

Kingsport Regional Bicycle and Pedestrian Plan

Church Hill • Gate City • Kingsport • Mt. Carmel • Weber City

Hawkins County, TN • Scott County, VA • Sullivan County, TN • Washington County, TN



Prepared for the
Kingsport Metropolitan
Transportation Planning
Organization



November 2012

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation. This report was prepared in cooperation with the United States Department of Transportation, the Federal Highway Administration, the Federal Transit Administration, Tennessee Department of Transportation and the Virginia Department of Transportation. It is the policy of the City of Kingsport not to discriminate on the basis of age, race, sex, color, national origin or disability in its hiring and employment practices, or in admission to, access to, or operation of its programs, services, and activities. For ADA (disability) inquiries contact TDD at 423-224-2614.

Contents

I. Plan Development	Why Plan? The Benefits of Active Transportation	2
	Our Goals - Coordination with Kingsport's Regional Long-Range Transportation Plan	4
II. Today's Non-Motorized Conditions	Kingsport's Existing Facilities	6
	Non-Motorized Trip Demand	8
	Current Bicycle Level of Service (BLOS)	9
	Current Pedestrian Level of Service (PLOS)	11
	Non-Infrastructure Conditions	13
III. The Kingsport Regional Plan	Proposed Bicycle Network - Overview	15
	Proposed Bicycle Network - Types of Facilities	16
	Proposed Bicycle Network - Recommended Routes	17
	Proposed Bicycle Network - Costs and Priorities	19
	Proposed Pedestrian Network - Overview	22
	Proposed Pedestrian Network - Costs and Priorities	26
	Benefits of the Recommended Networks	27
	Program and Policy Recommendations	30

I. Plan Development

The purpose of the Kingsport Regional Bicycle and Pedestrian Plan is to establish a comprehensive bikeway and pedestrian network which enables regional jurisdictions to plan and implement facilities that improve safety, enhance mobility, and promote a higher quality of life throughout this part of upper east Tennessee and southwest Virginia. The plan has been developed through oversight of the Kingsport Metropolitan Transportation Planning Organization (KMTPO) and with the coordinated assistance of a local steering committee as well as the public.

This plan is comprehensive in a regional scale in that it identifies locations for new facilities, policy changes to encourage walking and biking, and other opportunities to encourage bicycle and pedestrian travel within the cities of Kingsport, Weber City, Gate City, the towns of Mt. Carmel and Church Hill, as well as unincorporated areas of Sullivan County, TN, Hawkins County, TN, Washington County, TN, and Scott County, VA.

Why Plan? The Benefits of Active Transportation

The advantages gained by communities that have a complete transportation system with comprehensive, safe, and well maintained facilities are immense. As American communities grapple with growing transportation needs and mismatched budgets, non-motorized transportation continues to find favor as a mainstream component of our portfolio of travel options. Growing an effective and dynamic culture of active transportation in Kingsport will require helping transportation consumers to better understand the benefits of walking and biking. This can be accomplished by providing well-designed bicycle and pedestrian facilities and through education and encouragement activities. Benefits of walking and biking can be divided into benefits experienced by the whole community and benefits experienced by individuals.

Community Benefits

Communities that have more walking and biking trips historically see reduced healthcare costs, improved air quality, better mobility, safer streets for all users, and a greater sense of community. These communities provide safe, well-designed and constructed facilities for bicycle and pedestrian travel that provide connectivity between residential areas and schools, parks, offices, and retail areas.

Environmental

Vehicular emissions are a major contributor to poor air quality since these emissions create ground level ozone. A primary source of vehicle emissions occurs during the first couple minutes after ignition. Therefore, shorter trips that could

be replaced with walking or biking trips can contribute significantly to better air quality. Increasing the region's non-motorized travel share can help in avoiding a possible EPA designation as an air-quality non-attainment area.

Transportation System

The transportation system as a whole benefits from individuals choosing to walk and bike by decreasing the number of motor vehicles using the roadway network. Trips two miles or less account for 30% of all trips (2009 National Household Travel Survey). Converting a portion of these to walk or bike trips would have a positive impact on the region's transportation network.

Safety

Properly designed, constructed, and maintained bicycle and pedestrian facilities make it easier for drivers to predict the movement of cyclists and pedestrians. In cities where adequate facilities are constructed, bicycle and pedestrian injury and fatality rates are lower. Also, a perceived lack of safety is often cited as a deterrent to walk or bike.

Development

Cities that provide bicycle and pedestrian facilities are often considered to be more livable with an improved quality of life and sense of community. Cities that are more livable attract more companies of all sizes, more individuals that are relocating, and host an atmosphere with a greater sense of community.

Transportation Equity

An emerging perspective exists that transportation planning can be an effective tool for lowering biases and inequalities within our communities. Providing adequate infrastructure for all, regardless of physical ability, auto ownership, etc. will allow citizens of this part of east Tennessee and southwest Virginia to access the opportunities provided by complete mobility. The

result has been shown to come in the form of greater economic and social wellbeing for residents, especially populations defined as low income, elderly, people with disabilities, children, and young adults.



Recent development projects have included community-enriching pedestrian accommodations.

In Tennessee, 806 pedestrians were killed between 2000 and 2009. The Kingsport/Bristol urban area can build on the fact that it had the second lowest pedestrian fatality rate of Tennessee's 10 largest Metro areas.

Dangerous by Design 2011. Transportation for America.

Why Plan? The Benefits of Active Transportation

Individual Benefits

Individual benefits include the ability to make trips without relying on an automobile, lowering personal transportation costs, and improving health.

Non-Vehicular Trips

There are individuals in the Kingsport region who want an alternative to driving an automobile. There are also some individuals who have no choice but to walk, bike, or use transit to get somewhere. Properly designed pedestrian and bicycle facilities that connect residential areas with destinations such as schools, parks, retail, office

areas, and transit stops are important to those that desire or require an alternative to a trip by automobile.

Lower Personal Transportation Cost

With rising fuel costs and related impacts, walking and biking are affordable options to vehicular trips. Walking is virtually free and bicycling is relatively inexpensive. If walking and biking are a safe, reasonable option many people will consider these modes for short distance trips to save money.

Health

Walking and biking obviously helps combat obesity, but studies are also linking routine active transportation to the prevention of coronary heart disease, stroke, certain types of diabetes, colon cancer, hypertension, and depression. Making walking and biking part of a daily routine

makes it easier for most individuals to enjoy a greater measure of health. In order for walking and biking trips to become part of a daily routine, the location of destinations must be where walking and biking trips are viable options. Also, adequate facilities need to be provided that create a safe, friendly environment for walking and biking.

Percentage of Population that is Physically Active*, Southeastern States

	Adults	High School Students
Virginia	67.1%	Not reported
Georgia	66.8	26.1
South Carolina	64.3	20.1
North Carolina	60.9	24.5
Alabama	59.0	Not reported
Kentucky	57.9	17.6
Tennessee	51.8**	24.3

* Defined as 150 min/week of moderate intensity activity or 75 min/week of vigorous intensity activity.

** Lowest reported percentage in U.S.

State Indicator Report on Physical Activity 2010. US Dept. of Health and Human Services. Center for Disease Control and Prevention.



Often under appreciated, pedestrian accommodations have made downtown commerce possible since Kingsport's modern downtown was built.



While the setting of the Greenbelt is unique, its success shows the potential for non-motorized travel in the region when given high quality facilities.



Rural roads in Sullivan County offer opportunities for cycling on scenic roads shared with traffic.

"I highly encourage Kingsport to improve the bikeability of the city; my family enjoys biking on the Greenbelt, but I would really be happy if it was easier to safely bike to more places than just what's along the Greenbelt."

Survey respondent

Our Goals - Coordination with Kingsport's Regional Long-Range Transportation Plan

The recommendations and implementation of the Kingsport Regional Bicycle and Pedestrian Plan are driven by the development of the plan's community-based goals and objectives. The goals and objectives of the plan are directly related to those established for the larger transportation network as identified by the regional Long-Range Transportation Plan. The goals represent the overarching local desire for transportation to serve a strategic role in the promotion of this region. The objectives are action items that will support the goals of the region.

Livability

Provide safe, secure, convenient, and active transportation choices to all citizens which strengthens the livability and health of our communities and region.

- Improve safety by reducing transportation-related fatalities and injuries
- Make streets a place for all users - "Complete Streets"
- Increase opportunities for short trips to be made by non-motorized modes to promote active transportation
- Increase transit and other transportation demand management opportunities

Sustainability

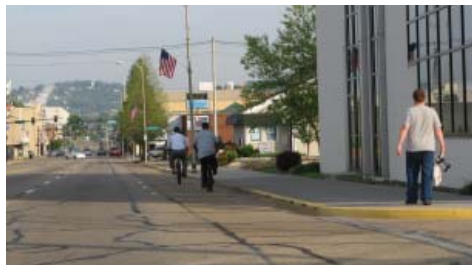
Promote and advance sustainable transportation choices for the greater Kingsport region that support long-term economic, social, and environmental sustainability within and throughout the region.

- Maintain what we have – take a "state of good repair" approach to our community's transportation assets
- Seek improvement options which minimize adverse impacts to historical, social, cultural, and natural environments
- Promote investment solutions that reduce carbon and other harmful emissions from transportation

Prosperity

Promote transportation policies and investments that advance quality economic development and redevelopment, economic competitiveness, and increased access to people, places, and goods and services within and throughout the region.

- Strategically target transportation investments to areas supportive and conducive to growth and redevelopment initiatives
- Support land use and development patterns that reduce transportation costs and expenditures for all users
- Continue to promote and foster an environment by which citizens, communities, jurisdictions, elected officials, and other stakeholders can collaboratively advance a sustainable multimodal transportation system that provides safe and secure connections throughout a livable and prosperous region



Bicycle and pedestrian accommodations encourage transportation in keeping with Kingsport's regional goals of being livable, sustainable, and prosperous.

The Plan Development Process

After identification of the goals of the plan a street inventory was conducted. As part of the inventory, roadway characteristics were collected and existing bicycle and pedestrian facilities were located. The infrastructure inventory quantified various bicycle and pedestrian-related cross-section components so that a pedestrian level of service (PLOS) and a bicycle level of service (BLOS) could be developed.

Along with the field work, the data collection included identifying programs and policies in the Kingsport region that affect pedestrian and bicycle facilities. Using the information collected in the field during the inventory process, an evaluation of the existing conditions was conducted. In addition, to determine the locations with the highest probability of producing walking and biking trips, a non-motorized trip model was created based on the land use patterns within the region. Throughout the process public and stakeholder input was obtained through various avenues. The public and stakeholder input along with the results of the analysis were used to make recommendations for the location and type of bicycle and pedestrian facilities. Prioritization strategies on how to implement the plan are included. Planning level cost estimates were also prepared.

II. Today's Non-Motorized Conditions

Like most communities in Tennessee and southwest Virginia, Kingsport and the surrounding jurisdictions have roadway networks and cross-sections that were well suited to the community desires and land use decisions made over the past five or more decades. The results are roadway designs that generally give little attention to non-auto modes and the promotion of residential and commercial development away from the traditional city centers. Today, this region like other progressive places seeks to re-introduce the most basic modes of travel into its metropolitan and rural settings. This section identifies the region's existing infrastructure as well as its policies and programs related to non-motorized transportation.

Kingsport's Existing Facilities

Over the years, growth in the Kingsport region has resulted in land uses and a transportation system that has created challenges to walking and biking trips. However, there are new opportunities within the region to improve the facilities and increase the amount of walking and biking through new development, redevelopment, and policy changes.

As part of the development of the Kingsport Regional Bicycle and Pedestrian Plan, local stakeholders were asked to identify some of the regional strengths and weaknesses. These are organized by the three overall goals of the plan.

Overwhelmingly, the Kingsport Greenbelt is seen as the premier walking and biking facility and gets high, though almost exclusively recreational use. Developing the ability to access the Greenbelt without driving is an objective of the plan's implementation.

One notable strength not mentioned by stakeholders but apparent to the plan development team is the area's dedication to and interest in enhancing and promoting Kingsport's quality of life. How a region moves is becoming increasingly synonymous with its desirability, particularly among the creative class of our technology and information-based economy. Continuing to link active transportation and the region's natural setting can strategically position this area with respect to other similar-size communities.

Our Strengths

Livability Goal

Contributions from and success of Greenbelt

Interest in/ability to expand Greenbelt

Formulation of Pioneering Healthy Communities (partnerships with wellness community)

Safe Routes to School efforts

Adoption of city sidewalk program

Sustainability Goal

Implementation of multi-use (mobility) paths along roads

Progress in environmental protection – wetland banking

Inclusion of sidewalk enhancements with resurfacing projects

Establishment of maintenance funds for pedestrian facilities

Prosperity Goal

Community amenities (gardens as example)

Our Weaknesses

Lack of adequate wayfinding (Greenbelt as example)

Inability of circulation using Greenbelt (more connections, ability to “loop”)

Lack of safe crossings (crosswalks, ped signals) – hampers walking, especially by children

Topography

Lost opportunities in project development (downtown grocery example)

Prevailing attitude of walking/biking as recreation only, not transportation – relatively few Greenbelt connections perpetuates this attitude

Continuation of suburban type and location of development

Lack of early right-of-way set-asides for facilities

No adopted city policy for mobility paths as part of roadway improvements

Need connections to increase economic value of Greenbelt

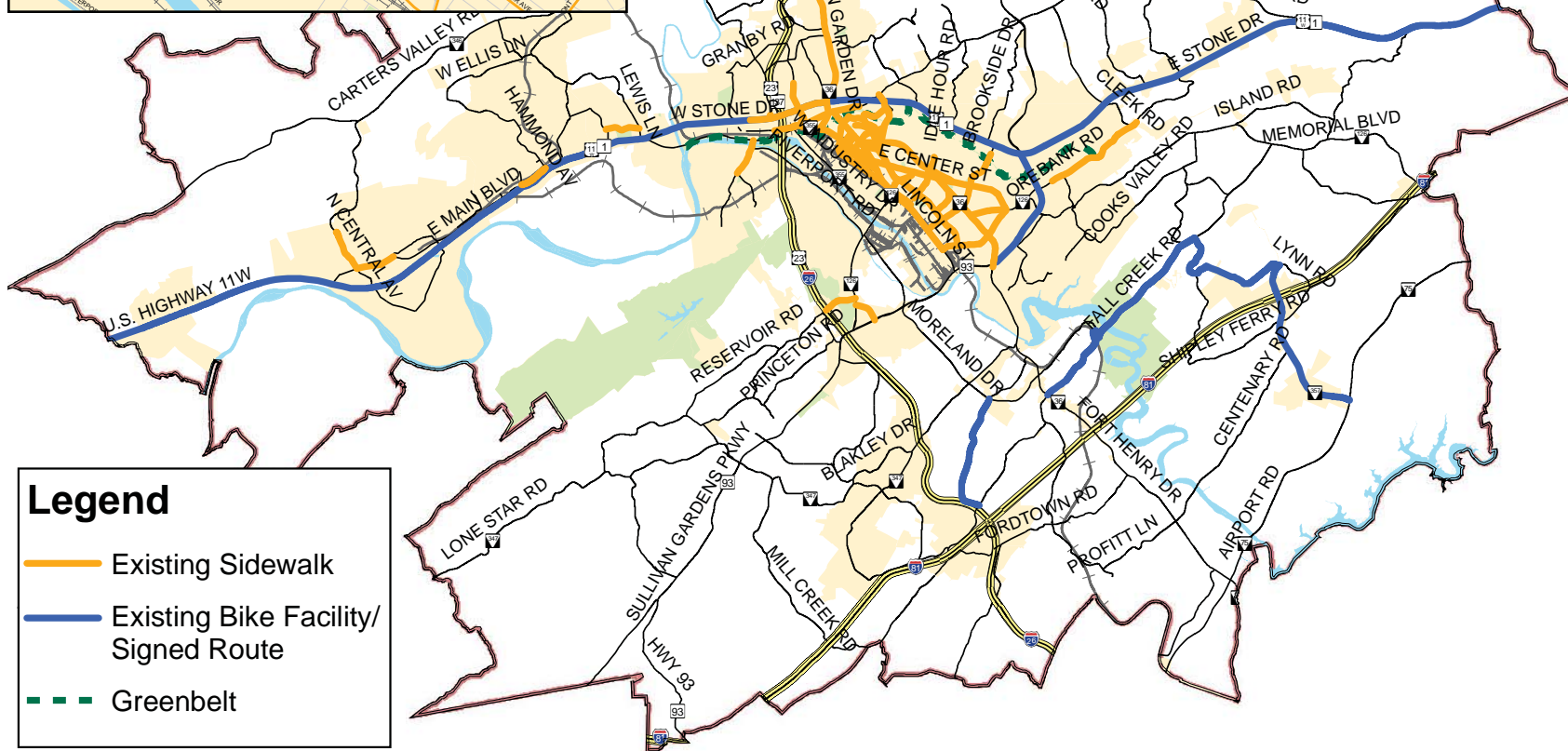
Low level of funding for bike/pedestrian improvements

Kingsport's Existing Facilities



Currently, on functionally classified collectors and arterials, approximately 41 miles of roadway with sidewalk and 23 miles of official bicycle accommodations and signed routes exist within the region. The bulk of the sidewalk is centered in downtown Kingsport, with other notable segments along Lynn Garden Drive and Orebank Road. Short segments exist in key commercial locations in Gate City, Weber City, Mt. Carmel, and Church Hill. Suburban-patterned commercial development along roads like Stone Drive, Ft. Henry Drive, and Wilcox Drive did not include sidewalk construction. These roads, in turn, are more of a barrier to pedestrian travel than a conduit for it.

On-street bicycle facilities leave much to be desired, and generally consist of shared lanes or the use of paved shoulders. A bike route is undesirably signed along an access-controlled segment of John B. Dennis Parkway. Other bike routes are signed in the area of Warriors Path State Park.



Legend

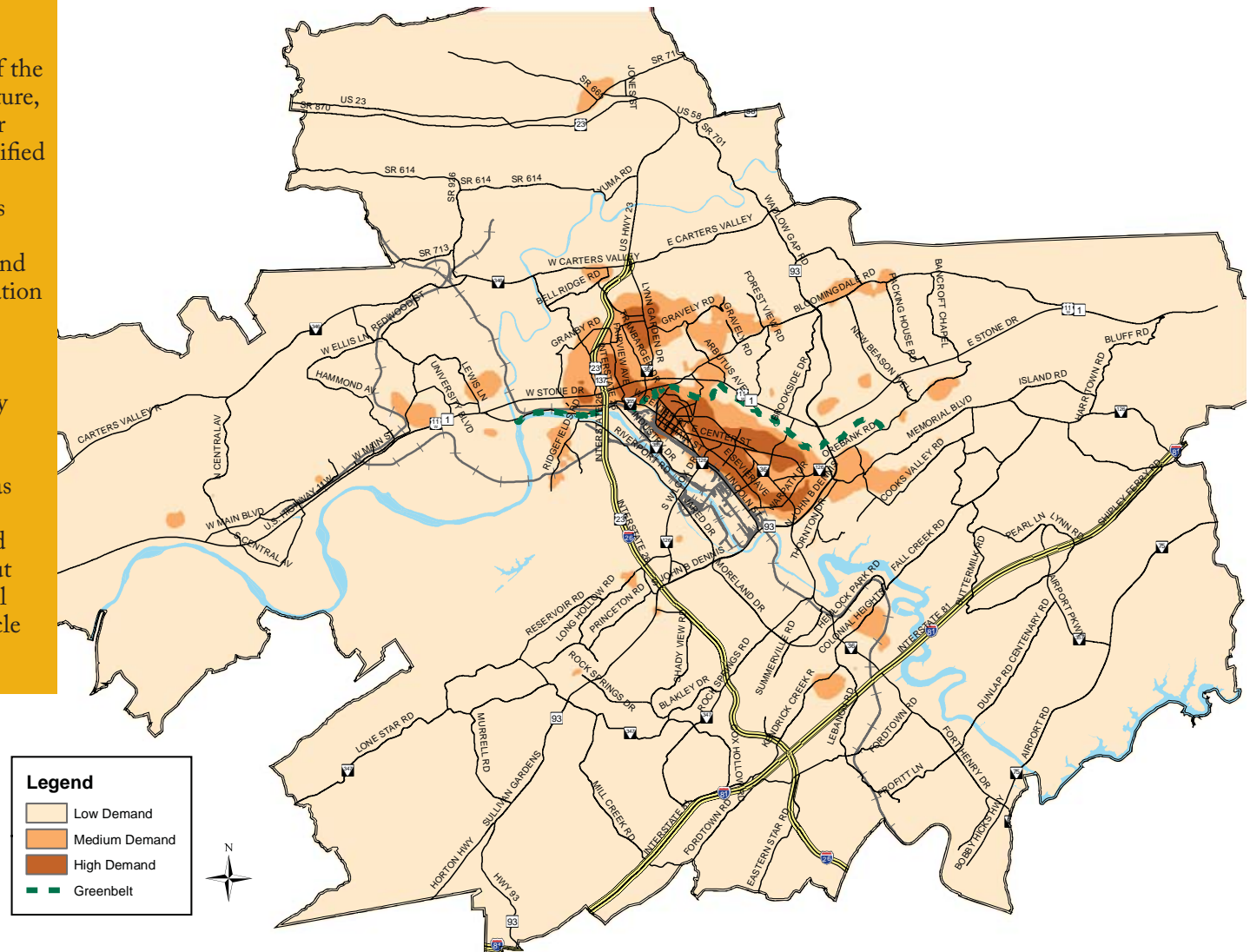
- Existing Sidewalk
- Existing Bike Facility/
Signed Route
- - - Greenbelt

Non-Motorized Trip Demand

Using a unique procedure developed by RPM, non-motorized trip demand within the study area has been estimated for 13 unique walk and bike trip types. The analysis shows that potential trips are concentrated in areas where people reside in proximity to schools, parks, shopping areas, and other destinations. The vast majority of these potential trips go unrealized for many reasons – one reason is the lack of adequate infrastructure. Predictably, high demand areas exist in downtown, in commercial areas like Kingsport Town Center, and adjacent neighborhoods with higher densities.

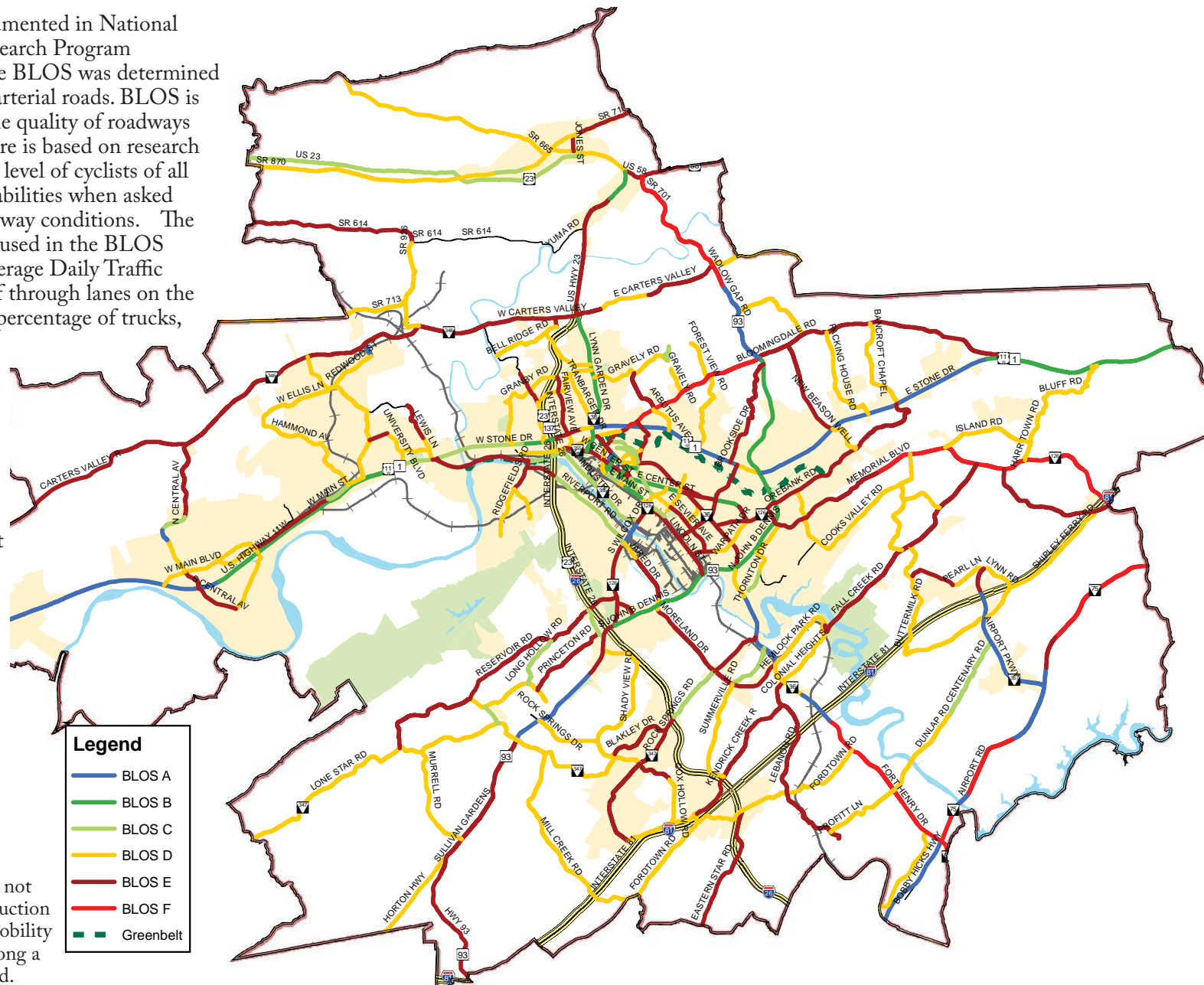
Inventory of Facilities

To determine the existing condition of the region's walking and biking infrastructure, a comprehensive inventory of all major roadways (collector and above as identified by the KMTPO and maintained in the regional transportation model) was undertaken. The inventory process involved building upon existing GIS and TDOT's Tennessee Roadway Information Management System (TRIMS) data with measurements made in the field. In total, over 370 miles of roadways were inventoried to document roadway conditions (number of lanes, roadway speed, traffic volume, pavement width, and bicycle accommodations) as well as the presence of sidewalks and related attributes. Local streets are considered outside the scope of this route plan, but should be considered on a project-level basis for implementation of local bicycle and pedestrian accommodations.



Current Bicycle Level of Service (BLOS)

Using the procedures documented in National Cooperative Highway Research Program (NCHRP) Report 616, the BLOS was determined for regional collector and arterial roads. BLOS is a way to objectively rate the quality of roadways for cyclists. The BLOS score is based on research which gauged the comfort level of cyclists of all age groups and riding capabilities when asked to ride on a variety of roadway conditions. The roadway condition factors used in the BLOS calculation include the Average Daily Traffic (ADT) volume, number of through lanes on the roadway segment, speeds, percentage of trucks, the width of the outside travel lane, shoulder, and bike lane, the condition of the pavement, and the occupancy rate of on-street parking. The result is a score ranging from A to F with A being the best conditions and F the worst conditions.



Note: Mapped conditions do not include projects under construction at the time of inventory. A mobility path is under construction along a portion of Rock Springs Road.

Current Bicycle Level of Service (BLOS)

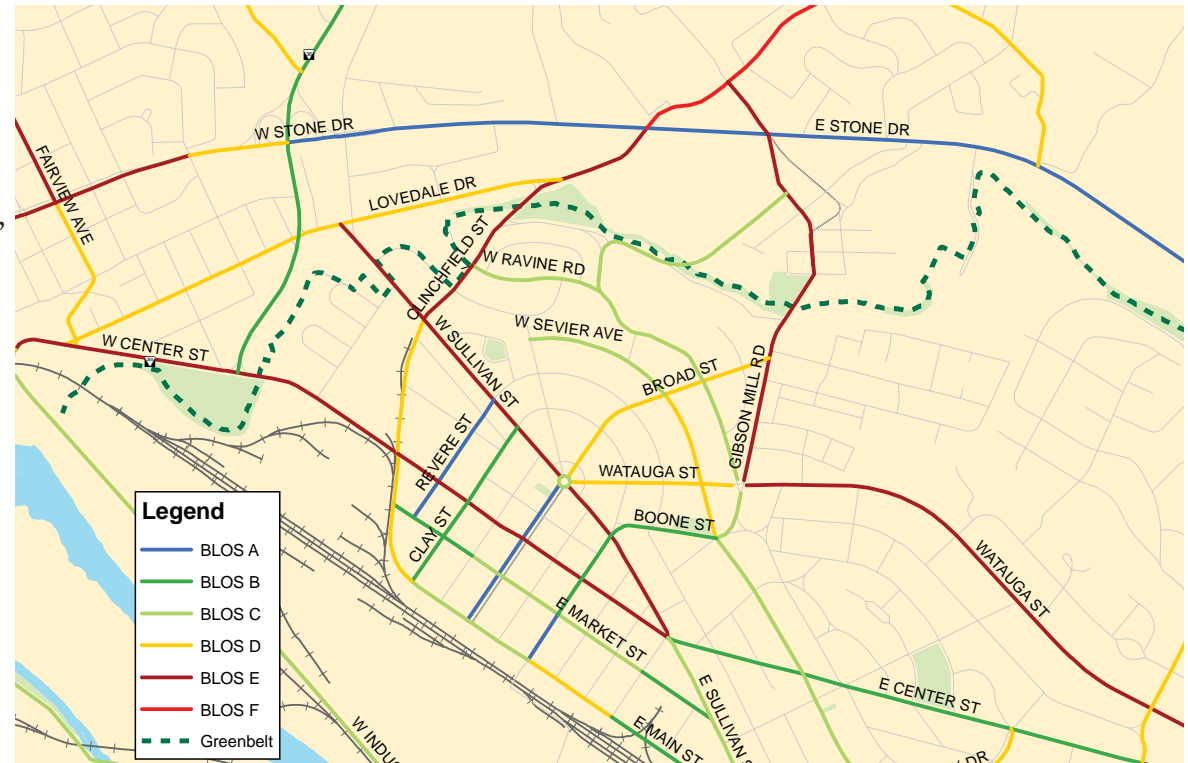
Few designated bike facilities currently exist in the Kingsport region. However, not all roads need a dedicated bicycle facility to be considered adequate for making non-motorized trips. The qualitative BLOS analysis shows that Kingsport's roadways currently present major challenges for widespread bicycle use. Approximately 75 miles of roadway in the region are identified as BLOS A, B, or C. However, these miles are far from contiguous, making moderate to long distance trips through the region difficult for most would-be cyclists.

Segments of several major arterial roads like Stone Drive, Wadlow Gap Road, Airport Parkway, John B Dennis Parkway, and Sullivan Gardens Road are considered to have good cycling conditions because of wide paved shoulders. These existing facilities can become the backbone of a more comprehensive regional network. Other more rural roads like segments of Carters Valley Road, VA 665, Fordtown Road, and Rock Springs Road have a marginal (LOS D) rating due to a combination of low traffic volumes and little or no paved shoulder.

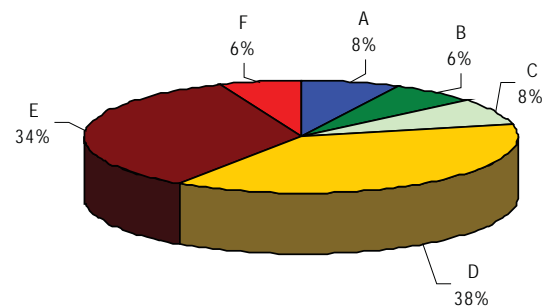
In downtown Kingsport, primary east-west traffic is along Center Street, resulting in good BLOS

on low volume alternatives like Market and Main Streets. Because of traffic dispersion across redundant north-south streets, most are good for bike travel (Revere, Clay, Broad, Cherokee, etc.).

Some attractions like Allandale Mansion, the Netherland Inn, and Exchange Place are readily accessible by bike and could be promoted as such with modest improvements. Unfortunately, access to two regional natural destinations, Bays Mountain Park and Warriors Path State Park, is difficult on today's road network.



Many downtown streets have good BLOS despite a lack of dedicated bicycle accommodations. This is generally because of low speeds and moderate traffic volumes. East Center Street's BLOS B is also due to the shoulder that exists, though on-street parking in the shoulder is common.



BLOS as a percentage of roadway mileage in the KMTPO area. BLOS is heavily influenced by traffic volumes and the amount of space outside of traffic lanes that cyclists have to use.

Current Pedestrian Level of Service (PLOS)

Like BLOS, the PLOS was determined for regional collector and arterial roads. The model reflects the effect on walking suitability or “compatibility” due to factors such as roadway width, presence of intervening buffers between the sidewalk and the road, barriers (such as street trees) within those buffers, traffic volume, motor vehicles speed, and on-street parking. Of course, the most influential factor on PLOS is the presence of sidewalk itself.

Pedestrian accommodations are usually defined as sidewalks and, in some cases, wide shoulders. With few exceptions, the pedestrian accommodations in Kingsport are good within the the area bounded by the Holsten River, I-26, Stone Drive, and John B. Dennis Highway. However, all of these boundaries present some barrier to expanding the pedestrian network.

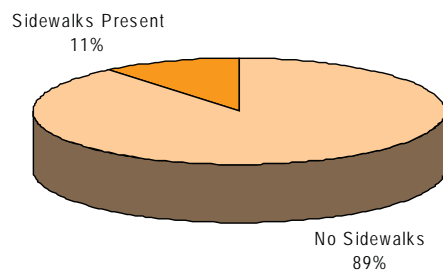
Main Street in Weber City, Kane and Jackson Streets in Gate City, Main Street in Mt. Carmel, and Main Boulevard in Church Hill are examples of long-standing pedestrian accommodations in core business areas. North Central Avenue in Church Hill is a particularly good example of the incorporation of sidewalks into a street's reconstruction.

Note: Mapped conditions do not include projects under construction at the time of inventory. A mobility path is under construction along a portion of Rock Springs Road.

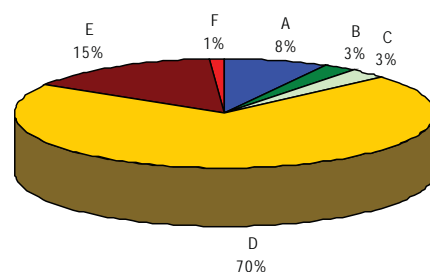


Current Pedestrian Level of Service (PLOS)

Non-Infrastructure Conditions



There are currently 41 miles of classified collector and arterial roadway having existing sidewalk in the KMTPO area. Almost all of this is within the City of Kingsport.



PLOS as a percentage of roadway mileage in the KMTPO area. Much of the study area is rural and has lower PLOS which is characteristic of rural roads. The lack of sidewalk is a primary determinant of roads having a PLOS D or below.

There are a number of planning related tools that can be used at the local level to increase walking and biking opportunities within the region. These tools include regulatory or statutory requirements, plans and policies, and educational and incentive programs. Presently, these are most used within the jurisdiction of the City of Kingsport.

Subdivision and Zoning Regulations

Subdivision and zoning regulations are the primary regulatory tools that local municipalities use to require certain provisions relative to the development of land and buildings. A large number of communities through their subdivision and zoning regulations require sidewalk and bikeway accommodations as part of residential, commercial, and mixed-use developments. In addition to these provisions, a number of communities also require certain types of developments to include the provision of bike racks, benches, and other amenities to complement non-motorized user accommodations.

Article 5, Section 1.8 of the Kingsport Minimum Subdivision Regulations requires that a four foot sidewalk be constructed as

part of new development on both sides of all streets with the following exceptions:

1. Sidewalks are not required in minor subdivisions.
2. In residential streets with 40-foot right-of-ways, a 4-foot sidewalk is required on only one side of the street, as approved by the Planning Commission.
3. In a dead end street sidewalks shall end at the transition curve of the cul-de-sac.

Article 9, Section 94-501 of the Code of Ordinances generally requires that a sidewalk be constructed on frontage of industrial, commercial, semi-public, or multi-family residential properties whenever a new principal structure is built. This ordinance also establishes the use of Kingsport's sidewalk fee in lieu of construction.

Local and State Codes of Law

City and State Ordinances generally govern the activity of making non-motorized trips and are not intended

Non-Infrastructure Conditions

to promote walking and biking as much as ensure that these users are reasonably safe. Some examples of standing laws are:

Pedestrians not crossing in a marked or unmarked crosswalk at an intersection must yield the right-of-way to the vehicles. If a pedestrian is crossing the roadway where a tunnel or overhead pedestrian crossing is provided, the pedestrian shall yield the right-of-way to the vehicles. Pedestrians shall not cross the roadway between two signalized intersections except in a marked crosswalk. (TCA 55-8-135 a-c)

No pedestrian shall enter upon any highway of the national system of interstate and defense highways or any other highway which incorporates similar design and access control features. (Kingsport Code Sec 102-390)

Bicyclists riding on a roadway shall follow the same rules and laws as those established for vehicles. (TCA 55-8-172)

In general, local and state laws regarding street operations are known and understood and do not require special promotion. One relatively new state law, however, can have a significant impact on cyclist safety and encouragement and should be promoted more because of its lack of familiarity. This is the “Three-Foot Law” and reads as

follows: When a vehicle is passing a bicyclist they must maintain a safe distance of at least three feet between the vehicle and bicycle and this shall be maintained until the vehicle is safely past the overtaken bicyclists. (TCA 55-8-175 c)

In addition to governing the safe operation of cyclists and pedestrians, laws may also designate the authority to establish special routes.

Designation of Bicycle Routes – at the State level, the commissioner (TDOT) may designate and appropriately mark on appropriate state highways, or portions thereof, routes for the use of bicycles. At the City level, the responsible authority in each municipality may designate and appropriately mark on appropriate municipal streets, or portions thereof, routes for the use of bicycles. At the County level, the county legislative body of each county may designate and appropriately mark on appropriate county roads, or portions thereof, routes for the use of bicycles. (TCA 54-5-142, 54-5-211, and 54-10-111)

Major Street and Road Plans

The City of Kingsport maintains a Major Street and Road Plan which determines, among other things, roadway right-of-way exactions. Current requirements are 100’ of right-of-way for principal arterials, 80’ for minor arterials, and 60’ for collectors. In general, these

requirements are adequate for vehicle needs, but may not allow for desirable non-motorized accommodations. For example, a typical five-lane minor arterial might have (5) 12’ lanes and (2) 10’ utility strips including curb-and-gutter and a 5’ sidewalk. This is a typical urban cross-section, but does not provide for any dedicated bicycle facility.

Policies and Resolutions

These tools are most effective in incorporating bicycle and pedestrian accommodations within larger roadway projects. In June 2011, Kingsport adopted Resolution 2011-243 in support of Complete Streets. From Section 1 of the resolution, “the City of Kingsport supports the concept of Complete Streets and encourages the implementation of policies and procedures regarding the planning, design, reconstruction, rehabilitation, maintenance, or operations of transportation facilities in keeping with the goals of accommodating and encouraging travel by individuals of all ages and abilities, pedestrians, bicyclists, and public transportation users.”

Both TDOT and VDOT have developed and adhere to adopted policies for routine bicycle and pedestrian accommodations as part of all projects. The major difference between the two policies is that VDOT’s has a more stringent

requirement for exceptions to the policy, requiring all exceptions to be approved by the department’s Chief Engineer. The TDOT policy has no such provision, allowing facility exceptions throughout the project development process for considerations like cost or “a demonstrated absence of need”.

III. The Kingsport Regional Plan

The Kingsport Regional Bicycle and Pedestrian Plan is presented as two separate planned regional networks, one for bicycles and one for pedestrians. In theory, all streets should be designed, constructed, and maintained as complete streets. However, the reality of state and local budgets require that prudent non-motorized planning efforts be organized and focused on achieving the region's most desired goals. Also, the defined bike route network will better allow users (especially cyclists) to navigate the Kingsport area's streets and roads. The development of the bike network, however, should not preclude bike facilities from being constructed as part of projects not on an identified bike route. Just the opposite, the effectiveness of the regional bike and pedestrian networks will be significantly increased each time a bicycle facility or a sidewalk is constructed within the region, whether on a street identified as part of the regional network or not.

Proposed Bicycle Network - Overview

The planned bicycle routes were developed to provide linkages between regional-scale destinations using functionally classified roadways within the study area. Connections to and through the region are considered to be primary objectives of the identified routes of this plan. Local connections providing short distance linkages between local destinations or linkages to the regional system are also shown as part of the plan.

The roadway segments comprising the regional bicycle network were identified for two major reasons. First, the segment must contribute to a regional connection either as a long-distance transportation route or to a significant regional destination. Many of the region's state routes are included as part of the network because these routes generally make these important regional connections. Second, the segment will preferably have either an adequate BLOS or will be included in future roadway improvement plans.

Through the plan development process, stakeholders stressed the importance of off-street facilities and in particular the important role of the Greenbelt. To increase the impact of the Greenbelt as a transportation facility, several new facilities are proposed to connect the Greenbelt to planned regional facilities. This is important because simply extending the length of the Greenbelt or even providing new Greenbelt spurs along relatively undeveloped waterways will not

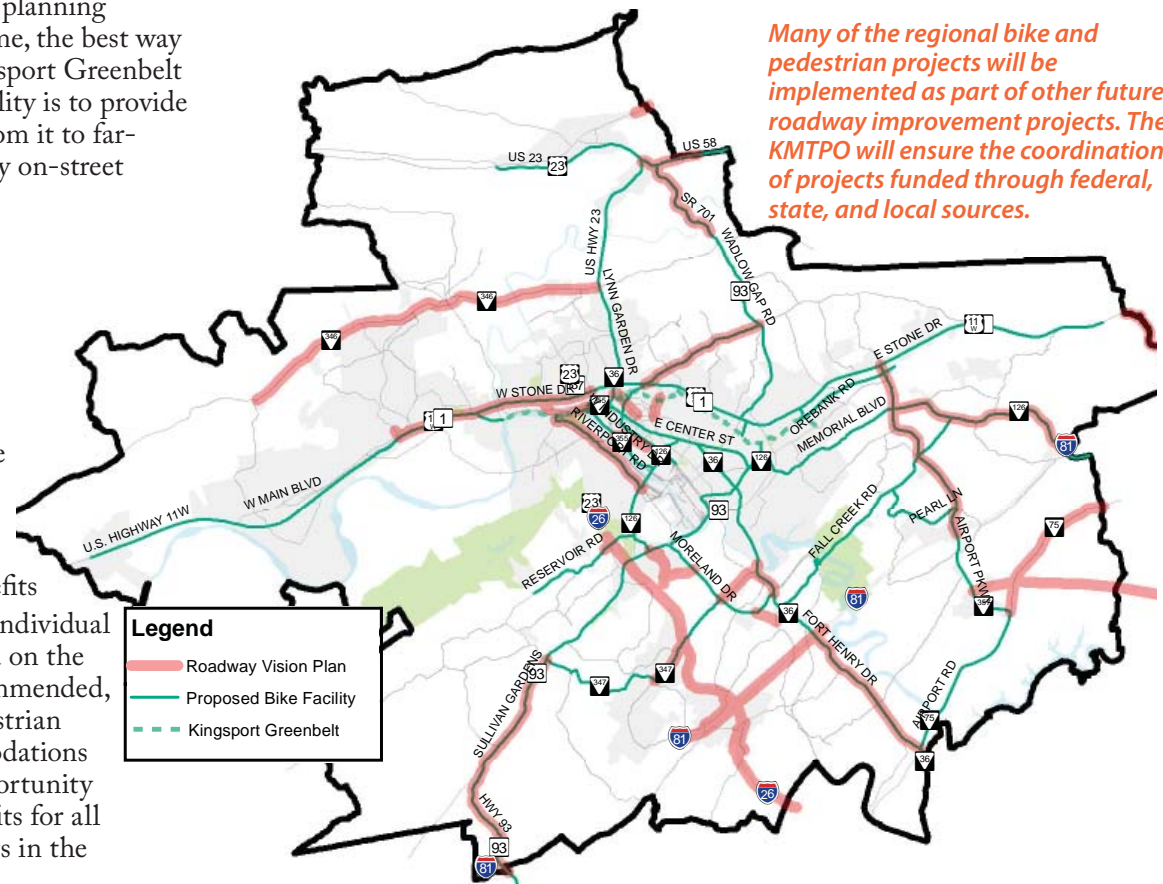
facilitate the non-recreational uses without providing needed connections back to origin and destination-based land uses. Thus, from a regional bike planning standpoint at this time, the best way to enhance the Kingsport Greenbelt as a premier city facility is to provide good connections from it to far-reaching high-quality on-street facilities.

It is recognized that different users will require or prefer different types of facilities. The recommendations made in this plan are generally deemed suitable based on the current standard of practice. The benefits realized by any one individual may be altered based on the type of facility recommended, but as a whole, pedestrian and cyclist accommodations will provide the opportunity for substantial benefits for all residents and workers in the Kingsport region.

A cyclist on Center Street feels more comfortable on the sidewalk than in the usable shoulder.



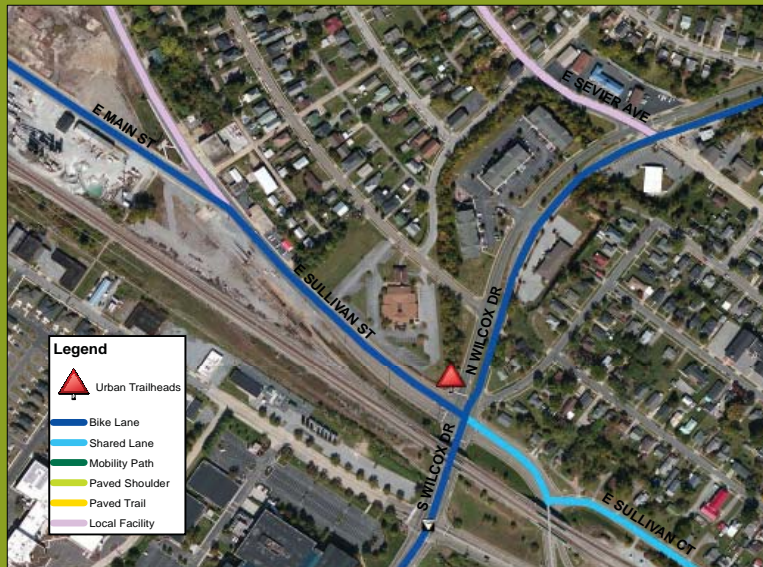
Many of the regional bike and pedestrian projects will be implemented as part of other future roadway improvement projects. The KMTPO will ensure the coordination of projects funded through federal, state, and local sources.



Proposed Bicycle Network - Types of Facilities

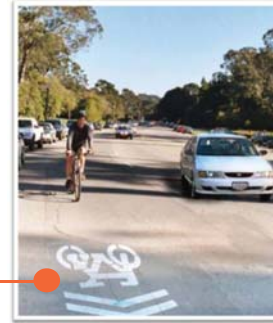
Kingsport's Urban Trailhead Concept

As the regional bike network is developed, the KMTPO should consider a pioneering application of wayfinding with Urban Trailheads. The urban trailhead concept was envisioned in Kingsport while considering the confluence of several proposed bike routes at the intersection of Wilcox Drive and Sullivan Street. At this location, three bike lanes will ultimately diverge, each with unique riding conditions and destinations. An urban trailhead at this location would provide basic accommodations (benches, overhead shelter, etc.) as well as uniform signage providing information on the bike network and nearby destinations with riding times and distances.



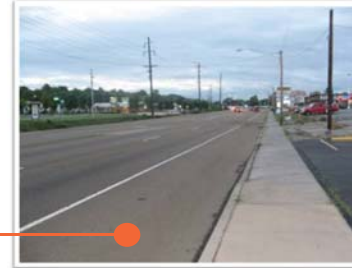
Shared Lanes

Shared lanes that are provided on the paved roadway include signed bike routes and wide outside lanes. Signed shared roadways are a commonly used bike facility using signs to designate a travel lane as being shared by vehicles and bicycles. Wide outside lanes are provided in the travel lane closest to the curb and provide 14 to 15 feet of pavement.



Paved Shoulders

A paved shoulder refers to the part of the highway that is adjacent to the regularly traveled portion of the roadway and is on the same grade as the roadway. Shoulders comprise the most common bicycle facility in rural areas.



Mobility Paths

Mobility paths have been used in Kingsport roadway projects to accommodate non-motorized travel on a separate paved path adjacent to the roadway and within the road's right-of-way. Mobility paths are typically constructed on only one side of the road and are shared by cyclists and pedestrians.

Paved Trail

Greenways (such as the Kingsport Greenbelt) are paved trail facilities most often built on exclusive rights-of-way and are physically separated from motor vehicle traffic by an open space or barrier. Trails are normally two-way facilities and are used by a variety of users (cyclists, runners, walkers, skaters, etc.) and skill levels. Several paved trail paths in the Kingsport Regional Plan are intended as Greenbelt connectors.



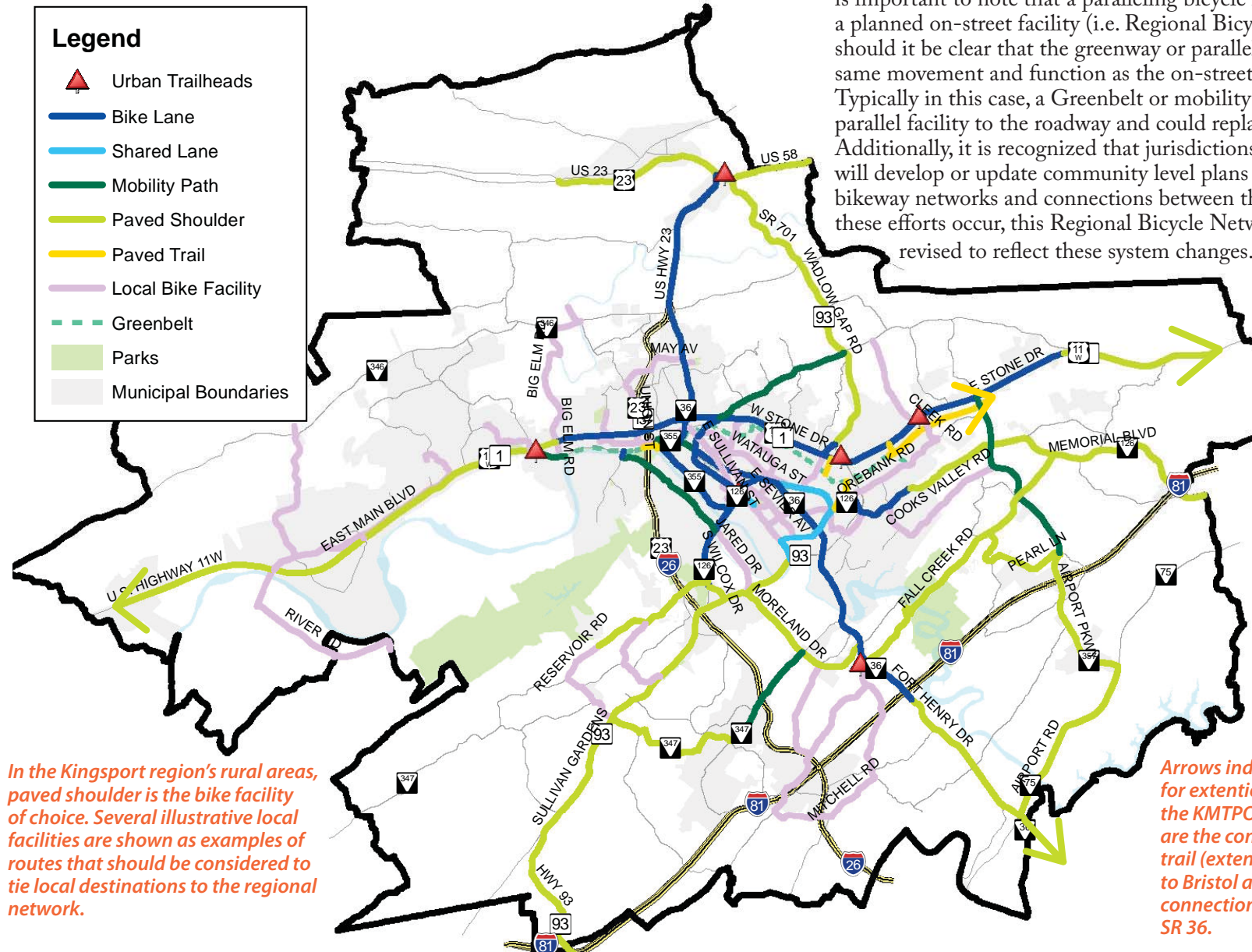
Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. In general, bike lanes are located on both sides of the road (except one-way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic.



Proposed Bicycle Network - Recommended Routes

The Regional Bicycle Network consists of on-street facilities but provides connections to existing and planned Greenbelt facilities. It is important to note that a paralleling bicycle facility may replace a planned on-street facility (i.e. Regional Bicycle Network facility) should it be clear that the greenway or parallel facility provides for the same movement and function as the on-street facility accommodation. Typically in this case, a Greenbelt or mobility path would serve as a parallel facility to the roadway and could replace a planned bike lane. Additionally, it is recognized that jurisdictions within the KMTPO will develop or update community level plans that call for localized bikeway networks and connections between the regional facilities. As these efforts occur, this Regional Bicycle Network may need to be revised to reflect these system changes.

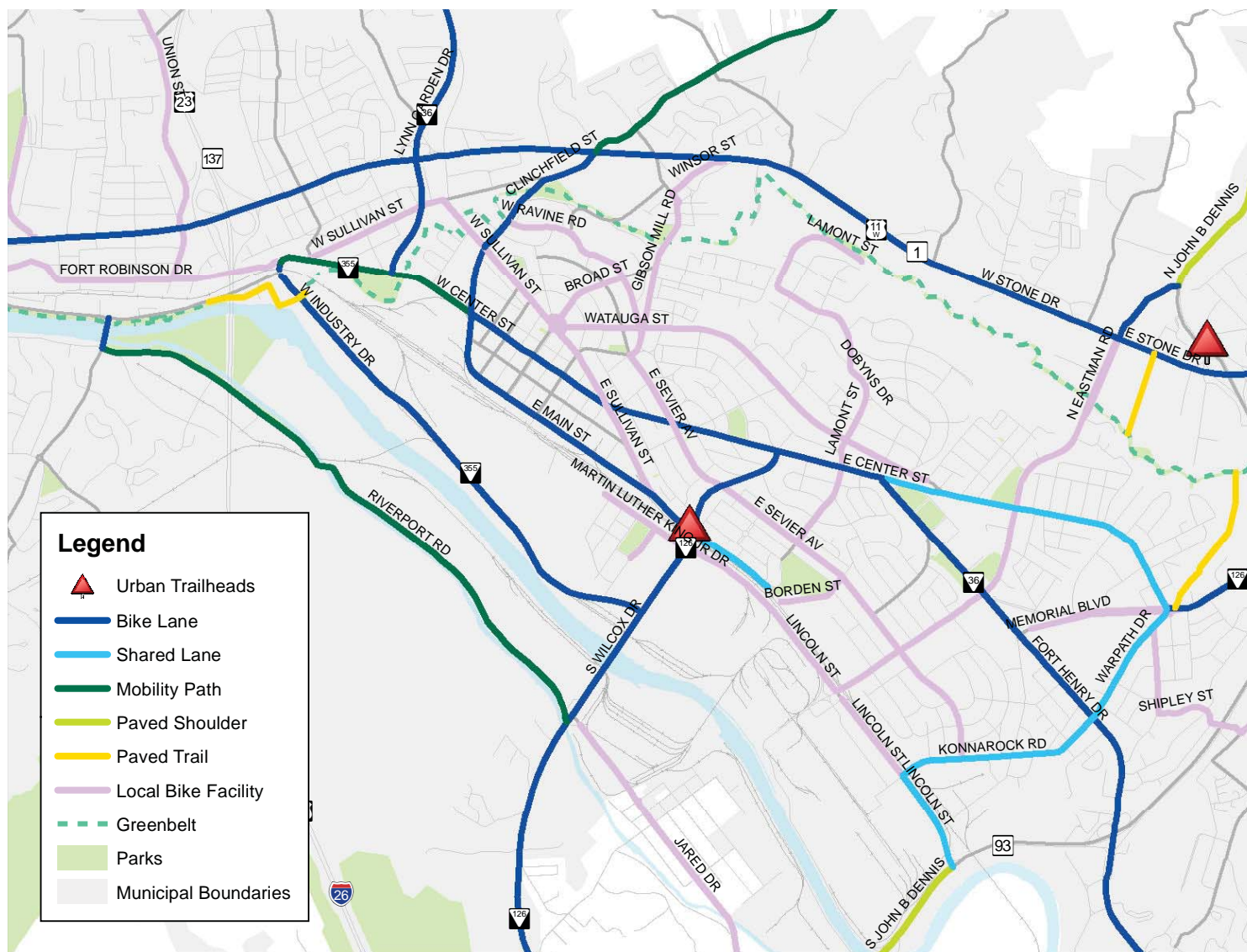


Proposed Bicycle Network - Recommended Routes

Urban portions of the regional network make up fewer miles of the system, but are expected to accommodate the highest use. Dedicated bike lanes are the urban facility of choice. Where road width is limited and/or traffic volumes are low, shared lanes will provide an adequate bicycle facility. Local facilities are most common in the urban areas. These are important local streets where bicycle (and pedestrian) accommodations are desirable and should strongly be considered as upgrades allow.

Identification of the types of bicycle facilities should not be considered absolute as defined by this plan. Detailed concept plans on a project level may well determine a more advantageous facility type.

Also, in some cases it may be desirable to implement one facility type in the short term, with a long range vision of implementation of a more “complete” bicycle facility. An example of this may be striping Clinchfield Street as a shared outside lane with the future intention of having bike lanes.



Downtown Kingsport should function as the “crossroads” of the region’s bicycle facilities network. Center Street and Clinchfield Street should especially serve as easily identifiable bicycle connections to the Greenbelt in the downtown area.

Proposed Bicycle Network - Costs and Priorities

Planning level cost estimates were developed for the proposed bicycle network in 2012 dollars assuming that each project is stand alone (i.e. the projects are not part of road construction, repaving, widening, or other projects). In reality, it is expected that many of these projects would be implemented as an integral component of larger roadway improvements. In fact, several of the regional bike routes were identified primarily based on the fact that larger scale roadway improvements are planned for these roads as documented in the regional Long Range Transportation Plan.

The planning cost estimate for the bicycle network is broken down for each type of bicycle facility. For the paved shoulder and bike lane facilities, it is assumed that 4' of pavement will be added on both sides of the roadway where necessary. A significant amount of bike lane, however, can be added through a reconfiguration of the existing pavement width such as a road diet. In these cases, additional pavement is not necessary and it is assumed that striping and signing is all that is required to implement the bike lane. The mobility path is assumed to be an 8'-10' wide asphalt path along a roadway and the paved trail is assumed to be a 12' wide asphalt path.

Cost Estimate for Bicycle Facilities*		
Facility Type	Length (Miles)	Cost
Paved Shoulder	111	\$33,322,000
Bike Route	6	\$54,000
Bike Lane	14	\$2,815,000
Mobility Path	10	\$7,800,000
Paved Trail	4	\$3,700,000
Total	145	\$47,691,000

*Construction cost only.

The on-road facilities (paved shoulder, bike route, and bike lane) make-up approximately 131 miles of the bicycle network and are estimated to cost approximately \$36M to construct. The off road facilities (mobility path and paved trail) make-up approximately 14 miles of the bicycle network and are estimated to cost approximately \$12M to construct.



The recommendations of the Kingsport Regional Bicycle and Pedestrian Plan are one layer in an integrated system of future bike and pedestrian accommodations. Having identified the routes that are important on a regional level, the KMTPO should become an active stakeholder and promoter of the implementation of these facilities, particularly with respect to other regional transportation projects. The KMTPO should also look to gain the support of state and local champions in implementing regional projects.

Addressing the improvements of the regional bike plan should be done in a deliberate and purposeful way. The study advisory committee ranked implementation criteria by order of importance with the following results:

Highest Importance:

- Make needed connections (livability objective)

- Retrofit existing substandard facilities (sustainability objective)

Moderate Importance:

- Potential for high volume of usage (livability objective)

- Cost of improvement (sustainability objective)

Lowest Importance:

- Improvement of BLOS/PLOS (livability objective)

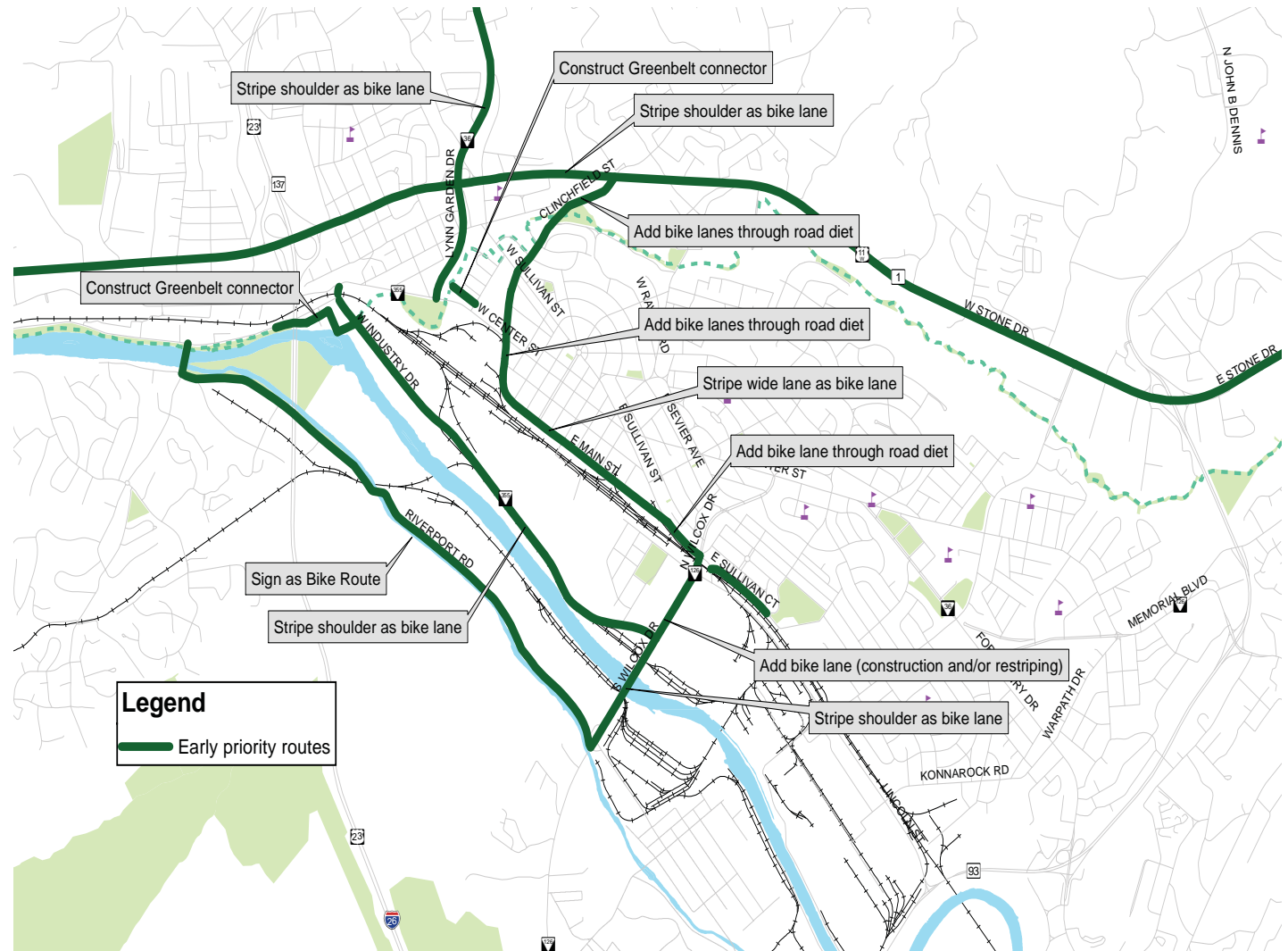
- Enhancement of target growth areas (prosperity objective)

	Policy	Funding	Construction	Maintenance
FHWA*	✓	✓		
TDOT/VDOT*	✓	✓	✓	✓
Kingsport MTPo*	✓	✓		
City/County	✓	✓	✓	✓
Other Stakeholders	✓			
*On select facilities				

Proposed Bicycle Network - Costs and Priorities

One typical strategy in bike network implementation is the early designation of bike routes where conditions are either suitable for cycling or can be made suitable with relatively minor improvements. These “low hanging fruit” projects make up the bulk of the near-term recommended network. The Kingsport region is unique among many in that the hub of the regional bike network is feasibly able to be implemented in relatively short order with little more than signing and pavement marking alterations. Especially attractive is the Wilcox/Sullivan/Main/Clinchfield route which would enhance the urban redevelopment projects occurring along it.

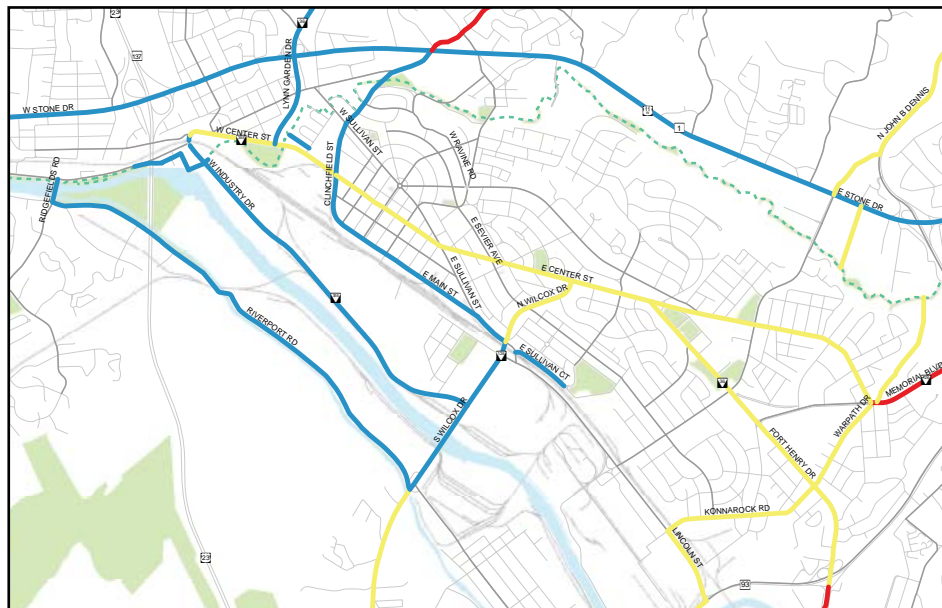
A specific engineering study would be needed to identify the special considerations of resulting lane widths, impacts to parking, changes to traffic signals, and other road diet issues with the addition of bicycle facilities. The early impact of a successful and high-profile project or set of projects can be invaluable to the future implementation of the network. Often, the highest impact projects are the most difficult due to lack of street width, high traffic volumes, or other factors. However as mentioned, in Kingsport the regional bike network can effectively be launched with study and implementation of the Wilcox-



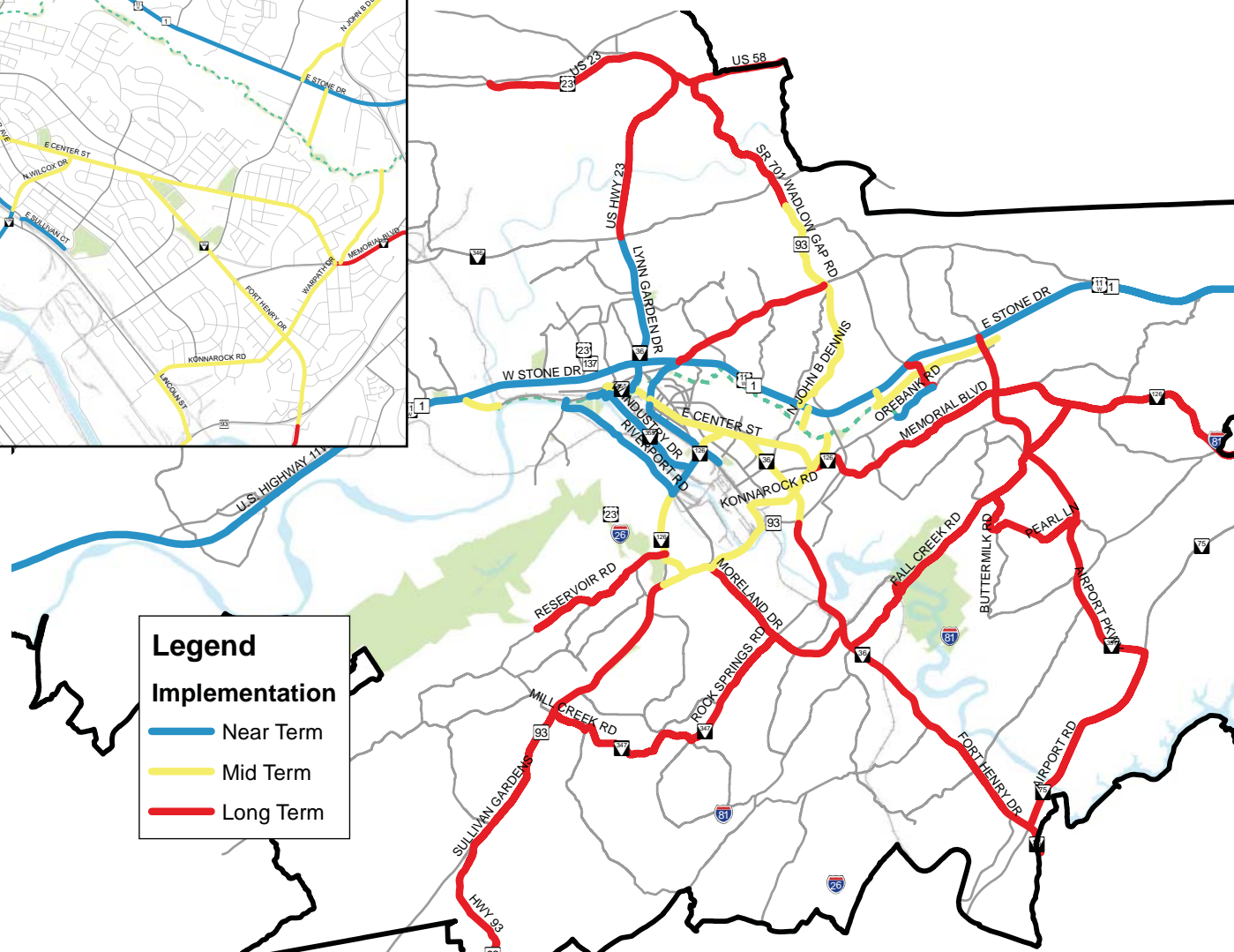
to-Stone route along Main and Clinchfield. A successful project in this corridor can get the public and political leaders squarely behind implementation of the plan.

Multiple early action projects can be accomplished in the heart of the bike network to create significant connections with relatively low cost.

Proposed Bicycle Network - Costs and Priorities



Following the early implementation projects, the mid-term and long-term recommended projects were organized around the locally-advised priority criteria. This prioritization strategy would provide a logical sequence of implementation based on the most acute needs in the region and the objectives of the community. However, as roadway projects are undertaken, the overall bike network should be reviewed so that bike facilities are constructed as part of the project irrespective of the phase of the project. An example is when the roadway resurfacing schedule is released, it should be compared to the bike plan to look for opportunities for implementation – regardless of the recommended phase of the bike plan improvement.

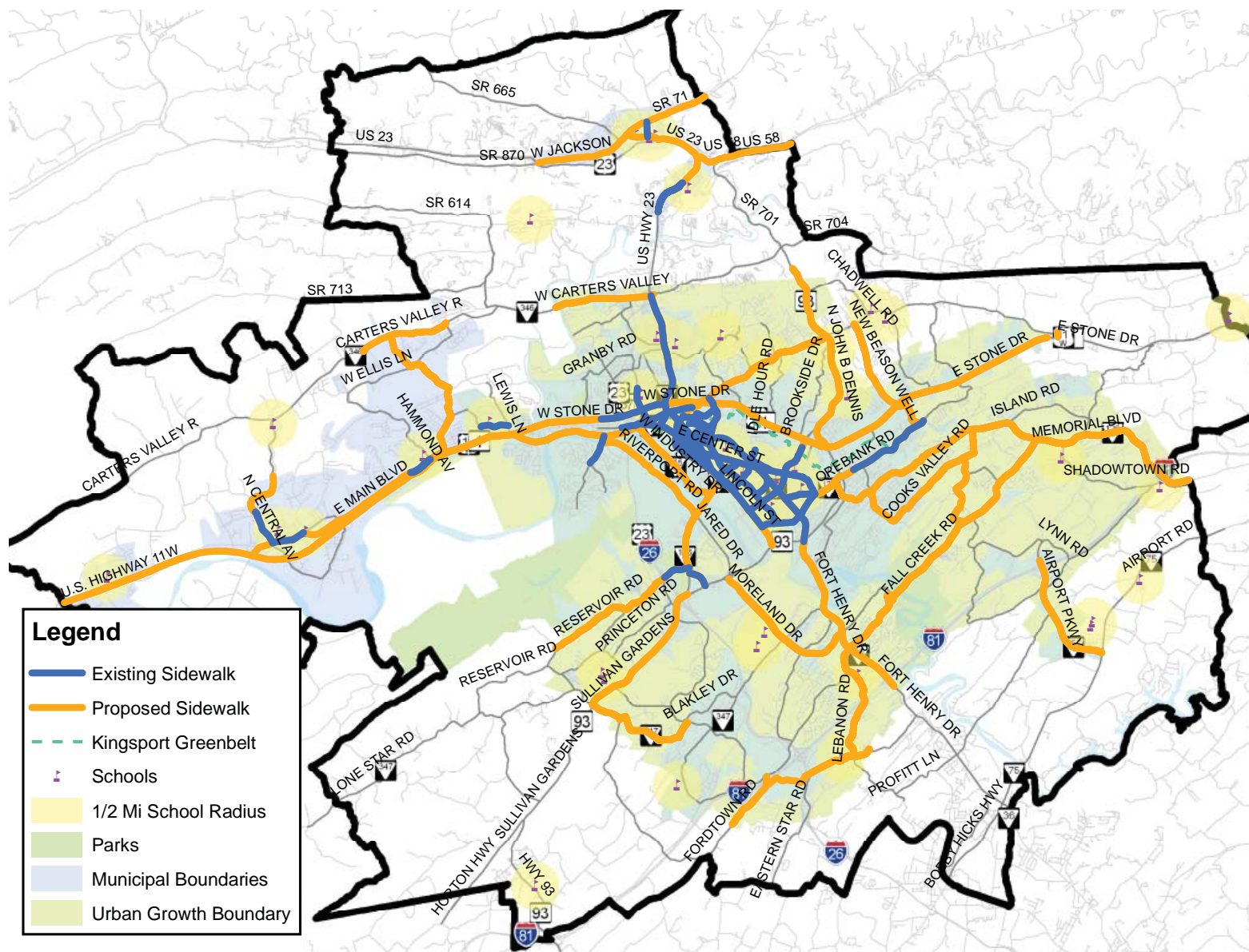


The combination of ease of implementation, the impact on areas of high demand, and the coordination of other improvements yields a recommended priority structure. Regardless of priority, projects can be implemented as part of other work (like regular resurfacing).

Proposed Pedestrian Network - Overview

The Kingsport Regional Bicycle and Pedestrian Plan is supportive of the development of local sidewalk improvements but places emphasis on regional accommodations as a KMTPO-based priority. As a regional priority, sidewalk accommodations on all federally classified arterial roadways within a City Limit or an Urban Growth Boundary of the KMTPO, on which pedestrians are not prohibited, constitute the primary regional sidewalk recommendations of the Regional Bicycle and Pedestrian Study.

These roadways serve as major commuting corridors, commercial corridors and corridors of commerce, and connect communities, activity centers, transit, and major destinations throughout the region. As such, they serve as the backbone to other roadways and streets in the region which,



The KMTPO's target pedestrian strategy for network expansion should be the federally classified arterials in urban or soon-to-be urban areas throughout the region. Meeting this goal would require the construction of new sidewalk on approximately 125 miles of roadway.

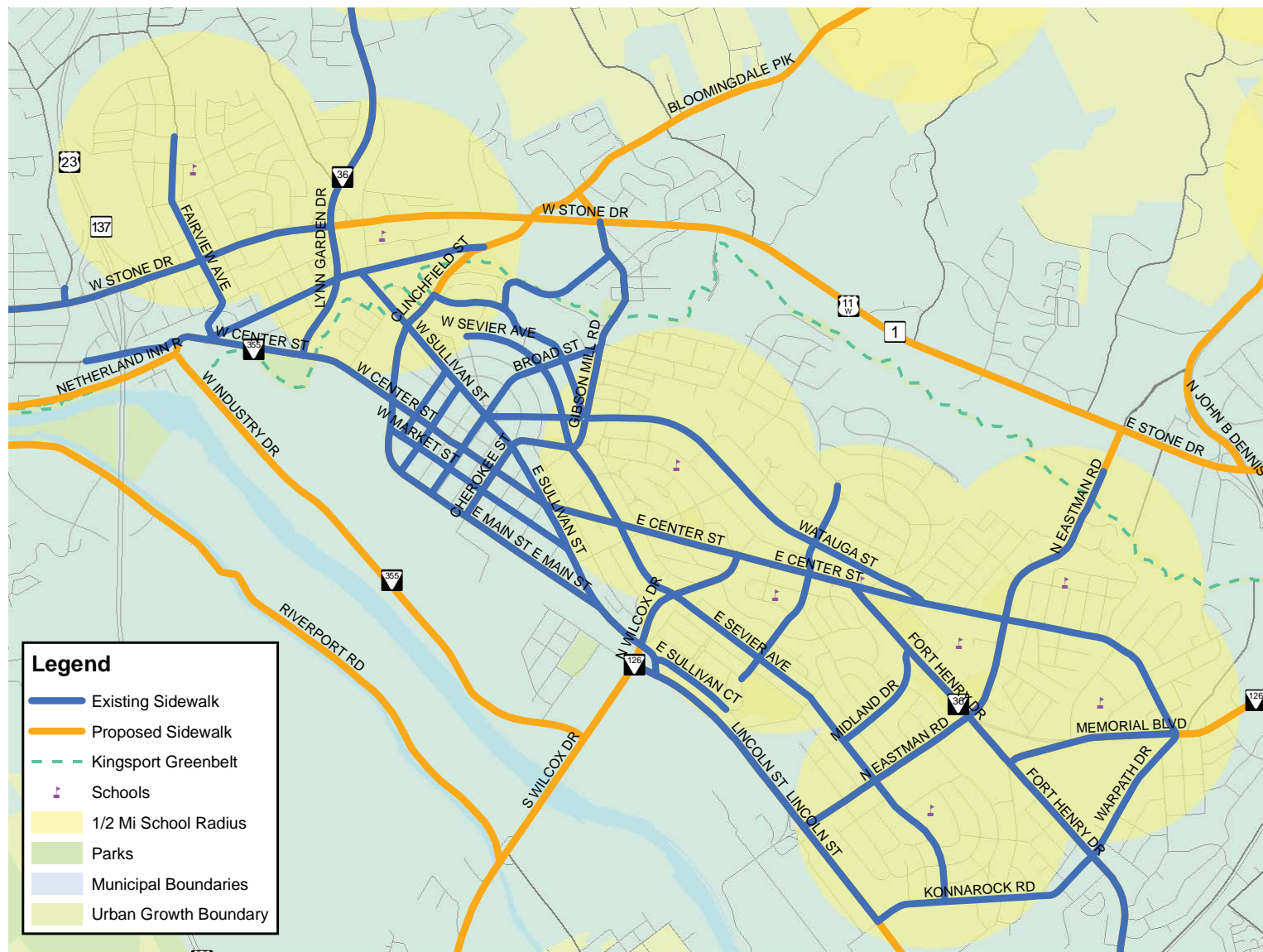
Proposed Pedestrian Network - Overview

combined with local sidewalks and streets, link neighborhoods, businesses, and other community facilities to one another.

The Urban Growth Boundary (as defined by TN Public Chapter 1101) was selected as the policy boundary as these areas of the region are expected to be urban in form over the next 20 years.

However, even comprehensive construction of sidewalks on the region's classified arterials will not result in fully desirable pedestrian accommodations for many of the region's residents. Therefore, a secondary recommendation is construction of sidewalks on locally classified streets within 1/2 mile of public schools.

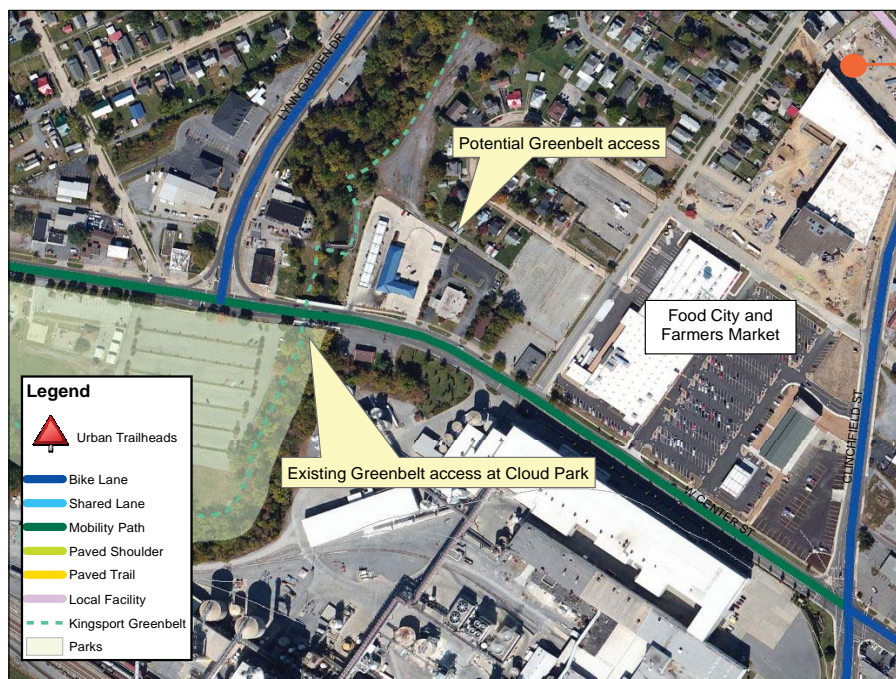
In general, sidewalk construction on collectors and locally classified streets can help expand the effectiveness of the regional pedestrian network. A localized, city-level plan can further refine and prioritize these specific sidewalk needs.



As the central regional destination, downtown Kingsport is generally accommodating of pedestrians. Extending sidewalks out the arterials will provide more connectivity, especially to more commercial destinations. Providing sidewalks in the areas defined by a radius of 1/2 mile to the nearest school would significantly enhance the pedestrian environments of neighborhoods east of downtown and the commercial areas along Eastman Road and Ft Henry Drive.

Proposed Pedestrian Network - Overview

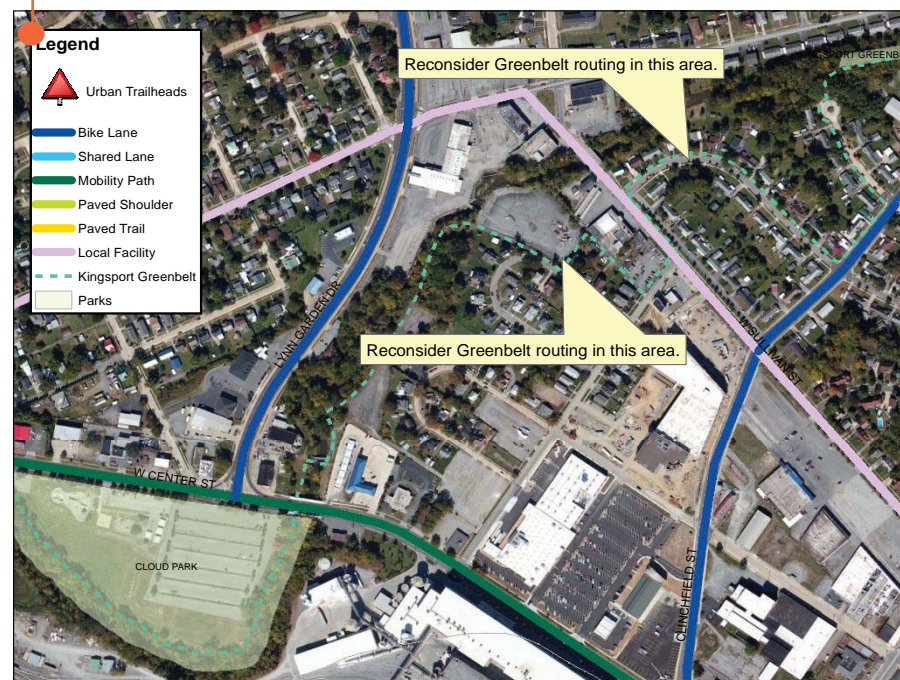
Making the Greenbelt Connections



Throughout the stakeholder and public involvement process, the Greenbelt has repeatedly been regarded as a desirable component of the region's biking and walking infrastructure. In the future, expansion of this off-road facility to the west would desirably link to the Mt. Carmel and Church Hill communities and to the east to access areas deeper into Sullivan County. Currently, the Greenbelt's connection between downtown Kingsport, the park setting along the Holston River west of downtown, and the commercial areas along Stone Drive east of downtown give it potential and importance as a transportation corridor. This plan, then, advocates increased connections between other regional transportation facilities and destinations to the Greenbelt system. Some of these recommended connections are illustrated here.

Downtown West. New urban redevelopment at the old press site can be enhanced with bike and pedestrian accommodations along Center Street, linking it to the Greenbelt at Cloud Park. Using a city-owned property across Roller Street could provide an additional off-street accommodation.

Downtown North. West of the termination of the Greenbelt at Cherokee Village Rd., the path routing is difficult to follow. Unless a more direct Greenbelt route can be secured, consider rerouting the Greenbelt to improved on-street facilities along Clinchfield and Center.



Proposed Pedestrian Network - Overview

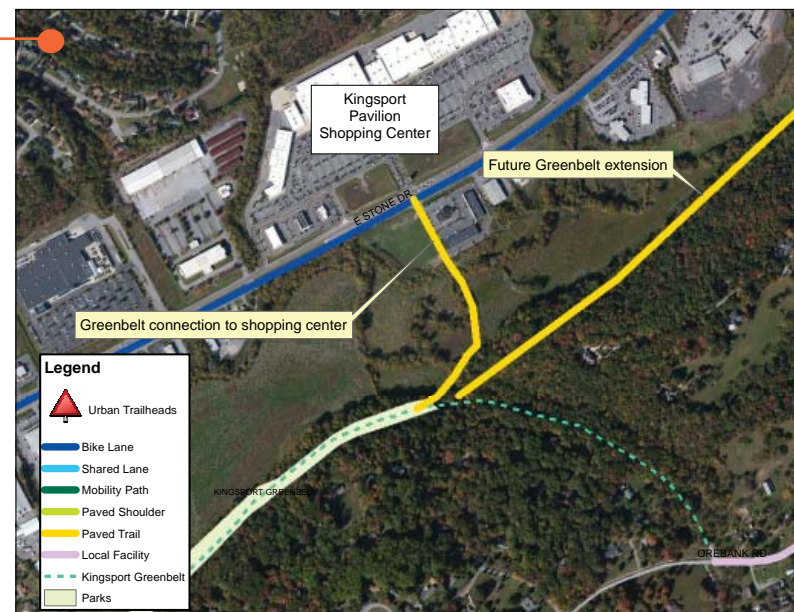
Making the Greenbelt Connections



West. Using the old bridge across the river, the Greenbelt can continue as a mobility path along Netherland Inn Road to Stone Drive. Look to improve the crossing at the intersection of Stone Drive and Netherland Inn Road and add an urban trailhead. From here, development of local facilities along Lewis Lane, Bellingham, and University Boulevard can provide access to destinations like Allandale Mansion, Washington Elementary School and the ETSU satellite campus.

Crossroads. At the Reedy Creek Crossroads area, the primary Greenbelt connection is just behind the East Stone Commons Shopping Center. Additionally, a connection developed to Jack White Drive would allow users better access to businesses on the west side of Eastman Road.

East. Near the Exchange Place trailhead, a connecting spur can be developed to connect to the Kingsport Pavilion Shopping Center. This connection also has the potential to be extended to serve the Preston Forest neighborhood, immediately to the north.



Proposed Pedestrian Network - Costs and Priorities

Planning level cost estimates have been developed for the proposed pedestrian network. The cost estimates are in 2012 dollars and are calculated assuming that each project is stand alone (i.e. the projects are not part of road construction, repaving, widening, or other projects). Perhaps even more so than with the bicycle projects, it is anticipated that a significant portion of the regional pedestrian network will be implemented in ways other than stand alone sidewalk construction. Larger scale roadway widening and development and redevelopment activity should contribute a major portion of the new sidewalk construction.

The planning cost for the proposed sidewalks in the KMTPO area is based on 5' concrete sidewalks on both sides of the road. The cost for drainage and ROW is not included which is typical for a planning cost estimate. The total estimated cost to construct sidewalks on both sides of 124 miles of roadway is approximately \$29M.

Sidewalk Cost*	
Length of Sidewalk	Cost
188 miles	\$44,180,000

*Construction costs only. Drainage improvements and right-of-way not included.

Retrofitting existing sidewalks can often present additional challenges. Reconstruction of necessary features like curb ramps, crosswalks, and pedestrian signal equipment at signalized intersections can drive costs higher where sidewalks already exist. These costs are not included in this plan's cost estimate and would require a more detailed evaluation of a specific study area within the KMTPO region to be estimated.

Based on the condition of the existing pedestrian network and local stakeholder input regarding priorities, it is recommended that the region's earliest efforts go toward retrofitting the existing network in several ways:

- *Make needed connections* by constructing Greenbelt connectors to existing sidewalks.
- *Retrofit substandard facilities* and *make needed connections* by improving crossings of major streets like Stone Drive, Center Street, Ft. Henry Drive, and US 23.
- *Retrofit substandard facilities* by encouraging expansion of ADA compliant streetscape improvements like those recently completed in downtown Kingsport.

Detailed pedestrian needs within the region should be identified on a project level. Language in the Americans with Disabilities Act (ADA) stipulates that any work which changes the function of a public transportation facility should include improvements which make the facility accessible according to ADA guidelines. For this reason, a detailed inventory of conditions (pushbutton type, curb ramp dimensions, etc) must ultimately be completed in order to fully understand what work will be required to improve pedestrian conditions in a particular corridor.



ADA requirements can introduce potentially unexpected challenges for the expansion of or connections to the regional sidewalk network.



Existing facilities can be used to help make needed connections. An example is this future Greenbelt connection at the intersection of Center Street and Memorial Boulevard...

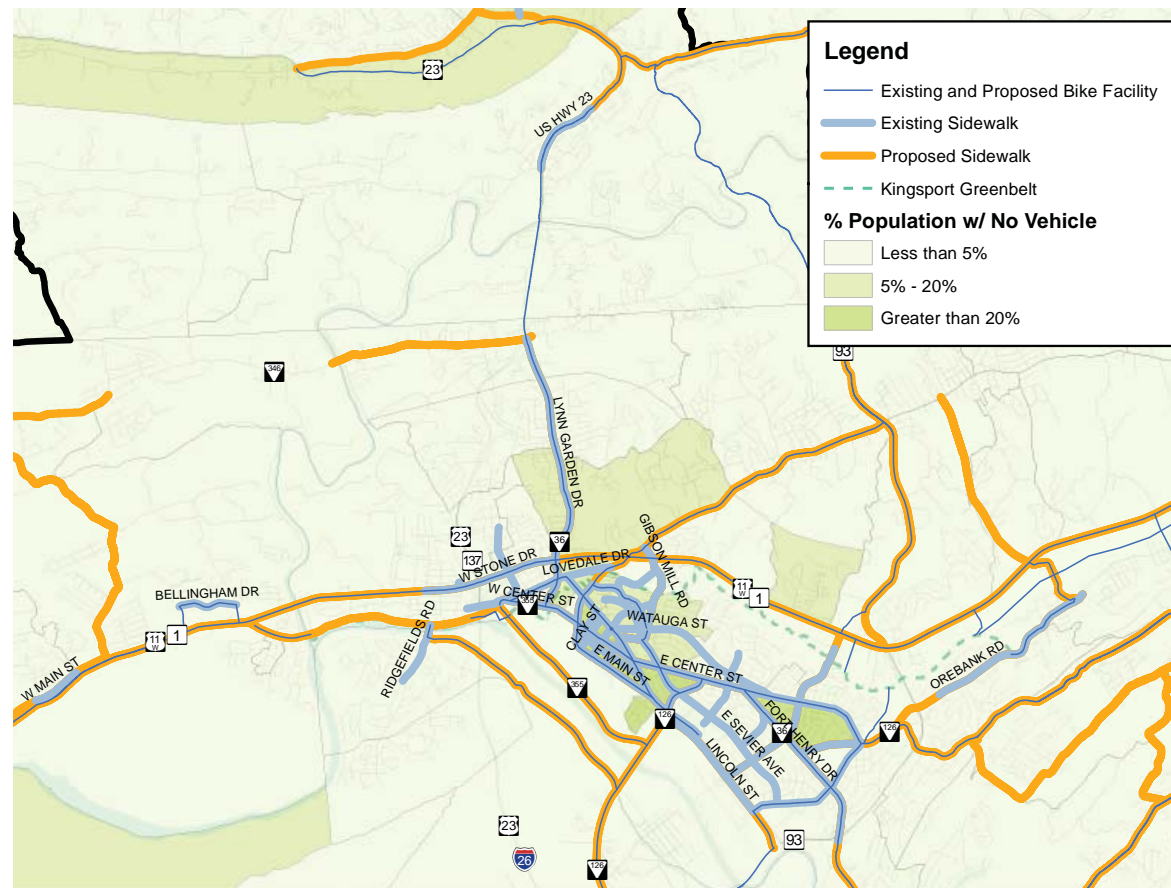


...another is the railroad underpass on Lincoln Street at Konnarock Road.

Benefits of the Recommended Networks

While research linking health conditions and the built environment is evolving, there is evidence that certain populations experience a decrease in physical activity and an increase in health disparities relative to the general population. The disparity exists relative to income, race, and age. Population groups that suffer the most when it comes to health status are those that have the highest poverty rates and the least education. In addition to income levels, research has shown that African Americans and Hispanics are generally less physically active than whites, and that by age 75, one in three men and one in two women engage in no regular physical activity.

Much of the research that links neighborhood environments with health focuses on four issues: physical activity, access and affordability, environmental exposure, and social networks. Physical activity studies explore how issues of land use can encourage or discourage physical activity. Access and affordability looks at the health



A surrogate for the traditional environmental justice categories of race, age, and income (but a very pertinent one), percentage of vehicle ownership is shown here with relation to the proposed recommended networks. Lower vehicle ownership rates are found in downtown Kingsport, neighborhoods north of downtown, and along the US 58 corridor in Gate City.

consequences associated with the lack of or limited access to schools, transit, food, goods and services, recreational facilities, and public spaces. Environmental exposure

deals with the health consequences of poor air quality, water, and soil, as well as noise. Finally, social networks explore the ways in which healthy neighborhoods facilitate

the communication of information, provide social support, and transmit accepted behaviors.

The design of the physical environment can either facilitate or reduce the opportunities for physical activity. Greater land use mixes, increased population and employment density, street connectivity and a connected bike and pedestrian network, are all believed to contribute to positive health outcomes due to more physical activity. In addition, neighborhoods located in close proximity to recreational facilities and parks show more physical activity than those located farther away.

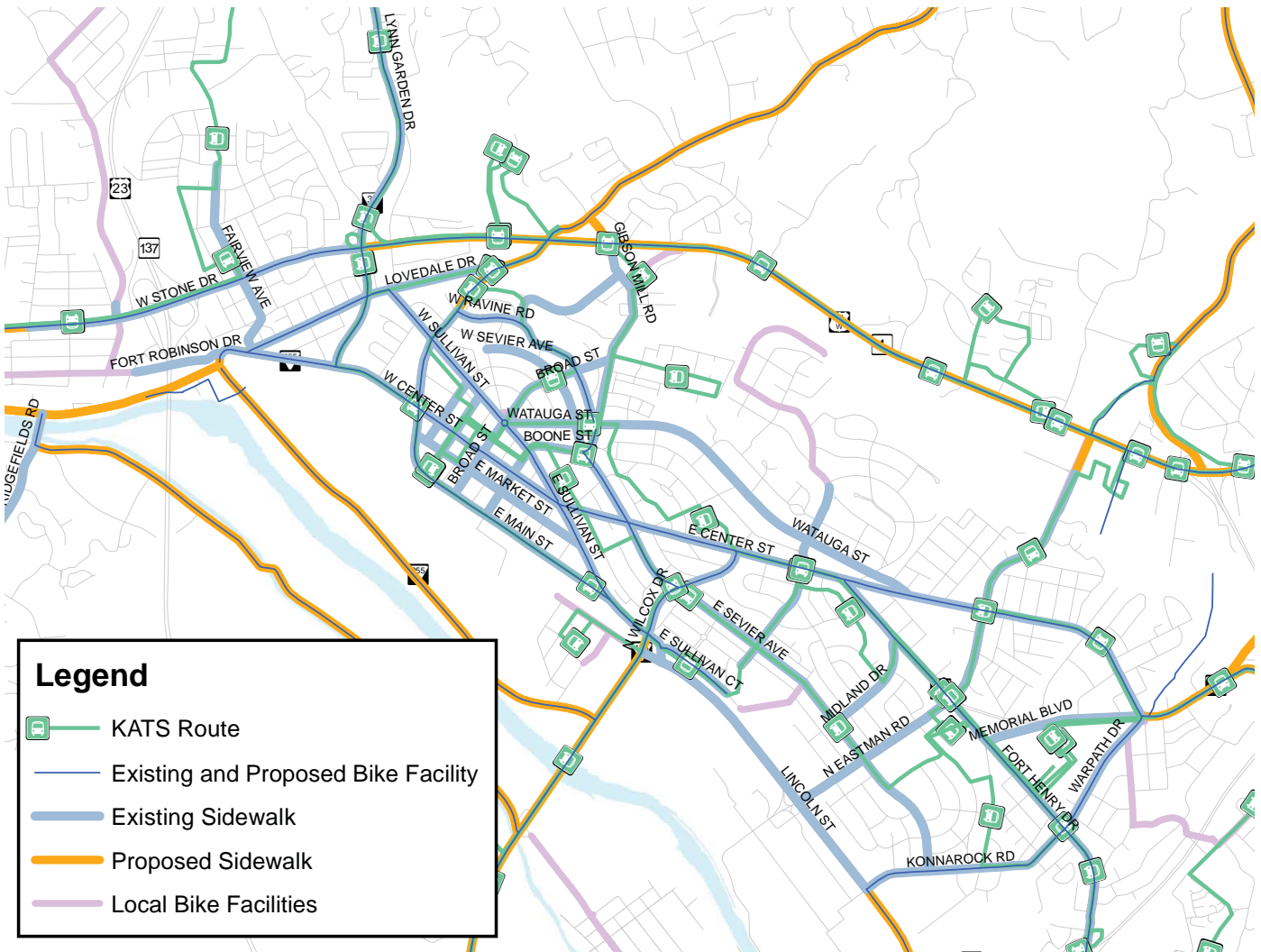
The implementation of the Kingsport Regional Bicycle and Pedestrian Plan will provide greater opportunity for at-risk populations to incorporate activity into daily routines. Doing so will significantly enhance the individual well-being of these residents as well as the livability of the region as a whole.

Benefits of the Recommended Networks

Urban transit consists of two general ridership groups, captive and non-captive. Both groups require an adequate level of pedestrian accommodations to allow for an effective transit network. However, to fully achieve the region's livability, sustainability, and prosperity goals as stated, KATS service must become a realistic option for non-captive commuters who have other transportation options (i.e. private automobile). The implementation of the Kingsport Regional Bicycle and Pedestrian Plan can significantly enhance the service area of KATS, especially when considering the ability of riders to combine a bike trip with a transit trip.



Although the federally classified arterials are the primary recommendation for regional pedestrian mobility, the KMTPO serves as a partner in local sidewalk planning and implementation. Here, KATS riders benefit from recent sidewalk construction on Gibson Mill Road.



Many of the arterials which are especially recommended for sidewalk construction also have bus routes along them. The presence of a bus route should be a factor when deciding the priority of future sidewalk expansion. Proposed bicycle and pedestrian facilities on local facilities are shown (in pink) as these facilities will allow for a significantly expanded service area for transit in some locations.

Benefits of the Recommended Networks

As described, the benefits of the recommended regional bicycle and pedestrian networks will be significant for those with limited transportation options and for transit users. However, the livability, sustainability, and prosperity goals set forth for the regional transportation systems can only be fully realized when all users begin to see non-motorized travel as a reasonable and, ultimately, an advantageous personal choice.

One of the emerging though major challenges for transportation system planners and providers is to cultivate a recognition of the true impact of transportation on their communities. These impacts range from personal social well being to major job creation. One transportation-related impact that has tremendous economic impact is health.

A special analysis has been completed in order to quantify the benefits of this plan to the health of the region as a whole. The analysis uses the average trip making characteristics of the Kingsport region, the state of Tennessee, and the nation to determine estimated shifts in the levels of biking and walking activity.

Today's Network	
Total Daily Trips (all modes) ¹	487,165
Estimated Daily Bike/Walk Trips ²	25,860

Recommended Network	
Total Daily Trips (all modes)	487,165
Estimated Daily Bike/Walk Trips ³	108,749

Recommended Network Benefits	
New Daily Non-Motorized Trips	82,889
Additional Hours of Physical Activity ⁴	20,570
Additional Minutes of Daily Physical Activity (per person average)	9.8

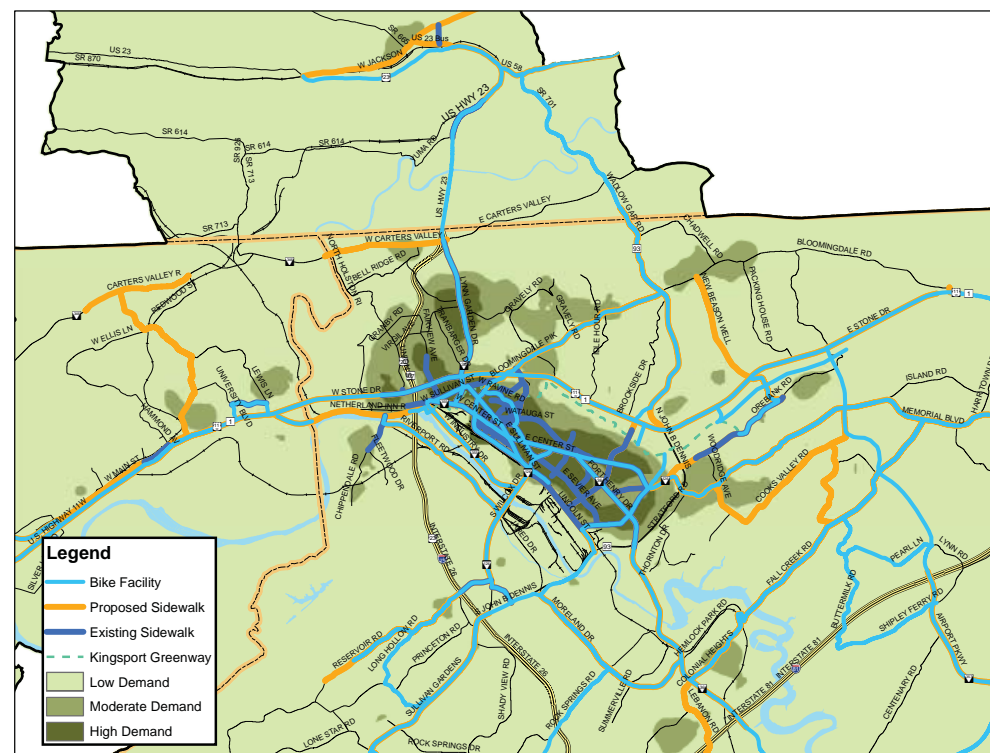
Basis of Data Notes:

¹ Kingsport 2009 base year travel demand model

² 2009 NHTS, TN State Add-On

³ RPM Demand Analysis

⁴ 2009 NHTS



By providing a well connected regional network of non-motorized accommodations, many residents in the Kingsport region will have the option of incorporating needed physical activity into their existing routines. It is estimated that over 20,000 hours of new activity could be realized - an average of approximately 10 minutes per day per resident. This analysis is based on the region's current land use characteristics as well as national and state averages for walking and cycling activity as collected in the 2009 National Household Travel Survey (NHTS).

The US Department of Health and Human Services recommends that adults do 2.5 hours of moderate-intensity aerobic physical activity per week (roughly 20 minutes per day). Serving the region with a more complete network of facilities will allow many residents to achieve almost half of this daily recommendation without drastically changing their daily routine.

Program and Policy Recommendations

Policies and programs directed toward improving conditions for walking and bicycling can have a major impact on non-motorized transportation in Kingsport. The recommended policies and programs promote bicycling and walking, educate bicyclists, pedestrians, and motorists, and move toward a more institutionalized process for implementing facilities for non-motorized travel. Proposed policy changes should be considered equally for adoption into each jurisdiction's regulations and ordinances. These non-infrastructure recommendations are organized by the KMTPO's goals of Livability, Sustainability, and Prosperity.

Livability

- If not already a locally adopted standard, the minimum width of new sidewalks should be 5 feet regardless of the street classification. Sidewalks should be constructed with buffer widths of 4 to 6 feet.
- In cooperation with local municipalities, the KMTPO should develop programs and initiatives which encourage local governments, as part of the development review process, to evaluate the potential for new developments to provide pedestrian connections to existing sidewalks and nearby destinations. These programs and initiatives should also encourage pedestrian and bicycle facilities which provide logical connections between schools, shopping centers, parks, civic buildings, transit stops, urban trailheads, residential developments, and other activity centers.

A good example is the Atlanta Regional Commission's "Livable Centers Initiative" (LCI). This program encourages local jurisdictions to plan and implement strategies that link transportation improvements with land use development strategies to create sustainable, livable communities consistent with regional development policies. Planning grants are awarded by the regional planning agency to local governments to prepare plans for the enhancement of existing centers and corridors, including non-motorized transportation.

- The KMTPO should work with local municipalities to establish bicycle and pedestrian accommodation provisions within their local plans and governing documents (e.g. comprehensive plans, zoning ordinances, and subdivision regulations). Provisions should not only require sidewalk and bikeway facilities but also advocate for

policies that support walking and bicycling through community design, mixed-use development, street connectivity, and transit oriented development. Provisions should also be consistent with the Regional Bicycle and Pedestrian Plan.

- The KMTPO and its member jurisdictions should encourage local school boards to establish school siting policies that favor sites with good walking and biking access. As an example, the policy could include a recommendation that new elementary schools be located on neighborhood streets with low traffic volumes and speeds, and within walking distance of a large proportion of students' homes. In addition, the site design of schools should give opportunity for pedestrian and bicycle access.
- Develop recommended guidelines for bicycle parking provisions which can be used by local governments.
- The KMTPO should continue educational efforts regarding bicycle safety including efforts to increase understanding and awareness of the Tennessee 3-foot law for motorists passing bicyclists. The KMTPO may wish to endorse the Virginia Bicycling Federation's proposal of increasing the legislated safe passing distance from two feet to three feet in that

state.

- Grants from the National Highway Traffic Safety Administration (NHTSA) can be obtained by local police departments for enforcing pedestrian right-of-way laws and bicycle traffic violations. The grants can be used to conduct targeted enforcement campaigns, pedestrian enforcement at intersections and bicycle enforcement at other intersections.
- The KMTPO should encourage greater use of the Safe Routes to School Program locally and work to provide a coordinated approach to such initiatives within the region.
- It is recommended that a bicycle and pedestrian traffic safety curriculum for elementary school students be developed. The program should establish guidelines to maintain, update, and distribute the materials, as well as train the educators on implementing the materials.
- Safety training may also be applicable for adult groups. Training for interested individuals can work, but offering presentations to large employers (which may offer regular safety training anyway) reaches an audience that may otherwise go unreached.

Program and Policy Recommendations

Sustainability

- Develop a maintenance and spot improvement program to be run by a Public Works and/or a Parks and Recreation Department. Examples of such maintenance activities include regular sweeping, litter and debris removal, vegetation control, and signing and striping.
- Provide spot maintenance forms upon request at bicycle shops and on a website set-up for bicycle and pedestrian information.
- A website should be established that contains information regarding biking and walking in the region. This website can be used to post bicycle maps showing the routes in the KMTPO region, spot maintenance forms, as well as information on a variety of educational resources such as elementary instructor training courses and programs like Safe Routes to School.
- Annual cyclist and pedestrian counts are emerging in larger cities as a way to quantify growing use of non-motorized facilities. If desired in the Kingsport region, it is recommended that this effort be somewhat limited. One or two automated counters on the Greenbelt will adequately give a general sense of relative increases or decreases in usage.
- Take advantage of continuing education requirements by offering professional staffs (engineers, planners, etc.) training opportunities in bicycle and pedestrian issues. Numerous webinars offer instruction ranging from facility design to community user encouragement.
- A visionary achievement might be a local biking center. Centralized locations for bicycle parking, showers, information, and even repairs and associated retail sales are in operation in a few cities which emphasize bicycle transportation. A “right-size” alternative might be adding and publicizing a bicycle parking area in the new municipal parking garage.

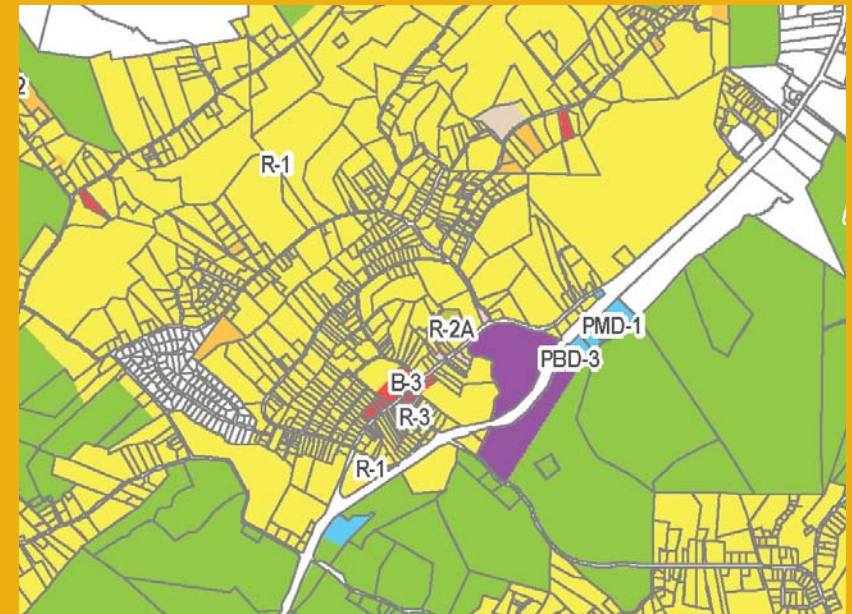
Prosperity

- Some jurisdictions in Tennessee allow “in-lieu-of” payments to the community’s sidewalk fund. By collecting equal payments in lieu of actual on-site sidewalk construction, more strategic choices can be made regarding where and when sidewalks are built. Use of this practice should be considered by local governments within the KMTPO region.
- The KMTPO should work with local and regional transit

providers to develop strategies and opportunities to increase walking and biking to and from public transportation services and facilities. Potential strategies include linking transit stops to sidewalks and bikeways, providing comfortable, well designed transit stops, and providing bike storage at transit stops. Pedestrian improvements within ½ mile and bicycle improvements within 3

miles of transit stops are eligible for Federal Transit Administration funding.

- While there currently is no state enabling legislation that would allow for the KMTPO jurisdictions to collect revenues for sidewalk and bikeway improvements, such opportunities may materialize in the future. Meanwhile, a dedication of a



Sullivan County’s Zoning Resolution requires sidewalk construction only in commercial districts (per Section 4-103.4). In the Sullivan Gardens community, this would mean that a few parcels along Sullivan Gardens Drive (in red) would be improved with sidewalk in a redevelopment scenario. However, no means of connection to the surrounding residential community or to nearby regional roads would be planned for. Local policies should complement the regional plan to take most advantage of future regional improvements.

Program and Policy Recommendations

percentage of regional expenditures toward active transportation could produce locally dedicated funding on a smaller scale.

- Leverage existing city resources against transportation needs. For example, an existing public works maintenance crew can be trained to construct ADA-compliant retrofits on existing sidewalks. A city-level plan can be developed to roadmap the upgrades in a systematic way.
- Give guidance to local communities on methods for establishing developer incentives (parking reductions, expedited review, etc.) for inclusion of sidewalks, bike lanes, transit accommodations, and/or end-of-trip facilities as part of projects.
- Develop a regional wayfinding and signage schedule based on the coordinated implementation of infrastructure projects.
- Consider a systematic review of VDOT's Six-Year Improvement Program to ensure incorporation of non-motorized improvements on upcoming projects.
- Developer exactions should be reflective of a coordinated approach to this plan's implementation. For example, Kingsport's Major Street and Road Plan should be re-evaluated to determine whether the

100'/80'/60' ROW requirement for new roads adequately accommodates the desired bicycle and pedestrian accommodations.

Other Encouragement Recommendations

Encouragement of non-motorized transportation can be key to wider acceptance and participation. Once a few basic infrastructure-related improvements have been completed (route designation, facility marking and signage, etc.), awareness will increase and some additional encouragement programs can become effective.

Informational Website - make it simple for someone looking for walking or biking information in the region to find it.

Special Events - sponsored by the KMTPO and/or others, the events may include group rides and flat repair and other maintenance clinics. Keep track of local advocates by registering participants for prizes. A popular example in Knoxville is a nighttime family ride touring Christmas lights in downtown neighborhoods.

Marketing Campaigns - Cable TV talk show segments can be used to highlight carpooling, safety issues, Bike Month, Bus Month, other special programs, and other alternative transportation issues. The Chamber of Commerce's ChamberZone program may feature a story or interview on bicycle and pedestrian issues, for example.

Awards - Municipal sponsorship of special recognitions can encourage a better balance between people and cars. Awards can honor outstanding projects, places, groups, or individuals that have contributed significantly toward making the region safer and more accessible for pedestrians and/or bicyclists.

Citizen Outreach - Personal interaction with interested individuals can help overcome obstacles to participation. Bicycle light distribution, youth helmet distribution, custom map creation, classes (safety, commuting, etc.), and walking to school sessions can all provide needed encouragement.



Kingsport's Subdivision Regulations require a four (4) foot sidewalk be constructed on new streets as part of new development. However, redevelopments along existing streets are not subject to this requirement. A local policy could be crafted to ensure that redevelopment along an arterial road would include sidewalk construction in keeping with the Regional Pedestrian Plan. City Code 94-159 could be used as the basis of this policy.

Section 94-159 - Authority to require construction or repair by abutting owner.

"The board of mayor and aldermen, whenever it is deemed necessary for the public welfare, may require the owner of any lot or part of lot in the city fronting upon any public street to construct and keep in repair a good and substantial sidewalk or travelway along the whole street frontage of his lot, of a width and materials prescribed by resolution of the board."