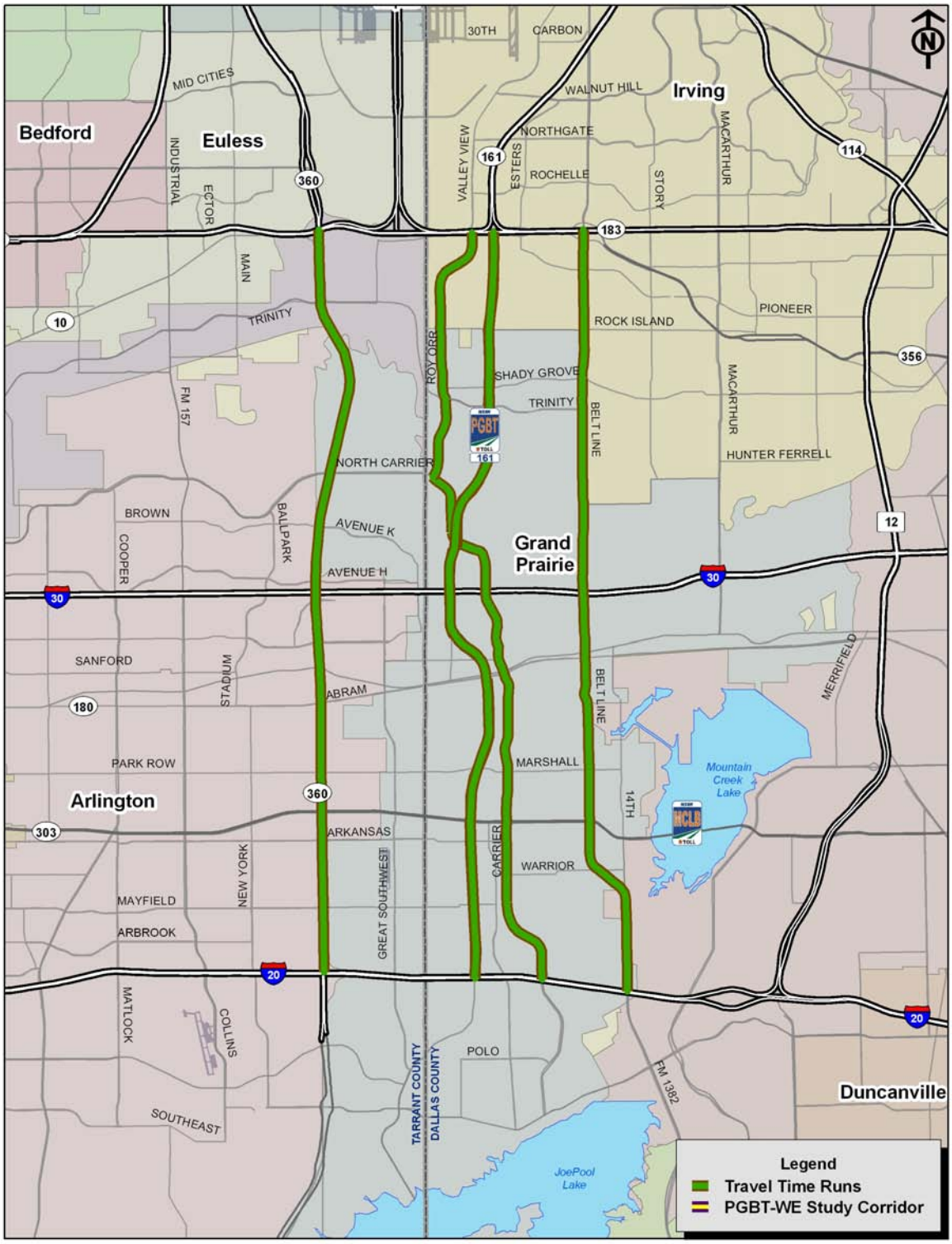


Figure 2-26. PGBT-WE Speed-Delay Run Locations (2010)

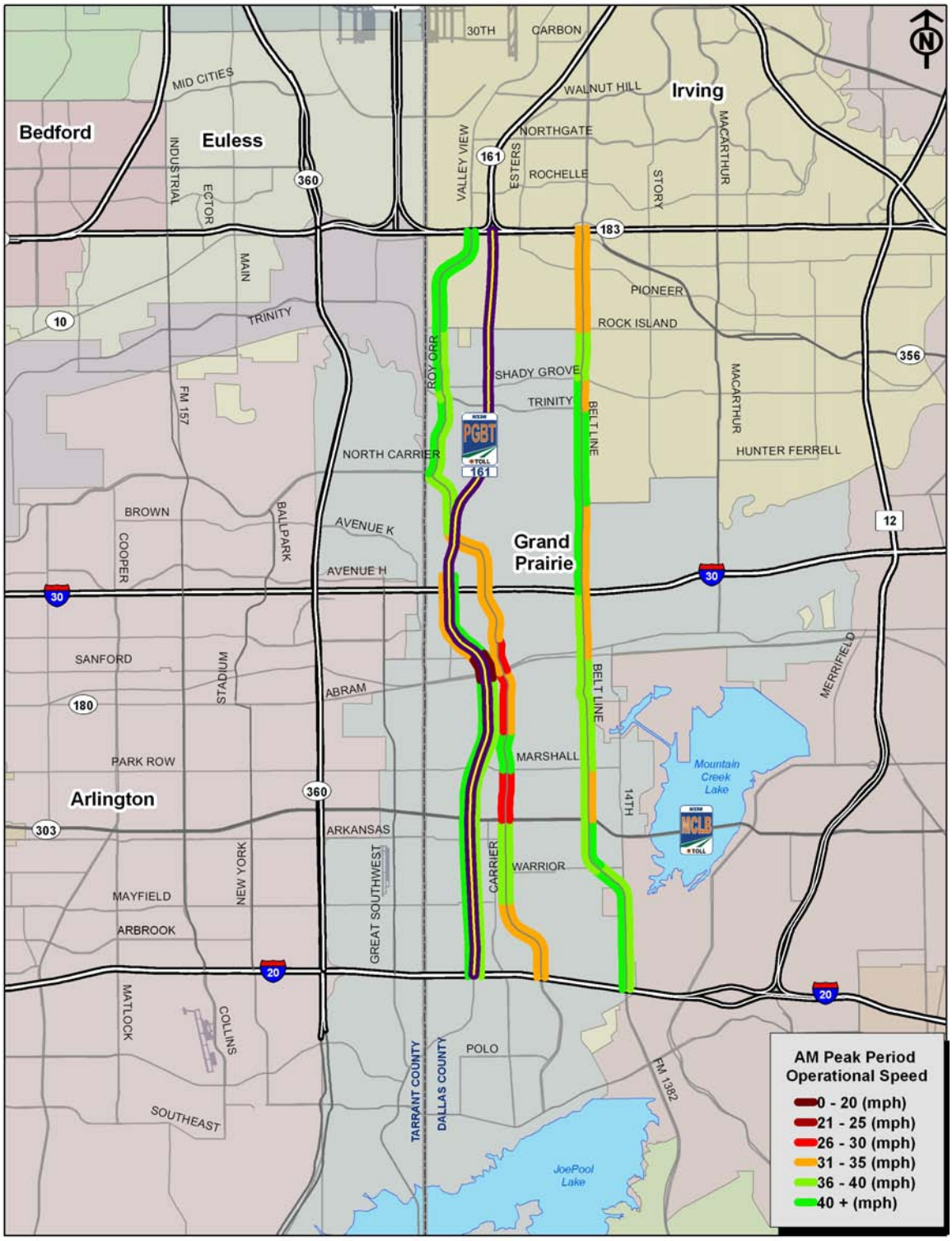


Figure 2-27. 2010 Speed-Delay Results: AM Peak Period (Arterials)

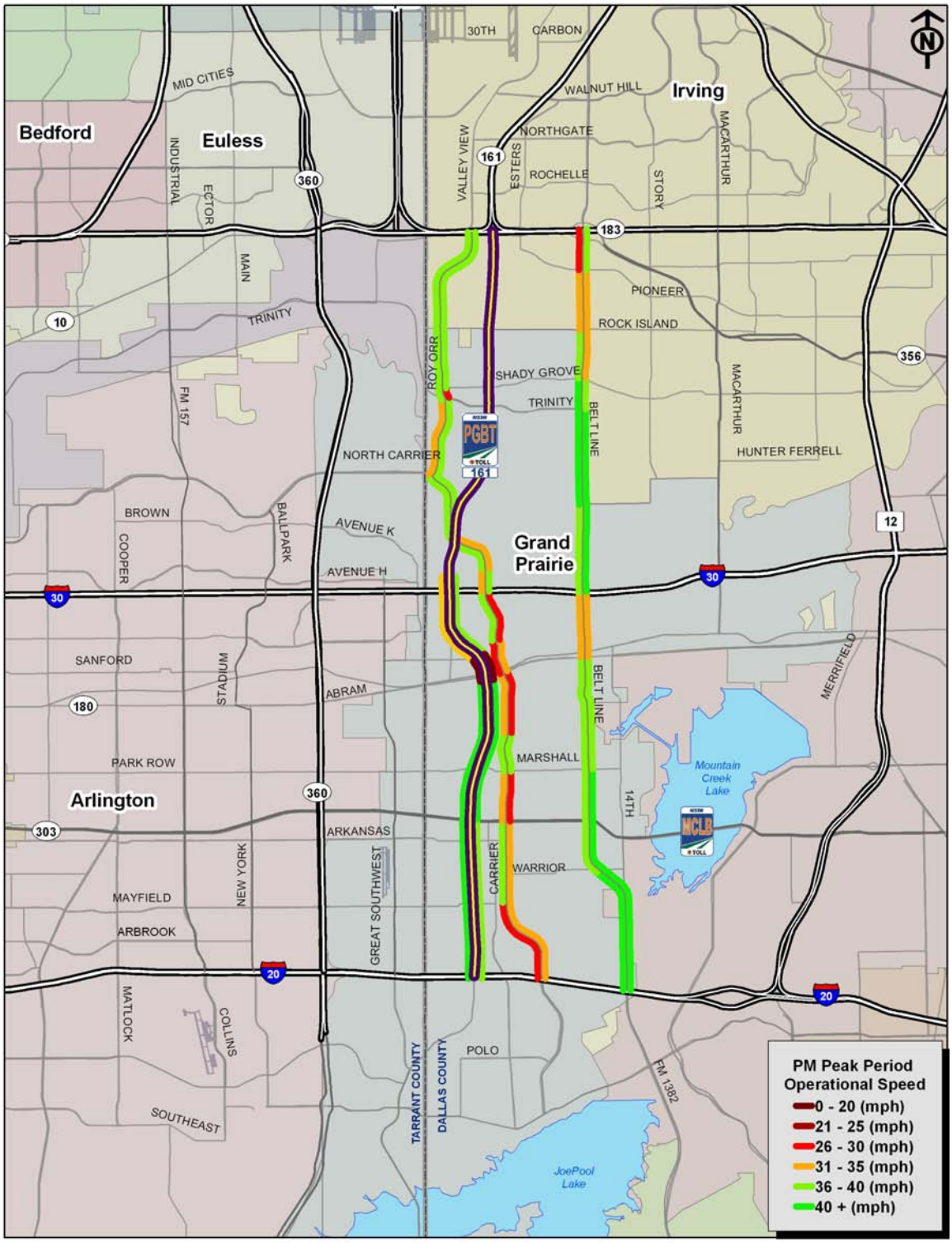


Figure 2-28. 2010 Speed-Delay Results: PM Peak Period (Arterials)

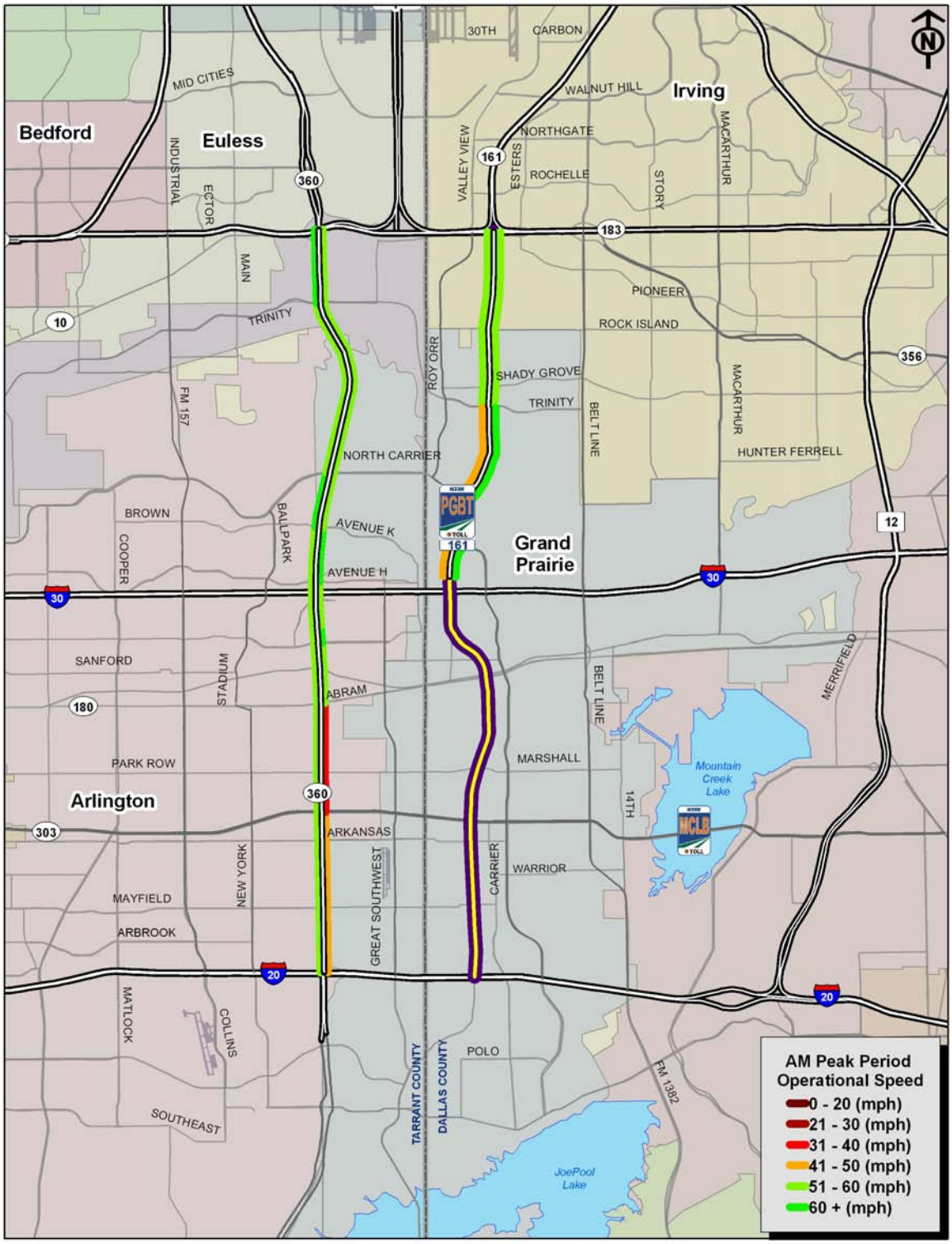


Figure 2-29. 2010 Speed-Delay Results: AM Peak Period
(SH 360 & PGBT-WE Mainlanes)

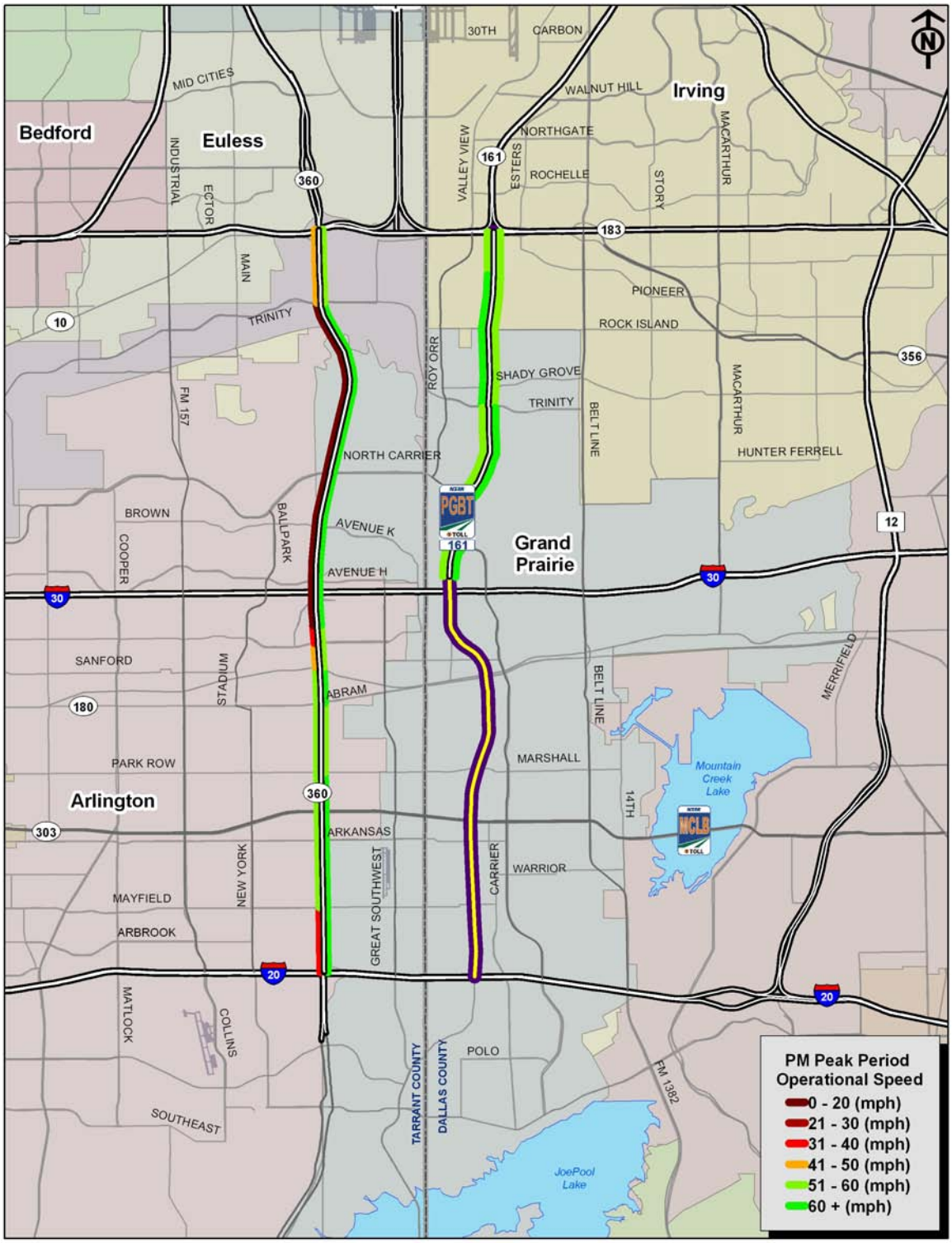


Figure 2-30. 2010 Speed-Delay Results: PM Peak Period (SH 360 & PGBT-WE Mainlanes)

STATED PREFERENCE SURVEY

In order to estimate the average value of time (VOT) in the PGBT-WE corridor, TxDOT contracted Resource Systems Group, Inc. (RSG) to conduct a stated preference survey. In November 2006, RSG conducted field intercept surveys at several public locations in the PGBT-WE corridor. They also conducted an internet-based version of the survey that was offered to drivers who had provided e-mail addresses during the origin-destination survey. The stated preference survey asked drivers to describe a recent trip in the PGBT-WE corridor. The dynamic computer-based survey then gave the respondents several potential travel scenarios and asked them to choose a travel route. In each scenario, the respondent was asked to choose between a tolled route on the PGBT-WE, and an alternate toll-free route. By using the results of the survey, RSG was able to estimate the average VOTs of drivers in the PGBT-WE corridor. These VOTs were used in WSA's travel demand model as described in Chapter 5.

ORIGIN-DESTINATION SURVEY

A detailed motorist travel pattern and trip characteristic survey is essential in the development and calibration of the model databases that assist the calculation of traffic and toll revenue. As part of the data collection effort for TxDOT, WSA conducted an origin-destination (O-D) survey in the PGBT-WE corridor in November 2006. The O-D data was collected using two survey distribution methods: a mailout survey using video-captured license plate numbers and an intercept survey handed out to travelers at signalized intersections. The locations used in the survey are shown in Figure 2-31.

Mailout Survey

At three locations on SH 360, video cameras were used to capture license plate numbers of passing cars. Surveys were then mailed to the registration addresses for each captured number. Each survey questionnaire asked respondents to report the origin and destination of a recent trip on SH 360 along with several trip characteristics. In total, 63,214 surveys were mailed out, and 6,012 were returned, representing a response rate of 9.5 percent. The results of this survey made up the majority of the O-D data.

Intercept Survey

To supplement the mailout survey conducted for SH 360, TxDOT also performed intercept surveys along several arterials in the PGBT-WE corridor. At signalized intersections, drivers who were stopped while the signal was red were handed postage-paid surveys. The questionnaires used in the intercept survey were virtually identical to those used in the mailout survey. In total, 12,878 surveys were handed out, and 1,766 were returned, representing a response rate of 13.7 percent.

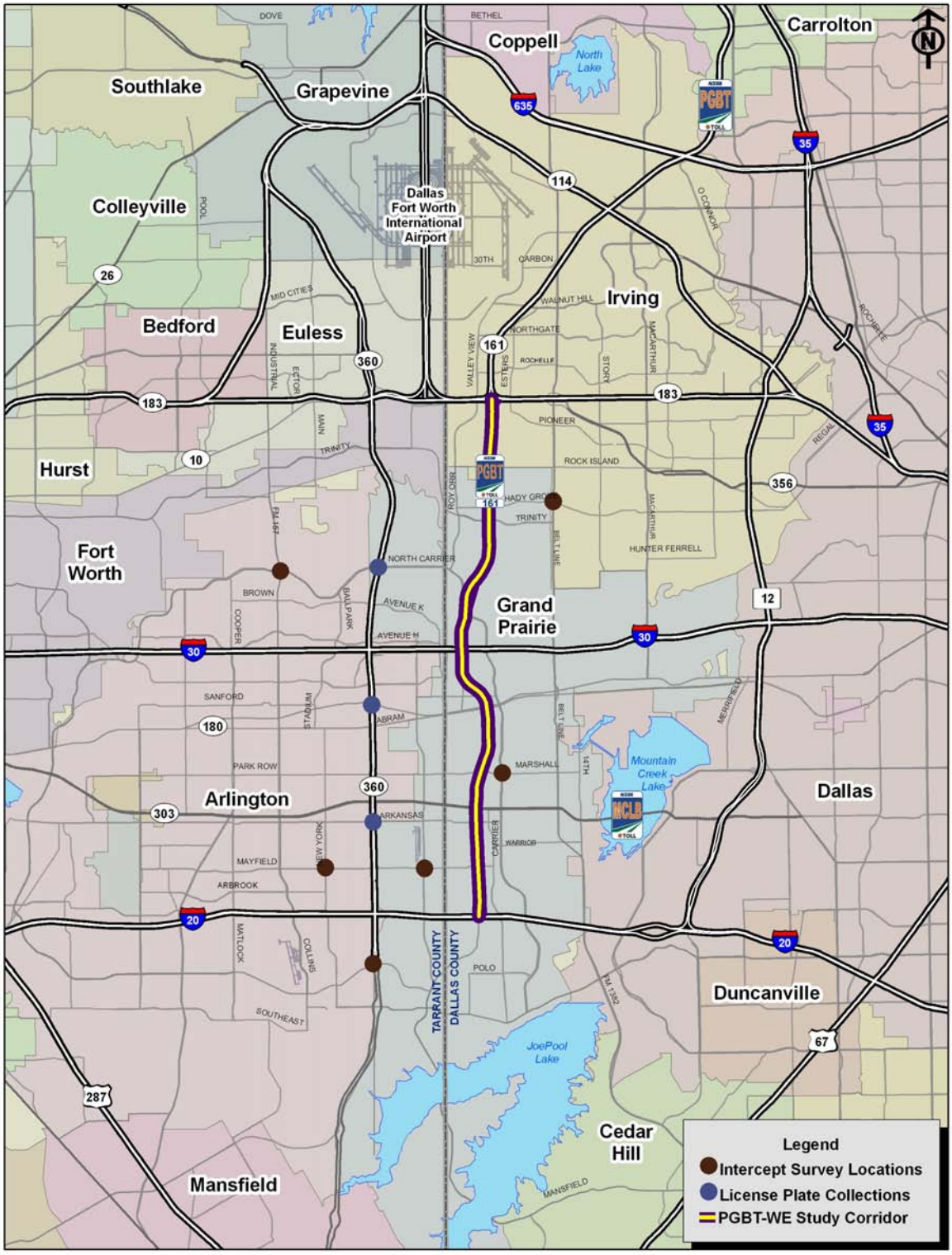


Figure 2-31. Origin-Destination Survey Locations

Summary of Results

A significant number of statistical facts concerning the customer base of motorists in the PGBT-WE corridor were obtained as a direct result of the survey effort. In addition to questions about trip origins and destinations, the surveys also included questions regarding several other trip characteristics such as trip purpose, trip frequency, vehicle occupancy, and TollTag participation.

Figure 2-32 shows the trip purpose distribution of the O-D respondents. As shown in the figure, 74.9 percent of survey respondents reported that they were on a trip to or from work or on company business. Figure 2-33 shows the weekly trip frequency for the trips reported in the O-D survey. Over half of the respondents indicated that they made their reported trip at least five times per week. The vehicle occupancy distribution of survey respondents is shown in Figure 2-34. Almost 80 percent of respondents reported occupancies of one, and the average occupancy reported was around 1.3. Figure 2-35 shows the responses to the survey question about TollTag enrollment. As shown, 28.8 percent of respondents reported having a TollTag, while 71.2 percent did not. However, it is important to note that at the time of the survey, respondents in this corridor would probably not use an NTTA facility on their daily trips. In October 2010, TollTag usage on the PGBT-WE mainlanes had reached approximately 68 percent after about fifteen months of operation.

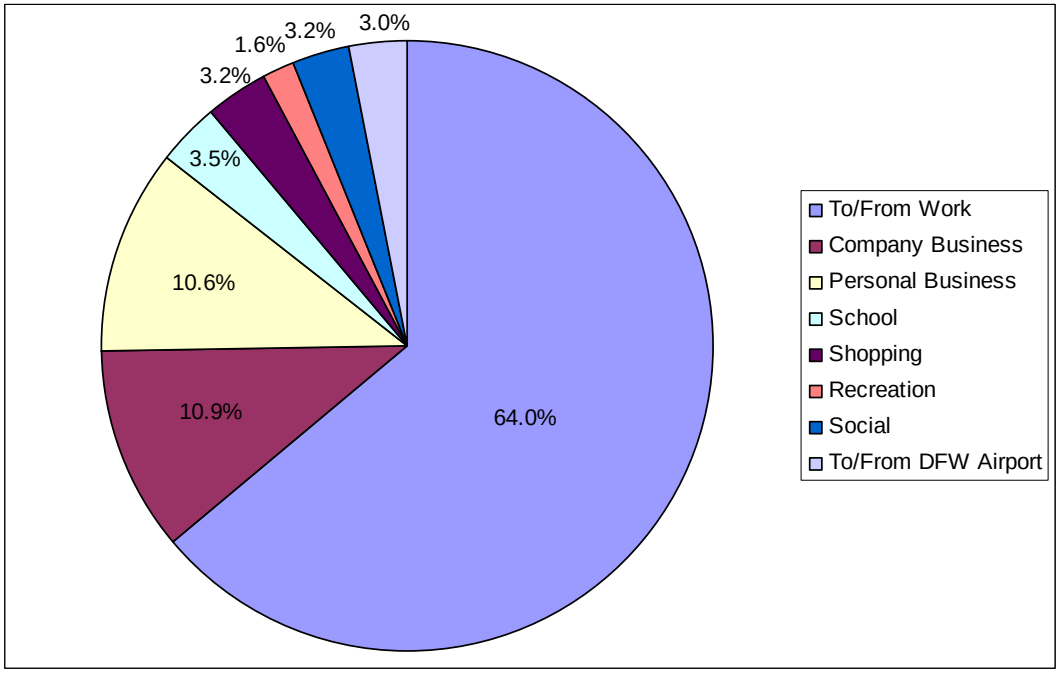


Figure 2-32. Trip Purpose Distribution
(TxDOT Data Collection, November 2006)

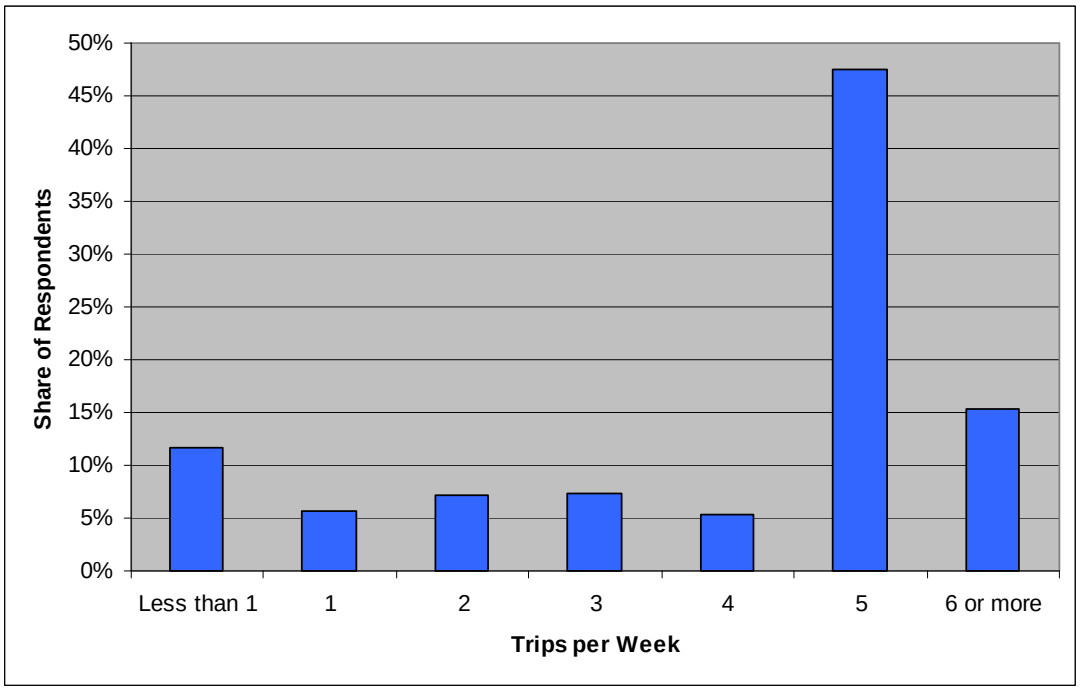


Figure 2-33. Trip Frequency Distribution
(TxDOT Data Collection, November 2006)

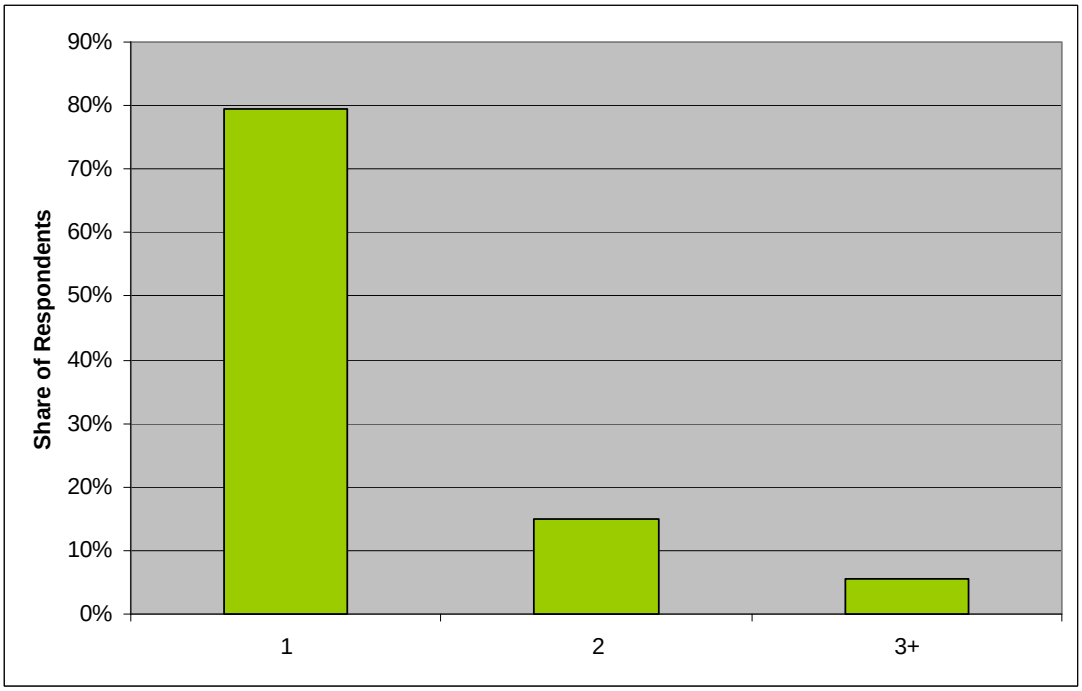


Figure 2-34. Vehicle Occupancy Distribution
(TxDOT Data Collection, November 2006)

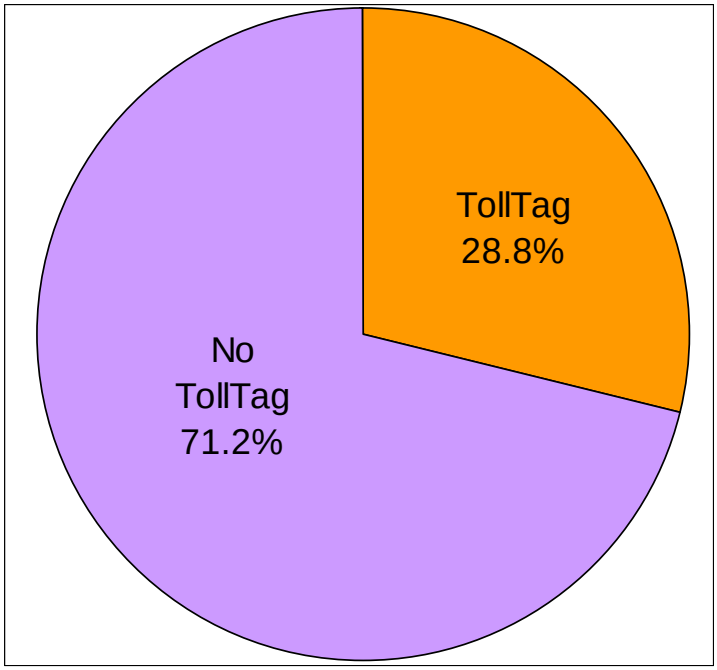


Figure 2-35. TollTag Participation
(TxDOT Data Collection, November 2006)

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CHAPTER 3

DALLAS - FORT WORTH AREA TRANSPORTATION CHARACTERISTICS

The purpose of this chapter is to provide a background of the existing and future transportation characteristics surrounding the PGBT-WE corridor in the Dallas-Fort Worth Metropolitan Area (DFWMA). The information described in this section draws from the Metropolitan Transportation Plan (MTP) Mobility 2030 – 2009 Update developed by the North Central Texas Council of Governments (NCTCOG), the metropolitan planning organization (MPO) for the DFWMA. As the MPO, NCTCOG is primarily responsible for conducting the multimodal long-range regional planning process for transportation infrastructure in the region.

The MTP for the DFWMA serves as a guideline for the region's planned investment in transportation infrastructure and services over the next twenty years. The MTP developed by NCTCOG is required to be financially constrained and balanced to the region's anticipated revenue streams over a minimum time horizon of twenty years. The MTP 2030 – 2009 Update was approved by Regional Transportation Council (RTC, the MPO policy body for DFWMA) in April 2009. The financial plan illustrates that the region could anticipate investing $71 billion for the transportation infrastructure improvements including freeway, tollway, transit, bicycle and pedestrian facilities, congestion mitigation strategies, HOV lanes, and many others. An updated MTP is currently under development and is expected to be approved in early 2011.

As the fourth largest metropolitan area in the country, the DFWMA had a population of five million in 2000 and is expected to have an estimated population of nine million by 2030. On average, the DFWMA population increases by one million every seven to eight years. Total employment is also expected to increase from 3.1 million in 2000 to 5.4 million by 2030. Chapter 4 provides detailed information regarding the demographic growth characteristics of the region.

TRAFFIC CONGESTION TRENDS

Figure 3-1 provides an illustration of the areas that experienced congested traffic conditions during the peak periods in 2007 according to the MTP report. Figure 3-1 also provides an estimate of the 2030 congestion levels with currently planned transportation infrastructure. Figure 3-1 illustrates that the PGBT-WE corridor area will be subject to light to moderate congestion through 2030.

The MTP 2030 – 2009 Update estimated that the region-wide annual cost of congestion during 2007 was close to $4.2 billion and would possibly reach $6.5 billion by 2030. This increase of 55 percent from the 2007 levels is in spite of approximately $71 billion in infrastructure investment through the year 2030, including $29.7 billion for additional highway capacity.

FREEWAY AND TOLLWAY SYSTEM

Figure 3-2 provides an illustration of the freeway and tollway corridor improvements that were adopted as part of the MTP 2030 – 2009 Update. The identification of these facilities is very important to this study because additional freeway and arterial improvements could materially impact the traffic and toll revenue on the PGBT-WE. Facilities providing improved accessibility to the corridor could provide positive impacts to the PGBT-WE while competing/alternative routes could dampen its traffic and revenue potential. Improvements to the existing highway system and the addition of new roadways that could potentially have an effect on the traffic and revenue for the PGBT-WE are shown in Figure 3-2. Among them are the following:

- SH 183 improvements, from IH 820 to Loop 12
- IH 30 improvements, from IH 820 to IH 35E
- SH 360 improvements, from IH 20 to IH 30
- IH 20 improvements, from SH 360 to IH 635
- SH 114 improvements, from IH 35E to Business 114
- Loop 12 improvements, from SH 183 to Spur 408, and
- PGBT/SH 161 improvements, from SH 183 to SH 78.

Additional toll roads programmed for the region during the next 20 years are marked in green in Figure 3-2. Among them are the following:

- PGBT Eastern Extension, from SH 78 to IH 30 (currently under construction)
- Trinity Parkway, from IH 35E to US 175
- Sam Rayburn Tollway, from Denton Creek to US 75 (partially open and under construction)
- Loop 9, in Collin, Rockwall, Kaufman, Dallas, Ellis, Johnson, Parker, Wise, and Denton Counties
- SH 360, from Green Oaks to south of US 67
- SH 170, from Loop 9 to SH 114, and
- Southwest Parkway/Chisholm Trail Parkway, from IH 30 to US 67.

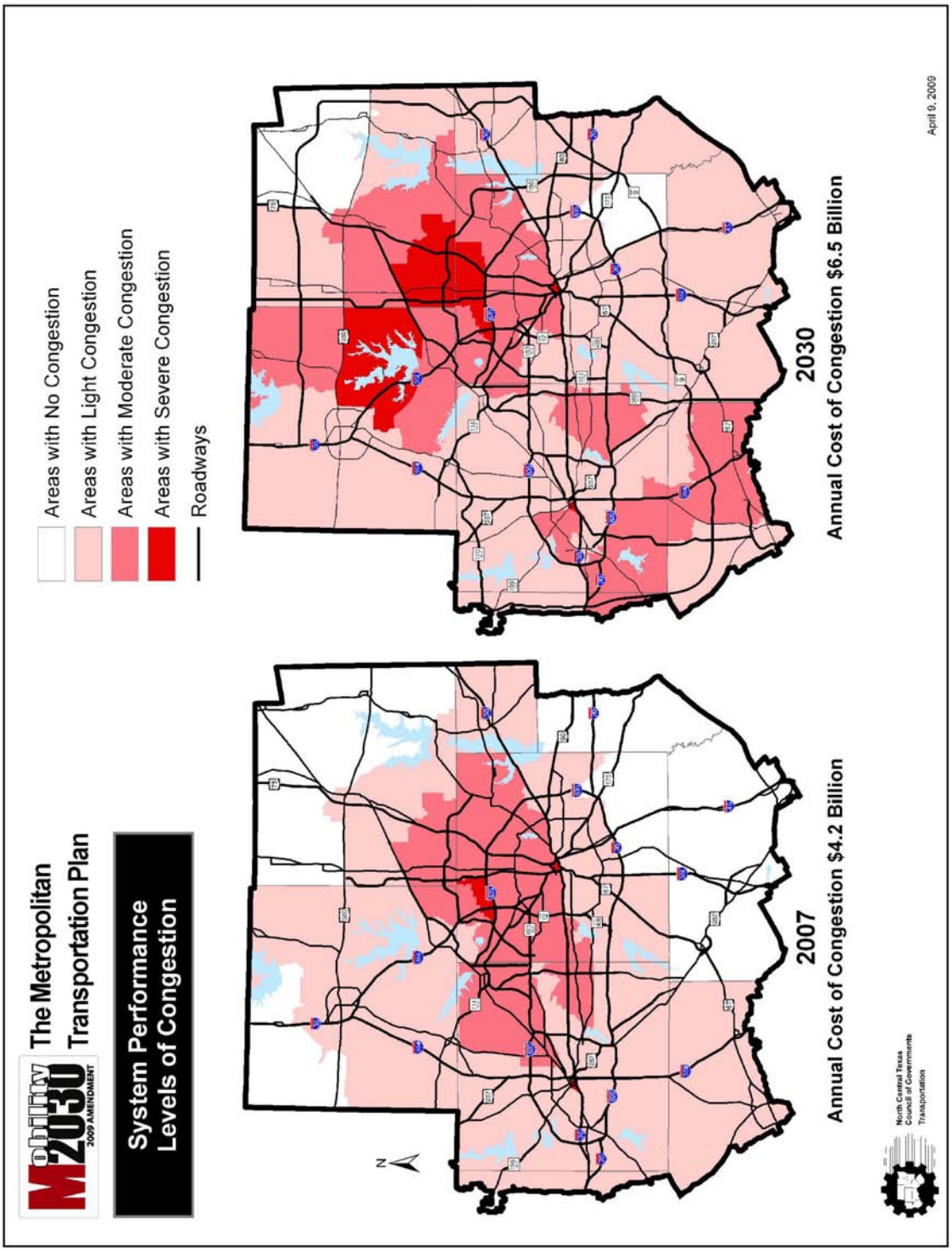

Figure 3-1. 2007 and 2030 Congestion Levels
Source: North Central Texas Council of Governments

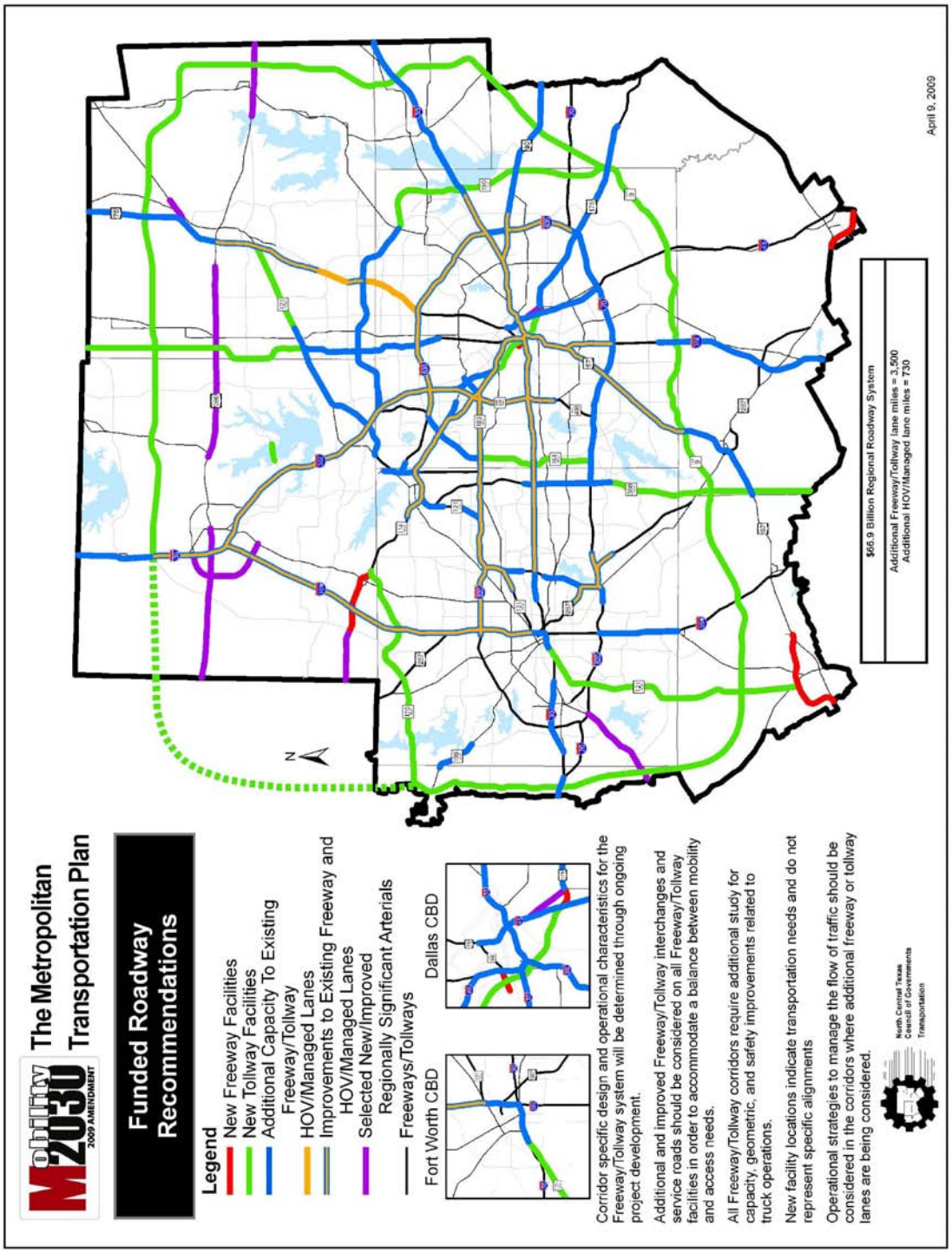

Figure 3-2. 2030 Freeway and Tollway System
Source: North Central Texas Council of Governments

Future roadway improvements in the PGBT-WE corridor are highlighted in Figure 3-3. These improvements consist of several of the previously mentioned highway improvements plus some arterial improvements on Cooper Street, Collins Street, Belt Line Road, Trinity Boulevard, and MacArthur Boulevard. Another significant improvement in the area is a fully directional interchange at SH 360 and IH 30 which is scheduled to open in 2025.

RAIL TRANSIT SYSTEM

Transit service in the DFWMA is provided primarily by the Dallas Area Rapid Transit (DART), the Fort Worth Transportation Authority (The T) and the Denton County Transportation Authority (DCTA). The existing DART light-rail system consists of three lines operational and one line under construction. The Red Line begins in South Dallas in Westmoreland Avenue and ends at the Parker Road station in Plano; the Blue Line extends from Ledbetter Drive in South Dallas to Downtown Garland; the Green Line opened in December 2010 and runs from Frankford Road in Carrollton southeast through downtown Dallas to Buckner Boulevard in Dallas. The Trinity Railway Express (TRE), which is jointly owned by DART and The T, connects the Dallas and Fort Worth central business districts. The planned Orange Line will run parallel with the Green Line through Downtown Dallas to Bachman Station in Northwest Dallas. From Bachman Station, the Orange Line will run northwest to the Las Colinas Urban Center in 2011 and Dallas/Fort Worth International Airport in 2013. A map of the current DART rail system is shown in Figure 3-4.

The Fort Worth Transportation Authority, popularly known as The T, is the operator of the bus system in the city of Fort Worth. The T also partners with DART through the Trinity Railway Express (TRE), which offers commuter rail service from downtown Fort Worth to DFW Airport and downtown Dallas.

The Denton County Transportation Authority (DCTA) is the transit authority that operates in Denton County, which is located northwest of Dallas County. Along with operating bus service in three cities within Denton County, the agency is also developing the A-Train commuter rail, a regional rail line which will parallel IH 35E and connect with DART's light rail system at Trinity Mills Station in Carrollton.

Figure 3-5 illustrates the proposed rail system as developed by NCTCOG in cooperation with the transit agencies. The transportation system defined in the MTP 2030 – 2009 Update and described above is reflected in the trip tables used to estimate the traffic and toll revenue for the PGBT-WE project. The trip tables and networks were obtained from NCTCOG to reflect all the planned transportation infrastructure development included in the MTP 2030 – 2009 Update.

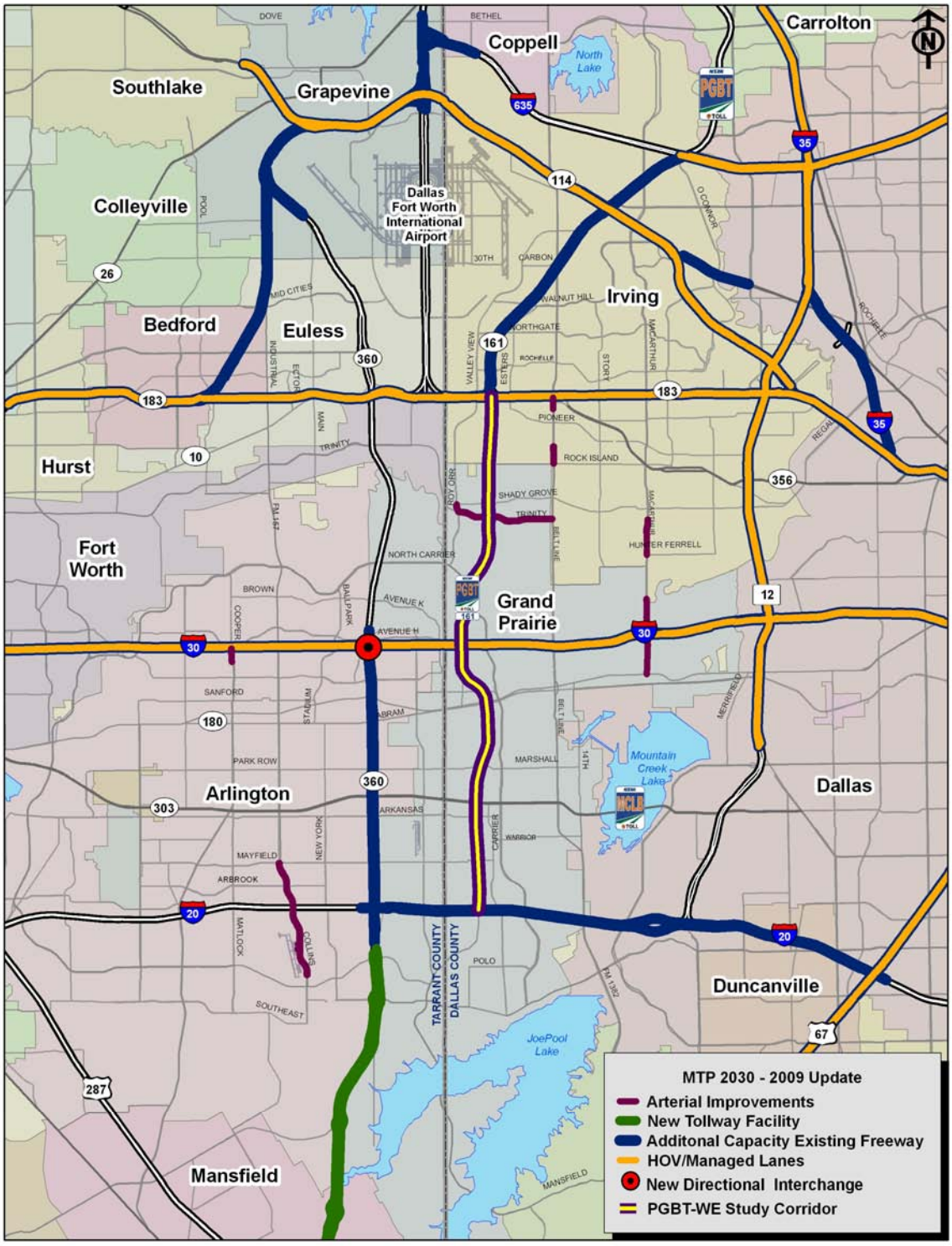

Figure 3-3. Future Roadway Improvements in the PGBT-WE Corridor

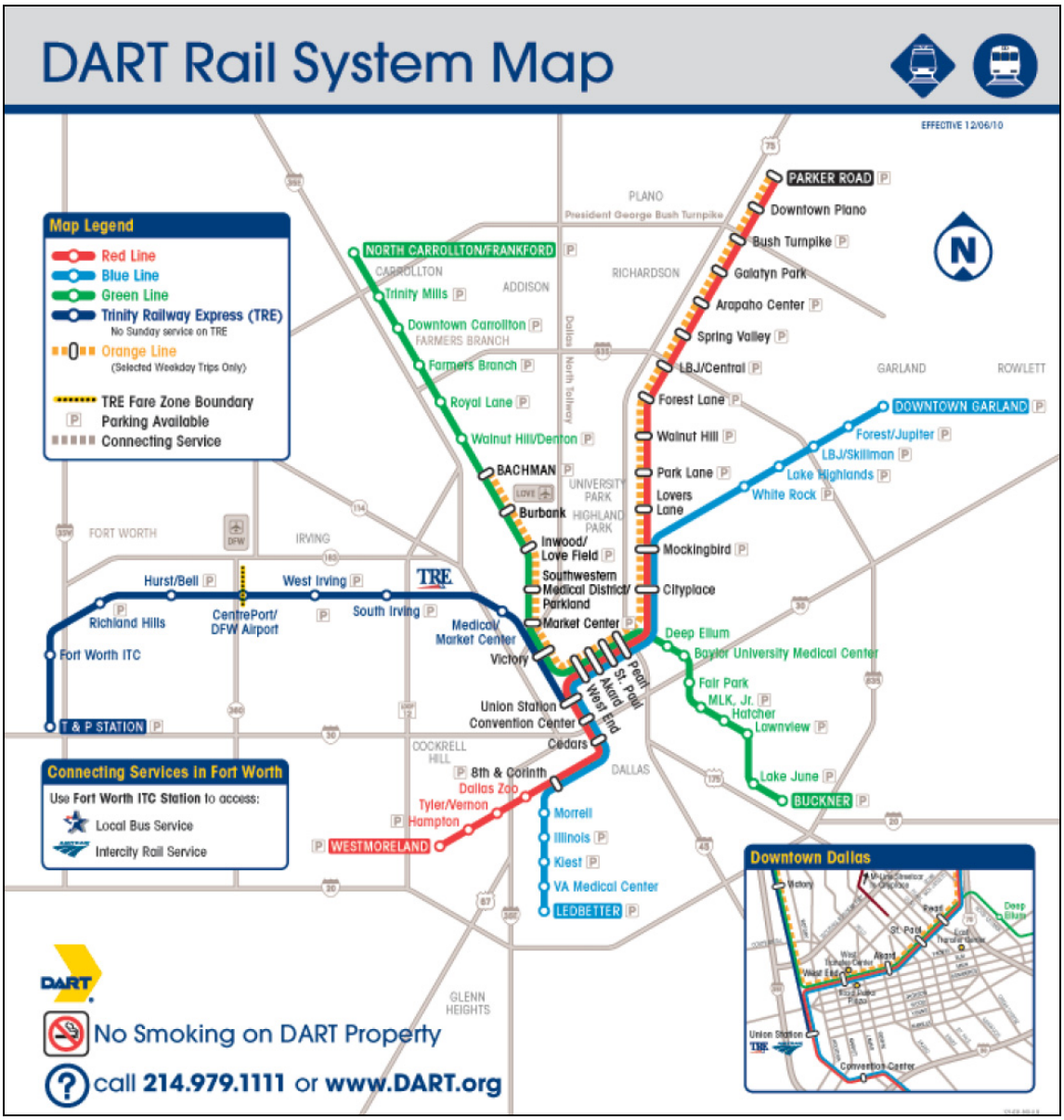

Figure 3-4. Current DART Rail System
Source: Dallas Area Rapid Transit (http://www.dart.org)

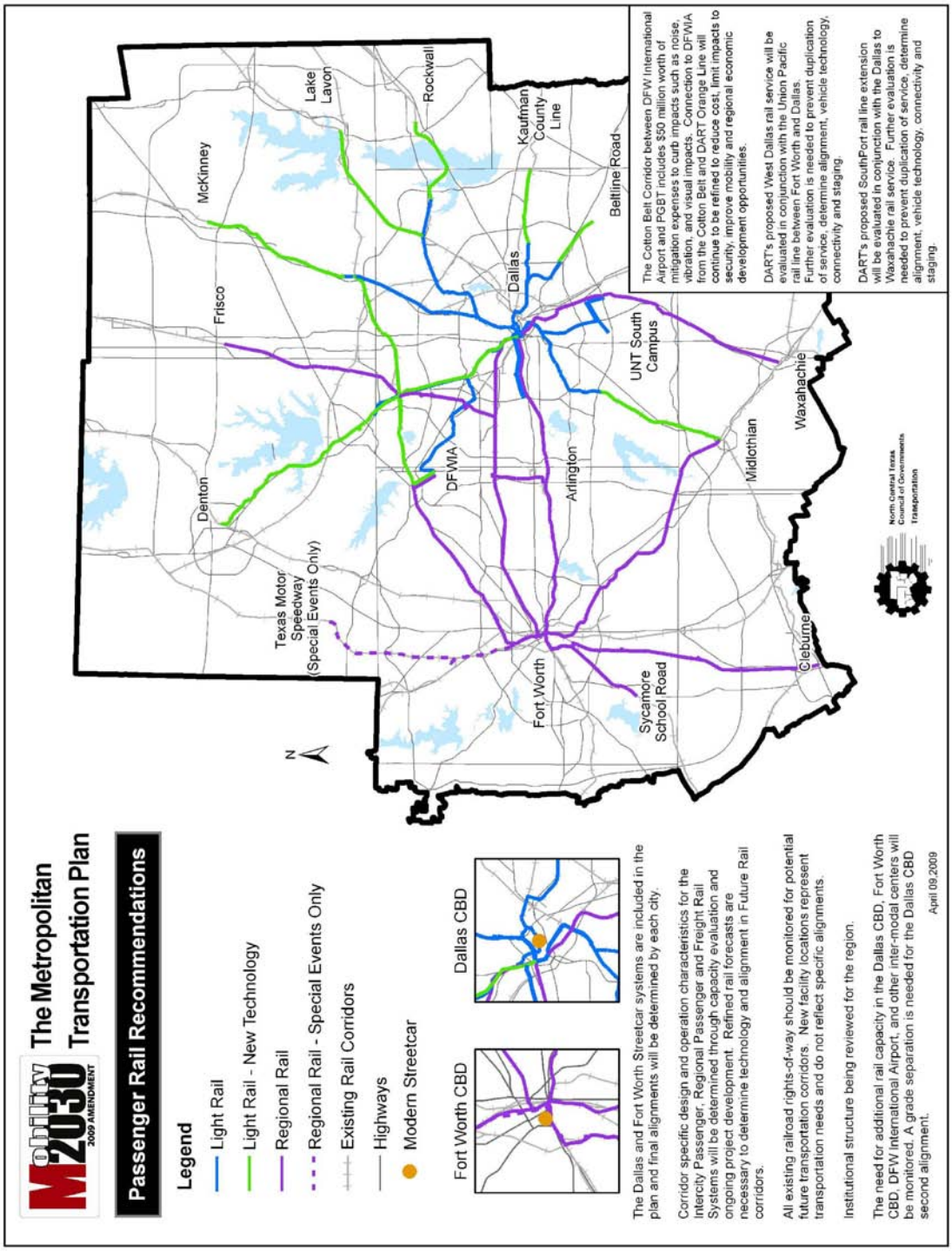

Figure 3-5. 2030 Future Rail System
Source: North Central Texas Council of Governments

CHAPTER 4

DEMOGRAPHIC GROWTH

As part of the PGBT-WE investment grade study, a review was made of the historic and projected demographic characteristics used by the North Central Texas Council of Governments (NCTCOG) to develop its traffic modeling trip tables. This chapter describes the major socioeconomic characteristics of the Dallas-Fort Worth Metropolitan Area (DFWMA) including both regional and specific trends within the PGBT-WE corridor.

The NCTCOG Executive Board approved the current regional demographic forecast in April 2003. That forecast includes the ten counties that comprise the DFWMA: Collin, Dallas, Denton, Tarrant, Johnson, Ellis, Kaufman, Rockwall, Parker and Wise. The resulting database was used as the baseline to generate future trip patterns in the DFWMA. An updated demographic forecast is currently under development and is expected to be approved in early 2011.

The first section of this chapter provides a description of the NCTCOG forecasting process used to generate the base demographics. The second section details the regional historical and future growth in the NCTCOG forecast area. The historical and future growth of the individual municipalities within the study corridor is considered in the third section of the chapter, and the fourth section describes the demographic characteristics of the PGBT-WE corridor. The final sections of the chapter discuss various socioeconomic indicators and summarize the independent economic review conducted as part of this investment grade study. The demographic descriptions included in this chapter range from the macro level (the region) to the corridor level which covers an area within five miles around the PGBT-WE. This information is the foundation to develop the potential demand for the proposed PGBT-WE toll facility. The demographic information is used in the trip generation model to estimate total trips produced in the area.

NCTCOG DEMOGRAPHIC FORECAST PROCESS

As required by federal legislation, NCTCOG periodically develops future demographics based on county and region control totals created by the Texas State Data Center (TSDC) and other independent consultants. The TSDC is part of the State Data Center System, a national network of 52 centers (all 50 states, Puerto Rico and the Virgin Islands) in charge of disseminating demographic information. The demographics adopted by NCTCOG are considered official demographics to support the metropolitan planning process and travel demand modeling within the DFW region.

The demographic forecast process and development of trip tables implemented by NCTCOG is divided into six steps as illustrated in Figure 4-1. In the first step, regional control totals of population and employment were developed in five-year increments from a base year (2000) through the forecast year (2030). These regional totals were obtained from the TSDC and were combined with forecasts developed by independent economists at the Perryman Group. A task force of local officials from city, county, and transportation entities acted as a governing body for the process and endorsed the forecast for approval by NCTCOG's Executive Board.

The TSDC population forecast process is a cohort-component forecast method for which the key element is the rate of migration. Three scenarios with different rates of migration are usually developed. The 0.0 scenario assumes that there is zero net migration (in-migration equals out-migration) and population change is only the result of births and deaths. The 0.5 scenario assumes a migration rate that is fifty percent of the migration seen from 1990-2000. Finally, the 1.0 scenario assumes migration equal to that experienced from 1990-2000.

Table 4-1 shows the control totals that were considered during the forecasting process. The 2030 population forecast ranges from 6.2 million for the zero percent migration scenario to 12.1 million under the 1.0 percent migration scenario. The population control totals adopted by NCTCOG for the ten-county area are shown in bold in Table 4-1. They reflect similar trends to those developed by the Perryman Group, and fall between the 0.5 and 1.0 migration scenarios from the TDSC.

Table 4-1
Population Control Totals

	2000	2010	2020	2030
TSDC Scenario 0.0	5,079,600	5,576,147	5,924,157	6,150,687
TSDC Scenario 0.5	5,079,600	6,075,653	7,172,447	8,403,478
TSDC Scenario 1.0	5,079,600	6,670,036	8,937,884	12,132,893
The Perryman Group	5,079,600	6,336,947	7,728,399	9,216,601
NCTCOG Adopted Forecast	**5,067,400**	**6,328,200**	**7,646,600**	**9,107,900**

Source: North Central Texas Council of Governments, Research and Information Services.

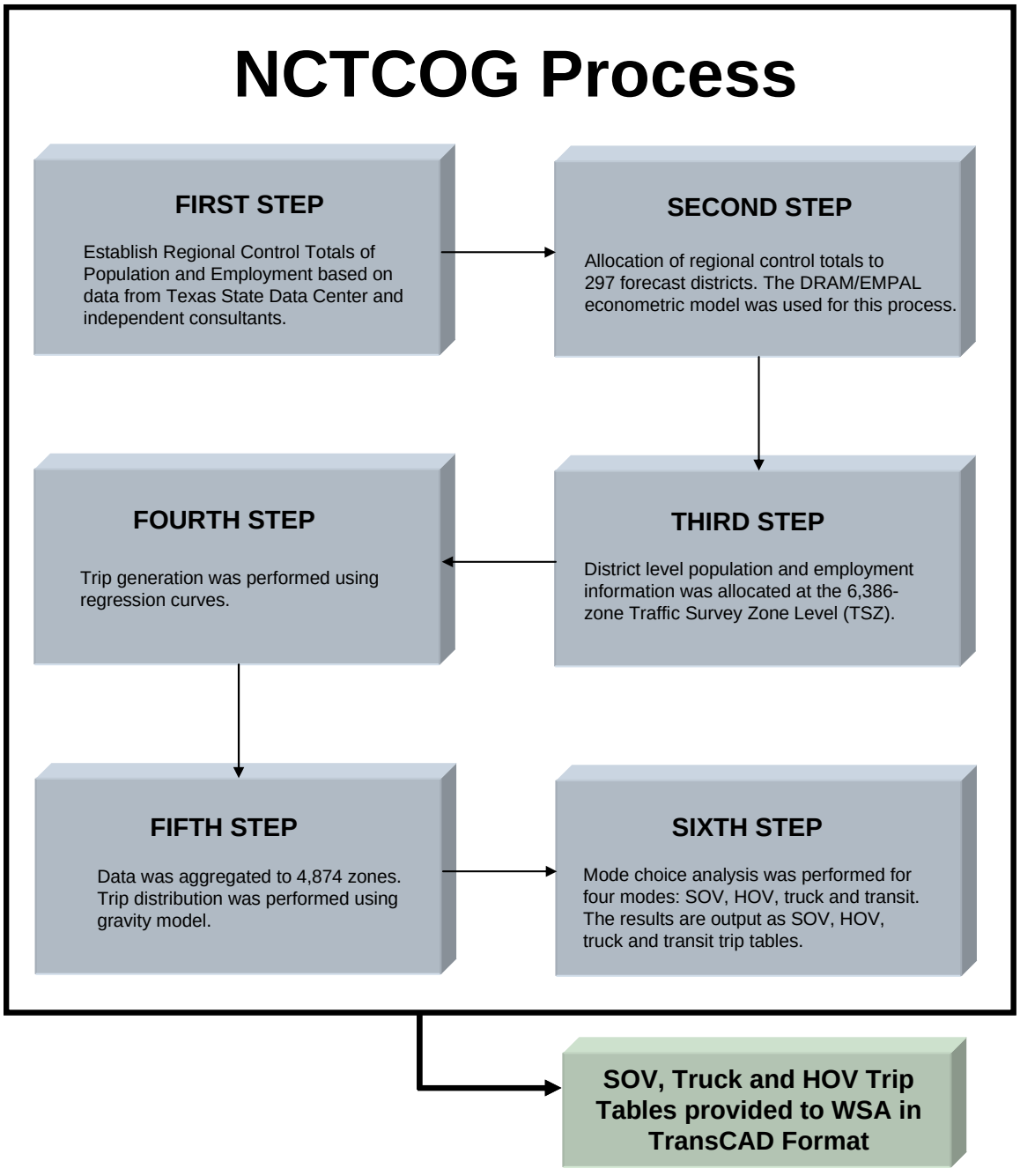

Figure 4-1. NCTCOG Forecasting Process

The employment control totals were generated by NCTCOG with input from its employment estimates program, which monitors non-construction job counts by place of work for municipalities in the Dallas-Fort Worth Metropolitan Planning Area (DFWMPA). The employment control totals seen in Table 4-2 show that the total employment in the NCTCOG ten-county area will increase from 3.2 million in 2000 to 5.4 million by 2030.

Table 4-2
Employment Control Totals

	2000	2010	2020	2030
NCTCOG Adopted Forecast	**3,158,200**	**3,897,000**	**4,658,700**	**5,416,700**

Source: North Central Texas Council of Governments, Research and Information Services.

The second step of the forecasting process involved allocating the regional control totals to 297 forecast districts for each analysis year. The Disaggregated Residential Allocation Model/Employment Allocation Model (DRAM/EMPAL) was used for this process as it is the most widely accepted land use allocation model by metropolitan planning organizations in the country. Key variables for the DRAM/EMPAL model include current employment locations by sector, household locations by income quartile, land use inventories, travel time matrices, and the number of workers per household.

In the third step, the district level information was disaggregated to the Traffic Survey Zone (TSZ) level which is the smallest disaggregation incorporated in the travel demand process. There are 6,386 TSZs in the NCTCOG forecast area. The critical variables used in this process were: district level household change, acres of vacant land, density of future residential development, and proximity to transportation infrastructure. Output from this process was closely reviewed by the member cities and approved by the Regional Demographic Task Force before being presented and approved by the NCTCOG Executive Board.

The fourth step involves performing trip generation by using regression curves. This process estimates the total number of trips generated and attracted for each TSZ. In the fifth step, the data was aggregated into 4,874 TAP zones. Trip distribution was then performed using a gravity model. In the sixth and final step, mode choice analysis was performed and trip tables were created for single occupant vehicle (SOV), high occupancy vehicle (HOV), truck and transit modes.

HISTORICAL AND FUTURE REGIONAL GROWTH

NCTCOG serves the sixteen counties of Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant and Wise. Figure 4-2 illustrates the spatial relationship of these counties and highlights the area included in NCTCOG's demographic forecast. The analysis of historical and future demographic growth from a regional perspective is based on county-level information pertaining to population, employment, and income.

HISTORICAL REGIONAL POPULATION TRENDS

Table 4-3 shows the historical population trends for the ten counties in the forecast area, the state of Texas and the United States. The total population in the NCTCOG forecast area has increased at an average annual rate of 2.6 percent from 1970 to 2000, equivalent to 2.7 million additional residents. This population growth trend exceeded the state and national growth trends between 1970 and 2000 which were 2.1 percent and 1.1 percent per year, respectively.

Dallas County, the most heavily-populated county in the region, grew by 891,203 people between 1970 and 2000 at an average annual growth rate of 1.7 percent. This annual growth rate was slightly lower than the rate of growth experienced by the state during the same period, which was 2.1 percent. Dallas County's population in 2000 represented approximately 43.7 percent of the total population of the NCTCOG forecast area.

Tarrant County is the second largest county in the region in terms of population with approximately 1.4 million people in 2000. Its population increased at an average annual rate of 2.4 percent between 1970 and 2000, adding a total of 730,632 people during that same period.

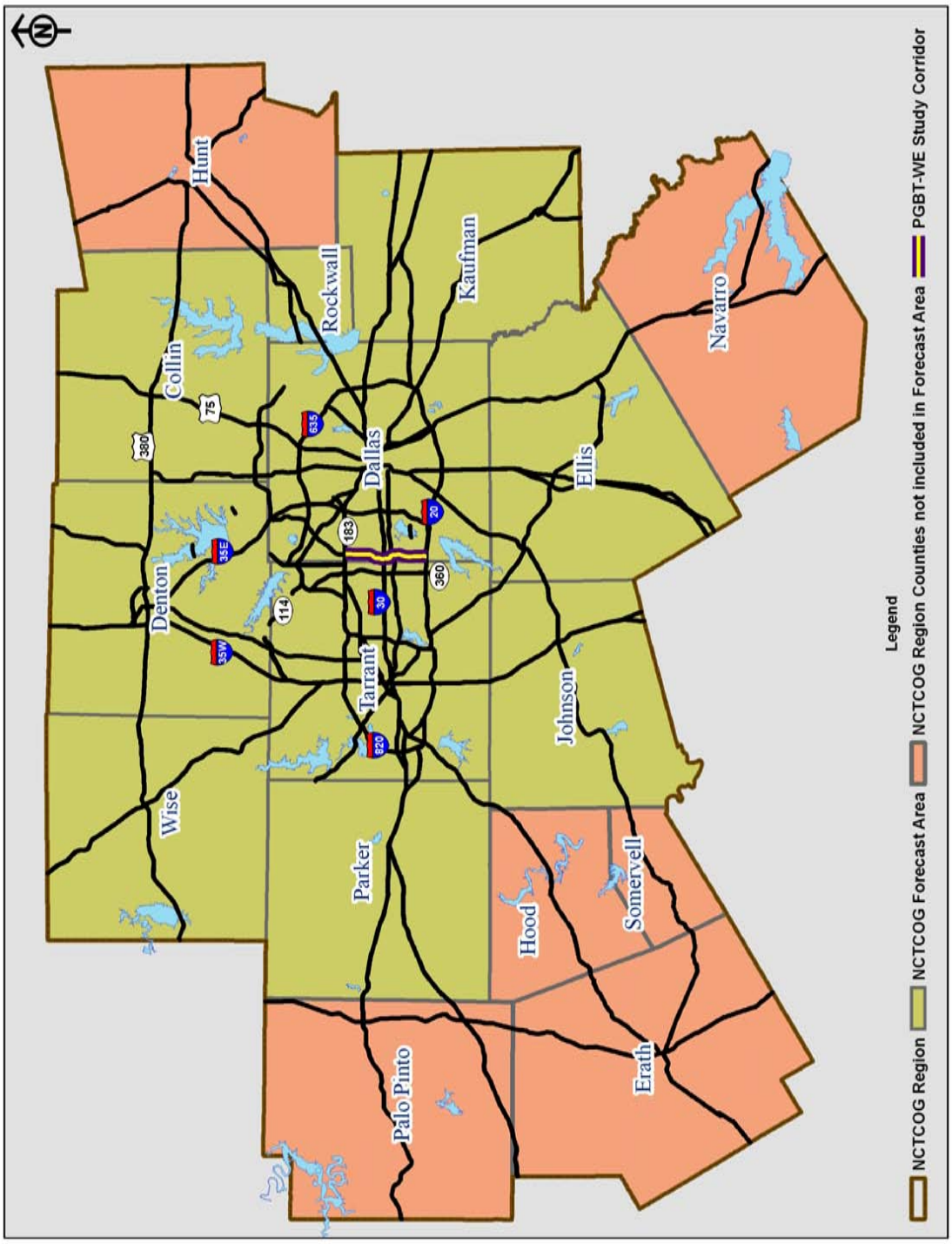

Figure 4-2. NCTCOG Region and Forecast Area

Table 4-3
Countywide Population Trends and Projections

County	U.S. Census Bureau				Forecast	Annual Percent Growth (1970-2000)	Annual Percent Growth (2000-2030)	Percent Population Distribution By County		Percentage of New Residents Between 2000 and 2030
	Year 1970	Year 1980	Year 1990	Year 2000	Year 2030			2000	2030	
Collin	66,920	144,576	264,036	491,675	1,166,645	6.9%	2.9%	9.7%	12.8%	16.8%
Dallas	**1,327,696**	**1,556,419**	**1,852,810**	**2,218,899**	**2,817,191**	**1.7%**	**0.8%**	**43.7%**	**30.9%**	**14.9%**
Denton	75,633	143,126	273,525	432,976	1,085,343	6.0%	3.1%	8.5%	11.9%	16.2%
Ellis	46,638	59,743	85,167	111,360	448,588	2.9%	4.8%	2.2%	4.9%	8.4%
Johnson	45,769	67,649	97,165	127,793	444,151	3.5%	4.2%	2.5%	4.9%	7.9%
Kaufman	32,392	39,015	52,220	71,313	277,745	2.7%	4.6%	1.4%	3.0%	5.1%
Parker	33,888	44,609	64,785	88,495	328,418	3.3%	4.5%	1.7%	3.6%	6.0%
Rockwall	7,046	14,528	25,604	43,080	144,976	6.2%	4.1%	0.8%	1.6%	2.5%
Tarrant	**715,587**	**860,880**	**1,170,103**	**1,446,219**	**2,291,723**	**2.4%**	**1.5%**	**28.5%**	**25.2%**	**21.0%**
Wise	19,687	26,575	34,679	48,793	102,449	3.1%	2.5%	1.0%	1.1%	1.3%
Ten-County Area	2,371,256	2,957,120	3,920,094	5,080,603	9,107,229	2.6%	2.0%	100.0%	100.0%	100.0%
State of Texas	11,256,480	14,337,820	16,986,510	20,851,820	33,317,744	2.1%	1.6%	N/A	N/A	N/A
United States	203,982,310	227,225,620	248,709,873	281,421,906	363,584,435	1.1%	0.9%	N/A	N/A	N/A

Sources: NCTCOG, U.S. Census Bureau, Texas State Data Center

FUTURE REGIONAL POPULATION GROWTH

Included in Table 4-3 is the future population estimate for 2030 developed by NCTCOG. The population in the NCTCOG forecast area is expected to increase from 5.1 million in 2000 to 9.1 million by 2030, corresponding to an average annual growth rate of 2.0 percent. This annual growth rate for the NCTCOG forecast area is anticipated to be higher than the annual growth rate for both the state and the nation.

Dallas County is expected to add approximately 598,292 additional residents between 2000 and 2030 at an average annual rate of 0.8 percent. Tarrant County is expected to add 845,504 people during the same period, representing the greatest increase among all counties. As indicated in Table 4-3, Dallas and Tarrant Counties will continue to comprise the largest population centers. However, their overall shares are expected to decline as surrounding counties, particularly Denton and Collin, continue to grow at higher rates.

Figures 4-3 and 4-4 illustrate the future population by county and their annual historical and expected future percentage growth, respectively. Dallas and Tarrant Counties' significant share of the total population of the NCTCOG forecast area is shown in Figure 4-3. However, this share has been decreasing as Denton and Collin Counties have experienced some of the highest rates of population growth since 1970 and are expected to remain high-growth counties through 2030, as evident in Figure 4-4.

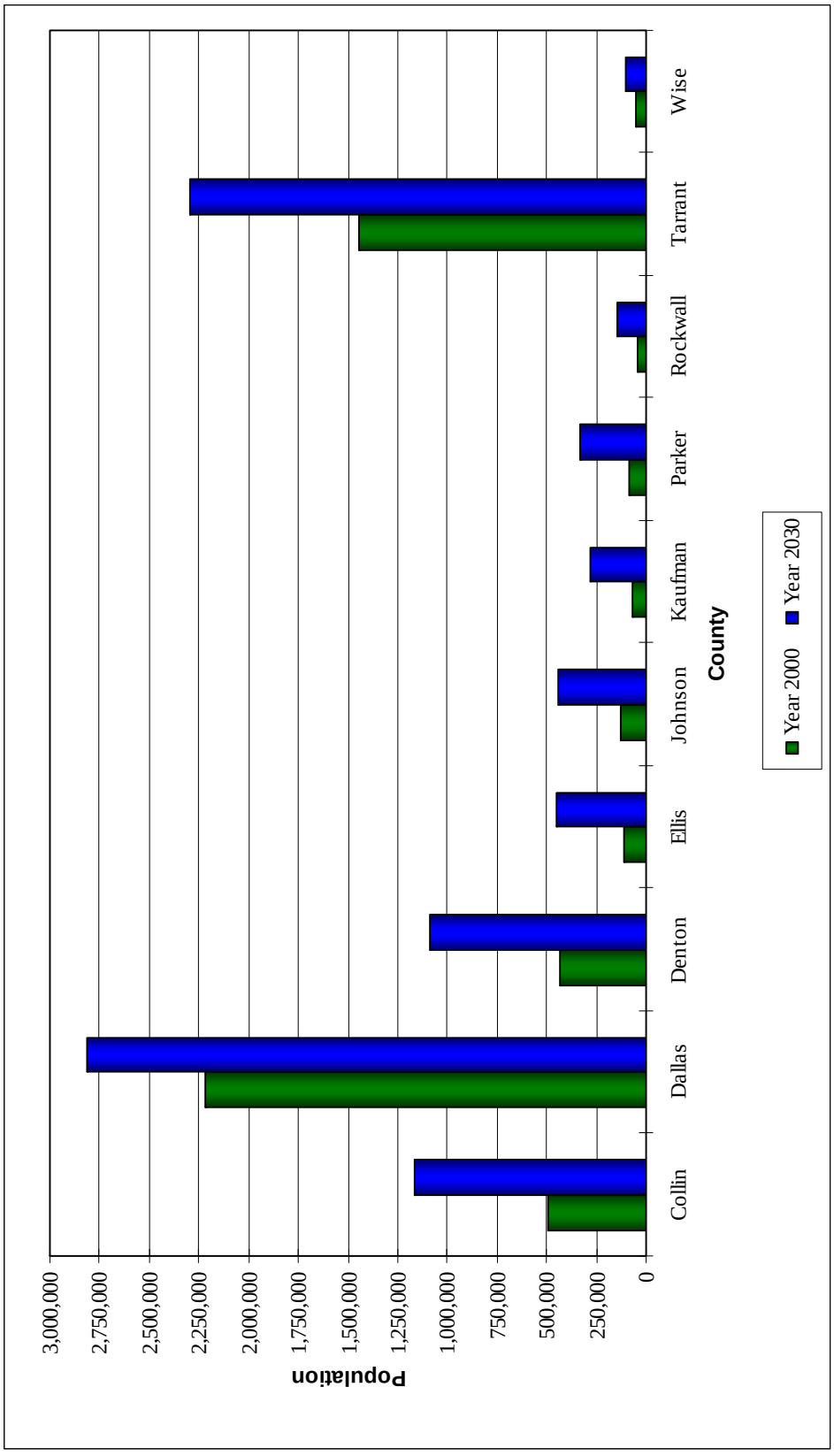

Figure 4-3. 2000 and 2030 Population

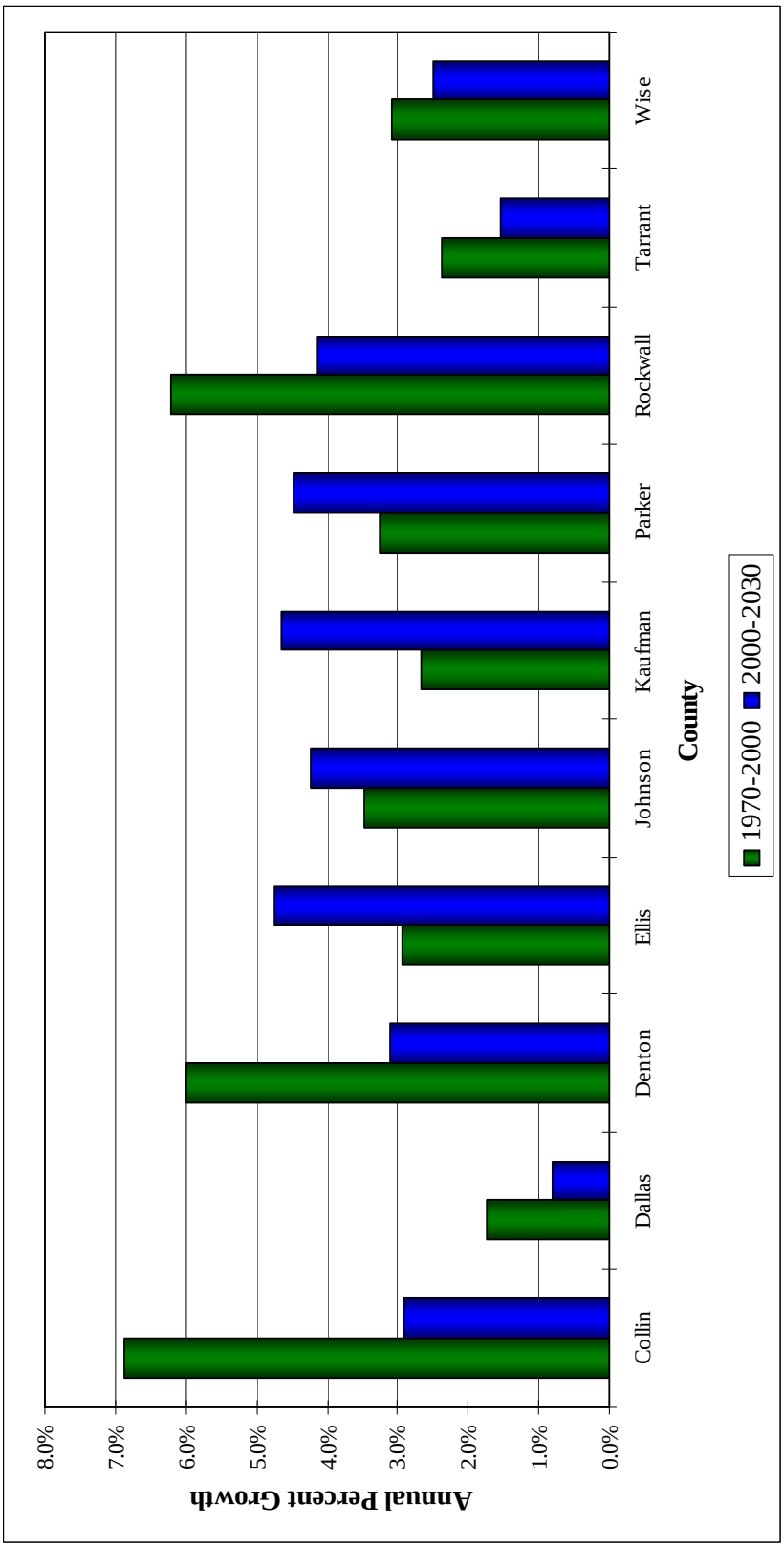

Figure 4-4. Population Annual Growth Rate for Counties

HISTORICAL REGIONAL EMPLOYMENT TRENDS

Employment statistics are used as relative indicators of trip attractions to an area. Intense employment growth in an area indicates the potential for an increase in the demand for transportation infrastructure. The countywide historical employment trends in the NCTCOG forecast area are shown in Table 4-4. Between 1990 and 2000, employment in the NCTCOG forecast area increased at an average annual rate of 4.1 percent, which was higher than the employment growth rate of both the state and nation.

Dallas County continues to be the major employment center in the region. Its employment in 2000 comprised 55.3 percent of the NCTCOG forecast area's total employment, and increased from 1.3 million in 1990 to 1.7 million in 2000. Tarrant County employment increased from 586,058 to 864,360 during this time, equivalent to approximately 278,302 new jobs. In 2000, the total employment in Tarrant County represented 27.4 percent of the total employment in the NCTCOG forecast area.

Employment distributions by county are also shown in Table 4-4. Dallas and Tarrant Counties incorporated the bulk of the employment in the NCTCOG forecast area, recording almost 83 percent of the region's total employment in 2000.

FUTURE REGIONAL EMPLOYMENT GROWTH

Table 4-4 also shows the adopted NCTCOG employment estimates for 2030. Dallas County's employment is expected to increase from 1.7 million in 2000 to 2.5 million by 2030 at an average annual growth rate of 1.2 percent. Dallas County is expected to house 34.7 percent of the total additional jobs in the NCTCOG forecast area by 2030.

Employment in Tarrant County is expected to reach 1.4 million in 2030, a more than 0.5 million increase from the 2000 employment of over 0.86 million. This represents an average annual growth of 1.6 percent between 2000 and 2030. Tarrant County is expected to account for 23.2 percent of the total additional jobs in the NCTCOG forecast area.

Between 2000 and 2030, 2.3 million additional jobs are expected to be added in the NCTCOG forecast area, at an average annual growth rate of 1.8 percent. Employment in Texas and in the nation is expected to grow from 2000 to 2030 at an average annual rate of 2.0 percent and 1.5 percent, respectively.

Table 4-4
Countywide Employment Trends and Projections

County	Year 1990	Year 2000	Year 2030	Annual Percent Growth (1990-2000)	Annual Percent Growth (2000-2030)	Percent Employment Distribution By County		Percentage of New Employees Between 2000 and 2030
						2000	2030	
Collin	93,729	204,057	517,264	8.1%	3.1%	6.5%	9.5%	13.9%
Dallas	**1,254,974**	**1,745,109**	**2,529,371**	**3.4%**	**1.2%**	**55.3%**	**46.7%**	**34.7%**
Denton	75,817	152,818	413,453	7.3%	3.4%	4.8%	7.6%	11.5%
Ellis	27,789	49,071	162,769	5.9%	4.1%	1.6%	3.0%	5.0%
Johnson	26,214	45,071	142,544	5.6%	3.9%	1.4%	2.6%	4.3%
Kaufman	17,174	31,027	82,078	6.1%	3.3%	1.0%	1.5%	2.3%
Parker	16,173	29,816	94,703	6.3%	3.9%	0.9%	1.7%	2.9%
Rockwall	7,492	17,025	48,466	8.6%	3.5%	0.5%	0.9%	1.4%
Tarrant	**586,058**	**864,360**	**1,388,247**	**4.0%**	**1.6%**	**27.4%**	**25.6%**	**23.2%**
Wise	N/A	19,848	37,823	N/A	2.2%	0.5%	0.7%	0.8%
Ten-County Area	2,105,420	3,158,202	5,416,718	4.1%	1.8%	100.0%	100.0%	100.0%
State of Texas	6,983,170	9,289,286	16,743,000	2.9%	2.0%	N/A	N/A	N/A
United States	108,657,200	129,877,063	202,431,000	1.8%	1.5%	N/A	N/A	N/A

Souce: NCTCOG

Table 4-4 also presents year 2030 employment distributions for the NCTCOG forecast area. The major employment concentrations are expected to continue to be located in Dallas and Tarrant Counties. Combined, the two counties are expected to house 72.3 percent of all employment in the NCTCOG forecast area. However, the projections anticipate the migration of jobs from the major city centers to the growing industries located in the suburbs throughout the northern part of the region.

Figure 4-5 illustrates future employment by county. The historical and expected future annual growth rates for each county are shown in Figure 4-6. As with the NCTCOG forecast area's population profile, its employment profile shows that the majority of employment exists in Dallas and Tarrant Counties. Employment percentage growth in the peripheral counties of the NCTCOG forecast area is expected to be higher than the projected Dallas and Tarrant County growth.

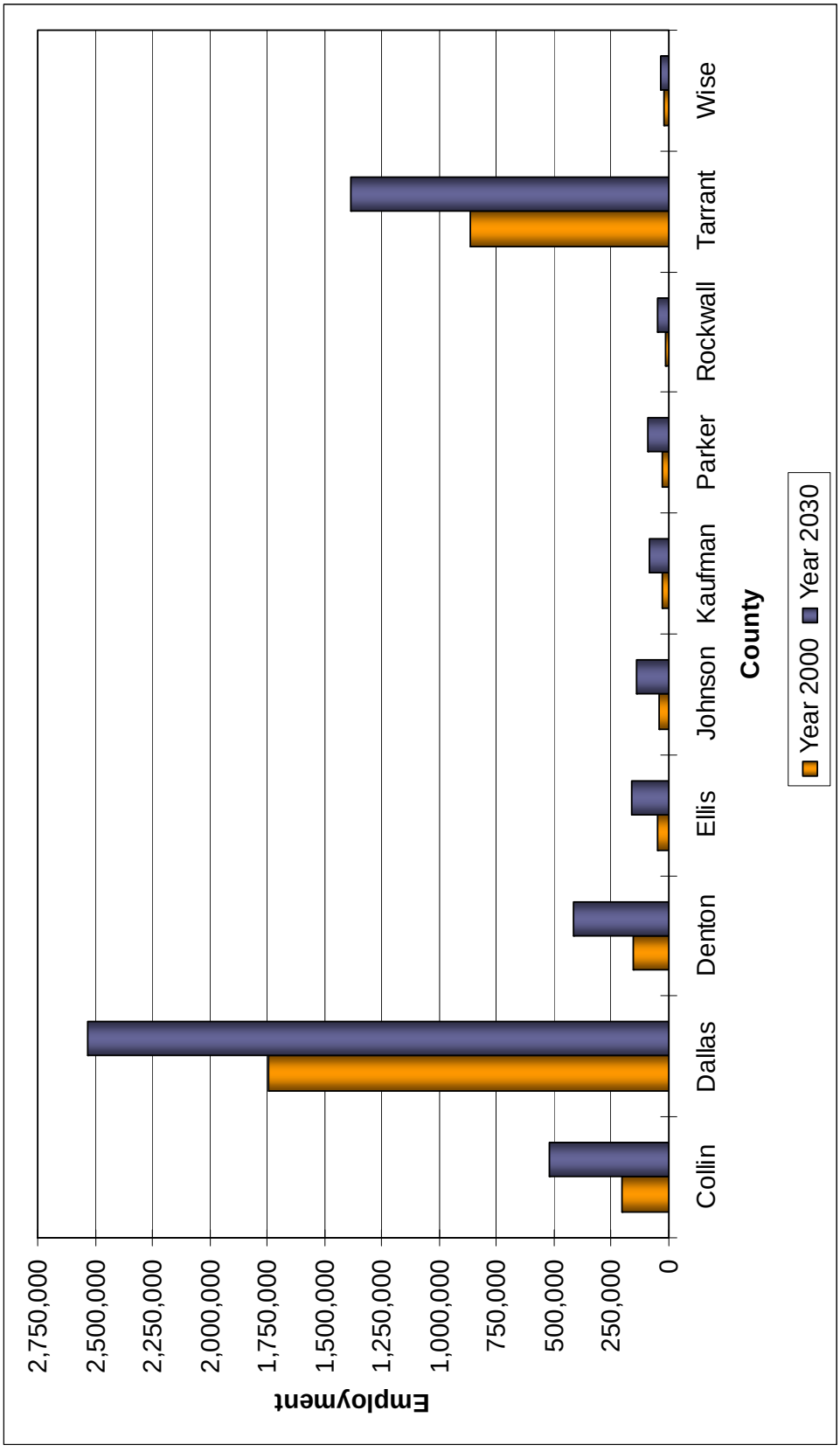

Figure 4-5. 2000 and 2030 Employment

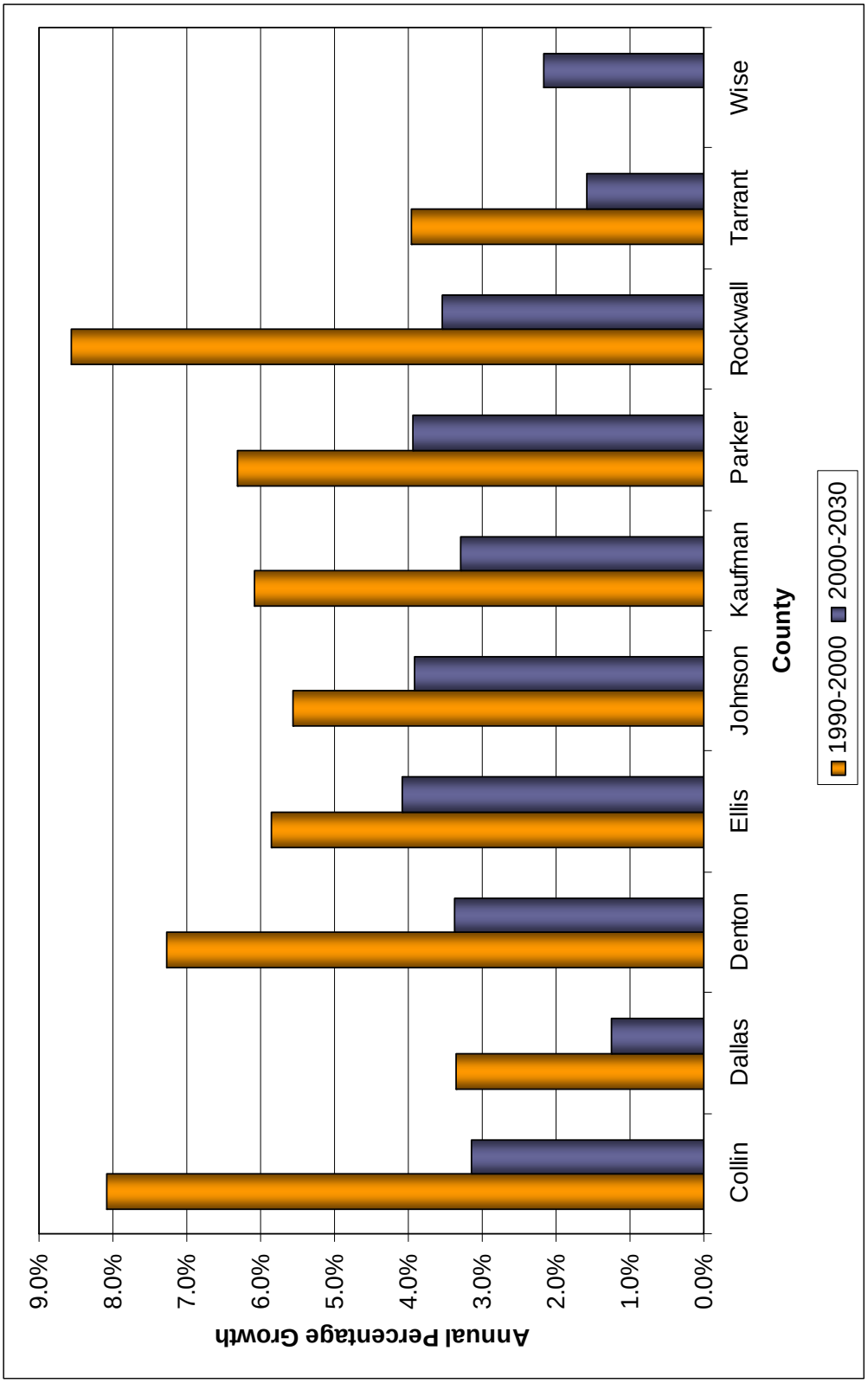

Figure 4-6. Employment Annual Growth Rate for Counties

REGIONAL MEDIAN HOUSEHOLD INCOME TRENDS

Travel demand, and specifically demand for toll roads, is sensitive to the amount of disposable income available within a household. A reliable indicator of a household's propensity for trip-making and a motorist's willingness to pay a toll is median household income. Generally, households with higher incomes are more likely to make more automobile trips than those with lower incomes due to their greater levels of disposable incomes. Value of time, a key factor in motorists' willingness to pay tolls, is generally higher in households with higher incomes.

A comparison of median household income for the NCTCOG forecast area is provided in Table 4-5. The most recent median household income data estimated by the U.S. Census Bureau for 2008 are provided for the urban counties, the state, and the nation. The median household income data presented in Table 4-5 indicates that when reported in inflation adjusted 2008 dollars, income in the region, the state, and the nation grew considerably between 1989 and 1999, but had declined by 2008. The 1999 median household incomes in Dallas and Tarrant Counties were higher than those of the state and the nation.

Table 4-5
Median Household Income (In 2008 Inflation Adjusted Dollars)

County	Year 1989 [1]	Year 1999 [1]	Year 2008 Estimate [2]	Average Annual Growth Rate		
				(1989-1999)	(1989-2008)	(1999-2008)
Collin	$77,710	$90,467	$81,200	1.5%	0.2%	-1.2%
Dallas	**$53,369**	**$55,331**	**$48,031**	**0.4%**	**-0.6%**	**-1.6%**
Denton	$62,334	$74,351	$73,275	1.8%	0.9%	-0.2%
Ellis	$51,592	$64,305	$59,932	2.2%	0.8%	-0.8%
Johnson	$51,692	$56,988	$54,161	1.0%	0.2%	-0.6%
Kaufman	$46,066	$57,195	$56,850	2.2%	1.1%	-0.1%
Parker	$51,658	$58,107	$60,477	1.2%	0.8%	0.4%
Rockwall	$71,626	$83,224	$75,929	1.5%	0.3%	-1.0%
Tarrant	**$54,602**	**$58,978**	**$55,425**	**0.8%**	**0.1%**	**-0.7%**
Wise	$43,710	$53,555	$57,123	2.1%	1.4%	0.7%
State of Texas	$45,620	$50,993	$49,078	1.1%	0.4%	-0.4%
United States	$50,753	$53,633	$52,175	0.6%	0.1%	-0.3%

[1] Adjusted to 2008 dollars using the Consumer Price Index (CPI).

[2] Estimate calculated by U.S. Census Bureau, presented in 2008 American Community Survey.

Sources: 1990 and 2000 Decennial Census, 2008 American Community Survey, U.S. Census Bureau.

The 2008 median household income estimate for Tarrant County was higher than the state and national median household income figure. Between 1989 and 2008, the annual rate of growth of median household income in the region's counties compared favorably to the state and nation, although some counties showed a smaller rate of increase. Figure 4-7 illustrates the median household income distribution among ten-county area counties, the State of Texas and the United States presented in year 2008 dollars.

Figure 4-8 represents the median household income from the 2000 Census at the TSZ level for the PGBT-WE corridor presented in 1999 dollars. Figure 4-8 shows that the higher income areas are located to the north and south of the corridor. Most of the zones in the central part of the corridor have a median household income of $15,000 to $45,000 in 1999 dollars.

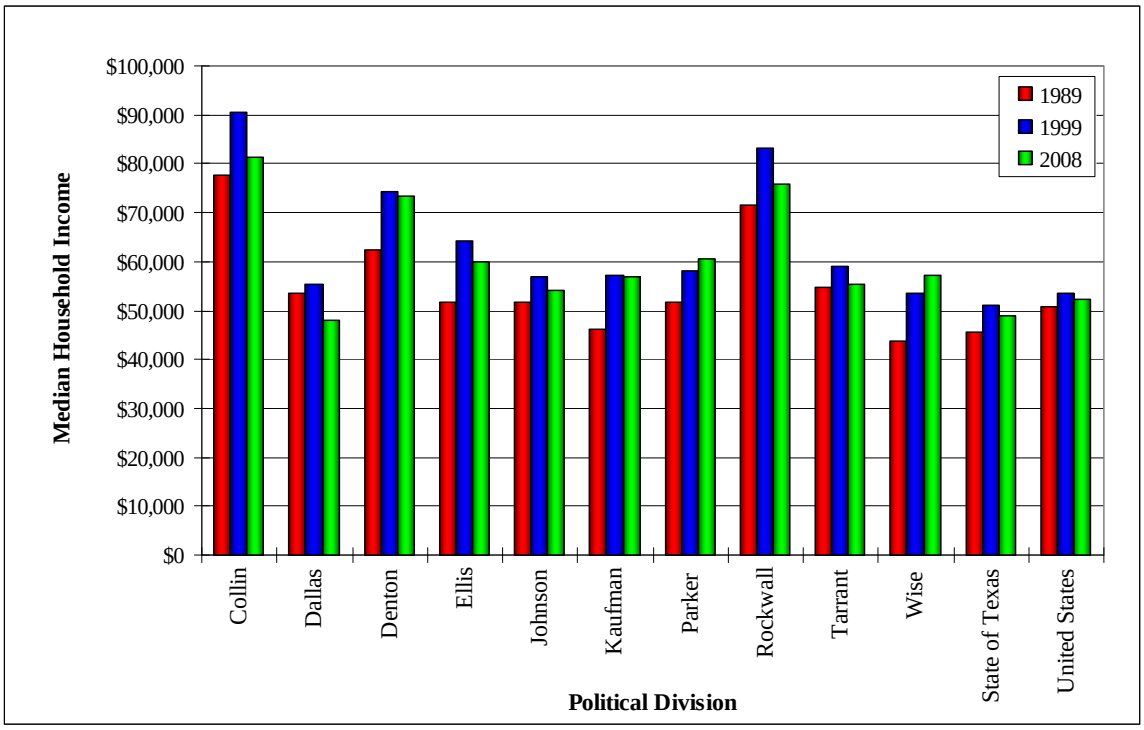

Figure 4-7. Median Household Income Trend (2008 Dollars)

Sources: 1990 and 2000 Decennial Census, 2008 American Community Survey, U.S. Census Bureau.

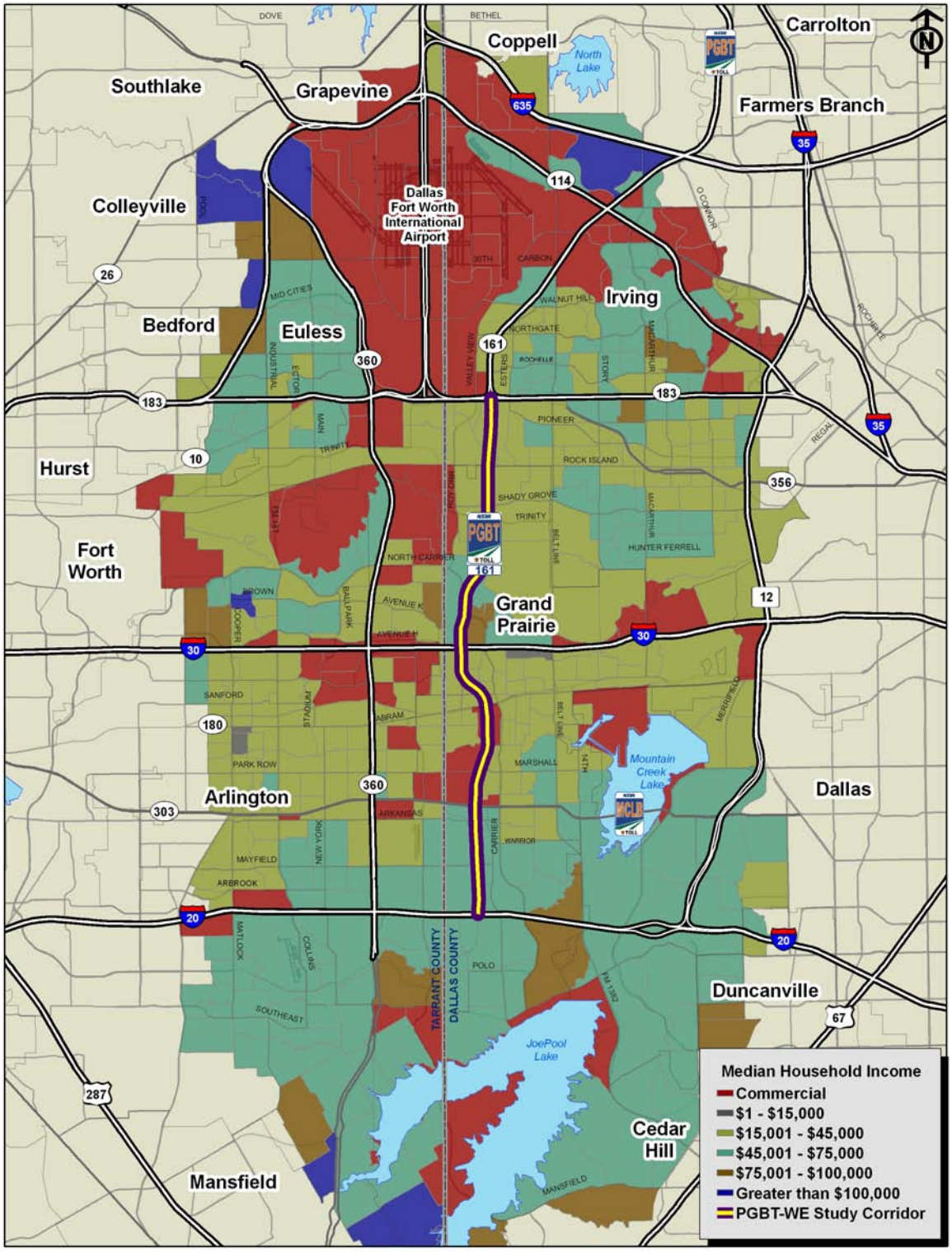

Figure 4-8. 2000 Median Household Income (1999 dollars)

HISTORICAL AND FUTURE MUNICIPAL GROWTH

In this section, the historical and future demographic growth in the municipalities that comprise the study area of the PGBT-WE corridor is addressed.

Within the vicinity of the PGBT-WE are the cities of Arlington, Bedford, Carrollton, Cedar Hill, Cockrell Hill, Colleyville, Coppell, Dallas, Desoto, Duncanville, Euless, Farmers Branch, Fort Worth, Grand Prairie, Grapevine, Hurst, Irving, Mansfield, and Southlake. A map of these municipalities is provided in Figure 4-9. The aggregation of these cities is referred in Table 4-6 and Table 4-7 as the PGBT-WE study area.

HISTORICAL MUNICIPAL POPULATION TRENDS

The historical population trends and projections of the municipalities in the study area are presented in Table 4-6. Average annual population growth between 1970 and 2000 ranged from a low of 0.1 percent in Farmers Branch to a high of 10.0 percent in Coppell.

The Cities of Coppell, Cedar Hill, and Southlake experienced the highest rates of population growth between 1970 and 2000. Coppell grew by 42,800 residents at an average annual growth rate of 10.0 percent. Cedar Hill gained 29,720 residents at an average annual rate of 8.8 percent while Southlake added 19,488 residents at an average annual rate of 8.2 percent

The Cities of Dallas, Arlington and Fort Worth had the largest incremental growth between 1970 and 2000. Dallas gained 358,191 residents at an average annual rate of 1.2 percent. Arlington's population increased by 244,380 residents at an average annual rate of 4.5 percent while Fort Worth grew by 141,239 residents at an average annual rate of 1.0 percent.

The municipalities that comprise the PGBT-WE study area grew by an average annual rate of 2.0 percent per year between 1970 and 2000. This compares to a historical average annual population growth rate of 2.6 percent for the NCTCOG forecast area, 2.1 percent for the state, and 1.1 percent for the nation.

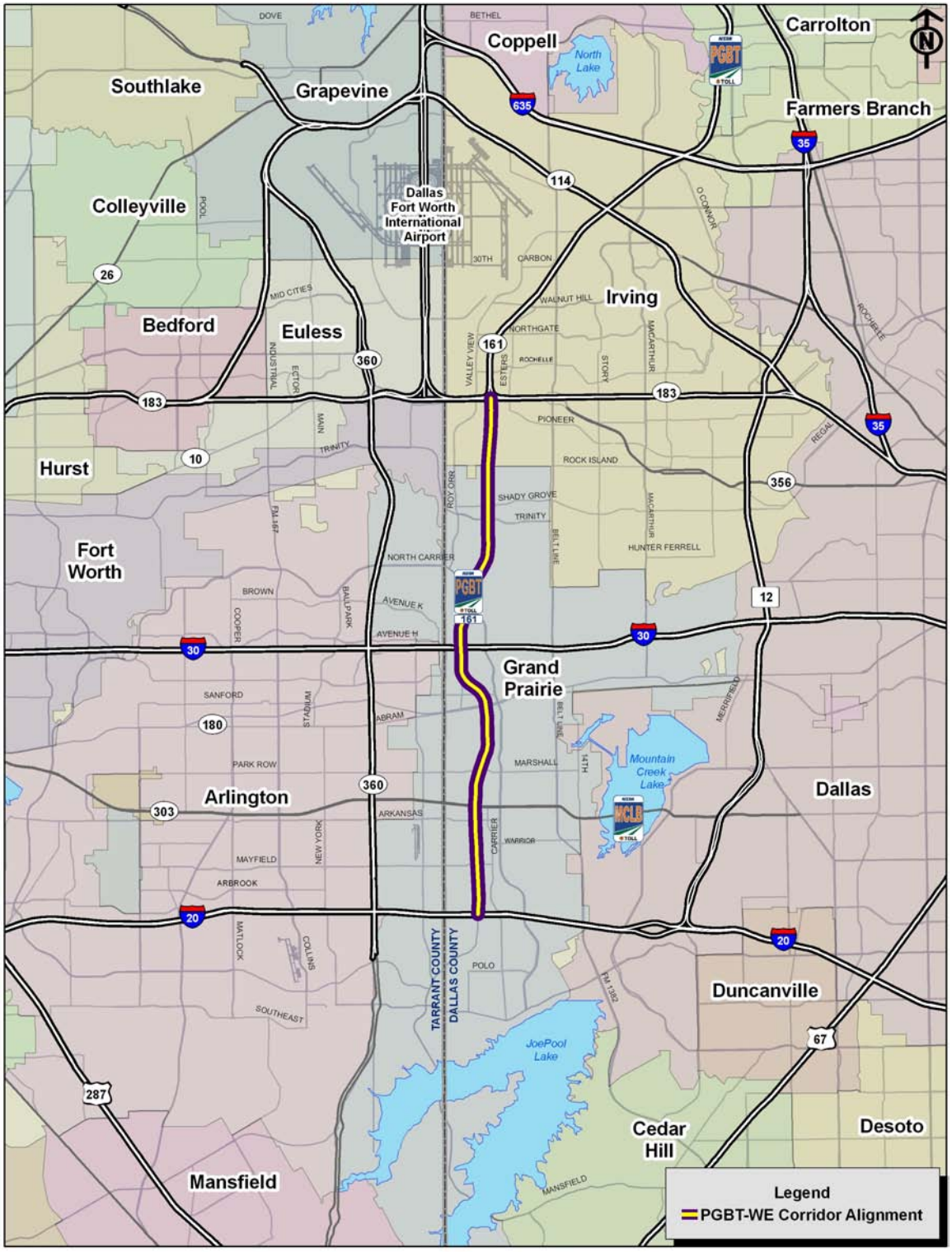

Figure 4-9. Municipalities in the PGBT-WE Corridor

Table 4-6
Historical Municipal Population Trends and Projections
PGBT-WE Study Area

Municipality	Actual				North Central Texas 2030 Forecast	Annual Percent Growth (1970-2000)	Annual Percent Growth (2000-2030)	Number of New Residents (1970-2000)	Number of New Residents (2000-2030)	Percent Population Distribution By Municipality		Percentage of New Residents Between 2000 and 2030
	Year 1970	Year 1980	Year 1990	Year 2000	Year 2030					2000	2030	
Arlington	90,229	160,113	261,717	334,609	437,862	4.5%	0.9%	244,380	103,253	11.4%	11.1%	10.3%
Bedford	10,049	20,821	43,762	47,055	50,636	5.3%	0.2%	37,006	3,581	1.6%	1.3%	0.4%
Carrollton	13,855	40,595	82,169	109,576	124,086	7.1%	0.4%	95,721	14,510	3.7%	3.2%	1.4%
Cedar Hill	2,610	6,849	19,976	32,330	78,036	8.8%	3.0%	29,720	45,706	1.1%	2.0%	4.6%
Cockrell Hill	3,515	3,262	3,746	4,443	4,451	0.8%	0.0%	928	8	0.2%	0.1%	0.0%
Colleyville	3,342	6,700	12,724	19,520	25,304	6.1%	0.9%	16,178	5,784	0.7%	0.6%	0.6%
Coppell	2,610	6,849	19,976	45,410	78,036	10.0%	1.8%	42,800	32,626	1.5%	2.0%	3.3%
Dallas	844,401	904,599	1,006,877	1,202,592	1,404,847	1.2%	0.5%	358,191	202,255	41.0%	35.7%	20.2%
DeSoto	6,617	15,538	30,544	37,646	59,001	6.0%	1.5%	31,029	21,355	1.3%	1.5%	2.1%
Duncanville	14,105	27,781	35,748	35,997	37,714	3.2%	0.2%	21,892	1,717	1.2%	1.0%	0.2%
Euless	19,316	24,002	38,149	46,005	62,314	2.9%	1.0%	26,689	16,309	1.6%	1.6%	1.6%
Farmers Branch	27,492	24,863	24,250	28,028	43,978	0.1%	1.5%	536	15,950	1.0%	1.1%	1.6%
Fort Worth	393,455	385,164	447,619	534,694	826,665	1.0%	1.5%	141,239	291,971	18.2%	21.0%	29.1%
Grand Prairie	50,904	71,462	99,606	129,356	231,011	3.2%	2.0%	78,452	101,655	4.4%	5.9%	10.1%
Grapevine	7,049	11,801	29,198	42,059	49,484	6.1%	0.5%	35,010	7,425	1.4%	1.3%	0.7%
Hurst	27,215	31,420	33,574	36,273	39,637	1.0%	0.3%	9,058	3,364	1.2%	1.0%	0.3%
Irving	97,260	109,943	155,037	196,632	225,714	2.4%	0.5%	99,372	29,082	6.7%	5.7%	2.9%
Mansfield	3,658	8,102	15,615	27,361	123,541	6.9%	5.2%	23,703	96,180	0.9%	3.1%	9.6%
Southlake	2,031	2,808	7,065	21,519	31,433	8.2%	1.3%	19,488	9,914	0.7%	0.8%	1.0%
PGBT-WE Study Area*	1,619,713	1,862,672	2,367,352	2,931,105	3,933,750	2.0%	1.0%	1,311,392	1,002,645	100.0%	100.0%	100.0%
Ten-County Area	2,371,256	2,957,120	3,920,094	5,080,603	9,107,229	2.6%	2.0%	2,709,347	4,026,626	N/A	N/A	N/A
State of Texas	11,258,480	14,337,820	16,986,510	20,851,820	31,830,579	2.1%	1.4%	9,593,340	10,978,759	N/A	N/A	N/A
United States	203,982,310	227,225,620	248,709,873	281,421,906	362,880,000	1.1%	0.9%	77,439,596	81,458,094	N/A	N/A	N/A

* PGBT-WE Study Area is an aggregation of all the cities in corridor

Source: NCTCOG, Texas State Data Center, U.S. Census Bureau

FUTURE MUNICIPAL POPULATION GROWTH

Population projections for 2030 were developed by NCTCOG for the municipalities in the study area. As shown in Table 4-6, population growth in most of the municipalities is expected to be much lower than the average annual population growth that was experienced between 1970 and 2000.

The area near the southern terminus of the project is expected to experience the greatest amount of growth. The Cities of Mansfield and Cedar Hill are expected to see the largest average annual growth rates between 2000 and 2030. It is projected that Mansfield will gain 96,180 residents at an average annual growth rate of 5.2 percent. Cedar Hill is expected to grow by 45,706 residents at an average annual growth rate of 3.0 percent.

The largest incremental growth between 2000 and 2030 is expected to be seen in Fort Worth, Dallas, Arlington and Grand Prairie. Fort Worth is projected to gain 291,971 residents at an average annual growth rate of 1.5 percent while Dallas will gain 202,255 residents at an average annual growth rate of 0.5 percent. Arlington is expected to grow by 103,253 residents at an average annual rate of 0.9 percent while Grand Prairie is expected to grow by 101,655 residents at an average annual rate of 2.0 percent.

HISTORICAL MUNICIPAL EMPLOYMENT TRENDS

Historical employment trends for the municipalities in the PGBT-WE study area are presented in Table 4-7. The eighteen municipalities have experienced average annual employment growth between 1990 and 2000 ranging from a low of 1.9 percent in Hurst to a high of 11.2 percent in Coppell. Employment information was not available for Cockrell Hill in 1990.

The Cities of Coppell, Colleyville, and Cedar Hill experienced the highest average annual growth rates between 1990 and 2000. Coppell grew by 12,051 employees at an average annual rate of 11.2 percent. Employment in Colleyville grew at an average annual rate of 10.4 percent gaining 3,115 employees while Cedar Hill gained 3,327 employees at an average annual rate of 8.0 percent.

The Cities of Dallas and Fort Worth experienced the largest incremental employment growth between 1990 and 2000. Dallas grew by 228,664 employees at an average annual growth rate of 2.5 percent. Fort Worth gained 119,443 employees at an average annual rate of 3.1 percent.

The municipalities in the PGBT-WE study area experienced a combined average annual employment growth rate of 3.3 percent between 1990 and 2000 which is lower than the annual average employment growth rate of 4.1 percent experienced in the NCTCOG forecast area and is higher than 2.9 percent in the state and 1.8 percent in the nation.

Table 4-7
Historical Municipal Employment Trends and Projections
PGBT-WE Study Area

Municipality	Year 1990	Year 2000	Year 2030	Annual Percent Growth (1990-2000)	Annual Percent Growth (2000-2030)	Number of New Employees (1990-2000)	Number of New Employees (2000-2030)	Percent Employment Distribution By Municipality	
								2000	2030
Arlington	90,100	140,947	197,390	4.6%	1.1%	50,847	56,443	6.4%	6.1%
Bedford	15,450	23,380	26,748	4.2%	0.4%	7,930	3,368	1.1%	0.8%
Carrollton	45,250	68,199	83,148	4.2%	0.7%	22,949	14,949	3.1%	2.6%
Cedar Hill	2,850	6,177	16,097	8.0%	3.2%	3,327	9,920	0.3%	0.5%
Cockrell Hill	N/A	699	779	N/A	0.4%	N/A	80	0.0%	0.0%
Colleyville	1,850	4,965	11,032	10.4%	2.7%	3,115	6,067	0.2%	0.3%
Coppell	6,350	18,401	29,380	11.2%	1.6%	12,051	10,979	0.8%	0.9%
Dallas	809,650	1,038,314	1,390,219	2.5%	1.0%	228,664	351,905	47.4%	43.0%
DeSoto	8,900	16,177	21,311	6.2%	0.9%	7,277	5,134	0.7%	0.7%
Euless	10,850	18,403	33,477	5.4%	2.0%	7,553	15,074	0.8%	1.0%
Farmers Branch	50,150	75,013	156,798	4.1%	2.5%	24,863	81,785	3.4%	4.8%
Fort Worth	330,350	449,793	701,524	3.1%	1.5%	119,443	251,731	20.5%	21.7%
Grand Prarie	51,800	82,664	125,866	4.8%	1.4%	30,864	43,202	3.8%	3.9%
Grapevine	27,100	49,565	85,475	6.2%	1.8%	22,465	35,910	2.3%	2.6%
Hurst	15,900	19,123	26,156	1.9%	1.0%	3,223	7,033	0.9%	0.8%
Irving	106,600	165,435	276,941	4.5%	1.7%	58,835	111,506	7.5%	8.6%
Mansfield	4,500	8,292	26,381	6.3%	3.9%	3,792	18,089	0.4%	0.8%
Southlake	3,450	6,125	26,094	5.9%	4.9%	2,675	19,969	0.3%	0.8%
PGBT-WE Study Area*	1,581,100	2,191,672	3,234,816	3.3%	1.3%	610,572	1,043,144	100.0%	100.0%
Ten-County Area	2,105,420	3,158,202	5,416,718	4.1%	1.8%	1,052,782	2,258,516	N/A	N/A
State of Texas	6,983,170	9,283,286	16,743,000	2.9%	2.0%	2,300,116	7,459,714	N/A	N/A
United States	108,657,200	129,877,063	202,431,000	1.8%	1.5%	21,219,863	72,553,937	N/A	N/A

* PGBT-WE Study Area is aggregation of all the cities in corridor

Source: NCTCOG, Texas State Data Center, U.S. Census Bureau

FUTURE MUNICIPAL EMPLOYMENT GROWTH

Also presented in Table 4-7 are estimates of future employment growth through 2030, as estimated by NCTCOG. All of the study area municipalities will continue to see growth in employment between 2000 and 2030. The City of Southlake is expected to see the fastest employment growth with an average annual rate of 4.9 percent while Bedford and Cockrell Hill will experience the lowest rate of 0.4 percent.

The Cities of Southlake, Mansfield and Cedar Hill are expected to see the largest average annual growth rates between 2000 and 2030. It is projected that Southlake will gain 19,969 employees at an average annual rate of 4.9 percent while Mansfield will gain 18,089 employees at an average annual rate of 3.9 percent. Employment in Cedar Hill is expected to grow by 9,920 at an average annual rate of 3.2 percent.

The Cities of Dallas, Fort Worth and Irving are expected to see the largest incremental employment growth between 2000 and 2030. Dallas is projected to grow by 351,905 employees at an average annual rate of 1.0 percent while Fort Worth will gain 251,731 employees at an average annual rate of 1.5 percent. Irving is expected to gain 111,506 employees at an average annual rate of 1.7 percent.

The employment projections prepared by NCTCOG indicate that Dallas will continue to be the focal point of employment activity in the municipalities that comprise the PGBT-WE study area, but there is expected to be more job growth in surrounding cities.

CURRENT AND FUTURE DEVELOPMENT GROWTH

This section describes the current and future economic development potential within the PGBT-WE study area. The future development potential is based on the identification of major employment establishments in the study corridor, potential new developments in the study area, as well as an examination of the demographic forecasts for the area immediately adjacent to and within the PGBT-WE corridor.

MAJOR EMPLOYMENT ESTABLISHMENTS

The Dallas Morning News annually ranks the top 150 major corporations in the Dallas-Fort Worth metropolitan area. The ranking is based on the total revenue generated by each corporation in the previous year. From the 2009 rankings, 23 of those corporations are located within five miles of the PGBT-WE corridor. A list of those corporations is presented in Table 4-8 and the locations of these facilities are illustrated in Figure 4-10.

Exxon Mobil Corp., the highest-ranked corporation, is located in Irving and experienced $425.1 billion in revenue in 2008. AMR Corp. in Fort Worth ranked third with $23.8 billion in 2008 revenue. Fluor Corporation in Irving ranked fourth and earned $22.3 billion in 2008 revenue. Kimberly Clark Corp. in Irving ranked fifth and earned $19.4 billion in 2008 revenue. The location of each of the 23 ranked corporations is shown in Figure 4-10.

In addition to the corporations ranked in the 2009 survey described above, there are several employment establishments within the study area of the PGBT-WE with 500 or more employees. In 2004, NCTCOG organized a list of employment establishments with at least 500 employees. Table 4-9 indicates those employers located within five miles of the PGBT-WE corridor and their locations are illustrated in Figure 4-11.

There are five companies in the PGBT-WE study area with 3,000 or more employees: American Airlines/AMR, CitiGroup, Verizon Communications Inc., Vought Jefferson Facility, and General Motors Corporation. These business establishments are important traffic generators to PGBT-WE.

Table 4-8
Major Corporations Ranked by the Dallas Morning News
PGBT-WE Corridor

Name	City	2010 Rank	2009 Revenue
Exxon Mobil Corp.	Irving	1	$275,564,000,000
Fluor Corp.	Irving	3	$21,990,300,000
AMR Corp.	Fort Worth	4	$19,917,000,000
Kimberly-Clark Corp.	Dallas	5	$19,115,000,000
GameStop Corp.	Grapevine	11	$9,077,997,000
Commercial Metals Co.	Irving	14	$6,793,396,000
Flowserve Corp.	Irving	21	$4,365,262,000
SuperMedia Inc.	Grapevine	34	$2,512,000,000
Zale Corp.	Irving	38	$1,779,744,000
Pioneer Natural Resources Co.	Irving	39	$1,609,984,000
FelCor Lodging Trust Inc.	Irving	48	$908,701,000
CEC Entertainment Inc.	Irving	53	$818,346,000
Darling International Inc.	Irving	62	$597,806,000
Brink's Home Security Holdings Inc.	Irving	66	$565,100,000
First Cash Financial Services Inc	Arlington	75	$365,954,000
Nexstar Broadcasting Group Inc.	Irving	87	$251,979,000
DG FastChannel Inc.	Irving	91	$190,886,000
Tandy Brands Accessories Inc.	Arlington	102	$129,017,000
EF Johnson Technologies Inc.	Irving	110	$92,341,000
American Caresource Holdings Inc.	Irving	117	$68,311,000
RBC Life Sciences Inc.	Irving	130	$24,924,580
Thomas Group Inc.	Irving	133	$9,553,000
Integrated Security Systems	Irving	134	$8,628,054
Greenhunter Energy Inc.	Grapevine	135	$5,791,533

Source: Dallas Morning News Scorecard 2010

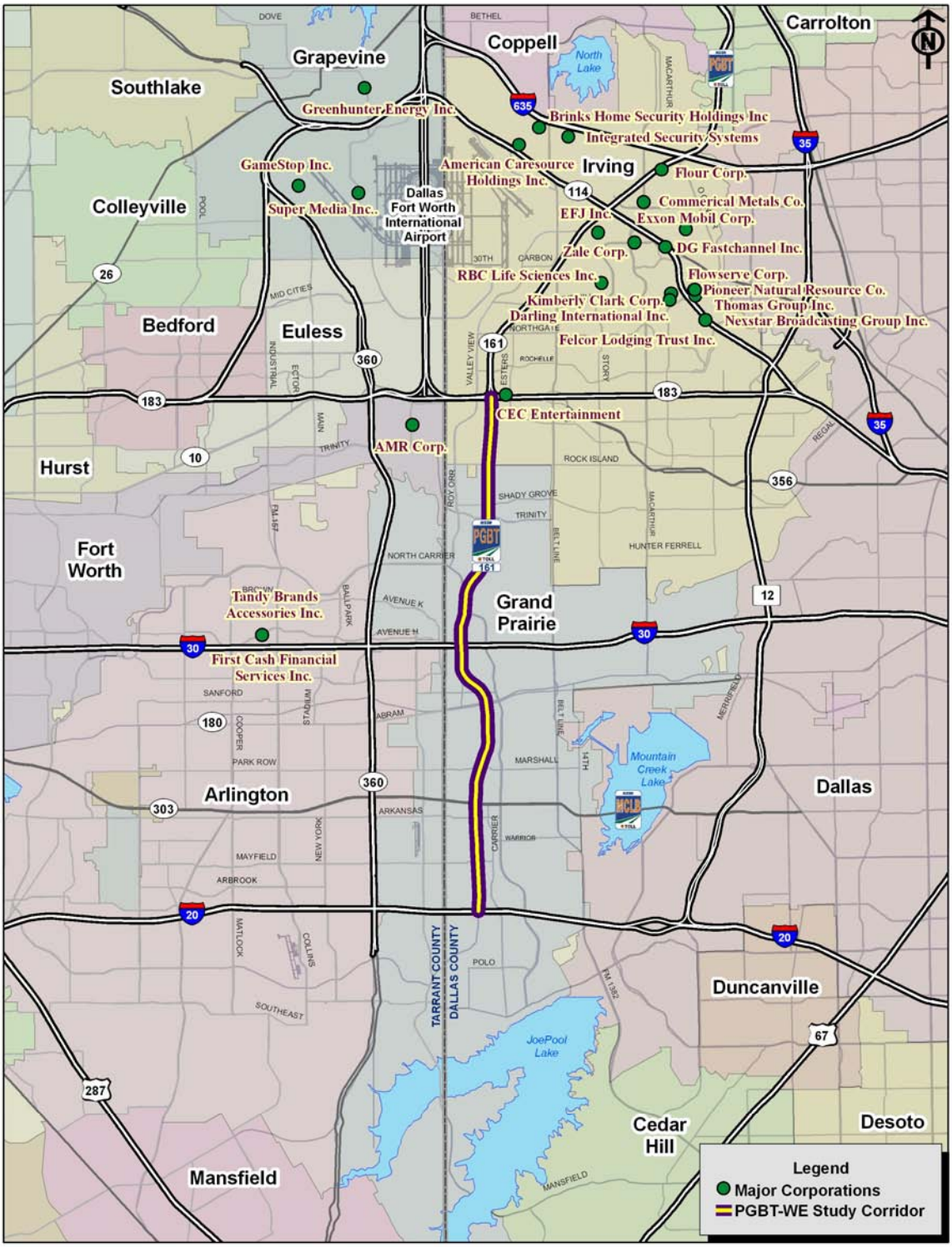

Figure 4-10. DFW Top 150 Corporations
(2009 Rankings based on 2008 Revenue)

Table 4-9
Major Employment Establishments with 500 or more Full-Time Employees
PGBT WE Corridor

Name	City	Number of Employees	Name	City	Number of Employees
American Airlines/AMR	DFW Airport	11,709	Capital One Services Inc.	Fort Worth	700
American Airlines/AMR HQ	Fort Worth	6,500	LSG Sky Chefs Inc.	Euless	700
CitiGroup	Irving	5,000	Fedex Freight	Irving	700
Vought Aircraft Industries Inc.	Dallas	3,560	L-3 Communications	Arlington	700
Verizon Communications Inc.	Irving	3,000	Lear Corporation	Arlington	700
Lockheed Martin	Dallas	2,600	Hurricane Harbor	Arlington	650
Six Flags Over Texas	Arlington	2,500	Saia Motor Freight Line	Grand Prairie	620
General Motors Corporation	Arlington	2,362	Chase Arlington Call Center	Arlington	600
Bank One Processing Center	Fort Worth	2,000	Syncreon Automotive (Mackie)	Arlington	600
D/FW Airport Board	DFW Airport	1,600	VHA Inc	Irving	600
Bank of America Home Loans	Fort Worth	1,500	Liberty Mutual	Irving	600
Baylor Medical Center	Irving	1,500	Cowboy Stadium	Arlington	550
Lone Star Park	Grand Prairie	1,400	Siemens Dematic	Arlington	540
Poly-America Inc.	Grand Prairie	1,350	Boy Scouts of America	Irving	520
American Airlines/AMR	Fort Worth	1,203	American Eagle Airlines Inc.	Fort Worth	508
Xerox Corp.	Irving	1,000	Accenture LLP	Irving	500
NEC America Inc.	Irving	1,000	La Quinta Corp. HQ	Irving	500
Atlantic Southeast Airline Inc.	Grapevine	1,000	Sprint Inc.	Irving	500
Verizon	Irving	1,000	North Texas Council of Governments	Arlington	500
North Lake College	Irving	970	Texas Health Resources	Arlington	500
Bell Helicopter Textron Plant 5	Fort Worth	961	Sterling Commerce Inc.	Irving	500
Nokia	Irving	900	Verizon Information Service	Irving	500
Abbott Laboratories	Irving	900	Onpoint Inc	Fort Worth	500
EMC Mortgage Corp.	Irving	900	Federal Aviation Administration	DFW Airport	500
Site Concrete Inc	Grand Prairie	900	Data Return Corp.	Irving	500
TXU	Irving	900	Oracle Corp	Irving	500
Americredit Center II	Arlington	848	Vought Marshall Facility	Grand Prairie	500
Medco Health Solutions	Fort Worth	800	First Horizon Home Loans	Irving	500
Americredit Center I	Arlington	722	FAA - Air Route Traffic Control	Fort Worth	500

Source: North Central Texas Council of Governments

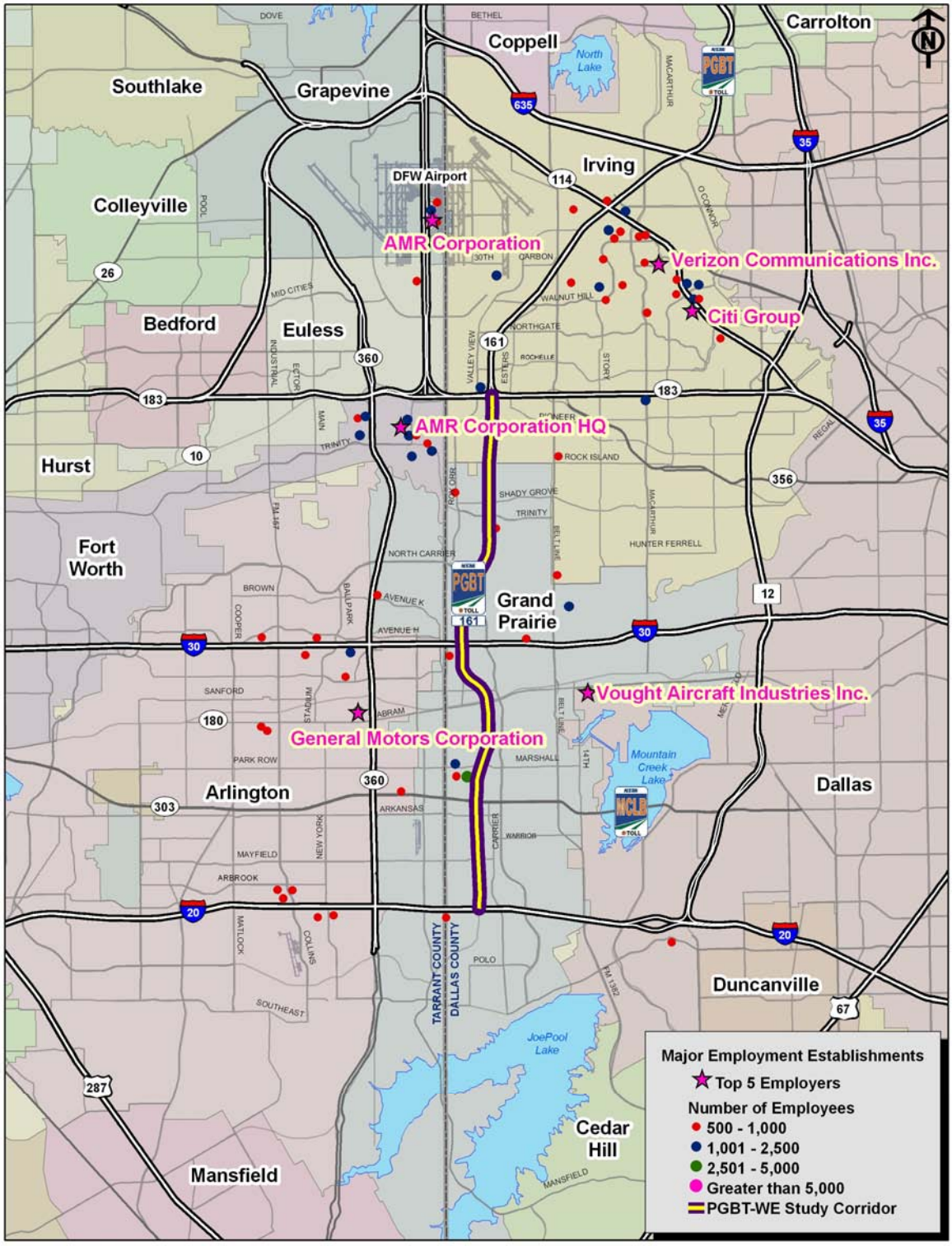

Figure 4-11. Major Employment Establishments

FUTURE POPULATION AND EMPLOYMENT ALONG THE CORRIDOR

Estimates of future population and employment growth between 2000 and 2030 for an approximate ten-mile corridor centered on the PGBT-WE disaggregated at the Traffic Survey Zone (TSZ) level is highlighted in Figures 4-12 through 4-19.

Population Growth Estimates

The expected absolute population growth between 2000 and 2030 is presented in Figure 4-12. There is a large amount of incremental population growth expected in Euless and areas surrounding Joe Pool Lake. Figure 4-13 illustrates the annual compounded population growth rate estimates based on the NCTCOG official demographics. Population growth rates are shown to be high in zones around Joe Pool Lake, Mountain Creek Lake and Northeast Arlington.

Figures 4-14 and 4-15 show the population densities for TSZs within five miles of the PGBT-WE corridor for the years 2000 and 2030 respectively. The population density reflects the number of residents per acre in each zone. Population density in many of the zones in the southern portion of the corridor is expected to increase between 2000 and 2030.

Employment Growth Estimates

The projected absolute employment growth between 2000 and 2030 is presented in Figure 4-16. The largest amount of incremental growth is expected in zones around DFW Airport. Figure 4-17 identifies the estimated annual compounded growth rates for employment within the TSZs in the PGBT-WE influence area based on NCTCOG official demographics. Again, the highest annual employment growth rates are expected around DFW Airport as well as areas near Joe Pool Lake.

Figures 4-18 and 4-19 show the employment densities for TSZs within five miles of the PGBT-WE corridor for the years 2000 and 2030, respectively. The employment density reflects the number of employees per acre in each zone. Employment density is expected to increase by 2030 in zones to the east of the PGBT-WE corridor as well as around DFW Airport.

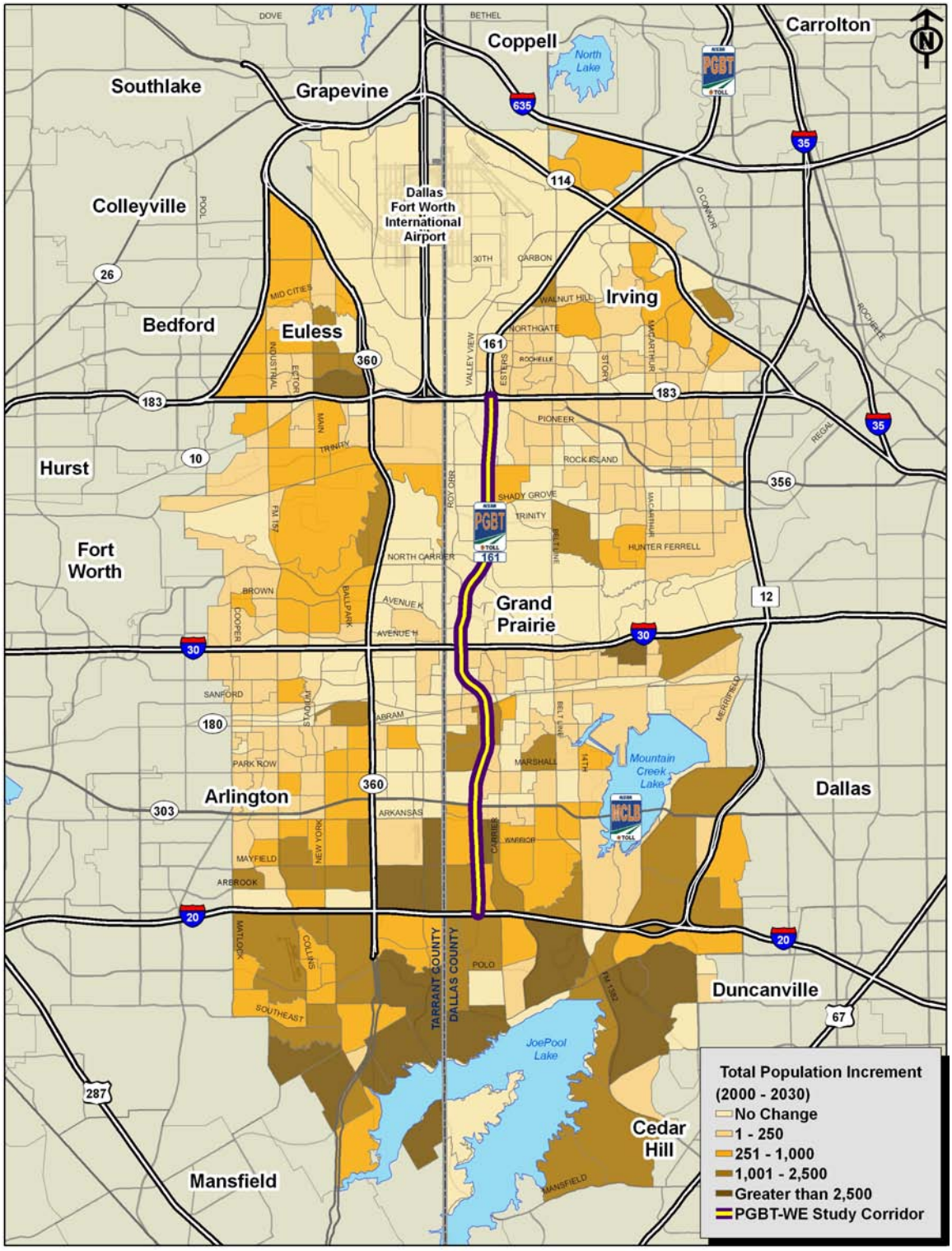

Figure 4-12. Total Population Increment (2000-2030)

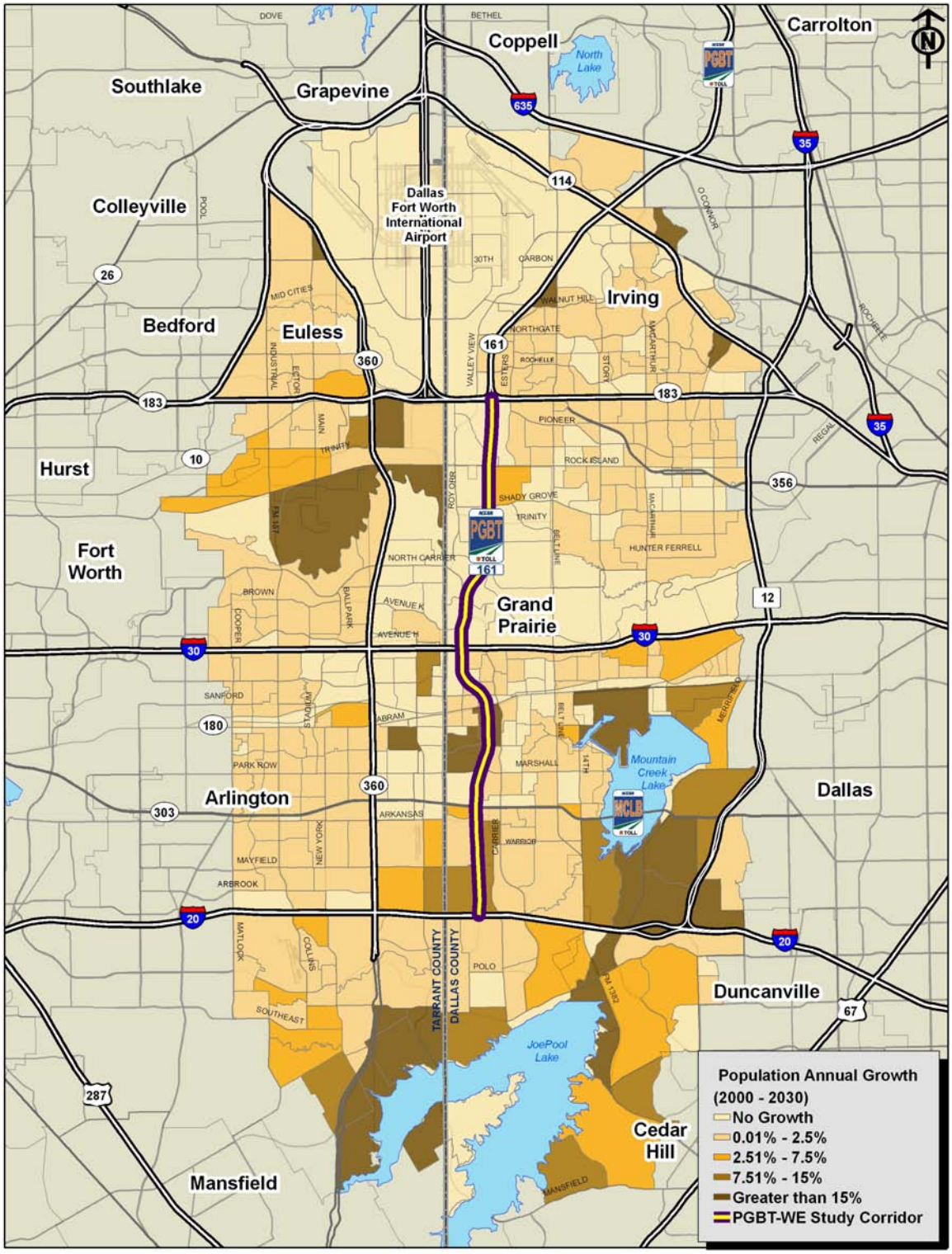

Figure 4-13. Population Annual Growth (2000-2030)

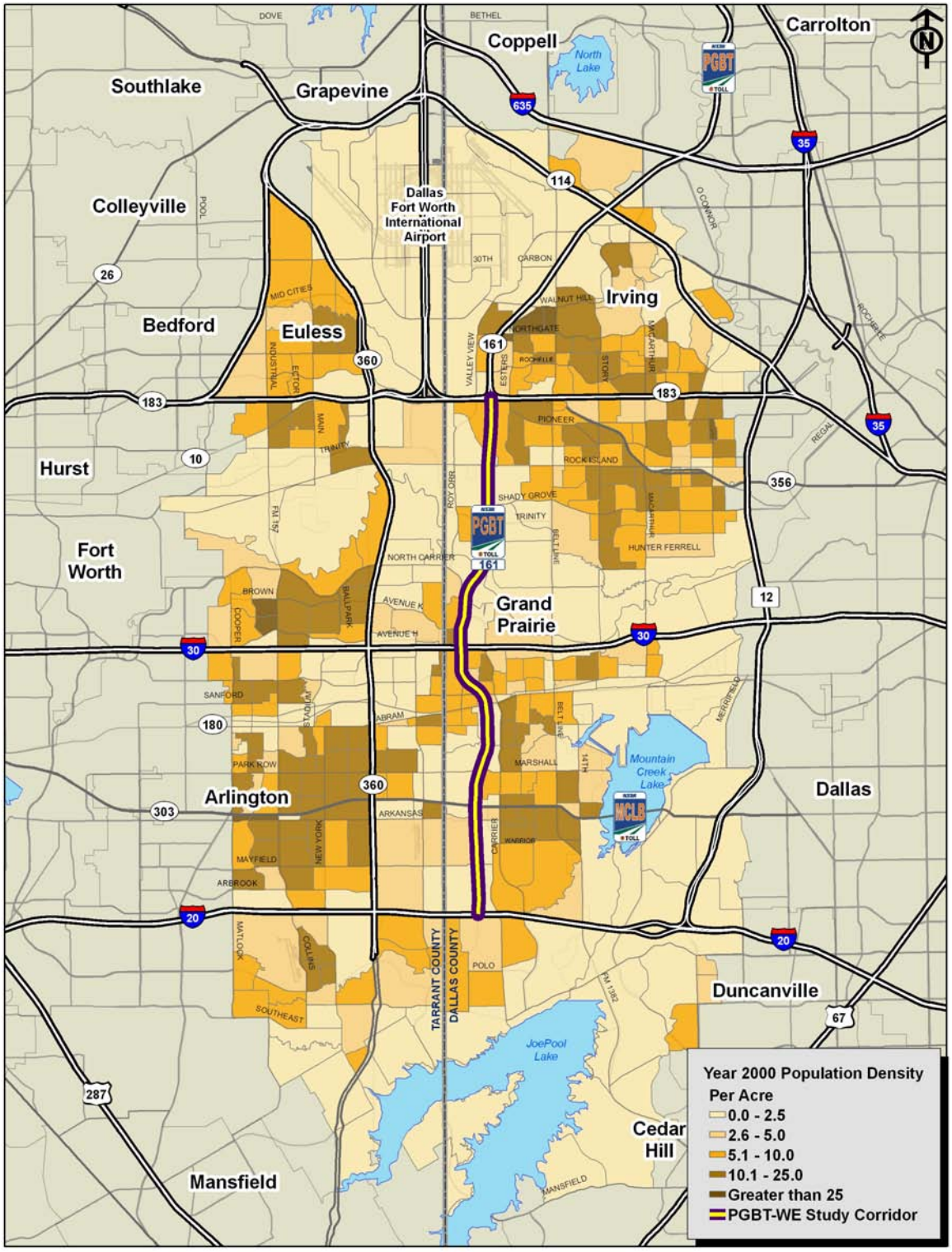

Figure 4-14. 2000 Population Density (residents/acre)

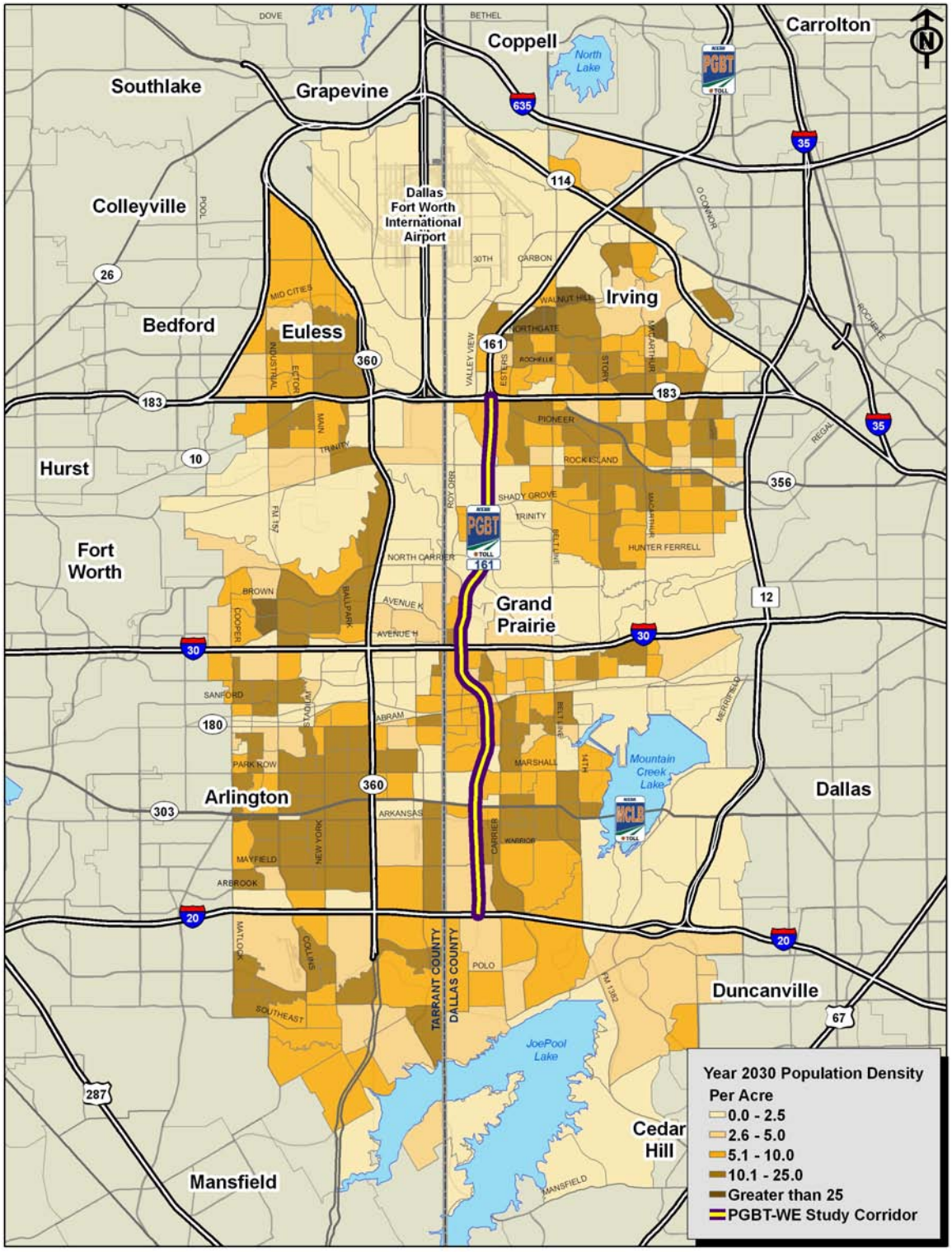

Figure 4-15. 2030 Population Density (residents/acre)

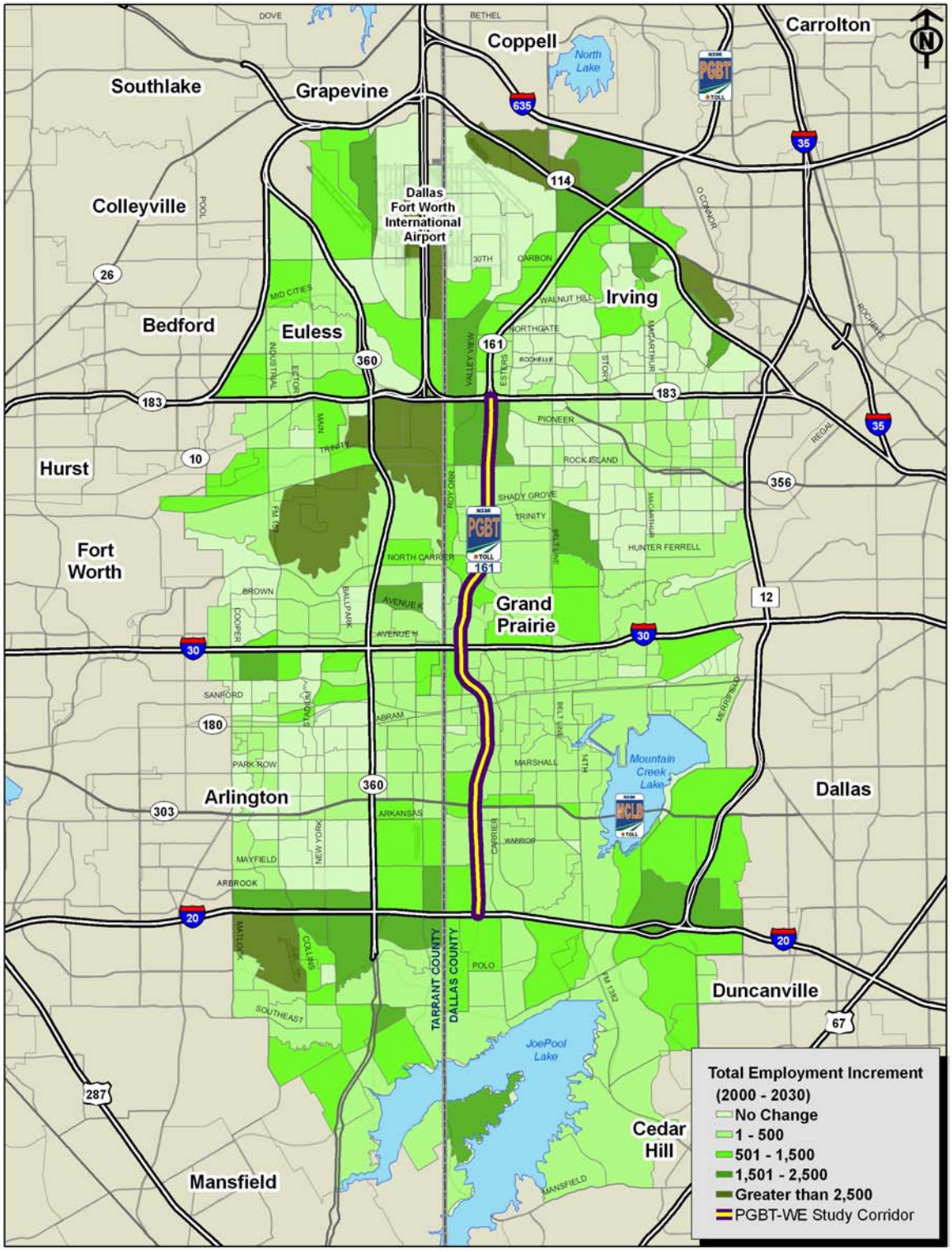

Figure 4-16. Total Employment Increment (2000-2030)

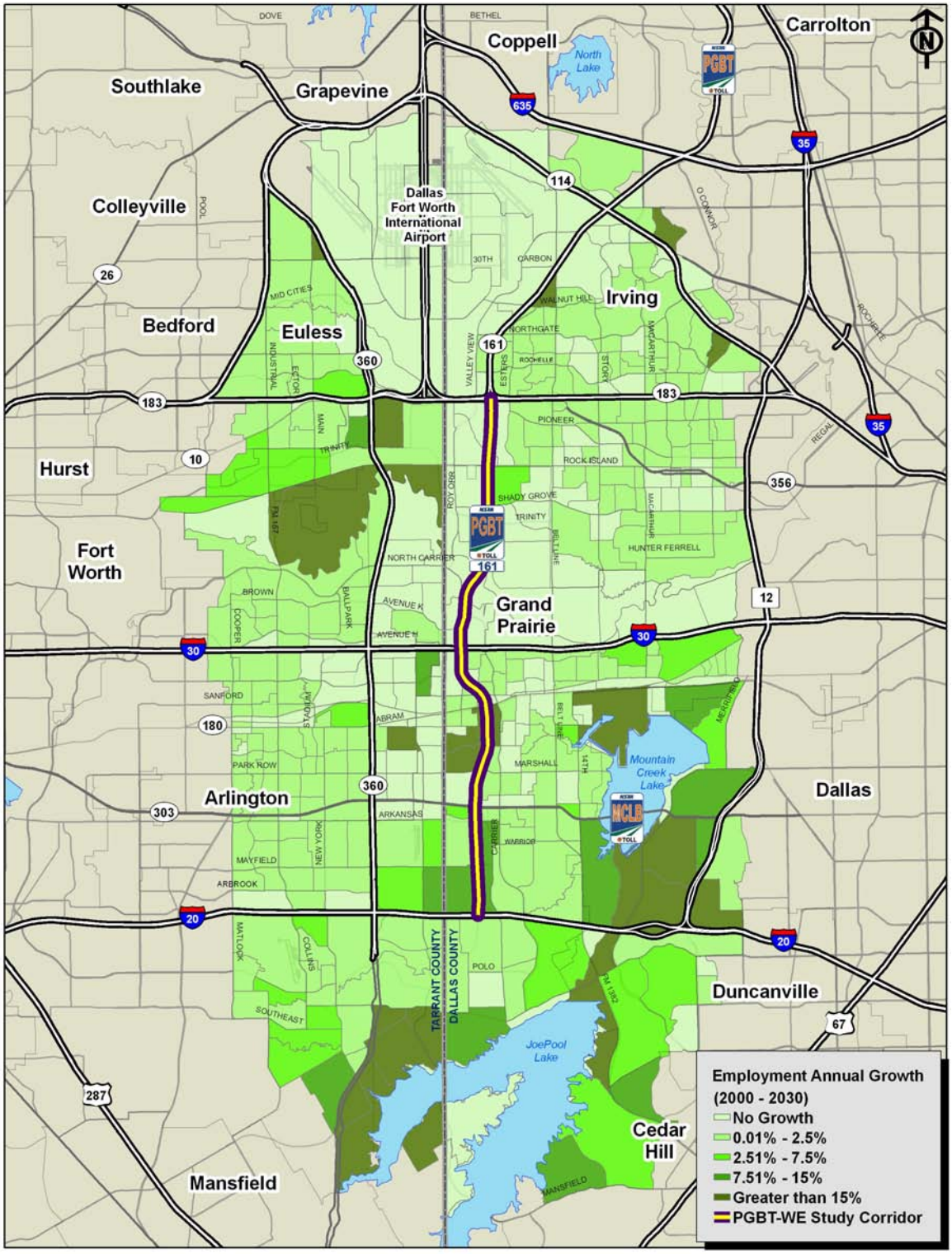

Figure 4-17. Employment Annual Growth (2000-2030)

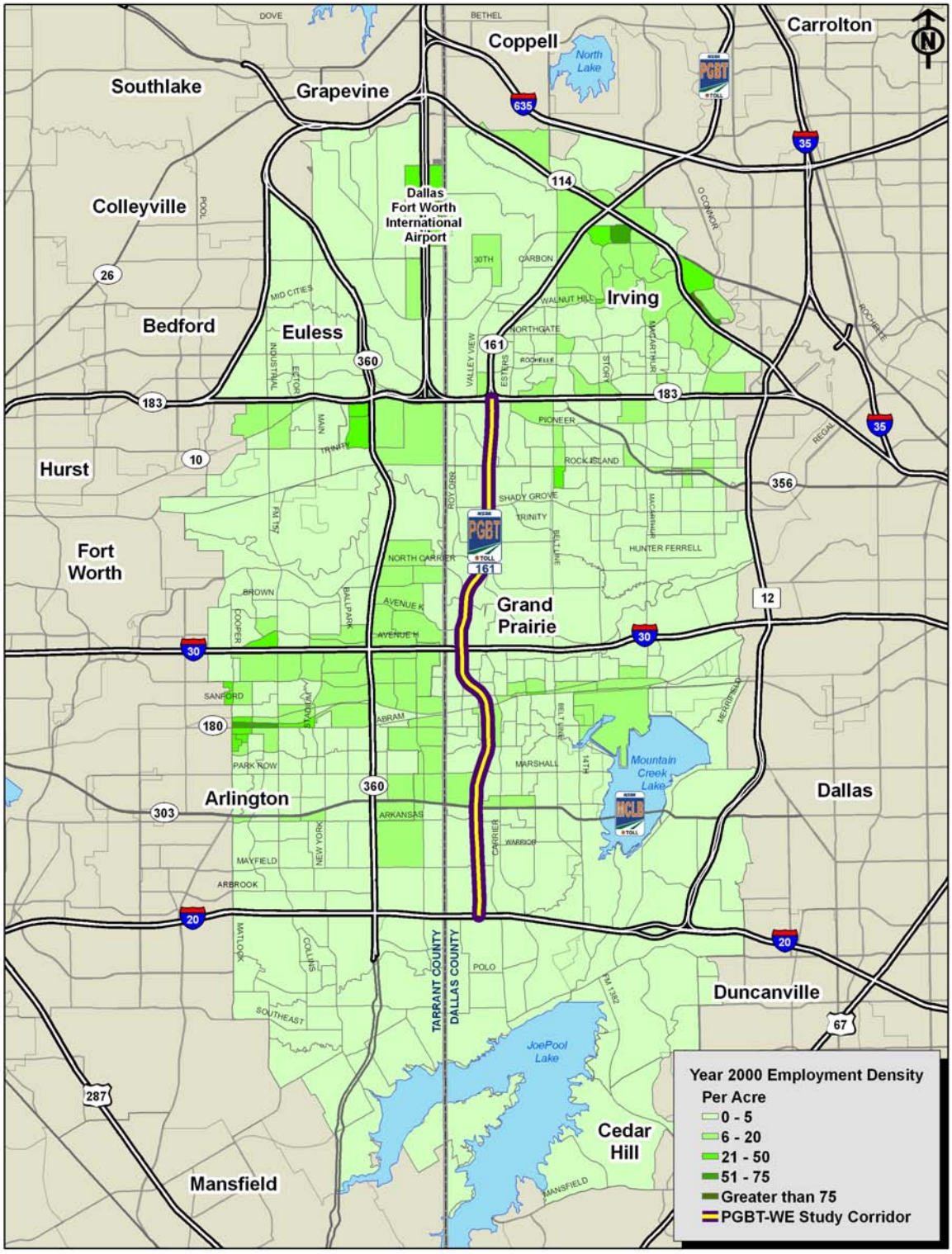

Figure 4-18. 2000 Employment Density (employment/acre)

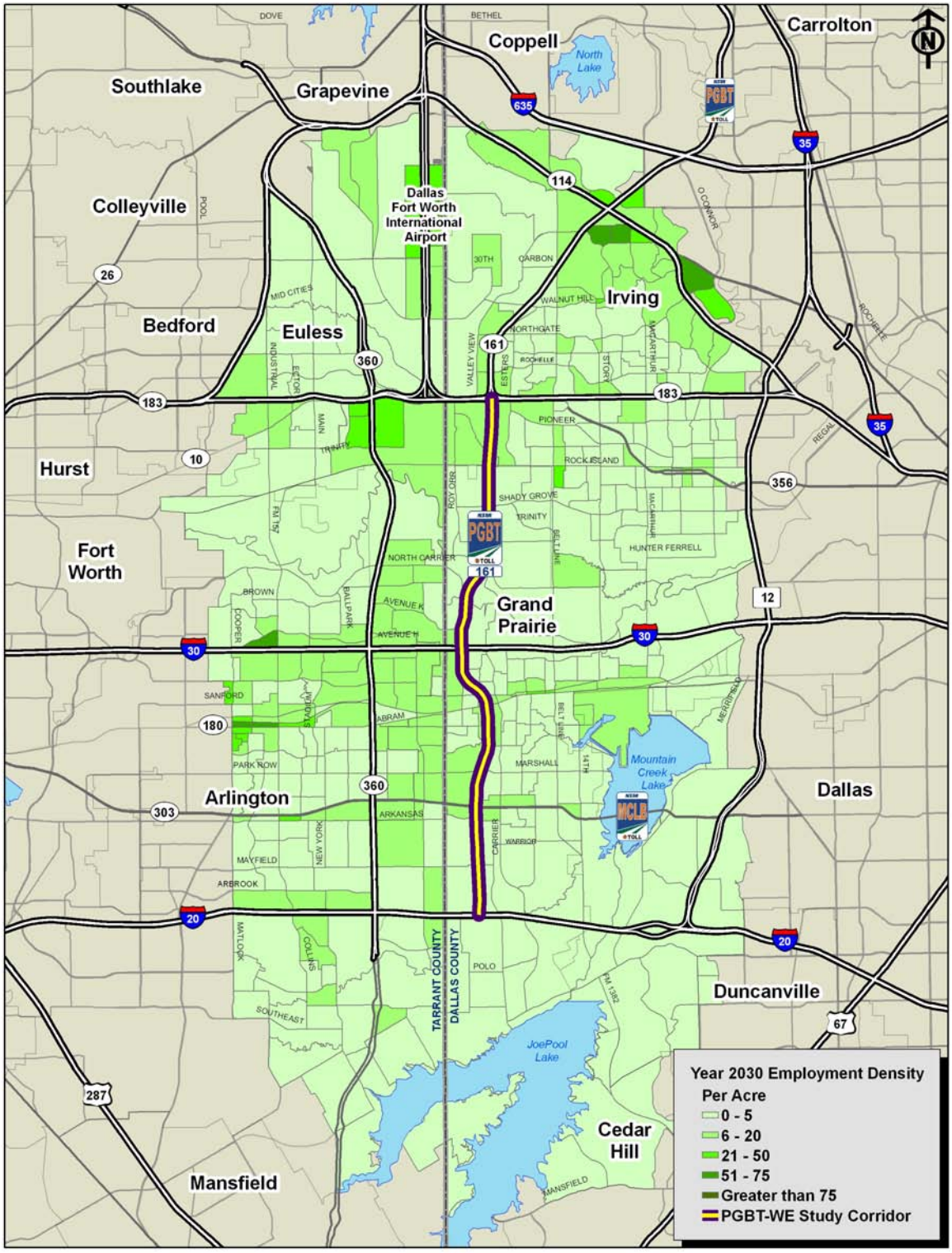

Figure 4-19. 2030 Employment Density (employment/acre)

SOCIOECONOMIC INDICATORS

CONSUMER PRICE INDEX

The consumer price index for all urban consumers (CPI-U) is the most widely used measure of inflation and serves as an economic indicator. The CPI-U determines the aggregate price level of a specific market basket of goods and services that are consumed by typical urban households. This is done by calculating the average going price of each item in the market basket. Food, clothing, housing, transportation (including tolls) and entertainment are all included in the basket. Income taxes and investment items such as stocks and bonds are not included. The Bureau of Labor Statistics of the U.S. Department of Labor calculates the CPI-U every month.

$$CPI - U \;\; for \;\; a \;\; given \;\; time \;\; frame = \frac{Cost \;\; of \;\; market \;\; basket \;\; in \;\; given \;\; time \;\; frame}{Cost \;\; of \;\; market \;\; basket \;\; in \;\; base \;\; time \;\; frame} \times 100$$

The consumer price index for the base time frame (1982-1984) is 100. Inflation is determined by finding the percentage change in the CPI-U from one year to the next. Table 4-10 gives the historical trends for CPI-U from 1967-2009 for Dallas-Fort Worth, the Southern Region (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington D.C., and West Virginia), and the United States. The CPI-U growth for all three regions is illustrated in Figure 4-20. The average annual growth rates for DFW CPI-U are depicted in Figure 4-21.

As seen in Table 4-10, inflation has recently experienced a decrease as a result of the economic recession, and fall in demand that has affected prices. From 2008 to 2009, the DFW CPI-U decreased by 0.6 percent compared to a much higher increase of 4.4 percent between 2007 and 2008. The CPI-U was 200.5 in 2009 and increased to 201.9 by September 2010.

Figure 4-20 illustrates the long-term trend of CPI-U from 1969 to 2009 for the Dallas-Fort Worth MSA, the Southern Region, and the United States. The average annual growth rates have historically been consistently similar for all three CPI-U indices. Figure 4-21 illustrates the annual growth of the inflation rate for the Dallas-Fort Worth metropolitan area which spiked in the late 1970's and early 1980's but has maintained moderate levels since then. As can be seen, 2009 was the first year that showed a negative change in the CPI-U.

Table 4-10
Consumer Price Index for All Urban Consumers
(1982-84 = 100.0)

Year	DFW	Growth	Southern Region	Growth	United States	Growth
1967	31.9	-----	32.6	-----	33.4	-----
1968	33.3	4.4%	34.0	4.3%	34.8	4.2%
1969	35.5	6.6%	36.0	5.9%	36.7	5.5%
1970	37.6	5.9%	37.9	5.3%	38.8	5.7%
1971	38.7	2.9%	39.5	4.2%	40.5	4.4%
1972	39.8	2.8%	40.7	3.0%	41.8	3.2%
1973	42.1	5.8%	43.3	6.4%	44.4	6.2%
1974	46.3	10.0%	48.6	12.2%	49.3	11.0%
1975	50.4	8.9%	53.3	9.7%	53.8	9.1%
1976	53.5	6.2%	56.3	5.6%	56.9	5.8%
1977	57.4	7.3%	60.0	6.6%	60.6	6.5%
1978	61.8	7.7%	65.0	8.3%	65.2	7.6%
1979	69.7	12.8%	72.4	11.4%	72.6	11.3%
1980	81.5	16.9%	81.9	13.1%	82.4	13.5%
1981	90.8	11.4%	90.7	10.7%	90.9	10.3%
1982	96.0	5.7%	96.5	6.4%	96.5	6.2%
1983	99.7	3.9%	99.7	3.3%	99.6	3.2%
1984	104.3	4.6%	103.8	4.1%	103.9	4.3%
1985	108.2	3.7%	107.1	3.2%	107.6	3.6%
1986	109.9	1.6%	108.9	1.7%	109.6	1.9%
1987	112.9	2.7%	112.4	3.2%	113.6	3.6%
1988	116.1	2.8%	116.4	3.6%	118.3	4.1%
1989	119.5	2.9%	121.5	4.4%	124.0	4.8%
1990	125.1	4.7%	127.9	5.3%	130.7	5.4%
1991	130.8	4.6%	132.9	3.9%	136.2	4.2%
1992	133.9	2.4%	136.5	2.7%	140.3	3.0%
1993	137.3	2.5%	140.8	3.2%	144.5	3.0%
1994	141.2	2.8%	144.7	2.8%	148.2	2.6%
1995	144.9	2.6%	149.0	3.0%	152.4	2.8%
1996	148.8	2.7%	153.6	3.1%	156.9	3.0%
1997	151.4	1.7%	156.9	2.1%	160.5	2.3%
1998	153.6	1.5%	158.9	1.3%	163.0	1.6%
1999	158.0	2.9%	162.0	2.0%	166.6	2.2%
2000	164.7	4.2%	167.2	3.2%	172.2	3.4%
2001	170.4	3.5%	171.1	2.3%	177.1	2.8%
2002	172.7	1.3%	173.3	1.3%	179.9	1.6%
2003	176.2	2.0%	177.3	2.3%	184.0	2.3%
2004	178.7	1.4%	181.8	2.5%	188.9	2.7%
2005	184.7	3.4%	188.3	3.6%	195.3	3.4%
2006	190.1	2.9%	194.7	3.4%	201.6	3.2%
2007	193.2	1.7%	200.4	2.9%	207.3	2.8%
2008	201.8	4.4%	208.7	4.2%	215.3	3.8%
2009	200.5	-0.6%	207.8	-0.4%	214.5	-0.4%
2009-Sept	201.8	-----	209.2	-----	216.0	-----
2010-Sept	201.9	0.0%	213.1	1.8%	218.4	1.1%
Compounded Annual Growth Rate	**(1969-2009)**	**4.4%**	**(1969-2009)**	**4.5%**	**(1969-2009)**	**4.5%**
	(1999-2009)	**2.4%**	**(1999-2009)**	**2.5%**	**(1999-2009)**	**2.6%**

Source: Bureau of Labor Statistics (BLS)

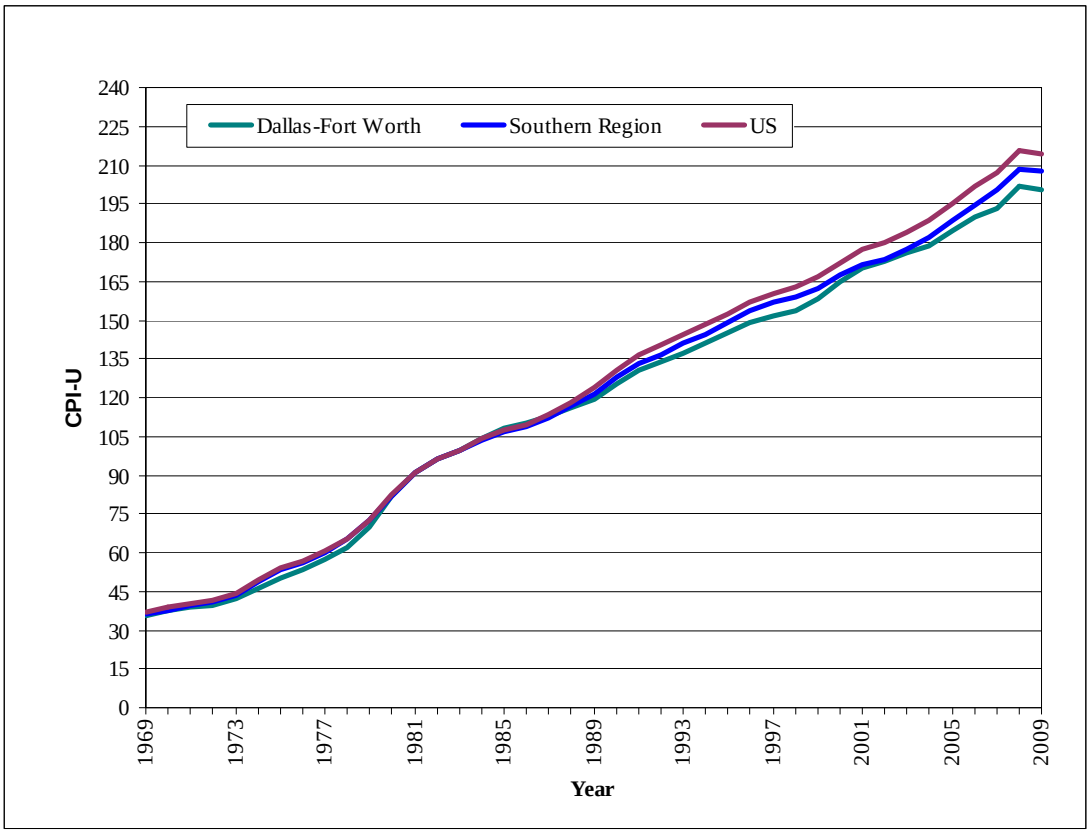

Figure 4-20. Consumer Price Index

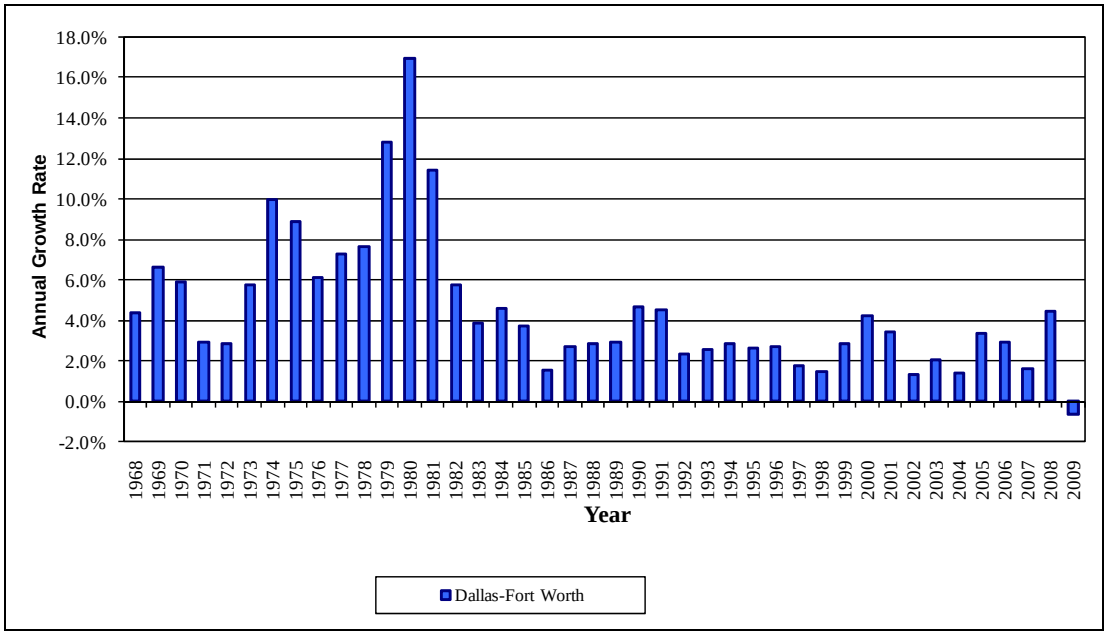

Figure 4-21. DFW CPI-U Annual Growth

TRENDS IN BUILDING PERMITS

The housing industry accounts for a large percentage of investment spending. Building permits are leading economic indicators as they help predict growth trends of the economy in future. Sustained declines in building permits slow the economy and can be indicative of a potential recession. Likewise, increases in this leading indicator can potentially indicate or trigger economic growth. Building permit activity provides insight into housing and overall economic activity in the upcoming months.

Building permits are also useful for updating previous demographics to recent and near-term future levels. New homes being built indicate population growth in the area. The trends in residential building permits in Dallas and Tarrant Counties, the state of Texas, and the United States are presented in Table 4-11. In all cases, single-family building permits and housing starts have generally continued to grow from year to year with some exceptions. Notably, single-family building permits dropped significantly in 2007, 2008 and 2009 due to the recent downturn in the housing market. The issuance of multi-family building permits has exhibited the greatest degree of variability from year to year. Due to the current economic downturn, the number of building permits issued in the last three years has dropped significantly in Dallas County, Tarrant County, the State of Texas and the United States. However, a slight upward trend has been seen nationally in 2010.

RESIDENTIAL HOUSING ACTIVITY

The number of homes that are sold and the amount of time that those homes are on the market indicate the strength of the economy. Sustained growth in the number of homes sold in combination with declining inventories indicates a strong housing market. Trends in residential housing activity, including the number of homes sold, the median price, and the average monthly inventories are presented for the Dallas Multiple Listing Service (MLS) area and the State of Texas in Table 4-12.

In 1990, homes stayed on the market for an average of 14.1 months in the Dallas MLS. By 2009, the average number of months of resale inventory had dropped to 6.3 months. Similar numbers were seen for the State of Texas with an average of 11.6 months inventory in 1990 dropping to 6.9 months in 2009.

The number of homes sold in the Dallas MLS increased at an average annual rate of 5.2 percent from 1990 to 2009 while the median price of homes sold increased at an average annual rate of 3.1 percent. In Texas, the number of homes sold increased at an average annual rate of 4.1 percent and the median price increased at an average annual rate of 4.1 percent from 1990 to 2009. As can be seen in the table, number of homes sold between 2009 and 2010 dropped by 6.7 percent and 3.2 percent in the Dallas MLS and in Texas, respectively.

Table 4-11
Historical Trends in Single and Multi-Family Building Permits

Year	Dallas County			Tarrant County			Texas			United States		
	Single Family	Multi Family	Total	Single Family	Multi Family	Total	Single Family	Multi Family	Total	Single Family	Multi Family	Total
1980	8,275	9,147	17,422	6,185	5,428	11,613	67,870	60,445	128,315	730,067	484,738	1,214,805
1981	6,354	9,814	16,168	4,602	4,717	9,319	66,161	70,310	136,471	581,913	425,682	1,007,595
1982	8,901	22,739	31,640	6,831	10,447	17,278	78,714	123,956	202,670	562,359	458,973	1,021,332
1983	14,744	45,341	60,085	11,957	25,732	37,689	103,252	175,965	279,217	922,751	708,867	1,631,618
1984	13,480	25,197	38,677	11,356	18,898	30,254	84,565	110,867	195,432	930,174	760,399	1,690,573
1985	13,477	23,541	37,018	10,846	13,986	24,832	67,964	73,229	141,193	931782	761,200	1,692,982
1986	11,962	15,529	27,491	8,825	3,854	12,679	59,143	37,620	96,763	1,088,281	693,290	1,781,571
1987	8,388	1,558	9,946	6,101	692	6,793	43,975	6,506	50,481	1,036,924	511,796	1,548,720
1988	5,282	988	6,270	4,801	58	4,859	35,908	4,598	40,506	1,005,872	463,338	1,469,210
1989	5,355	460	5,815	4,791	60	4,851	36,658	4,656	41,314	945,629	409,424	1,355,053
1990	5,640	3,199	8,839	4,571	323	4,894	38,233	8,962	47,195	809,474	320,128	1,129,602
1991	6,032	2,199	8,231	4,139	875	5,014	46,209	10,298	56,507	784,150	199,138	983,288
1992	7,410	1,371	8,781	5,065	20	5,085	59,543	9,514	69,057	949,197	187,573	1,136,770
1993	7,312	3,873	11,185	5,612	375	5,987	69,964	15,545	85,509	1,025,816	220,282	1,246,098
1994	6,391	6,276	12,667	6,012	1,359	7,371	70,452	32,237	102,689	1,080,591	305,148	1,385,739
1995	6,063	9,045	15,108	6,004	2,862	8,866	70,421	34,684	105,105	1,009,842	338,268	1,348,110
1996	6,630	6,535	13,165	6,886	2,600	9,486	83,132	35,720	118,852	1,083,063	359,830	1,442,893
1997	7,065	7,436	14,501	6,470	3,607	10,077	82,228	43,794	126,022	1,074,746	384,003	1,458,749
1998	8,367	8,933	17,300	8,521	4,937	13,458	99,912	56,918	156,830	1,198,695	428,211	1,626,906
1999	8,392	6,545	14,937	8,785	1,969	10,754	101,928	44,716	146,644	1,258,527	421,150	1,679,677
2000	8,856	4,889	13,745	9,505	2,180	11,685	108,782	32,620	141,402	1,212,076	400,234	1,612,310
2001	8,334	5,505	13,839	11,210	2,189	13,399	111,915	38,427	150,342	1,235,550	401,126	1,636,676
2002	8,006	7,324	15,330	12,189	3,729	15,918	122,913	42,409	165,322	1,350,718	420,904	1,771,622
2003	9,293	6,155	15,448	12,462	3,284	15,746	137,493	43,081	180,574	1,473,036	428,856	1,901,892
2004	10,046	3,251	13,297	14,705	2,583	17,288	151,384	39,796	191,180	1,616,600	456,737	2,073,337
2005	10,520	3,884	14,404	16,121	3,191	19,312	166,203	44,431	210,634	1,676,334	471,770	2,148,104
2006	9,941	5,615	15,556	13,834	3,641	17,475	163,032	53,894	216,926	1,381,853	460,695	1,842,548
2007	6,353	6,277	12,630	8,588	3,382	11,970	120,366	58,542	178,908	985,621	418,755	1,404,376
2008	3,690	10,606	14,296	5,753	3,501	9,254	81,107	49,897	131,004	577,487	329,805	907,292
2009	2,701	1,433	4,134	4,465	1,525	5,990	68,230	17,375	85,605	442,718	141,822	584,540
2009 Jan-Oct	2,272	1,072	3,344	3,815	1,420	5,235	54,183	14,645	68,828	328,570	108,742	437,312
2010 Jan-Oct	2,338	2,023	4,361	3,742	453	4,195	54,736	15,134	69,870	344,614	115,667	460,281
CAGR [1]	-3.8%	-6.2%	-4.8%	-1.1%	-4.3%	-2.3%	0.0%	-4.2%	-1.4%	-1.7%	-4.1%	-2.5%
CAGR [2]	-10.7%	-14.1%	-12.1%	-6.5%	-2.5%	-5.7%	-3.9%	-9.0%	-5.2%	-9.9%	-10.3%	-10.0%

[1] Compounded Annual Growth Rate (1980-2009)

[2] Compounded Annual Growth Rate (1998-2009)

Source: Real Estate Center at Texas A&M University

Table 4-12
Residential Housing Activity
Home Sale and Market Inventory Trends

Year	Dallas Multiple Listing Service Area			State of Texas		
	Number of Homes Sold	Average Months Inventory [1]	Median Price	Number of Homes Sold	Average Months Inventory [1]	Median Price
1990	17,528	14.1	$86,100	100,047	11.6	$68,100
1991	16,858	13.8	$86,000	99,619	10.5	$71,200
1992	19,742	11.3	$88,800	107,107	9.6	$75,200
1993	21,406	9.2	$91,800	116,604	8.5	$78,200
1994	22,999	7.8	$92,700	122,134	7.0	$80,000
1995	24,968	7.8	$94,900	121,823	7.6	$81,600
1996	30,128	6.3	$101,500	138,123	7.3	$86,400
1997	33,884	5.3	$107,400	146,395	6.8	$90,600
1998	40,051	4.1	$116,100	170,638	5.2	$96,200
1999	43,199	4.0	$121,400	184,056	4.6	$100,900
2000	45,446	3.8	$134,300	188,738	4.5	$112,100
2001	46,992	4.6	$141,500	196,401	5.1	$119,400
2002	47,199	5.5	$144,900	201,528	5.4	$124,500
2003	49,278	6.5	$148,500	215,834	6.1	$127,800
2004	54,514	6.3	$149,600	240,733	5.9	$129,700
2005	59,980	5.8	$154,800	266,842	5.4	$136,800
2006	64,226	5.6	$156,900	292,805	5.0	$142,900
2007	59,695	6.0	$159,700	275,584	5.6	$147,300
2008	50,848	6.2	$156,000	232,388	6.6	$146,900
2009	45,889	6.3	$155,100	213,330	6.9	$145,800
2009 (Jan-Oct)	38,713	6.4	$154,480	179,059	7.1	$145,060
2010 (Jan-Oct)	36,117	6.6	$158,060	173,259	7.4	$147,070
ACGR [2]	5.2%	***	3.1%	4.1%	***	4.1%
AGR [3]	-6.7%	***	2.3%	-3.2%	***	1.4%

[1] Average number of months homes are on the market.

[2] Annual Compounded Growth Rate (1990 - 2009)

[3] Annual Growth Rate (2009 - 2010)

Source: Real Estate Center at Texas A&M University

INDEPENDENT ECONOMIC REVIEW

The Dallas/Fort Worth combined metropolitan statistical area (CMSA) is a dynamic, rapidly growing economic region of Texas that is experiencing strong growth in both population and employment. Given the high growth in the DFW region, WSA observed that the forecasts from NCTCOG's previous Mobility Plans typically under-predict the actual growth in the demographics of the region.

Table 4-13 below shows the comparison of NCTCOG's population forecast from the NCTCOG's 2030 Demographic forecast and NCTCOG's annual population estimates. The 2007, 2008 and 2009 population forecasts as shown in Table 4-13 were obtained by interpolating 2005 and 2010 population forecasts made as part of NCTCOG's 2030 Demographic Forecasts in 2003. NCTCOG develops the population estimates each year based on the current housing inventories for each city in the NCTCOG region with a population of 1,000 or more.

Table 4-13

Population Comparison (Forecast and Estimates)

County	2007 Population Estimates**	2007 Forecast*	2008 Population Estimates**	2008 Forecast*	2009 Population Estimates**	2009 Forecast*	2010 Population Estimates**	2010 Forecast
Collin	724,900	691,236	748,050	710,605	766,900	729,974	786,250	749,343
Dallas	**2,417,650**	**2,429,090**	**2,451,800**	**2,448,390**	**2,471,000**	**2,467,689**	**2,492,850**	**2,486,989**
Denton	599,350	585,021	614,650	604,538	628,300	624,055	637,750	643,572
Ellis	144,500	156,115	147,850	164,282	152,750	172,450	155,600	180,617
Johnson	155,900	152,813	159,750	157,461	162,650	162,110	164,400	166,759
Kaufman	98,350	86,055	102,550	88,943	104,850	91,831	107,350	94,719
Parker	116,200	103,838	120,300	107,942	123,950	112,047	126,000	116,151
Rockwall	73,500	64,930	76,000	69,340	77,950	73,751	82,350	78,162
Tarrant	**1,745,050**	**1,670,889**	**1,780,150**	**1,695,954**	**1,807,750**	**1,721,018**	**1,829,400**	**1,746,082**
Wise	63,050	60,021	64,500	61,943	66,100	63,865	66,950	65,787
Nine County Urban Area* **	6,075,400	5,939,986	6,201,100	6,047,456	6,296,100	6,154,925	6,381,950	6,262,394

* Interpolated between 2005 and 2010 Population projections from NCTCOG 2030 Demographic Forecast done in the year 2003

** Population estimates published by NCTCOG every year

*** Nine county urban area includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant

Source: NCTCOG

The PGBT-WE corridor lies very close to the Dallas and Tarrant county line. As seen in Table 4-13, NCTCOG's 2007 population estimates were higher than 2007 population forecast for all the counties except for Dallas and Ellis counties. In years 2008 and 2009, population estimates were higher than forecast for all the counties except for Ellis County. As can be seen, population estimates for the nine county urban area for 2009 are higher than the 2010 forecasts. This shows that the region has been growing at a faster rate than NCTCOG forecasts made in 2003.

To assist with an independent assessment of the future employment and population along the project corridor, WSA engaged Insight Research Corporation (IRC), Research and Demographic Solutions (RDS) and Weinstein Clower and Associates (WCA) to perform independent economic reviews and development updates along the NTTAS and other corridors. The following were the studies performed by IRC, RDS and WCA along the various corridors:

- Independent economic reviews were performed along the DNT, PGBT, AATT, MCLB and PGBT EE corridors by IRC in April 2004. The results of these reviews are documented in the report, "Investment Grade Traffic and Revenue Study: DNT System", dated July 2004;
- An independent economic review was performed by IRC along the Lewisville Lake Toll Bridge (LLTB) corridor in November 2005. The findings of this report are presented in the draft report "Investment Grade Traffic and Toll Revenue Study: Lewisville Lake Toll Bridge", dated March 2006;
- IRC performed an independent economic review update along the Sam Rayburn Tollway (SRT) corridor in August 2007. This was done to update the independent economic review performed by IRC along the SRT in July 2006. A larger study area along the SRT corridor was considered by IRC in the 2007 study;
- IRC performed an independent economic review along the PGBT-WE corridor in March 2008. The findings of the economic review are included in Appendix A of this report;
- RDS and WCA performed an independent economic review along the Trinity Parkway corridor in December 2008. This in included in the draft report "Trinity Parkway Independent Economic Review".
- IRC performed an independent economic review along the Southwest Parkway/Chisholm Trail Parkway (SWP/CTP) corridor in April 2009.
- WSA hired WCA in early 2009 to review the revised demographic forecasts that were developed along the DNT, PGBT, AATT, MCLB, PGBT-EE, LLTB, SRT, PGBT-WE, SWP/CTP and Trinity Parkway corridors as described above to estimate the impacts of the recent economic downturn on the demographic growth along the NTTAS corridors. WCA provided an assessment of recent economic trends in the North Central Texas region as well as an updated assessment of future growth in key demographic and socio-economic characteristics. WCA also assessed the impact of national economic trends on the North Texas economy and the regional economy's resilience to financial shocks, key national policies, such as immigration, and prospects for future growth in an increasingly global marketplace. WCA's demographics review report is included as Appendix B at the end of this report.

The qualifier "official" refers to the NCTCOG demographics datasets, which were prepared by NCTCOG in 2003. The "probable" population and employment forecasts made to update the NCTCOG official demographics datasets along the PGBT-WE corridor, SWP/CTP corridor, Trinity Parkway and the existing NTTA System corridors are referred to as the "revised" demographic datasets. The revised demographics datasets reflect changes to the socioeconomic trends that have occurred or have been announced since the development of the official demographics datasets in 2003.

Based on the recommendations of WCA's report included as an Appendix B of this report, WSA applied a "lag" to the revised demographics along the SRT, PGBT-WE, SWP/CTP and Trinity Parkway corridors as shown in Figure 4-22. The lag was applied to 2009, 2019, 2025 and 2030 revised demographics. A two year lag was applied to revised demographics along the PGBT-WE corridor. The traffic and revenue estimates for the PGBT-WE corridor included in this report were developed using the "revised-lag" demographics datasets including demographic modifications for zones in the vicinity of SWP/CTP, NTTA System (DNT, PGBT, PGBT EE, AATT, MCLB, LLTB and SRT), the PGBT-WE corridor and Trinity Parkway.

Tables 4-14 and 4-15 show a comparison of the official and revised demographics (population and total employment) projections for Dallas County, Tarrant County, the PGBT-WE corridor and the NCTCOG Region for the years 2009, 2019, 2025 and 2030. The revised population and employment projections are higher than NCTCOG official demographics for all years with one exception. The revised employment in the PGBT-WE corridor in 2009 is slightly lower than the official projection. However, the annual compounded growth rates from 2009 to 2019 and 2009 to 2030 are higher than the official demographics for both population and employment.

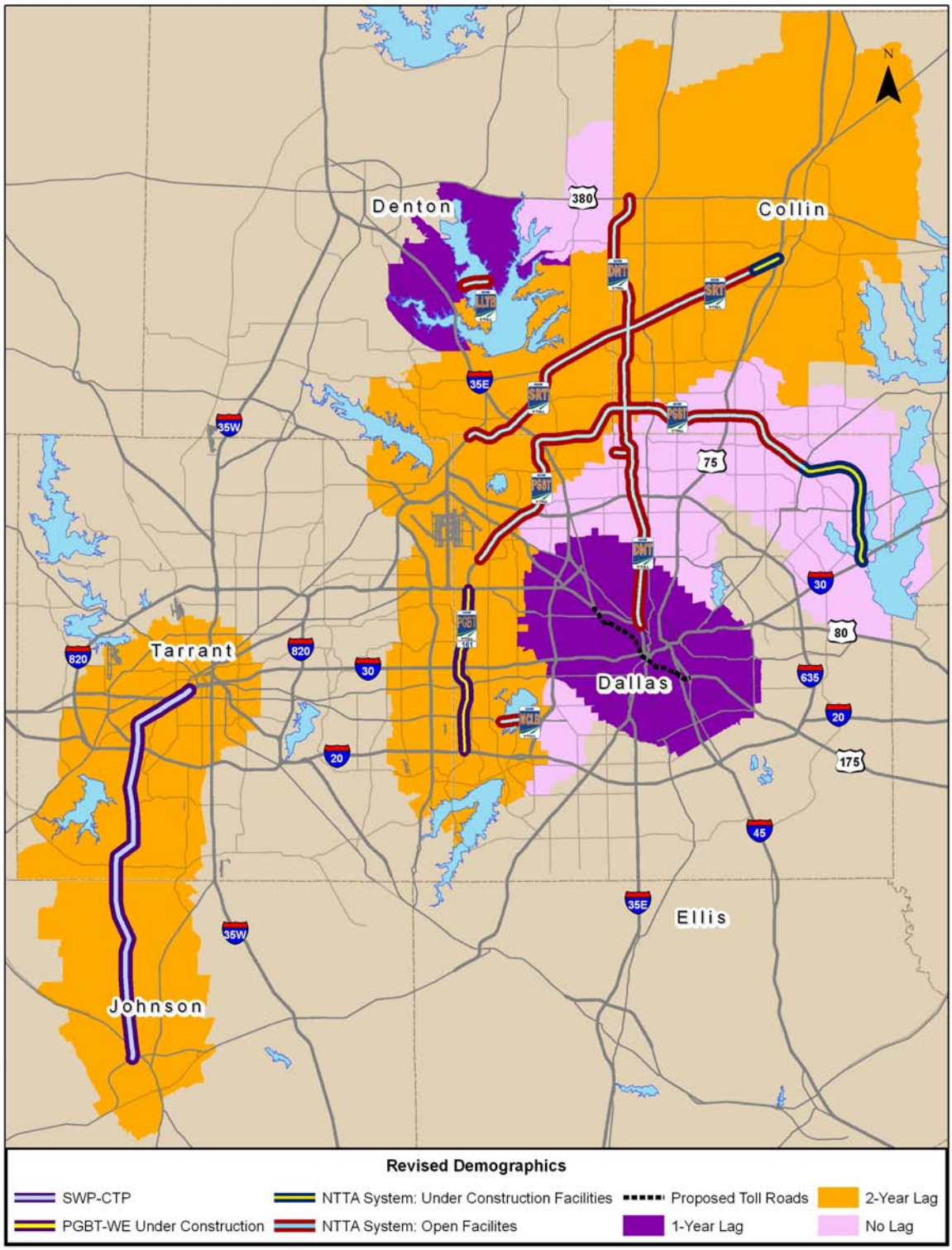

Figure 4-22. Lag Applied to Revised Demographics

Table 4-14
Comparison of Official and Revised Population Projections

Year	Dallas County		Tarrant County		PGBT-WE Corridor		DFW Region	
	Official	Revised*	Official	Revised*	Official	Revised*	Official	Revised*
2009	2,484,677	2,522,025	1,743,019	1,749,962	635,394	636,410	6,062,803	6,173,644
2019	2,631,983	2,788,618	2,044,012	2,119,896	669,512	715,706	7,226,427	7,706,670
2025	2,758,816	2,954,254	2,203,585	2,294,937	711,737	757,293	7,952,070	8,493,767
2030	2,829,580	3,074,229	2,310,439	2,414,870	723,610	778,283	8,503,146	9,106,757
ACGR [1]	0.6%	1.0%	1.6%	1.9%	0.5%	1.2%	1.8%	2.2%
ACGR [2]	0.6%	0.9%	1.4%	1.5%	0.6%	1.0%	1.6%	1.9%

[1] Annual Compounded Growth Rate (2009-2019)
[2] Annual Compounded Growth Rate (2009-2030)
* Revised Demographics with Lag
Sources: NCTCOG, Independent Economic Reviews along various regional toll road corridors

Table 4-15
Comparison of Official and Revised Employment Projections

Year	Dallas County		Tarrant County		PGBT-WE Corridor		DFW Region	
	Official	Revised*	Official	Revised*	Official	Revised*	Official	Revised*
2009	2,052,703	1,947,573	1,072,516	1,066,625	503,941	490,723	3,793,700	3,750,157
2019	2,337,710	2,280,602	1,257,044	1,317,685	582,807	611,491	4,528,161	4,771,525
2025	2,478,453	2,444,614	1,345,444	1,417,137	607,510	647,053	4,942,963	5,232,042
2030	2,540,076	2,536,394	1,393,459	1,472,656	610,077	660,412	5,256,667	5,584,070
ACGR [1]	1.3%	1.6%	1.6%	2.1%	1.5%	2.2%	1.8%	2.4%
ACGR [2]	1.0%	1.3%	1.3%	1.5%	0.9%	1.4%	1.6%	1.9%

[1] Annual Compounded Growth Rate (2009-2019)
[2] Annual Compounded Growth Rate (2009-2030)
* Revised Demographics with Lag
Sources: NCTCOG, Independent Economic Reviews along various regional toll road corridors

Figures 4-23 and 4-24 illustrate the zones in and around the PGBT-WE corridor whose socio-economic characteristics were modified based on the independent economic reviews and WCA recommendations as described earlier. Figure 4-23 shows the difference between the revised-lag and official population for years 2019 and 2030. Figure 4-24 illustrates the difference between the revised-lag and official employment for years 2019 and 2030.

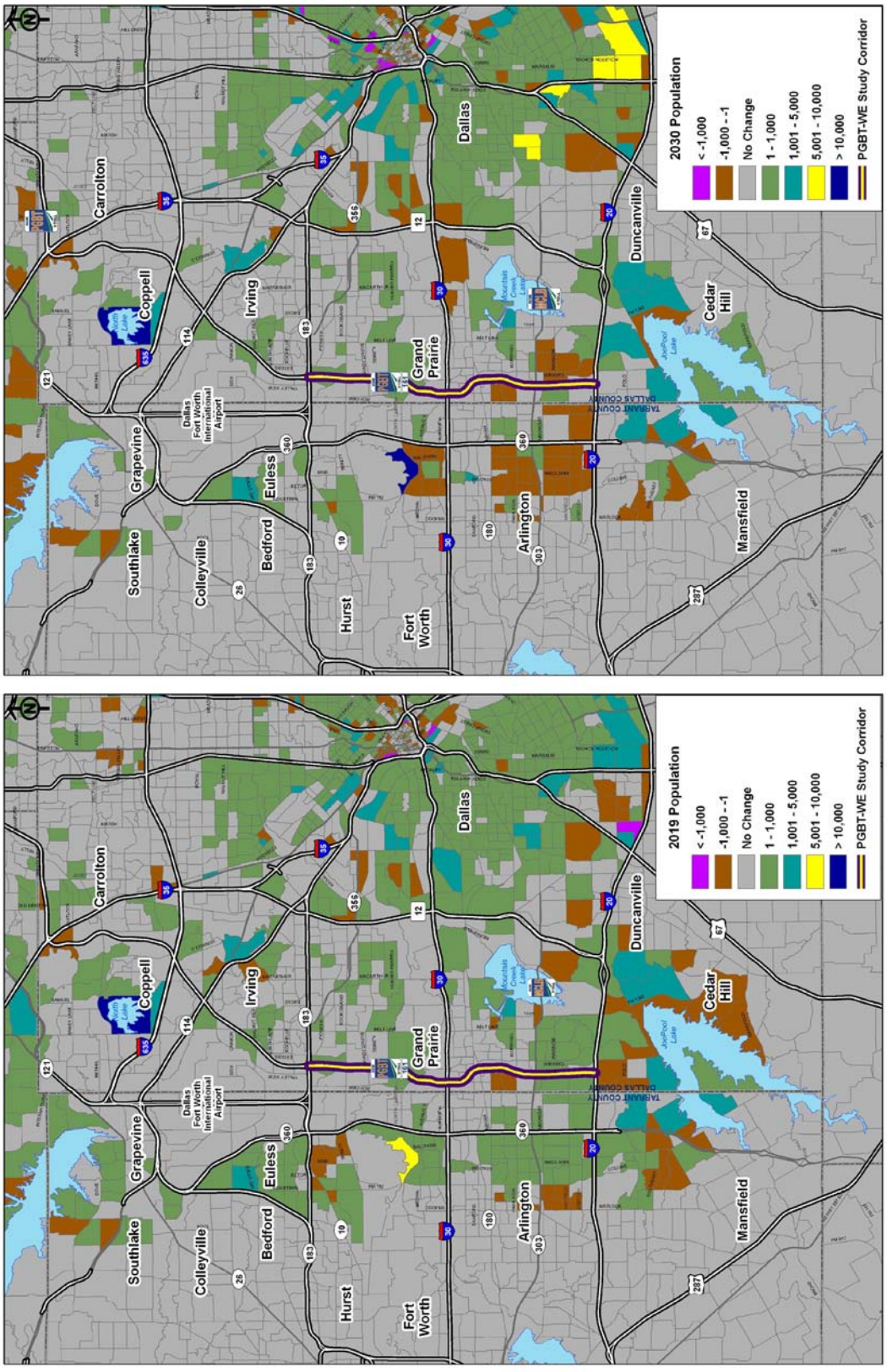

Figure 4-23. Difference between Revised and Official Population (2019 and 2030 Revised Population is with Lag)

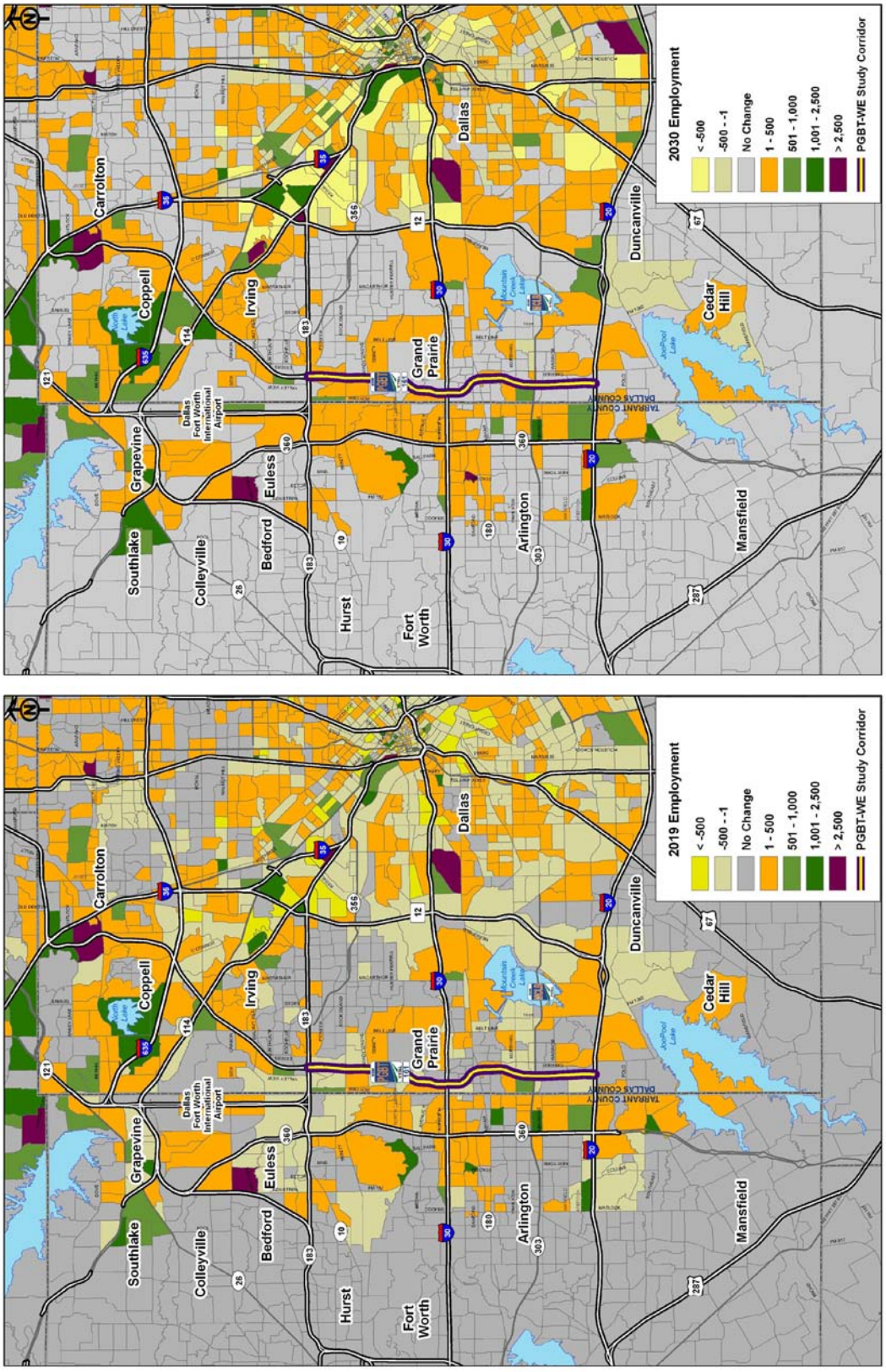

Figure 4-24. Difference between Revised and Official Employment (2019 and 2030 Revised Employment is with Lag)

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CHAPTER 5

TRAVEL DEMAND MODEL DEVELOPMENT

This chapter describes the travel demand model calibration and validation process, including database modifications and updates to the TransCAD network in the PGBT-WE corridor. Figure 5-1 illustrates the travel demand methodology used by WSA for developing the traffic and toll revenue forecasts for the PGBT-WE, which is consistent with previous analyses done by WSA in the Dallas/Fort Worth area.

NCTCOG INFORMATION

For this study, the latest travel demand model information was obtained from the North Central Texas Council of Governments (NCTCOG). This included the latest approved databases from the Mobility 2030 Plan: 2009 Update. The data included:

- NCTCOG 4,874-zone TransCAD network structure;
- Highway network characteristics for the years 2009, 2019, 2025 and 2030;
- Socioeconomic information at the 4,874-zone Transportation Analysis Process (TAP) level for the years 2009, 2019, 2025 and 2030; and
- Trip tables for single occupant vehicles, high-occupancy vehicles, and trucks for years 2009, 2019, 2025 and 2030. These trip tables were provided for the AM peak (6:30 to 9:00 AM), PM peak (3:00 to 6:30 PM), and off-peak (9:00 AM to 3:00 PM and 6:30 PM to 6:30 AM).

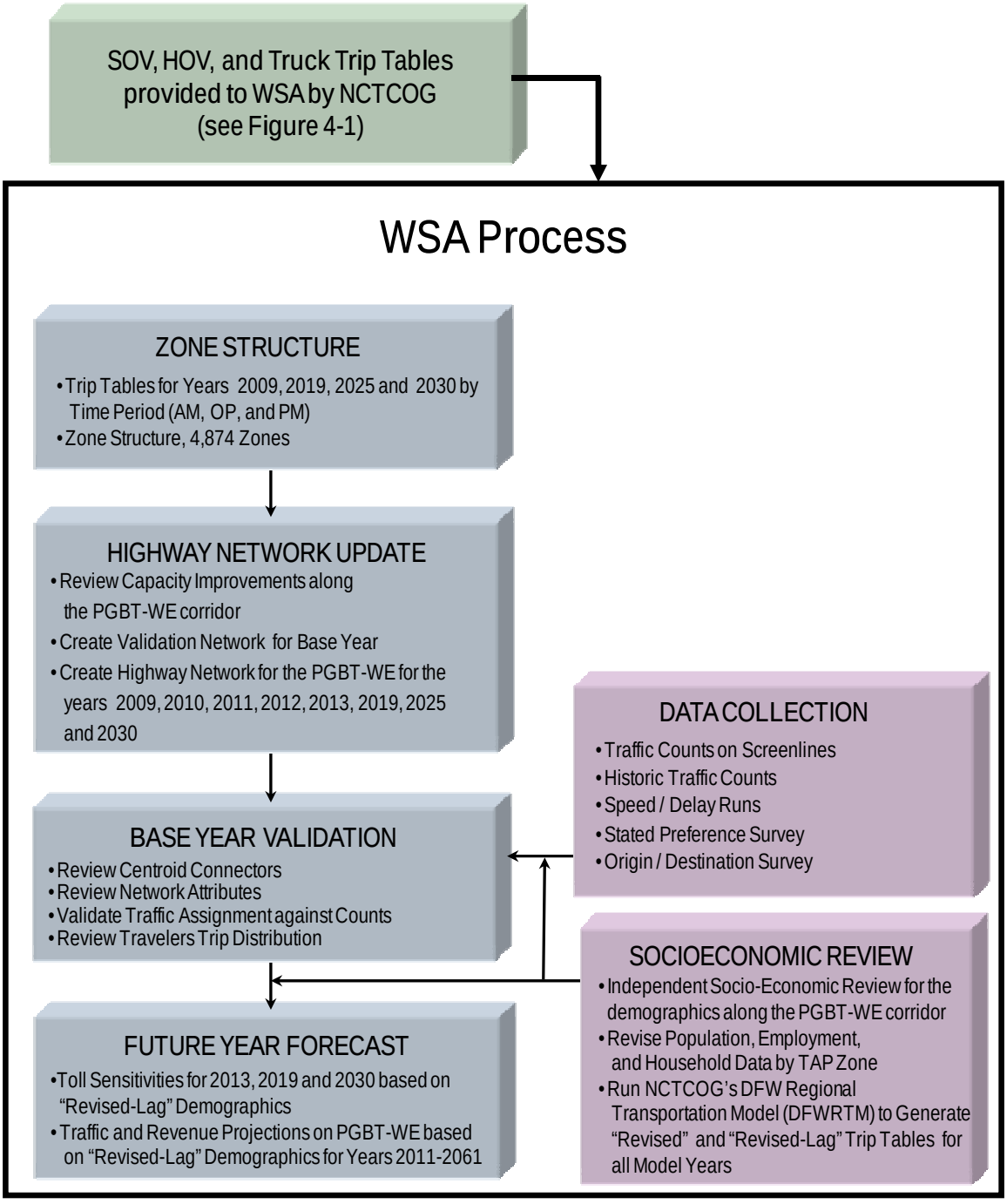


Figure 5-1. PGBT-WE Travel Demand Process

HIGHWAY NETWORK UPDATE

The Dallas/Fort Worth highway network obtained from NCTCOG reflects the latest planned transportation improvements included in the Mobility 2030 Plan: 2009 Update and was provided to WSA in TransCAD format. The network incorporates all existing NTTA and TxDOT toll facilities and all planned facilities in the Dallas/Fort Worth Metropolitan Area (DFWMA). Existing toll facilities were coded to reflect current ramp and mainlane toll charges.

The 2009, 2019, 2025 and 2030 networks provided by NCTCOG were reviewed for consistency and calibrated based on the speed and delay characteristics and traffic counts collected within the corridor as described in Chapter 2. The calibrated networks were then used to develop the forecasted PGBT-WE traffic and toll revenue streams.

The speed and delay runs performed were used to adjust the free flow speeds along facilities in the PGBT-WE corridor. These adjustments accounted for geometric and operational characteristics of the major facilities that are typically not captured or reflected as part of a regional NCTCOG calibration process of speed/delay attributes. Some typical factors that can influence traffic flow in the corridor include intersection design constraints, traffic control device impedances, narrow median design, and multiple entry point characteristics.

MODEL VALIDATION

The model validation process involved comparing the traffic assignment output volumes using trip tables from the "revised-lag" demographics against traffic counts obtained along the PGBT-WE corridor. Output travel times and speeds from the travel demand model were also compared to observed travel time data collected along the corridor. This process was performed for each of the time periods (AM Peak, PM Peak, and Off-Peak).

WSA used traffic counts collected in early 2010 along the PGBT-WE corridor to validate the model outputs and adjust the network characteristics where needed. Each of the four screenlines where traffic counts were collected was analyzed to ensure that the base model outputs reasonably reflected current traffic characteristics within the PGBT-WE corridor. The screenlines, as seen in Figure 5-2, were used to validate the model. Each of these screenlines was used to analyze traffic in both the northbound and southbound directions.

WSA performed a model validation in 2009 as part of a previous PGBT-WE study. The validation completed during that study showed that the 2006 base year model had tendencies towards overestimation of traffic north of IH 30.

In order to correct the overestimation between SH 183 and IH 30 in the corridor, the 2009 "revised-lag" trip table was adjusted to reduce the demand in the northern half of the corridor while preserving trip patterns in the greater Dallas/Fort Worth area. This was accomplished by factoring the model trips which pass through the traffic count locations (SH 360, PGBT-WE, Belt Line Road and Loop 12) and reducing them to match existing traffic counts. This model refinement introduces a measure of "real world" traffic volumes into the model within the project study corridor while preserving the integrity of trip data throughout the remainder of the modeling area.

Table 5-1 shows a comparison of the model output volumes after adjustments to account for existing traffic counts on the PGBT-WE and the daily traffic count volumes for each of the four screenlines. The differences between model output daily volumes and the traffic count volumes were within acceptable ranges.

Travel demand modeling practitioners in the United States use two primary references to check the reasonableness of the validation process: "NCHRP 255: Highway Traffic Data For Urbanized Area Project Planning and Design," which was published by the Transportation Research Board in 1982, and "Model Validation and Reasonableness Checking Manual," which was prepared for the Federal Highway Administration by Barton-Aschman Associates, Inc. and Cambridge Systematics, Inc. in 1997. As illustrated in Figure 5-3, the percentage differences between the model volumes and traffic counts were generally within acceptable ranges as defined by those two reports.

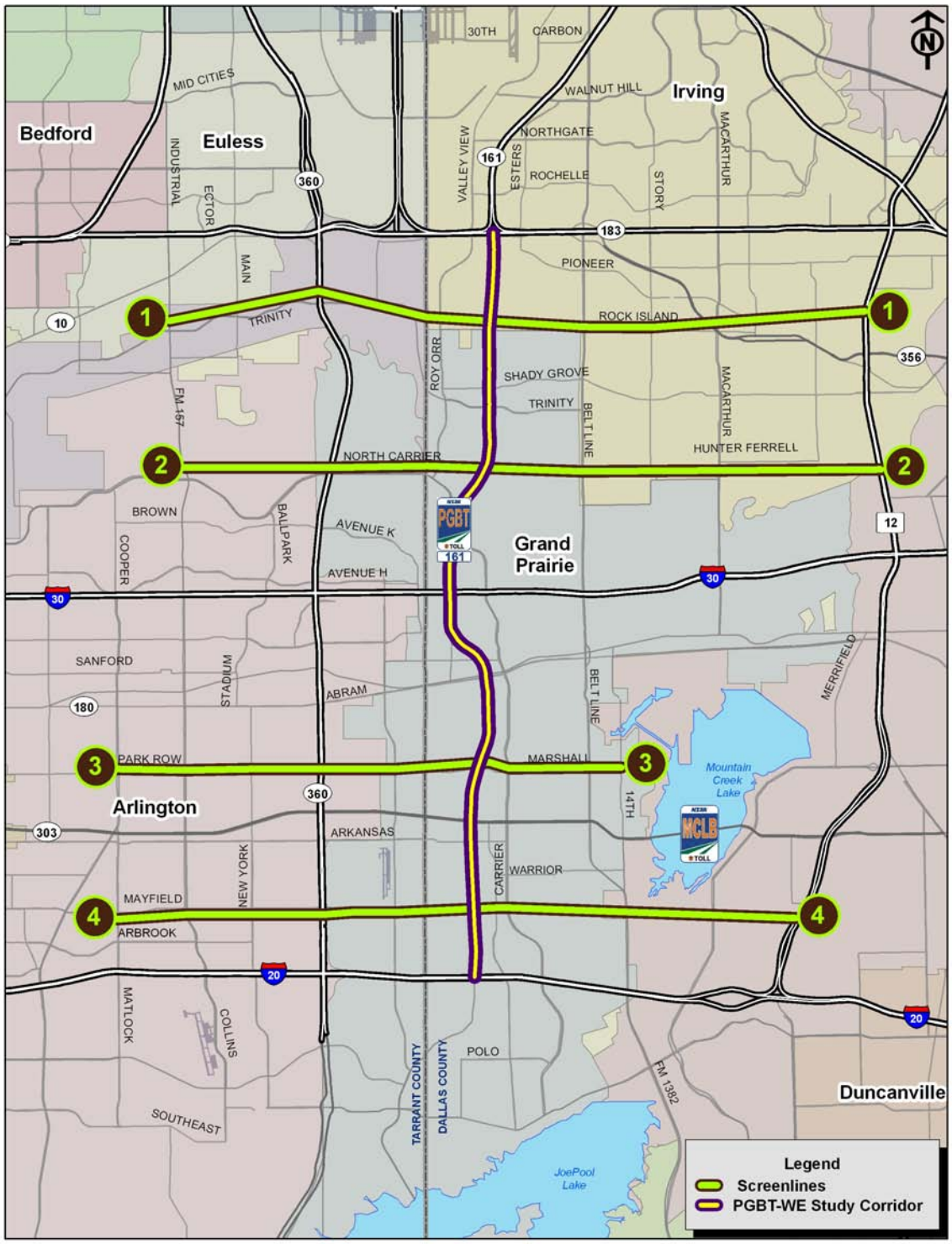
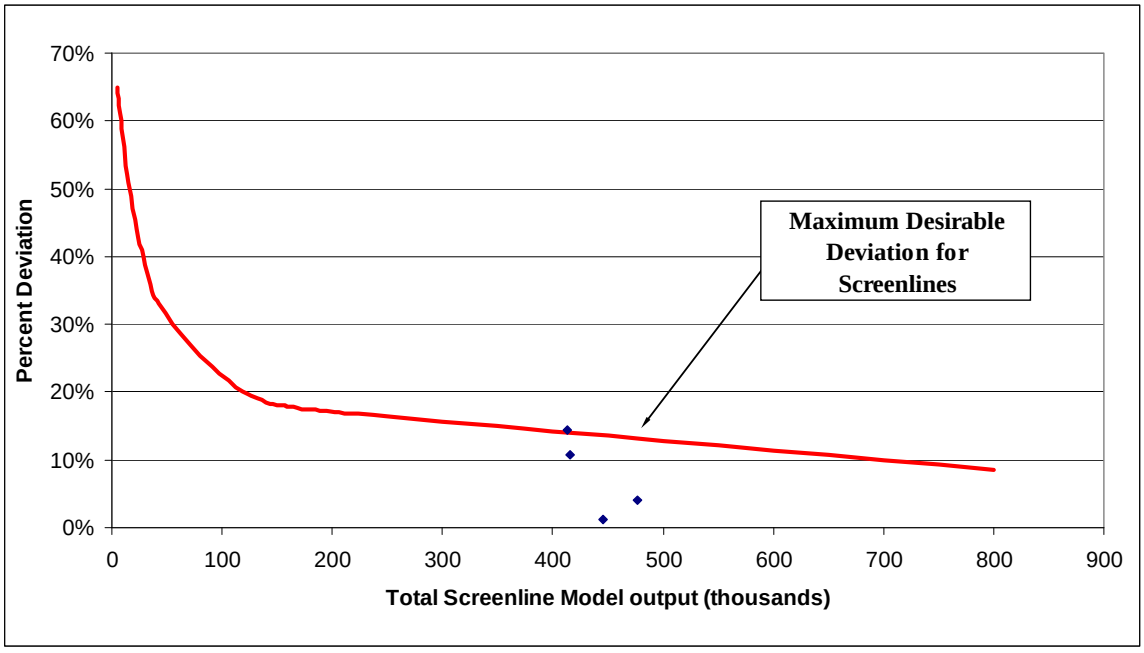


Figure 5-2. PGBT-WE Screenlines

Table 5-1 Comparison of Traffic Counts and Model Output: Daily Total			
Screenline	**Screenline Total**		
	Traffic Counts	**Model Output**	**Difference**
1. North of Trinity Blvd.	476,302	495,698	4%
2. North of Green Oaks Blvd	412,923	472,525	14%
3. North of Park Row Dr.	415,085	370,267	-11%
4. South of Mayfield Rd.	445,904	440,587	-1%



Note: The source of the maximum desirable deviation curve is: NCHRP 255 p.41 (cited in FHWA, Calibration and Adjustment of System Planning Models, Dec. 1990).

Figure 5-3. PGBT-WE Screenline Traffic Validation

MODELING METHODOLOGY

Professional practices and procedures were used in the development of the traffic and revenue forecasts for the PGBT-WE. The WSA market share diversion routines designed specifically to emulate motorists' willingness to pay at different toll levels and congestion

conditions were used to test the toll sensitivities within the corridor for the future years 2013, 2019 and 2030.

The toll diversion traffic assignments were run using an equilibrium diversion technique to evaluate the toll feasibility of the corridor. In this type of process, the travel model builds two paths between each pair of zones: one including the toll project, and the other path excluding the project. The travel cost associated with using both travel paths is computed, and the amount of trips using the toll facility is then estimated based on travel time and cost savings between the two paths. This technique simulates the driver's decision to use a toll or toll-free route, which depends to a large extent on the marginal differences in time and cost between the routes.

Time Cost and Vehicle Operating Costs

In addition to tolls, two other end-user costs are considered when calculating the total cost of a trip on the PGBT-WE: time cost and vehicle operating costs. The motorists' time cost is calculated using value of time estimates that are integrated into the modeling process. The value of time parameter provides a measure to convert travel time into an equivalent monetary cost for inclusion in the toll diversion process. Vehicle operating costs include a multitude of additional costs to travelers such as wear and tear, maintenance, tires, oil, fuel and other variable costs.

Value of Time

For this study, values of time were assumed to inflate at an average annual rate of 2.75 percent, and different values of time were used in the peak and off-peak periods. The average peak period values of time for different counties are listed in Table 5-2. The values of time for all zones within five miles of the PGBT-WE corridor were modified using the results of the stated preference survey described in Chapter 2. In addition, the values of time for Tarrant, Johnson, Collin, and Denton Counties were based on stated preference surveys performed for the Southwest Parkway/Chisholm Trail Parkway and Sam Rayburn Tollway corridors. To account for the effects of the economic recession and ongoing recovery, a two-year lag on the assumed value of time was applied through 2019.

Vehicle Operating Costs

A vehicle operating cost of $0.16 per mile for passenger vehicles in 2010 was assumed and inflated at the rate of 2.75 percent per year. This includes motor fuel (assumed to be approximately $2.50 per gallon) and limited other perceived out-of-pocket costs that are well below the full cost of operation which includes factors such as depreciation and insurance. These are generally not perceived by drivers as variable costs that affect their route decision choices.

Table 5-2
Nominal Value of Time ($/Hour)

County	2009		2019		2030	
	Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
Collin	$12.79	$12.79	$16.33	$16.33	$23.23	$23.23
Denton	$12.35	$12.35	$15.77	$15.77	$22.43	$22.43
Parker	$10.74	$9.64	$13.71	$12.31	$19.51	$17.51
Tarrant	$12.23	$9.21	$15.61	$11.76	$22.21	$16.73
Dallas	$10.71	$9.63	$13.67	$12.29	$19.45	$17.49
Rockwall	$14.22	$12.82	$18.15	$16.37	$25.83	$23.29
Kaufman	$10.56	$9.40	$13.48	$12.00	$19.18	$17.07
Ellis	$11.20	$10.04	$14.30	$12.82	$20.34	$18.24
Johnson	$11.73	$8.19	$14.97	$10.45	$21.31	$14.88
PGBT-WE Corridor	**$10.63**	**$8.48**	**$13.57**	**$10.83**	**$19.31**	**$15.40**

GENERAL ASSUMPTIONS

The forecasted volumes and revenues obtained from this study are based on the following general assumptions, which WSA believes are reasonable for the purposes of this study (project specific assumptions can be found in Chapter 6):

1. The PGBT-WE phasing and capacity expansions are as described in Chapter 6.
2. Expansion of PGBT from three lanes to four lanes per direction between IH 35E and US 75 by 2019.
3. Expansion of PGBT from three lanes to four lanes per direction between US 75 and SH 78 by 2019.
4. The DFW connector (Funnel) will open to traffic by 2019.
5. The future toll collection concept and rates (including ZipCash differentials) for the PGBT-WE will be adopted as shown in Chapter 6 of this report.
6. The improvements along major highway facilities in the vicinity of the PGBT-WE corridor will be as described in Chapter 3.
7. All other improvements to the present highway system near the PGBT-WE corridor are limited to those currently included in the Mobility 2030 Plan: 2009 Update. No additional competing limited-access highways will be constructed in the PGBT-WE corridor at any time during the forecast period.
8. Economic growth in the PGBT-WE area will follow the assumptions described in Chapter 4 of this report.

9. In accordance with the existing practice of the NTTA, the PGBT-WE will be well-maintained, efficiently operated and effectively signed to encourage maximum usage.
10. The PGBT-WE will utilize a fully electronic toll collection system including both TollTag and video tolling.
11. Toll rates on the NTTA System are consistent with those described in the NTTA System Investment Grade Traffic and Revenue Report, dated July 2009.
12. Toll rates on regional toll roads are consistent with RTC toll policy.
13. Growth in vehicle operating costs (which include fuel, maintenance, and tires) will not significantly deviate from inflation.
14. No local, regional, or national emergency will arise which would abnormally restrict the use of motor vehicles.

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CHAPTER 6

PGBT-WE ESTIMATED TRANSACTIONS AND TOLL REVENUE

This chapter presents the traffic and toll revenue estimates for the PGBT-WE located in Irving and Grand Prairie, Texas, until 2061. The fifty-one year project forecast was based on the modeling methodologies defined in Chapter 5 and project configuration described in this chapter.

In addition, this chapter includes an outline of toll sensitivity analyses that were performed to estimate the optimal toll rates and other sensitivity analyses related to impacts of various input parameters. The chapter also provides estimated average weekday traffic for the 2019 and 2030 model years and the resulting estimate of transactions and toll revenue through 2061.

PROJECT DESCRIPTION

Figure 6-1 shows the location of the PGBT-WE project in a regional context. The PGBT-WE tollway runs in a north-south direction between IH 20 in Grand Prairie and SH 183 in Irving. At its northern terminus at SH 183, it connects to the existing SH 161 highway, which is an extension of the President George Bush Turnpike (PGBT). When completed, the PGBT/SH 161/PGBT-WE corridor will provide a circumferential facility allowing continuous movement from IH 20 in Grand Prairie to IH 30 in Garland, a total distance of about 55 miles. The PGBT-WE is unique in that it will be located just two and a half miles east of SH 360, an existing north-south freeway. However, due to the close proximity, the PGBT-WE provides an alternative to the currently congested toll-free SH 360 and faces competition from the facility during the less congested off-peak hours.

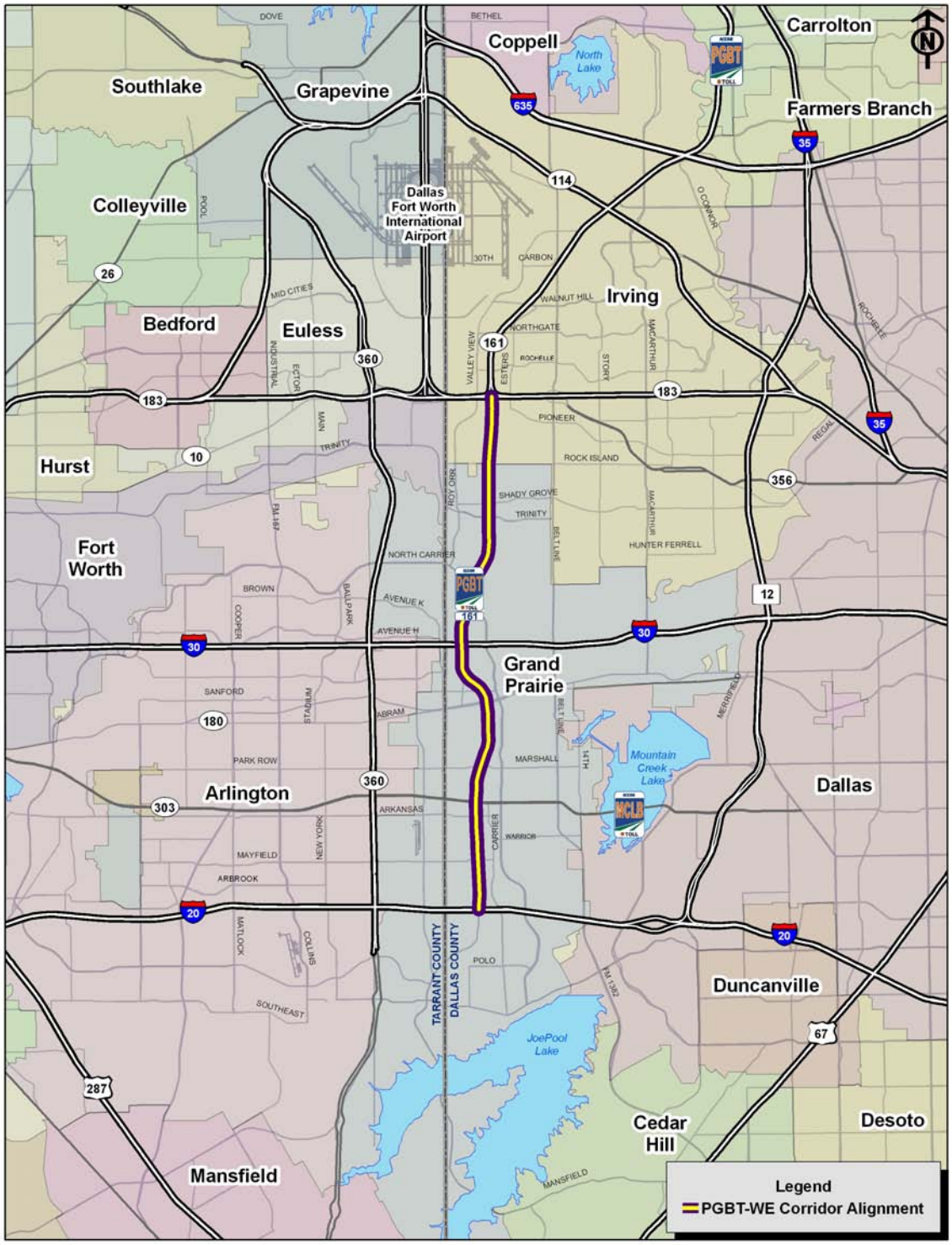


Figure 6-1. PGBT-WE Location

PROJECT PHASING

The PGBT-WE is scheduled to be opened in phases, with Phases 2 and 3 currently open to traffic. Figure 6-2 displays the PGBT-WE project phasing and general configuration. Phase 1, which is shown in green in Figure 6-2, consists of the frontage roads from IH 20 to Carrier Parkway, except between Jefferson Boulevard and Main Street. The Union Pacific railroad line runs parallel to and between these two streets. The PGBT-WE frontage road at-grade railroad crossings are planned as part of Phase 4. Phase 2 consists of the northbound mainlanes from Egyptian Way to SH 183. During this phase, the northbound mainlanes were striped and divided to accommodate both directions of traffic flow. Phase 3, which consists of the southbound mainlanes from SH 183 to Egyptian Way and frontage roads from SH 183 to Carrier Parkway, opened to traffic on April 10, 2010. The final phase of the project was assumed to open to traffic on October 11, 2012 and will extend the mainlanes south to the terminus at IH 20. Phase 4 will include the opening of fully directional interchanges at IH 30 and IH 20. However, the low-volume connectors at IH 30 (which include NB PGBT-WE to EB/WB IH 30, WB IH 30 to NB/SB PGBT-WE, EB IH 30 to SB PGBT-WE and SB PGBT-WE to EB IH 30) are not assumed to open until April 11, 2013.

CAPACITY EXPANSIONS

Two key capacity expansions are assumed for the PGBT-WE and have been estimated to occur in 2020 and 2031 in this study. When the facility fully opens in 2012, there will be six mainlanes in the northern segment between SH 183 and IH 30 and four mainlanes in the southern segment between IH 30 and IH 20. On January 1, 2020, the southern segment is assumed to be expanded to six lanes, and the entire facility is assumed to be expanded to eight lanes on January 1, 2031. This expansion schedule is assumed based on the PGBT-WE project agreement between NTTA and TxDOT.

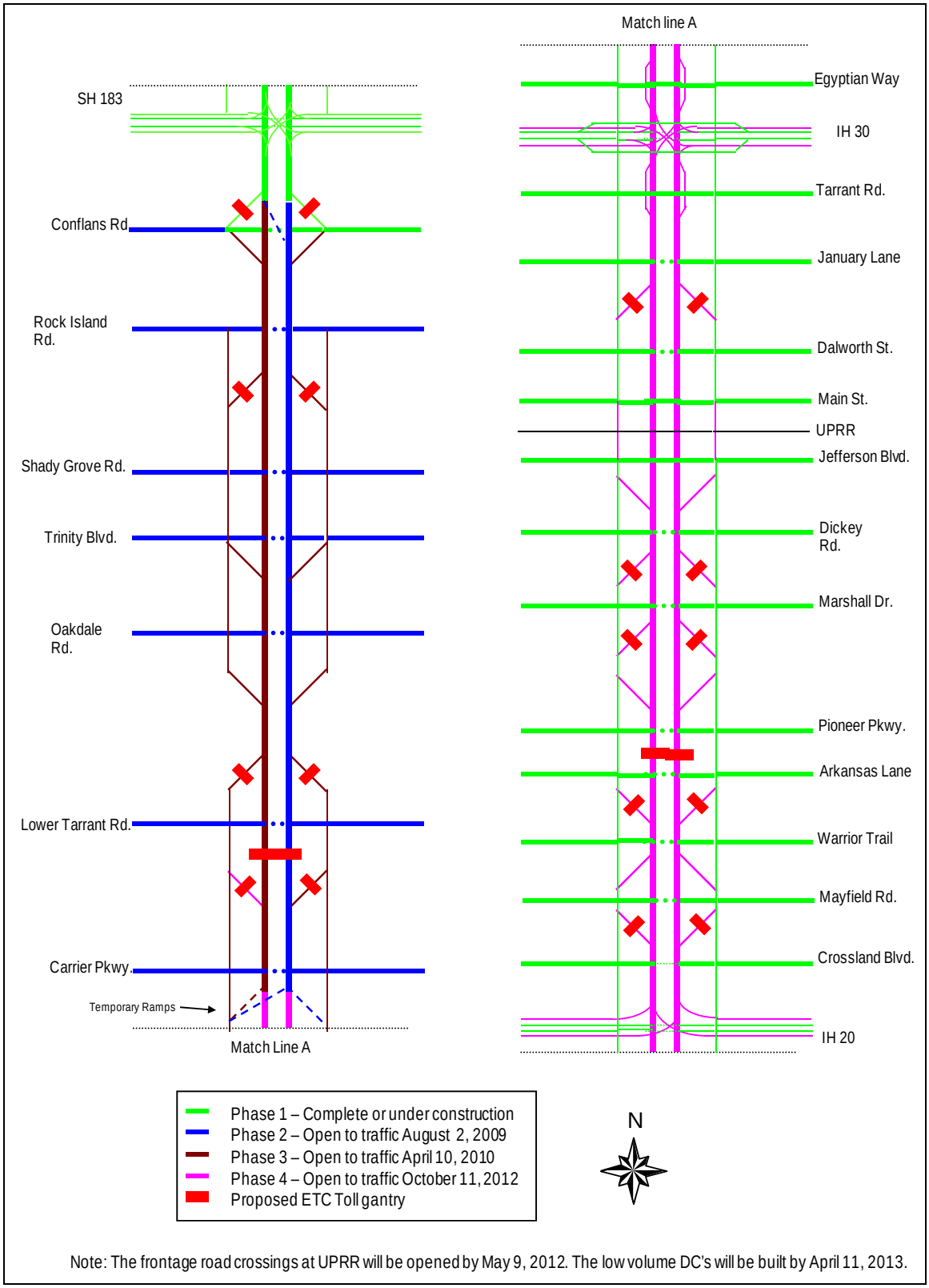


Figure 6-2. PGBT-WE Project Phasing.

TOLL SENSITIVITY ANALYSIS

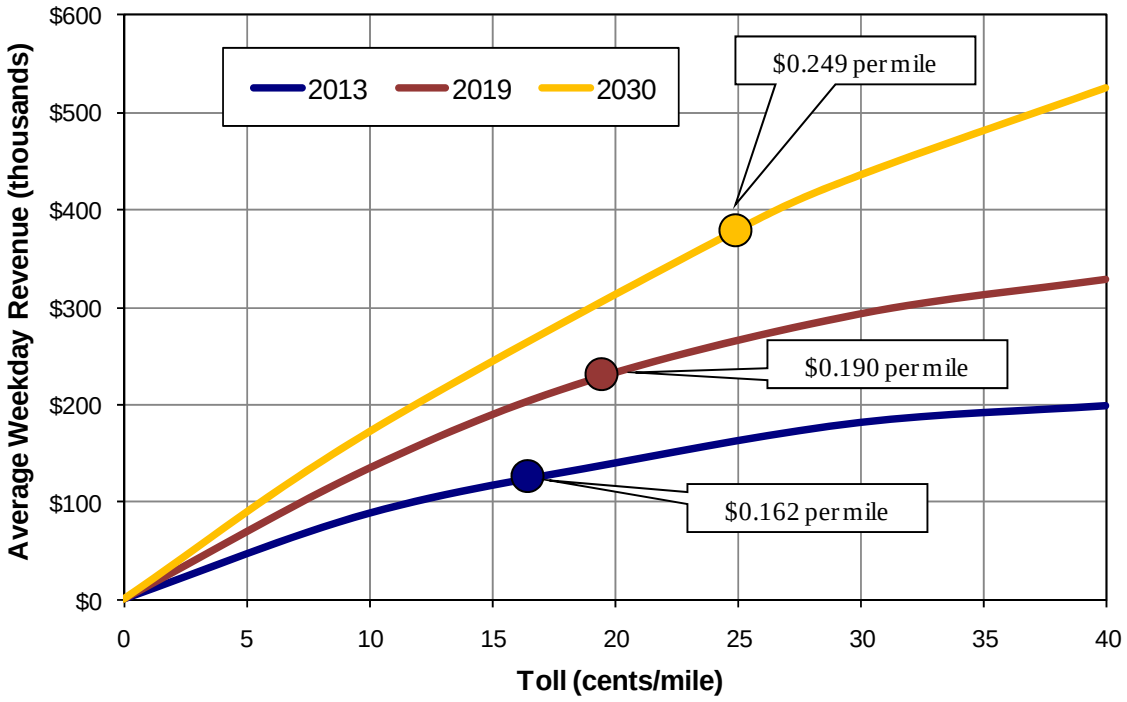
In order to test the impact of toll rates on PGBT-WE transactions and revenue, toll sensitivity curves were generated. The curves were created by running traffic assignments for several base toll rates. Typically it is recommended that a toll rate less than the rate that maximizes the toll revenue be selected to have future flexibility to increase the toll, if necessary. Future year toll sensitivity curves are based on changes in traffic characteristics of the PGBT-WE corridor such as increasing congestion, values of time and competing facilities. These curves are essential in estimating the viability of future toll rate increases.

The purpose of a toll sensitivity test is to ensure that future programmed toll rate in any year will not be more than the toll rate corresponding to the highest point on the toll sensitivity revenue curve for that year. When the toll rate increases, a portion of travelers will leave the toll facility and choose other routes. Therefore, as toll rates increase transactions would decrease. The revenue, however, will rise with an increase in the toll rate until reaching the optimal toll rate. Toll increases beyond the optimal rate would begin to reduce revenue.

Trip tables provided by NCTCOG were created based on the approved DFWMA demographic information and are referred to as the "official" trip tables. The trip tables which were developed based on the demographics adjusted by the independent socioeconomic reviews, which was described in Chapter 4, are referred to as the "revised-lag" trip tables.

Toll sensitivity analyses were conducted for the PGBT-WE for the years 2013, 2019 and 2030, by using the "revised-lag" trip tables. Toll rates, in nominal year dollars, ranging between $0.00 per mile and $0.40 per mile were analyzed for the three forecast years. Figure 6-3 illustrates the daily toll sensitivity curves for the years 2013, 2019 and 2030 expected for the PGBT-WE. The planned toll rate on the PGBT-WE is marked on each curve. The revenues and transactions shown in these figures do not account for ramp-up or violation rates.

The maximum base toll rate (MBT) in 2009 was established at $0.145 per mile in the Project Agreement between TxDOT and NTTA. Beyond 2009, the MBT has been adjusted every two years based on an assumed annual growth of 2.75 percent. The toll sensitivity curves in Figure 6-3 suggest that the annual toll rate growth increment of 2.75 percent would be feasible on the PGBT-WE.



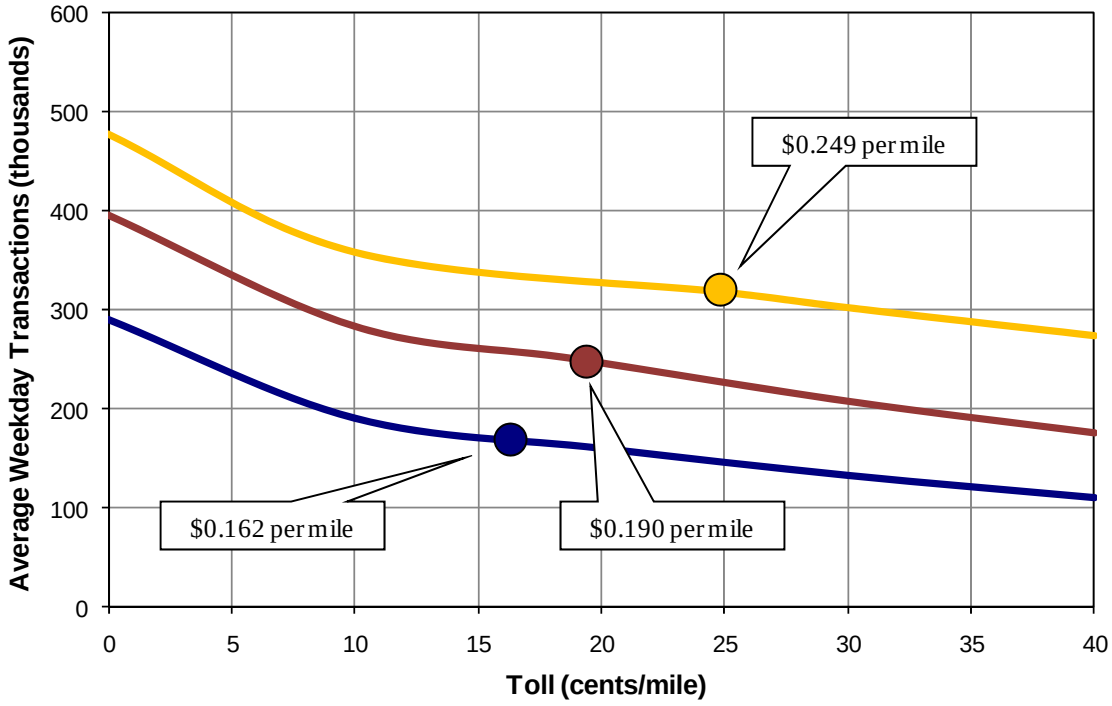


Figure 6-3. PGBT-WE Toll Sensitivity Curves

PROPOSED TOLL COLLECTION CONCEPT AND TOLL RATES

The PGBT-WE is currently using an all-electronic toll collection system with TollTag and ZipCash tolling. Under this type of toll collection system, patrons with a valid transponder in their vehicle pay the TollTag rate, while ZipCash patrons are billed for their tolls using auto ownership records associated with video-captured license plate numbers. ZipCash patrons also pay a surcharge which is the greater of 50 percent of the TollTag toll or $0.20 (in 2009 dollars) inflated at 2.75 percent annually. Figures 6-4 and 6-5 show the 2019 and 2030 TollTag and ZipCash toll charges, rounded to the highest cent, for the PGBT-WE under an annual toll rate escalation of 2.75 percent applied every two years.

The toll rates shown in Figures 6-4 and 6-5 were calculated based on the maximum distance covered by each toll collection point. For ramp plazas, the distance covered is from the main cross street served by each pair of ramp plazas to the most distant cross street which can be reached without encountering another toll zone. A minimum toll distance of 1.5 miles was used to calculate the toll rates at ramps where the actual distances were less than 1.5 miles. Rates shown in the figures reflect passenger car (i.e. two-axle vehicles with no trailer) tolls; higher tolls would be charged to multi-axle and commercial vehicles using the "N-1" methodology, under which vehicles pay the standard rate multiplied by one less than the vehicle's number of axles. The tolls at the northern Lower Tarrant Road ramps are reduced by 40 percent due to the lack of a frontage road bridge across the Trinity River.

As an example, a trip from IH 20 to SH 183 for a two-axle vehicle equipped with a TollTag will cost $2.26 and $2.96 in 2019 and 2030 respectively. ZipCash toll rate paid by a two-axle vehicle making a trip from IH 20 to SH 183 will cost $3.39 and $4.44 in 2019 and 2030 respectively. It should be noted that the revenue estimates included in this report for ZipCash transactions include the ZipCash surcharge but do not include the additional fees and fines paid by ZipCash customers who pay their invoices late.

ESTIMATED AVERAGE WEEKDAY TRAFFIC

An equilibrium diversion technique was used to carry out traffic assignment runs for the AM peak, PM peak, and off-peak periods. The model runs were conducted for the years 2011, 2012, 2013, 2019, 2025 and 2030. Traffic volumes were estimated in this analysis using the "revised-lag" trip tables, by applying the trip table adjustments resulting from the calibration process as mentioned in Chapter 5.

As the PGBT-WE utilizes both TollTag and ZipCash toll collection procedures, two separate traffic assignments, one with TollTag toll charges and the other with ZipCash toll charges were conducted. The traffic volume obtained by the TollTag toll charge assignment was adjusted based on the assumed TollTag share to obtain the TollTag traffic volume. The traffic volume obtained by the ZipCash toll charge assignment run

was factored using the assumed ZipCash share to get the ZipCash traffic volume. The sum of TollTag and ZipCash volumes provides the total estimated traffic along the PGBT-WE. In this manner, total volumes on the PGBT-WE tollway were estimated for the years 2011, 2012, 2013, 2019, 2025 and 2030. All other years were interpolated or extrapolated between or beyond the modeled years to obtain the yearly traffic and revenue estimates. Since 2030 is the latest modeling year, traffic growth between 2030 and 2035 was assumed to be the same as that between 2025 and 2030; growth from 2035 to 2040 was assumed to be 1.3 percent per year; growth rate beyond 2040 was assumed to be 1.0 percent per year.

The traffic assignment results for each of the analysis years were reviewed for reasonableness, and minor post-model adjustments were made as necessary. This included adjustments to reflect the model calibration results in the PGBT-WE corridor. In general, the model was found to overestimate demand in the northern segment of the corridor (north of IH 30) and underestimate demand in the southern portions of the corridor (south of IH 30).

Figure 6-6 shows estimated average weekday traffic volumes for the PGBT-WE corridor in 2019 and 2030. The highest daily volume is in the northern segment just south of Oakdale Road. At this location, mainline traffic volumes are estimated to be 107,300 in 2019 and 138,100 in 2030. The highest daily volume on the southern segment of the facility is seen just north of Dalworth Street and is expected to reach 97,700 in 2019 and 125,600 in 2030.

Weekday traffic at the northern mainlane toll gantry, south of Lower Tarrant Road, is expected to be 95,000 in 2019 and 124,800 in 2030. The southern mainlane toll gantry, south of Pioneer Parkway, is expected to generate 72,200 daily transactions in 2019 and 92,700 in 2030. Overall, toll transactions on the PGBT-WE project are expected to increase from about 250,300 per typical weekday in 2019 to 318,000 per weekday in 2030, representing an average growth of 2.2 percent per year. However, the expansion to eight lanes in 2031 is expected to spur additional traffic growth on the PGBT-WE.

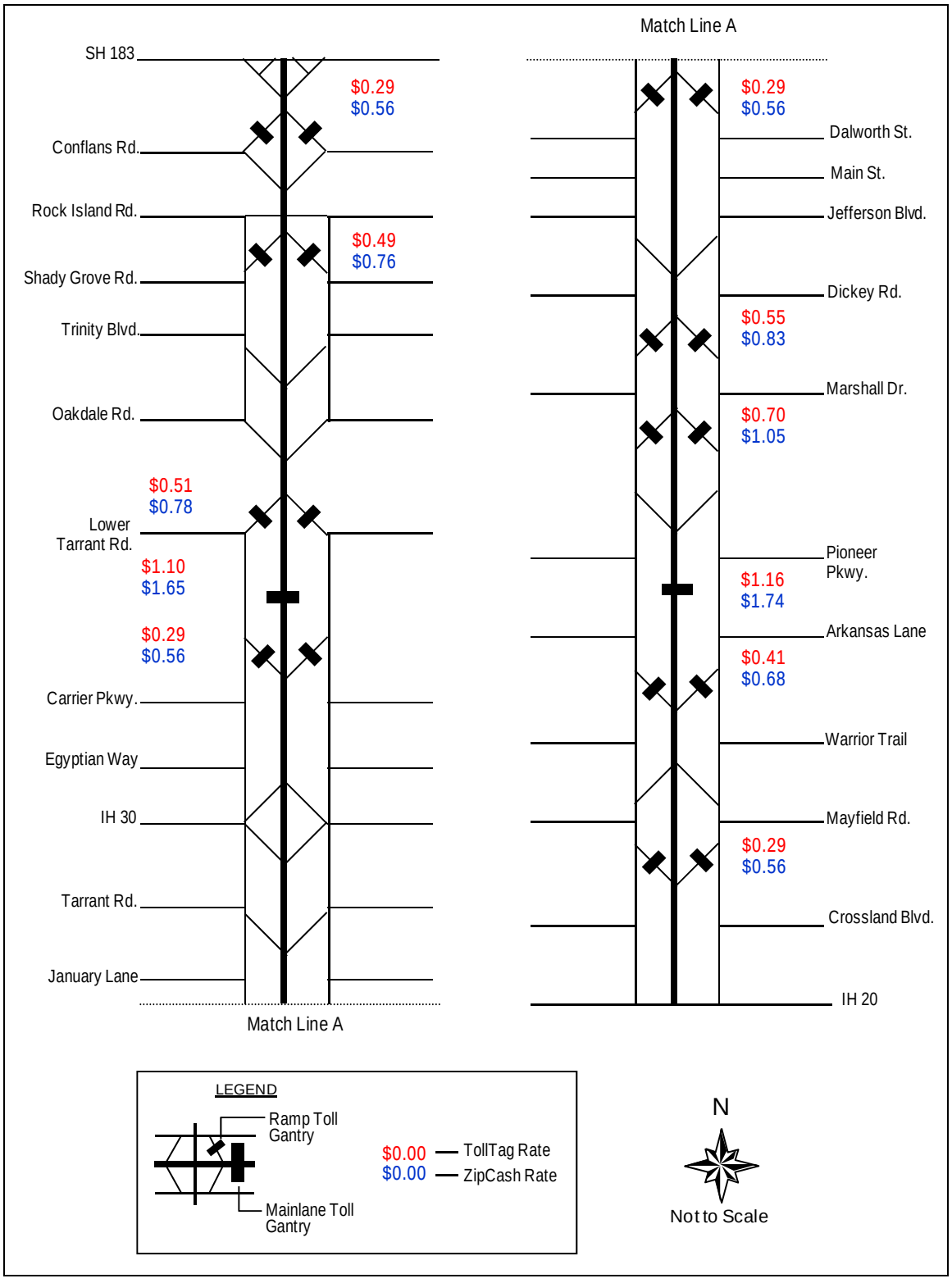


Figure 6-4. 2019 Toll Configuration and Toll Charges

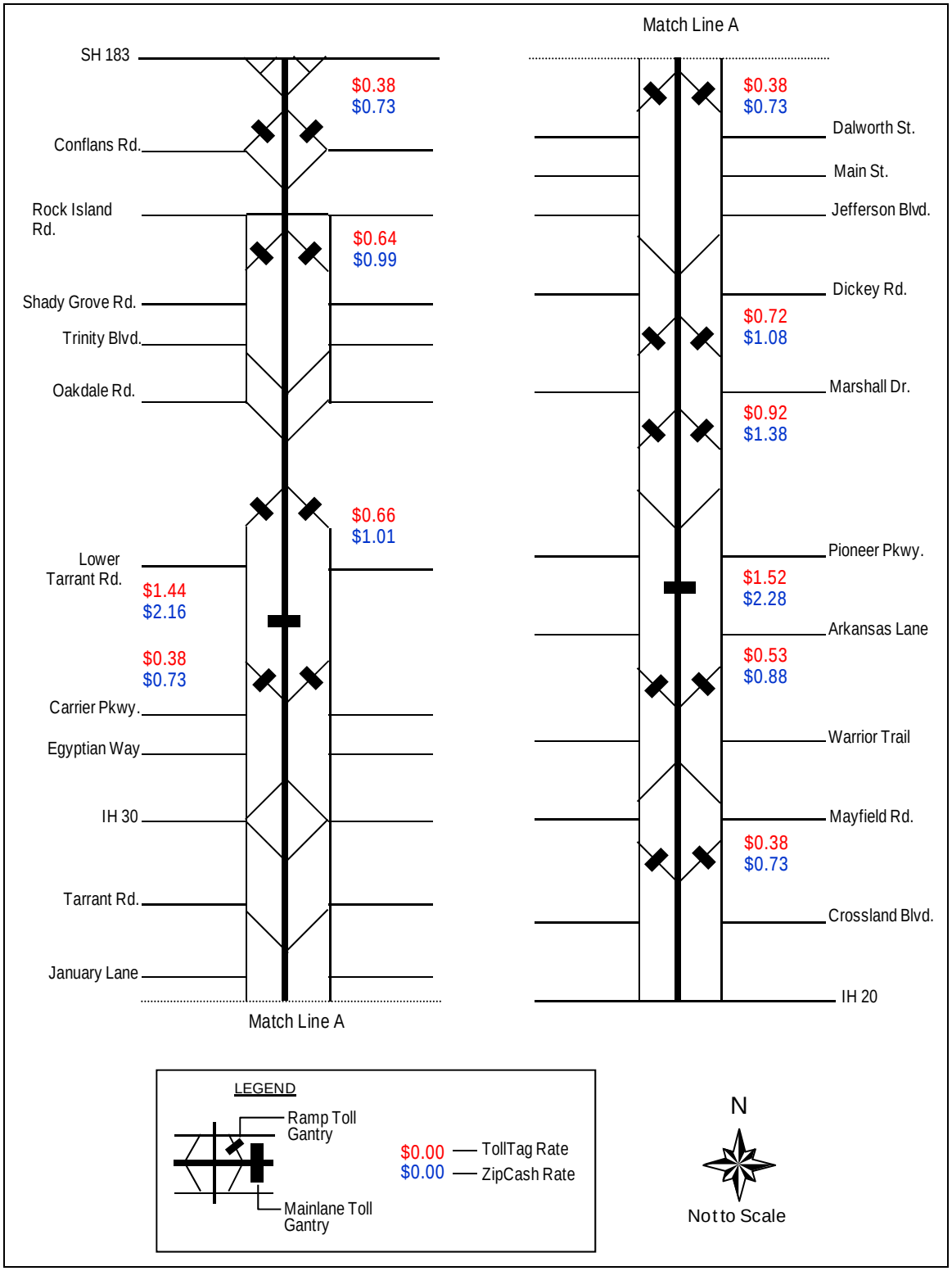


Figure 6-5. 2030 Toll Configuration and Toll Charges

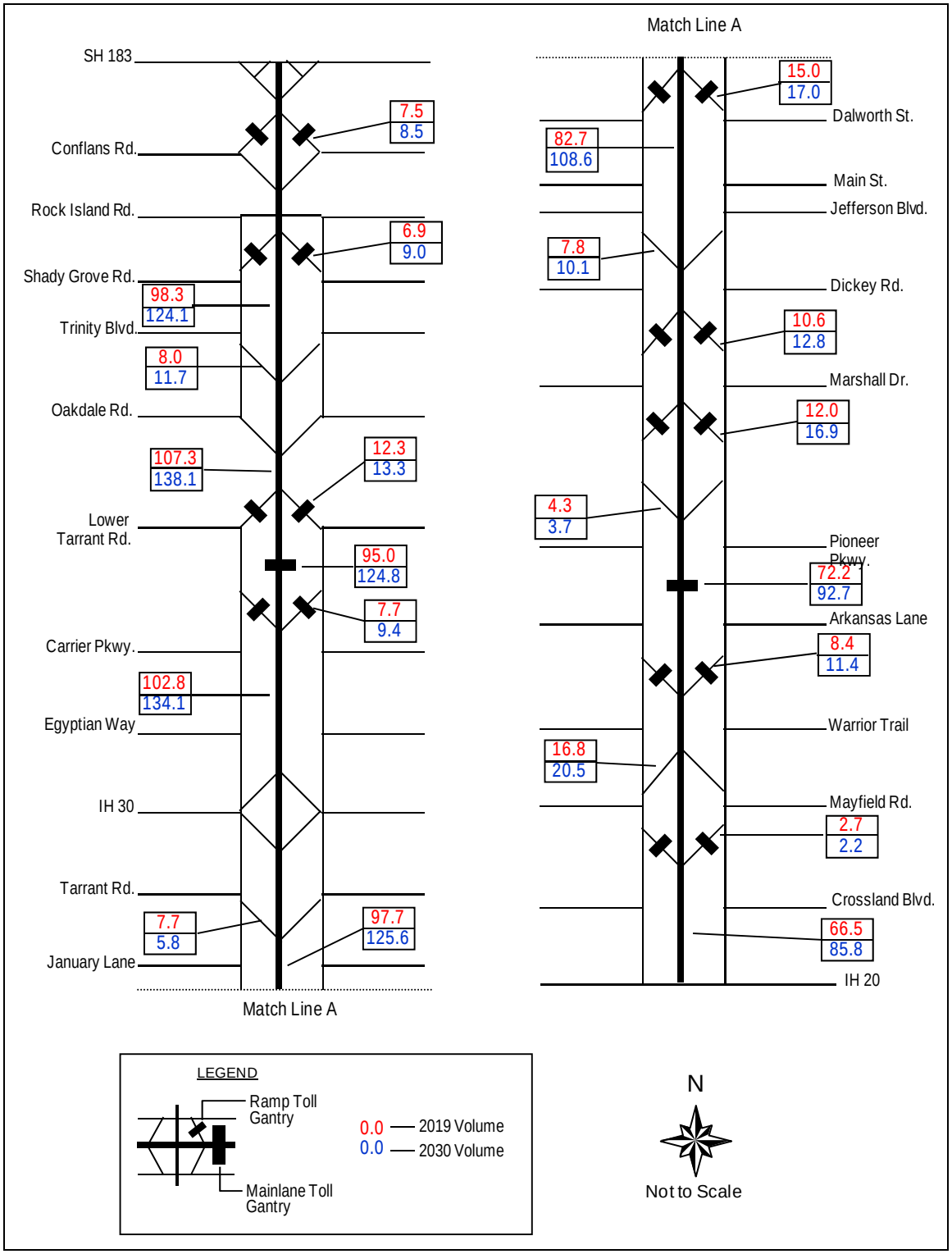


Figure 6-6. Estimated 2019 and 2030 Average Weekday Traffic Volumes (thousands)

CORRIDOR SHARE ANALYSIS

As part of the analysis of the future traffic on the facility, the corridor share of the PGBT-WE in 2019 and 2030 was analyzed with and without PGBT-WE. As shown in Figure 6-7, three screenlines were analyzed to determine what percentage of the total demand is expected to use the PGBT-WE and its competing facilities. Screenline 1 lies just north of Trinity Boulevard and Rock Island Road. Screenline 2 is located north of Green Oaks Boulevard and North Carrier Parkway, and Screenline 3 lies north of Park Row Drive and Marshall Drive.

Table 6-1 shows the results of the corridor share analysis for each of the three screenlines both with and without the PGBT-WE mainlanes in place. For Screenline 1, the PGBT-WE mainlanes will carry 16 percent of the total corridor demand in 2019 and 18 percent in 2030. For Screenline 2, the PGBT-WE mainlanes account for 18 percent of the corridor throughput in 2019 and 20 percent in 2030. The PGBT-WE mainlanes account for a smaller percentage of the total traffic along Screenline 3 than the other two screenlines. The PGBT-WE mainlanes account for 11 percent of the traffic in the corridor in both 2019 and 2030.

TRAVEL TIME SAVINGS

An important part of the decision to use a toll facility is the potential time savings that is offered to or perceived by the traveler. To investigate the time savings offered by the PGBT-WE, a set of routes were examined to determine the travel time of a trip on the PGBT-WE as compared to trips on alternative routes. Three routes were evaluated for a trip from DFW Airport (Point A) to the Great Southwest Parkway south of IH 20 (Point B). Travel time savings were calculated for both 2019 and 2030.

Figure 6-8 shows the calculated travel time savings for a trip from Point A to Point B using three different routes. The first route utilizes primarily SH 360 to get from Point A to Point B, the second route is an arterial route along Valley View Lane and Carrier Parkway, and the third route uses the PGBT-WE. During the 2019 morning peak period, drivers using the PGBT-WE route would save approximately 2.5 minutes compared to the SH 360 route and 7.3 minutes compared to arterial route. During the 2030 morning peak, drivers would save approximately 4.2 and 8.8 minutes, respectively. For the 2019 evening peak, a driver traveling from Point A to Point B using the PGBT-WE would save 1.7 minutes compared to the SH 360 route and 8.2 minutes compared to the arterial route. In 2030, these time savings increase to 6.2 and 9.5 minutes, respectively.

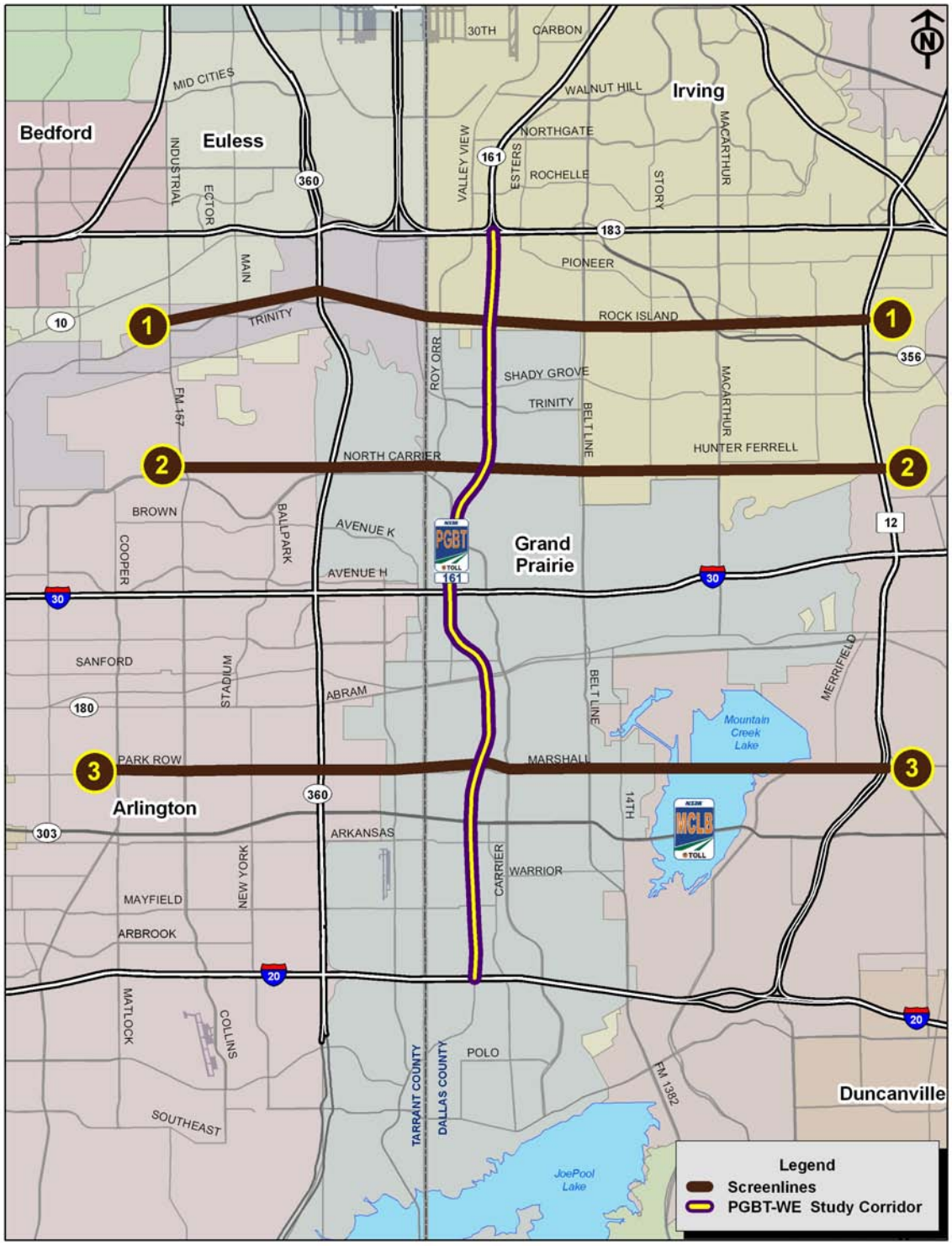


Figure 6-7. Corridor Share Analysis Screenlines

Table 6-1
Corridor Share Analysis Results

Screenline 1	2019		2030	
	With PGBT-WE	Without PGBT-WE	With PGBT-WE	Without PGBT-WE
FM 157	4%	5%	5%	6%
SH 360	28%	34%	28%	33%
Valley View Lane	3%	5%	2%	4%
Belt Line Road	4%	6%	3%	4%
MacArthur Boulevard	2%	3%	2%	2%
PGBT-WE	**16%**	**0%**	**18%**	**0%**
Loop 12	31%	34%	33%	38%
Other Routes	12%	14%	11%	13%
Total	100%	100%	100%	100%

Screenline 2	2019		2030	
	With PGBT-WE	Without PGBT-WE	With PGBT-WE	Without PGBT-WE
FM 157	4%	6%	5%	7%
SH 360	28%	32%	27%	31%
Great Southwest Parkway	2%	2%	2%	2%
Roy Orr Boulevard	5%	7%	3%	6%
Belt Line Road	3%	5%	2%	3%
MacArthur Boulevard	3%	4%	3%	4%
PGBT-WE	**18%**	**0%**	**20%**	**0%**
Loop 12	34%	38%	34%	40%
Other Routes	4%	6%	5%	7%
Total	100%	100%	100%	100%

Screenline 3	2019		2030	
	With PGBT-WE	Without PGBT-WE	With PGBT-WE	Without PGBT-WE
FM 157	6%	6%	5%	6%
Collins Street	5%	6%	4%	5%
SH 360	29%	32%	33%	37%
Great Southwest Parkway	4%	5%	2%	3%
Carrier Parkway	2%	4%	2%	3%
Belt Line Road	3%	4%	3%	4%
PGBT-WE	**11%**	**0%**	**11%**	**0%**
PGBT-WE Frontage Road	4%	4%	4%	4%
Loop 12	26%	29%	27%	30%
Other Routes	9%	11%	8%	10%
Total	100%	100%	100%	100%

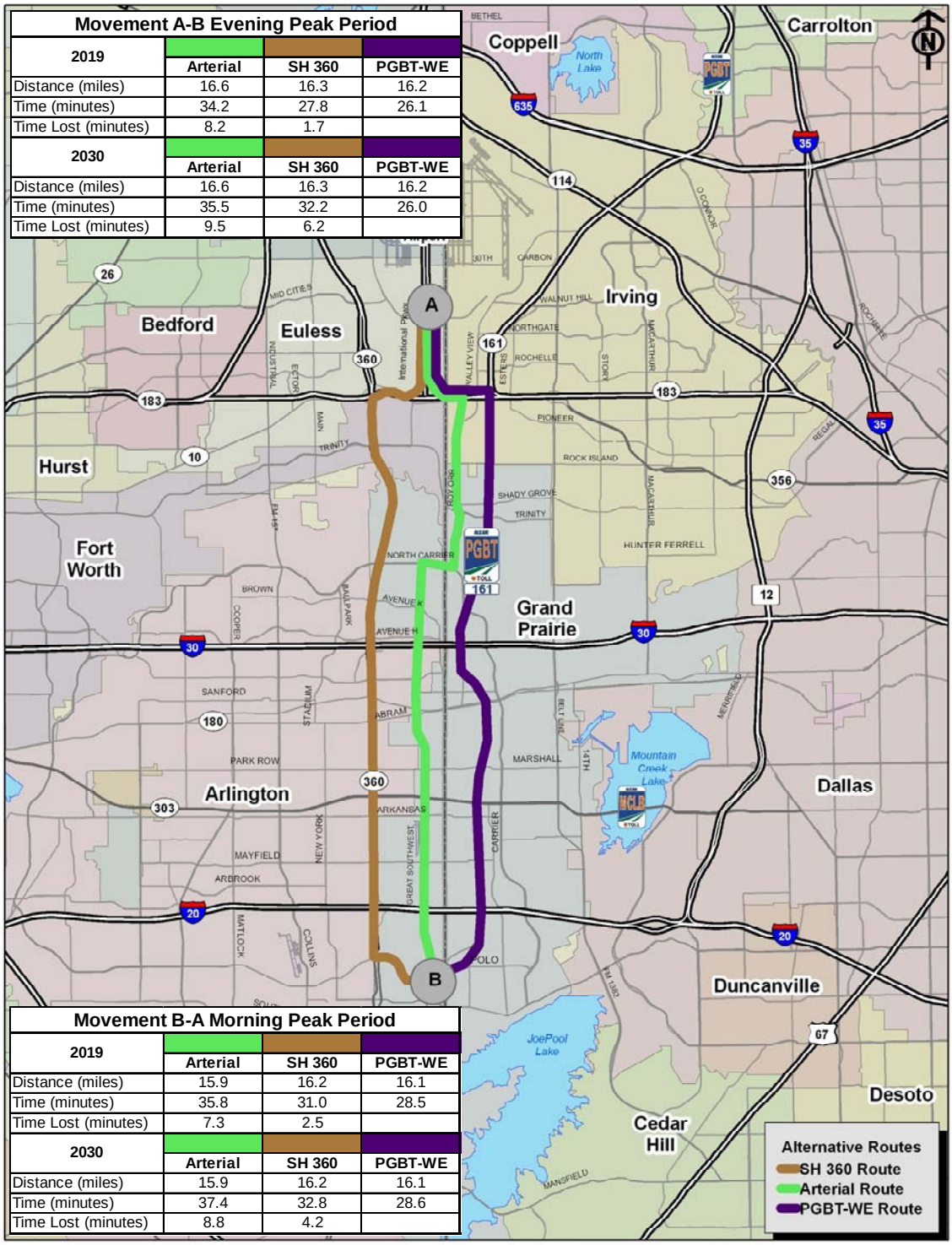


Figure 6-8. Travel Time Savings Comparison

TOLL REVENUE ESTIMATION ASSUMPTIONS

The transaction and toll revenue estimates for the PGBT-WE were developed using the following specific assumptions, which are considered reasonable for the purposes of this study:

TOLL RATE ASSUMPTIONS:

- Minimum toll charge was based on a trip length of 1.5 miles.
- Maximum Allowable Base Toll Rate (MBT) assumed for automobiles was 14.5 cents per mile in 2009.
- Beyond 2009, toll rates were assumed to be adjusted on July 1 every two years at a rate of 2.75 percent per year. MBT was rounded to the nearest tenth of a cent ($0.001).
- Tolls charged to users were rounded to the next highest penny.
- Video toll surcharge was the maximum of, a) 50 percent of TollTag toll or (b) 20 cents per transaction in 2009 dollars, inflated at 2.75 percent per year.
- Effects of congestion pricing on the PGBT-WE were not considered, although it is recognized that congestion pricing is allowable in the Project Agreement between TxDOT and NTTA.

TRUCK TRAFFIC SHARE/TRUCK TOLL ASSUMPTIONS:

- Truck traffic (greater than two axles) share was assumed to be 2.5 percent, 2.75 percent, 3.0 percent and 3.25 percent in 2011, 2012, 2013 and 2014 respectively. Beyond 2014, it was assumed to be 3.5 percent.
- Tolls for vehicles with more than two axles were calculated based on "N-1" weighting, where "N" is the number of axles. For example, the toll paid by a five axle vehicle would be four times the toll paid by a two axle vehicle. Average truck toll factor is a ratio of the weighted average of the truck tolls charged to vehicles with greater than two axles to the tolls charged to two-axle vehicles. For example, a high truck toll factor would mean a higher proportion of higher axle vehicles on a toll facility. If all the trucks using the facility were five axle vehicles, then the average truck toll factor for that facility would be 4.00. The average truck toll factor assumed on the PGBT-WE was 3.00.

TOLLTAG / ZIPCASH TRANSACTION SHARES:

- Both the TollTag and ZipCash transaction shares were determined working with NTTA staff and consultants.
- TollTag transaction share was assumed to be 70 percent and 75 percent in 2011 and 2012, respectively. Beyond 2012, it was assumed to grow following a logistic function to a 92 percent maximum. V-Toll transactions (transactions that are first identified as ZipCash but are subsequently determined to be TollTag transactions) were counted as part of the TollTag shares.
- The ZipCash transaction share was assumed to be 30 percent and 25 percent in 2011 and 2012, respectively. Beyond 2012, it was assumed to decrease following a logistic function to an 8 percent minimum.

ANNUAL REVENUE DAYS:

- WSA's modeling methodology, similar to most state-of-the-practice travel models, forecast traffic for a typical day. By application of a "revenue day" assumption, revenue estimated based upon daily forecasted traffic is annualized for use in financial feasibility applications. This factor takes into consideration the likely relationship between weekday and weekend travel in the subject corridor. Annual revenue days were assumed to be 320 days per year throughout the forecast period (this value includes the impacts of special events near the PGBT-WE corridor).

REVENUE RECOVERY ASSUMPTIONS:

- Revenue estimation generated from traffic projections is subject to the application of toll recovery assumptions. TollTag and ZipCash recovery assumptions were determined working with NTTA staff and consultants.
- Leakage rate for TollTag transactions was assumed to be 0.5 percent for all years. This assumption remains constant throughout the entire forecast period.
- For ZipCash transactions, current recovery experience was used to develop an initial leakage assumption as well as ramp-up to a threshold. ZipCash leakage of 45.8 percent was assumed to be reached by 2013 (representing a recovery rate of 54.2 percent), and held constant throughout the remainder of the forecast period.

RAMP-UP ASSUMPTIONS:

- WSA uses a ramp-up factor methodology to account for the dynamics of travel pattern shifts when new roads are opened. Traffic models are insensitive to the phenomenon regarding the time it takes drivers to shift their travel behavior to take advantage of a new route. By use of ramp-up factors, modeled volumes are adjusted to prevent over-estimation of initial traffic and thus revenue. Ramp-up factors were assumed to be 65 percent, 75 percent, 85 percent, 95 percent and 100 percent in 2011, 2012, 2013, 2014 and 2015, respectively.

ESTIMATED TRANSACTIONS AND REVENUE

Forecasts of toll transactions and revenue were developed over a 51-year projection period for the PGBT-WE. As shown in Figure 6-9 and Table 6-2, annual transactions on the PGBT-WE are estimated at 52.5 million in 2013 after the full opening. This reflects the impacts of ramp-up. Annual transactions are expected to increase to 94.2 million in 2024 but decrease to 89.8 million the following year due to improvements to SH 360 between IH 20 and IH 30. However, with the expansion to eight lanes on the PGBT-WE, annual transactions are expected to increase to 112.2 million in 2031.

Annual toll revenue on the PGBT-WE is estimated at $54.7 million in 2015, the first year after the ramp-up period. Revenue is expected to increase to $127.5 million in 2030 and $321.2 million by 2050.

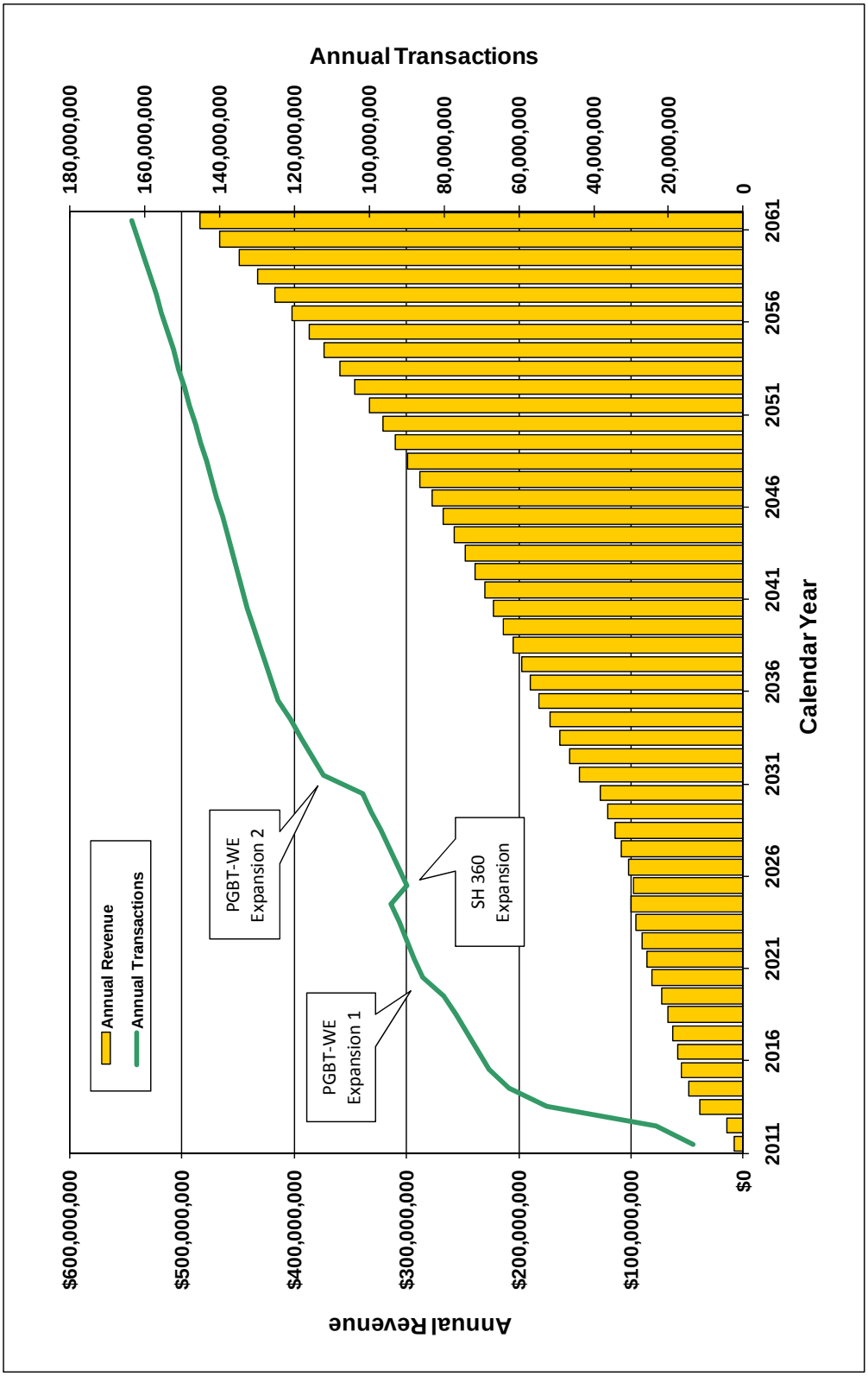


Figure 6-9. PGBT-WE Annual Revenue and Transactions

Table 6-2
Estimated PGBT-WE Transactions and Revenue

Calendar Year	Annual Transactions	Annual Revenue
2011	13,277,000	$8,106,900
2012	23,390,200	$15,004,800
2013	52,451,900	$38,521,200
2014	62,477,500	$48,282,600
2015	68,052,500	$54,743,500
2016	70,781,900	$58,846,700
2017	73,641,600	$63,058,800
2018	76,637,100	$67,723,000
2019	80,081,500	$72,976,300
2020	85,759,900	$81,075,600
2021	87,783,600	$85,652,200
2022	89,858,700	$90,474,900
2023	91,986,900	$95,257,600
2024	94,169,200	$100,433,900
2025	89,847,900	$97,434,400
2026	92,091,300	$102,712,600
2027	94,400,900	$108,265,100
2028	96,779,700	$114,224,100
2029	99,229,000	$120,613,300
2030	101,751,700	$127,521,700
2031	112,213,300	$145,927,200
2032	115,075,500	$154,268,100
2033	118,022,900	$163,126,000
2034	121,058,600	$172,641,200
2035	124,185,600	$182,235,700
2036	125,800,000	$189,819,700
2037	127,435,500	$197,326,100
2038	129,092,100	$205,296,300
2039	130,770,400	$213,525,600
2040	132,470,000	$222,203,900
2041	133,794,900	$230,307,800
2042	135,133,000	$238,846,800
2043	136,484,500	$248,149,800
2044	137,849,300	$258,000,800
2045	139,227,700	$267,466,900
2046	140,620,000	$277,545,700
2047	142,026,100	$288,185,900
2048	143,446,500	$299,411,500
2049	144,880,900	$310,006,500
2050	146,329,800	$321,246,900
2051	147,792,800	$333,345,800
2052	149,270,800	$346,188,100
2053	150,763,500	$359,201,400
2054	152,271,400	$372,958,000
2055	153,793,900	$387,019,700
2056	155,331,600	$401,898,100
2057	156,885,000	$416,709,700
2058	158,454,000	$432,515,500
2059	160,038,600	$449,026,900
2060	161,638,800	$466,470,100
2061	163,255,300	$483,499,700

SENSITIVITY TESTS OF KEY INPUT VARIABLES

IMPACTS OF VALUE OF TIME

Values of time (VOT) that were used to produce the traffic and revenue forecast on the PGBT-WE are shown in Table 5-2. Two alternative scenarios with low VOT and high VOT were created to test the sensitivity of VOT on the traffic and revenue forecast. The alternative VOTs were created by assuming a 15 percent decrease and increase for the low and high VOT scenarios, respectively. The scenarios were tested for years 2019 and 2030, and the traffic forecast and revenue comparison is shown in Table 6-3.

As can be seen in Table 6-3, for a 15 percent decrease in VOT, traffic is expected to drop by 4.8 percent in 2019 and 3.7 percent in 2030. Conversely traffic would increase by 3.5 percent in 2019 and 2.5 percent in 2030 when VOT is increased by 15 percent. Revenue impacts due to changes in VOT are similar to impacts on transactions.

Table 6-3
Sensitivity to Value of Time Parameters

	Transactions Index			Revenue Index		
Year	**Base VOT**	**Low VOT**	**High VOT**	**Base VOT**	**Low VOT**	**High VOT**
2019	100.0	95.2	103.5	100.0	95.2	103.5
2030	100.0	96.3	102.5	100.0	96.5	102.3

IMPACTS OF TRUCK SHARES

In the traffic and revenue forecast, trucks are assumed to account for 2.5 percent, 2.75 percent, 3.0 percent and 3.25 percent of the total traffic on the PGBT-WE in 2011, 2012, 2013 and 2014 respectively. Beyond 2014, truck transactions are assumed to be 3.5 percent. Two alternative scenarios were tested, one where the truck share increases from 2.5 percent in 2011 to a maximum of 5.0 percent in 2021 and another scenario with 2.0 percent trucks in all the forecast years. Table 6-4 compares the total revenue on the PGBT-WE throughout the forecast period for the base scenario and the two alternative scenarios. If the truck percentage is increased to 5.0 percent, the revenue is expected to increase by 2.7 percent. A truck share of 2.0 percent would reduce the revenue by 2.8 percent compared to the base scenario.

Table 6-4 Sensitivity to Truck Percentage	
Case	**Revenue Index**
Base Scenario*	100.0
Maximum 5% Trucks**	102.7
Maximum 2% Trucks***	97.2

* Truck traffic share is assumed to be 2.5%, 2.75%, 3% and 3.25% in 2011, 2012, 2013 and 2014 respectively. Beyond 2014, it is assumed to be 3.5%.
** Truck traffic share is assumed to be 2.5% in 2011 and increase by 0.25% per year until 2021. Beyond 2021, it is assumed to be 5%.
*** Truck traffic share is assumed to be 2% in 2011 and beyond.

IMPACTS OF REVENUE DAYS

The annual revenue days used for the PGBT-WE revenue estimation were assumed to be 320 days per year throughout the forecast period. Two alternative scenarios to this assumption were created with 310 days assumed for all years in the low case and a maximum of 335 days assumed in the high case. As shown in Table 6-5, decreasing the revenue days to 310 results in a revenue decrease of 3.1 percent, while increasing the revenue days to 335 increases the revenue by 4.7 percent.

Table 6-5 Sensitivity to Revenue Days	
Case	**Revenue Index**
Base Scenario*	100.0
Maximum 310 Days**	96.9
Maximum 335 Days***	104.7

* Revenue days are assumed to be 320 days per year in 2011 and beyond.
** Revenue days are assumed to be 310 per year in 2011 and beyond.
*** Revenue days are assumed to be 320, 325, 330 and 335 per year in 2011, 2012, 2013 and 2014 respectively. Beyond 2014, revenue days are assumed to be 335.

IMPACTS OF TOLLTAG PARTICIPATION

The traffic and revenue estimates for the PGBT-WE assume TollTag participation of 70 percent and 75 percent in 2011 and 2012 respectively. Beyond 2012, TollTag participation is assumed to grow following a logistic function to a 92 percent maximum. Two alternatives scenarios were compared to determine the impacts of TollTag participation on revenue. The first alternative assumes a TollTag participation of 65 percent in 2015, 2019, 2030 and 2040, and the second alternative assumes 95 percent in 2015, 2019, 2030 and 2040. The total number of transactions is assumed to be the same in all three scenarios. As shown in Table 6-6, at 65 percent TollTag the revenue would decrease by 3.7 percent, 4.5 percent, 4.8 percent and 4.8 percent over the base case in

2015, 2019, 2030 and 2040, respectively. This decrease in revenue is due to the higher leakage rate associated with the ZipCash transactions. At 95 percent TollTag, revenue would increase by 2.2 percent, 1.3 percent, 0.6 percent, and 0.5 percent in 2015, 2019, 2030 and 2040, respectively.

Table 6-6
Sensitivity to TollTag Participation

Year	Revenue Index		
	Base Scenario	65/35	95/5
2015	100.0	96.3	102.2
2019	100.0	95.5	101.3
2030	100.0	95.2	100.6
2040	100.0	95.2	100.5

IMPACTS OF RAMP-UP

The PGBT-WE traffic and revenue estimates assumed a ramp-up of 65 percent in 2011, 75 percent in 2012, 85 percent in 2013, 95 percent in 2014, and 100 percent in 2015 and all subsequent years. The impact of ramp-up was tested by assuming an initial ramp up of 55 percent in 2011, 65 percent in 2012, 75 percent in 2013, 85 percent in 2014 and 95 percent in 2015. As shown in Table 6-7, this reduction in ramp-up would decrease revenue by 12.9 percent in 2011 and 2012, 10.6 percent in 2013, 9.5 percent in 2014, and 4.0 percent in 2015.

Table 6-7
Sensitivity to Ramp Up

Year(s)	Ramp up Assumption		Revenue Index	
	Base Scenario	Alternative Scenario	Base Scenario	Alternative Scenario
2011/2012	65%/75%	55%/65%	100.0	87.1
2013	85%	75%	100.0	89.4
2014	95%	85%	100.0	90.5
2015	100%	95%	100.0	96.0

IMPACTS OF OFFICIAL DEMOGRAPHICS (WITH ADJUSTMENTS)

Traffic and revenue forecasts using the NCTCOG Mobility Plan 2030 – 2009 Update official demographics/trip tables were tested for years 2019 and 2030. It should be noted that the same validation adjustments described in Chapter 5 were applied to the NCTCOG official demographics. As can be seen in Table 6-8, the official demographics/trip tables result in revenue decrease of 6.2 percent and a transaction decrease of 5.6 percent in 2019. In 2030, the decrease in revenue and transactions are 8.9 percent and 8.0 percent respectively.

Table 6-8 Sensitivity to Demographics				
Year	Transactions Index		Revenue Index	
	Base Scenario	Official	Base Scenario	Official
2019	100.0	94.4	100.0	93.8
2030	100.0	92.0	100.0	91.1

IMPACTS OF SEVERE DEMOGRAPHIC GROWTH STAGNATION

Traffic and revenue forecasts were tested under severe demographic growth stagnation scenarios. The demographics are assumed to lag by five and ten years, and the corresponding traffic and revenue estimates are shown for 2011, 2012, 2013, 2015, 2019 and 2030. As can be seen in Table 6-9, the five year lag demographics result in a revenue decrease of 20.6 percent in 2019 and 7.1 percent in 2030. In case of a ten year lag in demographics, the revenue drops are 40.7 percent and 18.6 percent in 2019 and 2030 respectively. The decrease in transactions follows a similar pattern as the revenue.

Table 6-9 Sensitivity to Severe Growth Stagnation						
Year	Transactions Index			Revenue Index		
	Base Scenario	5 Year Lag	10 Year Lag	Base Scenario	5 Year Lag	10 Year Lag
2011	100.0	81.8	81.8	100.0	81.9	81.9
2012	100.0	78.8	78.8	100.0	78.2	78.2
2013	100.0	75.5	75.5	100.0	74.4	74.4
2015	100.0	77.2	70.6	100.0	76.0	69.2
2019	100.0	80.6	61.8	100.0	79.4	59.3
2030	100.0	93.5	82.9	100.0	92.9	81.4

IMPACTS OF VEHICLE OPERATING COST

The impacts of an increase in vehicle operating cost were tested by assuming a 25 percent increase in operating cost. The results of the test are shown in Table 6-10 for years 2019 and 2030. As shown in the table, both revenue and transactions would drop by 4.6 percent in 2019 and 4.1 percent in 2030 if vehicle operating cost increased by 25 percent.

Table 6-10 Sensitivity to Vehicle Operating Cost				
Year	Transactions Index		Revenue Index	
	Base	Alternative Scenario	Base	Alternative Scenario
2019	100.0	95.4	100.0	95.4
2030	100.0	95.9	100.0	95.9

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APPENDIX A

INDEPENDENT ECONOMIC REVIEW

This appendix contains the documentation of the independent economic review as provided by the subconsultant, Insight Research Corporation.

SH 161 Corridor
Traffic and Toll Revenue
Investment Grade Study

Independent Economic Overview
and Development Updates

March 2008

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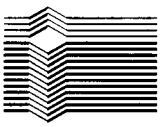

INSIGHT RESEARCH
CORPORATION

SH 161 Corridor
Traffic and Toll Revenue
Investment Grade Study

Independent Economic Overview and Development Updates
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1. PURPOSE AND SCOPE

In early 2008, Wilbur Smith Associates (WSA) was retained by the North Texas Tollway Authority (NTTA) to prepare an Investment Grade Traffic and Toll Revenue study for the proposed tollway on the SH 161 Corridor. Insight Research Corporation (Insight), an applied economics research firm specializing in transportation economics, was engaged by WSA in January of 2008 to prepare an independent cross check on existing population and employment forecasts by traffic analysis process zones (TAPs) for the study area that are expected to most directly affect traffic patterns on the proposed corridor, extending south of DFW International Airport to I-20.

Insight reviewed population and employment projections that are now being used by the North Central Texas Council of Governments (NCTCOG), the region's designated Metropolitan Planning Organization (MPO) for the Dallas/Fort Worth urbanized area. Insight then compared NCTCOG forecasts to actual and proposed land development, population and employment being experienced in the defined study area and recommended updates.

2. DEFINITION OF THE STUDY AREA

The study area as defined by WSA is composed of 486 TAPs in Dallas and Tarrant Counties located within the Dallas/Fort Worth, TX Metropolitan Statistical Area (MSA). All or portions of the seven cities and the DFW International Airport are located within the approximately 237 square miles of the study area. The seven cities are cited alphabetically and the study area is illustrated in Figure 1:

- Arlington (part),
- Cedar Hill (part),
- Dallas (part),
- DFW Airport,
- Euless (part),
- Fort Worth (part)
- Grand Prairie (part)
- Grapevine (part), plus
- Irving (part)

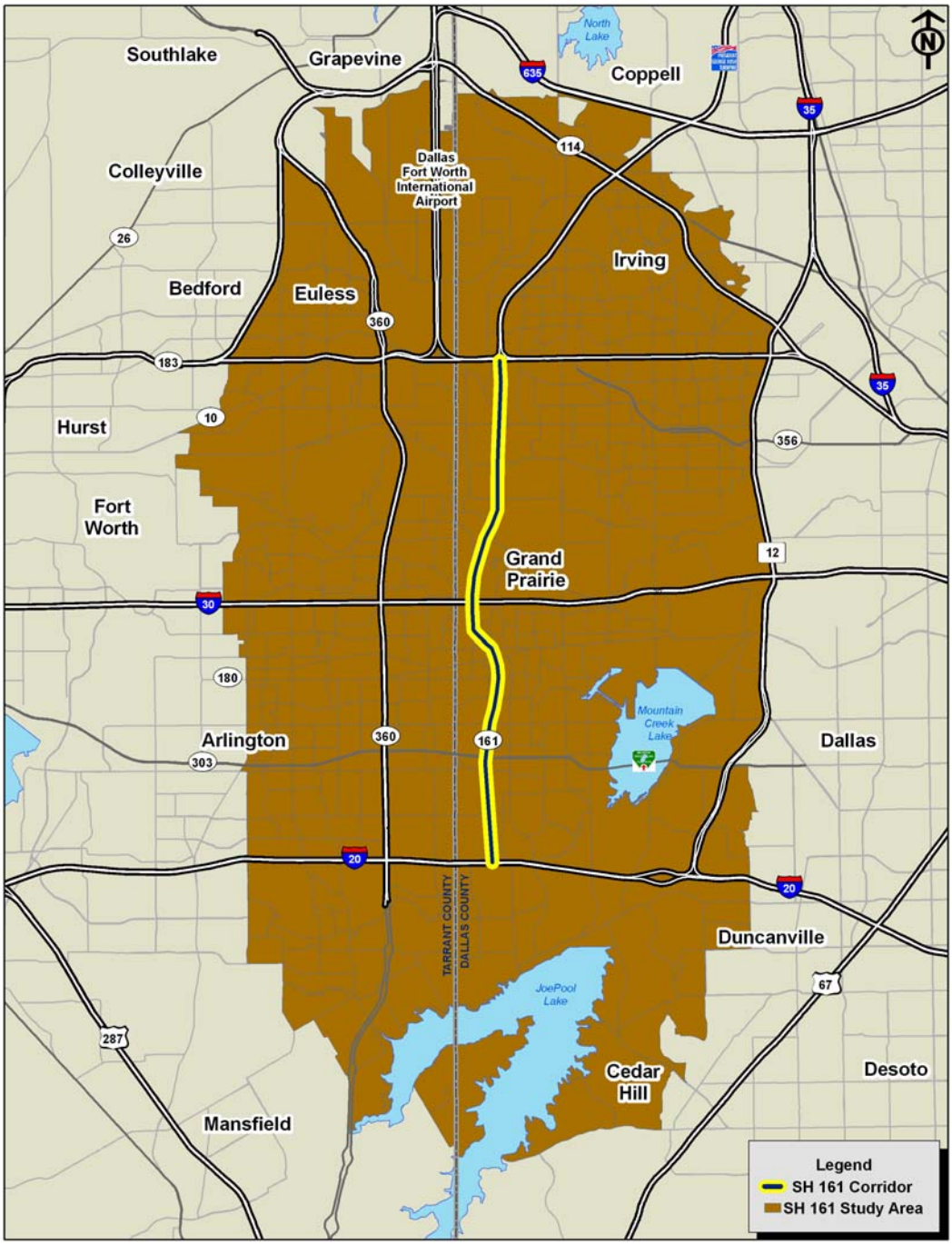


Figure 1: The SH 161 Corridor Study Area

3. METHODOLOGIES

As in other parts of the country, independent demographic studies such as this are prepared to provide a corroborating examination of the assumptions on which forecast trends are based, offering a cross check on local forecasting methodologies and strengthening the forecast of traffic volumes.

NCTCOG uses a continuous cycle of research and local review to forecast population and employment growth, to update anticipated land uses, and to monitor the final scope of actual projects. These forecasts allow updates to be integrated regularly into the TAP allocations, with major benchmarks forecast at five-year intervals. The current NCTCOG methodology is augmented by other regional forecasts to compare expectations of growth under different predictive methodologies.

However, because of the time frame of the process for updating these records, local economic information of significant scope can sometimes change at a more rapid pace than the current process of approximately five year intervals of major input, revision, and review can capture. NCTCOG's descriptive process of its 2030 Forecast Methodology is included as Appendix A.

Steps were taken by Insight Research Corporation to provide an independent review of NCTCOG population and employment forecasts for the study area.

- ***Establishing Factors Driving Potential Population or Employment Variance:*** Insight identified newly active and announced commercial projects, residential developments and employers by TAP along the designated study area that could affect population or employment assumptions -- either positively or negatively -- thus potentially affecting projections of future traffic volumes, and ultimately, the revenue forecasts underlying the financing options.

  The categories of activity for inclusion were defined as any development, project, employer or regional activity that might:

  A. Vary in size or timing from the TAP-level assumptions of underlying area development currently in use by NCTCOG,
  B. Contribute to either a gain or loss from the NCTCOG base employment data, or
  C. Affect the assumptions in current use (December 2003) by NCTCOG in any other statistically significant way.

- ***Obtaining and Reviewing NCTCOG Base Data:*** Insight obtained NCTCOG population and employment forecast data for the study area in required five-year increments by TAP along with accompanying maps outlining each of the 486 TAPs in the defined area. Key contacts in the affected jurisdictions were contacted by telephone, e-mail, facsimile and/or in person to acquaint them with the needed information and solicit their cooperation for project details.

- ***Preparing the Project List:*** Insight prepared lists of development and reviewed these lists with each community. Study area cities reviewed their most recent reports to NCTCOG on TAP-level development information and provided updates on only those additional residential or commercial projects that had changed or become formalized since the last report released in 2003 by NCTCOG, including those which had:

    A. Broken ground,
    B. Taken occupancy,
    C. Made credible and probable development announcements -- either publicly or confidentially -- which could be attributed to a specific TAP, including project size and/or timing forecast, or
    D. Changed in scope or size from information previously used by NCTCOG.

- ***Conducting Interviews:*** Insight interviewed and discussed the development patterns and trends being experienced with city planners, city management officials, economic development officials, building permit officials, real estate development and other professionals, and used project announcements and other local news sources to augment the assumptions in use by the NCTCOG. A list of projects found and persons interviewed or consulted is part of the bibliography of this report as Appendix B, as are electronic files, transmitted under separate cover, that update the NCTCOG TAP forecast data in final format.

- ***Conducting Field Surveys:*** Insight field teams drove the freeways, service roads, major thoroughfares, and farm-to-market (FM) roads in the study area to examine identified projects, cross check signage and determine construction progress. These field surveys were conducted in February and March of 2008.

- ***Calculating Population and Employment Gains and Losses:*** The list of projects was augmented and cross-checked for the correct TAP (or TAPs) of each project's location. The preliminary list of projects identified by five year increments in the format prescribed by NCTCOG included:

    - Development type,
    - Acreage,
    - Number and type of dwelling units,
    - Population (if applicable),
    - Employment (if applicable), further classified as basic, service or retail,
    - Estimates of square footage expected to be added, and
    - Expectations of project completion timing.

    In some instances, duplicate projects that had previously been reported to NCTCOG were revised using more current data, and any discrepancies which were found were resolved.

- ***Defining Other Corridor Influences:*** Some major projects were profiled and referenced in this text which are located just outside the study area. These projects, due to their size and traffic volume potential, add to an understanding of the development dynamics of the study area and could also affect the traffic volume estimates. **However, only those new and revised projects that were located within the boundaries of the defined study area were included for updating population and employment counts.**

    Population or employment losses were also calculated which might have been or which could be affected by economic conditions -- either as business upturns or downturns -- affecting specific employers. These forecasts also include employers who had closed or relocated, such as moves triggered by highway right-of-way requirements.

- ***Preparing Indirect Employment Calculations:*** Once additional direct, or on-site, employment was confirmed, indirect employment was calculated. This "ripple effect" employment results from the construction and operating activities of the newly added projects, using multipliers established by the U.S. Bureau of Economic Analysis (BEA) Regional Input-Output, Series II (RIMS II) for the Dallas/Fort Worth region. This indirect employment was allocated along predetermined geographic areas using a share of indirect job creation proportional to the amount of direct employment and further classified as basic, service or retail. This indirect employment was added to the direct employment, resulting in the total employment estimates by five-year increment.

- ***Calculating High and Low Forecast Alternatives:*** In order to bracket the risk inherent in any forecast, the Dallas/Fort Worth MSA population and employment growth trends and economic cycles were studied and forecast through 2030. Historic regional business cycle information was compared to that of the State of Texas and the United States to confirm regionally affected high and low cycle swings as a percentage of deviation from the average. Further definition of these business cycles is detailed and illustrated in Section 4 of this report.

  Within the limitations of the required five-year reporting intervals, the probable trend was calculated to incorporate expected fluctuations in population and employment forecasts. The high and low percentage deviation from the average defined the resulting variance possibilities, thus bracketing the probable forecast scenario with an economy-driven level of risk. The probable case, along with both high and low projections, was then provided to WSA in electronic table formats for use in refining traffic forecasts and revenue projections.

4. DEMOGRAPHIC AND ECONOMIC BACKGROUND

Dallas/Fort Worth MSA Population Overview

The Dallas/Fort Worth MSA is a dynamic, rapidly growing economic region of the United States and of Texas encompassing twelve counties: Collin, Dallas, Delta, Denton, Ellis, Henderson, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise. The MSA has a diverse employment base and is experiencing strong growth in both population and employment, roughly double that of the United States as a whole.

The map illustrates the rapid growth of the area, as depicted by the areas for which public utility service was available. In 1970, an area of approximately 1,152 square miles in Dallas, Tarrant, Denton and Collin counties was served by public utilities. By 1990, that service area had grown to 1,845 square miles. By 2010, it is forecast that the service area will have grown to 2,670 square miles.

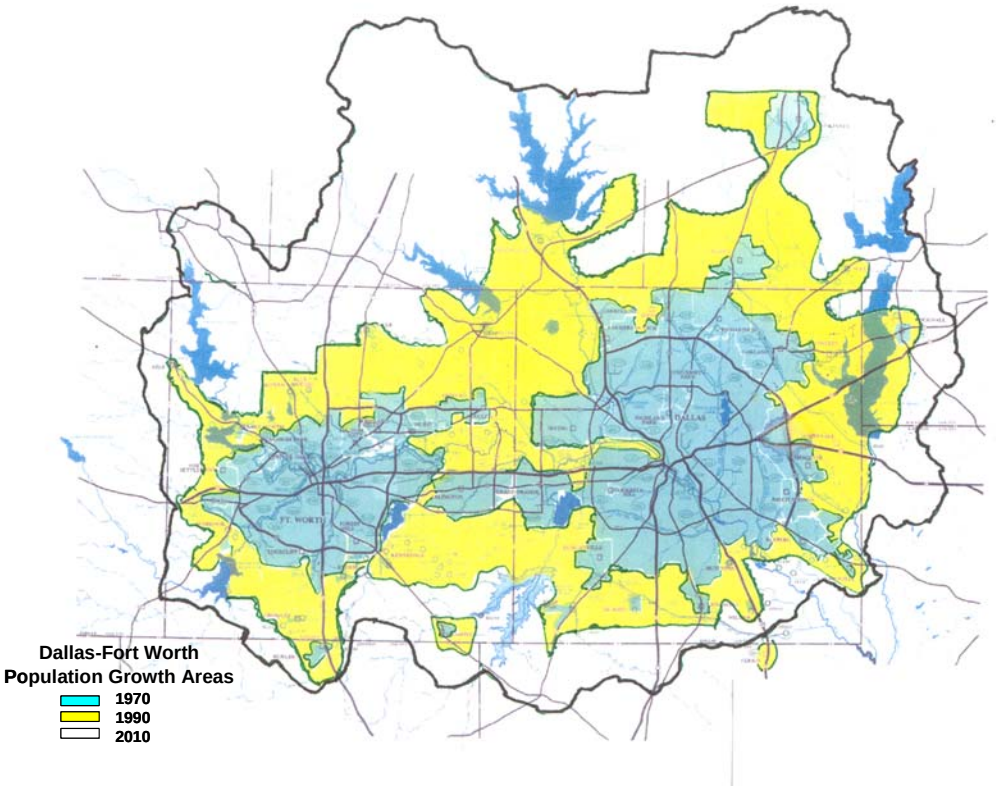


Figure 2: Areas of Public Utility Service at Twenty Year Intervals

Historic Dallas/Fort Worth MSA Population and Employment Overview

Shown at five year intervals from January 1, 1960 to January 1, 2005, a 45-year period, the population of the twelve-county Dallas/Fort Worth MSA -- including Collin, Dallas, Delta, Denton, Ellis, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise counties -- increased from 1,777,686 to 5,868,574, or 230.1%, an annual average of 2.7%. Likewise, the number of employed persons increased from 367,350 to 3,138,720, or 754%, from 1960 to 2005, an annual average of 4.9%.

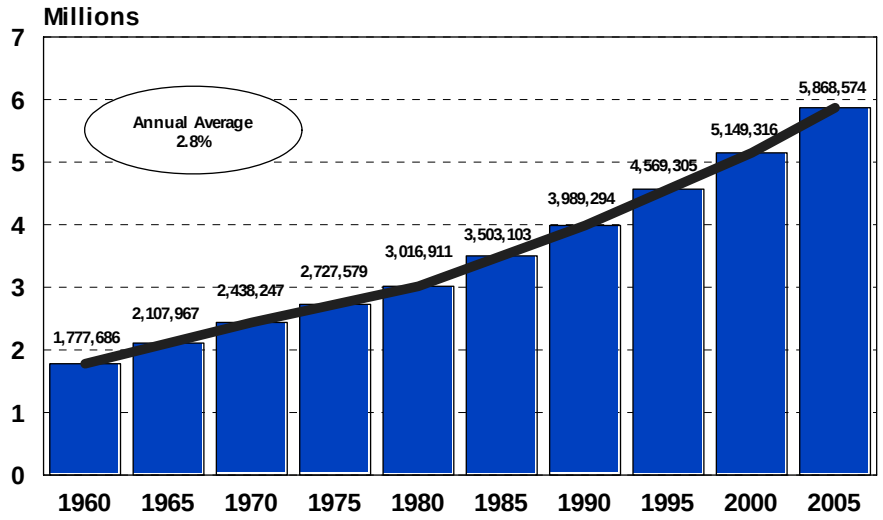


Figure 3: Dallas/Fort Worth MSA Historic Population from 1960 to 2005

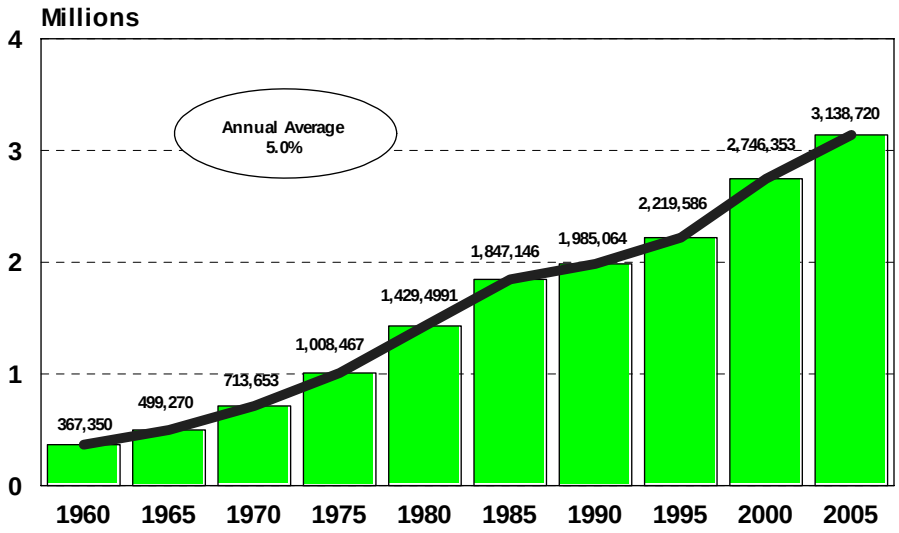


Figure 4: Dallas/Fort Worth MSA Employed Persons from 1960 to 2005

Dallas/Fort Worth MSA Wage and Salary Employment Overview

Figures 5 and 6 use the latest Bureau of Labor Statistics (BLS) employment classifications of North American Industrial Classification Standards (NAICS) to indicate the segmentation of employment sectors and the relative size of the wage and salary employment. The characteristics of the Dallas/Fort Worth MSA are illustrated in Figure 5, demonstrating the diversity of the labor force mix.

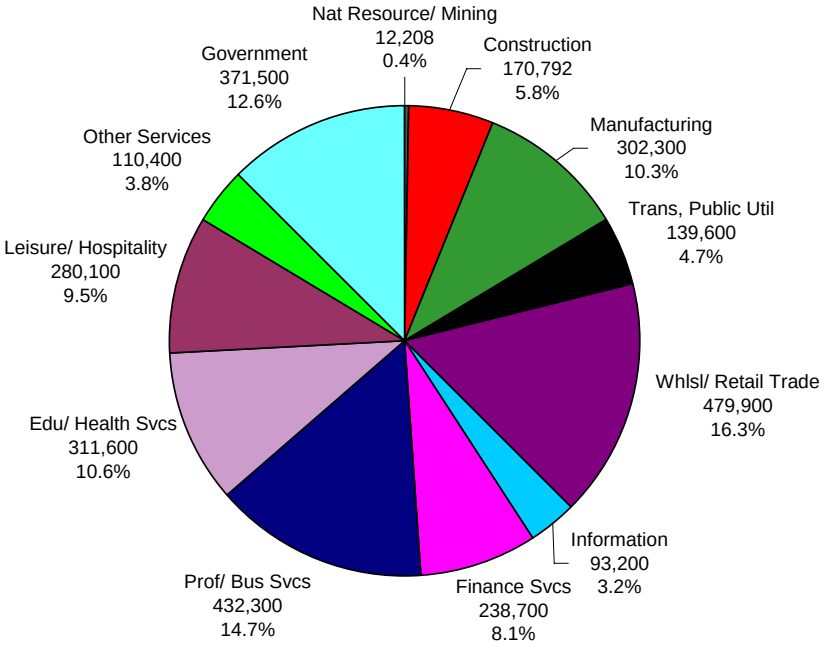


Figure 5: Dallas/Fort Worth MSA 2007 NAICS Total Non-Agricultural Wage and Salary Employment, Percentage by Industry

The Dallas/Fort Worth MSA is a dynamic, young and fast-growing metropolitan area, and as such, it reflects economic cycles in its population and employment performance. These cycles have been accounted for in projections of expected risk levels in capital-driven commercial development growth in the study area. Population and employment have been bracketed by best case, probable case and worst case percentages. These are shown as high, probable and low projections, offering an estimate of future upside and downside risk based on past experience of economic cycles in the Dallas/Fort Worth MSA.

Figure 6 illustrates the Dallas/Fort Worth MSA employment history as reported from wage and salaried payrolls by industry segment for each of the last eighteen years. Supporting data for this Figure is found in Table 1.

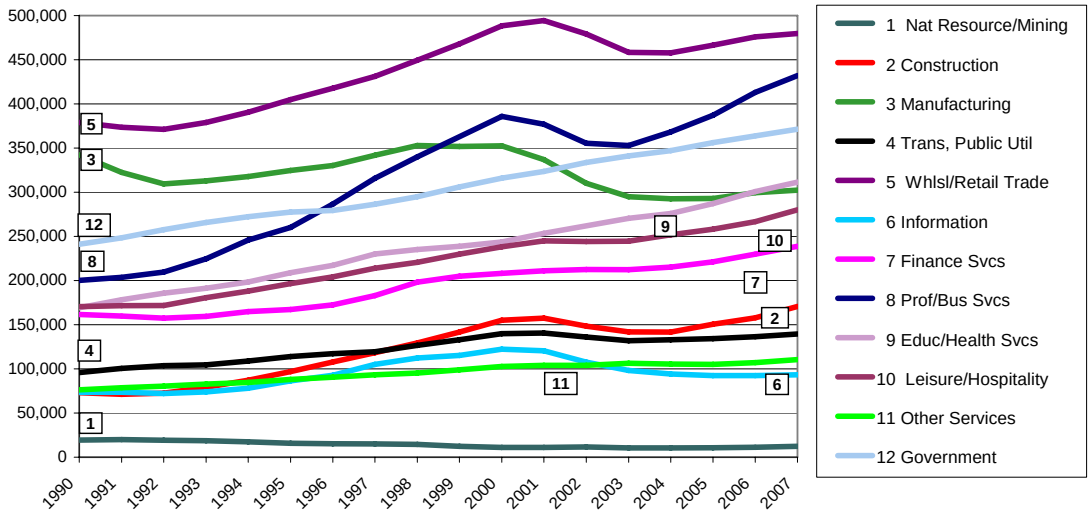


Figure 6: Dallas/Fort Worth MSA NAICS Total Non-Agricultural Wage and Salary Employment, 1990 – 2007

	Nat Resources/ Mining	Construction	Manufacturing	Trans, Public Util	Whlsl/Retail Trade	Information	Finance Svcs	Prof/ Bus Svcs	Educ & Health Svcs	Leisure/ Hospitality	Other Services	Government	Total
1990	19,300	73,100	342,400	95,700	379,000	73,200	161,600	200,300	169,000	170,300	76,200	241,100	2,017,100
1991	19,800	71,100	322,500	100,500	373,500	73,600	159,600	203,600	178,300	171,500	78,500	248,500	2,016,500
1992	19,200	72,400	309,500	103,700	371,200	72,100	157,200	209,700	185,600	171,700	80,400	257,700	2,025,600
1993	18,700	79,000	312,700	104,400	379,000	73,800	159,400	224,600	191,300	180,600	82,600	265,600	2,086,600
1994	17,300	87,200	317,800	108,800	390,600	77,900	164,900	245,900	198,400	188,000	84,500	272,300	2,166,700
1995	15,600	96,800	324,500	114,000	404,900	86,400	167,400	260,200	208,800	196,700	88,000	277,400	2,253,300
1996	15,100	107,900	330,400	117,300	417,800	92,800	172,400	286,700	217,400	204,100	90,700	279,300	2,331,500
1997	14,900	118,300	342,000	119,400	431,100	105,100	183,100	315,800	230,000	213,800	93,200	286,300	2,452,900
1998	14,400	129,300	353,000	126,700	449,400	112,200	198,100	340,000	235,000	220,600	95,300	295,100	2,568,900
1999	12,300	141,700	351,800	133,100	468,100	115,300	205,000	362,900	238,800	229,900	98,900	305,900	2,663,500
2000	11,000	155,100	352,600	139,800	488,400	122,200	208,100	385,900	243,800	238,200	102,600	315,900	2,763,200
2001	11,100	157,400	337,000	140,600	494,500	120,500	211,100	376,900	253,400	245,000	103,900	323,500	2,775,000
2002	11,400	148,500	310,100	136,100	479,300	107,700	212,600	355,400	262,100	244,200	103,900	333,700	2,705,000
2003	10,500	142,000	294,900	131,900	458,500	98,100	212,300	352,800	270,300	244,600	106,200	341,000	2,665,400
2004	10,378	141,622	292,700	133,100	457,800	94,200	215,200	368,300	275,900	251,800	105,400	347,100	2,698,200
2005	10,764	150,536	293,000	134,200	466,600	92,500	221,200	387,200	287,300	258,000	104,900	356,200	2,766,500
2006	11,260	157,940	299,400	136,500	475,800	92,300	229,900	413,200	300,800	266,800	107,000	364,000	2,860,800
2007	12,208	170,792	302,300	139,600	479,900	93,200	238,700	432,300	311,600	280,100	110,400	371,500	2,943,000

Source: U. S. Bureau of Labor Statistics

Table 1: Dallas/Fort Worth MSA US BLS Non-Agricultural Wage and Salary Employment 1990 to 2007 NAICS

While Table 1 reflects the official job count in the Dallas/Fort Worth MSA, some sectors are omitted. Those sectors include agricultural, military and civilian employment, as well as new business start-up activity for which the reporting requirements do not fully include new employment activity.

HISTORIC REGIONAL ECONOMIC PERFORMANCE AND FORECAST

As noted in the previous discussion, the potential economic risk for any required capital investment is influenced by the way in which a region's population and employment activity responds to national economic cycles.

Figure 7 illustrates a clear method of examining economic cycles in the United States by measuring the effect of available construction capital on employment cycles. Beginning in 1919, when the BLS began keeping employment data by market segment, the chart illustrates the annual percent of change in total employment from the previous year, shown in blue, as compared to the annual percent of change in construction employment, shown in red. Each year that the line is above zero indicates that employment increased by that percentage over the preceding year. Likewise, a mark below zero indicates that year's percent of loss against the preceding year, while a posting at zero would mean no change in total jobs from the previous year.

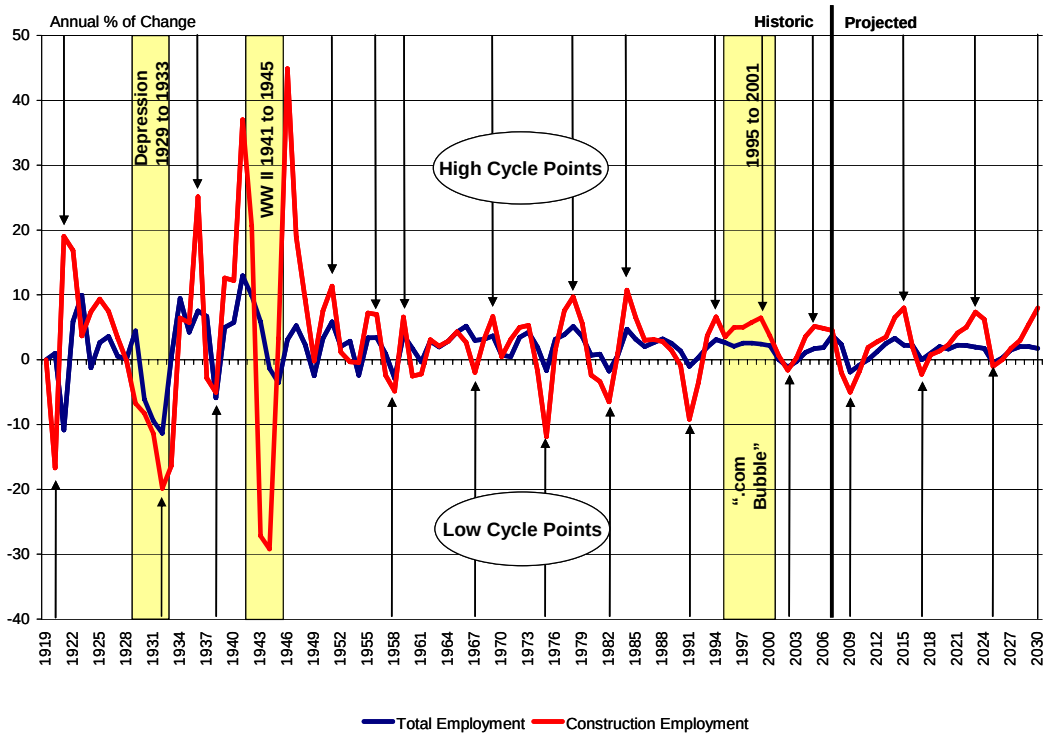


Figure 7: United States Economic Cycles of Capital Investment from 1919 to 2030

While total employment reflects overall activity in the country, construction employment is particularly useful to track because it is the most sensitive to the availability of capital for expenditure in improvements, both public and private. Construction employment represents between three and eight percent of total employment in a typical MSA and MD, and in the country as a whole. In Figure 7, construction employment acts as the tip of a "whip of change" as the whip is snapped and construction projects are released or slowed in proportion to the occupancy rates and business cycles in individual MD's.

Three areas of particular volatility or unpredictability from the expected norm are shown in Figure 7, including the Great Depression in the United States from 1929 to 1933, World War II from 1941 to 1945, and the "dot.com bubble" from 1995 through 2001. In each of these periods the market moved in an aberrant manner, reflecting the availability of capital formation for new public and private investment.

In addition, the graphic illustrates the high point and low point of each cycle with corresponding arrows. Through 1948, extreme swings in both construction employment and total employment were experienced, as the illustration shows. However, since 1953, cycles in the economy have become much less erratic due to improved federal regulations, money management and the improving stability of the world economy. From 1953 forward, economic cycles at intervals of approximately six to eight years are apparent in the data, allowing a predictive mechanism to be employed in estimating capital formation in the future. Detailed employment data from the U.S. Bureau of Labor Statistics is shown in Appendix C.

In the absence of a catastrophic economic event, it can be predicted that approximately every six-to-eight years the U.S. economy will experience a cycle of over-building followed by under-building, over-supply followed by under-supply, and available capital followed by restricted capital.

These economic cycles are documented at the regional level with equal clarity in most metropolitan statistical areas or metropolitan divisions, including the Dallas/Fort Worth MSA, as reflected in Figure 8, and distinctly affect new construction markets, with the accompanying "ripple effects" to land absorption for new development, resulting in changes in traffic patterns and volumes.

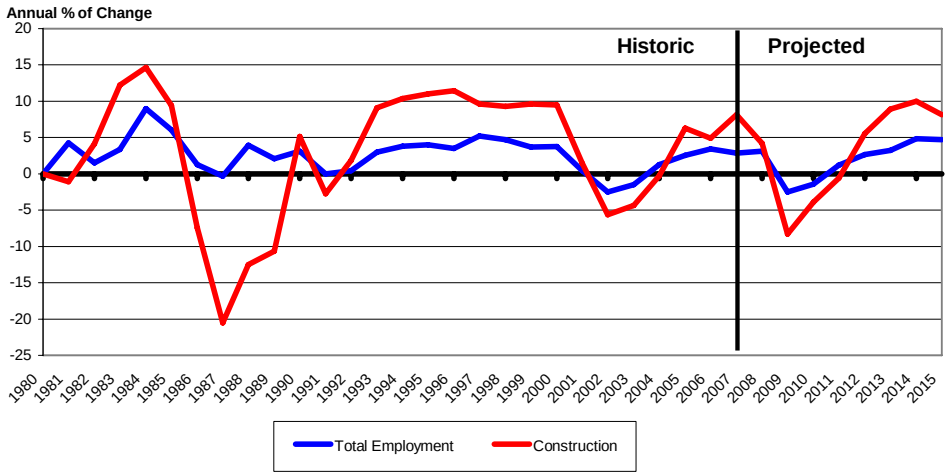


Figure 8: Dallas/Fort Worth MSA
Economic Cycles of Capital Investment

The expectations of growth cycles for the Dallas/Fort Worth MSA can also be forecast, as shown in Figure 8, with dynamic cycle changes occurring about every six-to-eight years. Continued in-migration to the State of Texas and to the Dallas/Fort Worth MSA is reflected in strong increases in annual job growth, followed by pauses in growth during economic downturns. The need for added business space and residential housing, accompanied by capital commitments to needed infrastructure, will continue to create well defined cycles of construction employment. The performance of the commercial construction and occupancy market in the Dallas/Fort Worth MSA, as provided in detail in Appendix D, also reflect these historic economic cycles.

The diversity of the employment base of the Dallas/Fort Worth MSA also serves to cushion the region's job performance to some extent from the more volatile effects of fluctuating energy prices. Unlike some other Texas markets that are heavily dependent on jobs in the energy sector -- such as Houston, with an energy dependent sector of 3% of its direct employment, plus significant indirect energy supporting and service sectors, and the Permian Basin in West Texas, with an average energy dependent labor sector of 16% -- the Dallas employment base includes only 0.4% of its employment related to energy dependent positions, as shown in Figure 5. The exception to this general cushioning are Dallas/Fort Worth's aviation and other transportation providers, where fluctuation and/or rising energy costs continue to present an unstable force in cost control for these transportation-related industries.

However, the Dallas/Fort Worth business climate in general, and certain logistics and transportation industry segments in particular, will be affected by the continuing gasoline and oil price increases and market scarcity factors that affect the balance of the country. As natural gas prices increase, the cost of living percentage associated with utilities and transportation may also be expected to increase over the next decade. The Barnett Shale exploration, although located in the western counties of the Dallas/Fort Worth MSA, is expected to add to the percentage of energy related positions over the next decade, although even with this percentage increase the energy related employment total is expected to be less than 1% of Dallas/Fort Worth MSA employment.

A change in the expected economy of in the Dallas/Fort Worth region is the declining impact of the 2005 hurricane season, which continues to affect the construction sector but less significantly than in the previous two years. As construction materials throughout the country were diverted to the heavily affected Gulf Coast regions, now undergoing reconstruction, new construction elsewhere in the United States experienced more expensive construction materials costs. At this time, the cost of housing (or "shelter") is approximately 33% of the consumer price index, a general benchmark for the cost of living, as shown in Figure 9.

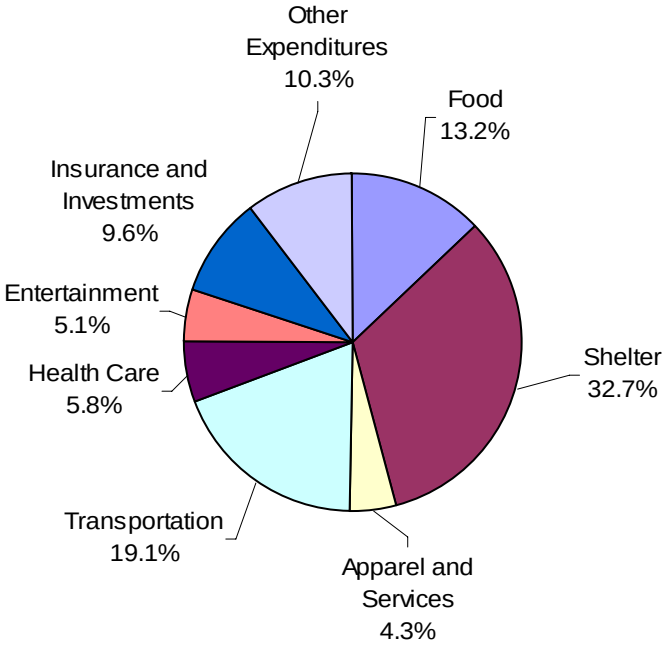


Figure 9: Components of the Consumer Price Index (CPI)

Figure 10 illustrates the relationship between the consumer price index, minus the cost of housing, in the Dallas/Fort Worth MSA as compared to the cost of housing reported separately. Housing prices have increased at roughly the same rate as the CPI (minus shelter) over the past five years. These combined forces result in a home price forecast in which the Dallas/Fort Worth MSA is expected to experience relatively constant pricing pressure on both new residential and commercial construction, despite more widely publicized fluctuations in home prices in both East and West Coast markets.

Mortgage interest increases and a higher than average rate of foreclosures have dampened housing market performance nationwide. These trends are far more limited in the Dallas/Fort Worth MSA. Unlike the east and west coasts of the U. S., the Dallas/Fort Worth MSA housing market has not experienced a rapid increase in prices, and is still considered an excellent value in the national housing marketplace. It is expected that home prices will stay constant or decline slightly in the next three years, while a strong recovery can be expected by 2010.

Figure 10: Housing Price Appreciation Versus Consumer Price Index Dallas/Fort Worth MSA, 2000 – 2007

5. DEVELOPMENT PATTERNS IN THE SH 161 CORRIDOR STUDY AREA

At this time, major improvements on SH 161 through the study area are eagerly anticipated. Activity levels all along the corridor continue at a steady pace in Arlington, Cedar Hill, Euless, Grand Prairie, Grapevine and Irving, with both residential and commercial land development in progress throughout the study area. These recent trends are apparent by comparing the reported "percent of developable land area built out" for each city by NCTCOG in 2000 to year end 2007 as shared with Insight by the city planning departments, and shown in Table 2:

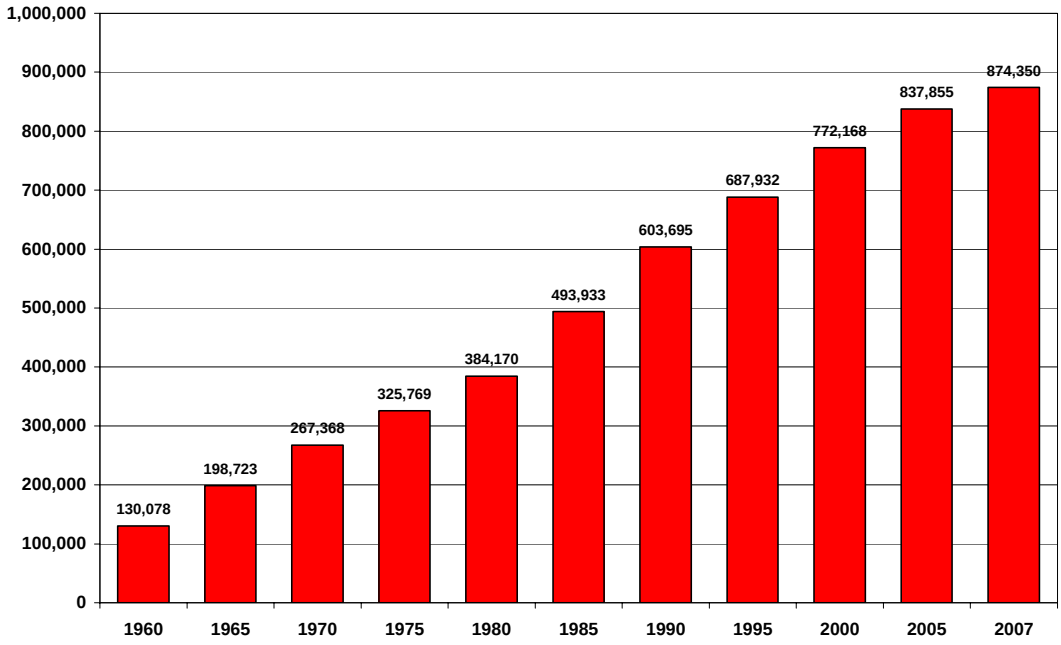
City	2000 % Built Out (NCTCOG)	2007 % Built Out (City)
Arlington	77%	N/A
Cedar Hill	38%	43%
Euless	82%	93%*
Grand Prairie	56%	67%**
Grapevine	83%	87%
Irving	72%	85%

** Does not include DFW Airport.*

*** Includes ETJ (Extra-Territorial Jurisdiction).*

Table 2: 2000 to 2007 Comparison of Developable Land Area Built Out as a Percentage of Total, SH 161 Study Area Cities

The combined population in 2005 of study area cities had grown 544% since 1960, and at an average annual growth rate of 1.7% since 2000. This steady growth in population is shown in Figure 11. A very small portion of the Cities of Dallas and Fort Worth are also included in the study area, but is omitted from analytical tables because of the disproportionately large population and employment base of these cities relative to the size of other communities in the study area. Figure 11 reflects the historic population in the study area cities.



Source: North Central Texas Council of Governments, Insight Research Corporation, Study Area Cities

Figure 11: Population of Study Area Cities – 1960 to 2007
Arlington, Cedar Hill, Euless, Grand Prairie, Grapevine and Irving

Table 3 indicates when each city expects its ultimate population to be achieved, with these estimates provided by the planning staff of each city.

City	2007 Population	Ultimate Population	Estimated Date to Reach Ultimate Population
Arlington	364,300	N/A	N/A
Cedar Hill	43,950	88,956	2030
Euless	53,400	60,093	2020
Grand Prairie	161,550	313,000	2038*
Grapevine	45,550	55,000	2023 to 2028
Irving	205,600	260,000	2050

** Assumes annexation of the ETJ (Extra-Territorial Jurisdiction).*
NA – Figures Not Available

Table 3: Current Population Estimates and Build-Out Expectations by City

Additions Made by IRC to NCTCOG Forecasts: Added commercial and residential projects identified within the boundaries of the study area, not included in the 2003 report from NCTCOG, define additional activity in the cities of Arlington, Cedar Hill, Dallas, Euless, Grand Prairie, Grapevine and Irving.

- **Arlington:** The City of Arlington is experiencing steady commercial and residential growth. Five mixed-use projects have been identified, including two large projects in the area of the new Cowboys Stadium, opening in Arlington in 2009. These two mixed use projects, Viridian and Glory Park, will bring a combined total of three hotels, 1.5 million square feet of office space, 1.4 million square feet of retail space, 3,200 multi-family units and 2,800 single family lots. In addition to the five mixed-use projects, 12 additional commercial projects have been identified, including public, office, industrial, retail and hotel uses. Residential development lot inventory includes 657 multi-family or townhome units in six communities and 664 single family lots within twelve subdivisions that are under development or are currently planned for development.

- **Cedar Hill:** Three large Cedar Hill TAPs are included in the study area. During the period of study a new Ninth Grade Center has opened within the study area, adding approximately 80 employees. In addition, two subdivisions account for the addition of 53 single family lots.

- **Dallas:** A total of 21 Dallas TAPs are included in the study area. Within the study area is Mountain Creek Business Park, a sizable development with a total of almost 2 million square feet of industrial/distribution space recently

completed or currently planned for development. In addition, single family lot inventory in the study area includes 2,694 lots in 16 active subdivisions.

- **Euless:** Development in the City of Euless has been primarily residential, with 826 single family lots within ten subdivisions that are under development or are currently planned for development. A mixed-use project, Glade Parks, will add 700 townhomes, 300,000 square feet of office space and 500,000 square feet of retail space. Four additional commercial projects were identified within the study area.

- **Fort Worth:** Current activity in the narrow strip of land annexed by the City of Fort Worth just south of DFW International Airport includes 145,000 square feet of industrial development, one townhome development with 132 units, and two subdivisions with a total of 339 single-family lots.

- **Grand Prairie:** All but the southern tip of Grand Prairie (south of where Lake Ridge crosses over Joe Pool Lake) is included in the study area. Development in the City of Grand Prairie has also occurred mostly in the industrial category, with twenty-three identified projects accounting for almost 9.5 million square feet of industrial development. The City has also experienced retail growth, with 22 projects adding 1.5 million square feet of retail space. Ten other commercial projects include hotel, office, and public uses. Single family development is also significant and will add more than 3,800 lots within 24 subdivisions to the City's study area. In addition, four townhome development projects that will add 382 units.

- **Grapevine:** Only the southern part of Grapevine is within the study area. Identified commercial projects in this area, which is adjacent to the west side of DFW airport, include 82,000 square feet of office space and 26,000 square feet of new industrial space. Residential lot inventory in the study area includes 131 single family lots within three subdivisions that are under development or are currently planned for development.

- **Irving:** The City of Irving is experiencing rapid commercial and residential growth, with a large portion of development occurring as mixed-use projects and multi-family projects in the Las Colinas area. These mixed-use projects include Las Colinas Station, The Gables, Water Street, and an as yet unnamed Hines/Fram project. Twenty-seven commercial projects have been identified in addition to the mixed-use projects, including public, office, industrial, retail and hotel uses. Residential development lot inventory

includes almost 6,740 multi-family lots within sixteen communities and 1,528 single family lots within twenty-one subdivisions that are under development or are currently planned for development.

- **Outside the Study Area:** Just outside of the study area, a 380,000 square foot outlet mall is planned near the site of Texas Stadium in Irving, which will be vacated by the Dallas Cowboys in 2009. Redevelopment plans for the Texas Stadium land are in the preliminary planning stages and may include up to 4,900 residences, one million square feet of retail and entertainment, two million square feet of office space, a 500-room hotel, a theatre and a civic center.

6. FINDINGS OF NEW PROJECT IMPACT

Employment Forecast: Figure 12 and Table 4 illustrate the findings of Insight Research Corporation's analysis of employment change as a variance from the NCTCOG projection. These projections are supplemented by low-mid-high employment values as calculated from the research, and further detailed in Appendix G.

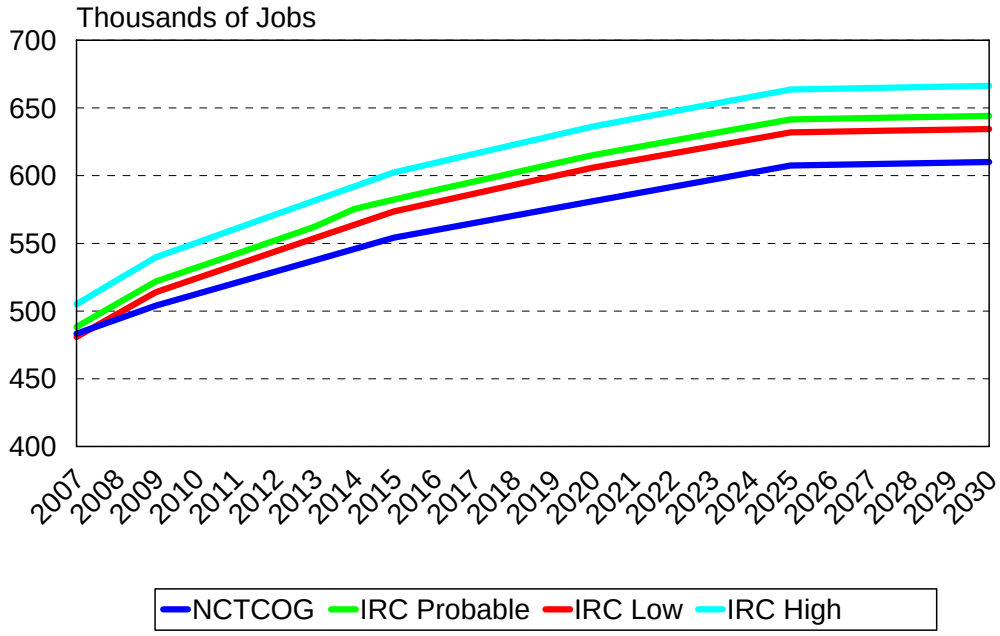


Figure 12: SH 161 Corridor Study Area
Direct Employment Projections
NCTCOG, Probable, Low and High Scenarios

Year	NCTCOG Trend	IRC Probable Trend	% Variance from NCTCOG Trend	IRC Low Trend	% Variance from NCTCOG Trend	IRC High Trend	% Variance from NCTCOG Trend
2007	483,356	488,274	1.0%	480,950	-0.5%	505,071	4.5%
2009	503,941	521,769	3.5%	513,942	2.0%	539,718	7.1%
2015	554,201	582,399	5.1%	573,663	3.5%	602,434	8.7%
2020	581,027	615,094	5.9%	605,868	4.3%	636,253	9.5%
2025	607,510	641,577	5.6%	631,953	4.0%	663,647	9.2%
2030	610,077	644,144	5.6%	634,482	4.0%	666,303	9.2%

Table 4: SH 161 Corridor Study Area
Direct Employment Projections
NCTCOG, Probable Low and High Scenarios

Population Forecast: Additional study area population from the Major Development Forecast found in Section 7 is captured in the TAP population and employment update and projection spreadsheets, provided as a part of this analysis and delivered in electronic file formats for further analysis by Wilbur Smith Associates. No indirect population or employment was attributed to the study area associated with residential development because the multipliers associated with such development are very small.

While NCTCOG estimates a population of 723,610 within the study area by 2030, Insight estimates a population of 783,031, or 8.2% higher based on un-platted future developments, platted developments and projects now underway. This variance is illustrated in Figure 13, comparing the existing NCTCOG population forecast for these TAPs to that supplemented by the updated field research prepared by Insight Research Corporation. The variance by year for each benchmark five-year increment is noted in Table 5.

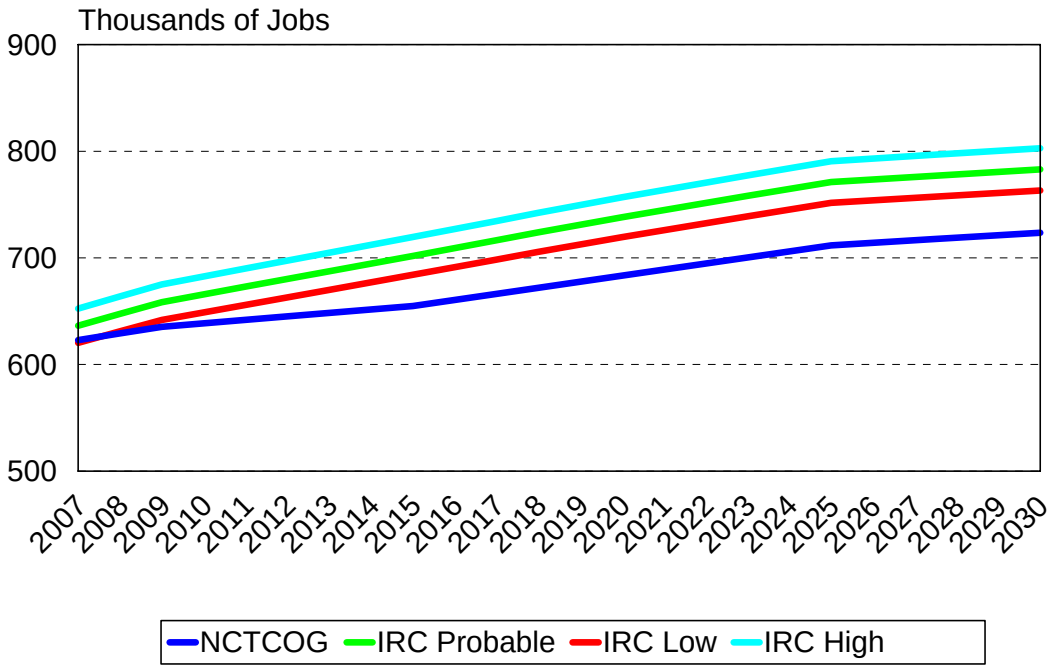


Figure 13: SH 161 Corridor Study Area Comparative Population Projections NCTCOG, Probable Low and High Scenarios

Year	NCTCOG Trend	IRC Probable Trend	% Variance from NCTCOG Trend	IRC Low Trend	% Variance from NCTCOG Trend	IRC High Trend	% Variance from NCTCOG Trend
2007	622,929	636,410	2.2%	620,309	-0.4%	652,511	4.7%
2009	635,394	658,506	3.6%	641,846	1.0%	675,166	6.3%
2015	654,856	701,841	7.2%	684,084	4.5%	719,598	9.9%
2020	683,336	738,339	8.0%	719,659	5.3%	757,019	10.8%
2025	711,737	771,158	8.3%	751,648	5.6%	790,668	11.1%
2030	723,610	783,031	8.2%	763,220	5.5%	802,842	10.9%

Table 5: SH 161 Corridor Study Area Comparative Direct Population Projections NCTCOG to IRC Trend, 2007 – 2030

Additional Detail: Appendices A though C in Section 8 provide additional detail of the research findings:

- **Appendix A:** NCTCOG forecast methodology for TAP population and employment projection, distribution and allocation methods.
- **Appendix B:** Elected officials, city representatives, real estate and economic development professionals who were contacted to provide information for this development update.
- **Appendix C:** U.S. Bureau of Labor Statistics (US BLS) historic employment data, plus Insight Research Corporation's forecast.

7. Major Development Forecast

Major Development Forecast
Incremental Estimates of
Direct Population and Employment Additions
SH 161 Corridor - March 2008

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Arlington	Tarrant	Holiday Inn	2009	Hotel Rooms	149	**9732**	**60**	
Arlington	Tarrant	Staybridge Suites	2009	Hotel Rooms	100	**9732**	**40**	
Arlington	Tarrant	Hampton Inn & Suites	2009	Hotel Rooms	94	**9734**	**38**	
Arlington	Tarrant	Alley & Alley Co. Hotel	2009	Hotel Rooms	150	**9905**	**60**	
Arlington	Tarrant	Arlington Convention Center Hotel	2015	Hotel Rooms	300	**9903**	**120**	
Arlington	Tarrant	Forum/Arkansas Industrial	2015	Ind D	504,000	**10414**	**100**	
Arlington	Tarrant	Barbeques Galore	2009	Ind D	200,825	**10415**	**80**	
Arlington	Tarrant	Arlington Commerce Center - Building A	2009	Ind D	219,230	**10633**	**88**	
Arlington	Tarrant	Arlington Commerce Center - Building B	2015	Ind D	557,478	**10633**	**223**	
Arlington	Tarrant	The "V" Office Building	2009	Office	15,000	**10108**	**50**	
Arlington	Tarrant	Pioneer 360 Business Park	2009	Office	1,600,000	**10414**	**1,600**	
Arlington	Tarrant	Vandergriff Town Center - Expansion	2009	Office	33,000	**40154**	**110**	
Arlington	Tarrant	Cheesecake Factory	2009	Retail	10,700	**10568**	**21**	
Arlington	Tarrant	Highland Commons	2015	Retail	166,817	**10568**	**334**	
Arlington	Tarrant	U.S. Bowling Congress Headquarters	2015	Other	100,000	**9906**	**198**	
Arlington	Tarrant	LA Fitness	2007	Other	45,637	**9907**	**20**	
Arlington	Tarrant	Cowboys Stadium	2015	Other		**10110**	**50**	
Arlington	Tarrant	Summit Internationsl Preparatory School	2009	School		**9900**	**45**	
Arlington	Tarrant	Viridian Mixed-Use	2015	Office	500,000	**9590**	**1,667**	
Arlington	Tarrant	Viridian Mixed-Use	2015	Retail	200,000	**9590**	**400**	
Arlington	Tarrant	Viridian Mixed-Use	2015	MF Units	300	**9590**		**540**
Arlington	Tarrant	Viridian Mixed-Use	2020	MF Units	300	**9590**		**540**
Arlington	Tarrant	Viridian Mixed-Use	2025	MF Units	300	**9590**		**540**
Arlington	Tarrant	Viridian Mixed-Use	2015	SF Lots	1,400	**9590**		**3,878**
Arlington	Tarrant	Viridian Mixed-Use	2020	SF Lots	1,400	**9590**		**3,878**
Arlington	Tarrant	Viridian Mixed-Use	2025	SF Lots	1,400	**9590**		**3,878**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Arlington	Tarrant	Glory Park - Westin Hotel Mixed-Use	2015	Hotel Rooms	310	**9904**	**124**	
Arlington	Tarrant	Glory Park - Two Hotels Mixed-Use	2020	Hotel Rooms	340	**9904**	**136**	
Arlington	Tarrant	Glory Park Mixed-Use	2020	Office	1,000,000	**9904**	**3,333**	
Arlington	Tarrant	Glory Park Mixed-Use	2020	Retail	1,200,000	**9904**	**2,400**	
Arlington	Tarrant	Glory Park Mixed-Use	2020	MF Units	2,000	**9904**		**3,600**
Arlington	Tarrant	Center Street Station Mixed-Use	2015	Office	12,425	**10108**	**62**	
Arlington	Tarrant	Center Street Station Mixed-Use	2015	Retail	27,260	**10108**	**138**	
Arlington	Tarrant	Uptown Market Mixed-Use	2015	Office	30,000	**10411**	**100**	
Arlington	Tarrant	Uptown Market Mixed-Use	2015	Retail	115,000	**10411**	**230**	
Arlington	Tarrant	Uptown Market Mixed-Use	2015	MF Units	82	**10411**		**148**
Arlington	Tarrant	Arlington Highlands Mixed-Use	2007	Retail	635,000	**10568**	**1,270**	
Arlington	Tarrant	Arlington Highlands Mixed-Use	2009	Hotel Rooms	130	**10568**	**52**	
Arlington	Tarrant	Arlington Highlands Mixed-Use	2009	Retail	160,000	**10568**	**320**	
Arlington	Tarrant	Pecan Street Housing	2009	MF Units	188	**10271**		**338**
Arlington	Tarrant	One Montgomery Plaza	2015	MF Units	240	**10414**		**432**
Arlington	Tarrant	Chelsea Park Townhomes	2009	Townhomes	93	**9903**		**167**
Arlington	Tarrant	905 S. Center Street	2009	Townhomes	30	**10273**		**54**
Arlington	Tarrant	East Abram Townhomes	2009	Townhomes	24	**10282**		**43**
Unincorporated	Tarrant	Rustic Woods	2007	SF Lots	2	**9338**		**6**
Unincorporated	Tarrant	Rustic Woods	2009	SF Lots	10	**9338**		**28**
Arlington	Tarrant	Hampden Woods	2009	SF Lots	37	**9590**		**102**
Arlington	Tarrant	Loch Highland Estates	2009	SF Lots	19	**9590**		**53**
Arlington	Tarrant	Frazee Court	2009	SF Lots	17	**9733**		**47**
Arlington	Tarrant	Avondale Place	2015	SF Lots	24	**9733**		**66**
Arlington	Tarrant	The Parks at Susan Drive	2009	SF Lots	25	**10284**		**69**
Arlington	Tarrant	The Parks at Susan Drive	2015	SF Lots	60	**10284**		**166**
Arlington	Tarrant	Woods of Timberlake	2007	SF Lots	122	**10285**		**338**
Arlington	Tarrant	Woods of Timberlake	2009	SF Lots	47	**10285**		**130**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Arlington	Tarrant	Cinnamon Creek Estates	2009	SF Lots	50	**10412**		**139**
Arlington	Tarrant	Cinnamon Creek Estates	2015	SF Lots	49	**10412**		**136**
Arlington	Tarrant	Monterra Addition	2009	SF Lots	14	**10567**		**39**
Arlington	Tarrant	Eden Creek Addition	2009	SF Lots	24	**10725**		**66**
Arlington	Tarrant	Josiah Village	2007	SF Lots	19	**10726**		**53**
Arlington	Tarrant	Josiah Village	2009	SF Lots	35	**10726**		**97**
Arlington	Tarrant	Parkcrest Place	2009	SF Lots	110	**10770**		**305**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Cedar Hill	Dallas	Ninth Grade Center	2007	School		**8660**	**80**	
Cedar Hill	Dallas	Promontory	2007	SF Lots	10	**8660**		**30**
Cedar Hill	Dallas	Promontory	2009	SF Lots	6	**8660**		**18**
Cedar Hill	Dallas	Juniper Ridge	2007	SF Lots	10	**40208**		**30**
Cedar Hill	Dallas	Juniper Ridge	2009	SF Lots	7	**40208**		**21**
Cedar Hill	Dallas	Juniper Ridge	2015	SF Lots	20	**40208**		**59**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Dallas	Dallas	Old Dominion Freight Line Inc.	2009	Ind D	107,000	**8284**	**43**	
Dallas	Dallas	Mountain Creek Business Park - Building 1	2007	Ind D	210,000	**8453**	**230**	
Dallas	Dallas	Mountain Creek Business Park - Nestle Waters NA Inc	2009	Ind D	750,000	**8453**	**230**	
Dallas	Dallas	Mountain Creek Business Park - MedLine	2015	Ind D	500,000	**8453**	**200**	
Dallas	Dallas	Mountain Creek Business Park - Naigara Bottling	2015	Ind D	441,000	**40263**	**200**	
Dallas	Dallas	Cielo Vista	2007	SF Lots	85	**8068**		**226**
Dallas	Dallas	Cielo Vista	2009	SF Lots	50	**8068**		**133**
Dallas	Dallas	Cielo Vista	2015	SF Lots	21	**8068**		**56**
Dallas	Dallas	Mountain Valley Estates	2007	SF Lots	31	**8076**		**82**
Dallas	Dallas	Mountain Valley Estates	2009	SF Lots	30	**8076**		**80**
Dallas	Dallas	Mountain Valley Estates	2015	SF Lots	11	**8076**		**29**
Dallas	Dallas	Bello Lago Villas	2007	SF Lots	98	**8174**		**261**
Dallas	Dallas	Bello Lago Villas	2009	SF Lots	58	**8174**		**154**
Dallas	Dallas	Bello Lago Villas	2015	SF Lots	159	**8174**		**423**
Dallas	Dallas	Capella Park	2009	SF Lots	78	**8174**		**207**
Dallas	Dallas	Capella Park	2015	SF Lots	316	**8174**		**841**
Dallas	Dallas	Clark Ridge	2007	SF Lots	53	**8453**		**141**
Dallas	Dallas	Clark Ridge	2009	SF Lots	51	**8453**		**136**
Dallas	Dallas	Clark Ridge	2015	SF Lots	44	**8453**		**117**
Dallas	Dallas	Grady Niblo Estates	2009	SF Lots	34	**8453**		**90**
Dallas	Dallas	Grady Niblo Estates	2009	SF Lots	32	**8453**		**85**
Dallas	Dallas	Camp Wisdom Estates	2009	SF Lots	23	**8504**		**61**
Dallas	Dallas	Forest View	2007	SF Lots	38	**8505**		**101**
Dallas	Dallas	Forest View	2009	SF Lots	70	**8505**		**186**
Dallas	Dallas	Lakewood Terrace	2009	SF Lots	50	**8505**		**133**
Dallas	Dallas	Lakewood Terrace	2015	SF Lots	83	**8505**		**221**
Dallas	Dallas	Summit Parc	2007	SF Lots	192	**8505**		**511**
Dallas	Dallas	Summit Parc	2009	SF Lots	63	**8505**		**168**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Dallas	Dallas	Harbor Glen	2007	SF Lots	84	**8566**		**223**
Dallas	Dallas	Harbor Glen	2009	SF Lots	50	**8566**		**133**
Dallas	Dallas	Harbor Glen	2015	SF Lots	27	**8566**		**72**
Dallas	Dallas	Mountain Creek Meadows	2007	SF Lots	190	**8566**		**505**
Dallas	Dallas	Mountain Creek Meadows	2009	SF Lots	54	**8566**		**144**
Dallas	Dallas	Mountain Creek Meadows	2015	SF Lots	53	**8566**		**141**
Dallas	Dallas	Mountain Hollow	2009	SF Lots	56	**8566**		**149**
Dallas	Dallas	Mountain Hollow	2015	SF Lots	55	**8566**		**146**
Dallas	Dallas	Mountain Ridge Estates	2007	SF Lots	40	**8566**		**106**
Dallas	Dallas	Mountain Ridge Estates	2009	SF Lots	30	**8566**		**80**
Dallas	Dallas	Mountain Terrace Addition	2007	SF Lots	146	**8566**		**388**
Dallas	Dallas	Mountain Terrace Addition	2009	SF Lots	25	**8566**		**67**
Dallas	Dallas	Woodberry Creek	2007	SF Lots	98	**8621**		**261**
Dallas	Dallas	Woodberry Creek	2009	SF Lots	16	**8621**		**43**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Euless	Tarrant	Southgate Plaza - 2 Hotels	2015	Hotel Rooms	530	**9246**	**212**	
Euless	Tarrant	Clarion	2009	Hotel Rooms	160	**9443**	**64**	
Euless	Tarrant	Vineyard Village - Expansion	2009	Retail	283,000	**9287**	**566**	
Euless	Tarrant	LA Fitness	2007	Other	43,742	**9287**	**19**	
Euless	Tarrant	Glade Parks Mixed-Use	2009	Office	300,000	**9287**	**1,000**	
Euless	Tarrant	Glade Parks Mixed-Use	2009	Retail	500,000	**9287**	**1,000**	
Euless	Tarrant	Glade Parks Mixed-Use	2015	Townhomes	700	**9287**		**1,260**
Euless	Tarrant	Zena Land Development	2009	SF Lots	62	**9446**		**148**
Euless	Tarrant	Running Bear Estates	2009	SF Lots	22	**9287**		**52**
Euless	Tarrant	Thousand Oaks Estates	2007	SF Lots	10	**9287**		**24**
Euless	Tarrant	Thousand Oaks Estates	2009	SF Lots	6	**9287**		**14**
Euless	Tarrant	Landing at Eden Lake	2007	SF Lots	34	**9288**		**81**
Euless	Tarrant	Landing at Eden Lake	2009	SF Lots	11	**9288**		**26**
Euless	Tarrant	Fountain Park	2009	SF Lots	142	**9290**		**338**
Euless	Tarrant	Creekwood Estates	2009	SF Lots	26	**9338**		**62**
Euless	Tarrant	Creekwood Estates	2015	SF Lots	25	**9338**		**60**
Euless	Tarrant	Midway Square	2007	SF Lots	168	**9397**		**400**
Euless	Tarrant	Midway Square	2010	SF Lots	54	**9397**		**129**
Euless	Tarrant	The Villas at Texas Star	2009	SF Lots	110	**9442**		**262**
Euless	Tarrant	Brookside at Bearcreek	2009	SF Lots	50	**9442**		**119**
Euless	Tarrant	Brookside at Bearcreek	2015	SF Lots	32	**9442**		**76**
Euless	Tarrant	Enclave at Wilshire Park	2009	SF Lots	51	**9443**		**121**
Euless	Tarrant	Enclave at Wilshire Park	2015	SF Lots	23	**9443**		**55**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Ft. Worth	Tarrant	RiverPark Business Center	2009	Ind D	145,000	**9528**	**58**	
Ft. Worth	Tarrant	Texas Star Townhomes	2009	Townhomes	132	**40983**		
Ft. Worth	Tarrant	Newport Village at Trinity	2007	SF Lots	87	**9522**		**234**
Ft. Worth	Tarrant	Newport Village at Trinity	2009	SF Lots	54	**9522**		**145**
Ft. Worth	Tarrant	Newport Village at Trinity	2015	SF Lots	30	**9522**		**81**
Ft. Worth	Tarrant	Trinity Estates	2009	SF Lots	25	**40983**		**67**
Ft. Worth	Tarrant	Trinity Estates	2015	SF Lots	143	**40983**		**385**

* TAP references these areas as unincorporated which are located in the corporate city limits of Ft. Worth.

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grand Prairie/ETJ	Tarrant	Comfort Suites	2009	Hotel Rooms	80	**10575**	**32**	
Grand Prairie/ETJ	Dallas	Trinity Overlook at GSW	2009	Ind D	305,000	**7176**	**122**	
Grand Prairie/ETJ	Dallas	National Auto Body Parts - Expansion	2009	Ind D	101,815	**7932**	**34**	
Grand Prairie/ETJ	Dallas	Distribution Center at 161 - Phase 1	2009	Ind D	600,000	**8166**	**240**	
Grand Prairie/ETJ	Dallas	Distribution Center at 161 - Phase 2	2015	Ind D	800,000	**8166**	**320**	
Grand Prairie/ETJ	Dallas	Poly-America	2009	Ind D	1,500,000	**8167**	**400**	
Grand Prairie/ETJ	Tarrant	Valley Dynamo	2007	Ind D	54,200	**9529**	**50**	
Grand Prairie/ETJ	Tarrant	Eagle Global Logistics	2007	Ind D	75,000	**9529**	**10**	
Grand Prairie/ETJ	Tarrant	Laticrete International - Expansion	2007	Ind D	49,968	**9660**	**20**	
Grand Prairie/ETJ	Tarrant	Ashley Furniture Homestores	2007	Ind D	213,720	**9661**	**100**	
Grand Prairie/ETJ	Tarrant	Shippers Warehouse	2007	Ind D	512,241	**10504**	**45**	
Grand Prairie/ETJ	Tarrant	Fresh Advantage - Expansion	2007	Ind M	300,000	**10505**	**150**	
Grand Prairie/ETJ	Tarrant	American Eurocopter - Expansion	2009	Ind M	20,360	**10504**	**150**	
Grand Prairie/ETJ	Tarrant	Sagem Avionics - Expansion	2009	Ind HT	66,000	**10504**	**66**	
Grand Prairie/ETJ	Tarrant	Cooper Tire & Rubber Company	2007	Ind D	395,880	**10504**	**25**	
Grand Prairie/ETJ	Tarrant	Logistics Crossing - One	2015	Ind D	605,500	**10575**	**242**	
Grand Prairie/ETJ	Tarrant	Logistics Crossing - Two	2015	Ind D	680,375	**10575**	**272**	
Grand Prairie/ETJ	Dallas	Jason's Deli	2009	Ind D	82,000	**30209**	**120**	
Grand Prairie/ETJ	Dallas	Gatorade/Pepsico	2007	Ind D	137,500	**40420**	**55**	
Grand Prairie/ETJ	Dallas	Crosspoint	2009	Ind D	800,000	**40420**	**260**	
Grand Prairie/ETJ	Dallas	Natgun Corporation	2007	Ind M	28,708	**40420**	**14**	
Grand Prairie/ETJ	Dallas	Goelzer Industries	2009	Ind M	120,000	**40420**	**60**	
Grand Prairie/ETJ	Dallas	Value Vinyls, Inc.	2009	Ind M	50,000	**40420**	**10**	
Grand Prairie/ETJ	Dallas	Grand Lakes I	2007	Ind D	750,000	**40592**	**300**	
Grand Prairie/ETJ	Dallas	Grand Lakes II	2009	Ind D	1,060,000	**40592**	**424**	
Grand Prairie/ETJ	Dallas	C&B Electric	2009	Ind D	38,491	**40592**	**15**	
Grand Prairie/ETJ	Dallas	Komplete Packaging	2009	Ind D	100,000	**40592**	**40**	
Grand Prairie/ETJ	Dallas	Thorne & Thorne Office	2007	Office	5,500	**8049**	**18**	

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grand Prairie/ETJ	Dallas	JP Morgan Chase	2007	Office	4,282	**10731**	**14**	
Grand Prairie/ETJ	Dallas	Belt Line Crossing	2007	Retail	6,800	**8171**	**14**	
Grand Prairie/ETJ	Dallas	Carnival Marketplace	2007	Retail	16,000	**8171**	**15**	
Grand Prairie/ETJ	Dallas	Dollar General	2007	Retail	9,024	**8171**	**18**	
Grand Prairie/ETJ	Dallas	Pioneer Courtyard	2009	Retail	32,000	**8267**	**30**	
Grand Prairie/ETJ	Dallas	KP Shopping Center I	2007	Retail	7,600	**8277**	**10**	
Grand Prairie/ETJ	Dallas	KP Shopping Center II	2009	Retail	25,000	**8277**	**50**	
Grand Prairie/ETJ	Dallas	Autozone, Inc.	2007	Retail	7,009	**8388**	**14**	
Grand Prairie/ETJ	Dallas	Spring Creek Barbecue	2009	Retail	10,000	**8500**	**15**	
Grand Prairie/ETJ	Dallas	Bardin Road Retail Center	2009	Retail	9,558	**8501**	**19**	
Grand Prairie/ETJ	Tarrant	Asia Times Square	2009	Retail	109,000	**10414**	**210**	
Grand Prairie/ETJ	Tarrant	Family Dollar	2007	Retail	9,148	**10574**	**18**	
Grand Prairie/ETJ	Tarrant	Golden Corral	2007	Retail	10,330	**10574**	**21**	
Grand Prairie/ETJ	Tarrant	China Dragon Restaurant	2007	Retail	5,600	**10575**	**11**	
Grand Prairie/ETJ	Tarrant	The Shops at Kingswood	2009	Retail	24,000	**10633**	**20**	
Grand Prairie/ETJ	Tarrant	Restaurant	2009	Retail	9,117	**10634**	**18**	
Grand Prairie/ETJ	Tarrant	Gregg Investment Retail Center	2009	Retail	20,000	**10636**	**20**	
Grand Prairie/ETJ	Tarrant	Lake Ridge Village	2009	Retail	40,000	**10636**	**80**	
Grand Prairie/ETJ	Tarrant	Walgreens	2007	Retail	9,024	**10637**	**18**	
Grand Prairie/ETJ	Tarrant	Lake Prairie Town Crossing	2007	Retail	438,000	**10731**	**876**	
Grand Prairie/ETJ	Tarrant	Lake Prairie Town Crossing	2009	Retail	117,000	**10731**	**234**	
Grand Prairie/ETJ	Tarrant	Camp Wisdom Business Park Retail Strip Center	2009	Retail	35,000	**10732**	**70**	
Grand Prairie/ETJ	Tarrant	Walgreens	2007	Retail	9,024	**10637**	**18**	
Grand Prairie/ETJ	Dallas	Duncan Perry Retail	2009	Retail	15,000	**40717**	**15**	
Grand Prairie/ETJ	Tarrant	Grand Prairie Prime Outlet	2015	Retail	485,000	**10574**	**500**	
Grand Prairie/ETJ	Tarrant	USA Truck Service Centers - Four buildings	2007	Other	67,200	**7177**	**27**	
Grand Prairie/ETJ	Tarrant	LA Fitness	2009	Other	45,000	**10634**	**20**	
Grand Prairie/ETJ	Tarrant	Kidd Academy	2007	Other	8,900	**10730**	**15**	

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grand Prairie/ETJ	Dallas	Grand Prairie Armed Forces Reserve	2007	Other	700,000	**40311**	**300**	
Grand Prairie/ETJ	Dallas	Mike Moseley Elementary	2009	School		**8277**	**35**	
Grand Prairie/ETJ	Dallas	South Grand Prairie High School 9th Grade Center	2009	School		**8389**	**100**	
Grand Prairie/ETJ	Dallas	Grand Prairie High School 9th Grade Center	2009	School		**40718**	**95**	
Grand Prairie/ETJ	Tarrant	Renaissance Hospital Mixed-Use	2009	Medical	150 Beds	**10286**	**600**	
Grand Prairie/ETJ	Tarrant	Renaissance Hospital Mixed-Use	2015	Office	100,000	**10286**	**333**	
Grand Prairie/ETJ	Tarrant	January Lane Townhomes	2007	Townhomes	9	**9660**		**16**
Grand Prairie/ETJ	Tarrant	January Lane Townhomes	2009	Townhomes	24	**9660**		**43**
Grand Prairie/ETJ	Tarrant	January Lane Townhomes	2015	Townhomes	53	**9660**		**95**
Grand Prairie/ETJ	Tarrant	St. Louis Townhomes	2015	Townhomes	27	**10574**		**49**
Grand Prairie/ETJ	Tarrant	Townhomes of Camp Wisdom	2007	Townhomes	26	**10636**		**47**
Grand Prairie/ETJ	Tarrant	Townhomes of Camp Wisdom	2009	Townhomes	6	**10636**		**11**
Grand Prairie/ETJ	Tarrant	Townhomes of Camp Wisdom	2015	Townhomes	81	**10636**		**146**
Grand Prairie/ETJ	Dallas	Lakeshore Village	2007	Townhomes	29	**40207**		**52**
Grand Prairie/ETJ	Dallas	Lakeshore Village	2009	Townhomes	19	**40207**		**34**
Grand Prairie/ETJ	Dallas	Lakeshore Village	2015	Townhomes	108	**40207**		**194**
Grand Prairie/ETJ	Dallas	Park View Estates	2007	SF Lots	106	**7451**		**307**
Grand Prairie/ETJ	Dallas	Park View Estates	2009	SF Lots	6	**7451**		**17**
Grand Prairie/ETJ	Dallas	Park View Estates	2015	SF Lots	17	**7451**		**49**
Grand Prairie/ETJ	Dallas	Creekwood Addition	2015	SF Lots	36	**8171**		**104**
Grand Prairie/ETJ	Dallas	Monterrey Park	2007	SF Lots	123	**8171**		**357**
Grand Prairie/ETJ	Dallas	Monterrey Park	2009	SF Lots	16	**8171**		**46**
Grand Prairie/ETJ	Dallas	Monterrey Park	2015	SF Lots	42	**8171**		**122**
Grand Prairie/ETJ	Dallas	Ridgeview Addition	2007	SF Lots	74	**8172**		**215**
Grand Prairie/ETJ	Dallas	Ridgeview Addition	2009	SF Lots	2	**8172**		**6**
Grand Prairie/ETJ	Dallas	Ridgeview Addition	2015	SF Lots	32	**8172**		**93**
Grand Prairie/ETJ	Dallas	Berkshire Park	2007	SF Lots	57	**8264**		**165**
Grand Prairie/ETJ	Dallas	Berkshire Park	2009	SF Lots	9	**8264**		**26**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grand Prairie/ETJ	Dallas	Brookfield	2007	SF Lots	60	**8264**		**174**
Grand Prairie/ETJ	Dallas	Brookfield	2009	SF Lots	10	**8264**		**29**
Grand Prairie/ETJ	Dallas	Kennedy Oaks	2015	SF Lots	89	**8268**		**258**
Grand Prairie/ETJ	Dallas	Candler Park	2015	SF Lots	54	**8392**		**157**
Grand Prairie/ETJ	Dallas	Hunters Glen	2007	SF Lots	29	**8392**		**84**
Grand Prairie/ETJ	Dallas	Hunters Glen	2009	SF Lots	4	**8392**		**12**
Grand Prairie/ETJ	Dallas	Hunters Glen	2015	SF Lots	24	**8392**		**70**
Grand Prairie/ETJ	Dallas	Haven at Westchester	2007	SF Lots	7	**8500**		**20**
Grand Prairie/ETJ	Dallas	Haven at Westchester	2009	SF Lots	7	**8500**		**20**
Grand Prairie/ETJ	Dallas	Polo Heights	2007	SF Lots	100	**8501**		**290**
Grand Prairie/ETJ	Dallas	Polo Heights	2009	SF Lots	18	**8501**		**52**
Grand Prairie/ETJ	Dallas	Polo Heights	2015	SF Lots	82	**8501**		**238**
Grand Prairie/ETJ	Dallas	Lakewood	2007	SF Lots	144	**8501**		**418**
Grand Prairie/ETJ	Dallas	Lakewood	2009	SF Lots	33	**8501**		**96**
Grand Prairie/ETJ	Dallas	Lakewood	2015	SF Lots	49	**8501**		**142**
Grand Prairie/ETJ	Dallas	Lake Parks	2007	SF Lots	459	**8619**		**1,331**
Grand Prairie/ETJ	Dallas	Lake Parks	2009	SF Lots	36	**8619**		**104**
Grand Prairie/ETJ	Dallas	Lake Parks	2015	SF Lots	98	**8619**		**284**
Grand Prairie/ETJ	Tarrant	Prairie Oaks	2007	SF Lots	9	**10286**		**26**
Grand Prairie/ETJ	Tarrant	Prairie Oaks	2009	SF Lots	9	**10286**		**26**
Grand Prairie/ETJ	Tarrant	Prairie Oaks	2015	SF Lots	61	**10286**		**177**
Grand Prairie/ETJ	Tarrant	Southwest Village	2007	SF Lots	40	**10286**		**116**
Grand Prairie/ETJ	Tarrant	Southwest Village	2009	SF Lots	2	**10286**		**6**
Grand Prairie/ETJ	Tarrant	Southwest Village	2015	SF Lots	40	**10286**		**116**
Grand Prairie/ETJ	Tarrant	High Hawk at Martins Meadow	2007	SF Lots	189	**10636**		**548**
Grand Prairie/ETJ	Tarrant	High Hawk at Martins Meadow	2009	SF Lots	20	**10636**		**58**
Grand Prairie/ETJ	Tarrant	High Hawk at Martins Meadow	2015	SF Lots	175	**10636**		**508**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grand Prairie/ETJ	Tarrant	Heather Glen	2007	SF Lots	49	**10730**		**142**
Grand Prairie/ETJ	Tarrant	Heather Glen	2009	SF Lots	2	**10730**		**6**
Grand Prairie/ETJ	Tarrant	Heather Glen	2015	SF Lots	27	**10730**		**78**
Grand Prairie/ETJ	Tarrant	Ivy Glen	2007	SF Lots	62	**10730**		**180**
Grand Prairie/ETJ	Tarrant	Ivy Glen	2009	SF Lots	4	**10730**		**12**
Grand Prairie/ETJ	Tarrant	Ivy Glen	2015	SF Lots	51	**10730**		**148**
Grand Prairie/ETJ	Tarrant	Lynn Creek Hills	2007	SF Lots	45	**10730**		**131**
Grand Prairie/ETJ	Tarrant	Lynn Creek Hills	2009	SF Lots	14	**10730**		**41**
Grand Prairie/ETJ	Tarrant	Lynn Creek Hills	2015	SF Lots	77	**10730**		**223**
Grand Prairie/ETJ	Tarrant	Somerton Village	2007	SF Lots	51	**10730**		**148**
Grand Prairie/ETJ	Tarrant	Somerton Village	2009	SF Lots	13	**10730**		**38**
Grand Prairie/ETJ	Tarrant	Somerton Village	2015	SF Lots	65	**10730**		**189**
Grand Prairie/ETJ	Tarrant	Southgate Addition	2007	SF Lots	82	**10730**		**238**
Grand Prairie/ETJ	Tarrant	Southgate Addition	2009	SF Lots	10	**10730**		**29**
Grand Prairie/ETJ	Tarrant	Southgate Addition	2015	SF Lots	29	**10730**		**84**
Grand Prairie/ETJ	Tarrant	Grand Peninsula	2007	SF Lots	470	**10801**		**1,363**
Grand Prairie/ETJ	Tarrant	Grand Peninsula	2009	SF Lots	66	**10801**		**191**
Grand Prairie/ETJ	Tarrant	Grand Peninsula	2015	SF Lots	254	**10801**		**737**
Grand Prairie/ETJ	Dallas	Coronado Forest	2007	SF Lots	25	**30207**		**73**
Grand Prairie/ETJ	Dallas	Coronado Forest	2009	SF Lots	7	**30207**		**20**
Grand Prairie/ETJ	Dallas	Coronado Forest	2015	SF Lots	20	**30207**		**58**
Grand Prairie/ETJ	Dallas	Croft on the Creek	2007	SF Lots	6	**41134**		**17**
Grand Prairie/ETJ	Dallas	Croft on the Creek	2009	SF Lots	7	**41134**		**20**
Grand Prairie/ETJ	Dallas	Croft on the Creek	2015	SF Lots	5	**41134**		**15**

* TAP references these areas as unincorporated which are located in the corporate city limits of Grand Prairie or its ETJ.

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Grapevine	Tarrant	Industrial Building	2007	Ind D	26,332	**9178**	**11**	
Grapevine	Tarrant	Professional Office - 5 Buildings	2007	Office	41,374	**40334**	**138**	
Grapevine	Tarrant	Woodland Office Building	2007	Office	34,870	**40334**	**116**	
Grapevine	Tarrant	Automotive Financial Group	2009	Office	5,957	**40334**	**20**	
Grapevine	Tarrant	Meritage	2007	SF Lots	13	**40334**		**35**
Grapevine	Tarrant	Meritage	2009	SF Lots	6	**40334**		**16**
Grapevine	Tarrant	Stone Bridge Oaks	2007	SF Lots	11	**40334**		**29**
Grapevine	Tarrant	Stone Bridge Oaks	2009	SF Lots	52	**40334**		**138**
Grapevine	Tarrant	Stone Bridge Oaks	2015	SF Lots	75	**40334**		**200**
Grapevine	Tarrant	Crestwood Hollow	2007	SF Lots	16	**40334**		**43**
Grapevine	Tarrant	Crestwood Hollow	2009	SF Lots	8	**40334**		**21**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Irving	Dallas	Homewood Suites	2007	Hotel Rooms	77	**6428**	**31**	
Irving	Dallas	Springhill Suites	2007	Hotel Rooms	130	**6540**	**52**	
Irving	Dallas	Holiday Inn	2009	Hotel Rooms	100	**40210**	**40**	
Irving	Dallas	Forward Air Corp.	2009	Ind D	150,000	**6428**	**60**	
Irving	Dallas	Aviall Services	2015	Ind D	250,000	**6430**	**100**	
Irving	Dallas	Maxim Integrated Projects	2015	Ind D	624,000	**6539**	**1,000**	
Irving	Dallas	Transwestern	2015	Ind D	225,000	**6730**	**90**	
Irving	Dallas	DFW Trademark III at International Commerce Park	2009	Ind D	205,945	**6949**	**82**	
Irving	Dallas	Valley View Business Center - Building 3	2009	Ind D	400,000	**7062**	**160**	
Irving	Dallas	Valley View Business Center - Building 4	2015	Ind D	140,000	**7062**	**56**	
Irving	Dallas	Town Lake Business Center	2015	Ind D	976,520	**7062**	**391**	
Irving	Dallas	Westridge	2009	Ind D	21,000	**40018**	**8**	
Irving	Dallas	Sanmar Distribution Center	2015	Ind D	680,000	**40210**	**272**	
Irving	Dallas	Valley View Information Park	2009	Ind D	22,500	**40987**	**9**	
Irving	Dallas	Washington Mutual	2007	Office	124,000	**6429**	**413**	
Irving	Dallas	Chase Hospitality	2009	Office	11,136	**6429**	**37**	
Irving	Dallas	Kimball Roofing	2009	Office	25,500	**6429**	**85**	
Irving	Dallas	Hackberry Creek Offices	2007	Office	102,900	**6430**	**343**	
Irving	Dallas	The Stewart Organization	2009	Office	42,617	**6432**	**142**	
Irving	Dallas	Opus Corporate Center Las Colinas - Buildings 1 and 2	2009	Office	220,000	**6541**	**733**	
Irving	Dallas	Avelo Mortgage LLC	2009	Office	100,000	**6742**	**400**	
Irving	Dallas	First Choice Power	2009	Office	61,385	**6743**	**205**	
Irving	Dallas	Comtel Investor	2009	Office	84,500	**6744**	**282**	
Irving	Dallas	Offices at 161/Walnut Hill	2009	Office	250,000	**6841**	**833**	
Irving	Dallas	The Grove	2009	Retail	252,651	**6645**	**505**	
Irving	Dallas	LA Fitness	2007	Other	42,500	**6645**	**19**	
Irving	Dallas	Stipes Elementary	2007	School		**7318**	**65**	

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Irving	Dallas	Watermark Hotel & Spa Mixed-Use	2015	Hotel Rooms	142	**6648**	**57**	
Irving	Dallas	Watermark Hotel & Spa Mixed-Use	2015	MF Units	36	**6648**		**65**
Irving	Dallas	Hines/fram Project Mixed-Use	2015	Retail	104,000	**6648**	**208**	
Irving	Dallas	Hines/fram Project Mixed-Use	2015	MF Units	1,000	**6648**		**1,800**
Irving	Dallas	Aloft Hotel Mixed-Use	2009	Hotel Rooms	136	**6742**	**54**	
Irving	Dallas	Aloft Hotel Mixed-Use	2009	Retail	30,479	**6742**	**61**	
Irving	Dallas	Water Street Mixed-Use	2015	Hotel Rooms	110	**6744**	**44**	
Irving	Dallas	Water Street Mixed-Use	2015	Office	20,000	**6744**	**67**	
Irving	Dallas	Water Street Mixed-Use	2015	Retail	300,000	**6744**	**600**	
Irving	Dallas	Water Street Mixed-Use	2015	Townhomes	36	**6744**		**65**
Irving	Dallas	Water Street Mixed-Use	2015	MF Units	810	**6744**		**1,458**
Irving	Dallas	The Gables Mixed-Use	2015	Retail	200,000	**6744**	**400**	
Irving	Dallas	The Gables Mixed-Use	2015	MF Units	800	**6744**		**1,440**
Irving	Dallas	Las Colinas Station Mixed-Use	2015	Office	300,000	**6744**	**1,000**	
Irving	Dallas	Las Colinas Station Mixed-Use	2015	Retail	30,000	**6744**	**60**	
Irving	Dallas	Las Colinas Station Mixed-Use	2015	MF Units	260	**6744**		**468**
Irving	Dallas	The Lofts at Las Colinas	2007	MF Units	341	**6648**		**614**
Irving	Dallas	Monterra at Las Colinas	2007	MF Units	282	**6648**		**508**
Irving	Dallas	The Lakes at Las Colinas	2009	MF Units	263	**6648**		**473**
Irving	Dallas	Lincoln Las Colinas	2015	MF Units	1,656	**6649**		**2,981**
Irving	Dallas	Alta Lakeshore	2009	MF Units	341	**6744**		**614**
Irving	Dallas	Zom	2009	MF Units	240	**6744**		**432**
Irving	Dallas	Mandalay on the Lake	2007	MF Units	369	**6747**		**664**
Irving	Dallas	Dominion	2009	Townhomes	165	**6730**		**297**
Irving	Dallas	Country Club Town House	2009	Townhomes	31	**6849**		**56**
Irving	Dallas	Verona Village Townhomes	2009	Townhomes	37	**30180**		**67**
Irving	Dallas	Versailles Villas	2009	Townhomes	72	**30182**		**130**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Irving	Dallas	Hunters Ridge	2007	SF Lots	128	**6539**		**320**
Irving	Dallas	Hunters Ridge	2009	SF Lots	26	**6539**		**65**
Irving	Dallas	Hunters Ridge	2015	SF Lots	50	**6539**		**125**
Irving	Dallas	Lakes of Las Colinas	2009	SF Lots	25	**6649**		**63**
Irving	Dallas	Lakes of Las Colinas	2015	SF Lots	255	**6649**		**638**
Irving	Dallas	Le Chateau	2007	SF Lots	26	**6733**		**65**
Irving	Dallas	Le Chateau	2009	SF Lots	100	**6733**		**250**
Irving	Dallas	Enclave at TPC Las Colinas	2007	SF Lots	10	**6733**		**25**
Irving	Dallas	Enclave at TPC Las Colinas	2009	SF Lots	16	**6733**		**40**
Irving	Dallas	Enclave at TPC Las Colinas	2015	SF Lots	25	**6733**		**63**
Irving	Dallas	Bordeaux Villas	2007	SF Lots	10	**6847**		**25**
Irving	Dallas	Bordeaux Villas	2009	SF Lots	45	**6847**		**113**
Irving	Dallas	University Park	2009	SF Lots	47	**6859**		**118**
Irving	Dallas	Villas of Alto Vista	2009	SF Lots	34	**6859**		**85**
Irving	Dallas	Dove Meadows	2009	SF Lots	16	**7077**		**40**
Irving	Dallas	Jackson Manors	2009	SF Lots	8	**7180**		**20**
Irving	Dallas	Parkview Estates	2009	SF Lots	8	**7201**		**20**
Irving	Dallas	Graff Farms	2007	SF Lots	180	**7318**		**450**
Irving	Dallas	Graff Farms	2009	SF Lots	25	**7318**		**63**
Irving	Dallas	Graff Farms	2015	SF Lots	58	**7318**		**145**
Irving	Dallas	Wood Creek Estates	2007	SF Lots	12	**7323**		**30**
Irving	Dallas	Wood Creek Estates	2009	SF Lots	24	**7323**		**60**
Irving	Dallas	Lakeview Estates	2009	SF Lots	12	**7326**		**30**
Irving	Dallas	Shady Park	2009	SF Lots	8	**7329**		**20**
Irving	Dallas	Cottonwood Hill Estates	2007	SF Lots	39	**30181**		**98**
Irving	Dallas	Cottonwood Hill Estates	2009	SF Lots	28	**30181**		**70**
Irving	Dallas	Cottonwood Valley	2007	SF Lots	20	**30181**		**50**
Irving	Dallas	Cottonwood Valley	2009	SF Lots	36	**30181**		**90**

Major Development Forecast (Continued)

City	County	Project Description	Year	Use Type(s)	Lots/Units Square Feet	TAP	Emp. Impact	Pop. Impact
Irving	Dallas	Hardrock Estates	2007	SF Lots	13	**30184**		**33**
Irving	Dallas	Hardrock Estates	2009	SF Lots	19	**30184**		**48**
Irving	Dallas	Wildbriar Ranch	2015	SF Lots	161	**30184**		**403**
Irving	Dallas	Rose Oaks	2009	SF Lots	31	**40416**		**78**
Irving	Dallas	Pioneer Estates	2009	SF Lots	13	**40423**		**33**
Irving	Dallas	Balleywood Vista	2007	SF Lots	13	**40424**		**33**
Irving	Dallas	Balleywood Vista	2009	SF Lots	7	**40424**		**18**

SH 161 Corridor
Traffic and Toll Revenue
Investment Grade Study

Independent Economic Overview
and Development Updates
March 2008

8. Appendices

A. NCTCOG Population and Employment Forecast Methodology

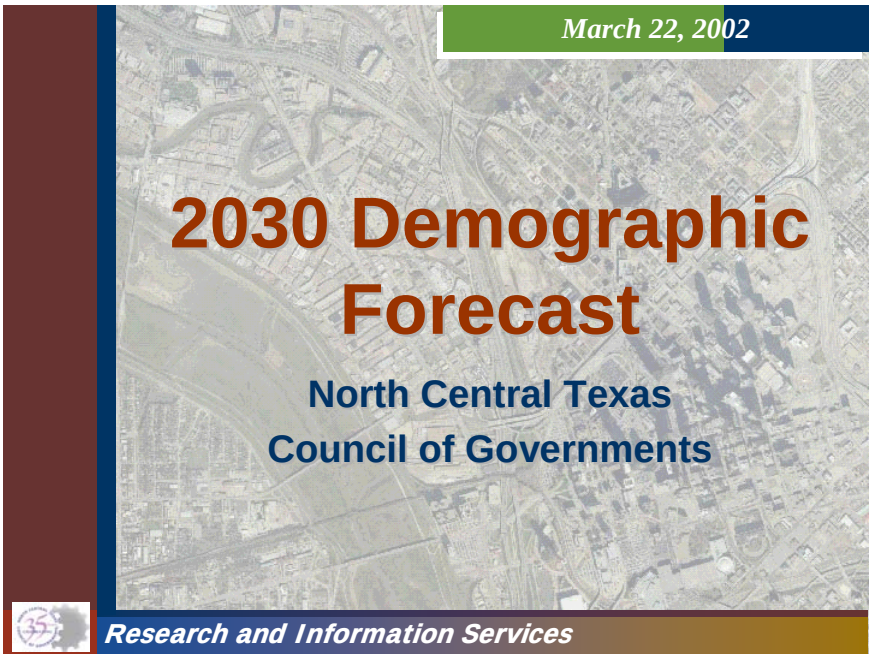
B. Contact List for This Analysis

C. United States Economic Cycle Data

Appendix A

NCTCOG Population and Employment Forecast Methodology

Appendix A
NCTCOG Population and Employment
Forecast Methodology



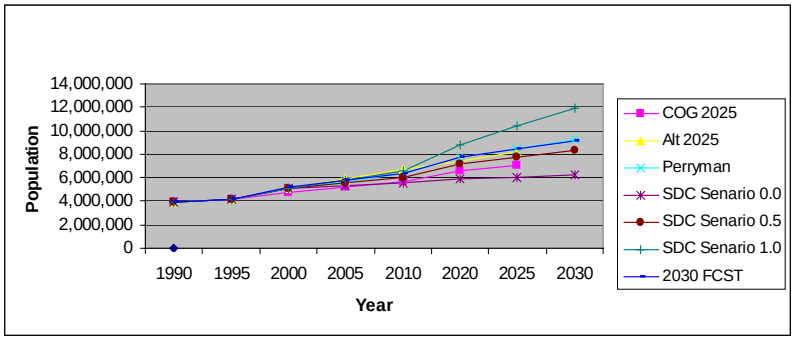
NCTCOG Forecast Process

I. 2001 - Research forecast methods, update land use, Development Monitoring
II. 2002 - Demographic Forecast
    I. Establish regional controls
    II. District forecast
    III. TSZ allocations
    IV. Local review
III. January 2003 - Executive Board approval

Population Research

2030 Demographic Forecast

	2000	2010	2020	2030
SDC Scenario 0.0	5,079,600	5,576,147	5,924,157	6,150,687
SDC Scenario 0.5	5,079,600	6,075,653	7,172,447	8,403,478
SDC Scenario 1.0	5,079,600	6,670,036	8,937,884	12,132,893
The Perryman Group	5,079,600	6,336,947	7,728,399	9,216,601
Draft 2030 Forecast	5,154,300	6,391,300	7,733,400	9,125,400



Research and Information Services

Regional Growth Rates

2030 Demographic Forecast

30-Year	% Change
SDC Scenario 1.0	138.90%
Census 1960 - 1990	126.30%
Census 1970 - 2000	114.20%
Perryman 2000-2030	81.40%
Draft 2030	77.00%
2025 Forecast	68.00%
SDC Scenario 0.5	65.40%
SDC Scenario 0.0	21.10%

	1960-1970	1970-1980	1980-1990	1990-2000
Regional Growth	36.9%	24.7%	32.6%	30.2%

	2000-2010	2010-2020	2020-2030
SDC Scenario 0.0	9.77%	6.24%	3.82%
SDC Scenario 0.5	19.61%	18.05%	17.16%
SDC Scenario 1.0	31.31%	34.00%	35.75%
The Perryman Group	24.75%	21.96%	19.26%
Draft 2030 Forecast	24.00%	21.00%	18.00%

Research and Information Services

Employment Research

2030 Demographic Forecast

2030 Draft Non-Construction Employment Projection:

- The Perryman Group's 2000-2030 Employment Forecast
  - Includes total employment, accounting for workers who may not be "wage and salary" or covered by unemployment insurance (UI).
  - Draft population forecast closely resembles the Perryman population forecast and the two are interrelated
- Texas Workforce Commission's 2000 estimates of construction
  - TWC construction estimates only include workers covered by unemployment insurance.
- Assumptions
  - Previous research revealed that approximately half of all construction employees are not covered by UI.
  - Construction jobs as a share of the total employment remains constant throughout the forecast

2000 Base Employment = 2000 Perryman – (TWC const * 2)
2030 Employment = 2030 Perryman – (PctConst * 2030 Perryman)

Research and Information Services

Employment Research

2030 Demographic Forecast

Population Employment Ratios (P/E)

- Employment Forecasts follow expected trends, after rapidly decreasing for decades the P/E ratio has started to stabilize and rise
  - P/E ratio will continue to increase as a large number of baby boomers begin to leave the labor force – TWC Labor market review
  - By 2025 this group will comprise almost 25% of the total population
  - The 25-44 age group with traditionally high labor force participation is expected to decline.
- Increased wealth has allowed workers leave the workforce sooner or postpone entering. – TWC Labor market review
- The negative effect on the labor participation rate will be most significant after 2010

	2000	*2005*	*2010*	*2020*	*2030*
Total Population	5,154,300	5,772,800	6,391,300	7,733,400	9,125,400
Total Employment	3,152,500	3,536,800	3,897,100	4,658,700	5,399,700
P/E Ratios	1.63	1.63	1.64	1.66	1.69

Research and Information Services

Appendix B

SH 161 Corridor
Contact List

Appendix B
SH 161 Corridor
Contact List

Organization	Contact	Title	Phone Number
Arlington, City of	Robert Cluck Jim Holgersson Jim Parajon Robert Sturns	Mayor City Manager Director of Comm. Dev. and Planning Economic Development Manager	817-459-6122 817-459-6100 817-459-6527 817-459-6114
Cedar Hill, City of	Rob Franke Alan Sims Rod Tyler Allison Thompson	Mayor City Manager Director of Planning Director of Economic Development	972-291-5100 972-291-5100 ext. 1290 972-291-5100 ext. 1081 972-272-5132
Dallas, City of	Mary Suhm David Cossum Peer Chacko Karl Zavitkovsky	City Manager Planning - Current Planning - Long Range Economic Development	214-670-3296 214-670-4209 214-670-3972 214-670-1696
D/FW Airport	Andy Bell	V.P. of Planning	972-973-4670
Euless, City of	Mary Lib Saleh Gary McKamie Mike Collins Bill Ridgway Chris Barker	Mayor City Manager Director of Planning Director of Economic Development Manager of Development	817-685-1419 817-685-1422 817-685-1623 817-685-1869
Grand Prairie, City of	Charles England Tom Hart Bill Crolley Bob O'Neal	Mayor City Manager Director of Planning Economic Development	 972-236-8000 972-237-8263 972-237-8081
Grapevine, City of	William D. Tate Bruno Rumbelow Scott Williams Dan Truex	Mayor City Manager Director of Development Services Economic Development	817-410-3104 817-410-3104 817-410-3158 817-410-3153
Irving, City of	Herbert A. Gears Tommy Gonzalez Gary Miller Steve Reed	Mayor City Manager Director of Planning Planning and Development Mananger	972-721-2410 972 721-2521 972-721-2424 ext. 900 972-721-2424

Appendix C

United States Economic Cycle Data

Appendix C
United States Economic Cycle Data
Total Employment and Construction Employment
1919 – 2030

Year	Total Employment	Annual % Change	Total Construction	Annual % Change
1919	27,078,000		1,036,000	
1920	27,340,000	0.97%	863,000	-16.70%
1921	24,372,000	-10.86%	1,027,000	19.00%
1922	25,816,000	5.92%	1,200,000	16.85%
1923	28,382,000	9.94%	1,244,000	3.67%
1924	28,028,000	-1.25%	1,336,000	7.40%
1925	28,766,000	2.63%	1,461,000	9.36%
1926	29,806,000	3.62%	1,570,000	7.46%
1927	29,962,000	0.52%	1,623,000	3.38%
1928	29,986,000	0.08%	1,621,000	-0.12%
1929	31,324,000	4.46%	1,512,000	-6.72%
1930	29,409,000	-6.11%	1,387,000	-8.27%
1931	26,635,000	-9.43%	1,229,000	-11.39%
1932	23,615,000	-11.34%	985,000	-19.85%
1933	23,699,000	0.36%	824,000	-16.35%
1934	25,940,000	9.46%	877,000	6.43%
1935	27,039,000	4.24%	927,000	5.70%
1936	29,068,000	7.50%	1,160,000	25.13%
1937	31,011,000	6.68%	1,127,000	-2.84%
1938	29,194,000	-5.86%	1,070,000	-5.06%
1939	30,645,000	4.97%	1,205,000	12.62%
1940	32,407,000	5.75%	1,352,000	12.20%
1941	36,600,000	12.94%	1,852,000	36.98%
1942	40,213,000	9.87%	2,234,000	20.63%
1943	42,574,000	5.87%	1,627,000	-27.17%
1944	42,006,000	-1.33%	1,152,000	-29.19%
1945	40,510,000	-3.56%	1,190,000	3.30%
1946	41,759,000	3.08%	1,724,000	44.87%
1947	43,945,000	5.23%	2,051,000	18.97%
1948	44,954,000	2.30%	2,241,000	9.26%
1949	43,843,000	-2.47%	2,236,000	-0.22%
1950	45,287,000	3.29%	2,405,000	7.56%
1951	47,930,000	5.84%	2,678,000	11.35%
1952	48,909,000	2.04%	2,709,000	1.16%
1953	50,310,000	2.86%	2,700,000	-0.33%
1954	49,093,000	-2.42%	2,688,000	-0.44%

Source: U.S. Bureau of Labor Statistics

Appendix C (Continued)

Year	Total Employment	Annual % Change	Total Construction	Annual % Change
1955	50,744,000	3.36%	2,881,000	7.18%
1956	52,473,000	3.41%	3,082,000	6.98%
1957	52,959,000	0.93%	3,007,000	-2.43%
1958	51,426,000	-2.89%	2,862,000	-4.82%
1959	53,374,000	3.79%	3,050,000	6.57%
1960	54,296,000	1.73%	2,973,000	-2.52%
1961	54,105,000	-0.35%	2,908,000	-2.19%
1962	55,659,000	2.87%	2,997,000	3.06%
1963	56,764,000	1.99%	3,060,000	2.10%
1964	58,391,000	2.87%	3,148,000	2.88%
1965	60,874,000	4.25%	3,284,000	4.32%
1966	64,020,000	5.17%	3,371,000	2.65%
1967	65,931,000	2.99%	3,305,000	-1.96%
1968	68,023,000	3.17%	3,410,000	3.18%
1969	70,512,000	3.66%	3,637,000	6.66%
1970	71,006,000	0.70%	3,654,000	0.47%
1971	71,335,000	0.46%	3,770,000	3.17%
1972	73,798,000	3.45%	3,957,000	4.96%
1973	76,912,000	4.22%	4,167,000	5.31%
1974	78,389,000	1.92%	4,095,000	-1.73%
1975	77,069,000	-1.68%	3,608,000	-11.89%
1976	79,502,000	3.16%	3,662,000	1.50%
1977	82,593,000	3.89%	3,940,000	7.59%
1978	86,826,000	5.13%	4,322,000	9.70%
1979	89,932,000	3.58%	4,562,000	5.55%
1980	90,528,000	0.66%	4,454,000	-2.37%
1981	91,289,000	0.84%	4,304,000	-3.37%
1982	89,677,000	-1.77%	4,024,000	-6.51%
1983	90,280,000	0.67%	4,065,000	1.02%
1984	94,530,000	4.71%	4,501,000	10.73%
1985	97,511,000	3.15%	4,793,000	6.49%
1986	99,474,000	2.01%	4,937,000	3.00%
1987	102,088,000	2.63%	5,090,000	3.10%
1988	105,345,000	3.19%	5,233,000	2.81%
1989	108,014,000	2.53%	5,309,000	1.45%
1990	109,487,000	1.36%	5,263,000	-0.87%
1991	108,374,000	-1.02%	4,780,000	-9.18%
1992	108,726,000	0.32%	4,608,000	-3.60%
1993	110,844,000	1.95%	4,779,000	3.71%
1994	114,291,000	3.11%	5,095,000	6.61%

Source: U.S. Bureau of Labor Statistics

Appendix C (Continued)

Year	Total Employment	Annual % Change	Total Construction	Annual % Change
1995	117,298,000	2.63%	5,274,000	3.51%
1996	119,708,000	2.05%	5,536,000	4.97%
1997	122,776,000	2.56%	5,813,000	5.00%
1998	125,930,000	2.57%	6,149,000	5.78%
1999	128,993,000	2.43%	6,545,000	6.44%
2000	131,785,000	2.16%	6,787,000	3.70%
2001	131,826,000	0.03%	6,826,000	0.57%
2002	130,341,000	-1.13%	6,716,000	-1.61%
2003	129,999,000	-0.26%	6,735,000	0.28%
2004	131,435,000	1.10%	6,976,000	3.58%
2005	133,703,000	1.73%	7,336,000	5.16%
2006	136,086,000	1.78%	7,691,000	4.84%
2007	137,626,000	1.13%	7,615,000	-0.99%
2008	140,860,211	2.35%	7,462,700	-2.00%
2009	138,183,867	-1.90%	7,089,565	-5.00%
2010	137,009,304	-0.85%	6,958,408	-1.85%
2011	137,009,304	0.00%	7,090,618	1.90%
2012	138,721,920	1.25%	7,285,610	2.75%
2013	142,189,968	2.50%	7,540,606	3.50%
2014	146,882,237	3.30%	8,030,746	6.50%
2015	150,187,088	2.25%	8,673,205	8.00%
2016	153,416,110	2.15%	8,833,659	1.85%
2017	153,416,110	0.00%	8,634,902	-2.25%
2018	154,950,271	1.00%	8,699,664	0.75%
2019	158,049,277	2.00%	8,817,109	1.35%
2020	160,657,090	1.65%	9,019,903	2.30%
2021	164,271,874	2.25%	9,389,719	4.10%
2022	167,885,855	2.20%	9,859,205	5.00%
2023	171,159,630	1.95%	10,583,856	7.35%
2024	174,154,923	1.75%	11,245,347	6.25%
2025	173,284,149	-0.50%	11,132,894	-1.00%
2026	173,717,359	0.25%	11,132,894	0.00%
2027	176,323,119	1.50%	11,327,720	1.75%
2028	179,849,582	2.00%	11,667,551	3.00%
2029	183,446,573	2.00%	12,309,266	5.50%
2030	186,656,888	1.75%	13,294,008	8.00%

Source: U.S. Bureau of Labor Statistics

APPENDIX B

INDEPENDENT ECONOMIC REVIEW

This appendix contains the documentation of the independent economic review as provided by the subconsultant, Weinstein, Clower and Associates.

WEINSTEIN, CLOWER & ASSOCIATES
Economic and Policy Analysis

P.O. Box 795001, Dallas, Texas 75379
(214) 202-4692 (214) 707-1834

May 7, 2009

Mr. Michael Copeland
Senior Project Manager
Wilbur Smith Associates
4925 Greenville Ave, Suite 1300
Dallas, TX 75206

Re: Contingency Planning: Traffic and Revenue Analysis

Dear Mr. Copeland:

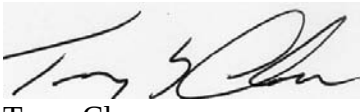
Weinstein and Clower Associates (WCA) is pleased to submit this Recent Economic Trends: Impacts on Socioeconomic Projections of the North Texas Tollway Authority Service Area report for the Contingency Planning: Traffic and Revenue Analysis project. The report offers a view of recent economic conditions –with some historical context – and our outlook for near term national and regional economic recovery. We specifically review five separate projections of population and employment trends previously conducted for NTTA and assess whether current economic conditions invalidate the findings of these previous analyses.

It is hereby certified that, in our opinion the population and employment projections offered in previous analyses require little to no adjustment. The depth and duration of the current economic recession remain unknown, though we anticipate recovery late in 2009 through mid-year 2010. However, current national and local economic conditions are not expected to substantially impact long range growth potential. It would be prudent for planning purposes to assume that growth will be delayed by one to two years.

We gratefully acknowledge the assistance and cooperation received from WSA, as well as others contacted during the course of the study. WCA sincerely appreciates the opportunity to have participated in this important project.

Respectfully submitted,

Weinstein Clower and Associates



Terry Clower
Principal, WCA

Recent Economic Trends: Impacts on Socioeconomic Projections of the North Texas Tollway Authority Service Area.

Prepared by:

Weinstein, Clower & Associates
Dallas Texas

May 2009

Introduction

In the following, we offer an assessment of the validity of previous socio-economic forecasts for the North Texas Tollway Authority (NTTA) service area in light of current economic conditions in the North Central Texas region. The approach used for this effort is to first describe a picture of the regional economy as we endure what many believe, including the authors of this report, to be the worst national economic downturn since the Great Depression. We conclude this introductory section with our outlook for the depth and duration of the downturn for the regional economy, our foretelling of how the local economy will perform as the national economy returns to growth, and examination of the impact of economic trends on historical NTTA toll revenues. We then offer brief reviews of five separate forecasts previously conducted for NTTA over the past few years and assess whether current economic conditions invalidate the findings of these previous analyses. Finally, we examine population and employment projections at the county level before drawing last conclusions. In entering this project, we were looking for four possible conclusions for the reviewed forecasts; existing

forecasts are valid within current parameters, existing forecasts remain valid with minor adjustments, continued forecast validity requires moderate adjustments with possible significant adjustments in specific parameters, and the reviewed forecast is no longer valid.

It is important to note that this assessment does not take into account any specific development projects that could be funded by the $75 billion federal economic stimulus package. However, it is implicit in our overall assumptions that new government spending will tend to lessen the depth and duration of the current recession with attendant impacts on regional population and employment growth.

For this report there is no need to create suspense before the conclusions are revealed. Our review of the forecasts finds that with, at most, minor adjustment these forecasts offer reasonable long term projections of socio-economic trends given current and near term economic conditions. The North Central Texas region has weathered economic storms before consistently recovering with comparative rapidity. We find little evidence that the current national economic malaise will do more than to slow regional economic and population growth and that, at most, the long range projections will be delayed by one to two years.

Overview and Outlook for the Dallas-Fort Worth Metropolitan Area

The Dallas-Fort Worth metropolitan area is currently the 4th largest urban region in the United States with a population of about 6.1 million at the end of 2007 (see Table 1). What's more, since 1990 DFW has been the second-fastest growing major metropolitan area in the country, adding almost 2.2 million residents during that 17-year period (see Table 2).

Table 1
US Population Ranking

MSA	July 2007
New York-Northern New Jersey-Long Island, NY-NJ-PA	18,815,988
Los Angeles-Long Beach-Santa Ana, CA	12,875,587
Chicago-Naperville-Joliet, IL-IN-WI	9,522,879
Dallas-Fort Worth-Arlington, TX	**6,144,489**
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,827,962
Houston-Sugar Land-Baytown, TX	5,629,127
Miami-Fort Lauderdale-Miami Beach, FL	5,413,212
Washington-Arlington-Alexandria, DC-VA-MD-WV	5,306,125
Atlanta-Sandy Springs-Marietta, GA	5,271,550
Detroit-Warren-Livonia, MI	4,467,592

U.S. Census Bureau, Population Estimates Program, 2008

Table 2
Major Metro Areas by Growth Rate
1990 to 2007

	Metropolitan Area	1990 Population	2007 Population	% Change
1	Atlanta-Sandy Springs-Marietta	3,069,425	5,271,550	71.7%
2	Dallas-Fort Worth-Arlington	3,989,294	6,144,489	54.0%
3	Houston-Baytown-Sugar Land	3,767,218	5,629,127	49.4%
4	Miami-Fort Lauderdale-Miami Beach	4,056,228	5,413,212	33.5%
5	Washington-Arlington-Alexandria	4,122,259	5,306,125	28.7%
6	Chicago-Napier-Joliet	8,181,939	9,522,879	16.4%
7	Los Angeles-Long Beach-Santa Ana	11,273,720	12,875,587	14.2%
8	New York-No. New Jersey-Long Island	16,863,671	18,815,988	11.6%
9	Philadelphia-Camden-Wilmington	5,435,550	5,827,962	7.2%
10	Detroit-Warren-Livonia	4,248,699	4,467,592	5.2%

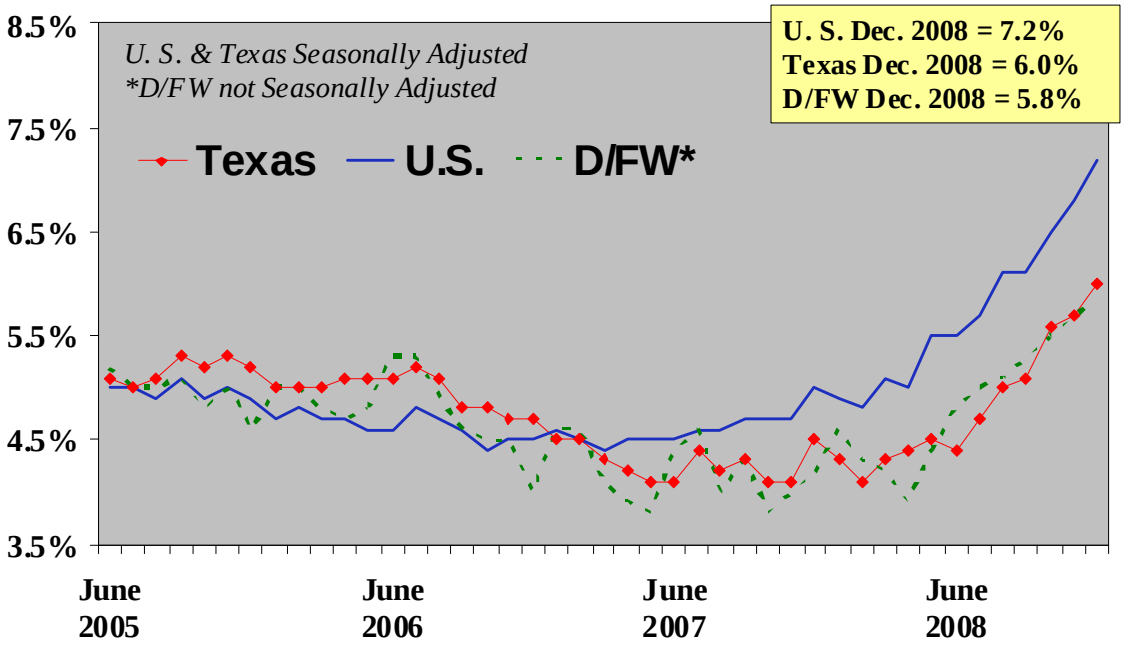
Source: U.S. Census Bureau

On the employment front, DFW's recent performance has been even more remarkable. In the three-year period between 2004 and 2007, the Metroplex added almost 300,000 jobs—a greater numerical increase than in any previous three-year period (see Table 4). Though job growth slowed in 2008 in tandem with the national recession, DFW still managed to add about 40,000 jobs according to preliminary data from the Texas Workforce Commission. By contrast,

payroll employment shrank by almost 3 million nationwide during 2008. The relative strength of the DFW economy is also evidenced by an unemployment rate well below the national average at the end of 2008 (see Figure 1).

Figure 1

Unemployment Rate, U. S., Texas, & D/FW



Source: Texas Workforce Commission

With the nation entering year two of the most severe economic downturn since the 1930s, the Texas Comptroller of Public Accounts has forecast a net loss of about 110,000 jobs statewide during 2009. As the Dallas-Fort Worth region accounts for about one-third of the state's economic activity, net job losses of between 30,000 and 40,000 can be expected in the Metroplex during 2009. The information technology and logistics sectors are especially vulnerable to job losses over the next year, as well as retail trade. However, it should be kept in mind that with nearly 3 million Metroplex residents employed at the end of 2008, the projected job loss would amount to only about one percent of current employment.

The Metroplex housing market has also held up much better than most other markets (see Table 3). While median home values plummeted more than 20 percent in many parts of the U.S. last year, Dallas-Fort Worth's 1.8% drop was the smallest of any major metropolitan area. Because home price increases in the Dallas area were relatively moderate during the first half of this decade, the recent drop in median home values has been modest (see Figure 2)

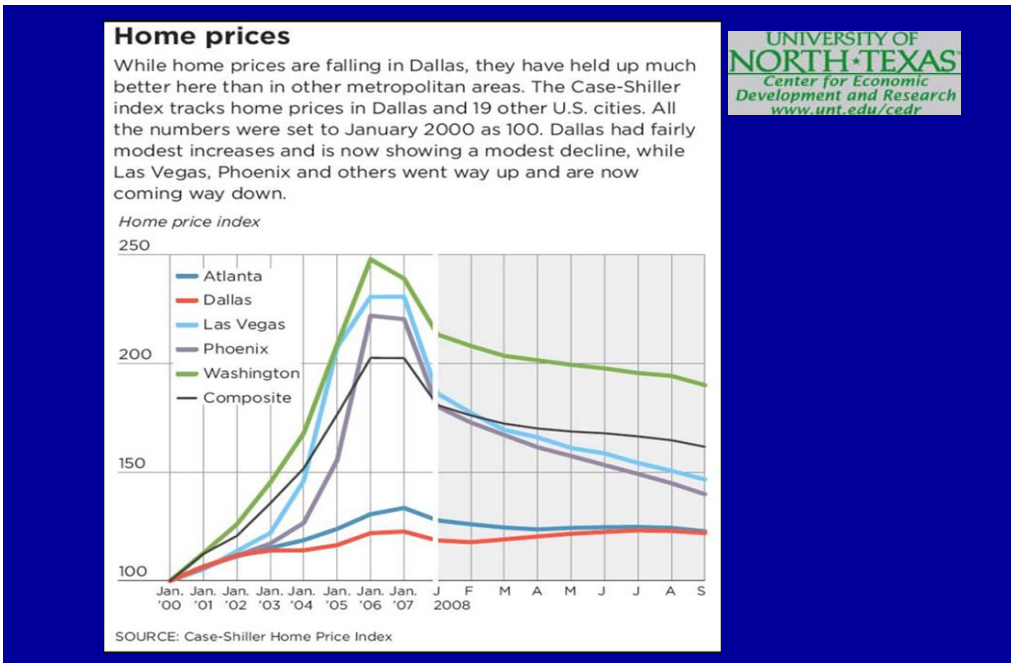
Table 3

Median Home Prices by Metro Area

Area	2008 Value	Change from 2007
Las Vegas	$ 182,484	-26.8%
Phoenix	$ 179,847	-22.3%
Orlando	$ 172,188	-20.7%
Los Angeles	$ 410,692	-21.0%
New York	$ 395,478	-6.2%
DALLAS-FORT WORTH	$ 132,312	-1.8%
US Median	$ 192,119	-11.6%
Source: Zillow		

Figure 2

Home Price Trends for Selected Major Metropolitan Areas



It is also important to remember that the Dallas-Fort Worth region evinced a remarkable ability to rebound smartly after past economic downturns. For example, in the aftermath of the collapse of the north Texas banking and real estate industries in the mid-1980s, the Metroplex lost about 50,000 jobs. But between 1988 and 1991, 111,000 jobs were added to area payrolls.

Similarly, following the "tech wreck" that occurred between 2001 and 2003, and which hit the Metroplex especially hard due to the prevalence of many telecommunications and other information technology companies in the region, the north Texas area lost about 100,000 jobs. But, as we see in Table 4, between 2004 and 2007 the Dallas-Fort Worth area recorded net job growth nearly triple the number of jobs lost in the 2001-2003 period.

If past is prologue, once the national economy begins to recover the Metroplex will once again outperform the U.S. in terms of job and income growth. All of the factors that have made DFW a desirable place to live and work are still in place: a moderate climate, central location, low cost-of-living, excellent transportation infrastructure, economic diversity, and low personal and business tax burdens. What's more, because the long-term prospects are so bleak in places like the industrial Midwest and California, we can expect a renewed influx of people and businesses into north Texas when the national economy rebounds.

Table 4
Employment Change 2004-2007

	DFW	Houston	Austin	San Antonio	Texas
2004	2,698,200 (1.2%)	2,289,800 (0.7%)	667,400 (2.2%)	760,000 (1.1%)	9,497,100 (1.3%)
2005	2,766,500 (2.5%)	2,348,600 (2.5%)	692,200 (3.7%)	782,000 (2.9%)	9,740,500 (2.6%)
2006	2,860,800 (3.4%)	2,446,000 (4.2%)	720,000 (4.0%)	811,300 (3.7%)	10,053,300 (3.2%)
2007	2,990,800 (4.5%)	2,568,500 (5.0%)	763,300 (6.0%)	840,100 (3.6%)	10,451,700 (4.0%)
Change 04-07	292,600	278,700	95,900	80,100	954,600

Source: Texas Workforce Commission

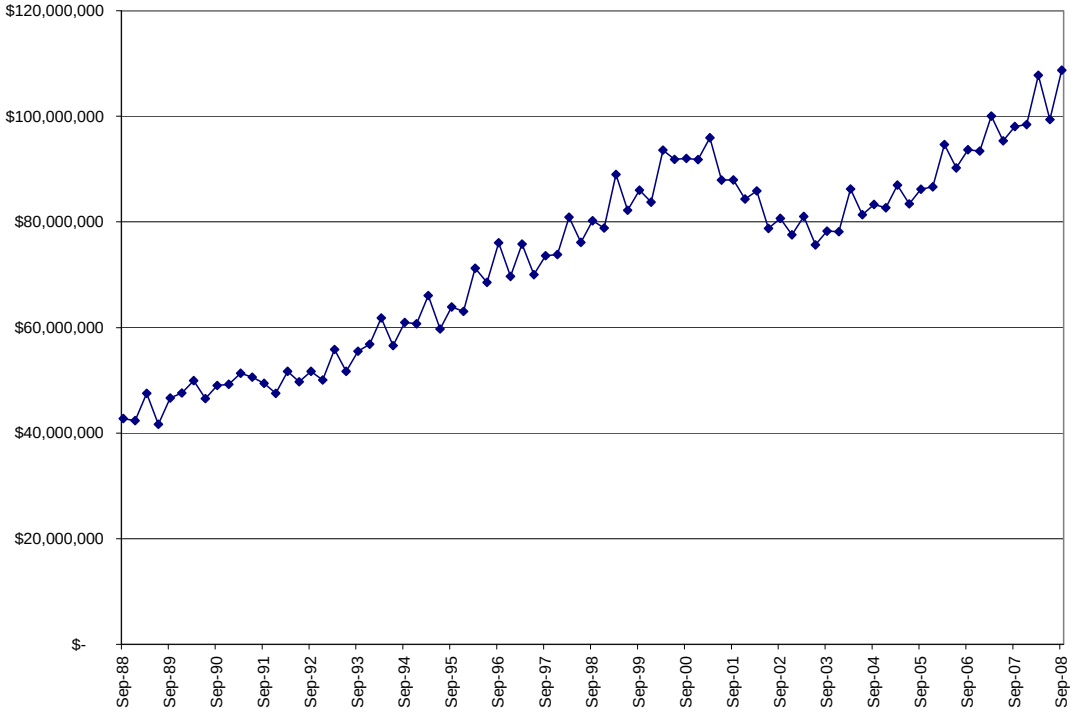
There has been much made in recent weeks about the disappearing consumer. Auto sales are dismal, noted retailers are liquidating, and holiday spending was well below expectations. Media reports have laid the blame for retailers' woes on increasing unemployment, tighter credit standards, and plummeting consumer confidence. We've seen this before. In a recent review of historical sales and use tax allocations paid to Dallas Area Rapid Transit participant cities, we found that the tech-wreck and national recession of 2001-2002 did have a substantial negative impact. As shown in Figure 3, total sales and use tax allocations did not recover for a period of about 4 years. (DART allocations are examined because DART cities serve as a reasonable geographic proxy for NTTA's service area.) However, overall employment and population growth recovered much more quickly, as discussed earlier. The point here is that even though sales and use tax allocations, which are dominated by taxable retail trade activities, are down, that does not mean that all sectors of the economy are going in the tank.

Still, the long-term prospects for the Metroplex remain extremely bright. If past is prologue, the region will once again witness a surge of in-migration and business relocations once the national and global economies start to recover.

The most recent projections from the Texas State Data Center show the region with a population of more than 10 million by 2040 (see Figure 4). For Dallas and Tarrant Counties—the two principal counties served by NTTA projects—their combined population is projected to grow from about 4.1 million today to 6.3 million in 2040 (see Figures 5 and 6).

Figure 3

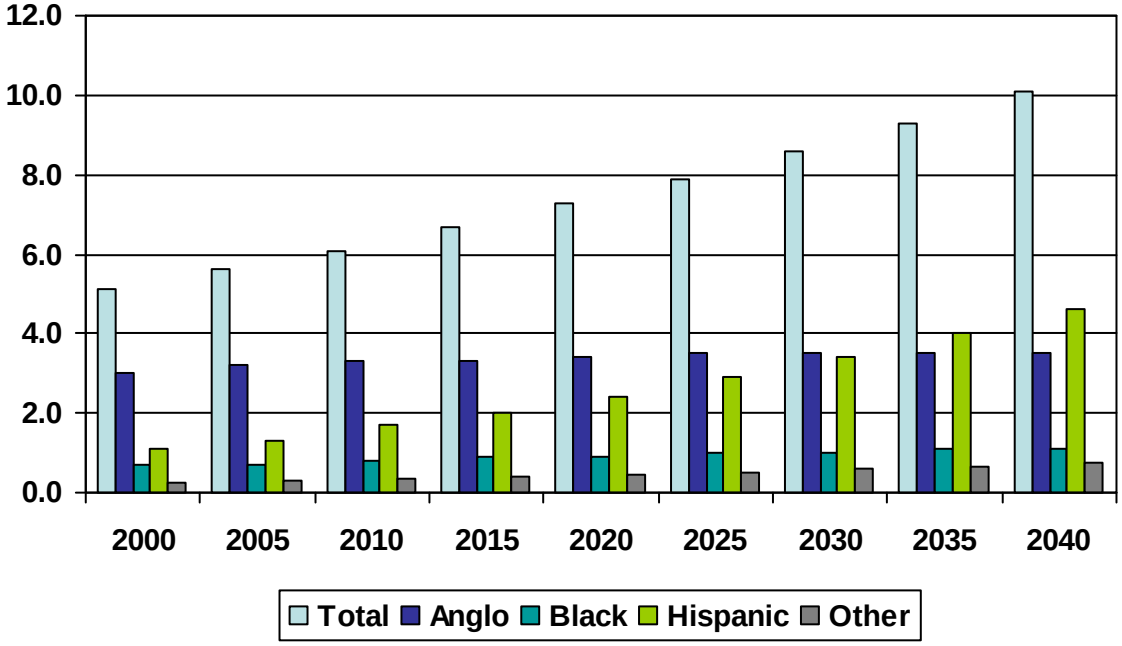
Quarterly Sales and Use Tax Allocations
Dallas Area Rapid Transit, 4Q88 through 4Q08



Source: Texas Comptroller

Figure 4

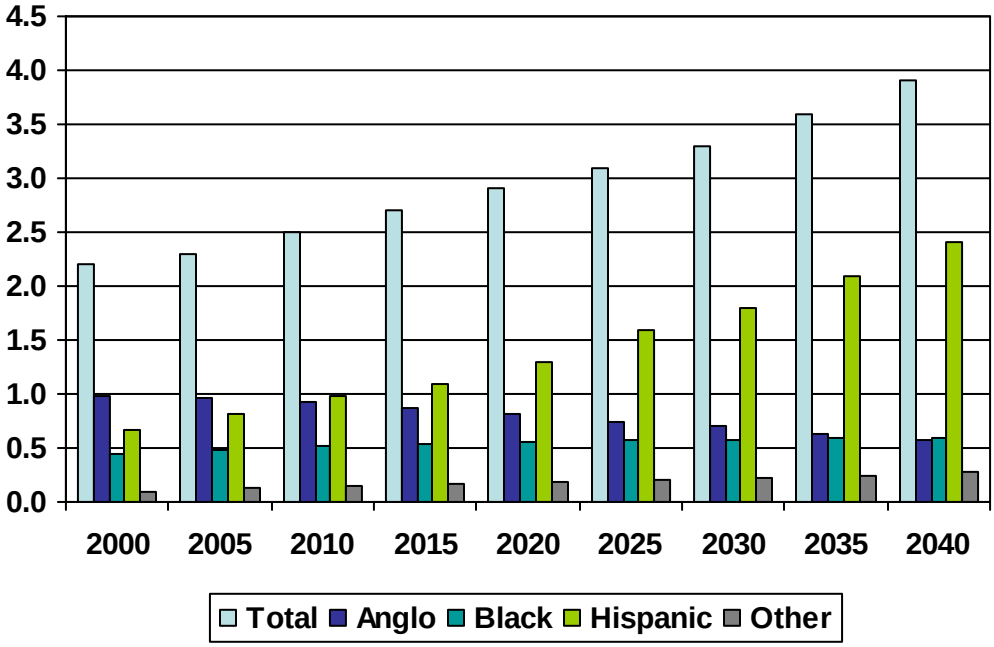
DFW Projected Population 2005-2040*



* Assumes 0.5% migration. Source: Texas State Data Center, 2006

Figure 5

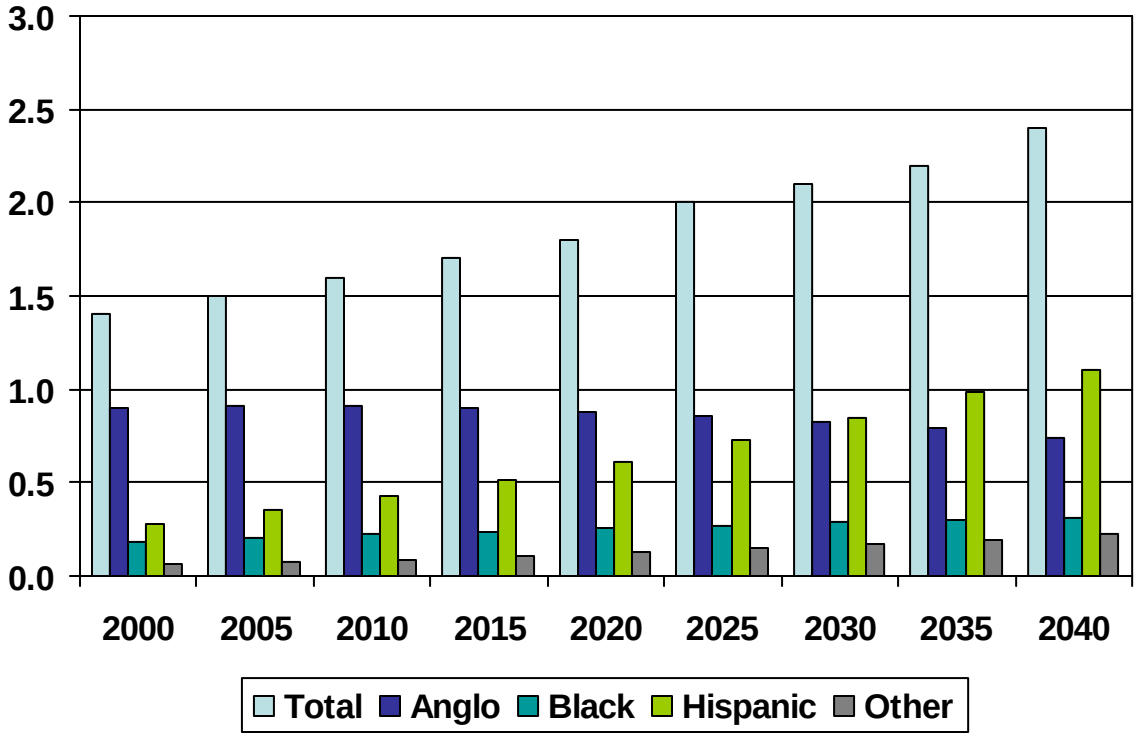
Dallas County Projected Population 2005-2040*



*Assumes 0.5% migration. Source: Texas State Data Center, 2006

Figure 6

Tarrant County Projected Population 2005-2040*



*Assumes 0.5% migration. Source: Texas State Data Center, 2006

While retail trade and other economic activities subject to sales and use tax are not perfect indicators of population and employment growth, they do offer insights into important local economic characteristics. Based on our forecast, we see retail sales in the DART area as declining for 2009 with recovery depending on a set of endogenous and exogenous factors. Endogenous factors include the degree to which national corporate layoff hit DFW area residents, the price of natural gas, which influences payments to local gas royalty holders and regional drilling activity, and local measures of consumer confidence. Exogenous factors include the nature and effectiveness of federal economic stimulus packages, the degree to which federal monies flow into north Texas, and the impact of credit terms, such as credit card interest

rates and the ability of consumers and small businesses to get loans, on local consumption spending.

As shown in Figure 7, our "most likely" scenario shows recovery beginning in late 2009 with total taxable sales regaining recent levels by late 2011. In the pessimistic scenario, the recovery period extends into 2013. Our choice of the most likely scenario parameters is based on a set of assumptions. We recently examined these assumptions in a socio-economic review for the Trinity Parkway (see Table 5). Those set of criteria still apply.

Figure 7

Projections of DART Sales and Use Tax Allocations
Three Scenarios: Pessimistic, Most Likely, and Optimistic
4Q06-3Q13

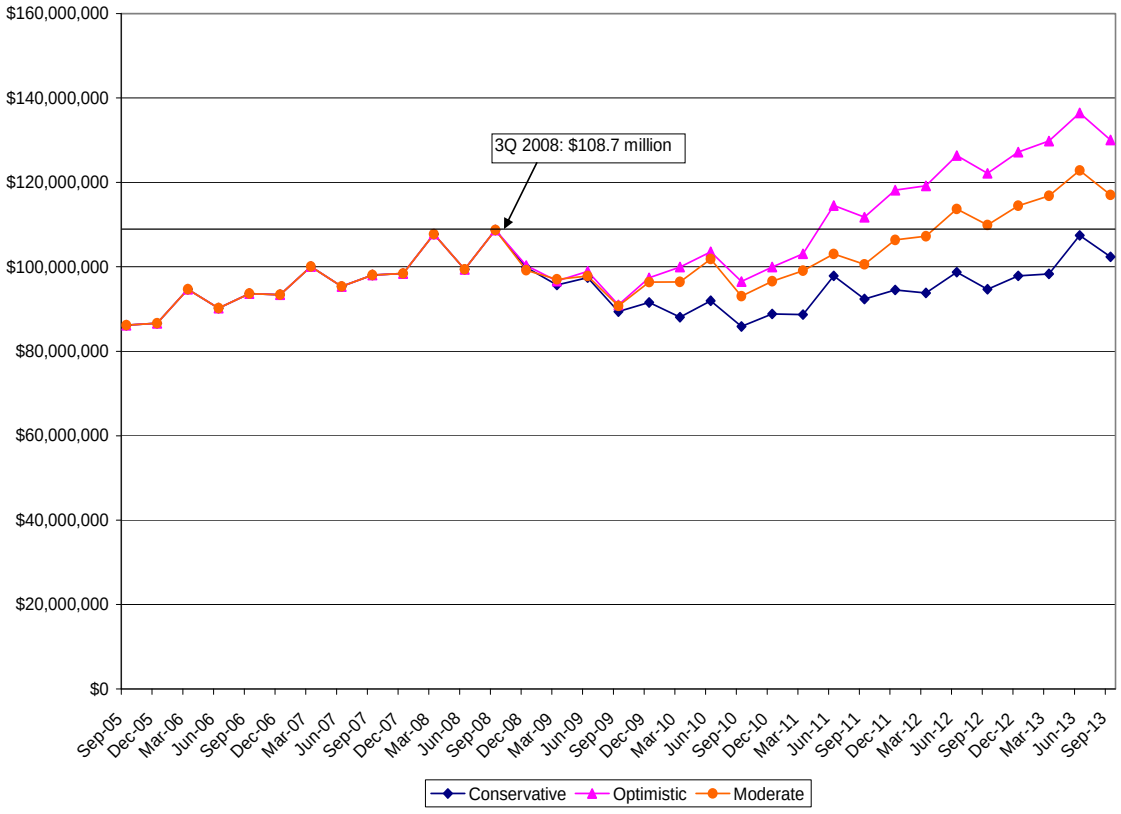


Table 5

Factors Potentially Influencing Population, Employment Change, and NTTA System Utilization (Timing of Impact)

Factor	Conservative	Most-likely	Optimistic
Fuel Prices (short to moderate term impacts)	Oil prices return to $100/bbl resulting in permanent change in commuting behavior (mass transit, carpooling)	Oil prices stay comparatively stable between $70-$100 bbl, some change in commuting patterns, but demand for toll roads remains high.	Gasoline prices stay below $60/bbl and commuters resumes driving behaviors of early 2000s.
Transit Oriented Development (moderate term)	High levels of transit oriented development draw traffic from toll roads.	Some transit oriented development, but capacity of transit system does not allow a meaningful impact on population or employment.	No expansion of transit service plans results in population and employment in catchment area being higher.
Immigration policy (short, moderate, and long term impacts)	Illegal immigration largely stopped with stringent limits on legal migration from south of the border. Result is lower population growth, lower demand for goods and services, higher building costs, and higher cost of living impacting business attraction.	Immigration enforcement no more effective than current efforts. Flow of low cost labor intact. Economy continues to grow at current levels.	Immigration enforcement somehow favors Texas allowing for expansion of regional market.
Immigration Policy/ Growth in Hispanic Households Impact Population Age (moderate to long term impacts)	Fewer Hispanic households, rising median age leading to lower workforce participation due to retirement lower employment growth rates.	Relatively young Hispanic households slow the “aging” of the population, but still a slight decline in workforce participation due to retirement rate.	Young Hispanic households combined with delayed retirement balances workforce participation and rise in population median age.
Global /Regional Competition (long term impacts)	Dallas/Fort Worth area lags other regions of the US in growth.	Remains competitive with other US regions and is a regional hub of global enterprise.	Becomes a major hub of international commerce on par with New York, London.

Table 5 continued

Factor	Conservative	Most-likely	Optimistic
Water Availability (some moderate terms impact, mostly long term impact)	Delayed reservoir development and extended drought cause moratoriums on development	Rainfall patterns return to "norm" for past 50 years, water conservation measures decrease average consumption, new reservoirs are developed, no impact on development.	Substantial rainfall combined with reservoir development and conservation measures provide sufficient water resources while other areas of the southwest lose water dependent industries to Texas.

In sum, we feel that the DFW economy is likely to resume recent growth trends in population, employment, and other measures of socio-economic activity by 2011, maybe earlier depending on the success of federal government economic stimulus programs. This suggests that, overall, it may be prudent to assume that previously estimated population and employment projections may be delayed by two or three years. However, some of the projections show sufficiently conservative approaches to their original estimations that these adjustments may not be necessary. In the following, we review each of the aforementioned studies and offer guidance on the need to adjust their findings for current economic conditions.

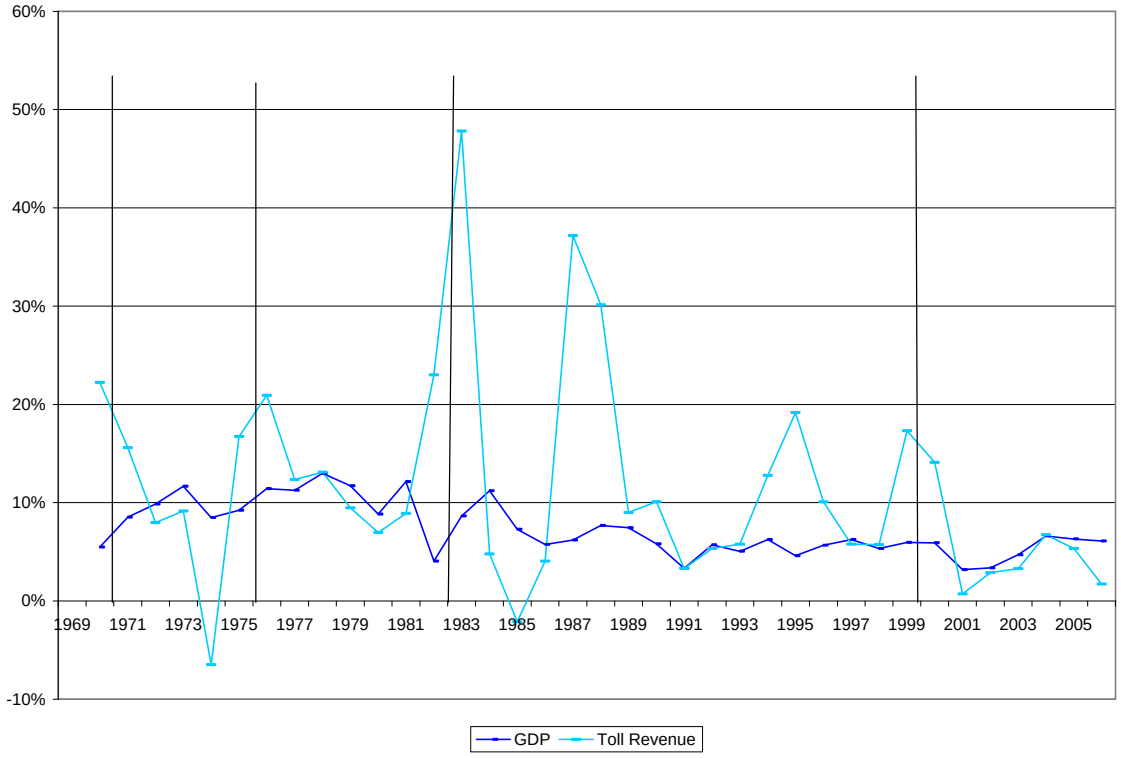
Analysis of Historical Toll Revenues

To consider the influence of national economic trends on NTTA toll revenues, we looked at year over year percentage changes in US GDP and local toll revenues from 1968 through 2006 capturing national recessions in the early 1970s, 1992, and 2001. Keep in mind that a recession is roughly defined as two or more consecutive quarters of negative economic growth. During the period examined, the national recessions did not result in an instance of negative annual economic growth. Figure 8 shows year over year change in GDP and NTTA toll revenues. The

vertical lines indicate years in which toll rates were increased. Visually, it appears that toll revenues do respond to national economic trends. However, using simple correlation analysis, we find that the annual change in GDP does not have a meaningful relationship with local toll revenues explaining a statistically insignificant 1% of total variation in toll revenues.

Figure 8

Year-to-Year Percentage Change
US Gross Domestic Product and NTTA Toll Revenues
1969-2006



To test this further, we conducted a relatively simple multivariate regression procedure in which we tested for a statistical relationship between toll revenues and US GDP controlling for total employment in the NTTA core counties (Dallas, Denton, Collin, and Tarrant), number of miles in the NTTA system, number of transactions, and toll rate increases. Since the data are annual, we created dichotomous variables indicating the year that a toll rate increase went into

effect and a separate variable identifying the year after the rate increase. All continuous variables are transformed to Logs in the equation to better fit model assumptions.

As shown in Table 6, neither US GDP nor core counties employment had a statistically significant impact on system revenues for the period 1970 through 2006. Overall, the model explained 59% of the variance in toll revenues. However, it is possible that there are other explanatory variables that could be added to the model that would alter the coefficients of the modeled variables. Still, the results clearly call into question any assumption that toll revenues are measurably influenced by short term changes in local employment or national economic performance. This is not to say that toll revenues are immune to local or national economic conditions. It simply tells us that over the past quarter century, NTTA toll revenues have been resilient to economic downturns. This supports our previous assertion that the current economic recession will have at most a temporary impact on system revenues.

Table 6

Regression Analysis Output
Dependent Variable: NTTA Toll Revenues

Variable	Regression Coefficient	Standard Error	T-Value	Probability Level (α)	Significant
Intercept	0.1350	0.3211	0.4200	0.6782	No
Employment	0.0305	0.1540	0.1980	0.8447	No
US GDP	0.0020	0.4180	0.0050	0.9963	No
System Miles	-0.3739	0.2088	-1.7910	0.0864	Marginal
Transactions	0.6872	0.1408	4.8800	0.0001	Yes
Rate increase (0/1)	0.9404	0.2041	4.6070	0.0001	Yes
Rate inc. (0/1) Lag 1 year	0.5770	0.1784	3.2340	0.0037	Yes
Adjusted R2: 0.59					

Review of: *SH 161 Corridor Traffic and Toll Revenue Investment Grade Study Independent Economic Overview and Development Updates*

We have carefully reviewed the March 2008 report entitled *SH 161 Corridor Traffic and Toll Revenue Investment Grade Study* ***Independent Economic Overview and Development Updates*** prepared by Insight Research for Wilbur Smith Associates. This is a well-researched and documented study that still has validity, even though the current national recession may result in a somewhat slower population and job growth over the next 2-3 year than projected by the North Central Texas Council of Governments and modified by Insight Research.

The authors have allowed for variation from the COG data by developing a "band" of growth scenarios, from low to high. They used data from the COG for their baseline projections, but they employed other methodologies to validate and modify these data. Interviews were conducted with a wide range of developers and public officials. In addition, the authors "drove" the SH 161 Corridor and listed every current and planned residential and non-residential parcel in the relevant TAP zones. The population and employment impacts of each project were estimated, and these data were used to supplement the COG projections.

Insight's analysis results in employment variances of between 4 and 9.2 percent vs. COG for different five-year periods through 2030. Insight also projects a 2030 population along the corridor that is 8.2 percent higher than the COG projections. This higher population figure is based on un-platted future developments, platted developments, and projects currently underway.

As the Insight report was prepared in March of 2008, before the severity of the national recession was fully visible, we believe the actual variations between the COG and the Insight projections will be somewhat smaller as planned developments are delayed or canceled.

Still, we find no reason to criticize either the COG projections or the Insight projections. Though the assumptions underlying long-term projections are extremely complex, the approaches taken by both the COG and Insight seem reasonable in view of the uncertainties implicit in such calculations. If relevant agencies wanted to take a cautious approach, it would not be unreasonable to push out the projected demographic growth by two to three years.

Review of: *SH121 Corridor Traffic and Toll Revenue Investment Grade Study, Denton and Collin Counties Independent Economic Overview and Development Updates*

Weinstein, Clower & Associates has reviewed the August 2007 report entitled *SH121 Corridor Traffic and Toll Revenue Investment Grade Study, Denton and Collin Counties* ***Independent Economic Overview and Development Updates*** that was prepared by Insight Research Corp. for Wilbur Smith and Associates in August 2007. This report reviews population and employment projections being used by the North Central Texas Council of Governments for communities and traffic survey zones (TSZs) along the SH121 corridor in Collin and Denton Counties that is currently being expanded and improved into a toll road.

Insight employs a variety of methodologies in their analysis, both quantitative and qualitative. Importantly, Insight documents newly active and announced commercial and residential projects along the corridor and ascertains whether they will contribute to either a gain or loss from the NCTCOG baseline forecasts. Insight also makes assumption about changes in business conditions that could have differential economic impacts on the survey area. Combining these data assumptions with the results of personal interviews with developers, Insight prepares both high and low forecast alternatives.

In terms of population, Insight estimates a population along the corridor of 1,730,077 by 2030, a figure 18.7 percent higher than the NCTCOG forecast using Insight's mid-range projection. Their higher number is based on unplatted future developments, platted developments and projects now underway. Insight's employment forecast to the year 2030 is 28.1 percent higher than the COGs.

Though we have no dispute with the methodologies used by Insight Research, we believe their projections of population and employment is slightly high. We base our assessment on two major factors. The first is the severe national recession that began in December 2007 and may

well last into 2010. Though the Dallas area has not been hit as hard as many other parts of the country, many residential and commercial real estate developments have been put on hold; and it may well take 4 or more years or more to absorb the current excess inventory of housing, office and industrial space. Second, we expect to see slower employment growth than Insight's projections due to national and international economic conditions. Also, with more restrictive immigration enforcement, and tighter border security, immigration from abroad is now falling and could continue to do so, though it appears the current presidential administration has little taste for strengthening border enforcement. However, the relative resilience of the DFW economic to the current economic downturn may result in a wave on job-seeking migrants on the order of what the state and region saw in the 1970s during the Rustbelt-Sunbelt phenomenon.

For the 121 corridor study for Denton and Collin Counties, we believe that the presented forecasts for 2030 population and employment are slightly high. This could be corrected by slightly reducing the estimates on order of one to two percent, or increase the suggested lag period to two years.

Review of: *SH121 Southwest Parkway Traffic and Toll Revenue Investment Grade Study Independent Economic Overview and Development Updates.*

Weinstein, Clower & Associates has reviewed the March 2006 report entitled *SH121 Southwest Parkway Traffic and Toll Revenue Investment Grade Study* ***Independent Economic Overview and Development Updates*** prepared by Insight Research Corp. for Wilbur Smith and Associates. Southwest Parkway, to be located in southwest Tarrant County, is currently in the design phase with construction slated to begin sometime in 2009. The facility is scheduled to open in 2012.

Insight Research has evaluated population and employment projections from the North Central Texas Council of Governments for southwest Tarrant County through the year 2030. Specifically, Insight looked at COG data for 807 traffic survey zones (TSZs) in Tarrant and Johnson Counties.

In preparing its own projections, Insight Research documents newly active and announced commercial and residential projects within the specified TSZs. They also conducted interviews with developers, city planners, and economic development officials.

Insight prepared its own probable, low and high employment and population forecasts and the compares their results with the COG forecasts. In terms of employment, Insight's variances from COG range from 1.2 percent (low) to 8.5 percent (probable) to 15.7 percent (high). We believe the "probable" forecast from Insight is the most reasonable through the year 2030 and that their projections may be closer to the mark than COG's. The Council of Governments has historically underestimated growth rates in Tarrant County. What's more, with northeast Tarrant County approaching build-out, we expect to see more residential, commercial and industrial development in southwest Tarrant County over the next two decades. We do not see much need for altering demographic outlooks for this road segment; however, a prudent

approach allowing for the uncertainty of current financial markets and the efficacy of federal economic intervention strategies could include assuming a one to two year delay to this report's current timeline such that projections reported for 2030 may be realized in 2031 or 2032.

Review of: *Dallas North Tollway System Investment Grade Traffic and Toll Revenue Study Independent Economic Overview and Development Updates*

Weinstein, Clower & Associates has reviewed the April 2004 report entitled *Dallas North Tollway System Investment Grade Traffic and Toll Revenue Study Independent Economic Overview and Development Updates* prepared by Insight Research Corp. for Wilbur Smith and Associates. Insight estimates population and employment projections as variants from the North Central Texas Council of Governments (COG) projections to the year 2030 for the two major NTTA corridors (Dallas North Tollway and President George Bush Turnpike) plus the Mountain Creek Toll Bridge. Though this report is nearly five years old, we find the authors' assumptions and conclusions basically sound.

To make adjustments to the COG projections, Insight first identified new and announced commercial and residential developments in the relevant traffic survey zones (TSZs). In addition, interviews were conducted with public officials and developers. Using a proprietary methodology, Insight calculated low, high and mid-range population and employment variances from the COG projections.

We believe the Insight adjustments are reasonable, especially if we take the mid-range estimates. In the year 2030, Insight projects a population about 154,000 greater than the COG forecast. Though the report does not include total population in the TSZs, this adjustment is only 1.7 percent higher than the COG regional projection for that year. Since Dallas-Fort Worth has been the second fastest-growing major metropolitan region in the nation since 1990, the Insight adjustment may actually prove to be an understatement of actual population growth.

In terms of employment, Insight's "probable" or "mid-range" projection is 5.4 percent higher than the COG's in the year 2030. Again, we find this adjustment reasonable, particularly in view of the fact that between 2004 and 2008 the Metroplex added about 340,000 jobs.

Though the current national recession will likely retard local job growth for the next few years, when the economy rebounds DFW should once again capture a disproportionate share of nation's employment gains. We feel these projections remain reasonable.

Review of: *Lewisville Lake Toll Bridge Traffic and Toll Revenue Investment Grade Study Independent Economic Overview and Development Updates*

Weinstein, Clower and Associates (WCA) reviewed the November 2005 *Lewisville Lake Toll Bridge Traffic and Toll Revenue Investment Grade Study Independent Economic Overview and Development Updates* prepared by Insight Research Corporation (IRC). Our conclusions find that over-aggressive mortgage lending, financial market turmoil, and subsequent recession have created circumstances slowing growth in the Lewisville Lake Toll Bridge catchment area. Based on our comparison of the most recent NCTCOG population estimates, we feel that the 2005 report may overstate near term (2009) population estimates by about three percent. Significant commercial and residential developments along Highway 380 (University Drive) in Denton are not included in the 2005 analysis and these developments, when completed, could impact traffic flows across the Lewisville Lake Bridge. While we do not specifically compare employment projections, it is likely that they are also overstated in the near term by three to four percent.

Therefore, we recommend that consideration be given to lowering the baseline population estimate by about three percent starting in 2009, and that the average annual population growth rate assumed in the IRC 2005 report for the 2010-2015 period (probable scenario) be lowered from 3.2% to 2.3%. For subsequent periods, we keep with the growth rates IRC used in the 2005 analysis averaging just over 2% per year. Making these changes results in the following revised population estimates for the study area:

Given the limited time frame, it may not be possible to model all trip generation impacts from the recommended modifications to the demographic projections provided in the 2005 analysis. However, demographic change and trip generation show relatively stable statistical

relationships over time. Therefore, lagging the trip tables associated with the Lewisville Lake Toll Bridge by approximately one year should reasonably reflect the proposed demographic change.

The analysis presented in this briefing is not meant as a substitute for a detailed re-examination of population and employment growth estimates in the Lewisville Lake Toll Bridge study area. We have highlighted some overall changes to market conditions that were not as apparent in 2005. For example, the current economic downturn is substantially deeper and will likely last longer than IRC projected in 2005. It is strongly recommended that a full update of the 2005 study be undertaken taking into account some of the key factors noted above.

Review of: *Trinity Parkway Corridor Traffic and Toll Revenue Investment Grade Study: Independent Socioeconomic Analysis.*

Weinstein, Clower & Associates has reviewed the November 2008 report entitled *Trinity Parkway Corridor Traffic and Toll Revenue Investment Grade Study: Independent Socioeconomic Analysis* prepared by Research and Demographic Solutions (RDS) for Wilbur Smith and Associates. We participated in this research study serving as independent economic analysts. Given our role in the preparation of this study, and the recency of this analysis, we limited out review to a re-examination of key assumptions used by RDS, which was covered in the first section of this report. We feel that the "most likely" scenario is still valid, especially in the later years of the analysis. Any adjustments would be relatively minor, such as maybe delaying the achievement of key population and economic characteristics by about one year.

There are, however, other factors affecting the timing of the Trinity Parkway. The US Army Corp of Engineers (USACE) has repeatedly delayed this project due to concerns regarding the placement of road infrastructure inside of the flood control levee system. Recently, soil testing has been allowed to resume, but there are no guarantees the USACE will approve roadway construction designs. The project has also been delayed by sometimes acrimonious debate on the Dallas City Council. Though city level political hurdles appear to have been cleared for now, there remain political questions about the Trinity Parkway project.

County Level Population Projection Review

In the following, we examine county level population and employment projections including those offered by the NCTCOG and analyses conducted previously for NTTA. In addition, we considered population projections prepared by the Texas State Data Center. Tables 7a through 7e show the population projections for Dallas, Denton, Collin, Tarrant, and Rockwall counties. Included in this review is consideration of the population projections released by the TSDC in February 2009.

Dallas County

The current projection for Dallas County's 2030 population from NCTCOG appears to be closely in line with TSDC estimates under the 0.0 Migration (no net migration) scenario. Dallas has been the slowest growing county, in percentage terms, in north central Texas for several decades. The northern half of Dallas County is largely built out and development in the southern sector remains problematic. During the 1990s, net migration to Dallas was close to zero with domestic out-migration offsetting the influx on international migrants to the county. We expect that this pattern will largely hold true for the first decade of the 21st century. However, there are some factors that will likely cause in-migration, domestic and international, to continue with a relative slowing of domestic out-migration resulting in a slightly positive trend in net migration.

One of the factors slowing domestic out-migration is the degree to which southern Collin County and Denton County are becoming built out. Those wishing to leave Dallas County are having to go farther north in Collin County to find housing, in many cases taking these persons farther from employment centers. Secondly, there is much hope that the Dallas Logistics Hub, located in the far southern portion of Dallas County, may be a spark for people not only choosing to stay in Dallas County, but will attract to domestic and international migration to

these potentially large, new regional employment center. Therefore, we feel that a net migration growth rate of about 0.25 (0.25% per year average net in-migration) is an appropriate adjustment to baseline population projections for Dallas County. This would result in a 2030 population in Dallas County of about 3.1 million using the TSDC data set, which is very similar to existing NTTA projections of 3.09 million.

Table 7
Dallas County Population Projections

Year	NCTCOG	NTTAS Revised	TSDC Migration 0.0	TSDC Migration 0.5	TSDC Migration 1.0
2005	-	-	2,345,016	2,387,018	2,434,045
2007	2,445,991	2,483,280	-	-	-
2008	-	-	-	-	-
2009	2,484,677	2,555,526	-	-	-
2010	-	-	2,451,542	2,563,125	2,699,760
2015	2,574,960	2,706,420	2,539,905	2,746,567	3,022,274
2020	-	-	2,616,406	2,941,394	3,407,537
2025	2,758,816	2,976,227	2,688,652	3,158,164	3,869,525
2030	2,829,580	3,089,170	2,751,175	3,396,109	4,422,781

NCTCOG: North Central Texas Council of Governments. NTTAS: North Texas Tollway Authority.
TSDC: Texas State Data Center (Migration assumption % per year).

Denton County

Denton County is poised to see continuing growth both along the IH 35E and Highway 380 corridors. Not withstanding the increasing cost of commuting from northern Denton County into the Dallas Central Business District and other Dallas County employment centers, folks continue to move into Denton County. With new local employment centers, such as the under-construction Razor Ranch project, a rapidly growing retail sector in the city of Denton serving far northern Denton County, and new transportation infrastructure better connecting the north central part of the county with western Dallas and Tarrant counties (Lakes Cities to Little Elm Lake Lewisville bridge), Denton County will continue to grow. There is little difference

between the NCTCOG and NTTA revised projections for total population in 2030, with both fitting closely with the 0.5 migration scenario for the TSDC. We see no reason to dispute the NTTA revised projections.

Table 8
Denton County Population Projections

Year	NCTCOG	NTTAS Revised	TSDC Migration 0.0	TSDC Migration 0.5	TSDC Migration 1.0
2005	-	-	466,521	517,177	572,375
2007	602,100	639,012	-	-	-
2008	-	-	-	-	-
2009	641,148	711,855	-	-	-
2010	-	-	493,549	606,715	743,700
2015	777,001	856,811	515,518	702,196	953,210
2020	-	-	530,498	800,028	1,201,728
2025	1,006,128	1,100,993	542,297	903,374	1,496,771
2030	1,102,151	1,197,018	549,268	1,011,101	1,845,677

NCTCOG: North Central Texas Council of Governments. NTTAS: North Texas Tollway Authority.
TSDC: Texas State Data Center (Migration assumption % per year).

Rockwall County

Rockwall County has seen huge growth in recent years, in percentage terms. However, even with this growth, total current population estimates suggest that only about 77,000 individuals live in Rockwall County. The TSDCs population projection at about 1.0 percent average annual net in-migration seems reasonable, which coincides with NCTCOG projections.

Table 9
Rockwall County Population Projections

Year	NCTCOG	NTTAS Revised	TSDC Migration 0.0	TSDC Migration 0.5	TSDC Migration 1.0
2005	-	-	44,629	49,307	54,635
2007	68,791	68,791	-	-	-
2008	-	-	-	-	-
2009	77,611	77,505	-	-	-
2010	-	-	46,212	55,873	67,993
2015	104,007	104,007	48,023	63,085	83,780
2020	-	-	49,784	71,210	102,866
2025	134,710	134,710	51,073	80,065	126,069
2030	147,151	147,151	51,683	89,384	154,168

NCTCOG: North Central Texas Council of Governments. NTTAS: North Texas Tollway Authority.
TSDC: Texas State Data Center (Migration assumption % per year).

Collin County

Previous data reviews have suggested that existing NCTCOG population estimates for Collin County substantially under-represent actual demographic trends. Collin County has seen tremendous growth over the past three decades, and while the pace of growth has slowed, due to a largely built out southern sector and national economic trends, the county will continue to see growth, especially net domestic migration once the local economy starts to recover from the current economic downturn. (We expect that Texas and the DFW Metroplex will be among the first areas to experience economic recovery.) The NTTA revised scenarios, which would fall within the TSDC projections with about 0.65% average annual net migration, seem to be the most likely outcome.

Table 10
Collin County Population Projections

Year	NCTCOG	NTTAS Revised	TSDC Migration 0.0	TSDC Migration 0.5	TSDC Migration 1.0
2005	-	-	520,385	579,470	643,300
2007	708,185	764,989	-	-	-
2008	-	-	-	-	-
2009	746,932	859,723	-	-	-
2010	-	-	540,407	669,064	822,204
2015	861,000	1,043,294	556,113	761,633	1,031,115
2020	-	-	571,231	862,960	1,283,242
2025	1,067,880	1,270,561	584,847	975,815	1,593,842
2030	1,187,606	1,390,286	592,718	1,096,857	1,971,640

NCTCOG: North Central Texas Council of Governments. NTTAS: North Texas Tollway Authority.
TSDC: Texas State Data Center (Migration assumption % per year).

Tarrant County

Tarrant County has grown at a faster clip than Dallas County for several decades. Unlike Dallas County, Tarrant County is growing rapidly both to the north and the south, with northwest Tarrant County one of the fastest-growing submarkets in North Texas. With a fairly large existing population base and limited land opportunities for future development, growth will be at least somewhat constrained. Still, we think that using a TSDC estimate assuming net migration in excess of 0.5% per annum is appropriate. Given that both the NCTCOG and NTTA revised projections meet this assumption, we suggest that there is little meaningful difference between these two projections.

Table 11
Tarrant County Population Projections

Year	NCTCOG	NTTAS Revised	TSDC Migration 0.0	TSDC Migration 0.5	TSDC Migration 1.0
2005	-	-	1,522,473	1,553,665	1,586,217
2007	1,692,833	1,716,558	-	-	-
2008	-	-	-	-	-
2009	1,743,019	1,784,198	-	-	-
2010	-	-	1,585,981	1,662,880	1,748,764
2015	1,933,641	2,026,016	1,640,528	1,777,494	1,944,948
2020	-	-	1,685,848	1,896,328	2,176,530
2025	2,203,585	2,320,116	1,724,270	2,021,308	2,454,636
2030	2,310,439	2,426,970	1,752,247	2,153,223	2,788,106

NCTCOG: North Central Texas Council of Governments. NTTAS: North Texas Tollway Authority.
TSDC: Texas State Data Center (Migration assumption % per year).

County Level Employment Projection Review

There is variance between NCTCOG estimates of total employment and those offered in the NTTAS revisions, especially in the pace of growth in the 2020-2025 and 2025-2030 periods (see Table 12). Overall, we are very comfortable with revised projections of total employment growth for the NTTA service area. Notwithstanding current conditions, this region is well poised for future job growth. County level employment projections from NCTCOG were also substantially revised. Notably, employment projections for Dallas County are lowered by about 5%, while Collin County's revised baseline projections are shown at 23% higher than NCTCOG estimates. Smaller increases were applied to Denton, Tarrant, and Rockwall county estimates. We agree with these revisions. While we note a few instances of potentially over-optimism in the forecasts offered in the reports reviewed earlier in this analysis, overall the trends and projections for 2030 are generally reasonable.

We note that the revised projections for Dallas County show a substantial increase in growth rate between 2015 and 2025. While local economic conditions could warrant such

growth, we feel that many of the seemingly intractable problems for historically-underutilized portions of southern Dallas County will remain challenging from an economic development perspective. In our opinion, it is more likely that much of this growth will be seen in Denton County. So while we do not see the need to change the revised long range projections of total employment significantly, the specific location of that growth could shift to some extent. We reiterate here that our recommendation remains that based on current economic conditions, it is prudent to assume that employment growth could be delayed for one to two years with attendant impacts on the level of total employment in any given forecast year.

Table 12
Employment Projections by County

	Total	Dallas	Denton	Collin	Tarrant	Rockwall
NCTCOG						
Nov,2007	3,544,071	2,000,008	213,529	273,171	1,035,603	21,760
Nov,2009	3,666,984	2,052,703	227,394	291,456	1,072,516	22,915
Nov,2015	4,082,139	2,223,891	287,287	361,559	1,182,745	26,657
Nov,2025	4,697,602	2,478,453	367,072	467,244	1,345,444	39,389
Nov,2030	4,935,071	2,540,076	423,293	527,853	1,393,459	50,390
NTTAS Revised						
Nov,2007	3,527,577	1,890,797	230,911	336,127	1,047,982	21,760
Nov,2009	3,799,886	1,995,058	259,259	414,161	1,108,482	22,926
Nov,2015	4,376,954	2,189,296	328,117	568,725	1,264,160	26,657
Nov,2025	5,039,169	2,458,958	407,452	698,957	1,434,413	39,389
Nov,2030	5,299,382	2,543,346	463,590	759,665	1,482,391	50,390

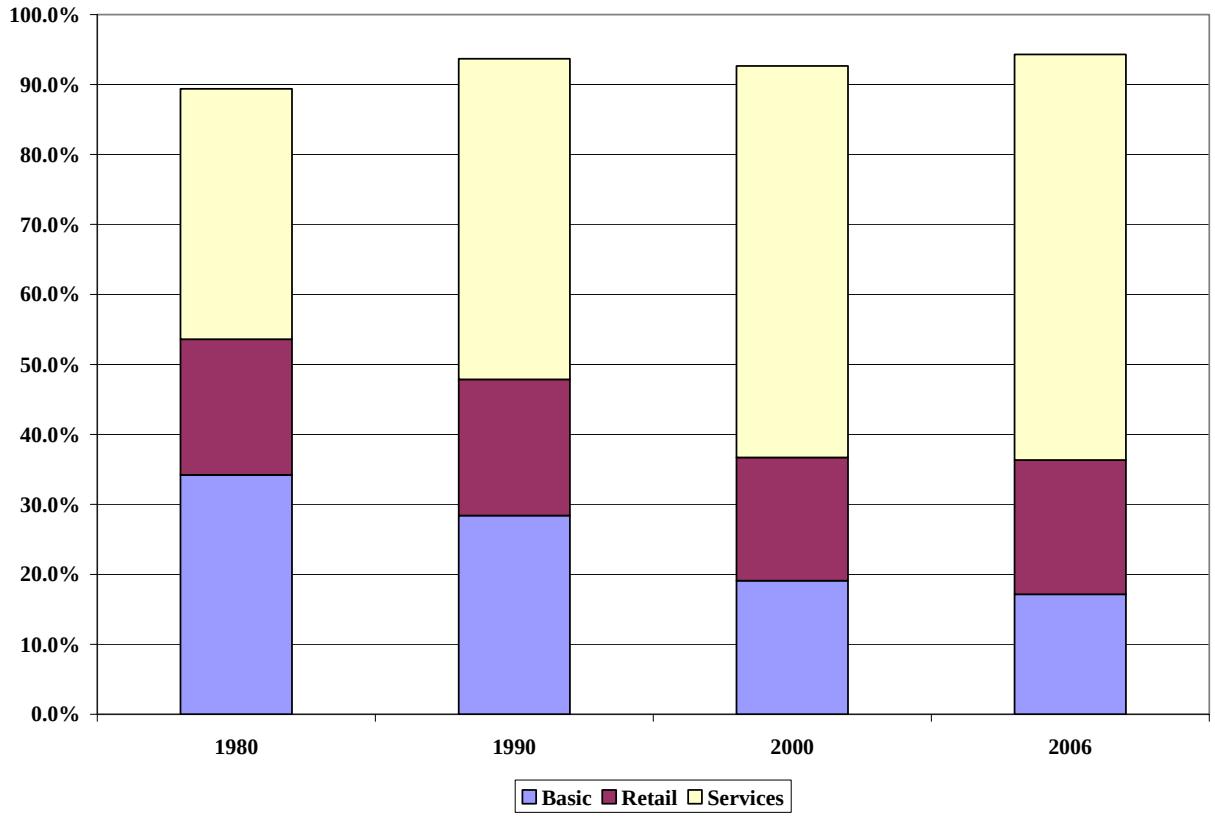
Projections are also offered on the breakdown of employment in the targeted counties by industry group including basic employment, retail trade, and services. Table 13 shows the relative distribution of employment in the revised projections. These data indicate that the regional industrial structure will remain stable over the next 20-plus years. We do not agree with that assessment.

Table 13
Percentage Employment by Industry
Revised Projections

	Basic	Retail	Services
Nov,2007	29.2%	22.3%	48.5%
Nov,2009	28.8%	22.7%	48.6%
Nov,2015	28.0%	23.2%	48.8%
Nov,2025	27.1%	23.7%	49.2%
Nov,2030	26.8%	23.8%	49.5%

Figure 9 shows historical distribution of employment for Dallas, Denton, Collin, and Tarrant Counties. (Rockwall County is not included due to data masking.) These data are sources from County Business Patterns (CBP) published by the US Department of Commerce and are not directly comparable to the NCTCOG and NTTAS Revised estimates. Data from the CBP do not adequately cover self-employed workers and generally do not count government employment. However, they are illustrative regarding changes in regional industrial structures. What is clearly shown is that while the proportion of employment in retail trade remained fairly consistent during the 1980-2006 period, there was a dramatic shift in basic to services employment. We do not expect another seismic shift in the make up of the regional economy over the next 20 years, but we do think that basic sector employment will continue to decline as a proportion of total employment as our economic becomes more service focused. What is unclear is how this shift will impact toll road traffic counts or toll revenues. Data presented earlier show that tolls rose throughout this period of economic restructuring, so we have no historical evidence that would suggest economic change will negatively impact future toll revenues.

Figure 9
Employment by Sector as a Percent of Total Employment
Dallas, Denton, Collin and Tarrant Counties



Source: County Business Patterns, US Department of Commerce

Conclusions

Taking several approaches and examining the data at varying levels of disaggregation, the revised population and employment projections offered in previous analyses require very modest to no adjustment. The depth and duration of the current economic recession remain unknown, though we anticipate recovery late in 2009 through mid-year 2010. There are mounting questions regarding the potential efficacy of federal economic stimulus plans and how those plans will affect the NTTA service area. However, the North Central Texas region has proven that it can recover, sometimes in dramatic fashion, from periods of economic upheaval.

Therefore, we stick to our previously stated opinion that current national economic conditions will do no more than slow regional economic and population growth and that, at most, the long range projections for population and employment for most of the forecast areas will be delayed by one to two years.

WEINSTEIN, CLOWER & ASSOCIATES
Economic and Policy Analysis

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June 8, 2009

Mr. Michael Copeland
Senior Project Manager
Wilbur Smith Associates
4925 Greenville Ave, Suite 1300
Dallas, TX 75206

Re: SH 121 Southwest Parkway Traffic and Toll Revenue Investment Grade Study

Dear Mr. Copeland:

At the behest of your staff, Weinstein, Clower and Associates (WCA) reviewed the April 2009 update of the SH 121 Southwest Parkway Traffic and Toll Revenue Study prepared by Insight Research Corporation. The following offers our assessment of the population and employment projections offered in the Insight Research report.

In February of this year WCA reported the findings of our review of a previous study of the Southwest Parkway. In summary we concluded that the previous study offered more credible forecasts of population and employment change that estimates available from the North Central Texas Council of Governments. Two factors contributed greatly to our assessment. First, NCTCOG has historically underestimated growth rates in Tarrant County. Second, in offering their projections, IRC noted their forecast of broad economic cycles showing a downturn for 2009. We found these somewhat offsetting characteristics compelling and advised that the long range projections offered by IRC as a "probable" scenario were credible.

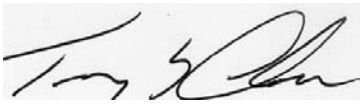
Specifically, IRC's employment forecasts varied from COG estimates by 1.2 percent (low), 8.5 percent (probable), and 15.7 percent (high). However, we also noted that given the uncertainty regarding near term economic performance in the US and north Texas, a prudent approach would be to assume that population and employment projections for 2030 will actually be attained in 2031 or 2032.

We are somewhat puzzled by the April 2009 analysis. IRC's projections of economic cycles seem to be spot on with overall economists' sentiments regarding the depth and duration of the current regional economic downturn with employment showing year of year declines for 2009 and job growth resuming in 2010-2011. Yet IRC's employment projections for 2030 appear higher than the previous forecast. Examination of detailed development trends may very well support the conclusion that once the regional economy resumes growth, southwest Tarrant County will be one of the next "hot" areas for economic development and population growth. However, we were comfortable with the previous projections. Therefore, where our previous recommendation was to not alter 2030 forecasts, but to prudently consider a one to two year lag, we now specifically recommend that traffic/trip model assumptions explicitly lower 2030

projections by about 10,000 employees under the “probable” scenario, and lower the population projections for 2030 by about 25,000 for the year 2030. Roughly similar reductions could be applied to the “low” or “high” scenarios. In effect, we are more strongly suggesting the assumption of a 2 year lag meaning that 2030 projections for employment and population will more likely be attained in 2032.

Respectfully submitted,

Weinstein Clower and Associates



Terry Clower
Principal, WCA

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June 8, 2009

Mr. Michael Copeland
Senior Project Manager
Wilbur Smith Associates
4925 Greenville Ave, Suite 1300
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Re: Lewisville Lake Toll Bridge Independent Economic Review

Dear Mr. Copeland:

At the behest of your staff, Weinstein, Clower and Associates (WCA) reviewed the November 2005 Lewisville Lake Toll Bridge Study prepared by Insight Research Corporation (IRC). The following offers our assessment of the population and employment projections offered in the IRC report.

As a first step we reviewed the development conditions described in the IRC report. The following reflects our views of development monitoring in each of the specified jurisdictions/areas:

Denton:

The 2005 review does not include Razor Ranch, Unicorn Lake, and other significant developments. It also apparently understates some of the development in the Loop 288 corridor, which could draw some potential traffic away for the bridge.

Corinth

While growing, Corinth continues to struggle in attracting significant commercial development. There is a medium sized hotel opening soon in proximity to the bridge.

Lake Dallas / Hickory Creek

The study does not point to any significant commercial development in the Lake Dallas/Hickory Creek communities. IRC's estimates did show modest population growth for both communities and may have understated actual growth in Hickory Creek.

Oak Point

Oak Point's commercial development stalled prior to the current economic downturn. There are questions regarding that city's leadership that could influence the pace of growth.

Highway 380 development corridor.

A combination of economic factors have caused substantial homeowner financial stress in some of the larger residential communities along the Highway 380 corridor, which could impact population and employment projections in the Lake Lewisville Toll Bridge cachement area. Savannah was one of the first large scale residential developments in its section of the Highway 380 corridor. While we do not have specific data to offer, anecdotal evidence and observations from area realtors suggest that even before the worst effects of the national recession hit north Texas, there were many non-performing mortgages in the Savannah community. This was tied largely to homeowners taking on variable interest rate loans that escalated monthly mortgage payments as the Federal Reserve turned its attention to fighting in 2003 through 2007 by raising interest rates. It has been suggested that as much as 25 percent of all homes in the Savannah development were in foreclosure or substantially behind on mortgage obligations last year.

The run up in gasoline prices in 2008 exacerbated stress on household finances in this area of the Metroplex as many of the people living in the Highway 380 corridor work in regional employment centers 20 or more miles away. Even though gas prices have declined by about 50% from their peak in 2008, the slowing DFW economy has added another dimension of stress to residents in communities such as Savannah. The effect of this household stress has been to slow the pace of development in the 380 corridor versus what was expected in the middle part of this decade.

Comparing IRC Projections with NCTCOG 2009 Population Estimates

IRC population projections in the 2005 through 2010 show steep trajectories compared to NCTCOG forecasts at that time. It is our judgment that due to the current economic slowdown, and especially the relative unavailability of financed capital, the growth curve has been less aggressive. To examine this further we compared IRC 2005 and 2010 projections with NCTCOG's 2009 population estimates. It is our view that NCTCOG has adapted previous estimates and better reflect current conditions than previous population estimates. To estimate 2009 population counts from IRC's projections we used a fixed proportion of the estimated growth between 2005 and 2010. In sum, IRC's 2005 estimates are about 3.2% higher than current NCTCOG estimates for population counts in cities included in the analysis. There are three cities not listed by NCTCOG, Cross Roads, Hackberry, and Lakewood Village that we have dropped from this comparison.

Population Estimate Comparisons, Municipalities in the Study Area

City	IRC 2005	IRC 2010	IRC 2009*	NCTCOG 2009	Difference	% Difference
The Colony	36,450	46,131	44,195	40,100	4,095	10.2%
Copper Canyon	1,300	2,093	1,934	1,350	584	43.3%
Corinth	17,800	21,164	20,491	19,700	791	4.0%
Denton	96,200	108,042	105,674	107,250	-1,576	-1.5%
Double Oak	2,500	2,622	2,598	2,600	-2	-0.1%
Flower Mound	60,450	78,532	74,916	62,800	12,116	19.3%
Frisco	85,520	112,725	107,284	100,800	6,484	6.4%
Hickory Creek	2,250	2,600	2,530	3,750	-1,220	-32.5%
Highland Village	14,150	16,554	16,073	15,200	873	5.7%
Lake Dallas	6,650	7,330	7,194	7,200	-6	-0.1%
Lewisville	86,650	92,437	91,280	95,250	-3,970	-4.2%
Little Elm	17,150	20,436	19,779	23,350	-3,571	-15.3%
Oak Point	2,050	4,935	4,358	2,600	1,758	67.6%
Prosper	3,600	7,668	6,854	7,100	-246	-3.5%
Shady Shores	1,900	1,951	1,941	2,400	-459	-19.1%
totals	434,620	525,220	507,100	491,450	15,650	3.2%

Our conclusions find that over-aggressive mortgage lending, financial market turmoil, and subsequent recession have created circumstances slowing growth in the Lewisville Lake Toll Bridge cachement area. Based on our comparison of the most recent NCTCOG population estimates, we feel that the 2005 report may overstate near term (2009) population estimates by about three percent. Significant commercial and residential developments along Highway 380 (University Drive) in Denton are not included in the 2005 analysis and these developments, when completed, could impact traffic flows across the Lewisville Lake bridge. While we do not specifically compare employment projections, it is likely that they are also overstated in the near term by three to four percent.

Therefore, we recommend that consideration be given to lowering the baseline population estimate by about three percent starting in 2009, and that the average annual population growth rate assumed in the IRC 2005 report for the 2010-2015 period (probable scenario) be lowered from 3.2% to 2.3%. For subsequent periods, we keep with the growth rates IRC used in the 2005 analysis averaging just over 2% per year. Making these changes results in the following revised population estimates for the study area:

Lewisville Lake Toll Bridge Study Area Population Estimates (Probable Scenario)

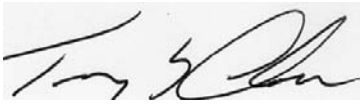
Year	NCTCOG 2005	IRC 2005	WCA 2009
2005	264,604	291,036	
2010	318,093	396,011	372,132
2015	377,523	463,875	416,942
2020	435,437	521,789	468,977
2025	495,217	581,569	522,629
2030	557,244	643,596	578,440

Given the limited time frame, it may not be possible to model all trip generation impacts from the recommended modifications to the demographic projections provided in the 2005 analysis. However, demographic change and trip generation show relatively stable statistical relationships over time. Therefore, lagging the trip tables associated with the Lewisville Lake Toll Bridge by approximately one year should reasonably reflect the proposed demographic change.

The analysis presented in this briefing is not meant as a substitute for a detailed re-examination of population and employment growth estimates in the Lewisville Lake Toll Bridge study area. We have highlighted some overall changes to market conditions that were not as apparent in 2005. For example, the current economic downturn is substantially deeper and will likely last longer than IRC projected in 2005. It is strongly recommended that a full update of the 2005 study be undertaken taking into account some of the key factors noted above.

Respectfully submitted,

Weinstein Clower and Associates



Terry Clower
Principal, WCA

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