Town of Thompson's Station

Impact Fee Study

Final Report
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Town of Thompson's Station
Impact Fee Study

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Executive Summary

Located in central Tennessee, approximately 25 miles south of Nashville, Thompson's Station has a population of approximately 10,000 residents. The Town has experienced significant growth in recent years with its population doubling since 2015. Continued growth is projected through 2040, with estimated average annual growth rates ranging from approximately 3.5 percent to 8.0 percent. To address growth related infrastructure needs, the Town implemented impact fees for transportation, parks and recreation, and wastewater facilities. The technical study establishing the current adopted fees was last updated in 2019. To reflect current conditions, the Town retained Benesch to update the technical studies for the transportation and parks and recreation facilities and develop a new impact fee for general government buildings.

This report serves as the technical study to support the calculation of the impact fees for parks and recreation, government buildings and transportation. All data and support materials used in this analysis are incorporated by reference as set forth in this document.

This study utilizes a consumption-based impact fee methodology, which assesses new development based upon the burden each land use (demand) places on public services. The demand component is measured in terms of population per unit in the case of parks and recreation and government buildings impact fees. In the case of the transportation impact fee, it is measured in terms of travel.

The primary steps involved in the development of the impact fees included the following for each service area:

- Documentation of capital facilities and resulting levels of service;
- Development of the cost component, which reflects the current value of capital assets (roadways, land/right-of-way (ROW), buildings, recreational facilities, and vehicles);
- Development of the credit component through a review of non-impact fee funding sources allocated for capital expansion projects;
- Calculation of the demand component; and
- Calculation of the impact fees.

The figures calculated in this study represent the technically defensible level of impact fees that the Town could charge; however, the Town may choose to discount the fees as a policy decision.

Table ES-1 presents the technically defensible level of impact fee for each service area as calculated within this report, as well as the total for all the service areas.

Table ES-1

Calculated Impact Fee Schedule

ITE LUC	Land Use	Unit	Calculated Impact Fees			
			Parks and Recreation[1]	Government Buildings[2]	Transportation[3]	Total[4]
	RESIDENTIAL:					
210	Single Family (Detached)	du	$3,310	$366	$8,540	**$12,216**
215	Single Family (Attached)	du	$2,625	$290	$6,473	**$9,388**
220	Multi-Family Low-Rise, 1-3 Stories	du	$1,644	$182	$5,326	**$7,152**
221	Multi-Family Mid-Rise, 4-10 Stories	du	$1,644	$182	$3,827	**$5,653**
230	Low-Rise Residential w/Ground-Floor Commercial, 2-3 stories	du	$1,644	$182	$2,950	**$4,776**
231	Mid-Rise Residential w/Ground Foor Commercial, 4-10 stories	du	$1,644	$182	$3,420	**$5,246**
240	Mobile Home Park	du	$2,237	$246	$3,152	**$5,635**
240	Mobile Home on Lot	du	$2,237	$246	$8,540	**$11,023**
251	Senior Adult Housing (Single Family)	du	$1,963	$217	$3,100	**$5,280**
252	Senior Adult Housing (Multi-Family)	du	$982	$108	$2,138	**$3,228**
253	Congregate Care Facility	du	-	$228	$935	**$1,163**
254	Assisted Living	bed	-	$155	$1,484	**$1,639**
	LODGING:					
310/320	Hotel/Motel	room	-	$209	$3,301	**$3,510**
	RECREATION:					
430	Golf Course	acre	-	$19	$3,688	**$3,707**
492	Health/Fitness Club	1,000 sf	-	$362	$23,901	**$24,263**
495	Recreational Community Center	1,000 sf	-	$350	$21,962	**$22,312**
	INSTITUTIONS:					
520	Elementary School (Private)	student	-	$19	$977	**$996**
522	Middle School (Private)	student	-	$17	$893	**$910**
525	High School (Private)	student	-	$15	$943	**$958**
540/550	Community College/University (7,500 or fewer students) (Private)	student	-	$19	$1,974	**$1,993**
	Community College/University (more than 7,500 students) (Private)	student	-	$15	$1,478	**$1,493**
565	Day Care Center	1,000 sf	-	$81	$10,108	**$10,189**
560	Place of Worship	1,000 sf	-	$134	$3,922	**$4,056**
	MEDICAL:					
610	Hospital	1,000 sf	-	$256	$9,126	**$9,382**
620	Nursing Home	1,000 sf	-	$467	$2,508	**$2,975**
640	Animal Hospital/Veterinary Clinic	1,000 sf	-	$263	$5,095	**$5,358**
	OFFICE:					
710	General Office	1,000 sf	-	$130	$6,101	**$6,231**
720	Medical Office 10,000 sq ft or less	1,000 sf	-	$192	$19,390	**$19,582**
	Medical Office greater than 10,000 sq ft	1,000 sf	-	$267	$26,947	**$27,214**
	RETAIL:					
822	Retail/Shopping Center less than 40,000 sflga	1,000 sfgla	-	$381	$6,016	**$6,397**
821	Retail/Shopping Center 40,000 to 150,000 sfgla	1,000 sfgla	-	$513	$11,460	**$11,973**
820	Retail/Shopping Center greater than 150,000 sfgla	1,000 sfgla	-	$358	$11,713	**$12,071**
931	Restaurant	1,000 sf	-	$1,094	$33,289	**$34,383**
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	-	$1,812	$87,730	**$89,542**
944	Gas Station w/Convenience Store <2,000 sq ft	fuel pos.	-	$256	$11,907	**$12,163**
945	Gas Station w/Convenience Store 2,000 sq ft or more	fuel pos.	-	$316	$14,358	**$14,674**
947	Self-Service Car Wash	wash stall	-	$153	$9,195	**$9,348**
948	Automated Car Wash	1,000 sf	-	$513	$59,963	**$60,476**
	INDUSTRIAL:					
110	General Industrial	1,000 sf	-	$52	$2,801	**$2,853**
150	Warehouse	1,000 sf	-	$17	$1,233	**$1,250**
151	Mini-Warehouse	1,000 sf	-	$6	$723	**$729**

Note: Table excludes wastewater facilities impact fees

1) Source: Table II-8
2) Source: Table III-7
3) Source: Appendix G, Table G-1
4) Source: Sum of calculated impact fees (Items 1 through 3)

I. Introduction

Located in central Tennessee, approximately 25 miles south of Nashville, the Town of Thompson's Station has a population of approximately 10,000 residents. The Town has experienced significant growth in recent years with its population doubling since 2015. Based on information provided by the Town, continued growth is projected through 2040, with estimated average annual growth rates ranging from 3.5 percent to 8.0 percent.

Given this on-going growth, the Town implemented impact fees for transportation, parks and recreation, and wastewater facilities. The technical study establishing the current adopted fees was last updated in 2019. To reflect current conditions, the Town is interested in updating the technical studies for the transportation and parks and recreation facilities and developing a new impact fee for general government buildings.

This report serves as the technical study to support the calculation of the impact fees for parks and recreation, government buildings and transportation. All data and support materials used in this analysis are incorporated by reference as set forth in this document.

The figures calculated in this study represent the technically defensible level of impact fees that the Town could charge; however, the Town may choose to discount the fees as a policy decision.

Legal Overview

In 1987, the state legislature authorized Williamson County, City of Brentwood, City of Fairview and City of Franklin to collect impact fees/adequate facilities taxes. In 1999, revisions to the Tennessee code enabled municipalities incorporated under general law mayor-aldermanic charter (TN Code § 6-2-201 (2024)) and general law modified city manager-council charters (TN Code § 6-33-101 (2024)) to assess general taxes and fees. While impact fees are not specifically mentioned, the code is interpreted to enable the general law municipalities, such as the Town of Thompson's Station, with the authority to assess impact fees.

Based on case law related to impact fees, impact fees must comply with the "dual rational nexus" test, which requires that they:

- Be supported by a study demonstrating that the fees are proportionate in amount to the need created by new development paying the fee; and

- Be spent in a manner that directs a proportionate benefit to new development, typically accomplished through a list of capacity-adding projects included in the Capital Improvement Plan, or another planning document/Master Plan.

The following paragraphs provide a summary of generally applicable legal standards.

Impact Fee Definition

- An impact fee is a one-time capital charge levied against new development.
- An impact fee is designed to cover the portion of the capital costs of infrastructure capacity consumed by new development.
- The principal purpose of an impact fee is to assist in funding the implementation of projects identified in the Capital Improvement Plan or another planning document/Master Plan, which are necessary to serve new development for related infrastructure.

Impact Fee vs. Tax

- An impact fee is generally regarded as a regulatory function established based upon the specific benefit to the user related to a given infrastructure type and is not established for the primary purpose of generating revenue for the general benefit of the community, as are taxes.
- Impact fee expenditures must convey a proportional benefit to the fee payer. This can be accomplished through a list of capacity-adding projects included in the Capital Improvement Plan, or another planning document/Master Plan.
- An impact fee must be tied to a proportional need for new infrastructure capacity created by new development.

Methodology

This study uses a consumption-based impact fee methodology, which is also the Town's current adopted methodology. A consumption-based impact fee charges new development based upon the burden placed on services from each land use (demand). The demand component is measured in terms of population per unit in the case of parks and recreation facilities and government buildings. In the case of the transportation impact fee, it is measured in terms of travel.

A consumption-based impact fee charges new growth the proportionate share of the cost of providing additional infrastructure available for use by new growth. Unlike a "needs-based" approach, the consumption-based approach ensures that the impact fee is set at a proportionate rate that generates revenues sufficient to accommodate capital needs due to new growth and does not generate revenues at a level to correct existing deficiencies or to increase current levels of service. Under this methodology, the Town does not need to go through the process of estimating the portion of each capacity expansion project that may be related to existing deficiencies. In addition, per case law related to impact fees, a credit is subtracted from the total cost to account for the value of future contributions of new development from non-impact fee revenue sources toward similar capacity expansion projects. In other words, the "revenue credit" ensures that the new development is not charged twice for the same service capacity. This credit does not include revenues generated by the existing population.

II. Parks and Recreation

This section addresses the analysis used in developing the parks and recreation facilities impact fee. Several elements addressed in the section include:

- Park Land and Recreation Facilities Inventory
- Service Area and Demand Component
- Level of Service
- Cost Component
- Credit Component
- Net Impact Cost
- Calculated Parks and Recreation Impact Fee Schedule
- Parks and Recreation Impact Fee Schedule Comparison

These elements are summarized throughout this section.

Park Land and Recreation Facilities Inventory

According to information provided by the Town of Thompson's Station, the Town's park land inventory utilized for impact fee purposes includes 233 acres. Town greenways are excluded from the park land and recreation facilities inventory as they are considered part of the transportation network. **Table II-1** presents a summary of the inventory included in the parks and recreation facilities impact fee. The detailed parks and recreation facilities inventory table is included in Appendix C.

Table II-1

Parks and Recreation Inventory Summary

Description	Unit	Figure
Park Acre	acre	233.00
Dog Park: Small	park	1
Dog Park: Large	park	1
Exercise Course	course	1
Playing Field	field	1
Playground	playground	1
Pavilion	pavilion	3
Sensory Garden	garden	1
Stage	stage	1
Standalone Restroom	square foot	2,200
Trail	mile	8.40

1) Source: Town of Thompson's Station. Appendix C, Table C-1 provides further details.

Service Area and Demand Component

The Town of Thompson's Station provides parks and recreation facilities and services to all town residents. As such, the service area for the parks and recreation facilities included in the impact fee calculations is the entire town, which also represents the appropriate benefit district.

Appendix A, Table A-1, provides the estimated population for 2026 and the projected population through 2040. Parks and recreational facilities impact fees are charged only to residential land uses. As such, the population per housing unit is used to measure demand from each residential category, which is presented in Appendix A.

Level of Service

Table II-2 presents the calculation of the current level of service. As shown, the current achieved LOS in Thompson's Station is 23.23 acres of park land per 1,000 residents.

Table II-2

Current Achieved Level of Service

Description	Acres[(1)]	2026 Population[(2)]	Achieved LOS[(3)]
Parks and Recreation			
Park Land	233.00	10,031	**23.23**

1) Source: Town of Thompson's Station
2) Source: Appendix A, Table A-1
3) Acres (Item 1) divided by 2026 population (Item 5) multiplied by 1,000

Cost Component

The capital cost associated with parks and recreation facilities consists of two components: the cost of purchasing and developing land and the cost of recreational facilities located at each park. The following paragraphs address park land and recreational facility value estimates.

Land Cost

Park land value is estimated based on vacant land sales of similar size parcels over the past six years, value of similar size vacant parcels based on information obtained from the Williamson County Property Assessor and discussions with the Town. This analysis resulted in an estimated average land value of $36,000 per acre. This information is presented in **Table II-3**. Appendix B provides further details regarding the estimation of the land value.

The cost of land for parks and recreation facilities includes more than just the purchase of the land. Landscaping, site improvement, irrigation, utilities and paving are also considered. The estimated cost for landscaping, site preparation, and irrigation is estimated at $10,000 per acre. Additional details on this cost estimate are provided in Appendix B.

This land value is converted to land value per resident using the current LOS and results in $1,069 per resident.

Table II-3

Land Cost per Resident

Variable	Figure
Parks and Recreation	
Land Purchase Cost per Acre[1]	$36,000
Site Preparation Cost per Acre[2]	$10,000
Total Land Cost per Acre[3]	**$46,000**
Achieved LOS[4]	23.23
Total Land Cost per Resident[5]	**$1,068.58**

1) Source: Appendix B
2) Source: Appendix B
3) Sum of land purchase cost per acre (Item 1) and the landscaping, site preparation, and irrigation cost per acre (Item 2)
4) Source: Table II-2
5) Total land cost per acre (Item 3) multiplied by LOS used in the study (Item 4), divided by 1,000

Recreational Facility Value

To estimate current recreational facility value, data from multiple sources was reviewed, including insured values of the facilities, information from other jurisdictions, and input from the Town.

In addition to the construction cost of recreational facilities, the architectural, engineering and inspection (AE&I) costs associated with developing this infrastructure are also included. The AE&I cost is estimated at 10 percent of the construction cost based on discussions with the Town. As shown in **Table II-4**, the total recreational facility value is $3.12 million, which equates to $311 per resident .

Table II-4

Recreational Facility Value

Facility Type	Unit	Units[1]	Unit Value[2]	Total Value[3]
Dog Park: Small	park	1	$95,000	$95,000
Dog Park: Large	park	1	$190,000	$190,000
Exercise Course	course	1	$50,000	$50,000
Playing Field	field	1	$350,000	$350,000
Playground	playground	1	$90,000	$90,000
Pavilion	pavilion	3	$150,000	$450,000
Sensory Garden	garden	1	$15,000	$15,000
Stage	stage	1	$40,000	$40,000
Standalone Restroom	square foot	2,200	$250	$550,000
Trail	mile	8.40	$120,000	$1,008,000
Recreational Facility Value[4]				**$2,838,000**
Architecture, Engineering, and Inspection @ 10% [5]				$283,800
Total Recreational Facility Value[6]				**$3,121,800**
2026 Population[7]				10,031
Total Recreational Facility Value per Resident[8]				**$311.22**

1) Source: Town of Thompson's Station
2) Source: Cost estimates based on a review of Town of Thompson's Station's insurance reports, information from other jurisdictions, and discussions with the Town
3) Units (Item 1) multiplied by unit value (Item 2)
4) Sum of recreational facility value
5) Recreational facility value (Item 4) multiplied by 10 percent based on information provided by the Town of Thompson's Station.
6) Sum of recreational facility value (Item 4) and architecture, engineering, and inspection costs (Item 5)
7) Source: Appendix A, Table A-1
8) Total recreational facility value (Item 6) divided by 2026 population (Item 7)

Total Impact Cost per Resident

Table II-5 presents total parks and recreation facility value per resident. As presented, the parks and recreation facilities impact costs are estimated to be $1,380 per resident, which represents the level of investment existing population has made into the parks and recreation facilities infrastructure.

Table II-5

Total Impact Cost per Resident

Variable	Cost per Resident	Percent of Total[4]
Per Resident		
Land Cost per Resident[1]	$1,068.58	77%
Recreational Facility Cost per Resident[2]	$311.22	23%
Total Impact Cost per Resident[3]	**$1,379.80**	**100%**

1) Source: Table II-3
2) Source: Table II-4
3) Sum of land cost per resident (Item 1) and recreational facility cost per resident (Item 2)
4) Distribution of total impact cost per resident

Credit Component

To avoid overcharging new development for the capital cost of providing parks and recreation services, a review of the capital funding program for the parks and recreation program was completed. The purpose of this review is to estimate any future revenues generated by new development, other than impact fees, which will be used to fund the expansion of capital facilities and land related to the Town of Thompson's Station's parks and recreation program. The credit component does not include any capital renovation, maintenance, or operations expenses, as these types of expenditures do not add capacity and should not be considered for impact fee credit.

Capital Expansion "Cash" Credit

To calculate capital expansion credit per resident, funding sources used over a ten-year period are reviewed. It is important to note that expenditures related to greenway projects are excluded from the credit component as greenways are considered part of the transportation network. Between FY 2021 and FY 2030, the Town allocated an average annual non-impact fee funding of $167,200 towards town parks and recreational facility expansion projects. The annual capital expansion expenditures were divided by the average annual residents for the same period to calculate the average annual capital expansion credit per resident. As presented in **Table II-6**, the result is approximately $17 per resident per year.

Table II-6

Capital Expansion "Cash" Credit

Project Description[1]	FY 2021 to FY 2025	FY 2026 to FY 2030	Total
Grants			
Sarah Benson Park - Playground	$650,000	-	$650,000
Subtotal - Grants			**$650,000**
General Fund			
Sarah Benson Park Master Plan	-	$750,000	$750,000
Additional Parking Area	$2,329	-	$2,329
Park Benches	$11,567	-	$11,567
Parks Master Plan	$131,980	-	$131,980
Preservation Park Parking Lot	-	$75,000	$75,000
Preservation Park Parking Lot Addition	$12,600	-	$12,600
Preservation Park Signage	$14,000	-	$14,000
Professional Services	$24,472	-	$24,472
Subtotal - General Fund			**$1,021,948**
Total Capital Expansion "Cash" Expenditures			**$1,671,948**
Average Annual Capital Expansion "Cash" Expenditures[2]			$167,195
Average Annual Population[3]			9,886
Annual Capital Expansion "Cash" Expenditures per Resident[4]			**$16.91**

1) Source: Town of Thompson's Station
2) Average annual capital expenditures over the 10-year period
3) Source: Appendix A, Table A-1
4) Average annual capital expansion "cash" expenditures (Item 2) divided by the average annual population (Item 3)

Net Impact Cost

The net impact cost per resident is the difference between the cost and credit components. **Table II-7** summarizes the calculation of the net impact cost for the parks and recreational facilities impact fee. As presented, the net impact cost amounts to approximately $1,141 per resident.

Table II-7

Net Impact Cost per Resident

Variable	Figure
Total Impact Cost	
Total Impact Cost per Resident[1]	**$1,379.80**
Total Revenue Credit	
Annual Capital Expansion "Cash" Credit per Resident[2]	$16.91
- Capitalization Rate	5.0%
- Capitalization Period (years)	25
Capital Expansion "Cash" Credit per Resident[3]	**$238.33**
Net Impact Cost	
Net Impact Cost per Resident[4]	**$1,141.47**

1) Source: Table II-5
2) Source: Table II-6
3) Present value of annual capital expansion "cash" credit per resident (Item 2) over a 25-year period with a capitalization rate of 5%. The capitalization rate estimate is provided by Town of Thompson's Station.
4) Total impact cost per resident (Item 1) less the capital expansion "cash" credit per resident (Item 3)

Calculated Parks and Recreation Facilities Impact Fee Schedule

Table II-8 presents the calculated parks and recreation facilities impact fee schedule, based on the net impact cost per resident previously presented in Table II-7.

Table II-8

Calculated Parks and Recreation Impact Fee Schedule

ITE LUC	Land Use	Impact Unit	Residents per Unit[1]	Net Impact Cost per Resident[2]	Calculated Impact Fee[3]	Current Adopted Impact Fee[4]	Percent Change[5]
	RESIDENTIAL:						
210	Single Family (Detached)	du	2.90	$1,141.47	**$3,310**	$564	487%
215	Single Family (Attached)	du	2.30	$1,141.47	**$2,625**	$378	594%
220/221/222	Multi-Family	du	1.44	$1,141.47	**$1,644**	$378	335%
240	Mobile Home	du	1.96	$1,141.47	**$2,237**	$564	297%
251	Senior Adult Housing (Single Family)	du	1.72	$1,141.47	**$1,963**	$564	248%
252	Senior Adult Housing (Multi-Family)	du	0.86	$1,141.47	**$982**	$378	160%

1) Source: Appendix A, Table A-2
2) Source: Table II-7
3) Residents per unit (Item 1) multiplied by net impact cost per resident (Item 2)
4) Source: Town of Thompson's Station Ordinance No. 2023-006
5) Percent change from current adopted impact fee (Item 4) to calculated impact fee (Item 3)

Parks and Recreation Facilities Impact Fee Schedule Comparison

As part of the work effort in updating The Town of Thompson's Station's parks and recreation impact fee schedule, the Town's calculated impact fee schedules were compared to the adopted fee schedules of select municipalities. **Table II-9** presents this comparison.

Table II-9

Parks and Recreation Facilities Impact Fee Schedule Comparison

Land Use	Unit[2]	Town of Thompson's Station		City of Franklin[5]	City of Murfreesboro[6]	City of Springfield[7]	Town of Smyrna[8]
		Calculated[3]	Current Adopted[5]				
Date of Last Update		**2025**	**2019**	2020	2023	2022	2023
Adoption Percentage[1]		**N/A**	**100%**	100%	N/A	50%	100%
RESIDENTIAL:							
Single Family (2,000 sf)	du	**$3,310**	**$564**	$4,304	$1,772	$396	$1,406
Multi-Family (1,300 sf)	du	**$1,644**	**$378**	$4,304	$2,857	$298	$1,070
Mobile Home (1,300 sf)	du	**$2,237**	**$564**	$4,304	$1,152	$396	$1,468

1) Represents the portion of the maximum calculated fee for each respective jurisdiction that is actually charged. Fee may have been lowered/increased through annual indexing or policy discounts.
2) du = dwelling unit
3) Source: Table II-8
4) Source: Town of Thompson's Station Ordinance No. 2023-006
5) Source: City of Franklin Ordinance 2020-04
6) Source: City of Murfreesboro Ordinance 23-O-21
7) Source: City of Springfield Ordinance 22-10. Park system development fee only includes park improvements.
8) Source: Town of Smyrna Impact Fee Schedule

III. Government Buildings

This section discusses the analysis used in developing the government buildings impact fee. Several elements addressed in this section include:

- Facility Inventory
- Service Area and Demand Component
- Level of Service
- Cost Component
- Credit Component
- Net Impact Cost
- Calculated Government Buildings Impact Fee Schedule
- Government Buildings Impact Fee Schedule Comparison

These elements are summarized throughout this section.

Facility Inventory

The government buildings inventory includes facilities that are used primarily for the provision of essential town services, and do not include any of the buildings included in the calculation of other impact fees. According to information provided by the Town, the Town of Thompson's Station has 26,500 square feet of building space and 4 acres of land. This includes the square footage of primary and support buildings.

As shown in **Table III-1**, the total value of government buildings is estimated at $6.2 million; of which, $5.8 million is associated with the buildings and the remaining $400,000 is with land. The building value is estimated at $300 per square foot for primary buildings and $100 per square foot for support buildings based primarily on recent purchases, insurance values, and discussions with the Town.

Land values are estimated through a review of vacant land sales over the past six years throughout the Town of similarly sized parcels and value of vacant parcels, based on information obtained from the Williamson County Property Assessor. Land value for government buildings is estimated at $100,000 per acre. Appendix B provides additional information.

Table III-1
Government Buildings Facilities Inventory

Description	Building Type	Address	Square Feet[1]	Acres[2]	Building Value[3]	Land Value[4]	Total Building and Land Value[5]
New Town Hall	Primary	1110 Fountainview Blvd	8,038	0.86	$2,411,400	$86,000	$2,497,400
Community Development Office	Primary	1551 Thompson's Station Rd W	805	0.02	$241,500	$2,000	$243,500
Community Center	Primary	1555 Thompson's Station Rd W	3,630	0.08	$1,089,000	$8,000	$1,097,000
Old Granary	Support	1557 Thompson's Station Rd W	1,500	0.03	$150,000	$3,000	$153,000
Old Town Hall	Primary	1550 Thompson's Station Rd W	1,516	0.03	$454,800	$3,000	$457,800
Garage	Support	4625 Thompson's Ridge Rd	3,600	3.00	$360,000	$300,000	$660,000
Preservation Park Office	Primary	1600 Thompson's Station Rd W	1,878	0.04	$563,400	$4,000	$567,400
Preservation Park Barn	Support		4,950	0.11	$495,000	$11,000	$506,000
Preservation Park Bathroom	Support		608	0.01	$60,800	$1,000	$61,800
Total			**26,525**	**4.18**	**$5,825,900**	**$418,000**	**$6,243,900**
Building Value per Square Foot[6]					**$220**		
Land Value per Acre[7]						**$100,000**	

1) Source: Town of Thompson's Station
2) Source: Town of Thompson's Station
3) Square feet (Item 1) multiplied by building value per square foot ($300 per square foot for primary buildings and $100 per square foot on support buildings)
4) Acres (Item 2) multiplied by the estimated land value per acre (Item 7)
5) Sum of building and land value (Items 3 and 4)
6) Total building value (Item 3) divided by total square feet (Item 1)
7) Source: Appendix B

In addition to the buildings and land inventory, the Town of Thompson's Station also has vehicles necessary to perform general government services. **Table III-2** summarizes the vehicle and equipment inventory. As shown, the total vehicle inventory amounts to approximately $477,000.

Table III-2
Government Buildings Vehicle Inventory

Description	Unit Count[1]	Unit Value[2]	Total Value[3]
Ford Escape	1	$22,100	$22,100
Ford F150 Crew Cab 4x4	1	$44,500	$44,500
Ford F150 Pickup	1	$28,400	$28,400
Ford F250 Dual Cab	1	$33,000	$33,000
Ford F350 Crew Cab w/Flatbed	1	$48,300	$48,300
Ford F550 Dump Truck	3	$76,900	$230,700
Ford F550 with Crane	1	$70,000	$70,000
Total Value			**$477,000**

1) Source: Town of Thompson's Station
2) Source: Town of Thompson's Station
3) Unit count (Item 1) multiplied by unit value (Item 2)

Service Area and Demand Component

The service area for government buildings is town-wide, which also represents the appropriate benefit district. In this technical study, the current 2026 permanent and functional population estimates are used. Because simply using permanent population does not fully address all of the benefactors of government buildings services, the "functional" weekly 24-hour population approach is used to establish a common unit of demand across different land uses. Functional population accounts for residents, visitors, and workers traveling in and out of the Town throughout the day and calculates the presence of population at the different land uses during the day. Appendix A provides further detail on the population analysis conducted.

Level of Service

Table III-3 provides the current achieved LOS for government buildings in terms of square feet per resident. The LOS is provided both in terms of permanent population and functional population. In terms of functional residents, the Town's achieved LOS is 3.38 square feet per functional resident.

Table III-3
Current Achieved Level of Service (2026)

Variable	Year 2026	
	Permanent Population	Functional Population
Population[(1)]	10,031	7,857
Government Buildings Square Feet[(2)]	26,525	26,525
Achieved LOS (Square Feet per Resident)[(3)]	**2.64**	**3.38**

1) Source: Appendix A, Tables A-1 and A-7
2) Source: Town of Thompson's Station
3) Government buildings square feet (Item 2) divided by population (Item 1)

Cost Component

The cost component of the study evaluates the cost of capital items, including buildings, land, and vehicles. **Table III-4** provides a summary of all capital costs, which amounts to approximately $6.7 million.

Table III-4 also presents the cost per functional resident for the impact fee analysis. This cost is calculated by multiplying the capital asset value per square foot by the current LOS of 3.38 square

feet per functional resident. As shown, these calculations result in $856 per functional resident for government buildings capital assets, which represents the investment made into government buildings by the existing population.

Table III-4

Total Impact Cost per Functional Resident

Variable	Figure	Percent of Total[9]
Total Building Value[1]	$5,825,900	87%
Total Land Value[2]	$418,000	6%
Total Vehicle Value[3]	$477,000	7%
Total Capital Asset Value[4]	**$6,720,900**	**100%**
Total Building Square Feet[5]	26,525	
Total Capital Asset Value per Square Foot[6]	**$253.38**	
Achieved LOS (Square Feet per Functional Resident)[7]	3.38	
Total Impact Cost per Functional Resident[8]	**$856.42**	

1) Source: Table III-1
2) Source: Table III-1
3) Source: Table III-2
4) Sum of building value (Item 1), land value (Item 2), and vehicle value (Item 3)
5) Source: Table III-1
6) Total capital asset value (Item 4) divided by total building square feet (Item 5)
7) Source: Table III-3
8) Total capital asset value per square foot (Item 6) multiplied by the achieved LOS (Item 7)
9) Distribution of total capital asset value

Credit Component

To avoid overcharging new development, a review of capital funding allocation for government buildings is completed. The purpose of this review is to determine any potential revenues generated by future development that are likely to be used for capital expansion projects. The credit component does not include any capital renovation, maintenance, or operational expenses, as these types of expenditures do not add capacity and should not be considered for impact fee credit.

Capital Expansion "Cash" Credit

The review of the capital expansion expenditures for FY 2021 to FY 2025 was completed based on information provided by the Town of Thompson's Station. **Table III-5** summarizes the capital expansion expenditures over this five-year period. The annual funding allocation for government buildings capital expansion projects were divided by the average annual functional population

during the same time period. As shown, the total annual capital expansion "cash" credit amounts to approximately $47 per functional resident.

Table III-5
Capital Expansion "Cash" Credit

Description[1]	FY 2021 to FY 2025
General Fund	
New Town Hall Purchase	$1,600,000
Total Capital Expansion "Cash" Expenditures	**$1,600,000**
Average Annual Capital Expansion "Cash" Expenditures[2]	$320,000
Average Annual Functional Population[3]	6,804
Annual Capital Expansion "Cash" Expenditures per Functional Resident[4]	**$47.03**

1) Source: Town of Thompson's Station
2) Average annual capital expenditures over the 5-year period
3) Source: Appendix A, Table A-7
4) Average annual capital expansion "cash" expenditures (Item 2) divided by the average annual functional population (Item 3)

Net Impact Cost

The net government buildings impact cost per functional resident is the difference between the cost component and the credit component. **Table III-6** summarizes the calculation of the net government buildings impact cost per functional resident. As presented, the net impact cost amounts to $194 per functional resident.

Table III-6

Net Impact Cost per Functional Resident

Variable	Figure
Total Impact Cost	
Total Impact Cost per Functional Resident[(1)]	$856.42
Total Revenue Credit	
Capital Expansion "Cash Credit" Credit per Functional Resident[(2)]	$47.03
- Capitalization Rate	5.0%
- Capitalization Period (years)	25
Capital Expansion "Cash" Credit per Functional Resident[(3)]	**$662.84**
Net Impact Cost	
Net Impact Cost per Functional Resident[(4)]	**$193.58**

1) Source: Table III-4
2) Source: Table III-5
3) Present value of annual capital expansion "cash" credit per functional resident (Item 2) over a 25-year period with a capitalization rate of 5%. The capitalization rate estimate is provided by Town of Thompson's Station.
4) Total impact cost per resident (Item 1) less the capital expansion "cash" credit per functional resident (Item 3)

Calculated Government Buildings Impact Fee Schedule

Table III-7 presents the calculated government buildings impact fee schedule for the Town of Thompson's Station for both residential and non-residential land uses, based on the net impact cost per functional resident previously presented in Table III-6.

Table III-7

Calculated Government Buildings Impact Fee Schedule

ITE LUC	Land Use	Impact Unit	Functional Residents per Unit[1]	Calculated Impact Fee [2]
	RESIDENTIAL:			
210	Single Family (Detached)	du	1.89	**$366**
215	Single Family (Attached)	du	1.50	**$290**
220/221/222	Multi-Family	du	0.94	**$182**
240	Mobile Home	du	1.27	**$246**
251	Senior Adult Housing (Single Family)	du	1.12	**$217**
252	Senior Adult Housing (Multi-Family)	du	0.56	**$108**
	TRANSIENT, ASSISTED, GROUP:			
253	Congregate Care Facility	du	1.18	**$228**
254	Assisted Living	bed	0.80	**$155**
310/320	Hotel/Motel	room	1.08	**$209**
620	Nursing Home	1,000 sf	2.41	**$467**
	RECREATION:			
430	Golf Course	acre	0.10	**$19**
492	Health/Fitness Club	1,000 sf	1.87	**$362**
495	Recreational Community Center	1,000 sf	1.81	**$350**
	INSTITUTIONS:			
520	Elementary School (Private)	student	0.10	**$19**
522	Middle School (Private)	student	0.09	**$17**
525	High School (Private)	student	0.08	**$15**
540/550	Community College/University (7,500 or fewer students) (Private)	student	0.10	**$19**
	Community College/University (more than 7,500 students) (Private)	student	0.08	**$15**
560	Place of Worship	1,000 sf	0.42	**$81**
565	Day Care Center	1,000 sf	0.69	**$134**
	MEDICAL:			
610	Hospital	1,000 sf	1.32	**$256**
640	Animal Hospital/Veterinary Clinic	1,000 sf	1.36	**$263**
	OFFICE:			
710	General Office	1,000 sf	0.67	**$130**
720	Medical Office 10,000 sq ft or less	1,000 sf	0.99	**$192**
	Medical Office greater than 10,000 sq ft	1,000 sf	1.38	**$267**
	RETAIL:			
822	Retail/Shopping Center less than 40,000 sflga	1,000 sfgla	1.97	**$381**
821	Retail/Shopping Center 40,000 to 150,000 sfgla	1,000 sfgla	2.65	**$513**
820	Retail/Shopping Center greater than 150,000 sfgla	1,000 sfgla	1.85	**$358**
	SERVICES:			
931	Restaurant	1,000 sf	5.65	**$1,094**
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	9.36	**$1,812**
944	Gas Station w/Convenience Store <2,000 sq ft	fuel pos.	1.32	**$256**
945	Gas Station w/Convenience Store 2,000 sq ft or more	fuel pos.	1.63	**$316**

Table III-7 (Continued)

Calculated Government Buildings Impact Fee Schedule

ITE LUC	Land Use	Impact Unit	Functional Residents per Unit[1]	Calculated Impact Fee [2]
	SERVICES:			
947	Self-Service Car Wash	wash stall	0.79	**$153**
948	Automated Car Wash	1,000 sf	2.65	**$513**
	INDUSTRIAL:			
110	General Industrial	1,000 sf	0.27	**$52**
150	Warehouse	1,000 sf	0.09	**$17**
151	Mini-Warehouse	1,000 sf	0.03	**$6**

1) Source: Appendix A, Table A-8 for residential land uses and Table A-9 for non-residential land uses
2) Functional residents per unit (Item 1) multiplied by the net impact cost per functional resident shown in Table III-6

Government Buildings Impact Fee Schedule Comparison

As part of the work effort in developing the Town of Thompson's Station's government buildings impact fee program, a comparison of the Town's calculated government buildings impact fee schedule to the fee schedules of select Tennessee jurisdictions was completed. However, of the 20 jurisdictions researched, only the City of Springfield charges a government buildings impact fee. **Table III-8** presents this comparison.

Table III-8

Government Buildings Impact Fee Schedule Comparison

Land Use	Unit[2]	Thompson's Station Calculated Impact Fee[3]	City of Springfield[4]
Date of Last Update		**2025**	2022
Adoption Percentage[1]		**N/A**	50%
Residential:			
Single Family (Detached)	du	**$366**	$599
Non-Residential:			
Light Industrial	1,000 sf	**$52**	$279
Office	1,000 sf	**$130**	$784
Retail (125,000 sq ft)	1,000 sf	**$513**	$512

1) Represents the portion of the maximum calculated fee for each respective jurisdiction that is actually charged. Fee may have been lowered/increased through annual indexing or policy discounts.
2) du = dwelling unit
3) Source: Table III-7
4) Source: City of Springfield, Community Development & Planning Department, Planning & Zoning. Fee shown for retail is the commercial fee.

IV. Multi-Modal Transportation

This section of the report updates the Town of Thompson's Station transportation impact fee and converts it from a roadway-based fee to a multi-modal fee. The analysis used to develop the Town's multi-modal transportation impact fee schedule includes the following subsections:

- Demand Component
- Cost Component
- Credit Component
- Calculated Multi-Modal Transportation Impact Fee
- Multi-Modal Transportation Impact Fee Comparison

As mentioned previously, the methodology used for the impact fee study follows a consumption-based approach. In the case of multi-modal transportation impact fees, new development is charged based upon the proportion of person-miles of travel (PMT) that each unit of new development is expected to consume of the transportation network.

Under this methodology, the fees assess a proportionate share cost for the entire transportation network in the town, including classified Town, County and State roadways, with the exception of local/neighborhood roads and interstate highways. Generally, neighborhood roads are the obligation of the developers and are part of the site/subdivision approvals. Interstate highways are funded with earmarked federal and statewide funds and planned for at the state level with minimal local input and funding.

Included in this section is the necessary support material used in the calculation of the transportation impact fee. The general equation used to compute the multi-modal transportation impact fee for a given land use is:

[Demand x Cost] – Credit = Fee

The "demand" for travel placed on a transportation system is expressed in units of Person-Miles of Travel (PMT) (daily vehicle-trip generation rate x the trip length (in miles) x the percent new trips [of total trips] x the person-trip factor) for each land use contained in the impact fee schedule. Trip generation represents the average daily rates to provide a stable measure of new development's impact.

The "cost" of building new capacity typically is expressed in units of dollars per person-mile of transportation capacity.

The "credit" is an estimate of future non-impact fee revenues generated by new development that are allocated to provide transportation capacity expansion. The impact fee is considered to be an "up front" payment for a portion of the cost of a lane-mile of capacity that is directly related to the amount of capacity consumed by each unit of land use contained in the impact fee schedule, that is not paid for by future tax revenues generated by the new development. These credits are required under the supporting case law for the calculation of impact fees where a new development activity must be reasonably assured that they are not paying, or being charged, twice for the same level of service.

The service area for transportation is town-wide, which also represents the appropriate benefit district.

Demand Component

Travel Demand

Travel demand is the amount of transportation systems consumed by a unit of new land development activity. Demand is calculated using the following variables and is measured in terms of the person-miles of new travel (PMT) that a unit of development consumes on the existing transportation system:

- Number of daily trips generated (Trip Generation Rate = TGR)
- Average length of those trips (Trip Length = TL)
- Proportion of travel that is new travel, rather than travel that is already on the transportation system and is captured by new development (Percent New Trips = PNT)
- Interstate adjustment factor
- Person-trip factor (converts vehicle-miles of travel to person-miles of travel)

As part of this update, the trip characteristics variables were primarily obtained from two sources:

- The Institute of Transportation Engineers' (ITE) *Trip Generation Handbook* (12th Edition), which is primarily used for trip generation rates.
- Benesch's trip characteristics survey database (TCS database), which includes surveys conducted at individual sites and is used to measure trip length, percent new trips, and

the trip generation rate for several land uses. Although this database includes studies primarily conducted in Florida, trip length measurements conducted in Thompson's Station suggested that these measures are comparable.

Conversion of Vehicle-Trips to Person-Trips

In the case of multi-modal transportation impact fees, it is necessary to estimate travel in units of person-miles. Vehicle-trips were converted to person-trips by applying a vehicle-trip to person-trip conversion factor of 1.36. This value was used in the Nashville 2017 Activity-Based Model (prepared by the Greater Nashville Regional Council) for passenger vehicles. Given that a large portion of travel occurs via automobile, this approach is found to be reasonable.

Interstate Adjustment Factor

This variable was used to recognize that interstate highway improvements are funded by the State (specifically, the Tennessee Department of Transportation) using earmarked State and Federal funds. Typically, impact fees are not used to pay for these improvements and the portion of travel occurring on the interstate system is subtracted from the total travel for each use.

To calculate the interstate adjustment factor, the loaded highway network[1] file was generated for the Nashville 2017 Activity-Based Model. Interstate facilities were identified in the model roadway network for base and future year scenarios.

Currently, two interstate facilities pass through Thomspon's Station, which include I-840, I-65, and ramps serving these roads. Planned facilities in the 2045 model network were included for the future analysis. The limited access vehicle-miles of travel (Limited Access VMT) for trips on roadways within Thompson's Station was calculated for these facilities. Next, the total VMT was calculated for all travel within Thompson's Station for all roads, including interstate facilities.

The interstate adjustment factor of **32.1 percent** was determined by dividing the total limited access VMT by the total Thompson's Station VMT. The total VMT within the town reduced by this factor is representative of only the roadways that are eligible to be funded with multi-modal impact fee revenues. Appendix D, Table D-1 provides further detail on this calculation.

[1] The "loaded highway network" refers to the final travel demand model roadway network with traffic volumes assigned (or loaded) to each model roadway link. Model base year = 2017, future year = 2045.

Cost Component

Cost information from the Town of Thompson's Station was reviewed to develop a unit cost for all phases involved in the construction of one lane-mile of roadway capacity. Appendix E provides the data and supporting information utilized in this analysis.

Town/County & State Roadway Cost

The estimated cost for town/county and state roads capacity expansion improvements was based on the cost estimates presented in the Town's 2023 Major Thoroughfare Plan (Appendix E, Table E-1). First, the 30 percent contingency included in the plan estimates was removed to provide a conservative estimate. Next, the improvements were indexed to current dollars, which resulted in a range of $3.1 million per lane mile to $6.2 million per lane mile with a weighted average cost of approximately $4.0 million per lane mile. Based on this review and discussions with the Town, a total roadway cost (including design, right-of-way, construction, construction engineering/inspection) estimate of approximately **$4.0 million per lane mile** was used in the multi-modal fee calculation, as shown in **Table IV-1**.

Table IV-1
Estimated Cost per Lane Mile for Town/County & State Roads

Source	Lane Miles Added	Total Cost (Indexed)	Total Cost per Lane Mile
Town/County Roads	31.90	$122,130,000	$3,829,000
State Roads	14.00	$63,676,000	$4,548,000
Total/Weighted Average	**45.90**	**$185,806,000**	**$4,048,000**

Source: All Aboard: Thompson's Station Comprehensive Plan; Major Thoroughfare Plan
Note: All figures rounded to nearest $000. See Appendix E, Table E-1 for further details

Person-Miles of Capacity per Lane Mile (Roadways)

An additional component of the multi-modal impact fee equation is the capacity added per lane-mile of roadway constructed. The vehicle-miles of capacity (VMC) is an estimate of capacity added per lane mile for town/county and state roadway improvements in the 2050 Metropolitan Transportation Plan. As shown in **Table IV-2**, each lane mile will add approximately 6,700 VMC. This figure was then converted to person-miles of capacity (PMC) using the person-trip factor (1.36 persons per vehicle) previously discussed, resulting in a weighted average PMC of approximately 9,100 per lane mile.

Table IV-2

Weighted Average Person-Miles of Capacity per Lane Mile

Source	Lane Miles Added[1]	VMC Added[1]	VMC Added per Lane Mile[2]	Person-Trip Factor[3]	PMC Added per Lane Mile[4]
Town/County Roads	31.90	182,560	5,720	1.36	7,780
State Roads	14.00	125,380	8,960	1.36	12,190
Total	45.90	307,940			
Weighted Average Cost per VMC/PMC Added[4]			**6,710**	**1.36**	**9,130**

1) Source: Appendix E, Table E-1
2) Vehicle-miles of capacity added divided by lane miles added
3) Source: Nashville 2017 Activity-Based Model by the Greater Nashville Regional Council (GNRC)
4) VMC added per lane mile (Item 2) multiplied by the vehicle-trip to person-trip factor (Item 3)

Cost per Person-Mile of Capacity (Roadways)

The transportation cost per unit of development is assessed based on the cost per person-mile of capacity. As shown in Tables IV-1 and IV-2, the cost and capacity for roadways in the Town of Thompson's Station have been calculated based on typical roadway improvements planned to be constructed in the future. As shown in **Table IV-3**, the cost for travel within the town is approximately $443 per PMC.

This cost per PMC figure is used in the multi-modal impact fee calculation to determine the total cost per unit of development based on person-miles of travel consumed. For each person-mile of travel that is added to the roadway system, approximately $443 of transportation capacity is consumed.

Table IV-3

Weighted Average Cost per Person-Mile of Capacity Added (Roadways)

Source	Cost per Lane Mile[1]	Average PMC Added per Lane Mile[2]	Cost per PMC[3]
Town/County Roads	$3,829,000	7,780	$492.16
State Roads	$4,548,000	12,190	$373.09
Weighted Average	$4,048,000	9,130	
Weighted Average Cost per PMC Added[4]			**$443.37**

1) Source: Table IV-1
2) Source: Table IV-2
3) Cost per lane mile (Item 1) divided by the average PMC added per lane mile (Item 2)

Bicycle and Pedestrian Facility Costs

Bicycle and pedestrian facilities provide for relatively small portion of the total vehicle-miles of travel due to the difference in the average distance traveled by a car trip versus pedestrian/bicycle trips. Because of their relatively small role in the urban travel scheme, they do not have a significant effect on evaluating the cost of providing for mobility. However, bicycle and pedestrian facilities are important and provide a source of travel for those who cannot drive or cannot afford to drive, and they are a standard part of the urban streets and sometimes included in rural roadways. Their costs are included in the standard roadway cross-sections for which costs are estimated for safety and mobility reasons. Thus, the costs of these facilities on major roads are included in the multi-modal fee. The multi-modal fee provides funding for only those bike and pedestrian facilities associated with roadways classified as collectors and above (excluding local/neighborhood roads) and allows for facilities to be added to existing classified roadways or included in the construction of a new classified roadway or lane addition improvement.

Transit Capital Cost per Person-Mile of Travel

Currently, the Town of Thompson's Station does not have a local transit system and therefore has no planned transit capital improvements. For purposes of the multi-modal transportation impact fee calculation, the weighted average cost per person-mile is typically representative of the cost per person-mile for all modes of transportation since the largest portion of these costs is the roadway cost. In other recent impact fee studies for communities that do have transit systems, the cost per person-mile for a multi-modal transportation system with transit service was slightly higher than the cost per person-mile for roadways (ranging from two percent to seven percent).

Credit Component

Capital Improvement Credit

The credit component of the impact fee accounts for the non-impact fee funding sources that are being allocated to transportation capacity expansion projects. This section summarizes the credit calculations that estimate future development's non-impact fee contributions. Additional details are provided in Appendix F.

The present value of the portion of non-impact fee funding generated by new development over a 25-year period that is expected to be expended on capacity expansion projects was credited against the cost of the system consumed by travel associated with new development. In order

to provide a connection to the demand component, which is measured in terms of travel, the non-impact fee dollars were converted to a fuel tax equivalency.

Town Credit

As shown in Table IV-4, the Town of Thompson's Station spends an average of $12.0 million per year on transportation capacity-expansion projects funded with non-impact fee revenues from the General Fund. These expenditures equate to revenues generated from **9.5 pennies** of one-cent per gallon tax on gasoline and diesel fuels. Additional details are provided in Appendix F, Tables F-2 and F-4.

State Credit

State funding for transportation capacity projects in Williamson County was reviewed and a credit for the capacity-expansion portion attributable to state projects was estimated (excluding expenditures on limited access facilities). As presented in **Table IV-4**, this review, which included 10 years of planned expenditures, indicated that the Tennessee Department of Transportation's (TDOT) plans to allocate $24.3 million per year for transportation capacity addition projects, which in turn generates a credit of **19.2 pennies** of equivalent gas tax revenue, annually. Additional details are provided in Appendix F, Tables F-3 and F-5.

In summary, for transportation, the Town of Thompson's Station plans to allocate 9.5 equivalent pennies while the State plans to allocate an average of 19.2 equivalent pennies annually. The portion of capital improvement funding included in the multi-modal impact fee equation for credit calculations recognizes the future capital revenue that is expected to be generated by new development from all non-impact fee revenues. This credit does not include revenues generated by the existing population.

Table IV-4

Equivalent Pennies of Gas Tax Revenue

Credit	Average Annual Expenditures	Value per Penny[3]	Equivalent Pennies per Gallon[4]
Town Revenues[1]	$12,025,000	$1,263,000	$0.095
State Revenues[2]	$24,280,000	$1,263,000	$0.192
Total	**$36,305,000**		**$0.287**

1) Source: Appendix F, Table F-2
2) Source: Appendix F, Table F-3
3) Source: Appendix F, Table F-1
4) Average annual expenditures divided by the value per penny (Item 3) divided by 100

Present Worth Variables

- Facility Life: The roadway facility life used in the impact fee analysis is 25 years, which represents the reasonable life of a roadway.
- Interest Rate: This is the estimated interest rate the Town is likely to pay on future bonds. The discount rate of 5.00 percent was used in the impact fee calculation based on estimate provided by the Town of Thompson's Station.

Fuel Efficiency

The fuel efficiency (i.e., the average miles traveled per gallon of fuel consumed) of the fleet of motor vehicles was estimated using the quantity of gasoline consumed by travel associated with a particular land use.

Appendix F, Table F-6 documents the calculation of fuel efficiency value based on the following equation, where "VMT" is vehicle miles of travel and "MPG" is fuel efficiency in terms of miles per gallon.

$$Fuel\ Efficiency = \sum VMT_{Roadway\ Type} \div \sum \left(\frac{VMT_{Vehicle\ Type}}{MPG_{Vehicle\ Type}} \right)_{Roadway\ Type}$$

The methodology uses non-interstate VMT and average fuel efficiency data for passenger vehicles (i.e., passenger cars and other 2-axle, 4-tire vehicles, such as vans, pickups, and SUVs) and large trucks (i.e., single-unit, 2-axle, 6-tire or more trucks and combination trucks) to calculate the total gallons of fuel used by each of these vehicle types.

The combined total VMT for the vehicle types is then divided by the combined total gallons of fuel consumed to calculate, in effect, a "weighted" fuel efficiency value that reflects the existing fleet mix of traffic on non-interstate roadways. The VMT and average fuel efficiency data were obtained from the most recent Federal Highway Administration's *Highway Statistics 2024*. Based on the calculation completed in Appendix F, Table F-6, the fuel efficiency rate used in the impact fee equation is 20.10 miles per gallon.

Effective Days per Year

An effective 365 days per year of operation was used for all land uses in the proposed fee. However, this will not be the case for all land uses since some uses operate only on weekdays (e.g., office buildings) and/or only seasonally (e.g., schools). The use of 365 days per year,

therefore, provides a conservative estimate, ensuring that non-impact fee contributions are adequately credited against the fee.

Calculated Multi-Modal Transportation Impact Fee

Detailed impact fee calculations for each land use are included in Appendix G, which includes the major land use categories and the impact fees for the individual land uses contained in each of the major categories. For each land use, Appendix G illustrates the following:

- Demand component variables (trip rate, trip length, percent of new trips, and person-trip factor);
- Total impact fee cost;
- Annual capital improvement credit;
- Present value of the capital improvement credit; and
- Net multi-modal transportation impact fee.

For clarification purposes, it may be useful to walk through the calculation of a multi-modal transportation impact fee for one of the land use categories. In the following example, the net multi-modal transportation impact fee is calculated for the single-family (detached) residential land use category (ITE LUC 210) using information from the impact fee schedules included in Appendix G. For each land use category, the following equations are utilized to calculate the net impact fee:

Net Multi-Modal Transportation Impact Fee = Total Impact Cost – Capital Improvement Credit

Where:

Total Multi-Modal Impact Cost = ([Trip Rate × Assessable Trip Length × % New Trips] / 2) × (1 – Interstate Adjustment Factor) × (Person-Trip Factor) × (Cost per Person-Mile of Capacity)

Capital Improvement Credit = Present Value (Annual Capital Improvement Credit), given 5.00% interest rate & a 25-year facility life

Annual Capital Improvement Credit = ([Trip Rate × Total Trip Length × % New Trips] / 2) × (Effective Days per Year × $/Gallon to Capital) / Fuel Efficiency

Each of the inputs has been discussed previously in this document; however, for purposes of this example, brief definitions for each input are provided in the following paragraphs, along with the actual inputs used in the calculation of the fee for the single-family (detached) residential land use category:

- *Trip Rate* = the average daily trip generation rate, in vehicle-trips/day (7.81)
- *Assessable Trip Length* = the average trip length on collector roads or above, for the category, in vehicle-miles (6.62)
- *Total Trip Length* = the assessable trip length plus an adjustment factor of half a mile, which is added to the trip length to account for the fact that gas taxes are collected for travel on all roads including local roads (6.62 + 0.50 = 7.12 miles)
- *% New Trips* = adjustment factor to account for trips that are already on the roadway (100%)
- *Divide by 2* = the total daily miles of travel generated by a particular category (i.e., rate*length*% new trips) is divided by two to prevent the double-counting of travel generated between two land use codes since every trip has an origin and a destination
- *Interstate Adjustment Factor* = discount factor to account for travel demand occurring on interstate highways (32.1%)
- *Person-Trip Factor* = converts vehicle-miles of travel to person-miles of travel (1.36)
- *Cost per Lane* Mile = unit cost to construct one lane mile of roadway, in $/lane-mile ($4,048,000)
- *Average Person-Capacity Added per Lane* Mile = represents the average daily person-traffic on one travel lane at capacity for one lane mile of roadway, in person/lane-mile/day (9,130)
- *Cost per Person-Mile of Capacity* = unit of person-miles of capacity consumed per unit of development. Cost per person-mile divided by average capacity added per lane mile ($443.37)
- *Present Value* = calculation of the present value of a uniform series of cash flows, gas tax payments in this case, given an interest rate, “i,” and a number of periods, “n;” for 5.00% interest and a 25-year facility life, the uniform series present worth factor is 14.0939
- *Effective Days per Year* = 365 days
- *$/Gallon to Capital* = the amount of equivalent gas tax revenue per gallon of fuel that is used for capital improvements, in $/gallon ($0.287)
- *Fuel Efficiency* = average fuel efficiency of vehicles, in vehicle-miles/gallon (20.10)

Multi-Modal Transportation Impact Fee Calculation

Using these inputs, a net impact fee can be calculated for the single-family residential (detached) land use category as follows:

Multi-Modal Transportation Impact Fee:

Total Impact Cost = ([7.81 * 6.62 * 1.0] / 2) * (1 - 0.321) * (1.36) * ($443.37) = **$10,584**

Annual Cap. Improv. Credit = ([7.81 * 7.12 * 1.0] / 2) * 365 * ($0.287 / 20.10) = **$145**

Capital Improvement Credit = $145 * 14.0939 = **$2,044**

Net Impact Fee = $10,584 – $2,044 = **$8,540**

Table IV-5 presents the full calculated multi-modal transportation impact fee rates for all land uses in the Town's schedule and the current impact fee rates. Additional details are provided in Appendix G, Table G-1.

The detailed definition of each land use in the Town's multi-modal impact fee schedule corresponds to the definitions presented in the Institution of Transportation Engineer's Trip Generation Manual, 12th Edition.

Table IV-5

Calculated Multi-Modal Transportation Impact Fee Rates

ITE LUC	Land Use	Unit	Current Rate[1]	Calculated Rate[2]	Percent Change
	RESIDENTIAL:				
210	Single Family (Detached)	du	$4,154	**$8,540**	105.6%
215	Single Family (Attached)	du	$4,154	**$6,473**	55.8%
220	Multi-Family Low-Rise, 1-3 Stories	du	$3,221	**$5,326**	65.4%
221	Multi-Family Mid-Rise, 4-10 Stories	du	$3,221	**$3,827**	18.8%
230	Low-Rise Residential w/Ground-Floor Commercial, 2-3 stories	du	$3,221	**$2,950**	-8.4%
231	Mid-Rise Residential w/Ground Foor Commercial, 4-10 stories	du	$3,221	**$3,420**	6.2%
240	Mobile Home Park	du	$2,200	**$3,152**	43.3%
251	Senior Adult Housing (Single Family)	du	$1,874	**$3,100**	65.4%
252	Senior Adult Housing (Multi-Family)	du	$1,628	**$2,138**	31.3%
253	Congregate Care Facility	du	$1,628	**$935**	-42.6%
254	Assisted Living	bed	n/a	**$1,484**	-
	LODGING:				
310/320	Hotel/Motel	room	$2,578	**$3,301**	28.0%
	RECREATION:				
430	Golf Course	acre	$1,189	**$3,688**	210.2%
492	Health/Fitness Club	1,000 sf	n/a	**$23,901**	-
495	Recreational Community Center	1,000 sf	n/a	**$21,962**	-
	INSTITUTIONS:				
520	Elementary School (Private)	student	n/a	**$977**	-
522	Middle School (Private)	student	n/a	**$893**	-
525	High School (Private)	student	n/a	**$943**	-
540/550	Community College/University (7,500 or fewer students) (Private)	student	n/a	**$1,974**	-
	Community College/University (more than 7,500 students) (Private)	student	n/a	**$1,478**	-
565	Day Care Center	1,000 sf	$4,032	**$10,108**	150.7%
560	Place of Worship	1,000 sf	$2,450	**$3,922**	60.1%
	MEDICAL:				
610	Hospital	1,000 sf	$3,787	**$9,126**	141.0%
620	Nursing Home	1,000 sf	$2,309	**$2,508**	8.6%
640	Animal Hospital/Veterinary Clinic	1,000 sf	$3,787	**$5,095**	34.5%
	OFFICE:				
710	General Office	1,000 sf	$4,900	**$6,101**	24.5%
720	Medical Office 10,000 sq ft or less	1,000 sf	$4,900	**$19,390**	295.7%
	Medical Office greater than 10,000 sq ft	1,000 sf	$4,900	**$26,947**	449.9%
	RETAIL:				
822	Retail/Shopping Center less than 40,000 sflga	1,000 sfgla	$6,476	**$6,016**	-7.1%
821	Retail/Shopping Center 40,000 to 150,000 sfgla	1,000 sfgla	$6,476	**$11,460**	77.0%
820	Retail/Shopping Center greater than 150,000 sfgla	1,000 sfgla	$6,476	**$11,713**	80.9%
931	Restaurant	1,000 sf	$12,422	**$33,289**	168.0%
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	$27,638	**$87,730**	217.4%
944	Gas Station w/Convenience Store <2,000 sq ft	fuel pos.	$10,723	**$11,907**	11.0%
945	Gas Station w/Convenience Store 2,000 sq ft or more	fuel pos.	$10,723	**$14,358**	33.9%
947	Self-Service Car Wash	wash stall	n/a	**$9,195**	-
948	Automated Car Wash	1,000 sf	n/a	**$59,963**	-
	INDUSTRIAL:				
110	General Industrial	1,000 sf	$1,838	**$2,801**	52.4%
150	Warehouse	1,000 sf	$952	**$1,233**	29.5%
151	Mini-Warehouse	1,000 sf	$822	**$723**	-12.0%

1) Source: Town of Thompson's Station. Land uses with "n/a" are either new land uses added to the Town's fee schedule that were being charged using the rate of a similar land use or had a unit of measure change
2) Source: Appendix G, Table G-1

Multi-Modal Transportation Impact Fee Comparison

Table IV-6 presents the calculated multi-modal transportation impact fee rates for the Town of Thompson's Station compared to other transportation impact fee rates adopted by surrounding and other jurisdictions in Tennessee.

Note that differences in fee levels for a given land use can be caused by several factors, including the year of the technical study, adoption percentage, study methodology including variation in costs, credits, and travel demand, land use categories included in the fee schedule, etc.

Table IV-6

Multi-Modal Transportation Impact Fee Comparison

Land Use	Unit[2]	Town of Thompson's Station		City of Brentwood[5]	City of Franklin[6]	City of Spring Hill[7]	City of Murfreesboro[8]	City of Springfield[9]	Town of Smyrna[10]
		Calculated[3]	Current Adopted[4]						
Date of Last Update		**2026**	2019	2019	2024	-	2023	2022	2023
Adoption Percentage[1]		**N/A**	100%	100%	100%	N/A	100%	50%	100%
Residential:									
Single Family (2,000 sf)	du	**$8,540**	$4,154	$6,325	$17,472	$3,662	$1,093	$2,625	$3,481
Multi-Family (Low-Rise)	du	**$5,326**	$3,221	$4,905	$12,292	$2,839	$1,857	$1,100	$1,636
Non-Residential:									
Light Industrial	1,000 sf	**$2,801**	$1,838	$2,795	$8,849	$1,621	$644	$475	$3,397
Office	1,000 sf	**$6,101**	$4,900	$7,460	$15,985	$4,323	$1,264	$1,527	$5,746
Retail (125,000 sq ft)	1,000 sf	**$11,460**	$6,476	$9,870	$23,511	$5,710	$3,321	$3,529	$4,194

1) Represents the portion of the maximum calculated fee for each respective jurisdiction that is actually charged. Fees may have been lowered/raised through indexing or policy discounts
2) Du = dwelling unit
3) Source: Appendix G, Table G-1
4) Source: Town of Thompson's Station
5) Source: City of Brentwood Planning & Codes Department
6) Source: City of Franklin Ordinance; Municode. Fully phased-in rates are shown (effective July 1, 2030)
7) Source: City of Spring Hill Development Services Office
8) Source: City of Murfreesboro Buildings and Codes Department
9) Source: City of Springfield Community Development & Planning Department
10) Source: Town of Smyrna Planning & Zoning Department

Appendix A
Population: Supplemental Information

Appendix A: Population

Parks and recreation and government buildings impact fee programs included in this report require the use of population data in calculating current levels of service, demand and credit calculations. With this in mind, a consistent approach to developing population estimates and projections is an important component of the data compilation process. The population estimates used in this report are based on the "Thompson's Station All Aboard Population Growth Projections" provided by the Town. In addition, functional population is developed to account for workers coming to and leaving the Town of Thompson's Station throughout the day and presence of people at residential and non-residential land uses on a full-time equivalent basis. Functional population is discussed in greater detail later in this Appendix.

Table A-1 presents the permanent population trends for the Town of Thompson's Station. The medium-level projections indicate that the current population of the town is approximately 10,000 and is estimated to increase to 19,900 (increase of 9,900) by 2040. The projections in Table A-1 are based on the medium-level projections of approximately 5 percent per year.

Table A-1

Permanent Population Trends and Projections[1]

Year	Town of Thompson's Station Population
2010	1,946
2011	2,165
2012	2,409
2013	2,681
2014	3,089
2015	3,559
2016	4,101
2017	4,726
2018	5,509
2019	6,421
2020	7,485
2021	7,859
2022	8,252
2023	8,665
2024	9,098
2025	9,553
2026	**10,031**
2027	10,533
2028	11,060
2029	11,613
2030	12,192
2031	12,802
2032	13,442
2033	14,114
2034	14,820
2035	15,561
2036	16,339
2037	17,156
2038	18,014
2039	18,915
2040	19,859

1) Source: Town of Thompson's Station. Projections based on Town's medium-level projections (5% growth)

Apportionment of Demand by Residential Unit Type and Size

Table A-2 presents the population per housing unit (PPH) for the residential categories in terms of permanent population for the Town of Thompson's Station. This analysis includes all housing units, both occupied and vacant.

Table A-2
Population per Housing Unit

Housing Type	Population[1]	Housing Units[2]	Ratio[3]	Population per Housing Unit[4]
Single Family	7,800	2,717		2.87
Single Family (Detached)			101%	2.90
Single Family (Attached)			80%	2.30
Multi-Family	382	265		1.44
Mobile Home	102	52		1.96
Senior Adult Housing (Single Family)[5]	4,680	2,717		1.72
Senior Adult Housing (Multi-Family)[6]	229	265		0.86
Congregate Care Facility[7]	4,909	2,982		1.65

1) Source: 2024 American Community Survey (ACS); 5-Yr. Estimates, Table B25033
2) Source: 2024 American Community Survey (ACS); 5-Yr. Estimates, Table DP04
3) Ratios developed based on data derived from the 2023 5-Year American Community Survey PUMS Data (Williamson County—Thompson's Station town & Fairview city PUMA; Tennessee)
4) Population (Item 1) divided by housing units (Item 2). For single family detached and attached, the residents per housing unit is determined by multiplying the weighted average value (2.87) by the ratio developed from the PUMS data (Item 3)
5) Based on people per household figures for single family homes, adjusted for the residents over 55 years of age based on information obtained from the 2017 National Household Travel Survey, prepared by the US Department of Transportation.
6) Based on people per household figures for multi-family homes, adjusted for the residents over 55 years of age based on information obtained from the 2017 National Household Travel Survey, prepared by the US Department of Transportation.
7) Based on people per household figures for single and multi-family homes, adjusted for the residents over 55 years of age based on information obtained from the 2017 National Household Travel Survey, prepared by the US Department of Transportation.

Functional Population

Functional population, as used in the impact fee analysis, is a generally accepted methodology for several impact fee service areas, including government buildings, and is based on the assumption that demand for certain facilities is generally proportional to the presence of people at a land use, including residents, employees, and visitors. It is not enough to simply add resident population to

the number of employees, since the service demand characteristics can vary considerably by type of industry.

Functional population is the equivalent number of people occupying space within a community on a 24-hour-day, 7-day-a-week basis. A person living and working in the community will have the functional population coefficient of 1.0. A person living in the community but working elsewhere may spend only 16 hours per day in the community on weekdays and 24 hours per day on weekends for a functional population coefficient of 0.76 (128-hour presence divided by 168 hours in one week). A person commuting into the town to work five days per week would have a functional population coefficient of 0.30 (50-hour presence divided by 168 hours in one week). Similarly, a person traveling into the community to shop at stores, perhaps averaging 8 hours per week, would have a functional population coefficient of 0.05.

Functional population thus tries to capture the presence of all people within the community, whether residents, workers, or visitors, to arrive at an estimate of effective population that needs to be served.

This form of adjusting population to help measure real facility needs replaces the population approach of merely weighting residents two-thirds and workers one-third (Nelson and Nicholas 1992)[1]. By estimating the functional and permanent population per unit of land use across all major land uses in a community, an estimate of the demand for certain facilities and services in the present and future years can be calculated. The following paragraphs explain how functional population is calculated for residential and non-residential land uses.

Residential Functional Population

Developing the residential component of functional population is simpler than developing the non-residential component. It is generally estimated that people spend one-half to three-fourths of their time at home and the rest of each 24-hour day away from their place of residence. In developing the residential component of the Town of Thompson's Station's functional population, an analysis of the town's population and employment characteristics was conducted. **Tables A-3** and **A-4** present this analysis for the town. Based on this analysis, people in the town, on average, spend 15.6 hours each day at their place of residence. This corresponds to approximately 65 percent of each 24-hour day at their place of residence and the remaining 35 percent away from home.

[1] Arthur C. Nelson and James C. Nicholas, "Estimating Functional Population for Facility Planning," *Journal of Urban Planning and Development* 118(2): 45-58 (1992)

Table A-3

Population and Employment Characteristics (Town of Thompson's Station)

Variable	Year 2023
Total workers living in Thompson's Station[1]	3,749
Total Population[2]	7,855
Total workers as a percent of population[3]	**47.7%**
School age population (5-17 years)[4]	1,574
School age population as a percent of population[5]	**20.0%**
Population net of workers and school age population[6]	2,532
Other population as a percent of total population[7]	**32.2%**

1) Source: Census OnTheMap 2023
2) Source: 2023 ACS 5-Yr Estimates, Table S0101
3) Total workers (Item 1) divided by total population (Item 2)
4) Source: 2023 ACS 5-Year Estimates, Table S0101
5) Total school age population (Item 4) divided by total population (Item 2)
6) Total population (Item 2) less total workers (Item 1) and school age population (Item 4)
7) Population net of workers and school age population (Item 6) divided by total population (Item 2)

Table A-4

Residential Coefficient for 24-Hour Functional Population

Population Group	Hours at Residence[1]	Percent of Population[2]	Effective Hours[3]
Workers	13	47.7%	6.2
Students	15	20.0%	3.0
Other	20	32.2%	6.4
Total Hours at Residence[4]			15.6
Residential Functional Population Coefficient[5]			**65.0%**

1) Estimated
2) Source: Table A-3
3) Hours at residence (Item 1) multiplied by percent of population (Item 2)
4) Sum of effective hours
5) Sum of effective hours (Item 4) divided by 24

Non-Residential Functional Population

Given the varying characteristics of non-residential land uses, developing the estimates of functional residents for non-residential land uses is more complicated than developing estimated functional residents for residential land uses. Nelson and Nicholas originally introduced a method for estimating functional resident population, which is now widely used in the industry. This method uses trip generation data from the Institute of Transportation Engineers' (ITE) Trip

Generation Manual and Benesch's Trip Characteristics Database, information of passengers per vehicle, workers per vehicle, length of time spent at the land use, and other variables.

Specific calculations include:

- Total one-way trips per employee (ITE trips multiplied by 50 percent to avoid double counting entering and exiting trips as two trips).
- Visitors per impact unit based on occupants per vehicle (trips multiplied by occupants per vehicle less employees).
- Worker hours per week per impact unit (such as nine worker-hours per day multiplied by five days in a work week).
- Visitor hours per week per impact unit (visitors multiplied by number of hours per day times relevant days in a week, such as five for offices and seven for retail shopping).
- Functional population coefficients per employee developed by estimating time spent by employees and visitors at each land use.

Table A-5 shows the functional population coefficients for residential and non-residential uses in the Town of Thompson's Station, which are used to estimate the 2026 functional population for the Town in **Table A-6.**

Table A-5

Functional Population Coefficients

Population/Employment Category	ITE LUC	Employee Hours In-Place[1]	Trips per Employee[2]	One-Way Trips per Employee[3]	Journey-to-Work Occupants per Trip[4]	Daily Occupants per Trip[5]	Visitors per Employee[6]	Visitor Hours per Trip[1]	Days per Week[7]	Functional Population Coefficient[8]
Population									7.00	**0.650**
Natural Resources	N/A	9.00	4.02	2.01	1.32	1.38	0.12	1.00	7.00	**0.380**
Construction	110	9.00	4.02	2.01	1.32	1.38	0.12	1.00	5.00	**0.271**
Manufacturing	140	9.00	2.67	1.34	1.32	1.38	0.08	1.00	5.00	**0.270**
Transportation, Communication, Utilities	110	9.00	4.02	2.01	1.32	1.38	0.12	1.00	5.00	**0.271**
Wholesale Trade	150	9.00	5.05	2.53	1.32	1.38	0.15	1.00	5.00	**0.272**
Retail Trade	820	9.00	56.10	28.05	1.24	1.73	13.74	1.50	7.00	**1.234**
Finance, Insurance, Real Estate	710	9.00	3.44	1.72	1.24	1.73	0.84	1.00	5.00	**0.293**
Services[9]	N/A	9.00	20.34	10.17	1.24	1.73	4.98	1.00	6.00	**0.499**
Government[10]	730	9.00	7.45	3.73	1.24	1.73	1.83	1.00	7.00	**0.451**

(1) Estimated

(2) Trips per employee represents all trips divided by the number of employees and is based on Trip Generation 12th Edition (Institute of Transportation Engineers 2025) as follows:
ITE Code 110 at 4.02 weekday trips per employee, General Urban/Suburban and Rural (Land Uses 000-399), page 59
ITE Code 140 at 2.67 weekday trips per employee,General Urban/Suburban and Rural (Land Uses 000-399), page 93
ITE Code 150 at 5.05 weekday trips per employee, General Urban/Suburban and Rural (Land Uses 000-399), page 119
ITE Code 710 at 3.44 weekday trips per employee, General Urban/Suburban and Rural (Land Uses 400-799), page 683
ITE Code 730 at 7.45 weekday trips per employee, General Urban/Suburban and Rural (Land Uses 400-799), page 751
ITE Code 820 (Volume 5, page 90) based on blended average of trips by retail center size calculated below.
Trips per retail employee from the following table:

Retail Scale	*Trip Rate*	*Sq Ft per Employee[11]*	*Trips per Employee*	*Share*	*Weighted Trips*
Retail (Less than 40k sq. ft.)	54.45	890	48	50.0%	24.00
Retail (40k to 150k sq. ft.)	65.38	1152	75	35.0%	26.25
Retail (greater than 150k sq. ft.	36.39	1070	39	15.0%	5.85
Sum of Weighted Trips/1k sq.ft.					56.10

(3) Trip per employee (Item 2) multiplied by 0.5.

(4) Journey-to-Work Occupants per Trip from 2001 National Household Travel Survey (FHWA 2001) as follows:
1.32 occupants per Construction, Manufacturing, TCU, and Wholesale trip
1.24 occupants per Retail Trade, FIRE, and Services trip

(5) Daily Occupants per Trip from 2001 National Household Travel Survey (FHWA 2001) as follows:
1.38 occupants per Construction, Manufacturing, TCU, and Wholesale trip
1.73 occupants per Retail Trade, FIRE, and Services trip

(6) [Daily occupants per trip (Item 5) multiplied by one-way trips per employee (Item 3)] - [(Journey-to-Work occupants per trip (Item 4) multiplied by one-way trips per employee (Item 3)]

(7) Typical number of days per week that indicated industries provide services and relevant government services are available.

(8) Table A-6 for residential and the equation below to determine the Functional Population Coefficient per Employee for all land-use categories except residential includes the following:

$$\frac{(\text{Days per Week} \times \text{Employee Hours in Place}) + (\text{Visitors per Employee} \times \text{Visitor Hours per Trip} \times \text{Days per Week})}{(24 \text{ Hours per Day} \times 7 \text{ Days per Week})}$$

(9) Trips per employee for the services category is the average trips per employee for the following service related land use categories: quality restaurant, high-turnover restaurant, supermarket, hotel, motel, elementary school, middle school, high school, hospital, medical office, and church. Source for the trips per employee figure from ITE, 12th ed., when available, or else derived from the square feet per employee for the appropriate land use category from the Energy Information Administration from Table B-1 of the Commercial Energy Building Survey, 2003.

(10) Includes Federal Civilian Government, Federal Military Government, and State and Local Government categories.

(11) Square feet per retail employee from the Energy Information Administration from Table B-1 of the Commercial Energy Building Survey, 2018

Table A-6

Functional Population (Town of Thompson's Station)

Population Category	Thompson's Station Baseline Data[1]	Functional Resident Coefficient[2]	Thompson's Station Functional Population[3]
2026 Population	10,031	0.650	6,520
Employment Category			
Natural Resources	393	0.380	149
Construction	107	0.271	29
Manufacturing	20	0.270	5
Transportation, Communication, and Utilities	76	0.271	21
Wholesale Trade	8	0.272	2
Retail Trade	374	1.234	462
Finance, Insurance, and Real Estate	362	0.293	106
Services	999	0.499	499
Government Services	141	0.451	64
Total Employment by Category Population[4]			**1,337**
2026 Total Functional Population[5]			**7,857**

1) Source: Table A-1 for population. Employment data is 2025 Woods & Poole (2026 estimate) for Williamson County adjusted by the industry distribution ratio of the Town of Thompson's Station to Williamson County from Census OnTheMap 2023
2) Source: Table A-5
3) Functional population is calculated by multiplying the baseline data (Item 1) multiplied by the functional resident coefficient (Item 2)
4) The total employment population by category is the sum of the employment figures from the nine employment categories (e.g., natural resources, construction, etc.)
5) The total functional population is the sum of the residential functional population and the employment functional population

Table A-7 presents annual functional population figures from 2010 through 2040, based on the 2026 functional population figure from Table A-6 and the annual population growth rates from the population figures previously presented in Table A-1.

Table A-7

Functional Population (2010-2040)

Year	Thompson's Station[1]
2010	1,524
2011	1,695
2012	1,886
2013	2,099
2014	2,419
2015	2,787
2016	3,212
2017	3,702
2018	4,316
2019	5,030
2020	5,864
2021	6,157
2022	6,465
2023	6,788
2024	7,127
2025	7,483
2026	**7,857**
2027	8,250
2028	8,663
2029	9,096
2030	9,550
2031	10,028
2032	10,529
2033	11,055
2034	11,608
2035	12,188
2036	12,797
2037	13,437
2038	14,109
2039	14,814
2040	15,553

1) Source: Tables A-6 for 2026. Remaining years are based on growth rates of the population; Table A-1

Functional Residents by Specific Land Use Category

When a wide range of land uses impact services, an estimate of that impact is needed for each land use. This section presents full-time equivalent functional population estimates present at residential and non-residential land uses daily.

Residential and Transient Land Uses

As mentioned previously, different functional population levels need to be developed for each land use category to be analyzed. For residential and transient land uses, these estimates are displayed in **Table A-8**. The average number of persons per housing unit was calculated for each residential category. Besides the residential land uses, Table A-8 also includes transient land uses, such as congregate care facilities, hotel/motels, nursing homes, and assisted living facilities. Secondary sources, such the Tennessee Department of Health and the Tennessee Department of Tourist Development, are used to determine the occupancy rate for these land uses.

Non-Residential Land Uses

A similar approach is used to estimate functional residents for non-residential land uses. **Table A-9** presents basic assumptions and calculations, such as trips per unit, trips per employee, employees per impact unit, one-way trips per impact unit, worker hours, occupants per vehicle trip, visitors (patrons, etc.) per impact unit, visitor hours per trip, and days per week for non-residential land uses. The final column in the table shows the estimated functional residents per unit by land use. These coefficients by land use measure the demand component for government building impact fee programs and are used in the calculation of the impact fee per unit for each land use category.

Table A-8

Functional Population for Residential, Transient and Assisted Land Uses

Residential Land Use	Impact Unit	ITE LUC[1]	Residents/ Visitors Per Unit[2]	Occupancy Rate[3]	Adjusted Residents Per Unit[4]	Visitor Hours at Place[5]	Workers Per Unit[6]	Work Day Hours[7]	Days Per Week[8]	Functional Residents per Unit[9]
Residential:										
Single Family (Detached)	du	210	2.90	-	-	-	-	-	-	1.89
Single Family (Attached)	du	215	2.30	-	-	-	-	-	-	1.50
Multi-Family	du	220/221/222	1.44	-	-	-	-	-	-	0.94
Mobile Home	du	240	1.96	-	-	-	-	-	-	1.27
Senior Adult Housing (Single Family)	du	251	1.72	-	-	-	-	-	-	1.12
Senior Adult Housing (Multi-Family)	du	252	0.86	-	-	-	-	-	-	0.56
Transient, Assisted, Group:										
Congregate Care Facility	du	253	1.65	69%	1.14	20	0.62	9	7	1.18
Assisted Living	bed	254	1.00	69%	0.69	20	0.61	9	7	0.80
Hotel/Motel	room	310/320	3.15	63%	1.98	12	0.23	9	7	1.08
Nursing Home	1,000 sf	620	2.75	72%	1.98	20	2.04	9	7	2.41

(1) Land use code from the Institute of Transportation Engineers (ITE) Trip Generation Handbook, 12th Edition

(2) Estimates for the residential land uses and congregate care facility from Table A-2; hotel/motel visitors per room estimated based on average party size (2023-2024) from the Tennessee Vacacation Industry Visitor Reports; assisted living estimate based on 1 person per bed; nursing home estimate is based on 1 person per bed and an average square footage of 363 per bed in a nursing home, based on information provided in the ITE Trip Generation Handbook, 12th Edition.

(3) Estimate for hotel/motel occupancy is the average hotel/motel occupancy rate (2021-2024) from Tennessee Department of Tourist Development ; estimate for congregate care facility and assisted living is the average occupancy rate (2021-2024) for assisted-care living facilities in Williamson County from the Tennessee Department of Health; estimate for nursing home is the average occupancy rate (2021-2024) for nursing homes in Williamson County from the Tennessee Department of Health.

(4) Residents per unit (item 2) multiplied by occupancy rate (Item 3)

(5), (7), (8) Estimated

(6) Adapted from ITE Trip Generation Handbook, 12th Edition

calculated as

$$\frac{[(\text{Adjusted Residents per Unit} \times \text{Hours at Place} \times \text{Days per Week}) + (\text{Workers Per Unit} \times \text{Work Hours Per Day} \times \text{Days per Week})]}{(24 \text{ Hours per Day} \times 7 \text{ Days per Week})}$$

Table A-9
Functional Population for Non-Residential Land Uses

ITE LUC[1]	Land Use	Impact Unit	Trips Per Unit[2]	Trips Per Employee [3]	Employees Per Unit[4]	One-Way Factor @ 50%[5]	Worker Hours[6]	Occupants Per Trip[7]	Visitors[8]	Visitor Hours Per Trip[9]	Days Per Week[10]	Functional Residents per Unit[11]
	RECREATION:											
430	Golf Course	acre	3.74	20.52	0.18	1.87	9	1.64	2.89	0.25	7	**0.10**
492	Health/Fitness Club	1,000 sf	30.02	N/A	1.06	15.01	9	1.64	23.56	1.50	7	**1.87**
495	Recreational Community Center	1,000 sf	28.82	27.25	1.06	14.41	9	1.64	22.57	1.50	7	**1.81**
	INSTITUTIONS:											
520	Elementary School (Private)	student	2.27	22.50	0.10	1.14	9	1.11	1.17	2.00	5	**0.10**
522	Middle School (Private)	student	2.09	23.41	0.09	1.05	9	1.11	1.08	2.00	5	**0.09**
525	High School (Private)	student	1.94	21.95	0.09	0.97	9	1.11	0.99	2.00	5	**0.08**
540/550	Community College/University (7,500 or fewer students)	student	2.00	11.75	0.17	1.00	9	1.11	0.94	2.00	5	**0.10**
	Community College/University (more than 7,500 students)	student	1.50	11.75	0.13	0.75	9	1.11	0.70	2.00	5	**0.08**
560	Place of Worship	1,000 sf	6.78	20.64	0.33	3.39	9	2.16	6.99	1.00	7	**0.42**
565	Day Care Center	1,000 sf	42.89	19.30	2.22	21.45	9	1.11	21.59	0.15	5	**0.69**
	MEDICAL:											
610	Hospital	1,000 sf	10.70	3.57	3.00	5.35	9	1.44	4.70	1.00	7	**1.32**
640	Animal Hospital/Veterinary Clinic	1,000 sf	24.20	12.69	1.91	12.10	9	1.44	15.51	1.00	7	**1.36**
	OFFICE:											
710	General Office	1,000 sf	7.83	3.44	2.28	3.92	9	1.09	1.99	1.00	5	**0.67**
720	Medical Office 10,000 sq ft or less	1,000 sf	23.83	11.78	2.02	11.92	9	1.44	15.14	1.00	5	**0.99**
	Medical Office greater than 10,000 sq ft	1,000 sf	33.13	11.78	2.81	16.57	9	1.44	21.05	1.00	5	**1.38**
	RETAIL:											
822	Retail/Shopping Center less than 40,000 sflga	1,000 sfgla	54.45	17.42	3.13	27.23	9	1.52	38.26	0.50	7	**1.97**
821	Retail/Shopping Center 40,000 to 150,000 sfgla	1,000 sfgla	65.38	17.42	3.75	32.69	9	1.52	45.94	0.65	7	**2.65**
820	Retail/Shopping Center greater than 150,000 sfgla	1,000 sfgla	36.39	17.42	2.09	18.20	9	1.52	25.57	1.00	7	**1.85**
	SERVICES:											
931	Restaurant	1,000 sf	84.91	17.90	4.74	42.46	9	2.30	92.92	1.00	7	**5.65**
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	463.96	44.52	10.42	231.98	9	2.30	523.13	0.25	7	**9.36**
944	Gas Station w/Convenience Store <2,000 sq ft	fuel pos.	172.01	275.78	0.62	86.01	9	1.52	130.12	0.20	7	**1.32**
945	Gas Station w/Convenience Store 2,000 sq ft or more	fuel pos.	207.44	241.21	0.86	103.72	9	1.52	156.79	0.20	7	**1.63**
947	Self-Service Car Wash	wash stall	38.89	N/A	0.50	19.45	9	1.52	29.06	0.50	7	**0.79**
948	Automated Car Wash	1,000 sf	253.51	N/A	1.75	126.76	9	1.52	190.93	0.25	7	**2.65**

Table A-9
Functional Population for Non-Residential Land Uses

ITE LUC[1]	Land Use	Impact Unit	Trips Per Unit[2]	Trips Per Employee [3]	Employees Per Unit[4]	One-Way Factor @ 50%[5]	Worker Hours[6]	Occupants Per Trip[7]	Visitors[8]	Visitor Hours Per Trip[9]	Days Per Week[10]	Functional Residents per Unit[11]
	INDUSTRIAL:											
110	General Industrial	1,000 sf	3.60	4.02	0.90	1.80	9	1.08	1.04	1.00	5	**0.27**
150	Warehouse	1,000 sf	1.48	5.05	0.29	0.74	9	1.08	0.51	0.75	5	**0.09**
151	Mini-Warehouse	1,000 sf	1.37	61.90	0.02	0.69	9	1.08	0.73	0.75	7	**0.03**

Sources:
1) Land use code found in the Institute of Transportation Engineers (ITE) Trip Generation Handbook, 12th Edition
2) Land uses and trip generation rates consistent with those included in Appendix G-1
3) Trips per employee from ITE Trip Generation Handbook, 12th Edition, when available
4) Trips per unit (Item 2) divided by trips per person (usually employee). When trips per person are not available, the employees per unit is estimated
5) Trips per unit (Item 2) multiplied by 50 percent
6) Estimated
7) Source: 2022 National Household Travel Survey (FHWA 2022)
8) [(One-way Trips/Unit X Occupants/Trip) - Employees]
9) Estimated
10) Estimated
11) [(Workers X Hours/Day X Days/Week) + (Visitors X Hours/Visit X Days/Week)]/(24 Hours x 7 Days)

Appendix B
Building and Land Values for Parks and Government Buildings: Supplemental Information

Appendix B: Building and Land Values for Parks and Government Buildings

This Appendix provides a summary of building and land value estimates for parks and recreation and government buildings.

Building Values

To estimate building and recreational facility value, the following information was reviewed:

- Recent construction and cost estimates for future facilities by the Town of Thompson's Station, as applicable;
- Insurance values of existing facilities;
- Information from other jurisdictions; and
- Discussions with the Town.

The following paragraphs provide a summary for each service area.

Government Buildings

The government buildings inventory includes the Town Hall, the Community Development Office, the Community Center, and several other Town buildings. As part of the cost estimates the following was considered.

- The Town purchased the new Town Hall in 2024 at a cost of approximately $200 per square foot. This amount included the building and land.
- The building insurance values averaged $230 per square foot for primary buildings and $80 per square foot for support buildings. The insured value, including buildings and contents, averaged $260 per square foot for primary buildings and $85 per square foot for support buildings. It should be noted that insurance values are considered conservative estimates because the value of the foundation and other more permanent parts of the structure are typically excluded since they would not have to be rebuilt if the structure was damaged.
- Cost estimates for other jurisdictions (2020 to 2025) ranged from $230 per square foot to $500 per square foot.

Given this information and input from the Town, the building cost is estimated at **$300 per square foot** for primary buildings and **$100 per square foot** for support buildings.

Parks and Recreation

Recreational facility values are based on the following and were previously presented in Table II-4:

- Insurance values of existing facilities;
- Information from other jurisdictions; and
- Input from the Town.

Land Values

For each impact fee program area, land values were determined based on the following analysis, as data available:

- Vacant land sales from 2019 to 2025 throughout the Town by size and by land use as recorded by the Williamson County Property Assessor;
- Estimated value of vacant land of similar size properties by land use throughout the Town as proposed by the Williamson County Property Assessor; and
- Input from the Town.

Government Buildings

The following was considered in estimating the land value for government buildings:

- Vacant land sales of similarly sized parcels (1 acre to 5 acres) between 2019 and 2025 in Thompson's Station averaged $328,100 per acre with a median value of $352,800 per acre. Vacant land sales of larger parcels (5 to 10 acres) were lower, averaging $224,600 per acre with a median sale price of $109,900 per acre.
- Similarly, the value of vacant land throughout the Town (1 acre to 5 acres) as reported by the Property Assessor averaged $263,800 per acre with a median value of $236,500 per acre. The vacant land value for larger parcels (5 to 10 acres) was lower averaging $101,800 per acre with a median land value of $69,300 per acre.

Given this information, an average land value of **$100,000 per acre** is determined to be a reasonable, if not conservative, estimate for the government buildings impact fee calculations.

Parks and Recreation

The Town of Thompson's Station parks impact fee inventory includes three parks: Sarah Benson Park, Preservation Park, and Nutro Dog Park and Community Garden. Sarah Benson Park and Nutro Dog Park are developable active parks with higher land value while Preservation Park is used mostly for passive recreation with lower land value. Considering the size and potential value

difference, a weighted average land value was utilized based on the estimated land value of each park type. These calculations are presented in **Table B-1**. The following was considered in estimating the land value for parks and recreational facilities:

- Vacant sales of parcels (5 acres to 30 acres), between 2019 and 2025 in Thompson's Station averaged $467,100 per acre with a median sale price of $105,000 per acre. Vacant residential sales (5 to 30 acres) were lower averaging $153,700 per acre with a median sale price of $100,000 per acre. There were no sales of larger vacant parcels (30 to 300 acres) during this time period.
- Similarly, the value of vacant parcels (5 acres to 30 acres) reported by the Property Assessor averaged $78,900 per acre with a median value of $67,000 per acre for all vacant properties. The land value for larger vacant properties (30 acres to 300 acres) was lower, averaging $60,800 per acre with a median sale price of $48,300 per acre.
- The Town purchased the land for Preservation Park in 2014 for a cost of $12,000 per acre.

The land value for Sarah Benson Park and Nutro Dog Park and Community Garden was estimated at $100,000 per acre based on the vacant land sales analysis for similarly sized parcels (5 acres to 30 acres). The land value for Preservation Park was estimated at $25,000 per acre based on the original purchase price and consideration of property value increases over the past decade. Based on these estimates, the weighted average land value was calculated at **$36,000 per acre** to be used in the impact fee calculations.

Table B-1

Park Land Value Estimate

Park	Acres[1]	Estimated Land Value per Acre[2]	Total Land Value[3]
Sarah Benson Park	27.00	$100,000	$2,700,000
Preservation Park	200.00	$25,000	$5,000,000
Nutro Dog Park and Community Garden	6.00	$100,000	$600,000
Total	**233.00**		**$8,300,000**
Weighted Average[4]		**$35,622**	
Used in Study		**$36,000**	

1) Source: Town of Thompson's Station
2) Estimated based on vacant land sales, historical purchases, and land value increases
3) Acres (Item 1) multiplied by the estimated land value per acre (Item 2)
4) Total land value (Item 3) divided by total acres (Item 1)

In addition to land purchase price, land related costs also includes site preparation cost elements, such as landscaping, irrigation, utilities, etc.

The site preparation cost varies based on the type of park on a per acre basis. Given this, a weighted average cost was calculated as shown in **Table B-1**.

Based on discussions with the Town, the site preparation cost was estimated at $30,000 per acre for Sarah Benson Park and Nutro Dog Park and Community Garden. The site preparation cost for Preservation Park was estimated at $5,000 per acre. This results in a weighted average cost of $8,500 per acre. Given this information, the site preparation cost is estimated at $10,000 per acre.

Table B-2

Site Preparation Cost Estimate

Park	Acres[1]	Estimated Site Preparation Cost per Acre[2]	Total Site Preparation Cost[3]
Sarah Benson Park	27.00	$30,000	$810,000
Preservation Park	200.00	$5,000	$1,000,000
Nutro Dog Park and Community Garden	6.00	$30,000	$180,000
Total	**233.00**		**$1,990,000**
Weighted Average[4]		**$8,541**	
Used in Study		**$10,000**	

1) Source: Town of Thompson's Station
2) Estimated based on discussions with the Town
3) Acres (Item 1) multiplied by the estimated site preparation cost per acre (Item 2)
4) Total site preparation cost (Item 3) divided by total acres (Item 1)

Appendix C
Parks and Recreation Facilities Inventory: Supplemental Information

Appendix C: Parks and Recreation Facilities Inventory

This appendix presents the detailed inventory of Town-owned parks and associated recreational facilities in Thompson's Station.

Table C-1

Parks and Recreation Facilities Inventory[1]

Park	Address	Acres	Dog Park		Exercise Course	Playing Field	Playground	Pavilion	Sensory Garden	Stage	Standalone Restroom	Trail
			Small	Large								
Units			*park*	*park*	*course*	*field*	*playground*	*pavilion*	*garden*	*stage*	*square foot*	*mile*
Sarah Benson Park	1513 Thompson Station Rd W	27.00			1	1	1	2	1	1	1,000	2.00
Preservation Park	1600 Thompson Station Rd W	200.00						1			1,200	4.60
Nutro Dog Park and Community Garden	4441 Columbia Pike	6.00	1	1								1.80
Total		**233.00**	**1**	**1**	**1**	**1**	**1**	**3**	**1**	**1**	**2,200**	**8.40**

1) Source: Town of Thompson's Station

Appendix D
Multi-Modal Transportation:
Demand Component

Appendix D: MMTIF - Demand Component

This appendix presents detailed calculations for the demand component of the multi-modal transportation impact fee study.

Interstate Adjustment Factor

Table D-1 presents the interstate adjustment factor used in the calculation of the multi-modal transportation impact fee. This variable is based on data from the Nashville 2017 Activity-Based Model, specifically the 2045 projected vehicle-miles of travel of all Thompson's Station-generated trips on all in-county roadways. It should be noted that the adjustment factor excludes all external-to-external trips, which represent traffic that goes through Thompson's Station but does not necessarily stop in the town. This traffic is excluded from the analysis since it does not come from development within the town. The interstate adjustment factor is used to reduce the VMT that the multi-modal impact fee charges each land use.

Table D-1

Interstate Adjustment Factor

Roadway	VMT (2045)	% VMT
Town of Thompson'S Station		
Interstate Facilities	210,853	**32.1%**
Other Roads	446,257	67.9%
Total (All Roads)	**657,110**	**100.0%**

Source: Nashville 2017 Activity-Based Model by the Greater Nashville Regional Council (GNRC)

Trip Characteristics Studies Database

The Trip Characteristics Studies (TCS) Database includes approximately 345 studies on 40 different residential and non-residential land uses collected over the last 35 years. Data from these studies include trip generation, trip length, and percent new trips for each land use. This information has been used in the development of impact/multi-modal/mobility fees throughout the U.S.

Benesch estimates trip generation rates for all land uses in an impact fee schedule using data from studies in the TCS Database and the Institute of Transportation Engineers' (ITE) *Trip Generation* reference report (12th edition). In instances, when both ITE *Trip Generation* reference report (12th edition) and TCS trip generation rate (TGR) data are available for a particular land use, the data is typically blended to increase the sample size and provide a more valid estimate of the average number of trips generated per unit of development. If no TCS data is available, only TGR data from the ITE reference report is used in the fee calculation.

The trip generation rate for each respective land use is calculated using machine counts that record daily traffic into and out of the site studied. The traffic count hoses or video cameras are set at entrances to residential subdivisions for the residential land uses and at all access points for non-residential land uses.

The trip length information is obtained through origin-destination surveys that ask respondents where they came from prior to arriving at the site and where they intended to go after leaving the site. The results of these surveys were used to estimate average trip length by land use.

The percent new trip variable is based on assigning each trip collected through the origin-destination survey process a trip type (primary, secondary, diverted, and captured). The percent new trip variable is then calculated as 1 minus the percentage of trips that are captured. Benesch has published an article entitled, *Measuring Travel Characteristics for Transportation Impact Fees*, ITE Journal, April 1991, on the data collection methodology for trip characteristics studies.

Table D-2

Land Use 150: Warehouse

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Polk Co, FL	319.8	2024	-	-	7.34	-	-	-	-	Benesch
Polk Co, FL	969.2	2024	-	-	1.20	-	-	-	-	Benesch
Polk Co, FL	431.4	2024	-	-	1.59	-	-	-	-	Benesch
Polk Co, FL	2285.2	2024	-	-	1.77	-	-	98.0	-	Benesch
Polk Co, FL	839.2	2024	-	-	1.77	-	20.47	97.0	-	Benesch
Polk Co, FL	308.2	2024	-	-	5.78	-	-	-	-	Benesch
Polk Co, FL	297.6	2024	-	-	1.34	-	-	-	-	Benesch
Polk Co, FL	420.0	2024	-	-	2.92	-	-	-	-	Benesch
Polk Co, FL	200.2	2024	-	-	2.48	-	-	-	-	Benesch
Total Size	6,070.8	9					**Average Trip Length:**	**20.47**		
ITE	44,874.0	81					**Weighted Average Trip Length:**	**20.47**		
Blended total	50,944.8									

Weighted Percent New Trip Average: 97.7

Weighted Average Trip Generation Rate: 2.25

ITE Average Trip Generation Rate: 1.38

Blend of FL Studies and ITE Average Trip Generation Rate: 1.48

Table D-3

Land Use 151: Mini-Warehouse

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Orange Co, FL	89.6	2006	-	-	1.23	-	-	-	-	Orange County
Orange Co, FL	84.7	2006	-	-	1.39	-	-	-	-	Orange County
Orange Co, FL	93.0	2006	-	-	1.51	-	-	-	-	Orange County
Orange Co, FL	107.0	2007	-	-	1.45	-	-	-	-	Orange County
Orange Co, FL	77.0	2009	-	-	2.18	-	-	-	-	Tindale Oliver
Orange Co, FL	93.7	2012	-	-	1.15	-	-	-	-	Tindale Oliver
Total Size	545.0	6					**Average Trip Length:**	**n/a**		
ITE	704.0	11					**Weighted Average Trip Length:**	**n/a**		
Blended total	1,249.0									

Weighted Percent New Trip Average: -

Weighted Average Trip Generation Rate: 1.47

ITE Average Trip Generation Rate: 1.29

Blend of FL Studies and ITE Average Trip Generation Rate: 1.37

Table D-4

Land Use 210: Single Family - Detached

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sarasota Co, FL	76	Jun-93	70	70	10.03	-	6.00	-	60.18	Sarasota County
Sarasota Co, FL	79	Jun-93	86	86	9.77	-	4.40	-	42.99	Sarasota County
Sarasota Co, FL	135	Jun-93	75	75	8.05	-	5.90	-	47.50	Sarasota County
Sarasota Co, FL	152	Jun-93	63	63	8.55	-	7.30	-	62.42	Sarasota County
Sarasota Co, FL	193	Jun-93	123	123	6.85	-	4.60	-	31.51	Sarasota County
Sarasota Co, FL	97	Jun-93	33	33	13.20	-	3.00	-	39.60	Sarasota County
Sarasota Co, FL	282	Jun-93	146	146	6.61	-	8.40	-	55.52	Sarasota County
Sarasota Co, FL	393	Jun-93	207	207	7.76	-	5.40	-	41.90	Sarasota County
Hernando Co, FL	76	May-96	148	148	10.01	9a-6p	4.85	-	48.55	Tindale Oliver
Hernando Co, FL	128	May-96	205	205	8.17	9a-6p	6.03	-	49.27	Tindale Oliver
Hernando Co, FL	232	May-96	182	182	7.24	9a-6p	5.04	-	36.49	Tindale Oliver
Hernando Co, FL	301	May-96	264	264	8.93	9a-6p	3.28	-	29.29	Tindale Oliver
Charlotte Co, FL	135	Oct-97	230	-	5.30	9a-5p	7.90	-	41.87	Tindale Oliver
Charlotte Co, FL	142	Oct-97	245	-	5.20	9a-5p	4.10	-	21.32	Tindale Oliver
Charlotte Co, FL	150	Oct-97	160	-	5.00	9a-5p	10.80	-	54.00	Tindale Oliver
Charlotte Co, FL	215	Oct-97	158	-	7.60	9a-5p	4.60	-	34.96	Tindale Oliver
Charlotte Co, FL	257	Oct-97	225	-	7.60	9a-5p	7.40	-	56.24	Tindale Oliver
Charlotte Co, FL	345	Oct-97	161	-	7.00	9a-5p	6.60	-	46.20	Tindale Oliver
Charlotte Co, FL	368	Oct-97	152	-	6.60	9a-5p	5.70	-	37.62	Tindale Oliver
Charlotte Co, FL	383	Oct-97	516	-	8.40	9a-5p	5.00	-	42.00	Tindale Oliver
Charlotte Co, FL	441	Oct-97	195	-	8.20	9a-5p	4.70	-	38.54	Tindale Oliver
Charlotte Co, FL	1,169	Oct-97	348	-	6.10	9a-5p	8.00	-	48.80	Tindale Oliver
Collier Co, FL	90	Dec-99	91	-	12.80	8a-6p	11.40	-	145.92	Tindale Oliver
Collier Co, FL	400	Dec-99	389	-	7.80	8a-6p	6.40	-	49.92	Tindale Oliver
Lake Co, FL	49	Apr-02	170	-	6.70	7a-6p	10.20	-	68.34	Tindale Oliver
Lake Co, FL	52	Apr-02	212	-	10.00	7a-6p	7.60	-	76.00	Tindale Oliver
Lake Co, FL	126	Apr-02	217	-	8.50	7a-6p	8.30	-	70.55	Tindale Oliver
Pasco Co, FL	55	Apr-02	133	-	6.80	8a-6p	8.12	-	55.22	Tindale Oliver
Pasco Co, FL	60	Apr-02	106	-	7.73	8a-6p	8.75	-	67.64	Tindale Oliver
Pasco Co, FL	70	Apr-02	188	-	7.80	8a-6p	6.03	-	47.03	Tindale Oliver
Pasco Co, FL	74	Apr-02	188	-	8.18	8a-6p	5.95	-	48.67	Tindale Oliver
Pasco Co, FL	189	Apr-02	261	-	7.46	8a-6p	8.99	-	67.07	Tindale Oliver
Marion Co, FL	102	Apr-02	167	-	8.02	7a-6p	5.10	-	40.90	Kimley-Horn & Associates
Marion Co, FL	105	Apr-02	169	-	7.23	7a-6p	7.22	-	52.20	Kimley-Horn & Associates
Marion Co, FL	124	Apr-02	170	-	6.04	7a-6p	7.29	-	44.03	Kimley-Horn & Associates
Marion Co, FL	132	Apr-02	171	-	7.87	7a-6p	7.00	-	55.09	Kimley-Horn & Associates
Marion Co, FL	133	Apr-02	209	-	8.04	7a-6p	4.92	-	39.56	Kimley-Horn & Associates
Citrus Co, FL	111	Oct-03	273	-	8.66	7a-6p	7.70	-	66.68	Tindale Oliver
Citrus Co, FL	231	Oct-03	155	-	5.71	7a-6p	4.82	-	27.52	Tindale Oliver
Citrus Co, FL	306	Oct-03	146	-	8.40	7a-6p	3.94	-	33.10	Tindale Oliver
Citrus Co, FL	364	Oct-03	345	-	7.20	7a-6p	9.14	-	65.81	Tindale Oliver
Citrus Co, FL	374	Oct-03	248	-	12.30	7a-6p	6.88	-	84.62	Tindale Oliver
Lake Co, FL	42	Dec-06	122	-	11.26	-	5.56	-	62.61	Tindale Oliver
Lake Co, FL	51	Dec-06	346	-	18.22	-	9.46	-	172.36	Tindale Oliver
Lake Co, FL	59	Dec-06	144	-	12.07	-	10.79	-	130.24	Tindale Oliver
Lake Co, FL	90	Dec-06	194	-	9.12	-	5.78	-	52.71	Tindale Oliver
Lake Co, FL	239	Dec-06	385	-	7.58	-	8.93	-	67.69	Tindale Oliver
Hernando Co, FL	232	Apr-07	516	-	8.02	7a-6p	8.16	-	65.44	Tindale Oliver
Hernando Co, FL	95	Apr-07	256	-	8.08	7a-6p	5.88	-	47.51	Tindale Oliver
Hernando Co, FL	90	Apr-07	338	-	7.13	7a-6p	5.86	-	41.78	Tindale Oliver
Hernando Co, FL	58	Apr-07	153	-	6.16	7a-6p	8.39	-	51.68	Tindale Oliver
Collier Co, FL	74	Mar-08	503	-	12.81	7a-6p	3.05	-	39.07	Tindale Oliver
Collier Co, FL	97	Mar-08	512	-	8.78	7a-6p	11.29	-	99.13	Tindale Oliver
Collier Co, FL	315	Mar-08	1,347	-	6.97	7a-6p	6.55	-	45.65	Tindale Oliver
Collier Co, FL	42	Mar-08	314	-	9.55	7a-6p	10.98	-	104.86	Tindale Oliver
Total Size	10,380	55	13,130				**Average Trip Length:**	**6.83**		
							Weighted Average Trip Length:	**6.62**		

Weighted Average Trip Generation Rate: **7.81**

Table D-5

LUC 215: Single Family Attached Housing

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Hernando Co, FL	31	May-96	31	31	6.12	9a-6p	4.98	-	30.48	Tindale Oliver
Hernando Co, FL	128	May-96	198	198	6.47	9a-6p	5.18	-	33.51	Tindale Oliver
Pasco Co, FL	229	Apr-02	198	198	4.77	9a-6p	12.09	-	57.67	Tindale Oliver
Pasco Co, FL	248	Apr-02	353	353	4.24	9a-6p	3.53	-	14.97	Tindale Oliver
Total Size	636	4	780				**Average Trip Length:**	**6.45**		
ITE	924	11					**Weighted Average Trip Length:**	**7.01**		
Blended total	1,560									

Weighted Average Trip Generation Rate: 4.97

ITE Average Trip Generation Rate: 6.57

Blend of FL Studies and ITE Average Trip Generation Rate: **5.92**

Table D-6

LUC 220/221/222: Multi-Family/Apartment

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sarasota Co, FL	212	Jun-93	42	42	5.78	-	5.20	-	30.06	Sarasota County
Sarasota Co, FL	243	Jun-93	36	36	5.84	-	-	-	-	Sarasota County
Marion Co, FL	214	Apr-02	175	175	6.84	-	4.61	-	31.53	Kimley-Horn & Associates
Marion Co, FL	240	Apr-02	174	174	6.96	-	3.43	-	23.87	Kimley-Horn & Associates
Marion Co, FL	288	Apr-02	175	175	5.66	-	5.55	-	31.41	Kimley-Horn & Associates
Marion Co, FL	480	Apr-02	175	175	5.73	-	6.88	-	39.42	Kimley-Horn & Associates
Marion Co, FL	500	Apr-02	170	170	5.46	-	5.94	-	32.43	Kimley-Horn & Associates
Lake Co, FL	250	Dec-06	135	135	6.71	-	5.33	-	35.76	Tindale Oliver
Lake Co, FL	157	Dec-06	265	265	13.97	-	2.62	-	36.60	Tindale Oliver
Lake Co, FL	169	Dec-06	212	-	8.09	-	6.00	-	48.54	Tindale Oliver
Lake Co, FL	226	Dec-06	301	-	6.74	-	2.17	-	14.63	Tindale Oliver
Hernando Co, FL	312	Apr-07	456	-	4.09	-	5.95	-	24.34	Tindale Oliver
Hernando Co, FL	176	Apr-07	332	-	5.38	-	5.24	-	28.19	Tindale Oliver
Total Size	3,467	13	2,648			**Average Trip Length:**	**4.91**			
						Weighted Average Trip Length:	**5.21**			

Table D-7

Land Use 240: Mobile Home Park

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Marion Co, FL	67	Jul-91	22	22	5.40	48hrs.	2.29	-	12.37	Tindale Oliver
Marion Co, FL	82	Jul-91	58	58	10.80	24hr.	3.72	-	40.18	Tindale Oliver
Marion Co, FL	137	Jul-91	22	22	3.10	24hr.	4.88	-	15.13	Tindale Oliver
Sarasota Co, FL	996	Jun-93	181	181	4.19	-	4.40	-	18.44	Sarasota County
Sarasota Co, FL	235	Jun-93	100	100	3.51	-	5.10	-	17.90	Sarasota County
Marion Co, FL	188	Apr-02	147	-	3.51	24hr.	5.48	-	19.23	Kimley-Horn & Associates
Marion Co, FL	227	Apr-02	173	-	2.76	24hr.	8.80	-	24.29	Kimley-Horn & Associates
Marion Co, FL	297	Apr-02	175	-	4.78	24hr.	4.76	-	22.75	Kimley-Horn & Associates
Hernando Co, FL	1,892	May-96	425	425	4.13	9a-6p	4.13	-	17.06	Tindale Oliver
Total Size	4,121	9	1,303			**Average Trip Length:**	**4.84**			
						Weighted Average Trip Length:	**4.60**			
								Weighted Average Trip Generation Rate:		**4.17**

Table D-8

Land Use 251: Senior Adult Housing - Detached

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Lakeland, FL	67	3/28-4/2/90	26	24	3.50	9am-4pm	2.44	-	8.54	Tindale Oliver
Marion Co, FL	778	Apr-02	175	-	2.96	24hr.	3.49	-	10.33	Kimley-Horn & Associates
Marion Co, FL	877	Apr-02	209	-	2.91	24hr.	5.90	-	17.17	Kimley-Horn & Associates
Marion Co, FL	1,054	Apr-02	173	-	3.65	24hr.	6.00	-	21.90	Kimley-Horn & Associates
Marion Co, FL	3,076	Apr-02	198	-	2.63	24hr.	5.16	-	13.57	Kimley-Horn & Associates
Marion Co, FL	3,625	Apr-02	164	-	2.50	24hr.	5.83	-	14.58	Kimley-Horn & Associates
Total Size	9,477	6	945			**Average Trip Length:**	**4.80**			
ITE	10,166	17				**Weighted Average Trip Length:**	**5.42**			
Blended total	19,643							Weighted Average Trip Generation Rate:		2.75
								ITE Average Trip Generation Rate:		4.16
								Blend of FL Studies and ITE Average Trip Generation Rate:		**3.48**

Table D-9

Land Use 252: Senior Adult Housing - Attached

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sun City Center, FL	208	Oct-91	726	726	2.46	24hr.	-	-	-	Tindale Oliver
Total Size	208	1				**Average Trip Length:**	**-**			
ITE	486	6				**Weighted Average Trip Length:**	**-**			
Blended total	694							Weighted Average Trip Generation Rate:		2.46
								ITE Average Trip Generation Rate:		3.25
								Blend of FL Studies and ITE Average Trip Generation Rate:		**3.01**

Table D-10

Land Use 253: Congregate Care Facility

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pinellas Park, FL	72	Aug-89	25	19	3.50	9am-5pm	2.20	79.0	7.70	Tindale Oliver
Palm Harbor, FL	200	Oct-89	58	40	-	9am-5pm	3.40	69.0	-	Tindale Oliver
Total Size	272	2	83			**Average Trip Length:**	**2.80**			
ITE	330	2				**Weighted Average Trip Length:**	**3.08**			
Blended total	602							Weighted Percent New Trip Average:	71.6	
	402							Weighted Average Trip Generation Rate:		3.50
								ITE Average Trip Generation Rate:		2.43
								Blend of FL Studies and ITE Average Trip Generation Rate:		**2.62**

Table D-11

Land Use 310/320: Hotel/Motel

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pinellas Co, FL	174	Aug-89	134	106	12.50	7-11a/3-7p	6.30	79.0	62.21	Tindale Oliver
Pinellas Co, FL	114	Oct-89	30	14	7.30	12-7p	6.20	47.0	21.27	Tindale Oliver
Orange Co, FL	123	1997	-	-	6.32	-	-	-	-	Orange County
Orange Co, FL	120	1997	-	-	5.27	-	-	-	-	Orange County
Orange Co, FL	146	1997	-	-	7.61	-	-	-	-	Orange County
Orange Co, FL	252	1997	-	-	5.63	-	-	-	-	Orange County
Orange Co, FL	172	1997	-	-	6.36	-	-	-	-	Orange County
Orange Co, FL	170	1997	-	-	6.06	-	-	-	-	Orange County
Orange Co, FL	128	1997	-	-	6.10	-	-	-	-	Orange County
Orange Co, FL	200	1997	-	-	4.56	-	-	-	-	Orange County
Orange Co, FL	112	1998	-	-	2.78	-	-	-	-	Orange County
Orange Co, FL	130	1998	-	-	9.12	-	-	-	-	Orange County
Orange Co, FL	106	1998	-	-	7.34	-	-	-	-	Orange County
Orange Co, FL	98	1998	-	-	7.32	-	-	-	-	Orange County
Orange Co, FL	120	1998	-	-	5.57	-	-	-	-	Orange County
Orange Co, FL	70	1999	-	-	1.85	-	-	-	-	Orange County
Orange Co, FL	123	1999	-	-	4.81	-	-	-	-	Orange County
Orange Co, FL	123	1999	-	-	3.70	-	-	-	-	Orange County
Orange Co, FL	211	2000	-	-	2.23	-	-	-	-	Orange County
Orange Co, FL	144	2000	-	-	7.32	-	-	-	-	Orange County
Orange Co, FL	105	2001	-	-	5.25	-	-	-	-	Orange County
Orange Co, FL	891	2005	-	-	5.69	-	-	-	-	Orange County
Orange Co, FL	1,584	2005	-	-	5.88	-	-	-	-	Orange County
Orange Co, FL	210	2006	-	-	4.88	-	-	-	-	Orange County
Orange Co, FL	1,499	2006	-	-	4.69	-	-	-	-	Orange County
Orange Co, FL	144	-	-	-	4.74	-	-	-	-	Orange County
Orange Co, FL	148	-	-	-	7.61	-	-	-	-	Orange County
Orange Co, FL	160	-	-	-	6.19	-	-	-	-	Orange County
Orange Co, FL	130	-	-	-	4.29	-	-	-	-	Orange County
Orange Co, FL	130	-	-	-	3.40	-	-	-	-	Orange County
Orange Co, FL	144	-	-	-	7.66	-	-	-	-	Orange County
Orange Co, FL	100	-	-	-	7.37	-	-	-	-	Orange County
Orange Co, FL	190	-	-	-	4.71	-	-	-	-	Orange County
Orange Co, FL	1,501	2011	-	-	3.50	-	-	-	-	Tindale Oliver
Orange Co, FL	174	2011	-	-	7.03	-	-	-	-	Tindale Oliver
Orange Co, FL	238	2014	-	-	4.05	-	-	-	-	Tindale Oliver
Pinellas Co, FL	48	Oct-89	46	24	-	10a-2p	2.80	65.0	-	Tindale Oliver (Motel)
Pinellas Co, FL	54	Oct-89	32	22	-	12p-7p	3.80	69.0	-	Tindale Oliver (Motel)
Pinellas Co, FL	120	Oct-89	26	22	-	2p-7p	5.20	84.6	-	Tindale Oliver (Motel)

Total Size (TGR)	10,184.0	3		**Average Trip Length:**	**4.86**	
ITE (LUC 310)	286	2		**Weighted Average Trip Length:**	**5.42**	
ITE (LUC 320)	654	6		Weighted Percent New Trip Average:	70.7	
Blended total	11,124.0			Weighted Percent New Trip Average (Hotel ONLY):	66.3	
Total Size (TL/PNT)	510.0			Average Trip Generation Rate:		5.74
				ITE Average Trip Generation Rate (LUC 310):		5.84
				ITE Average Trip Generation Rate (LUC 320):		3.35
				Blend of FL Studies and ITE Average Trip Generation Rate:		**5.21**

Table D-12

Land Use 492: Health/Fitness Club

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	33	31	-	-	7.90	94.0	-	Kimley-Horn & Associates

Total Size		1	33	**Average Trip Length:**	**n/a**	
ITE	6	1		Percent New Trip Average:	94.0	

Table D-13

Land Use 565: Day Care Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pinellas Co, FL	5.6	Aug-89	94	66	66.99	7a-6p	1.90	70.0	89.10	Tindale Oliver
Pinellas Co, FL	10.0	Sep-89	179	134	66.99	7a-6p	2.10	75.0	105.51	Tindale Oliver
Tampa, FL	-	Mar-86	28	25	-	-	2.60	89.0	-	Kimley-Horn & Associates

Total Size	15.6	3	301	**Average Trip Length:**	**2.20**	
ITE	105.0	21		**Weighted Average Trip Length:**	**2.03**	
Blended total	120.6			Weighted Percent New Trip Average:	73.2	
				Weighted Average Trip Generation Rate:		66.99
				ITE Average Trip Generation Rate:		39.30
				Blend of FL Studies and ITE Average Trip Generation Rate:		**42.89**

Table D-14

Land Use 620: Nursing Home

Location	Size (Beds)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Lakeland, FL	120	Mar-90	74	66	2.86	11a-4p	2.59	89.0	6.59	Tindale Oliver

Total Size	120	1	74	**Average Trip Length:**	**2.59**	
ITE	480	3		**Weighted Average Trip Length:**	**2.59**	
Blended total	600			Weighted Percent New Trip Average:	89.0	

Table D-15

Land Use 640: Animal Hospital/Veterinary Clinic

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
St. Petersburg, FL	4.0	-	-	-	21.50	-	-	-	-	Tindale Oliver
Clearwater, FL	3.0	Sep-89	-	-	44.00	-	1.90	70.0	-	Tindale Oliver
Clearwater, FL	2.0	Aug-89	-	-	-	-	1.90	70.0	-	Tindale Oliver
Total Size	7.0	3	0			**Average Trip Length:**	**1.90**			
ITE	18.0	6				**Weighted Average Trip Length:**	**1.90**			
	25.0					Weighted Percent New Trip Average:		70.0		

Weighted Average Trip Generation Rate:	31.14
ITE Average Trip Generation Rate:	21.50
Blend of FL Studies and ITE Average Trip Generation Rate:	**24.20**

Table D-16

Land Use 710: General Office Building

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sarasota Co, FL	14.3	Jun-93	14	14	46.85	-	11.30	-	529.41	Sarasota County
Gwinnett Co, GA	98.0	Dec-92	-	-	4.30	-	5.40	-	-	Street Smarts
Gwinnett Co, GA	180.0	Dec-92	-	-	3.60	-	5.90	-	-	Street Smarts
Pinellas Co, FL	187.0	Oct-89	431	388	18.49	7a-5p	6.30	90.0	104.84	Tindale Oliver
St. Petersburg, FL	262.8	Sep-89	291	274	-	7a-5p	3.40	94.0	-	Tindale Oliver
Total Size	742.1	5	736			**Average Trip Length:**	**6.46**			
ITE	2,772.0	22				**Weighted Average Trip Length:**	**5.15**			
						Weighted Percent New Trip Average:		92.3		

Table D-17

LUC 720: Small Medical/Dental Office Building: 10,000 sf or Less

Site	Size (1,000 sf)	Tues., Jan 11		Wedn., Jan 12		Thur., Jan 13		TOTAL		AVERAGE		AVERAGE (per 1,000 sf)		
		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	TOTAL
Site 1	2.100	35	35	22	22	13	13	70	70	23.33	23.33	**11.11**	**11.11**	**22.22**
Site 2	3.000	40	40	52	52	53	53	145	145	48.33	48.33	**16.11**	**16.11**	**32.22**
Site 3	2.000	28	28	19	21	24	26	71	75	23.67	25.00	**11.84**	**12.50**	**24.34**
Site 4	1.000	30	30	52	52	57	57	139	139	46.33	46.33	**46.33**	**46.33**	**92.66**
Site 5	3.024	31	32	43	43	24	24	98	99	32.67	33.00	**10.80**	**10.91**	**21.71**
Site 6	1.860	22	24	19	17	11	11	52	52	17.33	17.33	**9.32**	**9.32**	**18.64**
Average												**17.59**	**17.71**	**35.30**
Average (excluding Site 4)												**11.84**	**11.99**	**23.83**

Table D-18

Land Use 720: Medical-Dental Office Building

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	33	26	-	-	6.00	79.0	-	Kimley-Horn & Associates
Palm Harbor, FL	14.6	Oct-89	104	76	33.98	9a-5p	6.30	73.0	156.27	Tindale Oliver
St. Petersburg, FL	-	Nov-89	34	30	57.20	9a-4p	1.20	88.0	-	Tindale Oliver
Hernando Co, FL	58.4	May-96	390	349	28.52	9a-6p	6.47	89.5	165.09	Tindale Oliver
Hernando Co, FL	28.0	May-96	202	189	49.75	9a-6p	6.06	93.8	282.64	Tindale Oliver
Charlotte Co, FL	11.0	Oct-97	-	186	49.50	9a-5p	4.60	92.1	209.67	Tindale Oliver
Charlotte Co, FL	28.0	Oct-97	-	186	31.00	9a-5p	3.60	81.6	91.04	Tindale Oliver
Charlotte Co, FL	30.4	Oct-97	-	324	39.80	9a-5p	3.30	83.5	109.68	Tindale Oliver
Citrus Co, FL	38.9	Oct-03	-	168	32.26	8-6p	6.80	97.1	213.03	Tindale Oliver
Citrus Co, FL	10.0	Nov-03	-	340	40.56	8-630p	6.20	92.4	232.33	Tindale Oliver
Citrus Co, FL	5.3	Dec-03	-	20	29.36	8-5p	5.25	95.2	146.78	Tindale Oliver
Orange Co, FL	50.6	2009	-	-	26.72	-	-	-	-	Orange County
Orange Co, FL	23.5	2010	-	-	16.58	-	-	-	-	Tindale Oliver
Total Size	298.6	13	763			**Average Trip Length:**	**5.07**			
ITE	176.0	16				**Weighted Average Trip Length:**	**5.55**			
Blended total	474.6					Weighted Percent New Trip Average:		88.9		

Average Trip Generation Rate:	32.59
ITE Average Trip Generation Rate:	34.03
Blend of FL Studies and ITE Average Trip Generation Rate:	**33.13**

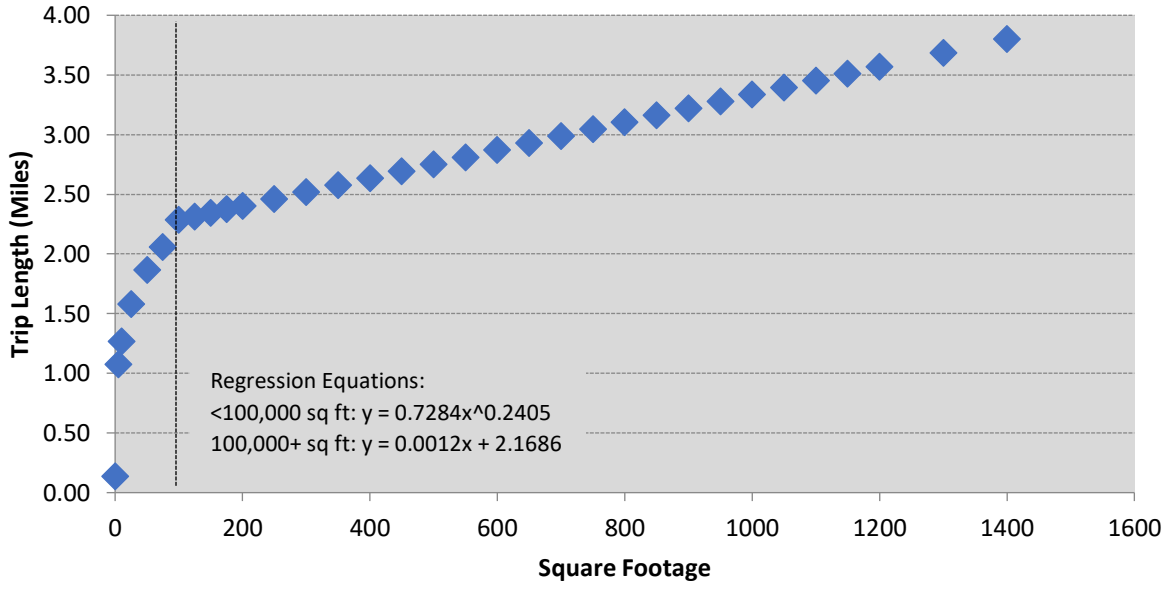
Table D-19

Land Use 820/821/822: Retail/Shopping Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	527	348	-	-	-	66.0	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	170	-	-	-	1.70	-	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	354	269	-	-	-	76.0	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	144	-	-	-	2.50	-	-	Kimley-Horn & Associates
St. Petersburg, FL	1,192.0	Aug-89	384	298	-	11a-7p	3.60	78.0	-	Tindale Oliver
St. Petersburg, FL	132.3	Sep-89	400	368	77.00	10a-7p	1.80	92.0	127.51	Tindale Oliver
Largo, FL	425.0	Aug-89	160	120	26.73	10a-6p	2.30	75.0	46.11	Tindale Oliver
Dunedin, FL	80.5	Sep-89	276	210	81.48	9a-5p	1.40	76.0	86.69	Tindale Oliver
Pinellas Park, FL	696.0	Sep-89	485	388	-	9a-6p	3.20	80.0	-	Tindale Oliver
Seminole, FL	425.0	Oct-89	674	586	-	-	-	87.0	-	Tindale Oliver
Hillsborough Co, FL	134.0	Jul-91	-	-	-	-	1.30	74.0	-	Tindale Oliver
Hillsborough Co, FL	151.0	Jul-91	-	-	-	-	1.30	73.0	-	Tindale Oliver
Collier Co, FL	-	Aug-91	68	64	-	-	3.33	94.1	-	Tindale Oliver
Collier Co, FL	-	Aug-91	208	154	-	-	2.64	74.0	-	Tindale Oliver
Sarasota/Bradenton, FL	109.0	Sep-92	300	185	-	12a-6p	-	61.6	-	King Engineering Associates, Inc.
Ocala, FL	133.4	Sep-92	300	192	-	12a-6p	-	64.0	-	King Engineering Associates, Inc.
Sarasota Co, FL	110.0	Jun-93	58	58	122.14	-	3.20	-	-	Sarasota County
Sarasota Co, FL	146.1	Jun-93	65	65	51.53	-	2.80	-	-	Sarasota County
Sarasota Co, FL	157.5	Jun-93	57	57	79.79	-	3.40	-	-	Sarasota County
Sarasota Co, FL	191.0	Jun-93	62	62	66.79	-	5.90	-	-	Sarasota County
Hernando Co, FL	107.8	May-96	608	331	77.60	9a-6p	4.68	54.5	197.85	Tindale Oliver
Charlotte Co, FL	88.0	Oct-97	-	-	73.50	9a-5p	1.80	57.1	75.56	Tindale Oliver
Charlotte Co, FL	191.9	Oct-97	-	-	72.00	9a-5p	2.40	50.9	87.97	Tindale Oliver
Charlotte Co, FL	51.3	Oct-97	-	-	43.00	9a-5p	2.70	51.8	60.08	Tindale Oliver
Lake Co, FL	67.8	Apr-01	246	177	102.60	-	3.40	71.2	248.37	Tindale Oliver
Lake Co, FL	72.3	Apr-01	444	376	65.30	-	4.50	59.0	173.37	Tindale Oliver
Pasco Co, FL	65.6	Apr-02	222	-	145.64	9a-5p	1.46	46.9	99.62	Tindale Oliver
Pasco Co, FL	75.8	Apr-02	134	-	38.23	9a-5p	2.36	58.2	52.52	Tindale Oliver
Citrus Co, FL	185.0	Oct-03	-	784	55.84	8a-6p	2.40	88.1	118.05	Tindale Oliver
Citrus Co, FL	91.3	Nov-03	-	390	54.50	8a-6p	1.60	88.0	76.77	Tindale Oliver
			30 6,346				**Average Trip Length:**	**2.71**		

Figure D-1

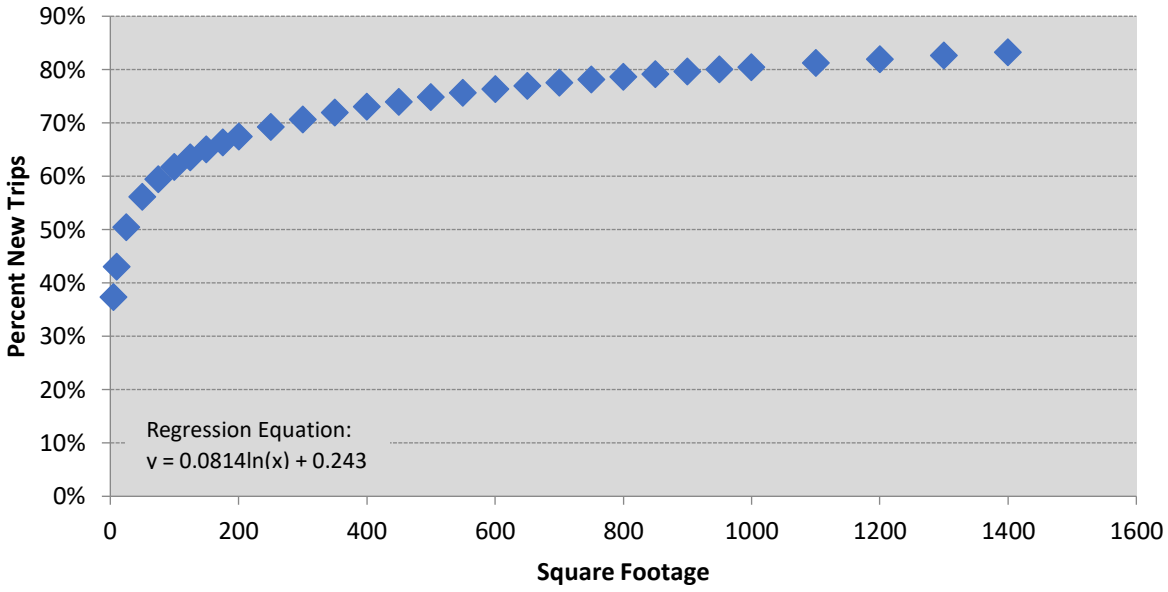
LUC 820: Retail/Shopping Center – TCS Curve Trip Length Regression



Source: Regression analysis based on TCS data for LUC 820

Figure D-2

LUC 820: Retail/Shopping Center – TCS Curve Percent New Trips Regression



Source: Regression analysis based on TCS data for LUC 820

Table D-20

Land Use 931: Restaurant

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	76	62	-	-	2.10	82.0	-	Kimley-Horn & Associates
St. Petersburg, FL	7.5	Oct-89	177	154	-	11a-2p/4-8p	3.50	87.0	-	Tindale Oliver
Clearwater, FL	8.0	Oct-89	60	40	110.63	10a-2p/5-9p	2.80	67.0	207.54	Tindale Oliver
Total Size	15.5	3	313			**Average Trip Length:**	**2.80**			
ITE	35.0	5				**Weighted Average Trip Length:**	**3.14**			
Blended total	50.5							Weighted Percent New Trip Average:	76.7	
	43.0							Weighted Average Trip Generation Rate:		110.63
								ITE Average Trip Generation Rate:		79.03
								Blend of FL Studies and ITE Average Trip Generation Rate:		**84.91**

Table D-21

Land Use 934: Fast Food Restaurant with Drive-Through Window

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	61	-	-	-	2.70	-	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	306	-	-	-	-	65.0	-	Kimley-Horn & Associates
Pinellas Co, FL	2.20	Aug-89	81	48	502.80	11a-2p	1.70	59.0	504.31	Tindale Oliver
Pinellas Co, FL	4.30	Oct-89	456	260	660.40	1 day	2.30	57.0	865.78	Tindale Oliver
Tarpon Springs, FL	-	Oct-89	233	114	-	7a-7p	3.60	49.0	-	Tindale Oliver
Marion Co, FL	1.60	Jun-91	60	32	962.50	48hrs.	0.91	53.3	466.84	Tindale Oliver
Marion Co, FL	4.00	Jun-91	75	46	625.00	48hrs.	1.54	61.3	590.01	Tindale Oliver
Collier Co, FL	-	Aug-91	66	44	-	-	1.91	66.7	-	Tindale Oliver
Collier Co, FL	-	Aug-91	118	40	-	-	1.17	33.9	-	Tindale Oliver
Hernando Co, FL	5.43	May-96	136	82	311.83	9a-6p	1.68	60.2	315.27	Tindale Oliver
Hernando Co, FL	3.13	May-96	168	82	547.34	9a-6p	1.59	48.8	425.04	Tindale Oliver
Orange Co, FL	8.93	1996	-	-	377.00	-	-	-	-	Orange County
Lake Co, FL	2.20	Apr-01	376	252	934.30	-	2.50	74.6	1742.47	Tindale Oliver
Lake Co, FL	3.20	Apr-01	171	182	654.90	-	-	47.8	-	Tindale Oliver
Lake Co, FL	3.80	Apr-01	188	137	353.70	-	3.30	70.8	826.38	Tindale Oliver
Pasco Co, FL	2.66	Apr-02	100	46	283.12	9a-6p	-	46.0	-	Tindale Oliver
Pasco Co, FL	2.96	Apr-02	486	164	515.32	9a-6p	2.72	33.7	472.92	Tindale Oliver
Pasco Co, FL	4.42	Apr-02	168	120	759.24	9a-6p	1.89	71.4	1024.99	Tindale Oliver
Total Size	48.8	18	4,463			**Average Trip Length:**	**2.11**			
ITE	204.0	68				**Weighted Average Trip Length:**	**2.05**			
Blended total	252.8							Weighted Percent New Trip Average:	57.9	
	34.0							Weighted Average Trip Generation Rate:		530.19
								ITE Average Trip Generation Rate:		448.12
								Blend of FL Studies and ITE Average Trip Generation Rate:		**463.96**

Table D-22

Land Use 944: Convenience Store/Gas Station

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Largo, FL	0.6	Nov-89	70	14	-	8am-5pm	1.90	23.0	-	Tindale Oliver
Collier Co, FL	-	Aug-91	168	40	-	-	1.01	23.8	-	Tindale Oliver
Total Size	0.6	2	238			**Average Trip Length:**	**1.46**			
ITE	48					**Weighted Average Trip Length:**	**1.90**			
ITE	5					Weighted Percent New Trip Average:		23.0		

Land Use 945: Convenience Store/Gas Station - Combined

	ITE	48	Conv. Store 2,000 to 3,999 sf:	211.05
	ITE	20	Conv. Store 4,000 to 5,499 sf:	203.49
	ITE	23	Conv. Store 5,500 to 10,000 sf:	203.35
		91	**Blend of ITE Average Trip Generation Rates for Convenience Store/Gas Station 2,000+ sf:**	**207.44**

Table D-23

Land Use 947: Self-Service Car Wash

Location	Size (Bays)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Largo, FL	10	Nov-89	111	84	-	8am-5pm	2.00	76.0	-	Tindale Oliver
Clearwater, FL	-	Nov-89	177	108	-	10am-5pm	1.30	61.0	-	Tindale Oliver
Collier Co, FL	11	Dec-09	304	-	30.24	-	2.50	57.0	-	Tindale Oliver
Collier Co, FL	8	Jan-09	186	-	22.75	-	1.96	72.0	-	Tindale Oliver
Total Size	29	4	778			**Average Trip Length:**	**1.94**			
Total Size (TGR)	19	2				**Weighted Average Trip Length:**	**2.18**			
ITE	28	4				Weighted Percent New Trip Average:		67.7		
Blended total	47									

Weighted Average Trip Generation Rate:	27.09
ITE Average Trip Generation Rate (adjusted):	46.90
Blend of FL Studies and ITE Average Trip Generation Rate:	**38.89**

Appendix E
Multi-Modal Transportation:
Cost Component

Appendix E: MMTIF - Cost Component

This appendix presents detailed calculations for the cost component of the multi-modal transportation impact fee study.

Town/County and State Roadway Costs

As shown in Table E-1, the Town's Major Thoroughfare Plan includes 13 proposed roadway capacity expansion projects, ranging from $2.7 million per lane mile to $5.5 million per lane mile with a weighted average cost of approximately $3.6 million per lane mile[3]. With the project cost estimate dating back to 2022, two cost indices were reviewed to index the costs to current dollars, including:

- Producer Price Index (PPI) for Highway & Street Construction
- National Highway Construction Cost Index (NHCCI)

Indices developed using a blend of the PPI and NHCCI were applied to local project costs presented in Table E-1. The indexed construction costs averaged $4.0 million per lane mile.

Based on a review of the local project costs and input from the Town, a total cost of approximately **$4.0 million per lane mile** was utilized in the multi-modal transportation impact fee calculations.

Roadway Capacity

As shown in **Table E-1**, the average capacity per lane miles was based on the same 13 proposed improvements in the Town's Major Thoroughfare Plan. The listing of projects reflects the mix of improvements that will yield the vehicle-miles of capacity (VMC) that will be built in the Town of Thompson's Station. The resulting weighted average capacity per lane mile of approximately 6,710 was used in the multi-modal transportation impact fee calculation.

[3] The initial cost estimates in the MTP included 30 percent for contingency but this was removed to provide a conservative cost estimate for the multi-modal transportation impact fee calculation purposes.

Table E-1

All Aboard: Thompson's Station Comprehensive Plan; Major Thoroughfare Plan; Proposed Improvements

Project Name	From	To	Project Description	Jurisdiction	Length (Miles)	Lanes Added	Lane Miles Added	Estimated Cost (Excl. Contingency)	Total Cost per Lane Mile	Total Indexed Cost	Indexed Cost per Lane Mile	Existing Capacity	Future Capacity	Added	VMC Added	VMC Added/ Lane Mile
Proposed Plan Improvements																
Columbia Pike	Critz Lane	Town Limit (just N of Main St)	Town Arterial - Widen to 4 Lanes	State	2.00	2	4.00	$17,570,000	$4,392,500	$19,854,000	$4,964,000	19,600	39,900	20,300	40,600	10,150
Columbia Pike North	Tollgate Blvd	West Harpeth Rd	Town Arterial - Widen to 4 Lanes	State	1.20	2	2.40	$11,060,000	$4,608,333	$12,498,000	$5,208,000	19,600	39,900	20,300	24,360	10,150
Lewisburg Pike	840 Interchange	June Lake Blvd Ext.	Country Arterial - Widen to 4 Lanes	State	3.80	2	7.60	$27,720,000	$3,647,368	$31,324,000	$4,122,000	15,200	31,100	15,900	60,420	7,950
Bethesda Connector	Lewisburg Pike	Heron Hill Lane	New Country 2 Lane Collector	Town/County	2.60	2	5.20	$15,260,000	$2,934,615	$17,244,000	$3,316,000	0	10,600	10,600	27,560	5,300
Carl Rd Extension	West Harpeth Rd	Carter's Creek Pike	New Country 2 Lane Collector	Town/County	1.70	2	3.40	$11,410,000	$3,355,882	$12,893,000	$3,792,000	0	10,600	10,600	18,020	5,300
Critz Lane Extension	Columbia Pike	Sedberry Rd	New Town 2 Lane Collector	Town/County	1.50	2	3.00	$11,690,000	$3,896,667	$13,210,000	$4,403,000	0	20,100	20,100	30,150	10,050
Dean Rd Extension	Thompson's Station Rd W	Thompson's Ridge Rd Ext.	New Country 2 Lane Collector	Town/County	0.40	2	0.80	$4,270,000	$5,337,500	$4,825,000	$6,031,000	0	8,700	8,700	3,480	4,350
McLemore Rd Ext.	Columbia Pike N	Sedberry Rd	New Country 2 Lane Collector	Town/County	1.80	2	3.60	$11,690,000	$3,247,222	$13,210,000	$3,669,000	0	10,600	10,600	19,080	5,300
McLemore Rd Ext. 2	Sedberry Road	Carter's Creek Pike	New Country 2 Lane Collector	Town/County	3.35	2	6.70	$18,270,000	$2,726,866	$20,645,000	$3,081,000	0	10,600	10,600	35,510	5,300
Thompsons Ridge Road Ext.	Thompson's Ridge Rd	Dean Rd	New Country 2 Lane Collector	Town/County	1.10	2	2.20	$8,680,000	$3,945,455	$9,808,000	$4,458,000	0	10,600	10,600	11,660	5,300
Thompsons Ridge Rd Ext. Connector	Thompson's Ridge Rd Ext.	Evergreen Rd	New Country 2 Lane Local Road	Town/County	0.60	2	1.20	$6,580,000	$5,483,333	$7,435,000	$6,196,000	0	10,600	10,600	6,360	5,300
West Harpeth to TS Rd Connector	West Harpeth Rd	Thompson's Station Rd W	New Country 2 Lane Collector	Town/County	1.90	2	3.80	$12,180,000	$3,205,263	$13,763,000	$3,622,000	0	10,600	10,600	20,140	5,300
Wilkes Lane Ext.	Wilkes Lane	Lavender Rd	New Country 2 Lane Collector	Town/County	1.00	2	2.00	$8,050,000	$4,025,000	$9,097,000	$4,549,000	0	10,600	10,600	10,600	5,300
TOTAL							45.90	$164,430,000	$3,582,353	$185,806,000	**$4,048,000**			170,100	307,940	**6,710**
TOTAL (State)							14.00	$56,350,000	$4,025,000	$63,676,000	$4,548,000			56,500	125,380	8,960
TOTAL (Town/County)							31.90	$108,080,000	$3,388,088	$122,130,000	$3,829,000			113,600	182,560	5,720

Source: All Aboard: Thompson's Station Comprehensive Plan; Major Thoroughfare Plan; Proposed Improvements

Appendix F
Multi-Modal Transportation:
Credit Component

Appendix F: MMTIF - Credit Component

This appendix presents the detailed calculations for the credit component of the multi-modal transportation impact fee.

Table F-1 shows the estimated revenue generation per penny of motor fuel tax in Tennessee. Using the population ratio of Williamson County to the State, the County's share of fuel tax revenues was calculated.

Table F-1

Estimated Revenue Generation per Penny of Motor Fuel Tax

Item	Amount of Levy per Gallon
Statewide Motor Fuel Tax Revenue_2025-26[(1)]	$935,600,000
Motor Fuel Tax Rate_2025-26[(1)]	27.4
Revenue Generation per Penny	$34,146,000
Williamson County Population Percentage[(2)]	3.7%
Revenue Generation per Penny; County Share[(3)]	**$1,263,000**

1) Source: Tennessee Department of Transportation
2) Source: Bureau of Economic Analysis
3) Revenue generation per penny multiplied by the Williamson County population percentage

Capital Improvement Credit

A revenue credit for the annual expenditures on multi-modal capacity-expansion projects in the Town of Thompson's Station and Williamson County is presented below. The components of the credit are as follows:

- Town capital project funding
- State capital project funding

The annual expenditures from each revenue source are converted to equivalent fuel tax pennies to be able to create a connection between travel by each land use and non-impact fee revenue contributions for all revenue sources.

Town Capital Project Funding

A review of planned capacity expansion improvements in the Town of Thompson's Station identified lane addition, intersection and multi-modal path improvements funded with General Fund revenues. As shown in **Table F-2**, an equivalent credit of 9.5 pennies was calculated for capacity expansion improvements planned to be funded by the Town of Thompson's Station.

Table F-2

Town of Thompson's Station Fuel Tax Equivalent Pennies

Source	Cost of Projects	Number of Years	Annual Average	Revenue from 1 Penny[2]	Equivalent Pennies[3]
Projected CIP Expenditures (FY 2026-2030)[1]	$60,125,000	5	$12,025,000	$1,263,000	**$0.095**

1) Source: Table F-4
2) Source: Table F-1
3) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

State Capital Project Funding

In the calculation of the equivalent pennies of fuel tax from the State, funding on transportation capacity-expansion projects spanning a 10-year period (from FY 2026 to FY 2035) were reviewed. This review yielded two road widening improvements located in Williamson County. The total cost of the multi-modal transportation capacity-expansion projects was estimated at $242.8 million.

As shown in **Table F-3**, the planned state expenditures for capacity-expansion transportation projects results in a total of 19.2 equivalent pennies. The specific projects that were used in the equivalent penny calculations are summarized in Table F-5.

Table F-3

State Fuel Tax Equivalent Pennies

Source	Cost of Projects	Number of Years	Annual Average	Revenue from 1 Penny[2]	Equivalent Pennies[3]
Projected Work Program (FY 2026-2035)[1]	$242,800,000	10	$24,280,000	$1,263,000	**$0.192**

1) Source: Table F-5
2) Source: Table F-1
3) Cost of projects divided by number of years divided by revenue from 1 penny (Item 2) divided by 100

Table F-4

Town of Thompson's Station Capital Improvement Plan, FY 2026-2030

Improvement	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total
Columbia Pike Widening Project	$4,300,000	$10,700,000	$0	$0	$0	**$15,000,000**
Thompson's Station Rd E (West)	$2,000,000	$7,100,000	$5,100,000	$0	$0	**$14,200,000**
Thompson's Station Rd E (Middle)	$0	$4,825,000	$4,825,000	$0	$0	**$9,650,000**
Thompson's Station Rd E (East End)	$0	$0	$6,525,000	$6,525,000	$0	**$13,050,000**
Intersection Updates	$0	$2,250,000	$2,250,000	$0	$0	**$4,500,000**
Trailway Multi-Modal Paths - Construction Ph. 3	$795,000	$0	$0	$0	$0	**$795,000**
Trailway Multi-Modal Paths - Construction Ph. 2	$1,250,000	$1,250,000	$0	$0	$0	**$2,500,000**
Trailway Multi-Modal Paths - Clayton Arnold Walkways	$430,000	$0	$0	$0	$0	**$430,000**
Total	**$8,775,000**	**$26,125,000**	**$18,700,000**	**$6,525,000**	**$0**	**$60,125,000**

Source: Town of Thompson's Station Capital Improvement Plan

Table F-5

Tennessee Department of Transportation 10-Year Plan: Williamson County

Improvement	Region	Constr. Year	FY 2026-2035
Maury/Williamson State Route 6 Widening	Region 3	2033	$142,800,000
State Route 397, Mack C. Hatcher Memorial Pkwy Widening	Region 3	2032	$100,000,000
TOTAL			**$242,800,000**

Source: Tennessee Department of Transportation

Table F-6

Average Motor Vehicle Fuel Efficiency – Excluding Interstate Travel

Travel Vehicle Miles of Travel (VMT) @			
	23.4	**7.5**	
Other Arterial Rural	346,432,000,000	53,342,000,000	399,774,000,000
Other Rural	311,167,000,000	32,101,000,000	343,268,000,000
Other Urban	1,562,510,000,000	100,948,000,000	1,663,458,000,000
Total	***2,220,109,000,000***	***186,391,000,000***	***2,406,500,000,000***

Percent VMT	
@ 23.4 mpg	**@ 7.5 mpg**
87%	13%
91%	9%
94%	6%
92%	**8%**

Fuel Consumed			
	Gallons @ 23.4 mpg	**Gallons @ 7.5 mpg**	
Other Arterial Rural	14,804,786,325	7,112,266,667	21,917,052,992
Other Rural	13,297,735,043	4,280,133,333	17,577,868,376
Other Urban	66,773,931,624	13,459,733,333	80,233,664,957
Total	***94,876,452,992***	***24,852,133,333***	***119,728,586,325***

Total Mileage and Fuel	
2,406,500	**miles (millions)**
119,729	**gallons (millions)**
20.10	**mpg**

Source: Table F-7; U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2024* , Section V, Table VM-1
Annual Vehicle Distance Traveled in Miles and Related Data - 2024 by Highway Category and Vehicle Type
http://www.fhwa.dot.gov/policyinformation/statistics.cfm

Table F-7

Annual Vehicle Distance Travelled in Miles and Related Data – 2024[1]

By Highway Category and Vehicle Type

Updated: February 2026 **TABLE VM-1**

YEAR	ITEM	LIGHT DUTY VEHICLES SHORT WB[2]	MOTOR-CYCLES	BUSES	LIGHT DUTY VEHICLES LONG WB[2]	SINGLE-UNIT TRUCKS[3]	COMBINATION TRUCKS	SUBTOTALS		ALL MOTOR VEHICLES
								ALL LIGHT VEHICLES[2]	SINGLE-UNIT 2-AXLE 6-TIRE OR MORE AND COMBINATION TRUCKS	
	Motor-Vehicle Travel (millions of vehicle-miles):									
2024	Interstate Rural	146,051	1,069	1,502	51,572	12,274	59,367	**197,623**	**71,641**	271,834
2024	Other Arterial Rural	240,923	2,416	2,407	105,509	20,329	33,014	**346,432**	**53,342**	404,598
2024	Other Rural	211,026	2,966	2,179	100,141	19,011	13,090	**311,167**	**32,101**	348,413
2024	All Rural	598,000	6,451	6,088	257,221	51,613	105,471	855,221	157,084	1,024,845
2024	Interstate Urban	396,092	2,279	2,356	110,284	21,600	49,968	**506,376**	**71,568**	582,579
2024	Other Urban	1,228,322	13,510	9,639	334,188	63,867	37,081	**1,562,510**	**100,948**	1,686,607
2024	All Urban	1,624,415	15,789	11,995	444,471	85,467	87,048	2,068,886	172,516	2,269,186
2024	Total Rural and Urban[5]	2,222,415	22,241	18,083	701,693	137,080	192,520	2,924,107	329,600	3,294,031
2024	Number of motor vehicles registered[2]	205,550,881	9,261,249	1,096,335	65,534,861	12,599,614	3,482,896	271,085,742	16,082,510	297,525,836
2024	Average miles traveled per vehicle	10,812	2,401	16,494	10,707	10,880	55,276	10,787	20,494	11,071
2024	Person-miles of travel (millions)[4]	3,412,169	22,806	383,365	1,035,822	137,080	192,520	4,447,991	329,600	5,183,762
2024	Fuel consumed (thousand gallons)	86,861,446	505,870	2,419,327	37,936,823	17,022,466	27,066,130	124,798,269	44,088,596	171,812,062
2024	Average fuel consumption per vehicle (gallons)	423	55	2,207	579	1,351	7,771	460	2,741	577
2024	Average miles traveled per gallon of fuel consumed	25.6	44.0	7.5	18.5	8.1	7.1	**23.4**	**7.5**	19.2

(1) The FHWA estimates national trends by using State reported Highway Performance and Monitoring System (HPMS) data, fuel consumption data (MF-21), vehicle registration data (MV-1), other data such as the R.L. Polk vehicle data, and a host of modeling techniques.

(2) Light Duty Vehicles Short WB - passenger cars, light trucks, vans and sport utility vehicles with a wheelbase (WB) equal to or less than 121 inches. Light Duty Vehicles Long WB - large passenger cars, vans, pickup trucks, and sport/utility vehicles with wheelbases (WB) larger than 121 inches. All Light Duty Vehicles - passenger cars, light trucks, vans and sport utility vehicles regardless of wheelbase.

(3) Single-Unit - single frame trucks that have 2-Axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 lbs.

(4) The vehicle occupancy is estimated by the FHWA from the 2022 National Household Travel Survey (NHTS) and the annual R.L. Polk Vehicle registration data; For single unit truck and heavy trucks, 1 motor vehicle mile traveled = 1 person-mile traveled.

(5) VMT data are based on the latest HPMS data available; it may not match previous published results.

Appendix G
Multi-Modal Transportation:
Calculated MMTIF Schedule

Appendix G: MMTIF - Calculated MMTIF Schedule

This appendix presents the detailed fee calculations for each land use in the Town of Thompson's Station's multi-modal transportation impact fee schedule.

Table G-1

Calculated Multi-Modal Transportation Impact Fee Schedule

		Gasoline Tax						Unit Cost per Lane Mile:	$4,048,000							Interstate Adjustment Factor:	32.1%		
		$$ per Gallon to Capital:	$0.287					Average PMC per Lane Mile:	9,130							Cost per VMC:	$443.37		
		Facility Life (Years):	25		Town Revenues:	$0.095		Fuel Efficiency:	20.10 mpg										
		Interest Rate:	5.00%		State Revenues:	$0.192		Effective Days per Year:	365										
ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source	Assessable Trip Length	Total Trip Length	Trip Length Source	Percent New Trips	% New Trips Source	Net VMT[1]	Person-Trip Factor	Net PMT[2]	Total Impact Cost	Annual Cap. Imp. Credit	Cap. Imp. Credit	Net Impact Fee	Current Impact Fee Rate[3]	Percent Change	
	RESIDENTIAL:																		
210	Single Family (Detached)	du	7.81	Appendix A: LUC 210	6.62	7.12	Appendix A: LUC 210	100%	n/a	17.55	1.36	23.87	$10,584	$145	$2,044	**$8,540**	$4,154	106%	
215	Single Family (Attached)	du	5.92	Appendix A: LUC 215	6.62	7.12	Same as LUC 210	100%	n/a	13.31	1.36	18.10	$8,023	$110	$1,550	**$6,473**	$4,154	56%	
220	Multi-Family Low-Rise, 1-3 Stories	du	6.21	ITE 12th Edition	5.21	5.71	Appendix A: LUC 220/221/222	100%	n/a	10.98	1.36	14.93	$6,623	$92	$1,297	**$5,326**	$3,221	65%	
221	Multi-Family Mid-Rise, 4-10 Stories	du	4.46	ITE 12th Edition	5.21	5.71	Appendix A: LUC 220/221/222	100%	n/a	7.89	1.36	10.73	$4,757	$66	$930	**$3,827**	$3,221	19%	
230	Low-Rise Residential w/Ground-Floor Commercial, 2-3 stories	du	3.44	ITE 12th Edition	5.21	5.71	Same as LUC 220/221/222	100%	n/a	6.08	1.36	8.27	$3,669	$51	$719	**$2,950**	$3,221	-8%	
231	Mid-Rise Residential w/Ground Foor Commercial, 4-10 stories	du	4.00	ITE 12th Edition (Adjusted)[4]	5.21	5.71	Same as LUC 220/221/222	100%	n/a	7.08	1.36	9.63	$4,266	$60	$846	**$3,420**	$3,221	6%	
240	Mobile Home Park	du	4.17	Appendix A: LUC 240	4.60	5.10	Appendix A: LUC 240	100%	n/a	6.51	1.36	8.85	$3,927	$55	$775	**$3,152**	$2,200	43%	
251	Senior Adult Housing (Single Family)	du	3.48	Appendix A: LUC 251	5.42	5.92	FL Studies	100%	n/a	6.40	1.36	8.70	$3,861	$54	$761	**$3,100**	$1,874	65%	
252	Senior Adult Housing (Multi-Family)	du	3.01	Appendix A: LUC 252	4.34	4.84	LUC 251 (adjusted)[5]	100%	n/a	4.44	1.36	6.04	$2,674	$38	$536	**$2,138**	$1,628	31%	
253	Congregate Care Facility	du	2.62	Appendix A: LUC 253	3.08	3.58	Appendix A: LUC 253	72%	Appendix A: LUC 253	1.97	1.36	2.68	$1,189	$18	$254	**$935**	$1,628	-43%	
254	Assisted Living	bed	4.14	ITE 12th Edition	3.08	3.58	Same as LUC 253	72%	Same as LUC 253	3.12	1.36	4.24	$1,879	$28	$395	**$1,484**	n/a	-	
	LODGING:																		
310/320	Hotel/Motel	room	5.21	Appendix A: LUC 310/320	5.42	5.92	Appendix A: LUC 310/320	71%	Appendix A: LUC 310/320	6.81	1.36	9.26	$4,104	$57	$803	**$3,301**	$2,578	28%	
	RECREATION:																		
430	Golf Course	acre	3.74	ITE 12th Edition	6.62	7.12	Same as LUC 210	90%	Based on LUC 710	7.57	1.36	10.30	$4,562	$62	$874	**$3,688**	$1,189	210%	
492	Health/Fitness Club	1,000 sf	30.02	ITE 12th Edition	5.15	5.65	Same as LUC 710	94%	Appendix A: LUC 492	49.34	1.36	67.10	$29,750	$415	$5,849	**$23,901**	n/a	-	
495	Recreational Community Center	1,000 sf	28.82	ITE 12th Edition	5.15	5.65	Same as LUC 710	90%	Based on LUC 710	45.35	1.36	61.68	$27,346	$382	$5,384	**$21,962**	n/a	-	
	INSTITUTIONS:																		
520	Elementary School (Private)	student	2.27	ITE 12th Edition	3.31	3.81	50% of LUC 210: Travel Demand Model	80%	Based on LUC 710 (adjusted)[6]	2.04	1.36	2.77	$1,231	$18	$254	**$977**	n/a	-	
522	Middle School (Private)	student	2.09	ITE 12th Edition	3.31	3.81	50% of LUC 210: Travel Demand Model	80%	Based on LUC 710 (adjusted)[6]	1.88	1.36	2.56	$1,133	$17	$240	**$893**	n/a	-	
525	High School (Private)	student	1.94	ITE 12th Edition	3.31	3.81	50% of LUC 210: Travel Demand Model	90%	Based on LUC 710	1.96	1.36	2.67	$1,183	$17	$240	**$943**	n/a	-	
540/550	Community College/University (7,500 or fewer students) (Private)	student	2.00	ITE Regression Analysis	6.62	7.12	Same as LUC 210	90%	Based on LUC 710	4.05	1.36	5.51	$2,439	$33	$465	**$1,974**	n/a	-	
	Community College/University (more than 7,500 students) (Private)	student	1.50	ITE Regression Analysis	6.62	7.12	Same as LUC 210	90%	Based on LUC 710	3.03	1.36	4.12	$1,830	$25	$352	**$1,478**	n/a	-	
565	Day Care Center	1,000 sf	42.89	Appendix A: LUC 565	2.03	2.53	Appendix A: LUC 565	73%	Appendix A: LUC 565	21.58	1.36	29.35	$13,011	$206	$2,903	**$10,108**	$4,032	151%	
560	Place of Worship	1,000 sf	6.78	ITE 12th Edition	3.93	4.43	Average of LUC 710 & LUC 820 (App. A)	90%	Based on LUC 710	8.14	1.36	11.07	$4,909	$70	$987	**$3,922**	$2,450	60%	
	MEDICAL:																		
610	Hospital	1,000 sf	10.70	ITE 12th Edition	6.62	7.12	Same as LUC 210	78%	Midpoint of LUC 310 & LUC 720 (App. A)	18.76	1.36	25.51	$11,311	$155	$2,185	**$9,126**	$3,787	141%	
620	Nursing Home	1,000 sf	6.75	ITE 12th Edition	2.59	3.09	Appendix A: LUC 620	89%	Appendix A: LUC 620	5.28	1.36	7.18	$3,185	$48	$677	**$2,508**	$2,309	9%	
640	Animal Hospital/Veterinary Clinic	1,000 sf	24.20	Appendix A: LUC 640	1.90	2.40	Appendix A: LUC 640	70%	Appendix A: LUC 640	10.93	1.36	14.86	$6,589	$106	$1,494	**$5,095**	$3,787	35%	

Table G-1 (continued)

Calculated Multi-Modal Transportation Impact Fee Schedule

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source	Assessable Trip Length	Total Trip Length	Trip Length Source	Percent New Trips	% New Trips Source	Net VMT[1]	Person-Trip Factor	Net PMT[2]	Total Impact Cost	Annual Cap. Imp. Credit	Cap. Imp. Credit	Net Impact Fee	Current Impact Fee Rate[3]	Percent Change
	OFFICE:																	
710	General Office	1,000 sf	7.83	ITE 12th Edition	5.15	5.65	Appendix A: LUC 710	92%	Appendix A: LUC 710	12.59	1.36	17.12	$7,595	$106	$1,494	**$6,101**	$4,900	25%
720	Medical Office 10,000 sq ft or less	1,000 sf	23.83	Appendix A: LUC 720 (≤10,000 sq ft)	5.55	6.05	Appendix A: LUC 720	89%	Appendix A: LUC 720	39.96	1.36	54.35	$24,097	$334	$4,707	**$19,390**	$4,900	296%
	Medical Office greater than 10,000 sq ft	1,000 sf	33.13	Appendix A: LUC 720	5.55	6.05	Appendix A: LUC 720	89%	Appendix A: LUC 720	55.56	1.36	75.56	$33,501	$465	$6,554	**$26,947**	$4,900	450%
	RETAIL:																	
822	Retail/Shopping Center less than 40,000 sflga	1,000 sfgla	54.45	ITE 12th Edition	1.48	1.98	Appendix A: Fig. A-1 (19k sfgla)	48%	Appendix A: Fig. A-2 (19k sfgla)	13.13	1.36	17.86	$7,919	$135	$1,903	**$6,016**	$6,476	-7%
821	Retail/Shopping Center 40,000 to 150,000 sfgla	1,000 sfgla	65.38	ITE 12th Edition	1.94	2.44	Appendix A: Fig. A-1 (59k sfgla)	57%	Appendix A: Fig. A-2 (59k sfgla)	24.54	1.36	33.37	$14,800	$237	$3,340	**$11,460**	$6,476	77%
820	Retail/Shopping Center greater than 150,000 sfgla	1,000 sfgla	36.39	ITE 12th Edition	2.70	3.20	Appendix A: Fig. A-1 (459k sfgla)	74%	Appendix A: Fig. A-2 (459k sfgla)	24.68	1.36	33.56	$14,884	$225	$3,171	**$11,713**	$6,476	81%
931	Restaurant	1,000 sf	84.91	Appendix A: LUC 931	3.14	3.64	Appendix A: LUC 931	77%	Appendix A: LUC 931	69.70	1.36	94.79	$42,027	$620	$8,738	**$33,289**	$12,422	168%
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	463.96	Appendix A: LUC 934	2.05	2.55	Appendix A: LUC 934	58%	Appendix A: LUC 934	187.28	1.36	254.70	$112,930	$1,788	$25,200	**$87,730**	$27,638	217%
944	Gas Station w/Convenience Store <2,000 sq ft	fuel pos.	172.01	ITE 12th Edition	1.90	2.40	Appendix A: LUC 944	23%	Appendix A: LUC 944	25.52	1.36	34.71	$15,388	$247	$3,481	**$11,907**	$10,723	11%
945	Gas Station w/Convenience Store 2,000 sq ft or more	fuel pos.	207.44	ITE 12th Edition (Adjusted)[7]	1.90	2.40	Same as LUC 944	23%	Same as LUC 944	30.78	1.36	41.86	$18,558	$298	$4,200	**$14,358**	$10,723	34%
947	Self-Service Car Wash	wash stall	38.89	Appendix A: LUC 947	2.18	2.68	Appendix A: LUC 947	68%	Appendix A: LUC 947	19.57	1.36	26.62	$11,802	$185	$2,607	**$9,195**	n/a	-
948	Automated Car Wash	1,000 sf	253.51	ITE 12th Edition	2.18	2.68	Same as LUC 947	68%	Same as LUC 947	127.59	1.36	173.52	$76,932	$1,204	$16,969	**$59,963**	n/a	-
	INDUSTRIAL:																	
110	General Industrial	1,000 sf	3.60	ITE 12th Edition	5.15	5.65	Same as LUC 710	92%	Same as LUC 710	5.79	1.36	7.87	$3,492	$49	$691	**$2,801**	$1,838	52%
150	Warehouse	1,000 sf	1.48	Appendix A: LUC 150	5.15	5.65	Same as LUC 710	98%	Appendix A: LUC 150	2.54	1.36	3.45	$1,529	$21	$296	**$1,233**	$952	30%
151	Mini-Warehouse	1,000 sf	1.37	Appendix A: LUC 151	3.51	4.01	Midpoint of LUC 710 & LUC 820 (<50k sq ft)	92%	Same as LUC 710	1.50	1.36	2.04	$906	$13	$183	**$723**	$822	-12%

1) Net VMT calculated as ((Trip Generation Rate* Trip Length* % New Trips)*(1-Interstate Adjustment Factor)/2). This reflects the unit of vehicle-miles of capacity consumed per unit of development and is multiplied by the cost per vehicle
2) Net VMT (Item 1) multiplied by the person-trip factor (1.36)
3) Source: Town of Thompson's Station. Land uses with "n/a" are either new land uses added to the Town's fee schedule and would have been charged the rate of a similar land use or have an updated unit of measure
4) The ITE 11th Edition trip generation rate for PM Peak Hour of Adjacent traffic was adjusted by a factor of 10 to approximate the Daily TGR
5) The assessable trip length was based on LUC 251 (5.42) but then adjusted by the ratio of the single family (LUC 210) based trip length of 6.62) to the multi-family (LUC 220) trip length (5.21). Adj. = 5.21 / 6.62 = 80%. TL = 80% × 5.42 = 4.34
6) The percent new trips for schools was estimated at 90% based on LUC 710, but was then adjusted to 80% to provide a conservative fee rate. This adjustment reflects the nature of elementary and middle school uses where attendees are unable to drive and are typically dropped off by parents/guardians on their way to another destination
7) Due to only slight variation, the trip generation rates for LUC 945 2,000 to 3,999 sq ft, 4,000 to 5,499 sq ft, and 5,500 to 10,000 sq ft were combined into a weighted average trip generation rate for a single land use tier of 2,000 sq ft or more

Note: "du" = dwelling unit
"sq ft" = living area/heated area square footage
"sfgla" = square footage gross leasable area