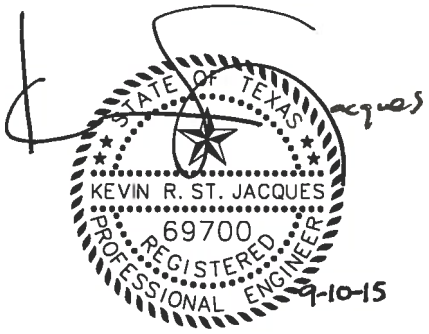
2015
Roadway Impact Fee System Update
City of Waxahachie, Texas

Final Report



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September 10, 2015

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1. Introduction

Waxahachie first implemented roadway impact fees in 2008 as a finance mechanism to help fund transportation improvements necessitated by new growth. Since the inception of the program, impact fee have been used to implement a number of projects citywide. Improvements facilitated by the impact fee program have resulted in better accessibility and circulation to growing portions of the city. In 2013, the roadway impact fee program was updated to include a variety of project additions and modifications.

Texas initially authorized the use of impact fees with the passage of Senate Bill 336 during the 1987 legislature. Now codified in Section 395 of the Texas Local Government Codes, the legislation authorizes cities to collect fees from new developments to finance new construction or expansion of capital improvements such as road, water and wastewater facilities. The law stipulates that all fees collected from new development must not exceed the maximum amount calculated by the methodology described therein. The law also mandates that impact fee systems be updated periodically to ensure existence of excess capacity of the capital improvement plan and that costs necessitated by new growth are accurately reflected in the cost per service unit calculation. Modifications to the capital improvement plan (CIP) may be made, subject to compliance with the city's official thoroughfare plan.

The implementation and administration of roadway impact fee systems offers several advantages to both a city and new development among which include: 1) a systematic, structured approach to assessment of fees, 2) a clear, equitable distribution of costs associated with the impact of new development, 3) the ability to pool funds for project initiation within a service area, 4) assurance that fees collected will be spent in the area where new development is occurring, 5) up-front knowledge of fees to be imposed, 6) credits for developer participation, and 7) ability for developers to demonstrate that, pursuant to city guidelines, specific unit equivalencies (service unit generation) may be different from those presented in the land use equivalency table.

This update amends the roadway capital improvements program to incorporate specific roadway project additions in Service Areas 1 and 3 deemed necessary to address future growth in the northwestern sector of the city. Per procedural requirements establish in Chapter 395, proper public noticing, work through the Capital Improvements Advisory Committee and public hearing process was initiated to consider the impact fee program amendments.

Study Methodology

The following steps were undertaken as part of the program update:

1. Meetings were held with the City of Waxahachie Staff and the Capital Improvement Advisory Committee to discuss technical approach and proposed impact fee CIP amendments.

2. Roadway costs (construction, engineering, right-of-way, and project financing) were prepared for proposed project additions and incorporated into the overall program costs. The resultant roadway costs were compiled by service area.

3. The cost of capacity supplied, cost attributable to new development and the maximum cost per service unit was calculated for each service area. A credit of 50% was applied to the overall cost of the capital improvements program for use in the calculation of the cost per service unit.

4. With the recent impact fee update in 2013, no changes were made to land use assumptions, land use equivalencies or service area structure (contained to the current city limits). With no changes in land use assumptions or land use equivalencies, there was no change in projected 10-year growth for the city.

5. The vehicle-mile of travel (VMT) during the PM peak hour was retained as the unit of measure for the roadway impact fee system.

6. Traffic volume count data collected as part of the 2013 update was reviewed and determined to remain valid. Traffic data collection at five locations was conducted in the northwestern sector of the city to supplement existing count data. This data was used to assess the existing roadway system for deficiencies and the impact fee CIP for excess capacity. The analysis of the existing impact fee CIP revealed excess capacity and therefore could remain in the impact fee program.

7. This report was prepared to document the procedures, findings, and conclusions of the study.

Organization of Report

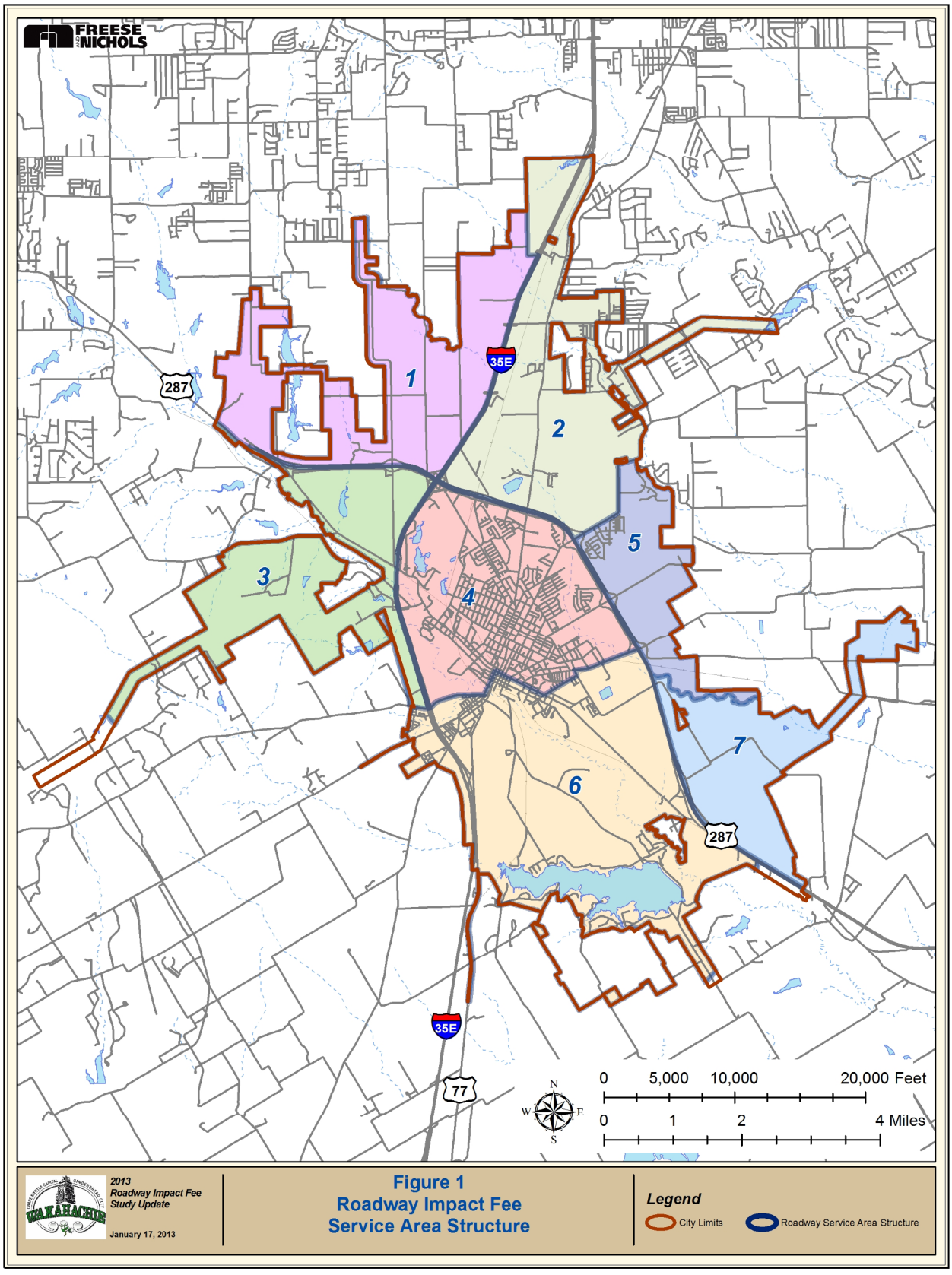
This report describes the background information, analysis, and findings of the study is as follows:

- Roadway Impact Fee Service Areas (Section 2)
- Roadway Impact Fee Service Units (Section 3)
- Existing Conditions Analysis (Section 4)
- Projected Conditions Analysis (Section 5)
- Calculation of Impact Fees (Section 6)
- Conclusion (Section 7)

2. Roadway Impact Fee Service Areas

Chapter 395 requires that service areas be defined for impact fees to ensure that facility improvements are located in proximity to the area that is generating needs. Legislation requires that roadway service areas be limited to a six-mile maximum and must be located within the current city limits. Transportation service areas are different from other impact fee service areas, which can include the city limits and Extra Territorial Jurisdiction (ETJ). This is primarily because roadway systems are "open" to both local and regional use as opposed to a defined limit of service that is provided with water and wastewater systems. The result is that new development can only be assessed an impact fee based on the cost of necessary capital improvements within that service area.

Waxahachie's roadway impact fee system contains seven service areas. No changes were made to the service area structure. The service area structure for Waxahachie is illustrated in **Figure 1**.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3. Roadway Impact Fee Service Units

An important aspect of the impact fee system is the determination of the proper service unit to be used to calculate and assess impact fees for new developments. As defined in Chapter 395, "Service unit means a standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development in accordance with generally accepted engineering or planning standards for a particular category of capital improvements or facility expansions."

To determine the transportation impact fee for a particular development, the service unit must accurately identify the impact that the development will have on the transportation system serving the development. This impact is a combination of the number of new trips generated by the development, the particular peaking characteristics of the land use(s) within the development, and the length of each new trip on the transportation system.

The correct service unit must also reflect the supply, which is provided by the roadway system, and the demand placed on the system during the time in which peak, or design, conditions are present on the system. Transportation facilities are designed and constructed to accommodate volumes expected to occur during the peak hours (design hours). These volumes typically occur during the morning (AM) and evening (PM) rush hours as motorists travel to and from work.

The vehicle-mile serves as the service unit for calculating and assessing transportation impact fees in Waxahachie. The vehicle-mile as a service unit establishes a way to relate the intensity of land development to the demand on the system through the use of published trip generation data. It also recognizes state legislation requirements with regards to trip length.

The PM peak hour was retained as the time period for assessing impacts because the greatest demand for roadway capacity occurs during this hour. Roadways are sized to meet this demand, and roadway capacity can more easily be defined on an hourly basis.

Service Units

Service units create a link between supply (roadway projects) and demand (development). Both can be expressed as a combination of the number of vehicles traveling during the peak hour and the distance traveled by these vehicles in miles.

Service Unit Supply

For roadway capital projects improvement, the number of service units provided during the peak hour is simply the product of the capacity of the roadway in one hour and the length of the project. For

example:

Given a four lane divided roadway project with a 600 vehicle per hour per lane capacity and a length of two miles, the number of service units provided is:

600 vehicles per hour per lane x 4 lanes x 2 miles = 4,800 vehicle-miles

Service Unit Demand

The demand placed on the system can be expressed in a similar manner. For example, a development generating 100 vehicle trips in the PM peak hour with an average trip length of two miles would generate:

100 vehicle-trips x 2 miles/trip = 200 vehicle-miles

Likewise, the existing demand placed on the roadway network is calculated in the same manner with a known traffic volume (peak hour roadway tube counts) on a street and a given segment length.

Service Units for New Development

An important objective in the implementation of the impact fee system is the identification of a specific service unit equivalency for individual developments. The vehicle-miles generated by a new development are a function of the trip generation and average trip length characteristics of that development. The following describes the process used to develop the vehicle-equivalency table, which relates land use types and sizes to the resulting vehicle-miles of demand created by that development.

Travel characteristics were deemed to be similar in nature to the previous system update, and therefore no changes were made to the resultant land use equivalency table.

Trip Generation

Trip generation information for the PM peak hour was based on data published in the Ninth Edition of *Trip Generation* by the Institute of Transportation Engineers (ITE). *Trip Generation* is a reference publication that contains travel characteristics of over 160 land uses across the nation and is based on empirical data gathered from over 4,800 studies that were reported to the Institute by public agencies, developers and consulting firms. Data contained in this publication is universally accepted for use in studies by transportation engineers throughout the nation.

Adjustments

The actual "traffic impact" of a specific site for impact fee purposes is based on the amount of traffic added to the street system. To accurately estimate new trips generated by a new development, adjustments must be made to trip generation rates and equations to account for pass-by and diverted trips. The added traffic is adjusted so that each development is assigned only for a portion of trips associated with that particular development and thus reducing the possibility of over-counting by counting only primary trips generated. Trip generation rates were reduced by the percentages presented in **Table 1** in an effort to isolate the primary trip purpose.

Pass-by trips are those trips that are already on a particular route for a different purpose and simply stop at a particular development on that route. For example, a stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. A pass-by trip does not create an additional burden on the street system and therefore should not be counted in the assessment of impact fees of a convenience store.

A diverted trip is a similar situation, except that a diversion is made from the regular route to make an interim stop. For example, a trip from work to home using Brown Street would be a diverted trip if the travel path were changed to Dallas Avenue for the purpose of stopping at a retail site. On a system-wide basis, this trip places a slightly additional burden on the street system but in many cases, this burden is minimal.

Table 1 contains the documented estimates of trip rate adjustments used in determining the appropriate rate to use in the impact fee calculation process. These adjustments were based on studies conducted by ITE.

The resulting recommended trip rates are illustrated as part of Table 3 Land Use/Vehicle Mile Equivalency Table. Rates were developed in lieu of equations to simplify the assessment of impact fees by the City and likewise, the estimation of impact fees by persons who may be required to pay an impact fee in conjunction with a development project.

A local study may also be conducted to confirm rates in Trip Generation or to change rates reflecting local conditions. In such cases, a minimum of three similar sites should be counted. Selected sites should be isolated in nature with driveways that specifically serve the development and not any other land uses. The results should be plotted on the scatter diagram of the selected land use contained in Trip Generation for comparison purposes. It is recommended that no change be approved unless the results show a variation of at least fifteen percent across the range of the sample size surveyed.

Trip Length

Trip lengths (in miles) are used in conjunction with site trip generation to estimate vehicle-miles of travel. Trip length data was based on information generated in the 1995 North Central Texas Council of Governments (NCTCOG) Workplace Survey. These travel characteristics were applied to Waxahachie to determine average trips lengths for common land use types.

Table 2 summarizes the derived average trip lengths for major land use categories. These trip lengths represent the average distance that a vehicle will travel between an origin and destination of which either the origin or destination contains the land-use category identified below. Data compiled by the Workplace Survey represents the best available information on trip lengths for this area.

Table 1
Trip Reduction Estimates (PM Peak Hour)*

ITE Code	Land Use Category	Pass-by Trips	Diverted Trips
110	General Light Industrial	0	0
130	Industrial Park	0	0
150	Manufacturing	0	0
151	Mini-Warehousing	0	0
210	Single-Family Detached Housing	0	0
220	Apartment	0	0
250	Retirement Community	0	0
540	Junior/Community College	0	0
560	Church/Place of Worship	0	0
565	Day Care Center	0	0
610	Hospital	0	0
710	General Office Building	0	0
750	Office Park	0	0
760	Research Center	0	0
815	Discount Store	52	0
820	Shopping Center	29-56%	27-17%
831	Quality Restaurant	40	18
832	High-Turnover Restaurant (Sit-down)	60	17
834	Fast Food Restaurant w/Drive-thru	50	20
843	Auto Parts Sales	41	13
848	Tire Store	28	4
851	Convenience Market	66	22
862	Convenience Market w/Gas Pumps	66	22
862	Home Improvement Store	48	8
863	Electronics Superstore	50	22
880	Pharmacy with Drive-thru	49	0
881	Pharmacy without Drive-thru	53	0
912	Bank with Drive-thru	41	8

DU = Dwelling Unit, GFA = Gross Floor Area; (*) Expressed as percent of total PM peak hour trips generated.
Source: Trip Generation, ITE 9th Edition, 2012

Table 2
Average Trip Lengths

Land Use Category	Average Trip Length (miles)	Localized Trip Length (miles)	Adjusted Trip Length (miles)
General Office	11.88	5.69	2.84
General Retail/Shopping Center	4.12	1.97	0.99
Industrial	9.95	4.77	2.38
Residential	11.27	5.40	2.70
Warehousing	8.84	4.23	2.12
Drive-In Bank	2.62	1.25	0.63
Specialty Retail	2.86	1.37	0.68
Hospital	5.18	2.48	1.24
Medical Office/Clinic	9.63	4.61	2.31
School	4.12	1.97	0.99
Hotel	4.18	2.00	1.00
Restaurant	3.74	1.79	0.90
Fast-Food Restaurant	3.53	1.69	0.84
Day Care Center	1.63	0.78	0.39
Supermarket	1.84	0.88	0.44
Pharmacy with Drive-thru	1.93	0.92	0.46

Source: US Census Bureau, NCTCOG, and Freese and Nichols.

Adjustments

The assessment of an individual development's impact fee is based on the premise that each vehicle-trip has an origin and a destination and that the development end should pay for one-half of the cost necessary to complete each trip. Thus, the development is charged only for a portion of the vehicle-trip associated with that development.

To prevent double charging, and to fairly attribute the demand placed on the system to each trip end location, the trip length was adjusted to remove travel on the federal roadway system and then divided by two to reflect half of the vehicle trip to and from the development. Data from the NCTCOG travel forecast model was used to compare VMT by roadway functional class. The average trip length was reduced by 48% to net out travel on the federal system. The average trip length, localized trip length, and adjustment for one-half trip length is illustrated in Table 2. Where specific land uses were considered to exhibit different trip length characteristics than those identified in Table 3, engineering judgment was used to estimate the average trip length. Finally, as the service area structure was based on a six-mile boundary, those land uses that exhibited trip lengths greater than six miles would be capped to this threshold.

Service Unit Equivalency Table

The result of combining the trip generation and trip length information is an equivalency table that establishes the service unit rate for various land uses. These service unit rates are based on an appropriate development unit for each land use. For example, a dwelling unit is the basis for residential uses, while 1,000 gross square feet of floor area is the basis for office, commercial, and retail uses. Other less common land uses are based on appropriate independent variables.

Separate rates have been established for specific land uses within the broader categories of residential, commercial, industrial and institutional to reflect the differences between land uses within the categories. However, even with these specific land use types, information is not available for every conceivable land use, so limitations do exist.

The updated equivalency table is illustrated in **Table 3**. Table 3 is reflective of adjusted trip rates (detailed in Table 1) and trip lengths (Table 2).

Table 3
Land Use Vehicle-Mile Equivalency Table

CATEGORY	LAND USE	DEVELOPMENT UNITS (X)	TRIP RATE	LOCAL TRIP LENGTH (mi.)	TOTAL SERVICE UNITS (VEH-MI / DEV UNIT)
RESIDENTIAL					
	SINGLE-FAMILY DETACHED	D.U.	1.01	2.70	2.73
	APARTMENT/TOWNHOUSE	D.U.	0.57	2.70	1.54
	RETIREMENT COMMUNITY	D.U.	0.29	2.41	0.70
	INDEPENDENT SR. LIVING FACILITY	D.U.	0.26	2.41	0.62
	OTHERS NOT SPECIFIED*	D.U.	1.01	2.70	2.73
OFFICE					
	GENERAL OFFICE BLDG	1000 GFA	1.49	2.84	4.24
	CORPORATE HEADQUARTERS BLDG	1000 GFA	1.40	2.84	3.98
	MEDICAL-DENTAL OFFICE BLDG	1000 GFA	3.55	2.31	8.19
	U.S. POST OFFICE	1000 GFA	3.26	1.92	6.25
	BUSINESS PARK	1000 GFA	1.29	2.84	3.67
	RESEARCH AND DEVELOPMENT CENTER	1000 GFA	1.02	2.84	2.90
	OTHERS NOT SPECIFIED*	1000 GFA	1.49	2.85	4.24
COMMERCIAL					
	RETAIL/SHOPPING CENTER	1000 GLA	2.25	0.99	2.22
	QUALITY RESTAURANT	1000 GFA	3.15	0.90	2.82
	FAST FOOD RESTAURANT WITH DRIVE-THROUGH	1000 GFA	10.34	0.84	8.74
	HIGH TURNOVER RESTAURANT	1000 GFA	4.37	0.93	4.06
	GAS STATION w/CONVENIENCE MARKET	1000 GFA	11.85	0.42	5.03
	CONVENIENCE MARKET WITH GASOLINE PUMPS	1000 GFA	7.27	0.42	3.09
	GROCERY/SUPERMARKET	1000 GFA	4.08	0.44	1.80
	DISCOUNT CLUB	1000 GFA	2.02	0.95	1.92
	AUTO SALES	1000 GFA	1.58	1.07	1.70
	VIDEO RENTAL STORE	1000 GFA	3.67	0.68	2.52
	BANK	1000 GFA	12.35	0.63	7.77
	PHARMACY/DRUGSTORE WITH DRIVE-THROUGH	1000 GFA	3.28	0.46	1.51
	APPAREL STORE	1000 GFA	1.38	0.81	1.12
	MOVIE THEATER	SCREENS	11.59	0.79	9.17
	FURNITURE STORE	1000 GFA	0.17	1.12	0.19
	HOME IMPROVEMENT SUPERSTORE	1000 GFA	1.08	0.99	1.06
	HARDWARE/PAINT STORE	1000 GFA	2.13	0.38	0.82
	BUILDING MATERIALS/LUMBER STORE	1000 GFA	1.98	0.38	0.76
	NURSERY (GARDEN CENTER)	1000 GFA	1.67	0.63	1.05
	NURSERY (WHOLESALE)	1000 GFA	1.40	0.63	0.88
	HOTEL	ROOMS	0.59	0.99	0.59
	MOTEL	ROOMS	0.47	0.99	0.47
	ALL SUITES HOTEL	ROOMS	0.55	0.99	0.55
	AUTO CARE CENTER	1000 GFA	2.30	0.68	1.57
	QUICK LUBE SHOP	1000 GFA	2.28	0.68	1.56
	AUTO PARTS SALES	1000 GFA	2.63	0.68	1.80
	TIRE SUPERSTORE	1000 GFA	2.84	0.99	2.80
	WHOLESALE TIRE STORE	1000 GFA	2.16	0.99	2.13
	MINI-WAREHOUSE/SELF STORAGE	1000 GFA	0.26	1.52	0.39
	OTHERS NOT SPECIFIED*	1000 GFA	2.25	0.99	2.22
INDUSTRIAL					
	GENERAL LIGHT INDUSTRIAL	1000 GFA	0.71	2.38	1.69
	MANUFACTURING	1000 GFA	0.74	2.46	1.82
	INDUSTRIAL PARK	1000 GFA	0.79	2.39	1.89
	WAREHOUSING	1000 GFA	0.47	2.12	0.99
	OTHERS NOT SPECIFIED*	1000 GFA	0.71	2.38	1.69
INSTITUTIONAL					
	PRIVATE SCHOOL (K-12)	STUDENTS	0.170	0.99	0.17
	JUNIOR/COMMUNITY COLLEGE	STUDENTS	0.120	1.01	0.12
	UNIVERSITY/COLLEGE	STUDENTS	0.820	1.20	0.98
	DAY CARE CENTER	STUDENTS	0.206	0.39	0.08
	HOSPITAL	BEDS	1.300	1.24	1.61
	NURSING HOME	BEDS	0.220	1.24	0.27
	ASSISTED LIVING CENTER	BEDS	0.220	1.24	0.27
	PLACE OF WORSHIP	1000 GFA	0.660	0.59	0.39

* THIS REPRESENTS TOTAL SERVICE UNIT EQUIVALENCY FOR LAND USES NOT SPECIFIED IN THIS CATEGORY. ACTUAL EQUIVALENCY MAY VARY AND MAY BE DEMONSTRATED BY PROPERTY OWNER TO BE DIFFERENT.

DU = Dwelling Unit
GFA = Gross Floor Area
GLA = Gross Leasable Area

4. Existing Conditions Analysis

Chapter 395 identifies specific requirements necessary in the capital improvements plan for impact fees. The existing conditions, including defining the existing roadway system, and analysis of the total capacity, the level of current usage, and commitments for usage of the existing roadway are required as part of the capital improvements plan. This Section discusses the existing conditions.

Existing Conditions

An inventory of the collector and arterial roadway facilities was conducted to determine existing conditions throughout Waxahachie. This analysis determines the capacity provided by the existing roadway system, the demand currently placed on the system, and the potential existence of deficiencies on the system.

Lane capacities used in the analysis are shown in **Table 4** and reflect hourly volume capacities for Level-of-Service "D" operations.

Table 4
Roadway Facility Vehicle-Mile Lane Capacities

Roadway Facility	Roadway Designation	Capacity "LOS D" Vehicles per hour per lane-mile of Roadway Facility
Divided Arterial	DA	625
Undivided Arterial	UA	600
Divided Collector	DC	550
Undivided Collector	UC	500

Existing System Evaluation

A review of data collected in the 2013 update was determined to be valid and therefor the existing conditions analysis and associated system deficiencies were retained for this system update. Traffic data collection at five locations was conducted in the northwestern sector of the city to supplement existing count data. A summary of the 2013 PM peak hour analysis is included in **Appendix C**.

Vehicle-Miles of Existing Capacity Supply

An analysis of the total capacity for each service area was performed. For each roadway segment, the

existing vehicle-miles of capacity supplied were calculated using the following equation:

Vehicle-Miles of Capacity = Link capacity per peak hour per lane x No. of Lanes x Length of segment (miles)

A summary of the current capacity available on the roadway system is shown in **Table 5**. A detailed listing of vehicle-miles of capacity by roadway segment is listed in Appendix C.

Vehicle-Miles of Existing Demand

The level of current usage in terms of vehicle-miles was calculated for each roadway segment. The vehicle-miles of existing demand were calculated by the following equation:

Vehicle-Miles of Demand = PM peak hour volume x Length of segment (miles)

Appendix C includes a detailed listing of vehicle-miles of demand by directional roadway segment.

Table 5
Peak Hour Vehicle-Miles of Existing Capacity and Demand

Service Area	Capacity Supplied (Veh-mi)	Demand (Veh-mi)
Service Area	Capacity	Demand
1	11,636	1,892
2	23,348	14,813
3	3,336	1,257
4	25,979	12,297
5	4,679	1,238
6	25,473	5,905
7	2,035	86
Total	96,486	37,488

Vehicle-Miles of Existing Excess Capacity and Deficiencies

For each roadway segment, the existing vehicle-miles of excess capacity and/or deficiencies were calculated. Each direction was evaluated to determine if vehicle demands exceeded the available capacity. If demand exceeded capacity in one or both directions, the deficiency is deducted from the supply associated with the impact fee capital improvement plan. A summary of peak hour excess capacity and deficiencies are shown in **Table 6**. A detailed listing of the existing excess capacity and deficiencies by roadway segment is also located in Appendix C.

Table 6
Peak Hour Vehicle-Miles of Excess Capacity and Deficiencies

Service Area	Excess Capacity (Veh-mi)	Deficiencies (Veh-mi)
Service Area	Excess Capacity	Deficiencies
1	9,744	0
2	8,535	0
3	2,079	0
4	13,901	219
5	3,610	169
6	19,568	0
7	1,949	0
Total	59,386	388

5. Projected Conditions Analysis

Chapter 395 requires a description of all capital improvements or facility expansions and their costs necessitated by and attributable to new development within the service area. This section describes the projected growth, vehicle-miles of new demand, capital improvements program, vehicle-miles of new capacity supplied, and costs of the roadway improvements.

Projected Growth

The projected growth for each transportation service area is represented by the increase in the number of new vehicle-miles generated over the 10-year planning period. The Land Use Assumptions report prepared as part of the 2013 system update were determined to remain valid by City Staff and the CIAC. Estimates of population and employment were prepared for the years 2013 and 2023.

Projected Vehicle-Miles of New Demand

As there were no changes in land use assumptions for the city, projections of 10-year growth (vehicle-miles of demand) remained the same. Vehicle-miles of demand for population growth were based on dwelling units, and vehicle-miles of demand for employment were based on the number of employees and estimates of square footage per employee.

Table 7 lists the projected vehicle-miles of demand over the 10-year planning period by service area. **Appendix D** contains the projected demand calculation worksheet.

Table 7
Vehicle-Miles of New Demand

Service Area	Projected 10-Year Growth (Vehicle-Miles)
1	3,079
2	5,607
3	1,375
4	3,981
5	2,541
6	2,296
7	709
Total	19,587

Capital Improvements Program

Evaluation of Existing CIP

Chapter 395 mandates that only CIP projects with excess capacity are eligible for consideration. Review of traffic volume data, revealed all projects within the program to contain excess capacity and therefore can be retained in the program.

Thoroughfare Plan

Impact fees may only consider "arterial" or "collector" class facilities designated on the City's Thoroughfare Plan. In Waxahachie, arterial class facilities are called "major thoroughfare" and "secondary thoroughfare". Several types of roadways fell under the "arterial" and "collector" class facilities and are listed below.

Waxahachie Thoroughfare Plan Sections

Arterial	**A-1**	**A-2**	**B**	**C-1**	**C-2**	**D-1**	**D-2**	**D-3**	**D-4**
Right-of-Way	100'	120'	100'	90'	90'	80'	70'	74'	64'
Collector	**E-1**	**E-2**	**E-3**	-	-	-	-	-	-
Right-of-Way	60'	60'	60'	-	-	-	-	-	-

Note: Types A-1, A-2, B, C-1, C-2, D-1, and D-3 are Divided Arterials (DA);
Types D-2 and D-4 are Undivided Arterials (UA); Types E-1, E-2, E-3, and E-4 are Undivided Collectors (UC)

2015 Amendments to the Impact Fee CIP

Amendments to the impact fee CIP included the following:

Impact Fee CIP Project Additions								
Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type
1	3	Marshall Rd	IH 35	Patrick Rd	New	0.94	4	DA
3	4	New Indian Rd	Bus. 287	US 287	New	0.83	4	DA
3	5	New Friar Ln	FM 664	New Indian Rd	New	0.79	2	UC

These amendments were deemed necessary to address future growth in the northwestern sector of the city. Within Service Area 3, anticipation of new development, as well as a proposed new high school, precipitated the need for the specified improvements. Amendments to the impact fee CIP were discussed with the CIAC on August 27, 2015.

2013 Amendments to the Impact Fee CIP

The following summary documents the previously approved 2013 amendments to the CIP. In Service Area 1, the initiation or completion of several projects (Longbranch, New Road "A", and Lofland) over the short-term was deemed unlikely and therefore removed. Excessive projected costs for needed bridge structures across railroad and water features caused for the removal of Lofland/Cardinal (SA2) and New Road "C" (SA6). Project additions were associated with the need for additional access/ circulation in growing areas to the northeast. Several projects were also modified due to relocation of connection points with other area streets. Indian Extension was relocated to connect with Indian Drive rather than Stadium Drive and John Arden Drive was realigned to connect with another location at Civic Center Lane. New Roads "B" and "E" (Service Area 2) were realigned due to changing development patterns in the area. The Impact Fee CIP project changes are listed below. Revisions of the impact fee CIP were discussed over four meetings (December 13, 2012, April 8, May 13 and July 19, 2013) with the CIAC.

Summary of 2013 Update CIP Modifications

Impact Fee CIP Project Removals								
Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type
1	*1*	Longbranch Rd	US 287	Longbranch Rd	New	1.18	4	DA
1	*3*	New Road A	Ovilla Rd.	Loftland	New	1.30	4	DA
1	*4*	Lofland	Solon	IH 35	New	0.35	4	UA
2	*5*	Lofland\Cardinal	IH-35	US 77	New	0.60	4	DA
6	*18*	New Road C - Segment 2	Howard	Bus 287	New	1.29	4	DA
Impact Fee CIP Project Additions								
Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type
2	*A*	New Road E	US 77	New Road B	New	0.14	4	DA
2	*7*	New Road B	Grove Creek Ext	Brown Rd (FM 813)	New	1.20	4	DA
5	*B*	Garden Valley	Park Place Blvd.	Brown Rd (FM 813)	New	0.69	4	UC
Impact Fee CIP Project Modifications								
Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type
4	*11*	John Arden	US 287	Solon	New	0.83	4	DA
4	*14*	Indian Extension	Brown	US 287	New	0.39	2	UC

Capital Improvements Plan

Figure 2 and **Table 8** illustrate and list the updated capital improvement projects for the impact fee system. The proposed CIP consists of 21 project segments covering all service areas. The cost of the proposed impact fee CIP is $62.5M, and is comprised of $56.9M in new projects and $5.6M recoupment projects. Cost components considered in the derivation of the estimated program cost include; construction, engineering, right-of-way, and debt service. Any previous assessments collected by the city from development (for any of the impact fee projects identified) were netted out of the cost of the program. The costs for impact fee study updates were also included in the program. **Appendix E** details the development of individual cost components of the impact fee CIP.

Impact Fee CIP Costs

The development of project costs for the CIP were based on a combination of actual and estimated costs. For completed projects, actual costs incurred by the city replaced costs that were planned from the previous system update. For new projects, unit costing developed as part of the 2013 update were used to estimate costs of impact fee CIP amendments. Construction unit costs were developed using a combination of area historic pricing and TXDOT 12-month price averages.

As with previous system updates, project costs were broken down to construction, engineering, right-of-way, and project financing. Other specific for engineering/survey, right-of-way acquisition and debt service were based on the following:

- Engineering/surveying – 7% of construction costs
- Right-of-way acquisition – $0.35-2.50/square foot
- Debt service – 5% compounded annually over 20 years

The cost to conduct future impact fee study updates is eligible for impact fee recovery and was retained as part of the cost of capital improvements implementation. The cost of two major five-year updates was estimated to be $35,000 each.

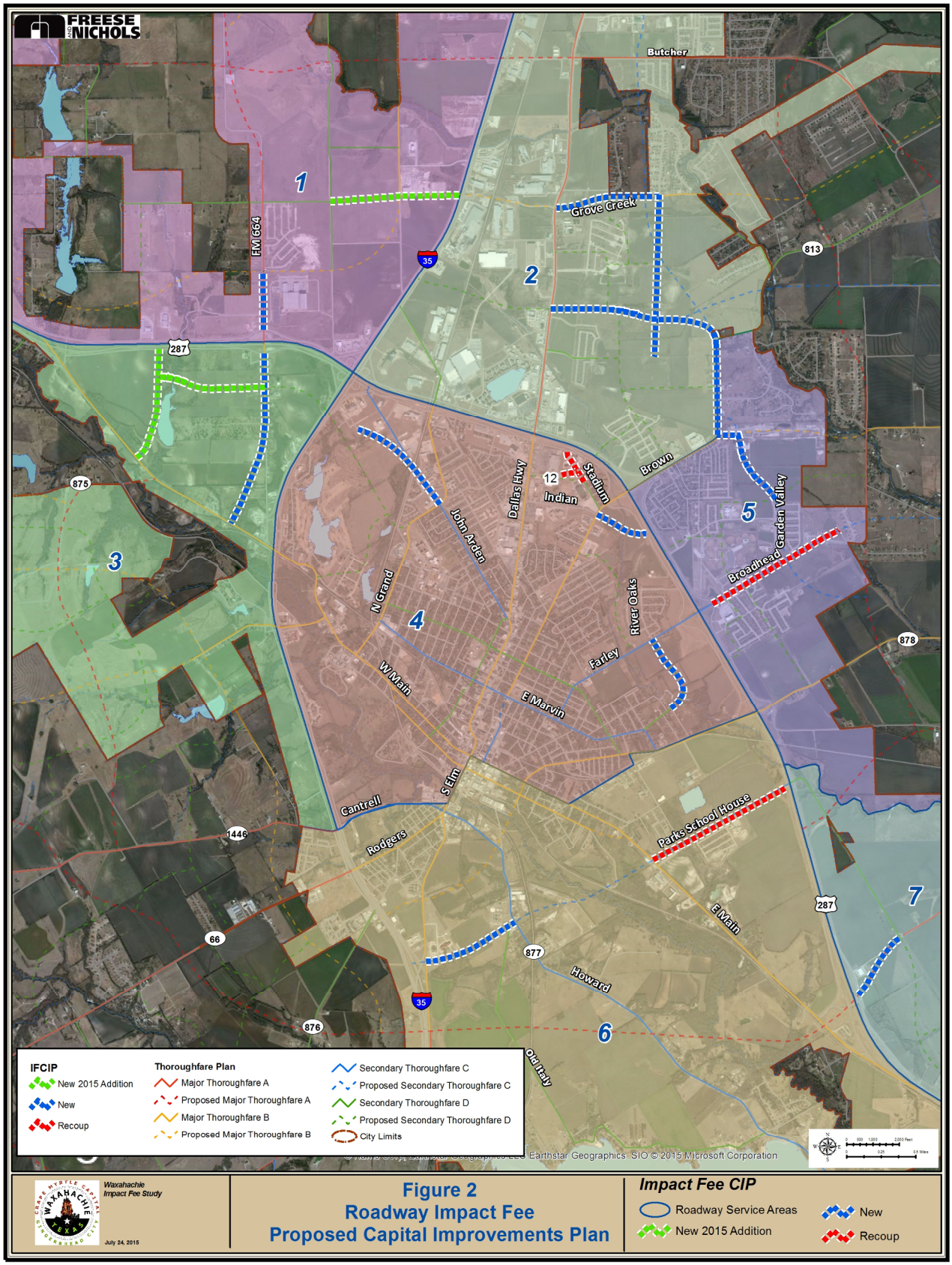
FREESE AND NICHOLS
Butcher
Grove Creek
FM 664
813
287
875
Dallas Hwy
Stadium
Brown
Indian
John Arden
Garden Valley
Broadhead
N Grand
River Oaks
878
W Main
Farley
E Marvin
S Hm
Cantrell
Rodgers
1446
Parks School House
E Main
66
877
Howard
876
Old Italy
1
2
3
4
5
6
7
IFCIP
New 2015 Addition
New
Recoup
Thoroughfare Plan
Major Thoroughfare A
Proposed Major Thoroughfare A
Major Thoroughfare B
Proposed Major Thoroughfare B
Secondary Thoroughfare C
Proposed Secondary Thoroughfare C
Secondary Thoroughfare D
Proposed Secondary Thoroughfare D
City Limits
Earthstar Geographics SIO © 2015 Microsoft Corporation
Waxahachie
Impact Fee Study
July 24, 2015
Figure 2
Roadway Impact Fee
Proposed Capital Improvements Plan
Impact Fee CIP
Roadway Service Areas
New 2015 Addition
New
Recoup

Table 8
2015 Waxahachie Roadway Impact Fee Study Update
Roadway Capital Improvements Plan

Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type	Tfare Plan Type	Roadway Project Costs: Engineering	ROW	Construction	Finance*	Prev. Assmt.**	Signal	Total Project Cost
1	2	Ovilla Rd***	US 287	New Road A (S. of Oregon	New	0.42	4	DA	A-2	$56,185	$89,220	$802,649	$497,729	$0	$0	$1,445,784
1	3	Marshall Rd	IH 35	Patrick Rd	New	0.94	4	DA	B	$225,180	$173,215	$3,216,850	$1,898,003	$0	$0	$5,513,248
Sub-total SA 1						**0.42**				**$281,365**	**$262,435**	**$4,019,499**	**$2,395,732**	**$0**	**$0**	**$6,959,031**
2	6	Grove Creek Ext	US 77	New Road B (W. of Brookstor	New	0.69	4	DA	B	$165,000	$126,923	$2,357,147	$1,390,762	$0	$80,000	$4,119,833
2	7	New Road B	Grove Creek Ext	Brown Rd (FM 813)	New	1.20	4	DA	C-1	$233,595	$200,274	$3,337,076	$1,979,747	$0	$0	$5,750,693
2/5	8	Brown Rd (FM 813)***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	$32,978	$18,849	$471,118	$989,874	$0	$0	$1,512,819
2	E	New Road E	US 77	New Road B	New	0.14	4	DA	C-1	$13,095	$22,454	$187,069	$116,874	$0	$0	$339,492
Sub-total SA 2						**2.71**				**$444,669**	**$368,501**	**$6,352,410**	**$4,477,257**	**$0**	**$80,000**	**$11,722,836**
3	9	Ovilla Rd***	US 287	Mid-Project	New	0.47	4	DA	B	$56,701	$99,694	$810,014	$507,365	$0	$0	$1,473,774
3	10	Ovilla Rd***	Mid-Project	Bus 287	New	0.80	4	DA	B	$96,427	$59,340	$1,377,526	$804,978	$0	$0	$2,338,270
3	4	New Indian Rd	Bus. 287	US 287	New	0.83	4	DA	C-1	$160,688	$137,767	$2,295,545	$1,361,850	$0	$0	$3,955,850
3	5	New Friar Ln	Ovilla Rd (FM 664)	Indian Rd	New	0.79	2	UC	D-2	$190,456	$116,508	$2,720,796	$1,589,574	$0	$0	$4,617,334
Sub-total SA 3						**1.27**				**$504,272**	**$413,308**	**$7,203,881**	**$4,263,767**	**$0**	**$0**	**$12,385,227**
4	11	John Arden	US 287	Solon	New	0.83	4	DA	C-1	$160,944	$328,538	$2,299,193	$1,464,054	$0	$0	$4,252,728
4	12	Northgate	Existing	Stadium Dr.	Recoup.	0.11	2	UC	D-2	$13,914	$0	$139,140	$80,353	$0	$0	$233,407
4	13	Stadium Dr.	Stadium Dr.	US 287	Recoup.	0.26	2	UC	D-2	$30,834	$0	$308,336	$178,064	$0	$0	$517,233
4	14	Indian Extension	Brown	US 287	New	0.39	2	UC	D-3	$187,950	$75,887	$1,879,502	$1,125,253	$0	$0	$3,268,592
4	15	River Oaks/Marvin Connection	Farley	Marvin Ave.	New	0.60	2	UC	D-3	$179,684	$81,980	$1,796,836	$1,080,712	$0	$0	$3,139,212
Sub-total SA 4						**2.79**				**$573,325**	**$486,404**	**$6,423,006**	**$3,928,436**	**$0**	**$0**	**$11,411,172**
5/2	8	Brown Rd (FM 813) ***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	$32,978	$18,849	$471,118	$274,547	$0	$0	$797,492
5	16	Broadhead	US 287	April Lane	Recoup.	1.06	4	DA	C-1	$320,000	$750	$3,980,138	$549,093	($50,111)	$80,000	$4,879,870
5	B	Garden Valley	Park Place Blvd.	Brown Rd (FM 813)	New	0.69	4	UC	D-4	$55,973	$89,592	$799,614	$496,219	$0	$0	$1,441,398
Sub-total SA 5						**2.44**				**$408,951**	**$109,191**	**$5,250,870**	**$1,319,859**	**($50,111)**	**$80,000**	**$7,118,760**
6	17	New Road C - Segment 1	US 77	Howard	New	0.71	4	DA	C-1	$137,600	$117,972	$1,965,712	$1,166,174	$0	$80,000	$3,467,457
6	19	Parks School	Main/Bus 287	US 287	New	0.93	4	DA	C-1	$248,394	$154,400	$3,548,480	$2,074,418	$0	$0	$6,025,691
Sub-total SA 6						**1.64**				**$385,993**	**$272,372**	**$5,514,191**	**$3,240,592**	**$0**	**$80,000**	**$9,493,148**
7	20	New Road D	US 287	Park School House	New	0.52	4	DA	A-2	$137,035	$163,205	$1,957,649	$1,185,392	$0	$0	$3,443,282
Sub-total SA 7						**0.52**				**$523,029**	**$435,577**	**$1,957,649**	**$1,185,392**	**$0**	**$0**	**$3,443,282**
Totals:						**10.04**				**$3,121,604**	**$2,347,788**	**$36,721,507**	**$20,811,034**	**($50,111)**	**$240,000**	**$62,533,457**

Engineering Cost	$3,121,604
Right-of-Way Cost	$2,347,788
Construction Cost	$36,721,507
Traffic Signals	$240,000
Finance Cost	$20,811,034
Previous Assessments	($50,111)
TOTAL NET COST	$62,533,457
Future Impact Fee Update Cost **	$70,000
TOTAL IMPLEMENTATION COST	$62,603,457

Notes:

* Assumes 7% cost of construction, interest rate for debt service @ 5% over 20 years.
** Collections received by the City previously
*** TXDOT Participation at 50%.
DA- Divided arterial
DC- Divided collector
UC- Undivided collector

Projected Vehicle-Miles Capacity Available for New Growth

The vehicle-miles of new capacity supply were calculated similar to the vehicle-miles of existing capacity supplied. The equation used was:

Vehicle-Miles of New Capacity Supplied = Link capacity per peak hour per lane x Num. of lanes within Service Area x Length of segment (miles)

Vehicle-miles of new supply, existing utilization and, 'net' capacity provided by the CIP are listed in **Table 9**. Existing utilization refers to capacity lost as a result of traffic currently on CIP roadways. **Appendix E** details capacity calculations provided by the CIP program.

Table 9
Vehicle-Miles of CIP Capacity Supplied

Service Area	Vehicle-Miles of CIP Capacity Supplied	Vehicle-Miles Capacity Less Existing Use	Vehicle-Miles of Net* Capacity Supplied
1	3,399	3,199	3,199
2	5,915	5,814	5,814
3	6,046	5,979	5,979
4	3,433	3,146	2,927
5	5,742	5,073	4,904
6	4,094	3,969	3,969
7	1,288	1,288	1,288
Totals	**29,917**	**28,467**	**28,080**

* Less existing system deficiencies.

Cost of Roadway Improvements

State law mandates that a credit be given for the portion of ad valorem tax revenues generated by improvements over the program period. In the alternative, a credit equal to 50% of the total projected cost of implementing the CIP may be given. As with the 2013 update, Waxahachie has chosen to apply the 50% credit to the cost of the impact fee CIP.

With the 50% credit, the cost of the program is reduced to $31.3 million of which, $29.4 million is the cost of net capacity provided and the maximum that can be considered for assessment to new development. The total and credited cost to implement the roadway improvements plan projects by service area is shown **in Table 10**. Each service area includes the proportional cost of study updates (totals $70,000) which is based on capacity provided by the CIP. Changes in the CIP (per this amendment) would affect the allocation of costs to all service areas. A detailed listing by project segment in each service area can be found in **Appendix F**. **Appendix G** details system costs by service area.

Table 10
Summary of Roadway Improvements Plan Cost Analysis

Service Area	Actual Cost of Proposed IFCIP Projects	Adjusted Cost (50% credit) of Proposed IFCIP Projects
1	$6,966,985	$3,483,493
2	$11,736,676	$5,868,338
3	$12,399,373	$6,199,687
4	$11,419,205	$5,709,602
5	$7,132,195	$3,566,097
6	$9,502,728	$4,751,364
7	$3,446,295	$1,723,148
Totals	$62,603,457	$31,301,728

State law is specific in identifying that only the portion of the CIP necessitated and attributable to new development is eligible for cost recovery. For example, if only 60% of the net service units supplied by the CIP is needed over the 10-year planning window, only 60% of the cost (credited at 50% per legislative requirements) may be considered in the calculation of fees. Based on projected needs over the ten-year planning period (19,587 vehicle-miles and based on the land use assumptions report), only 69.8% of the capacity made available by the CIP will be "necessitated by new growth" and therefore only $20.5 million is being considered in the current cost per service unit calculation. **Table 11** depicts CIP costs attributable to new growth by service area.

Table 11
Capital Improvements Plan Costs Attributable to New Development

Service Area	Actual Cost Attributable to New Growth	Adjusted Cost (50% credit) Attributable to New Growth
1	$6,310,159	$3,155,080
2	$11,125,490	$5,562,745
3	$2,819,013	$1,409,506
4	$9,734,120	$4,867,060
5	$3,156,358	$1,578,179
6	$5,329,436	$2,664,718
7	$1,896,716	$948,358
Totals	40,987,481	$20,493,740

6. Calculation of Impact Fees

This Section discusses the calculation of the cost per service unit and the calculation of roadway impact fees. The transportation impact fee will vary by the particular land use, service area, and size of the development. Examples are included to better illustrate the method by which the transportation impact fees are calculated.

Cost Per Service Unit

The cost per service unit is calculated by dividing the cost of the CIP necessitated and attributable to new demand (net cost as developed in Table 11) by the projected service units of growth over the 10-year planning period (Table 7 in Section 5).

Generally, the cost per service unit varies by service area because of the net capacity being provided by the proposed projects, variations in cost of CIP, and the number of service units necessitated by new growth in each impact fee service area.

Table 12 lists the results of the cost per service unit calculation by service area. The actual cost per service unit reflects the true burden to the City for the implementation of the roadway capital improvements program. As per state law, a credit for the portion of ad-valorem tax revenues generated by improvements over the program period, or a credit equal to 50% of the total projected cost of implementing the capital improvements plan must be given. Based on this analysis, the maximum collection rate reflects the maximum amount per service unit that can be charged to be in compliance with the state statute. **Appendix G** details the maximum fee per service unit calculation for each service area.

Table 12
Cost Per Service Unit Summary

Service Area	Actual Cost Per Service Unit	Maximum Allowable (50%) Cost per Service Unit
1	$2,048.00	$1,024.00
2	$1,984.00	$992.00
3	$2,050.00	$1,025.00
4	$2,444.00	$1,222.00
5	$1,242.00	$621.00
6	$2,320.00	$1,160.00
7	$2,674.00	$1,337.00
Average	$2,092.00	$1,046.00

Calculation of Roadway Impact Fees

The calculation of roadway impact fees for new development involves a two-step process. *Step One* is the calculation of the total number of service units that will be generated by the development. *Step Two* is the calculation of the impact fee due by the new development.

Step 1: Determine number of service units (vehicle-miles) generated by the development using the equivalency table.

No. of Development Units x Vehicle-miles per development unit = Development's Vehicle-miles

Step 2: Calculate the impact fee based on the fee per service unit for the service area where the development is located.

Development's Vehicle-miles x Fee per vehicle-mile = Impact Fee due from Development

Examples: The following fees would be assessed to new developments in Waxahachie if the cost per service unit in Service Area 5 were $621.00 (assumed adoption of 50%).

Single-Family Dwelling

1 dwelling unit x 2.73 vehicle-miles/dwelling unit = 2.73 vehicle-miles
2.73 vehicle-miles x $621.00/vehicle-mile = $1,695.33

20,000 square foot (s.f.) Office Building

20 (1,000 s.f. units) x 4.24 vehicle-miles/1,000 s.f. units = 84.80 vehicle-miles
84.80 vehicle-miles x $621.00/vehicle-mile = $56,660.80

100,000 s.f. Retail Center

100 (1,000 s.f. units) x 2.22 vehicle-miles/1,000 s.f. units = 222.00 vehicle-miles
222.00 vehicle-miles x $621.00/vehicle-mile = $137,862.00

7. Conclusions

Chapter 395 authorizes the assessment and collection of impact fees in Texas for transportation related capital improvements that must be met in order to assess and collect impact fees. This study was conducted to fulfill amend the impact fee CIP with specific project additions. These additions were determined to be needed based on changes in growth and anticipated access/circulation needs in Service Areas 1 and 3.

Amendments to the impact fee CIP included the following:

- Service Area 1: Marshall Rd Ext. (IH35 to Patrick); Type B, 6-lane divided, 100' ROW
- Service Area 3: New Indian Rd. (Bus 287 to US287); Type C-1, 4-lane divided, 80' ROW
- Service Area 3: New Friar Ln. (FM 664 to New Indian); Type D-2, 3-lane undivided, 80' ROW

Updated costs were prepared for the impact fee CIP amendments and included in the CIP program.

No changes were made to the service area structure as part of this system update. Seven service areas were created for Waxahachie as part of the initial impact fee program. This service area structure was configured so that no point is greater than the six-mile maximum set forth by law. The six-mile limit ensures that roadway improvements are in close proximity to the development paying the fees that it serves.

The land use equivalency table was deemed to be adequate for this update and hence, no changes were made to the land use equivalency table.

An analysis of existing conditions revealed that the current roadway system provides over 96,486 vehicle-miles of capacity. The existing demand placed on the system was determined to be 37,488 vehicle-miles. Evaluation of the existing roadway system found 388 vehicle-miles of deficiencies on the existing roadway network.

The Land Use Assumptions prepared as part of the 2013 update were deemed to be adequate for this system update. With no changes to land use assumptions or the land use equivalency table, the resultant projected 10-year growth, in terms of vehicle-miles, remained at 19,587.

The amended roadway impact fee capital improvements plan consists of twenty-one project segments, totaling $62.6 million. The credited (50%) cost attributable to new growth is $20.5 million and represents 70% of the net capacity made available for development by impact fee roadway projects. The recommended CIP program provides 28,080 vehicle-miles of net new capacity.

Based on the revised impact fee CIP and associated program costs, the *actual* cost per service unit was

calculated to be between $1,242.00 and $2,674.00. The credited (50%) cost per service unit was calculated to be between $621.00 and $1,337.00. Based on the updated CIP, the cost per service unit for Service Areas 1 and 3 increased from $188 to $1024 and from $599 to $1025, respectively. A summary of changes for the cost per service unit for all service areas is listed below.

Service Area	2013 Cost per Service Unit w/ 50% Credit	2015 Cost per Service Unit w/ 50% Credit
1	$188.00	$1,024.00
2	$921.00	$992.00
3	$599.00	$1,025.00
4	$1,265.00	$1,222.00
5	$621.00	$621.00
6	$1,160.00	$1,160.00
7	$1,338.00	$1,337.00
Average	$962.00	$1,046.00

The determination of fees due from new development is based upon the size of development, its associated service unit generation (equivalency table) and the cost per service unit derived or adopted for each service area.

APPENDICES

A. Roadway Impact Fee Definitions

ROADWAY IMPACT FEE DEFINITIONS

Average Trip Length - the average actual travel distance between two points. The average trip length by specific land use varies.

Diverted Trip - similar to pass-by trip, but a diversion is made from the regular route to make an interim stop.

Impact Fee - a charge or assessment imposed by a city against new development to generate revenue for funding or recouping roadway improvements necessitated and attributable to new development.

Maximum Fee Per Service Unit - the highest impact fee that may be collected by the City per vehicle-mile of supply. Calculated by dividing the costs of the capital improvements by the total number of vehicle-miles of demand expected in the 10-year planning period.

Pass-by Trip - a trip made as an intermediate stop on the way from an origin to a primary trip destination. For example, a stop at a convenience store on the way to office from home.

PM Peak Hour - the hour when the highest volume of traffic typically occurs. Data collection (September 2001) revealed the peak hour of travel between 5:00 and 6:00 pm for Waxahachie.

PM Peak Hour Traffic Counts - the number of vehicles passing a certain point during the peak hours of travel. Traffic counts are conducted during the PM peak hour because the greatest demand for roadway capacity occurs during this hour.

Primary Trip - a trip made for the specific purpose of visiting a destination; for example, from home to office.

Roadway Demand - the demand placed on the roadway network as a result of development. Determined by multiplying the trip generation of a specific land use by the average trip length.

Roadway Supply (or Capacity) - the number of service units provided by a segment of roadway over a period of time. Determined by multiplying the lane capacity by the roadway length.

Service Area - the area within the city boundaries to be served by capital improvements. Criteria for developing the service area structure include; 1) restricted to six-mile limit by legislation (to ensure proximity of roadway improvements to development), 2) conforms to census or forecast model boundaries, 3) projects on CIP as boundaries, 4) effort to match roadway supply with projected demand, or 5) city limit boundaries.

Service Unit - a measure of use or generation attributable to new development for roadway improvements. Also used to measure supply provided by existing and proposed roadway improvements.

Trip - a single, one-direction vehicle movement from an origin to a destination.

Trip Generation - the total trip ends for a land use over a given period of time or the total of all trips entering and exiting a site during that designated time. Used in the development of 10-year traffic demand projections and the equivalency table for Waxahachie. Based primarily on data prepared by the Institute of Transportation Engineers (ITE).

Vehicle - for impact fee purposes, any motorized appurtenance that carries passengers and/or goods on the roadway system during peak periods of travel.

Vehicle-mile - a unit used to express both supply and demand provided by, and placed on, the roadway system. A combination of a number of vehicles traveling during a given time period and the distance in which these vehicles travel in miles.

B. Land Use Definitions

LAND USE DEFINITIONS

Residential

Single-Family Detached - Any single-family detached home on an individual lot is included in this category. A typical example of this land use is a home in a suburban subdivision. Also included are duplex residential units and manufactured homes and other residential land uses not specified above.

Multi-Family - This land use includes both low-rise ("walk-up" dwellings) and high-rise multi-family apartments. An apartment is defined as a dwelling unit that is located within the same building with three or more dwelling units. Also included in this land use are residential condominiums, townhomes, triplex and quadplex units. Residential condominiums and townhomes are defined as single-family units that have at least one other single-family unit within the same building structure.

Independent Senior Living Facility - Retirement communities - restricted to adults or senior citizens - contain residential units similar to apartments or condominiums, and are usually self-contained villages. They may also contain special services such as medical facilities, dining facilities, and some limited supporting retail facilities.

Office

General Office Building - A general office building houses one or more tenants and is the location where affairs of a business, commercial or industrial organization, and professional activity are conducted. The building or buildings may be limited to one tenant or contain a mixture of tenants including professional services, insurance companies, investment brokers, company headquarters, and services for the tenants such as a bank or savings and loan, a restaurant or cafeteria, and several retail facilities. Also included in this category are office parks, and other office uses not specified above.

Medical Office Building – A building that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility.

Commercial/Retail

General Retail – General retail includes a variety of land uses that include shopping centers, home improvement stores, hardware stores selling a complete assortment of food, household goods and materials, apparel, servicing items. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. It is related to its market area in terms of size, location, and type of store. Shopping centers provide on-site parking facilities. Some centers may include non-merchandising uses such as small office professional services, post offices, banks, health clubs, video rentals, and recreational facilities such as ice-skating rinks or video arcades.

Restaurant - This land use consists of sit-down eating establishments. Quality and high-turnover (sit-down) restaurants are included in this category. Quality restaurants usually have a turnover

rate of at least one hour or longer. The turnover rate for a high-turnover (sit-down) restaurant is usually less than one hour.

Fast Food Restaurant - This category includes fast food restaurants with or without drive-through windows, such as McDonalds, Burger King, Dunkin Donuts, and Taco Bell. Some establishments may include an indoor or outdoor playground.

Convenience Store/Gas Station - Any convenience market that sells convenience foods, newspapers, magazines, and often, beer and wine and may have gasoline pumps. Gas stations generally are located at intersections or freeway interchanges and may include facilities for servicing, repairing, fueling motor vehicles and also may have convenience stores. Convenience stores/gas stations that have a fast-food restaurant contained within should be calculated on a separate basis based on the appropriate independent variable.

Bank - This land use includes walk-in and drive-in banks. Walk-in banks are generally free-standing buildings with their own parking lots. These banks do not have drive-in windows. Drive-in banks provide banking facilities for the motorist while in a vehicle; many also serve patrons who walk into the building. Savings and loan companies should also be included in this category.

Hotel/Motel – A place of lodging that provides sleeping accommodations, small restaurants, lounges, and meeting spaces. Some hotels or motels may provide banquet rooms or other retail and service shops.

Furniture and Appliance Sales - A store specializing in the sale of furniture, household appliances and goods and often, carpeting.

Theater – This land use consists of a movie or live theater and contains audience seating, single or multiple auditoriums, lobby, offices and refreshment stands.

Self-Storage Facilities - A self serve storage unit or vault that is rented for the storage of goods. Each unit is physically separated from other units and access is usually provided through an overhead door or other common access point.

Industrial

General Industrial – General industrial includes a variety of land uses such as light industrial, manufacturing, salvage, facilities for preparation/assembly and warehouse/distribution of goods. Other uses include materials testing laboratories, high-tech facilities and assemblers of technical equipment. Most facilities are free standing and devoted to a single use. Also included in this category are any other industrial uses not specified above.

Manufacturing – Facilities where the primary activity is the conversion or fabrication of raw materials to finished products. In addition to production of goods, manufacturing facilities may also have ancillary office, warehouse and associated functions.

Warehousing – These facilities are primarily devoted to the storage of materials. These facilities differ from mini-warehouse in that they are generally not self-service in nature.

Institutional

Private School - Private schools serve students between the kindergarten and middle school or high school levels. Private schools are usually centrally located in residential communities in order to facilitate student access and have no student drivers.

Community College - Community college provides two and four year advanced degrees. Vocational and technical schools are other uses that may fall under this category.

Day Care Center - A day care center is a facility where care for pre-school age children is provided, normally during the daytime hours. Day care facilities generally include classrooms, offices, eating areas, and playgrounds. Some centers also provide after-school care for older children.

Hospital - A hospital is any institution where medical or surgical care is given to non-ambulatory and ambulatory patients, and overnight accommodations are provided.

Nursing Home - A nursing home is any facility whose primary purpose is to care for persons who are unable to care for themselves. The term applies to rest homes, chronic care, and convalescent homes.

Religious Facilities – Churches, synagogues or houses of worship that provide public worship services, and generally house an assembly hall or sanctuary, meeting rooms, classrooms, and occasionally dining, catering, or party facilities.

Activity Centers – A recreational center or private club such as a YMCA that may offer classes and clubs for adults and children; a day care or a nursery school, meeting rooms, swimming pools and whirlpools; saunas, tennis, racquetball and handball courts, exercise classes, weightlifting equipment and locker rooms. Some may offer a small restaurant or snack bar within.

U.S. Post Office – A building that contains service windows for mailing packages and letters, post office boxes, offices, sorting and distributing facilities for mail and vehicle storage areas.

C. Existing Capital Improvements

EXISTING CAPITAL IMPROVEMENTS

Definitions

LANES	The total number of lanes in both directions available for travel.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial UC = undivided collector
PK-HR VOLUME	The existing volume of cars on the roadway segment traveling during the afternoon (PM) peak hour of travel. A and B indicate the two directions of travel. Direction A is a northbound or eastbound and direction B is southbound or westbound. If only one half of the roadway is located within the service area (see % in service area), the opposing direction will have no volume in the service area.
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
VEH-MI SUPPLY PK-HR	The number of total service units (vehicle-miles) supplied within the service area, based on the length and established capacity of the roadway type.
VEH-MI TOTAL DEMAND PK-HR	The total service unit (vehicle-mile) demand created by existing traffic on the roadway segment in the afternoon peak hour.
EXCESS CAPACITY PK-HR VEH-MI	The number of service units supplied but unused by existing traffic in the afternoon peak hour.
EXISTING DEFICIENCIES PK-HR VEH-MI	The number of service units of demand in excess of the service units supplied.

NOTE: Excess capacity and existing deficiencies are calculated separately for each direction. It is possible to have excess capacity in one direction and an existing deficiency in the other. When both directions have excess capacity or deficiencies, the total for both directions are presented.

Waxahachie Roadway Impact Fee Study
2013 Capital Improvements Analysis

A	B	C	D	E	F	G		H	I	J	K	L	M	N	O	R	U	X
Serv Area	Shared Svc Area	Roadway	From	To	Length (mi)	No. of Lanes	Type	Lane Capacity	Pct. in Serv. Area	Peak Hour Volume A	B	Total	VMT Supply A Dir Pk Dir	VMT Supply B Dir Pk Dir	VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Total VMT Excess Capacity	Total VMT Deficiency
1		PATRICK	US 287	MARSHALL	1.12	2	UC	500	100%	3	6	9	560	560	1120	10	1110	0
1		PATRICK	MARSHALL	N CITY LIMIT	1.14	2	UC	500	100%	3	6	9	570	570	1140	10	1130	0
1	2	HIGHLAND	US 287	N CITY LIMIT	0.74	2	UC	500	50%	0	79	79	0	370	370	58	312	0
1		OVILLA (FM 664)	US 287	MARSHALL	0.93	2	UA	600	100%	430	45	475	558	558	1116	442	674	0
1		OVILLA (FM 664)	MARSHALL	BOB WHITE	2.60	2	UA	600	100%	430	45	475	1560	1560	3120	1235	1885	0
1		MARSHALL	PATRICK	OVILLA (FM 664)	0.50	2	UC	500	100%	13	14	27	250	250	500	14	487	0
1		MARSHALL	OVILLA (FM 664)	BLACK CHAMP	1.34	2	UC	500	100%	13	14	27	670	670	1340	36	1304	0
1		SOLON	IH-35	LOFTLAND	0.71	2	UC	500	100%	1	1	2	355	355	710	1	709	0
1		LONGBRANCH	BLACK CHAMP	N CITY LIMIT	1.85	2	UA	600	100%	35	11	46	1110	1110	2220	85	2135	0
Sub-Total					*10.93*										*11,636*	*1,892*	*9,744*	*0*
2		GROVE CREEK	US 77	BROOKBEND DR	0.82	2	UA	600	100%	134	84	218	492	492	984	179	805	0
2	5	BROWN	US 287	SPRING CREEK	0.80	2	UA	600	50%	0	497	497	0	480	480	398	82	0
2	5	BROWN	SPRING CREEK	E CITY LIMIT	0.69	2	UA	600	50%	0	156	156	0	414	414	108	306	0
2		BUTCHER (FM 387)	IH-35	US77	0.50	2	UA	600	100%	393	163	556	300	300	600	278	322	0
2		BUTCHER (FM 387)	US77	W. of COVENTRY	0.72	2	UA	600	100%	132	63	195	432	432	864	140	724	0
2		US 77	IH 35	SH 342	1.02	4	UA	600	100%	632	663	1295	1224	1224	2448	1321	1127	0
2		US 77	SH 342	STERRETT	0.97	5	SA	625	100%	768	691	1459	1213	1213	2425	1415	1010	0
2		US 77	STERRETT	BUTCHER (FM 387)	0.97	5	SA	625	100%	979	1017	1996	1213	1213	2425	1936	489	0
2		US 77	BUTCHER (FM 387)	GROVE CREEK	1.50	5	SA	625	100%	842	742	1584	1875	1875	3750	2376	1374	0
2		US 77	GROVE CREEK	YMCA	0.68	5	SA	625	100%	913	885	1798	850	850	1700	1223	477	0
2		US 77	YMCA	US 287	1.99	5	SA	625	100%	1153	1145	2298	2488	2488	4975	4573	402	0
Sub-Total					*13.30*										*23,348*	*14,813*	*8,535*	*0*
3		OVILLA (FM 664)	US 287	Bus 287	1.38	2	UA	600	100%	111	91	202	828	828	1656	279	1377	0
3		Bus 287	OVILLA (FM 664)	FM 875 (LONE ELM)	0.91	2	UA	600	100%	342	395	737	546	546	1092	671	421	0
3		Bus 287	FM 875 (LONE ELM)	US 287	0.37	2	UA	600	100%	342	395	737	222	222	444	273	171	0
3	6	FM 1446 (CANTRELL)	IH 35 SBFR	W. CITY LIMITS	0.24	2	UA	600	50%	146	0	146	144	0	144	35	109	0
Sub-Total					*2.90*										*3,336*	*1,257*	*2,079*	*0*
4		US 77 (Dallas Hwy)	US 287	MARK TRAIL	0.18	5	SA	625	100%	1269	1295	2564	225	225	450	462	0	12
4		US 77 (Dallas Hwy)	MARK TRAIL	NORTHGATE	0.05	5	SA	625	100%	1257	1094	2351	63	63	125	118	8	0
4		US 77 (Dallas Hwy)	NORTHGATE	INDIAN	0.20	4	SA	625	100%	1206	1261	2467	188	188	375	493	0	118
4		US 77 (Dallas Hwy)	INDIAN	E. UNIVERSITY	0.41	4	SA	625	100%	993	997	1990	384	384	769	816	0	47
4		US 77 (Dallas Hwy)	E. UNIVERSITY	LA VISTA	0.21	4	DA	625	100%	928	842	1770	263	263	525	372	153	0
4		US 77 (Dallas Hwy)	LA VISTA	JOHN ARDEN	0.26	4	UA	600	100%	823	767	1590	312	312	624	413	211	0
4		US 77 (Dallas Hwy)	JOHN ARDEN	SYCAMORE	0.11	4	UA	600	100%	837	708	1545	132	132	264	170	94	0
4		US77 (Ferris Ave.)	SYCAMORE	ROSS	0.10	4	UA	600	100%	976	940	1916	120	120	240	192	48	0
4		US77 (Ferris Ave.)	ROSS	MARVIN	0.26	4	UA	600	100%	937	822	1759	312	312	624	457	167	0
4		US 77 (Elm St.)	MARVIN	SP RR	0.42	4	UA	600	100%	660	796	1456	504	504	1008	612	396	0
4		US 77 (Elm St.)	SP RR	MAIN	0.13	2	UA	600	100%	584	702	1286	78	78	156	167	2	13
4		US 77 (Elm St.)	MAIN	JEFFERSON	0.10	2	UA	600	100%	574	632	1206	60	60	120	121	3	3
4		US 77 (Elm St.)	JEFFERSON	MADISON	0.05	2	UA	600	100%	563	658	1221	30	30	60	61	2	3
4		NORTHGATE	HIGHSCHOOL	US 77 (Dallas Hwy)	0.40	2	UC	500	100%	168	169	337	200	200	400	135	265	0
4		NORTHGATE	US 77 (Dallas Hwy)	SOLON PLACE	0.67	2	UC	500	100%	325	371	696	335	335	670	466	204	0
4		HIGH SCHOOL	US 287	BROWN	0.49	2	UC	500	100%	221	143	364	245	245	490	178	312	0
4		BROWN	US 287	INDIAN	0.12	4	UA	600	100%	576	578	1154	144	144	288	138	150	0
4		BROWN	INDIAN	KIRKSY	0.80	4	UA	600	100%	409	394	803	960	960	1920	642	1278	0
4		BROWN	KIRKSY	ROSS	0.40	2	UA	600	100%	365	407	772	240	240	480	309	171	0
4		BROWN	ROSS	MARVIN	0.26	2	UA	600	100%	251	296	547	156	156	312	142	170	0
4		JOHN ARDEN	US 77 (Dallas Hwy)	E. UNIVERSITY	0.49	2	UC	500	100%	85	67	152	245	245	490	74	416	0
4		JOHN ARDEN	E. UNIVERSITY	SOLON PLACE	0.48	2	UC	500	100%	104	95	199	240	240	480	96	384	0
4		JOHN ARDEN	SOLON PLACE	SAM GEORGE	0.90	2	UC	500	100%	122	122	244	450	450	900	220	680	0
4		SOLON PLACE	US 287	JOHN ARDEN	0.70	2	UA	600	100%	91	88	179	420	420	840	125	715	0
4		SOLON PLACE	JOHN ARDEN	GRAND	0.37	2	UA	600	100%	232	245	477	222	222	444	176	268	0
4		GRAND	SOLON PLACE	MARVIN	0.50	2	UA	600	100%	240	246	486	300	300	600	243	357	0
4		GRAND	MARVIN	MAIN	0.30	2	UA	600	100%	228	286	514	180	180	360	154	206	0
4		E. UNIVERSITY	US 77 (Dallas Hwy)	JOHN ARDEN	0.33	2	UC	500	100%	213	195	408	165	165	330	135	195	0
4		E. UNIVERSITY	JOHN ARDEN	ROSS	0.39	2	UC	500	100%	168	161	329	195	195	390	128	262	0
4		E. UNIVERSITY	ROSS	MARVIN	0.38	2	UC	500	100%	121	121	242	190	190	380	92	288	0
4		FARLEY	US 287	ROSS	0.91	2	UC	500	100%	232	213	445	455	455	910	405	505	0
4		FARLEY	ROSS	MARVIN	0.28	2	UC	500	100%	232	213	445	140	140	280	125	155	0
4		SYCAMORE	GRAND	E. UNIVERSITY	0.36	2	UC	500	100%	42	108	150	180	180	360	54	306	0
4		SYCAMORE	E. UNIVERSITY	BRYSON	0.47	2	UC	500	100%	120	157	277	235	235	470	130	340	0
4		SYCAMORE	BRYSON	US 77 (Dallas Hwy)	0.10	2	UC	500	100%	98	208	306	50	50	100	31	69	0
4		ROSS	GRAND	E. UNIVERSITY	0.36	2	UC	500	100%	13	16	29	180	180	360	10	350	0
4		ROSS	E. UNIVERSITY	BRYSON	0.45	2	UC	500	100%	15	18	33	225	225	450	15	435	0
4		ROSS	BRYSON	US77 (Ferris Ave.)	0.10	2	UC	500	100%	98	208	306	50	50	100	31	69	0
4		ROSS	US77 (Ferris Ave.)	BROWN	0.19	2	UC	500	100%	84	61	145	95	95	190	28	162	0
4		ROSS	BROWN	FARLEY	0.39	2	UC	500	100%	83	85	168	195	195	390	66	324	0
4		ROSS	FARLEY	WYATT	0.46	2	UC	500	100%	61	109	170	230	230	460	78	382	0
4		MARVIN	GRAND	E. UNIVERSITY	0.43	2	UC	500	100%	121	122	243	215	215	430	104	326	0
4		MARVIN	E. UNIVERSITY	BRYSON	0.43	2	UC	500	100%	366	322	688	215	215	430	296	134	0
4		MARVIN	BRYSON	US77 (Ferris Ave.)	0.10	2	UC	500	100%	207	311	518	50	50	100	52	48	0
4		MARVIN	US77 (Ferris Ave.)	BROWN	0.18	4	UC	500	100%	529	357	886	180	180	360	159	201	0
4		MARVIN	BROWN	FARLEY	0.40	2	UC	500	100%	323	328	651	200	200	400	260	140	0
4		W. MAIN	IH 35 NBFR	GRAND	1.00	2	UA	600	100%	543	354	897	600	600	1200	897	303	0
4		W. MAIN	GRAND	US 77 (Elm)	1.11	2	UA	600	100%	294	399	693	666	666	1332	769	563	0
4		WYATT	E. MAIN	PETERS	0.55	2	UA	600	100%	195	114	309	330	330	660	170	490	0
4	6	FM 1446 (CANTRELL)	IH 35 NBFR	S. ELM	0.79	2	UC	500	50%	0	160	160	0	395	395	126	269	0
4	6	US 77 (Elm St.)	FM 1446 (CANTRELL)	MADISON	0.30	2	UA	600	50%	0	658	658	0	180	180	197	0	17
4	6	US 77 (Elm St.)	MADISON	MAIN	0.15	2	UA	600	50%	0	632	632	0	90	90	95	0	5
4	6	MAIN	S ELM	KAUFMAN	0.23	2	UC	500	50%	0	255	255	0	115	115	59	56	0
4	6	MAIN	KAUFMAN	WYATT	0.21	2	UC	500	50%	0	201	201	0	105	105	42	63	0
4	6	MAIN	WYATT	GETZENDANER	0.36	2	UC	500	50%	0	172	172	0	180	180	62	118	0
4	6	GETZENDANER	MAIN	PETERS	0.55	2	UC	500	50%	0	32	32	0	275	275	18	257	0
4	6	PETERS	GETZENDANER	WYATT	0.09	2	UC	500	50%	0	91	91	0	45	45	8	37	0
4	6	WYATT	PETERS	US 287 SB FR	0.83	2	UA	600	50%	0	123	123	0	498	498	102	396	0
Sub-Total					*22.24*										*25,979*	*12,297*	*13,901*	*219*

Waxahachie Roadway Impact Fee Study
2013 Capital Improvements Analysis

A	B	C	D	E	F	G		H	I	J	K	L	M	N	O	R	U	X
Serv Area	Shared Svc Area	Roadway	From	To	Length (mi)	No. of Lanes	Type	Lane Capacity	Pct. in Serv. Area	Peak Hour Volume A	B	Total	VMT Supply A Dir Pk Dir	VMT Supply B Dir Pk Dir	VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Total VMT Excess Capacity	Total VMT Deficiency
5	2	BROWN	US 287	SPRING CREEK	0.80	2	UA	600	50%	811	0	811	480	0	480	649	0	169
5	2	BROWN	SPRING CREEK	E CITY LIMIT	0.69	2	UA	600	50%	215	0	215	414	0	414	148	266	0
5		BROADHEAD LN	US 287 WBFR	BISON MEADOW	0.27	4	DA	625	100%	349	176	525	338	338	675	142	533	0
5		BROADHEAD LN	BISON MEADOW	GARDEN VALLEY	0.30	4	DA	625	100%	137	144	281	375	375	750	84	666	0
5		BROADHEAD LN	GARDEN VALLEY	APRIL LN	0.58	4	DA	625	100%	63	21	84	725	725	1450	49	1401	0
5		GARDEN VALLEY	BROADHEAD LN	PARK PLACE BLVD	0.32	2	UC	500	100%	74	32	106	160	160	320	34	286	0
5		FM 878	US 287 WBFR	E. CITY LIMIT	0.40	2	UC	500	100%	145	121	266	200	200	400	106	294	0
5		PARK PLACE BLVD	US 287 WBFR	E. CITY LIMIT	0.19	2	UC	500	100%	95	40	135	95	95	190	26	164	0
Sub-Total					*3.55*										*4,679*	*1,238*	*3,610*	*169*
6	3	FM 1446 (CANTRELL)	IH 35 SBFR	W. CITY LIMITS	0.24	2	UA	600	50%	0	199	199	0	144	144	48	96	0
6	4	FM 1446 (CANTRELL)	IH 35 NBFR	S. ELM	0.79	2	UC	500	50%	92	0	92	395	0	395	73	322	0
6	4	S ELM	FM 1446 (CANTRELL)	MADISON	0.30	2	UA	600	50%	553	0	553	180	0	180	166	14	0
6	4	S ELM	MADISON	MAIN	0.15	2	UA	600	50%	553	0	553	90	0	90	83	7	0
6	4	MAIN	S ELM	KAUFMAN	0.23	2	UC	500	50%	233	0	233	115	0	115	54	61	0
6	4	MAIN	KAUFMAN	WYATT	0.21	2	UC	500	50%	193	0	193	105	0	105	41	64	0
6	4	MAIN	WYATT	GETZENDANER	0.36	2	UC	500	50%	172	0	172	180	0	180	62	118	0
6	4	GETZENDANER	MAIN	PETERS	0.55	2	UC	500	50%	38	0	38	275	0	275	21	254	0
6	4	PETERS	GETZENDANER	WYATT	0.09	2	UC	500	50%	0	66	66	0	45	45	6	39	0
6	4	WYATT	PETERS	US 287 SB FR	0.83	2	UA	600	50%	155	0	155	498	0	498	129	369	0
6		S RODGERS (FM 66)	W. CITY LIMIT	IH35 SB FR	1.20	2	UA	600	100%	306	455	761	720	720	1440	913	527	0
6		S RODGERS (FM 66)	IH 35 NB FR	HOWARD	0.74	2	UA	600	100%	200	271	471	444	444	888	349	539	0
6		5 POINTS	W CITY LIMIT	IH35 SB FR	0.28	2	UA	600	100%	412	513	925	168	168	336	259	77	0
6		5 POINTS	IH35 NB FR	RODGERS	0.45	2	UC	500	100%	44	92	136	225	225	450	61	389	0
6		US 77	RODGERS	HILLTOP	0.57	2	UA	600	100%	356	393	749	342	342	684	427	257	0
6		US 77	HILLTOP	IH35 NB FR	0.44	2	UA	600	100%	461	498	959	264	264	528	422	106	0
6		OLD PARKS SCHOOL HOUS	GETZENDANER	NEW PARKS SCHOOL	0.70	2	UC	500	100%	21	53	74	350	350	700	52	648	0
6		GRAHAM	PARKS SCHOOL	S. MAIN	0.33	2	UA	600	100%	26	26	52	198	198	396	17	379	0
6		PARKS SCHOOL HOUSE	MAIN	OLD PARKS SCHOOL HOU	0.23	4	DA	625	100%	91	17	108	288	288	575	25	550	0
6		PARKS SCHOOL HOUSE	OLD PARKS SCHOOL HO	US 287	0.87	4	DA	625	100%	17	52	69	1088	1088	2175	60	2115	0
6		S MAIN	GETZENDANER	GRAHAM	0.41	2	UA	600	100%	154	143	297	246	246	492	122	370	0
6		S MAIN	GRAHAM	PARKS SCHOOL	0.39	2	UA	600	100%	133	160	293	234	234	468	114	354	0
6		S MAIN	PARKS SCHOOL	US 287 SB FR	1.62	2	UA	600	100%	112	205	317	972	972	1944	514	1430	0
6		S MAIN	US 287 SB FR	US 287	0.44	2	UA	600	100%	112	205	317	264	264	528	139	389	0
6		HOWARD	RODGERS	OLD ITALY	0.99	2	UA	600	100%	151	167	318	594	594	1188	315	873	0
6		HOWARD	OLD ITALY	LAKE SHORE	2.42	2	UA	600	100%	84	105	189	1452	1452	2904	457	2447	0
6		HOWARD	LAKE SHORE	HUNTER PASS	1.23	2	UC	500	100%	68	126	194	615	615	1230	239	991	0
6		HOWARD	PENN RD	SERVICE AREA	0.95	2	UC	500	100%	84	37	121	475	475	950	115	835	0
6		OLD ITALY	HOWARD	LAKESHORE	1.75	2	UC	500	100%	56	83	139	875	875	1750	243	1507	0
6		LAKESHORE	OLD ITALY	HOWARD	1.58	2	UC	500	100%	56	83	139	790	790	1580	220	1360	0
6		PENN RD	HOWARD	CITY LIMITS	1.28	2	UC	500	100%	37	47	84	640	640	1280	108	1172	0
6		LAKE WOOD	CITY LIMITS	CITY LIMITS	0.96	2	UC	500	100%	21	36	57	480	480	960	55	905	0
Sub-Total					*23.58*										*25,473*	*5,905*	*19,568*	*0*
7		PARKS SCHOOL HOUSE	US 287	CURVE	1.41	2	UC	500	100%	0	31	31	0	705	705	44	661	0
7		PARKS SCHOOL HOUSE	CURVE	S. CITY LIMITS	1.33	2	UC	500	100%	16	16	32	665	665	1330	43	1287	0
Sub-Total					*2.74*										*2,035*	*86*	*1,949*	*0*
Total					**79.24**										**96,486**	**37,488**	**59,386**	**388**

DA- Divided arterial
UA- Undivided arterial
SA- Special arterial with dual-left turn lane
DC- Divided collector
UC- Undivided collector

D. Calculation of Vehicle-Miles of New Demand

Vehicle-Mile Trip Generation by Service Area, Waxahachie Impact Fee Study
Based on May 15, 2008 Land Use Assumtptions by Sefko Planning Group/FNI.

Estimated Residential Growth Vehicle-Mile Trip Generation

Service Area	Added Dwelling Units	Vehicle-Miles per DU	Total Vehicle-Miles
1	301	2.73	821
2	850	2.73	2318
3	100	2.73	273
4	200	2.73	545
5	650	2.73	1773
6	200	2.73	545
7	200	2.73	545

SU Equivalency	
SF Res	2.73
Basic Employ	1.69
Service Employ	4.24
Retail Employ	2.22

Note: Estimates of employees per square foot based on data from the NCTCOG work place survey.

Estimated Basic Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.*	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
1	451	1205	543,455	1.69	918
2	885	1205	1,066,425	1.69	1,802
3	326	1205	392,830	1.69	664
4	714	1205	860,370	1.69	1,454
5	213	1205	256,665	1.69	434
6	437	1205	526,585	1.69	890
7	29	1205	34,945	1.69	59

Estimated Service Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.*	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
1	520	350	182,000	4.24	771
2	739	350	258,650	4.24	1,096
3	148	350	51,800	4.24	220
4	978	350	342,300	4.24	1,451
5	94	350	32,900	4.24	139
6	378	350	132,300	4.24	561
7	56	350	19,600	4.24	83

Estimated Retail Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.*	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
1	320	800	256,000	2.22	569
2	220	800	176,000	2.22	391
3	123	800	98,400	2.22	219
4	299	800	239,200	2.22	531
5	110	800	88,000	2.22	195
6	169	800	135,200	2.22	300
7	12	800	9,600	2.22	21

Vehicle-mile Generation Summary

Service Area	Residential Growth Vehicle-Miles	Basic Growth Vehicle-Miles	Service Growth Vehicle-Miles	Retail Growth Vehicle-Miles	Total Growth Vehicle-Miles
1	821	918	771	569	**3079**
2	2318	1802	1096	391	**5607**
3	273	664	220	219	**1375**
4	545	1454	1451	531	**3981**
5	1773	434	139	195	**2541**
6	545	890	561	300	**2296**
7	545	59	83	21	**709**
Totals	6,820	6,221	4,320	2,226	**19,587**

E. Roadway Improvement Plan Projects

ROADWAY IMPROVEMENTS PLAN PROJECTS

Definitions

LANES	The total number of lanes in both directions available for travel.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial UC = undivided collector
PK-HR VOLUME	The existing volumes of cars on the roadway segment traveling during the afternoon (PM) peak hour of travel.
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
VEH-MI SUPPLY TOTAL	The number of total service units (vehicle-miles) supplied within the service area, based on the length and established capacity of the roadway type.
VEH-MI TOTAL DEMAND PK-HR	The total service unit (vehicle-mile) demand created by existing traffic on the roadway segment in the afternoon peak hour.
EXCESS CAPACITY PK-HR VEH-MI	The number of service units supplied but unused by existing traffic in the afternoon peak hour.

2015 Waxahachie Roadway Impact Fee Study Update
Roadway Capital Improvements Plan

Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type	T'fare Plan Type	Lane Capacity	Pct. in Serv. Area	Peak Hour Volume A	B	Total	VMT Supply A Dir Pk Dir	VMT Supply B Dir Pk Dir	VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Excess VMT Capacity	CIP VMT Deficiency
1	2	Ovilla Rd***	US 287	New Road A (S. of Oregon	New	0.42	4	DA	A-2	625	100%	430	45	475	528	528	1056	201	855	0
1	3	Marshall Rd	IH 35	Patrick Rd	New	0.94	4	DA	B	625	100%	0	0	0	1172	1172	2343	0	2343	0
Sub-total SA 1						**0.42**								**475**			**3399**	**201**	**3199**	**0**
2	6	Grove Creek Ext	US 77	New Road B (W. of Brookstor	New	0.69	4	DA	B	625	100%	0	0	0	859	859	1717	0	1717	0
2	7	New Road B	Grove Creek Ext	Brown Rd (FM 813)	New	1.20	4	DA	C-1	625	100%	0	0	0	1505	1505	3010	0	3010	0
2/5	8	Brown Rd (FM 813)***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	625	50%	0	148	148	0	850	850	101	749	0
2	E	New Road E	US 77	New Road B	New	0.14	4	DA	C-1	625	100%	0	0	0	169	169	338	0	338	0
Sub-total SA 2						**2.71**								**148**			**5915**	**101**	**5814**	**0**
3	9	Ovilla Rd***	US 287	Mid-Project	New	0.47	4	DA	B	625	100%	92	49	141	590	590	1180	67	1114	0
3	10	Ovilla Rd***	Mid-Project	Bus 287	New	0.80	4	DA	B	625	100%	0	0	0	1003	1003	2007	0	2007	0
3	4	New Indian Rd	Bus. 287	US 287	New	0.83	4	DA	C-1	625	100%	0	0	0	1035	1035	2071	0	2071	0
3	5	New Friar Ln	Ovilla Rd (FM 664)	Indian Rd	New	0.79	2	UC	D-2	500	100%	0	0	0	394	394	788	0	788	0
Sub-total SA 3						**1.27**								**141**			**6046**	**67**	**5979**	**0**
4	11	John Arden	US 287	Solon	New	0.83	4	DA	C-1	625	100%	116	116	232	1037	1037	2074	192	1882	0
4	12	Northgate	Existing	Stadium Dr.	Recoup.	0.11	2	UC	D-2	500	100%	160	161	321	57	57	113	36	77	0
4	13	Stadium Dr.	Stadium Dr.	US 287	Recoup.	0.26	2	UC	D-2	500	100%	125	103	228	129	129	258	59	199	0
4	14	Indian Extension	Brown	US 287	New	0.39	2	UC	D-3	500	100%	0	0	0	194	194	388	0	388	0
4	15	River Oaks/Marvin Connection	Farley	Marvin Ave.	New	0.60	2	UC	D-3	500	100%	0	0	0	300	300	599	0	599	0
Sub-total SA 4						**2.79**								**781**			**3433**	**288**	**3146**	**0**
5/2	8	Brown Rd (FM 813) ***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	625	50%	204	0	204	850	850	1700	139	1561	0
5	16	Broadhead	US 287	April Lane	Recoup.	1.06	4	DA	C-1	625	100%	332	167	499	1328	1328	2657	530	2127	0
5	B	Garden Valley	Park Place Blvd.	Brown Rd (FM 813)	New	0.69	4	UC	D-4	500	100%	0	0	0	693	693	1385	0	1385	0
Sub-total SA 5						**2.44**								**703**			**5742**	**669**	**5073**	**0**
6	17	New Road C - Segment 1	US 77	Howard	New	0.71	4	DA	C-1	625	100%	0	0	0	887	887	1773	0	1773	0
6	19	Parks School	Main/Bus 287	US 287	New	0.93	4	DA	C-1	625	100%	86	49	135	1160	1160	2321	125	2195	0
Sub-total SA 6						**1.64**								**135**			**4094**	**125**	**3969**	**0**
7	20	New Road D	US 287	Park School House	New	0.52	4	DA	A-2	625	100%	0	0	0	644	644	1288	0	1288	0
Sub-total SA 7						**0.52**								**135**			**1288**	**0**	**1288**	**0**
Totals:						**10.04**								**2,383**			**29,917**	**1,450**	**28,467**	**0**

Notes:

DA- Divided arterial
DC- Divided collector
UC- Undivided collector

R - Recoupment project
N - New Project

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F. Roadway Improvements Plan Cost Analysis

ROADWAY IMPROVEMENTS PLAN COST ANALYSIS

Definitions

LANES	The total number of lanes in both directions available for travel.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial UC = undivided collector
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
TOTAL SEGMENT COST	The estimated cost (in dollars) of the entire segment of the proposed improvement.
TOTAL COST IN SERVICE AREA	The estimated cost (in dollars) of the portion of the proposed roadway improvement within the service area.

2015 Waxahachie Roadway Impact Fee Study Update
Roadway Capital Improvements Plan

Serv Area	Reference CIP No.	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type	T'fare Plan Type	Pct. in Serv. Area	Actual Project Cost	*Project Cost 50% Credit*	*Study Update Cost*	*Service Area Total 50% Cost*
1	*2*	Ovilla Rd***	US 287	New Road A (S. of Oregon	New	0.42	4	DA	A-2	100%	$1,445,784	$721,656	$2,471	$724,127
1	*3*	Marshall Rd	IH 35	Patrick Rd	New	0.94	4	DA	B	100%	$5,513,248	$2,753,882	$5,483	$2,759,365
Sub-total SA 1						**0.42**					**$6,959,031**	**$3,475,539**	**$7,954**	**$3,483,493**
2	*6*	Grove Creek Ext	US 77	New Road B (W. of Brookstor	New	0.69	4	DA	B	100%	$4,119,833	$2,057,908	$4,017	$2,061,925
2	*7*	New Road B	Grove Creek Ext	Brown Rd (FM 813)	New	1.20	4	DA	C-1	100%	$5,750,693	$2,871,825	$7,044	$2,878,868
2/5	*8*	Brown Rd (FM 813)***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	50%	$1,512,819	$755,415	$1,989	$757,404
2	*E*	New Road E	US 77	New Road B	New	0.14	4	DA	C-1	100%	$339,492	$169,351	$790	$170,141
Sub-total SA 2						**2.71**					**$11,722,836**	**$5,854,498**	**$13,840**	**$5,868,338**
3	*9*	Ovilla Rd***	US 287	Mid-Project	New	0.47	4	DA	B	100%	$1,473,774	$735,506	$2,761	$738,267
3	*10*	Ovilla Rd***	Mid-Project	Bus 287	New	0.80	4	DA	B	100%	$2,338,270	$1,166,787	$4,696	$1,171,483
3	*4*	New Indian Rd	Bus. 287	US 287	New	0.83	4	DA	C-1	100%	$3,955,850	$1,975,502	$4,845	$1,980,348
3	*5*	New Friar Ln	Ovilla Rd (FM 664)	Indian Rd	New	0.79	2	UC	D-2	100%	$4,617,334	$2,307,745	$1,844	$2,309,589
Sub-total SA 3						**1.27**					**$12,385,227**	**$6,185,541**	**$14,146**	**$6,199,687**
4	*11*	John Arden	US 287	Solon	New	0.83	4	DA	C-1	100%	$4,252,728	$2,123,938	$4,853	$2,128,790
4	*12*	Northgate	Existing	Stadium Dr.	Recoup.	0.11	2	UC	D-2	100%	$233,407	$116,571	$265	$116,836
4	*13*	Stadium Dr.	Stadium Dr.	US 287	Recoup.	0.26	2	UC	D-2	100%	$517,233	$258,315	$604	$258,919
4	*14*	Indian Extension	Brown	US 287	New	0.39	2	UC	D-3	100%	$3,268,592	$1,633,842	$909	$1,634,751
4	*15*	River Oaks/Marvin Connection	Farley	Marvin Ave.	New	0.60	2	UC	D-3	100%	$3,139,212	$1,568,904	$1,403	$1,570,307
Sub-total SA 4						**2.79**					**$11,411,172**	**$5,701,569**	**$8,033**	**$5,709,602**
5/2	*8*	Brown Rd (FM 813) ***	Brown Rd (FM 813)	Brown Rd (FM 813)	New	0.68	4	DA	C-1	50%	$797,492	$396,757	$3,978	$400,735
5	*16*	Broadhead	US 287	April Lane	Recoup.	1.06	4	DA	C-1	100%	$4,879,870	$2,436,827	$6,216	$2,443,043
5	*B*	Garden Valley	Park Place Blvd.	Brown Rd (FM 813)	New	0.69	4	UC	D-4	100%	$1,441,398	$719,078	$3,241	$722,319
Sub-total SA 5						**2.44**					**$7,118,760**	**$3,552,663**	**$13,435**	**$3,566,097**
6	*17*	New Road C - Segment 1	US 77	Howard	New	0.71	4	DA	C-1	100%	$3,467,457	$1,731,654	$4,149	$1,735,803
6	*19*	Parks School	Main/Bus 287	US 287	New	0.93	4	DA	C-1	100%	$6,025,691	$3,010,130	$5,430	$3,015,561
Sub-total SA 6						**1.64**					**$9,493,148**	**$4,741,785**	**$9,579**	**$4,751,364**
7	*20*	New Road D	US 287	Park School House	New	0.52	4	DA	A-2	100%	$3,443,282	$1,720,134	$3,013	$1,723,148
Sub-total SA 7						**0.52**					**$3,443,282**	**$1,720,134**	**$3,013**	**$1,723,148**
Totals:						**10.04**					**62,533,457**	**31,231,728**	**$70,000**	**31,301,728**

Notes:

DA- Divided arterial
DC- Divided collector
UC- Undivided collector

R - Recoupment project
N - New Project

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G. Service Area Analysis Summary

Waxahachie 2015 Roadway Impact Fee Study

Service Area Analysis Summary

	1	2	3	4	5	6	7	8	9	10	11	12	13
Service Area	**Capacity Supplied by CIP (veh-mi)**	**Existing Utilization (veh-mi)**	**Existing Deficiencies (veh-mi)**	**Net Capacity Supplied by CIP (veh-mi)**	**Total Project Cost of CIP***	**Project Cost of CIP* with 50% Credit**	**Cost of Net Capacity Supplied**	**Cost to Meet Existing Utilization**	**Projected 10yr Demand (veh-miles)**	**Pcnt. of CIP Attributable to New Dev. (10-yr)**	**Cost Attributable to New Dev.**	**Cost per Service Unit w/ 50% Credit**	***Actual Cost per Service Unit (veh-mi)***
1	3,399	201	0	3,199	$6,966,985	$3,483,493	$3,277,847	$205,645	3,079	96.3	$3,155,080	$1,024.00	*$2,048.00*
2	5,915	101	0	5,814	$11,736,676	$5,868,338	$5,768,451	$99,887	5,607	96.4	$5,562,745	$992.00	*$1,984.00*
3	6,046	67	0	5,979	$12,399,373	$6,199,687	$6,131,386	$68,300	1,375	23.0	$1,409,506	$1,025.00	*$2,050.00*
4	3,433	288	219	2,927	$11,419,205	$5,709,602	$4,867,060	$842,542	3,981	100.0	$4,867,060	$1,222.00	*$2,444.00*
5	5,742	669	169	4,904	$7,132,195	$3,566,097	$3,045,748	$520,349	2,541	51.8	$1,578,179	$621.00	*$1,242.00*
6	4,094	125	0	3,969	$9,502,728	$4,751,364	$4,605,903	$145,461	2,296	57.9	$2,664,718	$1,160.00	*$2,320.00*
7	1,288	0	0	1,288	$3,446,295	$1,723,148	$1,723,134	$14	709	55.0	$948,358	$1,337.00	*$2,674.00*
Totals	29,917	1,450	388	28,080	62,603,457	31,301,728	$29,378,910	$1,922,818	19,587	69.8	$20,493,740	$1,046.00	*$2,092.00*

** Includes proportionate cost of study updates.*

1. TOTAL VEH-MI OF CAPACITY SUPPLIED BY CIP (TVMCAP)
2. TOTAL VEH-MI OF EXISTING DEMAND (VMEXT)
3. TOTAL VEH-MI OF EXISTING DEFICENCIES (VMDEF)
4. NET AMOUNT OF ROADWAY CAPACITY SUPPLIED (NVMCAP) =
   NVMCAP =TVMCAP-VMEXT-VMDEF
5. TOTAL COST OF CIP WITHIN STUDY AREA+ PROPORTIONATE COST OF STUDY UPDATE
6. TOTAL COST OF CIP IN SERVICE AREA w/50% CREDIT (TVMCOST)
7. COST OF NET CAPACITY SUPPLIED (NCVMCAP) =
   NCVMCAP = (NVMCAP/TVMCAP)*TVMCOST
8. COST TO MEET EXISTING NEEDS AND USAGE (EXCOST) =
   EXCOST = TVMCOST-NCVMCAP
9. TOTAL VEH-MI OF NEW DEMAND OVER TEN YEARS (TNEWDEM)
10. PERCENT OF CIP ATTRIBUTABLE TO NEW DEVELOPMENT (NPCNT) =
    IF TNEWDEM > NVMCAP, NPCNT = 100%
    IF TNEWDEM < NVMCAP, NPCNT = (TNEWDEM / NVMCAP)*100
11. COST OF CIP ATTRIBUTABLE TO NEW DEVELOPMENT (NCVMDEM) =
    NCVMDEM = (TNEWDEM / NVMCAP) * NCVMCAP
12. CREDITED COST PER SERVICE UNIT = (MAX FEE)
    MAX FEE = NCVMDEM / TNEWDEM
13. ACTUAL COST PER SERVICE UNIT