5.0 Transportation

Today's transportation infrastructure in Sumner County was primarily built to move cars. Since the mass production of the automobile, Sumner County has seen similar growth in its transportation network built around cars as in other fast growing communities in the United States. Farm to market roads were paved and transformed into today's road system. Coordination with the Tennessee Department of Transportation (TDOT) over the years has resulted in the construction of highways connecting the county to the region. These convenient connections to Nashville and other places of employment have attracted new people to Sumner County. As Sumner County grew, traffic increased on many principal roadways especially during peak travel times. Local, regional, and national priorities are also shifting in the new millenimum as sources for additional transportation funding have remained stagnant. The maintenance of the current roadway infrastructure and improvement of other travel modes are less costly to implement and have longer life cycles. The transportation system in Sumner County is no longer viewed strictly from a roadway or thoroughfare perspective. Biking, walking, and utilizing mass transit are now appropriate transportation solutions that residents desire and local officials should consider funding. The roadway system will remain the backbone of transportation infrastructure in Sumner County, but other travel modes will complement this critical infrastructure.

Infrastructure improvements to the transportation system support economic growth, maintain sustainability, enhance local communities, reduce congestion, improve safety, support local land use functions, improve commute times, and mitigate air quality issues. These quality of life benchmarks can improve or deteriorate because of transportation improvements. Each benchmark can be analyzed for each travel mode.

The Transportation Element of the *2035 Comprehensive Plan* begins with an overview of residents desires for the transportation system in Sumner County. Then, an analysis of the existing transportation system and its regional connections is presented to understand Sumner County's future. Finally, an overview of the roadway system's function, potential future roadway projects, potential bicycle and pedestrian projects, and potential mass transit projects are outlined.

5.1 Thoughts about Transportation in Sumner County

During an on-line survey conducted in December 2009, residents where asked about the future of Sumner County. One question, "What do you not like about Sumner County?" generated a number of comments regarding transportation. The top three choices that were picked most by survey respondents were transportation-related:

1. Lack of sidewalks/no connectivity
2. Traffic/congestion
3. Few transit options

Appendix C contains the entire survey and responses that were received in December 2009.

Sumner County followed up with another on-line survey conducted in May 2010 addressing just transportation issues. The survey was performed to gather more input regarding transportation's role in Sumner County's future. Residents were asked about positive and negative characteristics of transportation and to identify the top issues future transportation projects should address in Sumner County. The top five issues in the survey were:

1. Congestion
2. Connectivity
3. Develop bicycle, pedestrian, and transit infrastructure
4. Safety
5. Economic growth

Those surveyed mentioned longer commute times to Nashville, particularly along SR 386/Vietnam Veterans Boulevard. There is a strong desire to address the morning and evening congestion issues along that particular highway. The completion of SR 109 from I-65 and I-40 was cited as an important project for Sumner County. Mass transit improvements connecting to Downtown Nashville and within Sumner County also have strong support. Connectivity was often mentioned related to bicycle and pedestrian improvements and for alternates east-west within the southern portion of the county. Some frustration was expressed regarding the lack of bicycle and pedestrian facilities and/or their maintenance on existing routes. Appendix D contains the survey and responses that were received in May 2010.

Public workshops were also held in May 2010 to discuss transportation issues. Safety was mentioned more at these workshops particularly involving intersections along US 31E/SR 6 from Gallatin to Westmoreland and regarding the completion of SR 109 from Gallatin to Portland. Mass transit connecting to Nashville was brought up by residents, too.

Information derived from the survey and public workshops are reflected in the *2035 Comprehensive Plan* and were utilized to prioritize proposed transportation improvements. This information is contained in the attached maps and in appendices detailing thoroughfares.

5.2 Transportation's Role in Achieving the 2035 Vision

The role of transportation is critical in achieving the 2035 vision. Components of transportation infrastructure are included within each objective of the *2035 Comprehensive Plan*. One objective is devoted entirely to transportation: To provide for the efficient movement of people, goods, and services while providing a range of transportation choices within Sumner County and the Middle Tennessee region. The role of transportation is critical to Sumner County's economic growth and competitiveness, environmental sustainability, and quality of life.

5.3 Local Commuting Patterns

Sumner County has residents that work within the county, commuters who come from outlying areas and work in the county, and residents that commute outside of the county to adjacent areas. A large number of those commuters travel to Metro-Nashville each day for employment. Routes such as I-5 and SR 386 (Vietnam Veterans Boulevard) experience the heaviest amounts of traffic and travel delays during peak morning and evening commute times. Other arterials such as US 31E, US 31W, and SR 174 (Long Hollow Pike) and SR 258 (New Shackle Island Road/New Hope Road/Tyree Springs Road) are experiencing higher volumes of traffic than a decade ago. The extension of SR 386 to Gallatin has relieved the strain on these major arterials, but its completion brings new challenges for Sumner County and its municipalities.

Figure 5-1 is from the Nashville Area MPO's Tri-County Transportation & Land Use Study involving Robertson, Sumner, and Wilson Counties. It depicts the increase in population compared to the increase in vehicle miles traveled (VMT). The VMT in the tri-county area is increasing at a faster rate than the population growth. As the region grows, more vehicle miles are traveled on area roadways causing an increase in traffic on already congested thoroughfares.

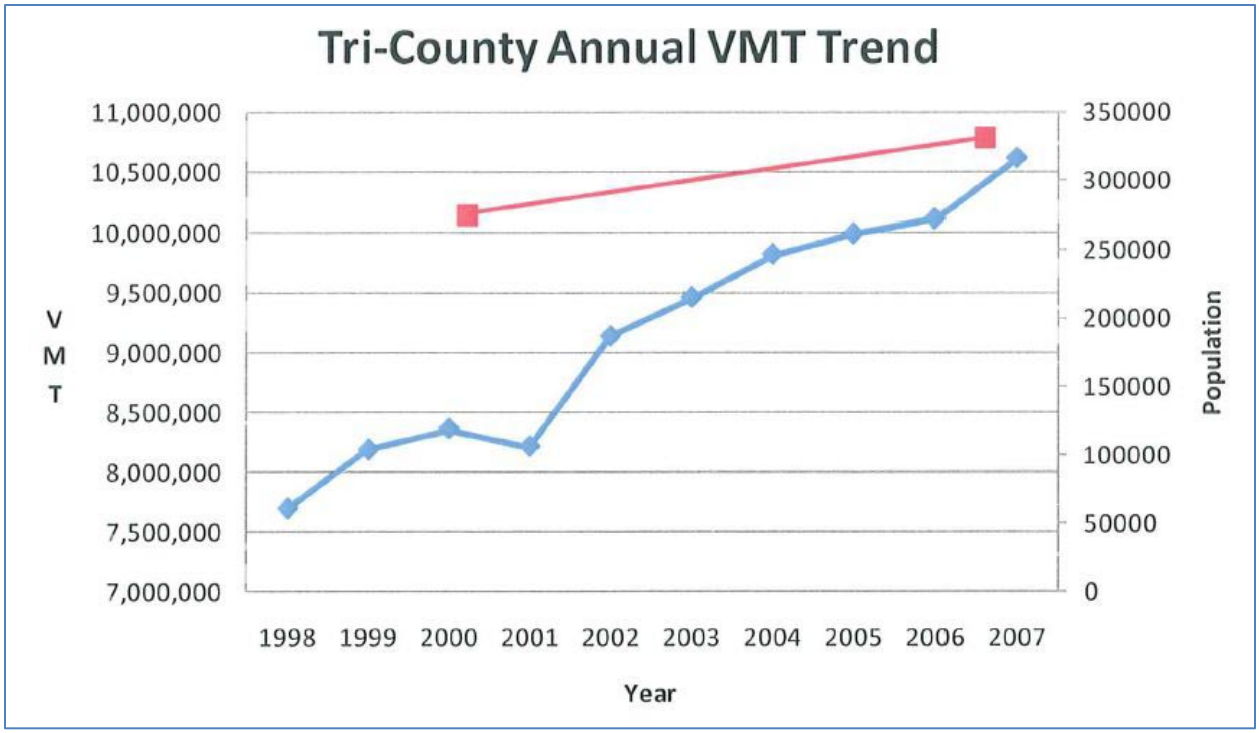


Figure 5-1: Tri-County Annual VMT & Population Trends - 1998-2007
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

Congestion in the Middle Tennessee region is forecasted to increase despite implementing transportation projects over the next 25 years. The Nashville Area MPO has also modeled congestion trends starting with 2008 (Figure 5-2) and ending in 2035 (Figure 5-3).

2008 Traffic Congestion Levels

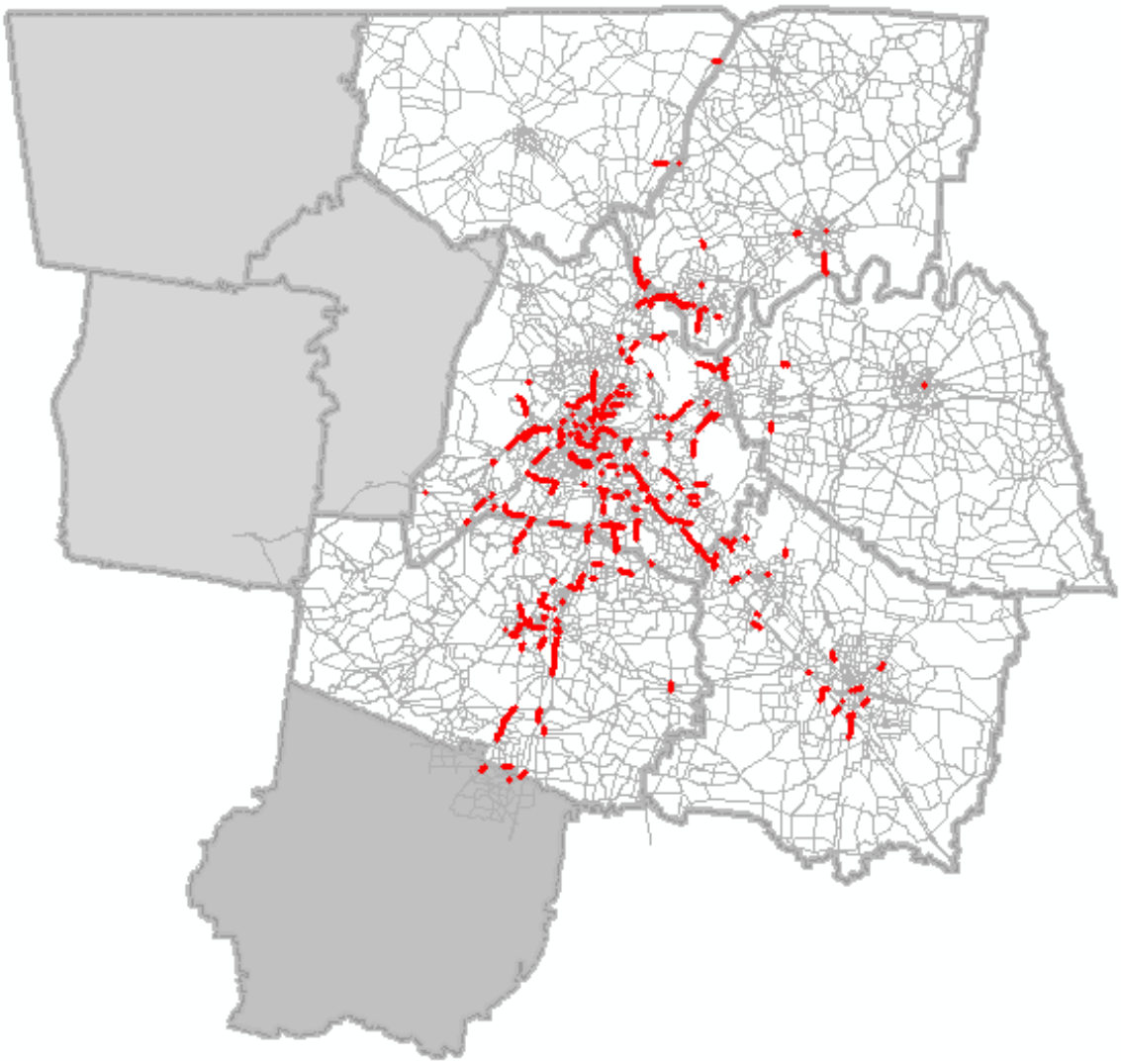


Figure 5-2: 2008 Congestion Levels, Middle Tennessee Region
Source: Nashville Area MPO (2009)

2035 Traffic Congestion Levels

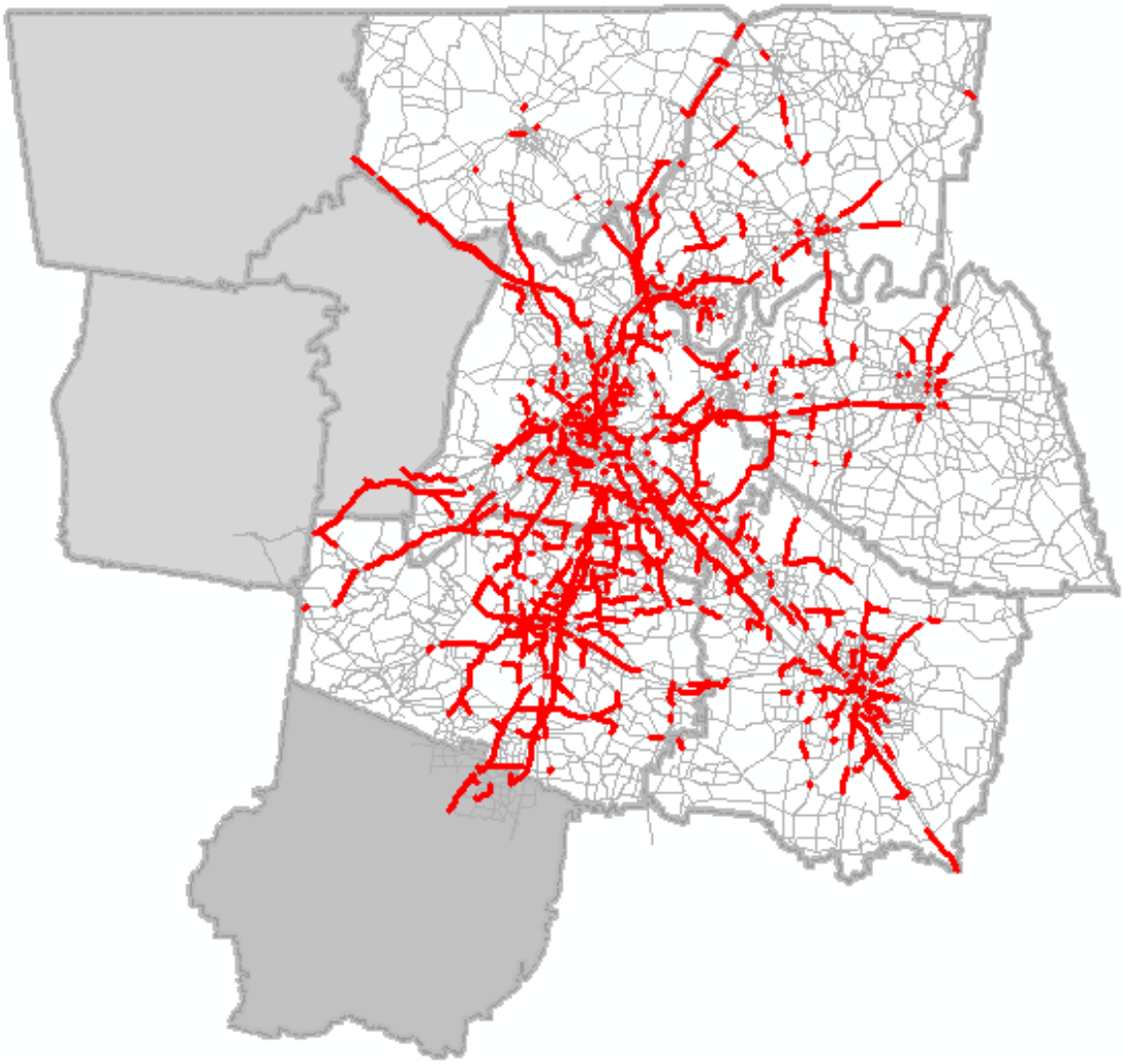


Figure 5-3: 2035 Projected Congestion Levels, Middle Tennessee Region
Source: Nashville Area MPO (2009)

Understanding basic commuting patterns helps identify where increases in VMT will likely occur. This relationship is also regional because commuters are not restricted to only staying within their jurisdictional boundaries. The following discussion considers the two largest cities in Sumner County and depicts where Sumner County residents commute for work and where workers come from into Sumner County. Figure 5-4 and Figure 5-5 illustrates this relationship for Hendersonville. Figure 5-4 shows that Hendersonville residents primarily commute to Nashville and other work destinations within the county such as Gallatin, Goodlettsville, and Portland. Brentwood and the Franklin/Cool Springs area are also evident work destinations, and some residents commute as far as an hour away to Dickson and Clarksville.

Figure 5-5 depicts the inverse relationship of areas where commuters reside and work in the Hendersonville area. A similar spatial distribution exists where the Hendersonville area employers draw employees from Sumner and northern Davidson Counties. Some commuters travel from the greater Middle Tennessee region including Clarksville, Dickson, and Murfreesboro.

LIVE in Hendersonville and WORK in…

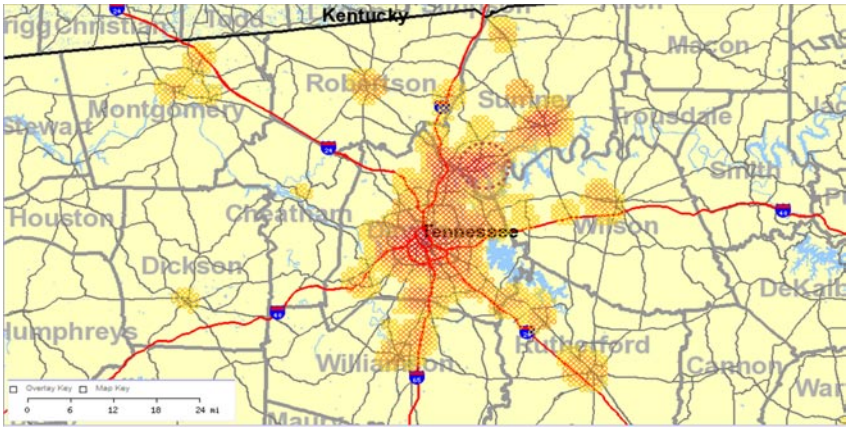


Figure 5-4: Hendersonville Area Residents' Work Locations
Source: U.S. Census Bureau & U.S. Department of Labor (2004)

WORK in Hendersonville and LIVE in…

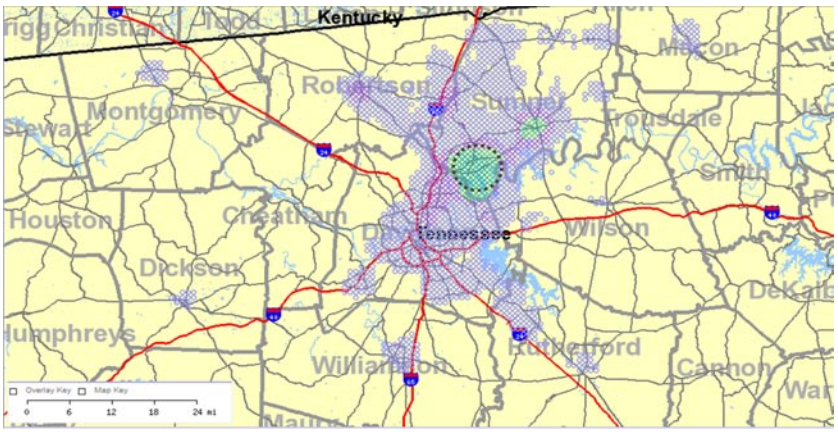


Figure 5-5: Hendersonville Area Workers' Residence
Source: U.S. Census Bureau & U.S. Department of Labor (2004)

Figure 5-6 and Figure 5-7 show the same relationships involving Gallatin area residents and workers. For the Gallatin area, there is not as strong of a relationship for commuters to Nashville as there is with Hendersonville, but Gallatin employers draw a larger spatial distribution from northern Sumner, Macon, and Trousdale Counties.

LIVE in Gallatin and WORK in…

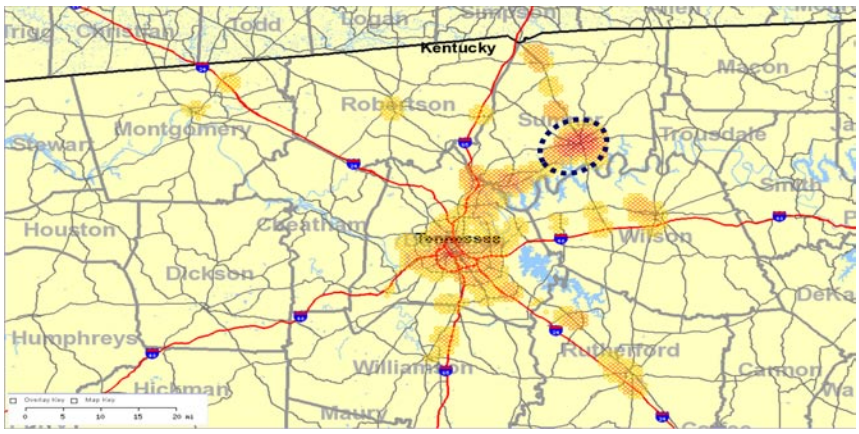


Figure 5-6: Gallatin Area Residents' Work Locations
Source: U.S. Census Bureau & U.S. Department of Labor (2004)

WORK in Gallatin and LIVE in…

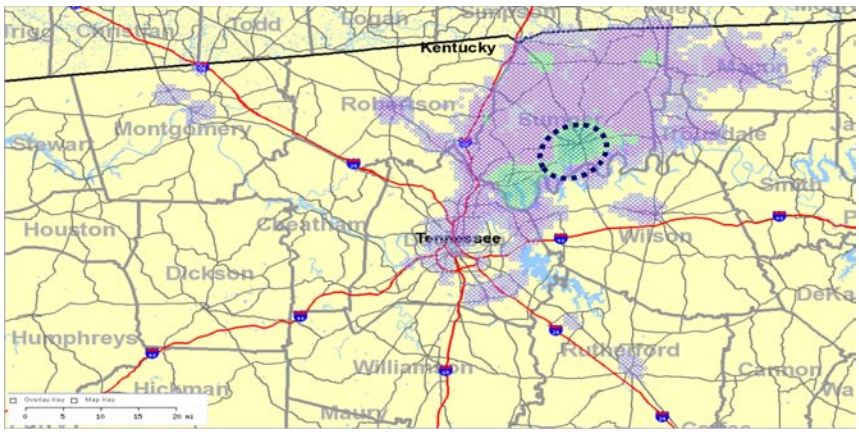


Figure 5-7: Gallatin Area Workers' Residence
Source: U.S. Census Bureau & U.S. Department of Labor (2004)

An increasing number of residents commute from northern Sumner County to south central Kentucky. Bowling Green is a major employment, service, retail, and educational center for the region. It is sometimes more efficient for residents in this area to obtain the same goods and services in Franklin or Bowling Green than to drive to Gallatin, Hendersonville, or the Goodlettsville-Rivergate areas with similar big-box stores and chain restaurants. Many of the national chains operating in Franklin and Bowling Green were not operating there 15 years ago. A lower retail sales tax rate makes shopping in these counties more affordable. The widening of I-65 through southern Kentucky and US-231 between Scottsville, Kentucky, and Bowling Green improves traffic flow and safety for commuters thus making south central Kentucky shopping destinations more accessible and more attractive for some northern Sumner County residents (Figure 5-8).

Figure 5-8: Travel Routes to South Central Kentucky Cities from Northern Sumner County

5.4 Sumner County's Existing Roadway System

The existing roadway system in Sumner County is composed of routes that travel through municipalities and connect rural areas with more urbanized areas throughout Middle Tennessee and Southern Kentucky. A priority for local transportation agencies in the future should be to maintain this existing infrastructure. A map of the functional classification system maintained by TDOT in unincorporated Sumner County is depicted in Figure 5-9.

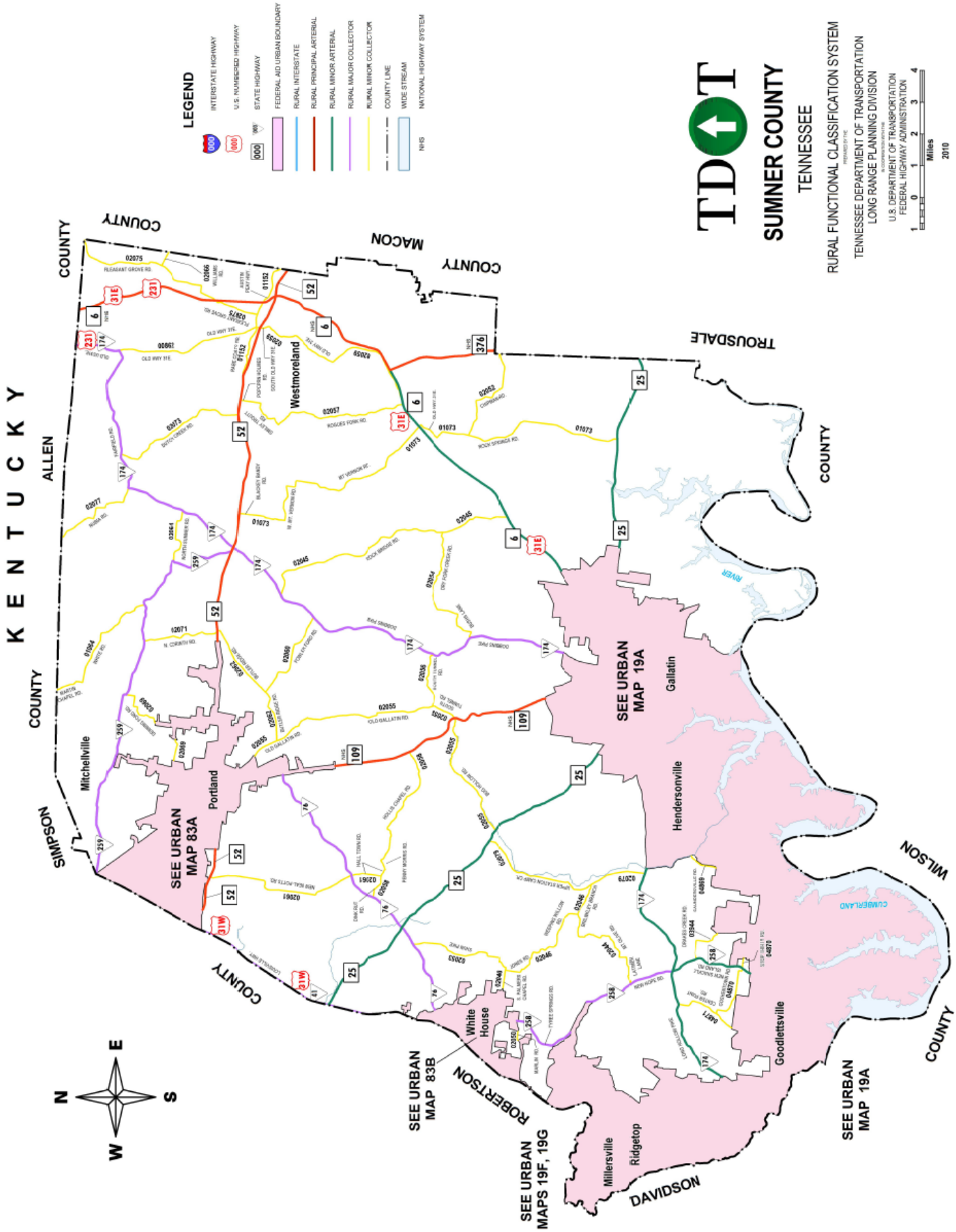
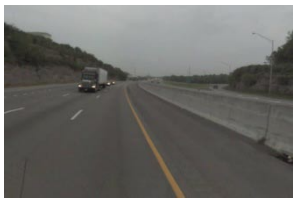


Figure 5-9: TDOT Functional Classification Map
Source: Tennessee Department of Transportation (2010)

5.5 Types of Roadway Infrastructure by Functional Class

The following is a list of functional classes in Sumner County for 2035 with photo illustrations (Table 5-1). Note that these functional classes should be designed in a proper context based upon the Land Use Element (4.0). A typical cross section should not simply be applied to an entire corridor without first considering the context in which the corridor will traverse. Figure 5-10 uses the rural-urban transect to demonstrate how different development patterns might change the character of a roadway, whether it is located in a rural area or a small village center.

Table 5-1: Functional Class in Sumner County

	**Urban Interstate – 6 lanes** Roadway built to carry interstate traffic. Six lanes of roadway separated by median. No bicycle or pedestrian accommodations, but consideration should be given as to how this facility might act as a barrier to local, non-motorized travel. Existing Local Example: Interstate 65 near Goodlettsville
	Urban Major/Minor Arterial – 4 lanes & 2 lanes Arterial within an urban environment designed to carry a large volume of traffic. Two or four lanes of roadway. Lanes may be separated by median. Sidewalks provided on both sides of road. Crosswalks and pedestrian signals located at intersections. Bicycle accommodations might include a bike lane. Existing Local Example: Indian Lake Boulevard in Hendersonville
	Urban Major/Minor Collector – 3 lanes & 2 lanes Collector within an urban environment designed to connect arterials with local streets. Two or three lanes of roadway. Sidewalks provided on both sides of road. Bicycles not separated from vehicular traffic because of lower traffic volumes. Sharrows, pavement markings that indicate bikes and car sharing the same lane, may be utilized for bicycle traffic. Existing Local Example: Green Wave Drive in Gallatin
	Rural Principal Arterial – 4 lanes & 2 lanes Arterial within a rural environment designed to carry regional traffic. Two or four lanes of roadway. Lanes may be separated by median. Pedestrian accommodations provided per Land Use Element (4.0) based upon context. Wide shoulder may be available for bicycle travel. Existing Local Example: US 31E/SR 6 from Gallatin to Westmoreland

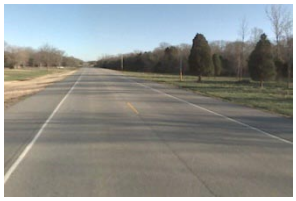
	**Rural Major/Minor Arterial – 4 lanes & 2 lanes** Arterial within a rural environment designed to carry a large volume of traffic. Two or four lanes of roadway. Lanes are typically not separated by a median. Pedestrian accommodations provided per Land Use Element (4.0) based upon context. Wide shoulder may be available for bicycle travel. Existing Local Example: SR 25/Hartsville Pike through Castalian Springs
	Rural Major/Minor Collector – 2 lanes Collector within a rural environment designed to connect principals or arterials with local streets. Two lanes of roadway. Existing Local Example: Dobbins Pike/SR 174 between Graball and Oak Grove

Photo Sources: Google StreetView

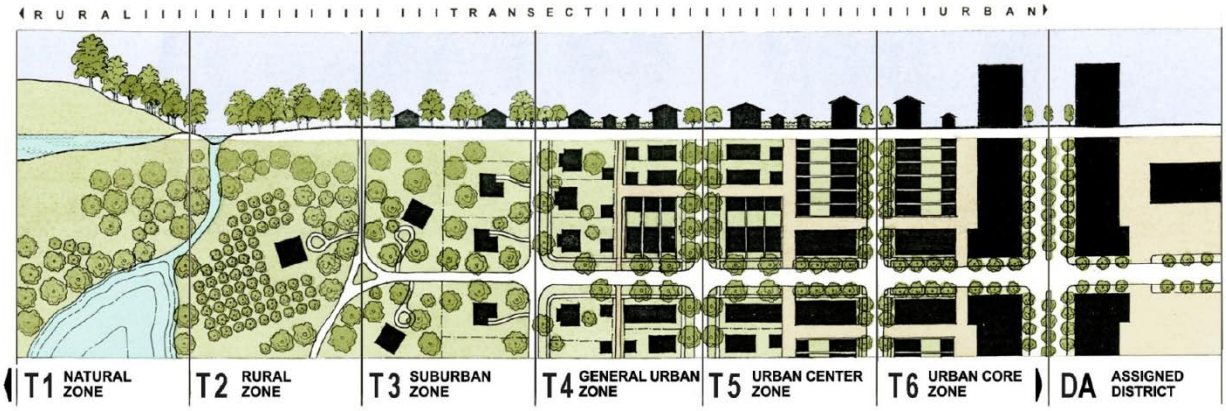


Figure 5-10: Rural-Urban Transect
Source: Duany-Plater Zyberk & Company (2003)

5.6 Sumner County's 2035 Roadway System

Considering the functional classification for 2010 and looking 25 years into the future, most functional classes will remain the same for Sumner County. Figure 5-11 shows the future functional classification or major thoroughfare plan. Right of way widths are outlined on page 7 of Appendix E. The dedication of right-of-way is important when subdividing or developing property to ensure that structures are not built within potential right-of-way and have adequate setbacks.

2035 Major Thoroughfare Plan

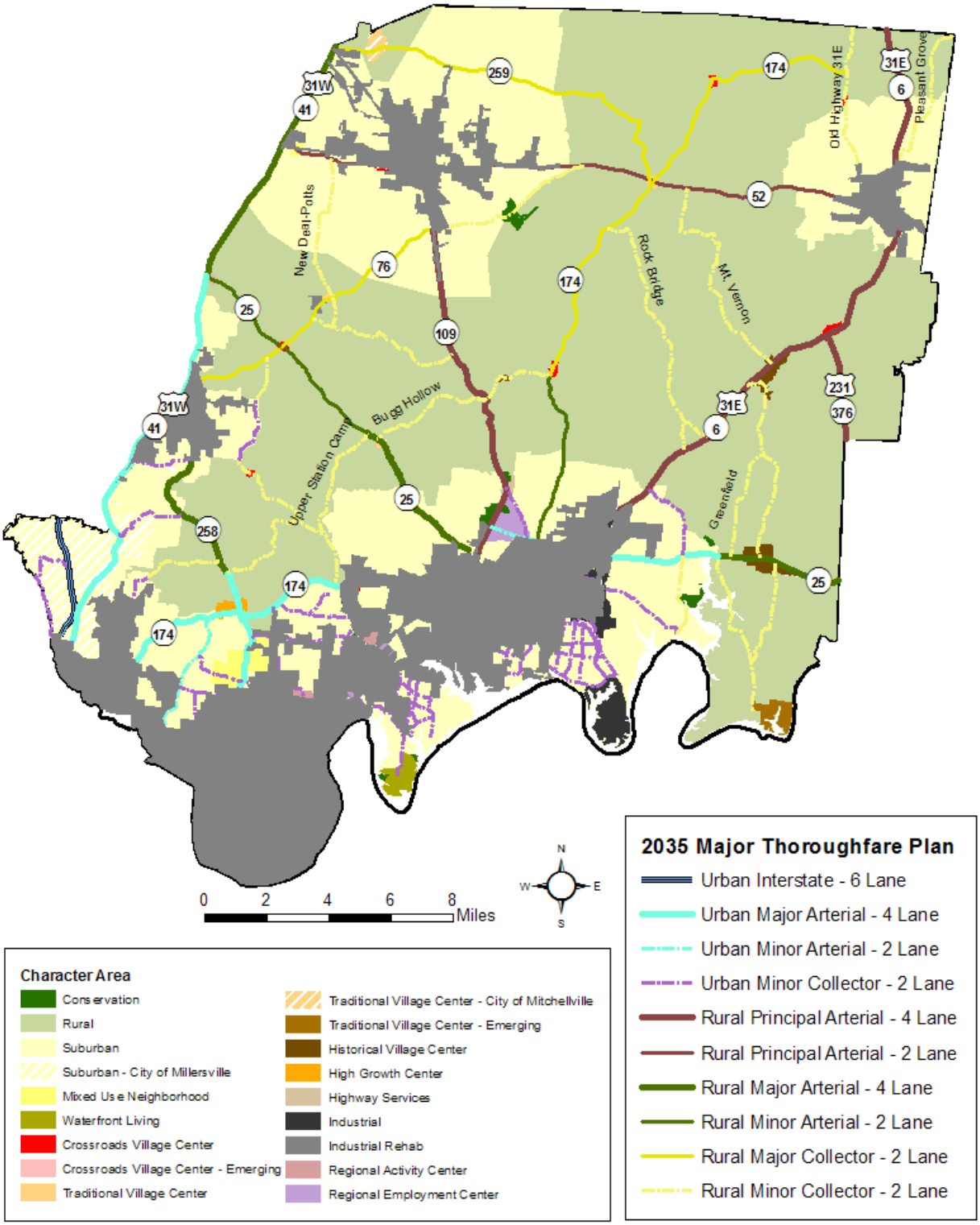


Figure 5-11: 2035 Major Thoroughfare Plan

Appendix E also contains a listing of all major thoroughfares, right-of-way, character areas, and bicycle/pedestrian accommodations in unincorporated Sumner County. Typical cross sections of thoroughfares are not depicted in the *2035 Comprehensive Plan*. The Sumner County Subdivision Regulations contains cross sections that must be updated to reflect the intent of the *2035 Comprehensive Plan*. Cross sections should be multi-modal and context sensitive. Any future roadway improvements should be mindful of its context within a community. This is especially important in unincorporated communities, so the sense of place and sense of community are maintained. Too often in the past, these areas have been bypassed by newer, wider roadways or bisected by these facilities. Future roadway improvements should be mindful of the community character established in the Land Use Element (4.0) and consider improvements from a multi-modal perspective and not just moving vehicles. A robust transportation system must include bicycle, pedestrian, and mass transit components.

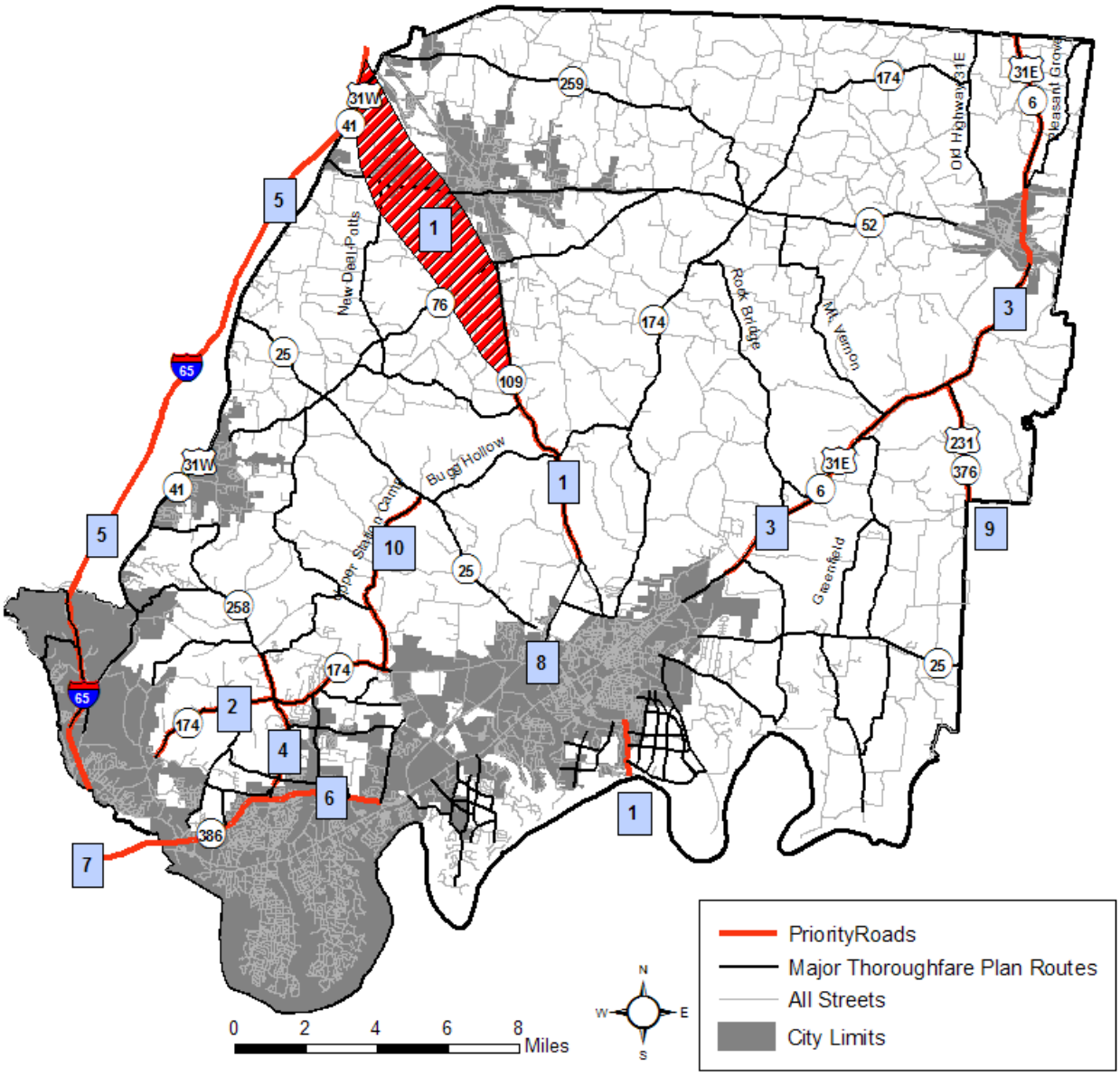
5.7 Priority Roadway Improvements

The following is a list of the most important roadway improvements in Sumner County (Figure 5-12) Most of these improvements are located in unincorporated Sumner County; however, a few of the improvements listed are located in Robertson or Davidson Counties. These routes have significant impact on the mobility of Sumner County residents and commuters. Sumner County will need to work with TDOT and the Nashville Area MPO to secure funding to implement improvements. These routes must be developed in a context sensitive manner that enhances sense of community, preserves rural viewsheds, and accommodates non-motorized travel modes and mass transit where appropriate. The Land Use Element (4.0) and Figure 5-8 should be consulted where these thoroughfares may need pedestrian or bicycle accommodations.

1. Complete widening of SR 109 from I-40 to I-65, including a Portland bypass and interchange with I-65. Limit future development to key access points to ensure that traffic flow is not impeded.
2. Widen SR 174/Long Hollow Pike from Goodlettsville to Gallatin. Include multi-modal elements such as a signed, wide shoulder for bicyclists, a shared use trail on the south side, and sidewalks in the Shackle Island community. Consider the viewsheds and context of the corridor in coordination with TDOT to ensure a scenic drive in the future and limited commercial development at key centers along the corridor as identified in the Land Use Element (4.0).
3. Widen US 31E/SR 6 from Gallatin to the Tennessee/Kentucky State Line. Include multi-modal elements such as sidewalks in communities such as Bransford, Bethpage, and Sideview. The context of the corridor should also direct TDOT's widening through the City of Westmoreland.
4. Widen SR 258/New Shackle Island Road from Hendersonville to Latimer Lane. Include multi-modal elements such as sidewalks in this fast growing, suburban area of Sumner County.
5. Widen I-65 through Sumner and Robertson Counties from Davidson County Line to Tennessee/Kentucky State Line. Consider multimodal elements such as mass transit that could link Nashville to Bowling Green or Louisville, Kentucky.
6. Widen SR 386/Vietnam Veterans Boulevard from I-65 to Saundersville Road. Consider how this corridor might support the objectives of the Northeast Corridor Mobility Study conducted by the Nashville Area MPO.
7. Reconstruct the SR 386/Vietnam Veterans Boulevard and I-65 interchange in Davidson County to provide access from westbound SR 386 to northbound I-65 and from southbound I-65 to eastbound SR 386.
8. Complete free-flow interchange of SR 386/Vietnam Veterans Boulevard and SR 109. Possibly coordinate this improvement with the Hatten Track Extension proposed by the City of Gallatin.
9. Widen US 231/SR 376 from US 31E/SR 6 to Trousdale/Sumner County Line.

10. Implement safety improvements to Upper Station Camp Creek Road that includes a wider shoulder and multi-modal elements such as crosswalks with a planned greenway parallel to the roadway in the future.
11. Widen the bridge over Station Camp Creek on SR 174/Long Hollow Pike, a TDOT designated bike route, to accommodate increased bicycle and pedestrian activity.

Priority Roadway Improvements



This map depicts high priority improvements contained in the 2035 Comprehensive Plan. These improvements may occur in existing right-of-way or may utilize other corridors depending upon further study. The areas shaded represent a concept and not an actual corridor or proposed path of any future roadways.

Figure 5-12: Priority Road Improvements

5.8 Sumner County's Existing Bicycle & Pedestrian System

The Sumner County Regional Planning Commission adopted the Bicycle & Pedestrian Master Plan for unincorporated areas in 2000. The Bike-Ped Master Plan outlined a number of proposed improvements involving shared use trails or greenways, bike lanes, and bike routes. Many of these projects involve

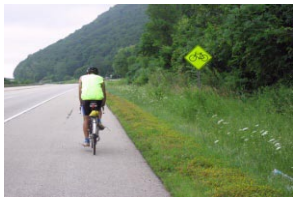
connecting the southern portion of Sumner County with the northern portion. Because funding has been scarce for improving bicycle and pedestrian infrastructure, significant progress in implementation of the Bike-Ped Master Plan through infrastructure projects has not occurred throughout much of unincorporated Sumner County. A Greenways of Sumner County Committee was formed and has worked on developing the Lower Station Camp Greenway that parallels Station Camp Creek from SR 174/Long Hollow Pike to SR 386/Vietnam Veterans Boulevard. Preliminary engineering and design have been completed for portions of the greenway with construction funds secured. It is anticipated that the greenway may break ground by the end of 2010/early 2011.

Currently, bicycle and pedestrian infrastructure is mostly restricted to sidewalks within older unincorporated areas of Sumner County and within newer residential Planned Unit Developments. The Cities of Hendersonville, Gallatin, and White House have made significant progress on greenways development. The other municipalities in Sumner County also require sidewalks as development occurs. Additionally, some of the TDOT highways in Sumner County have been designated as bike routes and have existing wide shoulders for bicycle travel.

5.9 Types of Bicycle & Pedestrian Infrastructure

Table 5-2 lists the most likely elements of the bicycle and pedestrian system that will be seen in Sumner County in the future.

Table 5-2: Bicycle and Pedestrian Components in Sumner County

	Greenway or Shared Use Trail A greenway is a corridor of undeveloped land along a river or between urban centers, which is reserved for recreational use or environmental preservation. A greenway or shared use trail accommodates bicyclists, pedestrians, skaters, and other non-motorized travel modes. Local Existing Example: Lower Station Camp Greenway in Sumner County
	Bike Lane A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Local Existing Example: Green Lea Boulevard in Gallatin
	**Bike Route/Wide Shoulder** A bike route is typically a signed route with a lower volume of traffic where adding pavement width is not required. A wide shoulder consists of travel lanes typically 14-16 feet wide that allow side-by-side operation of vehicles and bicycles. These should be signed as bike routes with rumble stripes (not strips). Local Existing Example: Portions of Nashville Pike (US 31E/SR 6) near Volunteer State Community College in Gallatin

	Bike Parking Bike parking can consist of racks to secure a bicycle or bike lockers to lock bicycles within an enclosure that provides for an appropriate place to park a bicycle. Local Existing Example: Bike parking is available at the new Hendersonville Public Library
	Sidewalk A sidewalk is a paved walkway along the side of a street. The ideal sidewalk has a minimum two feet buffer between the road and meets ADA requirements. Local Existing Example: Most new Planned Unit Developments in Sumner County
	Crosswalk A crosswalk is an element of pedestrian infrastructure, usually a path outlined on a street where pedestrians should cross. Pedestrian signals with countdown timers should be used at signalized intersections in urban areas. Local Existing Example: Intersection of Saundersville Road and Indian Lake Boulevard in Hendersonville
	Trail A trail is often an unpaved track that primarily accommodates runners or hikers for recreational use. Mountain bike trails can accommodate bicyclists. Local Existing Example: Trails within Bledsoe Creek State Park in Sumner County

Photo Sources: SunSentinel.com, rosiebrowne.wordpress.com, streetsblog.org, Washington State Department of Transportation, and Nashville Area MPO.

5.10 Sumner County's 2035 Bicycle & Pedestrian System

Considering the current bicycle and pedestrian infrastructure and looking 25 years into the future, significant progress must be made to implement the proposed greenways/shared use trails, wide shoulders, and bike lanes. The projects listed are not fiscally-constrained, so it is very unlikely all of these projects will be built by 2035. Appendix E contains a complete listing of the bicycle and pedestrian infrastructure for unincorporated Sumner County. Figure 5-13 depicts these proposed projects on a map.

2035 Bicycle & Pedestrian Plan

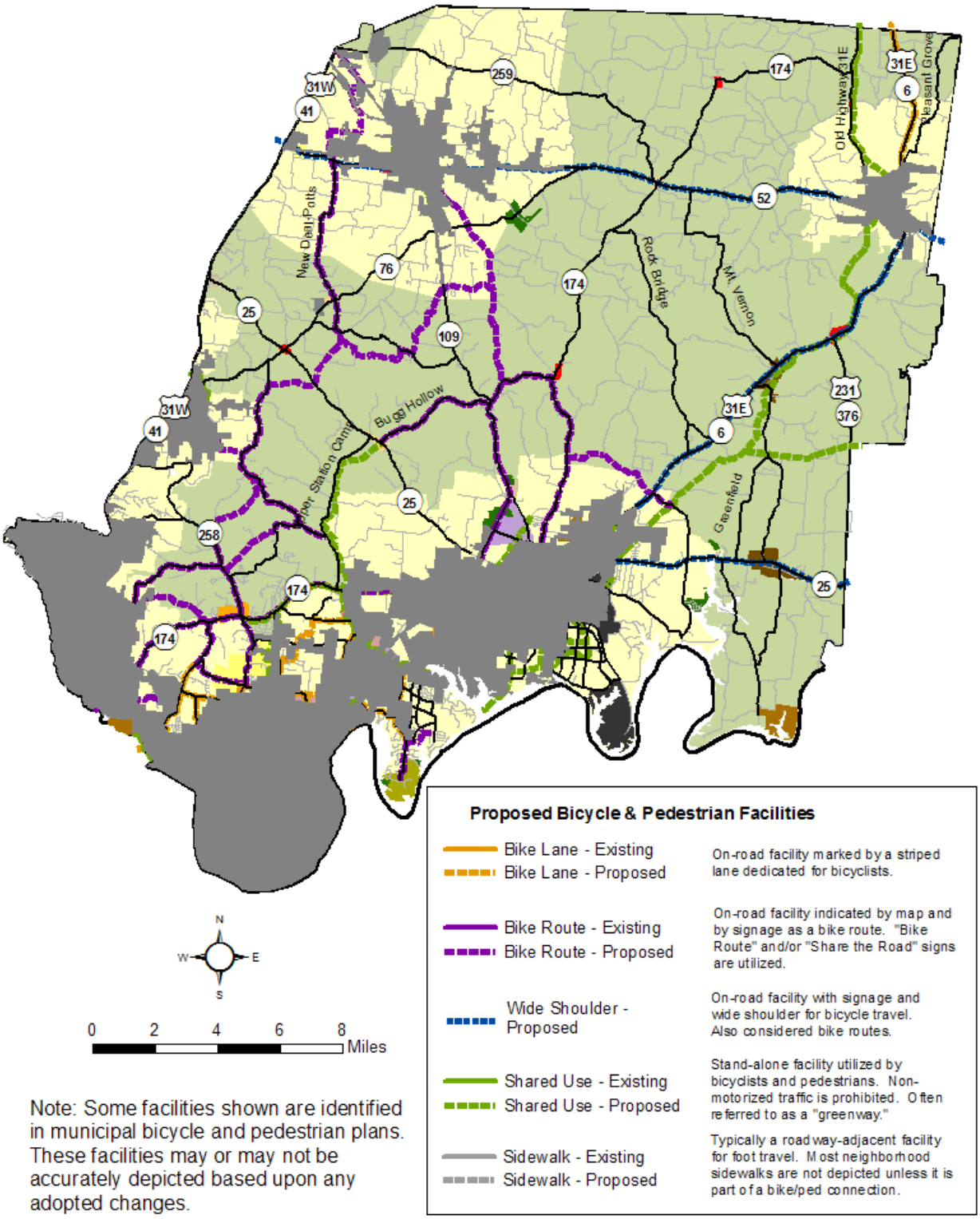


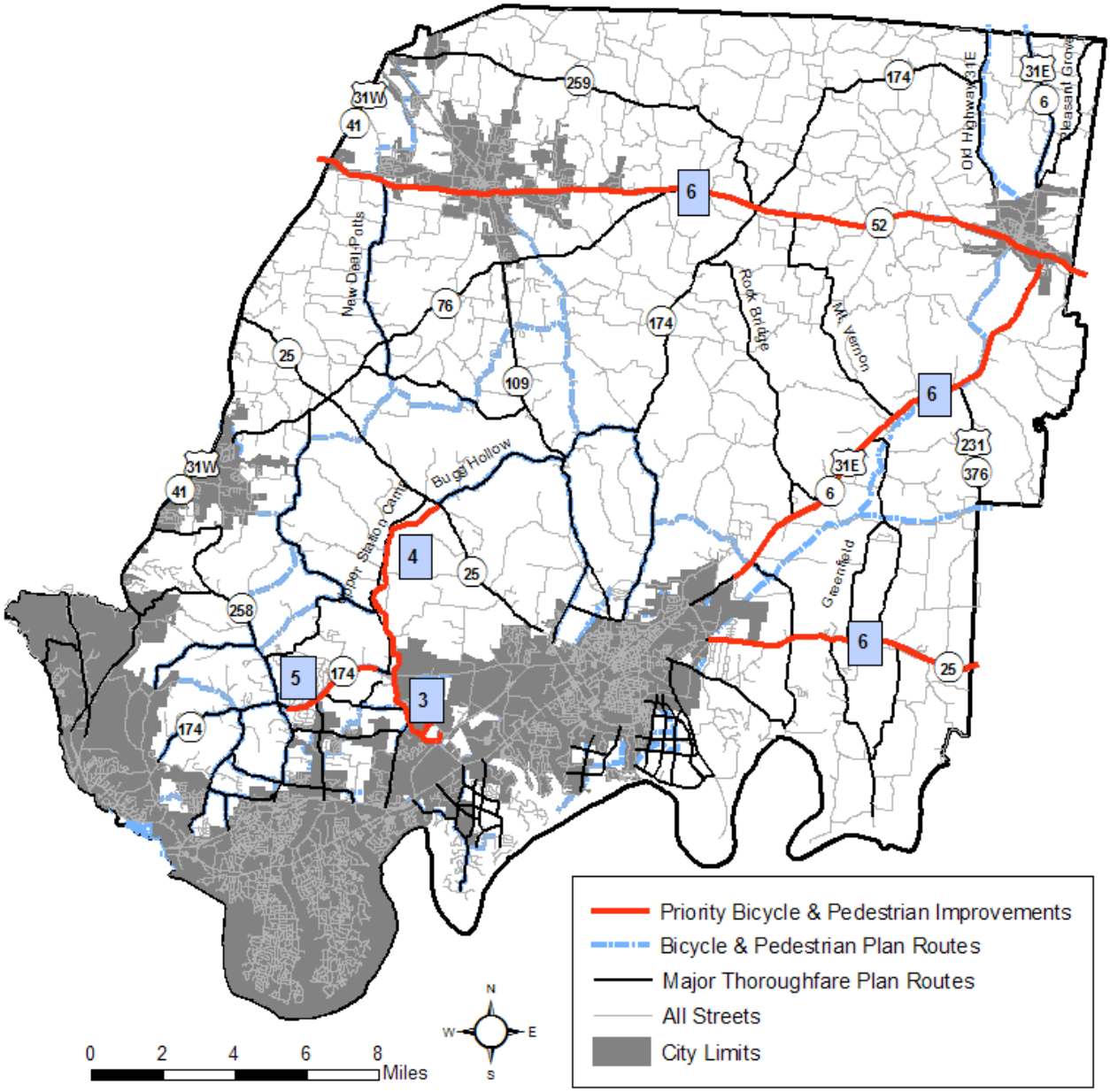
Figure 5-13: 2035 Bicycle & Pedestrian Plan

5.11 Priority Bicycle & Pedestrian Improvements

The following is a list of the most important bicycle and pedestrian improvements in Sumner County (Figure 5-14). Some of these improvements such as bicycle parking will require amendments to the Sumner County Subdivision Regulations to implement.

1. Sidewalks required on both sides of the street in all new Planned Unit Developments (residential and commercial) and new major subdivisions within all character area types outlined in the Land Use Element (4.0) except Rural and Conservation.
2. Bicycle parking required in all new Planned Unit Developments (commercial) and new commercial developments within all character area types outlined in the Land Use Element (4.0) except Rural and Conservation.
3. Construct Lower Station Camp Greenway from SR 174/Long Hollow Pike to SR 386/Vietnam Veterans Boulevard.
4. Construct Upper Station Camp Greenway from SR 174/Long Hollow Pike to SR 25 in Cottontown.
5. Construct Long Hollow Pike Shared Use Trail to parallel the south side of SR 174/Long Hollow Pike from Shackle Island to Gallatin City Limits.
6. Develop wide shoulder bike routes that include signage on state highways during regular maintenance by TDOT.

Priority Bicycle & Pedestrian Improvements



This map depicts high priority improvements contained in the 2035 Comprehensive Plan. These improvements may occur in existing right-of-way or may utilize other corridors depending upon further study.

Figure 5-14: Priority Bicycle & Pedestrian Improvements

5.12 Sumner County's Existing Mass Transit System

Mass transit operations in Sumner County have been minimal with mostly demand response operated by the Mid-Cumberland Human Resource Agency (MCHRA) until recently. The Regional Transportation Authority's (RTA) Relax and Ride commuter bus service began operations in Sumner County in 2008. Relax and Ride utilizes coach buses with modern amenities such as satellite television and wi-fi. RTA Park and Ride lots are located in Gallatin at the Super Walmart shopping center and in Hendersonville at the Glenbrook shopping center near Kohl's. The service stops in Downtown Nashville at the Music City Center and Vanderbilt's campus and runs during morning and evening commutes. It utilizes the existing roadway system, primarily SR 386/Vietnam Veterans Boulevard and I-65.

The Nashville Area MPO is currently conducting the Northeast Corridor Mobility Study to examine mass transit options between Nashville and Sumner County. This study is analyzing different mass transit components, routes, and projected ridership along with urban design elements to support land use decisions that complement mass transit improvements. Additionally, State legislation was recently passed that will allow the Middle Tennessee region to establish a regional transit authority. This new entity along with any funding streams must be voter approved. This study along with the recent transit legislation will shape the future of mass transit in Sumner County and the Middle Tennessee region.

5.13 Types of Mass Transit Infrastructure

A mass transit system can include bus rapid transit, demand response, express bus, light rail, heavy rail, commuter rail, vanpools/carpools, park and ride lots, and other components. Table 5-3 outlines the most likely options that may be utilized in Sumner County in the near future.

	Local Bus Service Local bus service includes passenger buses along a fixed route with multiple stops. Service can include local circulator or express bus service. Local Existing Example: Nashville MTA Local Bus Service
	Commuter Bus Commuter bus service includes passenger buses along a fixed route that typically operates daily during morning and evening commutes. It is primarily a commuter service from outlying areas into employment centers. Local Existing Example: RTA Relax and Ride Service between Nashville and Hendersonville/Gallatin
	Bus Rapid Transit Bus rapid transit (BRT) is a term applied to a variety of public transportation systems using buses to provide faster, more efficient service than an ordinary bus line. Often this is achieved by making improvements to existing infrastructure, vehicles and scheduling. Local Existing Example: Gallatin Road BRT operated by Nashville MTA from Downtown to the Walmart in Rivergate

	Light Rail Transit Light rail transit (LRT) is a mode of urban transportation utilizing predominantly reserved but not necessarily grade-separated rights-of-way. Electrically propelled rail vehicles operate singly or in trains. LRT provides a wide range of passenger capabilities and performance characteristics at moderate costs. Local Existing Example: None currently exist in the Middle Tennessee region
	Commuter Rail Commuter rail is rail service that uses heavy rail infrastructure and typically operates daily during morning and evening commutes from outlying areas into employment centers. Local Existing Example: Music City Star service between Nashville and Watertown
	Demand Response Demand response transportation is a form of transit that is first-call, first served available to anyone regardless of age or income. Local Existing Example: MCHRA operates Demand Response Transportation in Sumner County
	Park and Ride Lots Park and ride lots are parking areas for commuters to leave vehicles and take mass transportation either in carpools, vanpools, buses, or rail. Local Existing Example: Super Walmart parking lot in Gallatin serves as a Park and Ride for commuters taking RTA's Relax and Ride commuter bus
	Vanpool A vanpool is a group that commutes to work together in a van, usually provided by a local transit authority, nonprofit group or employer. Members volunteer to drive, fuel and keep the van clean, and schedule maintenance and repair work. Local Existing Example: RTA's Vanpool Program

Photo Sources: Nashville Metropolitan Transportation Authority, Grayline, Kansas City Area Transportation Authority, Colin Gregory Palmer, Nashville Regional Transportation Authority, and Virginia Department of Transportation.

5.14 Sumner County's 2035 Mass Transit System

It is anticipated that the mass transit system in Sumner County will be much more robust in the future. Figure 5-15 depicts some components of a regional mass transit system that would serve communities in the ten-county Middle Tennessee region. This is an example of what may happen in the future and is not an actual regional plan for mass transit. The Nashville Area MPO's 2035 Regional Transportation Plan will focus on enhancing mass transit service in the region.

Conceptual Middle Tennessee Regional Transit System

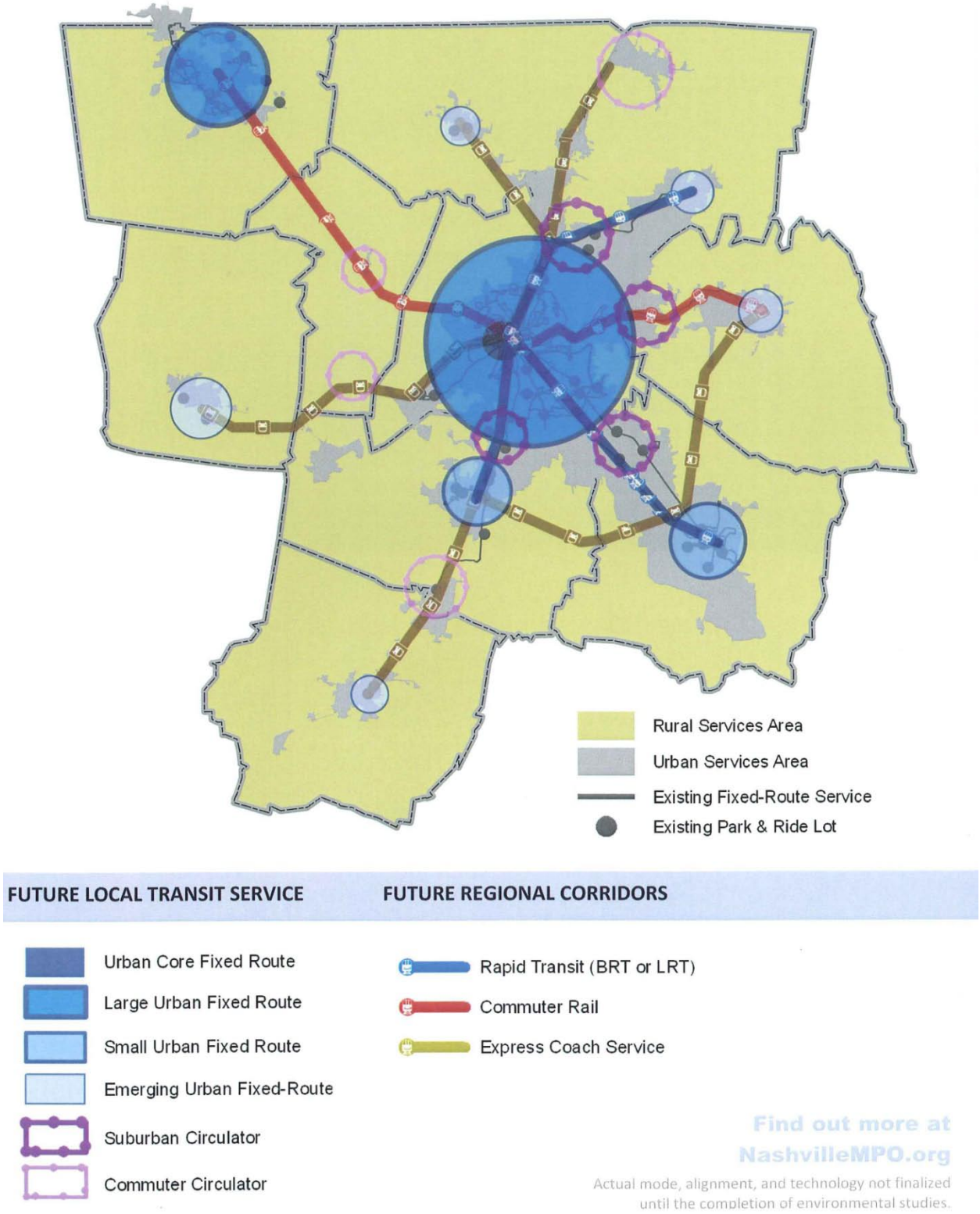


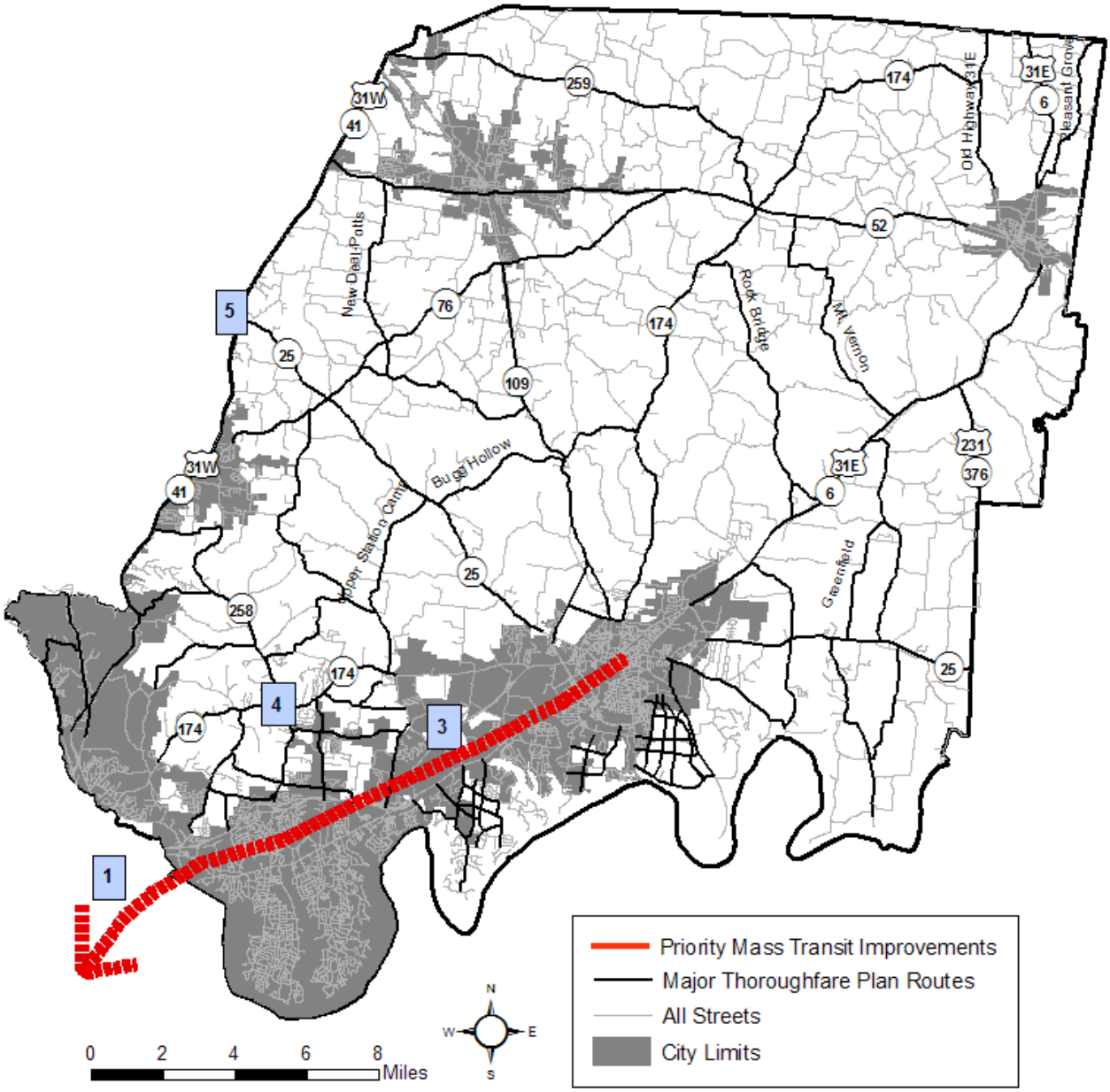
Figure 5-15: Conceptual Middle Tennessee Regional Transit System
Source: Nashville Area MPO (2010)

5.15 Priority Mass Transit Improvements

The following is a list of the most important mass transit improvements in Sumner County (Figure 5-16). These projects will require coordination between Sumner County, its municipalities, and the RTA.

1. Based upon the Nashville Area MPO's Northeast Corridor Mobility Study, develop a mass transit service (most likely bus rapid transit or light rail) connecting Downtown Nashville with Sumner County.
2. Develop local circulator service to support the Northeast Corridor mass transit improvements to move people within Sumner County.
3. Establish a multi-modal Park and Ride location or transit station in the Station Camp community near SR 386/Vietnam Veterans Boulevard to include connections with mass transit and local greenways. See Section 5.21 for conceptual illustrations.
4. Establish a Park and Ride location in the Shackle Island community near the intersection of SR 258/New Shackle Island Road and SR 174/Long Hollow Pike.
5. Establish a Park and Ride location near the I-65/SR 25 (Exit 112) interchange.
6. Enhance existing Relax and Ride commuter bus service operated by RTA between Nashville and the Cities of Hendersonville and Gallatin.
7. Expand RTA's Relax and Ride commuter bus service between Nashville and Sumner County to include additional Park and Ride locations.
8. Support regional demand response operated by MCHRA.

Priority Mass Transit Improvements



This map depicts high priority improvements contained in the 2035 Comprehensive Plan. These improvements may occur in existing right-of-way or may utilize other corridors depending upon further study.

Figure 5-16: Priority Mass Transit Improvements

5.16 Key Concept – Complete Streets

Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities must be able to safely move along and across a complete street.

Creating complete streets means transportation agencies and planning officials must change their orientation toward building primarily for cars. Instituting a complete streets policy ensures that transportation agencies and local governments routinely design and operate the entire right of way to enable safe access for all users. Places with complete streets policies make sure that their streets and roads work for drivers, transit users, pedestrians, and bicyclists, as well as for older adults, children, and people with disabilities.

Each complete street can be unique, so it is impossible to give a single description. Ingredients that may be found on a complete street include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median island, accessible pedestrian signals, curb extensions, and more. A complete street in a rural area will look quite different from a complete street in a highly urban area. Both are designed to balance safety and convenience for everyone using the road. Examples of different types of Complete Streets across the country can be found on the National Complete Streets Coalition website.[1]

Successful complete street transformations require community support and leadership, as well as coordination between various disciplines. In particular, support must include economic revitalization, business retention and expansion, property owner involvement, land use planning, urban design, landscape architecture, roadway design, utility coordination, traffic engineering, transportation planning, transit planners, architects, graphic artists, and developers.

The following principles embody the most important aspects of a successful Complete Streets program:

- Achieve community objectives.
- Blend street design with the character of the area served.
- Capitalize on a public investment by working diligently with property owners, developers, economic development experts, and others to spur private investment in the area. A minimum return-on-investment of $3 private for every $1 of public investment should be expected. Often in more densely populated areas, the ratio is 10:1 or more.
- Design in balance so that traffic demands do not overshadow the need to walk, bicycle, and ride transit safely, efficiently, and comfortably. The design should encourage people to walk.
- Empower citizens to create their own sense of ownership in the success of the street and its myriad characters.

The Implementation Element (7.0) outlines a strategy for Sumner County to develop and adopt a Complete Streets policy.

KEY CONCEPT: COMPLETE STREETS
With the adoption of a Complete Streets policy, future development that include road improvements in Sumner County shall consider the complete streets concept to ensure safe access for all users – drivers, transit users, pedestrians, bicyclists, older adults, children, and people with disabilities.

5.17 Key Concept – Connectivity

Connectivity is an important component of the transportation system because it can reduce congestion on principle and arterial roadways by diverting traffic on local streets. Many American cities and towns were originally developed utilizing a grid system of streets. This interconnectivity gives motorists several options to arrive at one's destination; thereby, traffic is diverted through the interconnected street system.

Since the modern suburb was built, streets began to be constructed in a curvilinear pattern with dead-ends. This type of street network development actually increases traffic congestion on principle and arterial streets by diverting traffic to only a few roadways. Many of Sumner County's residential developments have been built along arterials, but they have not been connected to one another. Connecting the internal street system is one way of addressing congestion on the County's arterials. Figure 5-17 shows the grid system, curvilinear system, and how to connect street networks. These connections can also be made with non-motorized infrastructure such as shared use trails or sidewalks.

This concept faces some hurdles as residents who have lived along dead end streets that were intended to be temporary stub-outs raise traffic safety concerns when connecting streets. Sumner County should work in the future to inform residents of the importance of interconnected streets and require developers to post signs at temporary stub-outs that indicate the dead end street is temporary and will be connected in the future.

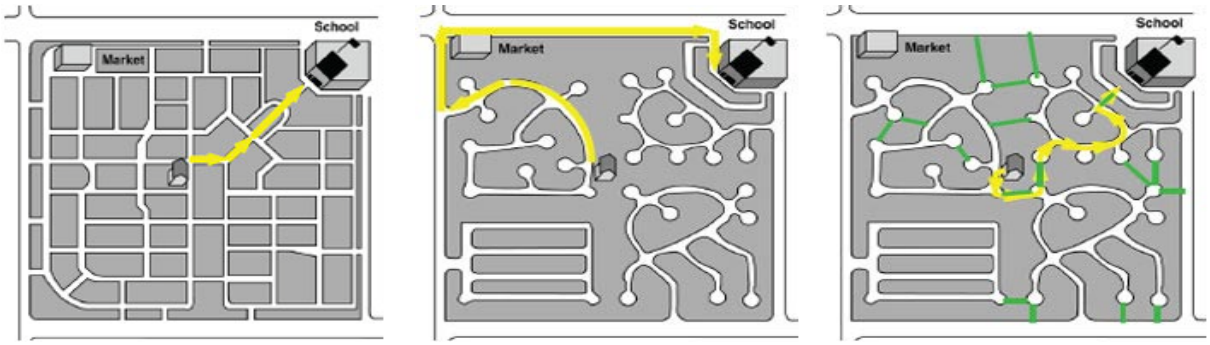


Figure 5-17: Examples of Street Networks

> **KEY CONCEPT: CONNECTIVITY**
> All future developments should strive for connectivity between adjacent existing and proposed developments. This connectivity could include extending streets or providing non-motorized connections.

5.18 Key Concept – Green Infrastructure

The Sumner County Subdivision Regulations outline the standards for streets, sidewalks, sewer lines, water lines, and other infrastructure. These regulations generally do not allow for green infrastructure such as pervious pavement, bioswales, rain gardens, and other more sustainable best management practices. In 2008, planners in Sumner County held training on green infrastructure and conducted a visual preference survey of different urban and rural design standards. A visual preference survey is conducted by showing a series of photographs of various types of developments and infrastructure. Participants are asked to rank their preference on a numeric scale. Photographs of green infrastructure were included in the series of 100 photos. The planning commissioners and staff in attendance were

generally favorable to green infrastructure such as pervious pavement, bioswales, check dams, rain gardens, and green roofs. See Appendix F for the photos.

One example of infrastructure that could be greener is the parking standards for Sumner County. Currently, dust-free parking is required with curbs leading to a detention system. Figure 5-18 shows the typical parking lot that would be required in a commercial development in Sumner County. Figure 5-19 is an example of a parking lot that has used pervious pavement, a bioswale, and limited curbing to reduce the amount of stormwater runoff. A stormwater system encouraging green best management practices (BMPs) can alleviate urban flooding issues, improve water quality, and reduce maintenance costs. Sumner County will need to research and assess appropriate BMPs to consider and possibly offer incentives to promote the usage of BMPs within new developments.

Figure 5-18: Typical Parking Lot Design

Figure 5-19: Parking Lot with Green Infrastructure
Source: Cumberland River Compact (2008).

KEY CONCEPT: GREEN INFRASTRUCTURE
All future developments should consider proven infrastructure elements that are sustainable, reduce stormwater impacts, conserve energy, and preserve Sumner County's natural landscape. These might include pervious pavement, maximum parking standards, bioswales, and rain gardens. Development regulations should be examined and incentives should be promoted to encourage the use of green infrastructure techniques.

5.19 Key Concept – Transportation Safety

The role of planning in communities has evolved over the past decade to include collaborating with public health professionals on how the built environment impacts health and injuries. Epidemiologists will examine morbidity and mortality trends in a community to understand how public health is impacted by disease, illnesses, and injuries. Sometimes how urban areas were built or rural areas maintained have influenced public health trends. For example, a built environment that has separated uses, no sidewalks, and high traffic volumes might have populations more likely to be overweight with chronic diseases such as asthma. A built environment of this nature does not encourage physical activity and may have air quality issues because of the traffic congestion. The way communities are planned and built can also impact traffic injuries and fatalities.

There were 37,261 people killed in traffic-related crashes in 2008 in the United States. Traffic injury is one of the leading causes of death among American youth. Research shows that the economic costs of

traffic crashes far outweigh the costs of congestion. Figure 5-20 compares the costs for the Nashville-Davidson-Murfreesboro Metropolitan Statistical Area (MSA) for 2005. Financial resources are often allocated to congestion management strategies and infrastructure improvements when there may be a need for more sound policies addressing crash prevention as an economic issue. More importantly, how much of the congestion costs and time delays are attributed to traffic crashes instead of recurring congestion? That is currently unknown for the region.

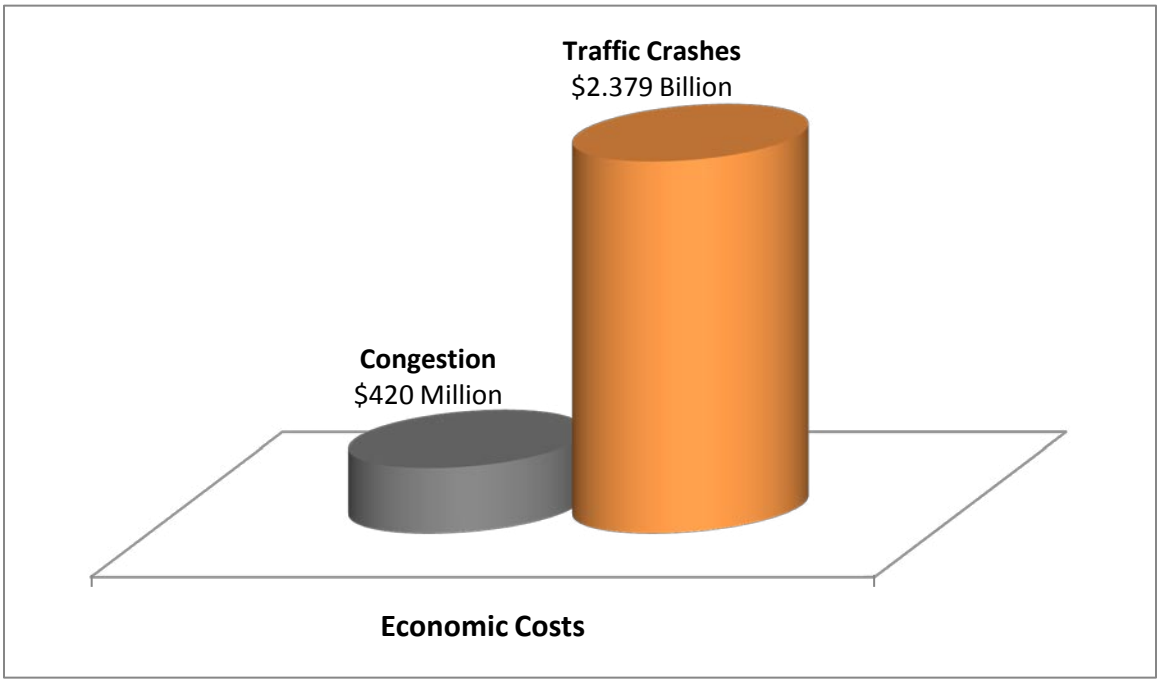


Figure 5-20: Economic Costs of Congestion & Crashes in the Nashville-Davidson-Murfreesboro MSA, 2005
Sources: *Urban Mobility Report*, Texas Transportation Institute (2009) and *Crashes vs. Congestion: What's the Cost to Society?*, AAA (2008).

Traffic safety professionals often use a four prong approach to address the traffic safety problem in the United States. Strategies involving the 4 E's, engineering, education, enforcement, and emergency response, can effectively deter crashes, prevent injuries, or provide life-saving medicine. Land use and transportation planning decisions can help to prevent future crashes and injuries by taking a safety conscious approach to the planning process.

Knowing the causes of crashes and where they are occurring in a community are important in developing planning strategies that involve infrastructure improvements. This knowledge is also critical for effective enforcement techniques and directing educational campaigns to particular populations. A safety conscious planning approach can benefit planners, engineers, traffic enforcement officers, educators, local media, public health professionals, emergency room nurses, and others.

County-wide there were 18 traffic fatalities in Sumner County in 2009. Figure 5-21 depicts crash trends over the last 5 years. There has been a decrease in injury crashes during that time period. A decrease in travel because of gas prices, the economic recession, and increased traffic enforcement could be factors in this reduction. Further analysis is needed to truly understand the impact of safety upon Sumner County and the Middle Tennessee region.

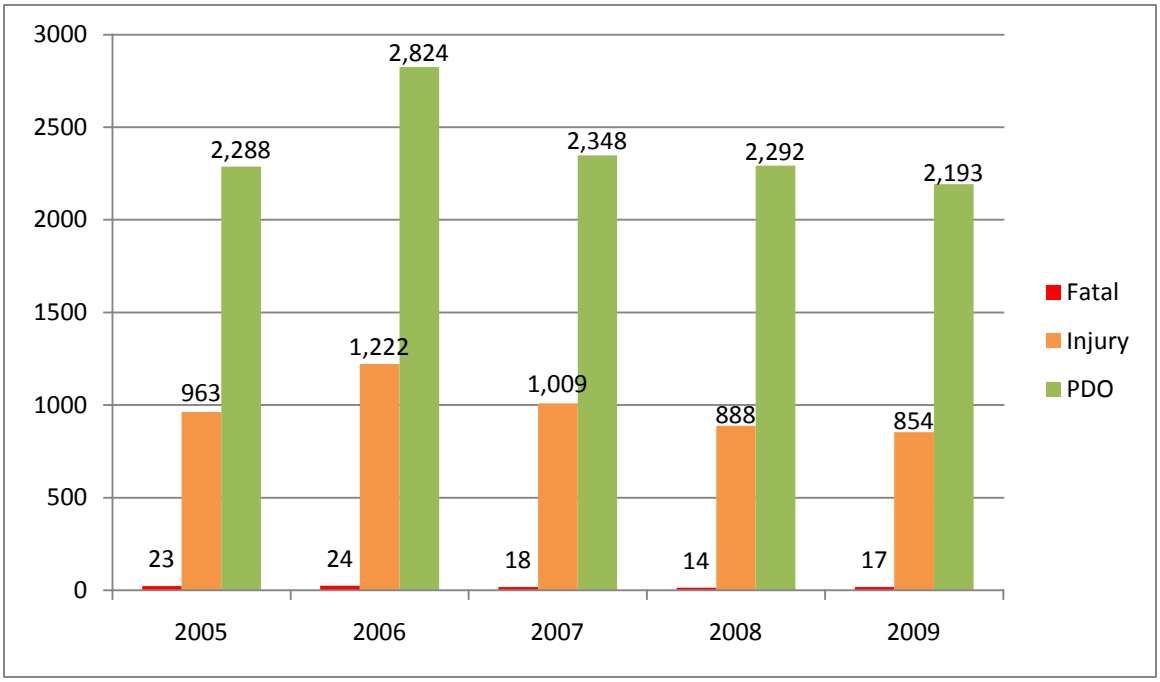


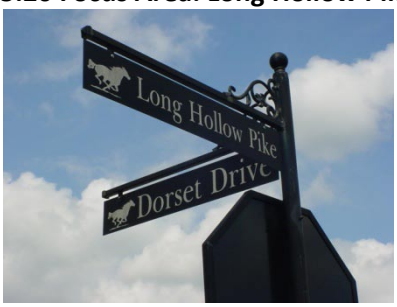
Figure 5-21: Fatal, Injury, and Property Damage Only Crashes in Sumner County, 2005-2009
Source: Tennessee Department of Safety (2010)

There are several facts about transportation safety that one can surmise about Sumner County and its planning activities based upon limited local data:

1. Although not highlighted in this document, most crashes occur at intersections in Sumner County. Future developments should be examined from intersection conflict points and future congestion.
2. There is a significant economic cost to crashes thereby making the prevention of crashes a high priority issue. Funding decisions should weigh heavily strategies that improve transportation safety.
3. Crashes are a financial drain on local government resources. The Sumner County Sheriff's Department has increased its involvement in reporting crashes. Although this process is driven by an elected official, the time spent to respond, develop the crash report, and finalize the report impact local resources but provides valuable, more reliable data.
4. Sumner County should work with local law enforcement, the Nashville Area MPO, TDOT, and the Tennessee Department of Safety to analyze traffic crash data and geolocate crash reports. Robust analysis of this nature should be utilized in considering safety improvements along roadways and in planning future developments.

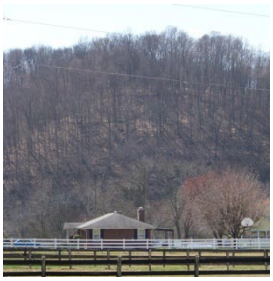
KEY CONCEPT: TRANSPORTATION SAFETY
All future developments should be examined from a safety conscious perspective to determine possible transportation safety issues. Crash data and local experience along with coordination with law enforcement, public health professionals, and engineers should guide development decisions and infrastructure improvements.

5.20 Focus Area: Long Hollow Pike Corridor & Shackle Island Community



The Long Hollow Pike Corridor (SR 174) between Madison Creek in Goodlettsville and Station Camp Creek in Gallatin was a focal point for several items of discussion while developing the *2035 Comprehensive Plan*. Local residents and elected officials developed the *Long Hollow Pike Corridor Plan* adopted by the Sumner County Regional Planning Commission in July 2003. This plan examined the corridor from the Goodlettsville City Limits to the proposed extension of SR 386 in Gallatin. It also built upon the Station Camp Area Plan for the area, at that time, of unincorporated Sumner County near the Station Camp schools complex. Despite forward planning efforts, the corridor still poses several challenges for Sumner County:

1. The scenic corridor winds its way through Sumner County and is under continued pressure for development from the west, south, and east.
2. The extension of water and sewer by the White House Utility District has resulted in increased residential development along the corridor since the 1990s.
3. There are rich natural and cultural resources along the corridor with several streams (Madison Creek, Drakes Creek, and Station Camp Creek), forested hillsides, and community facilities in the Shackle Island area.
4. The City of Gallatin annexed to the extent of its Urban Growth Boundary to the west along the corridor in 2009. The City of Hendersonville's Urban Growth Boundary does not include all of Long Hollow Pike. These jurisdictional issues pose challenges for Sumner County in providing services while maintaining a solid tax base. Intergovernmental cooperation is paramount along this corridor.
5. The portion of Long Hollow Pike from Shackle Island to Goodlettsville has increased traffic volumes in morning and evening commutes with residents accessing the Beech Schools complex and I-65 in Goodlettsville. Widening the roadway is a priority, but the widening must be balanced with the scenic attributes of the corridor and future growth potential.
6. Residents have repeatedly vocalized concern about new development in the corridor. They understand that new development will occur, but that development should occur in identified Centers as noted in the Land Use Element (4.0). New development should look unique, support the established Shackle Island community, and not resemble typical suburban development. Residents also want the corridor to remain scenic and quiet.



As part of the Nashville Area MPO's Tri-County Land Use & Transportation Study, the Shackle Island community and Long Hollow Pike were selected as a focus area and strategic corridor regarding future development decisions that may integrate best management practices involving green infrastructure, cluster development, and transportation concerns. This area was selected because of the challenges mentioned and the anticipation of future growth. The rural viewsheds, steep slopes, forested areas, and streams are natural elements to enhance and maintain; however, if policies are not implemented that support these elements, these natural features are endangered.

5.20.1 Existing Transportation Conditions along Long Hollow Pike

The strategic corridor (Figure 5-22) is located between Center Point Road and Buchanan Circle, covering a distance of 1.54 miles. It is a three-lane section with a paved shoulder and swale from Buchanan Circle to School Drive and a two-lane section with shoulder and swale from School Drive to Center Point Road. The corridor carries 10,800 vehicles per day (according to the AADT from 2008). In addition, there is heavy school bus traffic. Other characteristics of the corridor include (Figure 5-23):

- Offset intersection at Center Point Road/Happy Hollow Road.
- Crosswalks at New Shackle Island Road and Long Hollow Pike but no sidewalks.
- Blind shoulders/driveways with limited visibility.
- Speed limit posted at 50 mph, 15 mph during school hours.
- Travel speeds higher than posted speeds.
- High crash frequency east of New Shackle Island Road.

Figure 5-22: Long Hollow Pike Strategic Corridor
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

Figure 5-23: Photos of Existing Transportation Infrastructure along Long Hollow Pike
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

5.20.2 Future Transportation Strategies along Long Hollow Pike

The corridor is adjacent to the Shackle Island community, as noted in the Land Use Element (4.0) as a High Growth Village. The projected volume of traffic in 2035 along the corridor is 13,420 vehicles per day. In response to the projected traffic, widening the roadway to create a four-lane divided median with paved shoulder and swale is recommended. Other recommendations include:

- Providing for sidewalks or shared use paths in the vicinity of the elementary, middle, and high schools on both sides of the road.
- Providing for a shared use path along the creek parallel to New Hope Road.
- Reconstructing the intersection of Center Point Road and Happy Hollow Road to alleviate approach offset and sight distance concerns.
- Providing high visibility crosswalks and pedestrian heads at signalized intersections.
- Minimizing the flow rate of stormwater and contributing to improved water quality through use of shoulder and swale section and depressed median.

Figure 5-24 illustrates a cross section with the elements described above.

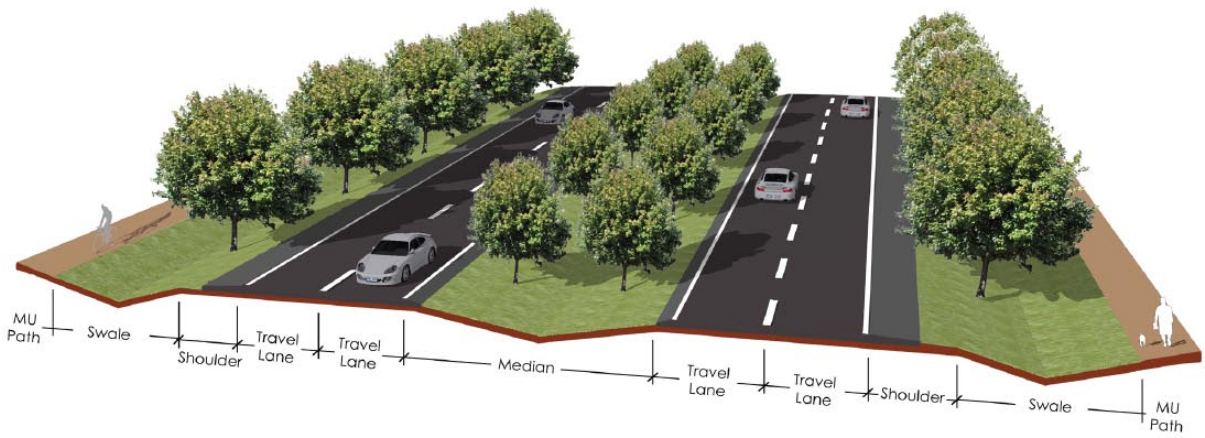


Figure 5-24: Long Hollow Pike Future Cross Section
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

5.20.3 Integrating Long Hollow Pike Transportation Improvements with Land Use Decisions

The Development Form Focus Area of Shackle Island is an example identified in the Tri-County Land Use and Transportation Study as a regional future model of a growing community with environmental constraints. It is served by the Long Hollow Pike strategic corridor (see Section 5.20.1 and Section 5.20.2) identified in the study as a transportation facility of regional importance. The following conceptual illustrations will reflect policies of the High Growth Center character area described in the Land Use Element (4.0) and inform local decision making. These are hypothetical models rather than actual development scenarios, so pieces of the concepts presented in this document could be applied as future development occurs.

Shackle Island is located in a high growth area. This location is experiencing, and will continue to experience, development pressure. Environmental constraints and transportation issues as already described will affect development in this area. Floodplain and steep slopes present challenges in accommodating development programs and policies consistent with the High Growth Center character area. Furthermore, the collocation of high, middle, and elementary schools has generated traffic volumes that hinder circulation in the area at peak hours, which affects access to adjacent development.

As depicted in the conceptual illustrations, residential and non-residential development is incorporated into the existing pattern to reinforce this location as a center or node along this route. With a cluster development or conservation subdivision approach, environmentally sensitive areas are preserved while suburban densities are achieved. In addition, the local street network is expanded to improve circulation and increase connectivity for a more walkable environment, particularly around the schools.

Greenway trails and bikeways would supplement the circulation system. The local streets are also intended to unite development rather than separate it with buffers; housing is oriented toward streets and adjacent development, as well as open spaces that include greenways, to create a more cohesive, linked environment. The floodplain and hilltops are illustrated as preserved open spaces and the focal points or natural amenities of development.

Figure 5-25, Figure 5-26, and Figure 5-27 conceptually illustrate this Development Form Focus Area. As illustrated in the depiction, Long Hollow Pike exhibits the following characteristics: four-lane, median

divided section with swales and shoulders wide enough to accommodate experienced bicycle riders. This is also consistent with the City of Hendersonville's Comprehensive Land Use and Transportation Plan adopted in 2009.

Figure 5-25: Future Shackle Island Community Concept
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

Figure 5-26: Future Shackle Island Built Environment Concept
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

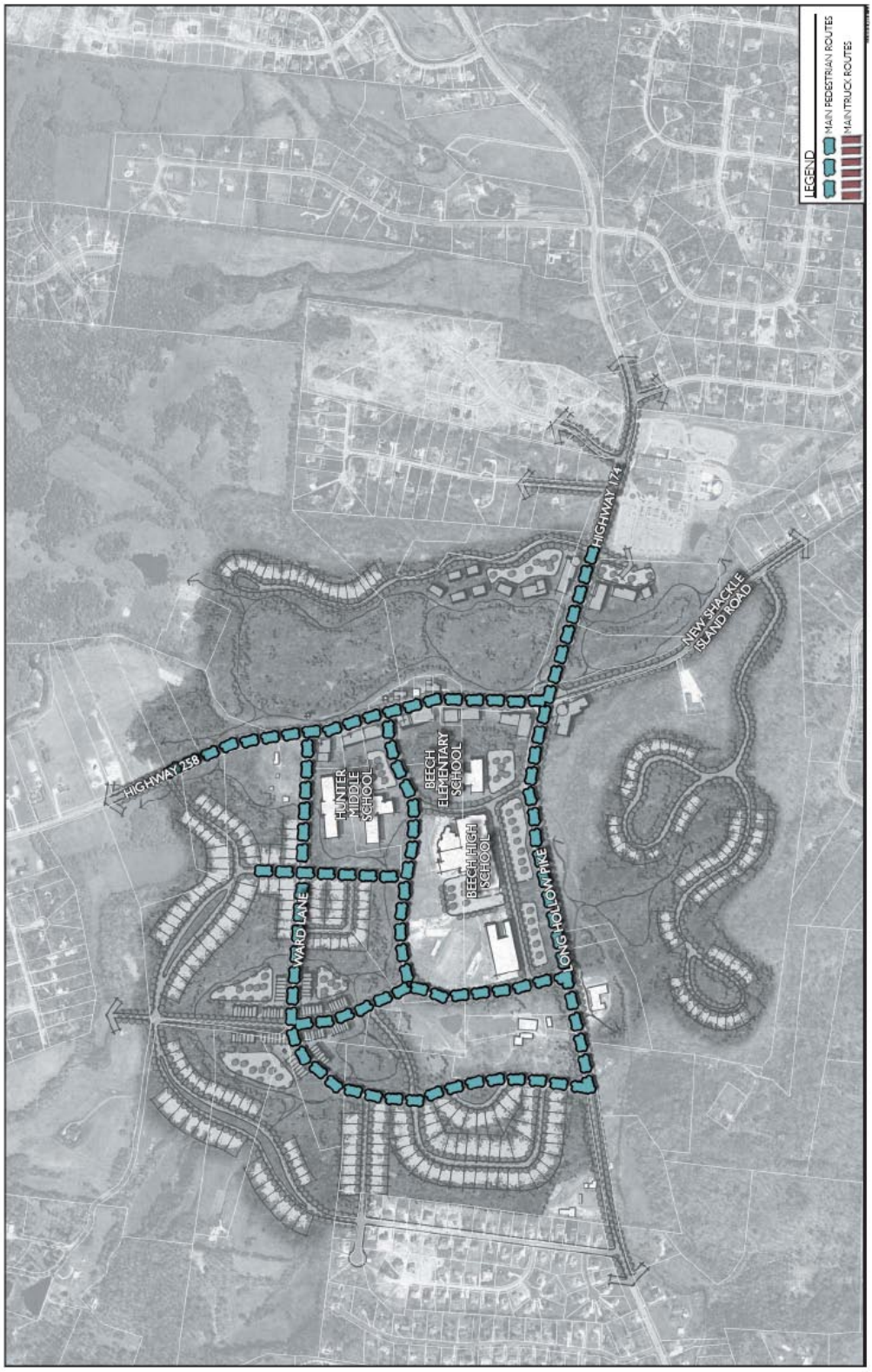


Figure 5-25: Future Shackle Island Transportation Connectivity Concept
Source: Nashville Area MPO Tri-County Transportation & Land Use Study (2010)

5.21 Station Camp Area Multi-Modal Station Concepts

The Nashville Area MPO's Northeast Corridor Mobility Study examines a range of mass transit options along the corridor generally following I-65 and US 31E from Downtown Nashville to Gallatin. Local decision makers have identified the Station Camp area including portions of Hendersonville, Gallatin, and unincorporated Sumner County as a potential location for a mass transit station or multi-modal park and ride facility. This facility will be a gateway into the heart of Sumner County and among the county's fastest growing cities.

In Charlotte, North Carolina, all Regional Mass Transit stations are designed to increase mobility by linking light rail or bus rapid transit to automobile park-and-ride, bicycling, and pedestrian movement, incorporating greenways wherever possible. Figure 5-26 is an example of such a facility. The Employment Center character area identified in the Land Use Element (4.0) that is also mirrored in Gallatin's 2020 On the Move Plan could be developed with this conceptual illustration in mind. Further analysis and study will be needed to determine the facility's location, components, and character.

Figure 5-26: Example of a Regional Mass Transit Station
Source: CharMeck Transit's *Transit Station Area Design Principles*

Transportation Element Endnotes

[1]National Complete Streets Coalition, Complete Streets FAQ Website -http://www.completestreets.org/. Accessed online on July 15, 2010.