



CITY OF MANOR ROADWAY IMPACT FEE CALCULATIONS

SERVICE UNITS - RECAP

WHAT IS A SERVICE UNIT?

- ❖ FOR ROADWAY IMPACT FEES THE SERVICE UNIT IS A VEHICLE MILE
- ❖ IN ORDER TO DETERMINE THE COST PER SERVICE UNIT, THE ESTIMATED GROWTH IN VEHICLE MILES IN EACH SERVICE AREA NEEDS TO BE CALCULATED FOR A TEN-YEAR PERIOD (2023-2033)
- ❖ ALL CURRENTLY DEVELOPED LAND AND ALL DEVELOPABLE LAND WILL BE CATEGORIZED AS EITHER RESIDENTIAL OR NON-RESIDENTIAL.
- ❖ NON-RESIDENTIAL WILL BE BROKEN INTO THREE (3) CATEGORIES:
 - ❖ RETAIL, SERVICE, AND BASIC

NON-RESIDENTIAL

- ❖ RETAIL WOULD BE LAND-USE ACTIVITIES THAT PROVIDE FOR THE SALE OF GOODS. THIS WOULD INCLUDE SUCH ITEMS AS GROCERY STORES AND RESTAURANTS.
- ❖ SERVICE IS ACTIVITIES THAT PROVIDE PERSONAL AND PROFESSIONAL SERVICES AND WOULD INCLUDE GOVERNMENT AND PROFESSIONAL OFFICES AS WELL AS EDUCATIONAL USES.
- ❖ BASIC WOULD-BE ACTIVITIES THAT PRODUCE GOODS AND SERVICES THAT WOULD BE EXPORTED OUT OF THE LOCAL ECONOMY AND WOULD INCLUDE SUCH THINGS AS MANUFACTURING, CONSTRUCTION, TRANSPORTATION, WHOLESALE, TRADE, WAREHOUSING AND OTHER INDUSTRIAL USES.

TRANSPORTATION DEMAND FACTOR

- ❖ THE MAXIMUM TRIP LENGTH WILL VARY BETWEEN THE THREE SERVICE AREAS.
- ❖ FOR SERVICE AREA 1, THE MAXIMUM TRIP LENGTH IS 2 MILES.
- ❖ FOR SERVICE AREA 2, THE MAXIMUM TRIP LENGTH IS 3 MILES.
- ❖ FOR SERVICE AREA 3, THE MAXIMUM TRIP LENGTH IS 4 MILES.
- ❖ THE ORIGIN-DESTINATION REDUCTION (OD) IS USED TO ADJUST THE AVERAGE TRIP LENGTH IN THE COMPUTATION OF THE MAXIMUM TRIP LENGTH. THIS WILL PREVENT TRIPS FROM BEING COUNTED TWICE AS BOTH RESIDENTIAL AND NON-RESIDENTIAL. IF THIS WAS NOT ADJUSTED, THEN A TRIP FROM HOME TO WORK WITH A STOP AT A STORE WOULD RESULT IN THIS BEING COUNTED AS TWO TRIPS. ONLY HALF OF THE TRIP WOULD BE COUNTED AS RESIDENTIAL AND THE OTHER HALF WOULD BE COUNTED AS NON-RESIDENTIAL.

EXISTING VEHICLE MILES

Service Area	Residential Vehicle Miles (Existing)				Nonresidential SF (Existing)			Trans. Demand Factor			Nonresidential Vehicle Miles (Existing)				Total Vehicle Miles (Existing)	
	Single Family Units	Trip Rate TDF	Multifamily	Trip Rate TDF	Vehicle Miles	Basic	Service	Retail	Basic	Service	Retail	Basic	Service	Retail	Total	
		0.94		0.51					0.65	1.44	2.24					
1	1519		1870		10,232	443,218	1,249,580	457,950				1,729	6,085	2,116	9,930	20,162
2	1845	4.04	0	2.19	7,454	0	35,000	0	3.9	4.87	4.62	0	162	0	162	7,616
3	1961		0		7,922	0	0	0				0	0	0	0	7,922
TOTALS	5325		1870		25,608	443,218	1,284,580	457,950				1,729	6,247	2,116	10,091	35,700

VEHICLE MILES CALCULATIONS

- ❖ THE VEHICLE MILES FOR RESIDENTIAL ARE CALCULATED BY MULTIPLYING THE TDF FOR EITHER SINGLE-FAMILY OR MULTIFAMILY BY THE NUMBER OF DWELLING UNITS
- ❖ THE NON-RESIDENTIAL VEHICLE MILES WERE CALCULATED BY ESTIMATING THE SQUARE FOOTAGE OF EACH NON-RESIDENTIAL USE AND THEN MULTIPLYING THE TDF BY THE NUMBER OF THOUSAND SQUARE FEET FOR EACH LAND USE.
- ❖ THE RESIDENTIAL AND NON-RESIDENTIAL VEHICLE MILES WERE ADDED TOGETHER TO GET A TOTAL VEHICLE MILES FOR EACH SERVICE AREA.

FUTURE VEHICLE MILES

10-YEAR GROWTH PROJECTIONS	
SERVICE AREA	VEHICLE-MILES
1	15,787
2	12,312
3	13,500

FUTURE VEHICLE MILES

Service Area	Residential Vehicle Miles (Future)				Nonresidential SF (Future)			Trans. Demand Factor			Nonresidential Vehicle Miles (Future)				Total Vehicle Miles (Future)	
	Single Family Units	Trip Rate TDF	Multifamily	Trip Rate TDF	Vehicle Miles	Basic	Service	Retail	Basic	Service	Retail	Basic	Service	Retail	Total	
		0.94		0.51					0.65	1.44	2.24					
1	1500		1000		8,250	351,470	155,144	1,171,220				1,371	756	5,411	7,537	15,787
2	2584	4.04	224	2.19	10,930	100,000	50,000	162,000	3.9	4.87	4.62	390	244	748	1,382	12,312
3	1961		0		7,922	250,000	300,000	680,000				975	1,461	3,142	5,578	13,500
TOTALS	6045		1224		27,102	701,470	505,144	2,013,220				2,736	2,460	9,301	14,497	41,599

VEHICLE MILES

❖ THE TOTAL ESTIMATED VEHICLE MILES TO BE ADDED BETWEEN 2023 AND 2033:

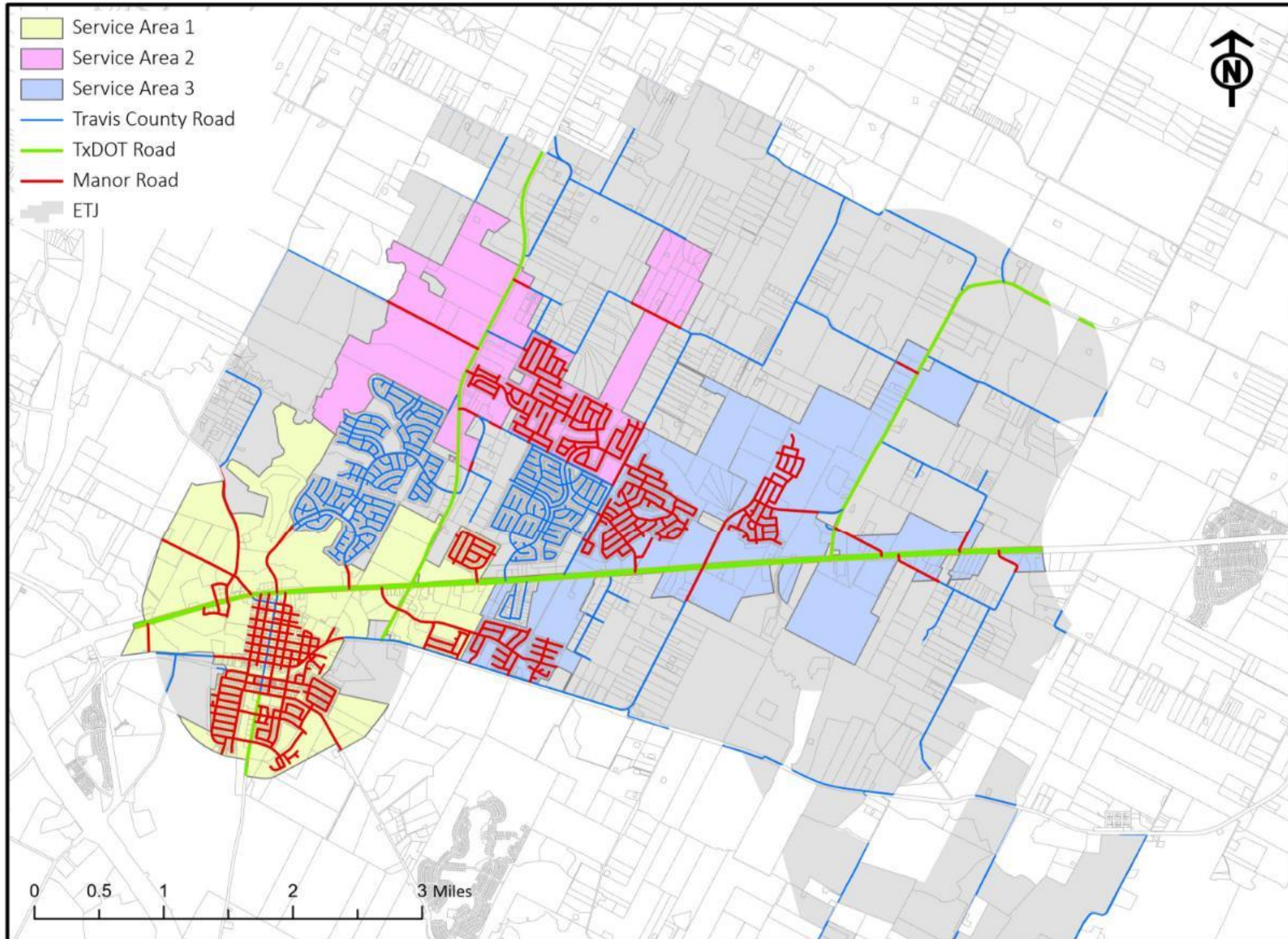
❖ SERVICE AREA 1 = 15,787 MILES

❖ SERVICE AREA 2 = 12,312 MILES

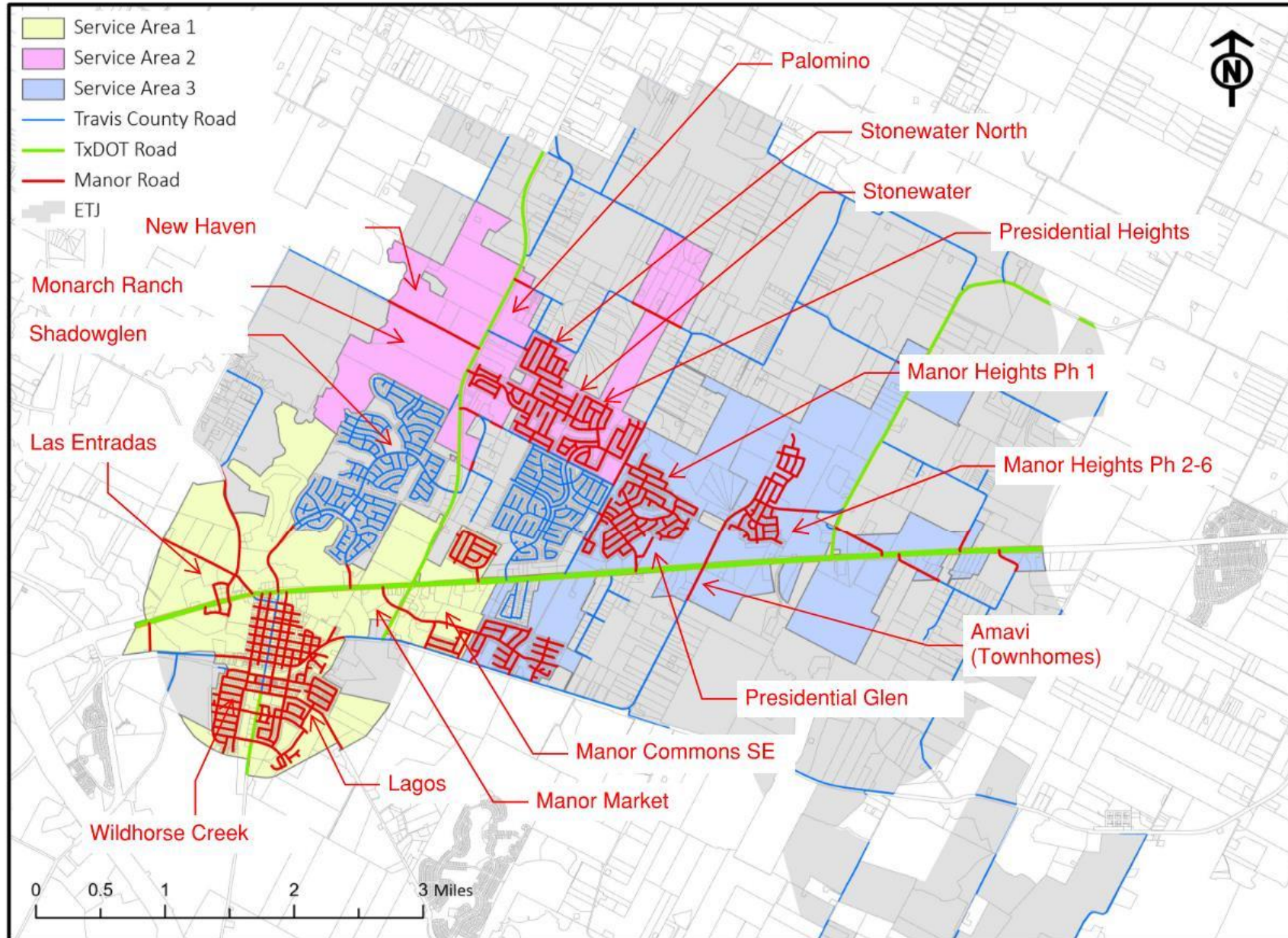
❖ SERVICE AREA 3 = 13,500

❖ TOTAL MILES ADDED = 41,599 (ALL 3 SERVICE AREAS)

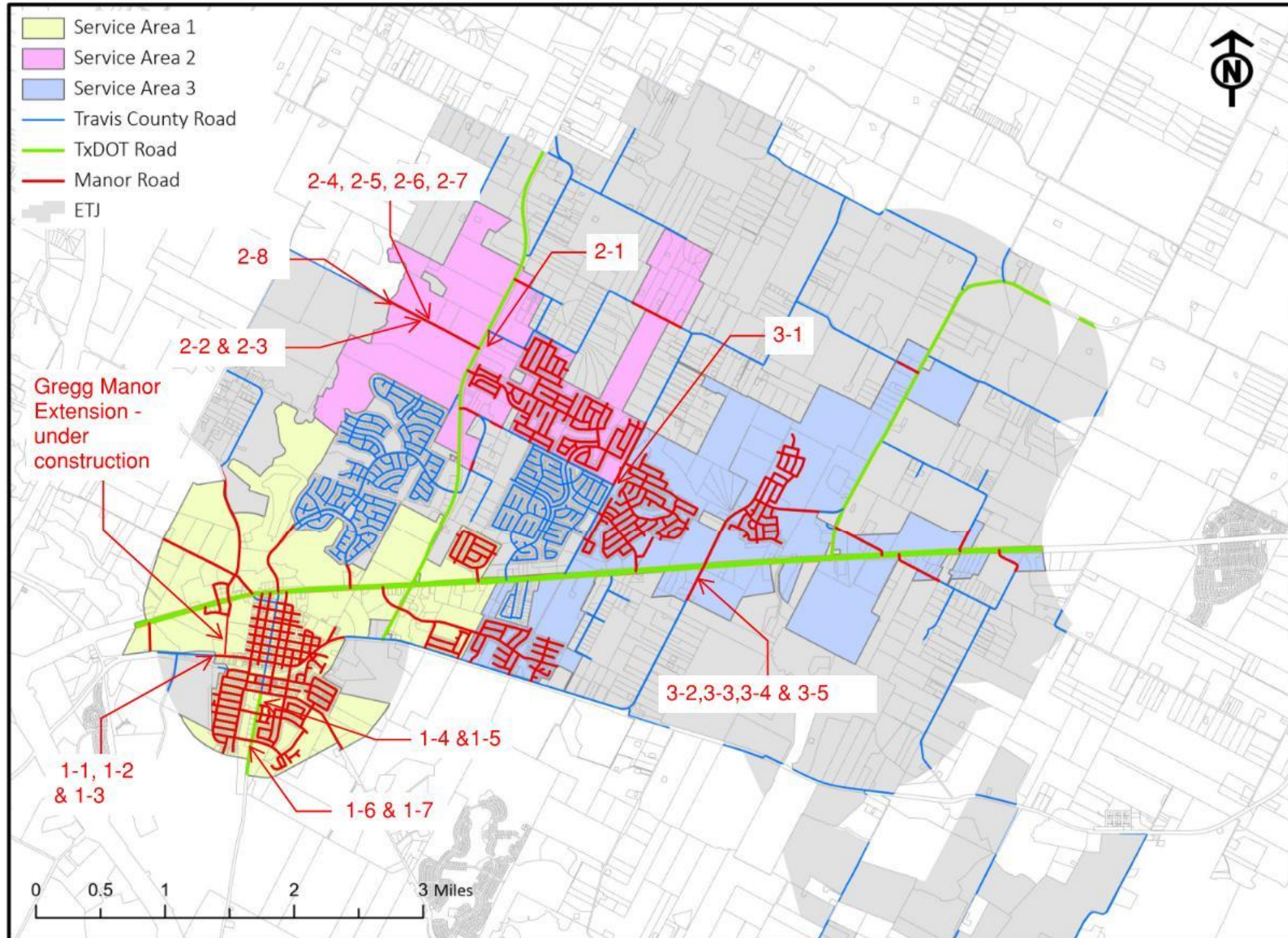
Manor Road Impact Fee Map



Manor Road Impact Fee Map



Manor Road Impact Fee Map



Capital Improvement Projects for Roadway Impact Fees - Service Area 1

Service Area	Proj. #	Roadway	Project	% in Service Area	Estimated Cost	TIA
1	1-1	West Parsons	Construction of a left turn lane on eastbound approach	100%	\$500,000.00	Las Entradas
	1-2	West Parsons	Construction of right turn lane on the westbound approach	100%	\$500,000.00	Las Entradas
	1-3	West Parsons/Gregg Manor	Installation of a traffic signal	100%	\$650,000.00	Las Entradas
	1-4	LaPoyner/Lexington	NB left turn lane - 100 ft storage & 100 ft of taper	100%	\$200,000.00	Wildhorse Commercial
	1-5	LaPoyner/ Lexington EB	Restripe approach providing exclusive left and through-righter turn lanes	100%	\$10,000.00	Wildhorse Commercial
	1-6	Murchison @ FM 973 EB	Restripe approach providing exclusive left and through-righter turn lanes	100%	\$10,000.00	Wildhorse Commercial
	1-7	Murchison @ FM 973 NB	NB left turn lane - 100 ft storage & 100 ft of taper	100%	\$200,000.00	Wildhorse Commercial

Total Cost \$2,070,000.00

Total Cost \$2,070,000.00

1-1	Murchison @ FM 973 NB	NB left turn lane - 100 ft storage & 100 ft of taper	100%	\$200,000.00	Wildhorse Commercial
1-2	LaPoyner/ Lexington EB	Restripe approach providing exclusive left and through-righter turn lanes	100%	\$10,000.00	Wildhorse Commercial

Capital Improvement Projects for Roadway Impact Fees - Service Area 2

Service Area	Proj. #	Roadway	Project	% in Service Area	Estimated Cost	TIA
	2-1	FM 973/Gregg Lane	Westbound through-receiving lane - 850 feet	100%	\$300,000.00	Palomino
	2-2	Gregg Ln between FM 973 and driveway 3	Expand roadway cross section	100%	\$1,700,000.00	Monarch Ranch
	2-3	Driveway 3 and Gregg Ln	Add EB right turn bay	100%	\$150,000.00	Monarch Ranch
	2-4	Gregg Ln at Roadway 1	Install 425' eastbound left turn lane	100%	\$145,000.00	New Haven
	2-5	Gregg Ln at Roadway 1	Install 235' westbound right turn lane	100%	\$145,000.00	New Haven
	2-6	Gregg Lane at Roadway 2	Install 425' eastbound left turn lane	100%	\$145,000.00	New Haven
	2-7	Gregg Lane at Commercial Driveway 1	Install 415' westbound right turn lane	100%	\$145,000.00	New Haven
	2-8	Gregg Lane	Widen to 1-34E from Roadway 1 to FM 973	100%	\$945,000.00	New Haven
Total Cost					\$3,675,000.00	

Total Cost \$3,675,000.00

5-8	Gregg Lane	to FM 973	100%	\$945,000.00	New Haven
-----	------------	-----------	------	--------------	-----------

Capital Improvement Projects for Roadway Impact Fees - Service Area 3

Service Area	Proj. #	Roadway	Project	% in Service Area	Estimated Cost	TIA
3	3-1	Bois D'arc	Expand roadway by 4' - City Portion	100%	\$700,000.00	Minimax
	3-2	Old Kimbro Road (SB)	Add 375 LF and 100' Taper SBR Lane	100%	\$125,000.00	Manor Heights
	3-3	Old Kimbro Road	Install 700' EB Right turn Lane (550' deceleration lane with 150' taper)	100%	\$280,000.00	Amavi
	3-4	Old Kimbro Road	Extend the existing left turn lane by an additional 750' and a new 150' taper (constructed with residential - 1st Phase)	100%	\$360,000.00	Amavi
	3-5	Old Kimbro Road	Install 300' NB right turn lane (250' storage + 50' taper)	100%	\$120,000.00	Amavi
Total Cost					\$1,585,000.00	

Total Cost					\$1,282,000.00	
	3-2	Old Kimbro Road	Install 300' NB right turn lane (250' storage + 50' taper)	100%	\$120,000.00	Amavi
	3-4	Old Kimbro Road	Extend the existing left turn lane by an additional 750' and a new 150' taper (constructed with residential - 1st Phase)	100%	\$360,000.00	Amavi

ROADWAY IMPACT FOR EACH SERVICE AREA

- The maximum impact fee allowable in each of the three service areas is calculated by dividing the Roadway Impact Fee CIP Attributable to Growth by the number of vehicle-miles in the corresponding Service Area.
- This calculation is performed for each service area individually; each service area has a stand-alone Roadway Impact Fee CIP and 10-year growth projection.

ROADWAY IMPACT FEES PER SERVICE AREA

- CALCULATIONS = SERVICE AREA IMPROVEMENT COSTS/NUMBER OF VEHICLE MILES ADDED
- SERVICE AREA 1 = $\$2,070,000/15787 = \131.12 per vehicle mile
- SERVICE AREA 2 = $\$3,675,000/12312 = \298.49 per vehicle mile
- SERVICE AREA 3 = $\$1,585,000/13500 = \117.41 per vehicle mile

ROADWAY IMPACT FEE CALCULATIONS

- The Roadway Impact Fee is determined by multiplying the impact fee rate by the number of service units projected for the proposed development. For this purpose, the City will utilize the Land Use/Vehicle-Mile Equivalency Table (LUVMET).

TRANSPORTATION DEMAND FACTOR CALCULATIONS

Variable	Residential Single Family	Residential Multifamily	Basic	Service	Retail
T	0.94	0.51	0.65	1.44	2.24
P _b	0%	0%	0%	0%	35%
L	8.59	8.59	12.89	6.76	6.35
L _{max}	4.30	4.30	6.00	3.38	3.18
TDF	4.04	2.19	3.90	4.87	4.62
The max length is less than 6 miles for each of the service areas, so the lower trip length is used rather than 6 miles.					

Variables:

$$TDF = T * (1 - P_b) * L_{max}$$

$$\text{where... } L_{max} = \min(L * OD \text{ or } 6)$$

- TDF = Transportation Demand Factor,
- T = Trip Rate (peak hour trips / unit),
- P_b = Pass-By Discount (% of trips),
- L_{max} = Maximum Trip Length (miles),
- L = Average Trip Length (miles), and
- OD = Origin-Destination Reduction (50%)

LUVMET TABLE

LAND USE/VEHICLE MILE EQUIVALENCY TABLE (LUVMET)									
Land Use Category	ITE Land Use Code	Development Unit	Trip Gen Rate (PM)	Trip Rate	Trip Length (mi)	Adj. for O-D	Adj. Trip Length (mi)	Max Trip Length (mi) (Max 6.00)	Veh-Mile Per Dev-Unit
PORT AND TERMINAL									
Truck Terminal	030	1,000 SF GFA	1.87	1.87	10.70	50%	5.35	5.35	10.0
INDUSTRIAL									
Light Industrial	110	1,000 SF GFA	0.63	0.63	12.89	50%	6.45	6.00	3.8
Manufacturing	140	1,000 SF GFA	0.67	0.67	12.89	50%	6.45	6.00	4.0
Warehouse	150	1,000 SF GFA	0.19	0.19	12.89	50%	6.45	6.00	1.1
RESIDENTIAL									
Single-Family Detached Housing	210	Dwelling Unit	0.99	0.99	8.59	50%	4.30	4.30	4.3
Multifamily Housing (Low-Rise)	220	Dwelling Unit	0.56	0.56	8.59	50%	4.30	4.30	2.4
Multifamily Housing (Mid-Rise)	221	Dwelling Unit	0.44	0.44	8.59	50%	4.30	4.30	1.9
Mobile Home Park / Manufactured Home	240	Dwelling Unit	0.46	0.46	8.59	50%	4.30	4.30	2.0
Senior Adult Housing-Attached	252	Dwelling Unit	0.26	0.26	8.59	50%	4.30	4.30	1.1
Assisted Living	254	Beds	0.26	0.26	8.59	50%	4.30	4.30	1.1

LUVMET TABLE

LODGING									
Hotel	310	Room	0.60	0.60	5.41	50%	2.71	2.71	1.6
RECREATIONAL									
Recreational Community Center	495	1,000 SF GFA	2.31	2.31	6.35	50%	3.18	3.18	7.4
Miniature Golf Course	431	Hole	0.33	0.33	6.35	50%	3.18	3.18	1.1
Multiplex Movie Theater	445	Screens	13.73	13.73	6.35	50%	3.18	3.18	43.66
INSTITUTIONAL									
Religious Place of Worship	560	1,000 SF GFA	0.49	0.49	6.30	50%	3.15	3.15	1.5
Day Care Center	565	1,000 SF GFA	11.12	6.23	3.39	50%	1.70	1.70	10.5
Elementary and Middle School (K-8)	520/2	Students	0.17	0.17	3.39	50%	1.70	1.70	0.3
High School	530	Students	0.14	0.14	3.39	50%	1.70	1.70	0.2
MEDICAL									
Clinic	630	1,000 SF GFA	3.28	3.28	6.76	50%	3.38	3.38	11.0
Hospital	610	1,000 SF GFA	0.97	0.97	6.76	50%	3.38	3.38	3.3
Nursing Home	620	Beds	0.22	0.22	6.76	50%	3.38	3.38	0.7
Animal Hospital/Veterinary Clinic	640	1,000 SF GFA	3.53	2.47	6.76	50%	3.38	3.38	8.4
OFFICE									
General Office Building	710	1,000 SF GFA	1.15	1.15	6.76	50%	3.38	3.38	3.9
Medical-Dental Office Building	720	1,000 SF GFA	3.46	3.46	6.76	50%	3.38	3.38	11.6
Single Tenant Office Building	715	1,000 SF GFA	1.71	1.71	6.76	50%	3.38	3.38	5.8
Office Park	750	1,000 SF GFA	1.07	1.07	6.76	50%	3.38	3.38	3.6

LUMMET TABLE

COMMERCIAL - Automobile Related									
Automobile Care Center	942	1,000 SF GFA	3.11	1.87	5.41	50%	2.71	2.71	5.1
Automobile Parts Sales	843	1,000 SF GFA	4.91	2.80	5.41	50%	2.71	2.71	7.6
Gasoline/Service Station	944	Vehicle Fueling Position	14.03	8.14	1.20	50%	0.60	0.60	4.9
Gasoline/Service Station w/ Conv Market and Car Wash	945	Vehicle Fueling Position	13.99	6.16	1.20	50%	0.60	0.60	3.7
Quick Lubrication Vehicle Shop	941	Servicing Positions	4.85	2.91	5.41	50%	2.71	2.71	7.9
Self-Service Car Wash	947	Stall	5.54	3.32	1.20	50%	0.60	0.60	2.0
Tire Store	848	1,000 SF GFA	3.98	2.87	5.41	50%	2.71	2.71	7.8
COMMERCIAL - Dining									
Fast Food Restaurant with Drive-Thru Window	934	1,000 SF GFA	32.67	16.34	3.39	50%	1.70	1.70	27.7
Fast Food Restaurant without Drive-Thru Window	933	1,000 SF GFA	28.34	14.17	3.39	50%	1.70	1.70	24.0
High Turnover (Sit-Down) Restaurant	932	1,000 SF GFA	9.77	5.57	5.41	50%	2.71	2.71	15.0
Quality Restaurant	931	1,000 SF GFA	7.80	4.37	5.41	50%	2.71	2.71	11.8
Coffee/Donut Shop with Drive-Thru Window	937	1,000 SF GFA	43.38	13.01	1.20	50%	0.60	0.60	7.8

LUMMET TABLE

COMMERCIAL - Other Retail									
Nursery (Garden Center)	817	1,000 SF GFA	6.94	4.86	6.35	50%	3.18	3.18	15.4
Home Improvement Superstore	862	1,000 SF GFA	2.33	1.21	6.35	50%	3.18	3.18	3.9
Pharmacy/Drugs store w/o Drive-Pharmacy/Drugs store w/ Drive-Thru Window	880	1,000 SF GFA	8.51	4.00	6.35	50%	3.18	3.18	12.7
	881	1,000 SF GFA	10.29	5.25	6.35	50%	3.18	3.18	16.7
Shopping Center	820	1,000 SF GLA	3.81	2.51	6.35	50%	3.18	3.18	8.0
Supermarket	850	1,000 SF GFA	9.24	5.91	6.35	50%	3.18	3.18	18.7
Toy/Children's Superstore	864	1,000 SF GFA	5.00	3.50	6.35	50%	3.18	3.18	11.1
Department Store	875	1,000 SF GFA	1.95	1.37	6.35	50%	3.18	3.18	4.4
SERVICES									
Walk-In Bank	911	1,000 SF GFA	12.13	7.28	3.39	50%	1.70	1.70	12.3
Drive-In Bank	912	Drive-in Lanes	27.15	17.65	3.39	50%	1.70	1.70	30.0
Hair Salon	918	1,000 SF GLA	1.45	1.02	3.39	50%	1.70	1.70	1.7

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.

$$\begin{array}{r} \text{No. of Development} \\ \text{Units} \end{array} \times \begin{array}{r} \text{Vehicle-miles} \\ \text{per development unit} \end{array} = \begin{array}{r} \text{Development's} \\ \text{Vehicle-miles} \end{array}$$

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

$$\begin{array}{r} \text{Development's} \\ \text{Vehicle-miles} \end{array} \times \begin{array}{r} \text{Fee per} \\ \text{vehicle-mile} \end{array} = \begin{array}{r} \text{Impact Fee due} \\ \text{from Development} \end{array}$$

CALCULATION EXAMPLES

- SERVICE AREA 1 HAS A COST PER VEHICLE MILE OF \$131.12

Single-Family Dwelling:

500 dwelling units x 4.3 vehicle-miles/dwelling unit = 2150 vehicle-miles

2150 vehicle-miles x \$131.12 /vehicle-mile = \$281,908.00

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

20 (1,000 s.f. units) x 3.9 vehicle-miles/1,000 s.f. units = 78 vehicle-miles

78 vehicle-miles x \$131.12 /vehicle-mile = \$10,227.36

CALCULATION EXAMPLES

50,000 s.f. Retail Center:

50 (1,000 s.f. units) x 3.9 vehicle-miles/1,000 s.f. units = 195 vehicle-miles

195 vehicle-miles x \$131.12 /vehicle-mile = \$25,568.40

100,000 s.f. Industrial Development:

100 (1,000 s.f. units) x 3.8 vehicle-miles/1,000 s.f. units = 380 vehicle-miles

380 vehicle-miles x \$131.112 /vehicle-mile = \$49,825.60

CALCULATION EXAMPLES

- SERVICE AREA 2 HAS A COST PER VEHICLE MILE OF \$298.49

Single-Family Dwelling:

500 dwelling units x 4.3 vehicle-miles/dwelling unit = 2150 vehicle-miles
2150 vehicle-miles x \$298.49 /vehicle-mile = \$641,753.50

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

20 (1,000 s.f. units) x 3.9 vehicle-miles/1,000 s.f. units = 78 vehicle-miles
78 vehicle-miles x \$298.49 /vehicle-mile = \$23,282.22

CALCULATION EXAMPLES

50,000 s.f. Retail Center:

$50 (1,000 \text{ s.f. units}) \times 3.9 \text{ vehicle-miles}/1,000 \text{ s.f. units} = 195 \text{ vehicle-miles}$

$195 \text{ vehicle-miles} \times \$298.49 \text{ /vehicle-mile} = \$58,205.55$

100,000 s.f. Industrial Development:

$100 (1,000 \text{ s.f. units}) \times 3.8 \text{ vehicle-miles}/1,000 \text{ s.f. units} = 380 \text{ vehicle-miles}$

$380 \text{ vehicle-miles} \times \$298.49 \text{ /vehicle-mile} = \$113,426.20$

CALCULATION EXAMPLES

- SERVICE AREA 3 HAS A COST PER VEHICLE MILE OF \$117.41

Single-Family Dwelling:

500 dwelling units x 4.3 vehicle-miles/dwelling unit = 2150 vehicle-miles
2150 vehicle-miles x \$117.41 /vehicle-mile = \$252,431.50

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

20 (1,000 s.f. units) x 3.9 vehicle-miles/1,000 s.f. units = 78 vehicle-miles
78 vehicle-miles x \$117.41 /vehicle-mile = \$9,157.98

CALCULATION EXAMPLES

50,000 s.f. Retail Center:

50 (1,000 s.f. units) x 3.9 vehicle-miles/1,000 s.f. units = 195 vehicle-miles

195 vehicle-miles x \$117.41 /vehicle-mile = \$22,894.95

100,000 s.f. Industrial Development:

100 (1,000 s.f. units) x 3.8 vehicle-miles/1,000 s.f. units = 380 vehicle-miles

380 vehicle-miles x \$117.41 /vehicle-mile = \$44,615.80