WILLIAMSON COUNTY
COMPREHENSIVE TRAFFIC STRATEGY








November 2017

Williamson County, Tennessee

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Chapter 1
Introduction

BACKGROUND

Williamson County and the Middle Tennessee region are experiencing rapid population and employment growth. While this growth is primarily occurring in the cities, and while traffic issues are most pronounced within incorporated areas, many roadways in the unincorporated County are also experiencing increased traffic volumes and congestion as a result of the growth that is taking place, both regionally as well as in the unincorporated areas of the County.

Citizens and County officials are becoming increasingly concerned about the impact that increased traffic is having, or will have in the future, on the quality of life of area residents. Citizens and County officials are also expressing frustration over the lack of available funding for roadway improvement projects and the limitations associated with bringing about meaningful roadway improvements through regulatory approaches alone.

Additionally, while not contributing to traffic congestion per se, part of the frustration being felt by citizens stems from a lack of awareness regarding the complexities of this issue given the multi-jurisdictional nature of the problem.

"Citizens and County officials are becoming increasingly concerned about the impact that increased traffic is having, or will have in the future, on the quality of life of area residents."

In response to those concerns, the County hired a consultant team with expertise in land use planning, transportation and fiscal analysis to:

1. Evaluate current traffic conditions in the unincorporated County;
2. Project and analyze future traffic conditions in the unincorporated County; and
3. Develop a comprehensive set of recommended strategies geared toward putting the proper systems in place to manage traffic in the most effective way possible.

This report documents the consultant team's analysis of the various factors that contribute to traffic congestion in Williamson County and outlines a recommended multi-faceted strategy that the County should pursue as it seeks to responsibly and proactively address traffic issues in the future.

PROCESS

This project unfolded over an approximately 18-month period, beginning in the spring of 2016 and culminating in the presentation of the document to the Williamson County Highway Commission (Highway Commission), the Williamson County Regional Planning Commission (Planning Commission) and the Williamson County Board of County Commissioners (County Commission) in November of 2017 for their consideration.

Formation of Advisory Committee

To assist with the development of this set of strategies, a group of elected officials, appointed officials and citizens was assembled to form an Advisory Committee. This Committee represented a variety of community interests and included members of the County Commission, Planning Commission, and Highway Commission, in addition to County residents and individuals from the development community. This committee served as a key source of information, a sounding board for discussing findings and potential strategies, and as an important liaison between the consultant team and the public.

Data Gathering and Analysis

The planning process focused initially on gathering and analyzing a wide variety of data and information pertinent to understanding traffic issues in Williamson County. The information evaluated at this stage related to land use policies, historical population and employment growth, existing traffic conditions, travel demand forecasts, existing revenue sources for roadway projects, and existing plans and traffic-related documents (such as the County's Major Thoroughfare Plan and Major Corridors Study). This data gathering and analysis phase provided the consultant team with a thorough understanding of the forces and trends that shape traffic conditions in the County and laid the foundation for well-informed decisions regarding potential strategies later in the process.

Strategy Identification

Upon completion of the data gathering and analysis phase, and armed with a thorough understanding of the various factors that impact traffic conditions in the County, the consultant team began the process of researching, evaluating and testing a wide range of alternative strategies and potential actions that the County could consider pursuing. These potential strategies fell into a variety of inter-related categories, including land use policies, roadway improvement needs, funding sources, capital planning, and other approaches such as inter-governmental cooperation, lobbying and education.

Meetings with Advisory Committee and County Officials

At key stages of the process, meetings were held with the Advisory Committee and with elected and appointed County officials in order to keep them informed and, most importantly, so that these County leaders and stakeholders could provide their insight, knowledge, feedback and direction throughout the process. Meetings with these groups were held in August of 2016, November of 2016, July of 2017 and September of 2017. Additionally, staff and the consultant team held additional "stakeholder meetings" with members of the Advisory Committee in April of 2017.

Public Participation

Public participation was an important element in this planning process. In addition to working with the Advisory Committee, which represented a cross-section of the community, several public meetings were held in order to solicit input and feedback from the general public regarding traffic-related issues. Toward the beginning of the process, public meetings were held on consecutive evenings in November of 2016 – one in the western section of the County and one in the eastern section of the County. This first round of public meetings was designed to educate the community regarding traffic issues and to glean information from the public regarding what they saw as the most significant issues related to

the subject. Following these two initial public meetings, the County published two online surveys to provide the community with additional opportunities to provide input and to augment the information obtained at the public meetings themselves.

In September of 2017, a public meeting was held (with County Commission and Planning Commission members present) to present findings and recommended strategies and to solicit feedback from citizens and County officials.

Consideration by County Commission

This report will be presented to the County Commission at its regularly scheduled meeting in November of 2017 for its consideration. This report will also be presented to the Highway Commission and Planning Commission at their November meetings for their consideration and recommendation.

Chapter 2
The Nature of the Problem
Forces, Trends and Contributing Factors

Traffic congestion is a complex issue. This complexity is particularly acute in an area like Williamson County due to its position within a rapidly growing and economically vibrant region. Adding to the complexity is the numerous governmental jurisdictions in the region, each with their own policies regarding growth, development and transportation issues. There are a number of inter-related forces, trends and contributing factors that must be evaluated and understood in order to develop meaningful and effective strategies for addressing traffic-related issues. This chapter sheds light on the key aspects that were evaluated. Those aspects include:

- Population and employment growth
- Effect of land use policies on growth
- Changing traffic conditions
- Roadway improvement needs
- Projected funding gap
- Regulatory tools for addressing traffic issues

POPULATION AND EMPLOYMENT GROWTH

The 10-county Middle Tennessee region is experiencing unprecedented population and employment growth. Williamson County leads the way in both categories due in large part to its outstanding school district, favorable business climate and desirable quality of life.

Population

With a population increase of approximately 70% since the year 2000, Williamson County ranks as the fastest growing county in the state of Tennessee and among the fastest growing counties in the nation. According to the Nashville Area Metropolitan Planning Organization's (MPO's) population forecasts, approximately 350,000 additional residents will reside in Williamson County by the year 2040, which would bring the population of the County beyond the 500,000 mark (See Figure 1). While the MPO's population forecast is a high-end projection, the fact remains that Williamson County is expected to receive a staggering amount of growth between now and 2040.

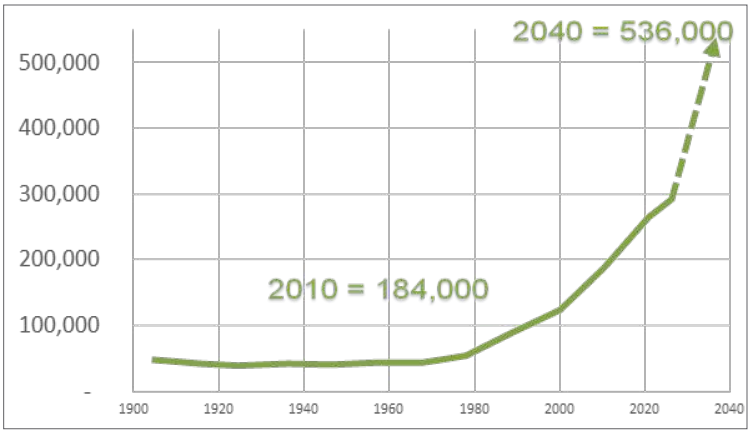

Figure 1: Williamson County Population Growth

The MPO's growth projection indicates that approximately 35% of that population growth, representing an additional 124,646 people, will take place in the unincorporated portion of Williamson County. The vast majority of the growth in the unincorporated County is expected to take place in the eastern portion of the County, which is predominantly zoned to allow a maximum residential density of 1 unit per acre (See Figure 2). Population and employment growth were evaluated using geographic sub-areas of the unincorporated County called Potential Development Areas (PDAs). These PDAs, which are depicted in Figure 3, were established during the Comprehensive Plan update process for the purpose of evaluating future population capacity and demand.

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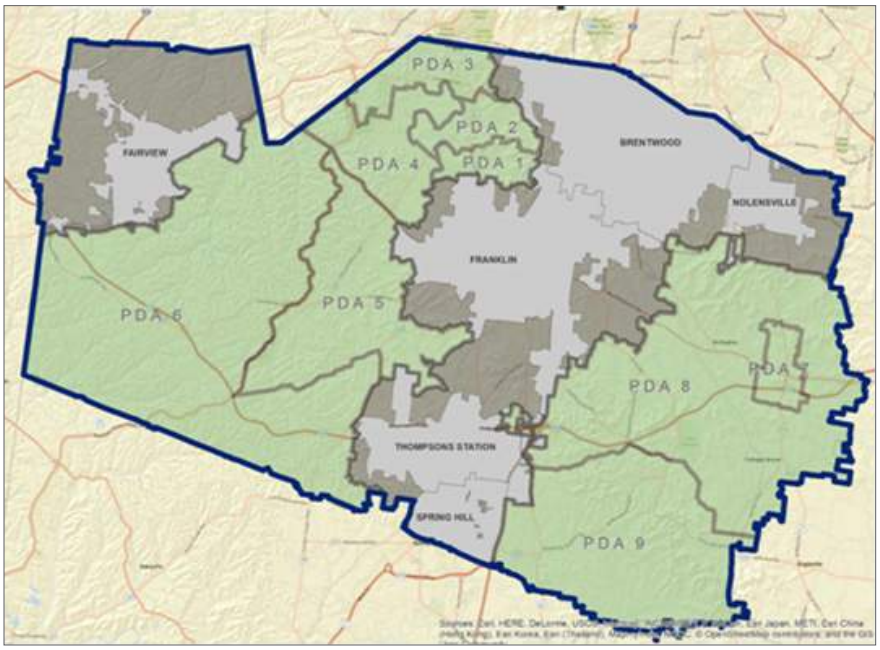


Figure 2: Planned Development Areas (PDA)

PDA	Population Growth
1	3,827 (3%)
2	3,459 (2%)
3	4,841 (41%)
4	5,098 (4%)
5	10,471 (8%)
6	15,852 (13%)
7	**2,311 (1%)**
8	**53,216 (43%)**
9	**25,570 (21%)**
Total	**124,646**

Figure 3: Population Growth in Unincorporated Williamson County
Unincorporated areas east of I-65 (PDAs 7, 8, and 9) are expected to see approximately 65% of the population growth over the next 25 years.

Employment

The Nashville region as a whole has ranked among the nation's leaders in job growth in recent years. From 2010 to 2015, employment in the 10-county region grew approximately 15%. Williamson County has led the region with an employment growth rate of 29% during that time period. In fact, according to Williamson, Inc., Williamson County has had the fastest-growing job market (of large counties) in the United States for four consecutive quarters. Additionally, according to the Bureau of Labor Statistics, Williamson County ranked as the fastest growing job market in the entire nation for the year 2016.

Approximately half of the Nashville region's largest publicly traded companies call Williamson County home, and for four years in a row, 30% of the fastest growing companies in the state of Tennessee have been based in Williamson County.

According to employment projections from the Nashville Area MPO, jobs in Williamson County as a whole are expected to increase by 156% over their 2010 levels (See Figure 4). This is nearly double the increase anticipated for the 10-county MPO area as a whole.

Year	MPO	Davidson	Maury	Robertson	Rutherford	Sumner	**Williamson**	Wilson	TN	MPO & TN
1990	640,605	417,239	32,943	16,299	63,121	42,000	**41,284**	27,719	2,777,447	23%
2000	887,397	532,062	44,456	25,011	104,707	57,610	**81,092**	42,459	3,471,226	26%
2010	971,904	542,778	39,998	28,066	133,805	55,355	**120,263**	51,639	3,581,414	27%
2015	1,067,548	585,974	43,100	30,806	150,853	60,662	**138,235**	57,918	3,846,687	28%
2020	1,180,595	635,738	47,043	33,591	170,093	66,686	**162,311**	65,133	4,155,814	28%
2030	1,442,259	745,177	55,746	39,857	215,490	80,227	**223,802**	81,960	4,848,844	30%
2040	1,759,652	869,137	65,609	47,190	271,416	95,976	**307,887**	102,437	5,655,937	31%
2010-2040	81%	60%	64%	68%	103%	73%	**156%**	98%	58%	

Figure 4: Employment Trends

EFFECT OF LAND USE POLICIES ON GROWTH

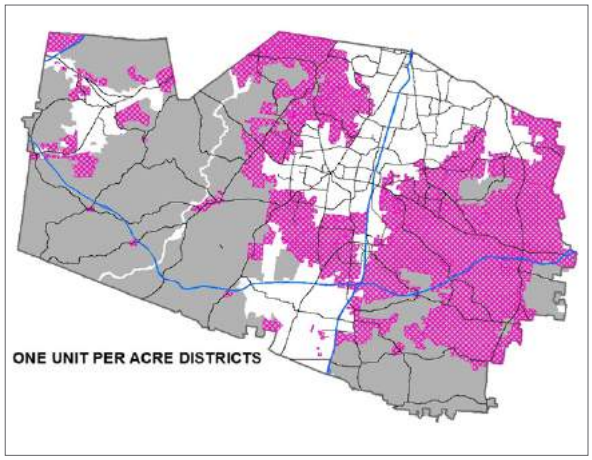
In addition to market forces, growth patterns are shaped to a large degree by the land use policies and regulations that are in place. These policies are established in the Williamson County Comprehensive Land Use Plan and are implemented through the County's regulatory documents, chief of which is the Zoning Ordinance.

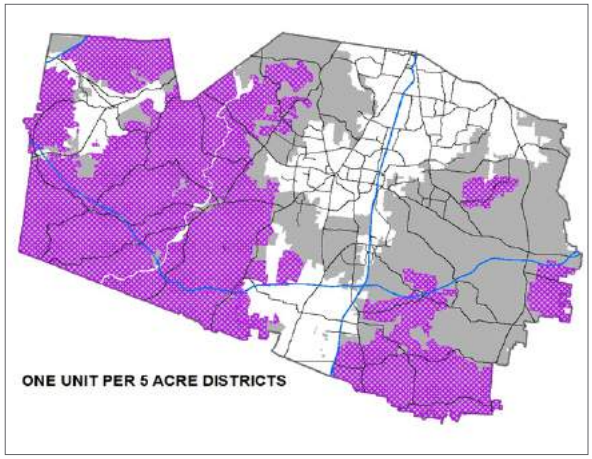
Comprehensive Land Use Plan

The Williamson County Comprehensive Land Use Plan is the document that articulates the overarching policies for the unincorporated County with respect to land use and development issues. In the mid-to-late 2000s, the County underwent a very extensive update to the Plan. Adopted in 2007, the updated Plan was the product of considerable public involvement and significant discussion by appointed and elected officials. During that process, a number of ideas were explored, including the option of reducing allowable residential densities in certain areas in order to concentrate growth in and around the municipalities and other strategic locations. This idea was viewed as a way to help preserve rural character in outlying areas, which was one of the key themes that emerged during public involvement meetings. However, after a great deal of discussion, and as a result of considerable opposition by many landowners to reducing densities, it was decided at that time not to alter the basic residential densities that had been in place for many years. Given the changes that have occurred in the County over the 10 years since the adoption of the last Comprehensive Plan update, attitudes toward growth (including residential densities) may be different today.

Zoning Ordinance and Allowable Densities

The growth-related policies articulated in the County's Comprehensive Land Use Plan are carried forward in, and implemented through, the County's Zoning Ordinance, which outlines the "rules" for development, including the residential density that is permitted. Generally speaking, the zoning districts that are applied in the unincorporated County either allow a residential density of approximately one-unit-per-acre or limit residential density to one-unit-per-five-acres. The eastern portion of Williamson County predominantly allows a density of one unit per acre, while the western portion of the County is primarily restricted to a density of one unit per five acres (See Figures 5 and 6). These basic allowable densities have been in place since at least the late 1980s.





(Top) Figure 5: One-Unit-per-Acre Districts
(Bottom) Figure 6: One-Unit-per-Five-Acres Districts

Subdivision Development

The vast majority of the residential development that has occurred in the unincorporated County has occurred in areas that are zoned to allow a residential density of one-unit-per-acre. Since the year 2000, there have been 54 subdivisions (15 lots or greater) totaling 6,358 lots approved in unincorporated areas (See Figure 7). With very few exceptions, those subdivisions have been located in areas of the County zoned to allow one-unit-per-acre. The subdivision development during that timeframe has averaged just fewer than 400 lots per year. However, in the past three years alone, 19 such subdivisions totaling 2,280 lots have been approved. This three-year total accounts for 35% of the total number of subdivisions and 36% of the total number of lots since the year 2000. All of the 19 subdivisions approved in the past three years have been located in one-unit-per-acre zoning districts. The subdivisions approved since 2000 have consumed approximately 9,900 acres of land.

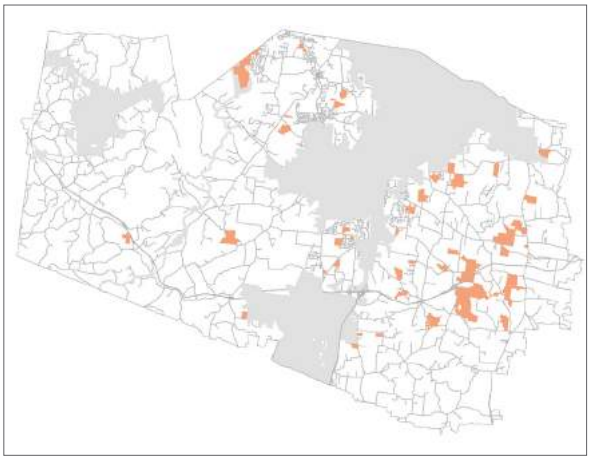


Figure 7: County Subdivisions (15 lots or more) since 2000

Based on projected demand and current development policies, development in these one-unit-per-acre districts is anticipated to accelerate in future years, with some estimates indicating that the pace of development in future years may be approximately 4 times the historical average.

Alternative Wastewater Systems

One of the factors that have helped fuel new development in recent years is the proliferation of alternative wastewater technologies, which enable wastewater from a subdivision to be treated in a central location and disposed of by dispersing the treated effluent through the soil. Prior to the advent of these systems, subdivision development in unincorporated areas, which almost exclusively lack public sewer service, was dependent upon the ability of the soil to support traditional septic systems. These alternative wastewater technologies largely remove this natural impediment to development and, therefore, generally allow land to be developed at a higher density than if traditional septic systems are used. As a result, the use of these nontraditional wastewater systems has become commonplace, particularly in areas with one-unit-per-acre zoning (See Figure 8).

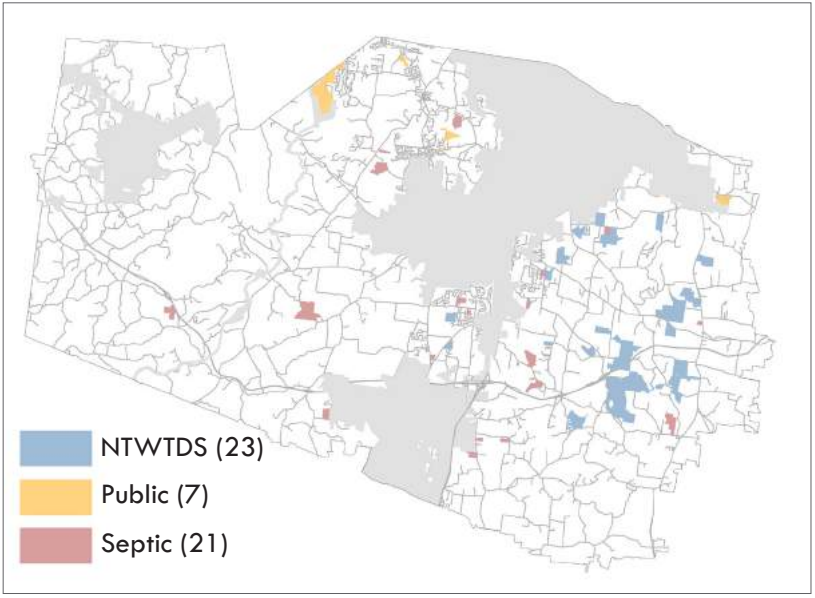


Figure 8: County Subdivisions (15 lots or more) since 2000 by Wastewater Type
Wastewater types include nontraditional wastewater treatement and disposal systems, septic, and public sewer. Subdivisions shown are those approved as of June 2017.

Based on current land use policies, there is enough land with one-unit-per-acre zoning to support an additional 23,000 dwelling units in the eastern portion of the County alone. While application of the County's traffic shed requirements may reduce this amount somewhat, the fact remains that significant capacity for additional development remains in this area of the County.

CHANGING TRAFFIC CONDITIONS

The most visible consequence of the rapid rate of growth taking place in the region is the stress it places on the roadway network. The majority of this regional growth is taking place within the various municipalities in the region (and those within Williamson County). Consequently, traffic issues resulting from that growth are most pronounced in the cities. However, many roadways in the unincorporated areas of Williamson County are also experiencing increased traffic volumes and congestion as a result of the growth that is taking place – both regionally and within the unincorporated County. Figure 9 illustrates the relative increase in average daily traffic in the western and eastern portions of the County. This chart shows that the areas east of I-65 have experienced higher traffic volumes and a faster rate of volume increase than areas west of I-65.

The Nashville Area MPO's travel demand model was also utilized to show relative congestion levels, both existing and future, on the major County roadways in each PDA. Congestion was quantified using the average volume-capacity ratios (v/c ratio) for the roadways in each PDA, which theoretically represents

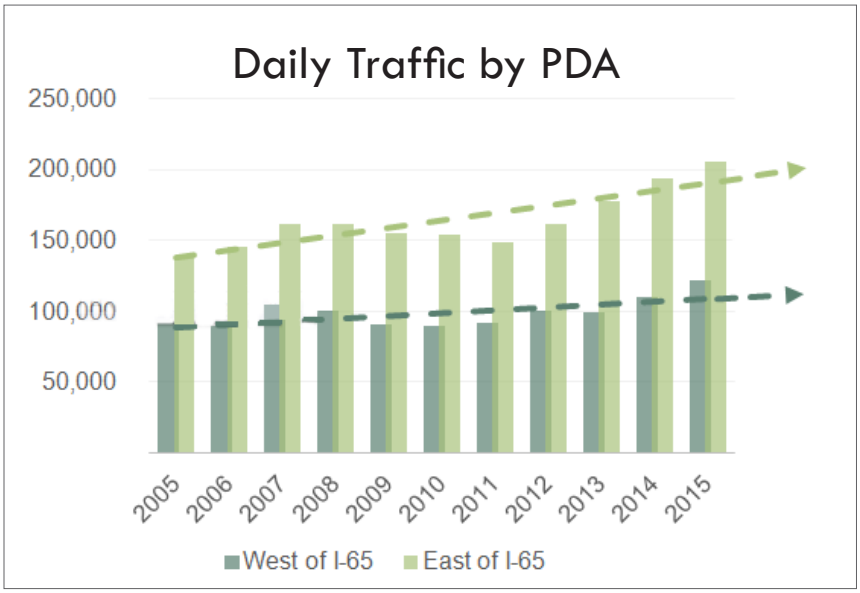


Figure 9: Daily Traffic by Year in PDAs

the proportion of a roadway's capacity that is being taken up by vehicles on the road. A v/c ratio of 1.0 indicates that all of the roadway's theoretical capacity is being utilized by traffic on the roadway.

Figure 10 shows average daily traffic conditions, both today and as projected in the year 2040 broken out by PDA. This daily traffic volume is depicted in relation to the theoretical maximum v/c ratio of 1.0 (depicted by the dashed line). This chart highlights the fact that from purely a daily traffic volume standpoint, the roadways, on average, in each of the PDAs are operating at level that is below full capacity. The percentages are representative of the percent increase in the average v/c ratio on the roadways in each PDA expected by 2040 as a result of population and employment growth in the region and locally.

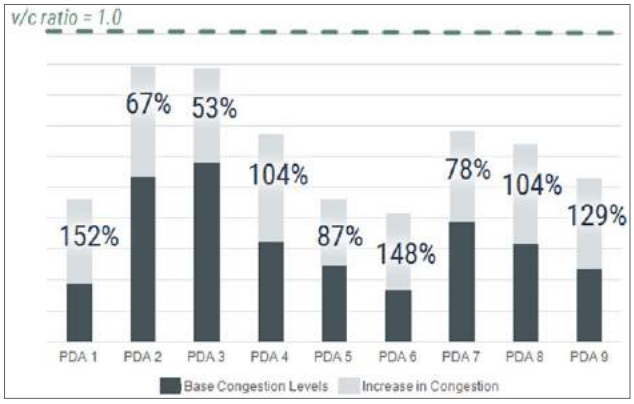


Figure 10: Daily Traffic Conditions-Today and in the Future

However, when peak hour conditions are considered, specifically the evening (PM) rush hour since it's generally more congested than the morning rush hour, many roadways in the unincorporated County currently experience high levels of congestion. By 2040, a number of roadways in the County are expected to see congestion levels where the v/c ratio exceeds 1.0, meaning that the number of vehicles actually exceeds the capacity of the roadway. Figure 11 depicts these PM peak hour conditions for roadways, on average, within the various PDAs. This analysis indicates that by 2040, congestion levels on roadways such as Arno Road, Nolensville Road, Horton Highway, Clovercroft Road and others are projected to see similar peak hour congestion as is currently being experienced on roadways such as Hillsboro Road and Sneed Road.

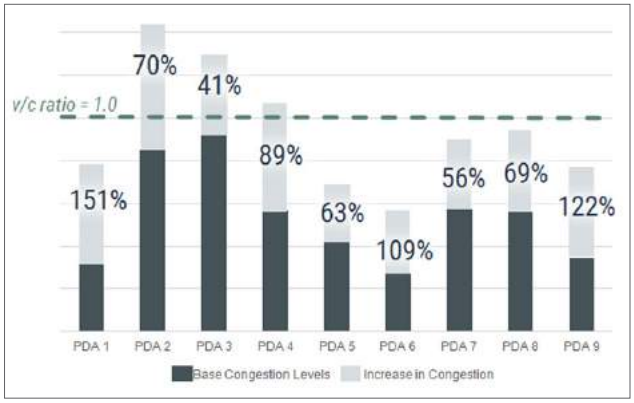


Figure 11: PM Peak Hour Traffic Conditions-Today and in the Future

Pass-Through Traffic from Regional Growth

Because large portions of the unincorporated County are situated between rapidly growing communities (such as Franklin, Spring Hill, Nolensville, Rutherford County/Murfreesboro and Maury County) and employment centers in Cool Springs, Brentwood and Nashville, many County roads receive large amounts of "pass-through" traffic from areas that are outside the County's jurisdiction. Before Williamson County became a major center for regional employment, the commuting pattern predominantly consisted of vehicles traveling north from Williamson County in the morning and back south from Nashville in the evening. That pattern has changed drastically, as today there are more vehicles traveling into Williamson County for work than there are leaving Williamson County for work (See Figure 12).

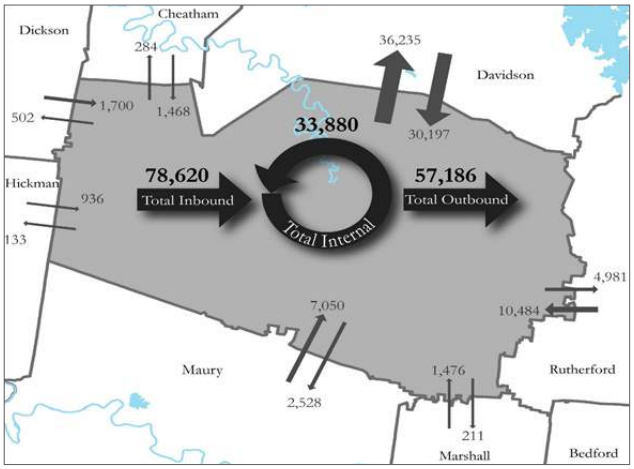


Figure 12: County-to-County Employment Flows (2014)

By 2040, the trend of more employment traffic coming into the County than leaving the County is projected to continue, and become even more pronounced. It is anticipated that by 2040, the number of employment-related vehicles coming into Williamson County from Davidson County will exceed the number of employment-related vehicles doing the reverse (See Figure 13).

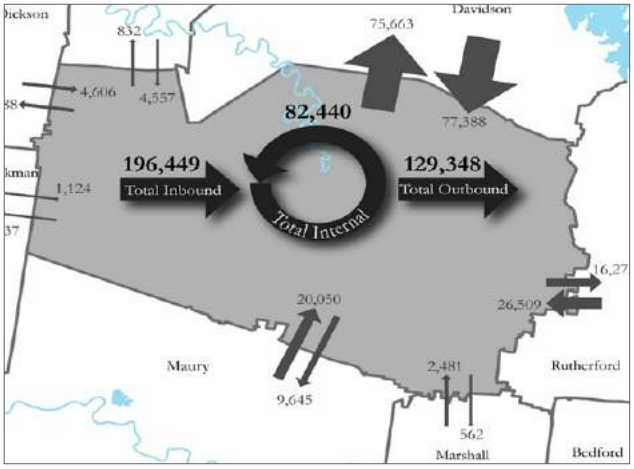


Figure 13: County-to-County Employment Flows (2040)

Figure 14 shows the users of the various major corridors in the unincorporated County by where they live. This figure helps illustrate the regional nature of traffic in Williamson County, as in the year 2010, more than half of all motorists on the County's major corridors lived in counties other than Williamson.

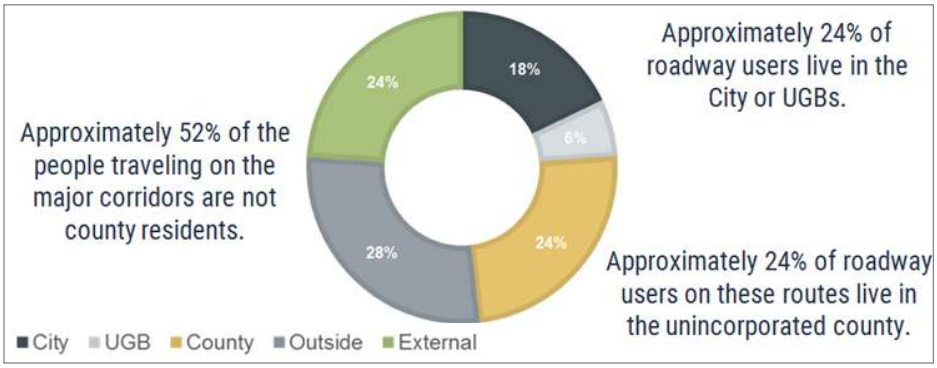


Figure 14: Users on Major Corridors (2010)

Local Traffic – The Next Big Contributor

The majority of traffic congestion on key corridors is currently attributable to pass-through traffic from areas outside the County's jurisdiction. However, due to the rapid growth that is forecasted to take place in the unincorporated County, county residents are expected to become increasingly predominant users on the major corridors in the future (see Figure 15).

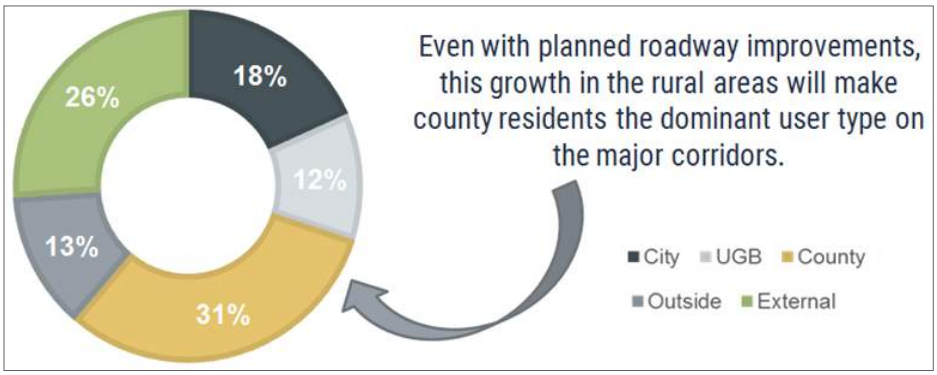


Figure 15: Users on Major Corridors (2040)

ROADWAY IMPROVEMENT NEEDS

The rapid pace of growth that has taken place in Williamson County and the region, which is expected to continue well into the future, results in increased traffic volumes and congestion on many area roadways. This increased traffic and congestion creates a very significant need for major roadway improvements.

The County has created two planning documents that identify needed improvements. These improvements are depicted in Figure 16.

Major Thoroughfare Plan

The County's Major Thoroughfare Plan, which was most recently updated in 2011, identifies improvements to the roadway network that will be needed in order to accommodate the growth that is projected. These improvements include the construction of new roads, the widening and/or extension of existing roads, and the construction of safety improvements, such as adding shoulders or widening existing travel lanes.

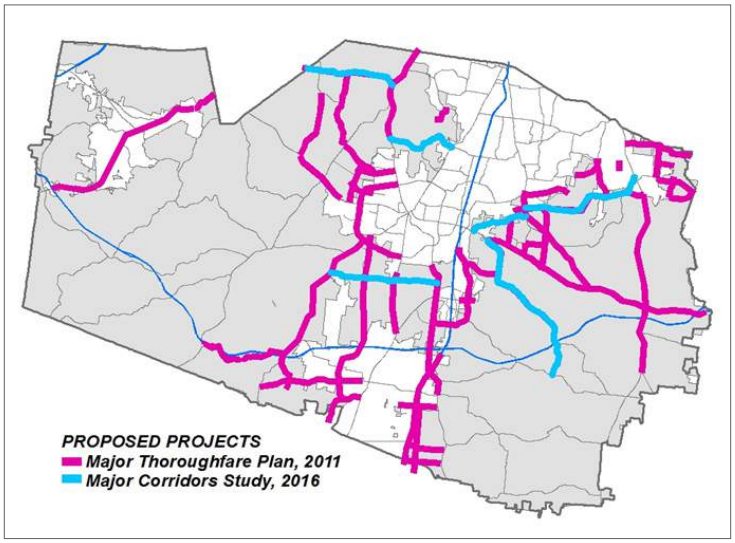


Figure 16: Roadway Improvement Projects

Major Corridors Study

The County's Highway Department developed the Major Corridors Study in 2016. In this study, a number of corridors in the unincorporated County were evaluated in greater detail in order to identify more specifically what improvements to those roadways will be necessary. The roadway corridors that were evaluated include Arno Road, Clovercroft Road, Lynwood Way, Sneed Road, Coleman Road and Henpeck Lane. This study recommended both short-term (2020) improvements, which predominantly include safety and intersection improvements, and long-term (2030) improvements, which largely consist of road widening projects.

Regional Travel Demand Model

The Nashville Area MPO's regional travel demand model was also used to identify a number of operational needs on County roadways above and beyond those identified in either the Major Thoroughfare Plan or the Major Corridors Study. Specifically, improvements to rural roadways that have both narrow lane widths and expected increases in v/c ratio by 2040 were considered to be operational and safety needs.

EXISTING FUNDING GAP

The County's Major Thoroughfare Plan and Major Corridors Study as well as the MPO's travel demand model identify improvements to the roadway network that will be needed in order to accommodate projected growth. The estimated cost for all of these improvements is approximately $736 million, which is solely for capital improvements and does not include maintenance costs. When State-owned roadways are excluded from consideration, this estimated cost is reduced to approximately $378.8 million. This figure includes roughly $223 million for capital projects, such as the construction of new roads and the widening and/or extension of existing roads, and roughly $155 million for operational improvements. Figure 17 lists these roadway improvements and associated costs as called for in the Major Thoroughfare Plan, the Major Corridors Study and the MPO regional model respectively.

Costs		Amount
Costs to Address Operational & Safety Needs		
Major Thoroughfare Plan	$	4,411,000
Major Corridors Study	$	63,376,000
Travel Demand Model Analysis	$	87,770,000
Subtotal: Operational & Safety Needs	***$***	***155,557,000***
Costs to Address Capacity Needs		
Major Thoroughfare Plan	$	116,623,000
Major Corridors Study	$	106,577,000
Subtotal: Capacity Needs	***$***	***223,200,000***
Total Cost	**$**	**378,757,000**

Figure 17: Cost of Identified Roadway Improvements

Despite these significant and demonstrated roadway improvement needs, there is currently no ongoing, dedicated source of revenue within the County to fund the type or magnitude of roadway improvements that are needed, or will be needed in the future, in order to address existing and anticipated deficiencies. The County Highway Department has a FY 2017/2018 budget of approximately $11.5 million and the vast majority of these funds are needed for operations and maintenance of existing roads and bridges. Furthermore, funding from State and Federal sources is very

limited, and counties typically do not fare well in comparison to their municipal counterparts when it comes to the allocation of State and Federal funds for roadway improvements. The County has, however, pledged $7 million (funds to be derived from the Highway Department fund balance) to help implement the short-term (2020) improvements as called for in the Major Corridors Study. Improvements to Arno Road will be undertaken by the County first, with an initial emphasis on road widening and intersection improvements at the I-840 interchange, in front of Page High School/Middle School and at the Highway 96E intersection. Even with this $7 million, there is a funding gap of approximately $371.8 million between the cost of necessary roadway improvements and anticipated revenue to fund those improvements (See Figure 18).

> "There is currently no ongoing, dedicated source of revenue within the County to fund the type or magnitude of roadway improvements that are needed, or will be needed in the future, in order to address existing and anticipated deficiencies"

Costs		Amount
Costs to Address Operational & Safety Needs		
Major Thoroughfare Plan	$	4,411,000
Major Corridors Study	$	63,376,000
Travel Demand Model Analysis	$	87,770,000
Subtotal: Operational & Safety Needs	**$**	***155,557,000***
Costs to Address Capacity Needs		
Major Thoroughfare Plan	$	116,623,000
Major Corridors Study	$	106,577,000
Subtotal: Capacity Needs	**$**	***223,200,000***
Total Cost	**$**	**378,757,000**

Revenue Transfer		Amount
FY2018 Highway Fund Transfer	$	7,000,000
Total Revenue Transfer	**$**	**7,000,000**
Excess / (Deficit)	**$**	**(371,757,000)**

Figure 18: Existing Funding Gap

REGULATORY TOOLS

The County has adopted, as part of its Zoning Ordinance, regulations designed to help mitigate the impacts of new development on the surrounding roadway network. These regulations are designed to limit the allowable density of a proposed development if sufficient capacity does not exist on the key roadways serving the property, unless roadway improvements which add such capacity are constructed by the developer. The County utilizes two key regulatory tools in the development review process – Traffic Sheds and Traffic Studies.

Traffic Sheds

The County has utilized the Traffic Shed methodology in the development review process since the late 1980s. The methodology has been updated several times through the years, including in 2013 with the adoption of the current Zoning Ordinance. Under the current Zoning Ordinance, the Traffic Shed methodology is applicable in certain zoning districts outside of the Urban Growth Boundaries (UGBs). These areas of the County have been divided into various traffic sheds based upon the way the roadway network functions in the area. Figure 19 illustrates a small portion of the county relative to traffic shed boundaries.

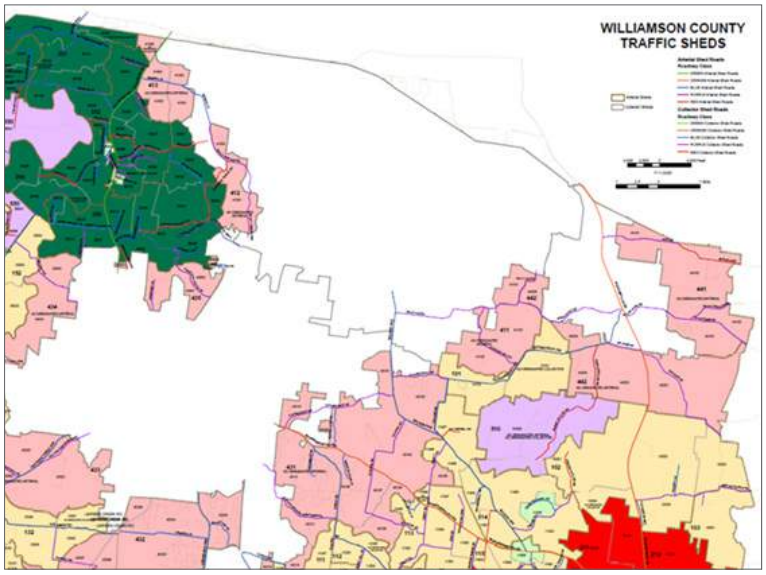


Figure 19: Excerpt from Traffic Shed Map

The basic premise behind the Traffic Shed approach is that allowable development within a given Traffic Shed is directly related to the available capacity of the collector and arterial roads serving the proposed development.

Under the Traffic Shed approach, if it is demonstrated that sufficient capacity does not exist to accommodate a proposed development, the developer would have the choice to either:

- Scale back the development to a level that is commensurate with the roadway capacity that does exist; or
- Conduct a Traffic Study to identify roadway improvements that are necessary to add sufficient capacity. The developer is responsible for funding and constructing the necessary improvements including acquiring any necessary right-of-way and/or construction easements. (See the subsection below regarding Traffic Studies).

Many roadways in the unincorporated County lack sufficient capacity to accommodate a significant amount of additional traffic. As a result, it is relatively common for the density in subdivisions subject to the Traffic Shed methodology to be reduced below the level that the underlying zoning district would otherwise allow. An analysis of subdivisions that have been approved since the year 2000 suggests that the Traffic Shed methodology has resulted in a reduction in density of approximately 40%, on average.

Traffic Studies

Traffic Studies evaluate the impact that a proposed development will have on the surrounding roadway network and recommend what, if any, roadway improvements are needed in order for the roadway network to accommodate the development at acceptable Levels of Service. Traffic Studies are required in the following circumstances:

- For all developments that will generate 50 or more peak hour vehicle trips in the Municipal Growth Area (MGA) and Suburban Infill & Conservation (SIC) zoning districts;
- For developments within zoning districts that are subject to the Traffic Shed methodology where the developer wishes to exceed the amount of development permitted by the applicable Traffic Shed; and
- For all developments that will generate 400 or more PM peak hour trips.

The County's traffic consultant reviews Traffic Studies on behalf of the County in accordance with a set of Traffic Study Guidelines that the County has developed. Upon completion of this review, the County's consultant will make specific recommendations as to the extent and timing of roadway improvements that a developer must implement. These recommendations are incorporated into the conditions of approval for the development established by the Planning Commission. Typical roadway improvements that result from Traffic Studies include the installation of turn lanes into the development and/or at key intersections in the vicinity and the widening of travel lanes and shoulders along segments of roadway within the study area.

Analysis of the County's Regulatory Tools

The County's regulatory tools related to traffic, which predominantly include Traffic Sheds and Traffic studies, were analyzed to determine how they measure up to those utilized in other communities and what, if any, changes should be made to improve the effectiveness of those tools. The Traffic Shed approach is unique to Williamson County. This approach has served the County well through the years. However, because this approach functions best in a relatively rural setting, it may lose its effectiveness in the long term, especially in areas where significant growth is anticipated.

Existing Practices	Pros	Cons
Traffic Shed Methodology	Resulting densities are predictable	Not always easily understood by developers, elected bodies, or public
	Effectively links allowable density to capacity of roadways	Most suitable for rural areas with specific traffic patterns
Traffic Studies	Off-site improvements to the roadway system (turn lanes, traffic signals, etc.) are paid for by developers	Mitigates local traffic impacts, but does not address system-wide impacts
		Traffic Impact Study parameters must be agreed upon by developers and County
		ROW acquisition for off-site improvements can be difficult
		Staff time and resources are allocated to review Traffic Impact Studies

Figure 20: Pros and Cons of Regulatory Approaches

Traffic Studies are widely used in jurisdictions across the Country as a way to help mitigate traffic impacts associated with developments. There are pros and cons to all regulatory tools, and those related to Traffic Sheds and Traffic Studies are listed in Figure 20.

"While regulatory tools, such as the ones utilized by the County, can and do help implement necessary localized roadway improvements, they can do little to address the type of system-wide needs that the County is facing"

Overall, the County's regulatory tools are quite sound and the County is getting about as much out of them as can be expected, given current development policies, the high demand for development in the County and the current funding environment. However, while regulatory tools, such as the ones utilized by the County, can and do help implement necessary localized roadway improvements, they can do little to address the type of system-wide needs that the County is facing.

SUMMARY OF FINDINGS

The following is a summary of the key findings that were made as a result of studying the various forces, trends and contributing factors discussed in this Chapter. These findings form the basis for the specific recommended strategy that is outlined in Chapter 3: Recommendations.

Finding 1: Population and employment growth continue to soar in Williamson County and the Middle Tennessee region. This growth is expected to continue, and even accelerate, in future years.

Finding 2: While the unincorporated County accounts for a relatively small portion of the overall regional growth, significant new development is also occurring within the unincorporated areas, particularly in the eastern portion of the County. This growth is being fueled by:

- A robust housing market and strong demand for new development due to the County's employment opportunities, exceptional schools and enviable quality of life;
- Current land use policies and zoning regulations, which allow new residential development at a density of up to one-unit-per-acre for the majority of land in the eastern portion of the County; and
- The proliferation of alternative wastewater technologies that make properties easier to develop and typically result in higher density development than would otherwise occur with traditional septic systems.

Finding 3: This "local growth" is just scratching the surface, as high-end projections indicate that up to 124,000 additional residents are forcecasted to live in unincorporated areas by the year 2040 based on current land use policies.

Finding 4: As a byproduct of the County's growth and economic success, traffic congestion is increasing and negatively impacting the quality of life for many citizens. As with population growth, traffic congestion is likely to become significantly more acute in future years.

Finding 5: Because much of the unincorporated County is situated between rapidly growing communities (such as Franklin, Spring Hill, Nolensville, Murfreesboro, etc.) and large employment centers in Cool Springs, Brentwood and Nashville, many County roads receive a large amount of "pass-through" traffic from areas outside of the County's jurisdiction. Additionally, much of the negative regional impact is a result of drivers finding short cuts on roads that were not intended to be regional traffic carriers. Currently, this regional traffic is the dominant influence on many key County corridors.

Finding 6: As a result of the growth that is expected to occur within unincorporated areas given projected demand and current development policies, County residents will become an increasingly dominant influence on traffic in the future.

Finding 7: Significant roadway improvements will be needed in order to accommodate the growth and associated traffic that is projected to occur in the future. The total cost of all of these improvements, excluding state-owned roadways, is estimated to be approximately $378 million.

Finding 8: There is a substantial funding gap that exists between the costs of needed roadway improvements and the anticipated funds that will be available to pay for them, based upon the current funding environment.

Finding 9: There are structural problems that must be addressed related to the organizational, institutional, and funding systems to manage traffic. The County's current system worked well when the County consisted of a series of small towns surrounded by rural areas without extensive growth. However, the current system is no longer adequate to meet the needs of a high-growth area with complex regional travel patterns. The County's regulatory tools are sound but cannot be expected to address the area's extensive roadway improvement needs in any meaningful way. The County is lacking the proper structural system that is needed in order to effectively identify, prioritize and fund roadway improvements, the need for which is created by new growth.

Finding 10: Williamson County has evolved from a relatively rural county to a high-growth, rapidly developing county. In order to manage traffic and growth issues most effectively, the County's transportation planning and funding practices need to evolve accordingly. The situation will require that a wide range of planning and funding tools, approaches and strategies be employed.

Chapter 3
Recommended Strategy

Based on a thorough evaluation of the technical data and analysis that has taken place over the past 18 months, as well as the feedback and direction that has been provided by elected officials, appointed officials, the Advisory Committee, Staff and the general public during this process, it is recommended that the County implement a multi-faceted strategy for managing traffic issues in the unincorporated County. The elements of this strategy, which must work in tandem, are as follows:

LAND USE, TRANSPORTATION PLANNING AND REGULATORY TOOLS

Comprehensive Plan Update

The County should revisit its fundamental land use policies through an update to the Comprehensive Land Use Plan.

- A major focus of this effort should be to determine whether to alter the residential densities that are permitted in unincorporated areas.
- Particular emphasis should be placed on evaluating the areas that are currently zoned to allow approximately one unit-per-acre.
- Because land use and transportation issues are so strongly linked, the evaluation and consideration of various land use policy changes should consider the potential effect of those changes from a transportation standpoint as well as a land use standpoint.
- It is important to note that at this point, no judgment should be made as to whether those densities should be lowered, raised, or whether a combination thereof is appropriate.

Implementation of Policy Changes

Any policy changes that result from the Comprehensive Plan update process should be implemented through revisions to the County's Zoning Ordinance and other such implementation documents. Updated and improved traffic regulations and other mitigation tools should be pursued as part of the implementation strategy.

Strategic Investment Priorities

In concert with any revised land use policies outlined in the Comprehensive Plan update process, the County should strategically identify and prioritize roadway improvement projects to coordinate land use and transportation planning efforts. In identifying roadway priorities, the County should consult the list of roadway projects as identified in the Major Thoroughfare Plan, the Major Corridors Study and the MPO's travel demand model. Priorities should be based upon the impact the improvement would have on alleviating traffic congestion, safety concerns that would be addressed by the improvements, as well as the timing of when the roadway improvements are expected to become necessary. These priorities should be made in order for the County to ascertain how much funding will be necessary to implement the improvements.

IMPLEMENTATION OF ROADWAY IMPROVEMENTS

Funding

The County should pursue dedicated and ongoing sources of funding to implement prioritized roadway improvement projects. This subsection provides an analysis of various potential funding opportunities to assist the County in understanding the pros and cons of various sources and how particular sources may be combined to generate the revenue necessary to fund the roadway improvements that have been identified. The revenue sources evaluated during this process include general taxes (property tax, sales tax, wheel tax, gas tax), Impact Fees, Transportation Utility Fees and Jurisdictional Revenue Sharing. Each of these potential funding sources was evaluated according to certain criteria to determine its suitability/ applicability (See Figure 21).

	Revenue Potential	Techical Ease	Proportionate to Demand	Legal
Property Tax	Positive	Positive	Negative	Positive
Transportation Utility-Countywide	Positive	Neutral	Neutral	Negative
Transportation Utility-Unincorporated	Positive	Neutral	Neutral	Negative
Wheel Tax	Positive	Positive	Negative	Positive
Gas Tax	Negative	Positive	Neutral	Positive
Sales Tax	Negative	Positive	Negative	Positive
Impact Fees	Positive	Negative	Positive	Positive

Figure 21: Funding Source Evaluation

As was discussed in Chapter 2 of this report, a $371.8 million funding gap exists between the cost of needed roadway improvements (as outlined in the Major Thoroughfare Plan, Major Corridors Study and MPO travel demand model analysis) and the projected funds that will be available based on current available funds and existing revenue sources (See Figure 22).

Costs		Amount
Costs to Address Operational & Safety Needs		
Major Thoroughfare Plan	$	4,411,000
Major Corridors Study	$	63,376,000
Travel Demand Model Analysis	$	87,770,000
Subtotal: Operational & Safety Needs	**$**	***155,557,000***
Costs to Address Capacity Needs		
Major Thoroughfare Plan	$	116,623,000
Major Corridors Study	$	106,577,000
Subtotal: Capacity Needs	**$**	***223,200,000***
Total Cost	**$**	**378,757,000**

Revenue Transfer		Amount
FY2018 Highway Fund Transfer	$	7,000,000
Total Revenue Transfer	**$**	**7,000,000**
Excess / (Deficit)	**$**	**(371,757,000)**

Figure 22: Existing Funding Gap

The following funding scenarios were developed to illustrate various ways of raising the necessary funds to close the $371.8 million funding gap. Scenarios 1 and 2 are County-wide options (including the municipalities), while scenarios 3, 4 and 5 would derive funds only from unincorporated sources (See Figure 23). It is important to note that the $371.8 million would fund all improvements identified as needed in the Major Thoroughfare Plan, Major Corridors Study and the MPO travel demand model and the County may choose to pursue a smaller, prioritized set of roadway improvements.

Gross Funding Needs				
Project Type	**Major Thoroughfare Plan**	**Major Corridor Study**	**Travel Demand Model Analysis**	**Total**
Operational & Safety	-	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	-	**$223,200,000**
Total	**$116,623,000**	**$167,364,000**	**$87,770,000**	**$371,757,000**
Potential Funding Options				
Countywide				
Scenario #1	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Property Tax	(+$0.03/$100)	(+$0.04/$100)	(+$0.023/$100)	**(+$0.093/$100)**
Scenario #2	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Road Utility Fee	(+$30/DU)	(+$40/DU)	(+$20/DU)	**(+$90/DU)**
Unincorporated County				
Scenario #3	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Property Tax	(+$0.13/$100)	(+$0.18/$100)	(+$0.10/$100)	**(+$0.41/$100)**
Scenario #4	no increase	$60,787,000	$87,770,000	**$148,557,000**
Property Tax		(+$0.065/$100)	(+$0.10/$100)	**(+$0.165/$100)**
AND	$116,623,000	$106,577,000	not eligible	**$223,200,000**
Impact Fees	(+$1,700/DU)	(+$1,600/DU)		**(+$3,300/DU)**
Scenario #5	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Road Utility Fee	(+$235/DU)	(+$335/DU)	(+$175/DU)	**(+$745/DU)**

Figure 23: Funding Scenarios Table

Scenario 1: Countywide Property Tax Increase

To fund the entire $371.8 million transportation capital funding gap solely through a Countywide property tax increase, the tax rate would need to increase by $0.093 per $100 of valuation through 2040. This represents an annual property tax increase of $93 for a home valued at $400,000.

- Countywide Property Tax Increase: $0.093
- $400,000 house: $93 annual increase

Scenario 2: Countywide Transportation Utility Fee (Annual)
To fund the entire $371.8 million transportation capital funding gap solely through the establishment of a Countywide Transportation Utility Fee, the fee assessed to residential property would be approximately $90 per housing unit on an annual basis. Nonresidential fees are assessed per 1,000 square feet of floor area based on the type of use. As an example, in 2018, retail uses would be assessed approximately $260 per 1,000 square feet on an annual basis. It is important to note that Transportation Utility Fees are not currently authorized in Tennessee. An amendment to State law would be required before such a fee could be implemented.

- Residential: $90 per dwelling
- Commercial: $260 per 1,000 sq ft
- Office/Service: $103 per 1,000 sq ft

*Note: Transportation Utility Fees are not currently authorized in Tennessee. An amendment to State law would be required before such a fee could be implemented.

Scenario 3: Unincorporated County Property Tax Increase
To fund the entire $371.8 million transportation capital funding gap solely through a property tax increase that would apply only to the unincorporated County, the tax rate would need to increase by $0.41 per $100 of valuation through 2040. This represents an annual property tax increase of $410 for a home valued at $400,000.

- Unincorporated County Property Tax Increase: $0.41
- $400,000 house: $410 annual increase

Scenario 4: Unincorporated County Property Tax Increase Combined with Impact Fee
To fund the entire $371.8 million transportation capital funding gap through a combination of an unincorporated County road impact fee and an unincorporated County property tax increase, the following would need to occur: A one-time road impact fee of $3,300 per each new dwelling would need to be assessed. This one-time fee would be assessed to new nonresidential uses as well, based upon the number of vehicular trips anticipated for the type of use proposed. This fee would fund the estimated $223 million that is needed to address roadway capacity needs. Because impact fees cannot be used to pay for existing deficiencies, an unincorporated County property tax increase of $0.165 per $100 of valuation through 2040 would also be needed in order to fund operational and safety improvements that are not eligible for funding through impact fees. This represents an annual property tax increase of $165 for a home valued at $400,000.

- Unincorporated County Tax Increase: $0.165
- $400,000 house: $165 annual increase
- Impact Fee: $3,300 per dwelling

*Note: Impact fees may only be assessed in order to fund new or expanded facilities that will be needed in order to address the direct impacts that new development will create.

Scenario 5: Unincorporated County Transportation Utility Fee
To fund the entire $371.8 million transportation capital funding gap solely through the establishment of an unincorporated County Transportation Utility Fee, the fee assessed to residential property would be approximately $745 per dwelling on an annual basis. Nonresidential fees are assessed per 1,000 square feet of floor area based on the type of use. As an example, in 2018, retail uses would be assessed approximately $2,200 per 1,000 square feet on an annual basis. It is important to note that Transportation Utility Fees are not currently authorized in Tennessee. An amendment to State law would be required before such a fee could be implemented.

- Transportation Utility Fee (annual)
- Residential: $745 per dwelling
- Commercial: $2,200 per 1,000 sq ft
- Office/Service: $862 per 1,000 sq ft

*Note: Transportation Utility Fees are not currently authorized in Tennessee. An amendment to State law would be required before such a fee could be implemented.

Capital Improvement Program (CIP)

Once a funding source(s) is identified, the County should create and maintain a Capital Improvement Program (CIP) for roadway improvement planning.

A CIP identifies all the individual capital projects that are proposed, their associated construction and completion schedules, and the financial plan for funding those improvements. The CIP provides a working blueprint for prioritizing and implementing projects such as roadway improvements. It coordinates strategic planning, financial capacity, and physical development. A CIP has two parts – a capital budget and a capital program. The capital budget is the upcoming year's spending plan for capital items. The capital program is a plan for capital expenditures that typically extends five to ten years beyond the capital budget.

COORDINATION AND EDUCATION EFFORTS

There are a number of other actions that the County can take that can either help advance roadway improvement projects or incrementally reduce the demand on the roadway network. These actions may include the following:

- Work with municipalities to pursue Inter-local approaches to roadway improvements, especially in areas where traffic from multiple jurisdictions is leading to congestion issues.
- Actively lobby and advocate for the acceleration of needed roadway projects on State Routes and for legislative changes that can help advance transportation planning efforts, such as the authorization of a Transportation Utility Fee.
- Pursue transportation demand management efforts such as intelligent signalization (coordinated signal timing capable of real time adjustments based on traffic conditions), staggered work and school hours, and improved access management standards.

SUMMARY OF STRATEGY ELEMENTS

The following is a summary of strategy elements that the county should persue.

Update Comprehensive Land Use Plan
The County should revisit its land use policies through an update to the Comprehensive Land Use Plan, with particular emphasis on residential densities.

Implement Policy Changes
Policy changes resulting from the Comprehensive Plan update process should be implemented through revisions to the Zoning Ordinance and other regulatory documents.

Prioritize Roadway Improvement Projects
The County should prioritize the roadway improvement projects as outlined in the Major Thoroughfare Plan, the Major Corridors Study and the MPO travel demand model analysis and develop a list of roadway projects that it wishes to implement over time.

Establish Funding Source(s)
The County should establish a permanent, dedicated source(s) of funding to implement the prioritized list of roadway improvement projects.

Create Capital Improvement Program (CIP) for Roadway Improvements
Once a funding source(s) is identified, the County should create a Capital Improvement Program (CIP) for roadway improvement planning that is updated on an annual basis.

Other Approaches
The County should seek opportunities to coordinate with other jurisdictions, lobby and advocate for State roadway projects and legislation that can advance transportation planning efforts, and pursue partnerships to help implement transportation demand management efforts, such as staggered work and school hours and improved access management.

Effect of Comprehensive Traffic Strategy Report

This Comprehensive Traffic Strategy Report does not make any specific judgments or decisions with respect to future land uses, residential densities or sources of funding.

Rather, this Report acknowledges that traffic conditions are projected to worsen considerably in unincorporated areas and that in order to prevent a deterioration of the high quality of life that County residents enjoy, the County must actively pursue, develop and implement a multi-faceted strategy that integrates land use planning, capital improvement planning, financial planning and other efforts.

Appendices

Appendix 1: Transportation Funding Report

Appendix 2: Technical Transportation Data

Appendix 3: Public Responses to Surveys

Appendix 1

TRANSPORTATION FUNDING REPORT

TischlerBise, Inc

Transportation Capital Funding Strategy

Prepared for:
Williamson County, Tennessee

October 19, 2017

TischlerBise
FISCAL | ECONOMIC | PLANNING

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EXECUTIVE SUMMARY

BACKGROUND

TischlerBise is part of a consultant team, along with McBride Dale Clarion and RPM Transportation Consultants, working with Williamson County, Tennessee, to develop a Transportation Capital Funding Strategy for planned transportation improvements through 2040. This report is designed to address the transportation capital funding gap and to identify the most realistic funding tools for consideration by Williamson County.

PROJECTED TRANSPORTATION CAPITAL IMPROVEMENTS

In rapidly growing areas in Williamson County, the pace of growth already exceeds the pace of transportation capital improvements – resulting in increased congestion and deteriorating levels of service. The *Major Thoroughfare Plan*, the *Major Corridors Study*, and the Nashville Area Metropolitan Planning Organization Travel Demand Model identify transportation capital improvements in Williamson County. The analysis outlined in this report focuses on Williamson County's share of transportation capital improvements in unincorporated areas of Williamson County – the analysis excludes state roads and transportation capital improvements in the incorporated areas. Shown in Figure 1, Williamson County's share of transportation capital improvements totals $378,757,000 (in 2017 dollars).

Figure 1: Summary of Transportation Capital Improvements

Costs	*Amount*
Costs to Address Operational & Safety Needs	
Major Thoroughfare Plan	$4,411,000
Major Corridors Study	$63,376,000
Nashville MPO Travel Demand Model	$87,770,000
Subtotal: Operational & Safety Needs	***$155,557,000***
Costs to Address Capacity Needs	
Major Thoroughfare Plan	$116,623,000
Major Corridors Study	$106,577,000
Subtotal: Capacity Needs	***$223,200,000***
Total Cost	**$378,757,000**

PROJECTED FUNDING FOR TRANSPORTATION CAPITAL IMPROVEMENTS

Williamson County funds road maintenance and road improvements through the Highway Fund. Historically, operations and maintenance account for the majority of expenditures to the Highway Fund and the major sources of funding are the Wheel Tax, Gas and Motor Fuel Tax, Business Tax, and dedicated property tax. The analysis assumes the current funding structure remains constant with most, if not all, Highway Fund revenues being used for operations and maintenance. In Williamson County's Fiscal Year 2018 Budget, the Highway Fund includes a transfer of $7,000,000 to fund transportation capital improvements. Long-term reliance on transfers from the Highway Fund is unsustainable without additional revenue sources; therefore, the figure below includes a one-time transfer from the Highway Fund. This results in a transportation capital funding gap, or deficit, of $371,757,000.

Figure 2: Summary of Transportation Capital Needs and Current Funding Sources

Costs	*Amount*
Costs to Address Operational & Safety Needs	
Major Thoroughfare Plan	$4,411,000
Major Corridors Study	$63,376,000
Nashville MPO Travel Demand Model	$87,770,000
Subtotal: Operational & Safety Needs	***$155,557,000***
Costs to Address Capacity Needs	
Major Thoroughfare Plan	$116,623,000
Major Corridors Study	$106,577,000
Subtotal: Capacity Needs	***$223,200,000***
Total Cost	**$378,757,000**

Revenue Transfer	*Amount*
FY2018 Highway Fund Transfer	$7,000,000
Total Revenue Transfer	**$7,000,000**

Excess / (Deficit)	**($371,757,000)**

POTENTIAL FUNDING TOOLS

To address transportation capital funding needs, this report includes potential funding tools and revenues that could be generated by each of these tools. Tennessee already allows an array of potential funding tools to address cost-of-growth issues. Still other tools are unauthorized but have been used by other fast-growing communities in other states to fund capital infrastructure for transportation.

When focusing on a funding strategy to address the transportation capital funding gap, it is important to begin by prioritizing, or identifying, the funding tools that provide the most realistic opportunities to achieve the funding goals of Williamson County. Given current conditions in Williamson County, the following is our assessment of each of these funding tools according to four criteria: (1) revenue potential; (2) technical ease; (3) proportionality; and (4) public acceptance.

Through consultation with Williamson County staff, the Williamson County Planning Commission, and the Williamson County Comprehensive Traffic Strategy Advisory Committee, TischlerBise focused on three potential funding tools for inclusion in the transportation capital funding strategy. Where applicable, this report analyzes potential funding tools for implementation either countywide or in unincorporated areas of Williamson County. To address the funding gap for transportation capital improvements, this analysis recommends the following three funding tools:

1. Property Tax (countywide or unincorporated area);
2. Transportation Utility Fees (countywide or unincorporated area); and
3. Impact fees (unincorporated area).

Figure 3: Evaluation of Funding Tools

Revenue Tool	*Revenue Potential*	*Technical Ease*	*Proportionality*	*Public Acceptance*
Property Tax	Positive	Positive	Negative	Positive/Negative[1]
Transportation Utility Fee	Positive	Neutral	Neutral	Positive/Neutral[2]
Impact Fee	Positive	Negative	Positive	Positive

1. Depends on projects and structure of tax increase (e.g., finite period for specific projects).
2. Depends on the projects/purposes.

Property Tax

Often when communities need to increase revenues, the first sources considered are the largest existing revenue sources. Williamson County's largest revenue source is the property tax – accounting for approximately $42.4 million in the General Fund (49 percent) and $30.2 million in the General Debt Service Fund (70 percent). Williamson County is no exception as they have on several occasions raised the ad valorem tax rates to fund specific initiatives. Traditionally, property tax revenues are relatively stable and predictable, and a small increase often results in a significant amount of revenue. Property tax increases can be dedicated for a specific purpose, such as transportation capital improvements, which may also improve the likelihood of such increases being approved.

Transportation Utility Fee

Also called "road utility fees" and "transportation maintenance fees," select cities and counties across the country utilize this type of fee. Developed properties are charged a fee based on land use demand factors to fund operations, maintenance, and/or capital improvements of a specific service. Most fees of this type fund street maintenance or transportation operations, with trip generation factors and/or a parcel's street frontage as demand factors. This type of fee must be reasonably related to the overall cost of the service and must be used to defray the cost of a particular governmental service – unlike a tax which may be used to defray general governmental expenses. Fee revenue may not be transferred to other governmental funds. Using the projected transportation capital funding gap, a transportation utility fee can be sized to generate enough revenue to fund the planned transportation improvements.

Impact Fees

Impact fees (also called development fees or capacity fees) are one-time fees assessed on new development and reflect new growth's fair share of the cost to provide necessary capital facilities. Impact fees are regulatory measures that happen to generate revenue – the overall premise is that the fee is a mechanism to provide adequate infrastructure to ensure orderly growth. Fees are collected from new development only and can only be used to pay for new or expanded capital improvements, not maintenance or operations. Put simply, the fees reflect the cost to provide infrastructure to new development.

In determining the reasonableness of these one-time fees, the fee must meet three requirements: (1) needed capital facilities are a consequence of new development; (2) fees are a proportionate share of the government's cost; and (3) revenues are managed and expended in such a way that new development receives a substantial benefit. Impact fees cannot be imposed on new development to pay for or provide public improvements needed by existing development nor can they used for maintenance, replacement of existing facilities, or renovation of existing facilities that do not add new capacity. Capital improvements funded by impact fees must enable Williamson County to accommodate new development by adding facility capacity.

SUMMARY OF TRANSPORTATION CAPITAL FUNDING STRATEGIES

Through the analysis and development of this Transportation Capital Funding Strategy, TischlerBise developed five scenarios to fund Williamson County's transportation capital funding needs. Designed to provide Williamson County with a variety of funding options, the scenarios shown in Figure 4 represent funding tools that provide the most realistic opportunities to achieve Williamson County's funding goals. These scenarios are not exhaustive, and potential funding tools from multiple scenarios could be adopted as complementary revenue tools. For example, Williamson County could adopt unincorporated property taxes (Scenario 3) and unincorporated transportation utility fees (Scenario 5) at lower levels than suggested in the analysis.

Figure 4: Summary of Transportation Capital Funding Strategies

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Potential Funding Options				
Countywide				
Scenario 1: Property Tax	$116,623,000 (+$0.03/$100)	$167,364,000 (+$0.04/$100)	$87,770,000 (+$0.023/$100)	**$371,757,000 (+$0.093/$100)**
Scenario 2: Transportation Utility Fee	$116,623,000 ($30 per DU)	$167,364,000 ($40 per DU)	$87,770,000 ($20 per DU)	**$371,757,000 ($90 per DU)**
Unincorporated County				
Scenario 3: Property Tax	$116,623,000 (+$0.13/$100)	$167,364,000 (+$0.18/$100)	$87,770,000 (+$0.10/$100)	**$371,757,000 (+$0.41/$100)**
Scenario 4: Property Tax	no increase	$60,787,000 (+$0.065/$100)	$87,770,000 (+$0.10/$100)	**$148,557,000 (+$0.165/$100)**
AND Impact Fees	$116,623,000 ($1,700 per DU)	$106,577,000 ($1,600 per DU)	not eligible	**$223,200,000 ($3,300 per DU)**
Scenario 5: Transportation Utility Fee	$116,623,000 ($235 per DU)	$167,364,000 ($335 per DU)	$87,770,000 ($175 per DU)	**$371,757,000 ($745 per DU)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

PROJECTED TRANSPORTATION CAPITAL IMPROVEMENTS

Based on projections developed by Williamson County staff and RPM Transportation Consultants, Williamson County expects to continue its trend of strong population and employment growth. Countywide population estimates (2017) total 237,680 persons with 46,671 persons living in unincorporated areas. By 2040, population totals are projected to equal 552,052 persons countywide and 160,835 persons in unincorporated areas. Similarly, employment in Williamson County is expected to increase from the current estimate of 149,136 jobs (countywide) with 7,957 jobs located in unincorporated areas to 307,870 jobs countywide and 58,413 jobs in unincorporated areas by 2040. Projected population and employment growth will have significant implications on the demand and provision of capital improvements in Williamson County.

In rapidly growing areas in Williamson County, the pace of growth already exceeds the pace of transportation capital improvements. This results in increased congestion and deteriorating levels of service. The *Major Thoroughfare Plan*, the *Major Corridors Study*, and the Nashville Area Metropolitan Planning Organization Travel Demand Model identify transportation capital improvements in Williamson County. The analysis outlined in this report focuses on Williamson County's share of transportation capital improvements in unincorporated areas of Williamson County – the analysis excludes state roads and transportation capital improvements in the incorporated areas. Williamson County's share of transportation capital improvements totals $378,757,000 (in 2017 dollars). Of this amount, $155,557,000 is needed to address operational and safety needs and $223,200,000 is needed to address capacity needs.

Figure 5: Summary of Transportation Capital Improvements

Costs	*Amount*
Costs to Address Operational & Safety Needs	
Major Thoroughfare Plan	$4,411,000
Major Corridors Study	$63,376,000
Nashville MPO Travel Demand Model	$87,770,000
Subtotal: Operational & Safety Needs	***$155,557,000***
Costs to Address Capacity Needs	
Major Thoroughfare Plan	$116,623,000
Major Corridors Study	$106,577,000
Subtotal: Capacity Needs	***$223,200,000***
Total Cost	**$378,757,000**

PROJECTED FUNDING FOR TRANSPORTATION CAPITAL IMPROVEMENTS

This section of the analysis evaluates whether Williamson County, under its current revenue structures, will be able to generate sufficient revenues to fund the needed capital infrastructure identified in the previous section. In instances where revenue generation is insufficient, the report identifies the funding gap, or the difference between the costs needed to address capital infrastructure needs and Williamson County's ability to generate the needed revenue under current revenue structures.

Williamson County funds road maintenance and road improvements through the Highway Fund. Historically, operations and maintenance account for the majority of expenditures to the Highway Fund and the major sources of funding are the Wheel Tax, Gas and Motor Fuel Tax, Business Tax, and dedicated property tax. The analysis assumes the current funding structure remains constant with most, if not all, Highway Fund revenues being used for operations and maintenance. In Williamson County's Fiscal Year 2018 Budget, the Highway Fund includes a transfer of $7,000,000 to fund transportation capital improvements. Long-term reliance on transfers from the Highway Fund is unsustainable without additional revenue sources; therefore, the figure below includes a one-time transfer from the Highway Fund. This results in a transportation capital funding gap, or deficit, of $371,757,000.

Figure 6: Summary of Transportation Capital Needs and Current Funding Sources

Costs	*Amount*
Costs to Address Operational & Safety Needs	
Major Thoroughfare Plan	$4,411,000
Major Corridors Study	$63,376,000
Nashville MPO Travel Demand Model	$87,770,000
Subtotal: Operational & Safety Needs	***$155,557,000***
Costs to Address Capacity Needs	
Major Thoroughfare Plan	$116,623,000
Major Corridors Study	$106,577,000
Subtotal: Capacity Needs	***$223,200,000***
Total Cost	**$378,757,000**

Revenue Transfer	*Amount*
FY2018 Highway Fund Transfer	$7,000,000
Total Revenue Transfer	**$7,000,000**

Excess / (Deficit)	**($371,757,000)**

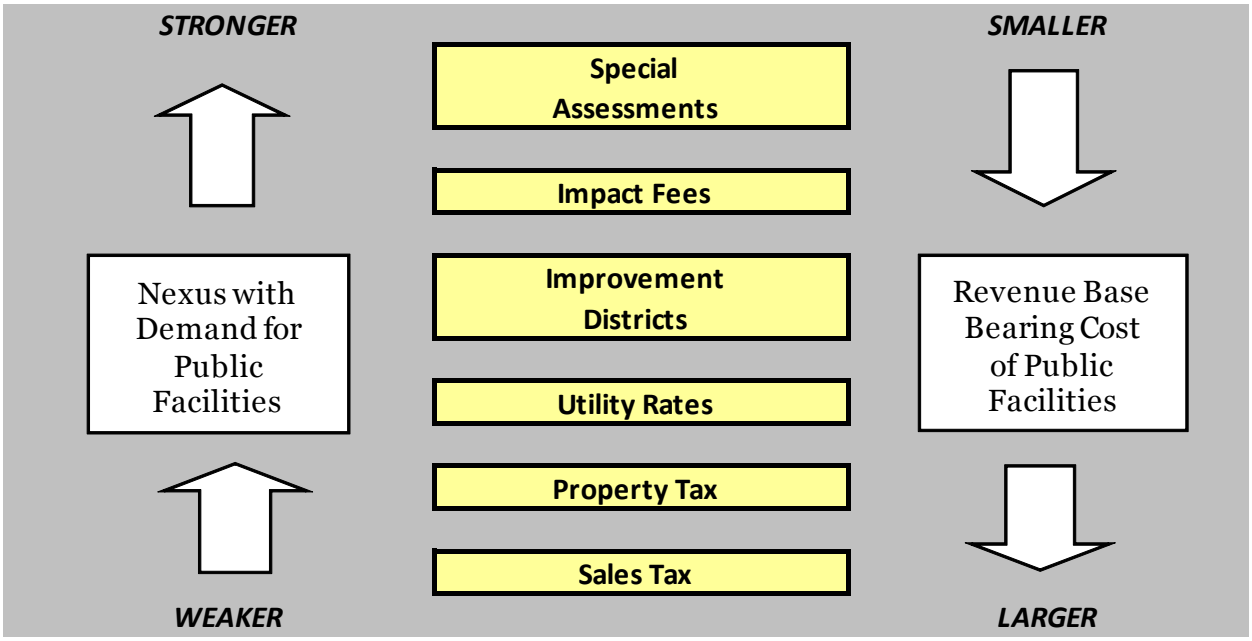
POTENTIAL FUNDING TOOLS

This section is designed to address the transportation capital funding gap and to identify the most realistic funding tools for consideration by Williamson County. To address transportation capital funding needs, this section includes potential funding tools and revenues that could be generated by each of these tools. It also summarizes the pros and cons of using the revenue tool.

APPROACH, STRATEGY, AND PHILOSOPHY

To address infrastructure funding, revenue strategies often force decision-makers to wrestle with a dynamic tension between two competing desires. As shown on the left side of Figure 7, various infrastructure-funding options have a strong to weak connection between the source of funds and the demand for public facilities. For instance, area-specific assessments are based on known capital costs in a specific location and are paid by those directly benefiting from the new infrastructure. In contrast, property tax revenue may be used by a locality to fund infrastructure with very little, if any, connection between those paying the tax and the need for capital improvements.

Figure 7: Conceptual Framework for Capital Funding Strategies

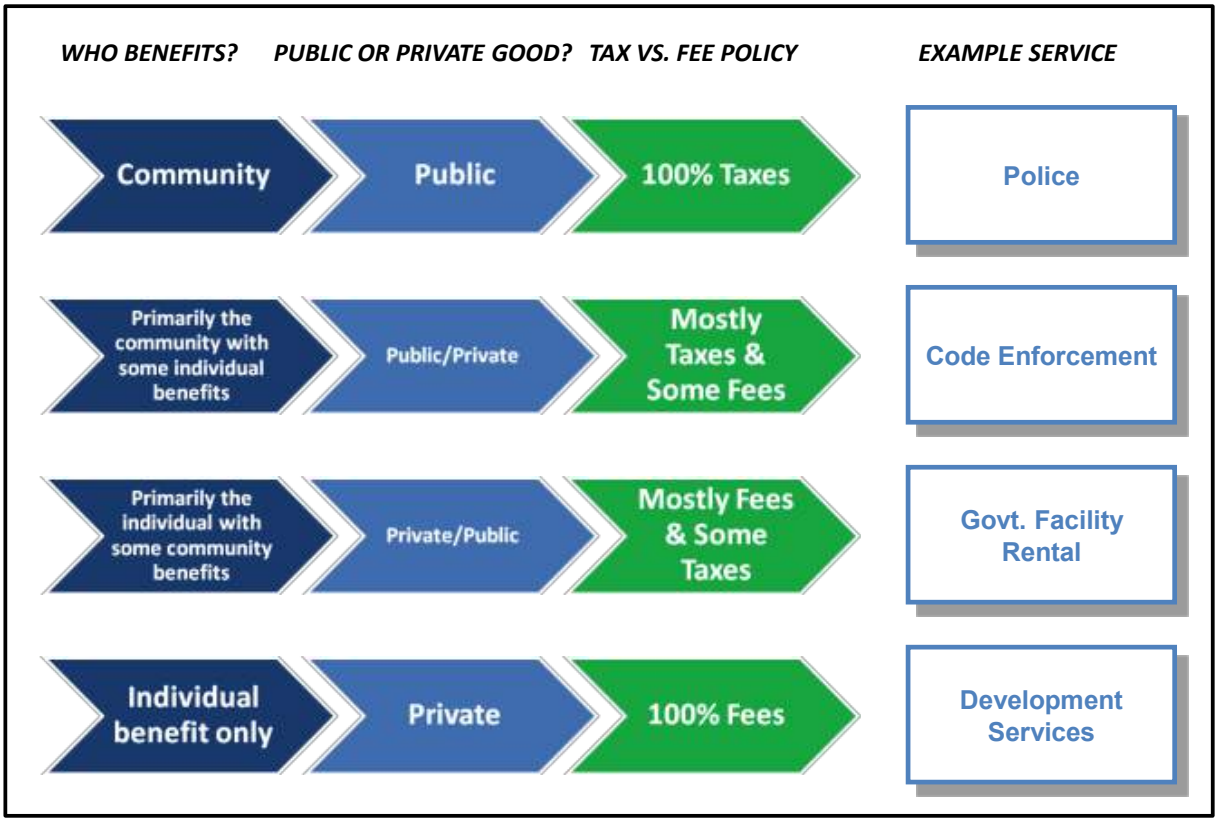


Source: TischlerBise: P. Tischler, D. Guthrie, and N. Mishkovsky, "Introduction to Infrastructure Financing," ICMA IQ Service Report

As with capital infrastructure funding, paying for public services offers its own set of tensions. As depicted in the figure below, certain types of services are more appropriate to be funded with general tax dollars because they are a public good and benefit all of a community, rather than an individual (e.g., public safety). At the other end of the continuum, other services can be viewed as more appropriately funded with user fees because the benefit is directly enjoyed by an individual (e.g., development

services such as building permits). Still others are a mix of both community and individual benefits and therefore appropriate to be funded with a combination of general tax dollars and fees. Because of these issues, local governments often establish policies regarding acceptable thresholds for cost recovery from fees while considering social and economic factors.

Figure 8: Taxes vs. Fees



Source: TischlerBise, Inc.

General Criteria for Evaluating Funding Tools

Tennessee already allows an array of potential funding tools to address cost-of-growth issues. Still other tools are unauthorized but have been used by other fast-growing communities in other states to fund capital infrastructure for transportation. Funding tools considered in the analysis include property tax, sales tax, wheel tax, local option gas tax, impact fees, transportation utility fees, jurisdictional revenue sharing, real estate transfer fee, toll roads, special districts, tax increment financing, hotel occupancy tax, and rental car receipts tax.

When focusing on a funding strategy to address the funding gap for transportation, it is important to begin by prioritizing, or identifying, the funding tools that provide the most realistic opportunities to achieve the funding goals of Williamson County. When considering which tools are most appropriate, four principle criteria should be considered:

1. **Revenue Potential:** This is perhaps the most important evaluation criterion, as the ability to raise sufficient revenue to cover capital and operational costs is critical. Specific criteria include whether the revenue is ongoing or one-time in nature. The long-term performance of on-going revenue sources should be evaluated for their ability to keep pace with ongoing costs. This evaluation should include an analysis of what economic or other factors may impact the stability of the revenue source.
2. **Technical Ease:** Each of the potential revenue strategies requires some technical expertise and administrative effort to implement. They may require, for example, additional accounting and reporting requirements. Furthermore, a funding mechanism may require that a technical study be prepared to justify the fee or charge.
3. **Proportionality**: This evaluation criterion refers to the relation between those generating the demand for public services versus those who pay the tax or fee. For example, communities sometimes choose to require developer contributions or exactions for growth-related facilities because the public perception is that existing residents are unfairly paying the cost of new growth. In another example, to make an impact fee proportionate and reasonably related to service demands, the fee should vary by type of land use as each generates a different number of persons, jobs, vehicle trips, etc.
4. **Public Acceptability**: This evaluation criterion often varies by jurisdiction and the type of facility or service to be funded. It reflects how the majority of existing residents are expected to accept each financing or planning mechanism.

EVALUATION OF SPECIFIC FUNDING TOOLS

Through consultation with Williamson County staff, the Williamson County Planning Commission, and the Williamson County Comprehensive Traffic Strategy Steering Committee, TischlerBise focused on three potential funding tools for inclusion in the transportation capital funding strategy. Where applicable, this report analyzes potential funding tools for implementation either countywide or in unincorporated areas of Williamson County. To address the funding gap for transportation capital improvements, this analysis recommends the following three funding tools:

1. Property Tax (countywide or unincorporated area);
2. Transportation Utility Fees (countywide or unincorporated area); and
3. Impact fees (unincorporated area).

Other funding tools were considered, but were not included for different reasons.

1. A **sales tax** increase was considered but not suggested due to its limited revenue generating ability under Williamson County's current sales tax revenue sharing structure (50 percent to schools and 50 percent to the jurisdiction where the sale occurred). Due to the limited amount of retail development located in unincorporated Williamson County, this revenue source would generate limited revenue and require dedicating a portion of the increased sales tax rate to transportation improvements.
2. A **wheel tax** increase was considered but not suggested due to the need for jurisdictional revenue sharing (if paid by all county drivers) or the need for different tax rates for vehicles registered in incorporated areas and unincorporated areas (if paid by only unincorporated drivers). A 2006 referendum to increase the wheel tax failed by majority vote.
3. A **local option gas tax** was not considered due to the recent statewide gas tax increase. Although many communities across the nation are authorized by their state legislatures to add a local tax on each gallon of gas sold within the jurisdiction, there is not a local option gas tax in place in Tennessee. It is a revenue tool that would require authorization from the state legislature.
4. A **real estate transfer fee** was considered but not suggested because of its limited revenue generating potential and its need for authorization from the state legislature.
5. **Toll roads** were not considered because of their limited popularity in the region and their complete absence in Williamson County and Tennessee.
6. **Special benefit districts** are not included due to the direct benefit requirements for the assessments; therefore, the tool is usually used for capital infrastructure that is more local (versus) regional in nature.
7. **Tax increment financing** (TIFs) was not included because it is used primarily in a redevelopment context, it results in the county foregoing increased tax dollars for other needs, and it is usually used for more localized, versus regional projects.

8. A **rental car receipts tax** was not considered because the large majority of rental cars used in the region are rented at the airport in Nashville and, consequently, the tool would not be a significant revenue generator.
9. An **accommodations tax** was not included because, without a jurisdictional revenue sharing agreement, it is not likely to generate sufficient revenue for Williamson County given the majority of hotel/motels are located within the incorporated areas.

The three funding tools evaluated in greater detail in this analysis are: (1) property taxes; (2) transportation utility fees; and (3) impact fees. Given current conditions in Williamson County, the following is our assessment of each of these funding tools according to four criteria: (1) revenue potential; (2) technical ease; (3) proportionality; and (4) public acceptance.

Figure 9: Evaluation of Funding Tools

Revenue Tool	*Revenue Potential*	*Technical Ease*	*Proportionality*	*Public Acceptance*
Property Tax	Positive	Positive	Negative	Positive/Negative[1]
Transportation Utility Fee	Positive	Neutral	Neutral	Positive/Neutral[2]
Impact Fee	Positive	Negative	Positive	Positive

1. Depends on projects and structure of tax increase (e.g., finite period for specific projects).
2. Depends on the projects/purposes.

Property Tax

Often when communities need to increase revenues, the first sources considered are the largest existing revenue sources. Williamson County's largest revenue source is the property tax – accounting for approximately $42.4 million in the General Fund (49 percent) and $30.2 million in the General Debt Service Fund (70 percent). Williamson County is no exception as they have on several occasions raised the ad valorem tax rates to fund specific initiatives. Traditionally, property tax revenues are relatively stable and predictable, and a small increase often results in a significant amount of revenue. Property tax increases can be dedicated for a specific purpose, such as transportation capital improvements, which may also improve the likelihood of such increases being approved.

Williamson County's current combined property tax rate of $2.15 on each $100 of taxable property is allocated to the County General Fund ($0.38), Solid Waste/Sanitation Fund ($0.06), Highway/Public Works Fund ($0.02), General Purpose Schools Fund ($1.21), General Debt Service Fund ($0.27), and Rural Debt Service Fund ($0.21). The following figure shows the amount of property tax that goes to each fund based on Williamson County's 2018 Budget.

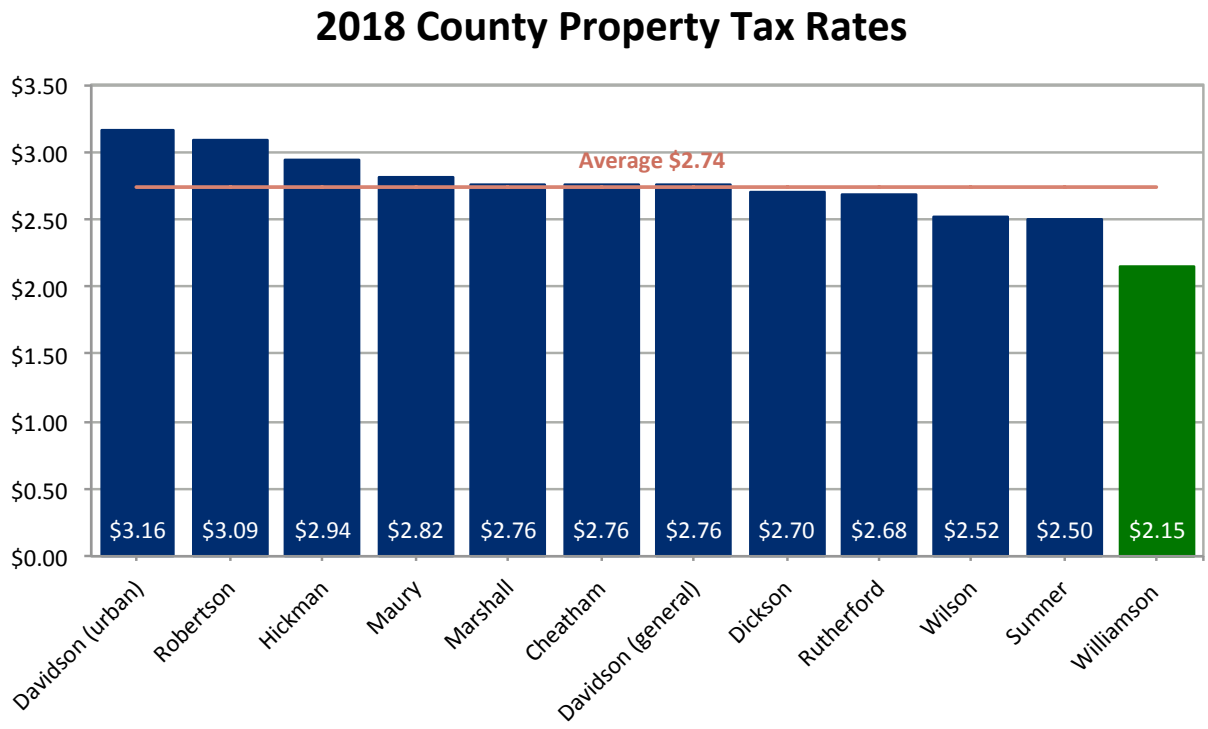
Figure 10: Property Tax Rates and Tax Revenues, 2018

Fund	*Proposed Tax Rate (FY17-18)*	*Amount of Tax Levy*	*Reserve for Delinquency (8%)*	*Estimated Collections of Taxes*
County General	$0.38	$46,128,218	$3,690,257	$42,437,961
Solid Waste/Sanitation	$0.06	$3,935,885	$314,871	$3,621,014
Highway/Public Works	$0.02	$488,869	$39,110	$449,759
General Purpose School	$1.21	$146,881,956	$11,750,556	$135,131,400
General Debt Service	$0.27	$32,775,312	$2,622,025	$30,153,287
Rural Debt Service	$0.21	$20,001,860	$1,600,149	$18,401,711
	$2.15	$250,212,100	$20,016,968	$230,195,132

Source: 2018 Budget, Williamson County, Tennessee.

In comparison, property tax rates in neighboring counties range from a low of $2.50 per $100 of taxable value to a high of $3.16 – the average property tax rate for counties in the Nashville metropolitan area is $2.74. Increasing Williamson County's property tax rate closer to the area average would likely not put Williamson County at a competitive disadvantage – while at the same time has the potential to generate hundreds of millions of dollars in revenue. Furthermore, this increase could be dedicated to transportation capital improvements, which could assist in gaining public support.

Figure 11: Nashville Area Property Tax Rates, 2018



Shown below are two potential scenarios for adoption of dedicated property taxes in Williamson County. The first scenario assumes a dedicated countywide property tax assessed to all development in Williamson County. The second scenario assumes a dedicated property tax assessed to development in unincorporated areas of Williamson County. Property taxes are assessed per $100 of taxable value and the analysis uses the current taxable value of $12.14 billion shown in Williamson County's 2018 budget to estimate base year revenues. All projected revenues maintain the current relationship between taxable value and development.

Countywide Property Tax

To fund the transportation capital funding gap, Williamson County needs to increase and dedicate approximately $0.09 per $100 of valuation countywide through 2040 – this represents an annual property tax increase of $93 for a home valued at $400,000. Used as the sole funding source for the transportation capital funding gap, a dedicated countywide property tax could generate $371,757,000. Shown below in Figure 12 are property tax rates needed to fund improvements included in the Major Thoroughfare Plan ($0.03), the Major Corridors Study ($0.04), and the Nashville Area MPO Travel Demand Model ($0.023). This represents Scenario 1 and includes no other funding tools.

Figure 12: Countywide Property Tax Revenue

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**

Potential Funding Options				
Countywide				
Scenario 1: Property Tax	$116,623,000 (+$0.03/$100)	$167,364,000 (+$0.04/$100)	$87,770,000 (+$0.023/$100)	**$371,757,000 (+$0.093/$100)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Unincorporated Property Tax

As an alternative to a countywide property tax increase, the analysis includes a dedicated property tax assessed in Unincorporated Williamson County. Because unincorporated areas of Williamson County include less development than incorporated areas, the potential tax base is smaller. To fund the transportation funding gap of $371,757,000, the dedicated property tax rates needs to be approximately $0.41 per $100 of valuation through 2040 – this represents an annual property tax increase of $410 for a home valued at $400,000. Individual property tax rates, shown below in Figure 13, fund improvements included in the Major Thoroughfare Plan ($0.13), the Major Corridors Study ($0.18), and the Nashville Area MPO Travel Demand Model ($0.10). This represents Scenario 3 and includes no other funding tools.

Figure 13: Unincorporated Property Tax Revenue

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**

Potential Funding Options				
Unincorporated County				
Scenario 3: Property Tax	$116,623,000 (+$0.13/$100)	$167,364,000 (+$0.18/$100)	$87,770,000 (+$0.10/$100)	**$371,757,000 (+$0.41/$100)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Evaluation

A dedicated property tax has significant revenue potential. It is a tool that can be applied across the county or only in unincorporated area, but using this revenue tool countywide might raise potential equity issues. Countywide property tax increases to fund transportation capital infrastructure in unincorporated areas would result in low countywide property tax increases, but some may question the proportionality of property owners in the incorporated areas funding transportation improvements in the unincorporated areas. There is existing authorization to use the property tax, and it is easy to administer since Williamson County already administers a property tax program.

Transportation Utility Fee

Also called "road utility fees" and "transportation maintenance fees," select cities and counties across the country utilize this type of fee. Developed properties are charged a fee based on land use demand factors to fund operations, maintenance, and/or capital improvements of a specific service. Most fees of this type fund street maintenance or transportation operations, with trip generation factors and/or a parcel's street frontage as demand factors. This type of fee must be reasonably related to the overall cost of the service and must be used to defray the cost of a particular governmental service – unlike a tax which may be used to defray general governmental expenses. Fee revenue may not be transferred to other governmental funds. Using the projected transportation capital funding gap, a transportation utility fee can be sized to generate enough revenue to fund the planned transportation improvements.

To calculate potential transportation utility fees, the analysis assumes construction of planned transportation improvements happens on a consistent basis from 2018 through 2040 – 23 years. Dividing the projected transportation capital funding gap, $371,757,000, by the projected timeframe, 23 years, produces an average annual deficit of approximately $16.16 million. Next, allocating the average annual deficit to projected vehicle trips for the corresponding year determines the cost per trip. Finally, applying the cost per trip to the number of trips generated by each type of development, based on Institute of Transportation Engineers trip factors, generates a transportation utility fee specific to that type of development.

Adjusting the transportation utility fee on an annual basis generates revenue equal to the average annual transportation deficit for that year; however, updating the fee every year increases the administrative burden of this revenue tool. Although the study uses the average annual deficit to calculate the proposed fee, Williamson County can update the fee less frequently. For example, Williamson County could update the fee every five years based on planned improvements during that five-year timeframe. This eases the administrative burden but generates small deficits in the early years and small surpluses in the later years. Five-year revenue generation, however, equals the five-year planned transportation improvements on which the fee is based.

Shown below are two potential scenarios for adoption of transportation utility fees in Williamson County. The first scenario assumes a countywide fee assessed to all development in Williamson County. The second scenario assumes a fee assessed to development in unincorporated areas of Williamson County. Fees are assessed per housing unit for residential development and per thousand square feet of floor area for nonresidential development.

Countywide Transportation Utility Fee

Shown below in Figure 14 is a fee schedule, based on the above assumptions, for a countywide transportation utility fee. The cost per trip in year one is $18.64 ($16,163,348 deficit / 867,512 countywide vehicle trips). By spreading the cost of all planned transportation improvements evenly through 2040, and assuming vehicle trips will increase each year as development occurs, the cost per trip decreases each year. Therefore, the transportation utility fee will decrease each year as the cost of transportation improvements is allocated to a greater number of vehicle trips.

Residential fees are assessed per housing unit based on average weekday vehicle trips. In 2018, the annual single-family fee is $88.73 per housing unit ($18.64 cost per trip X 4.76 average weekday vehicle trips per housing unit), or $7.40 per month. Nonresidential fee are assessed per 1,000 square feet of floor area. In 2018, the annual fee per 1,000 square feet of office development is $102.80 ($18.64 cost per trip X 5.515 average weekday vehicle trips per 1,000 square feet), or $8.57 per month.

Figure 14: Countywide Transportation Utility Fee

	2017	2018	2027	2037	2040
	Base Year	*1*	*10*	*20*	*23*
Vehicle Trips		867,143	1,163,721	1,625,759	1,800,198
Deficit		$16,163,348	$16,163,348	$16,163,348	$16,163,348
Cost per Trip		$18.64	$13.89	$9.94	$8.98

		2018	2027	2037	2040
Development Type	Trips[1]	*1*	*10*	*20*	*23*
Residential	4.76	$88.73	$66.11	$47.32	$42.74
Commercial	14.091	$262.65	$195.72	$140.09	$126.52
Office/Service	5.515	$102.80	$76.60	$54.83	$49.52
Industrial	3.485	$64.96	$48.40	$34.65	$31.29

1. Trip Generation, Institute of Transportation Engineers, 2012.

Shown below, Figure 15 represents Scenario 2 and includes no other funding tools. Countywide transportation utility fees, shown above in Figure 14, generate enough revenue to fund the transportation capital funding gap.

Figure 15: Countywide Transportation Utility Fee Revenue

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Potential Funding Options				
Countywide				
Scenario 2: Transportation Utility Fee	$116,623,000 ($30 per DU)	$167,364,000 ($40 per DU)	$87,770,000 ($20 per DU)	**$371,757,000 ($90 per DU)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Unincorporated Transportation Utility Fee

Shown below in Figure 16 is a fee schedule, based on the above assumptions, for a transportation utility fee assessed in unincorporated areas of Williamson County. The cost per trip in year one is $156.36 ($16,163,348 deficit / 103,374 unincorporated area vehicle trips). By spreading the cost of all planned transportation improvements evenly through 2040, and assuming vehicle trips will increase each year as development occurs, the cost per trip decreases each year. Therefore, the transportation utility fee will decrease each year as the cost of transportation improvements is allocated to a greater number of vehicle trips.

Residential fees are assessed per housing unit based on average weekday vehicle trips. In 2018, the annual single-family fee is $744.27 per housing unit ($156.36 cost per trip X 4.76 average weekday vehicle trips per housing unit), or $62.02 per month. Nonresidential fee are assessed per 1,000 square feet of floor area. In 2018, the annual fee per 1,000 square feet of office development is $862.32 ($156.36 cost per trip X 5.515 average weekday vehicle trips per 1,000 square feet), or $71.86 per month. As shown below, allocating the cost of planned transportation improvements only to development in unincorporated Williamson County increases the fee amount, because the costs are allocated to a smaller development base.

Figure 16: Unincorporated Transportation Utility Fee

	2017	2018	2027	2037	2040
	Base Year	*1*	*10*	*20*	*23*
Vehicle Trips		103,374	179,456	341,823	417,924
Deficit		$16,163,348	$16,163,348	$16,163,348	$16,163,348
Cost per Trip		$156.36	$90.07	$47.29	$38.68

		2018	2027	2037	2040
Development Type	Trips[1]	*1*	*10*	*20*	*23*
Residential	4.76	$744.27	$428.73	$225.08	$184.09
Commercial	14.091	$2,203.24	$1,269.16	$666.30	$544.97
Office/Service	5.515	$862.32	$496.73	$260.78	$213.29
Industrial	3.485	$544.91	$313.89	$164.79	$134.78

1. Trip Generation, Institute of Transportation Engineers, 2012.

Shown below, Figure 17 represents Scenario 5 and includes no other funding tools. Unincorporated transportation utility fees, shown above in Figure 16, generate enough revenue to fund the transportation capital funding gap.

Figure 17: Unincorporated Transportation Utility Fee Revenue

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Potential Funding Options				
Unincorporated County				
Scenario 5: Transportation Utility Fee	$116,623,000 ($235 per DU)	$167,364,000 ($335 per DU)	$87,770,000 ($175 per DU)	**$371,757,000 ($745 per DU)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Evaluation

Transportation utility fees have significant revenue potential, because they can be used to fund all planned transportation improvements. Transportation utility fees have neutral proportionality, because only the owner of a developed property pays the fee – since undeveloped properties do not generate vehicle trips. However, the owner of a developed property may pay fees to construct transportation improvements in part of the county far from that person's property. Currently, no Tennessee cities or counties utilize a road utility fee, so Williamson County will need legislative approval to use this revenue tool. Although there is no system in place, collecting road utility fees should have a limited administrative burden. Annual fees could be added to the property owner's tax bill. Finally, the public acceptability of a road utility fee is uncertain. Since the amount of the fee is tied to specific projects, public acceptance may be higher among property owners with property located near a specific project. Also, because the type of development determines the amount of the fee, unlike property taxes based on the value of the property, public acceptance may be positive – transportation utility fees should decrease each year, while property taxes could increase each year based on assessed value.

Impact Fees

Impact fees (also called development fees or capacity fees) are one-time fees assessed on new development and reflect new growth's fair share of the cost to provide necessary capital facilities. Impact fees are regulatory measures that happen to generate revenue – the overall premise is that the fee is a mechanism to provide adequate infrastructure to ensure orderly growth. Fees are collected from new development only and can only be used to pay for new or expanded capital improvements, not maintenance or operations. Put simply, the fees reflect the cost to provide infrastructure to new development.

In determining the reasonableness of these one-time fees, the fee must meet three requirements: (1) needed capital facilities are a consequence of new development; (2) fees are a proportionate share of the government's cost; and (3) revenues are managed and expended in such a way that new development receives a substantial benefit. Impact fees cannot be imposed on new development to pay for or provide public improvements needed by existing development nor can they be used for maintenance, replacement of existing facilities, or renovation of existing facilities that do not add new capacity. Capital improvements funded by impact fees must enable Williamson County to accommodate new development by adding facility capacity.

To be proportionate, new development should pay for the capital cost of infrastructure according to its fair share of impact on a particular public facility. To ensure impact fees are proportionate, the cost allocation methodology should consider variations by type of development and type of public facility. As appropriate, capital cost assumptions must consider the net cost of facilities after accounting for grants, intergovernmental revenues and other funding sources. The reasonable connection between the impact fees and the benefit requires that funds be earmarked for use in acquiring capital facilities to benefit the new development. Substantial benefit also requires consideration of when the fees are spent. Typically, this requires that funds be spent on a "first in, first out" basis within a five- to ten-year Capital Improvement Program timeframe.

The substantial benefit test often leads communities to set up collection and expenditure zones for public facilities that have general geographic service areas. This can take the form of fee differentials, based on land use characteristics, or spending in areas in which the fees are collected. In the latter case, impact fees would not differ by geography but the revenue collected in a specific area would be spent in the same area.

Impact fees can help meet capital facility needs due to new growth with less pressure on the tax rate. Given the choice, impact fees are often politically attractive since they pass specific capital costs to future development. From a planning perspective, impact fees coordinate new growth with the facilities demanded. A formal impact fee system is more predictable and equitable than an informal system of negotiated exactions and is likely to generate considerably more revenue.

Although Williamson County does not currently charge new development a road impact fee, it does charge residential development an education impact fee. Because there is already a system in place at the county level to collect impact fees, collecting road impact fees will have a limited administrative

burden. Although the calculation of impact fees can be very complex, TischlerBise prepared road impact fees for the sake of this analysis with three broad assumptions: (1) the fees assume all "costs to address capacity needs" shown in Figure 5 are attributable to new development in unincorporated Williamson County ($223,200,000); (2) future development occurs as RPM Transportation Consultants projected; and (3) vehicle trip generation rates do not change substantially from current rates.

Potential road impact fees are shown below in Figure 18. If Williamson County adopted road impact fees in the unincorporated areas, based on the assumptions outlined above, single-family fees would total approximately $3,300 per unit. Because impact fees can only be used to fund growth-related improvements, the single-family fee includes capacity projects included in the Major Thoroughfare Plan ($1,700) and the Major Corridors Study ($1,600). All other land uses would use the same cost per demand unit but would use Institute of Transportation Engineers trip factors specific to that type of development. Road impact fees, using a plan-based methodology, would generate $223,200,000 in revenue for transportation capital facilities.

Figure 18: Impact Fee Revenue

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**

Potential Funding Options				
Unincorporated County				
Scenario 4: Property Tax	no increase	$60,787,000 (+$0.065/$100)	$87,770,000 (+$0.10/$100)	**$148,557,000 (+$0.165/$100)**
AND Impact Fees	$116,623,000 ($1,700 per DU)	$106,577,000 ($1,600 per DU)	not eligible	**$223,200,000 ($3,300 per DU)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Shown above in Figure 18, road impact fees alone will not fund the transportation capital funding gap. Scenario 4 assumes an unincorporated property tax dedicated to transportation capital improvements funds all operational and safety improvements. As discussed in the property tax section of this analysis, a dedicated property tax has significant revenue potential. To fund the remaining transportation capital funding gap in Scenario 4, Williamson County needs to increase and dedicate $0.165 per $100 of valuation countywide through 2040 – this represents an annual property tax increase of $165 for a home valued at $400,000. Used as a complementary funding source for Scenario 4, a dedicated countywide property tax could generate $148,557,000. Shown above are property tax rates needed to fund improvements included in the Major Corridors Study ($0.065) and the Nashville Area MPO Travel Demand Model ($0.10).

Evaluation

Impact fees for transportation have significant revenue potential; however, they will need to be used with other funding tools, since impact fees cannot be used to fund existing deficiencies. Transportation impact fees are designed and targeted (through the use of geographic districts) so that only the new development in unincorporated Williamson County is asked to pay for the new transportation capital infrastructure needs in the unincorporated county. Impact fees are more difficult to administer than many of the other revenue tools because of their "fair share" or proportionality requirements. Detailed support studies need to be prepared to support new impact fees, and these studies will need to be updated every five years or so. Finally, the public acceptability of additional impact fees is uncertain. However, fair share impact fees have found a high degree of public acceptability in many fast-growing communities, because they can raise substantial sums of revenue for capital infrastructure, and because they only ask new growth and development to pay their fair share of infrastructure costs. Impact fees, however, do meet resistance from the building industry, in particular, because they are imposed at time of building permit issuance.

SUMMARY OF TRANSPORTATION CAPITAL FUNDING STRATEGIES

Through the analysis and development of this Transportation Capital Funding Strategy, TischlerBise developed five scenarios to fund Williamson County's transportation capital funding needs. Designed to provide Williamson County with a variety of funding options, the scenarios shown in Figure 19 represent funding tools that provide the most realistic opportunities to achieve Williamson County's funding goals. These scenarios are not exhaustive, and potential funding tools from multiple scenarios could be adopted as complementary revenue tools. For example, Williamson County could adopt unincorporated property taxes (Scenario 3) and unincorporated transportation utility fees (Scenario 5) at lower levels than suggested in the analysis.

Figure 19: Summary of Transportation Capital Funding Strategies

Gross Funding Needs				
Project Type	***Major Thoroughfare Plan[1]***	***Major Corridors Study[2]***	***MPO Travel Demand Model***	***Total***
Operational & Safety	$0	$60,787,000	$87,770,000	**$148,557,000**
Capacity	$116,623,000	$106,577,000	$0	**$223,200,000**
Subtotal	$116,623,000	$167,364,000	$87,770,000	**$371,757,000**
Potential Funding Options				
Countywide				
Scenario 1: Property Tax	$116,623,000 (+$0.03/$100)	$167,364,000 (+$0.04/$100)	$87,770,000 (+$0.023/$100)	**$371,757,000 (+$0.093/$100)**
Scenario 2: Transportation Utility Fee	$116,623,000 ($30 per DU)	$167,364,000 ($40 per DU)	$87,770,000 ($20 per DU)	**$371,757,000 ($90 per DU)**
Unincorporated County				
Scenario 3: Property Tax	$116,623,000 (+$0.13/$100)	$167,364,000 (+$0.18/$100)	$87,770,000 (+$0.10/$100)	**$371,757,000 (+$0.41/$100)**
Scenario 4: Property Tax	no increase	$60,787,000 (+$0.065/$100)	$87,770,000 (+$0.10/$100)	**$148,557,000 (+$0.165/$100)**
AND Impact Fees	$116,623,000 ($1,700 per DU)	$106,577,000 ($1,600 per DU)	not eligible	**$223,200,000 ($3,300 per DU)**
Scenario 5: Transportation Utility Fee	$116,623,000 ($235 per DU)	$167,364,000 ($335 per DU)	$87,770,000 ($175 per DU)	**$371,757,000 ($745 per DU)**

1. Operational & safety funding needs reflect balance after $4.411 million transfer from Highway Fund ($7.0 million total).
2. Operational & safety funding needs reflect balance after $2.589 million transfer from Highway Fund ($7.0 million total).

Appendix 2

TECHNICAL TRANSPORTATION DATA

RPM Transportation Consultants
(KCI Technologies)

Percentage of Traffic by Residential Class and Corridor

Major Corridor	2010 Base Year Model Run					
	City	UGB	County	Outside	External	Total
Clovercroft Road	23%	9%	9%	33%	25%	100%
South Berry's Chapel/Lynnwood Way	26%	3%	42%	14%	15%	100%
Arno Road	11%	9%	35%	23%	22%	100%
Sneed Road	17%	3%	22%	31%	27%	100%

Major Corridor	2040 Existing + Committed Model Run					
	City	UGB	County	Outside	External	Total
Clovercroft Road	19%	20%	24%	17%	20%	100%
South Berry's Chapel/Lynnwood Way	32%	11%	34%	8%	16%	100%
Arno Road	9%	9%	43%	15%	23%	100%
Sneed Road	14%	3%	22%	15%	45%	100%

Major Corridor	2040 Fiscally Constrained Model Run					
	City	UGB	County	Outside	External	Total
Clovercroft Road	20%	22%	24%	16%	18%	100%
South Berry's Chapel/Lynnwood Way	34%	13%	32%	6%	15%	100%
Arno Road	10%	10%	44%	12%	23%	100%
Sneed Road	13%	4%	21%	16%	46%	100%

Population Growth by PDA (Nashville Travel Demand Model Projections)

PDA	2010 TDM Households	2010 Population*	2040 TDM Households	2040 Population**	2010-2040 Household Change	2010-2040 Population Change	2010-2040 Percent Change	Percent of Total Growth
1	1,129	3,195	2,526	7,022	1,397	3,827	120%	3.1%
2	928	2,626	2,189	6,085	1,261	3,459	132%	2.8%
3	1,988	5,626	3,765	10,467	1,777	4,841	86%	3.9%
4	909	2,572	2,759	7,670	1,850	5,098	198%	4.1%
5	688	1,947	4,467	12,418	3,779	10,471	538%	8.4%
6	1,819	5,148	7,554	21,000	5,735	15,852	308%	12.7%
7	145	410	979	2,722	834	2,311	563%	1.9%
8	2,417	6,840	21,603	60,056	19,186	53,216	778%	42.7%
9	1,175	3,325	10,394	28,895	9,219	25,570	769%	20.5%
Total Unincorporated	11,198	31,690	56,236	156,336	45,038	124,646	393%	35.3%
City/UGB	53,694	151,954	136,789	380,273	83,095	228,319	29%	65%
Total ALL County	64,892	183,644	193,025	536,610	128,133	352,965	71%	100%

*Assumes 2.83 people/household

**Assumes 2.78 people/household

Employment Growth by Type and PDA (Nashville Travel Demand Model Projections)

2010

Area	Education	Food Service	Government	Industrial	Medical	Other Office	Retail	Other Service	Other Sectors	Total Employment
City and UGB	3,454	8,900	1,564	7,292	13,154	50,467	14,339	9,190	7,300	115,660
PDA 1	2	47	0	24	137	76	55	40	29	410
PDA 2	36	73	2	18	94	195	29	26	48	521
PDA 3	1	27	1	11	8	154	17	205	115	539
PDA 4	5	42	0	38	5	85	27	247	78	528
PDA 5	15	37	2	28	2	138	19	27	327	595
PDA 6	0	11	0	46	0	412	40	53	51	612
PDA 7	0	1	0	21	4	46	37	0	36	145
PDA 8	7	14	3	72	15	367	44	122	203	847
PDA 9	1	12	1	20	4	249	36	16	94	432
Total County	3,520	9,165	1,573	7,569	13,423	52,189	14,644	9,928	8,280	120,291

2040

Area	Education	Food Service	Government	Industrial	Medical	Other Office	Retail	Other Service	Other Sectors	Total Employment
City and UGB	4,717	17,398	4,209	10,335	41,753	98,647	28,689	33,349	10,361	249,457
PDA 1	2	50	0	25	144	80	59	43	28	431
PDA 2	40	94	2	19	108	215	45	28	47	598
PDA 3	1	28	1	12	9	162	18	216	111	558
PDA 4	6	83	0	39	6	109	29	309	76	656
PDA 5	16	562	2	29	2	2,460	120	404	317	3,912
PDA 6	23	563	23	47	23	6,404	255	1,518	51	8,907
PDA 7	32	13	32	929	35	2,856	1,026	63	35	5,022
PDA 8	1,374	905	611	376	700	19,495	1,761	6,435	197	31,854
PDA 9	1	447	1	20	180	4,108	1,511	116	91	6,475
Total County	6,210	20,142	4,881	11,832	42,959	134,537	33,513	42,483	11,314	307,870

TDOT Count Station Data for Major Corridors

Year	Sneed Road	Lynnwood Way	Clovercroft East	Clovercroft West	Arno Road near 96	Arno Road near 840	Total	Annual Change	Percent Change
	Stn. 003	Stn. 219	Stn. 048	Stn. 041	Stn. 038	Stn. 063			
2015	11,580	9,778	10,278	3,529	10,504	4,405	32,362	1,355	4%
2014	11,071	9,734	9,937	3,345	9,999	4,361	31,007	6,496	27%
2013	10,439	9,217	7,995	3,151	6,077	4,115	24,511	707	3%
2012	9,851	9,486	7,936	3,155	6,017	3,668	23,804	(168)	-1%
2011	9,957	8,491	7,705	3,092	6,310	3,562	23,972	6,767	39%
2010	9,605	340	3,295	2,891	4,305	3,094	17,205	590	4%
2009	9,440	-	3,185	2,554	3,990	2,969	16,615	65	0%
2008	9,589	-	3,091	2,862	3,870	2,840	16,550	42	0%
2007	9,638	-	2,885	2,570	3,985	2,925	16,508	(142)	-1%
2006	9,676	-	3,011	2,594	3,963	2,590	16,650	168	1%
2005	10,196	-	2,853	2,327	3,433	1,885	16,482	16,482	-

Average V/C Ratio Comparisons by PDA

Daily V/C Ratios

	Base Congestion Level	2040 E+C	Increase in Congestion	Percent Increase
PDA 1	0.19	0.48	0.29	152%
PDA 2	0.54	0.90	0.36	67%
PDA 3	0.58	0.89	0.31	53%
PDA 4	0.33	0.67	0.34	104%
PDA 5	0.25	0.47	0.22	87%
PDA 6	0.17	0.42	0.25	148%
PDA 7	0.39	0.69	0.30	78%
PDA 8	0.32	0.65	0.33	104%
PDA 9	0.24	0.54	0.31	129%

AM Peak Hour V/C Ratios

	Base Congestion Level	2040 E+C	Increase in Congestion	Percent Increase
PDA 1	0.38	0.92	0.54	143%
PDA 2	1.06	1.76	0.70	65%
PDA 3	1.09	1.51	0.42	38%
PDA 4	0.70	1.27	0.57	81%
PDA 5	0.52	0.83	0.31	59%
PDA 6	0.33	0.61	0.28	84%
PDA 7	0.62	0.96	0.33	54%
PDA 8	0.66	1.08	0.42	65%
PDA 9	0.47	0.84	0.37	78%

PM Peak Hour V/C Ratios

	Base Congestion Level	2040 E+C	Increase in Congestion	Percent Increase
PDA 1	0.32	0.79	0.48	151%
PDA 2	0.85	1.44	0.59	70%
PDA 3	0.92	1.30	0.38	41%
PDA 4	0.57	1.07	0.50	89%
PDA 5	0.43	0.69	0.27	63%
PDA 6	0.27	0.57	0.30	109%
PDA 7	0.57	0.89	0.32	56%
PDA 8	0.56	0.95	0.39	69%
PDA 9	0.35	0.77	0.42	122%

Williamson County - Operational and Safety Needs

(Based on Safety and Operational Needs Identified in the Williamson County Major Thoroughfare Plan, the Williamson County Major Corridors Study, and Analysis from the Nashville MPO's Regional Travel Demand Model)

MTP, MC & TDM Needs - All	Total Cost
Major Thoroughfare Plan	61,819,994
Corridor Study	95,594,838
Model Operations & Safety	147,091,918
Total	304,506,749

Total Unincorporated Area (PDA & UGB Areas)	Total Cost
Major Thoroughfare Plan	56,410,525
Corridor Study	85,770,404
Model Operations & Safety	147,091,918
Total	289,272,846

MTP, MC & TDM Needs - County (PDA)	Total Cost
Major Thoroughfare Plan	29,089,960
Corridor Study	63,376,224
Model Operations & Safety	129,600,000
Total	222,066,184

MTP, MC & TDM Needs - County (UGB)	Total Cost
Major Thoroughfare Plan	27,320,565
Corridor Study	22,394,180
Model Operations & Safety	17,491,918
Total	67,206,662

MTP, MC & TDM Needs - Cities	Total Cost
Major Thoroughfare Plan	5,409,469
Corridor Study	9,824,434
Model Operations & Safety	-
Total	15,233,903

MTP, MC & TDM Needs - All	MTP	MCS	TDM	Total Cost
City & County Roads	20,449,995	95,594,838	110,710,319	226,755,151
State Roads	41,369,999	-	36,381,599	77,751,598
Total	61,819,994	95,594,838	147,091,918	304,506,749

Total Unincorporated Area (PDA & UGB Areas)	MTP	MCS	TDM	Total Cost
County Roads	17,005,168	85,770,404	110,710,319	213,485,891
State Roads	39,405,357	-	36,381,599	75,786,956
Total	56,410,525	85,770,404	147,091,918	289,272,846

Ownership - County (PDA)	MTP	MCS	TDM	Total Cost
County Roads	4,411,075	63,376,224	97,770,000	165,557,299
State Roads	24,678,885	-	31,830,000	56,508,885
Total	29,089,960	63,376,224	129,600,000	222,066,184

Ownership - County (UGB)	MTP	MCS	TDM	Total Cost
County Roads	12,594,093	22,394,180	12,940,319	47,928,591
State Roads	14,726,472	-	4,551,599	19,278,071
Total	27,320,565	22,394,180	17,491,918	67,206,662

Ownership - Cities	MTP	MCS	TDM	Total Cost
City Roads	3,444,827	9,824,434	-	13,269,261
State Roads	1,964,642	-	-	1,964,642
Total	5,469,469	9,824,434	-	15,233,903

Operational & Safety Improvement Needs - Unincorporated Area (By PDA)

MTP, MC & TDM Needs - PDAs	Total Costs
Major Thoroughfare Plan	29,089,960
Corridor Study	63,376,224
Model Operational & Safety	129,600,000
Total	$ 222,066,184

Ownership	PDA 1	PDA 2	PDA 3	PDA 4	PDA 5	PDA 6	PDA 7	PDA 8	PDA 9	Total
County Routes	900,000	5,397,314	17,698,785	6,696,928	18,849,227	11,971,933	11,910,000	63,466,290	18,322,995	155,213,472
State Routes	10,343,827	10,170,000	-	13,140,000	-	8,460,000	-	24,738,885	-	66,852,711
Total	$ 11,243,827	$ 15,567,314	$ 17,698,785	$ 19,836,928	$ 18,849,227	$ 20,431,933	$ 11,910,000	$ 88,205,175	$ 18,322,995	$ 222,066,184

Ownership	PDA 1	PDA 2	PDA 3	PDA 4	PDA 5	PDA 6	PDA 7	PDA 8	PDA 9	Total
County Routes	1%	3%	11%	4%	12%	8%	8%	41%	12%	100%
State Routes	15%	15%	0%	20%	0%	13%	0%	37%	0%	100%
Total	5%	7%	8%	9%	8%	9%	5%	40%	8%	100%

Williamson County - Capacity Needs

(Based on Needs Identified in the Williamson County Major Thoroughfare Plan and the Williamson County Major Corridors Study)

MTP & MC Needs - All	Total Cost
Major Thoroughfare Plan	1,274,560,000
Corridor Study	172,790,000
Total	1,447,350,000

MTP & MC Needs - All	Total Cost
City & County Roads	636,850,000
State Roads	810,500,000
Total	1,447,350,000

Total Unincorporated Area (PDA & UGB Areas)	Total Costs
Major Thoroughfare Plan	782,965,065
Corridor Study	151,165,986
Total	934,131,051

Total Unincorporated Area (PDA & UGB Areas)	Total Costs
County Roads	458,576,364
State Roads	475,554,687
Total	934,131,051

MTP & MC Needs - County (PDA)	Total Cost
Major Thoroughfare Plan	407,584,788
Corridor Study	106,576,790
Total	514,161,578

Ownership - County (PDA)	Total Cost
County Roads	223,199,549
State Roads	290,962,029
Total	514,161,578

MTP & MC Needs - County (UGB)	Total Cost
Major Thoroughfare Plan	375,380,278
Corridor Study	44,589,196
Total	419,969,474

Ownership - County (UGB)	Total Cost
County Roads	235,376,816
State Roads	184,592,658
Total	419,969,474

MTP & MC Needs - Cities	Total Cost
Major Thoroughfare Plan	490,229,264
Corridor Study	22,989,684
Total	513,218,948

Ownership - Cities	Total Cost
City Roads	162,174,387
State Roads	351,044,562
Total	513,218,948

Capital Improvement Needs - Unincorporated Area (By PDA)

MTP & MC Needs - PDAs	Total Costs
Major Thoroughfare Plan	407,584,788
Corridor Study	106,576,790
Total	$ 514,161,578

Ownership	PDA 1	PDA 2	PDA 3	PDA 4	PDA 5	PDA 6	PDA 7	PDA 8	PDA 9	Total
County Roads	12,476,924	57,314	36,369,230	23,278,368	27,497,684	11,102,505		57,972,061	54,445,463	223,199,549
State Roads	5,429,077	21,045,180	7,233,043	13,259,117	16,821,092	16,638,023	42,879,913	144,348,787	23,307,797	290,962,029
Total	$ 17,906,000	$ 21,102,494	$ 43,602,273	$ 36,537,485	$ 44,318,775	$ 27,740,528	$ 42,879,913	$ 202,320,848	$ 77,753,259	$ 514,161,578

Ownership	PDA 1	PDA 2	PDA 3	PDA 4	PDA 5	PDA 6	PDA 7	PDA 8	PDA 9	Total
County Roads	6%	0%	16%	10%	12%	5%	0%	26%	24%	100%
State Roads	2%	7%	2%	5%	6%	6%	15%	50%	8%	100%
Total	3%	4%	8%	7%	9%	5%	8%	39%	15%	100%

Notes:
MTP – Major Thoroughfare Plan; MC – Major Corridors Study; TDM – Travel Demand Model; PDA – Potential Development Area; UGB – Urban Growth Boundary

UGB areas are currently county geographies that are to be annexed in the future by a city. PDA are areas that are to remain under the control of the county today and in the future. City identified needs are only those needs identified in the County's Major Thoroughfare Plan (they are not inclusive of all city needs for municipalities within Williamson County).

Appendix 3

PUBLIC RESPONSES TO SURVEYS

Comprehensive Traffic Strategy Survey

QUESTION SUMMARIES | INDIVIDUAL RESPONSES

All Pages

Q1

While not required, if you would like to provide your contact information, please fill out the information below.

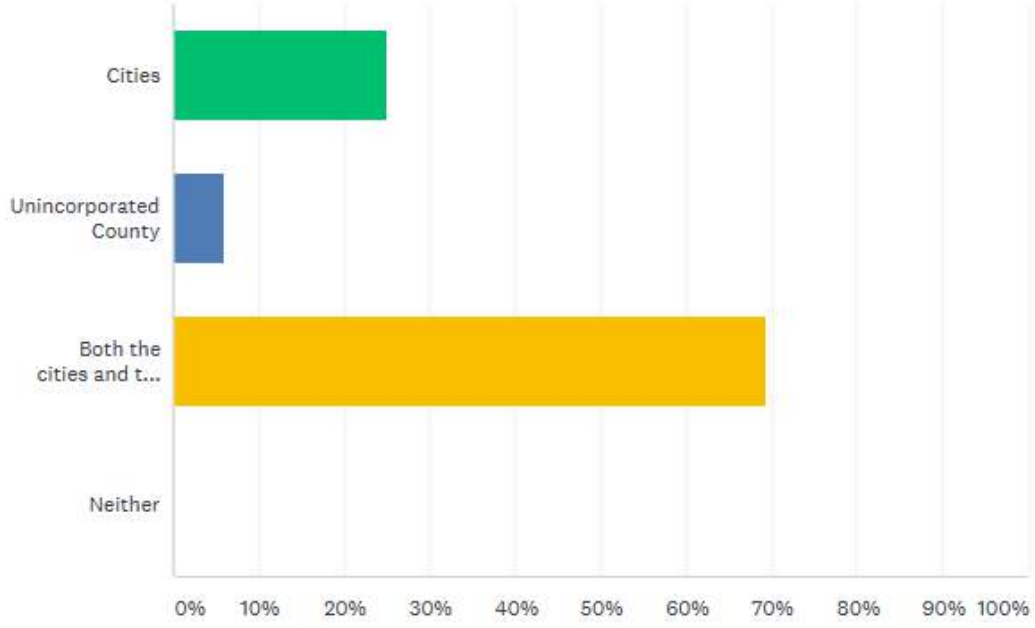
Answered: 30 Skipped: 22

ANSWER CHOICES		RESPONSES	
Name	Responses	96.67%	29
Company	Responses	13.33%	4
Address	Responses	93.33%	28
Address 2	Responses	6.67%	2
City/Town	Responses	100.00%	30
State/Province	Responses	93.33%	28
ZIP/Postal Code	Responses	93.33%	28
Country	Responses	66.67%	20
Email Address	Responses	83.33%	25
Phone Number	Responses	76.67%	23

Q2

Which of these areas in Williamson County have significant traffic problems?

Answered: 52 Skipped: 0

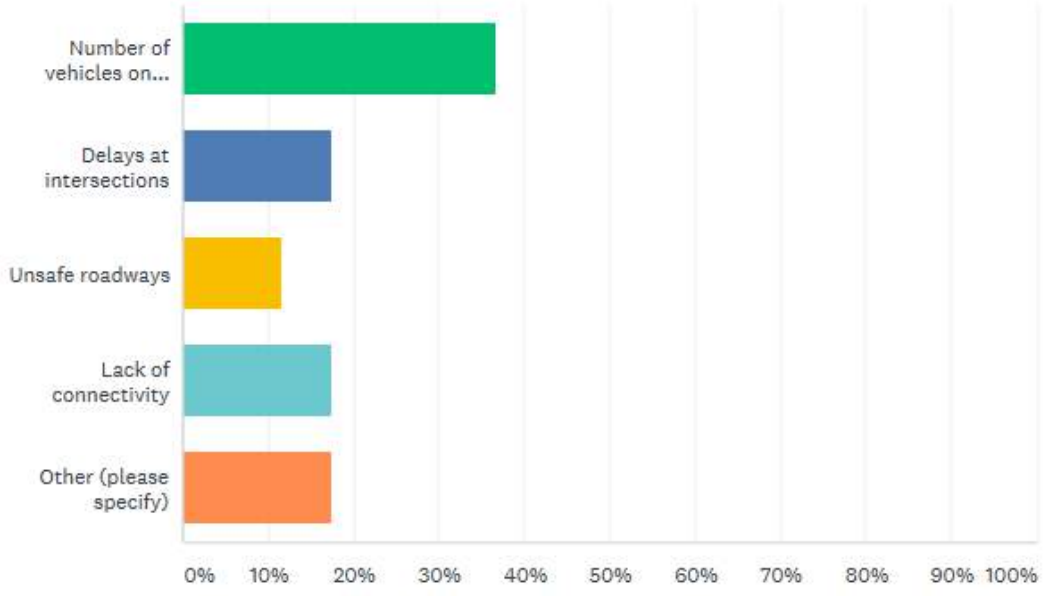


ANSWER CHOICES	RESPONSES	
Cities	25.00%	13
Unincorporated County	5.77%	3
Both the cities and the unincorporated County	69.23%	36
Neither	0.00%	0
TOTAL		52

Q3

What would you consider to be the most significant traffic-related issue in the unincorporated County?

Answered: 52 Skipped: 0

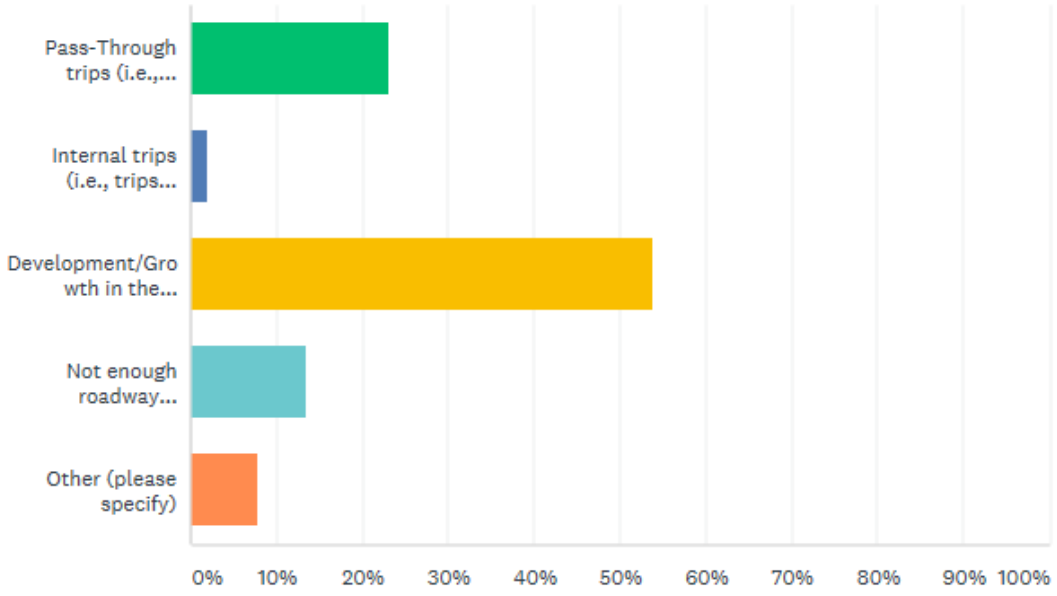


ANSWER CHOICES		RESPONSES	
Number of vehicles on county roadways		36.54%	19
Delays at intersections		17.31%	9
Unsafe roadways		11.54%	6
Lack of connectivity		17.31%	9
Other (please specify)	Responses	17.31%	9
TOTAL			52

Q4

What would you consider to be the biggest factor contributing to traffic-related issues in the unincorporated County?

Answered: 52 Skipped: 0

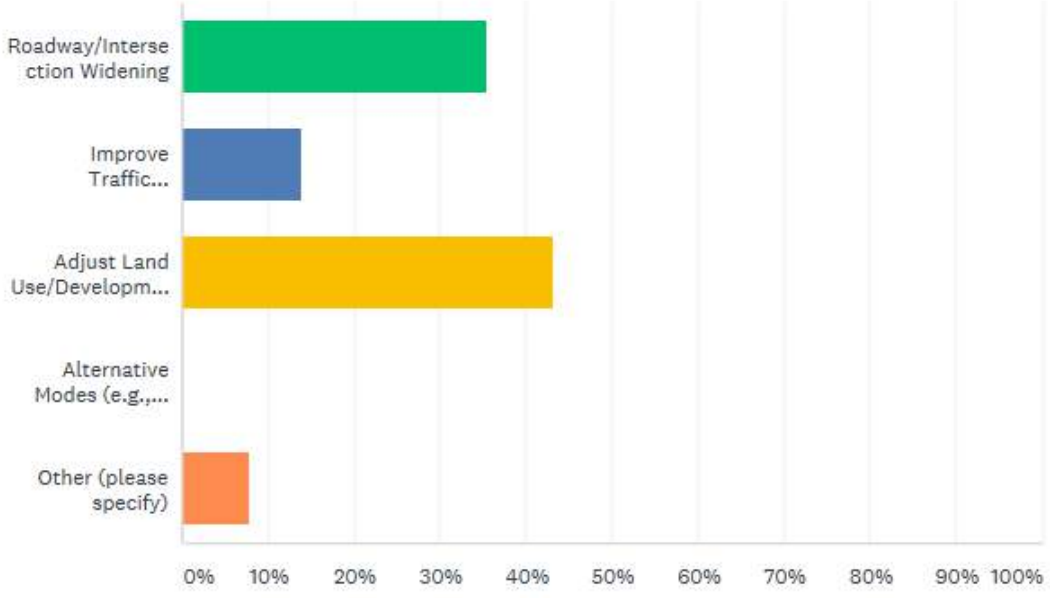


ANSWER CHOICES		RESPONSES	
Pass-Through trips (i.e., from/to other areas)		23.08%	12
Internal trips (i.e., trips within Williamson County)		1.92%	1
Development/Growth in the unincorporated County		53.85%	28
Not enough roadway improvements		13.46%	7
Other (please specify)	Responses	7.69%	4
TOTAL			52

Q5

What is the most effective way of addressing traffic related issues in the unincorporated County?

Answered: 51 Skipped: 1

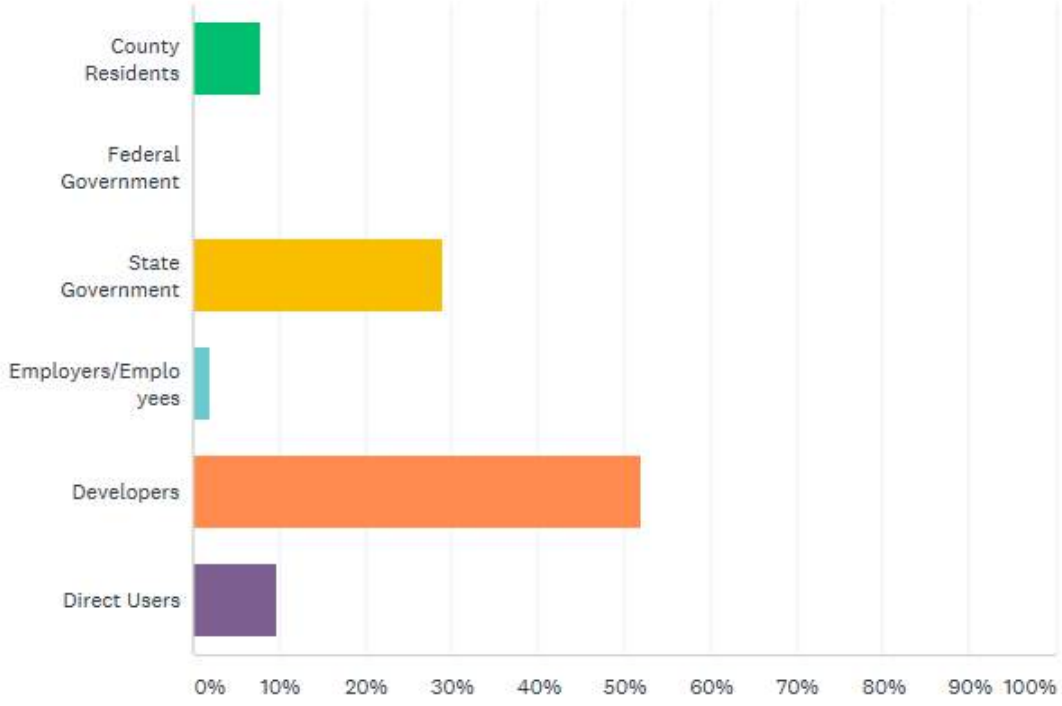


ANSWER CHOICES		RESPONSES	
Roadway/Intersection Widening		35.29%	18
Improve Traffic Operations (e.g., stop signs, signals, etc.)		13.73%	7
Adjust Land Use/Development Policies		43.14%	22
Alternative Modes (e.g., transit, bike, pedestrian)		0.00%	0
Other (please specify)	Responses	7.84%	4
TOTAL			51

Q6

Who should be responsible for funding these roadway improvements?

Answered: 52 Skipped: 0

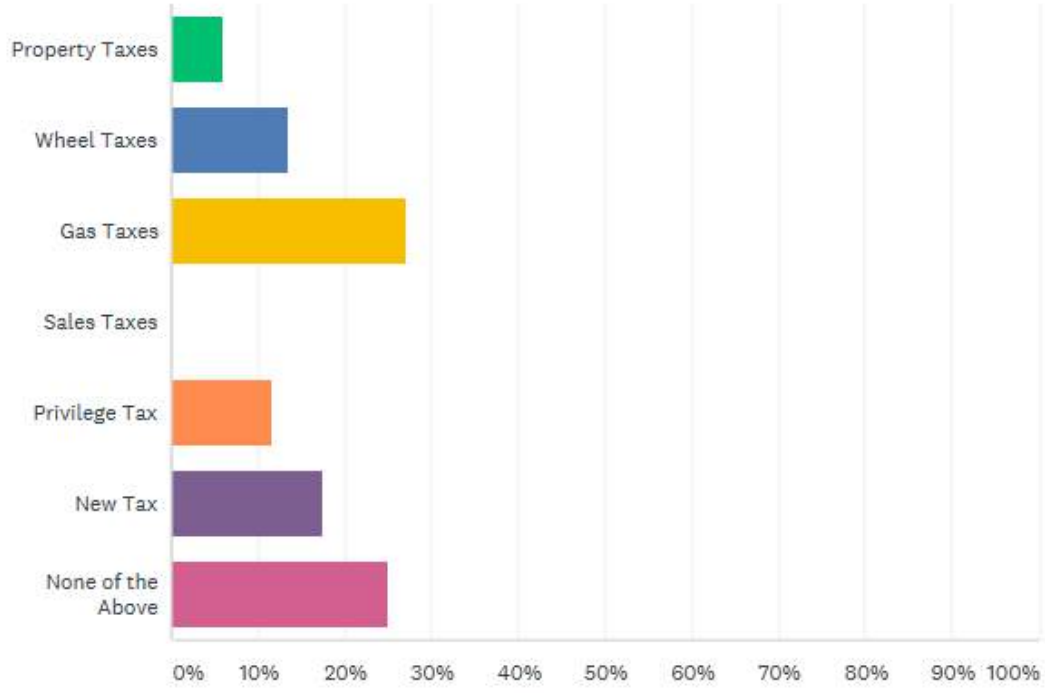


ANSWER CHOICES	RESPONSES	
County Residents	7.69%	4
Federal Government	0.00%	0
State Government	28.85%	15
Employers/Employees	1.92%	1
Developers	51.92%	27
Direct Users	9.62%	5
TOTAL		**52**

Q7

To help increase funding for needed roadway improvements, County and/or State Government should look into increasing ... ?

Answered: 52 Skipped: 0



ANSWER CHOICES	RESPONSES	
Property Taxes	5.77%	3
Wheel Taxes	13.46%	7
Gas Taxes	26.92%	14
Sales Taxes	0.00%	0
Privilege Tax	11.54%	6
New Tax	17.31%	9
None of the Above	25.00%	13
TOTAL		**52**

Q8

Do you have any other comments, questions, or concerns?

Answered: 29 Skipped: 23

Seems to be lack of comprehensive view of traffic patterns and how to manage system wide as work is done in small areas with the hope to just fix those small problem.

3/16/2017 10:14 PM

We moved here 24 years ago. The peaceful rural, uncrowded area was appealing, but is disappearing, along with our quality of life. There are blind spots in both directions at the entrance to our subdivision (Worthington), and drivers do not slow to 30 m.p.h. as they approach the entrance.
3/6/2017 12:04 PM

May I point out that south of Old Hickory Blvd between I-65 and I-24 there are NO 4/5 lane roads running east-west until you get to SR 840. All are 2 lane, no shoulders, dangerously narrow in spots, and speeders make them worse. Careless speeders cross center lines of roads almost causing head-on accidents. Almost every time I travel Split Log Road (the part not in Brentwood) and Sam Donald Road, I encounter 1-2 drivers speeding and crossing the center lines. McEwen Drive between Wilson Pike and the traffic circle is very dangerous, few drivers observe the speed limit. Yet, Franklin/Brentwood/Nolensville keep approving more and more subdivisions. Much of the traffic on the east-west county roads is Rutherford county residents commuting to Cool Springs or Brentwood. The Concord road projects are a joke, it should have been made 4/5 lanes instead the 2/3 that it is. The only good thing was the elimination of the big dog-leg between Waller Rd and Nolensville Rd. Former Franklin resident now living in Nolensville.
2/12/2017 11:48 PM

Development should be halted. We don't need further development here.
1/24/2017 4:30 PM

Funding from a variety of sources including taxes and usage + development fees.
1/7/2017 9:19 PM

A new tax of $10/month on apartments that will go directly to widening roads. This would directly tax residents that live in dense population complexes. As developers attract more people with new apartments revenues will increase widen roads to support them. The money could be collected thru electric company to lessen the burden on apartment owners and renters. This should also help ensure that if an apartment is occupied the taxes are being paid. Such a tax would prevent further burden on property owners within the county and less resistant to new developments. The new proposed I-65 exit in Spring Hill could make good use of this money by having the exit split to Thompson Station Road and Duplex instead of Buckner Road. The

property is cheaper to widen especially on Thompson Station Road that has less houses and connections to large subdivisions. The state is already widening Duplex to save even more money. This would serve both sides of Spring Hill, provide easy access Thompson Station and improve traffic flow on 31.
12/30/2016 10:36 AM

Yes, stick to the County's plans of keeping mass development OUT OF the unincorporated areas. End the plans to expand Franklin City Limits into unincorporated parts of eastern Williamson County. DO NOT even toy with the idea of expanding ANY city limits within the County.
12/29/2016 5:26 AM

Questions 7 and 8 - I selected the most prominent answers, but a mix of strategies will be needed.
12/28/2016 9:08 AM

I fail to understand how anyone could approve 1400 homes on Stevens Farm given a total lack of feeder and arterial roads in existence. We are heading toward a county wide parking lot. Somewhere there must be common sense land use.
12/23/2016 3:53 PM

Williamson county gov't should assess an out of county tax on employees that live outside the county but work in the county. All other tax options listed in question 7 penalize county residents while the problem is created by out of county residents. Employers can have the option of paying the tax for the out of county employee if they desire.
12/14/2016 10:20 PM

I don't commute, so my issues are related to my local traffic. The intersection of Wilson Pike and Hwy 96 can be dangerous during rush hour, particularly in the winter darkness. Also, it would be nice if Osburn Road wasn't being used as a high speed through-way between Wilson Pike and Nolensville Road.
12/9/2016 11:27 AM

Many commuters from Rutherford county east-west to/from Cool Springs/Brentwood areas clogging up the few county roads. Nolensville Road needs to be widened from Old Hickory Blvd all the way to SR840. Too much development without any regard to increase in traffic.
12/8/2016 12:47 PM

New communities that contribute hundreds of new vehicles to the road system should assist in the cost of upgrading roads that feed their communities (not just adding a redlight and a turn lane for a few hundred feet in-front of the sub division). Additionally, HW96 between Franklin and Murfreesboro is rapidly becoming a very busy highway. New developments are adding their 'turn lanes' in-front of their developments but there is room for improvements in both traffic flow and safety at intersections such as Wilson Pike, Trinity Road, Cox Road, etc. where there is a great deal of traffic turning onto and off of the road and frequent need of long lines of traffic to come to a complete stop (from 44 - 55 MPH) to allow vehicles to turn across traffic.
11/30/2016 7:25 PM

Need more public education on the need for infrastructure improvements and investment.
11/25/2016 3:59 PM

Curtail development. Was out today and though it is a holiday week and many are likely off work and off school, could not move thru Brentwood/Franklin/Cool Springs area. Had to REPEATEDLY do U-ies to get where I needed to go because traffic was so heavy and drivers were not inclined to let me in. Unsafe drivers abound too since I think they are just as frustrated as I am. I hate to go out on weekends in the area anymore. Sad.
11/21/2016 6:24 PM

Please fix McEwen Rd between Wilson and Cool Springs in Franklin. It is very unsafe with the high volume of traffic and its getting worse by the day. Needs to be widened, lit, and straightened.
11/21/2016 4:07 PM

Developers should pay steep tax for new expansions to improve roads, and that tax should stay within proximity of the roads to the development for improvement. They should also be required to connect green spaces with bike or hiking trails to embedded grocery stores, schools etc... see woodlands in Texas for the model
11/21/2016 4:00 PM

Traffic issues will only get larger due to ever increasing development. It's way to late to fix the existing and future road demands. Bad decisions are being and have been made that we must now live with. Traffic congestion improvements will never catch up to demand!
wrcress@comcast.net
11/21/2016 3:32 PM

Taxes are too high as it is. Find ways to for developers who want to build in Williamson County to fund road development/improvement.
11/21/2016 1:42 PM

new development property tax should be sufficient to make upgrades... Developers should be financially responsible for highway changes from major roadways to accommodate traffic flow into their developments (turn lanes, roadway signals, acceleration/deceleration lanes)
11/21/2016 1:31 PM

Development is not paying for itself. Long time residents are now having to pay for lack of planning and forward thinking to these issues. Wheel, gas and privilege taxes are needed to fund.
11/21/2016 11:01 AM

Support closer development controls to maintain rural character of incorporated areas and a development tax for road improvements like the one under consideration for new school contruction.
11/21/2016 10:20 AM

Let developers pay for improvements-100%
11/21/2016 7:26 AM

Impact fee on new residents
11/19/2016 5:17 PM

Split the funding between developers and county residents. It will take a creative combination of the elements in Q. #5 to address the traffic related issues in the unincorporated county.
11/19/2016 3:40 PM

I think developers and State should be paying more for for new area's
11/19/2016 6:39 AM

No single solution to our traffic problems. Highway 96E is unsafe and should have been widened to 4 lane years ago. Intersections are often at a gridlock because drivers are attempting to do whatever to get through the light, despite congestion. School zones ought not cause total stoppage. It's understandable to stop traffic to assist entry and exit of school property but crossing guards should not delay countless highway traffic simply because of one vehicle.
11/18/2016 9:42 PM

Developers should be held standard zoning of 1 house per acre to reduce density, larger impact fees for roads and schools.
11/18/2016 9:14 AM

Slow down county developments until improvements are made. Increase taxes on land speculators purchases.
11/17/2016 1:02 PM

Driving Behavior Survey

QUESTION SUMMARIES | INDIVIDUAL RESPONSES

All Pages

Q1

While not required, if you would like to provide your contact information, please fill out the information below.

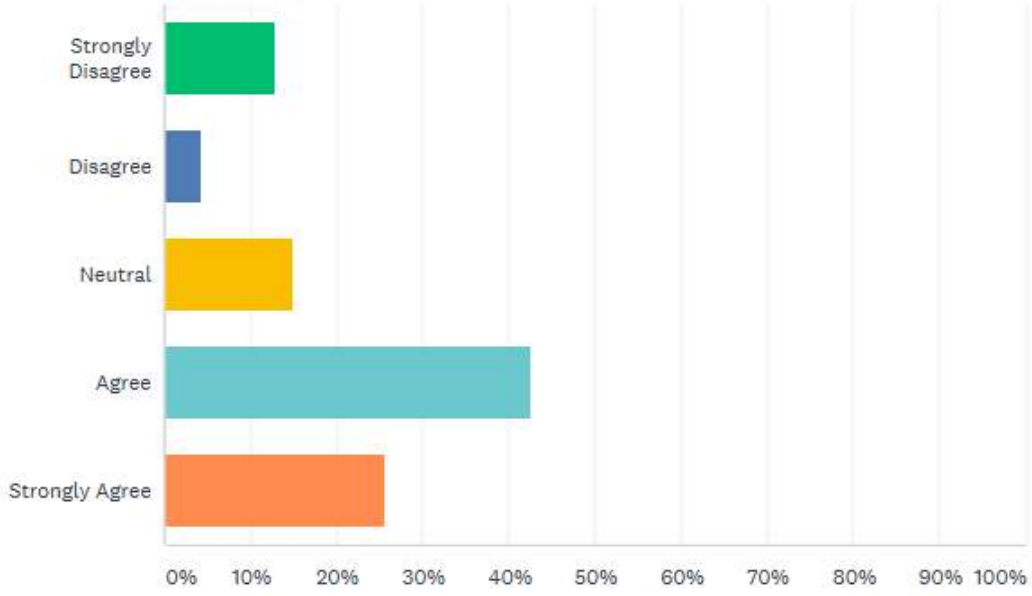
Answered: 34 Skipped: 16

ANSWER CHOICES		RESPONSES	
Name	Responses	97.06%	33
Company	Responses	14.71%	5
Address	Responses	97.06%	33
Address 2	Responses	2.94%	1
City/Town	Responses	97.06%	33
State/Province	Responses	97.06%	33
ZIP/Postal Code	Responses	97.06%	33
Country	Responses	73.53%	25
Email Address	Responses	85.29%	29
Phone Number	Responses	73.53%	25

Q2

Traffic-related issues in the unincorporated County negatively impact my quality of life.

Answered: 47 Skipped: 3

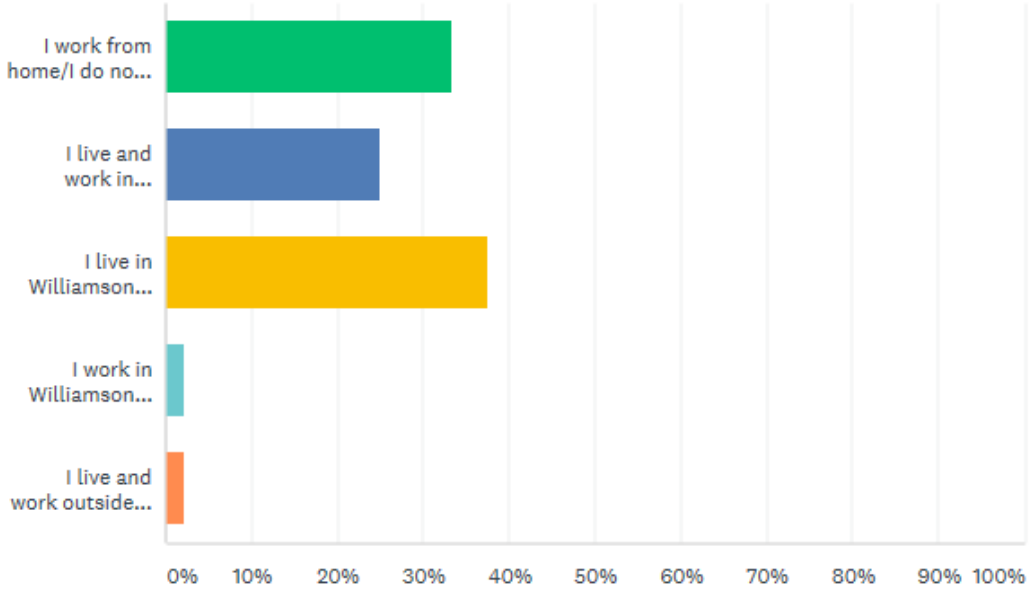


ANSWER CHOICES	RESPONSES	
Strongly Disagree	12.77%	6
Disagree	4.26%	2
Neutral	14.89%	7
Agree	42.55%	20
Strongly Agree	25.53%	12
TOTAL		**47**

Q3

Which sentence best describes your commute to work?

Answered: 48 Skipped: 2

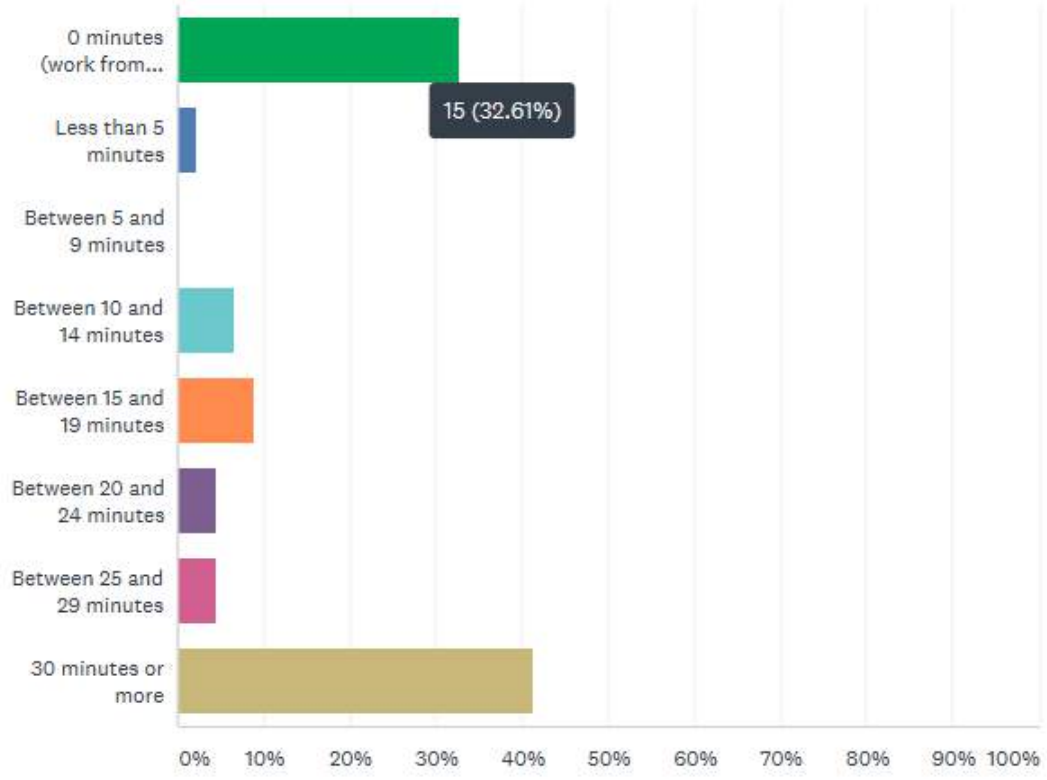


ANSWER CHOICES	RESPONSES	
I work from home/I do not work.	33.33%	16
I live and work in Williamson county.	25.00%	12
I live in Williamson County, but do not work in Williamson County.	37.50%	18
I work in Williamson County, but do not live in Williamson County.	2.08%	1
I live and work outside of Williamson County.	2.08%	1
TOTAL		**48**

Q4

How long (typically) is your commute to work?

Answered: 46 Skipped: 4

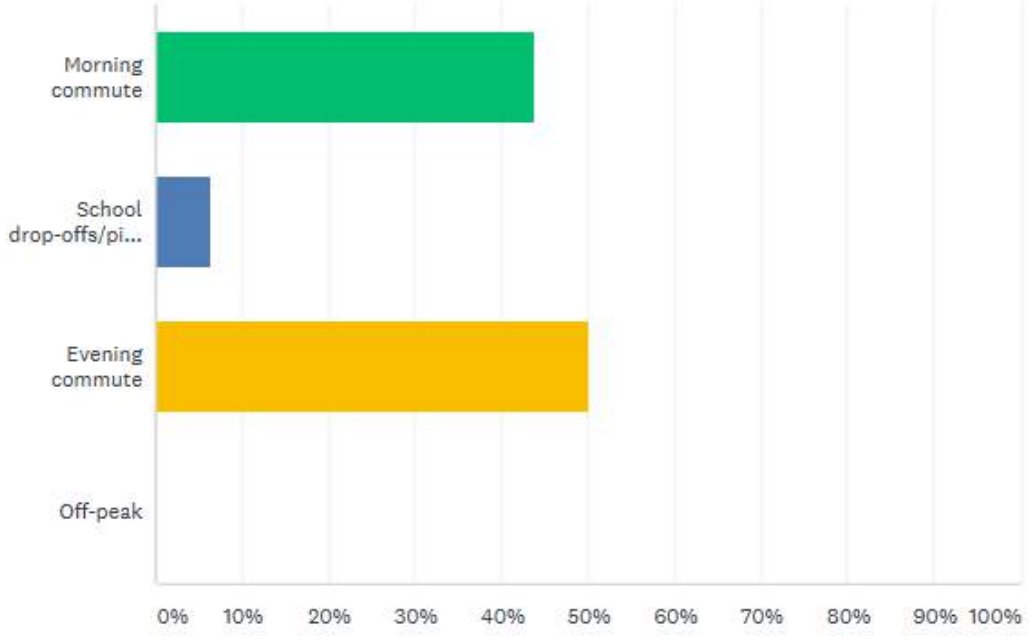


ANSWER CHOICES	RESPONSES	
0 minutes (work from home/do not work)	32.61%	15
Less than 5 minutes	2.17%	1
Between 5 and 9 minutes	0.00%	0
Between 10 and 14 minutes	6.52%	3
Between 15 and 19 minutes	8.70%	4
Between 20 and 24 minutes	4.35%	2
Between 25 and 29 minutes	4.35%	2
30 minutes or more	41.30%	19
TOTAL		**46**

Q5

Traffic seems to be the worst during ... ?

Answered: 48 Skipped: 2

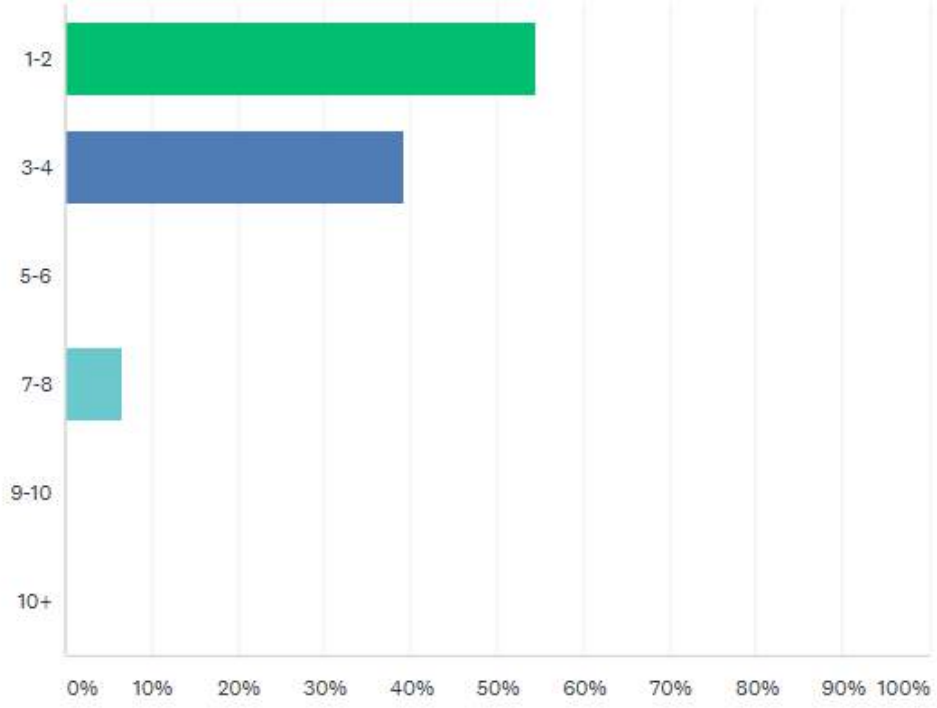


ANSWER CHOICES	RESPONSES	
Morning commute	43.75%	21
School drop-offs/pick-ups	6.25%	3
Evening commute	50.00%	24
Off-peak	0.00%	0
TOTAL		**48**

Q6

How many vehicle trips do you take on a typical day?

Answered: 46 Skipped: 4



ANSWER CHOICES	RESPONSES	
1-2	54.35%	25
3-4	39.13%	18
5-6	0.00%	0
7-8	6.52%	3
9-10	0.00%	0
10+	0.00%	0
TOTAL		**46**