MIDLAND, TEXAS
ROADWAY IMPACT FEE STUDY

February 2019

Prepared for the City of Midland

Prepared by:

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Project Number: 061301600

EXECUTIVE SUMMARY

Introduction

Impact Fees are a mechanism for funding the public infrastructure necessitated by new development. Across the country, they are used to fund police and fire facilities, parks, schools, roads and utilities. In Texas, the legislature has allowed their use for water, wastewater, roadway and drainage facilities. In 2018, the City began exploring Water, Wastewater, and Roadway Impact Fees as a funding tool for infrastructure needs as a result of significant growth in the City of Midland.

In the most basic terms, impact fees are meant to recover the incremental cost of the impact of each new unit of development creating new infrastructure needs. In the case of Roadway Impact Fees, the infrastructure need is the increased capacity on arterial and collector roadways that serve the overall transportation system. The purpose of the 2019 Roadway Impact Fee Study is to identify the fee per unit of new development necessary to fund these improvements in accordance with the enabling legislation, Chapter 395 of the Texas Local Government Code.

Impact Fees are a mathematical calculation that determines a maximum impact fee that would be equivalent for growth paying for growth. The Maximum Roadway Impact Fee per Service Unit for Roadway Facilities is considered an appropriate measure of the impacts generated by a new unit of development on the City's Thoroughfare System. An impact fee program is anticipated to be designed so that it is predictable for both the development community and City. An impact fee program is equitable since similar developments pay a similar fee regardless if they are the first or last to develop. An impact fee program is transparent. This report describes in detail how the fee is calculated and how an Capital Improvements Advisory Committee (CIAC) monitors the Impact Fee program. An impact fee program is flexible in that funds can be used on priority projects and not just on project adjacent to a specific development. An impact fee program is consistent with other City goals and objectives for growth. For example, the actual collection rate set by Council may be determined to be less than the Maximum Roadway Impact Fee to achieve and be in alignment with other City goals and objectives for growth.

Impact Fee Basics

Roadway Impact Fees are determined by several key variables, each described below in greater detail.

Impact Fee Study

The 2019 Roadway Impact Fee Study is to determine the maximum impact fee per unit of new development chargeable as allowed by the state law. This determination is not a recommendation; the actual fee amount ultimately assessed is at the discretion of the Midland City Council, so long as it does not exceed the maximum assessable fee allowed by law. The study looks at a period of 10 years to project new growth and corresponding capacity needs, as required by state law. The study and corresponding maximum fees must be restudied at least every five years. However, the study can be updated at any time to accommodate significant changes in any of the key variables of the impact fee equation.

Service Areas

A Service Area is a geographic area within which a unique maximum impact fee is determined. All fees collected within the Service Area must be spent on eligible improvements within the same Service Area. For Roadway Impact Fees, the Service Area may not exceed 6 miles. In Midland, this results in the creation of five (5) separate Service Areas. It is to be noted that Service Area E was assumed to be a no fee Service Area.

In defining the Service Area boundaries, the project team considered the corporate boundary, required size limit, adjacent land uses, highway facilities, and topography. Since each Service Area has a unique maximum impact fee, the per-unit maximum fee for an identical land use will vary from one Service Area to the next.

Land Use Assumptions

The Impact Fee determination is required to be based on the projected growth and corresponding capacity needs in a 10-year window. This study considers the years 2019-2029. Acknowledging that the parameters of the study (the corporate boundaries, Tall City Tomorrow Comprehensive Plan, zoning maps, platting history, etc.) are changing constantly, this study is based on conditions as they were in April 2018.

One of the key elements in the determination of the impact fee is the amount of new development anticipated over 10 years. The residential and non-residential growth projections were performed using historical permit data and reasonable assumptions for undeveloped areas based on growth trends and the Future Land Use Plan in the Tall City Tomorrow Comprehensive Plan.

Roadway Impact Fee Capital Improvements Plan

The Roadway Impact Fee Capital Improvements Plan (RIF CIP) is distinct and separate from the City's traditional Capital Improvements Plan (CIP). The RIF CIP is a list of projects eligible for funding through impact fees. The City's Thoroughfare System is the ultimate plan for the infrastructure within the City Limits. Only capacity improvements still needed to build out the City's Thoroughfare System to accommodate the expected growth within the next 10-years are included in the RIF CIP. Capacity improvements may include the addition of lanes, intersection improvements, or the extension of a new road. Resurfacing or other maintenance activities do not qualify as capacity improvements under impact fee law in Texas and cannot be funded with Roadway Impact Fees.

The cost of the RIF CIP is one of the fundamental factors in the calculation of the per-unit maximum impact fee. The RIF CIP's cost was calculated through systematic evaluation of each eligible project. In determining project limits, the team identified roadway segments with uniform need. For Example, Mockingbird Lane has a portion with one third of a 6-lane divided facility built from Golden Gate Drive to Avalon Drive, while east of Avalon Drive, Mockingbird Lane is proposed as a new facility. These were split as two separate projects based on uniform need. Developing unit costs based on input from local staff, uniform costs were determined for the major items of work, additional construction items, and project delivery costs. Section III provides a listing of the 10-Year RIF CIP by service area in Tables 2.A – 2.D and maps of the RIF CIP by service area in Exhibits 4.A – 4.D. Finally, detailed cost projections by project can be found in Appendix A. It should be noted that these cost projections are based on conceptual level planning, and are subject to refinement upon final design. Only those projects listed in the RIF CIP are eligible to utilize impact fee funds.

Only the costs associated with providing the additional capacity at an anticipated level of service D necessitated by 10 years of growth can be used to calculate the maximum impact fee. To calculate the maximum impact fee, the total cost of the RIF CIP at build-out was reduced to account for (1) the portion of new capacity that will address existing needs, and (2) the portion of new capacity that will not be necessitated until beyond the 10-year growth window. A ratio that compares 10 years' demand for capacity to the net supply of capacity (total new capacity in the RIF CIP minus existing needs) can be calculated. That ratio, which may not exceed 100%, is then applied to the cost of the net capacity supplied. The result is a determination of the costs attributable to the next 10 years' growth, which is then used to calculate the maximum impact fee in accordance with state law. The result is known as the recoverable cost of the RIF CIP.

Service Unit

The "service unit" is a measure of consumption or use of the capital facilities by new development. In other words, it is the unit of measure used in the 2019 Roadway Impact Fee Study to quantify the supply and demand for roads in the City. For transportation purposes, the service unit is defined as a vehicle-mile. A vehicle-mile is the capacity consumed in a single lane in the PM peak hour by a vehicle making a trip one mile in length. The PM Peak is used as the basis for transportation planning and the estimation of trips caused by new development.

Impact Fee Calculation

In simplest terms, the maximum impact fee allowable by law is calculated by dividing the recoverable cost of the RIF CIP by the number of new service units of development. In accordance with state law, both the cost of the RIF CIP and the number of new service units of development used in the equation are based on the growth and corresponding capacity needs projected to occur within a 10-year window. This calculation is performed for each service area individually; each service area has a stand-alone RIF CIP and 10-year growth projection.

I. INTRODUCTION

Chapter 395 of the Texas Local Government Code describes the procedure political subdivisions must follow to create and implement impact fees. Chapter 395 defines an Impact Fee as "a charge or assessment imposed by a political subdivision against new development to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development."

The City has retained Kimley-Horn and Associates, Inc. to provide professional transportation engineering services for the 2019 Rodway Impact Fee Study. This report includes details of the Roadway Impact Fee calculation methodology in accordance with Chapter 395, the applicable Land Use Assumptions, development of the RIF CIP, and the Land Use Equivalency Table.

This report references two of the basic inputs to the Roadway Impact Fee:

1) Land Use Assumptions
2) Roadway Impact Fee Capital Improvements Plan (RIF CIP)

Information from these Land Use Assumptions and RIF CIP is used extensively throughout the remainder of the report.

There is a detailed discussion of the methodology for the computation of impact fees. This discussion is broken into three components:

1) Methodology for Roadway Impact Fees
2) Roadway Impact Fee Calculation
3) Plan for the Roadway Impact Fee Credit (

The components of the Methodology for Roadway Impact Fees include development of:

- Service Areas
- Service Units
- Cost Per Service Unit
- RIF CIP Costing Methodology
- Summary of RIF CIP Costs
- Service Unit Calculation

The Roadway Impact Fee is then calculated as:

- Maximum Assessable Impact Fee Per Service Unit
- Service Unit Demand Per Unit of Development

II. LAND USE ASSUMPTIONS

A. Purpose and Overview

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for residential and employment growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and population in the service area. The land use assumptions assist the City of Midland in determining the need and timing of capital improvements to serve future development.

The residential and non-residential estimates and projections were compiled in accordance with the following categories:

Units: Number of dwelling units, both single and multi-family.

Employment: Square feet of building area based on three (3) different classifications. Each classification has unique trip making characteristics.

Retail: Land use activities which provide for the retail sale of goods which primarily serve households and whose location choice is oriented toward the household sector, such as grocery stores and restaurants.

Service: Land use activities which provide personal and professional services, such as government and other professional offices.

Basic: Land use activities that produce goods and services such as those which are exported outside of the local economy, such as manufacturing, construction, transportation, wholesale, trade, warehousing, and other industrial uses.

The above categories are used in the development of the assumptions for impact fees; however, expanded classifications used in the assessment of impact fees are found in the Land Use / Vehicle-Mile Equivalency Table.

B. Land Use Assumptions Methodology

The residential and non-residential growth projections formulated in this report were performed using reasonable and generally accepted planning principles. The following factors were considered in developing these projections:

- Character, type, density, and quantity of existing development;
- Current zoning plans;
- Future Land Use Plan;
- Growth trends;
- Location of undeveloped parcels;
- Physical restrictions (i.e. flood plains, railroads, gas wells); and
- Physical development carrying capacity of Midland.

The following was the process used to develop the land use assumptions:

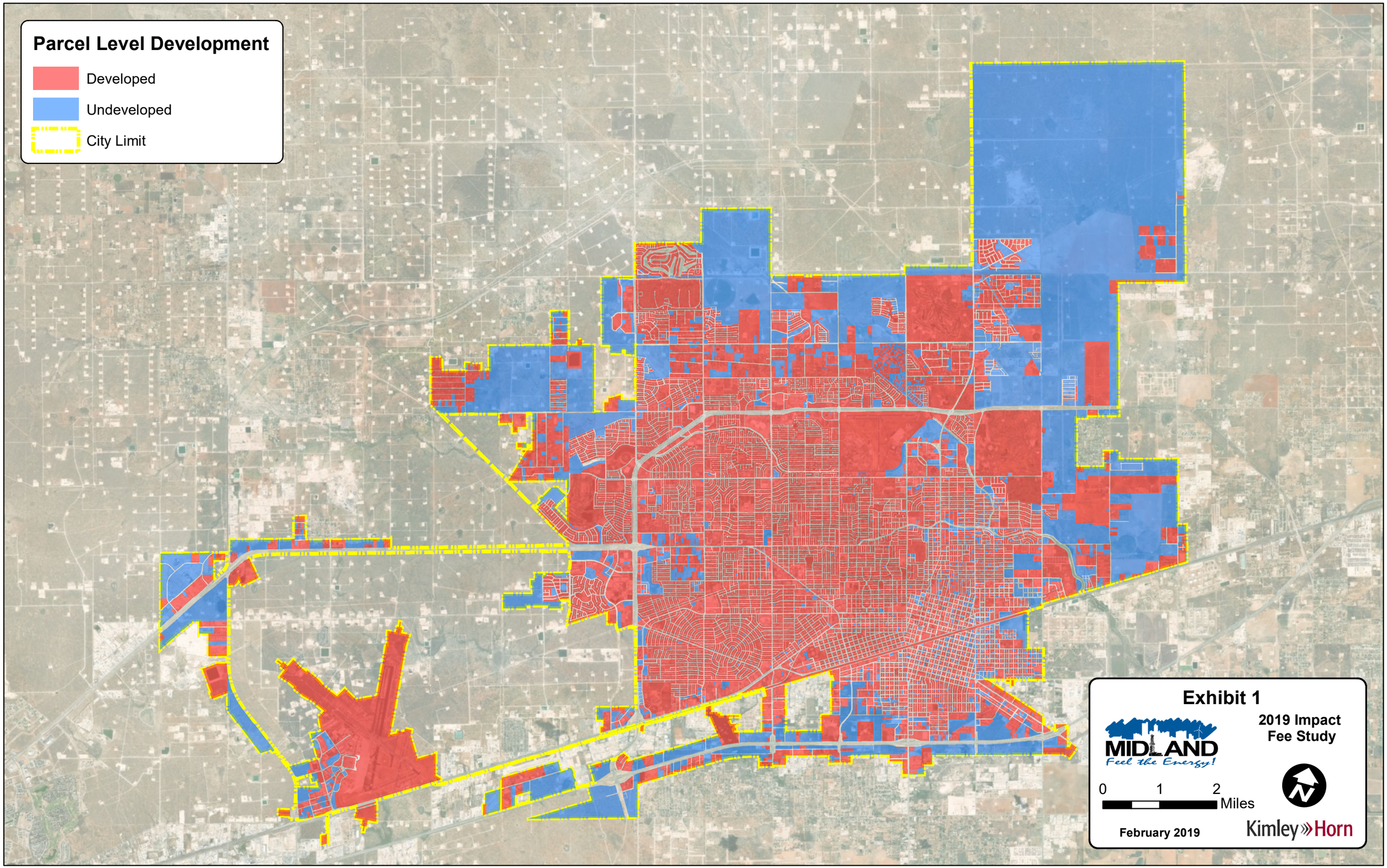
Step 1: Determine Developed and Undeveloped Parcels

The first step was determining which parcels were developed versus undeveloped. Based on information provided by the Midland County Appraisal District and aerial survey, parcel level development was able to be estimated. Exhibit 1 summarizes parcel development status within the City Limits.

Step 2: Determine Base Year (2018)

For the developed parcels identified in Step 1, existing residential and employment estimates were obtained using existing building information provided by the City, Midland County Appraisal District, and an aerial survey of existing development. For multifamily units, a density calculation was performed based on the building's footprint and average densities throughout the City. A conversion of square footage per unit was utilized to determine the number of units.

To estimate employment square footage, building footprint data and aerials were utilized.


Parcel Level Development
Developed
Undeveloped
City Limit
Exhibit 1
2019 Impact Fee Study
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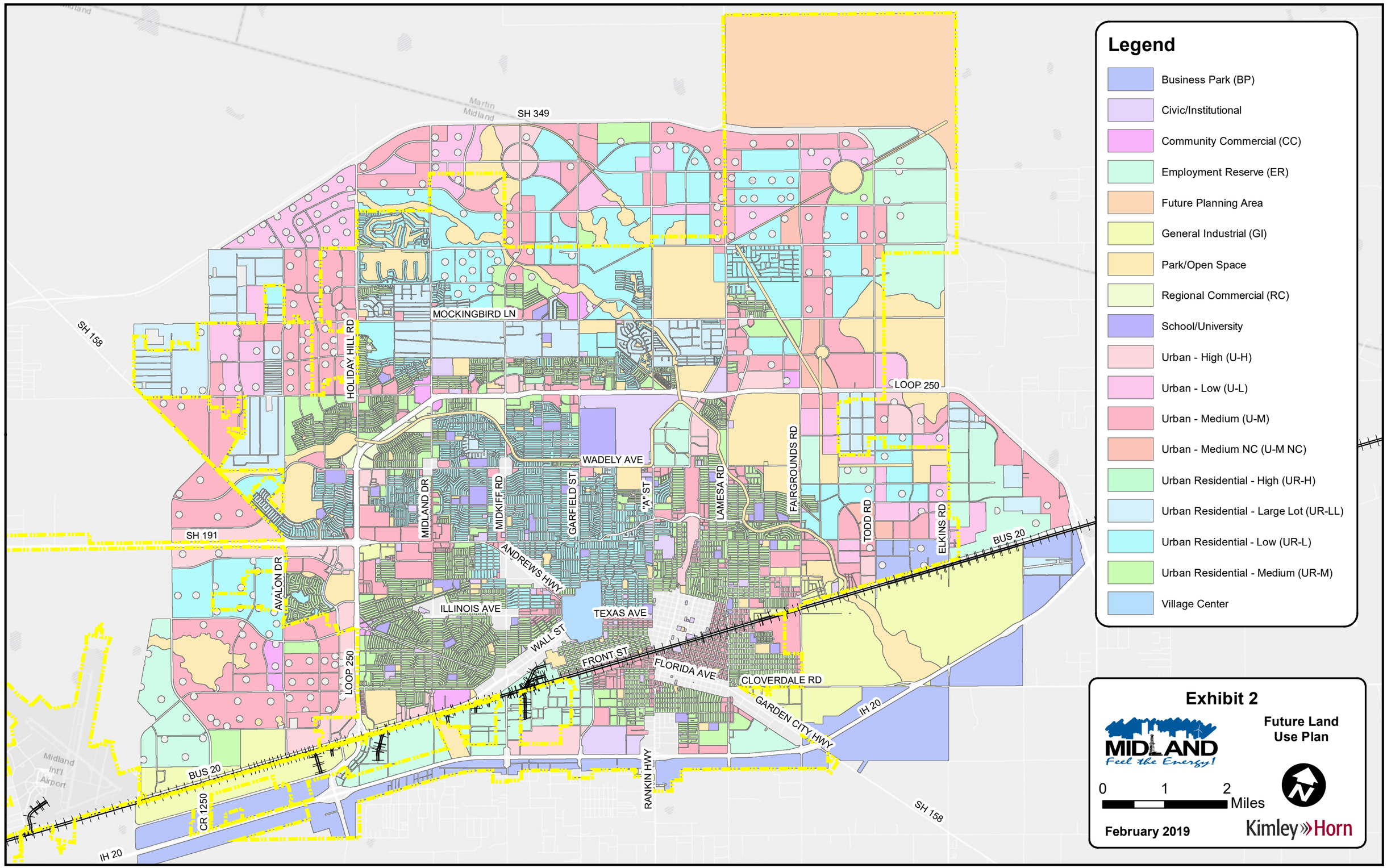
Step 3. Determine Development Carrying Capacity (Growth Potential)

For the remaining undeveloped areas, assumptions based upon the City's Future Land Use (Exhibit 2) from the Tall City Tomorrow Comprehensive Plan were used to estimate the carrying capacity, or growth potential, of land within the Roadway Impact Fee study area for both residential and employment land uses. The carrying capacity was calculated in two basic steps.

1) Determine the future land use for study area parcels based on previous planning efforts completed by the City.
2) Determine the amount of dwelling units and employment building space that could occupy every parcel – i.e. the parcel's "Development Carrying Capacity" – based on the future land use development types.


Legend
Business Park (BP)
Civic/Institutional
Community Commercial (CC)
Employment Reserve (ER)
Future Planning Area
General Industrial (GI)
Park/Open Space
Regional Commercial (RC)
School/University
Urban - High (U-H)
Urban - Low (U-L)
Urban - Medium (U-M)
Urban - Medium NC (U-M NC)
Urban Residential - High (UR-H)
Urban Residential - Large Lot (UR-LL)
Urban Residential - Low (UR-L)
Urban Residential - Medium (UR-M)
Village Center
SH 349
SH 158
MOCKINGBIRD LN
HOLIDAY HILL RD
LOOP 250
WADELY AVE
MIDLAND DR
MIDKIFF RD
GARFIELD ST
"A" ST
LAMESA RD
FAIRGROUNDS RD
TODD RD
ELKINS RD
SH 191
AVALON DR
ANDREWS HWY
ILLINOIS AVE
TEXAS AVE
WALL ST
FRONT ST
FLORIDA AVE
CLOVERDALE RD
GARDEN CITY HWY
IH 20
BUS 20
RANKIN HWY
CR 1250
Midland Int'l Airport
Exhibit 2
Future Land Use Plan
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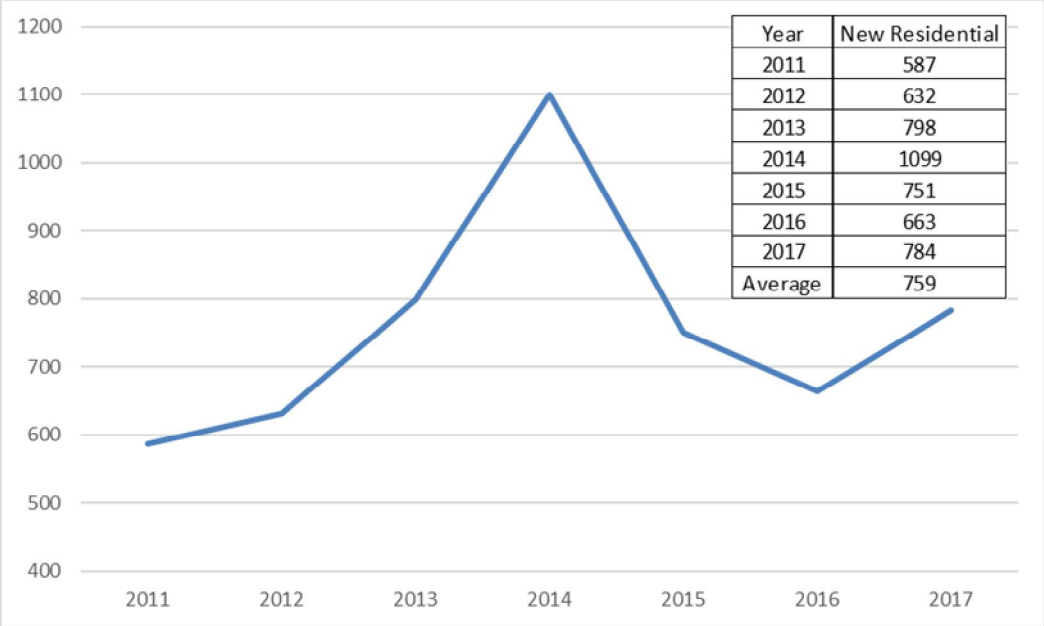
Step 4. Determine 10-Year Growth Projections

As a basis for determining the 10-year growth projections, historical permit data provided by City of Midland staff was used. Using new residential permit data collected from 2011 to 2017, an average new permit per year value was found. Using the average number of new permits per year, an estimate of the number of single-family dwelling units to develop within the 10-year window was obtained. Based on the historical permit data, it was found that an average of 759 permits per year have been pulled from 2011 to 2017. With the 10-year growth assumptions, it is estimated that 7,590 single-family dwelling units will be constructed over the next 10 years. Figure 1 summarizes the permit data from 2011 to 2017.

Figure 1 – New Residential Permit Totals (2011 – 2017)



Year	New Residential
2011	587
2012	632
2013	798
2014	1099
2015	751
2016	663
2017	784
Average	759

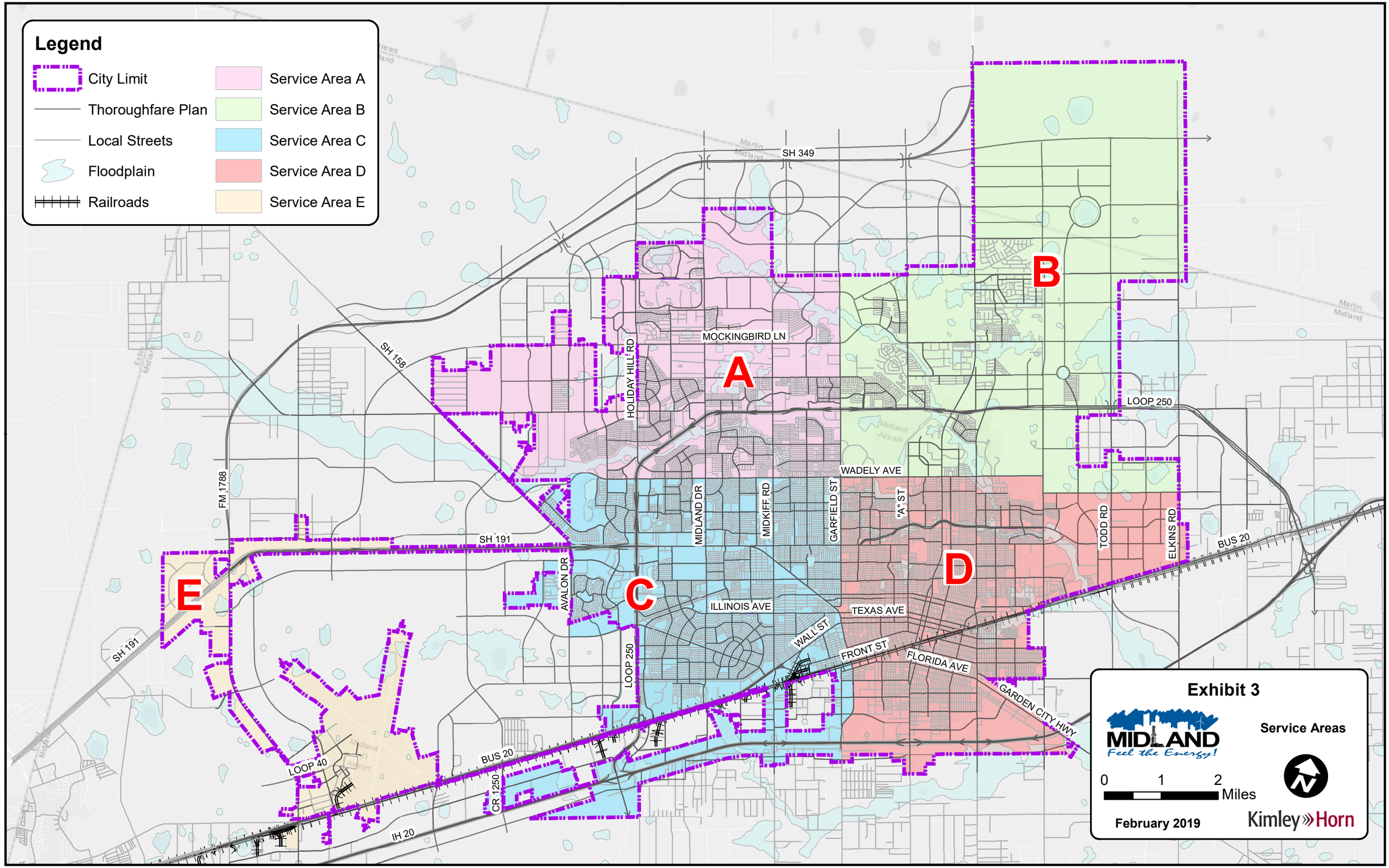
This anticipated number of single-family units to develop within the 10-year window was distributed among the service areas using a ratio of the anticipated development carrying capacity within the individual service area and the development carrying capacity of the City. The estimated multifamily units to develop within the 10-year window was determined using the same approach as the single-family units.

The remaining growth to occur within the 10-year window for non-residential units was derived from reasonable assumptions for undeveloped areas based on growth trends and the Future Land Use Plan.

C. Roadway Impact Fee Service Areas

The geographic boundary of the proposed impact fee service areas for transportation facilities is shown in Exhibit 3. The City of Midland is currently divided into five (5) service areas. The service areas were based upon input from the City of Midland staff and Capital Improvements Advisory Committee. The service areas east/west boundary is a combination of Wadley Avenue and County Road 72, with Garfield Street representing the north/south boundary. For roadway facilities, the service areas are limited to those areas within the current corporate limits. Therefore, areas within the extraterritorial jurisdiction (ETJ) are excluded from this study. The area surrounding the airport was considered a no fee zone because minimum capacity related improvements were identified.

It should be noted that at locations where service area boundaries follow a thoroughfare facility, the proposed boundary is intended to follow the centerline of the roadway. In cases where a service area boundary follows the City Limits, only those portions of the facility within the City Limits are included in the service area.


Legend
City Limit
Thoroughfare Plan
Local Streets
Floodplain
Railroads
Service Area A
Service Area B
Service Area C
Service Area D
Service Area E
A
B
C
D
E
SH 349
SH 158
SH 191
FM 1788
MOCKINGBIRD LN
HOLIDAY HILL RD
LOOP 250
WADELY AVE
MIDLAND DR
MIDKIFF RD
GARFIELD ST
"A" ST
TODD RD
ELKINS RD
BUS 20
AVALON DR
ILLINOIS AVE
TEXAS AVE
WALL ST
FRONT ST
FLORIDA AVE
GARDEN CITY HWY
LOOP 40
CR 1250
IH 20
Martin
Midland
Midland Airpark
Exhibit 3
Service Areas
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D. Land Use Assumptions Summary

Table 1 summarizes the residential and employment 10-year growth projections. These values were derived based on the identification of undeveloped parcels, the City's Future Land Use Plan, historical building permit data, and input from City of Midland staff.

Table 1. Residential and Employment 10-Year Projections

Service Area	Residential		Employment		
	Single Family	Multi-Family	Basic	Service	Retail
	Dwelling Units		Sq. Ft.	Sq. Ft.	Sq. Ft.
A	2,221	845	0	983,000	753,000
B	3,876	1,642	20,000	2,384,000	987,000
C	414	1,281	685,000	3,993,000	438,000
D	1,080	735	99,000	3,062,000	355,000
Sub-Total	7,591	4,503	804,000	10,422,000	2,533,000

III. ROADWAY IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The City has identified the transportation projects needed to accommodate the projected growth within the City. The City's Thoroughfare System is the ultimate plan for the infrastructure within the City Limits. Only capacity improvements still needed to build out the City's Thoroughfare System to accommodate the expected growth within the next 10-years are included in the RIF CIP. The RIF CIP consists of 5 categories of projects. They are as follows:

- New – Any future roadway identified by the City to be included in the CIP.
- Widening – Existing roadways not currently built to the ultimate classification in the Tall City Comprehensive Plan and must be completely reconstructed.
- (1/3, 2/5, 1/2, 3/5, or 2/3) Widening – Existing roadways that only have a portion of the ultimate classification cross section to be built.
- Lane Capacity Additions – Existing roadways identified for lane capacity additions within the existing cross section. These projects assume an overlay and restriping to add lane capacity.
- Access Management – Existing cross section identified for median construction for access management purposes.

The RIF CIP includes roadway facilities as well as major intersection improvements. All the roadway facilities identified are included in the Thoroughfare System.

Major intersection improvements were based on direction from City of Midland staff. Improvements were categorized as follows:

- Signal – Either a new signal or modification to an existing signal due to construction of a new roadway approach to an existing signalized intersection.
- Turn Lane Improvements – Addition of turn lanes.
- Intersection Improvement – Improving roadway alignment and medians at an intersection.
- Roundabout – Roundabout construction.
- SPUI – Single Point Urban Interchange construction.
- Bridge Widening – Cross section widening of existing bridge section.
- Operational Capacity Improvements – Improvements assumed along the Loop 250 Frontage Roads.

All intersection improvement recommendations are recommended to undergo a design level evaluation before implementation to ensure the most appropriate improvements are made. In the case where a design level evaluation determines improvements contrary to the RIF CIP, such as turn lane improvements in place of a signal, the RIF CIP cost allocated to the intersection may still be applied to the alternate improvements. It is to be noted that these intersection improvement costs were based on standard costs for each improvement and that no engineering was done when assuming these costs.

The proposed RIF CIP is listed in Tables 2.A – 2.D and mapped in Exhibits 4.A – 4.D. The tables show the length of each project as well as the facility's typology. The RIF CIP was developed in conjunction with input from City of Midland staff and represents projects that will be needed to accommodate the growth projected in the Land Use Assumptions section of this report.

Table 2.A. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area A

Service Area	Proj. #	Thoroughfare Plan Classification	Roadway	Limits	Length (mi)	% In Service Area
SA A	A1	Major Arterial Proposed	Occidental Pkwy (1)	Midland Dr to Passage Way	1.13	100%
	A2	Primary Collector Proposed	Green Tree Blvd	Midland Dr to Passage Way	1.03	100%
	A3	Major Arterial Proposed	Mockingbird Ln (1)	CR 1250 to CR 1244	0.64	50%
	A4	Major Arterial	Mockingbird Ln (2)	CR 1244 to Golden Gate Dr	0.10	50%
	A5	Major Arterial	Mockingbird Ln (3)	Golden Gate Dr to Avalon Dr	0.28	100%
	A6	Major Arterial Proposed	Mockingbird Ln (4)	Avalon Dr to 715' E of Avalon Dr	0.13	50%
	A7	Major Arterial Proposed	Mockingbird Ln (5)	715' E of Avalon Dr to Heritage Oaks Dr	0.07	100%
	A8	Major Arterial Proposed	Mockingbird Ln (6)	Heritage Oaks Dr to 885' E of Heritage Oaks Dr	0.17	50%
	A9	Major Arterial Proposed	Mockingbird Ln (7)	2,630' W of Holiday Hill Rd to 1,990' W of Holiday Hill Rd	0.12	50%
	A10	Major Arterial Proposed	Mockingbird Ln (8)	1,990' W of Holiday Hill Rd to Holiday Hill Rd	0.38	100%
	A11	Major Arterial Proposed	Mockingbird Ln (9)	Holiday Hill Rd to Oriole Dr	0.50	100%
	A12	Major Arterial	Mockingbird Ln (10)	Oriole Dr to Midland Dr	0.50	100%
	A13	Major Arterial	Mockingbird Ln (11)	925' E of Midkiff Rd to Mayfield Pl	0.06	100%
	A14	Major Arterial	Mockingbird Ln (12)	Mayfield Pl to Garfield St	0.77	100%
	A15	Major Arterial	Briarwood Ave (1)	SH 158 to 610' W of CR 1250	0.77	100%
	A16	Major Arterial	Briarwood Ave (2)	610' W of CR 1250 to 290' W of Roadrunner Trl	1.01	100%
	A17	Major Arterial	Briarwood Ave (3)	290' W of Roadrunner Trl to Roadrunner Trl	0.05	100%
	A18	Major Arterial	Briarwood Ave (4)	Roadrunner Trl to Avalon Dr	0.05	100%
	A19, C2	Major Arterial Proposed	Wadley Ave (3)	1,505' W of Callaway Dr to 595' W of Callaway Dr	0.17	50%
	A20	Major Arterial Proposed	CR 1250	Mockingbird Ln to Briarwood Ave	1.00	100%
	A21	Secondary Collector	Avalon Dr (1)	1,615' N of Saddle Horn Ln to Mockingbird Ln	0.50	50%
	A22	Major Arterial	Avalon Dr (2)	Mockingbird Ln to Briarwood Ave	1.00	100%
	A23	Major Arterial	Holiday Hill Rd (1)	Green Tree Blvd to 1,085 N of Mockingbird Ln	0.76	100%
	A24	Major Arterial	Holiday Hill Rd (2)	1,085 N of Mockingbird Ln to 580' N of Mockingbird Ln	0.10	100%
	A25	Major Arterial	Holiday Hill Rd (3)	580' N of Mockingbird Ln to 445' S of Mockingbird Ln	0.19	100%
	A26	Major Arterial	Holiday Hill Rd (4)	445' S of Mockingbird Ln to 160' N of Riverside Dr	0.07	100%
	A27	Major Arterial	Holiday Hill Rd (5)	160' N of Riverside Dr to 350' N of Greathouse Ave	0.61	50%
	A28	Major Arterial Proposed	Midland Dr (1)	1,055' N of Occidental Pkwy to 525' N of Occidental Pkwy	0.10	100%
	A29	Major Arterial Proposed	Midland Dr (2)	525' N of Occidental Pkwy to 1,225' N of Island Dr	0.40	50%
	A30	Major Arterial Proposed	Midland Dr (3)	1,225' N of Island Dr to Island Dr	0.23	100%
	A31	Primary Collector Proposed	Midkiff Rd (1)	1,115' NE of Passage Way to Midkiff Rd	0.53	100%
	A32, B12	Major Arterial Proposed	Garfield St (1)	1,335' N of Passage Way to Mockingbird Ln	1.00	50%
	A33, B13	Major Arterial	Garfield St (2)	Mockingbird Ln to 310' N of Bluebird Ln	0.45	50%
	Proj. #	**Intersection Improvements**	**Location**	**Improvement(s)**		**% In Service Area**
	IA1		Holiday Hill Rd & Greentree Blvd	SIGNAL & TURN LANE IMPROVEMENTS		100%
	IA2		Holiday Hill Rd & Mockingbird Ln	SIGNAL & TURN LANE IMPROVEMENTS		100%
	IA3		SH 158 & Briarwood Ave	SIGNAL & TURN LANE IMPROVEMENTS		25%
	IA4		Loop 250 & Midland Dr	OPERATIONAL CAPACITY IMPROVEMENTS		100%
	IA5		Loop 250 & Midkiff Rd	OPERATIONAL CAPACITY IMPROVEMENTS		100%
	IA6		Loop 250 & Tremont Ave	OPERATIONAL CAPACITY IMPROVEMENTS		100%
	IAC1		Midkiff Rd & Wadley Ave	TURN LANE IMPROVEMENTS		50%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.

Exhibit 4.A

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RIF CIP - SA A

0 0.5 1 Miles

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GREEN TREE BLVD
MOCKINGBIRD LN
BRIARWOOD AVE
MIDKIFF RD
SH 158
ODDICK HWY

A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19, C2 A20 A21 A22 A23 A24 A25 A26 A27 A28 A29 A30 A31 A32, B12 A33, B13

IA1 IA2 IA3 IA4 IA5 IA6 IAC1

Legend

- # Intersection Improvements
- Widening
- Lane Capacity Addition
- New
- Tall City Plan Streets
- Local Streets

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Table 2.B. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area B

Service Area	Proj. #	Thoroughfare Plan Classification	Roadway	Limits	Length (mi)	% In Service Area
SA B	B1	Major Arterial	Occidental Pkwy (2)	Big Spring St to 4,610' E of Big Spring St	0.87	100%
	B2	Major Arterial Proposed	Occidental Pkwy (3)	4,610' E of Big Spring St to 2,950' W of Elkins Rd	1.60	100%
	B3	Major Arterial Proposed	Occidental Pkwy (4)	2,950' W of Elkins Rd to Elkins Rd	0.56	100%
	B4	Primary Collector Proposed	Passage Way	Garfield St to Passage - Big Spring Connector	0.25	100%
	B5	Primary Collector Proposed	Passage - Big Spring Connector	Passage Way to Big Spring St	1.89	100%
	B6	Major Arterial Proposed	Mockingbird Ln (13)	Garfield St to A St	1.20	100%
	B7	Major Arterial	Mockingbird Ln (14)	A St to Big Spring St	1.01	100%
	B8	Major Arterial Proposed	Mockingbird Ln (15)	3,410' E of Big Spring St to 245' E of Todd Dr	1.50	100%
	B9, D1	Major Arterial	Wadley Ave (5)	Ranchland Dr to Fairgrounds Rd	0.65	50%
	B10, D2	Major Arterial	CR 72 (1)	Fairgrounds Rd to 2,660' E of Fairgrounds Rd	0.50	50%
	B11, D3	Major Arterial Proposed	CR 72 (2)	2,660' E of Fairgrounds Rd to Elkins Rd	1.53	50%
	A32, B12	Major Arterial Proposed	Garfield St (1)	1,335' N of Passage Way to Mockingbird Ln	1.00	50%
	A33, B13	Major Arterial	Garfield St (2)	Mockingbird Ln to 310' N of Bluebird Ln	0.45	50%
	B14	Major Arterial Proposed	A St (1)	Passage - Big Spring Connector to 1,030' N of Woodland	0.55	100%
	B15	Major Arterial	A St (2)	1,030' N of Woodland Park Ave to Mockingbird Ln	0.46	100%
	B16	Major Arterial	Big Spring St (1)	Nadine and Tom Craddick Hwy to 825' S of Nadine and	0.16	100%
	B17	Major Arterial	Big Spring St (2)	825' S of Nadine and Tom Craddick Hwy to Pueblo Rd	1.93	100%
	B18	Major Arterial	Big Spring St (3)	Pueblo Rd to Mockingbird Ln	0.57	100%
	B19	Major Arterial Proposed	Fairgrounds Rd (1)	Nadine and Tom Craddick Hwy to Loop 250 WBFR	3.93	100%
	B20	Major Arterial Proposed	Todd Dr (1)	Occidental Pkwy to Loop 250 WBFR	2.49	100%
	B21	Major Arterial	Todd Dr (2)	Loop 250 WBFR to 510' S of Loop 250 EBFR	0.14	100%
	B22	Major Arterial	Todd Dr (3)	1,065' N of Vista Del Pueblo Dr to Cynthia Dr	0.62	100%
	B23	Major Arterial	Elkins Rd (1)	265' N of Vista Del Pueblo to Cynthia Dr	0.49	50%
	B24	Interstate/Expressway Proposed	Nadine and Tom Craddick Hwy	Big Springs St to 605' E of Elkins Rd	3.15	100%
	B25	Major Arterial	Big Spring St (4)	SH 250 EBFR to Corporate Dr	0.56	100%
	B26	Major Arterial	Big Spring St (5)	Corporate Dr to Wadley Ave	0.41	100%
	B27, D20	Major Arterial	Wadley Ave (4)	190' E of I St to Big Spring St	0.98	50%
	Proj. #	**Intersection Improvements**	**Location**	**Improvement(s)**		**% In Service Area**
	IB1		Big Spring St & Occidental Pkwy	SIGNAL & TURN LANE IMPROVEMENTS		50%
	IB2		Mockingbird Ln & Magellan St	SIGNAL & TURN LANE IMPROVEMENTS		100%
	IB3		Fairgrounds Rd & Mockingbird Ln	SIGNAL & TURN LANE IMPROVEMENTS		100%
	IB4		Loop 250 & Big Springs St	OPERATIONAL CAPACITY IMPROVEMENTS		100%
	IB5		Loop 250 & Lamesa Rd	OPERATIONAL CAPACITY IMPROVEMENTS		100%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.

Legend

- # — Intersection Improvements
- Widening
- Lane Capacity Addition
- New
- Tall City Plan Streets
- Local Streets

B24
B16
B17
IB1
B1
B2
B3
B5
B4
B14
B19
B20
A32, B12
B6
B15
B18
B7
IB2
IB3
B8
A33, B13
IB4
IB5
B21
LOOP 250
B25
B26
WADELY AVE
B27, D20
B9, D1
B22
B23
B10, D2
B11, D3
Midland Airpark
Martin Midland

Exhibit 4.B

MIDLAND Feel the Energy!

RIF CIP - SA B

0 0.5 1 Miles

February 2019

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Table 2.C. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area C

Service Area	Proj. #	Thoroughfare Plan Classification	Roadway	Limits	Length (mi)	% In Service Area
SA C	C1	Major Arterial Proposed	Wadley Ave (2)	2,710' W of Callaway Dr to 1,505' W of Callaway Dr	0.23	100%
	A19, C2	Major Arterial Proposed	Wadley Ave (3)	1,505' W of Callaway Dr to 595' W of Callaway Dr	0.17	50%
	C3	Major Arterial	Florida Ave	Cotton Flat Rd to Garfield St	0.18	100%
	C4	Primary Collector	Harris Rd (1)	Clark St to Cotton Flat Rd	0.13	100%
	C5	Primary Collector Proposed	Harris Rd (2)	Cotton Flat Rd to Garfield St	0.14	100%
	C6	Primary Collector Proposed	Ottis Rd	Midkiff Rd to 1,000' E of Midkiff Rd	0.19	100%
	C7	Primary Collector Proposed	Warehouse - Midkiff Connector (1)	Warehouse Rd to 805' W of Midkiff Rd	0.34	50%
	C8	Primary Collector Proposed	Warehouse - Midkiff Connector (2)	805' W of Midkiff Rd to Midkiff Rd	0.15	100%
	C9	Primary Collector Proposed	CR 111	1,035' W of Midkiff Rd to Midkiff Rd	0.20	100%
	C10	Primary Collector Proposed	CR 127 (1)	7,610' W of Antelope Trl to 2,300' W of Antelope Trl	1.01	50%
	C11	Primary Collector Proposed	CR 127 (2)	2,300' W of Antelope Trl to 1,200' W of Antelope Trl	0.21	100%
	C12	Primary Collector Proposed	CR 127 (3)	1,200' W of Antelope Trl to 1,105' E of Antelope Trl	0.44	100%
	C13	Primary Collector Proposed	CR 127 (4)	1,105' E of Antelope Trl to 1,465' E of Antelope Trl	0.07	100%
	C14	Major Arterial	Avalon Dr (3)	Potomac Pkwy to 1,140' S of Musial Way	0.36	50%
	C15	Interstate/Expressway	Antelope Trl (1)	IH 20 WBFR to 250' S of IH 20 EBFR	0.21	100%
	C16	Interstate/Expressway	Antelope Trl (2)	250' S of IH 20 EBFR to CR 127	0.10	100%
	C17	Interstate/Expressway Proposed	Antelope Trl (3)	CR 127 to 2,080' S of CR 127	0.39	100%
	C18	Secondary Collector	Market St	865' N of IH 20 WBFR to IH 20 WBFR	0.16	100%
	C19	Secondary Collector	Warehouse Rd	835' N of IH 20 WBFR to IH 20 WBFR	0.16	100%
	C20	Major Arterial	Midkiff Rd (2)	IH 20 WBFR to 1,035' S of CR 111	0.46	100%
	C21	Major Arterial	Andrews Hwy (1)	Idlewilde Dr to Midland Dr	0.71	100%
	C22	Major Arterial	Andrews Hwy (2)	Midland Dr to Denton St	0.58	100%
	C23	Major Arterial	Wall St	Circle Dr to Andrews Hwy	0.16	100%
	C24, D18	Major Arterial	Andrews Hwy (3)	Kent St to Wall St	0.28	50%
	C25, D19	Major Arterial	Garfield St (3)	Wall St to Missouri Ave	0.07	50%
	C26	Major Arterial Proposed	Wadley Ave (1)	SH 158 to 1,975' E of SH 158	0.37	50%
	C27	Primary Collector Proposed	Deauville Blvd	Arlington Rd to Avalon Dr	0.43	50%
	C28	Major Arterial Proposed	Avalon Dr (4)	1,140' S of Musial Way to Thomason Dr	0.20	50%
	C29	Major Arterial Proposed	Thomason Dr	Avalon Dr to Tradewinds Blvd	0.77	50%
	C30	Primary Collector Proposed	Tradewinds Blvd	Thomason Dr to 1,795' N of BUS 20 WBFR	1.21	100%
	Proj. #	**Intersection Improvements**	**Location**	**Improvement(s)**		**% In Service Area**
	IAC1		Midkiff Rd & Wadley Ave	TURN LANE IMPROVEMENTS		50%
	IC1		Andrews Hwy & Woodcrest Dr	SIGNAL		100%
	IC2		Avalon Dr & Deauville Blvd	SIGNAL		75%
	IC3		Tradewinds Blvd & Deauville Blvd	SIGNAL		100%
	IC4		Michigan Ave & Kent St	ROUNDABOUT & TURN LANE IMPROVEMENTS		100%
	IC5		Illinois Ave & Thomason Dr	SIGNAL & TURN LANE IMPROVEMENTS		100%
	IC6		Wall St & Midkiff Rd	INTERSECTION IMPROVEMENTS		100%
	IC7		Andrews Hwy & Midland Dr	SIGNAL		100%
	IC8		SH 158 & Wadley Ave	SIGNAL & TURN LANE IMPROVEMENTS		25%
	ICD1		Garfield St & Storey Ave/Cuthbert Ave	ROUNDABOUT		50%
	ICD2		Front St & Garfield St	TURN LANE IMPROVEMENTS		50%
	ICD3		Garfield St & Florida Ave	SIGNAL		50%

Notes: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.

Exhibit 4.C

RIF CIP - SA C

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0 0.5 1 Miles

February 2019

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Legend

- # Intersection Improvements
- Widening
- Access Management
- Lane Capacity Addition
- New
- Tall City Plan Streets
- Local Streets

Table 2.D. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area D

Service Area	Proj. #	Thoroughfare Plan Classification	Roadway	Limits	Length (mi)	% In Service Area
SA D	B9, D1	Major Arterial	Wadley Ave (5)	Ranchland Dr to Fairgrounds Rd	0.65	50%
	B10, D2	Major Arterial	CR 72 (1)	Fairgrounds Rd to 2,660' E of Fairgrounds Rd	0.50	50%
	B11, D3	Major Arterial Proposed	CR 72 (2)	2,660' E of Fairgrounds Rd to Elkins Rd	1.53	50%
	D4	Major Arterial Proposed	Scharbauer - Golf Course Connector	Fairgrounds Rd to Quail Ridge - Elkins Connector	0.58	100%
	D5	Major Arterial	Golf Course Rd (1)	Quail Ridge - Elkins Connector to Todd Dr	0.51	100%
	D6	Major Arterial Proposed	Golf Course Rd (2)	Todd Dr to Evans Ln	0.84	100%
	D7	Major Arterial	Golf Course Rd (3)	Evans Ln to Elkins Rd	0.17	100%
	D8	Primary Collector	Industrial Ave	Indiana Ave to Terrell St	0.38	100%
	D9	Primary Collector Proposed	Wolcott Ave	Garfield St to 3,065' E of Garfield St	0.58	100%
	D10	Primary Collector	Longview Ave (1)	Baird St to Terrell St	0.28	100%
	D11	Primary Collector Proposed	Longview Ave (2)	Terrell St to Lamesa Rd	0.46	100%
	D12	Primary Collector Proposed	Latta St (1)	685' E of Lamesa Rd to 1,835' E of Lamesa Rd	0.22	100%
	D13	Primary Collector	Latta St (2)	Taylor Ave to Garden City Hwy	0.15	100%
	D14	Major Arterial	Fairgrounds Rd (2)	Indiana Ave to Cloverdale Rd	0.46	50%
	D15	Major Arterial	Todd Dr (4)	CR 72 to BUS 20 WBFR	1.34	100%
	D16	Major Arterial	Elkins Rd (2)	CR 72 to 1525' N of Golf Course Rd	0.48	50%
	D17	Major Arterial	Elkins Rd (3)	1525' N of Golf Course Rd to BUS 20 WBFR	0.59	100%
	C24, D18	Major Arterial	Andrews Hwy (3)	Kent St to Wall St	0.28	50%
	C25, D19	Major Arterial	Garfield St (3)	Wall St to Missouri Ave	0.07	50%
	B27, D20	Major Arterial	Wadley Ave (4)	190' E of I St to Big Spring St	0.98	50%
	Proj. #	**Intersection Improvements**	**Location**	**Improvement(s)**		**% In Service Area**
	ID1		Scharbauer Dr & Golf Course Rd	ROUNDABOUT		100%
	ID2		Big Spring St & Scharbauer Dr	SPUI & BRIDGE WIDENING		100%
	ICD1		Garfield St & Storey Ave/Cuthbert Ave	ROUNDABOUT		50%
	ICD2		Front St & Garfield St	TURN LANE IMPROVEMENTS		50%
	ICD3		Garfield St & Florida Ave	SIGNAL		50%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.

WADELY AVE
B27, D20
B9, D1
FAIRGROUNDS RD
B10, D2
B11, D3
GARFIELD ST
"A" ST
LAMESA RD
ID2
SCHARBAUER DR
D4
TODD RD
D16
ID1
D5
D6
D7
D17
D15
ICD1
ILLINOIS AVE
C24, D18
C25, D19
TEXAS AVE
WALL ST
D8
FRONT ST
ICD2
ICD3
FLORIDA AVE
D14
CLOVERDALE RD
GARFIELD ST
D13
GARDEN CITY HWY
IH 20
D9
D12
D10
D11
RANKIN HWY

Legend

- # Intersection Improvements
- Widening
- Access Management
- New
- Tall City Plan Streets
- Local Streets

Exhibit 4.D

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RIF CIP - SA D

0 0.5 1 Miles

February 2019

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IV. METHODOLOGY FOR ROADWAY IMPACT FEES

A. Service Areas

The five (5) service areas used in the 2019 Roadway Impact Fee Study are shown in the previously referenced Exhibit 3. These service areas cover the entire corporate boundary of the City of Midland. The area surrounding the airport was considered a no fee zone because minimum capacity related improvements were identified. Chapter 395 of the Texas Local Government Code specifies that "the service area is limited to an area within the corporate boundaries of the political subdivision and shall not exceed six (6) miles." The service areas in the 2019 Roadway Impact Fee Study are consistent with the specification of Chapter 395 of the Texas Local Government Code.

B. Service Units

The "service unit" is a measure of consumption or use of the capital facilities by new development. In other words, it is the unit of measure used in the 2019 Roadway Impact Fee Study to quantify the supply and demand for roads in the City. For transportation purposes, the service unit is defined as a vehicle-mile. Below is the definition for vehicle-mile.

Vehicle-Mile: The capacity consumed in a single lane in the PM peak hour by a vehicle making a trip one mile in length. The PM Peak is used as the basis for transportation planning and the estimation of trips caused by new development.

Total Vehicle-Miles of Supply: Based on the total length (miles), number of lanes, and capacity (vehicles per hour) provided by the Thoroughfare System.

Total Vehicle-Miles of Demand: Based on the 10-year growth projections. The demand is equal to PM Trip Rate (trips) * Trip Length (miles).

The capacity values used in the 2019 Roadway Impact Fee Study are based upon generally accepted thoroughfare capacity criteria. Tables 3A and 3B show the service volumes as a function of the facility classification and type.

Table 3A. Service Volumes for Proposed Facilities

(used in Appendix B – Roadway Impact Fee CIP Service Units of Supply)

Proposed Cross Section	Facility Classification	Median Configuration	Hourly Vehicle-Mile Capacity per Lane-Mile of Roadway Facility
7U	Major Arterial	Undivided	850
6D	Major Arterial / Expressway	Divided	900
5U	Primary Collector / Major Arterial	Undivided	750
4D	Primary Collector / Major Arterial	Divided	800
4U	Major Arterial	Undivided	600
3U	Secondary Collector	Undivided	650
2U	Primary / Secondary Collector	Undivided	400

Table 3B. Service Volumes for Existing Facilities

(used in Appendix C – Existing Roadway Facilities Inventory)

Roadway Type	Description	Hourly Vehicle-Mile Capacity per Lane-Mile of Roadway Facility
2U-G	Rural Two-lane Undivided Cross-Section (i.e., gravel, dirt, etc.)	100
2U	Two-lane Undivided	400
2D	Two-lane Divided	550
3D	Three-lane Divided	650
3U	Three-lane Undivided (TWLTL)	650
4U	Four-lane Undivided	600
4D	Four-lane Divided	800
5U	Five-lane Undivided (TWLTL)	750
5D	Five-lane Divided	900
6U	Six-lane Undivided	750
6D	Six-lane Divided	900
7U	Seven-lane Undivided (TWLTL)	750

C. Cost Per Service Unit

A fundamental step in the impact fee process is to establish the cost for each service unit. In the case of the Roadway Impact Fee, this is the cost for each vehicle-mile of travel. Thus, it is the cost to construct a roadway (lane-mile) needed to accommodate a vehicle-mile of travel. The cost per service unit is calculated for each service area based on the roadway projects within that service area.

The second component of the cost per service unit is the determination of the number of service units in each service area. This number is the measure of the growth in transportation demand that is projected to occur in the ten-year period. Chapter 395 requires that Impact Fees be assessed only to pay for growth projected to occur in the city limits within the next ten-years. As noted earlier, the units of demand are vehicle-miles of travel.

D. Roadway Impact Fee CIP Costing Methodology

All of the project costs for a facility which serves the overall transportation system are eligible to be included in the RIF CIP. Chapter 395 of the Texas Local Government Code specifies that the allowable costs are "…including and limited to the:

1. Construction contract price;
2. Surveying and engineering fees;
3. Land acquisition costs, including land purchases, court awards and costs, attorney's fees, and expert witness fees; and
4. Fees actually paid or contracted to be paid to an independent qualified engineer or financial consultant preparing or updating the CIP who is not an employee of the political subdivision."

The engineer's opinion of the probable costs of the projects in the RIF CIP is based, in part, on the calculation of a unit cost of construction. This means that a cost per linear foot of roadway is calculated based on an average price for the various components of roadway construction. This allows the probable cost to be determined by the type of facility being constructed, the number of lanes, and the length of the project. The cost for location specific items such as bridges, highway ramps, drainage structures, or any other special components

are added to each project, as appropriate. In addition, based upon discussions with City of Midland staff, TxDOT driven projects have been included in the CIP as a 20% portion of the total cost where the City anticipates contributing a portion of the total project costs. The following is a detailed description of the costing worksheet/methodology for the Roadway Impact Fee CIP.

1. Overview of Roadway Impact Fee CIP Costing Worksheets

For each project a specific costing worksheet was developed (see Appendix A). Each worksheet contains project information, construction pay items, construction component allowances, and a summary of costs and allowances. An example of the costing sheets can be seen below.

Project Information

Construction Pay Items

Construction Component Allowances

Summary of Costs and Allowances

City of Midland 2/18/2019

2019 Roadway Impact Fee

Conceptual Level Project Cost Projection

Project Number: C14

Project Information: **Description: Major Arterial**

Name: **Avalon Dr (3)**
Type: **(3/5) Widening**
Limits: **Potomac Pkwy to 1,140' S of Musial Way**

This project includes the widening of the existing two-lane undivided asphalt roadway to a five-lane undivided asphalt major arterial.

Service Area:	**C,ETJ**
Exist. Pavement Status:	**2U**
Impact Fee Type:	**5U**
Length (FT):	**1,883**
Travelway (FT):	**64**
Bike Lane (FT)	**6**
Roadbeds (divided #):	**1**
Area (SY):	14,649
Landscape and Utility Zone (FT):	**19**
Width of Median (FT):	**0**
Sidewalk Width (FT):	**6**
Bike Lanes and Sidewalks (#):	**2**

Roadway Construction Cost Projection

Item	*Description*	*Depth in Inches*	*Quantity*	*Unit*	*Unit Cost*	*Extended Cost*
	Street Excavation	17	7,115	CY	$25.00	$178,000
	Earthwork/TopSoil	**6**	907	CY	$15.00	$14,000
	Prepared Subgrade	**8**	3,348	CY	$35.00	$117,000
	Type "A" C&G	n/a	3,767	LF	$20.00	$75,000
	Bike Lane		22,601	SF	$10.00	$226,000
	Concrete Sidewalks	n/a	22,601	SF	$10.00	$226,000
	Concrete Pavement	**0**	0	CY	$300.00	0
	HMAC Pavement	**5**	3,953	Ton	$100.00	$395,000
	Flexible Compacted Base	**12**	5,022	CY	$55.00	$276,000
					Roadway Construction Cost Subtotal:	$1,508,000
					Costing Based on 3/5 of Ultimate Cross Section Total:	**$905,000**

Major ROW Construction Component Allowances

Description	*Notes*	*Allowance*	*Item Cost*
Mobilization		6%	$54,000
Prep ROW		10%	$90,000
Utilities	Minor Adjustments	5%	$45,000
Drainage	Internal Stormsewer System	30%	$271,000
Special Drainage			
Other Major Items			
ADA Ramps & Requirements		6%	$54,000
Signs, Pavement Markings		2%	$18,000
Traffic Control		2%	$18,000
Street Lighting		6%	$54,000
Landscaping (Grass, Trees, Restoration, E/S Controls)		4%	$36,000
		Construction Allowances Subtotal:	**$642,000**
		Roadway & ROW Construction Allowances Subtotal:	$1,547,000

Capital Improvement Project (CIP) Allowances

Description	*Notes*	*Allowance*	*Item Cost*
Engineering / Surveying / Geotechnical	(12%+4%+2%)	18%	$278,000
Construction Inspection / Testing	(6%+2%)	8%	$124,000
Contingency		15%	$232,000
ROW / Easement Acquisition		15%	$136,000
		CIP Allowances Subtotal:	**$770,000**

Impact Fee Project Cost Summary

Item	*Notes*	*Item Cost*
Roadway Construction Items		$905,000
ROW Construction Items		$642,000
Capital Improvement Costs		$770,000
	Grand Total:	**$2,317,000**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Midland.

The planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

2. Project Information

In order to correctly estimate the cost of a roadway project, several attributes are first identified:

- Project Number – Identifies which Service Area the project is in with a corresponding number. The corresponding number does not represent any prioritizations and is used only to identify projects. For example, Project C14 is in Service Area C and is the 14th project on the list.
- Name – A unique identifier for each project.
- Limits – Represents the beginning and ending location for each project.
- Description – The costing class to be used in the analysis. The description provides the width and depth for the various elements in the facility cross section. The construction costs are variable, based on the proposed Thoroughfare System classification of the roadway. Some projects have modified cross sections in cases where retrofit projects are needed. Other specialized cases are noted in the short description box located in this section.
- Type – Describes the type of project identified. Includes; New, Widening, Lane Capacity Addition, and Access Management. Additional classifications are utilized in cases where a portion of the facility currently exists and the road is only to be widened. The following notations are used for these projects:
  - "(1/3)" for facilities where the facility needs an additional lane to be constructed;
  - "(2/5)" for future five-lane facilities where two additional lanes are needed;
  - "(1/2)" for facilities where half the facility still needs to be constructed;
  - "(3/5)" for future five-lane facilities where three additional lanes are needed;
  - "(2/3)" for future six-lane facilities where four additional lanes are needed.
- Length (ft) – The distance measured in feet that is used to cost out the project.
- Service Area(s) – Represents the service area where the project is located. Multiple service areas will be listed if the project lies along a service area boundary.

3. Roadway Construction Cost

A typical roadway project consists of a number of costs, including the following: planning, survey, design engineering, permitting, right-of way acquisition, construction, and inspection. While the construction cost component of a project may actually consist of approximately 100 various pay items, a simplified approach was used for developing the conceptual level project costs. The pay items for both concrete and asphalt roads are shown in Table 4.

Table 4. Construction Cost Pay Items

Concrete Pay Items	Asphalt Pay Items
• Street Excavation • Earthwork/Top Soil • Prepared Subgrade • Type "A" Curb & Gutter • Bike Lane • Concrete Sidewalks • Concrete Pavement • Flexible Compacted Base	• Street Excavation • Earthwork/Top Soil • Prepared Subgrade • Type "A" Curb & Gutter • Bike Lane • Concrete Sidewalks • HMAC Pavement • Flexible Compacted Base

4. Major ROW Construction Component Allowances

A percentage of the paving construction cost is allotted for various major construction component allowances, as appropriate. These allowances include mobilization, preparation of right-of-way (ROW), utilities, drainage, ADA ramps and requirements, signage and pavement markings, traffic control, street lighting, and landscaping. If the project type is "New," traffic control was set to 0%. It is to be noted that this percentage is taken from the roadway construction cost

In addition, lump sum dollar allowances are provided for special drainage structures. An allotment of $250,000 per crossing to account for stream or flood plain crossings was assumed.

5. CIP Allowances

To determine the total Impact Fee project cost, 18% of the roadway and ROW construction allowance subtotal is added for engineering, surveying, and geotechnical work. Additional allowances are given for contingency (15%), and construction inspection and testing (8%). Based on whether or not the project is new or existing, either a 30% or 15% ROW and easement acquisition allowance is assumed.

6. Impact Fee Project Cost

The Impact Fee Project Cost Total is then the Roadway Construction Items, ROW Construction Items, and Capital Improvement Plan Allowances. Based upon discussions with City of Midland staff, state highway projects were included with a projected contribution of twenty percent (20%) of the total project. In addition, some projects have been included based on cost estimates from the City.