



Appendix E

Growth Rate Determination Memo

FM 76 (North Loop Drive) Feasibility Study

December 2022

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1. Introduction

The Farm to Market (FM) 76 (North Loop Drive) Feasibility Study is studying options to improve mobility and safety of 12.5 mile along FM 76 between Horizon Boulevard (FM 1281) and Alameda Avenue (SH 20) in Fabens. FM 76 (North Loop Drive) Feasibility Study limits are shown in **Figure 1**. The traffic projections methodology presented in a previous submittal, the **Methodology Report**, is applied to obtain the traffic growth rate for the FM 76 (North Loop Drive) corridor. The growth rate presented in this **Growth Rate Determination** report will support the scoped Subtask 110.A.4 “Traffic Projection Studies,” which will estimate the future year (2045) volumes for the No-Build scenario.

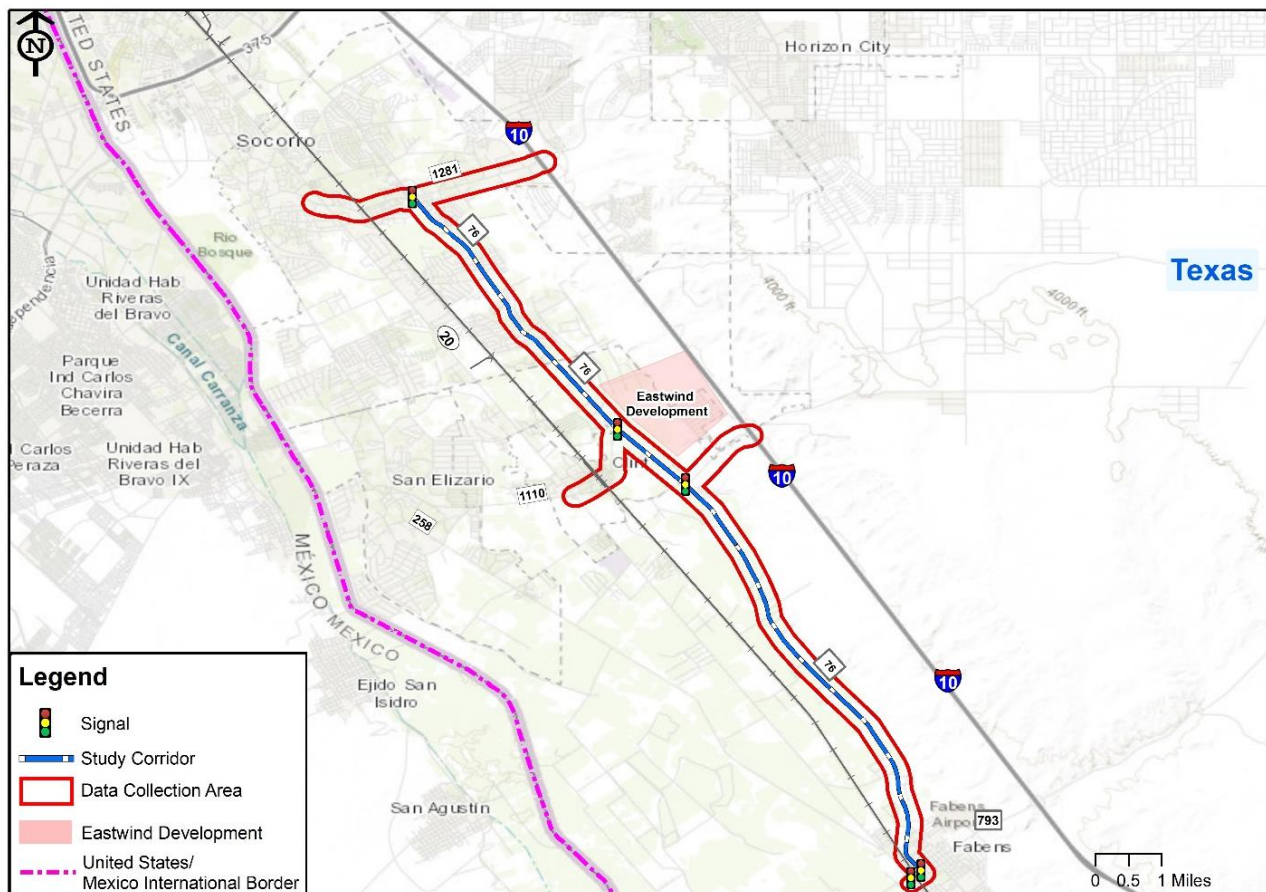


Figure 1: Study Vicinity and Limits

2. Future Developments Affecting Corridor Traffic Forecasts

The most significant project affecting the corridor traffic in the future is the Eastwind Development which is briefly described in the following section.

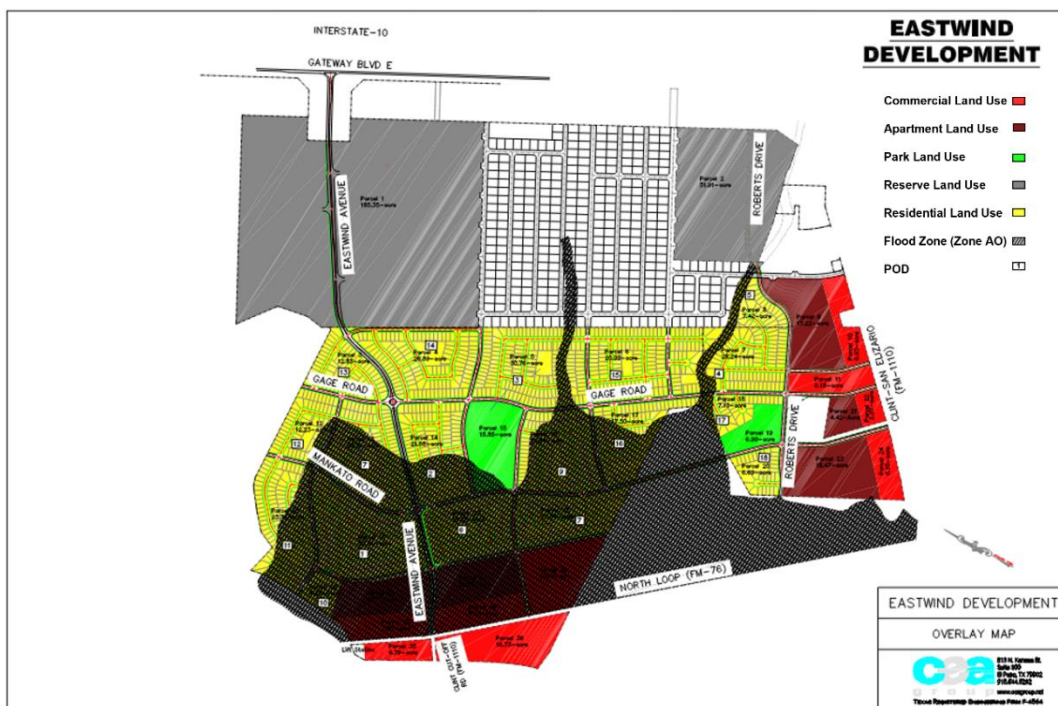
Other potential developments discussed affecting the study area, such as the proposed development along Darrington Road north of Interstate 10, have not progressed far enough along in its development to be defined for this study.

2.1 Eastwind Development

The Eastwind Development contains approximately 734.16 acres and is bounded by Interstate 10 / Gateway Boulevard (Blvd.) to the east, FM 76 to the west, Clint-San Elizario to the south and open desert and brushland to the north. Fully built the Eastwind Development will likely contain the following land use:

- Industrial park (237.26 acres)
- Residential (333.71 acres)
- Apartment (65.46 acres)
- Commercial (74.89 acres)
- Park (22.84 acres)

Access to the Eastwind Development will be from Gateway Blvd. East, Clint-San Elizario, and FM 76. The Eastwind Development land use and access map is shown in **Figure 2**.



Source: Eastwind Subdivision TIA Report

Figure 2: Eastwind Development Land Use Map

3. Sources of Traffic Counts

To develop the existing year (2019) traffic and classification counts, traffic data from the following sources were used:

- TxDOT count data
- SteetLight origin-destination (O-D) data

3.1 Existing 2019 Volumes

The Average Annual Daily Traffic (AADT) volume for the existing year is obtained from the Statewide Traffic Analysis and Reporting System (STARS II), which is the Traffic Count Database System (TCDS) of TxDOT. A map of the TCDS location identifications (ID) and 2019 AADT along FM 76 and other corridors in the study area vicinity are presented in **Figure 3**.

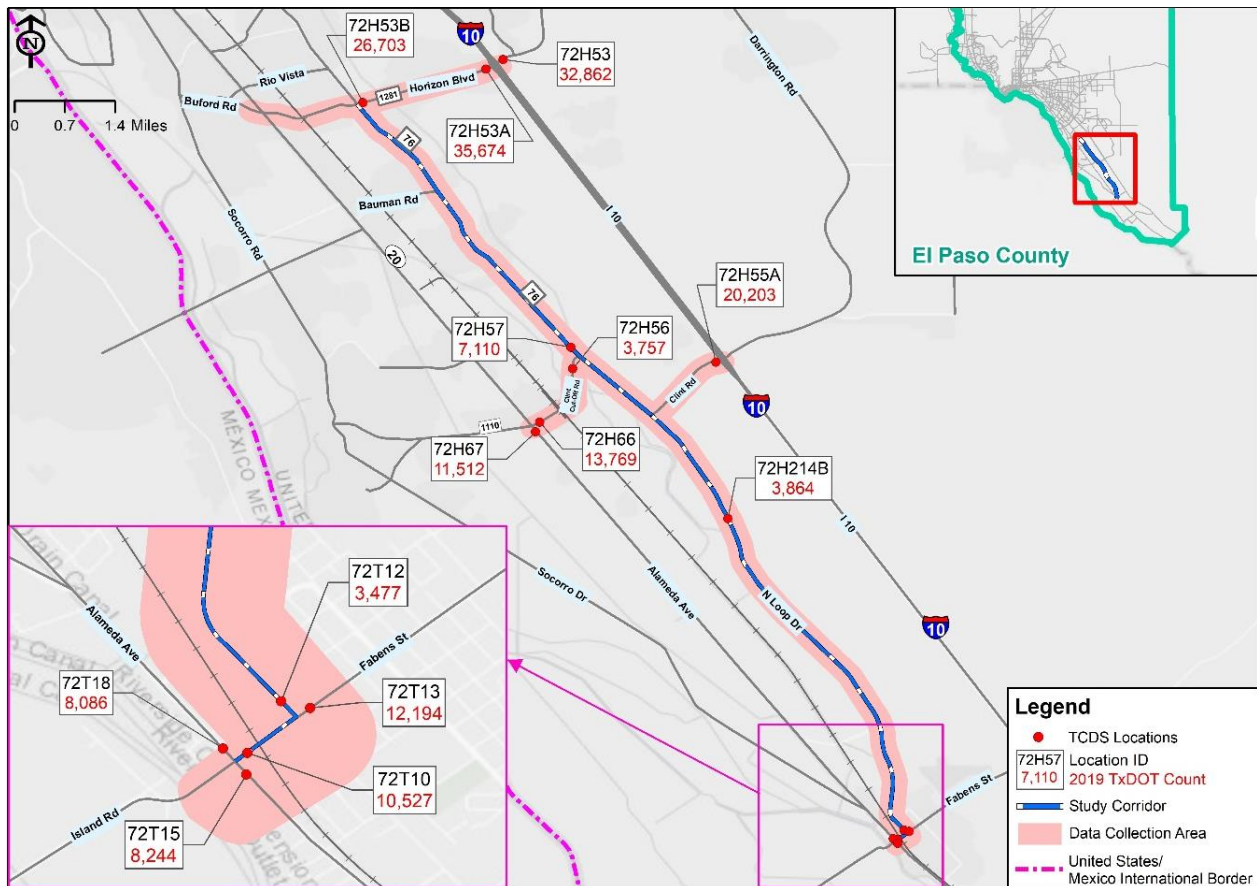


Figure 3: TCDS Locations Referenced for the Study

Detailed extracts of the STARS II outputs showing the historic traffic details for the study area are presented in **Appendix E.1**. The TCDS does not contain the turning movement counts (TMCs) in the study area. Therefore, the existing year TMCs at the intersections on the FM 76 (North Loop Drive) were obtained using the StreetLight platform. Considering STARS II data as reliable counted data, scaling factors were developed to adjust the TMC data. Existing 2019 peak hour traffic volumes at the key intersections on the FM 76 (North Loop Drive) are presented in **Appendix E.2**.

4. Sources of Traffic Forecasts

As indicated in the scope of work, the future year baseline traffic forecast for No-Build scenario is obtained by applying a growth rate to the existing year traffic. The growth rate is determined by reviewing the following sources:

1. Historic TxDOT count data
2. The El Paso Metropolitan Planning Organization (MPO) Travel Demand Model (TDM)
3. Regression Analysis using the Transportation Planning and Program (TP&P) work sheet

4.1 Historic Counts from TxDOT

An evaluation of TxDOT count trends was conducted as one measure of traffic growth. TxDOT counts between 1999 and 2019 were obtained for the FM 76 (North Loop Drive) study corridor and connecting roadway segments. **Figure 4** shows the summary of 2000, 2010, 2015 and 2019 TxDOT counts in the FM 76 (North Loop Drive) study area.

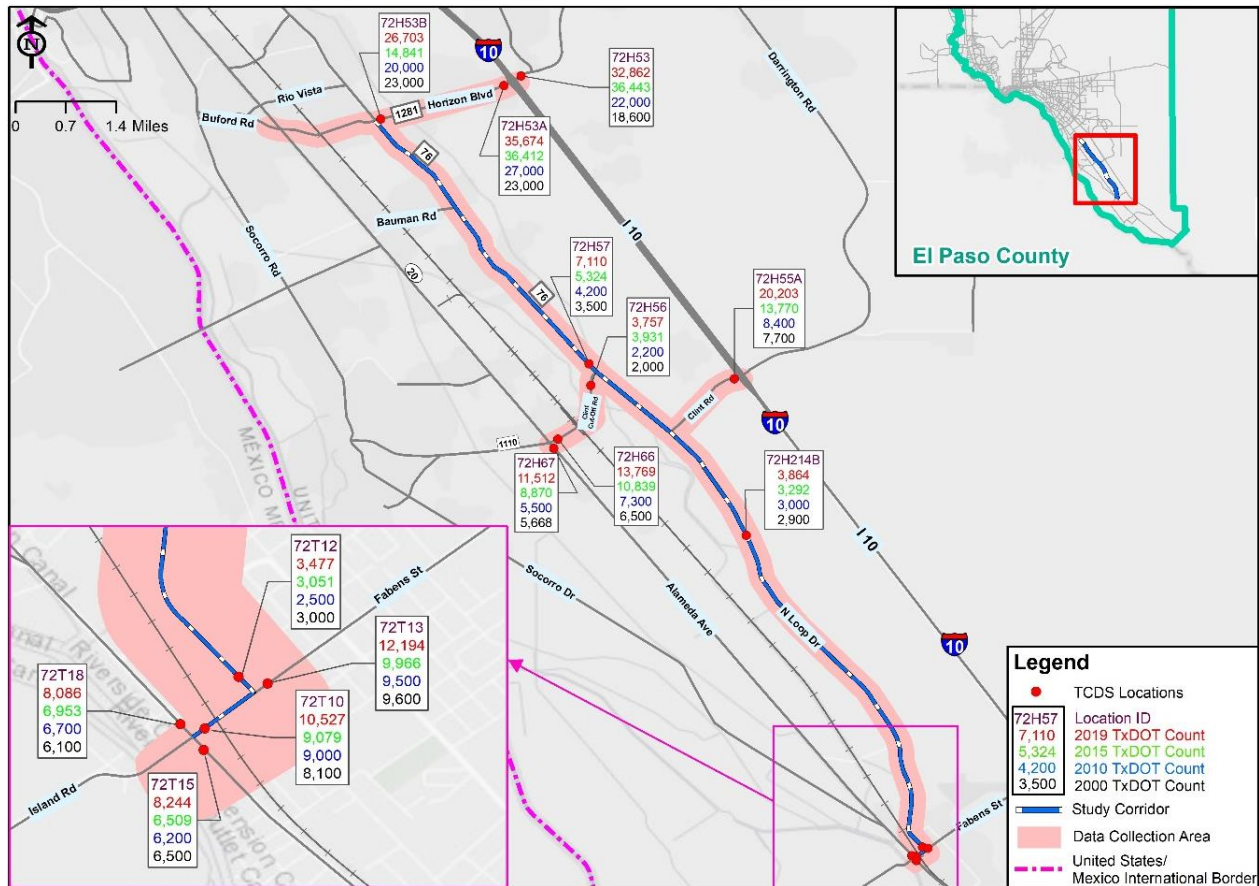


Figure 4: Summary of 2000, 2010, 2015 & 2019 TxDOT Counts near FM 76

Figure 5 show historical AADT patterns on various corridors in the study area including FM 76. Figure 5 does not show a major decline in traffic due to the 2008 economic downturn. Temporary decline in FM 76 and other corridors' traffic is noted from 2012 to 2014 and from 2017 to 2018.

Table 1 presents the linear annual growth rates for various count locations in the study area including FM 76. The Historical AADT data source from 1999-2019 have high annual growth rates that vary from minimum 0.3% to maximum 8.1% and averages to 2.9%. Overall, both Table 1 and Figure 5 verify a steady growth trend which averages to a linear growth of 2.9% per year between 1999 and 2019.

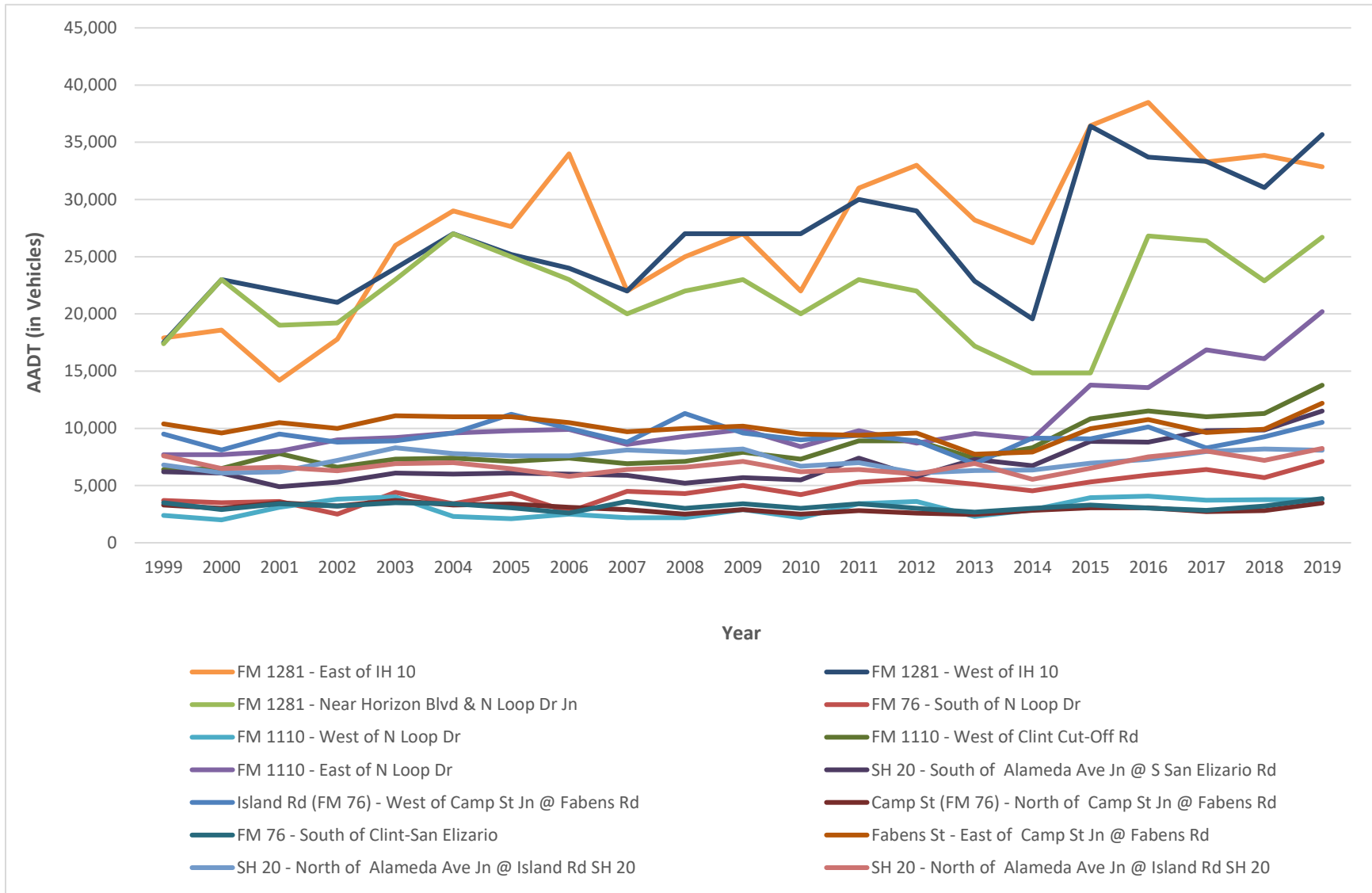


Figure 5: TxDOT Historic Count Trends for the Purposes of the Study

Table 1: TxDOT Historic Count Summary

Location ID	Location	Annual Average Daily Traffic (AADT)							Linear Annual Growth Rate	
		1999	2000	2010	2015	2017	2018	2019	1999-2019	2000-2019
72H53	FM 1281 - East of IH 10	17,900	18,600	22,000	36,443	33,289	33,850	32,862	4.2%	4.0%
72H53A	FM 1281 - West of IH 10	17,500	23,000	27,000	36,412	33,324	31,045	35,674	5.2%	2.9%
72H53B	FM 1281 - Near Horizon Blvd & N Loop Dr Jn	17,400	23,000	20,000	14,841	26,399	22,881	26,703	2.7%	0.8%
72H57	FM 76 - South of N Loop Dr	3,700	3,500	4,200	5,324	6,398	5,681	7,110	4.6%	5.4%
72H56	FM 1110 - West of N Loop Dr	2,400	2,000	2,200	3,931	3,710	3,757	3,757	2.8%	4.6%
72H66	FM 1110 - West of Clint Cut-Off Rd	6,400	6,500	7,300	10,839	11,004	11,301	13,769	5.8%	5.9%
72H67	SH 20 - South of Alameda Ave Jn @ S San Elizario Rd	6,200	6,100	5,500	8,870	9,787	9,867	11,512	4.3%	4.7%
72H55A	FM 1110 - East of N Loop Dr	7,700	7,700	8,400	13,770	16,851	16,085	20,203	8.1%	8.5%
72H214B	FM 76 - South of Clint-San Elizario	3,500	2,900	3,000	3,292	2,840	3,208	3,864	0.5%	1.7%
72T10	Island Rd (FM 76) - West of Camp St Jn @ Fabens Rd	9,500	8,100	9,000	9,079	8,293	9,258	10,527	0.5%	1.6%
72T12	Camp St (FM 76) - North of Camp St Jn @ Fabens Rd	3,300	3,000	2,500	3,051	2,732	2,805	3,477	0.3%	0.8%
72T13	Fabens St - East of Camp St Jn @ Fabens Rd	10,400	9,600	9,500	9,966	9,647	9,919	12,194	0.9%	1.4%
72T18	SH 20 - North of Alameda Ave Jn @ Island Rd	6,800	6,100	6,700	6,953	7,973	8,196	8,086	0.9%	1.7%
72T15	SH 20 - North of Alameda Ave Jn @ Island Rd	7,600	6,500	6,200	6,509	8,024	7,194	8,244	0.4%	1.4%

Source: Statewide Traffic Analysis and Reporting System (STARS II) (txdot.gov)

4.2 Travel Demand Model

The El Paso Metropolitan Planning Organization (MPO) Amended Horizon 2045 Destino Travel Demand Model (TDM) was used to study traffic projections for the study area. The Destino TDM consists of the regional network and demographic input files and provides five model network configurations (2012, 2017, 2020, 2030, 2040 and 2045) to simulate the planning periods. **Figure 6** shows the TDM forecasts for AADT along FM 76 and connecting corridors for the model years 2017, 2020, 2030, 2040 and 2045.

Table 2 presents the estimated linear growth rates between the model years based on the model forecasts. The forecasted traffic growth for the study area ranges from 0.1% to 4.0% per year (averaging 1.5% per year) based on the Destino TDM data from 2017-2045.

Note that variations in the growth rates in **Table 2** can be caused by many factors including demographics and the pattern of connections to traffic analysis zones in the model. Thus, some variations may not represent actual traffic loading patterns.

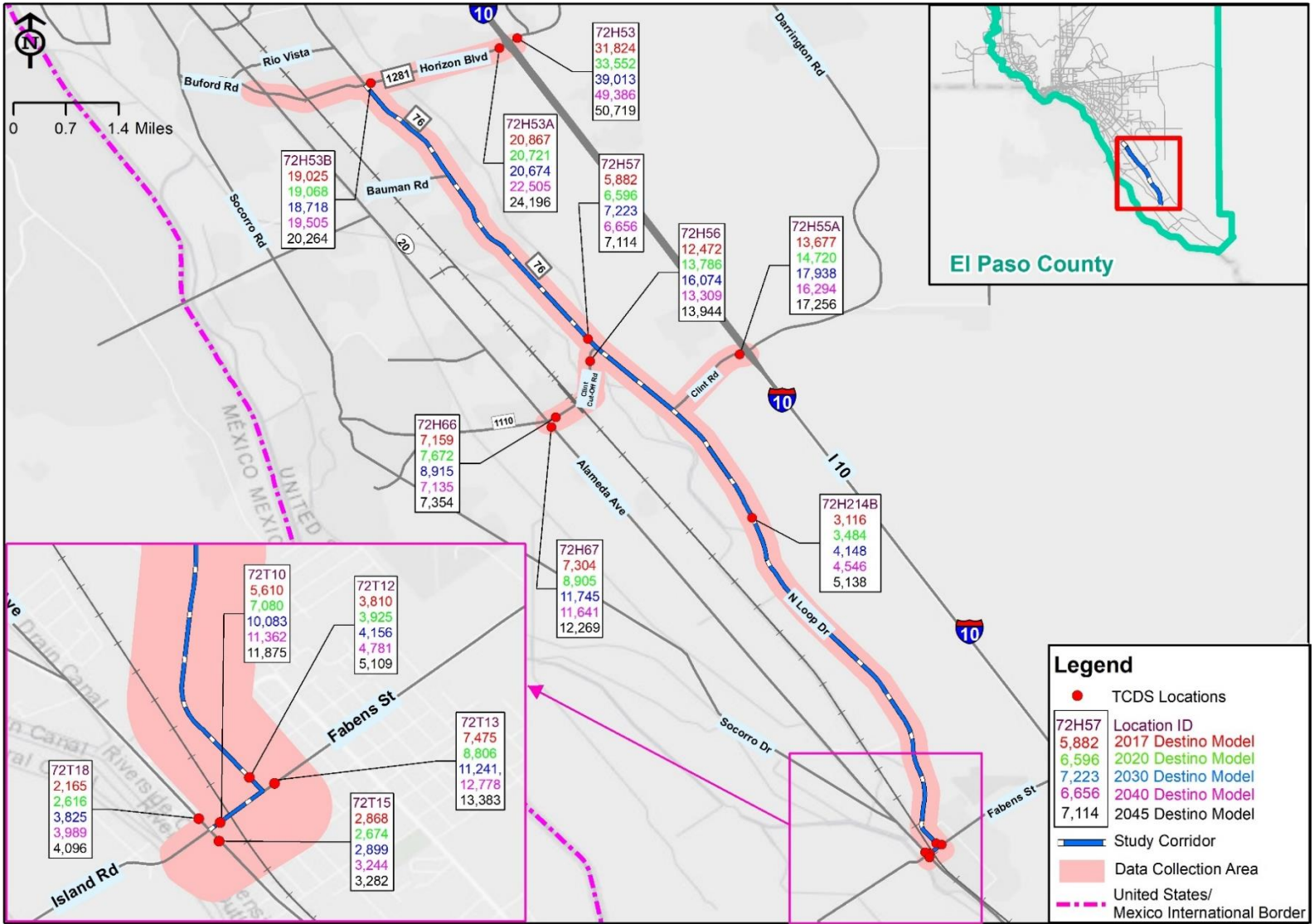


Figure 6: TDM Model AADT for 2017, 2020, 2030, 2040 & 2045 near FM 76

Table 2: Model Volumes and Average Annual Growth Rates

Location ID	Location	Model Volumes					Linear Annual Growth Rates		
		2017	2020	2030	2040	2045	2017-2030	2017-2040	2017-2045
72H53	FM 1281 - East of IH 10	31,824	33,552	39,013	49,386	50,719	1.7%	2.4%	2.1%
72H53A	FM 1281 - West of IH 10	20,867	20,721	20,674	22,505	24,196	-0.1%	0.3%	0.6%
72H53B	FM 1281 - Near Horizon Blvd & N Loop Dr Jn	19,025	19,068	18,718	19,505	20,264	-0.1%	0.1%	0.2%
72H57	FM 76 - South of N Loop Dr	5,882	6,596	7,223	6,656	7,114	1.8%	0.6%	0.7%
72H56*	FM 1110 - West of N Loop Dr	12,472	13,786	16,074	13,309	13,944	2.2%	0.3%	0.4%
72H66*	FM 1110 - West of Clint Cut-Off Rd	7,159	7,672	8,915	7,135	7,354	1.9%	0.0%	0.1%
72H67	SH 20 - South of Alameda Ave Jn @ S San Elizario Rd	7,304	8,905	11,745	11,641	12,269	4.7%	2.6%	2.4%
72H55A	FM 1110 - East of N Loop Dr	13,677	14,720	17,938	16,294	17,256	2.4%	0.8%	0.9%
72H214B	FM 76 - South of Clint-San Elizario	3,116	3,484	4,148	4,546	5,138	2.5%	2.0%	2.3%
72T10	Island Rd (FM 76) - West of Camp St Jn @ Fabens Rd	5,610	7,080	10,083	11,362	11,875	6.1%	4.5%	4.0%
72T12	Camp St (FM 76) - North of Camp St Jn @ Fabens Rd	3,810	3,925	4,156	4,781	5,109	0.7%	1.1%	1.2%
72T13	Fabens St - East of Camp St Jn @ Fabens Rd	7,475	8,806	11,241	12,778	13,383	3.9%	3.1%	2.8%
72T18	SH 20 - North of Alameda Ave Jn @ Island Rd	2,165	2,616	3,825	3,989	4,096	5.9%	3.7%	3.2%
72T15	SH 20 - North of Alameda Ave Jn @ Island Rd	2,868	2,674	2,899	3,244	3,282	0.1%	0.6%	0.5%

* Traffic rerouted due to future proposal of Clint Cut-Off Road

4.3 Regression Analysis

An evaluation of traffic forecasts from the TxDOT STARS II TCDS historic data was also performed as additional source of traffic growth trends. As detailed in the *Methodology Report*, the STARS II TCDS data presents traffic growth rate based on regression analysis performed using the TxDOT TP&P regression worksheet. Locations having a minimum of 2% growth near the study area were selected for the regression analysis. The STARS II TCDS historic data detailed in the regression analysis is presented in **Appendix E.3**, and **Table 3** presents the summary of the regression analysis. **Table 3** shows the pre- and post-pivot year growth rates based on the selected locations and the 2045 traffic forecasts. TxDOT STARS II TCDS regression based growth rates for pre- and post- pivot year are 2.6% and 2.0% respectively which averages to approximately 2.5% per year between 1999 and 2045.

Table 3: Regression Analysis Volumes and Average Annual Growth Rates

Location ID	Location	Volumes				Linear Annual Growth Rates	
		2019	2025	2039	2045	2019-2039 (Pre-Pivot Year)	2039-2045 (Post-Pivot Year)
72H53	FM 1281 - East of IH 10	32,862	38,000	50,000	53,900	2.6%	2.0%
72H57	FM 76 - South of N Loop Dr	7,110	8,200	10,800	11,700		
72H66	FM 1110 - West of Clint Cut-Off Rd	13,769	15,900	20,900	22,600		
72H67	SH 20 - South of Alameda Ave Jn @ S San Elizario Rd	11,512	13,300	17,500	18,900		
72H55 A	FM 1110 - East of N Loop Dr	20,203	23,400	30,700	33,100		

Source: Regression Worksheet

5. Corridor Growth Rates

5.1 Comparison of Corridor Growth Rates

A comparison of minimum, maximum, and average annual growth rates obtained from the three sources as described above is presented in **Table 4**. Historical AADT data source from 1999-2019 have high growth rates that vary from 0.3% to 8.1% and averages to 2.9%. The Destino TDM source show growth rates range from 0.1% to about 4.0% and averages to 1.5%. TxDOT STARS II TCDS regression based growth rates for pre- and post- pivot year are 2.6% and 2.0% respectively which averages to approximately 2.5% between 1999 and 2045.

Table 4: Average Annual Growth Rates Comparison

Source	Minimum	Maximum	Average
Historic AADT (1999 - 2019)	0.3%	8.1%	2.9%
Travel Demand Models (2017 - 2045)	0.1%	4.0%	1.5%
Regression Analysis (1999 - 2045)	2.0%*	2.6%**	2.5%

*post-pivot year growth rate

**pre-pivot year growth rate

5.2 Population Census Growth

Population data (refer to **Appendix E.4** for details) for the City of El Paso and El Paso County were extracted from the U. S. Census data for the year 2010 and 2020. The data shows the city and county population are growing at an annual rate of 0.46% and 0.81% respectively. The Destino TDM also contains population information for the model years 2017, 2022, 2032, 2040 and 2045. **Table 5** summarizes the population growth from U. S. Census and the TDM.

Table 5: Population Growth Rate

Source	Source	Years	Linear Growth Rate
El Paso City, Texas- Population	Census	2010-2020	0.46%
El Paso County, Texas- Population	Census	2010-2020	0.81%
El Paso County, Texas- Population	TDM	2017-2045	1.64%

Source: <https://www.census.gov/quickfacts/fact/table/elpasocitytexas,elpasocountytexas/PST045221>)

5.3 Corridor Growth Rate Recommendation

Evidence presented from **Table 4** provides an indication of potential traffic growth trends in the FM 76 (North Loop Drive) corridor. The scope of work requires traffic forecasts to be developed for future year 2045. Considering the traffic growth rates from all the three sources, as summarized in **Table 4**, the study team recommends an average linear growth rate of 2.6% per year between 2019-2039 and 2.0% thereafter (resulting in an average growth rate of 2.5% per year between 2019-2045) for the FM 76 (North Loop Drive) study traffic forecasts.

6. Corridor Projected Volumes

The future year 2045 volumes for the No-Build scenario is obtained by combining the future year 2045 baseline traffic and development traffic from Eastwind Development. Since the operational analysis is based on the peak hour traffic, traffic forecasts for the 2045 baseline and Eastwind Development are individually developed and aggregated to obtain the No-Build scenario forecast.

6.1 Baseline 2045 Corridor Traffic

Baseline 2045 corridor traffic is derived by applying a growth factor to the existing year 2019 traffic volumes. Based on the pivot year growth rates the growth factor is calculated as 1.64. Peak hour future year 2045 baseline turning movement volumes at the intersections on FM 76 were developed and rounded to nearest 25 when the turning movements are zero or less than 25.

6.2 Traffic Generated from Eastwind Development

It is assumed that by the year 2045, the Eastwind Development will have 100% occupancy in the land uses shown in the development layout (**Figure 2**). Trip generation for the proposed Eastwind Development was estimated using the standard trip rates published by the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th edition). **Table 6** summarizes the Eastwind Development trip generation which shows the development will generate 4,159 AM peak hour vehicle trips and 6,036 PM peak hour vehicle trips in the year 2045.

Table 6: Peak Hour Traffic from Eastwind Development

Landuse	Units			AM Peak Hour				PM Peak Hour			
	Units	GFA ('000 sq.ft.)	Acre	Rate	Trips	In	Out	Rate	Trips	In	Out
Industrial Park	-	3,240	-	0.40	1,296	81%	19%	0.40	1,296	21%	79%
Residential	1,618	-	-	0.74	1,197	25%	75%	0.99	1,602	63%	37%
Apartment	1,638	-	-	0.46	753	23%	77%	0.56	917	63%	37%
Department Store	-	365	-	0.58	212	64%	36%	1.95	712	50%	50%
Shopping Center	-	282	-	0.94	265	62%	38%	3.81	1,074	48%	52%
General Office Building	-	376	-	1.16	436	86%	14%	1.15	432	16%	84%
Park	-	-	23	0.02	0	59%	41%	0.11	3	55%	45%
Total					4,159				6,036		

Source: ITE Tripgeneration Manual, 10th edition

Apartment typical density adopted from <https://www.webpages.uidaho.edu/larc301/lectures/housing.htm>

Note: Commercial area assumed as departmental stores 36%, Shopping center 28%, General office Building 37%

Table 7 summarizes the Eastwind Development trip generation which shows the development will generate daily 60,856 vehicle trips in the year 2045.

Table 7: Daily Traffic from Eastwind Development

Landuse	Units			Daily Trip Rate	Daily Directional Distribution %		Daily Directional Trips
	Units	GFA ('000 sq.ft.)	Acre		IN	OUT	
Industrial Park	-	3,240	-	3.37	50%	50%	10,920
Residential	1,618	-	-	9.44	50%	50%	15,274
Apartment	1,638	-	-	7.32	50%	50%	11,990
Department Store	-	365	-	22.88	50%	50%	8,354
Shopping Center	-	282	-	37.75	50%	50%	10,640
General Office Building	-	376	-	9.74	50%	50%	3,660
Park	-	-	23	0.78	50%	50%	18
Total							60,856

Source: ITE Tripgeneration Manual, 10th edition

Apartment typical density adopted from <https://www.webpages.uidaho.edu/larc301/lectures/housing.htm>

Note: Commercial area assumed as departmental stores 36%, Shopping center 28%, General office Building 37%

Traffic Impact Assessment (TIA) for the full Eastwind Development is not available at the time of this report. TIA prepared by **CEA Group** in 2022 for the 185 acre industrial park site estimated 860 trips during each of the AM and PM peak hours.

Based on the review of the study area travel patterns from the Destino TDM, professional judgement, and the TIA conducted for the Eastwind Development, traffic distribution of the Eastwind generated traffic is developed and prepared as a line diagram which is presented in **Appendix E.5**.

6.3 Future 2045 No-Build Corridor Traffic

Future year 2045 traffic forecast for the FM 76 for the No-Build scenario is obtained by combining the 2045 baseline and Eastwind Development traffic. Peak hour future year 2045 No-Build traffic in the form of a line diagram is prepared and presented in **Appendix E.6**.

7. Quality Control

Quality control checks on the results from all the analyses were conducted on both the existing year (2019) and future year (2045) No-Build line diagrams. This ensured that the resulting line diagrams provide a reliable representation of the existing traffic conditions as well as a reasonable future traffic forecast along the study corridor.



APPENDIX E.1

TxDOT Traffic Data (STARS II)



APPENDIX E.2

Existing 2019 Peak Hour Traffic Volumes



APPENDIX E.3

Regression Analysis



APPENDIX E.4

Population Census Data



APPENDIX E.5

Eastwind Development Generated Traffic



APPENDIX E.6

Future No-Build 2045 Straight Line Diagrams