

Knoxville Regional Mobility Plan 2009-2034



Knoxville Regional Transportation Planning Organization

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2009-2034 Knoxville Regional Mobility Plan

Adopted by:

East Tennessee South Rural Planning Organization on May 12, 2009

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CHAPTER 1: Introduction

The numbers: this plan manages \$6.6 billion dollars in transportation projects over 25 years for more than a million people across 4,000 square miles. It's a big plan. And it's been developed during an extremely volatile time.

Gas prices (Figure 1) and fuel consumption—how a large percentage of transportation project funds are raised—have risen and fallen drastically; total fuel consumption decreased in 2008 by 5.7 percent. By the time we reach the end of this plan's life, new funding sources will have been devised, new policies will be in place that will address transportation's role in global warming, new behavioral trends will emerge as individuals make different choices about how they live and work. The future is a moving target. But a shared vision and a willingness to adapt can help us as a Region weather these trying times and arrive at a future that is different but also brighter than we can imagine.



Figure 1. Weekly US Retail Gasoline Prices, Regular Grade, July 2006 – January 2009

Purpose of the 2009 Regional Mobility Plan

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005 requires that each MPO with a population of at least 200,000 develop an intermodal transportation plan with at least a 20-year horizon. The plan must be updated every four years to keep consistent with existing conditions, re-evaluate proposed plans, programs and projects, and validate air quality conformity analysis. The last long range transportation plan was adopted by the TPO on April 11, 2005, and amended July 26, 2006. A finding of conformity was made by the Federal Highway



"Good planning does not begin with an abstract scheme that it seeks to impose on the community; it begins with a knowledge of existing conditions and opportunities."

– Lewis Mumford

Administration (FHWA), the Federal Transit Authority (FTA) and the Environmental Protection Agency (EPA) on July 20, 2006. With adoption of this plan, the 2009 Knoxville Regional Bicycle Plan is also adopted.

Scope of the plan

The Regional Mobility Plan addresses all modes of transportation associated with streets and highways, public transportation, bicycles, pedestrians, rail, air, maritime, and freight and goods movement and supports integration among these modes. The plan consists of a regional air quality conformity determination that demonstrates that the transportation plans, programs and projects identified in this plan do not exceed the budget for mobile emissions established by the EPA for the Knoxville region. Also included are strategies to reduce congestion, promote transportation demand management and maximize efficiency of the existing transportation system. The plan is fiscally constrained, showing that projected revenue sources for the TPO will

be able to support and sustain the cost of the proposed transportation system. Transportation plans, programs and projects identified in this plan are implemented through the Transportation Improvement Program (TIP) that includes a four-year program for funding that the TPO continuously updates. To be eligible for federal funding, plans, programs and projects must be in the Mobility Plan and have been included in the TIP.

Planning area and regional area

The TPO has two distinct areas for which we must plan. The TPO Planning Area consists of all of Knox County and the 2000 Census-defined urbanized portions of Blount, Loudon and Sevier Counties, which includes the cities of Alcoa, Maryville and Lenoir City and the unincorporated area of Seymour. The TPO Non-Attainment Area (or TPO Region), in addition to the Planning Area, includes Anderson County, Jefferson County, the non-urbanized portions of Blount, Sevier and Loudon Counties and small portions of Roane and Cocke



Figure 2. Knoxville Region Non-Attainment Area and Planning Area

Counties (see Figure 2). This Regional Mobility Plan covers the larger Non-Attainment area.

The TPO is governed by an Executive Board and an advisory Technical Committee. Table 1 shows the positions represented in each group.

Several special interest groups—such as the Freight Advisory Committee (FAC), Title VI Working Group, Human Services Transportation Planning Committee, and Bicycle Advisory Committee—were created to provide feedback to the TPO on transportation-related issues. Other projects will prompt the formation of specific Task Forces that will sunset with project completion.

The Knoxville Regional Transportation Planning Organization (TPO), established in 1977, is the federally designated Metropolitan Planning Organization (MPO) for the Knoxville Urban Area, which is the 2000 Census-defined urbanized areas of Knox, Blount, Loudon and Sevier Counties. The Knoxville TPO changed its name to reflect the emphasis on transportation planning.

Each urbanized area in the United States with a population of 50,000 or more is required by the federal government to have an MPO. MPOs are responsible for the continuing, cooperative and comprehensive transportation planning process for their urbanized area.

Urbanized Areas are designated by the United States Census Bureau and are a reflection of urban growth, not political boundaries. For example, growth in the Knoxville area has reached into four counties surrounding the City of Knoxville. Therefore the Knoxville Urbanized Area (as designated by the Census Bureau) includes multiple political entities, namely the City of Knoxville/Knox County, and parts of Blount, Sevier and Loudon Counties.

This is the reason why MPOs are responsible for the transportation planning process for urbanized areas and not single political entities. The Federal Government wants to ensure that the transportation planning process and resulting network are cohesive and functional for areas that have grown together. In other words, transportation planning needs to be regional in scope because transportation systems cut across governmental boundaries.

Not only are there the challenges of planning for such a large geographic area and a diverse mix of cities and towns, there are other, more daunting challenges this plan tries to address. Some of those challenges included connecting land use planning and transportation planning, and creating a sustainable and equitable transportation system. It is important to keep these challenges and opportunities in mind when analyzing the region's needs and possible solutions.

Table 1. TPO representation

Executive Board representation

Principal elected officials from:

Town of Farragut
City of Alcoa
City of Maryville
Blount County
Loudon County
Lenoir City
Sevier County
State of Tennessee
East Tennessee Development District
Knox County (*two elected officials*)
City of Knoxville (*two elected officials*)

Technical Committee representation

Planners and engineers from:

Blount County
Knox County
Loudon County
Sevier County
City of Alcoa
City of Maryville
Lenoir City
City of Knoxville
Anderson County
Lakeway Area Metropolitan TPO
Tennessee Department of Transportation (TDOT)
Knoxville Area Transit (KAT)
Metropolitan Knoxville Airport Authority (MKAA)
Knoxville Commuter Pool
Knox County CAC Transit (formally Knoxville-Knox County Community Action Committee)
East Tennessee Human Resource Agency (ETHRA)
Knoxville-Knox County Metropolitan Planning Commission (MPC)
Tennessee Division of the FHWA (*non-voting member*)
Region 4 of FTA (*non-voting member*)

Challenges and Opportunities—Four Things to Keep in Mind

1. POPULATION GROWTH

In 25 years, the population of the Knoxville region is expected to increase by 50 percent. That means 1.3 million people will need to get to work, school and services via the region's transportation system. This growth will create further pressure on our existing transportation system, affecting the economic competitiveness of our region and the state, our environment and our quality of life. Not only is the region forecasted to grow, but it is predicted to grow older. Twenty-five years from now, one in five East Tennesseans will be 65 years or older (Figure 3). Older residents and workers have different transportation needs that will have to be met through a variety of choices. For instance, do the elderly drive to medical services, use a transit service or does the medical service go to them?

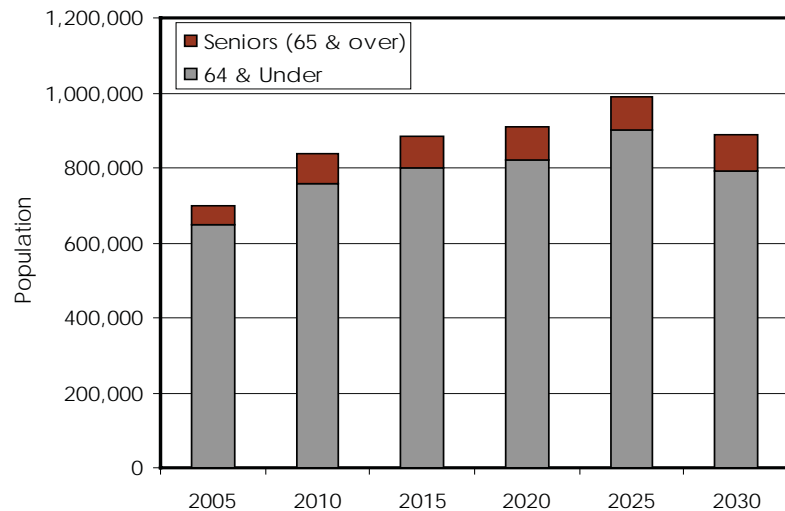


Figure 3. Projected Senior Population in the Knoxville Region, 2005-2030

2. REGIONAL ECONOMY

The Knoxville region is a hub for commerce and tourism. Three of the nation's most heavily traveled interstates converge in Knoxville: I-40, I-75 and I-81. As a result, Knoxville is in the strategic position of being within a day's drive half of the nation's population. Knoxville is on an important thoroughfare for the movement of goods to major population centers in the eastern United States. The Knoxville region is also home to the nation's most visited national park, the Great Smoky Mountains National Park. With more than 9 million visitors in 2007, the Park is a key economic resource for the Region.

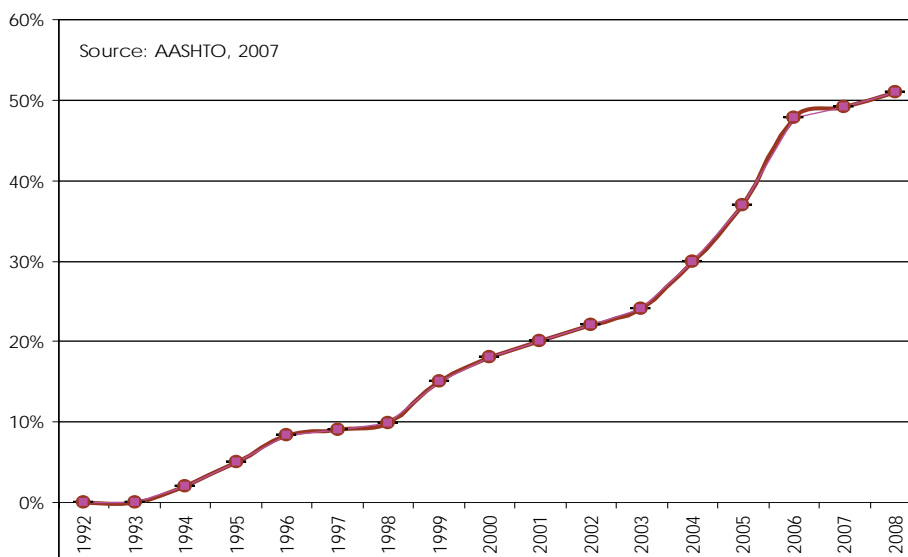
The economic health of the region depends on remaining competitive by attracting and maintaining well-trained labor pools and maintaining our low cost of living and high quality of life. The Mobility Plan recognizes that the transportation system plays a crucial role in sustaining the economic health of the region and the State of Tennessee. Many sectors of the regional

economy depend heavily on the safe and efficient movement of people and goods and services by car, truck, rail, air and water. Additionally, the economic health of the region depends on attracting high-quality jobs that are dependent on a region that maintains a desirable quality of life.

Using transportation investments as a way to support urban reinvestment and infill provides tremendous advantages to enhancing the economic health of our region. The necessary transportation, water, sewer, and other infrastructure are already present, thus reducing the cost of development. Transportation investments geared toward creating more livable, walkable places provide choice in the marketplace, allowing for increased diversity to flourish and the region as a whole to prosper. Furthermore, strong central places are engines that drive regional economic growth. The economic competitiveness of the Knoxville region depends upon its community centers to serve as core areas for business, government, education, health care, culture and entertainment. Failure to attract and support development in the city centers and urban corridors will contribute to further loss of activity in these areas and additional decentralization. Transportation investments supportive of growth and redevelopment in town centers and along urban corridors promote the efficient use of land and existing infrastructure. They also have the potential to improve quality of life by enhancing our main streets and central business districts, making them safer and more attractive for business and public activities.

3. RISING COSTS

Geopolitical instability, uncertain energy supplies and other trends will continue to drive up transportation costs, affecting project costs and household expenditures. Rising costs are felt collectively and individually. Higher prices for all petroleum products—not just fuel—are here to stay. We may experience some fluctuation in the cost of fuel, but the reality is we have a finite supply, and we need to think about how to make our region's transportation system more sustainable. For example, the price of asphalt



<< Figure 4. Percentage Increases in Transportation Construction Costs, 1992-2008

The Mobility Plan's financially constrained system is a federal term that refers to the set of investments that equals the federal, state and local resources the region can "reasonably expect" to be available during the life of the plan.

more than doubled in Tennessee from January 2008- December 2008. This increase has contributed to a doubling of project costs in some cases. While the costs have very recently fluctuated and even dropped in some instances, in general, transportation construction costs have risen quickly in the last 10 years (Figure 4). Due to the overall and projected rising cost of gasoline, personal vehicle upkeep and insurance and greater driving distances between destinations, transportation costs per household in the region are also increasing. Transportation is the second highest household expense after housing, with lower-income households spending a higher percentage of their income on transportation costs than on housing.

4. FUNDING SHORTFALLS

Revenue from federal and state transportation sources are not keeping up with growing needs. As Figure 5 shows, at current spending levels and without new sources of funding, the federal highway trust fund will expend all available revenues projected to be collected during 2009. State and local government purchasing power is steadily declining because the federal gas tax has not been increased since 1997, and Tennessee's state gas tax has not been increased since 1989. Since that time inflation has reduced its value by more than 40 percent. Attempts to adjust the gas tax have failed, and persistently higher pump prices for gasoline will continue to thwart any attempts to adjust the state or federal fuel tax. This will increasingly force local governments to find other means to meet their funding needs.

Reduced purchasing power of current revenues leads to increasing competition for transportation funds, and less capability to expand, improve and maintain the transportation infrastructure we currently have. Meanwhile, the region's transportation infrastructure continues to age, requiring increasing maintenance. Over the next two decades, the gap will grow

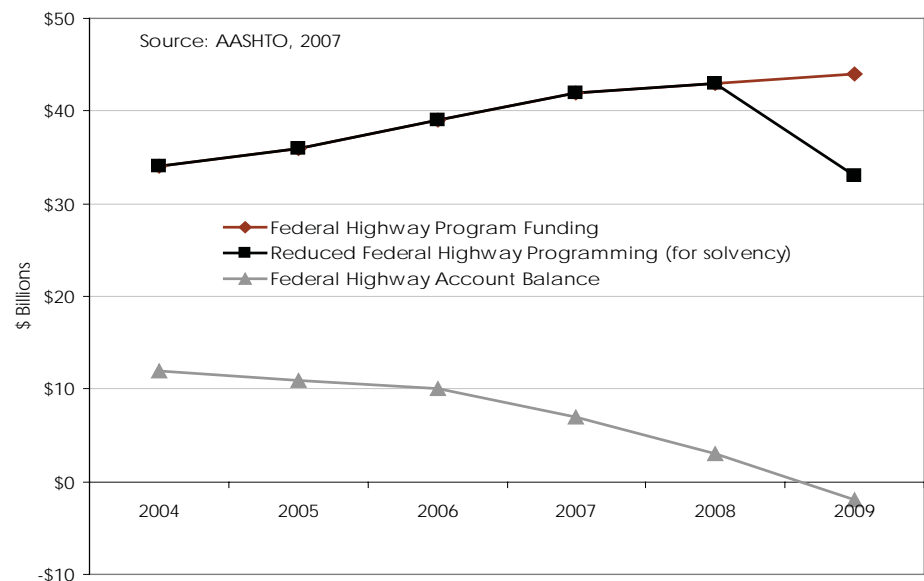


Figure 5. Projected Federal Highway Trust Shortfall

between the revenues we have and the investments we need to make just to keep our interstates, streets and transit system in their current condition.

Planning factors, goals and objectives

The Mobility Plan recognizes the diversity of transportation needs throughout the Knoxville region and attempts to balance needs that often compete with each other. While advocating for a transportation system that adequately serves all modes of travel, the plan recognizes that the automobile will likely continue to be chosen by people for most trips over the life of the plan. However, the Mobility Plan also recognizes the need for expanded transportation options for traveling to everyday destinations, and to provide access and mobility for those unable to travel by automobile. Even the occasional use of transit, walking, bicycling or sharing a ride can help the region improve its air quality, conserve energy and efficiently accommodate more people within a compact sustainable form.

Principles

The principles and strategies of the 2009 Knoxville Regional Mobility Plan are directed to meet the eight federal planning factors developed under SAFETEA-LU to ensure continuing, coordinated and comprehensive transportation planning throughout the Knoxville region. The principles and strategies also support the regional vision while acknowledging the obstacles and challenges.

The vision statement that guides this entire plan has been developed over many years and through many visioning efforts such as Nine Counties One Vision, the Regional Transportation Alternatives Plan, Environmental Health Action Team (Blount County), Regional Senior Summit, the Blount County Growth Strategy and the Plain Talk on Quality Growth conference. This vision statement was brought before the public again through this plan's public participation efforts, and participants helped identify general principles and then more specific supporting strategies (Table 2). This is the backbone of our plan. This vision represents the region's collective goal.

The region's vision is very broad and can be realized in any number of ways. The four strategies help to make the vision more concrete, and actions describe even more specifically how we want to achieve the strategies and reach the vision. In an effort to refine the vision and strategies, the TPO's Technical Committee reviewed the common themes and also gave feedback on prioritization of the strategies. The Technical Committee's feedback and the feedback received through public participation efforts were remarkably similar. Both groups recognize the need to concentrate on maintaining the current infrastructure while adjusting the focus in the future to multimodal facilities and services, not just auto-oriented ones.

Vision statement

Every corner of our region is connected by a system of transportation choices that is efficient, reliable, affordable and environmentally friendly.

Table 2. Principles, Strategies and SAFETEA-LU Planning Factors

Principle	Strategies	Planning Factors Addressed
Preserve and Manage —Preserving and managing the existing system is the highest priority. Capital investments should be directed based on function and need.	<p>Maintain good infrastructure conditions</p> <p>Plan for a safer and more secure transportation system</p> <p>Enhance management and operation of the regional transportation system</p> <p>Enhance demand management Improve system performance</p> <p>Manage congestion</p> <p>Protect our investments</p> <p>Minimize our costs</p>	<p>Increase the safety and security of the transportation system for motorized and non-motorized users;</p> <p>Promote efficient system management and operation;</p> <p>Emphasize the preservation of the existing transportation system;</p> <p>Protect and enhance the environment, promote energy conservation, and improve quality of life.</p>
Link Transportation and Land Use —Land uses impact the function of the transportation system and vice versa.	<p>Proactively plan vibrant communities</p> <p>Ensure the environmental impacts of transportation actions are considered</p> <p>Encourage local land use management</p> <p>Link transportation investments to land use planning</p>	<p>Promote efficient system management and operation;</p> <p>Protect and enhance the environment, promote energy conservation, and improve quality of life;</p> <p>Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;</p> <p>Enhance the integration and connectivity of the transportation system, across and between modes, for people and goods.</p>
Plan and Build for All Modes —As a Region, we need to provide safe and secure mobility choices	<p>Treat all modes fairly</p> <p>Support intermodal transportation</p> <p>Provide reliable, efficient and accessible transit service</p>	<p>Promote efficient system management and operation;</p> <p>Protect and enhance the environment, promote energy conservation, and improve quality of life;</p> <p>Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;</p> <p>Increase the accessibility options available to people and goods;</p> <p>Increase the safety and security of the transportation system for motorized and non-motorized users.</p>
Develop the Region's Potential —Build on our strengths, and use a variety of transportation investments as an economic development tool.	<p>Explore long-term big ticket/big idea initiatives</p> <p>Secure adequate funding to fully implement the plan</p>	<p>Promote efficient system management and operation;</p> <p>Protect and enhance the environment, promote energy conservation, and improve quality of life;</p> <p>Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.</p>

CHAPTER 2:

We Are Planning With People

PUBLIC INVOLVEMENT

We're busy. It's hard to be involved with things, even important things, when every segment of life clamors for attention. The TPO knows this and does its best to make involvement in Plan development as convenient as possible.

The TPO engaged the public in the development of the 2009 Knoxville Regional Mobility Plan through conventional means, such as meetings and workshops, and through new efforts like blogs and brand marketing. The internet was used for each step of the plan's development, from advertising meeting notices, to gathering comments and survey results to sharing the final document and the iterations leading up to it.

TPO staff conducted three rounds of regional workshops: one in May and June 2008, another in September 2008 and a third round in March and April 2009. At each stage of the plan's development, materials were available on the TPO's website (www.knoxtrans.org), including draft documents and public meeting presentations.

What We Heard—surveys and money boxes

Early in the planning process, the TPO conducted an informal public survey seeking the public's opinion on the existing transportation system. The survey was available online and at all of the public meetings.

The informal survey sought three key pieces of information. First, respondents were asked to rate the current transportation system. Second, respondents were asked to rate a series of transportation issues based on their perceived importance over the next 25 years. Finally, respondents were asked their preference on funding transportation projects in the future. This last question, "How would you spend transportation funds?" played an important role at the public workshops also. Each participant was given \$100 in fake money and asked to distribute the bills among nine different options in a box labeled with the choices. Some chose to spend all of their money in one category such as "Build New Roads" or "More Transit" while others divided their money between categories. Results of this funding exercise are shown in Table 3.

A similar informal survey was used in the 2005 Long Range Transportation Plan update, and staff compared the results to see if and how public views might be changing. Results from 2005 and the results from the comments for the 2009 plan are shared here. Tables 4 and 5 show how the respondents



A TPO booth at Knoxville's Market Square drew many participants.

Table 3.
How Respondents Distributed Transportation Funds (2009)

Category	Percentage of total
Better Traffic Signal	
Operations	4.9%
Add Lanes to Existing	
Roadways.....	5.3%
Build New Roads.....	3.7%
Encourage Alternative	
Transportation.....	17.5%
Provide Real-Time Traffic	
Information.....	2.3%
Maintain Pavement in Good	
Condition.....	11.4%
Improve Roadway Safety	7.1%
More Transit Services	20.9%
More Bicycle/Pedestrian	
Facilities	26.8%

Based on informal surveys.

rated the transportation system. Generally, most rated the various system components as good or fair, though few found any of the elements to be very good. Key elements rated poor were transit services, sidewalks and crosswalks, and bike lane and wide shoulders. However, this may not be a statement against existing services and facilities. When looking at the results of Table 3 that shows which issues the respondents thought were very important over the next 25 years, there is a general call for increased transit service, sidewalks and bike facilities. Therefore, the initial poor ranking most likely is the result that not all of the Knoxville region has access to transit services, sidewalks and bike lanes; people want these types of services and facilities and will rank the system poor if they do not have access to them.

The results of the informal surveys done in 2005 and recently are surprisingly consistent. Two changes should be noted. In 2005 more than one-quarter of respondents perceived that the traffic conditions on major roads were poor, while only 13 percent of respondents rated traffic conditions as poor in the later update. Also, the number of respondents rating the transit services as poor increased between 2005 and the 2009 update.

Table 4. Respondents Rate the Transportation System (2005)

Category	Very Good	Good	Fair	Poor
Traffic Conditions on Major Roads	4%	26%	43%	26%
Transit Services	2%	23%	35%	40%
Sidewalks and Crosswalks	1%	12%	31%	57%
Bike Lanes and Wide Shoulders	0%	4%	15%	81%
Greenways and Bicycle/Pedestrian Paths	5%	27%	35%	33%
Traffic Safety and Control Measures on Major Roads	1%	32%	46%	21%
Overall Rating for Transportation System	0%	15%	58%	27%
Based on informal surveys.				

Table 5. Respondents Rate the Transportation System (2009)

Category	Very Good	Good	Fair	Poor
Traffic Conditions on Major Roads	8%	34%	45%	13%
Transit Services	2%	16%	34%	48%
Sidewalks and Crosswalks	2%	12%	32%	54%
Bike Lanes and Wide Shoulders	1%	4%	17%	78%
Greenways and Bicycle/Pedestrian Paths	7%	25%	33%	35%
Traffic Safety and Control Measures on Major Roads	4%	33%	43%	20%
Overall Rating for Transportation System	2%	18%	56%	24%
Based on informal surveys.				

Table 6 shows how respondents prioritize transportation issues. Key issues identified include respondents wanting to see a transportation system that helps protect neighborhoods, historic places and natural resources and improves air quality. They want a system that promotes walkability and promotes the use of alternative modes. They want a system that is safe to use. And finally, respondents would like to see a stronger link between land use and the transportation system.

Table 6. Respondents Rate Transportation Issues for the Next 25 Years

Category	Most Important	Least Important	Category	Most Important	Least Important
2005			2009		
Better Traffic Signal Operations	8%	14%	Better Traffic Signal Operations	9%	15%
Real Time Traffic Information	5%	29%	Real Time Traffic Information	4%	22%
More Transit Services	30%	2%	More Transit Services	44%	3%
More Sidewalks	42%	3%	More Sidewalks	45%	3%
Maintain Existing Transportation System	17%	9%	Maintain Existing Transportation System	21%	6%
More Bike Facilities	48%	7%	More Bike Facilities	52%	4%
Build New Roads	8%	53%	Build New Roads	3%	50%
High Occupancy (HOV) Lanes	18%	21%	High Occupancy (HOV) Lanes	8%	20%
Improve the Movement of Goods and Freight	23%	15%	Improve the Movement of Goods and Freight	14%	15%
Protect Historic Resources	36%	4%	Protect Historic Resources	40%	5%
Walkable Neighborhoods and Commercial Centers	59%	1%	Walkable Neighborhoods and Commercial Centers	61%	3%
Protect Community Character	45%	2%	Protect Community Character	51%	3%
Safe Routes to School	69%	1%	Safe Routes to School	65%	1%
Reduce Travel Time between Places	18%	13%	Reduce Travel Time between Places	13%	11%
Improve Air Quality	76%	1%	Improve Air Quality	69%	2%
Protect Natural Resources	65%	2%	Protect Natural Resources	67%	2%
Safety for Drivers	44%	2%	Safety for Drivers	33%	3%
Safety for Bicyclists and Pedestrians	72%	1%	Safety for Bicyclists and Pedestrians	70%	1%
Coordinated Land Use and Transportation System	48%	3%	Coordinated Land Use and Transportation System	56%	2%

Due to rounding, percentages do not always add up to 100%. Based on informal surveys.

The changes between the responses to the 2005 update and the 2009 update include more people calling a “Coordinated Land Use and Transportation System” and “More Transit Service” the most important transportation issues for the Knoxville region. Fewer respondents selected “Improve the Movement of Goods and Freight,” “Safety for Drivers” and “High Occupancy (HOV) Lanes” as the most important issues in 2009 than in 2005.

Table 3, on page 15, answers the question, “How would you spend \$100 in transportation funds?” Nearly 700 people participated in this exercise, both online and in public meetings, everyone from shoppers at Knoxville’s Market Square, to county planning commissioners.

More than half of the money was put towards funding transportation alternatives, like transit and bicycle and pedestrian facilities. While the TPO’s survey was not scientific, it was used as an additional piece of public input into how the Mobility Plan’s policies, recommendations and projects were derived. This information cannot be interpreted as a future funding model but rather as the public’s general desire to shift funding priorities.

The results are surprisingly similar to a national scientific survey (Figures 6-7), where 81 percent of respondents support allocation of tax dollars toward the expansion and improvement of public transportation, sidewalks and bike paths in their communities.

However, research demonstrates that there is a disconnect between what people want transportation dollars to be spent on and where they are actually spent. On average in the United States, 79 percent of transportation dollars are allocated to roads.

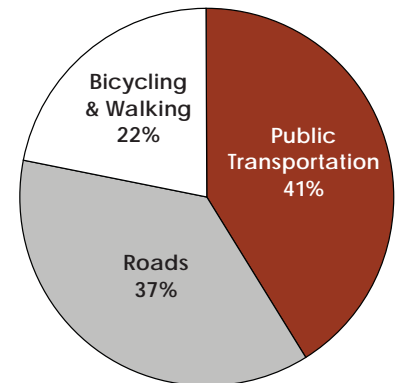


Figure 6. How Respondents would like to have Funds Allocated, National Scientific Funding Survey
Source: Active Transportation for America: The Case for Increase Federal Investments in Bicycling & Walking, 2008

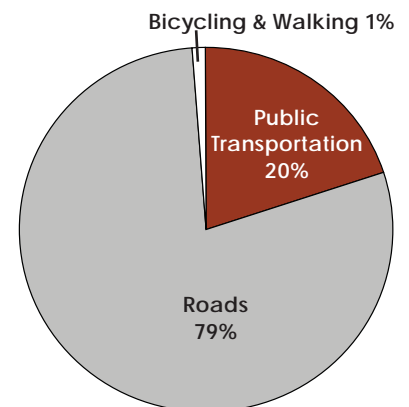


Figure 7. How Transportation Funding is Currently Allocated, National Scientific Funding Survey
Source: Active Transportation for America: The Case for Increase Federal Investments in Bicycling & Walking, 2008

What is Context Sensitive Solutions?

Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist.

Many communities across the U.S. realize that designing neighborhoods, subdivisions, business districts and shopping centers around the automobile has diminished, not enhanced the quality of life. Some of the basic transportation elements that must be restored to improve community livability include:

- *A connected network of sidewalks and bike routes,*
- *Safe, dependable and accessible travel options for community members who cannot afford a car or can't drive,*
- *Affordable transit that gets people to job centers, retail centers and recreation facilities,*
- *Traffic management in neighborhoods, "main" streets, shopping centers and downtowns, that is compatible with bicycling and walking.*

While the car offers us a high level of accessibility, people's ability to move and to reach destinations is often constrained by traffic congestion. An important factor in our decision to use other modes of transportation is based on how long one could be stuck in traffic on the highways and freeways. Walking and bicycling, on the other hand, offer many people cost effective personal mobility, yet there are very few places that are easily accessible to non-motorized modes of travel. Many children can ride bikes in their neighborhoods, but visiting friends one to two miles away or riding to school is difficult or not safe, particularly if the trip involves crossing an arterial.

Most people opt not to walk or bike because the route to the store or park is indirect, does not have sidewalks and there are too many fast cars competing for the road space. Taking the bus can be equally frustrating. The bus stop is frequently too far from work or home, or the bus service is infrequent or slow, and few amenities are available. (Compare these travel conditions to the expectations, comfort features, and amenity options available for motorists: identified and paved path/travel lane, way-finding signs, carpeting, entertainment, music and news, climate control, many places to stop to refuel and a even place to rest your beverage!) These are only a few of the varying and valid transportation needs and objectives of a community that are typically considered in Context Sensitive Street Design (CSSD). Additionally, CSSD designers and planners must also take into account the role of the entire right-of-way as public space, and the role of the street in shaping the character, function and livability of adjacent land uses and neighborhoods.

Source: www.contextsensitivesolutions.org



Overview of the First Round of Public Meetings

At the first round of meetings, staff provided information on existing demographic information, the current transportation system, presented goals and objectives for the plan and sought input on major transportation issues for the Region. More than 100 people attended the nine workshops held in Knox, Blount, Loudon, Sevier and Anderson Counties.

Public meetings and workshops were held at the end of May and the first of June 2008. In an attempt to reach minority communities, two public meetings were held in Title VI designated areas. Additional meetings were held in the following locations to ensure adequate coverage throughout the Knoxville Region:

- Cedar Bluff Public Library (West Knoxville);
- Burlington Public Library (East Knoxville);
- City County Building (Downtown Knoxville);
- Bonny Kate Public Library (South Knox County);
- Halls Public Library (North Knox County);
- Loudon County Visitor's Bureau;
- Blount County Public Library;
- Anderson County Chamber of Commerce;
- Sevierville Civic Center (Sevier County).

The informal survey was distributed at various public meetings and was available through the TPO website. It was available online from April 2008 to June 5, 2008, and drew nearly 500 responses. The meetings took place between 6:00 and 8:00 pm. These hours were chosen in order to have public transit service available, and three of the locations were served by Knoxville Area Transit.

Meeting Announcements

MPC staff designed a specific logo to identify Mobility Plan products and it was first used on posters that were distributed to nearly 50 locations in the region, including public library branches and community boards in businesses. More than 800 postcards were sent directly to various TPO mailing lists, including neighborhood and community groups and interested individuals, at least two weeks before each round of meetings or workshops. Notice of the meetings was also posted on KnoxViews, a local political blog. Other blogs picked up on the chatter and also shared the meeting dates and locations. To further advertise the meetings, legal notices were posted in local and regional newspapers including two local minority-targeted newspapers, The Knoxville Enlightener and El Mundo Hispano. A press release was sent to a wider array of media outlets closer to the meetings.

Meeting Discussions

The turnout at meetings was higher than expected, partly due to the topics of interest: high gas prices, sustainable development, carbon footprints



TPO used a variety of methods to keep citizens informed and to gather feedback.



A workshop participant spends his transportation funds.

and alternative transportation. The open discussion of the workshops was successful and many participants commented favorably on the relaxed atmosphere and the opportunity to hear everyone speak instead of breaking into smaller groups and reporting back.

All of the public workshops can be characterized by good discussions and many questions. A major theme of discussion at many of the meetings was the land use side of transportation and community development. Several individuals were concerned that land use decisions made by cities and counties do not adequately address short and long range transportation impacts. There was also interest in encouraging land use development that would support increased public transportation services.

The concerns and discussion items raised at the workshops informed the next stage of the plan development, defining strategies and then developing actions.

Overview of the Second Round of Public Meetings

Below is a summary of comments received during second round of the Mobility Plan workshops. The workshops were held in four locations: three locations in Knox County and one location in Blount County. Approximately 55 people attended the four workshops the week of September 8, 2008.

Workshop attendees were asked to assist TPO staff in identifying potential strategies that support the following guiding principles:

- Preserve and Manage
- Link Transportation and Land Use
- Plan and Build for all Modes
- Develop the Region's Potential

As a reminder, these guiding principles were developed from the first round of public workshops held in June 2008 and gleaned from a number of recent regional visioning efforts. The actions identified in the second round of public workshops are organized under a set of strategies developed by staff that aims to support the guiding principles and the SAFETEA-LU planning factors (refer to Table 2 for the planning factors).

Potential strategies and actions developed by the public:

1. Potential Strategy: Maintain Good Infrastructure Conditions

Actions

- Improve the existing surface roads rather than create new interstates and thoroughfares
- Don't neglect road system.
- Have a plan and a schedule for maintenance.
- Maintain the roads – good repaving, pay attention to details.
- Coordinate with utility work.

2. Potential Strategy: Pro-actively Plan Vibrant Communities

Actions

- Use the maintenance as a time to reevaluate.
- Tie money to policies that support our priorities.
- Implement detailed, comprehensive land use policies.
- Pilot project to show successful transportation/land use project.
Addresses education also. *Ex: develop a town center at Karns traffic signal.*
- Create development incentives along existing corridors (rail lines and existing roads)
- Plan now.
- Consider social and health impacts.
- Form political advocacy effort to inform and influence decision-makers, local grassroots and progressive leaders
- Education of the community.
- Make density not scary. Show how density can support your community vision.
- Consider social and health impacts.
- TPO partner with local historical associations and provide information on how people used to travel around.
- Discourage sprawl - discourage building new roads into undeveloped areas
- Identify stakeholders, expand the range of stakeholders engaging in this discussion (e.g. Chambers of Commerce, Business Associations, etc. . .)
- Provide the analysis needed to gain access to a privately operated rail line
- Educate young people about these issues
- Give this presentation to our public officials and business leaders - present the same questions to them
- Continue education of elected officials in regards to air quality issues and possible solutions.
- Talk to county commissioners – express wants and vision.
- Be vocal about priorities.
- Include complete streets studies and corridor studies in the Knoxville-Knox County sector planning process
- Find a champion with a vision.
- Form political advocacy effort to inform and influence decision-makers, local grassroots and progressive leaders
- Make planning process more visible.
- Engage more people, local leaders.
- Share a regional vision.
- Listen to other viewpoints and interests.

In 1970, passenger train service to Knoxville via the Birmingham Special ended.

3. Potential Strategy: Plan for a Safer and More Secure Transportation System

Actions

- Publicize bike crashes.

Americans are more concerned than ever about the impact of growth and development on the changing climate. Nearly 90% believe new communities should be designed so we can walk more and drive less, and that public transportation should be improved and accessible.

— October 25, 2007
National Association of Realtors
and Smart Growth America

- Need driver education to increase bike safety.
- Change the driving age to 18

4. Potential Strategy: Enhance Management and Operation of the Regional Transportation System

Actions

5. Potential Strategy: Support Intermodal Transportation

Actions

- Investigate economic development opportunities with intermodal facilities.

6. Potential Strategy: Provide Reliable, Efficient and Accessible Transit Service

Actions

- Make KAT stops more visible, safe and comfortable.
- Expand transit service to county.
- Advertise KAT – give information to the public, help get people off the roads.
- Improve KAT operations – extend routes, partner with Pellissippi State.
- Since fares do not cover all transit costs, find other sources.
- Increase frequency of buses on major corridors.
- Have safe and comfortable transit stops/shelters.

7. Potential Strategy: Treat All Modes Fairly

Actions

- Promote mass transit first. Gives time to re-examine funds for other projects.
- Work towards establishing better public transit (e.g. van pool, shuttle, bus, etc) to and from UT and downtown Knoxville.
- Provide routine accommodation for all modes, all users in our retrofits and new constructions - a mandate for routine accommodation.
- Make alternatives (transit, biking) more visible.
- Increase frequency of buses on major corridors. Have safe and comfortable transit stops/shelters.
- More bike signage and bike lanes.
- Always include bike lanes in new construction and improvements.
- Overcome public objections to things like bike lanes.
- Recognize bicycling as a mode of transportation.
- Explore different surfaces for walking and bike paths to decrease cost.

8. Potential Strategy: Enhance Demand Management

Actions

- Create or designate, commuter or express lanes (separate from local traffic) during peak times.
- Partner better with UT – get students and faculty on KAT.

- Increase visibility of Park and Ride and route signs.
- Charge for parking at schools.
- Discourage the use of motor vehicle use.
- Need driver education to increase bike safety.

9. Potential Strategy: Ensure the Environmental Impacts of Transportation Actions are Considered

Actions

- Educate people on the true costs of roads.
- Identify hidden costs such as public health, environmental impacts.
- Address air quality before solutions are prescribed.
- Use transportation to clean up the air.
- Mandatory testing for vehicle emissions.

10. Potential Strategy: Explore Big Ticket/Big Idea Initiatives

Actions

- Discuss with CSX gaining access to a rail hub/corridor near the airport to connect Blount County to Knoxville
- Use interstate ROW for rail.
- Seriously look at regional passenger/transit rail, include examining operating costs.

11. Potential Strategy: Secure Adequate Funding to Fully Implement the Plan

Actions

- Keep more local taxes here to pay for what we need.
- Use some interstate monies for other uses – transit.
- Tax new development to pay for needed infrastructure. (impact fees)
- Work together to secure more funding.
- Increase fuel tax.
- Have separate funds that can be put towards strategic improvements during maintenance – piggyback money and labor/equipment.

Additionally, TPO staff participated in discussing the Mobility Plan at other community or agency meetings: Blount County Planning Commission, Louisville Planning Commission, Knoxville/Knox County Metropolitan Planning Commission, the Smoky Mountain Greenway Council and the East Tennessee South Rural Planning Organization.

Americans strongly disapprove of increasing gasoline taxes as a way to discourage driving and reduce energy use, with 84 percent rejecting the idea.

— October 25, 2007
National Association of Realtors
and Smart Growth America

"A good sustainability and quality of life indicator: the average amount of time spent in a car."

– Paul Bedford

Overview of the Third Round of Public Meetings

The draft 2009 Regional Mobility Plan was presented to the public through a series of eight public meetings held throughout the region between March 23 and April 2, 2009. Approximately 50 people attended meetings held in Knox, Blount, Loudon, Sevier and Anderson Counties.

The eight public meetings were held in the following locations:

- Cedar Bluff Public Library (West Knoxville);
- Burlington Public Library (East Knoxville);
- City County Building (Downtown Knoxville);
- Halls Public Library (North Knox County);
- Loudon County Visitor's Center;
- Blount County Public Library;
- Anderson County Chamber of Commerce;
- Sevierville Civic Center (Sevier County).

Several methods were used to notify the public about the meetings. The draft document and the notice for the meetings were posted to the TPO website (www.knoxtrans.org). Staff sent out over 1,000 postcards directly to various TPO mailing lists, including neighborhood and community groups and interested individuals, at least two weeks before the meetings. Notice of the meetings was also sent to local newspapers and appeared in a widely-read regional weekly paper, the MetroPulse.

In a continued attempt to engage minority communities, two meetings were also held for the Title VI community and the Knoxville City Mayor's Council on Disability Issues.

The draft document was open for public review from March 2, 2009 through late May.

The TPO did not receive significant comments on the draft plan. Many questions were project specific. Other people were interested in the Air Quality Conformity Determination analysis. Some expressed dissatisfaction with the planning process in general and stated that they felt the TPO and local governments are not responsive to what the citizens are requesting.

CHAPTER 3: We Are Planning For People

We need to know where people live and work and how they get around in order to develop a plan that meets the region's needs. Understanding the region's demographic, socioeconomic and commuting characteristics is a key component of the Mobility Plan because it helps us to better understand our communities and provides information that assists in planning a transportation system that best meets their needs.¹

Population

The population of the Knoxville region has grown steadily over the past few decades (see Table 7). Between 1990 and 2007, the population of the region increased 30 percent, with Sevier County experiencing the greatest percentage increase, more than 60 percent. The population of the Knoxville region has continued to rise since the 2000 census, seeing an 11 percent increase from 2000 to 2007. Both population and employment are expected to rise substantially, as Figure 8 shows.

Table 7. Knoxville Region Historical Population: Trends by County

County	1970	1980	1990	2000	% change 1990-2000	2007	% change 2000-2007
Anderson	60,300	67,346	68,250	71,330	4.5%	73,471	3.0%
Blount	63,744	77,770	85,969	105,823	23.1%	119,855	13.3%
Jefferson	24,940	31,284	33,016	44,294	34.2%	50,221	13.4%
Knox	276,293	319,694	335,749	382,032	13.8%	423,874	11.0%
Loudon	24,266	28,553	31,255	39,086	25.1%	45,448	16.3%
Roane	38,881	48,425	47,227	51,910	10.0%	53,399	2.9%
Sevier	28,241	41,418	51,043	71,170	39.4%	83,527	17.4%
REGION	516,665	614,490	652,509	765,645	17.3%	849,795	11.0%

Source: 1990 US Census Data: SF1 Table: P1; US Census 2000 Data: SF1 Table: P1; US Census Data: Population Estimates Program Data 2007 Tables: States, Counties and Cities and Towns.

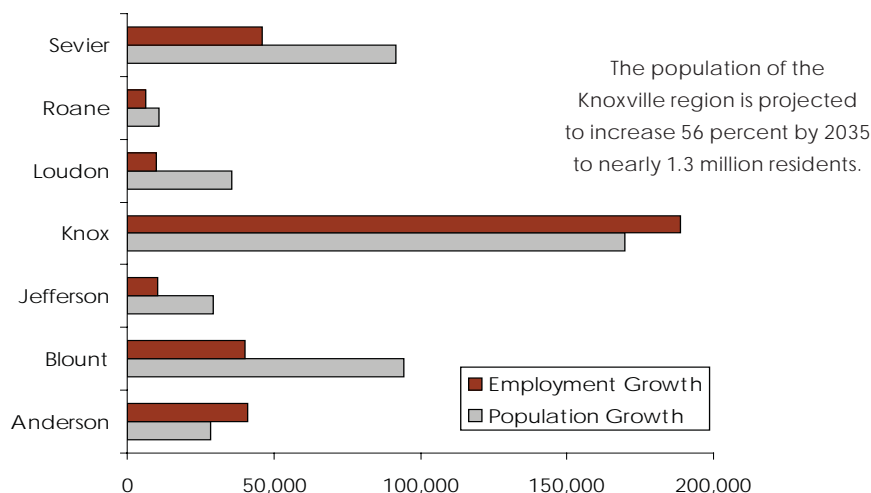


Figure 8. Knoxville Region's Population and Employment Increase (2007-2035)
Source: Woods and Poole Economics



"If you plan cities for cars and traffic, you get cars and traffic. If you plan for people and places, you get people and places."

— Streets are People Places
By Fred Kent

¹All of Roane County is included in the evaluation of demographic, socioeconomic and commuting characteristics for the Knoxville region since partial county data are not readily available. Cocke County is not included in the description of demographic, socioeconomic and commuting trends, because the portion of Cocke County that is non-attainment has a very small population.

TRANSPORTATION & OUR HEALTH

The automobile-dominated planning of the last 50 years has created widespread barriers to people's ability to incorporate physical activity into their daily routines. In 1996, the Surgeon General released a landmark document entitled 'Physical Activity and Health.' This report highlighted physical inactivity as a leading factor of death and disability. Reports have attributed 22-30 percent of cardiovascular deaths, 30-60 percent of cancer deaths, and 30 percent of diabetes deaths to sedentary lifestyles and poor dietary habits. Additionally, it is estimated that physical inactivity is a primary factor in more than 200,000 deaths each year in the United States.

For the third time in five years, The Asthma and Allergy Foundation of America (AAFA), has ranked Knoxville as one of the most challenging places to live with asthma in the nation.

Increasing the mode share of non-motorized transportation, such as walking and bicycling, through the improvements of existing bicycle and pedestrian facilities and the design of walkable towns and neighborhoods, helps combat a range of health problems such as obesity, adult-onset diabetes, heart disease, osteoporosis, cancer, and stroke. Having access to safe pedestrian and bicycle routes means people are more likely to choose walking or biking as modes of transportation, as a result increasing their physical activity. People are also better able to interact with their community and engage in outdoor activities with their families, building valuable social capital. Implementing transportation strategies and policies that reduce reliance on private automobiles will result in reduced air pollution leading to reductions in the incidence of asthma and other respiratory disease. Less fuel exhaust in our air will result in less residual pollution in our local soil and water resources.

Sources: Local Government Commission. Accessed on 11/08/08. <http://www.lgc.org/transportation/health.html>

Asthma and Allergy Foundation of America. "Knoxville Named Top 2008 Asthma Capital." January 30, 2008. <http://www.aafa.org/display.cfm?id=7&sub=100&cont=571>. Accessed on November 21, 2008.

Households

The number of housing units in the Knoxville region increased 41 percent from 257,104 in 1990 to 363,371 in 2008. This was in response to the increase in population and also, as Figure 9 shows, to shrinking household sizes. The greatest decrease in household size was in Roane County, where the average household size dropped from 2.56 persons in 1990 to 2.35 persons in 2000, an 8 percent decline.

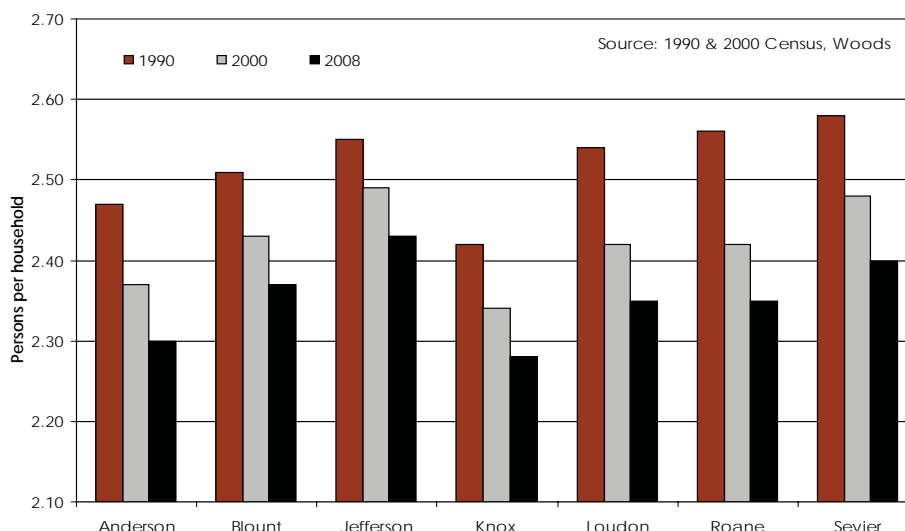


Figure 9. Knoxville Region's Average Household Size; 1990, 2000, 2008

While the average household size in the Knoxville Region continues to decrease, the number of vehicles per household has increased in most counties (see Figure 10).

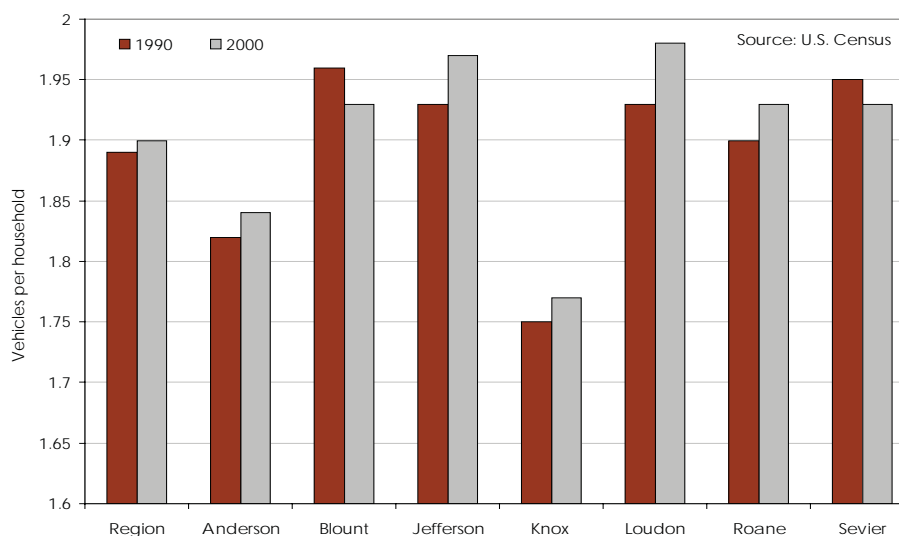


Figure 10. Knoxville Region's Average Vehicles per Household

Income and Employment

While median household income has continued to rise throughout the Region, most of the counties in the Knoxville region have between 25 and 30 percent of their households making less than \$20,000 annually. At \$40,401, Loudon County had the highest median income in 2000, the most recent year for which this data was available. Table 8 shows the ranges of income in the region's counties.

Table 8. Household Income Ranges: (Percent Share)

County	Less than \$14,999	Between \$15,000 - \$19,999	Greater than \$20,000
Anderson	19.6	7.2	73.2
Blount	16.6	7.0	76.4
Jefferson	20.6	8.6	70.8
Knox	19.1	7.1	73.8
Loudon	16.4	6.2	77.4
Roane (block group)	18.6	10.1	71.3
Sevier	17.3	7.8	74.9
REGION	516,665	614,490	652,509

Source: US Census 2000 SF3 Table P52

In 2007, there were 429,480 people employed within the Knoxville region, an increase from 1990 of 38 percent. Blount, Jefferson, and Sevier Counties have experienced the greatest percentage increase in employment since 1990, although Knox County continues to lead the region with 218,150 employees in 2007.

Commuting Characteristics

Understanding the travel characteristics and the travel patterns of people and goods within our transportation system plays an important role in determining future transportation needs.

Based on data from the 2000 Census Transportation Planning Package, the automobile is the most common form of transportation within the region, with 84 percent of workers commuting to work in single-occupant vehicles. There has been very little change in travel modes from 2000 to 2008.² Figure 11 offers a breakdown of commuting modes throughout the Knoxville region in 2000.

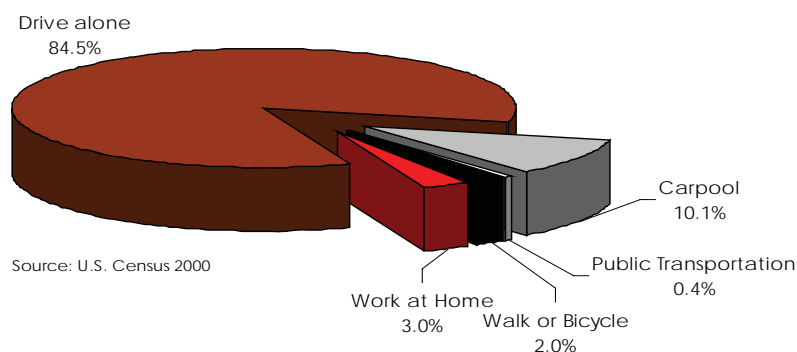


Figure 11. Knoxville Region Commute to Work by Mode of Transportation



A Knoxville to Oak Ridge carpool group.

²2008 East Tennessee Household Travel Survey. NuStats. August 4, 2008.

Throughout the Knoxville region, commuting times are becoming longer as people live farther from their jobs and congestion on area roadways increases (see Table 9). Workers in Jefferson County commute an average of 26.4 minutes one way to work, the longest commute time in the region, while workers in Knox County commute an average of 22.2 minutes one way to work, the shortest.

Table 9. Knoxville Region Average Commute Time to Work (Minutes)

County	1990	2000
Anderson County	20.7	22.9
Blount County	22.3	24
Jefferson County	22.4	26.4
Knox County	20.5	22.2
Loudon County	22	24.8
Roane County	23.2	26
Sevier County	23.5	25.3
State of Tennessee	21.5	24.5

The number of people who commuted more than 45 minutes each way to work increased by 14 percent from

1990 to 2000. Residents from one county often commute to another county within the Knoxville region for work, with Knox County acting as a major attractor for employment. More than 25 percent of the workers in each of Anderson, Blount, Jefferson and Loudon Counties commute to Knox County for work. The majority of Knox County residents, 88 percent, commute to work within the County. Commuters who leave Knox County for work commute primarily to Anderson County or Blount County.

Air Quality

Most of the Knoxville region is in non-attainment for two federal air quality standards as Figure 12 shows. The region exceeds the allowable limits of ozone precursors (NOx and VOC) and fine particulate matter (PM 2.5).

What does this mean for the Knoxville region? For one, it means that this plan and its associated highway projects must undergo an analysis to determine if they



Figure 12. Knoxville Regional Non-Attainment Area (PM 2.5 and Ozone)

will negatively affect the region's air quality. Second, it means that this region is eligible for a federal funding program, Congestion Mitigation and Air Quality (CMAQ), for projects that can help improve air quality, such as installing technologically advanced filters on municipal diesel vehicles. Third, it means that if air quality continues to worsen and our best efforts to improve air quality do not work, federal highway funding could be restricted. While this last implication is not likely at present, it is a consequence we have to keep in mind as we develop the project list and choose where investments go.

History of Air Quality in Knoxville

On April 15, 2004, the EPA designated the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke within the Great Smoky Mountains National Park in non-attainment of the 8-hour standard for ground level ozone. As a result of the designation, an air quality conformity determination was performed showing that any transportation plans, programs and projects for the above counties will not create additional mobile emissions that would worsen the air quality.

A large portion of the Ozone Non-Attainment Area was outside of the currently designated TPO Planning Area. In response to this issue, meetings were held among the county Mayors of the non-attainment counties, TPO Executive Board, Tennessee Department of Transportation, and Tennessee Department of Environment and Conservation to discuss ways to address air quality and transportation planning for the entire Ozone Non-Attainment Area. After alternatives were presented, the consensus was to request the TPO prepare the Regional Long Range Transportation Plan and corresponding air quality conformity analysis for the entire Non-Attainment Area.

On April 5, 2005, the U.S. EPA designated the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane in non-attainment for fine particulate matter (PM 2.5) standards. As a result of the PM 2.5 designation, the TPO updated the LRTP in 2006, expanding the Knoxville region to include that portion of Roane County not included in the original plan. The TPO performed an air quality conformity determination for the new PM 2.5 standards for those areas in non-attainment. The Knoxville Non-Attainment Area is referred to in the Mobility Plan as the Knoxville region (see Figure 14).

Interim Emissions Tests for Ozone

Transportation Conformity is demonstrated through measurement of the emissions that form ozone from on-road mobile sources, specifically volatile organic compounds (VOC), and oxides of nitrogen (NOx), and comparing those against the amount that has been determined to be an acceptable level to allow the Region to attain the National Ambient Air Quality Standards (NAAQS). Since a plan has not yet been established to determine specific emissions budgets that would be required to show attainment of the recently implemented 8-hour ozone standard (known as a State Implementation



TPO manages the East Tennessee Clean Air Coalition website which provides daily air quality forecasts for the region.

Plan or SIP), the TPO is instead required to use an interim emissions test to demonstrate conformity.

There are two different interim emissions tests that were required for the Knoxville Ozone Non-Attainment Area, the 1-Hour Budget Test for Knox County and the No Greater than Baseline Year 2002 Test for the balance of all other counties in the Nonattainment Area. The 1-Hour Budget Test for Knox County is required because Knox County is designated as a “Maintenance Area” under the 1-hour ozone standard and has emissions budgets for VOC and NO_x that were previously established to meet that standard. The No Greater than Baseline Year 2002 Test is used in the other counties because emissions budgets have not yet been established and EPA determined that an area can demonstrate transportation conformity in the interim period by showing that on-road mobile source emissions of VOC and NO_x will be less in future years than what was observed in the year 2002.

Projections of on-road mobile source emissions were made using a travel demand forecasting model that has been calibrated using socioeconomic data for the region to closely replicate existing travel behavior and traffic volumes on the roadway network. Vehicle emission rates for future years are estimated using the emission factor model from EPA known as MOBILE6.2. Analysis years of 2009, 2014, 2024, and 2034 were established in order to meet criteria in the federal conformity regulations for which projected emissions were compared against the 1-Hour Budget for Knox County and the 2002 emissions for the other counties in the Nonattainment Area.

Particulate matter is characterized according to size - mainly because of the different health effects associated with particles of different diameters. Particulate matter is the general term used for a mixture of solid particles and liquid droplets in the air. It includes aerosols, smoke, fumes, dust, ash

Sources of Fine Particulate Matter

Natural sources

- wildfire (elemental carbon and organic carbons)
- organic carbons from biogenic VOCs
- nitrates from natural NO_x

Primary Manmade Sources

- fossil fuel combustion (industrial, residential, autos) (elemental carbon and organic carbons)
- residential wood combustion (elemental carbon and organic carbons)

Secondary Manmade Sources

- organic carbons from anthropogenic sources of VOCs (autos, industrial processes, solvents)
- sulphates and nitrates from anthropogenic sources of SO_x and NO_x (autos, power plants, etc.)

Source: epa.gov



Figure 13. Relative Size of Fine Particulate Matter

Source: US Environmental Protection Agency

and pollen. The composition of particulate matter varies with place, season and weather conditions. Fine particulate matter is particulate matter that is 2.5 microns in diameter and less. It is also known as PM_{2.5} or respirable particles because it penetrates the respiratory system further than larger particles. Figure 13 shows the relative size of PM_{2.5}, and the sidebar on page 30 outlines the various sources of PM_{2.5}.

What's next?

An Interagency Consultation (IAC) process continues. The TPO works closely with the EPA, Tennessee Department of Environment and Conservation, TDOT, Knox County Air Quality Management, FTA, FHWA and the National Park Service to increase communication and to keep the process transparent.

The fleet of vehicles on the road is continuing to turn over. Older, more-polluting vehicles are being replaced by newer, more efficient and cleaner-burning vehicles. This helps combat the non-point source emitters, but at the same time the EPA continues to tighten air quality standards effectively setting the bar higher. If more investments are directed to non-highway projects including public transportation, this will further reduce the amount of pollutants in our air.



Incremental changes through land use and transportation investments can transform an underutilized place into a safe, vibrant destination.

CHAPTER 4: Existing System And Conditions

ROADWAYS

Whether it be passenger, service or freight vehicles, the street and highway network is responsible for handling a large number of the movements of people and freight throughout the Knoxville region. Due to its location at the junction of three major interstates, the region experiences a large amount of through traffic. The location of several tourist destinations, most notably the Great Smoky Mountains National Park, as well as entertainment venues, recreational opportunities, government facilities and educational and medical institutions attract a large amount of traffic from outside the region.

Existing Conditions

Since 1990, the number of vehicle miles traveled per day throughout the region has increased at a rate faster than the increase in population (Figure 14). This means people are driving more often and commute greater distances. Per capita vehicle miles traveled (VMT) increased in every county in the region with the highest growths in Blount (45 percent) and Knox (39 percent) Counties. However, just recently there was a nationwide reduction in VMT due to high fuel costs, which fell 5.3 percent nationwide between November 2007 and November 2008. During that same time period, VMT in Tennessee fell by 6.2 percent. Still, the trends over the long-term point to ever-increasing VMT due to the region's dependence on one mode of transportation.

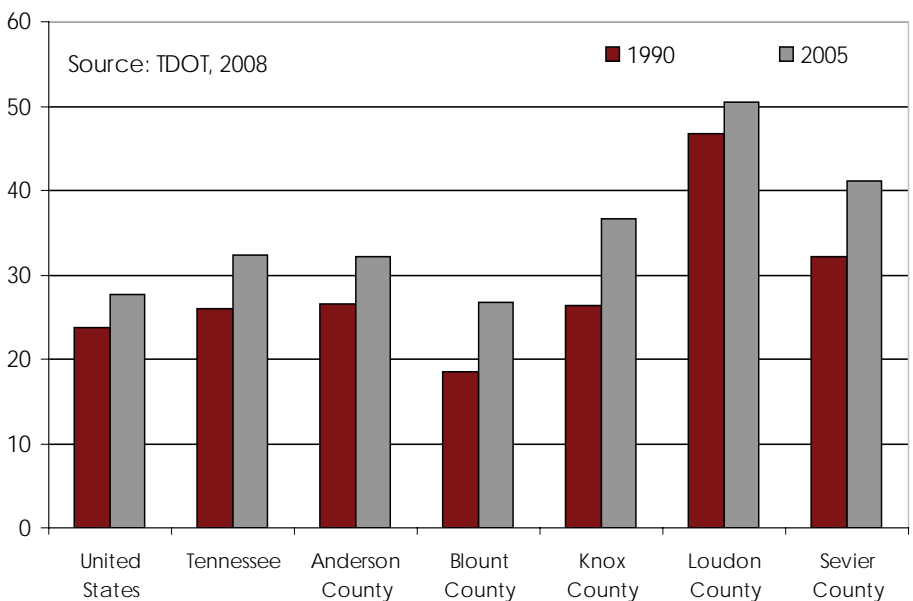


Figure 14. Vehicle Miles Traveled per Capita, 1990-2005



While fuel economy and renewable fuel usage have both remained constant in recent years, the amount of road travel has increased dramatically. VMT increased from approximately 2.1 trillion to nearly 3 trillion between 1990 and 2005.

*— AASHTO
Primer on Transportation and
Climate Change
April 2008*

Travel Demand Model Background

In order to project future conditions of the roadway system the TPO uses a computer modeling tool known as a travel demand forecasting model. The Knoxville Regional Travel Demand Model was calibrated to closely replicate existing traffic patterns in the Knoxville region in order to provide a means to be able to forecast future traffic volumes and conditions. The model includes the primary roadway network in all of Anderson, Blount, Jefferson, Knox, Loudon, Roane, Sevier and Union Counties plus portions of Grainger County. To develop the model, mathematical relationships between travel activity and household socio-economic characteristics were derived from an extensive travel behavior survey that was conducted in the year 2000. In this survey, over 1,500 households in Knox and Blount Counties were requested to record their travels in a one-day period including information on trip purpose, origin and destination of each trip, mode of transportation used, and time of day the trip was made. The model was then developed based on the assumption that households with similar socio-economic characteristics such as household income, number of school-age children, and vehicle ownership would exhibit similar travel activity. These household characteristics are available from the U.S. Census and are input into the model based on their distribution across smaller geographic areas in the region known as Traffic Analysis Zones (TAZ).

In addition to the socio-economic inputs at the TAZ-level, the model also includes a mathematical representation of the roadway network through a system of links and nodes. Each link in the model represents a segment of roadway that is described by several attributes such as functional classification, speed limit, number of lanes, pavement width, and level of access control and whether it is divided by a median. The nodes represent intersections or where roadway characteristics might change in the middle of a segment, such as where a road narrows, and also include locations of traffic signals. The roadway attributes are used to determine the vehicular capacity and travel time along each link in the model network. The model can therefore be used to test alternative improvement strategies by changing appropriate attributes such as increasing the number of lanes or by coding in a new link to represent construction of a new roadway.

Please contact the TPO with any technical questions regarding the model and its analysis.

General Overview

The Knoxville Regional TPO uses a “Four-Step” Travel Demand Forecasting Model, which is the standard national practice for travel demand modeling.

The four steps of the model are:

- Trip Generation – Determines the total number of trips made in the Region
- Trip Distribution – Determines the destinations of all trips

- Mode Share – Determines the number of trips made by motor vehicles
- Trip Assignment – Determines the specific roadways used for each trip

In addition to the four main steps described above, the Knoxville Model uses procedures to estimate A.M. and P.M. peak hour traffic and post-processes the outputs to obtain statistics such as average speeds, delay and volume-to-capacity ratios which are used to determine performance and congestion on the regional roadway network.

The model was primarily developed using information obtained from a travel behavior survey that was conducted in 2000 and 2001 with participation from 1,500 households in Knox and Blount Counties. Mathematical relationships were developed using a statistical analysis of the trip making influences from the different socioeconomic characteristics that were observed in the survey.

Model Components

The four-step travel demand model is actually comprised of separate models that are run sequentially. Following is a brief description of each sub-model and sequence:

- A. Trip Generation: The trip generation component consists of trip production and trip attraction models for the several trip purposes.

1. Trip Production Model – The following six trip purposes were identified from the survey data and cross classification techniques were used to determine number of trips produced for each given the most appropriate socioeconomic predictor variable:

- Home-Based Work (HBW)
- Home-Based School (HBS)
- Home-Based University (HBU)
- Home-Based Other (HBO)
- Non-Home-Based Work (NHBW)
- Non-Home-Based Other (NHBO)

In addition to the household based trips above, the model also incorporates trips not associated with households such as from on-campus students that reside in group quarters and the short distance truck trips such as mail and delivery trucks.

2. Trip Attraction Model – The trip attraction model is based on a regression analysis of geo-coded trip ends versus zonal socioeconomic characteristics. The attractions were factored up so that total attractions would approximately balance the productions in the base year. Zonal level variables such as employment, population, households and school enrollment formed the input to this model.

3. Special Generators – The Knoxville model includes special generators that are treated separately in order to account for their unique trip production and attraction characteristics.
 - McGhee Tyson Airport
 - Turkey Creek Shopping Area at Parkside Drive
 - Sevier County Tourist Areas
- B. Trip Distribution: The gravity model is used to distribute zonal trip productions and attractions, which is the most widely used model for trip distribution. The gravity model requires base year data on average trip lengths and trip length distributions for each of the trip purposes which were determined by the household survey. Friction factors were calibrated from the trip length distribution data for each trip purpose which describe people’s willingness to travel certain distances for different types of trips – for example, people generally will tolerate longer travel times to their place of employment rather than to the grocery store. Socioeconomic adjustment factors, also known as “K-factors,” were used to represent zone-to-zone adjustments for selected zonal interchanges when necessitated by special circumstances such as bridges or other perceived travel barriers.
- C. Mode Split: The trip distribution step yields tables of “person trips” by trip purpose and time-of-day. The Knoxville model only assigns the trips that are made by motor vehicles to the roadway network so the person trips were converted to vehicle trips using data from the household travel survey. Factors for vehicle occupancy were also developed and these were determined to vary during different time periods throughout the day and incorporated into the model.
- D. Time-of-Day Models: The Knoxville model allows analyses to be performed for four major time periods – 24-hour (daily), morning peak (6:00 – 9:00 am), afternoon peak (3:00 – 6:00 pm) and off peak (all times other than morning or afternoon peak). The time-of-day model was accomplished using data collected from the household behavior survey on hourly distributions of trips by purpose.
- E. External Models: Trips with at least one trip end outside the study area are considered external trips. The Knoxville model has 29 external stations where traffic can enter or exit the model’s roadway network. A consultant performed an updated external license plate survey for the major interstates in the Knoxville model area in 2007 in order to determine the percentage of through traffic using the Interstates in this region.
- F. Trip Assignment: The assignment of trips to the network is the last step of the sequential modeling process. It provides the foundation

for validating the model's performance in replicating base-year (2006) travel patterns. Once the base year is validated, it is further used to forecast future traffic conditions on the network and to evaluate any transportation improvements in the future.

One feature to note of the trip assignment process in the Knoxville model is that it includes a feedback procedure in which congested travel times are fed back to the Trip Distribution Stage until equilibrium is achieved. The reason a feedback loop is needed is to account for the fact that people will oftentimes take congestion into consideration in their decisions for which destinations are chosen.

Figure 15 illustrates the sequential process of the Knoxville Travel Demand Model:

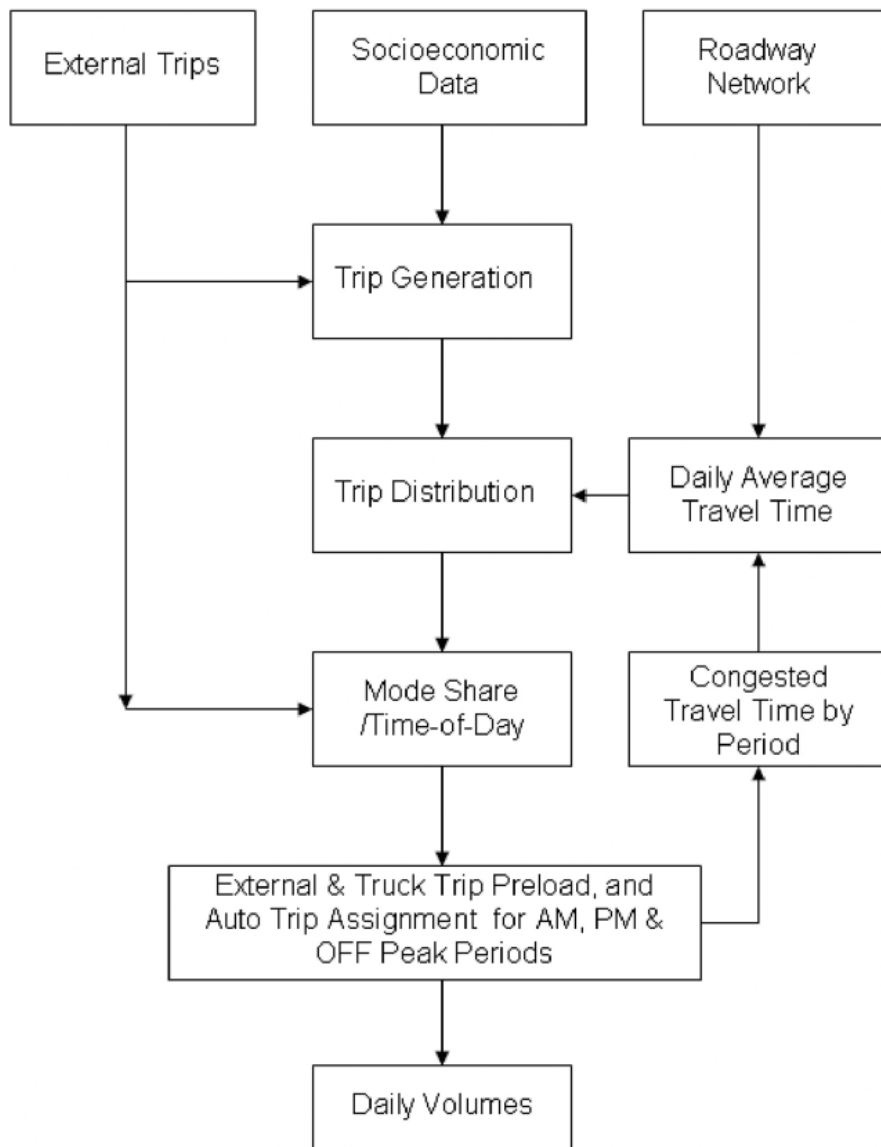


Figure 15. Sequential Process of the Knoxville Travel Demand Model

Model Calibration and Validation

As the travel demand model is being developed each submodel is calibrated until acceptable results are obtained. The process of determining acceptable results is known as “Model Validation.” The ultimate validation of a travel demand model is in comparing the daily traffic volumes computed by the model for each roadway against actual traffic counts that are taken in the validation year.

Validation Criteria – Criteria for acceptable errors between observed and estimated traffic volumes vary by facility type, according to the magnitude of traffic volume. For example, higher volume roadways have stricter calibration guidelines than those with lower volumes. Acceptable error standards set by the Federal Highway Administration for travel demand models are shown in Table 10. The Knoxville model meets or exceeds the standards set by FHWA for model validation.

Table 10. Knoxville Travel Demand Model Performance by Volume Group

Volume Range	Average Counts	Average Loading	% RMSE	% Error	% Acceptable Range	VMT % Error
1,001 ~ 2,000	1,496	2,393	140.54	59.94	± 200	71.36
2,001 ~ 3,000	2,429	3,691	124.48	51.93	± 200	52.30
3,001 ~ 4,000	3,479	3,445	67.45	-0.98	± 100	4.93
4,001 ~ 5,000	4,463	4,765	65.06	6.76	± 100	7.22
5,001 ~ 6,000	5,522	5,587	61.91	1.18	± 50	6.52
6,001 ~ 8,000	6,958	7,322	44.92	5.24	± 50	11.19
8,001 ~ 10,000	8,901	7,929	40.96	-10.91	± 50	-9.35
10,001 ~ 15,000	12,224	12,008	33.93	-1.76	± 20	-4.75
15,001 ~ 20,000	17,442	16,708	31.09	-4.21	± 20	1.06
20,001 ~ 25,000	22,123	22,732	21.44	2.75	± 20	6.12
25,001 ~ 30,000	27,622	29,635	20.54	7.29	± 15	10.25
30,001 ~ 40,000	33,730	34,777	17.28	3.10	± 15	9.89
40,001 ~ 50,000	44,588	48,432	16.99	8.62	± 15	8.80
50,001 ~ 60,000	54,064	56,035	11.69	3.65	± 10	5.40
> 60,000	71,270	68,761	5.33	-3.52	± 10	-4.40
ALL	12,261	12,617	32.95	2.91	± 10	6.87

If the reader would like to know more about the Travel Demand Model, please visit our website (www.knoxtrans.org) to read the “Knoxville Travel Demand Model Technical Memorandum.”

Land Use Model Background

The TPO recently developed a new land use allocation model through a consulting contract and with funding assistance from the TDOT. The model is known as the Urban Land Use Allocation Model (ULAM) and has been used extensively by MPOs in Florida.

The ULAM planning package is designed to provide an automated process to allocate future growth in the form of county-wide population and employment

control totals at the traffic analysis zone (TAZ) level producing files ready for input into the travel demand forecasting model. ULAM contains a GIS interface which allows the model to be used as a land use visualization tool. This tool is discussed in more detail in Chapter 5: Scenario Planning.

The most important input variable to the ULAM model is the vacant acreage information by land use type which is developed from parcel level GIS data. The vacant land information is used to incorporate physical, environmental and policy constraints into the land use allocation process, ensuring that growth is not allocated to areas already built out and that growth is not allocated to wetlands or other types of environmentally sensitive areas. By separating vacant land by land use type, the model is able to reflect the current zoning restrictions and land use regulations. It ensures that the model does not allocate unacceptable types of land uses in areas where that type of development is not permitted.

Control variables for individual traffic zones include: vacant buildable acreage by land use type, allowable land use densities, approved development, population per dwelling unit, percentage of vacant or seasonal units, auto ownership information, variables for the life style trip generation model, and other restrictions for each TAZ.

A market index or desirability score for each TAZ and each type of land use is computed using approved development, historical trends and the real estate market information designed to reflect unique local market conditions. The real estate market index is then used by the ULAM model in the allocation process to determine which TAZs will be developed first for a particular type of land use.

The impacts of changes in the transportation network on future land development patterns are reflected in the ULAM Real Estate Market Index. The model ranks each TAZ for different types of development based upon travel time and accessibility to major land use activity centers and based upon socio-economic conditions within a given travel time around each traffic zone. As the transportation network is changed, the travel time on the network changes which also changes the ranking of each TAZ for different types of development. As an example if a new expressway is added to the network the travel time from those TAZs around that expressway to major land use activity centers decreases making those TAZs more accessible and giving them a higher ranking for most types of development. In addition the market area based upon travel time has increased in size, meaning more population and employees are within that market area or drive time of that TAZ. The larger market area population and employment of that TAZ makes that TAZ more desirable for retail and other types of new development.

For the development of this Plan the ULAM model was used to generate land use allocations assuming the continuation of the historical trend in development

patterns. This is because of the fact that there are few policies in place within the region to control development patterns at the current time. Chapter 5 (Scenario Planning) documents the possible impacts of changing the spatial allocation of land uses based on ULAM and the travel demand model's results.

Roadway Operational Analysis

The roadway system performance can be described using different measures. The most commonly used measure is the "Level of Service" (LOS), which is documented in the Highway Capacity Manual by the Transportation Research Board. LOS is a qualitative measure that describes operational conditions within a traffic stream and their perception by motorists. There are many different levels of analysis that can be done depending on the type of facility being analyzed such as a freeway segment or a single intersection. For the purposes of the Mobility Plan a planning level analysis is most appropriate, which bases the LOS on the peak hour volume-to-capacity (V/C) ratio of the roadway. The V/C ratio describes the amount of traffic volume that can be effectively accommodated based on the carrying capacity of the roadway. The capacity of a roadway is influenced by characteristics such as the number of lanes, the number of intersecting roadways and traffic signals along the route.

The TPO is using a V/C ratio threshold of 0.85 to determine roadways that are becoming congested for this plan. In simple terms, this means that a roadway has reached 85 percent of its theoretical capacity, and therefore traffic operations are becoming unstable. As the V/C ratio approaches 1.0 the traffic flow starts to break down, and even minor disruptions can cause major queues as disruption waves propagate through the upstream traffic flow. There is also a strong correlation between high V/C ratios and crash rates.

The travel demand model was run for the base year of 2006 and for future socioeconomic conditions in years 2014, 2024 and 2034 in order to determine potential congested areas on the existing plus committed roadway network.

Existing plus Committed Projects

Table 11a lists highway projects that have either been completed or construction has already begun since the year 2006. This list reflects the projects that have been added to the TPO's "Existing plus Committed" (E+C) network in the travel demand model. This is necessary because the model was only calibrated to reflect the travel patterns in the year 2006 on the highway network that was in place at that time. The E+C network is used as the base case in the travel demand model, which is then used to determine operational deficiencies in the future assuming that no other improvements are made to the roadway network.

The E+C network is also necessary to reflect the fact that the projects which have not been closed out and are still receiving funding for construction are indeed still a subset of the current Mobility Plan for our region.

Table 11a. Knoxville Regional Existing Plus Committed Projects

TIP or STIP #	Old LRTP #	Project	Jurisdiction	Location	Description
2008-022	56	I-40	Knoxville	I-275 to Cherry St	Widen 4-lane to 6-lane
Completed	613	I-275	Knoxville	Baxter Ave to I-640	Widen 4-lane to 6-lane
Completed	614	I-640	Knoxville	Interchange with I-75/I-275	Widen I-75 underpass and add eastbound through lane
2008-041	71	Pleasant Ridge Road	Knoxville	Merchant Dr to I-640	Add center turn lane
2006-006	51	Emory Road (SR 131)	Knox County	Bishop Rd to Norris Frwy	Widen 2-lane to 4-lane w/center turn lane
Completed	18	US 321 (SR 73)	Loudon County	East of Tennessee River to SR 95	Widen 2-lane to 4-lane
2008-029	59	Lovell Road (SR 131)	Knox County	Gilbert Road to Pellissippi Pkwy	Widen 2-lane to 4-lane w/center turn lane
73030	12	Oak Ridge Turnpike (SR 95)	Oak Ridge	Westover Dr to Illinois Ave (SR 62)	Add center turn lane

Figure 16 on the next page shows the roadway network color coded by the year in which a segment exceeds the congestion threshold. The results of this analysis were presented to the members of the TPO Technical Committee and other operations staff from the local jurisdictions. Individual workshops were held with member jurisdictions in order to develop and prioritize appropriate mitigation strategies for the congested areas in accordance with the Congestion Management Process procedures that are described later in this chapter.

Figure 17 on the following page shows the results of congestion reduction through the implementation of the projects in this plan. The roadways that are below the congestion threshold as a result of project implementation are shown in green while the roadways that are still above the congestion threshold but have been significantly improved are shown in blue. As part of the Scenario Planning discussion in Chapter 5, the travel demand model

analysis of operations and demonstrates the improvements that can be achieved through the implementation of the roadway projects identified in this Plan.

Table 11b below shows the travel demand model operational analysis and demonstrates the improvements that can be achieved through the implementation of the roadway projects identified in this Plan. The model statistics give a comparison of expected performance of the roadway system for the base year of the model (2006), the ultimate horizon year of 2034 on the existing plus committed roadway network and finally for the year 2034 with all of the roadway improvement projects included in this plan being implemented.

It is important to note that the travel demand model is only one tool that can be used to determine deficient roadways and the results must be carefully scrutinized to determine whether a particular roadway is indeed an

Table 11b. Travel Demand Model Operational Analysis Results

Model Statistic	2006 "Existing + Committed"	2034 "Existing + Committed"	2034 LRMP Implementation
Vehicle Miles of Travel (VMT)	27,787,143	43,560,288	43,947,952
Vehicle Hours of Travel (VHT)	608,654	1,101,117	1,051,130
Systemwide Avg. Speed (mph)	45.7	39.6	41.8
Arterial Peak Hour Speed (mph)	33.8	27.4	30.4
Freeway Peak Hour Speed (mph)	50.5	26.1	32.0
Total Systemwide Delay (veh-hrs)	71,268	262,092	216,143
% Lane Miles with V/C > 0.85	7.5%	25.8%	20.7%

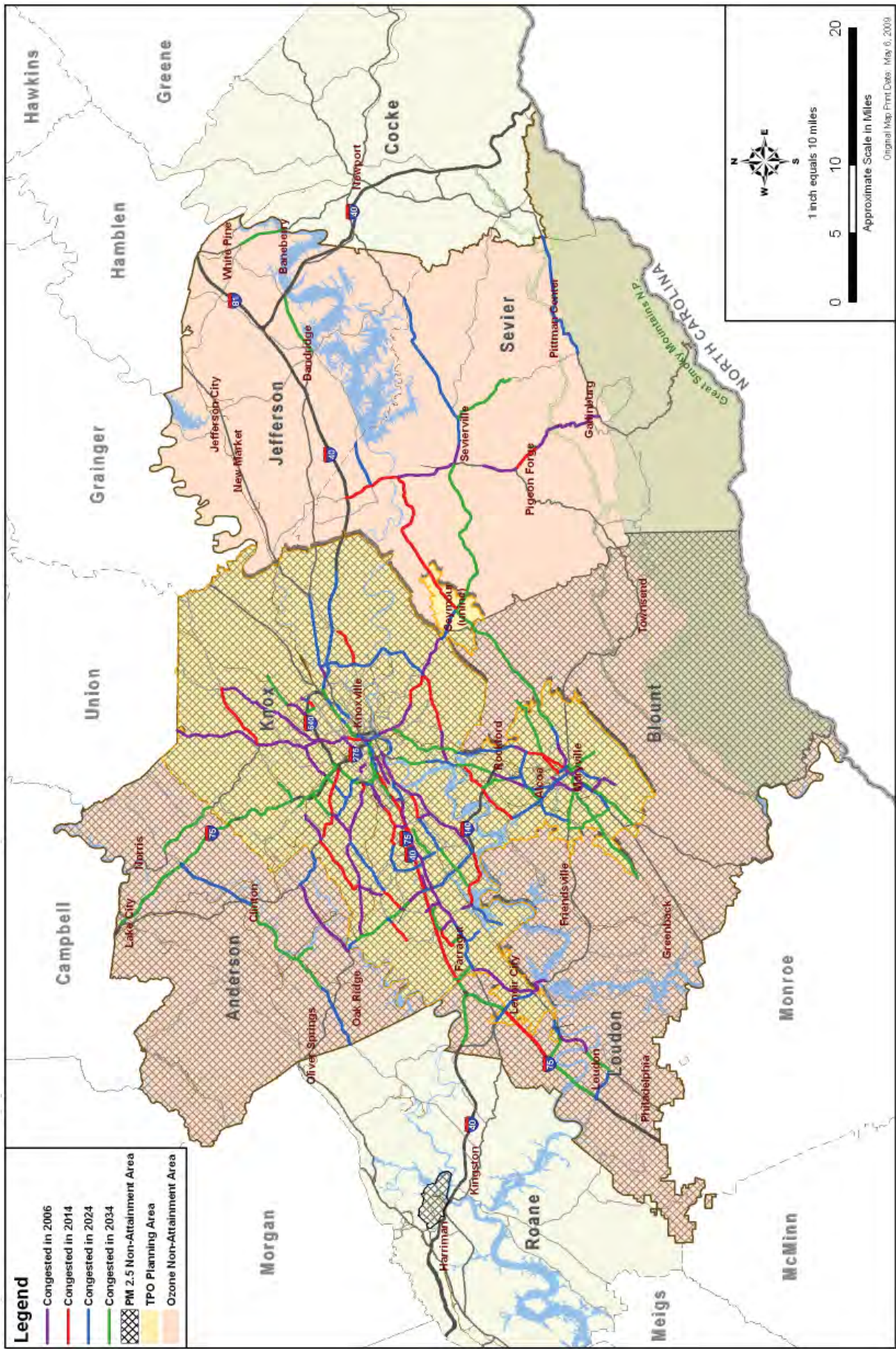


Figure 16. Congestion on Existing plus Committed Roadway Network

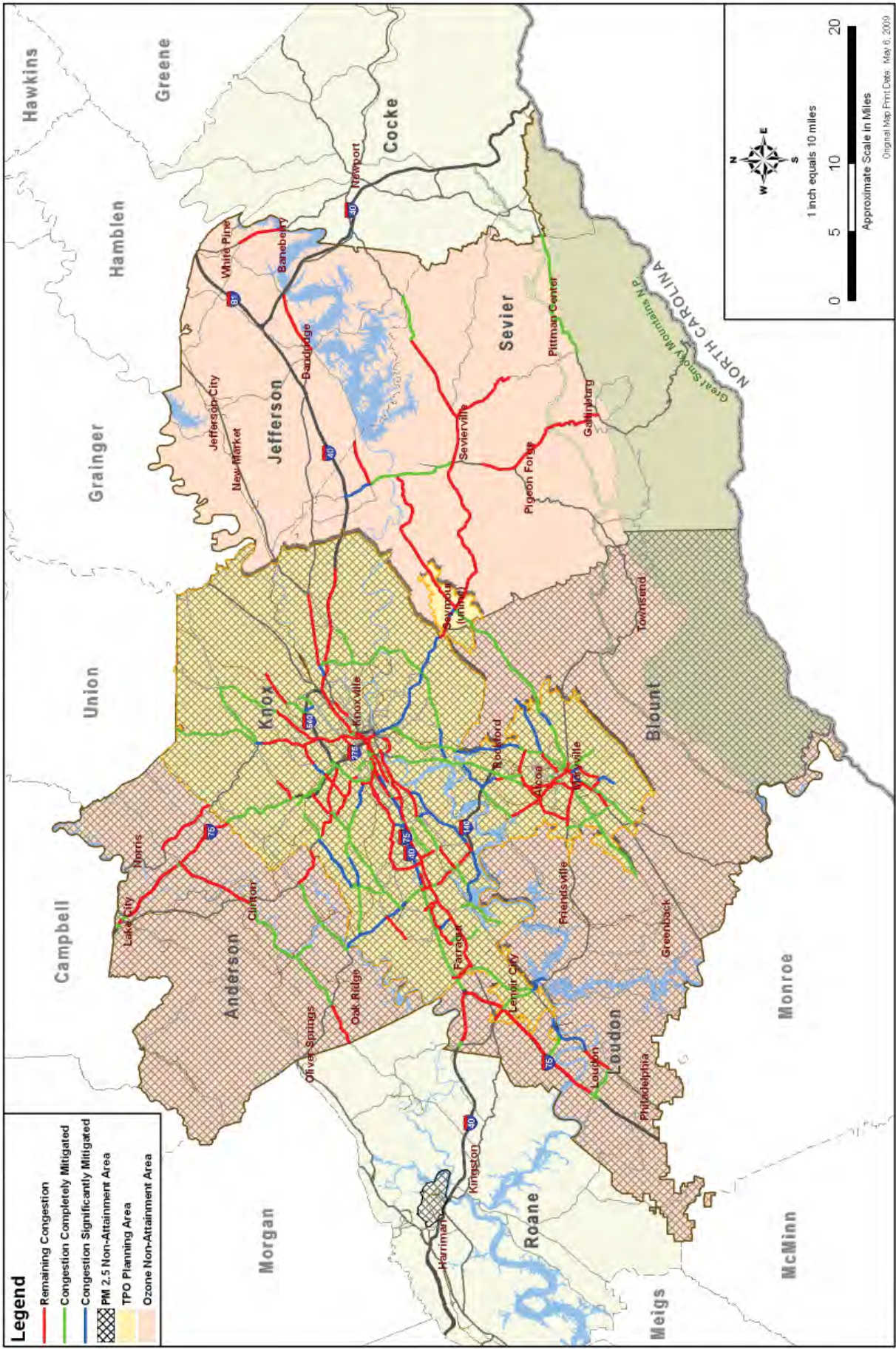


Figure 17. Congestion Mitigation from Implementation of Roadway Improvement Projects

area of concern. One drawback of the model is that it can only measure effects of major improvement projects such as additional lanes or new roadways whereas smaller capacity improvements such as intersection improvements and additional turn lanes, and other congestion management strategies such as those identified in the Congestion Management Process section will not typically show much effect in the model.

Issues

The non-attainment designation for ground-level ozone for Anderson, Blount, Jefferson, Knox, Loudon and Sevier Counties, and a portion of Cocke County, as well as the non-attainment designation for fine particulate matter (PM 2.5) for Anderson, Blount, Knox and Loudon Counties, and a portion of Roane County requires an air quality conformity determination. This determination must show that any highway projects identified in the Mobility Plan for the above counties will not worsen air quality. Performing this analysis requires the coordination of multiple jurisdictions to meet conformity.

Objectives and Proposed Actions

The Mobility Plan uses selection criteria for transportation projects to be included into the plan by evaluating projects based on whether they meet the goals and objectives of the plan. This includes criteria that emphasize system maintenance, system efficiency, environmental quality, mobility options, regional approach, financial investments, safety and security (see Appendix G for a copy of the application). In addition, jurisdictions submitting transportation projects for inclusion into the plan must identify the project's cost, funding source and projected completion year. TPO staff is responsible for evaluating projects based on their application.

Proposed actions suggested by the public during the planning process include:

- Educate people on the true costs of roads;
- Identify hidden costs of building new roads such as public health and the environment;
- Address air quality before solutions are prescribed;
- Make transportation decisions that actually improve our air quality; and
- Explore creating a vehicle emissions testing program.

While it is obvious that the projects identified by this plan significantly improve the future operations versus the no-build alternative there are still projected to be several remaining roadway sections with excessive congestion. It is widely recognized that it is impossible to build your way out of congestion. Instead, the full list of operational and travel demand management strategies should be considered for the remaining deficient roadways given the fact that major capacity improvements are very costly and can be very disruptive to residences, businesses, and the environment. The operational deficiencies listed above that are related to a high V/C Ratio can be targeted with the following strategies that do not involve

capacity construction, as also outlined in the Knoxville Regional Congestion Management Process Plan:

- **Travel Demand Management Strategies** – Strategies that reduce the travel demand have the effect of reducing the volume component in the V/C Ratio equation, which can reduce it to an acceptable level. Examples of TDM strategies are ridesharing, telecommuting, and land use controls;
- **Transit and other Alternative Mode Enhancements** – Similar to TDM, this strategy has the effect of shifting single occupant vehicles to another mode of travel such as public transportation, bicycling, or walking; and,
- **Incident Management** – Crashes and other nonrecurring incidents can cause significant delays especially if lanes are completely blocked. Incident management allows the roadway's available capacity to be maximized by removing incidents as quickly as possible.

The operational deficiencies that are associated with substandard travel time can be best addressed with the following strategies:

- **Access Management** – The number and design of access points can be a major factor in the operations of a roadway. Where access must be provided, access points should be spaced sufficiently apart in order for traffic signals and turn lanes to operate effectively;
- **Advanced Traffic Management Systems** – Traffic signals can be a major source of delay to motorists, especially when they are not timed correctly. This strategy involves installing newer signal technology that can allow traffic adaptive timing plans to be automatically installed and communicated to other signals in the system; and,
- **Advanced Traveler Information Systems** – This strategy involves informing the public of current traffic conditions to allow for better decision-making as to the best route to take.

Planned Projects

Because roads are the dominant transportation infrastructure in the Knoxville region, roads make up the bulk of this plan's projects. Due to rising costs and depleting budgets, more money is being spent on improvements like adding turn lanes and maintenance instead of building new facilities. Table 34 shows a list of roadway projects for the Knoxville region by completion year, and Figure 41 illustrates the projects.

Conclusion

The list of regional roadway projects includes both projects that are included in the air quality conformity determination and those that are exempt. Projects that are exempt do not create additional through capacity that can increase vehicle miles traveled and thus create additional mobile emissions. These projects include intersection changes, bridge replacement, turn lane construction, traffic signal and street lighting installation, roadway

reconstruction that doesn't add capacity, and resurfacing. All other projects meet air quality conformity requirements, the results of which are explained in Chapter 6.

Finally, it should be noted that since the Long Range Mobility Plan is updated every four years, there will be further opportunity to address the deficiencies that are being identified now, especially for the more distant future years of 2024 and 2034.

GOODS MOVEMENT

Freight can be moved from origin to destination by truck, rail, barge, airplane, pipeline or a combination of modes. Given Knoxville's location at the crossroads of three major interstates, trucking plays a primary role in the movement of goods into and through the region. The regional railroad network, our waterways and the Knoxville Regional Airport also contribute to the movement of goods in the region.

Existing Conditions

Nearly 730 million tons of freight is moved across the transportation network in the Knoxville region each year, either by truck, rail, barge or airplane, of which 56.7 million tons, or about 8 percent, has either an origin or destination in the Region. Of this freight with a trip end in the region, trucks handle approximately 44 million tons (77.6 percent), with rail responsible for 8.7 million tons, (15.3 percent), barge responsible for 4 million tons (7.1 percent), and aircraft responsible for 40,000 tons (0.07 percent).

Trucking

The trucking industry is solely responsible for handling 70 percent of the more than 20 billion tons of freight that is moved across the nation's transportation system annually. An additional 18 percent of freight is handled by truck at some point during its shipment.

Nationwide, vehicle miles traveled for heavy-duty freight trucks has increased 90 percent since 1980. Truck activity has escalated in recent years and will continue to place great demands on the transportation system, particularly the interstates.

Almost 338 million tons of freight is moved across highways in the Knoxville region each year, resulting in nearly 22 million truck trips. A large volume of heavy-duty truck traffic uses the interstate system in Knoxville to transport freight to or from various parts of the country. Only 44 million tons of freight and 4.1 million truck trips have



Figure 18. State of Tennessee Average Daily Truck Traffic (1999)
Source: FHWA Office of Freight Operations

either an origin or destination in the Knoxville region, meaning 76.8 percent of the truck tonnage and 67.6 percent of the trucks that enter the Knoxville region are passing through. Figure 18 shows average daily truck traffic on interstates and major highways throughout the state. The thicker line weights indicate higher volumes of truck traffic.

Rail

Nearly 370 million tons of freight is moved by railroad throughout the Knoxville region each year. Only 8.7 million tons of this freight has an origin or destination in the region, meaning 97.6 percent of the freight traveling on railroads throughout the region is passing through. Railroads handle approximately 2.1 million tons, or 12 percent of the annual outbound freight and about 6.6 million tons, or 16.8 percent of the inbound freight. There are approximately 310 miles of railroad track throughout the Knoxville region that are operated by two major Class I railroads, Norfolk Southern and CSX, and one short line railroad, the Knoxville & Holston River Railroad.

Intermodal

Slightly more than 20 million of the 370 million tons, or 5.4 percent, of annual rail freight that is handled on the region's rail network is intermodal freight. Moving freight in intermodal containers allows commodities to be shipped between transportation modes in a single container without having to handle the individual commodity. This allows for the intermodal shipment of containers by barge or rail with the ability to upload from or download to a truck trailer without retrofit and with relative ease.

Maritime

Commercial navigation of the Tennessee River system is made possible by the Tennessee Valley Authority's (TVA) system of dams and locks. The dams create a system of reservoirs that control the current and the depth of water, maintaining a draft depth of at least nine feet. Locks are located at the dams and allow recreational watercraft and commercial barges to navigate between reservoirs. Each year, 34,000 barges carry 50 million tons of goods up and down the river, about 20 million tons of which is coal being shipped to TVA power plants.

Since commercial navigation of the Tennessee River begins in Knoxville, there are not any pass through barge trips. Approximately 4 million tons of annual barge freight has an origin or destination in the region. Barges handle approximately 1.3 million tons, or 7.4 percent of the annual outbound freight, and about 2.7 million tons, or 6.9 percent of the inbound freight.

Air

Air cargo, the combined activities of air freight and air mail, can be shipped either within the cargo hold of commercial passenger aircraft (belly haul) or within aircraft dedicated to air cargo. Air cargo has been the most dynamic

growth sector of the air transportation industry since the 1980's. There is a 21-acre Air Cargo complex at McGhee Tyson Airport, built to serve the major air cargo operators that service the Knoxville region. Annually about 4,000 arrival or departure operations at the airport are airplanes dedicated to freight.

Nearly 40,000 tons of air freight is handled at McGhee Tyson Airport, with only 0.1% of that as mail. Table 12 shows the historic, current and projected freight tonnage at McGhee Tyson Airport. United Parcel Service (UPS), FedEx and DHL Express control the majority of the air freight market.

Table 12. Air Cargo Operation at McGhee Tyson Airport

Year	Air Freight	Air Mail	Total Air Cargo
1990	27,731.1	3,698.5	31,429.6
1995	29,464.5	4,940.5	34,405
2000	31,540.9	17,332.5	48,873.4
2003	29,134.4	909.8	30,044.2
2006	46,265.5	44	46,309.5
2009 ¹	42,700	1,100	43,800
2014 ¹	51,300	1,100	52,400
2024 ¹	69,200	1,100	70,300

¹Projections are from the McGhee Tyson Airport 2006 Master Plan

Knoxville Downtown Island Airport handles approximately 18,000 aircraft operations per year, none of which are related to air cargo. The Gatlinburg/Pigeon Forge Airport handles approximately 50,000 aircraft operations and 44 tons of air cargo per year. Very little freight is handled at Morristown Municipal Airport. Sky Ranch Airport handled less than 5,000 aircraft operations each year.

Air Passenger Travel

In 2006, approximately 1.7 million passengers arrived or departed through McGhee Tyson Airport passenger terminals, 20 percent more than in 2003. This growth puts the air passenger usage of McGhee Tyson Airport back to levels comparable to pre-September 11, 2001. Table 13 shows the historic, current and projected passenger usage at McGhee Tyson Airport.

Table 13. Air Passenger Operations at McGhee Tyson Airport

Year	Total Air Passengers
1999	1,763,431
2000	1,735,831
2001	1,433,651
2002	1,431,979
2003	1,428,061
2004	1,607,077
2006	1,701,324
2009 ¹	2,019,800
2014 ¹	2,403,000
2024 ¹	3,280,000

¹Projections are from the McGhee Tyson Airport 2006 Master Plan

Pipeline

Two major petroleum pipelines operated by Colonial Pipeline Company and Plantation Pipeline Company transport petroleum products from refineries located along the Gulf of Mexico Coast directly to terminals located on Middlebrook Pike between Amherst Road and Ed Shouse Drive in the City of Knoxville. The tanks at the 23-acre Middlebrook Tank Farm are capable of storing more than 100,000 barrels of petroleum. The Tank Farm is a major generator of truck activity for tanker trucks that deliver fuel to retail fuel stations throughout the region.

Objectives and Proposed Actions

The following are objectives and actions of the Mobility Plan's Goods and Movement element:

- The TPO will continue to coordinate meetings of the Knoxville Freight Advisory Committee and follow the recommendations in the Knoxville Regional Freight Movement Plan. The TPO will continue to be involved in the I-81 Corridor Study and will work with TDOT on the I-75 Corridor Study and state freight planning efforts.
- The TPO will research funding opportunities for freight-related projects and apply for grants as applicable. In addition, the TPO will research a travel demand forecasting software program that will assist in projecting future year truck activity. This software program will work coherently with the existing Travel Demand Model, which currently provides projections for automobile traffic, to identify areas where truck activity will increase and assign these trucks to the roadway network to identify truck volumes for future years.
- The TPO will also work with TDOT on implementing the Tennessee State Rail Plan and work with the Knoxville Metropolitan Airport Authority as needed on implementing the McGhee Tyson Airport Master Plan.
- The TPO will study the feasibility of developing an intermodal facility in the region and identify available funding resources.
- In March of 2005, the TPO Executive Board adopted a resolution requesting TDOT and Commissioner Nicely to fully support the phased construction of the Memphis to Bristol Railroad Connection by securing the cooperative efforts of the railroads involved, the cooperative efforts of the State of Virginia, and by including appropriate projects in the next 3-Year Program of Projects and in the 10-Year Investment Plan which will be prepared as part of the Statewide Long-Range Multi-Modal Transportation Plan.

A study done by Wendell Cox Consultancy concludes that if by 2025, 25 percent of the freight shipped through the U.S. were to be shipped by intermodal rail rather than trucks, the average person traveling during peak periods would save 44 hours per year, more than 17 billion gallons of gasoline and diesel fuel would be saved, and mobile emissions (carbon monoxide, VOCs and NOx) would be reduced by 900,000 tons.

PUBLIC TRANSPORTATION

With the volatility of gas prices, unease over the economy, and concerns about the environment, there has been increased interest in public transportation in the Knoxville region. These interests have come from a cross-section of the community including persons at different income levels;



KAT unveiled new buses in June 2009.

from those who live in suburbia, urban areas or downtowns; and from college students, workers and retirees. Transit ridership has reached levels not seen in over 25 years. And the public is demanding more service. Community-based efforts like Nine Counties. One Vision., Knox County's Senior Summit, the Plain Talk on Quality Growth conference, the Choices for Independence Transportation Forum, and the Mobility Plan's public involvement process have seen additional public support for increases in public transportation services throughout the region.

The same conditions that draw riders to transit also place a burden on transit providers. Throughout the United States public transit does not pay for itself. It must be highly subsidized, typically through government grants, and this is true of public transit in Knoxville. In the current economic environment, tax revenues that support public transit are shrinking at the local, state, and national level. The increasing cost of fuel, health care and wages has driven the cost of providing public transit dramatically higher over the last year or two. The extra riders place additional stresses on an already strained and aged vehicle fleet. Many citizens who recently have inquired about the possibility of expanded transit services live in the suburbs. The impact of higher gas prices on their personal budgets has been dramatic as they often live farther from jobs and drive longer distances. However, in many cases it is impractical to serve suburbia with mass transit. Land use decisions that have been made over the decades—especially spread out development and segregated uses—have made much of this area a challenge to service with transit.

The fuel paradox—that when gas prices are high, riders are drawn to transit, but increased transit operating costs threaten to result in increased fares or service reductions—must be solved. Just as our country seeks to protect its economy from the affects of an unstable oil market, transit must protect itself from the havoc that unstable fuel costs can cause. Public transit, in order to be effective, must be reliable. If public transit can't provide this reliability, services will fail and riders who can will return to their cars. Public transit agencies are going to require new and stable funding sources and increased coordination to meet this increasing demand.

While these challenges seem to cast a dark cloud over transit's future, there is good news in Knoxville's transit future. As stated, transit ridership is at a level not seen in at least 25 years. Many of the new riders are making the choice to ride. KAT is breaking ground on a new state-of-the-art transfer center. KAT will be implementing an intelligent transportation system (ITS) project that will place global position satellite (GPS) units on its buses which will allow passengers to have real-time information on when vehicles will arrive. KAT's University of Tennessee transit service continues to grow with thousands of new students riding each year. Knox County CAC Transit continues to provide a valuable service carrying hundreds of citizens to work.

The Knoxville Knox County Community Action Committee Office on Aging has launched a new innovative project that allows volunteers to escort elderly or disabled passengers to medical appointments, shopping errands, and other activities. Plus, the new program has a mobility navigator who acts as a “transportation counselor” working one-on-one with clients to find them the best transportation options.

Public input received during the Mobility Plan was clear that the citizens want a variety of transportation alternatives, including increased transit services throughout the region. The Mobility Plan lays out a regional plan for transit. Much of this plan incorporates and builds upon recent transit studies and community plans that have been accomplished over the last seven years. Recognizing the current funding constraints, the plan calls for our public transit agencies to continue their efforts to be more efficient, with the funding available, and to maintain, if at all possible, current service levels. Then, within the framework provided, transit services should be increased and amenities added, new funding partners brought to the table, and transit should be integrated more into our land use decisions. Over time, regional mobility will improve with the creation of a seamless, easy to use public transportation system that provides residents throughout the region with meaningful alternative transportation opportunities.

Existing Conditions

Local Public Transportation Services

Knoxville Area Transit (KAT)

KAT is the largest provider of public transit in the Knoxville region. KAT focuses a majority of its services within the City of Knoxville but does provide some service in Knox County outside the city limits (see Figure 19). With a capital and operating budget slightly over \$16 million annually, KAT provides fixed-route bus service, downtown trolley circulators, and door-to-door paratransit service for those persons who are disabled. The KAT fixed route bus system consists of 28 routes served by a fleet of 72 buses. KAT also provides bus service to the University of Tennessee which consists of on and off campus fixed routes, curb-to-curb minibus service and ADA paratransit service. KAT provides approximately 3.6 million passenger trips per year.

Knox County CAC Transit

Knox County CAC Transit provides public demand response transportation for Knox County. A key part of Knox County CAC Transit’s mission is to increase access to community resources to those who have no other means of transportation. Knox County CAC Transit uses multiple funding sources to provide services. Some sources allow service to be provided to the general public while other services are limited based on funding or pre-determined eligibility requirements. A majority of trips provided are health-care related. Knox County CAC Transit also provides CAC Job Ride, a demand responsive



One of KAT’s 3.6 million annual passengers.

service for employment and training that operates 24 hours a day, seven days per week. Knoxville County CAC Transit provides more than 1,000 trips per day and carries approximately 275,000 one-way trips a year.

East Tennessee Human Resource Agency (ETHRA)

ETHRA provides public demand response transportation to residents living in the 16 counties of East Tennessee. ETHRA's goal is to provide affordable, safe, quality, dependable transportation. While ETHRA's main focus is to serve residents who have no other source of transportation for medical, essential errands and employment trips, their service is available to the general public. ETHRA operates 85 vehicles and provides approximately 250,000 trips a year.

University of Tennessee Commuter Pool and Tennessee Vans

The Knoxville Commuter Pool (KCP) and Tennessee Vans are regional commuter services designed to

encourage area commuters to carpool, vanpool or ride public transportation. KCP works very closely with KAT and the Smart Trips program. Tennessee Vans is a statewide van service that provides passenger vehicles and support services to commuters and community organizations. The program is designed to broaden economic opportunities throughout the region by alleviating transportation barriers to employment and by improving mobility options for area workers. KCP and Tennessee Vans have instituted several innovative programs, including car and van leasing programs and establishing Park and Ride lots. Tennessee Vans has placed 179 vans with 115 different organizations throughout the region.

Smart Trips Program

The Smart Trips Program is housed within the TPO. The program seeks to reduce peak-hour traffic congestion on major roadways in the Knoxville region and improve air quality. The program helps implement Commute Trip

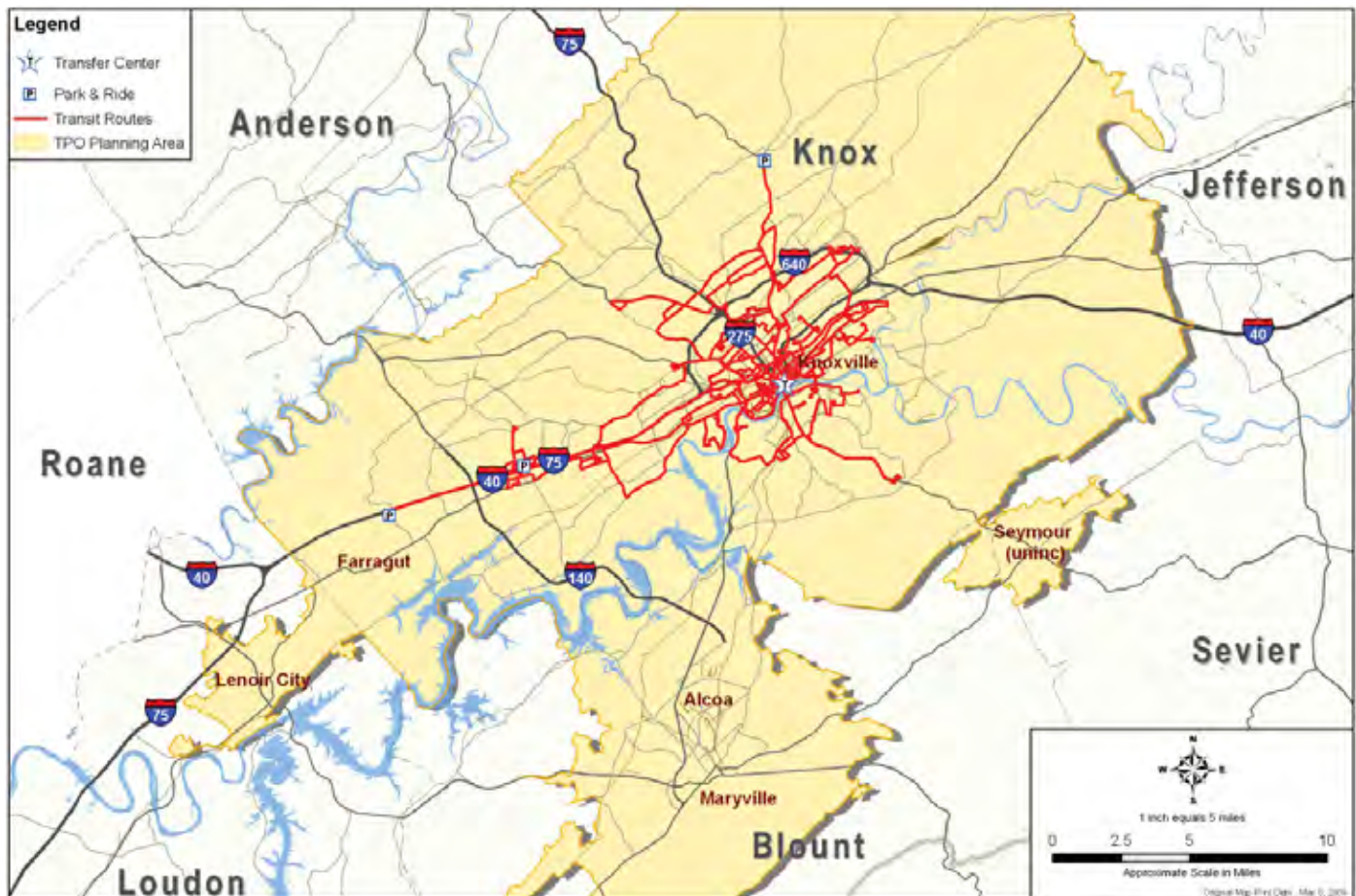


Figure 19. KAT Routes Map

Reduction programs at individual worksites. The Smart Trips coordinator helps develop and initiate these programs, but they need to be sustained in the long term by the employer. An online ride-matching service is provided free of charge to the public, and incentives are provided throughout the year to participants.



Gatlinburg Trolley System

The Gatlinburg Trolley System is the fifth-largest transit system in the state. The system includes 20 trolleys that provide service on six fixed routes throughout the City of Gatlinburg with connections to the Great Smoky Mountains National Park, Dollywood and the Welcome Center. The system handles approximately 870,000 passenger trips per year.

Pigeon Forge Fun Time Trolleys (PFFTT)

The PFFTT provides service throughout the Cities of Pigeon Forge and Sevierville with connections to Dollywood and the Gatlinburg Welcome Center. The PFFTT system carries about 700,000 passenger trips per year.

Oak Ridge Transit System

The Oak Ridge Transit System provides public transit service throughout the City of Oak Ridge. Oak Ridge Transit operates three ADA accessible mini-buses. The Oak Ridge Transit System serves approximately 25,000 riders annually.

Section 5310 and Other Providers

Section 5310 is a program through the FTA and administered by TDOT that provides funding to agencies (typically non-profits) for vehicles. Occasionally, Knox County CAC Transit, KAT, and ETHRA have received Section 5310 vans. Other agencies receiving vans are: Sertoma Center, Cerebral Palsy Center of Knoxville, Douglas Cooperative (Sevierville), and the Lakeway Center for the Handicapped (Morristown, within the Lakeway TPO area).

Taxi cab and airport shuttle services are available throughout the TPO Area with the majority of service concentrated in the City of Knoxville and at McGhee Tyson Airport. TennCare transportation is provided for those individuals that are enrolled in TennCare. Each client must call their managed care organization to find out who is responsible for providing their transportation. Many social service agencies, health care providers and churches provide transportation to individuals participating in their related sponsored programs. Many of these fund their own capital and operating expenses while some are eligible for funds from TDOT. The public schools throughout the area all offer transportation services to their students. Knox County schools alone provides more than 5 million trips per year.

Existing Studies, Plans and Programs

Several planning studies have been completed over the last few years. Those

include the Regional Transportation Alternatives Plan, the Downtown Transportation Linkages Study, KAT Action Plan 2010, the Knox County Senior Summit Transportation Task Force, and the Knoxville Regional Human Services Transportation Coordination Plan. The KAT Transit Development Plan (TDP) is currently under way and is scheduled to be complete in June of 2009. Some of the KAT TDP findings and recommendations have been included in the Mobility Plan.

Regional Transportation Alternatives Plan (RTAP)

The 2002 RTAP identified corridors throughout the region that will support alternative transportation modes. Five areas of concern were identified through the planning process: (1) people want choices in transportation; (2) the community has an interest in rail; (3) communities still need highways; (4) no one transportation mode will provide the solution; and (5) people are concerned about whether mass transit is affordable.

Developing an efficient regional public transportation system or mass transit system requires a mass of either people or jobs along a corridor. In plotting the region's projected population for 2030, it was evident that population density meeting this threshold is not widely prevalent. However, some pockets of population density exist in the central city of Knoxville and in clusters around Alcoa, Maryville, Oak Ridge and Lenoir City. While Sevier County does not have a high population density, it does contain a high density of hotel rooms that house tourists and the abundance of employment generated by the tourist industry.

The proposed transit concept starts with a series of express buses connecting the region (see Figure 20).

Some of the key areas the express buses will originate and end at are Oak Ridge, Maryville/Alcoa, Lenoir City, Knoxville, Sevierville and Pigeon Forge. Strategically placed will be a series of transfer centers where express

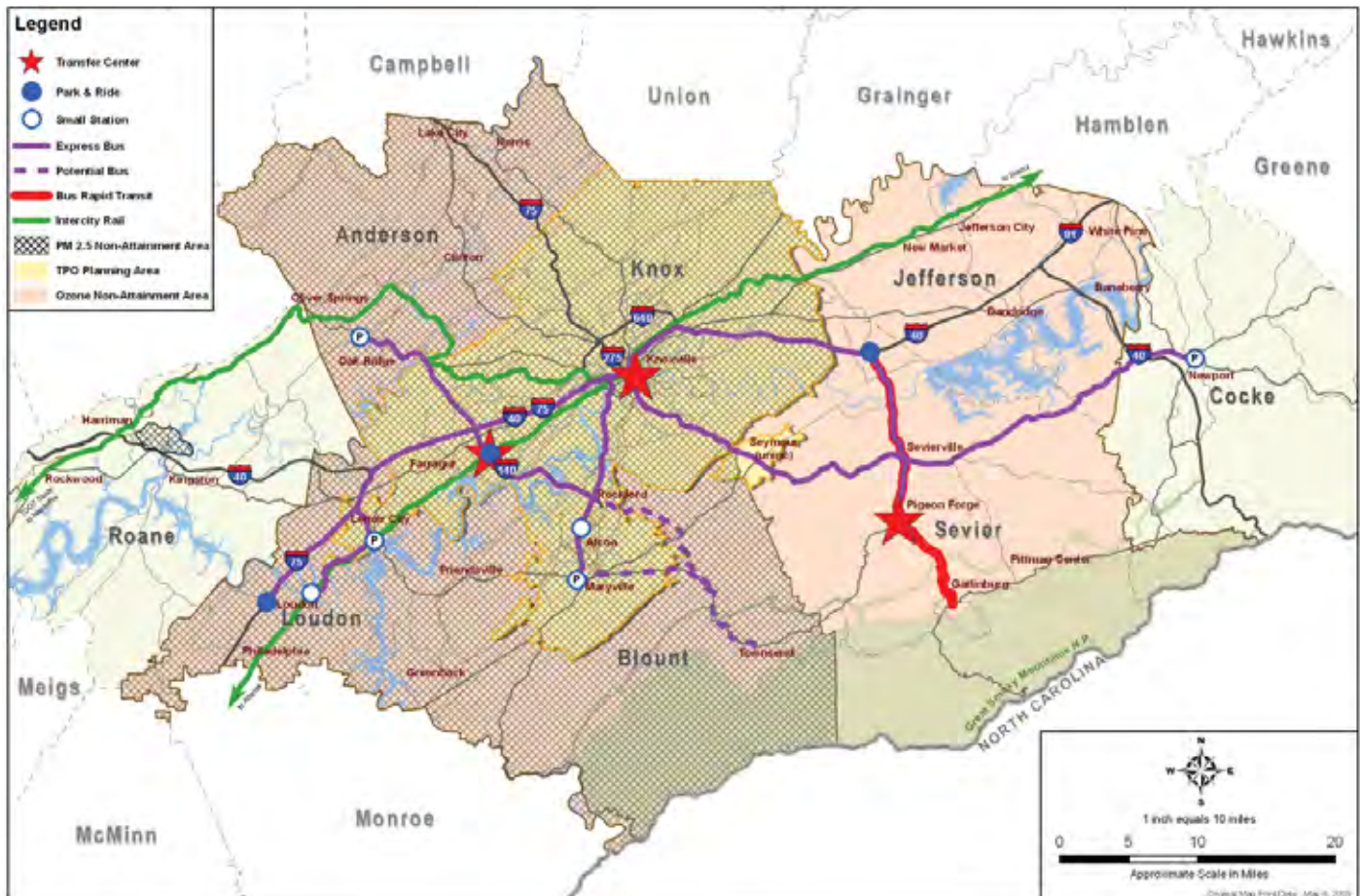


Figure 20. Regional Transportation Alternatives Plan Map

buses will meet and where passengers can transfer to different routes or to other local services. An important part of the concept is a proposed bus rapid transit (BRT) system that would stretch from I-40 to Sevierville, Pigeon Forge and Gatlinburg. BRT is similar to light rail in that vehicles are separated from traffic but instead are rubber-wheeled vehicles. The key to this service is the separation from the rest of the traffic allowing the BRT vehicle to keep moving when congestion occurs. The estimated cost of the entire RTAP transit concept is approximately \$140 million, which includes everything from the buses, park-and-ride lots, transfer centers and the BRT system.

Passenger Rail Opportunities

While the RTAP study concluded that in the near future passenger rail is unlikely, this does not mean that efforts should not be undertaken to continue to assess potential opportunities. During the Mobility Plan public meetings many citizens expressed interests in light rail, commuter rail, and vintage trolley rail. As rail projects are extremely expensive, often running into the hundreds of millions of dollars, most cities fund rail projects by using federal grants. FTA has a very competitive process in which dozens of cities apply for funding yearly but only a few are selected. Recently FTA has focused on funding rail expansion in cities that already have an established system. Attributes like residential and employment density and existing transit ridership are considered when awarding funding. Also, there is a renewed interest at the federal level for passenger rail expansion.

Because of some unique characteristics of the region in regards to tourism, economic development, and poor air quality, the issue of developing rail should continue to be explored. There have been several opportunities mentioned throughout the region. These include linking downtown, the University of Tennessee, and the new South Knoxville Waterfront using a vintage rail trolley or light rail. Another option is using light rail or commuter rail to link: (1) Knoxville to Sevierville, Pigeon Forge, Gatlinburg, and the Smoky Mountains National Park; (2) downtown Knoxville to Maryville, Alcoa, and McGhee Tyson Airport; or (3) downtown Knoxville to west Knoxville. A third option is a commuter rail link from Knoxville to Chattanooga, Knoxville to Nashville, or Knoxville to Johnson City and Bristol, Virginia (as a continuation of possible I-81 corridor improvements in Virginia). The continued study of these possible opportunities would position the region to move more quickly for federal funds if circumstances evolve that justify rail.

The Need for a Regional Transportation Authority

As of May 2009, the Tennessee state legislature approved the creation of an RTA by any combination of two or more adjacent local governments with a combined population of at least 200,000. This action amended Tennessee Code, Title 64, Chapter 8. RTAP and the Nine Counties. One Vision. both

identified a need to provide a variety of transit options throughout the Region. To create, coordinate and promote transit throughout such a large area, it was recommended that a regional transportation authority (RTA) be created. The solution rests in the need to work collaboratively to create an efficient and flexible transportation system that features integrated regional transit that fosters reduced traffic congestion, cleaner air, better land use decisions, economic development, job creation, and tourism. A regional public transportation strategy should: (1) maximize existing transportation resources; (2) assist in reducing congestion by providing alternatives to automobile use; (3) improve the quality of life for those persons who cannot drive by providing them opportunities to participate in regional activities; (4) advocate for a regional land use strategy that supports regional transit and promotes transit use; and (5) improve the air quality of the Region. The Mobility Plan does not recommend that a RTA be created at this time. However, it is worthy of continued study and discussion.

KAT Action Plan 2010 and the KAT Transit Development Plan (TDP)

The KAT Action Plan 2010 included both a detailed evaluation of KAT's existing services with recommended improvements and a new vision for KAT's future growth. To accomplish the vision additional funding and resources are needed. The vision identified goals and set forth approaches to how KAT could begin to implement the vision. Key elements included partnering with other organizations, agencies or governments; segmenting and designing services for specific groups (elderly, college students, downtown workers, etc.); and identifying new funding sources. One major success was partnering with the University of Tennessee to provide a comprehensive campus transit system. The partnership has allowed KAT to grow and introduced transit to a whole new segment of riders. Residual benefits include students who now also use the regular fixed-route system and increases in federal funding whose distribution formula considers increased ridership.



The KAT Transit Development Plan will help improve service, control cost and operate more efficiently.

The TDP is an operational analysis of KAT's fixed-route system, an examination of the downtown trolley system, and an investigation of ways to promote transit corridors. The TDP does not create a new vision as the 2010 vision is still valid. With KAT's success in attracting new riders it is beginning to experience growing pains, operating costs have been increasing, and funding has been unstable. This has caused KAT to slow growth and focus more on improving the efficiency of existing services. The building of a new transit center will affect all of the routes, especially how they move in and out of downtown. The trolleys are also experiencing growing demand and are scheduled to be an integral part of how the new transit center functions. KAT is still far behind with implementing ITS and using technology. The TDP will help provide KAT a blueprint to improve its services, control cost and operate more efficiently.

Knoxville Human Services Transportation Coordination Plan (HSTCP)

The HSTCP identifies gaps in existing services, proposes strategies to help meet the identified gaps, examines ways services can be coordinated, and outlines how Job Access and Reverse Commute (JARC), New Freedom, and Section 5310 (Elderly Individuals and Individuals with Disabilities) funds will be distributed.

JARC funds are available to help provide transportation services to get people to work or to job training or education-related activities. New Freedom funds help people who are disabled. Typically, they must be used to provide new services that have not been traditionally operated. Section 5310 funding is also open to non-profits and typically buys vans which must predominately carry elderly individuals and those persons who are disabled. New federal regulations require the HSTCP help coordinate how the funds are distributed and to make sure they are being used in the most efficient means.

The HSTCP created broad strategies and based on review of other studies, surveys, and public input ranked them in the following order of importance: (1) provide additional, affordable and accessible service; (2) coordinate services and increase efficiency; (3) educate citizens about the availability of transit services; and (4) create greater access to transit by providing infrastructure and amenities such as sidewalks, shelters and signs.

The HSTCP also identifies and ranks more detailed strategies as a slate of possible projects that should be worked towards locally. Examples of those projects include: additional transit services, the use of different sized vehicles that can provide a more efficient service, the possible transfers between transit service providers, efforts to inform citizens about the availability of transit services, the use of travel trainers (or escorts), assisted transport in cars or minivans, and the use of technology can help create a more conducive coordination environment.

Knoxville Station

A new, state-of-the-art bus transfer center is currently being constructed in downtown Knoxville. The site abuts the Church Avenue Bridge and extends over the James White Parkway. The site itself is partially located on a bridge-like-structure. This site is an innovative concept that meets the criteria of being located in the Central Business District (CBD) but also helps solve an urban design challenge by bridging the downtown over the James White Parkway. City planners have longed to solve the logistical challenge of finding a way to help expand the Knoxville CBD that has been limited in growth by interstates to the north and east and a river to the south. The new transfer center can act as a catalyst to expand the CBD eastward to the underutilized Knoxville Coliseum area. It will also be one of the few Leadership in Energy and Environmental Design (LEED) certified buildings in Knoxville and will have a highly-visible solar array as shown in the drawing on page 58.



Construction on the new transfer center has begun.

Regional Public Transportation Concerns

The following is a list of issues concerning transit that are common themes identified throughout the various studies or in public input processes.

Dedicated Funding. In order to expand transit services there will be a need to identify a dedicated funding source. Dedicated funding can occur from statewide legislation to local level funding initiatives. Work must begin to build a constituency to support transit objectives. Efforts should commence to recruit transit allies in city and county government, the local business community, from colleges and universities, and from the general public.

Services for Seniors. Transportation must be convenient for all residents including the elderly. Often the elderly may not qualify for ADA Services and are unable to fully use the fixed-route KAT system. Services should be designed to help provide travel options for the elderly.

Inter-City Transportation. Expansion of inter-city transportation services should be encouraged. The

demand for affordable travel options to other cities throughout the Region and country will continue to grow.

Suburban Transit Service. Much of the suburban and rural area does not have adequate access to public transportation services. While Knox County CAC Transit and ETHRA try to meet some of the suburban and rural demand, a majority of their services are geared towards persons who are disabled or elderly. This gap in service needs to be addressed.

Objectives and Proposed Actions

The following are objectives and actions of the Mobility Plan's Public Transportation element. These proposed actions and objectives will help shape the future of public transportation in the Knoxville region and draw upon many of the recommendations of the recent transit planning studies that have been completed:

- Improve coordination and communication between transit providers to gain greater efficiencies in providing services.
- Provide transit training that will assist people in learning how to use transit.

Intermodal Associated Architects a joint venture of Bullock Smith & Partners and McCarty Holsapple McCarty



Architectural Drawing of the Future Downtown Knoxville Transit Center

- Identify target markets for the development and promotion of additional services which should include, but not be limited to, students, elderly, disabled persons, commuters and shoppers.
- Improve local fixed-route services where population densities or traffic generators justify service. Trunk-lines or core routes should have very frequent service (up to fifteen-minute headways).
- Support neighborhood circulators and community based transit services where appropriate.
- Suburban circulators should be designed to facilitate movement within particular suburban centers. Services could be fixed-route or demand response and seek to reduce congestion at these locations.
- Downtown transit opportunities should be enhanced. The park once and ride transit concept should be fully supported. New developments, including parking structures, should accommodate transit services. Expansion of the trolley system should occur.
- Transit providers should use a variety of sized vehicles.
- Marketing needs to be made a more integral component of all transit programs.
- Designated stops should be developed where trunk line routes, cross-town routes, neighborhood, and suburban circulators intersect, facilitating a timed transfer network. The stops should be clearly identified and include shelters and passenger amenities.
- Satellite centers or superstops should be at locations where several trunk route, cross-town, and circulator routes converge. Transit centers could also include restrooms, restaurants, shelters, small shops and ticket booths.
- Commuter-oriented services should be provided throughout the TPO area. Ridesharing alternatives should be promoted.
- A series of express routes should be offered throughout the TPO area. Services should originate from park-and-ride lots and provide limited-stop service via the interstate or major arterials to major attractors. Where practical, reverse commute opportunities as part of express bus services should be explored.
- Transit providers should continue to work toward meeting the ADA regulations by providing comparable paratransit service and accessible fixed-route services to persons who have a disability.
- An overall parking strategy that includes parking policies, pricing that encourages transit usage, and coordination between zoning, planning and public works on actions that include parking and transit use should be established, especially in downtown areas. In other words, a strategy that encourages interdepartmental coordination on parking policies and policies that incentivize the use of transit.
- Transit agencies should promote use of both alternative fuels and alternative fuel vehicles.
- Local transit providers should take advantage of the new emerging technologies to help promote and simplify the use of transit. Transit

providers should work in concert so ITS applications cannot only work within a system but regionally also. ITS technology should also be used to obtain greater efficiencies in transit operations.

- Update the Regional Transportation Alternatives Plan.

Public transportation projects are presented in Table 14 and are also included in the complete Non-Roadway Project List (Table 35) on page 157. A more detailed discussion occurs in the Transit Financial Analysis section of Appendix H of this report.

Table 14. Public Transportation Projects in the Non-Roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
850	ETHRA Vans	16 County Area ETHRA	500 vans (replacement)	2025-2034	\$37,500,000	FTA	√	√	√	√	√	√	√	√
851	Replacement Trolleys	Gatlinburg	Trolley fleet replacement	2025-2034	\$7,000,000	FTA	√	√	√	√	√	√	√	√
852	KAT Buses	KAT	220 buses	2025-2034	\$77,000,000	FTA	√	√	√	√	√	√	√	√
853	Lift Vans/Call-A-KAT	KAT	52 vehicles	2025-2034	\$3,900,000	FTA	√	√	√	√	√	√	√	√
854	KAT ADA/ Neighborhood Vans	KAT	130 Vans	2025-2034	\$9,750,000	FTA								
855	Trolleys	KAT	42 trolleys	2025-2034	\$14,700,000	FTA	√	√	√	√	√	√	√	√
856	Implementation of ITS Technologies at KAT	KAT	Implementation of ITS technology	2009-2014	\$25,000,000	FTA	√	√	√	√	√	√	√	√
857	KAT Fare box Replacement	KAT	Replace fare box on buses (2 times over 25 years)	2025-2034	\$6,000,000	FTA	√	√	√	√	√	√	√	√
858	KAT Associated Maintenance Items	KAT	Capital items to assist w/operations and fleet maintenance	2025-2034	\$52,000,000	FTA	√	√	√	√	√	√	√	√
859	KAT Facility & System Improvements	KAT	Improve KAT Magnolia Ave. Facility	2025-2034	\$2,300,000	FTA	√	√	√	√	√	√	√	√
860	Knoxville Central Station	KAT	Bus Transfer Facility & Admin. Building	2025-2034	\$7,000,000	FTA	√	√	√	√	√	√	√	√
860	Section 5307 Formula Transit Funds	KAT	Planning, facility, computer, and misc. improvements	2025-2034	\$110,000,000	FTA	√	√	√	√	√	√	√	√
861	KCT Vans	KCT (CAC)	300 vans (replacement)	2025-2034	\$22,500,000	FTA	√	√	√	√	√	√	√	√
862	Office on Aging CAC Minivans	Knox County/ CAC	25 minivans	2025-2034	\$1,000,000	FTA	√	√	√	√	√	√	√	√
863	Office on Aging Hybrid Sedans	Knox County/ CAC	50 hybrid sedans	2025-2034	\$1,500,000	FTA	√	√	√	√	√	√	√	√
864	Replacement Vans	Oak Ridge	Van replacement	2025-2034	\$7,500,000	FTA	√	√	√	√	√	√	√	√
865	Replacement Trolleys	Pigeon Forge	Trolley fleet replacement	2025-2034	\$35,000,000	FTA	√	√	√	√	√	√	√	√
866	Replacement Trolleys	Sevierville	Trolley fleet replacement	2025-2034	\$35,000,000	FTA	√	√	√	√	√	√	√	√
867	Section 5316	Knoxville Urban Area	Job Access & Reverse Commute grants	2015-2024	\$5,000,000	FTA	√	√	√	√	√	√	√	√
868	Section 5317	Knoxville Urban Area	New Freedom Program	2015-2024	\$5,000,000	FTA	√	√	√	√	√	√	√	√
869	Section 5310	Knoxville Urban Area	Vans or Services	2015-2024	\$4,000,000	FTA	√	√	√	√	√	√	√	√
870	Tennessee Vans	UT Commuter Pool/ Tennessee Vans	300 vans	2025-2034	\$22,500,000	Other	√	√	√	√	√	√	√	√

PEDESTRIANS and GREENWAYS

Walking is the most basic means of transportation, the most accessible, inexpensive and simple. Those parts of cities and towns that were built while walking and streetcars were the main forms of transportation were constructed to safely accommodate pedestrians. Much of the infrastructure built since then has been designed primarily to serve cars, with the needs of pedestrians and other users secondary, if they were considered at all.

Some places in the Knoxville Region are working to counter this trend, with significant investments in planning and constructing greenways and sidewalks, and with policies requiring sidewalks with new construction and redevelopment. The TPO's recently completed Complete Streets Study carries on this work, providing guidance to local governments seeking to retrofit auto-oriented corridors into places that accommodate all users. More about complete streets can be found in Chapter 6.

The TPO has conducted regular pedestrian counts in the City of Knoxville for several years to get a better idea of who is actually using this form of transportation. Figure 21 shows that the numbers of pedestrians have increased in the City.

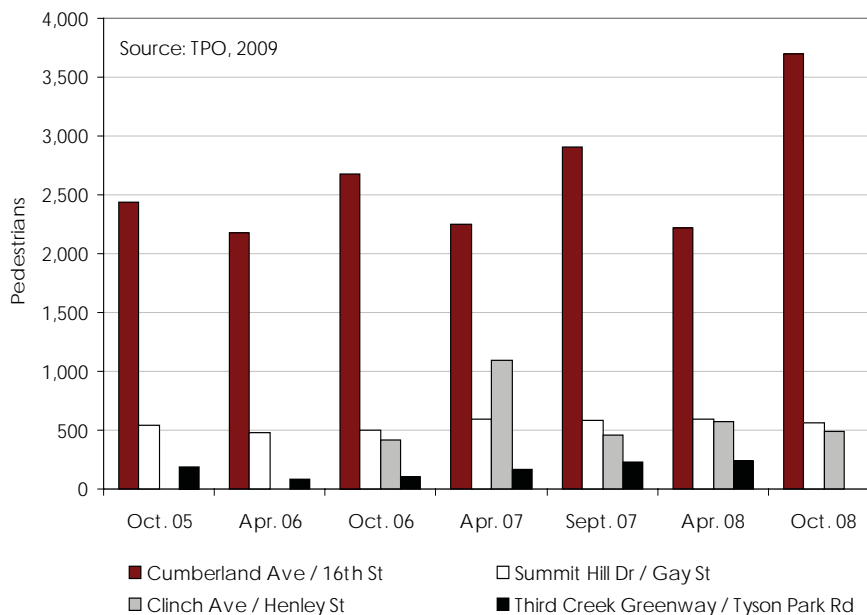


Figure 21. City of Knoxville Pedestrian Counts, 2005-2008

As this study and others have demonstrated, creating a pedestrian-friendly place includes several elements:

- Safe and attractive places to walk, such as sidewalks and greenways.
- Safe and convenient places to cross streets.
- Land use patterns that support pedestrian transportation.

This chapter will deal primarily with sidewalks and greenways, as the TPO is involved in the planning and funding of these types of pedestrian facilities.



The greenways in the Knoxville Region are heavily used.

Street crossing design and land use decisions are the responsibility primarily of local governments.

Still, the importance of those two elements should not be forgotten in efforts to make places more pedestrian-friendly.



Pedestrians' needs should be incorporated into intersection designs.

Street crossings: Safe and convenient street crossings are essential so that major roads do not create barriers within neighborhoods, and so that transit lines that run on those roads are accessible to pedestrians. All elements of intersection design—including signalization, turning radii and pavement markings—should factor in the needs of pedestrians, including children, seniors and people with physical disabilities. The TPO's Complete Streets Study, and a host of other resources, provide information on how to incorporate the needs of pedestrians into intersection designs that also safely accommodate vehicles and meet standard engineering guidelines.

Land use: The day-to-day land use decisions made by planning commissions, city councils, county commissions, zoning boards and other decision-making bodies have a significant impact on the walkability of their communities. Much of that impact can be summed up in the areas of density, diversity and design. Higher density of development, often called compact development, creates more places within walking distance of each other. Diverse, mixed-use development creates stores, offices and other destinations within walking distance of homes, a pattern that accommodates pedestrian travel better than the strict segregation of uses. And the design of streets, neighborhoods, buildings and other places can greatly contribute to or detract from the pedestrian environment.

Sidewalks—Existing Conditions & Policies

This section describes the extent of sidewalks as compared with street mileage in the cities within the Knoxville region for which these data were made available to the TPO. It also notes localities that have ordinances or regulations requiring sidewalk construction with development and/or redevelopment.

The comparison of sidewalk mileage to street mileage does not give a full picture of the extent of sidewalk coverage because it does not tell us how many miles of streets have sidewalks on both sides, one side, or neither. Still, it provides a general sense of the proportion of sidewalk and street infrastructure in each city or county. (All street mileage figures exclude limited-access highways, which typically would not have sidewalks.) Typically sidewalks are found in older neighborhoods and in downtowns and community centers.

Knoxville: Sidewalks are present throughout downtown Knoxville, the University of Tennessee, and several older neighborhoods. Beyond these

areas, sidewalks are sparse and generally lack connectivity. The city has 1,171 miles of streets and 319 miles of sidewalks.

Knox County: Outside of the City of Knoxville limits, Knox County has 1,993 miles of streets and 48 miles of sidewalks.

Alcoa: Alcoa currently has 23 miles of sidewalk network along its 110 miles of streets. These sidewalks are primarily in Alcoa's downtown and older neighborhoods. City of Alcoa ordinance requires sidewalks to be constructed with all single-lot development and redevelopment projects wherever site plan review is conducted by the City's planning commission. Alcoa's subdivision regulations require sidewalk construction with all new road construction by developers. In some instances, the City asks developers to pay a fee in lieu of sidewalk construction, and the fees collected go into Alcoa's general sidewalk fund.

Clinton: The city has 80 miles of streets and 35 miles of sidewalks.

Dandridge: Dandridge has 60 miles of streets and 10 miles of sidewalks.

Farragut: Farragut has 147 miles of streets and 39 miles of sidewalk. The Town of Farragut has a policy that requires pedestrian facilities be incorporated into new subdivisions and developments.

Jefferson City: The city has 63 miles of streets and 15 miles of sidewalks.

Kingston: The city has 56 miles of streets and 9 miles of sidewalks.

Lenoir City: The city has 106 lane miles of streets and does not currently have an inventory of its sidewalk network.

Loudon: The city has 62 miles of streets and 15 miles of sidewalks.

Maryville: The city maintains 174 miles of streets and 44 miles of sidewalks. Sidewalks are located mainly in Maryville's downtown in older neighborhoods. Maryville's subdivision regulations require that sidewalks be constructed along both sides of all new streets.

Norris: Norris has 13 miles of streets and 7 miles of sidewalks.

Oak Ridge: The city maintains 230 miles of streets and does not have data on the extent of its sidewalk network.

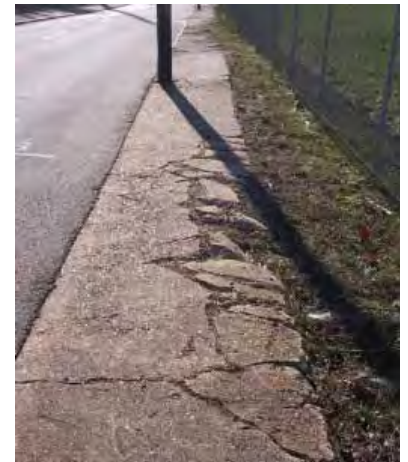
Pigeon Forge: The city has 91 miles of streets and does not have data on the extent of its sidewalk network.

Sevierville: The city has 180 miles of streets and does not have data on the extent of its sidewalk network.

White Pine: White Pine has 25 miles of streets and 2 miles of sidewalks.



While ideal pedestrian conditions can be found...



...sidewalks in need of repairs and upgrades abound.

Greenways—Existing Conditions

Greenways are shared-use paths designed for use by pedestrians and bicyclists. They serve both recreational and transportation purposes. As short greenway links and loops are knitted together to create connections within and between cities and towns, greenways increasingly function as active transportation networks and even as tourism destinations. Greenways complement the on-street pedestrian and bicycle network provided by sidewalks and bicycle lanes, and provide important linkages to transit lines and many other destinations. Below is an inventory of significant greenways within the Knoxville region. The mappable projects with valid data behind them are mapped in Figure 22 on page 66.

Knoxville

Primarily linear greenways

- Bearden Village Elementary to Sequoyah Hills Park and Morningside Park
 - Bearden Village Greenway (Sutherland Ave; 2.1 miles)
 - Third Creek Greenway (Forest Park Boulevard to Lake Loudoun; 4.5 miles)
 - Sequoyah Greenway (median of Cherokee Boulevard; 2.6 miles) unpaved
 - Neyland Greenway (Neyland Drive from Volunteer Landing to University Club; 3 miles)
 - Lower Second Creek Greenway (Neyland Greenway to World's Fair Park; 0.15 mile)
 - James White Greenway (Neyland Greenway to Morningside Greenway; 1 mile)
 - Morningside Greenway (James White Greenway to Haley Heritage Square; 1.6 miles)
- Cavet Station Greenway (I-40 to Middlebrook Pike; 1 mile)
- First Creek Greenway in First Creek Park (I-40 to Broadway along First Creek; 0.9 mile)
- Jean Teague Greenway (West Hills Elementary School to West End Church of Christ; 1.9 miles)
- Liberty Street Greenway (Middlebrook Pike to Division Street; 0.4 mile)
- Mary Vestal Greenway (Mary Vestal Park; 0.4 miles)
- Middlebrook Greenway (Middlebrook Pike; 0.8 miles)
- Northwest and Victor Ashe Greenways (Northwest Middle School to Victor Ashe Park; 2.6 miles)
- Parkside Greenway (Campbell Station Road to Lovell Road; 2 miles)
- Weisgarber Greenway (Middlebrook Pike to Papermill Road; 1 mile)
- Will Skelton Greenway (Ijams Nature Center to Forks of the River Wildlife Management Area; 3.6 miles)



The Great Smoky Regional Greenway Council is working to create regional greenway connections.

Primarily loop greenways

- Adair and Sue Clancy Greenways (Adair Park; 1.1 mile)

- Charter Doyle (Charter Doyle Park, 0.4 mile loop)
- Community Unity Greenway (Montgomery Village Housing Area; 0.6 mile loop)
- First Creek Greenway in Caswell Park (0.5 mile)
- Fountain City Greenway (Fountain City Park; 0.6 mile loop)
- Gary Underwood Greenway (Gary Underwood Park; 0.8 mile loop)
- Holston-Chilhowee Greenway (Holston Chilhowee Ballfields; 1 mile)
- Holston River Greenway (Holston River Park; 2.0 mile loop)
- Lakeshore Greenway (Lakeshore Park; 2.25 mile loop)
- Lonsdale Greenway (Lonsdale Park, 0.3 mile)
- Loves Creek Greenway (Holston Middle School; 0.25 mile loop)
- Malcolm Martin Greenway (Ed Cothran pool; 0.3 mile loop)
- North Hills Greenway (North Hills Park; 0.4 mile)
- Sam Duff Greenway (Sam Duff Field; 0.25 mile loop)
- Westview Greenway (Westview Park; 0.26 mile loop)

Farragut

- Anchor Park (0.8 mile loop)
- Campbell Station Park (1 mile loop)
- Grigsby Chapel Greenway (Berkeley Park Subdivision to Farragut Commons to Grammar Lane; 2 miles)
- Mayor Bob Leonard Park (0.9 mile loop)
- Parkside Greenway (Campbell Station Road to Lovell Road; 2 miles)
- Turkey Creek Greenway (Audubon Hills to Anchor Park to Brixworth - west along Turkey Creek Road; 1.6 miles with a 0.3 mile spur to Turkey Creek Woods)

Knox County

- Halls Greenway (from Halls Community Park along Beaver Creek to Halls Library Branch and to several neighborhoods; 1 mile)
- Pellissippi Greenway Trail (south from Pellissippi State Community College along Pellissippi Parkway; 1 mile)
- Powell Greenway (Emory Road from Powell High School to Powell Middle School; 1.7 miles)
- Sterchi Hills Greenway (Knox County/AYSO Soccer Complex; 2.2 miles and 0.3-mile loop)
- Howard Pinkston Greenway (from French Memorial Park to Bonny Kate Elementary School; 0.25 mile)
- Ten Mile Creek Greenway Trail (from Wynnsong 16 movie theater on North Peters Road through Walker Springs Park to Gallaher View Road; 1.5 miles)

Alcoa & Maryville

- Clayton's Segment; 1 mile
- Springbrook Park to Alcoa/Maryville line; 3.5 miles
- Springbrook Park Trail; 1.4 miles
- Springbrook Corporate Loop & Connector; 0.8 miles



Many parks contain greenways or are linked together by a greenway system.

- Springbrook Road & Wright Road; 1.5 miles
- Alcoa/Maryville line to Greenbelt Park (Amphitheater); 1 mile
- Greenbelt Park to Sam Houston Elementary; 1 mile
- Sam Houston Elementary to Sandy Springs Park; 1 mile
- Sandy Springs Park to Montgomery Lane; 1 mile

Townsend

- Townsend Greenway (US 321 from Walland Highway bridge to Potleg Hill Road; 9 miles)

Lenoir City

- Town Creek Greenway (from Broadway along Town Creek to Lenoir City Middle School; 1.75 miles)

Sevierville

- Memorial River Trail Greenway (from Sevierville City Park to Burchfiel Arboretum; 2.25 miles)

Pigeon Forge

- Riverwalk (from Jake Thomas Road to Patriot Park; 0.8 mile)

- Veterans Boulevard Greenway (Sevierville city limit to McCarter Hollow Road/Dollywood; 1.3 miles)

Oak Ridge

- Emory Valley Greenway (along Emory Valley Road from Briarcliff Road to Melton Lake Drive; 3.2 miles)
- Melton Lake Greenway (along Melton Lake Drive from Oak Ridge Turnpike to Edgemoor Road; 3.4 miles)

Existing Studies, Plans, and Programs

This section briefly describes current or recently completed studies, plans and programs that have significant relevance to pedestrian conditions within the TPO region.

Complete Streets Study: Complete streets are designed for safe access by all modes of transportation and all users. (For more on complete streets, see Chapter 6) This TPO study, funded by TDOT, analyzed two auto-oriented commercial corridors in the Knoxville region with the purpose of creating a vision and a set

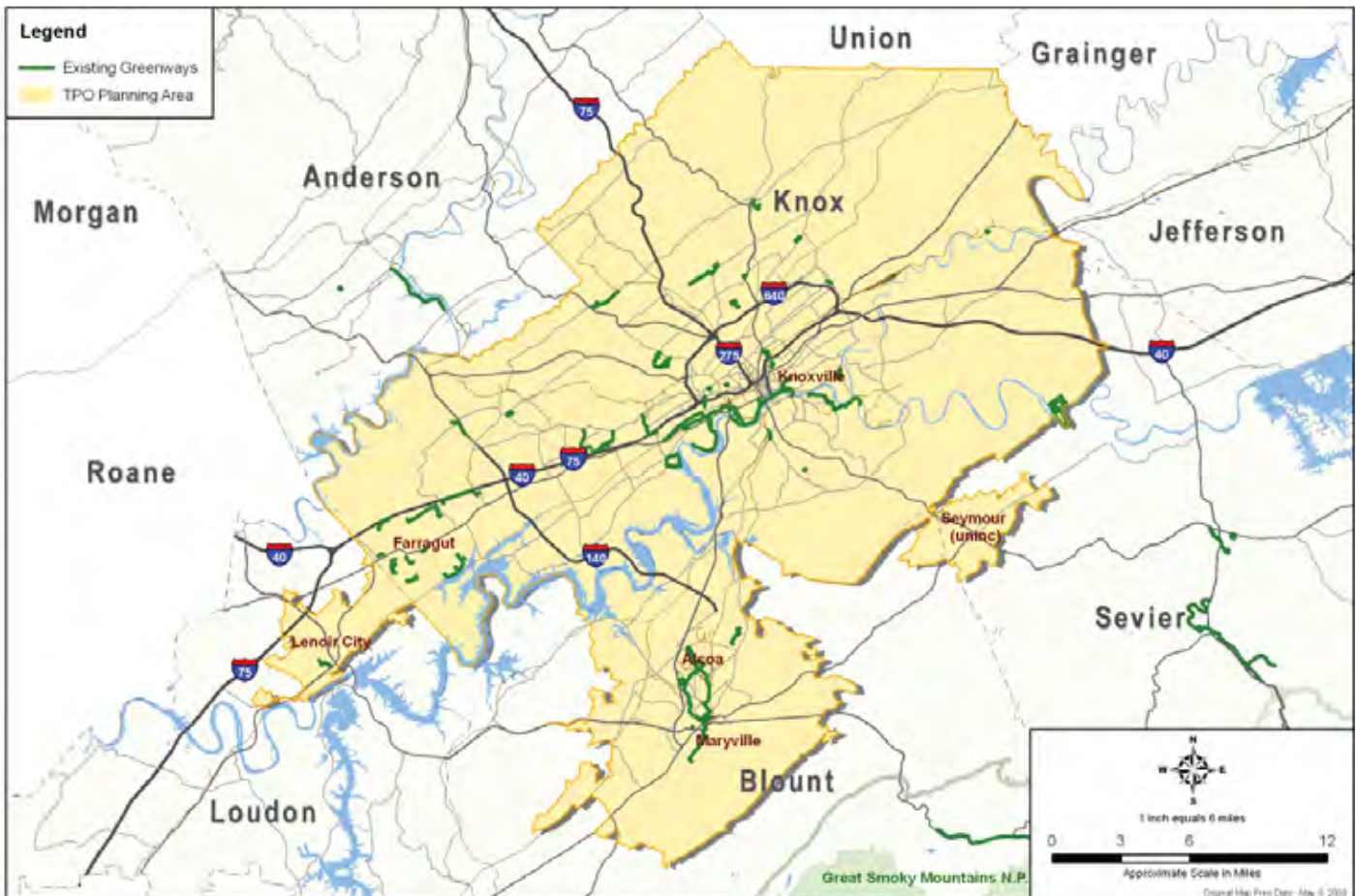


Figure 22. Existing Regional Greenways Map

of recommendations that would transform them into complete streets. The study also produced a set of guidelines for retrofitting similar corridors as complete streets. It is available on the TPO website.

Safe Routes to School: This is a federal program that is being implemented through TDOT grants and local funding throughout the Knoxville region. Its goals are to increase the number of children who can walk and bicycle safely to and from school, in order to increase children's fitness and to reduce traffic congestion and air pollution around schools, among other benefits. It is a comprehensive program aimed at addressing what are known as the "5 E's": engineering, enforcement, education, encouragement and evaluation.

Federal funding for Safe Routes to School was included in the 2005 federal surface transportation bill known as SAFETEA-LU and is provided to state DOTs for distribution to local governments. In addition to seeking state grants, local governments, school districts, health departments, law enforcement agencies and other groups can have a significant impact on bicycle and pedestrian conditions around schools and on the number of children walking and bicycling to school by systematically addressing the barriers to safe bicycle and pedestrian travel.

To find a Safe Routes to School program in your area, or to see about starting one, visit TDOT's Safe Routes to School web page at www.tdot.state.tn.us/bikeped/saferoutes.htm.

For more information on Safe Routes to School in general, visit the website of the National Center for Safe Routes to School at www.saferoutesinfo.org.

Greenway plans: Several citywide or countywide greenway plans are ongoing or have been recently completed within the Knoxville region.

The Knoxville-Knox County Metropolitan Planning Commission is scheduled to adopt the Knoxville, Knox County Comprehensive Park, Recreation and Greenways Plan, which maps out and prioritizes park and greenway projects for the coming years and decades. The plan was created in close consultation with the City of Knoxville, Knox County, the TPO and the public.

In 2008, for the first time, the Tennessee Department of Environment and Conservation awarded Tennessee Trails grants for planning and design, in addition to the usual construction funding. Two governments in the Knoxville region received these planning/design grants: the City of Gatlinburg and Blount County. Gatlinburg intends to create a citywide greenway plan with its funding. Blount County will be working with the Cities of Alcoa, Maryville and Knoxville to identify routes that will connect the planned Knox/Blount Greenway (from downtown Knoxville to the Blount County line) into the Alcoa/Maryville greenway network, and from the Alcoa/Maryville



Beaumont Elementary School is the only school in Knox County to receive a Safe Routes to School grant.

According to the American Public Transportation Association, nationally, more than 10 billion trips were taken on local public transportation in 2006...

Rural communities with transit service were found to have 11 percent greater average net earnings growth over counties without transit.

*—National Association of Development Organizations
Research Foundation
Volume 1, Issue 1
April 2007*

greenways east toward the Townsend Greenway. The goal of the Blount County planning effort is to create plans and designs that will contribute to the ultimate goal of a regional greenway from Knoxville to the Great Smoky Mountains National Park.

Plans with pedestrian impacts: The City of Knoxville is in the process of implementing two recent major plans that will mean significant changes in the pedestrian realm for their study areas. The South Waterfront Vision Plan and the Cumberland Avenue Corridor Plan both envision streets designed with pedestrian safety and accessibility at the forefront. Both plans also recommend the use of form-based zoning codes to encourage development patterns that support walking and other alternatives to driving.

Knoxville-Knox County General Plan: This 2003 plan states that the Knoxville pedestrian system should meet the needs of the average citizen, the elderly, and people with disabilities. Walking, where feasible, should be promoted as a viable transportation alternative to driving, especially in light of the non-attainment designation. The plan outlines goals for more non-motorized usage in that pedestrian facilities should be incorporated into all aspects of a functional design and:

- Road and highway design should encourage bicycling and walking to nearby amenities;
- Neighborhoods should be pedestrian-oriented, containing sidewalks and walking trails;
- Traditional neighborhoods should have sidewalk connections to schools and village centers;
- Streets should be interconnected and have fewer cul-de-sacs; and,
- New subdivisions should be designed taking into account future developments by providing pedestrian connections as well as street connections.

Statewide plans: The Tennessee Trails and Greenways Plan was updated in 2008. The plan discusses the many roles of greenways and trails and includes a two-year action plan for the state to expand the network of greenways. TDOT's 2005 statewide Long-Range Transportation Plan includes a Bicycle and Pedestrian Plan that aims to improve pedestrian movement and provide for safer pedestrian facilities.

Prioritizing greenways and sidewalks

Most sidewalks and greenways in the Knoxville region are constructed in one of two ways: some are built by local governments or TDOT using public funds, and others are constructed as part of private-sector development projects. Plans and/or policies requiring sidewalk or greenway construction as part of development are often helpful in increasing the amount the private sector contributes to pedestrian infrastructure. Plans also help local governments prioritize public investment in sidewalks and greenways.

In the absence of a full-fledged sidewalk or greenway plan, local governments can still systematically prioritize their construction of those facilities. This can be done through the use of GIS or another mapping software or, more simply, by drawing circles on a map.

The first step in identifying sidewalk or greenway priorities is mapping the existing network to identify missing links. Again, this can be accomplished with GIS or by drawing lines on a paper map. The paper map requires less upfront effort and cost, but a GIS map is easier to keep up to date and can contain much more data.

Once missing links are identified, the next step is to determine the factors that will go into prioritizing new construction. Prioritization factors should be determined in consultation with relevant stakeholders within and outside of local government. Some prioritization factors to consider are:

- Location and density of residential development
- Location and density of commercial development
- Location and density of employment
- Schools
- Transit corridors
- Parks and other greenways
- Libraries and other civic buildings
- Hospitals and major medical offices
- Public and senior housing
- The average daily traffic (ADT) and classification of a given road
- Evidence of pedestrian demand, such as paths worn in the grass
- Whether right-of-way is available for a sidewalk or greenway
- Length of sidewalk or greenway segment needed to fill in a gap

These factors and others can be mapped in GIS or by drawing them on a map, with a circle of reasonable walking distance (one-quarter or one-half mile) around origins and destinations. The missing sidewalk and greenway links within locations where the most circles overlap would be the highest priorities. Greater weight can be given to some factors over others, or based on the relative density of development. In smaller cities and towns, the missing links could simply be listed, with points assigned based on the various relevant factors. The projects with the most points would be the highest-priority projects.

Funding greenways and sidewalks

Within the next two years we will see the approval of a new multi-year federal transportation bill. That legislation may continue many of the current transportation funding programs, or it may significantly alter the way this funding is allocated. If the major funding programs remain largely intact, local governments should note that many of them are flexible programs whose funding can often be used for the design and construction of pedestrian and



Third Creek Greenway in Knoxville is one of the region's most popular greenways for transportation and recreation.

Depending on several factors, from mixed land uses to pedestrian-friendly design, compact development reduces driving from 20 to 40 percent, and more in some instances, according to the book Growing Cooler: The Evidence on Urban Development and Climate Change. Typically, Americans living in compact urban neighborhoods where cars are not the only transportation option drive one-third fewer miles than those in automobile-oriented suburbs, the researchers found.

—Smart Growth America

bicycle infrastructure. The Surface Transportation Policy Project has an excellent publication describing the flexibility of those programs available at their website (www.transact.org) called From the Margins to the Mainstream: A Guide to Transportation Opportunities in Your Community.

Other federal transportation programs aim specifically to fund greenways and sidewalks, such as Safe Routes to School, described earlier in this chapter, and Transportation Enhancements, which many local governments in the Knoxville region regularly use. There is more information on enhancements at the National Transportation Enhancements Clearinghouse website: www.enhancements.org.

Local funds are also a potential source of dollars for these projects. General funds, special assessments, bonds and tax increment financing are among some of the local revenue sources that can be harnessed to build sidewalks and greenways.

Objectives and Proposed Actions

The following are objectives and actions of the Mobility Plan's pedestrian and greenway element:

- Roadway design: Continue to provide safe and convenient bicycle and pedestrian access in all new and improved transportation projects, unless exceptional circumstances exist (as recommended by the US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure).
- Barriers and missing links: Achieve greater system continuity for pedestrian travel by removing deterrents and barriers, creating better pedestrians links to public transit and filling gaps in regional and local networks.
- Education and encouragement: Educate the general public and public officials about the economic, environmental, health and social benefits of walking as transportation, and develop improved programs to encourage increased levels of walking.
- Regional cooperation and communication: Use the Great Smoky Mountains Regional Greenway Council to develop and refine the regional greenway network so that all parties understand, incorporate and proceed to implement their respective components of the plan. Additionally the group identifies, prioritizes and seeks funding for needed greenway links in addition to collaborating on grant applications and map production.
- Comprehensive and transportation plan development: Foster pedestrian-oriented development patterns and plan for appropriate greenway facilities through the development and refinement of local comprehensive plan transportation elements, sub-area plans and state transportation plans.

Greenway and sidewalk projects are shown in Tables 15-17 and are also included in the complete Non-Roadway Project List (Table 35) on page 157.

Table 15. Greenway Projects in the Non-Roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
900	Pedestrian Bridge	Alcoa	Construct Pedestrian Bridge over Alcoa Hwy	2009-2014	\$1,000,000	HPP	✓	✓	✓	✓	✓	✓	✓	✓
901	Beaver Creek Greenway	Knox County	Construct greenway linking Halls Community Park to schools, Powell Greenway to Powell Library, and Northwest Sports Park to Westbridge Business Park	2009-2014	\$3,705,600	ENH	✓	✓	✓	✓	✓	✓	✓	✓
902	Conner Creek Greenway	Knox County	Construct greenway from Pellissippi State to Hardin Valley schools	2009-2014	\$187,500	ENH	✓	✓	✓	✓	✓	✓	✓	✓
903	John Sevier Highway Greenway	Knox County	Construct greenway along John Sevier Highway from Asheville Highway to Alcoa Highway	2009-2014	\$1,584,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
904	Knox/Blount Greenway Phase II	Knox County		2009-2014	\$1,111,500	ENH	✓	✓	✓	✓	✓	✓	✓	✓
905	Northshore Drive Greenway	Knox County	Construct Greenway along Northshore through Concord Park and Carl Cowan Park	2009-2014	\$225,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
906	Pellissippi Parkway Greenway	Knox County	Construct greenway from Carmichael Road to Dutchtown area	2009-2014	\$934,500	STP-TPO	✓	✓	✓	✓	✓	✓	✓	✓
907	Plum Creek Greenway	Knox County	Construct greenway from Nicolas Ball Park to Plum Creek Park	2009-2014	\$1,267,200	local	✓	✓	✓	✓	✓	✓	✓	✓
908	Stock Creek Greenway	Knox County	Construct greenway from South Doyle High School to Howard Pinkston Library Branch	2009-2014	\$387,500	ENH	✓	✓	✓	✓	✓	✓	✓	✓
909	Ten Mile Creek Greenway	Knox County	Construct link from existing greenway to Catholic High School	2009-2014	\$545,400	ENH	✓	✓	✓	✓	✓	✓	✓	✓
910	Turkey Creek Greenway	Knox County	Construct greenway from Turkey Creek wetlands to Concord Park and from I-40/75 to Pellissippi Parkway	2009-2014	\$1,980,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
911	Baker Creek	Knoxville	Construct greenway from Mary James Park to south waterfront	2009-2014	\$300,000	local	✓	✓	✓	✓	✓	✓	✓	✓
912	First Creek Greenway connections	Knoxville	Construct greenway from Lake Loudoun to Caswell Park, from Caswell Park to First Creek Park, from First Creek Park to Walker Boulevard, and from Adair Drive to Fountain City Lake	2009-2014	\$3,326,400	ENH	✓	✓	✓	✓	✓	✓	✓	✓
913	Fourth Creek Greenway	Knoxville	Construct greenway from Weisgarber Greenway to Lakeshore Park and to Bearden Elementary, and from Lakeshore Park to Bearden Elementary	2009-2014	\$1,030,350	ENH	✓	✓	✓	✓	✓	✓	✓	✓
914	Goose Creek Greenway	Knoxville	Construct greenway from Mary Vestal Park to Lake Loudoun	2009-2014	\$187,500	local	✓	✓	✓	✓	✓	✓	✓	✓
915	Knox/Blount Greenway Phase I	Knoxville	Construct greenway from Buck Karnes Bridge to Marine Park	2009-2014	\$2,925,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
916	Loves Creek Greenway	Knoxville	Construct greenway from Knoxville Center Mall to Spring Place Park	2009-2014	\$794,850	ENH	✓	✓	✓	✓	✓	✓	✓	✓
917	Second Creek Greenway extension	Knoxville	Construct greenway from World's Fair Park to the Old City	2009-2014	\$861,900	ENH	✓	✓	✓	✓	✓	✓	✓	✓
918	Smoky Mountain Railroad Greenway	Knoxville	Construct greenway from Mary Vestal Park to Charter E. Doyle Park	2009-2014	\$1,962,150	ENH	✓	✓	✓	✓	✓	✓	✓	✓
919	South Waterfront Greenway	Knoxville	Construct greenway from Island Home to Scottish Pike	2009-2014	\$792,000	HPP	✓	✓	✓	✓	✓	✓	✓	✓
920	Tennessee Holston Greenway	Knoxville	Construct greenway from existing James White Greenway to Holston River Park	2009-2014	\$1,472,250	ENH	✓	✓	✓	✓	✓	✓	✓	✓
921	Third Creek Greenway extensions	Knoxville	Construct greenway from Sutherland Ave. trailhead of Third Creek Greenway to Victor Ashe Park, & from where greenway crosses Tobler Lane to Sutherland Ave.	2009-2014	\$1,128,300	ENH	✓	✓	✓	✓	✓	✓	✓	✓
922	Williams Creek Greenway	Knoxville	Construct greenway from Five Points/Union Square Park area to Lake Loudoun	2009-2014	\$270,600	ENH	✓	✓	✓	✓	✓	✓	✓	✓
923	Ten Mile Creek Greenway	Knoxville/Knox County	Construct greenway from I-40/75 to West Valley Middle School	2009-2014	\$545,500	ENH	✓	✓	✓	✓	✓	✓	✓	✓
924	Arboretum to Events Center Greenway	Sevierville	Construct greenway from Burchfiel Arboretum to Sevierville Events Center	2009-2014	\$390,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
925	East Gate Road Greenway	Sevierville	Construct greenway along East Gate Road to Sevierville Primary School	2009-2014	\$648,150	ENH	✓	✓	✓	✓	✓	✓	✓	✓
926	West Prong Greenway	Sevierville	Construct greenway from Paine Lake Estates to U.S. 441	2009-2014	\$525,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
927	Beaver Creek Greenway	Knox County	Construct greenway from Brickey-McCloud Elem. to Powell Library, Powell Middle School to Karns Elementary, and Westbridge Business Park to Pellissippi Parkway	2015-2024	\$2,168,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
928	Burnett Creek	Knox County	Construct greenway from French Broad River to John Sevier Highway	2015-2024	\$153,450	ENH	✓	✓	✓	✓	✓	✓	✓	✓
929	Conner Creek Greenway	Knox County	Construct greenway from Hardin Valley schools to Melton Hill Park	2015-2024	\$1,080,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
930	McFee Greenway	Knox County	Construct greenway from Farragut city limits to Northshore Drive	2015-2024	\$465,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
931	Northshore Drive Greenway	Knox County	Construct greenway from Concord Park to Pellissippi Parkway and from Pellissippi Parkway to Lakeshore Park	2015-2024	\$1,215,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
932	Pellissippi Parkway Greenway	Knox County	Construct greenway from Pellissippi State to Oak Ridge, Dead Horse Lake to Dutchtown area, and I-40-75 to Blount County	2015-2024	\$25,344,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
933	Plum Creek Greenway	Knox County	Construct greenway from Plum Creek Park to Pellissippi Parkway	2015-2024		ENH	✓	✓	✓	✓	✓	✓	✓	✓
934	Smoky Mountain Railroad Greenway	Knox County	Construct greenway from Charter E. Doyle Park to Bower Field	2015-2024	\$1,962,150	ENH	✓	✓	✓	✓	✓	✓	✓	✓
935	Stock Creek Greenway	Knox County	Construct greenway from Howard Pinkston Library Branch to Knox/Blount Greenway and from South Doyle High School to John Sevier Highway	2015-2024	\$387,300	ENH	✓	✓	✓	✓	✓	✓	✓	✓
936	Ten Mile Creek Greenway II	Knox County	Construct greenway from West Valley Middle School to Pellissippi Parkway	2015-2024	\$545,500	ENH	✓	✓	✓	✓	✓	✓	✓	✓
937	First Creek Greenway connection	Knoxville	Construct greenway from Walker Boulevard to Adair Drive	2015-2024	\$1,188,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
938	Loves Creek Greenway	Knoxville	Construct greenway from Spring Place Park to Holston Middle School and from Holston Middle School to Holston Hills	2015-2024	\$475,200	ENH	✓	✓	✓	✓	✓	✓	✓	✓
939	Second Creek Greenway extension	Knoxville	Construct greenway from the Old City to Sysco	2015-2024	\$1,821,600	ENH	✓	✓	✓	✓	✓	✓	✓	✓
940	South Waterfront Greenway	Knoxville	Construct Greenway from Scottish Pike to UT Hospital	2015-2024	\$915,000	HPP	✓	✓	✓	✓	✓	✓	✓	✓
941	Tennessee Holston Greenway	Knoxville	Construct greenway from Loves Creek to Boyds Bridge Pike	2015-2024	\$390,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
942	Murphy Creek/White Creek Greenway	Knoxville/ Knox County	Construct greenway from First Creek to Washington Pike and from Greenway Drive/ Beverly Road to Ritta Elementary	2015-2024	\$3,168,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
943	Knox/Blount Greenway Future Phases	Knox Cnty/TDOT	Construct greenway from Marine Park to Knox/Blount county line	2015-2024	\$5,000,000	ENH	✓	✓	✓	✓	✓	✓	✓	✓
944	Tennessee River Pedestrian Crossing	City of Knoxville	Connecting South Waterfront to University of Tennessee	2009-2014	\$12,500,000	HPP	✓	✓	✓	✓	✓	✓	✓	✓

Table 16. Sidewalk Projects in the Non-Roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
960	Brown Gap Road	Knox County	Sidewalk within a parental responsibility zone	2025-2034	\$1,500,000	ENH	√	√	√				√	√
961	Carter School Road	Knox County	Sidewalk within a parental responsibility zone	2025-2034	\$300,000	ENH	√	√	√				√	√
962	Buffat Mill Road Sidewalks	Knoxville	Construct missing sidewalk links along Buffat Mill Road. Sidewalk need identified in 2002 East City Sector Plan	2009-2014	\$1,050,000	ENH	√	√	√				√	√
963	Castle Street	Knoxville	Sidewalk within a parental responsibility zone	2025-2034	\$420,000	ENH	√	√	√				√	√
964	Cumberland Avenue	Knoxville	Pedestrian improvements	2009-2014	\$3,744,108	ENH	√	√	√				√	√
965	Hollywood Drive	Knoxville	Sidewalk within a parental responsibility zone	2025-2034	\$150,000	ENH	√	√	√				√	√
966	Neyland Drive	Knoxville	Pedestrian improvements	2009-2014	\$1,056,000	ENH	√	√	√				√	√
967	Pickering Street	Knoxville	Sidewalks constructed to improve pedestrian travel	2015-2024	NA	ENH	√		√				√	√
968	Sutherland Avenue	Knoxville	Sidewalks constructed as part of Bearden Village enhancements	2015-2024	\$990,750	ENH	√		√				√	√
969	Beaman Lake Road	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$250,000	ENH	√	√	√				√	√
970	Blount Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2009-2014	\$250,000	HPP	√	√	√				√	√
971	Clinton Highway	Knoxville	Sidewalks to enhance pedestrian travel	2015-2024	\$1,056,000	ENH	√	√	√				√	√
972	Fern Street	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$250,000	ENH	√	√	√				√	√
973	Martin Mill Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$528,000	ENH	√	√	√				√	√
974	Sevier Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2009-2014	\$528,000	HPP	√	√	√				√	√
975	Spring Hill Road	Knoxville	Sidewalk within a parental responsibility zone	2015-2024	\$264,000	ENH	√	√	√				√	√
976	Tazewell Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$1,584,000	ENH	√	√	√				√	√
977	Woodlawn Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$528,000	ENH	√	√	√				√	√
978	Valley View Drive	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$792,000	ENH	√	√	√				√	√
979	Chickamauga Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Chickamauga Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$422,400	ENH	√	√	√				√	√
980	Fulton High/St. Mary's Area Sidewalks	Knoxville	Construct missing sidewalk links along St. Mary's Street, Huron Street, and other streets near Fulton High School and St. Mary's Hospital. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$475,200	ENH	√	√	√				√	√
981	Keith Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Keith Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH	√	√	√				√	√
982	Nadine Street Sidewalks	Knoxville	Construct missing sidewalk links along Nadine Street. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH	√	√	√				√	√
983	Texas Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Texas Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH	√	√	√				√	√
984	Wilder Street Sidewalks	Knoxville	Construct missing sidewalk links along Wilder Street. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$132,000	ENH	√	√	√				√	√

Table 17. Safe Routes to School Projects in the Non-Roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
990	Safe Routes to School projects and programs	TPO Area	Projects and programs funded by Safe Routes to School grants	2009-2014	\$18,750,000	SRTS	√		√				√	√

BICYCLING

Whereas bicycling was once an extremely common way of getting around, today it's become the forgotten mode of transportation. Because motorized vehicles dominate the transportation system, bicycling is often perceived to be a dangerous and/or unimportant mode of travel. The truth is bicycling can bring great economic, environmental, social and health benefits to the region. And, on any given day, a motorist is many times more likely to be involved in a crash than a bicyclist. Raising public awareness about the importance and value of biking, and its legitimate place in the region's transportation system, must be an ongoing regional priority. The TPO has conducted regular bicycle and pedestrian counts in the City of Knoxville to get a better idea of who is actually using these forms of transportation. Figure 23 shows that the numbers of cyclists have increased.



The University of Tennessee's Knoxville campus is an ideal setting to encourage bicycling.

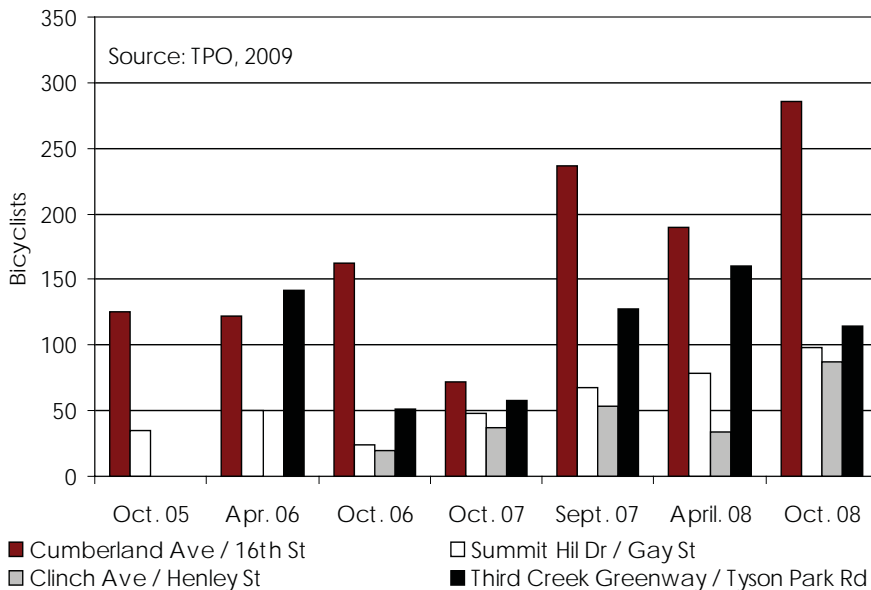


Figure 23. City of Knoxville Bike Counts, 2005-2008

The implementation of bicycle systems and encouragement of their use are responsibilities shared by all government agencies and jurisdictions in the Region, as well as many community organizations. Good facility plans must be developed, and each level of government has to commit funding for bicycle projects and programs.

There have been several bicycle plans developed for Knoxville and Knox County in the past 20 years. The 2002 Regional Bicycle Plan covered Knox and Blount Counties. The 2009 plan now covers the same geographic area as this Mobility Plan. As with all regional plans of this nature, the Bike Plan is subject to fiscal and policy decisions of each local government.



Bicyclists are more and more common throughout the Knoxville region.

Existing Conditions

There are only a few miles of bike lanes in Knoxville and Alcoa.

Knoxville

- Magnolia Ave (SR 1) from Jessamine St to Prosser Rd (approx. 2 miles)
- Melrose Ave from Volunteer Blvd to the circle (less than ¼ mile)
- Hall of Fame Dr from Summit Hill Dr to N. 6th Ave (approx 1 mile.)

Alcoa

- Wright Rd from Hunt Rd to Poplar St (1 mile)
- Wright Rd from Springbrook Rd to Lincoln Rd (½ mile)
- Lincoln Rd from Aluminum Ave to Harding St (1 mile)

There is one state bike route in the region, extending from Gatlinburg to Jonesborough in Washington County. This bike route shares pavement with state, county and local roads and does not contain separate bike lanes or pavement striping. The bike route is identified by TDOT bike route signs.

Existing or Committed Studies, Plans, Programs and Projects

The TPO continues to provide staff for the Regional Bicycle Program, which covers the urbanized portions of Knox, Blount, Sevier and Loudon counties. The TPO Bicycle Advisory Committee is made up of 12 citizens, who help implement the bicycle plan and promote bicycling as transportation to the public.

The TPO Bike Parking Program provides bike racks to businesses and agencies at just 20 percent of the actual cost, through a CMAQ grant. To date, more than 400 racks have been installed throughout the region.

The Knoxville-Knox County Bicycle Map, second edition, was printed in June 2008. The first Blount County Bicycle Map was printed in June 2008 also. The maps are distributed for free at bike shops, special events and other locations. The maps are also available on the TPO website, along with all of the bicycle program's other handbooks and brochures. Figure 24 shows the regional bike network as developed through the Bicycle Advisory Committee.

The City of Knoxville committed \$20,000 in FY 08/09 for bicycle projects, to be determined by the TPO. The Bicycle Advisory Committee has a list of prioritized projects; however, these projects' costs are significantly higher than the amount of funding available so the committee will need to assess other, smaller needs.

TDOT is responsible for developing statewide bike routes and maintaining maps and other information about bicycling in Tennessee, including areas not covered by the TPO Bicycle Program. TDOT developed a statewide bicycle plan as part of its recent Long Range Multi-Modal Transportation Plan. A goal

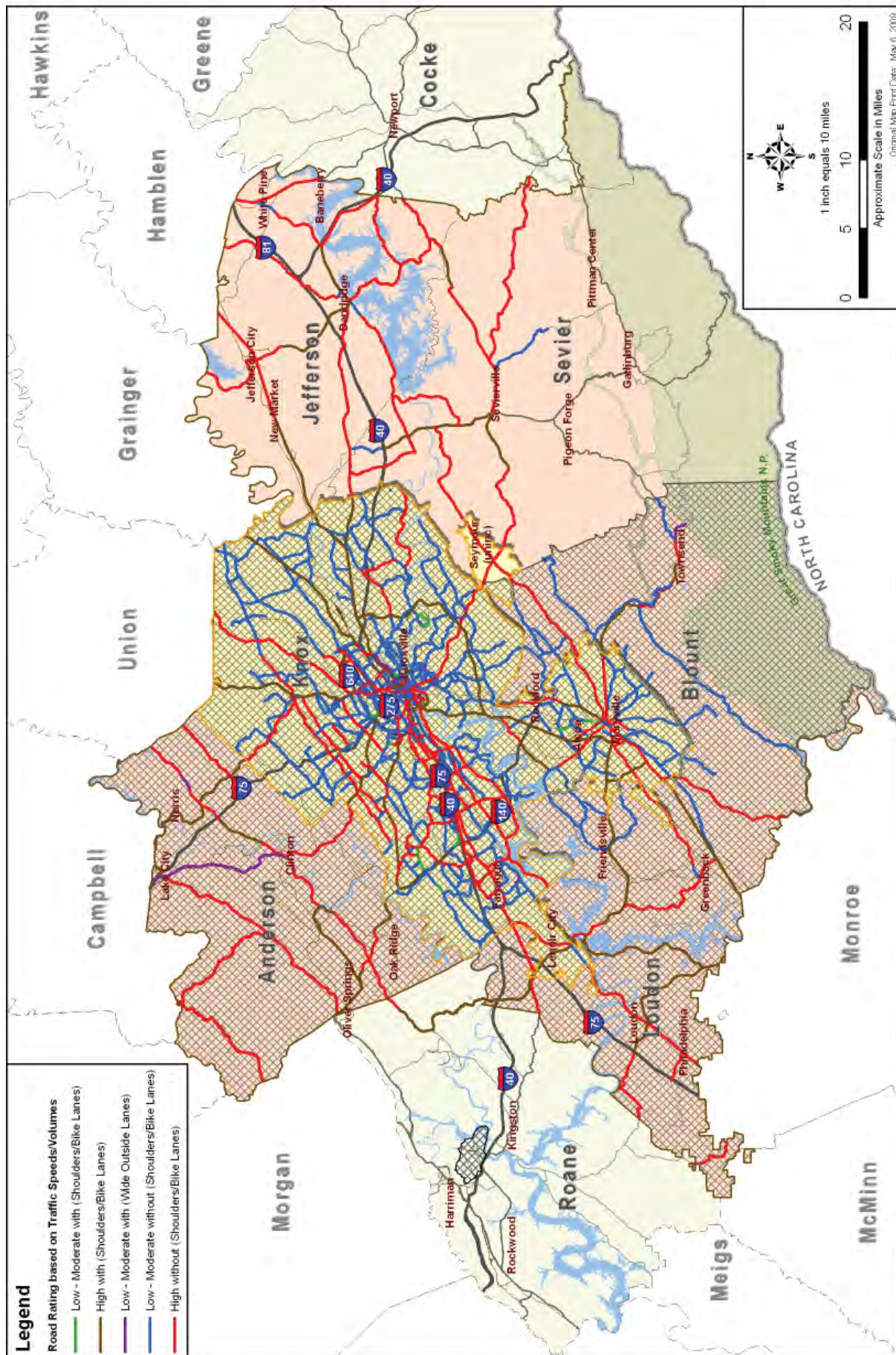


Figure 24. Regional Bicycle Network Map



a bicyclist on Gay Street

of the plan is to meet alternative transportation needs and provide recreational activity. The plan includes a proposal to connect various sections of the state bicycle route system and to connect population and activity centers.

Issues

Bicycle projects and programs share many common implementation challenges with other regional modal transportation programs. However, the challenges discussed below affect people's ability to comfortably and safely bicycle and will likely take more effort and a longer time to overcome.

Over the past five decades, prevalent land-use patterns have tended to favor automobile travel over other modes. Also, traditional transportation planning, which focused on increasing "vehicle throughput," often resulted in the construction of wider, faster roads that lacked sidewalks, bike lanes or wide shoulders and are unsafe for bicyclists. Increasing levels of congestion, high gas prices, parking issues and air quality concerns have all begun to encourage more citizens to switch to bicycling.

Bicycle transportation needs to be recognized as essential to the overall mobility and accessibility of the region before it will be allocated a higher proportion of revenues in transportation budgets. Currently bicycle facilities are often viewed as superfluous or "add-ons" rather than as integral parts of the regional transportation system that can bring great benefits. Mainstreaming of bicycle transportation can only be achieved with continued education about the necessity and importance of bicycling.

Objectives and Proposed Actions

The following are objectives and actions of the Mobility Plan's Bicycling element:

Provide safe and convenient bicycle accommodation in all transportation projects.

- Continue to follow the TPO Bicycle Accommodation Policy adopted in 2002 and the TDOT Policy adopted in 2004.
- Review and update local roadway design standards for appropriate bicycle accommodation.

Maintain bicycle facilities for function and safety.

- Develop facility management plans to assure proper maintenance of bicycle facilities.
- Keep bicycle facilities well maintained and free of hazards.
- Develop a policy requiring paved aprons on gravel driveways or roads to prevent gravel from being carried out onto the shoulders.

Achieve greater system continuity for bicycle travel.

- Add bicycle crossings over waterways, highways, major arterials and other obstacles where such crossings are inadequate.

- Give high priority to bicycle projects that link existing facilities into a continuous network.
- Address regional bicycle “missing links” identified in plans and studies.

Build all bicycle projects according to accepted design standards.

- Plan, design and build facilities in accordance with the AASHTO Guide for the Development of Bicycle Facilities and other accepted documents.
- Educate transportation planners and engineers on how to safely and efficiently accommodate bicyclists.

Educate the general public and public officials about the benefits of biking and develop/improve programs to encourage increased levels of biking.

- Increase the use of media to educate the public.
- Integrate bicycle safety laws and regulations into driver’s education classes and driver’s license testing.
- Produce materials on bicyclist safety laws and distribute in a wide variety of venues.
- Develop and administer bicycle safety programs for bicyclists of all ages.
- Produce, regularly update and distribute bicycle maps.
- Increase participation in and quality of special events and programs that encourage bicycling.

Increase enforcement of traffic laws equally among bicyclists and motorists to increase safety and build mutual respect among all system users.

- Consistently enforce laws among motorists and bicyclists.
- Continue to educate and train law enforcement personnel in bicycle enforcement.

Develop and refine the regional bicycle network so that all jurisdictions understand, incorporate and implement their respective components of the regional system.

- Develop guidelines for jurisdictions to use when developing the bicycle components of their local plans.
- Collaborate to ensure that all plans are in agreement.

Support greater investment in bicycle projects.

- Support increased funding to implement and maintain transportation plans, including bicycle components.
- As new transportation funding sources are identified, assure that a share be provided for bicycle projects.

Monitor the progress of the implementation of the bicycle plan, and assess the effects of project and program investments.

- Conduct counts to measure changes in bicycle travel over time
- Conduct “before and after” studies to evaluate the impact of improved and expanded facilities
- Develop tools to measure the effects of safety, education and encouragement programs
- Periodically inventory bicycle facilities in the region.

Bicycling Projects

There has been a state Bicycle Accommodation Policy since 2002 (see full language in Appendix B), so most new road projects will include bike lanes or shoulders that can accommodate bicycles. Programmed and planned greenway and sidewalks projects are below in Table 18 and are also included in the complete Non-Roadway Project List on page 157.

Table 18. Bicycle Projects in the Non-Roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
950	Bike Parking Program	TPO Area	Bike racks provided to businesses and agencies at reduced cost	2015-2024	\$25,000	ENH	√	√	√	√			√	√
951	Bike network improvement projects	TPO Area	Projects that enhance bicycle transportation	2025-2034	\$50,000	ENH	√	√	√	√			√	√
952	Signage for City of Knoxville bike and greenway network	City of Knoxville	Improved signage for bicycle transportation	2015-2024	\$50,000	ENH	√	√	√	√			√	√

TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) reduces traffic congestion and pollution by influencing changes in travel behavior. Rather than building or widening roads or improving signal timing, TDM increases the passenger capacity of the transportation system by reducing the number of vehicles on the roadway during peak travel times. In general, TDM strategies encourage travelers, especially commuters, to make their trip via some method other than driving alone (bus, carpool, vanpool, bike, walk); or not to make the trip at all (telecommute); or to shift their travel time to off-peak hours (compressed work week and flex-time programs). These strategies are typically voluntary in nature, and often rely on market-based or employer incentives to increase participation.

TDM strategies include:

- *Ridesharing Programs.* Ridesharing can reduce congestion by reducing the number of vehicle trips, in turn leading to reductions in Vehicle Miles Traveled (VMT).
- *Alternative Work Arrangements.* Alternative work arrangements reduce VMT by providing work sites closer to homes, or by spreading traffic to non-peak periods.
- *Incentives.* Economic or other incentives for transit, carpooling, bicycling and walking can reduce the costs of these modes, encourage their use, and thus reduce VMT.
- *Parking Management.* Parking management manages the cost of parking, reduces its availability, provides information regarding availability, so as to reduce travel demand and reduce excess VMT searching for parking spaces.
- *Emergency Ride Home Programs.* Emergency ride home programs reduce VMT through increase use of alternative modes by guaranteeing people a way home should they need to work late or an emergency arises during the day.
- *Car Sharing Programs.* Car sharing reduces VMT by reducing vehicle ownership; cars are available when needed, but discretionary trips may be more likely made by transit or non-motorized modes.



"How Many Can You Fit in a Fit?" is a popular Smart Trips Month event. The winning team (not pictured) fit 21 people into a Honda Fit.

Existing Conditions

The Knoxville Regional Smart Trips Program is housed within the TPO. The primary goal of the Smart Trips Program is to reduce the number of VMT and the number of single-occupant vehicle trips to improve air quality. Secondary goals are to reduce peak-hour traffic congestion on major roadways in the Knoxville region. This is accomplished by serving as a resource to help commuters find alternative commuting options and getting businesses involved in promoting the program and providing incentives to their employees, such as free transit passes, parking cash-out (where employees can choose a parking space or get the value of that parking space each month), or preferential carpool parking.

The Smart Trips website provides information on carpooling, transit, bicycling, walking and telecommuting/reduced work week. The website allows commuters to register for Smart Trips and access an online ride-matching service free of charge. The Smart Trips commuter database allows the TPO to quantify results and track commuting habits, although not everyone who uses alternative transportation registers for Smart Trips, and not every participant logs their commutes.

The Smart Trips program has more than 1,500 program members as of September 2008 and continues to add more each week. The main reason given for becoming a Smart Trips participant is the high cost of commuting, followed by the desire to do something good for the environment. Commuters are becoming better educated about the impact driving has on regional air quality, and Smart Trips actively promotes the impact air quality has on East Tennessee's economy and the health effects. Commuters use Smart Trips as a resource to ask questions about which bus routes are available and how to ride the bus, how to find a carpool partner, how to find safe biking and walking routes, and how to get their employer to participate.

There are more than 55 participating employers in the program now, compared to just 4 when the LRTP was completed in early 2005. Smart Trips has been contacted by several employers a week looking for more information to provide their employees. Carpooling, taking transit, biking, walking, telecommuting and compressed work weeks help make commuting more affordable and can complement employee wellness programs. Since there are a number of employers located out of reach of KAT routes, Smart Trips is working with these companies to promote carpooling to their locations and to recruit other nearby businesses to provide more potential carpool partners. The numbers of employees signing up with Smart Trips has increased substantially over the past few years, as Figure 25 shows.

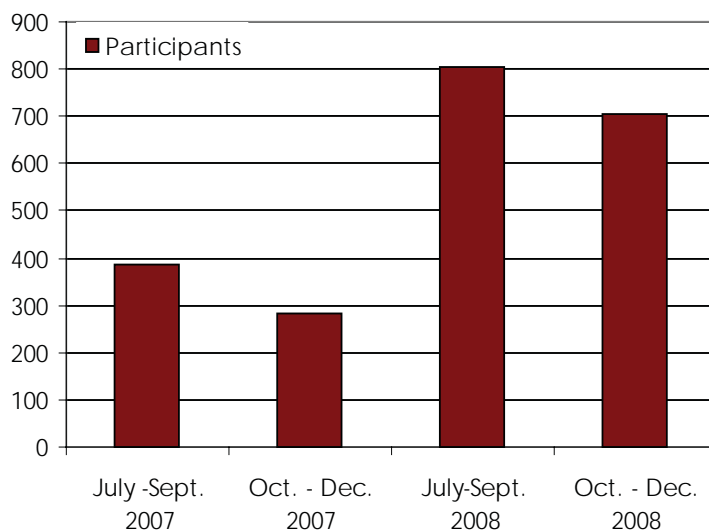


Figure 25. Smart Trips Participation July 2007-December 2008



Smart Trips website



Two Smart Trips Commuters of the Month

Existing or Committed Studies, Plans, Programs and Projects

When participants log their commutes online, they can qualify for an incentives program called “Commuter Bucks.” Smart Trips also recognizes outstanding participants through the “Commuter of the Month” program. Additionally, Smart Trips holds a Commuter Challenge each year, although the most recent challenge ran from May 1, 2008, through June 30, 2009, the duration of the SmartFix40 closure of I-40 through downtown Knoxville. The most recent Commuter Challenge had increased participation.

Smart Trips Month is a recent event now held each May and involves many events and presentations designed to increase awareness of and participation in the program. In 2008, the month included an “Undrivers License” promotion to encourage commuters to make the pledge to carpool, ride the bus, bike or walk to work at least once during the month and offered discounts to local retailers and free KAT rides on Tuesdays. Many of the pledges came from people who were new to Smart Trips.

An outreach campaign is conducted in conjunction with Smart Trips Month and the Commuter Challenge, including various forms of marketing. In the past, television and radio advertising have been used. Currently, website and newspaper advertising is a larger component. Presentations at worksites and tabling at health fairs are another main component of Smart Trips outreach.

Issues

A well-managed and properly supported TDM program can affect a significant portion of total travel. Comprehensive TDM programs can achieve cost-effective reductions of 20 - 40 percent in motor vehicle travel, although most programs have smaller effects because they focus on particular types of trips (such as commuting), cover a limited geographic scope or are limited to strategies that can be implemented by a particular government agency. Travel reductions of 10 - 30 percent are more realistic for TDM programs implemented by local or regional governments.

Commute trips represent only about 30 percent of total personal vehicle travel. Other types of trips can also be reduced using appropriate TDM strategies. For example, school TDM programs can also achieve 15 - 30 percent trip reductions. Land use management strategies such as access management and smart growth can reduce per capita vehicle travel by 20 - 50 percent in a specific area.

Best practices for TDM include:

- Make TDM programs comprehensive, including as many transportation improvements and incentives as appropriate for a particular situation;
- Include both positive and negative incentives. TDM programs tend to be most effective when they improve consumers’ travel choices and provide incentives to use alternatives to driving when possible;

- Integrate transportation and land use planning as part of a comprehensive TDM program; and,
- Involve stakeholders in TDM program planning and implementation, including transportation and land use planning agencies, transit providers, businesses, residents and employees.

Common barriers to TDM programs include existing planning and funding practices that favor capacity expansion over demand management (even when it is more cost effective and beneficial overall), institutional opposition to change, political opposition to change, and resistance from special interest groups that benefit from existing inefficiencies.

Objectives and Proposed Actions

Reduce traffic congestion and positively impact air quality by decreasing the use of the single occupant vehicles (SOV) at peak hours.

- The TPO shall work with local governments and TDOT to develop vehicle miles traveled (VMT) reduction goals.
- The TPO shall continue the Smart Trips program, promoting alternatives to SOV travel, including carpool, vanpool, transit, walking, bicycling, telecommuting and variable work schedules.
- The TPO shall encourage local governments and businesses to participate in events and other activities that support and facilitate the use of alternatives to driving alone by commuters and other travelers (e.g., Smart Trips Month, Try Transit days, Air Quality Action Days, Bike to Work Week).
- The TPO shall work with transportation-related agencies and local governments to encourage, promote and support employer participation in qualified transportation fringe benefit allowed under the federal IRS Code to provide tax-deductible public transportation benefits to their employees.
- The TPO shall encourage and participate in public-private partnerships and develop incentives to encourage employer, developer and other organizations' participation in meeting the mobility needs of the region's residents, visitors and businesses.
- The TPO shall work with local governments, employers and developers to encourage and implement effective parking management strategies, including preferential parking for carpools and vanpools, shared use parking and variable parking pricing.
- The TPO will work with local governments to develop TDM-supportive policies and ordinances for all new and redevelopment projects.

INTELLIGENT TRANSPORTATION SYSTEM

Intelligent Transportation Systems (ITS) refers to the use of advanced technologies to enhance the management and operation of transportation facilities, increase safety, security, and mobility, and reduce congestion. ITS elements can take on many forms, some of which include vehicle detection

devices that report traffic counts, speed, and travel time; video surveillance equipment to monitor roadways for congestion and incidents; roadway sensors that monitor weather and road conditions; communication services and facilities that transmit information; traffic control centers that serve as a central location for traffic management, communication, and the collection and coordination of information; variable message signs that display traffic information to motorists; and roadway service patrols that respond to incidents in a timely manner.

Existing Conditions

During the 1990's, the Tennessee Department of Transportation recognized the need for a statewide Intelligent Transportation System that was later named SmartWay in 2003. A component of the TDOT SmartWay Strategic Plan was to focus these ITS efforts in the four major urban areas of Tennessee- Nashville, Knoxville, Chattanooga, and Memphis.

Knoxville Intelligent Transportation Systems Plan

In 1998, the Knoxville ITS Strategic Assessment was completed, incorporating input from the Tennessee Department of Transportation, Federal Highway Administration, state, county and local highway officials, planning agencies, local emergency services, and transit and airport authorities to identify what an intelligent transportation system in the Knoxville region should consist of and what it should accomplish. In October 2000, the Knoxville Regional Intelligent Transportation Systems Plan was completed, which included a Communications Master Plan and Regional Architecture. The plan identified the project limits of the ITS, consisting of more than 41 miles of roadways within Knox County and including all or portions of I-40, I-75, I-640, I-275, Pellissippi Parkway and Alcoa Highway.

The Communications Master Plan identifies how information will be transmitted among ITS components, jurisdictions and agencies responsible for management, operations and emergency response, the media and the public. The deployment of the Knoxville ITS involves the use of wireless communications for audio information to the public and fiber optic land lines for the transmission of video digital information. To ensure redundancy in the system, two public private partnership agreements are used for covering shared usage of fiber optics.

The Regional Architecture ensures that ITS projects funded by federal transportation dollars are in compliance with the National ITS Architecture so that separate ITS components will be compatible and integrated with one another. It identifies which ITS user services will be provided for the Knoxville region along with the roles and responsibilities of stakeholders involved in its deployment. The ITS user services identified for the Knoxville ITS Plan are travel and traffic management, public transportation management, electronic payment, emergency management, and information management.

Highway Advisory Radio System (HARS)

The Highway Advisory Radio System provides information to motorists through an AM radio band. In Knoxville, AM 1620 is dedicated to broadcasting highway advisories.

Progress since the Adoption of the 2002 Long Range Transportation Plan

Since the last Long Range Transportation Plan, several ITS activities throughout the Knoxville region have been initiated.

Knoxville Regional Transportation Management System (TMS)

The first large scale deployment of the Knoxville ITS plan, known as the Knoxville Regional Transportation Management System (TMS) has been completed by TDOT to address operations and management of the interstate system. The Knoxville TMS includes 75 CCTV cameras along portions of the interstate, expressway, and arterial system to monitor traffic flow and roadway conditions and to identify incidents. Sixteen dynamic message signs (DMS) were placed at overhead locations along the interstates and expressways displaying traveler information. Eventually, five additional DMS locations along major arterials will be constructed. There are now several dynamic message signs strategically located at critical points on the rural interstate system in the region.

The Traffic Management Center (TMC) is in operation at the TDOT Region 1 Headquarters on Strawberry Plains Pike. The TMC acts as a central point for the Knoxville TMS. It collects and coordinates all transportation related information. The TMC also controls the direction of traffic cameras, incident detection, verification, coordination and HELP truck deployment. The TMC also issues traveler information and displays travel times on the dynamic message signs. Travelers can also check traffic conditions and view real time traffic cameras on the TDOT and TPO webpage. The TPO is responsible for maintaining the Knoxville ITS Regional Architecture.

Tennessee 511

The Tennessee 511 system utilizes an automated voice response system to provide travelers with information on road and travel conditions, incidents, and construction. The Tennessee 511 is available 24 hours a day, 7 days a week and can also be accessed through the internet at www.tn511.com.

ITS and Public Transit

Intelligent transportation systems can also be used by public transportation agencies to track transit vehicles, provide route information, aid in fare collection and management, and provide transit information to passengers. Knoxville Area Transit (KAT) has finalized an ITS Needs Assessment that developed a prioritization plan. Based on the recommendation of the KAT Action Plan 2010, KAT is vigorously pursuing ITS technology. Today's



The dynamic message sign on Pellissippi Parkway.



Commuters can monitor traffic in real time using TDOT SmartWay camera images on the TPO website.

*"I look to the future because
that is where I am going to
spend the rest of my life"*

—George Burns

riders want on-demand access to transit information. Also, key to the KAT Action Plan 2010 was the need for KAT to become more efficient in their operations by using ITS technology. The ITS Needs Assessment reviewed operations, made recommendations of what types of ITS technology would be appropriate for a system of KAT's size, prioritized which ITS technology should be implemented first, and made sure the different types of technology recommended are compatible. Phase Two will ready KAT for the acquisition of ITS technology by preparing a detailed networking plan, identifying specific product brands and models, and prepare actual bid specifications. Before Phase Two can be initiated KAT must first get a better handle on how data will be transmitted. An interim study that analyzes data transmission options and costs needs to be conducted.

In 2005, KAT incorporated onboard security cameras onto its buses and provided real-time bus scheduling.

Both Knox County CAC Transit and the East Tennessee Human Resource Agency (ETHRA) are also pursuing ITS technologies. Both agencies already have Global Position System (GPS) units on either part or all of their vehicle fleet. ITS can assist agencies that provide demand response by making operations more efficient. KCT and ETHRA are also exploring possible coordinating opportunities with KAT.

Great Smoky Mountains National Park

The National Park Service (NPS) has recently completed a study that identified potential ITS projects for the park and major access points. The TPO, TDOT and NPS should work together to ensure that the ITS architecture is compatible and that ITS projects are coordinated.

Issues

While the Knoxville ITS Plan provides a much needed service, there are still some issues surrounding its deployment:

- The plan calls for ITS coverage throughout Knox County only and does not reach beyond to include the entire Knoxville region; and,
- The plan provides information on the interstate and expressway system in Knox County and does not currently go beyond to include the arterial and collector system or specific congested intersections.

Objectives and Proposed Actions

The following are objectives and actions recommended by the Mobility Plan's ITS element:

- Update the regional ITS architecture incorporating the NPS ITS plan;
- Promote the expansion of TMS deployment throughout the region, including placing CCTV traffic cameras and dynamic message signs in Anderson, Blount, Cocke, Jefferson, Loudon, and Sevier Counties;
- Develop a strategic plan for ITS expansion in the City of Knoxville by

identifying additional opportunities, a timeframe for deployment, and potential funding sources; and,

- Support the installation of additional CCTV traffic cameras and dynamic message signs along arterials and collectors and at congested intersections, especially throughout the TPO planning area.

The following objectives relate to incident management:

- Support expanded incident management through HELP truck coverage along the interstate and expressway system in Anderson, Blount, Cocke, Jefferson, Loudon and Sevier Counties.

CONGESTION MANAGEMENT PROCESS

The ability to reach one's destination in the Knoxville region in a timely manner, whether it is for work, shopping, school, social purposes or a delivery of goods, is a critical component in the quality of life for local residents and visitors. The problem of traffic congestion can threaten this aspect of quality of life, especially if it is not managed and is allowed to increase over time. The Knoxville Congestion Management System (CMS) plan that was adopted on February 26, 2003, originally set in place a mechanism for identifying congestion in the TPO planning area, and for choosing appropriate solutions to deal with traffic congestion. The TPO staff subsequently completed an update to the CMS plan, which is now known instead as a Congestion Management Process, or CMP. This section of the Mobility Plan is intended to provide an overview of how the Congestion Management Process is conducted and implemented in the TPO planning area. A map of congested locations is shown in Figure 26 on page 88 and a table listing each congested corridor along with a cross reference of projects in the Mobility Plan that will mitigate congestion is provided in Appendix C, Tables 36 and 37.

The requirement for a CMP originated with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) legislation in 1991, and was carried forward unchanged in its successor, the Transportation Equity Act for the 21st Century (TEA-21). With the passage of SAFETEA-LU in 2005, the Congestion Management System requirement was changed to a Congestion Management Process. Much of the language in the federal regulations remains the same between a CMS and a CMP, however, as the name suggests, there is more emphasis on making congestion management an ongoing process. The new regulations strengthen the tie between a CMP and the Mobility Plan, stating that the regulations reflect the goal that the CMP be an integral part of developing a long range transportation plan and TIP for MPOs. Furthermore, the CMP should not be developed as a stand-alone product of the planning process, but rather fully integrated into the operations, management and other planning processes of the metropolitan transportation system such that there are a common set of goals and objectives that provide a seamless selection process for projects to be included in the TIP. One of the key methods to insure the complete

The nation's drivers languished in traffic delays for a total of 4.2 billion hours in 2005, up from 4 billion the year before, according to the Texas Traffic Institute's urban mobility report. That's about 38 hours per driver.

"Things are bad and they're getting worse," said Alan Pisarski, a transportation expert and author of "Commuting in America."

The study estimates that drivers wasted 2.9 billion gallons of fuel while sitting in traffic. Together with the lost time, traffic delays cost the nation \$78.2 billion, the study estimates.

Note:

A CMP is required in urbanized areas with greater than 200,000 population, which are known as a Transportation Management Areas (TMA). Therefore the Knoxville Regional TPO concentrates most data collection efforts on the urbanized area although since the TPO's travel demand forecasting model includes the entire nonattainment area it is possible to include some measures of congestion for the regional area.

integration of the CMP with all other planning processes is to provide for stakeholder involvement with others in the region including public transportation operators and state and local operations staff.

Required Elements of a CMP

1. Identify methods to monitor and evaluate the performance of the multimodal transportation system.

Since driving cars is the predominant mode of transportation in the Knoxville region, and the street and highway system affects the mobility of several modes such as personal vehicles, freight and public transit, it was determined that the CMP should include all roadways that carry an average daily traffic volume of 10,000 vehicles or greater. Congestion is also monitored for all facilities that are included in the TPO's travel demand forecasting model as described in the Roadway section of Chapter 4.

2. Identify mechanism for selection of appropriate performance measures.

This element involves the definition of parameters used to measure the extent of congestion based on locally determined thresholds for system performance. There are two performance measures that were selected to determine congestion in the Knoxville region: volume-to-capacity ratio (V/C ratio) and travel speed comparison between peak periods and off peak periods.

The V/C ratio compares the traffic volume of a roadway in the peak hour to the theoretical capacity of the roadway in order to determine whether the traffic flow is being effectively accommodated. One main reason that the V/C ratio was chosen as a performance measure is because of the ability to use the TPO's travel demand forecasting model to determine possible future congestion in both the urban and regional areas.

The peak period versus off peak period travel speed comparison performance measure allows the TPO to document roadway congestion in terms that are easy to understand by the general public. This measure is based on actual speed data collected using GPS units attached to vehicles that travel on roadways in times of peak hour congestion. Due to the extensive amount of data collection required for this measure the GPS travel time data is collected only within the TPO urbanized area. The off-peak travel time is computed based on an "ideal" free flow speed for the facility, which is based on the facility type and posted speed limit. A locally derived definition of level-of-service (LOS) based on the degradation of travel speed compared to the free flow speed is used to determine whether a roadway is congested.

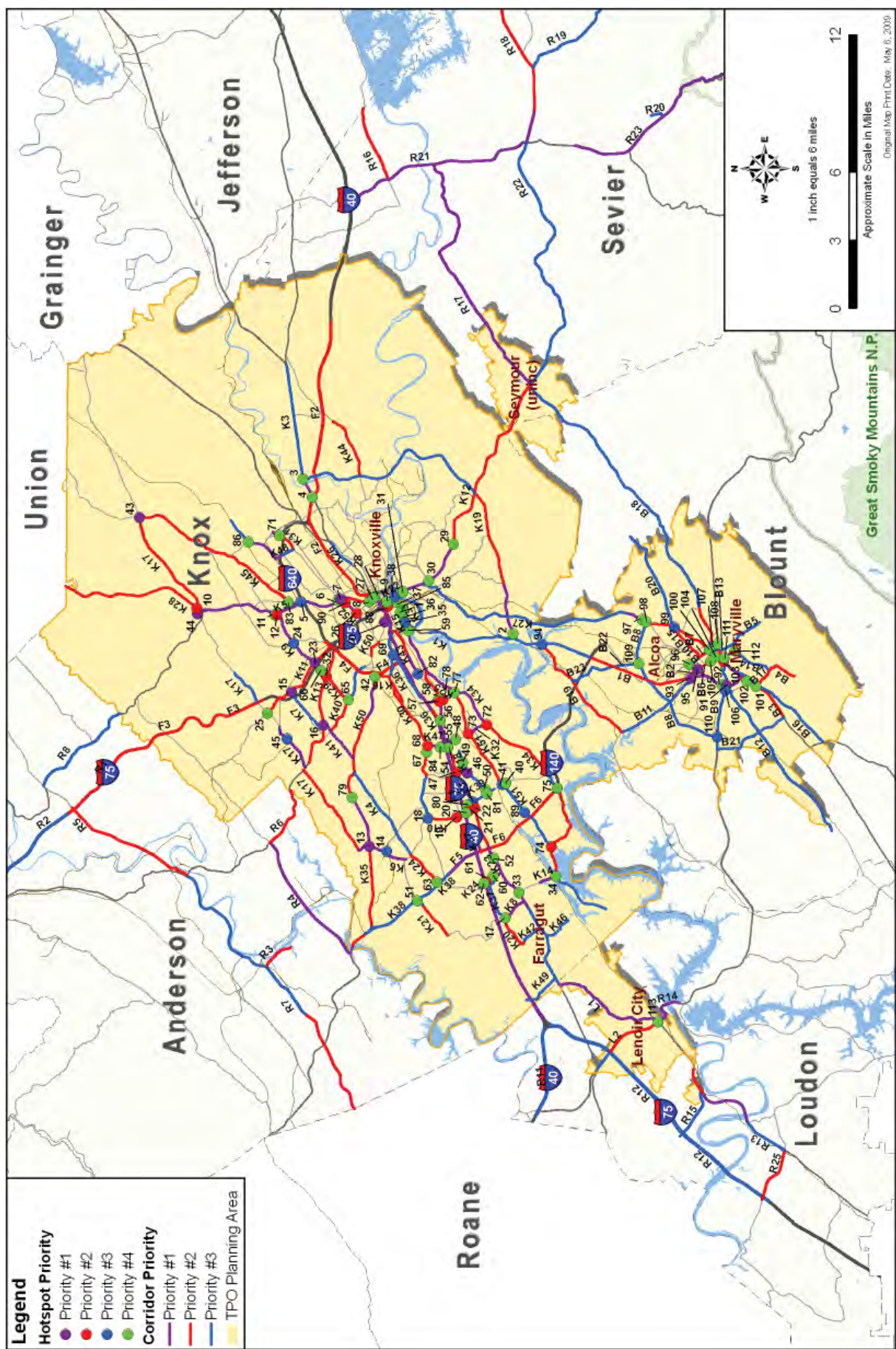
3. Establishment of Program for Data Collection and System Monitoring.

This component includes the development of a data collection program that provides for adequate system monitoring in order to identify the causes of congestion. As previously mentioned the TPO collects travel time data on the system's roadways and has found that GPS units provide the most efficient and accurate means of travel time data collection. Other transportation data such as hourly traffic volume counts feed into the CMP and are provided by various agencies in the area. Using the data that is collected and performing technical analyses based on the performance measures that were identified above, the roadway corridors and segments that qualify as being congested can be identified.

The TPO further identifies the congestion on two separate levels, Congested Corridors and Congestion Hot-Spots (Figure 26). Congested Corridors are defined as several contiguous segments of roadway with similar characteristics and with major intersections as termini that qualify as being congested under the performance measure criteria. The Congested Corridors are also listed in Table 36 in Appendix C. Priority levels were established for the corridors based on the horizon year in which the roadway is congested so for example a roadway that is already experiencing congestion receives a higher priority than one that is projected to be congested in a future year such as 2024 or 2034. Congestion Hot Spots were identified using the travel time data to determine specific locations where stopped delay was excessive, which often was the result of a signalized intersection, listed in Table 37 (in Appendix C). The hotspots are also prioritized based on the amount of delay and the number of approaches that are experiencing excessive delay.

4. Identification of Appropriate Congestion Mitigation Strategies.

There are several strategies that are available in the transportation planner's "toolbox" that can be used to reduce congestion. This component of the CMP attempts to identify the most appropriate mitigation strategy on a case-by-case basis. The intent of the CMP regulations is to first investigate mitigation strategies that focus on improving transportation operations and managing the existing system more efficiently, as well as reducing travel demand as a means to reduce congestion before resorting to new roadway construction or widening projects that serve only single occupant vehicles (SOV). The Knoxville CMP identifies a menu of congestion mitigation strategies (listed in Table 39 in Appendix C) that provide for a stepwise method of evaluating operational and travel demand reducing improvements prior to determining that additional SOV capacity is warranted.



The TPO organized a group of stakeholders and operations partners from each jurisdiction and agency represented on the Technical Committee in order to identify which strategies are appropriate for each congested corridor. Table 36 in Appendix C provides a cross reference of the projects in this Plan that address the congested corridors. The current list of strategies that were selected were based primarily on subjective analysis of the measures, but as this process continues, the TPO expects to find better tools to evaluate the various mitigation strategies using a quantitative basis.

The CMP regulations require that areas such as the Knoxville region which are designated in nonattainment of the ozone standard include complementary mitigation strategies that increase the effectiveness and preserve the capacity of a project that significantly increases the capacity for single occupant vehicles (SOV). Table 38 in Appendix C identifies all of the projects within the Knoxville TMA that significantly increase capacity for SOV and what complementary strategies are included with such projects. For example, all roadway widening projects in the TPO Area are recommended to include non-traditional mode incentives, which include sidewalks and bicycle lanes at the minimum and provisions for transit vehicles where appropriate. An additional strategy not specifically noted in Table 39 that was determined to be very important in this region is the continuous maintenance of the traffic control equipment to ensure that appropriate signal timings are in place and that all the detection hardware is functioning correctly. Other stand-alone projects that have already been implemented to reduce travel demand and improve operational efficiency include the Smart Trips program, the freeway Transportation Management System project, and several signal synchronization projects.

5. Identification of an Implementation Schedule.

One mechanism for implementing the mitigation strategies that are identified by the CMP is through the Regional Mobility Plan and Transportation Improvement Program project selection processes. Projects that are identified in the planning process are given points based on how well they address the goals and objectives of the region, of which congestion is a major factor. Coordination with operations and management partners throughout the region is another mechanism being pursued by the TPO in order to identify congestion issues and solutions that can be implemented more quickly than a major construction project. A description of the specific scoring criteria used to identify projects for implementation follows later in this section.

6. Implementation of a process for periodic assessment of the effectiveness of implemented strategies.

A process for periodic assessment of the efficiency and effectiveness of implemented strategies is a key component of a fully operational CMP, although it can prove very challenging. Since certain congestion mitigation strategies take long periods of time to fully implement and others may be taking place simultaneously, it can be difficult to measure the effectiveness of the specific measure that was taken. An example of this may be where a major interstate widening is occurring during the same time that an ITS project is being implemented through the same corridor. The TPO requires that operational improvement projects such as signal timing upgrades include a before and after analysis to determine its effectiveness and measure its impact on congestion. In addition, the TPO plans to continually update the CMP through regular data collection that should provide information about the change in conditions over time and whether the mitigation strategies that are being employed are keeping pace with the congestion.

Summary of CMP Interaction with the Overall Planning Process

The CMP is not intended to supersede the other elements of the transportation planning process, nor is it intended to prioritize all transportation projects. The primary purpose of the CMP is to provide for a more informed decision-making process that can be used to make the most effective use of limited resources to address congestion problems.

The project selection criteria for the Regional Mobility Plan, TIP and CMAQ program have been modified to address results from the CMP. The scoring system used in the above criteria provides a direct mechanism for the CMP to be considered in the project selection process, which ultimately determines the projects that are to be implemented.

Currently, the Regional Mobility Plan project scoring criteria incorporates the CMP under the goal of System Efficiency, and it is assigned 10 out of the total possible 70 points, the TIP project selection criteria assigns a weight to CMP considerations of 20 out of 100 total possible points and the CMAQ selection criteria assigns 10 out of a possible 70 points to projects or strategies identified by the CMP.

Conclusion

Congestion is a way of life in many metropolitan areas, although it can be kept at a tolerable level by employing operational and travel demand reduction strategies along with capacity additions where they are necessary. An effective CMP is an important tool that provides objective data on the performance of the transportation system in order to identify congested areas, select appropriate mitigation strategies and finally prioritize selection of projects and actions to address the congestion.

Table 19. CMP Procedural Considerations

Task	Year 1	Year 2	Year 3	Year 4
1. Collect Data				
2. Evaluate Completed Projects				
3. Select Appropriate Strategies				
4. Prepare Summary Report				
5. Select Projects for RMP Inclusion				

The above schedule assumes Year 1 begins immediately upon adoption of a new, fully updated Regional Mobility Plan.

Task 1 – Collect Data, refers most specifically to the collection of GPS travel time data which is the most important data that is collected with respect to the CMP, however there are other types of transportation system data that are collected continuously such as traffic counts and land use information, which also feed into the CMP development. An attempt should be made prior to beginning this task to review the CMP performance measures to ensure that the appropriate data is being collected or if additional types of data will be needed.

Task 2 – Evaluate Completed Projects, is done on an ongoing basis as projects are being completed and is highly dependent on the type of project that is being evaluated, i.e. some project types have a definitive conclusion whereas others, such as the Smart Trips program, are ongoing and should be evaluated on a recurring basis as to their congestion reduction performance.

Task 3 – Select Appropriate Strategies, involves coordination with the aforementioned operations partners and other stakeholders to determine the appropriate congestion reduction strategies for each of the corridors that are determined to be congested based on the most recent data collection and performance measure analysis.

Task 4 – Prepare Summary Report, is intended to be a single document that summarizes the CMP process and includes the most current listing of congested locations, identified strategies for each location and an analysis of implemented strategies.

Task 5 – Select Projects for Regional Mobility Plan Inclusion, is not a step in the CMP per se, but rather is the culmination of the cycle such that the Regional Mobility Plan can be developed with the appropriate information on congestion having been made available to the decision-making process for selecting and prioritizing projects.

CMP Procedural Considerations

It is important to stress that the CMP is an ongoing process that is a continuous aspect of the transportation planning process. The following schedule (Table 19) illustrates the preferred mechanism for maintaining the CMP as an ongoing process that will provide timely information for the development and selection of projects for both the Regional Mobility Plan and the TIP.

SAFETY

Incorporating safety in transportation planning helps identify, analyze and develop solutions to transportation hazards. Safety conscious planning addresses highway, transit, pedestrian, bicycle and freight safety. It is necessary for many agencies (TPO, TDOT, local governments, public safety personnel, emergency services personnel and trucking companies) and the public to communicate consistently with one another and build partnerships. Promoting transportation safety is primarily focused on reducing injuries and loss of life but improving safety can also decrease economic losses and significant transportation system disruptions that result from crashes.

Great efforts have been made in Tennessee to increase roadway safety. Behavioral strategies such as new Traffic Safety Laws (Seatbelt Law, Child

2007 National Statistics

Source: National Highway Traffic Safety Administration

- Fatalities: 41,059
- Injuries: 2,491,000
- Property damage only: 4,275,000
- Non-motorists:
 - o Pedestrians killed: 4,654
 - o Pedestrians injured: 70,286
 - o Bicyclists killed: 698
 - o Bicyclists injured: 43,481

2007 Tennessee Statistics

- Fatalities: 1,210
- Injuries: 78,139

Knoxville Region

(Anderson, Blount, Knox, Loudon and Sevier Counties)

Pedestrian and Bicyclists Data

Source: TDOT

- Traffic Crashes Involving Pedestrians
 - o 2003: 120
 - o 2004: 121
 - o 2005: 114
 - o 2006: 125
 - o 2007: 139
- Traffic Crashes Involving Bicyclists
 - o 2003: 43
 - o 2004: 52
 - o 2005: 48
 - o 2006: 48
 - o 2007: 49
- Traffic Crashes Involving Fatalities

(Source: Tennessee Department of Safety)

- o 2003: 120
- o 2004: 154
- o 2005: 141
- o 2006: 131
- o 2007: 124

- Traffic Crashes Involving Injuries

(Source: Tennessee Department of Safety)

- o 2003: 5,056
- o 2004: 6,671
- o 2005: 6,849
- o 2006: 6,401
- o 2007: 6,357

- Total Traffic Accidents

(Source: Tennessee Department of Safety)

- o 2003: 20,628
- o 2004: 24,750
- o 2005: 25,430
- o 2006: 25,282
- o 2007: 24,288

Knoxville MSA Pedestrian Fatalities

Source: Surface Transportation Policy Partnership data (www.transact.org)

- o 2000-2001: 21
- o 2002-2003: 17

Knoxville Region Highway–Rail Incidents

(January 2000 to September 2004)

- Anderson County:
 - 8 incidents, 2 injuries, 1 fatality;
- Blount County:
 - 3 incidents, 1 injury, 1 fatality;
- Cocke County:
 - 7 incidents, 1 injury;
- Jefferson County:
 - 5 incidents, 1 injury;
- Knox County:
 - 28 incidents, 6 injuries;
- Loudon County:
 - 4 incidents.

Restraint Law, DUI Law, and the Graduated License Law) are steps that have been made to improve safety on Tennessee's roadways. Other state strategies that will ultimately improve safety in the state and in region involve technology like the Intelligent Transportation System (ITS) and policies like the State Strategic Plan for Highway Incident Management. Some national, state and regional statistics are given below to provide a realistic view of the challenges regarding safety problems for varying modes of transportation. Although there have been improvements and the rates of fatalities and injuries have declined on the national level over the years, there are still obviously needed improvements.

It should be noted that nationally the number of motor vehicle fatalities decreased in 2007 for the first time in many years. Between 1997 and 2007, the fatality rate per 100 million vehicle miles traveled decreased each year (1.64 and 1.37, respectively). That reduced rate along with VMT increasing at a slower rate (and even decreasing in 2008) results in fewer fatalities on the nation's roads.

In Tennessee, many steps have been taken to improve safety in the transportation system.

In June 2006, the Knoxville Urban Area Incident Management Taskforce was established, comprising of several stakeholders such as TDOT, KPD, EMS-911, Tennessee Highway Patrol and the Knoxville Regional TPO. This taskforce is meant to bring the stakeholders together to explore new initiatives and increase the efficiency in incident management. Incident management encompasses all of the activities undertaken to assist involved motorists, protect public health and safety, conduct necessary investigations, minimize travel disruptions and delays, remove the damaged vehicles or cargo, and restore the roadway to normal conditions.

TDOT has installed emergency reference markers to improve emergency response to interstate crashes and other incidents along 228 miles of Interstate highways in the four metropolitan areas, specifically in the Knoxville region.

The TPO is working with local governments on Safe Routes to School programs at several schools in the Knoxville region. The City of Knoxville installed many countdown-timer pedestrian signals in the downtown area.

Strategic Highway Safety Plan

In November 2004, the State of Tennessee was the first state to complete a Strategic Highway Safety Plan (SHSP). It was updated in August 2007, and its stated goal is to reduce the fatality rate by 10 percent by the end of 2008. Additionally, the plan has been revised in 2009 and will be signed by the Governor later this year. The plan details eight areas of emphasis:

1. Improve decision making process and information systems;
2. Keep vehicles in the proper lane and minimize the effects of leaving the travel lane;
3. Improve intersection safety;
4. Improve work zone safety;
5. Improve motor carrier safety;
6. Improve driver behavior, including the following specific issues:
 - i. Alcohol,
 - ii. Aggressive driving,
 - iii. Occupant protection,
 - iv. Young drivers and
 - v. Older drivers;
7. Legislation; and,
8. Educational programs.

The development of this plan is a combined effort of the Tennessee Department of Transportation, Governor's Highway Safety Office, Tennessee Department of Safety, Federal Highway Administration and Federal Motor Carrier Safety Administration.

Mobility Plan and TIP Project Selection Criteria

The project selection criteria for the Mobility Plan and the Transportation Improvement Program projects have been revised to include safety. As previously mentioned, the TPO requires that all parties pursuing projects funded with federal funds show how the project meets the goals and objectives of this plan, including safety.

The Mobility Plan and TIP project applications both collect safety-related information including crash rate data, how the project addresses or improves the safety and security of the transportation system as well as for the users of the system.

Regional High Crash Locations

The TPO compiled information from TDOT that identified high crash locations on major streets and highways in the region. Table 20 highlights the locations that are a part of TDOT's Highway Safety Improvement Program (HSIP), High Risk Rural Roads (HRRR) and Ramp Queue Program (Queue).

HSIP roadways are roads that have experienced fatal and/or incapacitating injury crashes. In addition to the severe crashes, there is a second set of criteria which evaluates the type of crash that is prevalent in a location and compares a crash rate for the roadway to the critical crash rate based off of crash types.

HRRR roadways are roads in which the crash rate for fatal or incapacitating injury crashes exceeds the statewide average for the qualifying functional class roadway. The qualifying functional classes are major collector, minor collector and local roadways.

The excessive ramp queuing list is a list of high crash locations at interstate off-ramps that are the by-product of excessive queuing from the off-ramp.

Public Transit Safety

Local transit agencies have always placed an emphasis in providing a safe, secure and reliable service for

its passengers and employees. These efforts are continuing and are an integral part of providing transit service.

While transit must be concerned about safety and security as it relates to the provision of service, transit itself can be a valuable resource to a community in providing rescue or evacuation services. Local transit providers participate as part of the larger community emergency preparedness efforts.

Basic goals of transit agencies in regards to safety and security include:

- Being prepared for and well-protected against attacks;

Table 20. Knoxville Region Crash Data (2007)

High Risk Rural Roads

County	HRRR Roadway	Beginning Cross Street	Ending Cross Street
Knox	Thorngrove Pike	Asbury Road	Asheville Highway (SR 9)
Knox	Lovell Rd/Emory Road (SR 131)	Schaffer Road	Old Tazewell Pike
Knox	Maynardville Pike (SR 33)	Emory Road (SR 131)	Union County Line
Sevier	Douglas Dam Road (SR 338)	Emily Drive	Termini of Road
Sevier	Jones Cove Road (SR 339)	Long Springs Road	Wilhite Road
Sevier	Chapman Highway (SR 35)	Boyd's Creek Highway	Whites School Road
Blount	Montvale Road (SR 336)	Broadway (SR 33)	Jericho Road
Blount	Montvale Road (SR 336)	Raulston Road	Montvale Station Road

Highway Safety Improvement Program

County	HSIP Roadway	Beginning Cross Street	Ending Cross Street
Knox	Maryville Pike (SR 33)	Ogle Lane	Ogle Lane
Knox	Oak Ridge Highway (SR 62)	Schaad Road	Ball Camp Pike
Knox	Oak Ridge Highway (SR 62)	Ball Road/Beaver Ridge Rd	Ball Road/Beaver Ridge Rd
Blount	Alcoa Highway (SR 115)	Singleton Station Road	Hall Road
Blount	Montvale Road (SR 336)	Old Niles Ferry Pike	Old Niles Ferry Pike
Loudon	Harrison Road	Norwood Street	Browder Hollow Road
Jefferson	Flat Gap Road (SR 92)	Russell Avenue	Russell Avenue

Ramp Queue Program

County	Interstate	Exit
Loudon	I-40 EB	Watt Road
Knox	I-40 WB	Watt Road
Knox	I-40 EB	Lovell Road (SR 131)
Knox	I-40 WB	Lovell Road (SR 131)
Knox	I-40 EB	Asheville Highway (SR 9)
Knox	I-75 NB	Merchants Drive
Knox	I-75 SB	Merchants Drive
Knox	I-75 NB	Callahan Drive
Knox	I-75 SB	Callahan Drive
Knox	I-140 WB	Kingston Pike (SR 1)
Knox	I-140 WB	Westland Drive
Knox	I-140 WB	Northshore Drive (SR 332)
Knox	I-640 EB	Broadway (SR 33)
Knox	I-640 WB	Broadway (SR 33)
Knox	I-640 EB	Washington Pike
Knox	I-640 EB	I-75
Sevier	I-40 EB	Winfield Dunn Parkway (SR 66)
Sevier	I-40 WB	Winfield Dunn Parkway (SR 66)
Anderson	I-75 SB	N Charles Sevierville Blvd (SR 61)

- Being able to respond rapidly and effectively to natural and human-caused threats and disasters;
- Being able to appropriately support the needs of emergency management and public safety agencies; and,
- Being able to quickly and efficiently be restored to full capability.

Incident Management

TDOT launched its incident response unit trucks, known as HELP, in July 1999. The trucks operate daily along I-40 from Farragut to Strawberry Plains Pike, I-75 from I-640 to Emory Road, and all of I-640 and I-275. HELP trucks are equipped to respond to accidents and other incidents along these roadways or adjoining ramps to restore normal traffic flow as quickly as possible, not only providing a service to vehicles involved but also reducing nonrecurring congestion caused by incidents.

Since the HELP program began in 1999, incident response unit trucks have responded to 85,406 incidents in the Knoxville region. Between July 1, 2005 and June 30, 2006, HELP trucks made 18,897 stops, assisting primarily with disabled vehicles, abandoned vehicles, accidents, and debris on the road. The trucks were on the scene of the incident in less than 15 minutes approximately 87 percent of the time. Of the vehicles assisted, 79 percent were passenger vehicles and almost 7 percent were tractor trailers or other heavy duty trucks.

System Maintenance

Included in the objectives of system maintenance are items such as maximizing the useful life of existing elements of the transportation system, using management systems to identify and implement optimal maintenance strategies, and maintaining transit vehicles. While maintaining the existing infrastructure, operational equipment like traffic, pedestrian, and railroad crossing signals, and transit vehicles extends the life of these elements, maintenance and/or reconstruction can also enhance the safety qualities of bridges, roadways, sidewalks, intersections, and railroad crossings. Included in the objectives of system efficiency are items such as maximizing the street network efficiency through the use of technology and travel demand management strategies and increasing vehicle occupancy rates.

Highway Incident Management

Highway incident management is gaining national attention as a means to improve highway congestion problems as well as safety. An incident such as a traffic accident, an overturned truck, an abandoned vehicle on the shoulder, or debris on the highway can cause major problems, such as congestion, on the highway system and eventually to the nearby transportation network. Overriding the deterioration of efficiency, when incidents do occur on the highway, are the increased risks imposed on the system. Often these events lead to secondary crashes. Reportedly, approximately 20 percent of all freeway crashes are secondary



TDOT Help Trucks keep traffic moving with their quick response times to incidents.

Safety Conscious Planning

Safety conscious planning is proactive safety planning for preventing crashes and unsafe conditions. Often safety improvements are reactive, spearheading strategies such as “hot spot” improvements and educational and behavioral programs. In essence, safety conscious planning involves a shift of focus from driver behavior initiatives to strategies that make it more difficult for the driver to have a crash. One way to look at integrating safety conscious planning into long range planning is considering that crashes are a function of exposure. In long range transportation planning, the TPO has the capability of minimizing exposure (via an efficient intermodal network), minimizing risk (via functional network), and minimizing consequences (via efficient emergency management system). Although, in considering these techniques of reducing and modifying and restricting exposure, a balance must be achieved such that a change to one component of the system doesn't impose safety problems to another component of the transportation system.

To be most effective, safety conscious planning must extend across all planning activities. The Institute for Transportation Engineers (ITE) identified several levels of planning processes and decisions which safety conscious planning must effectively address, namely:

- Regional - growth strategies, major network strategies, etc.;
- City/County - community plans, zoning and subdivision regulations, transportation plans, etc.;
- Small area plans - sector/neighborhood plans, area transportation strategies, corridor and access management strategies, pedestrian and bicycle facilities development, etc.; and,
- Site - site plan review, site impact studies, etc.

Safety conscious planning is needed in land use planning decisions and processes to influence policies that shape the direction of land uses to the specifics of urban form, mix, and density of use. Safety conscious planning is also an integral part of transportation planning for all modes of travel in order to shape the amount of travel as well as the mix of transportation modes.

Issues

Some of the challenges involved in planning for safety include creating an innovative region-wide and/or state-wide system for collecting, analyzing, and sharing important information like crash data and integrating safety conscious planning into long range planning and short-term programs.

Some other issues surrounding incorporating safety and security in the Mobility Plan are as follows:

- Recognizing regional safety needs and local isolated problems;
- Building stakeholder partnerships;
- Continuing multi-agency coordination and communication;

- Developing or obtaining modeling software tools for predicting potential hazards;
- Disseminating important real-time incident information to motorists;
- Implementing design factors in new infrastructure that enhances the safety and extends the life of structures, minimizing construction zone periods;
- Improving interconnectivity of the transportation system, across and between modes, for people and goods such as at modal transfer points, bike facilities that share and cross the roadways, intersections with crosswalks, and railroad crossings;
- Improving the accessibility and safety of transit stops and transfer points;
- Continuing efforts to promote truck safety such as restricted lanes, speed limits and proper loading to prevent turnovers;
- Implementing ITS technologies on transit and emergency vehicles; and,
- Finding financial resources to fund safety and security improvements.

Objectives and Proposed Actions

- Develop and implementing short term strategies that enhance the safety for all users of the transportation system;
- Creating policies and design practices that are consistent with an efficient and safe intermodal transportation network;
- Develop an information system for crash data compiling, consolidating, analyzing and accessing;
- Encourage TPO involvement in the development of regional incident management plans, coordination, and training, and
- Develop tools that allow stakeholders to examine safety data and establish priorities; apply for relevant funding; publicize the benefits of safety; and educate decision-makers and the public.

SECURITY

Security has recently been added as a separate goal to address new standards identified in SAFETEA-LU. All projects listed in this plan have been reviewed to determine their potential to improve the security of the transportation system.

The TPO is not involved in specific security or emergency planning, but does communicate with the Tennessee Department of Transportation, Tennessee Department of Safety, Tennessee Emergency Management Agency, Tennessee Highway Patrol, Knoxville-Knox County Emergency Management Agency, local law enforcement, local engineering officials, and emergency personnel on major transportation plans and projects with the intention of developing a transportation system that is as secure as possible.

The TPO has attended meetings of the East Tennessee Safety and Maintenance Committee (ETSMC) of the Tennessee Trucking Association

and includes members of the State Governor's Highway Office and ETSMC on its Freight Advisory Committee.

Existing Conditions

The project selection criteria for the Mobility Plan and the Transportation Improvement Program projects have been revised to include security. The TPO requires that all parties pursuing projects funded with federal funds show how the project meets the goals and objectives of this plan, including security.

The specific question related to safety and security in the Long Range Transportation Plan application is:

- "How does the project improve or promote safety and security for the users?"
- The specific questions or related information pertaining to safety and security in the TIP application are:
- Identification of the crash rate; and,
- "Does the project address or improve the safety/security of the transportation system? If yes, explain."

Evacuation Routes

The only designated evacuation routes throughout the Knoxville region are provided for the emergency evacuation of the Department of Defense facilities in Oak Ridge. In Anderson County, evacuation routes are SR 95, SR 62, SR 170, Union Valley Road, Emory Valley Road, Melton Lake Drive and Lafayette Drive. In Knox County, Pellissippi Parkway and Hardin Valley Road are designated as evacuation routes. In the event of other emergency evacuations, such as for hazardous spills or natural disasters, local law enforcement will determine the best routes.

Intelligent Transportation Systems

The Knoxville Regional Intelligent Transportation System (ITS) cameras allow officials at the Transportation Management Center (TMC) to monitor activity along interstates in Knox County. Law enforcement and/or emergency personnel can be dispatched by the TMC if an emergency is spotted.

Dynamic message boards located along interstates and major highways throughout Knox County and at some rural locations are capable of displaying emergency information such as weather or other natural incidents or warnings, hazardous spill information, Amber alerts or evacuation orders. The TDOT HELP trucks not only provide incident response services along area interstates, but also provide routine surveillance of bridges and overpasses, keeping an eye out for suspicious activity or disabled vehicles. HELP truck operators are able to contact law enforcement or emergency personnel if needed.

Knoxville Area Transit is currently undertaking an Intelligent Transportation System (ITS) assessment. From a camera system, Global Positioning Systems (GPS) that allow real-time tracking of vehicles to better communications systems, all will greatly enhance the level of security.

Public Transportation

Since the terrorist attacks of September 11, 2001, the efforts with regards to safety and security have reached a new level of importance. The Federal Transit Administration has undertaken a series of major steps to help local transit providers prepare against a variety of threats. It is critical to integrate security throughout every aspect of transit programs. This commitment must be demonstrated by the continual emphasis on security from the procurement of new systems and equipment, through the hiring and training of employees, to the management of the agency, and through the provision of service. The security function must be supported by an effective capability for emergency response, both to support resolution of those incidents that occur on transit property and those events that affect the surrounding community serviced by the agency.

Although local transit providers have made great strides to strengthen security and emergency preparedness, there remains much more to do. Local transit providers are a critical, high risk and high consequence asset. Everyday, transit provides mobility to thousands of our region's citizens. An appealing aspect of transit is its open and easy access. This aspect also makes it vulnerable.

At the basic level, local transit agencies are assessing their vulnerability, developing security and emergency response plans, training drivers and supervisors, coordinating with local emergency management services, and, if possible, accelerating technology development. Security is being considered proactively in all plans or projects being developed rather than added as an afterthought.

Basic goals of transit agencies in regards to safety and security include:

- Being prepared for and well-protected against attacks;
- Being able to respond rapidly and effectively to natural and human-caused threats and disasters;
- Being able to appropriately support the needs of emergency management and public safety agencies; and,
- Being able to quickly and efficiently be restored to full capability.

While local transit agencies have embraced the need to update safety and security throughout their systems, there are relatively few funds to help pay for these programs. No local agency receives any funds through The Department of Homeland Security to help with these issues. Capital expenses can slowly be absorbed through the regular improvement plans. As

older vehicles are replaced, new ones can be equipped with updated security features; however, to turn over the entire fleet could take years.

Trucking

The Transportation Security Administration (TSA) administers the Hazmat Threat Assessment Program which obtains background and security checks on drivers of commercial vehicles transporting hazardous materials. In addition, the Federal Motor Carrier Safety Administration (FMCSA) has initiated several programs aimed at protecting against terrorists using commercial trucks as weapons or targets. Their top priority is dealing with trucks that carry hazardous materials.

Commercial trucks carrying hazardous materials are restricted from using I-40 through downtown Knoxville between exit 385 (I-75/I-640) west of Knoxville and exit 393 (I-640) east of Knoxville. This restriction does not apply to trucks carrying hazardous materials to/from locations within the City of Knoxville or locations along US 129, Alcoa Highway.

Rail

The TSA has developed a series of voluntary freight rail security action items that should be considered when security plans are developed. The action items address system security, access control, and en-route security.

Both CSX and Norfolk Southern routinely monitor railroads for both safety and security purposes. CSX spends \$1 billion annually on track maintenance and upgrades.

Air

The TSA has new air cargo regulations in place that includes canine teams, site and on-board inspections, and physical screening of cargo as well as security and background checks of pilots, employees, and air cargo carriers. The TSA is also responsible for air passenger security.

Barge

The U.S. Army Corps of Engineers is responsible for monitoring all the locks along the Tennessee River and ensuring that they are operating safely and efficiently. The Port Security Exercise Training Program (PortSTEP) was established by TSA to provide port and barge security services.

Pipeline

Both Plantation Pipeline Company and Colonial Pipeline Company monitor and control pipeline flow through the use of electronic sensors that can identify an incident and shut down the pipeline in the event of an emergency within seconds. Both companies have security cameras in place and pumping stations and terminals and perform routine monthly aerial surveillance of their right-of-way.

Recent Progress

The Strategic Plan for Highway Incident Management in Tennessee was adopted in August 2003 and “establishes the framework for a systematic, statewide, multi-agency effort to improve the management of highway incidents - crashes, disabled and abandoned vehicles, debris in the roadway, work zones, adverse weather, and other events and emergencies that impact the transportation system.”

The Department of Homeland Security (DHS) administers the Targeted Infrastructure Protection (TIP) Program which in 2005 allocated \$365 million to rail, port and inter-city bus security, and highway watch and buffer zone protection programs.

In April 2003, the State of Tennessee formally formed the Tennessee Department of Homeland Security with the intention of coordinating emergency services and investigative agencies.

The DHS has also provided \$250 million to state and local governments and owners of transit security systems and \$141 million to owners and operators of rail systems.

Knoxville Area Transit has recently instituted an onboard camera system that provides closed loop security monitoring of their buses.

Issues

There are some industries within the Knoxville region that use, produce, store or distribute hazardous materials. The Department of Defense facilities at Oak Ridge and the Middlebrook Tank Farm are two of the larger facilities that handle hazardous materials.

Since Knoxville is at a crossroads for three major interstates, I-75, I-40, and I-81, and for two major Class I railroads, Norfolk Southern and CSX, hazardous materials are often transported through the Region. Trucks carrying hazardous materials are currently banned from the section of I-40 through downtown Knoxville and are directed to use I-640. Occasionally, incidents involving trucks or trains carrying hazardous materials results in the closure of a highway or evacuation of nearby neighborhoods.

The Tennessee Emergency Management Agency (TEMA) identifies the following as major hazards in East Tennessee:

1. Sequoyah and Watts Bar Nuclear Plants, which are both located outside the Knoxville Region;
2. U.S. Department of Energy (DOE) facility at Oak Ridge;
3. Wild fire or forest fire;
4. Flooding;
5. Hazardous materials;

6. Severe weather; and,
7. Earthquakes.

The Knoxville-Knox County Emergency Management Agency (EMA) has identified severe weather and hazardous materials as the most likely hazards. Primary response in these events will involve the Knoxville Fire Department, Rural Metro of Tennessee, Knoxville Police Department, Knox County Sheriffs Office and the Knoxville Health Department. The EMA has also established a working relationship with KAT to provide transportation as able in needed situations.

Objectives and Proposed Actions

- Ensure cooperation and coordination among all agencies in incident management and emergency situations.
- Engage emergency and law enforcement personnel in transportation planning.
- Ensure that the transportation system is capable of handling a response to an emergency.
- The TPO will continue to coordinate the Knoxville Incident Management Committee which includes members of TDOT, TEMA, THP, local governmental officials, law enforcement, emergency personnel and wrecker services. An objective of the TPO is to ensure cooperation and coordination among all agencies in incident management and emergency situations. In the event of a major hazard, the TPO supports all measures that need to be taken to ensure the area is safe and secure but also would like to see highways or lanes closed as a result opened as soon as possible. In some events, the evacuation of nearby neighborhoods may be necessary.
- The TPO will continue to engage emergency and law enforcement personnel in transportation planning activities. Another objective of the TPO is to ensure that the transportation system is capable of handling a response to an emergency. This can be achieved by providing multiple alternative routes through road network connectivity in the case of highway closures, ensuring sufficient emergency personnel and equipment access along the transportation system throughout the region, and utilizing ITS and other measures to effectively handle an evacuation.

ENVIRONMENTAL MITIGATION

The SAFETEA-LU legislation requires that the Knoxville Regional Transportation Planning Organization consult with federal, state, and tribal land management, wildlife, and regulatory agencies to develop a general discussion on possible environmental mitigation activities that should be incorporated into transportation projects identified in this plan.

As part of this requirement, TDOT established a consultation process with state and federal agencies responsible for environmental protection, land use

management and natural resource and historic preservation. Through this process, the TPO was able to seek comment and compare available plans and maps with planned transportation improvements.

Since the transportation planning activities of the TPO are regional in scope, this environmental mitigation discussion does not focus on each individual project within the Long Range Transportation Plan but rather offers a summary of the environmentally sensitive areas to be aware of regionwide, the projects that most likely will have an impact on these environmentally sensitive areas, and mitigation strategies that should be considered to reduce the impact of projects.

This environmental mitigation discussion was developed through a three step process. First, the TPO developed a list of environmentally sensitive areas that should be identified. Geographic Information Systems (GIS) was then used to map these areas. Second, the highway projects from the Long Range Transportation Plan were overlaid. A query was performed to determine which projects would have an impact on an environmentally sensitive area. Finally, a discussion of general mitigation efforts that should be utilized is included to minimize the potential impacts any project in this plan has on an environmentally sensitive area.

Environmentally Sensitive Areas

There are numerous environmentally sensitive areas found throughout the Knoxville region. Many areas are too small or too numerous to map at a regional level and can only be clearly identified through a project level analysis. Some areas are yet to be identified and will only become known once a project level analysis is completed, such as caves, sinkholes, and wetlands. When a project is ready to move from the Long Range Transportation Plan into construction phases, a complete analysis should be completed to determine the type and location of environmentally sensitive areas within the project study area. The following environmentally sensitive areas are included in that analysis:

1. Lakes/rivers/streams
2. Flood plains and floodways
3. Wetlands
4. Sinkholes
5. Caves and other karst topography
6. Steep slopes
7. Preserved forest/game lands
8. National/state/local parks
9. Historic sites/ neighborhoods
10. Cemeteries
11. Scenic highways/parkways

Transportation Projects Potentially Impacting Environmentally Sensitive Areas

For the initial purposes of determining whether a transportation project may have an impact on an environmentally sensitive area, any project that intersects or comes within 1/8 of a mile (660') of an environmentally sensitive area identified from the list above is considered to have an impact and thus should incorporate mitigation strategies. Due to the hilly terrain, presence of karst topography, and numerous government preserved lands in the area, the majority of the projects in this plan may require some type of mitigation effort. Figure 27 on the following page illustrates the prevalence of slope. More specific examinations are conducted after a project's scope has been defined. For instance, TDOT's area of potential effect corridors typically runs from 500 feet wide to 2000 feet wide depending on the scope of the proposed project.

Environmental Mitigation

While some sort of mitigation effort should be included in every project that has an impact on an environmentally sensitive area, it is recognized that not every project will have the same level of impact and thus different levels and types of mitigation should be utilized. Some projects involve major construction with considerable earth disturbance, such as new roadways and roadway widening projects. Other projects involve minor construction and minimal, if any earth disturbance, such as traffic signal, street lighting, and resurfacing projects. The mitigation efforts used for a project should be dependant upon how severe the impact on environmentally sensitive areas is expected to be. In determining which mitigation strategies to utilize, each project identified as having an impact on an environmentally sensitive area should follow the three step mitigation planning process prior to construction:

1. Identify all environmentally sensitive areas throughout the project study area;
2. Determine how and to what extent the project will impact these environmentally sensitive areas; and,
3. Develop appropriate mitigation strategies to lessen the impact these projects have on the environmentally sensitive areas.

All projects shall minimize off site disturbance in sensitive areas and develop strategies to preserve air and water quality, limit tree removal, minimize grading and other earth disturbance, provide erosion and sediment control, and limit noise and vibration. Where feasible, alternative designs or alignments should be developed that would lessen the project's impact on environmentally sensitive areas. The three step mitigation planning process should solicit public input and offer alternative designs or alignments and mitigation strategies for comment by the TPO and local government.

For major construction projects, such as new roadways, or for projects that may have a regionwide environmental impact, a context sensitive solutions process should be utilized in which considerable public participation and alternative design solutions are used to lessen the impact of the project.

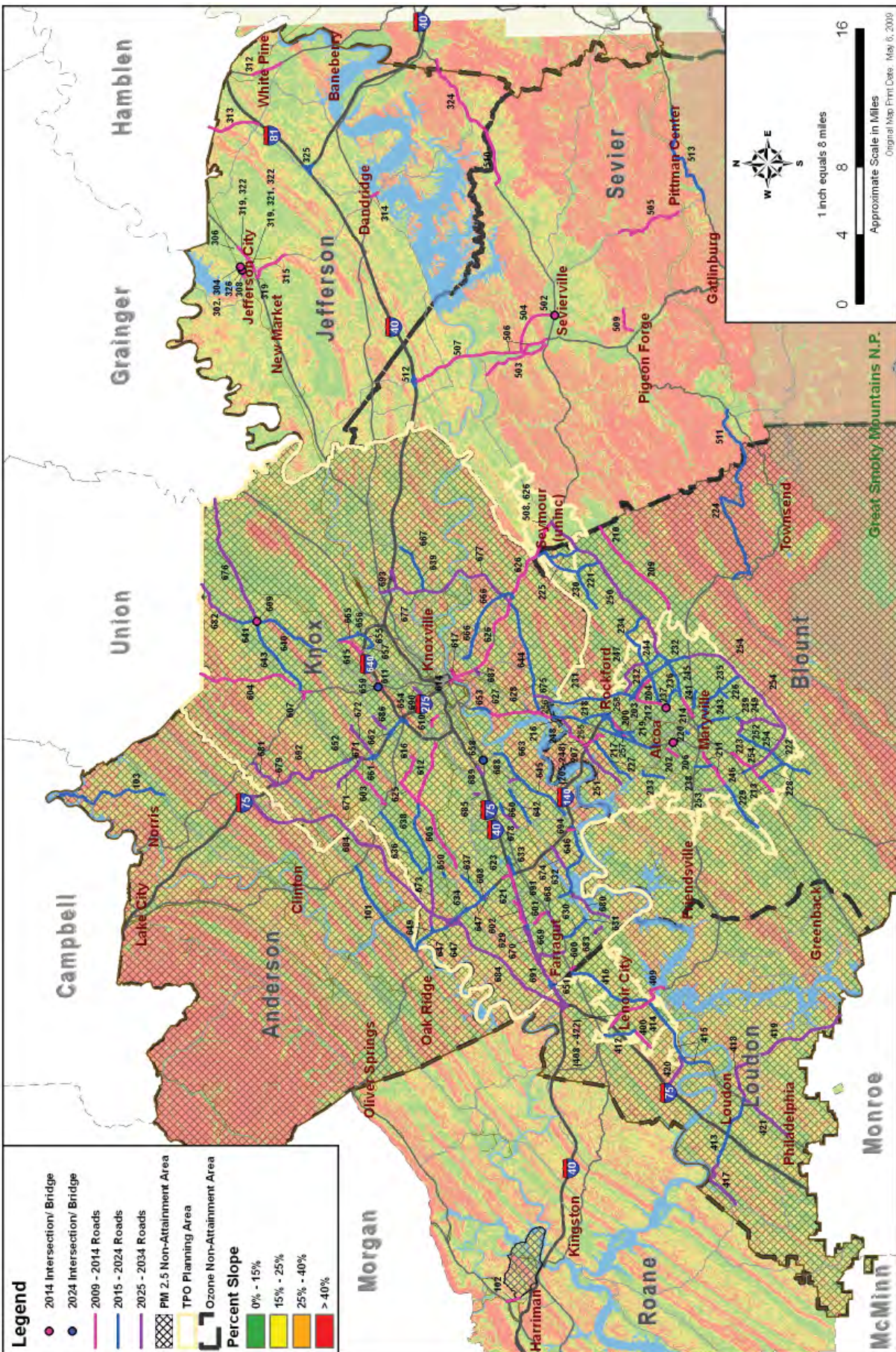


Figure 27. Regional Environmental Constraints Map

TITLE VI

All state agencies who receive federal money to develop and implement plans are required to follow the Title VI regulations of the Civil Rights Act of 1964. The Act ensures that no persons on the grounds of race, color, or national origin be excluded in the participation in, be denied the benefits of, or be subjected to discrimination under any program receiving federal financial assistance.

Background

For the purposes of Title VI Assessment, both the TPO planning area and the entire Knoxville region were evaluated. Within the TPO planning area, minorities consist of 10.7 percent of the population. Throughout the Knoxville region, minorities constitute 8.3 percent of the total population.

Following the methodology specified in the Federal Transit Administration (FTA) Circular 4702.1, any census tract whose percentage is greater than the TPO area average is designated a Title VI minority census tract. Regulations defining minority areas only exist in the FTA regulations and therefore this analytical tool is used as only one means to evaluate Title VI areas. The TPO recognizes that Title VI opportunities and concerns can exist outside of these defined areas and the definition of a Title VI minority area is for TPO analysis only.

It is also important to recognize the presence of the rising Hispanic population in the TPO area. While 1.3 percent is not a significantly high number, monitoring the growth of the Hispanic population as well as other ethnic groups is necessary because once the percentage reaches five percent it will become necessary to comply with Executive Order 13166, which requires “improved access to services for persons with Limited English Proficiency (LEP).” Federal departments and agencies are required to extend financial assistance to develop programs and provide oral and written services in languages other than English. Please see Appendix E for the Limited English Proficiency report in full.

While the Knoxville region does not meet the thresholds outlined in the Limited English Proficiency report, the Spanish-speaking population is increasing, and based on the outcome of the 2010 US Census, strategies to

reach out to and communicate with Spanish-speaking residents will be explored. There are many areas of the country which, having had larger Spanish-speaking populations for much longer than Knoxville, have perfected techniques that the Knoxville region can look to as guidance.

Existing Conditions

Of the 107 census tracts that are partially or entirely within the TPO Planning Area, 39 are designated as minority tracts. Despite a slight increase in the total number of census tracts in the TPO area, the number of minority tracts has remained the same as those designated in the 2002 Long Range Reaffirmation Plan. However, there is a slight increase in the average minority population percentage since 2002. Most of these minority tracts are located within the City of Knoxville while two are located within Blount County. Sevier and Loudon County contain no minority census tracts. Throughout the Knoxville region, 50 out of the 146 census tracts are considered to be minority areas, including six tracts in Anderson County, two tracts in Blount County and one tract in Jefferson County.

Over \$3.4 billion in highway projects are programmed in the Regional Mobility Plan. Of these, approximately \$703 million are in or border Title VI areas. This represents approximately 20.7 percent of the total dollars invested in highway projects. As a percentage, this is clearly higher than the 8.3 percent regional minority population. The projects are mapped in Figure 28 and listed in Table 21.

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Table 21. Proposed Mobility Plan projects in Title VI areas

RMP #	Route	Jurisdiction	Type of Improvement
101	Edgemoor Rd (SR 170)	Oak Ridge/ Anderson County	Widen 2-lane to 4-lane
200	Cusick Road	Alcoa	Add center turn lane
201	East Bessemer Street	Alcoa	Realign intersection
205	Topside Road (SR 333)	Blount	Phase I and II signalization and intersection realignment
206	US 129 Bypass (SR 115)	Alcoa	Intersection improvements
207	Wrights Ferry Road	Alcoa	Add center turn lane
214	Sevierville Rd (SR 35) (US 411)	Maryville	Construct 2-lane road w/center turn lane along existing and new alignment
216	Alcoa Highway (SR 115) (US 129)	Blount County/ Alcoa	Widen 4-lane to 6-lane
217	Alcoa Highway (SR 115) (US 129)	Alcoa	Add turn lanes/ traffic signals (upon completion of proposed Bypass)
218	Alcoa Highway Bypass (SR 115) (US 129)	Alcoa	Construct new 6-lane freeway
219	Wright Road	Alcoa	Reconstruct 2-lane section
220	Hunter Growth Study Corridor #1- Home Ave Extension	Alcoa/ Maryville	Reconstruct 2-lane section, construct new bridge, demolish part of shopping center
227	Mentor Road	Blount County	Reconstruct 2-lane section
233	Proffitt Springs Road	Blount County	Reconstruct 2-lane section
239	Montvale Road (SR 336)	Maryville	Add center turn lane
242	W. Broadway Avenue (SR 33) (US 411)	Maryville	Add center turn lane
243	Wilkinson Pk	Maryville	Reconstruct 2-lane section
248	Topside Road (SR 333)	Alcoa	Reconstruct 2-lane section
251	Topside Road (SR 333)	Blount County	Widen 2-lane to 4-lane
302	E. Main St/N. Chucky Pk	Jefferson City	Realign intersection
303	Municipal Dr	Jefferson City	Add left and right turn lanes
304	Old AJ Highway	Jefferson City	Add left and right turn lanes
306	Odyssey Rd	Jefferson City	Add center turn lane
307	Old AJ Highway	Jefferson City	Replace bridge
308	Old AJ Highway (SR 92)	Jefferson City	Add center turn lane and sidewalks
309	Old AJ Highway	Jefferson City	Signalize Intersection
310	Old AJ Highway	Jefferson City	Signalize Intersection
311	Rittenhouse Rd/Slate Rd	Jefferson City	New 2 lane road connection
316	SR 92	Jefferson City	Add left and right turn lanes
319	US 11E (SR 34)	Jefferson City	Install street lighting
321	US 11E (SR 34)	Jefferson City	Install pedestrian signals and pushbutton activation
322	US 11E (SR 34)	Jefferson City	Signal coordination
326	Old AJ Highway	Jefferson City	Bridge replacement
605	Schaad Road Extension	Knox County	Construct new 4-lane road
610	Western Avenue (SR 62)	Knoxville	Widen 2-lane to 4-lane
611	I-640/ Broadway (SR 33) (US 441) Interchange Phase II	Knoxville	Modify interchange
612	Western Avenue (SR 62)	Knoxville	Widen 2-lane to 4-lane
613	Cumberland Avenue (SR 1) (US 11/70)	Knoxville	Pedestrian Improvements and Reduce from 4 lanes to 2 lanes with center turn lane
614	Henley Street Bridge (SR 33/71) (US 441)	Knoxville	Rehabilitate bridge & widen 5-lane to 6-lane
615	Washington Pike	Knoxville	Widen 2-lane to 4-lane
616	Pleasant Ridge Rd/Merchant Dr Phase II	Knoxville	Add center turn lane
617	South Knoxville Waterfront Roadway Improvements	Knoxville	Add turn lanes where needed and widen one-lane underpass to two lanes
625	Schaad Road	Knoxville/ Knox County	Widen 2-lane to 4-lane
626	Chapman Highway (SR 71) (US 441)	Knoxville/ Knox County	Operational and Safety Improvements including turn lanes at various locations
638	Oak Ridge Highway (SR 62)	Knox County	Widen 2-lane to 4-lane
642	Westland Drive	Knox County	Reconstruct 2-lane section
647	Pellissippi Parkway (SR 162)	Knox County	Add auxiliary lanes between interchanges and access control including frontage roads where needed
654	I-640/ I-275/ I-75 Interchange	Knoxville	Interchange improvements to include additional through lanes on I-75 north and southbound ramps
655	Millertown Pike	Knoxville	Reconstruct 2-lane section
656	Millertown Pike	Knoxville	Widen 2-lane and 4-lane sections to 4-lane and 6-lane sections
657	Washington Pike	Knoxville	Add center turn lane
658	Northshore Drive (SR 332)	Knoxville	Intersection improvement
660	Gleason Drive	Knoxville	Reconstruct 2-lane section
662	I-75/ Merchant Dr Interchange	Knoxville	Modify interchange
663	Northshore Drive (SR 332)	Knoxville	Reconstruct 2-lane section
664	Broadway (SR 33) (US 441)	Knoxville	Intersection improvement
665	Murphy Road Extension	Knoxville/ Knox County	Construct new 4-lane road
685	Vanosdale Road	Knoxville	Add center turn lane
687	Moody Avenue	Knoxville	Construct new 2-lane road w/ center turn lane
688	Morrell Road	Knoxville	Add center turn lane
689	Papermill Road	Knoxville	Add center turn lane
690	Woodland Avenue	Knoxville	Add center turn lane

CHAPTER 5: Scenario Planning

Alternative Development Scenarios

Given the uncertain future of the Knoxville region, the TPO used a scenario planning exercise to test the impacts of growth. Scenario planning asks “What if?” What if the region adopts smart growth principles? What if the region continues to grow as it always has? What if large investments are made in the road network?

Instead of simply postulating, technology allows us to actually get a picture of what might happen. By altering the inputs of where people might live and work and changing the land uses accordingly, planners can measure the changes in congestion, time of delay on the roads and the average vehicle miles traveled for a picture of the results. Scenario planning is still based on estimates, but the tool helps planners and citizens better understand the likely outcomes of transportation and land use decisions.

What is scenario planning?

The premise of scenario planning is that it is better to get the future imprecisely right than to get the future precisely wrong. We know that our predictions of the future are never exactly correct. Rather than picking one definitive picture of the future and planning for that future, scenario planning allows a region to consider various possibilities and identify policies that can adapt to changing circumstances. Scenarios do not describe a forecasted end state. Scenarios are stories about future conditions that convey a range of possible outcomes.

The scenario planning process can help people understand the forces of change and the collective choices they have.

For many, the first step is to identify the quality of life issues facing the region. This information provides the foundation for scenario development. These issues can be expressed as a question about the future that the scenarios might answer. Planners, working in close coordination with community leaders, businesses, local officials, the public and other stakeholders, could undertake the following process:

Research the driving forces. Define the major sources of change that impact the future. These forces can be either predictable or not predictable elements. Some of the relatively predictable elements are local demographics, trends in local land use consumption, levels of congestion, mode split, etc. Less predictable are macro elements such as the world economy, future

availability of infrastructure funding, global environmental conditions and technological innovation. There are many other driving forces, which are uncertain. Narrowing down those driving forces will be helpful in advancing a scenario planning process.

Determine patterns of interaction. Consider how the driving forces could combine to determine future conditions. To determine the patterns of interaction between driving forces, a matrix can be developed. On a matrix these driving forces can be identified as either having a positive or negative outcome and their relationship to a dichotomy of potential future worlds can be further examined. For example, if we use economy as a driving force, we can label it as having either little or no growth or fast growth. In determining the interaction of each of the future conditions, scenarios can be created.

Create scenarios. In generating scenarios, planners should think through the implications of different strategies in different future environments. The goal is to bring life to the scenarios in a way that community stakeholders can easily recognize and connect the various components. Basic stories are created based upon the interaction of drivers described in the previous step and how these drivers affect local factors. Scenarios might challenge existing thought patterns.

Analyze their implications. Ultimately, scenario planning is a technique for better decision making, not only about transportation but also about land use, public investment, and environmental policies. The scenarios enable planners to explore the shape and nature of transportation within a variety of circumstances, using a range of tools. Scenario-planning software tools can be used to present scenarios visually. The visualization of the interaction among the forces in each scenario can provide the public and decision makers with information on the consequences of potential actions. The use of graphic visual information assists in helping the public understand the potential impacts of scenarios.

Evaluate scenarios. The devised scenarios are measured against each other by comparing indicators relating to land use, transportation demographics, environment, economics, technology and other criteria. During large regional public meetings, graphical simulations of alternative scenarios can stimulate project understanding and decision making among stakeholders, including the community, business representatives and local elected officials. Through this process the community can formulate reasoned responses and enhance its ability to respond to change.

Monitor indicators. Scenario planning is an on-going process for a region. As the future unfolds, reality needs to be assessed compared to the selected scenarios, new scenarios developed and new decisions or policies made to address changing conditions.³

³Source: FHWA, <http://www.fhwa.dot.gov/planning/scenplan/about.htm>, October 2008

Scenario Planning at the TPO

This is the first time the TPO has used scenario planning in its long-range plan and is the first step toward developing a more sophisticated scenario planning process. The TPO's scenario planning was a two-step process. Based on historic trends, local feedback during our public input process and national best practices, three land-use scenarios were developed. Based on land uses and accessibility, modeling software called the Urban Land Use Allocation Model (ULAM) redistributed both population and employment growth. Next, the TPO's Travel Demand Forecasting Model ran each of the scenarios in order to estimate the impact each would have on the transportation network.

It was trying to answer the "What if?" question. ULAM sets up the scenario, then the Travel Demand Forecasting Model shows how traffic responds to it.

In each of the three scenarios, the model used the same projected growth numbers for both population and employment. These data are shown in Table 22. These input remained constant.



The Lovell Road interchange: 40 years ago and today.

Table 22. Population and Employment Control Totals (2005-2035)

Population	2005	2015	2025	2035	Growth	Percent change	Regional share
Anderson	72,518	81,787	91,245	100,972	28,454	39 %	6 %
Blount	115,616	144,913	175,243	209,924	94,308	82 %	20 %
Grainger	22,188	25,466	28,921	32,609	10,421	47 %	2 %
Jefferson	48,261	57,746	67,295	77,453	29,192	60 %	6 %
Knox	405,355	459,953	515,178	574,950	169,595	42 %	36 %
Loudon	43,411	54,766	66,339	79,010	35,599	82 %	7 %
Roane	52,753	56,209	59,673	63,669	10,916	21 %	2 %
Sevier	79,339	107,940	137,938	170,928	91,589	115 %	19 %
Union	19,005	21,319	23,888	26,525	7,520	40 %	2 %
Region	858,446	1,010,099	1,165,720	1,336,041	477,595	56 %	100 %
Employment	2005	2015	2025	2035	Growth	Percent change	Regional share
Anderson	52,693	66,646	80,625	93,715	41,022	78 %	12 %
Blount	58,293	72,026	85,749	98,613	40,320	69 %	12 %
Grainger	7,358	8,541	9,721	10,670	3,312	45 %	1 %
Jefferson	18,754	22,238	25,720	29,007	10,253	55 %	3 %
Knox	293,068	355,716	418,237	481,664	188,596	64 %	54 %
Loudon	18,720	22,114	25,501	28,861	10,141	54 %	3 %
Roane	21,420	23,793	26,279	27,926	6,506	30 %	2 %
Sevier	49,918	65,084	80,277	95,939	46,021	92 %	13 %
Union	4,780	5,205	5,677	6,074	1,294	27 %	0 %
Region	525,004	641,363	757,786	872,469	347,465	66 %	100 %

STEP 1: Analyze the resulting demographic distributions and land use patterns for each scenario:

Scenario 1. Historical Trend

The historical trend scenario shows what happens if the Knoxville region continues to grow and plan the way it has for years. It maintains the status quo. As we see in Table 1, population growth for the region is forecast at 56 percent, and employment is forecast to grow by 66 percent. If current development patterns continue, where will these new households and jobs be located?

This is the official plan forecast and can be considered the most likely based on past trends and current land use policies. Additionally, this is the scenario that has to be used to determine air quality conformity for the region as it is the scenario that is currently supported by plans and regulations. Figure 29 shows a conceptual representation of the mix of uses and density currently found in the Knoxville region.

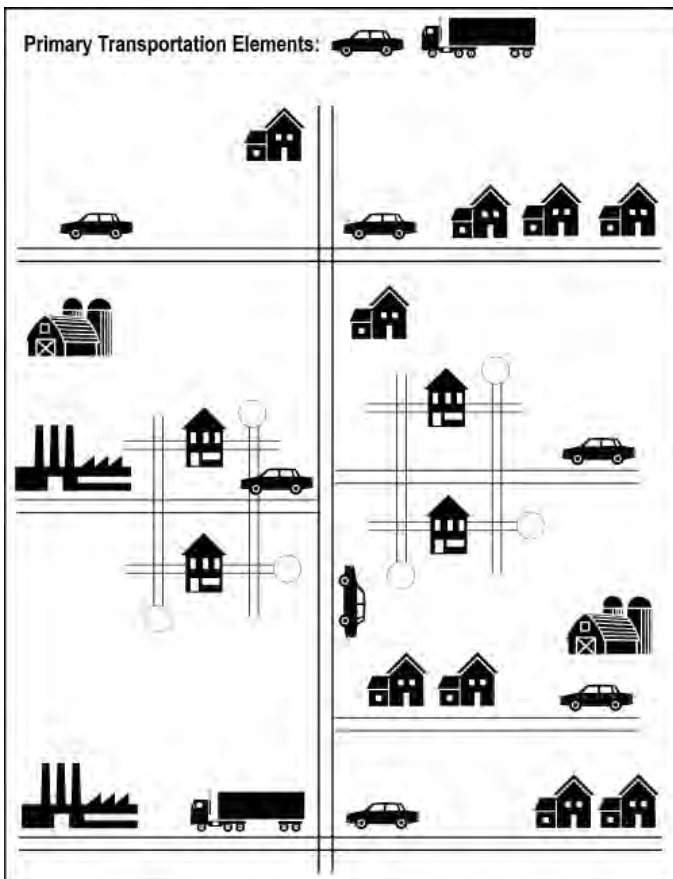


Figure 29. Illustration of a "Status Quo" Scenario

Scenario 2. Sustainable Development

This scenario asks what happens if the same number of people and jobs that are currently forecast for the Knoxville region are accommodated differently. It assumes that most growth occurs in a concentrated manner along major transportation corridors and within development nodes. This encourages a mix of uses within walkable distances (Figure 30). The scenario assumed that 80 percent of the growth would be within the urban growth boundaries in each county (Figure 31) and that there is substantial reinvestment in our existing cities and towns (Figure 32). This development pattern requires suburban and rural planning. More specifically, it requires changing the current planning, land uses and policies that govern development as well as suburban and rural conservation. Table 23 on the following page shows the objectives that planners used to develop the scenario. In other words, what would be considered "sustainable" for communities in the Knoxville Region, specifically.

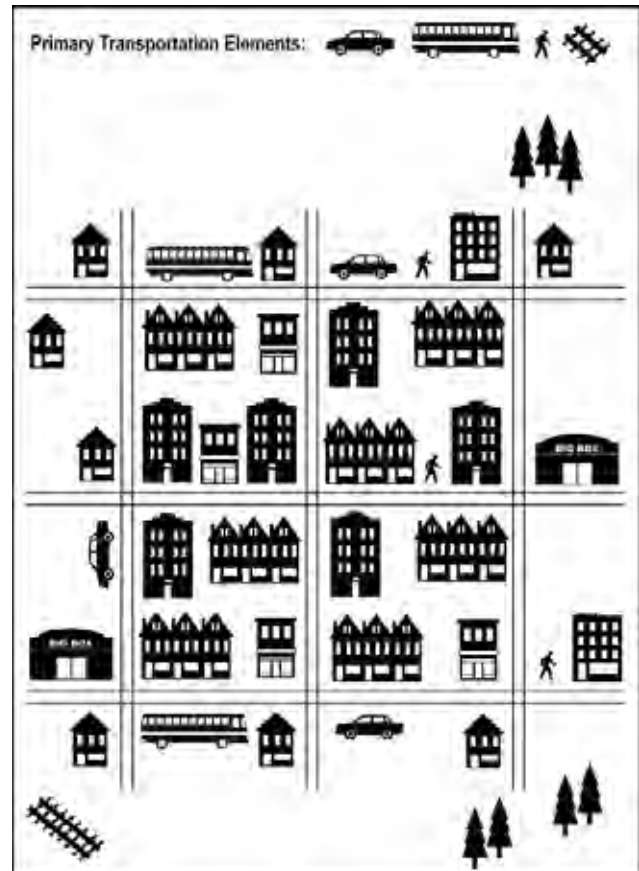


Figure 30. Illustration of a "Sustainable Development" Scenario

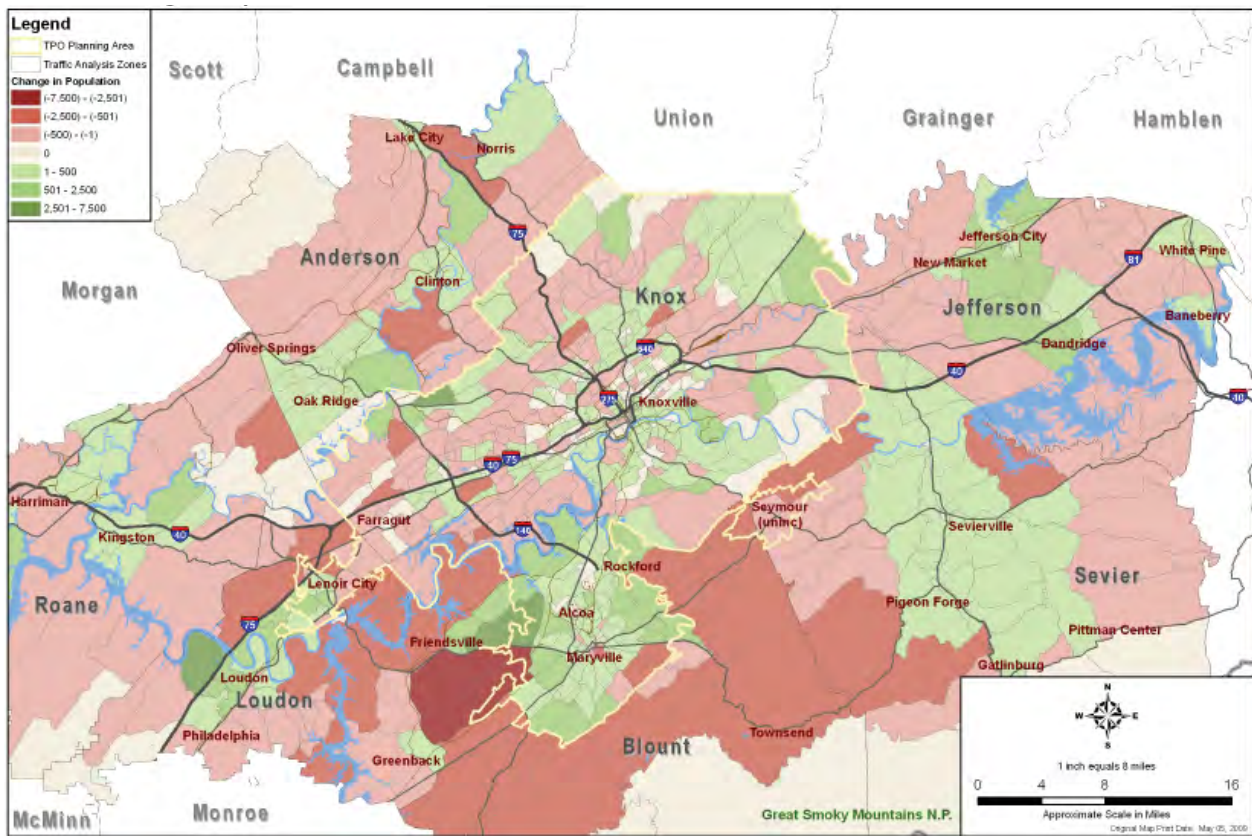


Figure 31. Year 2034: Change in Population with Sustainable Growth Scenario

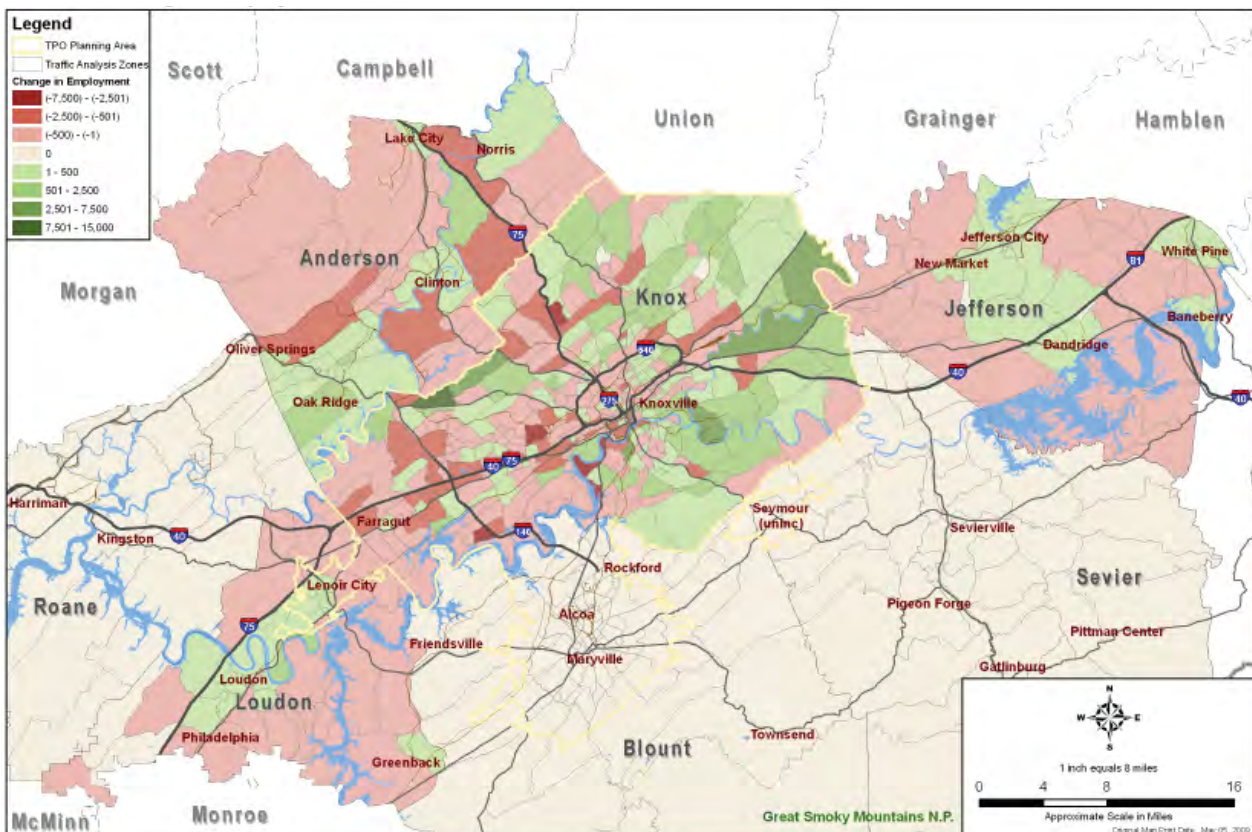


Figure 32. Year 2034: Change in Employment with Sustainable Growth Scenario

Table 23. Sustainable Development Scenario Objectives

Type_Center	Jobs/ Housing	Dwelling Units/ Acre	Floor Area Ratio	Retail/ Office
Regional	50	24	1.0	40
Community	40	16	1.0	40
Neighborhood	30	8	1.0	70
Employment Center	90	24	2.0	20
Urban Corridor	60	8	1.0	60
Suburban Corridor	50	16	1.0	70

Scenario 3. Targeted Road Investments

The third scenario asks what happens if four large road projects that have been in the plans for some time now get built. These include the Knoxville Beltway (I-475), both the eastern and western legs; the extension of James White Parkway from Moody Avenue to Gov. John Sevier Highway; the extension of the Pellissippi Parkway from SR 33 to US Highway 321, and the extension of the Veterans Boulevard in Sevier County. This scenario uses the same forecast growth totals for the region. Figure 33 shows a major roads investment concept.

This alternative sought to reflect the increase in development that might occur if these road projects became part of the transportation network. The activity centers in this case are the new interchanges that would be built and the development that might occur around those new interchanges. This alternative was based on the historical trend alternative (Scenario 1). Parcels in the immediate area around the potential interchanges were identified and input into the allocation model as approved development. High-intensity development in the form of retail and services was assumed within a quarter-mile of the interchange and along the surface roads serving the interchange. Multi-family and mixed use development was assumed from one-quarter to one-half mile from the interchange. Single-family residential development at four units per acre was assumed for the area from one-half to one mile out from the interchange. These assumptions were also applied as redevelopment of selected parcels as well as vacant land. Vacant land was also set aside for the construction of the interchange based on a likely interchange configuration for that type of facility.

Figure 34 illustrates the migration of employment that is projected under the Targeted Roads Investment scenario. Not surprisingly, there is increased development near new interchanges. Likewise, Figure 35 shows similar migration patterns for residential population under the Targeted Roads Scenario. The forecasting software assumes that better access opens more land for development, both residential and commercial/industrial.

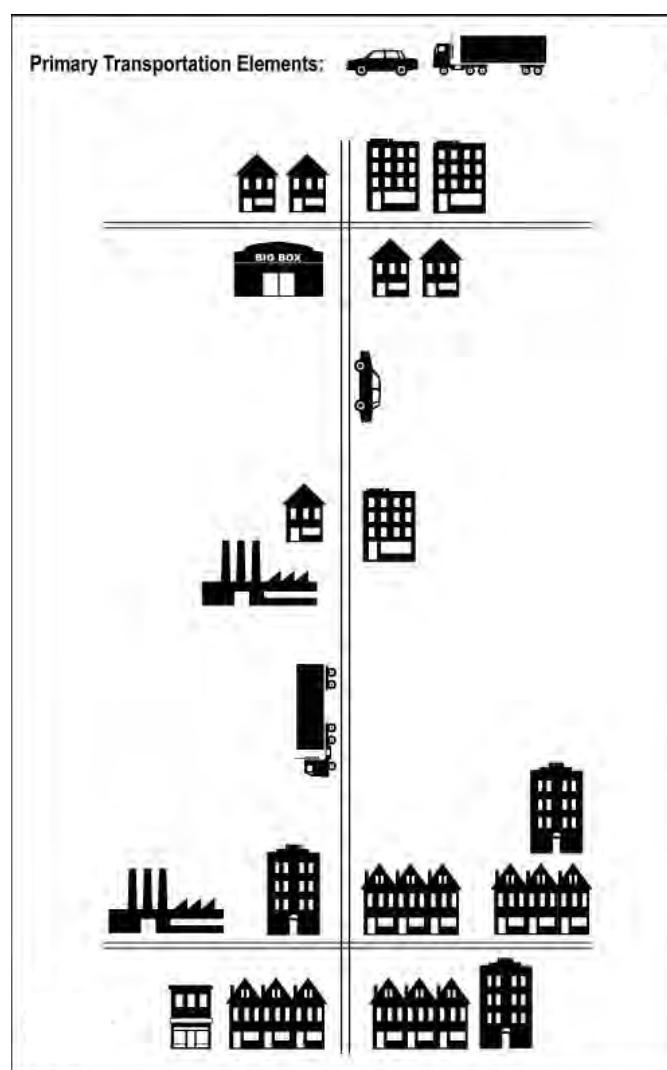


Figure 33. Illustration of a "Major Road Investments" scenario

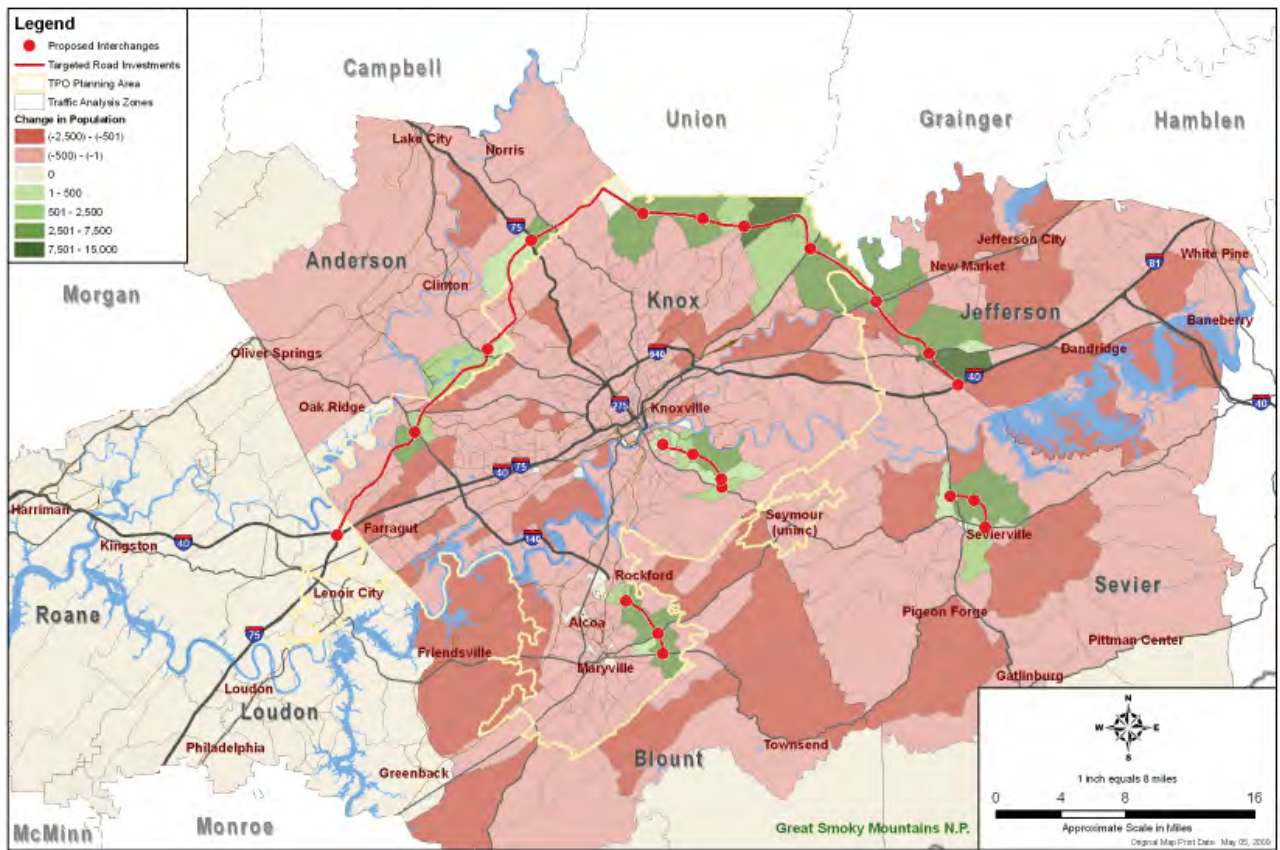


Figure 34. Year 2034: Change in Population with Targeted Road Investment Scenario.

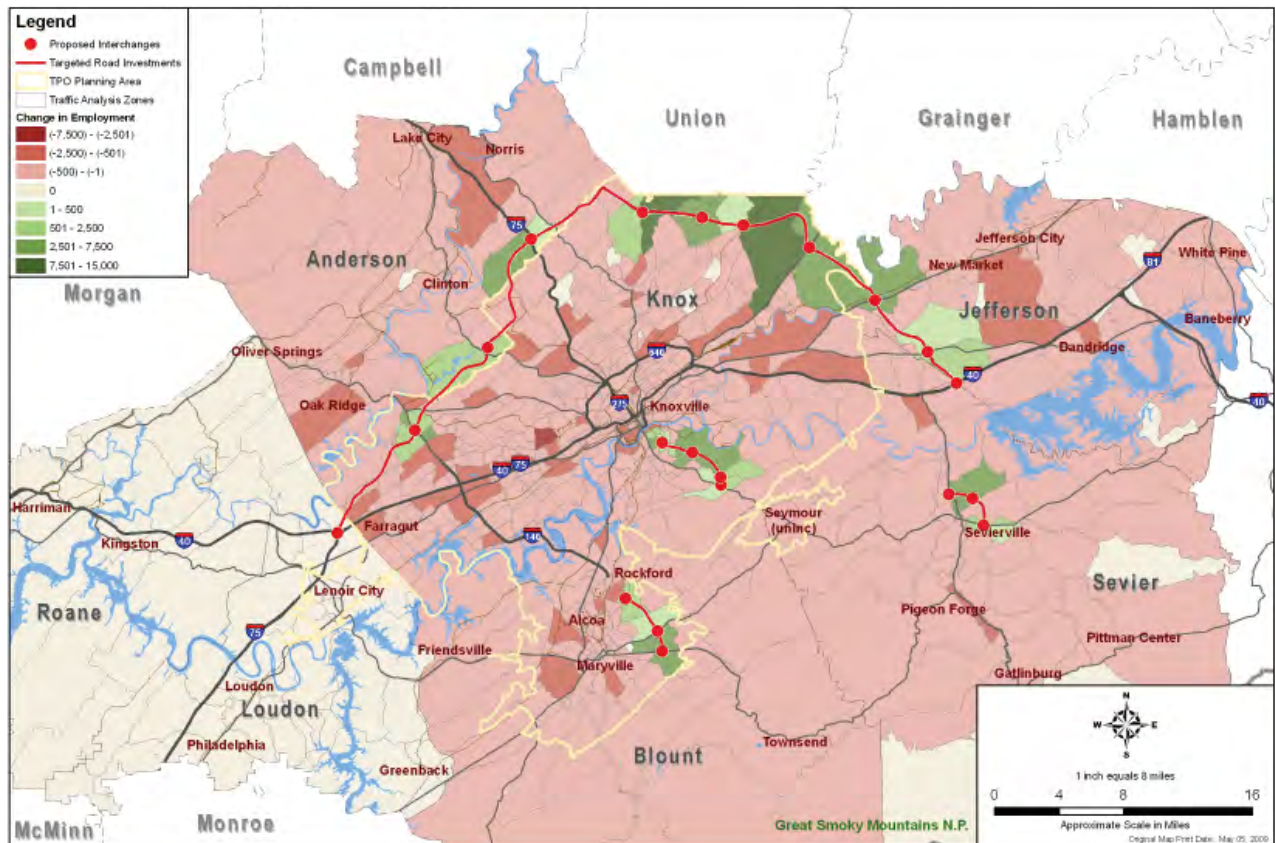


Figure 35. Year 2034: Change in Employment with Targeted Road Investment Scenario

STEP 2: These three scenarios were then analyzed with the Travel Demand Forecasting Model, the TPO's existing projection model.

Results of Travel Demand Forecasting Model Runs with each Scenario

Table 24 shows some key outputs from the travel demand forecasting model that can be used to compare the performance of the roadway system under the different land use scenarios. Both the sustainable development and targeted roads investment alternatives outperformed the status quo alternative in terms of reducing congestion and vehicle delay on the roadway system. These improvements translate directly into substantial user benefits in terms of reduced operating costs and time savings. It can also be demonstrated that shifts in land use can potentially prolong the service life of roadways as shown by the fact that fewer lane miles of roadway are operating above capacity thresholds.

Since the current TPO travel demand forecasting model is not capable of addressing potential mode shifts from motor vehicles to other modes such as bicycling and transit these results are likely very conservative – especially for the Sustainable Development Alternative. These other modes become much more attractive with compact and mixed-use development as destinations are closer together and more accessible by other modes.

The TPO would like to be able to take the scenario planning techniques described here a step further and show how land uses might change under each of these scenarios. This goal will enhance visualization for all users of the plan.

Table 24. Key Outputs from the Travel Demand Forecasting Model

Evaluation Criteria	Status Quo	Sustainable Development Alternative	% Change from Status Quo	Targeted Road Investments Alternative	% Change from Status Quo
Vehicle Miles Traveled (VMT)	43,858,765	43,683,974	-1.5%	43,946,964	-0.6%
Vehicle Hours Traveled (VHT)	1,112,980	1,398,040	-3.5%	1,037,325	-6.8%
VMT per Capita (miles)	32.8	32.7	-1.5%	32.6	-0.6%
Total Daily Vehicle Hours of Delay	752,537	661,117	-10.4%	211,134	-21.1%
Avg Peak Hour Roadway Speed (mph)	42.0	43.1	2.2%	42.0	6.6%
Congested Lane Miles of Roadways	3,591	3,488	-6.9%	1,586	-10.9%

Why Connect Transportation and Land Use?

Transportation and land use are intrinsically linked. Our most pressing problems are regional – air quality, responsible land use, access to transportation, affordable housing and quality jobs. Although streets and roads are usually viewed solely as transportation facilities, they also exist as a function of land use, just as other transportation facilities such as parking and gas stations, transit stops and centers do. However, development of land in this region has primarily occurred based on the perceived highest and best use of a particular piece of land with little consideration of the impact of that land use on the transportation system. The more we understand about the influence of land use on how we travel the better we will become at making decisions regarding land use changes and the region's transportation system.

What can – or cannot – be supplied in the way of transportation facilities, services, and programs is directly related to the kind of community that is built. Low-density, segregated land uses require traveling in a car, no matter the level of service. However, compact development patterns can easily and affordably allow for mode choices. Shorter trips and convenient connections depend on compact development with a mix of housing types and appropriate-scale commercial and civic uses. On a per capita basis, this is also a cost-effective and efficient kind of transportation system for government to offer.

Challenges for Land Use and Transportation Coordination

- Policy makers struggling with the vision/reality disconnect – where adopted visions don't seem feasible given the existing community policies.
- The incremental changes needed to realize these visions may be worrisome to some residents. For example, established neighborhoods sometimes object to infill projects that add housing to adjacent lots. While infill improves the delivery of government services – like transit – it can also change the local neighborhood character.
- Growth management policies protect the diversity of urban, suburban and rural communities, but concern some private property rights advocates.

Opportunities for Land Use and Transportation Coordination in East Tennessee

The TPO believes that in order to meet the goals of the Mobility Plan 2034 and improve quality of life for all residents within the region, transportation and land use decisions must be more closely coordinated. However, the TPO cannot take on the quality growth challenge alone. Working more closely with local governments, the private sector, community-based organizations and members of the public who haven't traditionally been engaged in the transportation and land-use discussions is absolutely critical to the future of this region. In the end, however, it is local governments who will ultimately make the land-use decisions. The successful coordination of land use and

transportation decisions will require that we all work together to develop closer partnerships with cities and counties.

Planning departments around the country are becoming increasingly aware of the need for drastic changes in the way we travel. This awareness is spurring exciting innovations in transportation planning. Nodal and transportation-oriented developments (TOD) provide models for improving multi-modal transportation in communities and the connectivity between them. Advances in vehicle technology might mean that the cars that are on the road will be cleaner and more efficient but not necessarily cheaper. This movement has tremendous potential to help us coordinate our efforts, supporting networking such as car/ride sharing, vanpools, enhanced traffic operations and advanced strategies for public transit. In thinking about long-range transportation planning for the Knoxville region, it is important to emphasize aspects of our current system that support sustainable transportation, sustainable land use, and encourage innovative application of human, material and technological resources.

In both suburban and urban centers, transportation investments can encourage community scale, mixed use development in locations with pedestrian and bicycle access and transit. When residential development occurs far from arterials or when the separation between residential and commercial development is too great, accessibility is limited to the auto only. When development occurs close to arterials with a mix of complementary uses, people are given transport choices in addition to the automobile. Transportation investments that provide pedestrian and bicyclist enhancements and transit opportunities along urban and suburban corridors improve neighborhood integrity and community livability. If schools and shops are located closer to homes and to one another, walking and bicycling could become convenient options. Ultimately a regional shift toward more compact growth patterns could increase livability, preserve air quality, protect the environment and open space; decrease vehicle miles traveled, and make our investments in transportation more cost-effective.

Sources:

Cumberland Region Tomorrow. Quality Growth Toolbox. December 2006.

Littman, Todd and Rowan Steele. Land Use Impacts on Transport: How Land Use Patterns Affect Travel Behavior. Accessed on 11/05/08. <http://www.vtppi.org/landtravel.pdf>.

Hume, Christopher. A Planning Headache, 50 Years in the Making. The Toronto Star. 31 May 2008.

CHAPTER 6: Planning for Implementation

By taking a big picture look at regional growth patterns, travel trends and visions for the future we have established the planning context for the 2009-2034 Regional Mobility Plan. Now that we have established this context we can explore implementation strategies. The following sections lay the framework for implementing a vision for the future that begins to address some of the complex challenges we will face as a region over the next 25 years. This framework will become the guiding policy behind funding decisions on transportation projects and programs throughout the region.

Many of the region's goals can be achieved and its vision realized through a transportation planning approach called complete streets where 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.

Streets can be completed in many ways. Common elements are sidewalks, bicycle lanes, transit stops and safe crossing places. The TPO's recently completed Regional Complete Streets Study is full of ideas for converting existing streets into complete streets. That study is on the TPO's website: www.knoxtrans.org.

So why bother? Complete streets are important for a number of reasons. Here are just a few:

Public health: Americans don't get enough physical activity. For decades (at least), we've been encouraged to move more. The current Surgeon General recommendation is that everyone should get 30 minutes of moderately vigorous physical activity most days of the week. Yet research has shown that all this encouragement hadn't led to more people meeting that recommendation⁴. This despite the fact that adequate physical activity is associated with reduced risk of cardiovascular disease, diabetes, osteoporosis, obesity, dementia, clinical depression, and some cancers.

Active transportation: walking and bicycling rather than driving—is one way for people to build more physical activity into their lives. Studies have found that people who live and work in more walkable and bikeable places get more physical activity⁵. Complete streets create the opportunity for more people to choose a healthier way to get around.



Common elements of a complete street are sidewalks, bicycle lanes, transit stops and safe crossing places

⁴Morbidity and Mortality Weekly Report 50 (09), March 9, 2001.

⁵Transportation Research Board Special Report 282 (2005)

Not everyone drives: Walking, cycling and taking public transportation are choices for some. For others, they're necessities. Across the country, about one-third of the population doesn't drive. Here in the Knoxville region, 19 percent of the population is under 16 years of age. School-age children in places with complete streets are able to walk or bike to school, to the park, or to the corner store. Without complete streets, children are dependent on someone to drive them everywhere they go and may never develop the sense of independence and the wayfinding skills that children learn by exploring their neighborhoods.

Seniors, people with physical disabilities, and low-income populations are also less likely to drive. For a street to meet the mobility needs of everyone in a community, it needs to be a complete street.

Public safety: It's no surprise that streets that aren't designed with bicyclists and pedestrians in mind are less safe for those users. The addition of sidewalks to a street reduces by 88 percent the likelihood of a pedestrian being hit while walking along the street⁶. Designing intersections with pedestrian travel in mind can reduce pedestrians' exposure to traffic by 28 percent⁷. And designing streets for more appropriate vehicle speeds improves pedestrian safety by giving drivers more time to stop and by reducing the severity of injuries when pedestrians are hit.

Small differences in a driver's speed mean big improvements in pedestrian safety, as Figure 36 shows. A pedestrian hit by a car that's going 20 miles per hour has a 5 percent chance of being killed. The death rate jumps to 45 percent if the car is going 30 mph, and to 85 percent if the car is going 40 mph. On local streets especially, engineering, education and enforcement are needed to keep drivers at appropriate speeds so that the streets are safe for everyone.

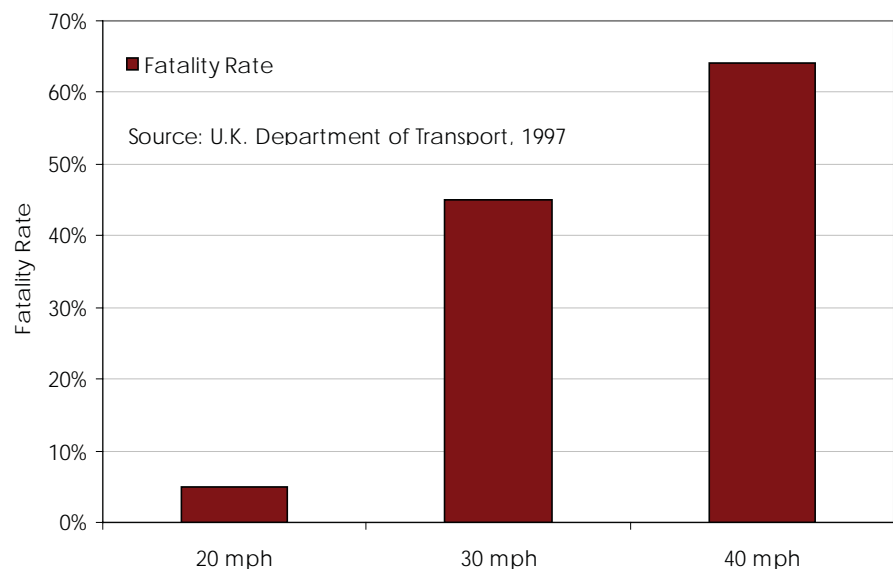


Figure 36. Fatality Rate by Vehicle Speed
Source: "Killing Speed and Saving Lives," U.K. Department of Transport (1997)

⁶Federal Highway Administration 2002 report FHWA-RD-01-101.

⁷Transportation Research Board 2003 Paper 03-3135.

Air quality: Emissions from cars and trucks make a significant contribution to the Knoxville region's air quality problems. Because of the emissions released by cold starts, short trips are more polluting on a per-mile basis than longer trips. The TPO's travel survey has found that 16 percent of trips taken in Knox and Blount Counties are one mile or shorter, and 44 percent are three miles or less. Yet 95 percent of these short trips are accomplished by car rather than on foot or bicycle.

If every household in Knoxville replaced one half-mile-long driving trip per week with a walking trip, emissions of the compounds that cause ozone pollution would be reduced by more than 12,000 pounds per year. Emissions of carbon dioxide, the most common greenhouse gas, would be reduced by nearly 1,000 tons per year. Complete streets could make a big contribution to cleaning up our air.

Finally, people want more travel options: Recent opinion polls found that 52 percent of Americans want to bicycle more, and 55 percent would prefer to drive less and walk more. Clearly, complete streets are in high demand.

So What Does a Complete Street Look Like?

Not all that different from any other street, actually. Here are two examples from the TPO's Complete Streets Study showing how the transformation can be made within the same amount of space by changing a few details over time.

These two diagrams show the cross-section of Hall Road in Alcoa as it is today (Figure 37) and a vision for its future (Figure 38). To create a complete street, the shoulders are replaced with bicycle lanes and a wider greenspace, which is planted with trees and shrubs. The trees create an additional buffer for pedestrians, as well as providing shade. A pedestrian refuge is added in the median to make it easier to cross the street in a long section between traffic signals. The vision also includes gradual redevelopment that moves buildings closer to the street to increase convenience for pedestrians and bicyclists.

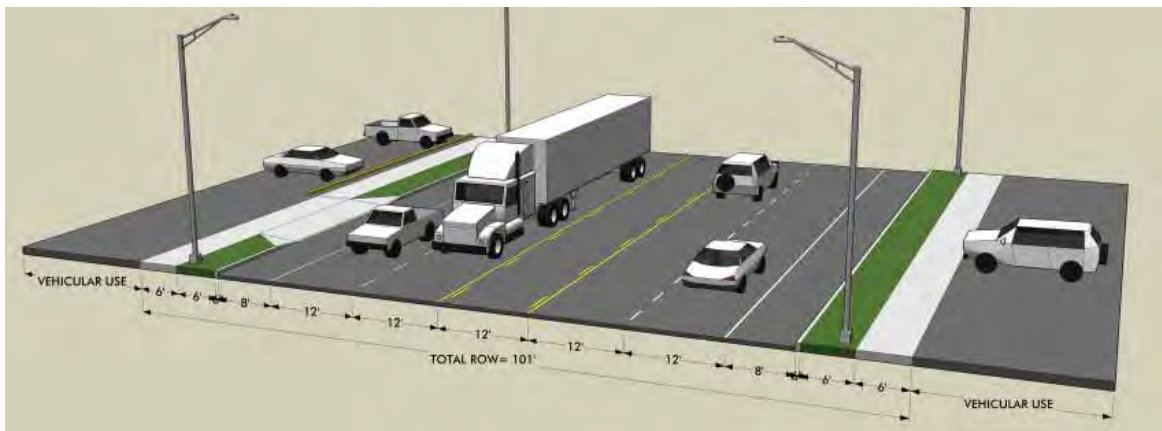


Figure 37. The cross-section of Hall Road in Alcoa today



Figure 38. The vision of Hall Road as a complete street

This set of photos illustrates the transformation of one intersection: Washington Street and Sevierville Road in Maryville. Figure 39 is the intersection as it is today. The photo illustration below (Figure 40) depicts the vision of a more attractive intersection that is safer for all users. The curbs are built out (without losing any travel lanes) to slow turning cars and reduce crossing distances for pedestrians. These curbs create space for

benches, lighting, wayfinding signs or other amenities. The painted and textured pavement highlights the center of the intersection as a space that is used by drivers and pedestrians alike.

For more information on complete streets see www.completestreets.org, the national Complete the Streets website.



Figure 39. Washington Street and Sevierville Road in Maryville today.



Figure 40. A vision of Washington and Sevierville as a safer, more attractive intersection.

Air Quality Conformity

As a nonattainment area under the both the 8-hour ground level ozone standard and the Particulate Matter 2.5 (PM 2.5) annual standard, the Knoxville Regional Transportation Planning Organization must demonstrate that its transportation plans and programs will be in conformance with air quality plans that will bring the region into attainment with national air quality standards within the required timeframe – a process known as “Transportation Conformity.” This chapter presents a summary of the conformity requirements and analyses used demonstrate that the Long Range Mobility Plan meets Transportation Conformity requirements under federal regulations found in the Clean Air Act Amendments of 1990 and SAFETEA-LU. More detailed information can be found in the separately bound report entitled “Air Quality Conformity Determination Addressing the PM2.5 and Ozone Standards for the 2009 - 2034 Knoxville Regional Long Range Mobility Plan”. The full Conformity Determination Report is also included in Appendix A.

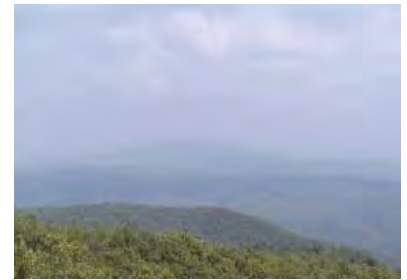
Background

As documented previously, on June 15, 2004, the Environmental Protection Agency (EPA) designated an area encompassing all of Anderson, Blount, Jefferson, Knox, Loudon, and Sevier Counties as well as the portion of Cocke County within the Great Smoky Mountains National Park as being in non-attainment of the National Ambient Air Quality Standard (NAAQS) for ozone. In addition, on April 5, 2005, the EPA designated an area encompassing all of Anderson, Blount, Knox and Loudon Counties as well as a portion of Roane County as nonattainment for PM2.5. Transportation Conformity is one of the major requirements that are placed on nonattainment areas in order to ensure that the air quality is improved to an acceptable level, and if it is not demonstrated, an area may lose its ability to obtain federal funding for certain roadway projects.

The TPO entered into a formal Memorandum of Agreement with the Tennessee Department of Transportation and the Lakeway Area Metropolitan Transportation Planning Organization (MTPO) that the TPO would be responsible for performing the conformity analysis for the entire nonattainment area even though portions are outside of the TPO Planning Area. The Lakeway Area MTPO contains a portion of Jefferson County that is within the ozone non-attainment area while TDOT is responsible for transportation planning in the areas outside of the TPO planning area.

Interim Emissions Tests for Ozone

Transportation conformity is demonstrated through measurement of the emissions that form ozone from on-road mobile sources, specifically Volatile Organic Compounds (VOC), and Oxides of Nitrogen (NOx), and comparing those against the amount that has been determined to be an acceptable level to allow the region to attain the NAAQS. Since a plan has not yet been established to determine specific emissions budgets that would be required



Poor air quality affects visibility. The two photos above are taken from the same place: the top photo on a day with 15-mile visibility and the bottom photo on a day with 150-mile visibility.

Source: East Tennessee Regional Clean Air Coalition website.

to show attainment of the 8-hour ozone standard (known as a State Implementation Plan or SIP), the TPO is instead required to use an interim emissions test to demonstrate conformity. There are two different interim emissions tests that are required for the Knoxville Ozone Nonattainment Area, the 1-Hour Budget Test for Knox County and the No Greater than Baseline Year 2002 Test for the balance of all other counties in the Nonattainment Area. The 1-Hour Budget Test for Knox County is required because Knox County is designated as a “Maintenance Area” under the 1-hour ozone standard and has emissions budgets for VOC and NOx that were previously established to meet that standard. The No Greater than Baseline Year 2002 Test is used in the other counties because emissions budgets have not yet been established and EPA determined that an area can demonstrate transportation conformity in the interim period by showing that on-road mobile source emissions of VOC and NOx will be less in future years than what was observed in the year 2002. Projections of on-road mobile source emissions were made using a travel demand forecasting model that has been calibrated using socio-economic data for the region to closely replicate existing travel behavior and traffic volumes on the roadway network. Vehicle emission rates for future years are estimated using the emission factor model from EPA known as MOBILE6.2. Analysis years of 2009, 2014, 2024, and 2034 were established in order to meet criteria in the federal conformity regulations for which projected emissions were compared against the 1-Hour Budget for Knox County and the 2002 emissions for the other counties in the nonattainment area.

Conformity Statement for 8-Hour Ozone

Tables 25 and 26 summarize the results of the emissions analyses used to demonstrate conformity of the LRTP to the 8-Hour Ozone Standard:

The projected emissions of VOC and NOx that are expected to result from the build-out of the roadway projects included in this plan are in all cases lower than either the established 1-Hour Budget for Knox County or the Baseline 2002 emissions for the other counties. Therefore, Transportation Conformity under the 8-Hour Ozone Standard has been demonstrated for the 2009 – 2034 Knoxville Regional Mobility Plan.

Interim Emissions Test for PM2.5

The emissions of concern from on-road mobile sources that contribute directly to PM 2.5 pollution (known as “Direct PM 2.5” emissions) are from small particles in the vehicle exhaust as well as from brake and tire wear. In addition to Direct PM 2.5, it is believed that Oxides of Nitrogen (NOx) is also a precursor to PM 2.5 formation. Similar to the ozone standard, there is not currently a SIP for PM 2.5 that establishes a motor vehicle emissions budget for the above noted emissions. Therefore, the interim test used to demonstrate conformity to the PM 2.5 Standard is the No Greater than Baseline Year 2002 test.

The analysis years are similar as those used for the ozone analysis, except for Year 2009 which is not required for PM2.5 analysis. The analysis period for PM 2.5 is on an annual basis instead of the daily period analyzed for ozone, therefore the emissions are reported in tons per year.

Table 25. Test 1: 1-Hour Budget Test for Knox County (tons/day)

Volatile Organic Compounds (VOC)	2009	Analysis Years		
		2014	2024	2034
Emissions Budget	29.24	22.12	22.12	22.12
Projected Emissions	19.28	14.40	9.63	10.38
Oxides of Nitrogen (NOx)	2009	Analysis Years		
		2014	2024	2034
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	32.05	20.72	10.87	9.46

Table 26. Test 2: Regional Area No Greater than Baseline 2002 Test (tons/ day)

Volatile Organic Compounds (VOC)	Analysis Years		
	2014	2024	2034
Emissions Budget	25.11	25.11	25.11
Projected Emissions	12.70	8.77	10.02
Oxides of Nitrogen (NOx)	Analysis Years		
	2014	2024	2034
Emissions Budget	57.94	57.94	57.94
Projected Emissions	21.86	11.42	10.31

Conformity Statement – PM 2.5

Table 27 summarizes the results of the emissions analysis used to demonstrate conformity of the 2009-2034 Knoxville Regional Long Range Mobility Plan.

The projected emissions of Direct PM 2.5 and NO_x that are expected to result from the build-out of the roadway projects included in this plan are in all cases lower than the 2002 emissions. Therefore, Transportation Conformity under the PM 2.5 standard has been demonstrated for the 2009-2034 Knoxville Regional Long Range Mobility Plan.

Table 27. No Greater than Baseline 2002 Test (tons/year)

Direct PM 2.5	Analysis Years		
	2014	2024	2034
Emissions Budget	473.6	473.6	473.6
Projected Emissions	213.6	182.1	202.8

Oxides of Nitrogen (NO _x)	Analysis Years		
	2014	2024	2034
Emissions Budget	31,609	31,609	31,609
Projected Emissions	12,313	6,534	5,866

Interagency Consultation Summary

The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation (IAC) process to formally deliberate any issues. The Interagency Consultation Group included participants from EPA, FHWA, FTA, TDOT, Tennessee Department of Environment and Conservation (TDEC), the National Park Service, Knox County Air Quality Management Department, and representatives from affected local jurisdictions. Meetings were held in order to explain the assumptions and procedures that were used to perform the conformity analysis and modeling. Full documentation of the IAC process is included in the separate full conformity determination report.

Financing

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU) requires

the TPO to financially constrain the Long Range Transportation Plan for the TPO planning area. The plan is financially constrained when all the proposed project costs under this plan do not exceed the projected revenues. Financially constraining the plan provides a realistic account of what projects and programs can be accomplished within the specific time frame.

Transportation projects are funded through many different sources including federal, state, and local funds. Most regionally significant projects, as identified in this plan, are funded with some combination of federal, state, and local funds. The greatest funding source for highway and road projects is from the federal government. Figure 4 shows the average percent of dollars spent per year by funding source within the TPO Area during the past four years.

Federal funding programs account for approximately 88 percent of the funding granted to the TPO Area. The local jurisdictions and the TPO have discretion on spending the remaining funding sources, STP-TPO, CMAQ and local.

STREETS AND HIGHWAYS

Federal Funding

The greatest funding source for street and highway projects is from the federal government. The Federal-Aid Highway Act and the Highway Revenue Act in 1956 established the Highway Trust Fund in order to create a financing mechanism for the Interstate Highway System. This is the source of funding for most of the programs in the Act. The funds come from a motor fuels tax and are administered by the Federal Highway Administration (FHWA). The following programs are included in the Highway Trust Fund.

National Highway System (NHS)

Roadways eligible for this funding include rural and urban roads serving major population centers, other rural and urban principal arterials, the interstate system, international border crossings, intermodal transportation facilities, and major travel destinations. Other areas of eligible funding are publicly owned bus terminals, infrastructure-based intelligent transportation system

capital improvements, and natural habitat mitigation. These funds are distributed based on a formula that includes each state's lane miles of principal arterials (excluding interstates), vehicle miles traveled on those arterials, diesel fuel used on state highways, and per capita principal arterial lane miles. Annually, the State of Tennessee receives approximately \$127 million under this program.

Interstate System/Interstate Maintenance (IM)

Reconstruction, maintenance, and improvement projects to the National System of Interstate and Defense Highways are eligible for this funding program. These funds are distributed based on each state's lane miles of interstate routes open to traffic, vehicle miles traveled on those interstates and contributions to the Highway Account of the Highway Trust Fund attributed to commercial vehicles. Annually, the State of Tennessee receives about \$124 million.

Surface Transportation Program (STP)

Projects eligible for funding under this program include construction, reconstruction, and rehabilitation (major resurfacing) of any Federal Aid Highway, including the NHS, rural minor collectors, bridge projects on any public road, transit capital projects, enhancement projects, and public bus terminals and facilities. Additionally the program funds advanced truck stop electrification systems, project relating to intersections which are on a Federal-aid highway that have high accident rates and high congestion, and environmental restoration and pollution abatement. Funds are distributed based on each state's lane miles of Federal Aid Highways, total vehicle-miles traveled on those highways, and estimated contributions to the Highway Account of the Highway Trust Fund. The State of Tennessee will receive approximately \$141 million per year.

The TPO receives approximately \$6 million in STP funds annually. Every other year, the TPO solicits local jurisdictions for projects and ranks the projects according to prescribed scoring criteria developed from the goals and objectives of the Long Range Transportation Plan. The projects are ranked according to the scoring criteria. The highest ranked projects will be funded until the funding is depleted.

Bridge Replacement and Rehabilitation

Tennessee receives approximately \$50 million annually for this program, which provides funding for rehabilitation and replacement of bridges on public roads. The State prioritizes projects for bridge repair based on the bridge's need for repair and maintenance.

Congestion Mitigation and Air Quality Improvement (CMAQ)

The CMAQ program was designed to assist non-attainment and maintenance areas in attaining the National Ambient Air Quality Standards for ozone, carbon monoxide (CO), and particulate matter by funding transportation projects and programs that will improve air quality by reducing transportation related emissions. Historically, the TPO has received approximately \$2.7 million from TDOT.

High Priority Projects (HPP)

SAFETEA-LU continued with the tradition of past highway bills by providing designated funding for specific projects identified by Congress. The State of Tennessee expects to receive approximately \$68 million to fund the designated projects. Projects funded within the non-attainment area total approximately \$112 million.

Additional funding resources within SAFETEA-LU include Safe Routes to School Program and the continuation of Transportation, Community, and System Preservation Program and Transportation Infrastructure Finance and Innovation Act. Other innovative financing techniques available for cities to enact or legislate include toll facilities, federal loans, capital leasing, tax increment financing, Transportation Utility Districts, tapered funding, etc. The following section lists and describes programs that are available and can benefit the TPO Planning Area in funding its transportation projects.

The Transportation and Community and System Preservation Pilot Program TCSP- (section 1117 of SAFETEA-LU)

TCSP's purpose is to increase the efficiency of the transportation system while decreasing its impact on the environment, lessening the need for costly future investments, and provide efficient access to jobs. This money can be used to design, plan, or implement projects

that link transportation and land use decisions and to strengthen existing community assets. Examples include transit oriented development plans, traffic calming measures, and other community-based projects that involve transportation with a strong bias toward projects that include non-traditional partners. The Secretary of Transportation will make grants based on applications from states, tribal, regional, and local governments. The average amount of funding for this grant is \$61.25 million.

Transportation Infrastructure Finance and Innovation Act TIFIA- (section 1601 of SAFETEA-LU)

This new provision helps local jurisdictions focus on finding other means of financing projects. More specifically, the idea is to shift the jurisdiction's mindset away from always using direct funding by the federal government toward realizing the potential money available from private capital leveraged by federal loan guarantees. These programs and options allow governments to finance projects and are able to start projects at a quicker pace instead of waiting years to get to the front of the line for federal funding and matches.

The TIFIA promotes using public-private financing options to fund transportation projects. These financing options include direct loans, loan guarantees, letters of credit, recognition of donated funds, property, in-kind contributions, and joint public-private financing of transit-oriented community economic development surrounding public transit properties. Projects such as transit, highways, and inter-city rail can be financed during planning, design work, environmental mitigation, construction, buying real property, reconstruction, and rehabilitation. All projects funded under TIFIA must be included in the Transportation Improvement Program and be approved by the local planning process.

Safe Routes to School Program-(section(s): 1101(a)(17), 1404 of SAFETEA-LU)

This program was established by SAFETEA-LU in order to encourage and enable walking and bicycling to schools. Eligible activities include planning, design, and construction of projects that improve the connectivity and availability of students to walk and bike to school. Projects may include sidewalk

improvements and construction, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bike parking and traffic diversion improvements in the vicinity of schools (within two miles). States must set aside from this program 10 to 30 percent of the funds for non infrastructure-related activities to encourage walking and bicycling. These activities may include public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health and environment, and training volunteers and managers of safe routes to school program. The average yearly authorization for this program is \$122.3 million, of which the State of Tennessee will receive about \$1 million each year.

American Recovery and Reinvestment Act (ARRA)

ARRA provides significant new funding for transportation infrastructure throughout the United States. Signed into law on February 17, 2009, the goal of the Act is to spur economic growth and new job creation. The influx in new federal funding will help local jurisdictions accelerate existing projects and provide resources that will allow new projects to be identified. The Knoxville region has been allocated approximately \$12.7 million in ARRA funds for transportation related projects. These funds will be utilized to fund approximately 18 projects. All but one of these projects is located within the TPO planning area. The type of projects identified for ARRA funding include; resurfacing existing roads, constructing a new greenway, enhancing pedestrian accessibility, expanding existing roadways and bridge reconstruction. The TPO anticipates the ARRA funds will result in an increase in surface transportation projects over the next couple of years throughout the TPO planning area.

State Funding

In addition to the Highway Trust Fund allocations, the State of Tennessee has two types of funds to finance street and highway projects. State funds can be used to match Transportation Enhancement or Recreational Trails Programs.

1986 Roads Program

In 1986, the Tennessee State Legislature passed an aggressive pay-as-you-go transportation improvement program. Identified in legislation were a number of transportation projects that were funded via a special tax of 4 cents per gallon of gasoline and 3 cents for motor fuel.

Motor Fuels Tax

This source of funding is utilized by TDOT to support transportation improvements throughout the entire State. The gasoline current tax amount is 21.4 cents per gallon which yields approximately \$642.3 million per year. Of the amount that is collected by TDOT, approximately \$236.9 million was distributed to cities and counties and \$380.1 million was retained by TDOT with the remaining \$25.3 million being deposited into the state general fund. Part of the money that is maintained by TDOT is used for ongoing maintenance and operations, resurfacing, bridges, major reconstruction, new construction, right-of-way purchases and to match federal funds.

Local

Local towns, cities, and counties use their respective general fund as the primary source of funding for operations and maintenance. Some counties have instituted a local wheel tax in addition to the state motor vehicle registration fee to build the general fund. Local jurisdictions also provide funding in full or to match federal or state funds for local transportation projects. Money for capital investments in streets and highways may also come from the sale of bonds.

Locally, the jurisdictions in the TPO Area have alternative sources of funding authorized by the state enabling legislation to finance transportation projects. These sources of funding can include toll facilities, rail authorities, local gasoline tax, local motor vehicle taxes and road improvement districts. These sources help to generate a steady flow of funding for transportation improvements. The following describes these options as well as other local funding available to the TPO.

Special Assessment Districts

Special Assessment Districts are designated areas within which commercial and residential property is

assessed a charge sufficient to defray the costs of capital improvements that benefit the property within the district. Transportation Development Districts (TDDs) are one example of these districts used to finance transportation improvements. The TDD has the power to issue bonds to pay for construction that can benefit the area instead of waiting for the local jurisdiction to fund the project. These districts work best in small, fast growing suburban areas where the tax base is low and the tax rate is high.

Impact and Utility Fees

This one-time fee is imposed by local governments on new developments to help pay for the capital facilities, mainly extending utilities and putting in traffic enhancements and transit facilities that serve it. A fee is typically assessed on a square footage of the planned development and in some cases the granting of a building permit is made contingent on payment of the fee. To implement this impact fee, it must be demonstrated that 1.) improvements are necessary and are caused by the new development, 2.) each developer is being charged a fair share of the cost of the improvements, and 3.) funds to be collected are being used in close proximity to the new development and for the intended purposes only. These fees are enacted by the local ordinance and are usually favorable because the new development is creating these development needs. The upper limit on impact fees is around 3 percent of project value, however, enforcing and administering this fee is burdensome to the local government.

Bond Financing

Bond financing helps local government pay for projects by establishing a type of payment plan that allows capital costs to be spread out over a number of years.

Toll Roads

The Tennessee Tollway Authority (TTA) is authorized under Sections 54-15-101 to 54-15-120 of the Tennessee Code Annotated to construct, maintain, and operate toll roads, to acquire sites abutting on a toll road, and to issue bonds when the toll is collected. TTA members include the Commissioner of the Tennessee Department of Transportation, Controller of the Treasury, State Treasurer, one member appointed by the Speaker of the

Senate and one member appointed by the Speaker of the House of Representatives. There are approximately 240 toll facilities in the United States today, accounting for more than 5,000 miles of highways. Most of these miles have not been financed with federal support, rather, financing has come from borrowing in the tax-exempt markets. Tolls offer good revenue potential for facilities with sufficient traffic, however, they are sensitive to inflation due to the difficulty of adjusting tolls to match the change in costs. The construction and design costs are usually financed through debt with the money repaid over 20 to 30 years. Tolls are seen as an equitable source of revenue since like vehicles are charged the same amount to use a particular facility. Costs are also allocated to the user and are a direct benefit to the participants choosing to use the facility. Please see page 132 for more information on toll roads in Tennessee.

Property Tax

This is the chief source of local revenue. The funds are distributed to a General Fund and then appropriated for transportation purposes. These taxes are dependent on local economic conditions, although, they remain a steady and reliable source of revenue. A separate tax for transit operations and capital can be administered by voter approval.

Local Gasoline Taxes

Counties, municipalities and metropolitan governments are authorized under Section 67-3-101 to 67-3-1013 of the Tennessee Code Annotated to impose a local gasoline tax to support local public transportation services. Imposition of the tax requires a majority vote in public referendum. The tax revenue depends on tax rate, driver sensitivity to price, administrative costs, population, and real travel patterns. The Tennessee Gasoline Tax is 21.4 cents per gallon. That yields approximately \$642.3 million per year of which TDOT collects about \$380.1 million (or 12.7 cents per gallon).

Sales Tax

This is one of the most commonly used and the second largest source of local revenue for state and local jurisdictions in the country. This tax is placed on the sale of consumer goods and services, and purchases by business firms of items for business use. The tax is a

function of the tax rate, use of funds and of redistribution formulas. A sales tax is generally more acceptable to citizens than other taxes since the tax is collected in small amounts that are not highly visible to consumers. Sales tax within the TPO area counties range from a low of 2.00% in Loudon County to a high of 2.50% in Sevier County.

Wheel Tax

Counties are authorized under Section 5-8-102 of the Tennessee Code Annotated to impose a local motor vehicle tax to provide revenue for county purposes. Imposition of the tax requires a majority vote in public referendum of a two-thirds vote from the county legislators at two consecutive meetings. Revenue potential of the local motor vehicle tax depends on the tax rate, driver sensitivity to price, administrative costs and the number of registered vehicles. The high tax rate may encourage some motorists to register their vehicle in a county that does not have local motor vehicle tax. Administrative costs are likely to be low because local motor vehicle departments are already organized to collect state taxes and fees. A disadvantage of this tax is that the tax revenues do not have to be earmarked for transportation. In 2004 Knox County voters passed a \$30 increase on a \$6 wheel tax. This additional revenue is expected to generate about \$12 million dollars for Knox County, however, these dollars are earmarked for other projects that are not transportation related.

Other Taxes

Other taxes that can be used to generate revenue include payroll tax, income tax, severance tax, driver's license fees, and a parking tax. The payroll, income, and parking tax are used in relatively few states but can offer a small additional revenue source. The severance tax can be imposed on resources extracting industries such as oil, gas, coal, or other natural products. This tax is used to help pay for the cost of providing roads to these industries. The driver's license fee has limited revenue potential but it does offer a stable source of money.

PUBLIC TRANSPORTATION

The Federal Transit Administration (FTA) administers funds to state and local governments for operating and capital assistance for public transportation activities.

FTA Section 5307 funds can be used for capital projects and FTA Section 5309 funds can be used for special projects. Typically, FTA provides 80 percent funding for capital and special projects. Most funding levels are derived through complicated formulas that consider local population and numbers of transit trips provided. Each year, KAT receives a Section 5307 grant of approximately \$1 million that can be mainly used to purchase capital items.

The Tennessee Department of Transportation (TDOT) provides funds for capital and operating assistance to local transit operators. TDOT also provides matching funds, typically up to 50 percent of the non-federal share, for programs partially funded through FTA. KAT receives approximately \$1.7 million annually from TDOT, an amount that has increased over the last few years. Additional funding for public transportation is available through TDOT's Commuter Transportation Assistance Program (CTAP) which provides funds for ridesharing services. TDOT has also provided capital and operation funding for the transportation programs at the Knox County Transit (formally CAC) and East Tennessee Human Resource Agency (ETHRA).

The City of Knoxville is the single largest source of operating funding for Knoxville Area Transit (KAT), providing \$4.7 million in funds. The City also provides matching funds to KAT for capital and operating assistance partially funded through FTA. Knox County assists in funding the KCT transportation program. Please see Appendix H for more information regarding public transportation's finances.

RAIL

The Federal Railroad Administration (FRA) administers the Railroad Rehabilitation and Investment Financing Program (RRIF) that offers various loan enhancements to public or private sponsors of intermodal and rail capital projects, including acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities.

The Local Rail Freight Assistance (LRFA) Program provides financial support to states for the continuation

of rail freight service on abandoned light density lines, and allows capital assistance for rehabilitation prior to abandonment.

The Federal Highway Administration also administers the Transportation Infrastructure Finance and Innovation Act Program (TIFIA) which is available for some rail related projects, including at-grade highway/rail crossings and intermodal freight terminals.

Also new in SAFETEA-LU is the Capital Grants for Rail Line Relocation Projects, which can be used to relocation railroads resulting in improved vehicular flow, improved quality of life, and economic development, and the Rehabilitation and Improvement Financing (RRIF), which provides loans to enhance rail service and capacity.

AIRPORT

Federal Funding

The Federal Airport Administration (FAA) administers funding for airports. The Aviation Trust Fund, which serves as the funding source under the Airport Improvement Program (AIP) legislation, comes from taxes on airline tickets, taxes on fuel, and other aviation related fees.

State Funding

State funding assistance for McGhee Tyson Airport and Knoxville Downtown Island Airport comes from statewide grants and can be used for paving projects and implementation of noise mitigation programs. McGhee Tyson Airport also receives funding from the Tennessee Air National Guard for runway maintenance and other projects that improve the military operation.

Local Funding

McGhee Tyson Airport uses funds from airport earnings and reserves and through issuance of airport revenue or general obligation bonds to match federal or state funds, or to fund unmatched projects. The Knoxville Downtown Island Airport is managed by a fixed base operator, KnoxAir, for the Metropolitan Knoxville Airport Authority.

OTHER MODES

Transportation Enhancements

The Transportation Enhancement (TE) program is a major source of funding for bicycle and pedestrian projects. Ten percent of the STP fund is set-aside for bicycle and pedestrian projects including greenways, pedestrian paths and other facilities. Most of the greenways within the TPO area have been fully or partially funded with Transportation Enhancement grant dollars. There are 12 categories of programs and projects eligible for TE funds:

1. Provision of pedestrian and bicycle facilities
2. Provision of pedestrian and bicycle safety and education activities
3. Acquisition of scenic or historic easements and sites
4. Scenic or historic highway programs including tourist and welcome centers
5. Landscaping and scenic beautification
6. Historic Preservation
7. Rehabilitation and operation of historic transportation buildings, structures, or facilities
8. Conversion of abandoned railway corridors to trails
9. Control and removal of outdoor advertising
10. Archaeological planning and research
11. Environmental mitigation of highway runoff pollution, reduce vehicle-caused wildlife mortality, maintain habitat connectivity
12. Establishment of transportation museums

Recreational Trails Program

Government agencies and private organizations alike are eligible to receive funds from the Recreational Trails Program (RTP), which are distributed by the Tennessee Department of Environment and Conservation. RTP funds can be used for the design, construction and maintenance of bicycle and pedestrian trails. A 20 percent local match is required.

State Funding

TDOT's main role in enhancing roadways for pedestrian use is to incorporate sidewalks, additional lanes, and increased shoulder widths into the design of new roadways and roadway enhancements. Having these designs in place minimizes the cost of having to implement these into existing roads. TDOT also matches funds for bicycle and pedestrian facilities.

Local Funding

Local governments provide funding for sidewalks and greenways as part of construction projects. They can also apply to the Tennessee Department of Transportation to receive funding under the Transportation Enhancement Program.

In light of grim financial predictions and the realization that a new funding source needs to be found, the Tennessee state legislature organized a Transportation Funding Special Joint Study Committee. This committee met to discuss the challenging task of paying for necessary transportation projects with dwindling funds. For example, TDOT estimates its 10-year goals are underfunded by \$8 billion. Below are some of the funding options that were discussed and their predicted results :

- Tennessee, at \$0.214 a gallon, is below the National Gas Tax average of \$0.30 a gallon. A state sales tax on gasoline could generate between \$228 and \$685 million annually depending on the tax rate.
- Based on existing demand, a one penny increase in the fuel tax could generate \$30.5 million annually; a dime increase, bringing the fuel tax within a penny of the national average, could generate \$304.6 million annually.
- A penny increase in the Motor Fuel (diesel) Tax increase could generate \$10.8 million annually; a dime increase could generate \$108.4 million annually.
- An indexed fuel tax maintains purchasing power. \$1.75 in 2008 can buy as much as \$1.00 in 1989.
- Increasing the vehicle registration by 25 percent to \$30 per passenger vehicle would generate \$65 million annually.
- Impact fees could be imposed on vehicle purchases, a one-time charge when the vehicle is registered or titled, and/or on land developers, a charge for placing new burden on the transportation system.
- Other options:
 - Hotel/Motel revenue tax
 - Tire and battery fees
 - Increasing sales and use tax
 - Weight mile tax
 - Rental car tax
 - Toll roads
 - Bonding

Source: Scott-Balice Strategies presentation to Tennessee Transportation Funding Special Joint Study Committee, 2008

Tolls and congestion pricing

While the implementation of tolls has received mixed reviews from the public in most states, user fees are a key part of infrastructure development and maintenance across the nation, even though some states still do not have the authority to toll.

At present, tolls account for roughly five percent of total highway-related revenues, according to the American Association of State Highway and Transportation Officials. While that percentage has remained stable in recent years, it does not capture the role tolling has played in funding new highway capacity. According to the Federal Highway Administration, during the last 10 years an average of 150 to 175 miles of urban expressways opened annually; of these, 50 to 75 miles a year were new access-controlled expressways with tolls. In effect toll roads have been responsible for 30 to 40 percent of new, high-end road mileage over the past decade.

Although public resistance to tolling may linger, recent technological advancements are making tolling a more acceptable option for motorists. In particular, open-

road tolling does away with the traditional tollbooth, allowing motorists to pass through a toll plaza at highway speed while money is collected through a transponder. Investment in this technology also opens up value pricing opportunities, including high-occupancy toll lanes and variable pricing or congestion pricing. With variable pricing, toll rates rise and fall with the level of congestion, assuring motorists who are willing to pay the higher rate a driving speed of 55 mph or better.

At present, tolling is not an option for financing any of the projects in the Mobility Plan. It was previously considered as a way to finance the high-priced Knoxville Regional Parkway (State Road 475). The 2007 Tennessee Tollway Act called for the development of two pilot toll projects, one highway and one bridge. TDOT considered the Parkway for the highway project and proposed a feasibility study. Popular opinion appeared to be against the use of tolling, however, and Knox County Commission passed a resolution on April 28, 2008, opposing the establishment of toll roads in Knox County. In August 2008, TDOT announced that it will not consider tolling for the Knoxville Regional Parkway.

How Will We Fund Transportation in the Future?⁸

Traditional funding options for our nation's aging infrastructure, including federal, state and local gas taxes and vehicle taxes and fees, generate less than \$60 billion a year. SAFETEA-LU provides some additional funding all states need for road, highway, bridge, transit and transportation infrastructure programs, but this bill is unlikely to be approved when it comes up for reauthorization in October 2009.

The Office of Management and Budget reports that the Federal Highway Trust Fund is expected to post a \$3.8 billion deficit in fiscal year 2009. To help fund future transportation needs, a federal Blue Ribbon Commission recommended a gas tax increase, which has remained at 18.4 cents per gallon since the

mid-1990s. However, most lawmakers don't consider this a viable option.

This year, Federal Highway Trust Fund revenues will begin falling short of planned federal spending for the first time since it was established in 1956. The shift has been swift and significant: At the end of 2000, the trust fund balance was more than \$22 billion; by the end of 2007, it had been depleted to about \$7.4 billion. The most recent administration forecasts predict that the account will fall short of its commitments by \$4.3 billion during 2009, jeopardizing federal SAFETEA-LU funding approved in 2005.

By 2015, the trust fund deficit likely will run more than \$100 billion. Infrastructure improvement and new construction needs, on the other hand, continue to escalate, as do costs for cement, steel and diesel fuel required to build bridges and roads.

In the next five years alone, the funding gap will reach an astonishing \$1.6 trillion.

States are experimenting with other methods to raise money, including tolling and congestion pricing, charging variable fuel taxes pegged to inflation, implementing systems where drivers pay a fee based on miles driven rather than gas consumed and entering into financing agreements with private entities.

Such tactics are just one part of the solution. Transportation industry leaders must consider a range of options to address the critical needs facing our nation's highways and bridges, including using new technologies and strategies that allow projects to be built less expensively.

⁸Source: HNTB magazine "Think". Issue 02, 2008. pp. 27-28.

Gasoline taxes

Traditionally, the nation's infrastructure has relied heavily on the federal gasoline tax for funding. However, for the first time since 1960, the federal government is taking more out of the Highway Trust Fund than it is putting in, creating a projected deficit for 2009. In addition, less vehicle miles traveled is adding an extra burden to the already ailing fund. With federal tax revenues spread so thin, more pressure is on each state to raise gas taxes.

As with tolling proposals, the mention of tax increases is highly unpopular with the public. Still, there is growing consensus that gas tax hikes may be essential if we are to keep our infrastructure viable in the coming years. In January 2008, the National Surface Transportation Policy and Revenue Study Commission proposed that the federal fuel tax be increased from five cents to eight cents per gallon per year over the next five years, after which it should be indexed to inflation. Such increases would still fall short of generating the needed revenue to pay for infrastructure maintenance, let alone create new capital for capacity enhancements.

Naturally we can count on significant debate over how much, and when, to raise federal gas taxes to help pay for our burgeoning infrastructure bills. Volatile oil prices are already straining many household and business budgets, adding heat to the political fire.

As with most large-scale projects, there is no single funding approach that will fit all needs. However, every potential option – from public-private partnerships, to tolls, to taxes – should be made available to allow leaders to develop our transportation system and prepare it for the increasing demands of tomorrow.

Streets and Highways Financial Constraint

The following section details the methodology for financially constraining the 2009-2034 Knoxville Regional Mobility Plan. Specifically, the projected expenditures for all the projects in the plan are compared to the projected revenues anticipated to be available for each network year through 2034. This section supports the plan's financial constraint because the costs of the projects do not exceed the projected revenues.

Projected revenues

The projected revenues were derived from the jurisdictions year 2005 through year 2008 actual funding amounts for roadway construction and rehabilitation. These past figures were projected forward to year 2034 using a 3 percent inflation rate. Funding estimates from the Tennessee Department of Transportation show expected revenues will equal the expected expenditures for the Tennessee Department of Transportation sponsored projects shown in the plan..

Projected expenditures

Each roadway project cost was projected using the year of expenditure cost with an inflation rate of 3.6 percent. The year of expenditure cost was the middle point of the network year. It is assumed that half of the projects will be funded before the middle of the network year and half will be funded after the middle of the network year. For instance, projects within the 2015 to 2024 network year were projected to year 2019.5 since that is the midpoint for the network grouping.

Financial constraint

Table 28 displays all the projected revenues and expenditures by funding source. The table exhibits that the plan is financially constrained for highway construction and rehabilitation.

Streets and Highways Operation and Maintenance Financial Constraint

Operating and maintaining the transportation system is an important aspect in ensuring that investments to improve, widen, or expand the transportation system are maintained. If the new improvements or existing roadways are not maintained properly, then the transportation system is not functioning at its capacity and the new investments are not fully realized. Local governments are cutting programs and projects in order to meet other budgetary needs and that includes not expanding or building new highways or placing greater emphasis on maintaining existing roadways since it is often less expensive than building new roadways. Therefore, jurisdictions are ensuring that they budget enough money in order to maintain and preserve their current transportation system. This section details the

Table 28. Street and Highways Capital Cost vs. Revenue by Network Year

2009-2014 Network Year			
Funding Program	Revenues	Expenditures	Balance
ARRA	5,302,653	3,386,578	1,916,075
Bridge	50,323,887	32,139,718	18,184,170
CMAQ	7,868,453	5,025,245	2,843,208
HPP	156,417,100	99,896,922	56,520,178
IM	3,763,173	2,403,378	1,359,795
Local	132,200,168	84,430,601	47,769,566
NHS	141,922,941	90,640,121	51,282,820
State	108,064,647	69,016,275	39,048,372
STP	118,220,274	75,502,240	42,718,034
STP-TPO	145,554,403	92,959,381	52,595,022
Total	869,637,698	555,400,459	314,237,239
2015-2024 Network Year			
Funding Program	Revenues	Expenditures	Cumulative Balance
ARRA	-	-	-
Bridge	8,480,425	7,248,488	1,231,937
CMAQ	1,017,651	869,819	147,832
HPP	67,843,404	57,987,906	9,855,498
IM	-	-	-
Local	149,550,607	127,825,640	21,724,967
NHS	537,319,756	459,264,212	78,055,544
State	657,157,497	561,693,324	95,464,173
STP	278,334,348	237,901,181	40,433,166
STP-TPO	243,461,651	208,094,383	35,367,268
Total	1,943,165,338	1,660,884,953	282,280,385
2025-2034 Network Year			
Funding Program	Revenues	Expenditures	Cumulative Balance
ARRA	-	-	-
Bridge	10,659,422	10,633,646	25,775
CMAQ	-	-	-
HPP	82,791,624	82,591,428	200,196
IM	-	-	-
Local	159,353,593	158,968,265	385,328
NHS	438,795,609	437,734,571	1,061,038
State	1,449,329,476	1,445,824,898	3,504,578
STP	263,691,323	263,053,699	637,624
STP-TPO	66,802,492	66,640,959	161,533
Total	2,471,423,538	2,465,447,466	5,976,072
Total 2009-2034			
Funding Program	Revenues	Expenditures	Cumulative Balance
ARRA	3,390,901	3,386,578	4,323
Bridge	50,085,703	50,021,852	63,851
CMAQ	5,902,588	5,895,063	7,525
HPP	240,783,215	240,476,256	306,960
IM	2,406,446	2,403,378	3,068
Local	371,698,361	371,224,506	473,855
NHS	988,899,591	987,638,904	1,260,687
State	2,079,185,121	2,076,534,496	2,650,625
STP	577,192,949	576,457,121	735,828
STP-TPO	368,164,073	367,694,724	469,349
Total	4,687,708,950	4,681,732,879	5,976,071

street and highway operations and maintenance costs associated with sustaining the existing system and the new improvements proposed in this plan.

Local and state operations and maintenance revenues

Each jurisdiction and TDOT submitted funding spent on street and highway operations and maintenance (O&M) during the past five years (2004-2008). These figures include sidewalk/greenway/street and signal maintenance, resurfacing, street striping, guardrails, pavement management, equipment and other expenses related to operating and maintaining the jurisdictions' facilities. Each county's sum was projected to year 2034 using a 3 percent growth rate.

Cost per network year to maintain transportation system

Costs associated with operating and maintaining the transportation system were derived from calculating a cost per lane mile and applying this cost to the number of lane miles built in each network year. It is assumed that the same level of operation and maintenance currently applied to the transportation system will be available in the future out years. Table 29 displays the urban areas current cost per lane mile.

Table 29. Urban Area Current Operation and Maintenance Cost per Lane Mile

2009 Operation & Maintenance budget for Urban area	Total Lane miles	Cost per lane mile (Budget / total lane miles)
\$40,496,764	2,891	\$14,008

The travel demand model produced the total lane miles expected per network year based on the list of projects included in this plan, shown in Table 30. Minor collectors and local roads are not accounted for in these figures because of the limitations of the travel demand model.

Table 30. Urbanized Area Lane Miles from the Travel Demand Model

	2009	2014	2024	2034
TPO Urban Area	2891	2965	3117	3308

To calculate the total lane miles for each network year grouping (i.e. 2009-2014, 2015-2024, etc.), each year's lane mile count was calculated, and then all the years within the grouping were summed. For instance, to calculate the total lane miles for the network year period from year 2009-2014, the urban areas increase in lane miles from year 2009 to 2014 was divided by five. This number is the increase in lane miles per year. For each year, the amount of increase in lane miles was added to each year. For example, the urban areas lane miles in year 2009 is 2,891, and it is projected to increase to 2,965 lane miles in year 2014; $(2965-2891=74/5=14.8)$ therefore, it is assumed that from 2009 to 2014 the urban area will increase the lane miles by 14.8 miles per year. To calculate the total amount of lane miles for the network year 2009-2014 grouping each years total lane miles is summed to get the total number of lane miles in that network year (year 2009 lane miles + year 2010 lane miles + year 2014 lane mile = 12,768 total lane miles). In order to calculate the total cost of operating and maintaining each network year grouping the total lane miles was multiplied by the above current cost per lane mile (see Table 29). Table 31 displays the urban area's total cost to maintain and operated the transportation system with the improvements and additions stated in this plan. Table 32 shows the operations and maintenance costs by jurisdiction.

Table 31. Cost to Maintain New Lane Miles

Network year	Total expected lane miles	Expected total cost
2009-2014	12,768	\$ 178,852,537
2015-2024	22,486	\$ 314,981,059
2025-2034	24,221	\$ 339,277,716

Financial constraint

The operations and maintenance costs and revenues for each network year were compared to each other, and Table 33 shows the results. These calculations include state maintained roadways. Street and highway operation and maintenance expenses are financially constrained for the life of this plan. This financial plan verifies that the cost of the proposed transportation improvements and the dollars required to maintain current and future systems are consistent with programmed and projected sources of revenue. The plan is fiscally constrained.

Table 32. Operations and Maintenance Costs by Jurisdiction

	2009		2014		2024		2034	
	lane miles	O&M costs	lane miles	O&M costs	lane miles	O&M costs	lane miles	O&M costs
City of Knoxville	1277	\$17,888,216	1298	\$18,182,384	1313	\$18,392,504	1315	\$18,420,520
Town of Farragut	102	\$1,428,816	109	\$1,526,872	111	\$1,554,888	128	\$1,793,024
Knox County	863	\$12,088,904	904	\$12,663,232	977	\$13,685,816	1122	\$15,716,976
City of Maryville	130	\$1,821,040	131	\$1,835,048	133	\$1,863,064	134	\$1,877,072
City of Alcoa	137	\$1,919,096	140	\$1,961,120	161	\$2,255,288	161	\$2,255,288
Blount County	236	\$3,305,888	236	\$3,305,888	269	\$3,768,152	283	\$3,964,264
Seymour/Sevier County	39	\$546,312	39	\$546,312	39	\$546,312	39	\$546,312
Lenoir City/Loudon County	106	\$1,484,848	107	\$1,498,856	114	\$1,596,912	126	\$1,765,008
Total	2890	\$40,483,120	2964	\$41,519,712	3117	\$43,662,936	3308	\$46,338,464

Table 33. Street and Highway Operation and Maintenance Costs vs Revenues by Network Year

	Revenue	Cost	Balance
2009-2014	\$ 264,099,698	\$ 178,852,537	\$ 85,247,161
2015-2024	\$ 559,720,730	\$ 314,981,059	\$ 244,739,671
2025-2034	\$ 752,217,856	\$ 339,277,716	\$ 412,940,140

Financially Constrained Project List

The Roadway section of Chapter 4 discussed how the roadway projects were selected and evaluated for inclusion in the Regional Mobility Plan. The roadway project list is financially constrained, and the projects that increase the capacity of the roadway network undergo air quality conformity, the results of which will be shown in this chapter of the plan.

Many of these highway projects fall under TDOT's Accommodation Policy (see Appendix B to view the full text of policy) and will therefore also include sidewalks and/or bike lanes as appropriate. In the past, intersection improvements were already prescribed in the plan as adding a center turn lane or adding a right-hand turn lane. In this plan update, the appropriate design to fulfill the project's needs will be determined during the design phase.

The Mobility Plan number corresponds with the project listing (Table 34) to the project location on Figure 41, which displays regional roadway projects, color coded by anticipated completion horizon year. Three completion

horizon years were used to coincide with air quality conformity determination horizon years: 2014, 2024 and 2034.

The project lists include columns related to the eight planning factors identified in 2005's SAFETEA-LU legislation. These planning factors are addressed through the following goals, and each project's goals have been indentified:

1. System maintenance: Highway projects that don't significantly change the character of the road and primarily involve intersection improvements, addition of turn lanes, roadway safety improvements, bridge rehabilitation, and resurfacing.
2. System efficiency: Projects that reduce traffic congestion, such as adding turn lanes, widening roads, constructing new roads and improving intersections.
3. Environmental quality: Projects such as intersection improvements and constructing turn lanes and aim to reduce mobile source emissions by eliminating congestion while not adding capacity.
4. Mobility options: Includes projects that facilitate movement among and between modes such as intersection improvements, new interchanges and new roads with multimodal facilities.

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
Anderson and Roane Counties																		
101	New	Edgemoor Rd (SR 170)	Oak Ridge Hwy (SR 62) to Clinton Hwy (SR 9) (US 25W)	Oak Ridge/Anderson County	6.2	Widen 2-lane to 4-lane	2015 - 2024	\$52,913,964	State	South RPO	√	√				√	√	
103	New	Park Lane	Andersonville Hwy (SR 61) to End of Route	Anderson County	7.3	Reconstruct 2-lane section	2015 - 2024	\$37,692,139	State	South RPO	√	√				√	√	
102	610*	SR 29	Pine Ridge Rd to SR 61	Roane County	0.8	Widen 2-lane to 4-lane	2009 - 2014	18,025,334	State	South RPO		√				√	√	√
Blount County																		
200	47	Cusick Road	Alcoa Hwy (SR 115) (US 129) to Pellissippi Pkwy (SR 162)	Alcoa	1.7	Add center turn lane	2009 - 2014	\$6,934,838	STP-TPO	KRTPO		√				√	√	√
201	50	East Bessemer Street	Intersection w/ E Watt St	Alcoa	0.0	Realign intersection	2009 - 2014	\$32,773	STP-TPO	KRTPO		√				√	√	√
237	74	E. Broadway Avenue (SR 33)	Intersection with Brown School Rd	Maryville	0.0	Realign and install traffic signal	2009 - 2014	\$873,956	CMAQ	KRTPO	√	√				√	√	√
202	605*	Hunter Growth Study Corridor #2 - Robert C. Jackson Dr Extension	Middlesettlements Rd to Louisville Rd (SR 334)	Alcoa	0.7	New 4-lane road w/center turn lane	2009 - 2014	\$4,588,267	STP-TPO	KRTPO		√		√		√	√	√
203	New	Old Knoxville Hwy (SR 33)	Hunt Rd (SR 335) to Pellissippi Pkwy (SR 162)	Alcoa	0.5	Widen 2-lane to 4-lane w/center turn lane	2009 - 2014	\$3,277,334	STP-TPO	KRTPO	√	√				√	√	
204	612	Pellissippi Place Access Road	Connect Old Knoxville Hwy (SR 33) to Wildwood Rd through Pellissippi Place Research Park	Alcoa	1.2	Construct new 2 and 4-lane road w/center turn lane	2009 - 2014	\$9,613,512	HPP	KRTPO	√					√	√	√
205	75	Topside Road (SR 333)	East of Old Topside Rd to Wrights Ferry Rd	Alcoa	1.0	Phase I & II signalization and intersection realignment	2009 - 2014	\$1,638,667	CMAQ	KRTPO	√	√	√			√	√	√
206	New	US 129 Bypass (SR 115)	Intersection with Louisville Rd (SR 334)	Alcoa	0.0	Intersection improvements	2009 - 2014	\$873,956	CMAQ	KRTPO		√				√	√	
207	79	Wright's Ferry Road	Topside Rd (SR 333) to Airbase Rd (SR 429)	Alcoa	1.5	Add center turn lane	2009 - 2014	\$5,789,956	STP-TPO	KRTPO		√	√	√		√	√	√
208	E4	Improve Streetscapes & Pavement	Locations throughout Blount County	Alcoa/ Maryville/ Blount County	N/A	Improve streetscapes and repair pavement	2009 - 2014	\$262,187	STP-TPO	KRTPO	√					√	√	√
209	97	Ellejoy Road	River Rd to Jeffries Hollow Rd	Blount County	3.7	Reconstruct 2-lane section	2009 - 2014	\$10,924,445	Local	KRTPO	√					√	√	√
210	106	Jeffries Hollow Road	Ellejoy Rd to Sevier County Line	Blount County	2.7	Reconstruct 2-lane section	2009 - 2014	\$7,210,134	Local	KRTPO	√					√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
211	109a	Morganton Road Phase 1	Foothills Mall Dr to William Blount Dr (SR 335)	Blount County	2.2	Reconstruct 2-lane section	2009 - 2014	\$6,008,445	HPP	KRTPO		√				√	√	√
212	66	Old Knoxville Hwy (SR 33)	Wildwood Rd to McArthur Rd	Blount County	1.2	Reconstruct 2-lane section	2009 - 2014	\$6,897,148	State	KRTPO		√				√	√	√
213	114	Old Niles Ferry Road	Maryville City Limit to Calderwood Hwy (SR 115) (US 129)	Blount County	3.3	Reconstruct 2-lane section	2009 - 2014	\$6,129,641	Local	KRTPO		√				√	√	√
214	New	Sevierville Rd (SR 35) (US 411)	Washington St (SR 35) to Everett High Rd	Maryville	0.5	Construct 2-lane road w/center turn lane along existing and new alignment	2009 - 2014	\$8,193,334	STP	KRTPO	√	√				√	√	
215	129	Airport Access Road to I-140	Airport Terminus to Pellissippi Pkwy (I-140) (SR 162)	Alcoa	0.0	Add new interchange ramps to service airport cargo area	2015 - 2024	\$20,295,767	State	KRTPO				√	√	√	√	√
216	88	Alcoa Highway (SR 115) (US 129)	Singleton Station Rd to Topside Rd (SR 333)	Blount County/ Alcoa	1.5	Widen 4-lane to 6-lane plus 2 auxiliary lanes (8 total lanes)	2015 - 2024	\$44,650,687	NHS	KRTPO		√			√	√	√	√
255	88	Alcoa Highway (SR 115) (US 129)	Pellissippi Pkwy (I-140) (SR 162) to Singleton Station Rd	Blount County/ Alcoa	0.8	Widen 4-lane to 6-lane	2015 - 2024	\$44,650,687	NHS	KRTPO		√			√	√	√	√
256	88	Alcoa Highway (SR 115) (US 129)	Topside Rd (SR 333) to Knox County Line	Blount County/ Alcoa	0.5	Widen 4-lane to 6-lane	2015 - 2024	\$16,526,553	NHS	KRTPO		√			√	√	√	√
217	41	Alcoa Highway (SR 115) (US 129)	Singleton Station Rd to Hunt Rd (SR 335)	Alcoa	3.6	Improve intersections including signals and turn lanes where warranted (upon completion of proposed Bypass)	2015 - 2024	\$2,319,516	NHS	KRTPO	√		√		√	√	√	√
218	84	Alcoa Highway Bypass (SR 115) (US 129)	From Hall Rd (SR 35)/Alcoa Hwy (SR 115) Interchange to Proposed Interchange serving McGhee Tyson Airport	Alcoa	1.3	Construct 8-lane freeway on existing and new alignment	2015 - 2024	\$25,079,769	NHS	KRTPO		√		√	√	√	√	√
257	84	Alcoa Highway Bypass (SR 115) (US 129)	From Proposed Interchange serving McGhee Tyson Airport to Pellissippi Pkwy (SR 162)	Alcoa	2.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2015 - 2024	\$46,390,324	NHS	KRTPO		√		√	√	√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
258	84	Alcoa Highway Bypass (SR 115) (US 129)	From Pellissippi Pkwy (SR 162) to Near Singleton Station Rd	Alcoa	1.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2015 - 2024	\$27,109,346	NHS	KRTPO		√		√	√	√	√	√
219	128	Wright Road	Hunt Rd (SR 335) to Alcoa Hwy (SR 115) (US 129)	Alcoa	1.1	Reconstruct 2-lane section	2015 - 2024	\$5,798,791	STP-TPO	KRTPO	√					√	√	√
220	604*	Hunter Growth Study Corridor #1 Home Ave Extension	Home Ave to Calderwood St	Alcoa/ Maryville	0.2	Reconstruct 2-lane section, construct new bridge, demolish part of shopping center	2015 - 2024	\$5,363,881	STP-TPO	KRTPO		√		√		√	√	√
221	132	Burnett Station Road	Sevierville Rd (SR 35) (US 411) to Chapman Hwy (SR 71) (US 441)	Blount County	4.4	Reconstruct 2-lane section	2015 - 2024	\$19,425,948	HPP	KRTPO	√					√	√	√
222	133	Carpenters Grade Road	Raulston Rd to Mint Rd	Blount County	2.3	Reconstruct 2-lane section	2015 - 2024	\$4,784,002	STP-TPO	KRTPO	√					√	√	√
223	New	Carpenters Grade Road	Cochran Rd to Raulston Rd	Maryville	0.9	Reconstruct 2-lane section	2015 - 2024	\$2,754,426	STP-TPO	KRTPO	√	√				√	√	
224	30	Foothills Parkway	Lamar Alexander Pkwy (SR 73) (US 321) to Sevier County Line	Blount County	11.3	Construct new 2-lane road	2015 - 2024	Funds for federal lands	Federal Lands	KRTPO				√		√	√	√
225	102	Hinkle Road	Sevierville Rd (SR 35) (US 411) to Burnett Station Rd	Blount County	1.9	Reconstruct 2-lane section	2015 - 2024	\$10,202,972	Local	KRTPO	√					√	√	√
226	607*	Hunter Growth Study Corridor #5 - Ridge Rd Extension	Ridge Rd to Pleasant Hill Rd	Blount County	0.7	Construct new 2-lane road	2015 - 2024	\$4,928,972	Local	KRTPO		√		√		√	√	√
227	142	Mentor Road	Louisville Rd (SR 334) to Wrights Ferry Rd	Blount County	3.2	Reconstruct 2-lane section	2015 - 2024	\$14,062,067	STP-TPO	KRTPO		√				√	√	√
228	144	Mint Road	Old Niles Ferry to 4 miles east	Blount County	3.4	Reconstruct 2-lane section	2015 - 2024	\$17,396,372	Local	KRTPO	√					√	√	√
229	109b	Morganton Road Phase 2	William Blount Dr (SR 335) to Walker Rd	Blount County	3.3	Reconstruct 2-lane section	2015 - 2024	\$14,496,976	STP-TPO	KRTPO		√				√	√	√
230	111	Nails Creek Road	Wildwood Rd to Burnett Station Rd	Blount County	2.5	Reconstruct 2-lane section	2015 - 2024	\$9,886,938	Local	KRTPO	√					√	√	√
231	149	Old Knoxville Highway (SR 33)	Pellissippi Pkwy (SR 162) to Knox County Line	Blount County	4.6	Reconstruct 2-lane section	2015 - 2024	\$17,396,372	State	KRTPO		√				√	√	√
232	70	Pellissippi Parkway (SR 162) (I-140)	Old Knoxville Hwy (SR 33) to Lamar Alexander Pkwy (SR 73) (US 321)	Blount County	8.9	Construct new 4-lane freeway	2015 - 2024	\$57,987,906	HPP	KRTPO		√		√	√	√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
233	72	Proffitt Springs Road	Louisville Rd (SR 334) to Hunt Rd (SR 335)	Blount County	1.5	Reconstruct 2-lane section	2015 - 2024	\$7,402,156	Local	KRTPO		√				√	√	√
234	160	Wildwood Road	Maryville City Limit to Sevierville Rd (SR 35) (US 411)	Blount County	6.1	Reconstruct 2-lane section	2015 - 2024	\$17,976,251	STP-TPO	KRTPO		√		√		√	√	√
235	161	Wilkinson Pike	Maryville City Limit to Chilhowee View Rd	Blount County	2.6	Reconstruct 2-lane section	2015 - 2024	\$11,597,581	Local	KRTPO	√					√	√	√
236	New	Brown School Rd	E. Broadway Ave (SR 33) to Sevierville Rd (SR 35) (US 411)	Maryville	1.5	Reconstruct 2-lane section	2015 - 2024	\$5,508,851	Local	KRTPO	√	√				√	√	
238	131*	Hunter Growth Study Corridor #3 - Robert C. Jackson Dr Extension	Lamar Alexander Pkwy (SR 73) (US 321) to Morganton Rd	Maryville	0.9	Construct new 2-lane road	2015 - 2024	\$4,349,093	STP-TPO	KRTPO		√		√		√	√	√
239	108a	Montvale Road (SR 336)	Maryville South City Limits to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	2.7	Add center turn lane	2015 - 2024	\$36,242,441	State	KRTPO	√	√	√	√		√	√	√
240	New	Sandy Springs Rd	Intersection w/ Montgomery Ln	Maryville	0.0	Intersection improvements	2015 - 2024	\$869,819	CMAQ	KRTPO	√	√	√	√		√	√	
241	New	Tuckaleechee Pk	Lamar Alexander Pkwy (SR 73) (US 321) to Grandview Dr	Maryville	1.0	Reconstruct 2-lane section	2015 - 2024	\$3,624,244	Local	KRTPO	√	√				√	√	
242	162	W. Broadway Avenue (SR 33) (US 411)	Old Niles Ferry Rd to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	0.8	Add center turn lane	2015 - 2024	\$21,745,465	State	KRTPO		√				√	√	√
243	New	Wilkinson Pk	Court St to Maryville City Limits	Maryville	0.9	Reconstruct 2-lane section	2015 - 2024	\$8,698,186	STP-TPO	KRTPO	√	√				√	√	
244	152	Peppermint Rd	Wildwood Rd to Sevierville Rd (SR 35) (US 411)	Blount County	1.1	Reconstruct 2-lane section	2015 - 2024	\$4,204,123	Local	KRTPO	√					√	√	√
245	New	Sevierville Rd (SR 35) (US 411)	Dogwood Dr to Peppermint Rd	Maryville/ Blount County	3.0	Add center turn lane	2015 - 2024	\$21,600,495	State	KRTPO	√	√				√	√	
246	New	William Blount Dr Extension (SR 335)	US 411 (SR 33) @ Wm. Blount Dr to Old Niles Ferry Rd	Maryville/ Blount County	0.6	Construct new 2-lane road	2015 - 2024	\$11,597,581	STP-TPO	KRTPO	√	√				√	√	
247	153	Sam Houston School Road	Old Knoxville Hwy (SR 33) to Wildwood Rd	Alcoa/ Blount County	2.7	Add center turn lane	2025 - 2034	\$19,945,830	STP-TPO	KRTPO	√					√	√	√
248	183	Topside Road (SR 333)	Alcoa Hwy (US 129) (SR 115) to Wrights Ferry Rd	Alcoa	1.2	Reconstruct 2-lane section	2025 - 2034	\$22,671,347	State	KRTPO		√				√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
249	New	Montvale Rd (SR 336)	Maryville City Limits (near Hill Ct) to Six Mile Rd	Blount County	2.7	Reconstruct 2-lane section	2025 - 2034	\$29,939,393	State	KRTPO	√	√				√	√	
250	123a*	Sevierville Road (SR 35) (US 411)	Peppermint Rd to Chapman Hwy (SR 71) (US 441)	Blount County	10.5	Reconstruct 2-lane section	2025 - 2034	\$78,358,618	State	KRTPO		√			√	√	√	√
251	184	Topside Road (SR 333)	Pellissippi Pkwy (SR 162) to Louisville Rd (SR 334)	Blount County	3.0	Widen 2-lane to 4-lane	2025 - 2034	\$43,360,500	State	KRTPO		√				√	√	√
252	606*	Hunter Growth Study Corridor #4 - Cochran Rd Extension	Carpenters Grade Rd to Montvale Rd (SR 136)	Maryville/ Blount County	0.8	Construct new 2-lane road	2025 - 2034	\$11,356,321	Local	KRTPO		√		√		√	√	√
253	608*	Hunter Growth Study Corridor #6 - Old Glory Rd Extension	S. Old Glory Rd to William Blount DR (SR 335)	Maryville/ Blount County	0.6	Reconstruct 2-lane section	2025 - 2034	\$11,975,757	STP-TPO	KRTPO		√		√		√	√	√
254	609*	Hunter Growth Study Corridor #7 Southern Loop Connector	US 321 (SR 73) @ proposed Pellissippi Pkwy (SR 162) extension to Old Niles Ferry Rd @ proposed Wm Blount Dr (SR 335) extension	Maryville/ Blount County	10.7	Construct 2-lane road along existing and new alignment	2025 - 2034	\$82,591,428	HPP	KRTPO		√		√	√	√	√	√
Jefferson County																		
301	603*	Chucky Pike	Intersection at US 11E (SR 34)	Jefferson City	0.0	Intersection improvement add turn lanes and modify signal	2009 - 2014	\$152,942	STP	LAMTPO	√	√	√	√		√	√	
302	New	E. Main St/N. Chucky Pk	Intersection at Old AJ Hwy	Jefferson City	0.0	Realign Intersection	2009 - 2014	\$327,733	STP	LAMTPO	√	√	√	√		√	√	
303	New	Municipal Dr	Intersection at Old AJ Hwy	Jefferson City	0.0	Add left and right turn lanes	2009 - 2014	\$180,253	Local	LAMTPO	√					√	√	
304	New	Old AJ Highway	Intersection at Chucky Pk	Jefferson City	0.0	Add left and right turn lanes	2009 - 2014	\$409,667	STP	LAMTPO	√					√	√	
305	New	Odyssey Rd	Intersection at US 11E (SR 34)	Jefferson City	0.0	Add left and right turn lanes	2009 - 2014	\$65,547	STP	LAMTPO	√					√	√	
306	New	Odyssey Rd	US 11E (SR 34) to Norfolk Southern RR	Jefferson City	0.5	Add center turn lane	2009 - 2014	\$262,187	STP	LAMTPO	√					√	√	
307	32	Old AJ Highway	Railroad crossing	Jefferson City	0.0	Replace bridge	2009 - 2014	\$475,213	Bridge	LAMTPO	√					√	√	√
308	New	Old AJ Highway (SR 92)	Main St to Overlook Rd	Jefferson City	0.7	Add center turn lane and sidewalks	2009 - 2014	\$2,901,533	Bridge	LAMTPO	√	√		√		√	√	

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New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
309	New	Old AJ Highway	Intersection at SR 92	Jefferson City	0.0	Signalize Intersection	2009 - 2014	\$415,129	CMAQ	LAMTPO	√	√				√	√	
310	New	Old AJ Highway	Intersection at Mountcastle St	Jefferson City	0.0	Signalize Intersection	2009 - 2014	\$562,609	CMAQ	LAMTPO	√	√				√	√	
311	New	Rittenhouse Rd/Slate Rd	Ritenhouse Rd to Slate Rd	Jefferson City	0.4	New 2 lane road connection	2009 - 2014	\$109,244	Local	LAMTPO	√	√				√	√	
312	New	SR 32 (US 25E)	In White Pine	White Pine	1.9	Replace "Reduced Speed Limit" Signs	2009 - 2014	\$2,185	STP	LAMTPO						√	√	
313	8*	SR 66 Relocation	North of I-81 at SR 341 to SR 160	Jefferson County	3.1	Construct new 4-lane road	2009 - 2014	\$60,084,448	State	LAMTPO		√		√	√	√	√	√
314	9	SR 92	Bridge in Dandridge	Dandridge	0.4	Replace Bridge	2009 - 2014	16,386,668	Bridge	Regional	√					√	√	√
315	27	SR 92	US 11E to Hinchey Hollow Rd	Jefferson City	2.3	Install street lighting	2009 - 2014	\$32,773	State	LAMTPO	√					√	√	√
316	New	SR 92	Intersection at Old AJ Hwy	Jefferson City	0.0	Add left and right turn lanes	2009 - 2014	\$158,404	State	LAMTPO	√	√				√	√	√
317	14	US 11E (SR 34)	Intersection w/ George Ave	Jefferson City	0.0	Intersection improvements	2009 - 2014	\$76,471	STP	LAMTPO	√	√				√	√	√
318	15	US 11E (SR 34)	Intersection w/ Russell Ave	Jefferson City	0.0	Intersection improvements	2009 - 2014	\$65,547	STP	LAMTPO	√	√				√	√	√
319	16	US 11E (SR 34)	SR 92 to Morristown City Limit	Jefferson City	4.8	Install street lighting	2009 - 2014	\$49,160	STP	LAMTPO	√					√	√	√
320	16a	US 11E (SR 34)	All signalized intersections	Jefferson City	0.0	LED signal head replacements	2009 - 2014	\$120,169	STP	LAMTPO	√					√	√	√
321	New	US 11E (SR 34)	SR 92S to Hicks Rd	Jefferson City	1.7	Install Pedestrian Signals and Pushbutton Activation	2009 - 2014	\$32,773	STP	LAMTPO	√					√	√	
322	191*	US 11E (SR 34)	SR 92S to Odyssey Rd	Jefferson City	0.5	Signal Coordination	2009 - 2014	\$125,631	STP	LAMTPO	√					√	√	√
323	602*	US 11E (SR 34)	Intersection at Pearl Ave and at Harrington St	Jefferson City	0.0	Intersection improvement add left turn lanes	2009 - 2014	\$39,328	STP	LAMTPO	√	√				√	√	
324	21	US 411/ US 25W (SR 35)	Grapevine Hollow Rd to 4-lane section of SR 9	Jefferson County	5.6	Widen 2-lane to 4-lane	2009 - 2014	\$36,487,647	STP	South RPO		√			√	√	√	√
325	611*	I-40/ I-81 Interchange	I-40/ I-81 Interchange	Jefferson County	3.0	Safety Improvements to increase length of acceleration ramps	2015 - 2024	\$11,742,551	NHS	South RPO		√		√		√	√	√
326	36	Old AJ Highway	Mossy Creek E. of Branner Ave	Jefferson City	0.0	Bridge replacement	2015 - 2024	\$630,618	Bridge	LAMTPO	√					√	√	√

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New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
Loudon County																		
400	65	Harrison Road	From Kingston St to Lenoir City Limits (approx. 7,000 ft.)	Lenoir City	1.3	Intersection improvements and reconstruct 2-lane section	2009 - 2014	\$8,220,645	STP-TPO	KRTPO	√	√		√		√	√	√
401	E17	Improve RR Crossings	Various locations in Lenoir City	Lenoir City	N/A	Improve at-grade RR crossings	2009 - 2014	\$90,891	HPP	KRTPO	√	√		√		√	√	√
402	E13	Improve Streetscapes and Pavement	Various locations in Loudon County	Loudon County	N/A	Improve streetscapes and repair pavement	2009 - 2014	\$262,187	HPP	South RPO	√					√	√	√
403	E15	Improve Streetscapes and Pavement	Various locations in Greenback	Greenback	N/A	Improve streetscapes and repair pavement	2009 - 2014	\$218,489	HPP	South RPO	√					√	√	√
404	E12	Unitia Rd	Unitia Rd Bridge	Loudon County	0.0	Replace Bridge	2009 - 2014	\$1,005,049	Bridge	South RPO		√			√	√	√	√
405	80	US 11 (SR 2)	Intersection w/ Shaw Ferry Rd	Loudon County	0.0	Intersection improvements	2009 - 2014	\$1,106,769	STP	KRTPO	√	√		√		√	√	√
406	122	US 11 (SR 2)	Intersection w/ US 70 (SR 1)	Loudon County	0.0	Intersection improvements	2009 - 2014	\$4,369,778	State	KRTPO	√	√	√			√	√	√
407	New	US 11 (SR 2)	Intersection w/ Loudon H.S. Entr.	Loudon	0.0	Intersection improvements	2009 - 2014	\$546,222	CMAQ	South RPO	√	√				√	√	
408	81	US 321 (SR 73)	I-75 Interchange to US 11 (SR 2)	Lenoir City	2.7	Intersection Improvements from Corridor Study	2009 - 2014	\$546,222	CMAQ	KRTPO		√			√	√	√	√
409	82	US 321 (SR 73)	US 11 (SR 2) to east of Little Tennessee River	Loudon County	1.7	Construct 4-lane road on existing and new alignment	2009 - 2014	\$50,112,040	HPP	KRTPO / South RPO		√			√	√	√	√
410	83	US 321 (SR 73)	Intersection w/ US 11 (SR 2)	Lenoir City	0.0	Construct Interchange	2009 - 2014	\$20,210,224	HPP	KRTPO	√	√	√			√	√	√
411	E14	Veteran's Memorial Bridge	Veteran's Memorial Bridge	Loudon	N/A	Install lighting	2009 - 2014	\$218,489	STP-TPO	South RPO	√					√	√	√
412	148	Old Highway 95 (Kingston Street)	Harrison Rd to US 321 (SR 73)	Lenoir City	1.8	Reconstruct 2-lane section	2015 - 2024	\$14,805,037	STP-TPO	KRTPO		√				√	√	√
413	37	SR 72	US 11 (SR 2) to Corporate Park	Loudon County	4.2	Widen 2-lane to 4-lane	2015 - 2024	\$29,747,796	STP	South RPO		√			√	√	√	√
414	New	US 11 (SR 2)	Lenoir City Limits to US 321 (SR 73)	Lenoir City	1.8	Streetscape improvements, Potential "Road Diet" (reduce from 4-lane to 3-lane)	2015 - 2024	\$5,073,942	STP-TPO	KRTPO	√	√				√	√	

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
415	29	US 11 (SR 2)	Blair Bend Rd to Lenoir City Limit	Loudon County	3.8	Reconstruct 2-lane section	2015 - 2024	\$33,162,558	State	South RPO		√			√	√	√	√
416	121	US 11 (SR 2)	US 321 (SR 73) to US 70 (SR 1)	Lenoir City	5.1	Widen 2-lane to 4-lane	2015 - 2024	\$46,468,608	STP	KRTPO		√			√	√	√	√
417	25	SR 72	Corporate Park to Stockton Valley Rd	Loudon County	3.3	Widen 2-lane to 4-lane	2025 - 2034	\$47,077,114	State	South RPO		√				√	√	√
418	26	SR 72	US 11 (SR 2) to Vonore Rd	Loudon County	2.1	Widen 2-lane to 4-lane	2025 - 2034	\$25,421,642	State	South RPO		√				√	√	√
419	38	SR 72	Vonore Rd to Monroe County Line	Loudon County	7.0	Widen 2-lane to 4-lane	2025 - 2034	\$88,269,589	State	South RPO		√			√	√	√	√
420	28	Sugar Limb Road	US 11 (SR 2) to I-75	Loudon	2.3	Widen 2-lane to 4-lane	2025 - 2034	\$28,952,425	Local	South RPO		√				√	√	√
421	39	US 11 (SR 2)	SR 72 to Pond Creek Rd	Loudon	3.4	Reconstruct 2-lane section	2025 - 2034	\$33,629,165	State	South RPO		√			√	√	√	√
422	New	US 321 (SR 73)	US 11 (SR 2) to I-75	Lenoir City	2.7	Widen 4-lane to 6-lane	2025 - 2034	\$51,619,643	STP	KRTPO	√	√				√	√	
Sevier County																		
502	E34	Dolly Parton Pkwy (US 411) (SR 35)	Intersection w/ Veterans Blvd (SR 449)	Sevierville	0.0	Improve Intersection	2009 - 2014	\$873,956	CMAQ	South RPO		√		√	√	√	√	√
503	3	Old Knoxville Highway	Boyd's Creek Hwy (SR 338) to US 411/441 (SR 71)	Sevierville	4.2	Widen 2-lane to various 3 and 4 lane divided cross sections	2009 - 2014	Local bond	Local	South RPO		√				√	√	√
504	23	Veterans Blvd (SR 449) Extension	US 411 (SR 35) to SR 66	Sevierville	3.5	Construct new 4-lane road	2009 - 2014	Local bond	Local	South RPO				√		√	√	√
505	5	Birds Creek Road (SR 454)	Glade Rd to SR 416	Sevier County	4.6	Reconstruct 2-lane section	2009 - 2014	\$11,798,401	STP	South RPO	√					√	√	√
506	6	SR 66	North of Nichols St to Boyd's Creek Hwy (SR 338)	Sevierville/Sevier County	4.2	Widen 4-lane to 6-lane	2009 - 2014	\$30,916,180	State	South RPO		√				√	√	√
507	7	SR 66	Boyd's Creek Hwy (SR 338) to I-40	Sevierville/Sevier County	4.1	Widen 4-lane to 6-lane	2009 - 2014	\$39,437,247	State	South RPO		√			√	√	√	√
508	E18	Chapman Hwy (SR 71/US 441)	Boyd's Creek Hwy (SR 338) to Macon Ln	Sevier County/Seymour	0.7	Add center turn lane	2009 - 2014	\$1,310,933	HPP	South RPO	√	√	√	√		√	√	√
509	13	Thomas Road Connector	Teaster Lane to Veterans Blvd (SR 449) at McCarter Hollow Rd	Pigeon Forge	1.6	Construct new 4-lane road	2009 - 2014	\$17,894,651	HPP	South RPO		√	√	√		√	√	√
510	20	US 411 (SR 35)	Sims Rd to Grapevine Hollow Rd	Sevier County	3.4	Widen 2-lane to 4-lane	2009 - 2014	\$49,487,737	STP	South RPO		√			√	√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
511	31	Foothills Parkway	Blount County Line to US 321 (SR 73) in Wears Valley	Sevier County	2.5	Construct new 2-lane road	2015 - 2024	Funds for federal lands	Federal Lands	South RPO				√		√	√	√
512	New	I-40/ SR 66 Interchange	Interchange at SR 66	Sevierville	1.5	Modify Interchange to improve capacity including addition of new Interstate access ramps	2015 - 2024	\$28,993,953	NHS	South RPO	√	√				√	√	
513	19	US 321 (SR 73)	Buckhorn Rd (SR 454) to east of Pittman Center	Sevier County	6.4	Widen 2-lane to 4-lane	2015 - 2024	\$30,008,741	State	South RPO		√			√	√	√	√
Knox County																		
600	68	Watt Road Extension	Old Stage Rd to Kingston Pk (SR 1) (US 11/70)	Farragut	0.3	Construct new 2-lane road with center turn lane	2009 - 2014	\$4,479,023	STP-TPO	KRTPO	√					√	√	√
601	44	Campbell Station Road	Jamestown Blvd to Parkside Dr/ Grigsby Chapel Rd	Farragut	0.9	Widen 2-lane to 4-lane w/center turn lane	2009 - 2014	\$9,832,001	STP-TPO	KRTPO		√				√	√	√
602	New	Outlet Drive	Lovell Rd (SR 131) to Campbell Station Rd	Farragut/Knox County	0.5	Construct new 2-lane road w/center turn lane along existing and new alignment	2009 - 2014	\$3,277,334	Local	KRTPO	√	√				√	√	
603	52	Emory Road (SR 131)	Clinton Hwy (SR 9) (US 25W) to Gill Rd	Knox County	2.9	Widen 2-lane to 4-lane w/center turn lane	2009 - 2014	\$25,126,224	STP	KRTPO		√			√	√	√	√
604	60	Maynardville Hwy (SR 33)	Temple Acres Dr to Union County Line	Knox County	5.9	Widen 2-lane to 4-lane	2009 - 2014	\$35,026,502	State	KRTPO		√			√	√	√	√
605	89	Schaad Road Extension	Middlebrook Pike (SR 169) to west of Oak Ridge Hwy (SR 62)	Knox County	4.6	Construct new 4-lane road	2009 - 2014	\$39,328,003	Local	KRTPO				√	√	√	√	√
607	New	Halls Connector	Norris Fwy (SR 71) (US 441), Emory Rd (SR 131), Maynardville Hwy (SR 33)	Knox County	0.4	Reconfigure intersections and add SB thru lane on Norris Fwy from Emory Rd to Maynardville Hwy	2009 - 2014	\$17,752,223	STP-TPO	KRTPO	√					√	√	
608	New	Lovell Road (SR 131)	Pellissippi Pkwy (SR 162) SB Ramps to E. of Schaeffer Rd	Knox County	0.4	Widen 2-lane to 4-lane w/center turn lane	2009 - 2014	\$3,386,578	ARRA	KRTPO	√					√	√	
609	New	Emory Rd (SR 131)	Intersection w/Tazewell Pk (SR 331)	Knox County	0.0	Intersection improvement	2009 - 2014	\$4,369,778	STP	KRTPO	√					√	√	
610	78	Western Avenue (SR 62)	Texas Ave to Major Ave	Knoxville	0.8	Widen 2-lane to 4-lane	2009 - 2014	\$22,722,846	State	KRTPO		√			√	√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
611	57*	I-640/ Broadway (SR 33) (US 441) Interchange Phase II	I-640/ Broadway (SR 33) (US 441) Interchange	Knoxville	0.0	Construct additional ramps and access improvements	2009 - 2014	\$16,386,668	NHS	KRTPO	√	√		√		√	√	√
612	77*	Western Avenue (SR 62)	Schaad Rd to I-640	Knoxville	3.7	Widen 2-lane to 4-lane w/center turn lane	2009 - 2014	\$30,151,469	STP	KRTPO		√			√	√	√	√
613	94	Cumberland Avenue (SR 1) (US 11/70)	22nd St to 16th St	Knoxville	0.6	Pedestrian Improvements and Reduce from 4 lanes to 2 lanes with center turn lane	2009 - 2014	\$16,386,668	STP-TPO	KRTPO	√		√	√		√	√	√
614	101	Henley Street Bridge (SR 33/71) (US 441)	Bridge over Tennessee River	Knoxville	0.4	Rehabilitate bridge & widen 5-lane to 6-lane	2009 - 2014	\$31,134,669	Bridge	KRTPO	√	√	√	√		√	√	√
615	125	Washington Pike	I-640 to Murphy Rd	Knoxville	1.6	Widen 2-lane to 4-lane	2009 - 2014	\$15,184,979	STP-TPO	KRTPO		√				√	√	√
616	71	Pleasant Ridge Rd/Merchant Dr Phase II	Knoxville City Limits to Merchant Dr / Pleasant Ridge Rd to Wilkerson Rd	Knoxville	1.6	Add center turn lane	2009 - 2014	\$24,033,779	Local	KRTPO		√				√	√	√
617	E7	South Knoxville Waterfront Roadway Improvements	Sevier Ave / Blount Ave from Scottish Pk to James White Pkwy (SR 71)	Knoxville	1.9	Add turn lanes where needed and widen one-lane underpass to two lanes	2009 - 2014	\$6,554,667	HPP	KRTPO		√		√		√	√	√
618	E8	I-275 Industrial Park Access Improvements	I-275 Corridor	Knoxville	N/A	Improve railroad underpasses and make access improvements	2009 - 2014	\$5,462,223	HPP	KRTPO		√		√		√	√	√
619	E10	Various Railroad Crossings	Various Railroad Crossing Locations	Knoxville	N/A	Improve circuitry on vehicle protection devices of at-grade RR crossings throughout Knoxville	2009 - 2014	\$187,900	HPP	KRTPO	√	√			√	√	√	√
620	E11	Cessna Road RR Crossing	Cesna Rd RR crossing	Knoxville	0.0	Improve the at-grade RR crossing at Cessna Rd	2009 - 2014	\$83,900	HPP	KRTPO	√	√				√	√	√
621	New	I-40/75	From I-140 to Lovell Rd (SR 131) Interchange Westbound Direction	Knoxville	1.8	Add full auxiliary lane westbound between interchanges (approx 2,700 ft)	2009 - 2014	\$1,201,689	IM	KRTPO	√	√				√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
622	New	I-40/75 at Weigh Station	Eastbound and Westbound Truck Weigh Stations	Knoxville	0.0	Extend on and off ramps at weigh stations	2009 - 2014	\$1,092,445	IM	KRTPO	√	√				√	√	
623	New	I-140 (Pellissippi Pkwy)	I-40 to Dutchtown Rd	Knoxville	0.4	Restripe to add one lane on northbound I-140 and remove one lane from the ramp from I-40	2009 - 2014	\$109,244	IM	KRTPO	√	√				√	√	
624	New	Cedar Bluff Road	Cross Park Dr to Peters Rd	Knoxville	0.8	Intersection and Operational Improvements	2009 - 2014	\$1,092,445	CMAQ	KRTPO	√	√				√	√	
625	115	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	Knoxville/ Knox County	1.5	Widen 2-lane to 4-lane	2009 - 2014	\$11,661,845	Local	KRTPO		√			√	√	√	√
626	93	Chapman Highway (SR 71) (US 441)	Blount Ave to Boyd Creek Hwy (SR 338) in Sevier County	Knoxville/ Knox County	10.7	Operational and Safety Improvements including turn lanes at various locations	2009 - 2014	\$6,554,667	STP	KRTPO	√	√	√	√		√	√	√
627	40	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Woodson Dr	Knoxville	1.4	Widen 4-lane to 6-lane	2009 - 2014	\$31,648,118	NHS	KRTPO		√			√	√	√	√
628	87*	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Blount/Knox County Line	Knoxville	3.0	Widen 4-lane to 6-lane	2009 - 2014	\$42,605,336	NHS	KRTPO		√			√	√	√	√
694	New	I-140 (Pellissippi Pkwy)/Northshore Dr (SR 332) Interchange	I-140 EB Off Ramp to Northshore Dr (SR 332)	Knoxville	0.2	Construct new slip ramp from existing off ramp to serve the Northshore Town Center Development	2009 - 2014	Developer Funded	Private	KRTPO	√				√	√	√	√
629	103	I-40/75 / Campbell Station Road Interchange	Interchange w/ Campbell Station Rd	Farragut	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$50,739,417	NHS	KRTPO	√	√		√		√	√	√
630	124	Virtue Road	Boyd Station Rd to Kingston Pike (SR 1) (US 11/70)	Farragut	1.7	Reconstruct 2-lane section	2015 - 2024	\$11,597,581	STP-TPO	KRTPO	√					√	√	√
631	185	Turkey Creek Road	Brixworth Blvd to Boyd Station Rd	Farragut	0.2	Construct new 2-lane bridge and approaches to connect roads	2015 - 2024	\$10,147,883	Local	KRTPO		√		√		√	√	√
632	46	Concord Road (SR 332)	Turkey Creek Rd to Northshore Dr (SR 332)	Farragut/ Knox County	0.8	Widen 2-lane to 4-lane	2015 - 2024	\$10,147,883	STP-TPO	KRTPO		√				√	√	√

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New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
633	69	Parkside Drive	Mabry Hood Rd to Hayfield Rd	Knox County	1.1	Widen 2-lane to 4-lane	2015 - 2024	\$8,698,186	Local	KRTPO		√			√	√	√	√
634	100	Pellissippi Pkwy (SR 162)/ Hardin Valley Road Interchange	Hardin Valley Rd Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$24,644,860	State	KRTPO		√	√	√			√	√
635	58	Karns Connector	Westcott Blvd to Oak Ridge Hwy (SR 62)	Knox County	0.9	Construct New 2-lane road	2015 - 2024	\$4,421,578	Local	KRTPO		√		√	√	√	√	√
636	98	Emory Road (SR 131)	Oak Ridge Hwy (SR 62) to Clinton Hwy (SR 9) (US 25W)	Knox County	5.0	Add center turn lane	2015 - 2024	\$34,488,307	State	KRTPO		√			√	√	√	√
637	107	Lovell Road (SR 131)	Schaeffer Rd to Middlebrook Pike (SR 169)	Knox County	1.7	Widen 2-lane to 4-lane	2015 - 2024	\$17,686,311	STP-TPO	KRTPO		√			√	√	√	√
638	113a	Oak Ridge Highway (SR 62)	Schaad Rd to Byington-Beaver Ridge Rd (SR 131)	Knox County	4.2	Widen 2-lane to 4-lane	2015 - 2024	\$37,692,139	State	KRTPO		√			√	√	√	√
639	116	Strawberry Plains Pike	Gov. John Sevier Hwy (SR 168) to Moshina Rd	Knox County	1.6	Widen 2-lane to 4-lane	2015 - 2024	\$16,961,462	STP-TPO	KRTPO		√			√	√	√	√
640	155	Tazewell Pike (SR 331)	Murphy Rd to Emory Rd (SR 131)	Knox County	4.7	Widen 2-lane to 4-lane	2015 - 2024	\$37,692,139	STP	KRTPO		√				√	√	√
641	119	Tazewell Pike (SR 131)	Emory Rd (SR 131) to Barker Rd	Knox County	1.2	Widen 2-lane to 4-lane	2015 - 2024	\$12,249,945	STP	KRTPO		√				√	√	√
642	126	Westland Drive	Morrell Rd to Ebenezer Rd	Knox County	2.7	Reconstruct 2-lane section	2015 - 2024	\$16,019,159	Local	KRTPO	√					√	√	√
643	134	Emory Road (SR 131)	Maynardville Hwy (SR 33) to Tazewell Pike (SR 331)	Knox County	4.9	Widen 2-lane to 4-lane	2015 - 2024	\$53,058,934	STP	KRTPO		√			√	√	√	√
644	136	Gov John Sevier Highway (SR 168)	Alcoa Hwy (SR 115) (US 129) to Chapman Hwy (SR 71) (US 441)	Knox County	6.5	Widen 2-lane to 4-lane	2015 - 2024	\$67,845,850	STP	KRTPO		√			√	√	√	√
645	146	Northshore Drive (SR 332)	Morrell Rd to Ebenezer Rd	Knox County	3.5	Reconstruct 2-lane section	2015 - 2024	\$25,714,012	State	KRTPO		√			√	√	√	√
646	147	Northshore Drive (SR 332)	Pellissippi Pkwy (I-140) to Concord Rd (SR 332)	Knox County	4.5	Reconstruct 2-lane section	2015 - 2024	\$32,726,924	State	KRTPO		√			√	√	√	√
647	151	Pellissippi Parkway (SR 162)	Edgemoor Rd (SR 170) to Dutchtown Rd	Knox County	6.0	Add auxiliary lanes between interchanges and access control including frontage roads where needed	2015 - 2024	\$60,887,301	State	KRTPO		√			√	√	√	√

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648	New	Pellissippi Parkway (SR 162)/ Lovell Rd (SR 131) Interchange	Lovell Rd (SR 131) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$24,644,860	State	KRTPO	√	√				√	√	
649	New	Pellissippi Parkway (SR 162)/ Oak Ridge Highway (SR 62) Interchange	Oak Ridge Hwy (SR 62) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$14,496,976	State	KRTPO	√	√				√	√	
650	New	Byington-Beaver Ridge Road (SR 131)	At One-Lane Railroad Underpass	Knox County	0.2	Construct new road or widen railroad underpass	2015 - 2024	\$7,248,488	Bridge	KRTPO	√	√				√	√	
651	186	I-40/75/ Watt Road Interchange	Watt Rd Interchange at I-40/75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$28,993,953	NHS	KRTPO	√	√		√		√	√	√
652	104	I-75/ Emory Road (SR 131) Interchange	Emory Rd (SR 131) Interchange at I-75	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$28,993,953	NHS	KRTPO	√	√		√		√	√	√
653	86	Alcoa Highway (SR 115) (US 129)	Woodson Dr to Cherokee Trail	Knoxville	2.2	Widen 4-lane to 6-lane	2015 - 2024	\$49,579,659	State/NHS	KRTPO		√			√	√	√	√
654	New	I-640/ I-275/ I-75 Interchange	Interchange at I-640 & I-75/I-275	Knoxville	1.4	Interchange improvements to include additional through lanes on I-75 north and southbound ramps	2015 - 2024	\$36,242,441	NHS	KRTPO		√				√	√	√
655	64	Millertown Pike	Washington Pike to I-640	Knoxville	0.6	Reconstruct 2-lane section	2015 - 2024	\$7,584,383	STP-TPO	KRTPO		√				√	√	√
656	New	Millertown Pike	I-640 to Mill Rd	Knoxville	0.6	Widen 2-lane and 4-lane sections to 4-lane and 6-lane sections	2015 - 2024	\$9,423,035	STP-TPO	KRTPO		√				√	√	
657	76	Washington Pike	Millertown Pike to I-640	Knoxville	0.6	Add center turn lane	2015 - 2024	\$10,726,458	STP-TPO	KRTPO		√				√	√	√
658	112	Northshore Drive (SR 332)	Intersection w/ Kingston Pike (SR 1) (US 11/70)	Knoxville	0.0	Intersection improvement	2015 - 2024	\$14,496,976	STP	KRTPO	√	√	√	√		√	√	√

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659	120	Tazewell Pike (SR 331)	Intersection w/ Old Broadway & Greenway Dr	Knoxville	0.0	Intersection improvement	2015 - 2024	\$6,088,730	STP	KRTPO		√		√		√	√	√
660	137	Gleason Drive	Montvue Rd to Gallaher View Rd	Knoxville	1.0	Reconstruct 2-lane section	2015 - 2024	\$7,973,337	Local	KRTPO		√				√	√	√
661	138	I-75/ Callahan Rd Interchange	Callahan Rd Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$28,993,953	NHS	KRTPO		√	√		√		√	√
662	139	I-75/ Merchant Dr Interchange	Merchant Dr Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2015 - 2024	\$28,993,953	NHS	KRTPO		√	√		√		√	√
663	145	Northshore Drive (SR 332)	Lyons View Pike to Morrell Rd	Knoxville	2.2	Reconstruct 2-lane section	2015 - 2024	\$18,233,572	State	KRTPO			√			√	√	√
664	New	Broadway (SR 33) (US 441)	Intersection with Hall of Fame Dr	Knoxville	0.0	Intersection improvement	2015 - 2024	\$2,899,395	STP-TPO	KRTPO		√	√				√	√
665	110	Murphy Road Extension	Washington Pike to Millertown Pike	Knoxville/ Knox County	1.3	Construct new 4-lane road	2015 - 2024	\$11,307,642	STP-TPO	KRTPO			√		√	√	√	√
666	105	South Knoxville Blvd (SR 71)	Moody Ave to Chapman Hwy (SR 71) (US 441)	Knoxville/ Knox County	5.3	Construct new 4-lane road	2015 - 2024	\$137,721,276	State	KRTPO			√		√	√	√	√
667	154	Strawberry Plains Pike	Moshina Rd to south of I-40	Knoxville/ Knox County	1.4	Widen 2-lane to 4-lane	2015 - 2024	\$15,700,225	Local	KRTPO			√			√	√	√
668	New	Kingston Pike (SR 1) (US 11/70)	Smith Rd to Campbell Station Rd	Farragut	1.4	Widen 4-lane to 6-lane	2025 - 2034	\$20,647,857	State	KRTPO			√			√	√	√
669	New	Everett Road	Proposed Synder Rd Extension to Kingston Pk (SR 1) (US 11/70)	Farragut	2.1	Reconstruct 2-lane section	2025 - 2034	\$6,194,357	Local	KRTPO			√			√	√	√
670	New	Snyder Road Extension	Campbell Station Rd to Everett Rd north of I-40	Farragut	2.5	Construct new 2-lane road	2025 - 2034	\$16,518,286	STP-TPO	KRTPO			√			√	√	√
671	92	Central Avenue Pike	Beaver Creek Dr to Emory Rd (SR 131)	Knox County	2.3	Reconstruct 2-lane section	2025 - 2034	\$8,775,339	Local	KRTPO			√		√		√	√
672	96	Dante Road	Central Avenue Pike to Dry Gap Pk	Knox County	2.1	Reconstruct 2-lane section	2025 - 2034	\$15,795,611	Local	KRTPO			√				√	√
673	113b	Oak Ridge Highway (SR 62)	Byington-Beaver Ridge Rd (SR 131) to Pellissippi Pkwy (SR 162)	Knox County	4.2	Widen 2-lane to 4-lane	2025 - 2034	\$45,425,286	State	KRTPO			√			√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
674	127	Westland Drive	Northshore Dr (SR 332) to Pellissippi Pkwy (I-140)	Knox County	1.7	Reconstruct 2-lane section	2025 - 2034	\$17,550,679	Local	KRTPO	√					√	√	√
675	141	Maryville Pike (SR 33)	Gov. John Sevier Hwy (SR 168) to Blount County Line	Knox County	1.2	Reconstruct 2-lane section	2025 - 2034	\$10,530,407	State	KRTPO		√				√	√	√
676	165	Emory Road (SR 331)	Tazewell Pike (SR 131) to Grainger County Line	Knox County	7.8	Reconstruct 2-lane section	2025 - 2034	\$71,957,782	STP	KRTPO		√			√	√	√	√
677	166	Gov John Sevier Highway (SR 168)	Chapman Hwy (SR 71) (US 441) to Asheville Hwy	Knox County	9.2	Widen 2-lane to 4-lane	2025 - 2034	\$111,395,189	STP	KRTPO		√			√	√	√	√
678	167	Gleason Drive	Gallaher View Rd to Ebenezer Rd	Knox County	1.1	Add center turn lane	2025 - 2034	\$13,421,107	Local	KRTPO		√				√	√	√
679	173	I-75/ Raccoon Valley Rd Interchange	Raccoon Valley Rd Interchange at I-75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2025 - 2034	\$41,295,714	NHS	KRTPO	√	√		√		√	√	√
680	177	Northshore Drive	Concord Rd (SR 332) to Choto Rd	Knox County	2.8	Reconstruct 2-lane section	2025 - 2034	\$21,938,348	Local	KRTPO		√			√	√	√	√
681	179	Raccoon Valley Road (SR 170)	Norris Frwy (SR 71) (US 441) to I-75	Knox County	2.0	Reconstruct 2-lane section	2025 - 2034	\$15,795,611	State	KRTPO		√			√	√	√	√
682	182	Tazewell Pike (SR 131)	Barker Rd to Union County Line	Knox County	3.1	Reconstruct 2-lane section	2025 - 2034	\$28,081,086	State	KRTPO		√				√	√	√
683	143	McFee Road/ Harvey Road	McFee Rd to Harvey Rd over railroad	Knox County/ Farragut	0.6	Construct new road or widen railroad underpass	2025 - 2034	\$10,633,646	Bridge	KRTPO		√		√		√	√	√
684	140	Knoxville Regional Parkway (SR-475)	I-40/75 in Loudon County to I-75 in Anderson County	Knox/ Anderson/ Loudon County	24.3	Construct new 4-lane freeway	2025 - 2034	\$1,257,454,497	State	KRTPO		√	√	√	√	√	√	√
685	157	Vanosdale Road	Buckingham Rd to Middlebrook Pike (SR 169)	Knoxville	0.9	Add center turn lane	2025 - 2034	\$9,766,436	Local	KRTPO		√				√	√	√
686	163	Cedar Lane	East of Central Avenue Pike to Inskip Rd	Knoxville	1.0	Add center turn lane	2025 - 2034	\$15,072,936	Local	KRTPO		√		√		√	√	√
687	174	Moody Avenue	Chapman Hwy (SR 71) (US 441) to Maryville Pike (SR 33)	Knoxville	0.4	Construct new 2-lane road w/ center turn lane	2025 - 2034	\$3,485,771	Local	KRTPO		√		√		√	√	√
688	175	Morrell Road	Westland Dr to Northshore Dr (SR 332)	Knoxville	0.9	Add center turn lane	2025 - 2034	\$11,098,223	STP-TPO	KRTPO		√				√	√	√

Table 34: Knoxville Regional Roadway Project List

New LRMP #	Old LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Year of Expenditure Cost	Source of Funds	Planning Area	1	2	3	4	5	6	7	8
689	178	Papermill Road	Kingston Pike (SR 1) (US 11/70) to Weisgarber Rd	Knoxville	0.6	Add center turn lane	2025 - 2034	\$7,102,863	STP-TPO	KRTPO		√				√	√	√
690	187	Woodland Avenue	Central St to Huron St	Knoxville	0.6	Add center turn lane	2025 - 2034	\$6,658,934	Local	KRTPO		√	√	√		√	√	√
691	171	I-40/75	I-40/I-75 Interchange to Lovell Rd (SR 131) Interchange	Knoxville/ Farragut/ Knox County	6.7	Widen 6-lane to 8-lane	2025 - 2034	\$185,830,714	NHS	KRTPO		√			√	√	√	√
692	172	I-75	Emory Rd (SR 131) to Raccoon Valley Rd (SR 170) Interchange	Knoxville/ Knox County	4.8	Widen 4-lane to 6-lane	2025 - 2034	\$158,988,500	NHS	KRTPO		√			√	√	√	√
693	New	I-40/ Gov John Sevier Hwy (SR 168)	Gov John Sevier Hwy (SR 168)/ Hammer Rd/ Oglesby Rd area	Knoxville/Knox County	1.6	New Interchange	2025 - 2034	\$51,619,643	NHS	KRTPO	√			√	√	√	√	√

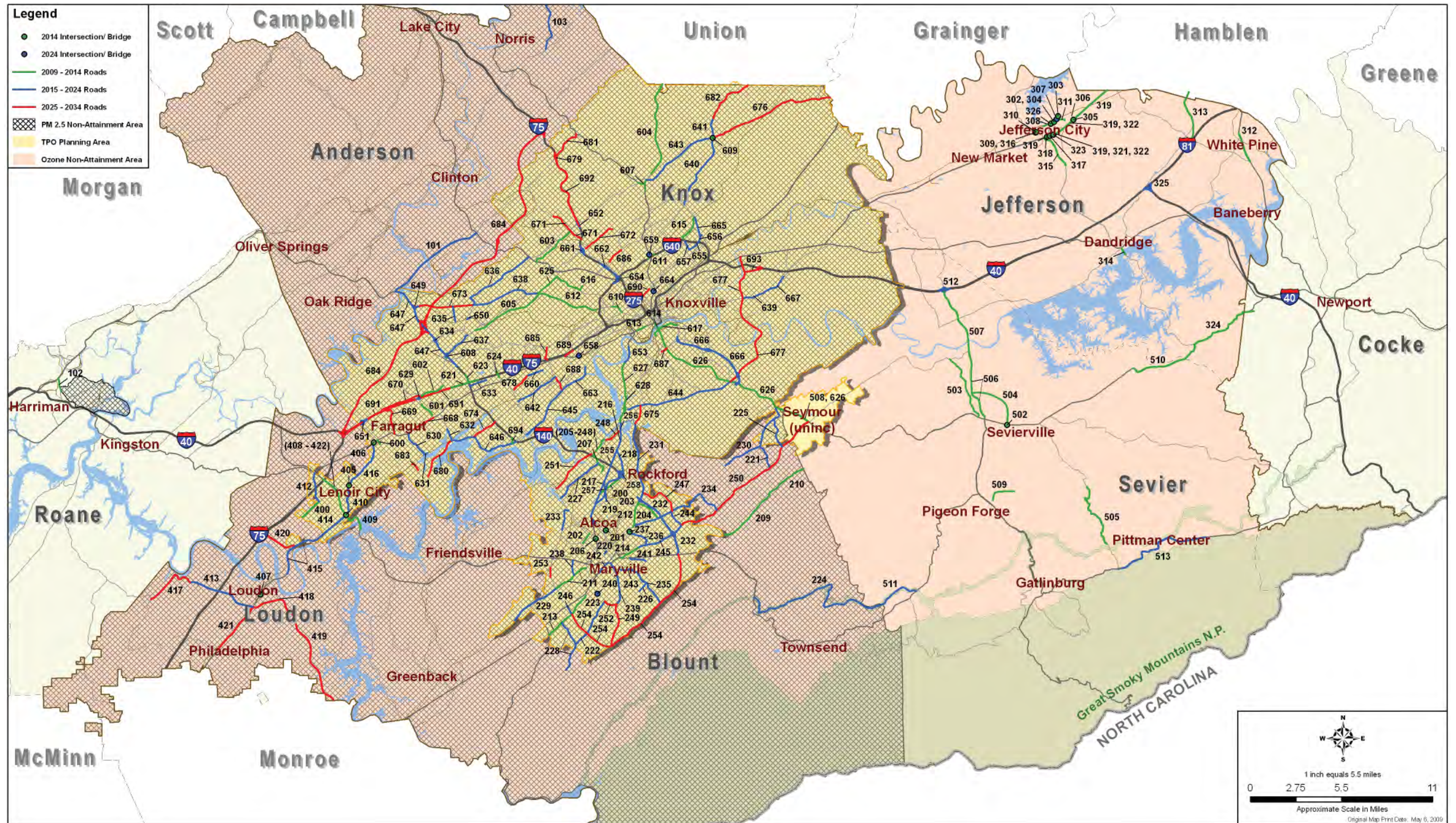


Figure 41: Knoxville Regional Roadway Projects Map

5. **Regional approach:** A project that is deemed regionally significant. Projects that occur on roads that are not included in the state functional classification and projects that do not add travel lane capacity such as road widening and new construction are not considered regionally significant.
6. **Financial investments:** Financially constrained projects.
7. **Safety:** All projects meet this goal.
8. **Security:** These projects provide or enhance a security benefit to the region.

Project Description Definitions

Further explanation of some of the descriptions included in the following table of roadway projects are as follows:

Construct new roadway: (any number of lanes)

- Entails constructing a roadway on new location.

Roadways that are envisioned to include full access control are denoted as a “freeway.” The final design will determine the median configuration in terms of either a continuous center turn lane or non-traversable raised median and the accommodation of bicyclists and pedestrians.

Widen roadway from x lanes to y lanes: Entails addition of motor vehicle capacity through construction of additional through travel lanes on an existing roadway. Multilane facilities will generally include either a non-traversable median or a center turn lane. The final design will determine the median configuration and accommodation of bicyclists and pedestrians through sidewalks and/or bike lanes.

Reconstruct 2-lane road: Entails the improvement of an existing 2-lane roadway to bring it up to modern standards in terms of lane and shoulder widths and geometric design chiefly to enhance the safety of the roadway. This may also involve the construction of turn lanes at major intersections necessary for safety to remove stopped vehicles from the travel lanes. The final design will determine the median configuration and accommodation of bicyclists and pedestrians through sidewalks and/or bike lanes.

Add center turn lane: Entails addition of a continuous two-way left turn lane on an existing undivided

roadway of two or more lanes, also usually involves reconstructing the roadway to modern design standards for lane and shoulder width and geometric design. The final design will determine the median configuration and accommodation of bicyclists and pedestrians through sidewalks and/or bike lanes.

Replace bridge: Entails the replacement of an existing bridge that has been determined to be structurally deficient. The new bridge may include safety enhancements such as wider lanes and shoulders, but will not have more through lanes than the previous structure had unless otherwise noted.

Intersection improvements: Entails the modification of a single intersection to improve safety and operations including the possible addition of separate turn lanes, realignment of approaches or traffic signal.

Transit Financial Analysis

Knoxville Area Transit (KAT) is the largest provider of public transportation in the Knoxville region. The Knoxville Regional Transportation Planning Organization (TPO) in consultation with KAT prepared the transit financial analysis. KAT has approximately 250 employees and over 100 vehicles dedicated to moving people every day. KAT’s Fiscal Year 2009 budget is forecasted to be \$17,547,151. KAT’s budget is made up of a variety of sources, including primarily contributions from City of Knoxville, the State of Tennessee, federal formula grants and fares.

Over the last ten years KAT budget has grown significantly, jumping almost \$10 million, from \$7,818,070 in Fiscal Year 1999 to the projected budget of \$17,547,151 in Fiscal Year 2009. This is an average increase of 8.2 percent a year. This type of annual average increase is not typical of historical growth. Contributors to this rapid increase include: implementation of the University of Tennessee transit service, absorption of Job Access and Reverse Commute service, the fluctuations in fuel prices, sharp increases in the cost of running the paratransit service, and continual rising health care cost.

Please see Appendix H for more information on the Transit Financial Analysis.

Non-roadway Project List

Funding for non-roadway projects such as greenways and sidewalks will primarily be funded from the Federal Transportation Enhancement program. The TPO region has historically received approximately \$5 million a year in enhancement funds. For federal funding that is distributed on a non-discretionary basis (including FTA's Section 5309 funds, earmarks and congressionally-designated funding), any funding beyond that currently authorized and targeted to the area may be considered as reasonably available if past history supports such funding levels.

The non-roadway projects do not add capacity to the regional roadway network and therefore do not impact the area's air quality. Because of that, they do not undergo air quality conformity analysis. Many of the projects in the non-roadway project list came from earlier planning processes such as the 2005 Long Range Transportation Plan, the Regional Transportation Alternatives Plan, Nine Counties. One Vision., and the Knoxville-Knox County Comprehensive Parks, Recreation and Greenways Plan. Other projects were generated by public interest and demand.

The project lists include columns related to the eight planning factors identified in 2005's SAFETEA-LU legislation. These planning factors are addressed through the following goals, and each project's goals have been identified:

1. System maintenance: Highway projects that don't significantly change the character of the road and primarily involve intersection improvements, addition of turn lanes, roadway safety improvements, bridge rehabilitation, and resurfacing.
2. System efficiency: Projects that reduce traffic congestion, such as adding turn lanes, widening roads, constructing new roads and improving intersections.
3. Environmental quality: Projects such as intersection improvements and constructing turn lanes and aim to reduce mobile source emissions by eliminating congestion while not adding capacity.
4. Mobility options: Includes projects that facilitate movement among and between modes such as intersection improvements, new interchanges and new roads with multimodal facilities.
5. Regional approach: A project that is deemed regionally significant. Projects that occur on roads that are not included in the state functional classification and projects that do not add travel lane capacity such as road widening and new construction are not considered regionally significant.
6. Financial investments: Financially constrained projects.
7. Safety: All projects meet this goal.
8. Security: These projects provide or enhance a security benefit to the region.

Table 35: Non-roadway Project List

Research, Studies & Planning Activities														
RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
800	University of Tennessee National Transportation Research Center	Knox County	Support for the NTRC	2015-2024	\$500,000	HPP	√	√	√	√		√	√	√
801	Regional Transportation Alternatives Plan	Knox TPO	Update to the Regional Transportation Alternative Plan	2009-2014	\$200,000	State	√	√	√	√		√	√	√
802	Bus Rapid Transit	Sevier County	Conduct BRT planning studies	2015-2024	\$400,000	HPP	√	√	√	√		√	√	√
Public Transportation Projects in the Non-Roadway Project List														
RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
850	ETHRA Vans	16 County Area ETHRA	500 vans (replacement)	2025-2034	\$37,500,000	FTA	√	√	√	√		√	√	√
851	Replacement Trolleys	Gatlinburg	Trolley fleet replacement	2025-2034	\$7,000,000	FTA	√	√	√	√		√	√	√
852	KAT Buses	KAT	220 buses	2025-2034	\$77,000,000	FTA	√	√	√	√		√	√	√
853	Lift Vans/Call-A-KAT	KAT	52 vehicles	2025-2034	\$3,900,000	FTA	√	√	√	√		√	√	√
854	KAT ADA/ Neighborhood Vans	KAT	130 Vans	2025-2034	\$9,750,000	FTA								
855	Trolleys	KAT	42 trolleys	2025-2034	\$14,700,000	FTA	√	√	√	√		√	√	√
856	Implementation of ITS Technologies at KAT	KAT	Implementation of ITS technology	2009-2014	\$25,000,000	FTA	√	√	√	√	√	√	√	√
857	KAT Fare box Replacement	KAT	Replace fare box on buses (2 times over 25 years)	2025-2034	\$6,000,000	FTA	√	√	√	√		√	√	√
858	KAT Associated Maintenance Items	KAT	Capital items to assist with operations and fleet maintenance	2025-2034	\$52,000,000	FTA	√	√	√	√		√	√	√
859	KAT Facility & System Improvements	KAT	Improve KAT Magnolia Ave. Facility	2025-2034	\$2,300,000	FTA	√	√	√	√		√	√	√
860	Knoxville Central Station	KAT	Bus Transfer Facility and Admin. Building	2025-2034	\$7,000,000	FTA	√	√	√	√		√	√	√
860	Section 5307 Formula Transit Funds	KAT	Planning, facility, computer, and misc. improvements	2025-2034	\$110,000,000	FTA	√	√	√	√		√	√	√
861	KCT Vans	KCT (CAC)	300 vans (replacement)	2025-2034	\$22,500,000	FTA	√	√	√	√		√	√	√
862	Office on Agining CAC Minivans	Knox County/ CAC	25 minivans	2025-2034	\$1,000,000	FTA	√	√	√	√		√	√	√
863	Office on Aging Hybrid Sedans	Knox County/ CAC	50 hybrid sedans	2025-2034	\$1,500,000	FTA	√	√	√	√		√	√	√
864	Replacement Vans	Oak Ridge	Van replacement	2025-2034	\$7,500,000	FTA	√	√	√	√		√	√	√
865	Replacement Trolleys	Pigeon Forge	Trolley fleet replacement	2025-2034	\$35,000,000	FTA	√	√	√	√		√	√	√
866	Replacement Trolleys	Sevierville	Trolley fleet replacement	2025-2034	\$35,000,000	FTA	√	√	√	√		√	√	

Table 35: Non-roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
867	Section 5316	Knoxville Urban Area	Job Access & Reverse Commute grants	2015-2024	\$5,000,000	FTA	√	√	√	√		√	√	√
868	Section 5317	Knoxville Urban Area	New Freedom Program	2015-2024	\$5,000,000	FTA	√	√	√	√	√	√	√	√
869	Section 5310	Knoxville Urban Area	Vans or Services	2015-2024	\$4,000,000	FTA	√	√	√	√	√	√	√	√
870	Tennessee Vans	UT Commuter Pool/Tennessee Vans	300 vans	2025-2034	\$22,500,000	Other	√	√	√	√	√	√	√	√
Greenway Projects in the Non-Roadway Project List														
RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
900	Pedestrian Bridge	Alcoa	Construct Pedestrian Bridge over Alcoa Hwy	2009-2014	\$1,000,000	HPP		√	√	√			√	√
901	Beaver Creek Greenway	Knox County	Construct greenway linking Halls Community Park to schools, Powell Greenway to Powell Library, and Northwest Sports Park to Westbridge Business Park	2009-2014	\$3,705,600	ENH		√	√	√			√	√
902	Conner Creek Greenway	Knox County	Construct greenway from Pellissippi State to Hardin Valley schools	2009-2014	\$187,500	ENH		√	√	√			√	√
903	John Sevier Highway Greenway	Knox County	Construct greenway along John Sevier Highway from Asheville Highway to Alcoa Highway	2009-2014	\$1,584,000	ENH		√	√	√			√	√
904	Knox/Blount Greenway Phase II	Knox County		2009-2014	\$1,111,500	ENH		√	√	√			√	√
905	Northshore Drive Greenway	Knox County	Construct Greenway along Northshore through Concord Park and Carl Cowan Park	2009-2014	\$225,000	ENH		√	√	√			√	√
906	Pellissippi Parkway Greenway	Knox County	Construct greenway from Carmichael Road to Dutchtown area	2009-2014	\$934,500	STP-TPO		√	√	√			√	√
907	Plum Creek Greenway	Knox County	Construct greenway from Nicolas Ball Park to Plum Creek Park	2009-2014	\$1,267,200	local		√	√	√			√	√
908	Stock Creek Greenway	Knox County	Construct greenway from South Doyle High School to Howard Pinkston Library Branch	2009-2014	\$387,500	ENH		√	√	√			√	√
909	Ten Mile Creek Greenway	Knox County	Construct link from existing greenway to Catholic High School	2009-2014	\$545,400	ENH		√	√	√			√	√
910	Turkey Creek Greenway	Knox County	Construct greenway from Turkey Creek wetlands to Concord Park and from I-40/75 to Pellissippi Parkway	2009-2014	\$1,980,000	ENH		√	√	√			√	√
911	Baker Creek	Knoxville	Construct greenway from Mary James Park to south waterfront	2009-2014	\$300,000	local		√	√	√			√	√
912	First Creek Greenway connections	Knoxville	Construct greenway from Lake Loudoun to Caswell Park, from Caswell Park to First Creek Park, from First Creek Park to Walker Boulevard, and from Adair Drive to Fountain City Lake	2009-2014	\$3,326,400	ENH		√	√	√			√	√
913	Fourth Creek Greenway	Knoxville	Construct greenway from Weisgarber Greenway to Lakeshore Park and to Bearden Elementary, and from Lakeshore Park to Bearden Elementary	2009-2014	\$1,030,350	ENH		√	√	√			√	√

Table 35: Non-roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
914	Goose Creek Greenway	Knoxville	Construct greenway from Mary Vestal Park to Lake Loudoun	2009-2014	\$187,500	local		√	√	√			√	√
915	Knox/Blount Greenway Phase I	Knoxville	Construct greenway from Buck Karnes Bridge to Marine Park	2009-2014	\$2,925,000	ENH		√	√	√			√	√
916	Loves Creek Greenway	Knoxville	Construct greenway from Knoxville Center Mall to Spring Place Park	2009-2014	\$794,850	ENH		√	√	√			√	√
917	Second Creek Greenway extension	Knoxville	Construct greenway from World's Fair Park to the Old City	2009-2014	\$861,900	ENH		√	√	√			√	√
918	Smoky Mountain Railroad Greenway	Knoxville	Construct greenway from Mary Vestal Park to Charter E. Doyle Park	2009-2014	\$1,962,150	ENH		√	√	√			√	√
919	South Waterfront Greenway	Knoxville	Construct greenway from Island Home to Scottish Pike	2009-2014	\$792,000	HPP		√	√	√			√	√
920	Tennessee Holston Greenway	Knoxville	Construct greenway from existing James White Greenway to Holston River Park	2009-2014	\$1,472,250	ENH		√	√	√			√	√
921	Third Creek Greenway extensions	Knoxville	Construct greenway from Sutherland Avenue trailhead of Third Creek Greenway to Victor Ashe Park, and from where greenway crosses Tobler Lane to Sutherland Avenue	2009-2014	\$1,128,300	ENH		√	√	√			√	√
922	Williams Creek Greenway	Knoxville	Construct greenway from Five Points/Union Square Park area to Lake Loudoun	2009-2014	\$270,600	ENH		√	√	√			√	√
923	Ten Mile Creek Greenway	Knoxville/Knox County	Construct greenway from I-40/75 to West Valley Middle School	2009-2014	\$545,500	ENH		√	√	√			√	√
924	Arboretum to Events Center Greenway	Sevierville	Construct greenway from Burchfiel Arboretum to Sevierville Events Center	2009-2014	\$390,000	ENH		√	√	√			√	√
925	East Gate Road Greenway	Sevierville	Construct greenway along East Gate Road to Sevierville Primary School	2009-2014	\$648,150	ENH		√	√	√			√	√
926	West Prong Greenway	Sevierville	Construct greenway from Paine Lake Estates to U.S. 441	2009-2014	\$525,000	ENH		√	√	√			√	√
927	Beaver Creek Greenway	Knox County	Construct greenway from Brickey-McCloud Elementary to Powell Library, Powell Middle School to Karns Elementary, and Westbridge Business Park to Pellissippi Parkway	2015-2024	\$2,168,000	ENH		√	√	√			√	√
928	Burnett Creek	Knox County	Construct greenway from French Broad River to John Sevier Highway	2015-2024	\$153,450	ENH		√	√	√			√	√
929	Conner Creek Greenway	Knox County	Construct greenway from Hardin Valley schools to Melton Hill Park	2015-2024	\$1,080,000	ENH		√	√	√			√	√
930	McFee Greenway	Knox County	Construct greenway from Farragut city limits to Northshore Drive	2015-2024	\$465,000	ENH		√	√	√			√	√
931	Northshore Drive Greenway	Knox County	Construct greenway from Concord Park to Pellissippi Parkway and from Pellissippi Parkway to Lakeshore Park	2015-2024	\$1,215,000	ENH		√	√	√			√	√
932	Pellissippi Parkway Greenway	Knox County	Construct greenway from Pellissippi State to Oak Ridge, Dead Horse Lake to Dutchtown area, and I-40-75 to Blount County	2015-2024	\$25,344,000	ENH		√	√	√			√	√
933	Plum Creek Greenway	Knox County	Construct greenway from Plum Creek Park to Pellissippi Parkway	2015-2024		ENH		√	√	√			√	√
934	Smoky Mountain Railroad Greenway	Knox County	Construct greenway from Charter E. Doyle Park to Bower Field	2015-2024	\$1,962,150	ENH		√	√	√			√	√

Table 35: Non-roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
935	Stock Creek Greenway	Knox County	Construct greenway from Howard Pinkston Library Branch to Knox/Blount Greenway and from South Doyle High School to John Sevier Highway	2015-2024	\$387,300	ENH		√	√	√			√	√
936	Ten Mile Creek Greenway II	Knox County	Construct greenway from West Valley Middle School to Pellissippi Parkway	2015-2024	\$545,500	ENH		√	√	√			√	√
937	First Creek Greenway connection	Knoxville	Construct greenway from Walker Boulevard to Adair Drive	2015-2024	\$1,188,000	ENH		√	√	√			√	√
938	Loves Creek Greenway	Knoxville	Construct greenway from Spring Place Park to Holston Middle School and from Holston Middle School to Holston Hills	2015-2024	\$475,200	ENH		√	√	√			√	√
939	Second Creek Greenway extension	Knoxville	Construct greenway from the Old City to Sysco	2015-2024	\$1,821,600	ENH		√	√	√			√	√
940	South Waterfront Greenway	Knoxville	Construct Greenway from Scottish Pike to UT Hospital	2015-2024	\$915,000	HPP		√	√	√			√	√
941	Tennessee Holston Greenway	Knoxville	Construct greenway from Loves Creek to Boyds Bridge Pike	2015-2024	\$390,000	ENH		√	√	√			√	√
942	Murphy Creek/White Creek Greenway	Knoxville/Knox County	Construct greenway from First Creek to Washington Pike and from Greenway Drive/Beverly Road to Ritta Elementary	2015-2024	\$3,168,000	ENH		√	√	√			√	√
943	Knox/Blount Greenway Future Phases	Knox County/TDOT	Construct greenway from Marine Park to Knox/Blount county line	2015-2024	\$5,000,000	ENH		√	√	√			√	√
944	Tennessee River Pedestrian Crossing	City of Knoxville	Connecting South Waterfront to University of Tennessee	2009-2014	\$12,500,000	HPP		√	√	√			√	√
Bicycle Projects in the Non-Roadway Project List														
RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
950	Bike Parking Program	TPO Area	Bike racks provided to businesses and agencies at reduced cost	2015-2024	\$25,000	ENH	√	√	√	√			√	√
951	Bike network improvement projects	TPO Area	Projects that enhance bicycle transportation	2025-2034	\$50,000	ENH	√	√	√	√			√	√
952	Signage for City of Knoxville bike and greenway network	City of Knoxville	Improved signage for bicycle transportation	2015-2024	\$50,000	ENH	√	√	√	√			√	√
Sidewalk Projects in the Non-Roadway Project List														
RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
960	Brown Gap Road	Knox County	Sidewalk within a parental responsibility zone	2025-2034	\$1,500,000	ENH		√	√	√			√	√
961	Carter School Road	Knox County	Sidewalk within a parental responsibility zone	2025-2034	\$300,000	ENH		√	√	√			√	√
962	Buffat Mill Road Sidewalks	Knoxville	Construct missing sidewalk links along Buffat Mill Road. Sidewalk need identified in 2002 East City Sector Plan	2009-2014	\$1,050,000	ENH		√	√	√			√	√
963	Castle Street	Knoxville	Sidewalk within a parental responsibility zone	2025-2034	\$420,000	ENH		√	√	√			√	√
964	Cumberland Avenue	Knoxville	Pedestrian improvements	2009-2014	\$3,744,108	ENH		√	√	√			√	√

Table 35: Non-roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
965	Hollywood Drive	Knoxville	Sidewalk within a parental responsibility zone	2025-2034	\$150,000	ENH		√	√	√			√	√
966	Neyland Drive	Knoxville	Pedestrian improvements	2009-2014	\$1,056,000	ENH		√	√	√			√	√
967	Pickering Street	Knoxville	Sidewalks constructed to improve pedestrian travel	2015-2024	NA	ENH		√		√			√	√
968	Sutherland Avenue	Knoxville	Sidewalks constructed as part of Bearden Village enhancements	2015-2024	\$990,750	ENH		√		√			√	√
969	Beaman Lake Road	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$250,000	ENH		√	√	√			√	√
970	Blount Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2009-2014	\$250,000	HPP		√	√	√			√	√
971	Clinton Highway	Knoxville	Sidewalks to enhance pedestrian travel	2015-2024	\$1,056,000	ENH		√	√	√			√	√
972	Fern Street	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$250,000	ENH		√	√	√			√	√
973	Martin Mill Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$528,000	ENH		√	√	√			√	√
974	Sevier Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2009-2014	\$528,000	HPP		√	√	√			√	√
975	Spring Hill Road	Knoxville	Sidewalk within a parental responsibility zone	2015-2024	\$264,000	ENH		√	√	√			√	√
976	Tazewell Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$1,584,000	ENH		√	√	√			√	√
977	Woodlawn Pike	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$528,000	ENH		√	√	√			√	√
978	Valley View Drive	Knoxville	Sidewalk to enhance pedestrian travel	2015-2024	\$792,000	ENH		√	√	√			√	√
979	Chickamauga Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Chickamauga Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$422,400	ENH		√	√	√			√	√
980	Fulton High/St. Mary's Area Sidewalks	Knoxville	Construct missing sidewalk links along St. Mary's Street, Huron Street, and other streets near Fulton High School and St. Mary's Hospital. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$475,200	ENH		√	√	√			√	√
981	Keith Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Keith Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH		√	√	√			√	√
982	Nadine Street Sidewalks	Knoxville	Construct missing sidewalk links along Nadine Street. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH		√	√	√			√	√
983	Texas Avenue Sidewalks	Knoxville	Construct missing sidewalk links along Texas Avenue. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$528,000	ENH		√	√	√			√	√
984	Wilder Street Sidewalks	Knoxville	Construct missing sidewalk links along Wilder Street. Sidewalk need identified in 2003 Central City Sector Plan	2015-2024	\$132,000	ENH		√	√	√			√	√

Table 35: Non-roadway Project List

RMP #	Project	Jurisdiction	Description	Horizon	Estimated Cost	Funding Source	1	2	3	4	5	6	7	8
Safe Routes to School Projects in the Non-Roadway List														
990	Safe Routes to School projects and programs	TPO Area	Projects and programs funded by Safe Routes to School grants	2009-2014	\$18,750,000	SRTS		√		√			√	√



**Air Quality Conformity Determination
for the:**

**Knoxville Regional Transportation
Planning Organization and Lakeway
Area Metropolitan Transportation
Planning Organization**

**FY 2011 – 2014
Transportation Improvement
Programs**

and

**Amendments to the
2009 – 2034 Knoxville Regional
Mobility Plan**

September 22, 2010

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

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Adopting Resolution by Knoxville Regional TPO Executive Board for Air Quality Conformity Determination

A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION (TPO) FINDING THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN AS AMENDED AND THE 2011- 2014 TRANSPORTATION IMPROVEMENT PROGRAM MEET AIR QUALITY CONFORMITY REQUIREMENTS

WHEREAS, the Clean Air Act Amendments of 1990 (CAAA) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment of an air pollution standard; and,

WHEREAS, the Knoxville Region consisting of the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier and portion of Cocke was designated nonattainment by the United States Environmental Protection Agency (EPA) for the 8-Hour Ozone Standard with an effective date of June 15, 2004; and,

WHEREAS, the Knoxville Region consisting of the counties of Anderson, Blount, Knox, Loudon and a portion of Roane was designated nonattainment by the EPA for the Particulate Matter 2.5 Standard with an effective date of April 5, 2005; and,

WHEREAS, the conformity determination used the latest emissions model approved by the EPA; and,

WHEREAS, conformity was demonstrated using the required emissions tests; and,

WHEREAS, the conformity determination addresses the planned transportation improvements included in the 2009-2034 Knoxville Regional Mobility Plan as Amended and covers the entire Knoxville Ozone and PM2.5 Nonattainment Areas; and,

WHEREAS, the Knoxville Regional TPO FY 2011-2014 Transportation Improvement Program is a subset of the 2009-2034 Knoxville Regional Mobility Plan as Amended; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the Air Quality Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

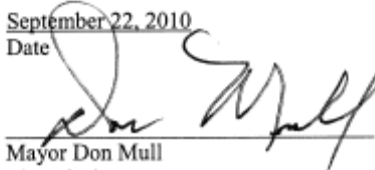
NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

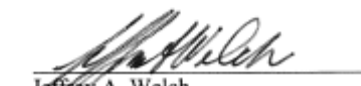
That the 2009-2034 Knoxville Regional Mobility Plan as Amended and the 2011-2014 Transportation Improvement Program have been found to conform to air quality requirements of the Tennessee SIP in accordance with the Clean Air Act as Amended.

BE IT FURTHER RESOLVED that the 8-hr ozone motor vehicle emission budgets (MVEBs) used for the 2009-2034 Knoxville Regional Mobility Plan as Amended and 2011-2014 Transportation Improvement Program will become effective on the effective date of EPA's finding that the budgets in the 1997 8-hr Ozone Maintenance SIP are adequate for conformity purposes.

September 22, 2010

Date


Mayor Don Mull
City of Alcoa
TPO Executive Board Chair


Jeffrey A. Welch
TPO Director

Adopting Resolution by Knoxville Regional TPO Executive Board for FY 2011 – 2014 Transportation Improvement Program

A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION ADOPTING THE FY 2011-2014 TRANSPORTATION IMPROVEMENT PROGRAM

WHEREAS, in accordance with Federal requirements of the U.S. Department of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Planning Organization; and

WHEREAS, a Transportation Improvement Program must be updated at least every four years; and

WHEREAS, no local highway and transit projects are eligible for Federal funds until they are programmed in the Transportation Improvement Program; and

WHEREAS, this Transportation Improvement Program meets the requirements for conformity with the Clean Air Act Amendments and is fiscally constrained; and

WHEREAS, this Transportation Improvement Program comes from a conforming Long Range Transportation Plan; and

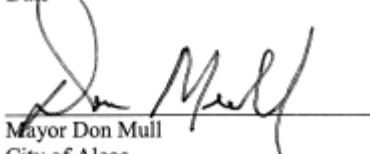
WHEREAS, the FY 2011-2014 Transportation Improvement Program has been prepared by the local planning staff with an endorsement from the TPO Technical Committee.

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD;

That the requirements of the 23 CFR 450.324 (Transportation Improvement Program: General) are met and this resolution be adopted as an endorsement of the FY 2011-2014 Transportation Improvement Program.

September 22, 2010

Date



Mayor Don Mull
City of Alcoa
TPO Executive Board Chair



Jeffrey A. Welch
TPO Director

Adopting Resolution by Knoxville Regional TPO Executive Board for Amendments to the 2009 – 2034 Knoxville Regional Mobility Plan

A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION ADOPTING AMENDMENTS TO THE 2009 – 2034 KNOXVILLE REGIONAL MOBILITY PLAN

WHEREAS, in accordance with requirements of the U.S. Department of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Planning Organization; and

WHEREAS, the 2009 – 2034 Knoxville Regional Mobility Plan was originally adopted on May 27, 2009; and

WHEREAS, the 2009 – 2034 Knoxville Regional Mobility Plan needs to be amended to reflect proposed changes to existing Plan projects and project changes resulting from preparation of the FY 2011 – 2014 Transportation Improvement Program; and

WHEREAS, the amendments will result in a Plan that remains in fiscal constraint; and

WHEREAS, an updated regional air quality analysis was performed that demonstrates air quality conformity for the Plan amendments to the Ozone and PM2.5 standards; and

WHEREAS, the public involvement process for the Plan amendments followed the Knoxville Regional TPO Public Participation Plan; and

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

That the 2009 – 2034 Knoxville Regional Mobility Plan , as amended, be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the TPO planning area.

September 22, 2010

Date



Mayor Don Mull
City of Alcoa
TPO Executive Board Chair



Jeffrey A. Welch
TPO Director

Adopting Resolution by East Tennessee South RPO for the 2009 – 2034 Knoxville Regional Mobility Plan Amendments and Air Quality Conformity Determination

A RESOLUTION BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION (RPO) ADOPTING AMENDMENTS TO THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN AND AIR QUALITY CONFORMITY DETERMINATION FOR THE KNOXVILLE OZONE AND PARTICULATE MATTER 2.5 NON-ATTAINMENT AREAS

WHEREAS, the East Tennessee South RPO, developed by the Tennessee Department of Transportation (TDOT), is responsible for ensuring that areas not included in a Metropolitan Planning Organization are involved in the state's transportation planning process; and,

WHEREAS, the 2009 – 2034 Knoxville Regional Mobility Plan as Amended meets the requirements of transportation conformity found in the Clean Air Act Amendment of 1990; and,

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone and PM2.5 Non-attainment Area, including the RPO/TDOT planning area within the region, which has determined that all proposed Amendments to the transportation projects meet the air quality conformity requirements; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the Amendments to the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the East Tennessee South RPO Technical Committee has reviewed the Amendments to the 2009-2034 Knoxville Regional Mobility Plan and the Air Quality Conformity Determination; and,


WHEREAS, the Air Quality Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

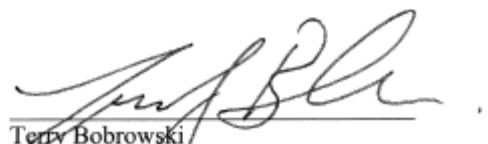
NOW, THEREFORE, BE IT RESOLVED BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION EXECUTIVE BOARD:

That the Amendments to the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the East Tennessee South RPO planning area.

August 31, 2010

Date


Mayor J. Allan Watson
Monroe County
East Tennessee South RPO Chair


Terry Bobrowski
Director, East Tennessee Development District

Adopting Resolution by Lakeway Area MTPO Executive Board for FY 2011 – 2014 Transportation Improvement Program

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

RESOLUTION 2010-009

A RESOLUTION BY THE LAKEWAY AREA METROPOLITAN TRANSPORTATION ORGANIZATION (LAMTPO) ADOPTING THE FY2011-2014 TRANSPORTATION IMPROVEMENT PROGRAM

WHEREAS, in accordance with the Federal requirements of the US Dept. of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Transportation Planning Organization, and

WHEREAS, this is the third (3rd) Transportation Improvement Program (TIP) for the Lakeway Area Metropolitan Transportation Planning Organization; and

WHEREAS, a Transportation Improvement Program (TIP) must be updated at least every four (4) years; and

WHEREAS, no local highway and transit projects are eligible for Federal funds until they are programmed in the Transportation Improvement Program (TIP); and

WHEREAS, this TIP is a subset of an adopted Long Range Transportation Plan; and

WHEREAS, the FY2011-2014 TIP has been prepared by the local planning staff and the Technical Advisory Committee subcommittee, with an endorsement from the LAMTPO Technical Advisory Committee;

NOW, THEREFORE BE IT RESOLVED BY THE LAKEWAY AREA METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION (LAMTPO) EXECUTIVE BOARD;

That the requirements of the 23 CFR 1410.324 (Transportation Improvement Program, General) are met and this resolution be adopted as an endorsement of the FY2011-2014 Transportation Improvement Program (TIP).


Chair, LAMTPO Executive Board

September 22, 2010
Date

Adopting Resolution by Lakeway Area MTPO Executive Board for Air Quality Conformity Determination

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2010-10

A RESOLUTION APPROVING THE AMENDED AIR QUALITY CONFORMITY DETERMINATION REPORT AS PREPARED BY THE KNOXVILLE TPO

WHEREAS, a comprehensive, cooperative, and continuing transportation planning process is to be carried out in the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) study area; and

WHEREAS, The Executive Board of the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) serves as a forum for cooperative decision making on transportation issues in the Urbanized Area; and

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization promotes the safety, protection, and enhancement of transportation corridors within its jurisdictional boundaries, and

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization and the Knoxville TPO are within the same nonattainment area for the 8-Hour Ozone Standard and have a Memorandum of Agreement to cooperatively address transportation conformity requirements for ozone, and

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone Non-attainment Area, including the LAMTPO planning area within Jefferson County, which has determined that all proposed transportation projects from the LAMTPO 2034 Long Range Transportation Plan and the LAMTPO 2011-2014 Transportation Improvement Program (both are SAFETEA-LU compliant) meet the air quality conformity requirements.

NOW, THEREFORE, BE IT RESOLVED, that the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) Executive Board approves the air quality conformity determination report as prepared by the Knoxville TPO.

This Resolution shall be effective upon its passage and approval.

ATTEST:


Chairman, LAMTPO Executive Board

September 22, 2010
Date

Adopting Resolution by Lakeway Area MTPO Executive Board for Amendments to the 2034 Long Range Transportation Plan

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2010-008

A RESOLUTION BY THE LAKEWAY AREA METROPOLITAN TRANSPORTATION ORGANIZATION (LAMTPO) AMENDING THE 2034 LONG RANGE TRANSPORTATION PLAN (LRTP)

WHEREAS, in accordance with the Federal requirements of the US Dept. of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Transportation Planning Organization, and

WHEREAS, this is the second Long Range Transportation Plan (LRTP) for the Lakeway Area Metropolitan Transportation Planning Organization; and

WHEREAS, the LRTP must be updated at least every four years in non-attainment areas; and

WHEREAS, local highway and transit projects are eligible for Federal funds until they are programmed in the LRTP; and

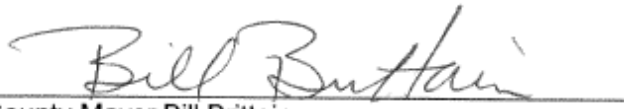
WHEREAS, the 2034 LRTP has been prepared by the local planning staff and the Technical Advisory Committee subcommittee, with an endorsement from the LAMTPO Technical Advisory Committee; and

WHEREAS, the 2034 LRTP shall be amended with the following changes, and the 2034 LRTP will remain financially constrained, and will still comply with Air Quality Conformity:

Knoxville Regional TPO LRTP Project List by Jurisdiction - Jefferson County

New LRTP #	Project	Jurisdiction	On State Route?	Location	Description	Proposed Horizon Year	Length (miles)	Current Status/Change Horizon Year?	2034 LRTP
302	E. Main St/N. Chucky Pk	Jefferson City		Intersection at Old AJ Hwy	Realign Intersection	2014	0.0	2024	19
303	Municipal Dr	Jefferson City		Intersection at Old AJ Hwy	Add left and right turn lanes	2014	0.0	2024	11
304	Old AJ Highway	Jefferson City		Intersection at Chucky Pk	Add left and right turn lanes	2014	0.0	2024	12
307	Old AJ Highway	Jefferson City		Mossy Creek E. of Branner Ave	Replace bridge	2014	0.0	change bridge replacement year with id 326 below, outyear for this is 2024	21
311	Rittenhouse Rd/Slate Rd	Jefferson City		Ritenhouse Rd to Slate Rd	New 2 lane road connection	2014	0.4	dropped take out completely	9
323	US 11E (SR 34)	Jefferson City	YES	Intersection at Pearl Ave and at Harrington St	Intersection improvement- add left turn lanes	2014	0.0	2024	3
326	Old AJ Highway	Jefferson City		Railroad crossing	Bridge replacement	2014	0.0	2014	55

NOW, THEREFORE BE IT RESOLVED, the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) Executive Board hereby approves the amendments to the 2034 Long Range Transportation Plan on Wednesday, September 22, 2010.



County Mayor Bill Brittain
Chair, LAMTPO Executive Board

Conformity Approval Letter from U.S. DOT



U.S. Department
of Transportation

Federal Highway Administration
Tennessee Division Office
404 BNA Drive, Suite 508
Nashville, TN 37217

Federal Transit Administration
Region 4
230 Peachtree St. N.E. Suite 800
Atlanta, GA 30303



November 05, 2010

Ms. Jeanne Stevens, Director, Long Range Planning
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243-0349

Subject: Knoxville & Lakeway TPO's Conformity Determination

Dear Ms. Stevens:

The Tennessee Division of the Federal Highway Administration (FHWA) and Region 4 of the Federal Transit Administration (FTA) in coordination with Region IV of the Environmental Protection Agency, have reviewed the 2034 Knoxville Regional Transportation Planning Organization's and Lakeway Area Metropolitan Transportation Planning Organization's Long Range Transportation Plan amendments, 2011-2014 TIPs and Conformity Determination, adopted by the Executive Boards on September 22, 2010. The Tennessee Department of Environment and Conservation, the Tennessee Department of Transportation, and the Metro Transit System, also had an opportunity to review and comment on the above-mentioned documents.

The Conformity Determination must be based on a Long Range Transportation Plan (LRTP) that meets the Federal Planning Regulations listed under 23 CFR 450.322. The FHWA and FTA reviewed Knoxville Regional Transportation Planning Organization and Lakeway Area Metropolitan Planning Organization's 2034 Long Range Transportation Plans for consistency with the Federal requirements and have determined consistency.

The FHWA and FTA found that the Conformity Document for the Knoxville Area TPO and the Lakeway Area TPO meet the five primary criteria of the Transportation Conformity Rule (69 FR 40004, March 2010):

- use of the latest planning assumptions;
- use of the latest emissions model;



- use of appropriate consultation procedures;
- consistency with the mobile source emission budgets in the State Implementation Plan (SIP); and
- provisions for timely implementation of transportation control measures in the SIP.

We also found that these documents met the criteria outlined in the Transportation Conformity Rule for the 8-hour ozone and PM 2.5 standards.

Therefore, the FHWA and the FTA approve the Conformity Determination for the 8-hour ozone and PM 2.5 standards for the 2034 Knoxville TPO and Lakeway MPO Long Range Transportation Plans.

If you have any questions regarding this approval, please contact Tameka Macon (FHWA) at 615-781-5767 or Valencia Williams (FTA) at 440-865-5634.

Sincerely,



Pamela M. Kordenbrock
Division Administrator
Federal Highway Administration
Tennessee Division

Cc: Don Mull, Mayor, Alcoa, TN
Stanley Wilder, Mayor, White Pine, TN
Angela Midgett, MPO Program Manager, TDOT
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EXECUTIVE SUMMARY

The Knoxville Regional Transportation Planning Organization (KRTPO) and the Lakeway Area Metropolitan Planning Organization have prepared updates to their respective FY 2008 - 2011 Transportation Improvement Programs (TIP) to cover the four-year period from FY 2011 – 2014. The TIP is a cooperatively developed program of projects that have some phase of work such as design, right-of-way or construction planned to be implemented during the next four years. The projects in the TIP must be a direct subset of a current and conforming Long Range Transportation Plan.

The purpose of this report is to document that the updated TIPs of both the KRTPO and LAMTPO, and the resulting amendments to the 2009 – 2034 Knoxville Regional Mobility Plan conform to federal regulations from the Clean Air Act Amendments of 1990 and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

An Air Quality Conformity Determination for transportation plans and programs within the Knoxville Region is required since it has been designated as a “Nonattainment Area” for the 8-Hour Ozone and Particulate Matter 2.5 (PM2.5) Standards. The United States Environmental Protection Agency (EPA) sets air quality standards through the Clean Air Act in order to protect human health and the environment from unsafe levels of pollution. The air quality conformity process is used to ensure that federal funds will not be spent on projects that delay timely attainment of these standards in a nonattainment area.

The Knoxville 8-Hour Ozone Nonattainment Area designation was made effective on June 15, 2004 and it includes Anderson, Blount, Jefferson, Knox, Loudon, Sevier and a portion of Cocke County. There are two Metropolitan Planning Organization jurisdictions within the 8-Hour Nonattainment Area – the KRTPO covers the urbanized portions of Blount, Knox, Loudon and Sevier counties and LAMTPO covers the urbanized portion of Jefferson County.

The Ozone conformity analysis consists of a Motor Vehicle Emission Budget (MVEB) Test for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NO_x). The MVEB was established for the year 2024 as a part of the 8-Hour Ozone Redesignation Request and Maintenance Plan that was submitted to EPA by the Tennessee Department of Environment & Conservation in May 2010. The MVEB was determined to be “adequate” for purposes of transportation conformity by EPA on July 20, 2010. A notice announcing the effective date of September 30, 2010 for these budgets was published in Federal Register / Vol. 75, No. 178 on Wednesday, September 15, 2010. The results of the emissions analysis using the MVEBs are summarized below:

MVEB Test for Ozone

	Analysis Year		
	<u>2014</u>	<u>2024</u>	<u>2034</u>
<u>Volatile Organic Compounds (VOC):</u>			
MVEB	N/A	25.19	25.19
Projected Emissions	27.11	18.34	20.25
<u>Oxides of Nitrogen (NO_x):</u>			
MVEB	N/A	36.32	36.32
Projected Emissions	42.49	22.19	19.43
(emissions in tons per day)			

In addition, a “qualitative” test is required for analysis years prior to the budget year of 2024, which in this case involves a required analysis year of 2014. The qualitative test as determined through the Interagency Consultation process was to use the interim emissions tests that have been used in previous conformity determinations. The interim emissions tests consist of a 1-Hour Budget Test for Knox County and a No Greater than Baseline Year 2002 Test for the other counties for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NO_x). The results are summarized below:

Analysis Year 2014 Qualitative Test for Ozone

Analysis Year 2014		
<u>Volatile Organic Compounds (VOC):</u>	<u>Knox County</u>	<u>Other Counties</u>
Maximum Allowable Emissions	22.12	25.11
Projected Emissions	14.59	12.51
<u>Oxides of Nitrogen (NO_x):</u>	<u>Knox County</u>	<u>Other Counties</u>
Maximum Allowable Emissions	22.49	57.94
Projected Emissions	20.68	21.80
(emissions in tons per day)		

The PM_{2.5} Nonattainment Area includes Anderson, Blount, Knox, Loudon and a portion of Roane County. The PM_{2.5} air quality standard consists of two different measurement timeframes – an annual level and a daily level – based on the health effects that can occur for short-term versus long-term exposures. The Knoxville Region has been designated as nonattainment for both the daily and annual measurement periods. The designation as a nonattainment area under the Annual PM_{2.5} Standard became effective on April 5, 2005 and the designation as a nonattainment area for the Daily PM_{2.5} Standard became effective on December 14, 2009. This Conformity Determination fulfills the requirement that conformity be demonstrated for the Daily PM_{2.5} Standard within 1-year of its effective date, i.e. by December 14, 2010.

The Annual PM_{2.5} conformity analysis consists of an MVEB Test for the annual PM_{2.5}-related emissions from on-road mobile sources known as “Direct PM_{2.5}” and “Oxides of Nitrogen” (NO_x). The results of the emissions analysis are summarized below:

MVEB Test for Annual PM_{2.5}

Analysis Year			
<u>Direct Particulate Matter 2.5:</u>	<u>2014</u>	<u>2024</u>	<u>2034</u>
MVEB	283.63	283.63	283.63
Projected Emissions	207.84	178.53	199.35
<u>Oxides of Nitrogen (NO_x):</u>	<u>2014</u>	<u>2024</u>	<u>2034</u>
MVEB	18,024.9	18,024.9	18,024.9
Projected Emissions	12,242.4	6,541.96	5,814.35
(emissions in tons per year)			

In accordance with EPA guidance, the Daily PM2.5 conformity analysis consists of an MVEB Test against the Annual PM2.5 budgets shown above since an MVEB is not yet available specifically for the Daily PM2.5 Standard. Therefore, the results of the emissions analysis are simply identical to the above analysis for the Annual PM2.5 Standard and are repeated below:

MVEB Test for Daily PM2.5 (using Annual PM2.5 MVEB)

	Analysis Year		
<u>Direct Particulate Matter 2.5:</u>	<u>2014</u>	<u>2024</u>	<u>2034</u>
MVEB	283.63	283.63	283.63
Projected Emissions	207.84	178.53	199.35
<u>Oxides of Nitrogen (NOx):</u>	<u>2014</u>	<u>2024</u>	<u>2034</u>
MVEB	18,024.9	18,024.9	18,024.9
Projected Emissions	12,242.4	6,541.96	5,814.35
	(emissions in tons per year)		

In summary, the emissions analysis performed by the KRTPO demonstrates that the projected emissions from the proposed transportation system are less than the allowable amount for each of the required analysis years and thus conformity for the 8-hour Ozone, Annual PM2.5 and Daily PM2.5 standards has been demonstrated for the affected current transportation plans.

The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation process and a 30-day public review and comment period was held. A summary of comments that were received and responses is included in the report.

Chapter 1: Introduction and Background Information

1.0 Introduction

The primary purpose of this document is to demonstrate that the amended 2009 – 2034 Knoxville Regional Mobility Plan (KRMP), the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2011-2014 Transportation Improvement Program (TIP) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) 2011 – 2014 TIP meet Transportation/Air Quality Conformity requirements of the Clean Air Act. In addition, this conformity determination is being made to satisfy the requirement that a conformity finding be made within one year of the effective date of the Daily PM_{2.5} Standard nonattainment designation, which is due by December 14, 2010. Section 1.1 describes other requirements that are being met by this conformity determination in addition to the primary purposes of the TIP Update and the first conformity determination for the Daily PM_{2.5} Standard.

The KRTPO and LAMTPO are required to update their respective TIPs periodically. A conformity determination must be made on the new TIPs based on the Transportation Conformity Rule requirement found in 40 CFR 93.102 which states that conformity determinations are required for the adoption, acceptance, approval or support of TIPs and TIP amendments.

After a review of the KRTPO TIP update it was determined that the Regional Long Range Transportation Plan, known as the 2009 – 2034 KRMP, would also need to be amended to ensure that it would be consistent with the schedules and descriptions proposed for projects included in the TIPs. One of the main issues necessitating the Long Range Plan revision is due to the fact that several projects included in the first horizon year of 2014 have been delayed for various reasons such that it is necessary to push them back to the next horizon year of 2024. There are also cases however where the opposite is true with a few projects moving ahead in schedule. Other changes necessitating a long range plan revision include changes in project description, addition of new projects and deletion of projects.

1.1 Transportation Conformity Triggers Satisfied under this Conformity Determination Report

As noted above, there are multiple transportation plans that are covered under this conformity determination. There are also multiple air quality standards for which the Knoxville Region is in nonattainment which causes there to be different “clocks” under which conformity must be demonstrated based on requirements under the Clean Air Act. The goal of this conformity determination is to line up as many of the conformity clocks and triggers as possible such that the number of future conformity determinations that will be required is minimized.

Following is a summary of the upcoming transportation conformity triggers that the KRTPO is aware of at this time (in chronological order):

1. Conformity Determination for the FY 2011 – 2014 Transportation Improvement Program update for both KRTPO and LAMTPO – **Due by October 2010**
2. Conformity Determination for the Daily PM_{2.5} Standard within one year of the effective date of designation – **Due by December 14, 2010**
3. Conformity Determination for the Annual PM_{2.5} Standard within two years of the adequacy finding for the year 2010 Attainment Demonstration's Motor Vehicle Emissions Budgets – **Due by March 2012**
4. Conformity Determination for the 1997 8-Hour Ozone Standard within two years of the adequacy finding for the year 2010 Attainment Demonstration's Motor Vehicle Emissions Budgets – **Due by September 2012**
5. Conformity Determination for the 2010 8-Hour Ozone Standard update within one year of the effective date of designation (the Knoxville area is expected to be designated nonattainment for this revised standard in October 2011) – **Likely due by October 2012, but exact schedule is unknown at the current time**
6. Conformity Determination for the next major update to the Long Range Transportation Plan (required every four years) – **Due by June 2013**

This conformity determination satisfies the requirements for numbers 1 through 4 above and essentially resets the clock such that another conformity determination for those particular standards will not be required until the next full long range transportation plan update noted in number 6.

1.2 Background on the Knoxville Region Ozone and PM_{2.5} Nonattainment Areas

The Clean Air Act requires the United States Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six "Criteria Pollutants" - Particulate Matter, Ozone, Nitrogen Dioxide, Carbon Monoxide, Sulfur Dioxide and Lead in order to protect human health and the environment from unsafe levels of these pollutants. These pollutants are regulated through the EPA setting maximum limits on exposure levels that must be reviewed periodically. Regions which are found to be out of compliance with those limits may be designated as a "Nonattainment Area". Portions of the Knoxville Region have been designated as nonattainment for two of the Criteria Pollutants – Ozone and Particulate Matter. Ozone is measured as exposure for an 8-hour period, known as the "8-hour Ozone Standard". Particulate Matter is measured as exposure over both a daily and annual basis for different sizes of particles. The Knoxville Region is currently nonattainment for both the daily and annual maximum standard for Particulate Matter measuring 2.5 microns or less in diameter, also known as "PM_{2.5}".

Map 1 depicts the geographical extents of both the Ozone and PM_{2.5} Nonattainment Areas for the Knoxville Region – note that the PM_{2.5} Nonattainment Area is identical for both the daily and annual PM_{2.5} Standards. The counties of Anderson, Blount, Knox and Loudon carry a designation as a Nonattainment Area for both pollutants, while there is a small portion of Roane County that is designated as a PM_{2.5} Nonattainment Area only; and the counties of Jefferson, Sevier and a small portion of Cocke County are designated as Ozone Nonattainment Areas only.

The designations of Ozone nonattainment areas (under the 1997 8-Hour Ozone Standard) were made effective on June 15, 2004, while the designations of PM_{2.5} areas were made effective on April 5, 2005, for the Annual Standard and on December 14, 2009, for the Daily Standard by EPA.

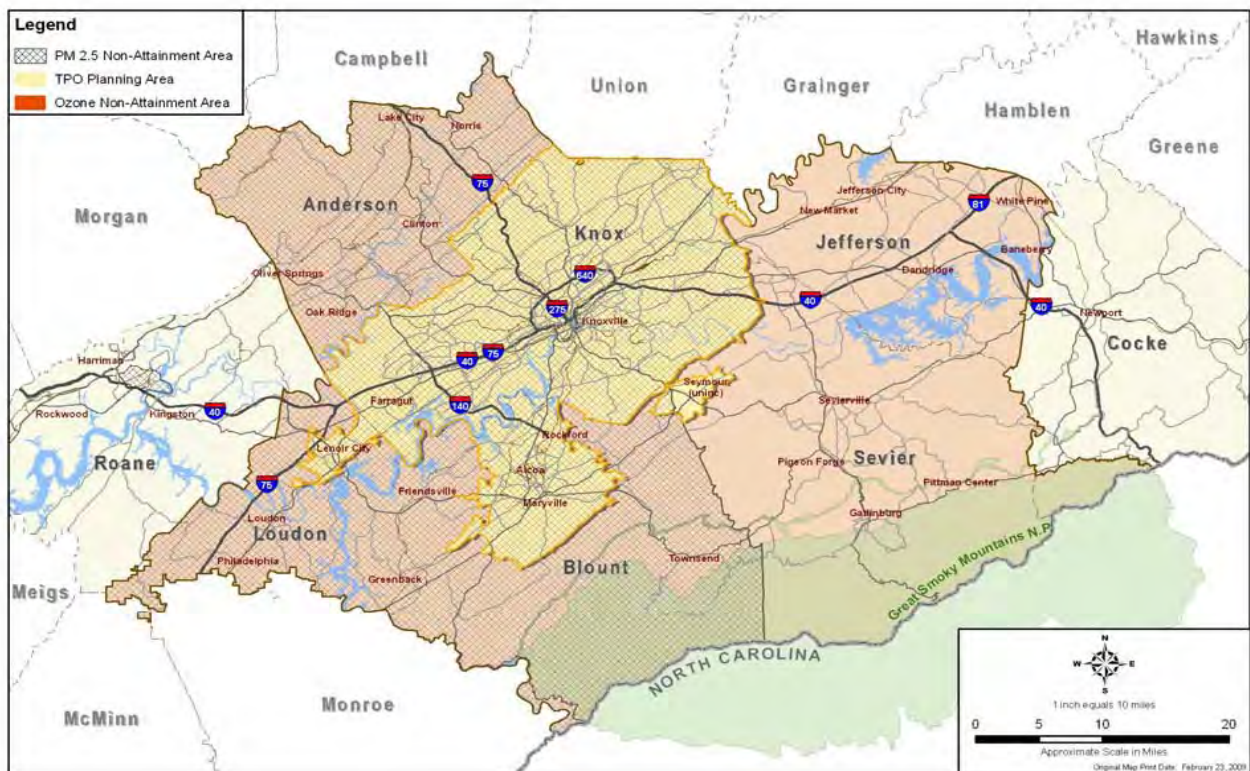


Figure 1. KNOXVILLE 8-HOUR OZONE and PM_{2.5} NONATTAINMENT AREAS

1.3 Transportation Conformity Background

Transportation Conformity is required in nonattainment and maintenance areas by federal regulations (40 CFR Parts 51 and 93) and is the mechanism through which on-road mobile source emissions are addressed in the area's goals for cleaner air. The basic intent of Transportation Conformity is to ensure that federal funds will not be spent on transportation

projects that may delay the attainment of the air quality standard for which the area is currently out of compliance. Therefore transportation plans and programs must be demonstrated to conform to the “State Implementation Plan” (SIP), which details the emissions levels from each sector including mobile sources needed to regain compliance with the air quality standard. If conformity is not demonstrated then the area may enter what is known as a “lapse” period in which only very specific projects may move forward, while funding is essentially frozen for most new roadway construction or widening projects.

1.4 Nonattainment Area Jurisdictional Coordination

The Knoxville Regional TPO (KRTPO) does not encompass the entire Nonattainment Area for Ozone and PM_{2.5}, and as such coordination with other transportation planning organizations and the Tennessee Department of Transportation (TDOT) is required in order to ensure all of the proposed transportation projects are included in the conformity analysis. The KRTPO boundary includes the urbanized portions of Blount, Knox, Loudon and Sevier counties while the LAMTPO boundary includes the urbanized portions of Jefferson County within the 8-Hour Ozone Nonattainment Area. TDOT is responsible for transportation planning in the rural portions of the nonattainment areas, and TDOT has set up a Rural Planning Organization (RPO) that includes all counties within the Knoxville Nonattainment Area, known as the “East Tennessee South RPO” which was coordinated with for this conformity determination.

A Memorandum of Agreement (MOA) was entered into by KRTPO, LAMTPO and TDOT in 2004 and subsequently revised in 2007. The MOA specifies that the KRTPO is responsible for compiling a single Conformity Determination Report for the entire Nonattainment Area and that TDOT and LAMTPO will provide the KRTPO with proposed project lists for their respective jurisdictions. The LAMTPO is a fairly new Metropolitan Planning Organization as it was created based on the 2000 Census. A copy of the MOA is included in Appendix K.

1.5 Emissions Analysis Background

Transportation Conformity is demonstrated through a technical process known as an “emissions analysis”, in which future estimates of emissions from the transportation system are compared against what has been determined to be sufficient to allow the area to re-attain the air quality standard. Different types of emissions are involved in the production of Ozone and PM_{2.5} pollution as described below:

- **Ozone:** Ozone is not directly emitted into the atmosphere; rather it is formed through a chemical reaction between “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NO_x) in the presence of sunlight. Mobile-sources contribute both sources of emissions – VOC are primarily formed from the evaporation of

motor fuel, while NO_x is formed from the internal combustion process and emitted in vehicle exhaust.

- PM_{2.5}: There are some PM_{2.5} emissions, known as “Direct PM_{2.5}”, that are directly emitted from motor vehicles. Direct PM_{2.5} emissions consist of elements contained in vehicle exhaust as well as particles resulting from brake and tire wear. In addition, it is believed that NO_x emissions can contribute to secondary formation of PM_{2.5} so it is included in the emissions analysis.

1.6 Emissions Analysis Procedure

The emissions analysis is performed primarily using two different models – a Travel Demand Forecasting Model (TDFM), developed by the KRTPO and the MOBILE6 emissions rate model, which was developed by EPA and allows the user to input localized parameters. The TDFM provides outputs of the estimated Vehicle Miles of Travel (VMT) on the transportation system and associated average speeds by functional classification. The MOBILE6 model provides outputs of emission factors in grams per mile of vehicle travel, such that an overall emissions amount can be calculated by multiplying the VMT output from the TDFM with the emission factor from MOBILE6.

There is one area – the partial Cocke County Ozone Nonattainment Area that is not represented in the TDFM for which an “off-model” analysis was performed. The off-model analysis primarily consisted of using historical traffic count data to determine a growth trend with which to project future VMT and is documented in Appendix F.

Appendix D describes the Travel Demand Forecasting Model parameters in more detail and Appendix E of this document describes the MOBILE6 input structure that was used in the emissions analysis.

Finally, the emissions analysis must also be performed for different years throughout the life of the LRMP. Since the timeframe covered by the LRMP is from 2009 – 2034, 40 CFR part 93 requires:

- 1.) That a year within the first five years of the plan must be analyzed (2014);
- 2.) The final year of the plan (2034), and
- 3.) A year must be chosen in between such that no more than ten years separate any analysis year (2024).

Chapter 2: Summary of Amendments to the 2009 – 2034 Knoxville Regional Mobility Plan

2.0 Overview of Amendments to 2009 – 2034 Knoxville Regional Mobility Plan

In development of the FY 2011 – 2014 Transportation Improvement Programs for both the KRTPO and LAMTPO it was determined that the overall long range transportation plan would need to be amended to meet the requirement that the projects included in the TIP are a direct subset of the conforming long range transportation plan.

The KRTPO maintains an overall regional long range transportation plan that includes projects within the entire nonattainment area, including those jurisdictions outside of the KRTPO planning area. The most current long range plan is known as the 2009 – 2034 Knoxville Regional Mobility Plan, which was adopted in May 2009 and a determination of conformity was made for both Ozone and the Annual PM_{2.5} Standard by the U.S. DOT on June 1, 2009.

Since the TIP covers through fiscal year 2014 it can be somewhat easily deduced whether a certain project that is included in the 2014 horizon year of the KRMP will be open to traffic by that time given the timing of the phases of work that are being shown in the updated TIP. For example, if a project that is included in the 2014 horizon year of the KRMP is only showing the design phase being funded in fiscal year 2014 then it can be assumed that there will be no way to fully construct the project and have it be open to traffic by the end of calendar year 2014.

Following is a summary of all the types of actions resulting from the FY 2011 – 2014 TIP update that have necessitated an amendment to the 2009 – 2034 KRMP, subsequent sections of this chapter will identify the specific projects that are affected:

- A project has become delayed such that it will not be completed by the horizon year it was programmed in the KRMP for.
- A project has moved ahead in schedule such that it will be open to traffic in a nearer-term horizon year than where it was programmed in the KRMP.
- A project has had a significant change in its description such as new termini, or proposed cross section.
- A new project not previously identified in the KRMP is being added to the Plan or is included in the TIP update.
- A project is no longer being pursued and will be dropped from the KRMP.

2.1 List of Projects that are being moved out of the first KRMP Horizon Year

The following projects are not expected to be open to traffic by the first long range plan horizon year of 2014 based on current information and the phases of work being programmed in the FY 2011 – 2014 TIPs for KRTPO and LAMTPO:

Table 1. KRMP Projects Moving out of 2014 Horizon Year

KRMP ID #	Route	Termini	Jurisdiction	Type of Improvement	Current Horizon Year	Proposed Horizon Year
102	SR 29	Pine Ridge Rd to SR 61	Harriman/Roane County	Widen 2-lane to 4-lane	2014	2024
202	Hunter Growth Study Corridor #2 - Robert C. Jackson Dr Extension	Middle settlements Rd to Louisville Rd (SR 334)	Alcoa	New 4-lane road w/center turn lane	2014	2024
207	Wrights Ferry Road	Topside Rd (SR 333) to Airbase Rd (SR 429)	Alcoa	Add center turn lane	2014	2024
209	Ellejoy Road	River Rd to Jeffries Hollow Rd	Blount County	Reconstruct 2-lane section	2014	2024
210	Jeffries Hollow Road	Ellejoy Rd to Sevier County Line	Blount County	Reconstruct 2-lane section	2014	2024
212	E. Broadway Avenue (SR 33)	Wildwood Rd to McArthur Rd	Blount County	Reconstruct 2-lane section	2014	2024
213	Old Niles Ferry Road	Maryville City Limit to Calderwood Hwy (SR 115) (US 129)	Blount County	Reconstruct 2-lane section	2014	2024
214	Sevierville Rd (SR 35) (US 411)	Washington St (SR 35) to Dogwood Rd	Maryville	Construct 2-lane road w/center turn lane along existing and new alignment	2014	2024
302	E. Main St/N. Chucky Pk	Intersection at Old AJ Hwy	Jefferson City	Realign Intersection	2014	2024
303	Municipal Dr	Intersection at Old AJ Hwy	Jefferson City	Add left and right turn lanes	2014	2024
304	Old AJ Highway	Intersection at Chucky Pk	Jefferson City	Add left and right turn lanes	2014	2024
307	Old AJ Highway	Mossy Creek E. of Branner Ave	Jefferson City	Replace bridge	2014	2024
308	Old AJ Highway (SR 92)	Main St to Overlook Rd	Jefferson City	Add center turn lane and sidewalks	2014	2024
313	SR 66 Relocation	North of I-81 at SR 341 to SR 160	Jefferson County	Construct new 4-lane road	2014	2024
314	SR 92	Bridge in Dandridge	Dandridge	Replace Bridge	2014	2024
316	SR 92	Intersection at Old AJ Hwy	Jefferson City	Add left and right turn lanes	2014	2024
323	US 11E (SR 34)	Intersection at Pearl Ave and at Harrington St	Jefferson City	Intersection improvement- add left turn lanes	2014	2024
502	Dolly Parton Pkwy (US 411) (SR 35)	Intersection w/ Veterans Blvd (SR 449)	Sevierville	Improve Intersection	2014	2024
503	Old Knoxville Highway	Boys Creek Hwy (SR 338) to US 411/441 (SR 71)	Sevierville	Widen 2-lane to various 3 and 4 lane divided cross sections	2014	2024
509	Thomas Road Connector	Teaster Lane to Veterans Blvd (SR 449) at McCarter Hollow Rd	Pigeon Forge	Construct new 4-lane road	2014	2024
510	US 411 (SR 35)	Sims Rd to Grapevine Hollow Rd	Sevier County	Widen 2-lane to 4-lane	2014	2024
604	Maynardville Hwy (SR 33)	Temple Acres Dr to Union County Line	Knox County	Widen 2-lane to 4-lane	2014	2024
605	Schaad Road Extension	Middlebrook Pike (SR 169) to west of Oak Ridge Hwy (SR 62)	Knox County	Construct new 4-lane road	2014	2024
615	Washington Pike	I-640 to Murphy Rd	Knoxville	Widen 2-lane to 4-lane	2014	2024
616	Pleasant Ridge Rd/Merchant Dr Phase II	Knoxville City Limits to Merchant Dr / Pleasant Ridge Rd to Wilkerson Rd	Knoxville	Add center turn lane	2014	2024
625	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	Knoxville/ Knox County	Widen 2-lane to 4-lane	2014	2024
627	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Woodson Dr	Knoxville	Widen 4-lane to 6-lane	2014	2024
628	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Blount/Knox County Line	Knoxville	Widen 4-lane to 6-lane	2014	2024

2.2 List of Projects that are being moved into the first KRMP Horizon Year

The following projects are expected to be open to traffic by the first long range plan horizon year of 2014 based on current information and the phases of work being programmed in the FY 2011 – 2014 TIPs for KRTPO and LAMTPO:

Table 2. KRMP Projects Moving into 2014 Horizon Year

KRMP ID #	Route	Termini	Jurisdiction	Type of Improvement	Current Horizon Year	Proposed Horizon Year
512	I-40/ SR 66 Interchange	Interchange at SR 66	Sevierville	Modify Interchange to improve capacity including addition of new Interstate access ramps	2024	2014
632	Concord Road (SR 332)	Turkey Creek Rd to Northshore Dr (SR 332)	Farragut/ Knox County	Widen 2-lane to 4-lane	2024	2014

2.3 List of Projects with Scope/Description Change

The following projects have a substantially different change in their scope of work or termini:

Table 3. KRMP Projects with Revised Description

KRMP ID #	Route	Termini	Jurisdiction	Type of Improvement	Proposed Horizon Year	Summary of Description Change
214	Sevierville Rd (SR 35) (US 411)	Washington St (SR 35) to Dogwood Rd	Maryville	Construct 2-lane road w/center turn lane along existing and new alignment	2024	Added 0.8 miles, was Washington St to Everett High Rd, added \$1.5 million, Moved to 2024 horizon year
306	Odyssey Rd	US 11E (SR 34) to Old AJ Hwy	Jefferson City	Add center turn lane	2014	Changed terminus from NS Railroad to Old AJ Hwy (add 0.4 miles)
408	US 321 (SR 73)	I-75 Interchange to Simpson Rd	Lenoir City	Intersection Improvements from Corridor Study	2014	Shortened the termini
410	US 321 (SR 73)	Intersection w/ US 11 (SR 2)	Lenoir City	Intersection Improvements	2014	Was "construct interchange"
507	SR 66	Douglas Dam Rd (SR 139) to I-40	Sevierville/Sevier County	Widen 4-lane to 6-lane	2014	Project ID# 507 split into two segments (was Boyds Creek Hwy to I-40)
NEW / 514	SR 66	Boys Creek Hwy (SR 338) to Douglas Dam Rd (SR 139)	Sevierville/Sevier County	Widen 4-lane to 6-lane	2024	Project ID# 507 split into two segments. This segment in 2024 horizon year
600	Old Stage Road/Watt Road Extension	Old Stage Rd. from Johnson's Corner Rd. to Town Limits, Watt Road from Old Stage Rd. to Kingston Pk (SR 1) (US 11/70)	Farragut	Improve Old Stage Road to 2-lane road with sidewalk from Johnson's Corner Rd to western Town limits and Extend Watt Road from Old Stage to SR-1 with three lanes, sidewalk, curb & gutter	2014	Changed project description to include Old Stage Rd improvements (added 0.5 miles)
613	Cumberland Avenue (SR 1) (US 11/70)	Alcoa Hwy to 16th St	Knoxville	Pedestrian Improvements and Reduce from 4 lanes to 2 lanes with center turn lane	2014	Was 22nd St to 16th St, added 0.2 miles
614	Henley Street Bridge (SR 33/71) (US 441)	Bridge over Tennessee River	Knoxville	Rehabilitate bridge & add bike lanes	2014	Changed description to reflect no additional travel lanes (was "widen from 5 to 6 lanes) bike lanes will be installed instead, change from non-exempt to exempt
618	I-275 Industrial Park Access Improvements	I-275 Corridor	Knoxville	Extend Blackstock Ave from Fifth Ave to Bernard Ave and realign Marion Sreet. Improve intersections of University Ave with W Fifth Ave and Bernard Ave.	2014	Changed description from widen RR underpass. Change from Exempt to Non-exempt
216	Alcoa Highway (SR 115) (US 129)	Pellissippi Pkwy (SR 162) to Knox/Blount County Line	Blount County/ Alcoa	Widen 4-lane to 6-lane plus 2 auxiliary between Singleton Station Rd and Topside Rd (SR 333)	2024	Combined project ID's 216, 256 and 257 together and identified the one segment that has auxiliary lanes within the "type of improvement" description.
647	Pellissippi Parkway (SR 162)/Oak Ridge Highway (SR 62)	Edgemoor Rd (SR 170) to Dutchtown Rd	Knox County	Widen from 4-lane to 6-lane	2024	Previously was add auxiliary lanes
422	US 321 (SR 73)	I-75 to Simpson Rd	Lenoir City	Widen 4-lane to 6-lane	2034	Project ID# 422 Split into 2 phases (was I-75 to US 11)
NEW / 423	US 321 (SR 73)	Simpson Rd to US 11 (SR 2)	Lenoir City	Widen 4-lane to 6-lane	2014	Project ID# 422 Split into 2 phases, This segment in 2014 horizon year

2.4 List of New Projects being added to KRMP

The following projects are included in the FY 2011 – 2014 TIP update or are new projects and need to be amended into the long range transportation plan:

Table 4. Added Projects to KRMP

KRMP ID #	Route	Termini	Jurisdiction	Type of Improvement	Proposed Horizon Year
NEW / 104	Blockhouse Valley Road	SR 9 to Clinton City Limits	Clinton/Anderson County	Reconstruct 2-lane section and add sidewalks	2014
NEW / 700	Campbell Station Road	Snyder Road to Yarnell Road	Farragut/Knox County	Add center turn lane	2024
NEW / 699	Kingston Pike (SR 1) (US 11/70)	Intersection w/Campbell Station Rd	Farragut	Intersection improvement to add additional eastbound left turn lane	2024
NEW / 698	Kingston Pike (SR-1)(US 11/70)	Intersection w/Everett Rd	Farragut	Intersection Improvements to include center turn lane and traffic signal	2014
NEW / 695	Dutchtown Road	Murdock Rd to E of Pellissippi Pkwy southbound ramps	Knox County	Widen to 4-lanes with center turn lane, add eastbound decel lane at Pellissippi ramps	2014
NEW / 259	McCammon Avenue Relocation	Intersection with Bessemer Street in Alcoa	Maryville	Re-align McCammon Avenue with Hamilton Crossing entrance to create signalized, 4-way intersection	2014
NEW / 260	McCammon Avenue Extension	720 ft. South of Bessemer Street to Foch Street	Maryville	Reconstruct existing 2-lane road to 2-3 lanes and extend on new alignment to tie-in with Watkins Road	2024
NEW / 261	Hall Road (SR 35)	Intersection with Alcoa South Plant Entrance	Alcoa	Add southbound left turn lane	2014
NEW / 696	Downtown Knoxville Wayfinding Project	Downtown Knoxville	Knoxville	Create a consistent signage system to include gateway signs, pedestrian directionals, trolley signs, etc...	2014
NEW / 697	Central Street	Woodland Ave to Depot St	Knoxville	Road Diet and Streetscape Project, reduce from 4 lanes to 2 lanes with center turn lane	2014
NEW / 515	SR 139	SR 66 to Bryan Rd	Sevierville/TDOT	Widen 2-lane to 4-lane	2024
NEW / 516	Bryan Road	E. Dumplin Valley Rd. to SR 139	Sevierville/Sevier County	Widen 2-lanes to 4-lanes	2024
NEW / 517	I-40 (mile 408)	New Interchange Proposed near Mile Marker 408	Sevierville/Sevier County	Construct new interchange	2024

2.5 List of Projects being removed from KRMP

The following projects are no longer being actively pursued in the region and therefore will be dropped from the long range transportation plan:

Table 5. Projects Deleted from KRMP

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement
200	Cusick Road	Alcoa Hwy (SR 115) (US 129) to Pellissippi Pkwy (SR 162)	Alcoa	1.7	Add center turn lane
205	Topside Road (SR 333)	East of Old Topside Rd to Wrights Ferry Rd	Alcoa	1.0	Phase I & II signalization and intersection realignment
311	Rittenhouse Rd/Slate Rd	Rittenhouse Rd to Slate Rd	Jefferson City	0.4	New 2 lane road connection
684	Knoxville Regional Parkway (SR-475)	I-40/75 in Loudon County to I-75 in Anderson County	Knox/ Anderson/ Loudon County	24.3	Construct new 4-lane freeway

Chapter 3: Summary of Revised Planning Assumptions and Effects on Travel Demand Model Outputs

3.0 Introduction

Since the most recent major transportation conformity determination was completed just over one year ago, many of the planning assumptions and procedures that were used therein are still valid. The one situation which has changed the most however deals with the major economic recession that the nation has experienced the last couple of years and primarily its long-term effects on projections of the socio-economic data that is used as input to the KRTPO's travel demand forecasting model. The previous conformity determination relied on socio-economic projections that were prepared by Woods & Poole Economics, Inc. that were purchased in 2007, i.e. just before the severe economic downturn began. For this conformity determination a new socio-economic dataset was purchased from Woods & Poole in early 2010. This chapter will compare the two datasets in terms of long term population and employment projections in the region and the effects that the new data have on travel statistics calculated by the travel demand model.

3.1 Comparison of Old and New Socio-Economic Projections

The following table summarizes the population and employment forecasts from the two purchased datasets from Woods & Poole Economics, Inc.:

Table 6. Comparison of Socio-Economic Datasets

County	"Old" Year 2035 W&P Population Forecast	"New" Year 2035 W&P Population Forecast	"Old" Year 2035 W&P Employment Forecast	"New" Year 2035 W&P Employment Forecast
Anderson	100,972	90,246	93,715	71,630
Blount	209,924	201,204	98,613	94,483
Jefferson	77,453	72,756	29,007	28,705
Knox	574,950	606,629	481,664	441,752
Loudon	79,010	78,673	28,861	30,410
Sevier	170,928	163,111	95,939	89,497
TOTAL	1,213,237	1,212,619	827,799	756,477
Difference (New - Old)		-618		-71,322

Note: "Old" refers to data acquired in year 2007 and "New" refers to data acquired in year 2010.

3.2 Impacts of New Socio-Economic Projections on Travel Demand Forecasting

From the above table in Section 3.1, it is apparent that employment growth is being forecasted to grow at a significantly lower amount over the next 25 years while the population forecast is not nearly affected as much. The county-level control totals for population and employment are input to a land use model that the Knoxville TPO maintains known as “ULAM”. The ULAM model is used to allocate the population and employment totals to the Traffic Analysis Zone (TAZ) level that is used by the TPO’s travel demand forecasting model. Further documentation of the ULAM model is also available in the previous CDR.

Below is a summary of the Travel Demand Forecasting Model outputs for vehicle miles of travel (VMT) on roadways in the counties of Anderson, Blount, Jefferson, Knox, Loudon and Sevier for the three horizon years that were analyzed:

Table 7. Travel Demand Model Output Comparison with New Socio-Economic Data

Horizon Year	"Old" Year 2009 Conformity Analysis Regional VMT	"New" Year 2010 Conformity Analysis Regional VMT	Difference (New - Old)	% Difference (New - Old)
2014	32,946,179	32,862,614	-83,564	-0.3%
2024	38,533,372	38,278,332	-255,040	-0.7%
2034	45,168,744	44,539,563	-629,180	-1.4%

It should be noted that the estimates of VMT are also affected by the transportation project changes that were documented in Chapter 2. One of the major project changes was the deletion of the Knoxville Parkway, which was a proposed new Freeway route covering over 20 miles.

3.3 Summary

Overall there is not a significant percentage difference in estimates of VMT as demonstrated in Table 3.2. This is likely due to the fact that the travel demand model is much more sensitive to changes in population than employment since it determines a trip generation rate based on population and number of households rather than on employment. The impact of lower employment in the travel demand model is primarily felt in the effect on where trips are distributed to within the region.

Chapter 4: Statement of Conformity

4.0 Introduction

This section of the report covers the conformity requirements for the Knoxville Region under both the 8-Hour Ozone Standard as well as the PM_{2.5} Standard. The conformity report complies with all applicable requirements found in the State Implementation Plan (SIP), Clean Air Act, Tennessee Transportation Conformity Regulation and the MPO Planning Regulations from SAFETEA-LU (23 CFR 450.322).

4.1 Statement of Conformity – 8-Hour Ozone Standard

The Ozone conformity analysis consists of a Motor Vehicle Emission Budget (MVEB) Test for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NO_x). The MVEB was established for the year 2024 as a part of the 8-Hour Ozone Redesignation Request and Maintenance Plan that was submitted to EPA by the Tennessee Department of Environment & Conservation in May 2010. The MVEB was determined to be “adequate” for purposes of transportation conformity by EPA on July 20, 2010. A notice announcing the effective date of September 30, 2010 for these budgets was published in Federal Register / Vol. 75, No. 178 on Wednesday, September 15, 2010.

The Maintenance Plan MVEB established for VOC emissions and NO_x emissions are as follows:

Pollutant	2024 MVEB (tons/day)
VOC	25.19
NO _x	36.32

The results of the emissions analysis are summarized below:

Table 8. Results of the Motor Vehicle Emission Budget Test for Ozone

	Analysis Year	
<u>Volatile Organic Compounds (VOC):</u>	<u>2024</u>	<u>2034</u>
MVEB	25.19	25.19
Projected Emissions	18.34	20.25
<u>Oxides of Nitrogen (NO_x):</u>	<u>2024</u>	<u>2034</u>
MVEB	36.32	36.32
Projected Emissions	22.19	19.43
	(emissions in tons per day)	

Note: The above table represents the sum of emissions for the entire Ozone Nonattainment Area including Anderson, Blount, Jefferson, Knox, Loudon, Sevier and a portion of Cocke County. Appendix C contains a summary of the emissions analysis results for each individual county.

In addition, a “qualitative” test is required for analysis years prior to the budget year of 2024, which in this case involves a required analysis year of 2014. The qualitative test as determined through the Interagency Consultation process was to use the interim emissions tests that have been used in previous conformity determinations. The interim emissions tests consist of a 1-Hour Budget Test for Knox County and a No Greater than Baseline Year 2002 Test for the other counties for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NO_x). The results are summarized in the following table (Table 9):

Table 9. Results of the Qualitative Analysis Year 2014 for Ozone

<u>Volatile Organic Compounds (VOC):</u>	Analysis Year 2014	
	<u>Knox County</u>	<u>Other Counties*</u>
Maximum Allowable Emissions	22.12	25.11
Projected Emissions	14.59	12.51
<u>Oxides of Nitrogen (NO_x):</u>	<u>Knox County</u>	<u>Other Counties*</u>
Maximum Allowable Emissions	22.49	57.94
Projected Emissions	20.68	21.80
(emissions in tons per day)		

*The other counties within the Ozone Nonattainment Area include Anderson, Blount, Jefferson, Loudon, Sevier and a portion of Cocke County within the Great Smoky Mountains National Park.

4.1.1 Summary of 8-Hour Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2009 – 2034 Knoxville Regional Mobility Plan (as amended), the LAMPTO 2034 Long Range Transportation Plan as well as the KRTPO and LAMTPO FY 2011 – 2014 TIPs demonstrate conformity for the 8-Hour Ozone Standard using the necessary emissions tests. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by SAFETEA-LU) has also been demonstrated. All Plans are financially constrained consistent with 23 CFR Part 450 Subpart C based on the projected costs and revenues as presented in the accompanying KRTPO LRMP and LAMTPO LRTP documents.

4.2 Statement of Conformity – Annual PM_{2.5} Standard

Through the Interagency Consultation Process it has been determined that conformity determinations should address the Direct PM_{2.5} emissions from vehicle exhaust and brake/tire wear and the PM_{2.5} precursor of Oxides of Nitrogen (NO_x). The other types of potential PM_{2.5} emissions from mobile sources have been determined to not be required until further analysis can be undertaken to determine their contribution to overall PM_{2.5} pollution – these include the Direct PM_{2.5} emissions of re-entrained road dust and

construction dust, and the PM_{2.5} precursors of volatile organic compounds, sulfur oxides and ammonia.

An attainment demonstration was submitted to EPA for the Annual PM_{2.5} Standard (also known as the 1997 PM_{2.5} Standard) in 2008 and the Motor Vehicle Emission Budgets were officially found adequate and published in the Federal Register / Vol. 75, No. 66 on Wednesday, April 7, 2010. The conformity rule under 40 CFR 93.118 therefore requires a conformity test against the Motor Vehicle Emissions Budgets that are set.

The MVEB established for Direct PM_{2.5} emissions and NO_x emissions are as follows:

Pollutant	2009 MVEB (tons/year)
PM _{2.5}	283.63
NO _x	18,024.90

The following table presents the results of the emissions analysis conducted for the analysis years of 2014, 2024 and 2034 against the established Motor Vehicle Emissions Budget (MVEB) level:

Table 10. Results of the MVEB Test for Annual PM_{2.5}

	Analysis Year		
	<u>2014</u>	<u>2024</u>	<u>2034</u>
<u>Direct Particulate Matter 2.5:</u>			
MVEB	283.63	283.63	283.63
Projected Emissions	207.84	178.53	199.35
<u>Oxides of Nitrogen (NO_x):</u>			
MVEB	18,024.9	18,024.9	18,024.9
Projected Emissions	12,242.4	6,541.96	5,814.35
	(emissions in tons per year)		

Note: The above table represents the sum of emissions for the entire PM_{2.5} Nonattainment Area including Anderson, Blount, Knox, Loudon and a portion of Roane County. Appendix C contains a summary of the emissions analysis results for each individual county.

4.2.1 Summary of Annual PM_{2.5} Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2009 – 2034 KRMP and the FY 2011 – 2014 TIP demonstrate conformity for the Annual Particulate Matter 2.5 Standard using the necessary emissions test. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by SAFETEA-LU) has also been demonstrated.

4.3 Statement of Conformity – Daily PM2.5 Standard

As noted previously in this report, the Daily PM2.5 Standard (also known as the 2006 PM2.5 Standard) and the designation of the Knoxville Region as nonattainment only recently became effective on December 14, 2009. The Conformity Rule requires that newly designated areas must demonstrate transportation conformity within one year of the effective date of designation (40 CFR 93.102). Therefore a conformity determination is due by December 14, 2010 and this report satisfies that requirement.

Prior to a State Implementation Plan or Attainment Demonstration being available that addresses the Daily PM2.5 Standard an area must use budgets for the Annual PM2.5 Standard if available to demonstrate conformity for the Daily PM2.5 Standard as per 40 CFR 93.109. This case applies to the Knoxville Region since an MVEB was found adequate for the Annual PM2.5 Standard as noted in Section 4.2 above. In addition, the geographic area covered by the Daily and Annual PM2.5 Standards is identical.

The following table (Table 11) presents the results of the emissions analysis conducted for the analysis years of 2014, 2024 and 2034 against the established Annual PM2.5 Standard Motor Vehicle Emissions Budget (MVEB) level:

Table 11. Results of the MVEB Test for Daily PM2.5

	Analysis Year		
	<u>2014</u>	<u>2024</u>	<u>2034</u>
<u>Direct Particulate Matter 2.5:</u>			
MVEB	283.63	283.63	283.63
Projected Emissions	207.84	178.53	199.35
<u>Oxides of Nitrogen (NOx):</u>			
MVEB	18,024.9	18,024.9	18,024.9
Projected Emissions	12,242.4	6,541.96	5,814.35
(emissions in tons per year)			

Note: The above table represents the sum of emissions for the entire PM2.5 Nonattainment Area including Anderson, Blount, Knox, Loudon and a portion of Roane County. Appendix C contains a summary of the emissions analysis results for each individual county.

4.3.1 Summary of Daily PM2.5 Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2009 – 2034 KRMP and the FY 2011 – 2014 TIP demonstrate conformity for the Daily Particulate Matter 2.5 Standard using the necessary emissions test. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by SAFETEA-LU) has also been demonstrated.

Chapter 5: Interagency Consultation

5.0 Introduction

The Transportation Conformity Rule in 40 CFR Part 93.105 requires that Interagency Consultation be a part of conformity determinations. Interagency Consultation allows for formal deliberation of any issues that arise as part of the conformity analysis and allows for input from all stakeholder agencies into the process. Specific consultation procedures are specified in the Tennessee Transportation Conformity Regulation found in 1200-3-34-.01(3) of the Tennessee State Code.

5.1 Participating Agencies

The core list of Interagency Consultation Participants included representatives from the following agencies:

- Knoxville Regional TPO
- Knox County Department of Air Quality Management
- Tennessee Department of Transportation
- Tennessee Department of Environment & Conservation
- Federal Highway Administration
- United States Environmental Protection Agency
- Federal Transit Administration
- Lakeway Area Metropolitan TPO
- Great Smoky Mountains National Park Service

A list of participant names is included in Appendix A.

5.2 Overview of Consultation Process and Comments

The conformity analysis process began with a presentation of background information and proposed analysis procedures to the Interagency Consultation Group on February 19, 2010. Several subsequent meetings were held via teleconference in order to discuss modeling parameters, project lists and to receive agreement on necessary assumptions. Appendix B contains the minutes of each of the interagency meetings.

There were no formal comments by the IAC group on the draft conformity determination report other than a few minor wording changes. All other questions and issues that were raised by the IAC were addressed during the regular meetings noted above and documented in Appendix B.

Chapter 6: Mobile Source Emissions Analysis and Applicable Governing Regulations

6.0 Introduction

The Metropolitan Planning Regulations of SAFETEA-LU (23 CFR Part 450, February 14, 2007) and the USEPA Transportation Conformity Rule (40 CFR Parts 51 and 93, August 15, 1997 and amended most recently on March 24, 2010) specify certain minimum requirements that must be addressed in performing a mobile source emissions analysis in order to determine conformity of a Long Range Transportation Plan (LRTP). The following sections in this chapter discuss these requirements and how they were addressed by the KRTPO in making the determination of conformity on the amended 2009 – 2034 KRMP.

6.1 Regulations related to Development of LRTP and Transportation Conformity

The Metropolitan Planning Regulations found in 23 CFR Part 450 specify the content of Long Range Transportation Plans and relevant aspects related to Transportation Conformity.

23 CFR 450.322(a) – The LRTP must have a minimum 20-year planning horizon. The LRTP covers the period of 2009 – 2034 which meets the requirement for a minimum 20-year planning horizon. The LRTP is known as the Knoxville Regional Mobility Plan and was last adopted on May 27, 2009.

23 CFR 450.322(b)(6) – The LRTP must “include design concept and scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of the source of funding, in nonattainment and maintenance areas to permit conformity determinations under the U.S. EPA conformity regulations at 40 CFR part 51. In all areas, all proposed improvements shall be described in sufficient detail to develop cost estimates”. The project list included in the LRMP document and in Appendix H covers the necessary detail and project scopes to develop cost estimates as accurately as possible.

23 CFR 450.322(b)(11) – The LRTP must “include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue...” The KRMP amendments document contains a financial analysis that demonstrates financial constraint.

6.2 Regulations Governing Mobile Source Emissions Analyses

The Transportation Conformity Rule was first promulgated by EPA on November 24, 1993 (58 FR 62188). It has subsequently been amended several times to cover changes such as the implementation of the 1997 8-Hour Ozone and PM_{2.5} National Ambient Air Quality Standards on July 1, 2004. The most recent amendment to the Transportation Conformity Rule was published in the Federal Register on March 24, 2010 (75 FR 14260), which primarily addressed revisions resulting from the implementation of strengthened PM_{2.5} standards in year 2006. Applicable guidelines from the Transportation Conformity Rule and how they have been addressed in this conformity determination are as follows:

40 CFR 93.106(a) – The transportation plan must specifically describe the transportation system envisioned for certain future years, which are called horizon years and are subject to the following restrictions:

- The horizon years may be no more than 10 years apart;
- The first horizon year may not be more than 10 years from the base year used to validate the transportation demand planning model.
- If the attainment year is in the time span of the transportation plan, the attainment year must be a horizon year.
- The last horizon year must be the last year of the transportation plan's forecast period.

The base year for validation of the KRTPO's transportation demand planning model is 2006 and the LRMP's forecast period is from 2009 – 2034. Therefore the analysis years used in developing the conformity analysis are:

For Ozone:

All Counties except Knox – Emission Test of “Less than Baseline Year 2002 Emissions” for NO_x and VOC

Analysis Years –

- 2014 – Year that is no more than 5 years out from Plan adoption year
- 2024 – Year such that there are no more than 10 years between analysis years
- 2034 – Ultimate horizon year of Plan

Knox County – Emission Test against the 1-Hour Ozone Maintenance Plan MVEB for NO_x and VOC.

Analysis Years –

- 2014 – Year with a 1-Hour Ozone Maintenance Plan Budget
- 2024 – Year such that there are no more than 10 years between analysis years
- 2034 – Ultimate horizon year of Plan

For PM2.5 (Annual Standard):

All Counties = Analysis Years of **2014, 2024 and 2034** using Motor Vehicle Emission Budget Test found adequate on April 22, 2010. The MVEB was established using the ‘Single-Run’ approach.

- 2014 – Year within 5 years of conformity determination, Attainment Year for Daily PM2.5 and Year with a 1-Hour Ozone Maintenance Plan Budget
- 2024 – Year such that there are no more than 10 years between analysis years
- 2034 – Last Year of current LRTP

For PM2.5 (Daily Standard):

Same as PM2.5 Annual Standard using the same MVEB as required prior to a Daily PM2.5 State Implementation Plan being established, which is not required until December 2012.

The analysis years were discussed and determined to be appropriate in the Interagency Consultation process as noted earlier.

40 CFR 93.106(a)(2)(i) – The transportation plan shall quantify and document the demographic and employment factors influencing the expected transportation demand.

The summary of county-level estimates of socioeconomic data and growth projections for all study years is included in Appendix E of this document and further detail is available upon request. The travel demand model used the following socioeconomic characteristics in order to determine estimates of travel for each analysis year:

- Total Population
- Household Population
- Number of Households
- Average Persons per Household
- Average Median Household Income
- Workers per Household
- Vehicles per Household
- Students per Household
- School Enrollment (K-12)
- University Student Enrollment
- Total Employment
- Basic Employment
- Industrial Employment
- Retail Trade Employment
- Services Employment

The 2000 Census provided estimates of base year values for the above socioeconomic data. The KRTPO acquired forecasted data for the above variables from Woods & Poole Economics, Inc. since they provided the most comprehensive set of data which was available for each county in the KRTPO's travel demand model coverage area. A land use allocation model known as ULAM was applied for this Plan, which allocated the growth to appropriate Traffic Analysis Zones based on a number of factors such as the amount of vacant and developable land. More information on the ULAM process is provided in Appendix D.

40 CFR 93.106(a)(2)(i) – The highway and transit system shall be described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years.

The transportation system is described in the travel demand model through a GIS-based network of links and nodes with attributes describing the character of roadway. Some of the key attributes that were used to account for the improvement projects that are being proposed include:

- FHWA Functional Classification
- Divided or Un-divided Roadway
- Level of Access Control
- Number of Lanes in each direction
- Lane Width
- Posted Speed Limit
- Area Type (Rural, Suburban, Urban or Major Employment District)

Transit usage is not formally modeled as part of the travel demand model since it currently accounts for a very small percentage of trips (approximately 1% of all work trips), and there is little reason to expect a major shift to transit in the future, however some increased use of transit will likely occur with the increased opportunities being proposed by the LRMP.

40 CFR 93.110 – The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination. The KRTPO documented its assumptions and planning data with the Interagency Consultation Group, which is summarized in the meeting information included in the Appendix B. The demographic and transportation modeling assumptions are documented in Appendix D & E.

40 CFR 93.111 – The conformity determination must be based on the latest emission estimation model available. The EPA has officially released a new emissions factor model known as “MOVES2010” however there is a 2-year grace period prior to it being required for use in preparing a conformity determination, i.e. March 2012. This conformity analysis was conducted using MOBILE6.2 primarily because this was the model used to develop the MVEB for the Annual PM_{2.5} Attainment Demonstration. Development of specific

inputs used for MOBILE6.2 to describe the Knoxville Region is documented in Appendix E.

40 CFR 93.112 – The conformity determination must satisfy consultation requirements in the applicable implementation plan. Chapter 5 and documentation in the appendix relate to the interagency consultation process.

40 CFR 93.118 and 93.119 – Motor vehicle emissions budget and other applicable conformity tests that must be used. Chapter 4 of this report documents the emissions tests that were used to demonstrate conformity. The emissions tests were discussed in the Interagency Consultation process to determine their appropriateness.

40 CFR 93.122 – Procedures for determining transportation-related emissions. The TPO documented its assumptions and methodology for determining future growth in vehicle miles of travel on the regionally significant transportation system with the Interagency Consultation Group. The primary source for projecting future vehicle activity is the travel demand forecasting model, which includes all regionally significant roadways and represents all regionally significant highway projects being proposed for implementation in the LRTP by analysis year. All counties in the nonattainment area are represented in the travel demand model except for the portion of Cocke County within the Great Smoky Mountains National Park. Map 2 below shows the extents of the travel demand forecasting model's coverage area as well as the roadways that are included. Again, it should be noted that regionally significant roadways are included; however greater coverage of lower-order roadways (collectors and locals) is also provided in the core TPO planning area of Knox and Blount counties as shown in the yellow-shaded area.



Figure 2. TRAVEL DEMAND MODEL COVERAGE AREA

An off-model analysis was performed for Cocke County in which future growth of vehicle miles of travel was estimated using a growth trend that was based on growth of historical observed traffic counts through 2008. Since there were only three roadways that were included in the analysis for Cocke County, and none are proposed for improvement during the life of the LRTP, the off-model analysis used a very simplified approach that is documented in a previous conformity determination report.

Other than Cocke County, there were other off-model procedures that were performed in order to account for the increase in VMT and change of emissions for the transportation system not included in the model, which is primarily the local road system outside of Knox County. It was assumed that the local VMT percentage (as a proportion of the rest of the county's VMT) would remain constant.

40 CFR 93.126 and 93.127 – Projects exempt from regional emissions analysis. The highway project list included in the Appendix H of this document describes which projects were determined to be exempt from air quality analysis. These projects were deliberated through the Interagency Consultation process to ensure that there was full agreement on the exempt status for projects.

Examples of exempt projects include:

- Bridge Replacement Project – A project that only entails rehabilitating or replacing the existing bridge in-kind without any additional laneage being constructed.
- Pedestrian Improvement Project
- Interchange Reconfiguration Project
- Intersection Project – This could include any type of project that involves only a single intersection such as adding turn lanes (channelization) or a traffic signal.
- Street Lighting
- Pavement Resurfacing
- Reconstruction of a 2-lane roadway which is only improving the width and geometrics of the roadway and perhaps some additional turn lanes.

Chapter 7: Conclusion and Summary of Comments

7.0 Conclusion

The analysis included in this report has demonstrated that the 2009 – 2034 Knoxville Regional Long Range Mobility Plan and accompanying FY 2011 – 2014 Transportation Improvement Programs for the entire Knoxville Nonattainment Area are in conformity with air quality regulations found in the Clean Air Act Amendments of 1990 and SAFETEA-LU.

Although Vehicle Miles of Travel are projected to increase steadily in the future, the corresponding emissions rates from vehicles are expected to decrease even more significantly according to the modeling performed by the KRTPO. The primary reason that emission rates are projected to decline so much is due to several regulations affecting tailpipe emission standards and fuel sulfur levels (both gasoline and diesel) which will be implemented nationwide by the year 2010. The MOBILE6 model incorporates these regulations into its calculations and determines their impacts, which increase over time as the vehicle fleet turns over and includes more of the vehicles affected by the new regulations.

Currently there are no transportation control measures (TCMs) in the Tennessee SIP for the Knoxville 8-hour ozone and PM_{2.5} nonattainment areas. However, should TCMs be introduced in the area, nothing in the KRMP nor the Transportation Improvement Program will prohibit the timely implementation of any that are approved in the SIP for the Knoxville area.

7.1 Public Involvement Summary

The Knoxville Regional TPO and Lakeway Area MTPO conducted a 30-day comment period between August 22, 2010 and September 22, 2010 to allow for public review and comment on the Air Quality Conformity Determination. Two formal public hearings were held as part of regularly scheduled Technical Committee and Executive Board meetings that were on September 14, 2010 and September 22, 2010 respectively. Separate public hearings were also held the evenings of September 8, 2010 (in Morristown) and September 9, 2010 (in downtown Knoxville, White Pine and Jefferson City).

Copies of the Conformity Determination Report were provided to area libraries and made available on the KRTPO web site. Public notice and advertisements for the hearings and locations to view the draft conformity determination report were placed in newspapers including The Knoxville News Sentinel, Maryville Daily Times, The Oak Ridger, The Clinton Courier, Loudon County News Herald, Enlightener (paper targeted toward minority population) and Mundo Hispano (paper targeted toward Hispanic population).

7.2 Public Comment and Response

No comments from the public were received.

References

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3. Davis, W. T., Miller, T. L., Reed, G. D., Tang, A. M. Y., Doraiswamy, P., and Sanhueza, P., *Effects of Growth in VMT and New Mobile Source Emission Standards on NOx and VOC Emissions in Tennessee*, Dept. of Civil and Environmental Engineering in the University of Tennessee, Mar. 14, 2002.
4. Yun, Jeongran, Draft Report *On-Road Mobile Source Emissions in Tennessee for 2002 an Inventory and Analysis*, Dept. of Civil and Environmental Engineering in the University of Tennessee, July 2004.
5. MOBILE6 website, <http://www.epa.gov/otaq/m6.htm>
6. *Guidance for Creating Annual On-Road Mobile Source Emission Inventories for PM2.5 Nonattainment Areas for Use in SIPs and Conformity*, U.S. EPA Office of Transportation and Air Quality, August 2005.

Glossary of Terms

1-Hour Ozone Standard – A national ambient air quality standard set for ozone based on the peak 1-hour concentration of ozone measured at a monitoring site. The maximum level of ozone allowed under the standard is 124 parts per billion of ozone. The EPA implemented a revised 8-Hour Ozone Standard effective on June 15, 2004, with the 1-Hour Standard being replaced by the 8-Hour Standard one year later on June 15, 2005.

8-Hour Ozone Standard – Similar to 1-Hour Standard, but changes measurement to a maximum level of 84 parts per billion over an 8-hour average timeframe.

Arterial Roadway – A major roadway facility with the primary function of traffic movement and connects activity centers in the region.

CAA – The U.S. Clean Air Act, referring to the Air Pollution Control Act of 1955, as amended.

Collector Roadway – A minor roadway facility primarily serving to provide access to and from local streets and adjacent land use.

Conformity – An analysis which demonstrates that a transportation plan, program, or project conforms with the State Implementation Plan purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

EPA – United States Environmental Protection Agency.

Exempt Project – Projects that are determined to be exempt from the requirement to determine conformity such as safety, maintenance, certain transit and other projects as determined through Interagency Consultation. These projects may proceed toward implementation even in absence of a conforming transportation plan and TIP.

Financial Constraint – The requirement that the proposed projects in the transportation plans for an area must not have costs which exceed the reasonably expected revenues.

FHWA – Federal Highway Administration.

FTA – Federal Transit Administration.

Freeway – A divided highway with two or more lanes for the exclusive use of traffic in each direction, and with full control of access and egress.

HPMS – Highway Performance Monitoring System. Summary information obtained from a sample of the arterial and collector functional systems to assess highway condition, performance, air quality trends, and future investment requirements.

Interagency Consultation – The formal process used to involve stakeholder agencies into the conformity determination development.

Local Roadway – A road, usually with low traffic volume, designed solely to serve adjacent development rather than through traffic.

LRTP/LRMP – Long Range Transportation Plan. Requirement for the metropolitan transportation planning process under SAFETEA-LU, must have a minimum of 20-year horizon and be updated every four years in metro areas with greater than 200,000 population.

Maintenance Area – A classification of an area which was in nonattainment of an air quality standard at one point in time and is required to demonstrate the ability to maintain the standard.

MOBILE6 – An emissions rate model approved by EPA for estimating on-road vehicle emission factors. Most current version is MOBILE6.2.

MVEB – Motor Vehicle Emissions Budget. Established by the SIP, it sets out the maximum levels of emissions from on-road mobile sources for an area.

NAAQS – National Ambient Air Quality Standards

Nonattainment Area – An area designated by the U.S. Environmental Protection Agency as not being in attainment of the national standard for a specified pollutant.

NO_x – Oxides of Nitrogen, an emission resulting from the process of fuel combustion.

Ozone – A secondary pollutant formed by the combination of VOCs and NO_x in the presence of sunlight.

PM_{2.5} - PM_{2.5} particles are air pollutants with a diameter of 2.5 micrometers or less, small enough to invade even the smallest airways. These particles generally come from activities that burn fossil fuels, such as traffic, smelting, and metal processing.

Ramps – Connections to and from freeway facilities to the arterial and collector roadway system.

Regionally Significant Project – A project which is on a facility which serves a regional transportation need and would normally be included in the modeling of an area's transportation network. These projects must be accounted for specifically in the regional air quality analysis.

SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. The federal transportation legislation governing the use of federal funds for transportation investments.

SIP – State Implementation Plan. Mandated by the Clean Air Act, SIPs contain details to monitor, control, maintain, and enforce compliance with National Ambient Air Quality Standards.

TAZ – Traffic Analysis Zone. A small geographic area for which socioeconomic data is estimated in the KRTPO travel demand model.

TDEC – Tennessee Department of Environment and Conservation

TDOT – Tennessee Department of Transportation

TIP – Transportation Improvement Program. A biennial document listing a three to five year program of projects with some phase of work to be implemented such as design, right-of-way or construction.

Travel Demand Forecasting Model – A computer software tool developed to estimate the travel activity of a region based on the correlation between household-level characteristics and travel behavior.

TPO – Transportation Planning Organization. Each urbanized area in the U.S. with greater than 50,000 population must have a MPO (Metropolitan Planning Organization) in order to coordinate transportation planning. In the Knoxville urbanized area the name TPO was chosen to better represent the activities that are performed.

VMT – Vehicle Miles of Travel. Is calculated from the average daily traffic volume multiplied by the length of roadway.

VOC – Volatile Organic Compounds. VOCs are emitted in the storage and use of fuel, solvents, and many industrial and consumer chemicals, as well as from vegetation.

Appendices

Appendix A: Interagency Consultation Participants

Knoxville-Area Primary Interagency Consultation Participants

AGENCY	REPRESENTATIVE
Knoxville Regional TPO 400 Main Street Suite 403 Knoxville, TN 37902 (865) 215-2500 FAX 215-2068	Jeff Welch, TPO Director
	Mike Conger, Transportation Engineer
	Katie Habgood, Transportation Planner
Knox County Dept. of Air Quality Mgmt. 140 Dameron Avenue Knoxville, TN 37917 (865) 215-5900 FAX 215-5902	Lynne Liddington, Director
	Steve McDaniel, Engineer
Tennessee Dept. of Transportation 505 Deaderick Street Nashville, TN 37243 (615) 741-2848 FAX 532-8451	Bob Rock, Transportation Manager III
	Angie Midgett, Transportation Specialist
	Alan Jones, Air Quality Policy Supervisor
	Mark McAdoo, Env. Policy Analyst
TDEC Air Pollution Control Division 401 Church Street, 9th floor L&C Annex Nashville, TN 37243-1531 (615) 532-0554 FAX 532-0614	Quincy Styke, Deputy Director
	Vicki Lowe
	Marc Corrigan, Environmental Specialist
Federal Highway Administration, Tenn. Division 640 Grassmere Park Nashville, TN 37211 (615) 781-5767 FAX 781-5773	Tameka Macon, Community Planner
FHWA, Southern Resource Center 61 Forsyth Street Atlanta, GA 30303 (404) 562-3570 FAX 562-3700	Michael Roberts, Air Quality Specialist
U.S. Environmental Protection Agency, Region 4 61 Forsyth Street Atlanta, GA 30303 (404) 562-9077 FAX 562-9019	Kelly Sheckler, Environmental Planner
	Dianna Smith, Environmental Scientist

Knoxville-Area Primary Interagency Consultation Participants (continued)	
Federal Transit Administration, Atlanta 61 Forsyth Street Atlanta, GA 30303 (404) 562-3500 FAX 562-3505	Abigail Rivera, Community Planner
Lakeway MTPO 100 W. 1st North Street Morristown, TN 37814 (423)581-0100 FAX 585-4679	Rich DesGrosseillers, MTPO Director
GSMNP Resource Management & Science Division 1314 Cherokee Orchard Road Gatlinburg, TN 37738 (865)436-1708 FAX 430-4753	Jim Renfro, Air Quality Branch Chief
	Teresa Cantrell, Transportation Planner

Appendix B: Interagency Consultation Meeting Information

B1: Meeting 1 – Meeting Minutes:

Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 2/19/10

Call Participants:

Mike Conger, TPO
Bob Rock, TDOT
Jerry Yuknavage, TDOT
Alan Jones, TDOT
Angie Midgett, TDOT
Marc Corrigan, TDEC
Dianna Smith, EPA
Kelly Sheckler, EPA
Jane Spann, EPA
Tameka Macon, FHWA TN Division
Steve McDaniel, Knox County Air Quality Management
Jim Renfro, National Park Service

Discussion Items:

1.) Discussion of Conformity Determination for Alcoa Highway Bypass TIP Amendments and I-75 Rockfall Mitigation Project

Mike Conger provided background on the proposed action which is to amend the TPO's FY2008 – 2011 with three total projects.

The first two amendments involve a proposed roadway known as the Alcoa Highway Bypass in Blount County. This is a non-exempt project and therefore a short conformity determination report was prepared that demonstrates the ability to rely on a previous regional emissions analysis to determine conformity. Kelly Sheckler asked for more clarification regarding these projects due to some confusion about termini and how many projects were involved. Mike responded that this was in the current TIP as one single project, but that it was now being broken out into two segments to account for the appropriate design description of the proposed laneage. Mike noted that the length of the original project was incorrect and that in fact the termini were the same for the combination of the two projects being split out and that of the original project. Mike further clarified that this action was to simply change the TIP to match the exact descriptions in the most recent Long Range Transportation Plan. There was agreement from the IAC partners that the short conformity report was acceptable for demonstrating conformity for the two Alcoa Highway Bypass amendments.

The third amendment is for a project involving mitigation activities for a potential rockfall area along I-75 in Knox County. Mike stated that it was the TPO staff's opinion that this project should be exempt from the need to determine conformity since it qualifies as an exempt project under 40 CFR 93.126 as a safety project. The IAC members were all in agreement with this opinion.

2.) Discussion of Addressing Conformity for the Daily PM_{2.5} Standard

Mike stated that the TPO needs to prepare a conformity determination for the Daily PM_{2.5} Standard by December 14, 2010 and the purpose of today's call was to start initial discussions to lay the groundwork for achieving that deadline.

The first item that needs to be determined is what type of interim emissions test will need to be used since there are different options and scenarios as presented in some slides from a webinar presented by EPA back in January that Mike provided to the IAC group. Mike stated that based on his interpretation the default interim emissions test would be a budget test against emission budgets for the 1997 Annual PM_{2.5} Standard if they were available. Mike asked EPA to give an update on the adequacy determination process for the Annual PM_{2.5} Standard emissions budgets for the Knoxville Region. Kelly Sheckler responded that she expects the Regional Administrator to sign off on the adequacy finding within a week or so and that the budgets would then be effective 15-days from when they are published in the Federal Register. They could be published in the Federal Register within a couple of weeks so it appears that they will be available for use in this conformity determination. Mike asked if he could receive an electronic copy of the SIP submittal for the 1997 Annual PM_{2.5} Standard so that he could refresh his memory on the development of the motor vehicle emissions budgets and Marc Corrigan replied that he could send it to him.

Marc Corrigan asked EPA for clarification on how the annual budgets were to be used in the interim emissions test for the Daily PM_{2.5} Standard in terms of if they would need to be calculated in a daily amount of emissions, i.e. in tons per day rather than tons per year. He stated that he had seen an example from Fresno which appeared to just divide the annual emissions by 365 in order to calculate a daily total. Dianna Smith responded that she thought that was the correct way to do it, but that EPA would follow-up to make sure what the appropriate format was.

EPA verified that there would be a 24-month clock for determining conformity that would begin once the Annual PM_{2.5} emissions budget was effective, however the conformity determination that will be conducted for the Daily PM_{2.5} standard should in essence be able to satisfy the conformity requirements for both the Daily and Annual standards at the same time.

Mike stated that a detailed discussion of the planning assumptions would follow at a later conference call although he wanted to get an idea today of what the likely required analysis years might be for the conformity analysis. He stated that his interpretation of the regulations was for an analysis year no more than 5 years in the future plus an analysis year for the last year of the Long Range Plan and then analysis years in between such that there are no more than 10 years between any of them. He noted that it would

appear then that the analysis years used in the most recent conformity analysis would still be appropriate which are 2014, 2024 and 2034. The budget year for the Annual Standard is 2009 and Mike asked the group if that year would need to be analyzed since it is in the past. There was agreement that 2009 would not be a required analysis year. A final determination of required analysis years will be made at a future IAC meeting.

Mike asked if there were any other questions or comments and Kelly Sheckler asked about the planning assumption regarding the vehicle age distribution. She asked if we were still planning to use inputs that were developed for the 2002 mobile source emissions inventory and if so then they were getting fairly out of date at this point in time since they were based on year 2000 vehicle registration data. Mike responded that we are still using that input as it is the latest data available, but we are aware of this issue and that there are plans to develop updated information that will be formatted for input into the MOVES model. The new information will likely not be available for the upcoming analyses and will not be in a proper format for MOBILE6.2. Kelly replied that it would perhaps be beneficial then to gather some information on vehicle purchase trends over the last decade in the Knoxville Region to see if there has been a substantial change in typical new vehicle purchases in case we get a challenge on this input. Mike replied that he can check into this through data potentially available from the Bureau of Transportation Statistics or other sources.

3.) Discussion of Ozone Re-designation Request and Maintenance Plan

Mike stated that based on the Knoxville Region having an ozone design value for the years 2007 – 2009 that is now below the 1997 8-hour Ozone Standard a request will be made from TDEC to EPA for a re-designation to attainment with a maintenance plan. He noted that TDEC had supplied a timeline showing that they expected to have a request prepared and approved by the State Air Board by July 15, 2010. Marc Corrigan replied that TDEC had heard from the TPO and others that this was a priority and that they were committed to trying to achieve this schedule.

Marc discussed the initial planning assumptions that would be used to develop the onroad mobile emissions inventory portion of the redesignation request. He stated that the proposed base year was 2007 and that the budget year would be 2024; however this led to a discussion regarding how far out in the future that the final budget year had to be. Jane Spann stated that she thought it would need to be at least 20 years out. Marc stated that we could use the year 2034 instead then since it was also a year that we had a travel demand model run available for. Marc noted that interim years that are 3 years apart would be chosen and interpolated values would be used if acceptable. There was agreement that the 3-year interval and interpolated values would be acceptable. Marc stated that he would revise the planning assumptions document and resubmit that to the IAC for future discussion. *(Note: attached is an updated planning assumptions document with other notes included by Marc Corrigan on this discussion)*

There was some discussion regarding what emissions test would be required for the analysis years prior to the budget year of 2034 if that was the one chosen. EPA representatives discussed that some different options were available, such as comparing against a base year, which is currently year 2002 but it may be changed to either 2005 or

2008. Another option might be to develop an interim budget year or use a “qualitative” test. It was agreed that this could be further discussed at a future meeting and in the meantime the TPO would seek further clarification on the available options through off-line discussions with EPA.

Marc asked if there were other comments on the proposed planning assumptions other than the analysis years. Mike stated that again the issue regarding the age distribution that was raised earlier by EPA would be looked into, but that he was in agreement with all the others. Steve McDaniel stated that he was in agreement and asked if the others on the call were as well, EPA and FHWA both indicated agreement.

Mike asked about what the schedule might be for obtaining motor vehicle emissions budgets since he was hoping to combine several conformity triggers into one single conformity determination this year. He stated that the item on the critical path was the major update to the TPO's Transportation Improvement Program, which was scheduled to be adopted by September or October of this year. The consensus of the group was that it would be extremely difficult to get budgets approved in time for this although it was not out of the question. There was a question about the possibility of extending the TIP approval deadline and Angie Midgett stated that there was a meeting scheduled for next week within TDOT staff to discuss whether the deadline could be pushed back any. Kelly Sheckler stated that if it could be moved back to November then it would increase the likelihood of the budgets being available. Mike noted that based on the conformity trigger for the upcoming new Ozone Standard likely being by August 2012 that the TPO will need to run conformity again such that it may not be critical to try and get budgets in time for this TIP conformity determination. Mike stated that he would put together his best guess of the upcoming conformity triggers and timelines that the TPO would be facing over the next few years for our next discussion. Alan Jones asked Mike to include information on the schedule as to which conformity determinations would require the use of MOVES versus MOBILE6.2.

4.) Next Meeting Date Discussion

It was determined that we should schedule a set time once a month to hold calls especially during the development of the Ozone Redesignation Request process. It was agreed to choose the second Monday of each month. The next meeting was scheduled for **Monday, March 8, 2010 at 2:00 PM ET (1:00 PM CT).**

Action Items:

- Marc Corrigan to send Mike Conger an electronic version of the motor vehicle emissions inventory used for the 1997 Annual PM2.5 SIP.
- EPA to determine appropriate interim emissions test format for budget test against annual emissions for the Daily PM2.5 Standard, i.e. should it be in tons/day or tons/year format?
- Mike Conger to investigate vehicle age trends since year 2000.

- Marc Corrigan to revise Onroad Mobile Planning Assumptions for the Ozone Redesignation Request (complete and sent with these minutes)
- Mike Conger to prepare timeline for upcoming conformity triggers.

B2: Meeting 2 – Meeting Minutes:

Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 3/8/10

Call Participants:

Mike Conger, TPO
Angie Midgett, TDOT
Mark McAdoo, TDOT
Marc Corrigan, TDEC
Dianna Smith, EPA
Lynorae Benjamin, EPA
Steve McDaniel, Knox County Air Quality Management
Jim Renfro, National Park Service

Discussion Items:

1.) Discussion of Upcoming Conformity Trigger Timeline

Mike Conger discussed the upcoming conformity triggers that are on the horizon for the Knoxville area. He noted that a document was sent to the IAC members that showed deadlines for the various triggers and which model would be used to perform the emissions analysis with – either MOBILE6.2 or MOVES. He stated that the ideal situation would be the scenario shown on the first page in which one single conformity determination could be prepared that addresses the TIP update, the Daily PM2.5 Standard, the Annual PM2.5 Standard and the old 8-Hour Ozone Standard. The more likely scenario however was the one shown on the second page in which the Maintenance Plan Motor Vehicle Emission Budgets would not be available in time to stay on the necessary schedule for completing the TIP update in October 2010. Angie Midgett noted that TDOT looked into possibly extending the TIP deadline, but that most likely they would need to stick with the October deadline based on issues that would arise with the timeframes of the Statewide TIP.

Steve McDaniel stated that he thought the Redesignation Request would be approved in June or July and if so then should not budgets be available to meet the October deadline. Dianna Smith replied that based on the schedule of the State Air Board approving the request on July 15th then there is usually a 90-day process to get budgets to be found adequate, meaning it would not be until October. Lynorae Benjamin stated that it may be possible for TDEC and EPA to run a parallel public review process, which could potentially shave 30 days off the schedule. Marc Corrigan stated that they could look into that further

as we go along, although that would still probably not buy us enough time. Dianna also noted that the schedule would be highly dependent on whether any public comments were received since if there are then that would add significant time to the process as the comments would have to be formally addressed.

Mike asked if it might be possible for the TPO to conduct an emissions analysis under two scenarios – one in which the budgets were not available and we would use the interim emission tests (less than base year 2002) and the other scenario being to compare against the “unofficial” emissions budgets from the Maintenance Plan while it was working its way through the approval process. Dianna replied that was definitely an option and that other areas had done that same thing such as Charlotte, NC. She stated that essentially both tests can be conducted and then you just finalize whichever one applies at the time you need to get conformity approvals. Marc Corrigan asked if the TPO did the two scenario approach and it wound up that the budgets were not found adequate until after the October TIP deadline then how much of a process would it be to just go back and re-determine conformity for the budgets once the budgets were actually made official. Lynorae responded that the separate conformity finding using the budgets would still have go through the full approval process of the TPO Executive Board and U.S. DOT, but it should be straightforward in terms of already completing the documentation for it and having had the public already review it. It was also noted however that doing two conformity test scenarios for Ozone could potentially be confusing for the public.

2.) Discussion of Conformity Process for the Daily PM2.5 Standard

Mike noted that he prepared a timeline for preparing a conformity determination for the Daily PM2.5 Standard, which will also simultaneously address conformity for the update to the Transportation Improvement Program. He reviewed the timeline and asked what the required public comment period would be - either 14 days or 30 days. Dianna responded that it should be 30 days based on this being a new Plan rather than just an amendment.

Mike clarified that we will not know until we receive all of the projects from our jurisdictions and TDOT in May whether or not the TIP update itself will necessitate a regional emissions analysis.

Mike stated that he would prepare documentation on planning assumptions for the next meeting, but he wanted to get some initial input on a couple of items today. The first item is that the TPO is working on an update to its travel demand model, which is in the final stages but not complete as yet in terms of not having future year networks developed or going through TDOT's official model approval process. He noted that the intent of the model update is to have it completed and ready for use when the TPO begins preparation of its next major Long Range Transportation Plan update. Lynorae responded that the TPO should just document the fact that it is not yet complete enough to be available for this current conformity analysis. Mike stated that the second item deals with updated population and employment projections for the region, which were recently purchased from Woods & Poole Economics, inc. He noted that there were some significant declines in employment projected in the future likely based on impacts from the current economic recession. Lynorae responded that the TPO should use the latest information available.

Marc asked if the TPO had received any follow-up from EPA on the question regarding the format of the interim emission test for the Daily PM_{2.5} Standard that was discussed on the previous IAC call. Mike replied that he had not heard anything and Dianna stated that she thought Kelly Sheckler was looking into it and that EPA would notify the TPO of its findings as soon as they knew. Mike noted that this was one of the action items included on last month's meeting minutes and that he would continue putting together an Action Item list with each set of minutes.

3.) Discussion of Ozone Re-designation Request and Maintenance Plan

Marc noted that there was some confusion on the last conference call regarding what the analysis years should be and that his original proposal turned out to be correct after he had further discussions with EPA Region 4 staff subsequent to the conference call. During the conference call it was thought that the Maintenance Plan's furthest out-year should be at least 20 years in the future, and so the year 2034 was picked. The correct method; however, is to pick a year that is about 12 years in the future since the Maintenance Plan, while being a 20-year plan, actually consists of two 10-year periods. Marc stated that he would send out another set of planning assumptions reflecting the corrected analysis years which are: 2007 (base year), 2010, 2013, 2016, 2020 and 2024. Marc stated that all other work in terms of developing inventories was currently underway and progressing on schedule.

4.) Next Meeting Date Discussion

The next meeting was scheduled for **Monday, April 12th, 2010 at 2:00 PM ET (1:00 PM CT).**

Action Items:

- EPA to determine appropriate interim emissions test format for budget test against annual emissions for the Daily PM_{2.5} Standard, i.e. should it be in tons/day or tons/year format?
- Mike Conger to investigate vehicle age trends since year 2000.
- Marc Corrigan to revise Onroad Mobile Planning Assumptions for the Ozone Redesignation Request (complete and sent with these minutes)
- Mike Conger to prepare planning assumption documentation for review prior to next IAC call.

B3: Meeting 3 - Meeting Minutes:**Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 4/19/10****Call Participants:**

Mike Conger, TPO
Angie Midgett, TDOT
Mark McAdoo, TDOT
Bob Rock, TDOT
Jerry Yuknavage, TDOT
Marc Corrigan, TDEC
Dianna Smith, EPA
Kelly Sheckler, EPA
Jim Renfro, National Park Service

Discussion Items:**1.) Discussion of FY 2008 – 2011 TIP Amendment #2008-154 (Morganton Road)**

Mike Conger discussed the proposed TIP amendment which resulted from a federal funding earmark to improve 2.3 miles of Morganton Road in Blount County. He explained that this project was included in the current LRTP and that it was determined to be exempt from the need to determine conformity based on it being only a reconstruction of a 2-lane roadway to modern lane and shoulder width standards and no additional travel lanes would be built. There was agreement from the IAC that this project was exempt.

2.) Discussion of Planning Assumptions for the Daily PM_{2.5} Standard

Mike discussed the planning assumptions on which the current conformity analysis and determination that was required for the Daily PM_{2.5} standard would be based. Mike noted that other conformity triggers would also likely be covered by this determination as had been discussed in the past and that were documented in the background information supplied to the IAC.

Mike discussed the updated socioeconomic data that would be used for this determination that reflected the recent economic recession and is projecting a significant reduction of the future employment in the region. Marc Corrigan asked if this socioeconomic data would be used to determine future vehicle miles of travel. Mike responded that this data would affect VMT since it is a primary input to the travel demand model; however the model is more sensitive to changes in population than employment such that overall VMT would most likely not be significantly impacted. Mike stated that once the forecasts from the model were available then they would be compared against the previous forecasts from the most recent CDR to check the magnitude of the difference.

Mike stated that MOBILE6.2 would be the emissions model used for this analysis based on the fact that the Annual PM2.5 budgets were developed with this model and that MOVES2010 was not yet required for use. Angie Midgett asked when it was that MOVES would be required. Dianna Smith responded that it was not required for conformity until 2 years after the official release date in the Federal Register, which was March 2, 2010.

Mike discussed the proposed emissions tests that would be used for the PM2.5 standards and for Ozone. He noted that the emissions tests for Ozone would only be necessary if there were changes to non-exempt projects along with the FY 2011 – 2014 TIP Update. The budgets for the Annual PM2.5 Standard have now been officially found adequate and are stated in terms of tons per year for Direct PM2.5 emissions and for Oxides of Nitrogen in the year 2009. Mike noted that the TPO was still looking for clarification regarding how the Annual PM2.5 budgets were supposed to be applied as an interim emissions test for the Daily PM2.5 Standard since the two standards have different time scales. Kelly Sheckler responded that she had sent this question to the EPA Headquarters previously, but has not yet gotten a response back. Kelly stated that she would follow-up again with headquarters to get clarification.

Mike discussed the proposed inputs that would be used for the MOBILE6.2 model and noted that most were simply carryovers from the most recent conformity determination. Mike noted that the proposed analysis years were 2014, 2024 and 2034 which were also the same as the previous CDR. He stated that he wanted to make sure that 2014 was an appropriate first horizon year based on it being the attainment year for the Daily PM2.5 Standard. Dianna Smith responded that 2014 was the correct analysis year for conformity purposes prior to the SIP being established. Marc Corrigan noted that once SIP planning began for the Daily PM2.5 Standard that the year 2013 might be used as a budget year since it will be the last full year of air quality monitoring data prior to the attainment year. He stated that it will then depend on when the SIP is established versus when the next conformity determination is done as to whether 2013 will be a required analysis year at some point in the future.

Mike discussed the proposed vehicle age distribution input, which is proposed to be the same input that has been used for several years now and was originally developed based on year 2000 data. Mike noted that he reviewed household vehicle ownership survey data that was available from both year 2000 and year 2008 and that there did not appear to be a significant difference in average age, nor was there an increase in older vehicles in the 2008 dataset. Mike stated that the TPO was therefore proposing to continue using the 2000 data until newer data became available. Mike asked Mark McAdoo for an update on TDOT's plans to hire a consultant to compile updated vehicle registration data. Mark responded that there were issues that TDOT was working through in order to obtain the data from the DMV and that they were currently in a holding pattern and that it was uncertain as to when the updated information would become available.

3.) Discussion of Ozone Re-designation Request and Maintenance Plan

Marc Corrigan stated that the development of the ozone redesignation request appeared to be on schedule and that a draft document should be released in the next few

weeks for review by the IAC. He stated that the IAC review period would likely be from around May 15 to June 15 and that a conference call would be held during that period to get feedback from the IAC on the draft. Mike stated that it would make sense to combine that conference call with our next PM2.5 conformity call. The group decided that the afternoon of Wednesday, June 2nd would work the best for everyone.

4.) Next Meeting Date Discussion

The next meeting was scheduled for **Wednesday, June 2nd, 2010 at 3:00 PM ET (2:00 PM CT)**. The main topics for the next conference call would be a discussion of the draft Ozone Redesignation Request and a discussion of the proposed projects for the FY 2011 – 2014 TIPs for both the Knoxville TPO and the Lakeway MTPO.

Action Items:

- EPA to determine appropriate interim emissions test format for budget test against annual emissions for the Daily PM2.5 Standard, i.e. should it be in tons/day or tons/year format?
- Mike Conger to prepare agenda and information on proposed projects for FY 2011 – 2014 TIP for the next conference call.

B4: Meeting 4 – Meeting Minutes:

Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 6/2/10

Call Participants:

Mike Conger, TPO
Katie Habgood, TPO
Angie Midgett, TDOT
Mark McAdoo, TDOT
Bob Rock, TDOT
Jerry Yuknavage, TDOT
Marc Corrigan, TDEC
Travis Blake, TDEC
Dianna Smith, EPA
Steve McDaniel, Knox County Air Quality Management
Tameka Macon, FHWA

Discussion Items:

1.) Discussion of FY 2008 – 2011 TIP Amendments

Mike Conger discussed the TIP amendments that were approved at the May 26th TPO Executive Board meeting. He stated that most items involve adding funds to existing

projects and these were primarily from Knoxville Area Transit's annual allocation of FTA Section 5307 funds. Mike advised the IAC group that there is a 14-day review period until Wednesday, June 18th should anyone have comments on these amendments.

2.) Discussion of Daily PM2.5 Conformity Process

Mike discussed the clarification that was received from Kelly Sheckler through EPA Headquarters regarding the appropriate use of the Annual PM2.5 MVEB as an interim emissions test for the Daily PM2.5 Standard. The proper format of the test is to estimate and compare the emissions on an annual basis, i.e. in tons per year.

Mike stated that a preliminary draft of the FY 2011 – 2014 TIP was submitted to TDOT and was attached to the email sent out to the IAC just prior to today's call. He noted that the TPO staff was still assessing the impacts to non-exempt projects in the current Long Range Transportation Plan in terms of the new timeframes being proposed for projects included in the FY 2011 – 2014 TIP. It appears that there will be non-exempt projects that will need to move into a different horizon year as well as some potential brand new projects that will have to be amended into the LRTP. This means that a regional emissions analysis will also need to be performed for ozone in addition to the analysis already being planned to address the Daily PM2.5 Standard. Mike stated that he will develop a table of project changes for distribution to the IAC in the next week or so.

Mike gave an overview of the current schedule proposed to complete the conformity determination for the TIP update and to address ozone and PM2.5. He stated that the target for completing a draft conformity determination was still around July 1st, which will start a 30-day review period by the IAC. Once the IAC review period was complete and comments have been addressed then the formal public input period can begin, which will be around August 2nd assuming the revisions required are minimal. The public review period will then last 30 days wrapping up around the first week of September. It is then planned to have the TIP and conformity determination heard at the TPO Technical Committee and Executive Board meetings on September 14th and September 22nd respectively. There will then be a 30 day period to allow for approval by U.S. DOT with consultation from EPA by October 22nd.

Angie Midgett asked if the TPO was coordinating the schedule with the Lakeway Area MTPO. Mike responded that he had been in contact with Rich DesGrosseillers from LAMTPO regarding development of the project list although he still needed to follow-up again soon to ensure that we are both on the same page in terms of the timelines we are shooting for.

Steve McDaniel raised an issue regarding potential delays in the modeling effort underway for the SEMAP program, which will be used to develop a SIP for the Daily PM2.5 Standard. He asked what impacts may occur if the schedule to complete the modeling, mainly due to issues with the new MOVES2010 model, were to slip. Mike responded that the SIP development schedule was independent of this conformity analysis since we are using an interim emissions test. Marc Corrigan stated that they would need to keep an eye on the situation and Steve stated he would follow-up with others regarding this issue.

3.) Discussion of Ozone Re-designation Request and Maintenance Plan

Marc Corrigan gave an overview of the draft 8-Hour Ozone Redesignation Request and Maintenance Plan for the Knoxville Region. He stated that the request was based on an attaining 3-year design value for the years 2007 – 2009 and he noted that the document makes the case that there is a direct correlation between a reduction in ozone that has been observed over the past several years and the reduction in ozone-forming emissions. He stated that future projections of emissions that are documented in the report further demonstrate a continued downward trend which should enable the Knoxville region to maintain attainment of the standard. He noted that Table 4-8 and 4-9 on pages 35 and 36 of the document show that onroad emissions of NO_x and VOC are projected to decline by 69% and 50% respectively, between 2007 and 2024. He noted that a motor vehicle emissions budget was provided in Table 4-11, which included an allocation from the available safety margin. Potential contingency measures that could be implemented if the area were to start exceeding the standard were listed on pages 42 and 43.

Mike stated that it appears that 25% of the safety margin was assigned to the MVEB and he asked how that number was determined. Marc responded that how much of the safety margin to allocate to the MVEB was based on various factors and in consultation with the local air program. Marc stated that in the future a SIP revision on the MVEB could be made if necessary.

Mike asked what type of emission budget test would be used for analysis years prior to the year 2024 in future conformity determinations since a single MVEB for 2024 was being proposed. Marc responded that there were various options such as a qualitative analysis or a baseline year test and that ultimately consultation through the IAC process would be used to determine the appropriate test.

Mike asked about the schedule for obtaining an adequacy finding for these budgets for possible use in the current conformity analysis being done. Marc responded that the process was still on schedule for a State Air Board hearing in July and that a parallel public input and EPA/IAC review period was being used in order to expedite the timeframe as much as possible. Marc advised that the TPO should prepare the conformity document under both scenarios of with and without the budgets being available and then ultimately adopt whichever one is applicable at that time.

Mike asked Dianna if there were any updates on the status of EPA finalizing the reclassification of areas under Subpart 2, which could mean a bump up to a Moderate designation for Knoxville and a stricter interim emissions test for ozone. Dianna replied that she would check into it and let the IAC know. Marc stated that this was an issue that we definitely needed to keep a close watch on in terms of how it may impact the timing of the conformity determination and if any other conformity triggers might occur based on when the reclassification became final.

Steve McDaniel asked about a public meeting to be held on the redesignation request. Travis Blake responded that there would be a public hearing at 2:00 PM ET on June 28th at the Knoxville TDEC field office on Middlebrook Pike.

Mike Conger stated his appreciation for the efforts of TDEC and Knox County Air Quality Management to put together the request and for meeting the aggressive time schedules up to this point. Dianna Smith acknowledged those groups for their early coordination which significantly aids the process from EPA's perspective.

4.) Next Meeting Date Discussion

The next meeting was scheduled for **Thursday, June 17th, 2010 at 2:00 PM ET (1:00 PM CT)**. The main topics for the next conference call will be a discussion of the proposed projects for the FY 2011 – 2014 TIPs for both the Knoxville TPO and the Lakeway MTPO and their impacts on the Regional Long Range Transportation Plan project list.

Action Items:

- Dianna Smith to determine latest information and status on the pending reclassification under Subpart 2 for Knoxville.
- Mike Conger to prepare agenda and information on proposed projects for FY 2011 – 2014 TIP for the next conference call.

B5: Meeting 5 – Meeting Minutes:

Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 6/17/10

Call Participants:

Mike Conger, TPO
Angie Midgett, TDOT
Deborah Fleming, TDOT
Bob Rock, TDOT
Marc Corrigan, TDEC
Kelly Sheckler, EPA
Steve McDaniel, Knox County Air Quality Management
Rich DesGroseillers, LAMTPO
Tameka Macon, FHWA

Discussion Items:

1.) Discussion of Ozone Re-designation Request and Maintenance Plan

Mike asked if there were any updates on the Ozone Re-designation Request. Marc Corrigan replied that the request document was continuing to progress through the review process and that TDEC was beginning to address some comments that have already been received by EPA. Marc reminded everyone that there was a public hearing scheduled for June 28th in Knoxville.

Kelly Sheckler stated that as part of the parallel EPA/public review process that an adequacy posting for the motor vehicle emissions budgets has already taken place effective on June 15, 2010. She stated that there is a 30-day public review period on the budget adequacy finding and that if any significant comments were received then the 30-day review clock will have to be restarted. If no significant comments are received then after the public comment period ends on July 15th then it will take another month or so to finalize the adequacy process and have the budgets officially available for use in conformity which would mean around mid-August.

Marc asked if any significant comments on the SIP itself would trigger the restart of the review period or if the comments had to be specifically on the budgets. Kelly responded that the comment would have to be regarding the budgets or closely related to the budgets in order to trigger the restart.

Mike stated that this schedule for adequacy was faster than he had originally thought it would be and that hopefully this will mean that the budgets will in fact be available for this current conformity analysis. Marc expressed his appreciation for the efforts of Kelly to take the adequacy finding through the process so expeditiously.

Kelly stated that she would keep the group posted via email of the progress and if any significant comments are received.

2.) Discussion of Daily PM_{2.5} Conformity Process

Mike reviewed the project lists for the overall Regional Long Range Transportation Plan and the updated FY 2011-2014 Transportation Improvement Programs for both the Knoxville TPO and the Lakeway MTPO. He noted that the Long Range Plan list has had several changes based on reviewing the timeframes for completion of projects and how phases of work are being reflected in the updated TIPs. He stated that these changes would be incorporated into the travel demand forecasting model for the conformity analysis.

Mike noted that there are some projects on the TIP lists that do not have a Long Range Plan ID number and that these are exempt-type projects such as repaving of roadways. He stated that in the past we have just identified these types of projects as being consistent with the Long Range Plan. He asked if that was an appropriate way to do it or if there was a more preferred way of showing these projects. Tameka Macon replied that other MPOs did this in a similar manner and that some would put down the specific section of the Long Range Plan that the project was consistent with. Mike stated that he would update the lists with that information. Mike stated that there is a 14-day review period until June 29th for the project lists and that if there are any comments or questions to give him a call or email.

Mike reviewed the timeline for the conformity process and noted key dates for review periods. Mike asked which date would be best for him to go over the draft conformity determination report with the IAC group. It was decided that it would be preferable to give the group a couple of weeks to look at the document before discussing it. There was

a consensus on the date of Monday, August 2nd at 10:00 am eastern (9:00 am central). Mike stated that if the need arises prior to that date for another IAC meeting he will notify the group via email.

3.) Next Meeting Date Discussion

The next meeting was scheduled for **Monday, August 2, 2010 at 10:00 AM ET (9:00 AM CT)**. The main topic for the next conference call will be a presentation of the draft conformity determination report and discussion of any preliminary comments.

B6: Meeting 6 – Meeting Minutes:

Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 8/2/10

Call Participants:

Mike Conger, TPO
Mark McAdoo, TDOT
Angie Midgett, TDOT
Marc Corrigan, TDEC
Dianna Smith, EPA
Rich DesGroseillers, LAMTPO
Jim Renfro, GSMNP

Discussion Items:

1.) Discussion of MVEB Adequacy Finding Process for Ozone Re-designation Request and Maintenance Plan

Mike asked for a status update on the process to find the motor vehicle emissions budgets (MVEB) developed for the 1997 8-hour Ozone Standard adequate for conformity purposes. Dianna Smith replied that the adequacy process was moving along and that the necessary documents had been prepared and were in the signature chain to get approval from the Regional Administrator for EPA Region 4. She stated that after the RA signature was obtained then it would be able to go out for publishing in the Federal Register where it would take 7-10 days to get published and would have a 15-day effective date before becoming official.

2.) Discussion of Draft Conformity Determination Report

Mike provided an overview of the highlights of the draft Conformity Determination Report (CDR) that was sent out for review by the IAC. Mike noted that the 30-day review period officially started on Monday, July 19th and would run through Tuesday, August 17th. He stated that the ultimate goal was to adopt the FY 2011-2014 TIP Update, the amendments to the Long Range Transportation Plan and the CDR all on September 22nd.

Mike noted that Chapter 2 of the CDR provides details on the Long Range Plan amendments that were necessary in order to ensure consistency with the projects in the TIP. He stated that a separate, stand-alone document would also be prepared for the Long Range Amendments and sent to the group in the next few days. Among other items that would be addressed in the stand-alone document was the demonstration of financial constraint for the Long Range Plan which is a requirement.

Mike stated the emissions analysis that is documented in Chapter 4 of the CDR includes two options for demonstrating conformity for Ozone – one in which the MVEB from the Re-designation Request is available and one where it is not available. Mike stated that this section would be revised since in all likelihood it now appears that the MVEB will be available for this conformity determination. He noted though that the group needed to determine an appropriate emissions test for the analysis year of 2014 since the MVEB does not include a budget prior to year 2024. He noted that the conformity regulations state that an appropriate test or qualitative analysis should be determined through the IAC process for years without a budget. He suggested that the interim emissions test could be used, which is the 1-hour budget test for Knox County and the less than baseline year 2002 for the other counties in the ozone nonattainment area. There was agreement from the group on this being a reasonable test to use for year 2014.

Mike reviewed the updated conformity timeline with the group. He noted that the public comment period was proposed to begin prior to the deadline for receiving comments from FHWA/FTA on the TIP document itself and that meant that if any significant comments are received then the 30-day public comment period would have to be re-started once the comments are addressed.

3.) Discussion of Alcoa Hwy Project Description

Mike reviewed the issue with the current inconsistency between how a roadway widening project on Alcoa Highway (SR 115/US 129) in Blount County is described in the TIP Update and in the current Long Range Plan. A document was sent to the group last week that explains the issue and included a proposed solution to provide project description consistency. The group on the call generally agreed that the proposed solution seemed to address the issue adequately; however no representative from FHWA was on the call to weigh in. Mike stated that he would follow-up with FHWA since they will have the final determination on approving the NEPA document for the project.

4.) Next Meeting Date Discussion

The next meeting was scheduled for **Thursday, August 12, 2010 at 2:00 PM ET (1:00 PM CT)**. This call is being set-up to facilitate any final questions from the IAC group prior to the 30-day review period ending on August 17th.

B7: Meeting 7 – Meeting Minutes:**Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 8/12/10****Call Participants:**

Mike Conger, TPO
Deborah Fleming, TDOT
Bob Rock, TDOT
Marc Corrigan, TDEC
Tameka Macon, FHWA
Rich DesGrosseilliers, LAMTPO

Discussion Items:**2.) Discussion of Latest Revisions to Draft Conformity Determination Report**

Mike Conger stated that an updated Draft Conformity Determination Report was sent to the group earlier this week which contained the draft adopting resolutions and an emissions test for Ozone that was based on the motor vehicle emissions budget from the Ozone Redesignation Request and Maintenance Plan being found adequate in time for use in this conformity determination. There was some discussion regarding the need for a 2014 analysis year and it was decided to go ahead and leave it in regardless since the analysis had already been performed. Marc Corrigan stated that he would check with EPA on the latest status of the budget adequacy process.

Mike also briefly reviewed the Long Range Plan amendment document that was sent last week to the IAC group. He stated that most of this information was already included in the conformity determination report, but that he wanted to provide a stand-alone document that would go out for public review along with the TIP and conformity determination report. He noted that the main piece of new information in this document that was not included in the CDR was the inclusion of a determination of financial constraint for the amendments to the Long Range Transportation Plan.

Mike reviewed the timeline going forward in which next Tuesday, August 17th is the deadline for receiving IAC comments on the draft CDR. He stated that he planned to respond as quickly as possible to any comments and depending on the magnitude of comments he is hoping to address them all and be prepared to begin the formal 30-day public comment period by the end of that week, i.e. by August 19th or 20th. Tameka asked if Mike would route all the comments and the TPO responses to the entire IAC group. Mike responded that he would do that so that everyone could see what the responses are. There were no other questions or comments at this time.

2.) Next Meeting Date Discussion

There was no meeting date scheduled, rather it was decided that any subsequent meetings would be scheduled on an as needed basis, such as if any significant comments either from the IAC group or from the public are received that need to be discussed.

Appendix C: Emissions Analysis Summary for each County

C1: Ozone Analysis

C1.1. Baseline Year 2002:

Anderson County 2002 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.392	9.956	585,938	0.90	6.43
Rural Principal Arterial	1.769	2.116	128,009	0.25	0.30
Rural Minor Arterial	1.731	2.216	82,336	0.16	0.20
Rural Collector	1.797	1.974	415,364	0.82	0.90
Rural Local	1.797	1.974	116,956	0.23	0.25
Rural Ramps	1.850	4.611	7,718	0.02	0.04
Urban Interstate	0.000	0.000		0.00	0.00
Urban Principal Arterial	1.820	1.968	621,164	1.25	1.35
Urban Minor Arterial	1.883	1.938	248,731	0.52	0.53
Urban Collector	2.038	1.824	67,900	0.15	0.14
Urban Local	3.196	1.827	131,453	0.46	0.26
Urban Ramps	0.000	0.000		0.00	0.00
TOTAL			2,405,569	4.75	10.41

Blount County 2002 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.000	0.000	0	0.00	0.00
Rural Principal Arterial	1.718	2.348	351,198	0.67	0.91
Rural Minor Arterial	1.776	2.151	82,958	0.16	0.20
Rural Collector	1.824	1.938	384,786	0.77	0.82
Rural Local	1.824	1.938	311,300	0.63	0.67
Rural Ramps	0.000	0.000	0	0.00	0.00
Urban Interstate	1.685	2.268	72,499	0.13	0.18
Urban Principal Arterial	1.772	2.162	867,920	1.70	2.07
Urban Minor Arterial	1.866	2.056	295,955	0.61	0.67
Urban Collector	1.963	1.930	264,581	0.57	0.56
Urban Local	3.189	1.922	281,439	0.99	0.60
Urban Ramps	2.226	2.012	14,744	0.04	0.03
TOTAL			2,927,381	6.26	6.71

Jefferson County 2002 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.372	10.528	1,196,190	1.81	13.88
Rural Principal Arterial	0.000	0.000	0	0.00	0.00
Rural Minor Arterial	1.729	2.557	457,546	0.87	1.29
Rural Collector	1.796	2.009	318,803	0.63	0.71
Rural Local	1.796	2.009	116,648	0.23	0.26
Rural Ramps	1.824	4.796	23,168	0.05	0.12
Urban Interstate	1.372	10.528	42,651	0.06	0.49
Urban Principal Arterial	1.817	2.138	109,802	0.22	0.26
Urban Minor Arterial	1.880	2.095	19,613	0.04	0.05
Urban Collector	1.897	1.977	12,809	0.03	0.03
Urban Local	3.186	1.944	28,856	0.10	0.06
Urban Ramps	1.824	4.796	3,112	0.01	0.02
TOTAL			2,329,197	4.05	17.16

Loudon County 2002 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.41	9.449	1,142,305	1.78	11.90
Rural Principal Arterial	1.693	2.880	166,833	0.31	0.53
Rural Minor Arterial	1.720	2.780	180,844	0.34	0.55
Rural Collector	1.813	1.977	322,713	0.64	0.70
Rural Local	1.813	1.977	107,297	0.21	0.23
Rural Ramps	1.873	4.447	26,892	0.06	0.13
Urban Interstate	1.431	8.915	19,783	0.03	0.19
Urban Principal Arterial	1.857	2.025	138,182	0.28	0.31
Urban Minor Arterial	1.903	1.955	25,580	0.05	0.06
Urban Collector	1.868	1.950	17,458	0.04	0.04
Urban Local	3.188	1.954	23,281	0.08	0.05
Urban Ramps	1.900	4.263	954	0.00	0.00
TOTAL			2,172,120	3.83	14.70

Sevier County 2002 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	1.834	1.940	479,029	0.97	1.02
Rural Minor Arterial	1.863	1.931	475,683	0.98	1.01
Rural Collector	1.825	2.002	502,438	1.01	1.11
Rural Local	1.825	2.002	509,290	1.02	1.12
Rural Ramps			0	0.00	0.00
Urban Interstate	1.427	8.979	304,608	0.48	3.01
Urban Principal Arterial	1.894	1.903	573,268	1.20	1.20
Urban Minor Arterial	1.876	1.908	55,063	0.11	0.12
Urban Collector	1.948	1.987	44,390	0.10	0.10
Urban Local	3.184	2.034	83,741	0.29	0.19
Urban Ramps	1.895	4.292	7,490	0.02	0.04
TOTAL			3,034,999	6.18	8.92

C1.2. Analysis Year 2014:

Anderson County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.546	2.741	639,569	0.38	1.93
Rural Principal Arterial	0.704	0.782	145,140	0.11	0.13
Rural Minor Arterial	0.690	0.812	95,888	0.07	0.09
Rural Collector	0.712	0.747	446,303	0.35	0.37
Rural Local	0.712	0.747	120,603	0.09	0.10
Rural Ramps	0.676	1.506	8,209	0.01	0.01
Urban Interstate				0.00	0.00
Urban Principal Arterial	0.721	0.737	669,976	0.53	0.54
Urban Minor Arterial	0.744	0.728	257,380	0.21	0.21
Urban Collector	0.793	0.704	75,795	0.07	0.06
Urban Local	1.184	0.724	143,028	0.19	0.11
Urban Ramps				0.00	0.00
TOTAL			2,601,893	2.02	3.55

Blount County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.686	0.823	380,178	0.29	0.34
Rural Minor Arterial	0.706	0.764	128,832	0.10	0.11
Rural Collector	0.722	0.721	194,615	0.15	0.15
Rural Local	0.722	0.721	285,188	0.23	0.23
Rural Ramps			0	0.00	0.00
Urban Interstate	0.675	0.849	155,304	0.12	0.15
Urban Principal Arterial	0.708	0.783	1,123,630	0.88	0.97
Urban Minor Arterial	0.740	0.755	523,383	0.43	0.44
Urban Collector	0.763	0.736	438,584	0.37	0.36
Urban Local	1.178	0.754	629,000	0.82	0.52
Urban Ramps	0.82	0.771	17,073	0.02	0.01
TOTAL			3,875,786	3.39	3.28

Jefferson County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.542	2.806	1,467,338	0.88	4.54
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.693	0.834	419,507	0.32	0.39
Rural Collector	0.711	0.753	361,278	0.28	0.30
Rural Local	0.711	0.753	149,286	0.12	0.12
Rural Ramps	0.672	1.531	8,369	0.01	0.01
Urban Interstate	0.548	2.704	50,180	0.03	0.15
Urban Principal Arterial	0.713	0.798	189,558	0.15	0.17
Urban Minor Arterial	0.737	0.781	72,260	0.06	0.06
Urban Collector	0.745	0.741	51,293	0.04	0.04
Urban Local	1.179	0.752	51,021	0.07	0.04
Urban Ramps	0.679	1.492	3,518	0.00	0.01
TOTAL			2,823,608	1.95	5.83

Knox County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.574	2.302	802,453	0.51	2.04
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.714	0.806	225,410	0.18	0.20
Rural Collector	0.726	0.731	314,946	0.25	0.25
Rural Local	0.726	0.731	314,671	0.25	0.25
Rural Ramps	0.707	1.340	5,098	0.00	0.01
Urban Interstate	0.621	1.606	5,397,548	3.69	9.56
Urban Principal Arterial	0.723	0.772	3,163,318	2.52	2.69
Urban Minor Arterial	0.749	0.752	2,032,289	1.68	1.68
Urban Collector	0.763	0.735	1,052,347	0.89	0.85
Urban Local	1.179	0.756	3,382,171	4.40	2.82
Urban Ramps	0.755	1.100	271,297	0.23	0.33
TOTAL			16,961,550	14.59	20.68

Loudon County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.554	2.600	1,346,677	0.82	3.86
Rural Principal Arterial	0.683	0.864	274,610	0.21	0.26
Rural Minor Arterial	0.696	0.829	193,543	0.15	0.18
Rural Collector	0.719	0.739	324,013	0.26	0.26
Rural Local	0.719	0.739	102,820	0.08	0.08
Rural Ramps	0.685	1.455	14,150	0.01	0.02
Urban Interstate	0.561	2.504	95,397	0.06	0.26
Urban Principal Arterial	0.705	0.940	223,419	0.17	0.23
Urban Minor Arterial	0.720	0.902	42,619	0.03	0.04
Urban Collector	0.734	0.737	53,409	0.04	0.04
Urban Local	1.177	0.760	62,052	0.08	0.05
Urban Ramps	0.694	1.415	4,508	0.00	0.01
TOTAL			2,737,216	1.92	5.31

Sevier County 2014 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.724	0.749	265,928	0.21	0.22
Rural Minor Arterial	0.736	0.742	554,365	0.45	0.45
Rural Collector	0.728	0.717	464,256	0.37	0.37
Rural Local	0.728	0.717	614,686	0.49	0.49
Rural Ramps			0	0.00	0.00
Urban Interstate	0.562	2.451	354,597	0.22	0.96
Urban Principal Arterial	0.743	0.739	893,958	0.73	0.73
Urban Minor Arterial	0.734	0.741	192,925	0.16	0.16
Urban Collector	0.771	0.752	206,330	0.18	0.17
Urban Local	1.172	0.787	307,554	0.40	0.27
Urban Ramps	0.694	1.409	7,964	0.01	0.01
TOTAL			3,862,562	3.21	3.82

C1.3. Analysis Year 2024:

Anderson County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.317	0.952	746,262	0.26	0.78
Rural Principal Arterial	0.401	0.422	153,433	0.07	0.07
Rural Minor Arterial	0.393	0.433	107,253	0.05	0.05
Rural Collector	0.403	0.416	502,827	0.22	0.23
Rural Local	0.403	0.416	137,167	0.06	0.06
Rural Ramps	0.401	0.607	9,287	0.00	0.01
Urban Interstate				0.00	0.00
Urban Principal Arterial	0.410	0.410	746,850	0.34	0.34
Urban Minor Arterial	0.420	0.411	288,868	0.13	0.13
Urban Collector	0.456	0.397	84,652	0.04	0.04
Urban Local	0.733	0.405	159,742	0.13	0.07
Urban Ramps				0.00	0.00
TOTAL			2,936,340	1.31	1.78

Blount County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.390	0.439	505,659	0.22	0.24
Rural Minor Arterial	0.403	0.415	170,400	0.08	0.08
Rural Collector	0.412	0.402	229,323	0.10	0.10
Rural Local	0.412	0.402	366,963	0.17	0.16
Rural Ramps			0	0.00	0.00
Urban Interstate	0.383	0.456	588,069	0.25	0.30
Urban Principal Arterial	0.401	0.423	1,122,961	0.50	0.52
Urban Minor Arterial	0.422	0.410	629,369	0.29	0.28
Urban Collector	0.435	0.404	485,462	0.23	0.22
Urban Local	0.730	0.412	794,521	0.64	0.36
Urban Ramps	0.471	0.444	26,297	0.01	0.01
TOTAL			4,919,025	2.49	2.28

Jefferson County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.317	0.951	1,799,582	0.63	1.89
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.394	0.435	495,725	0.22	0.24
Rural Collector	0.405	0.414	425,458	0.19	0.19
Rural Local	0.405	0.414	180,635	0.08	0.08
Rural Ramps	0.402	0.607	10,336	0.00	0.01
Urban Interstate	0.320	0.927	61,514	0.02	0.06
Urban Principal Arterial	0.407	0.422	216,766	0.10	0.10
Urban Minor Arterial	0.423	0.415	84,338	0.04	0.04
Urban Collector	0.426	0.407	53,082	0.02	0.02
Urban Local	0.730	0.412	58,400	0.05	0.03
Urban Ramps	0.405	0.599	4,165	0.00	0.00
TOTAL			3,390,002	1.35	2.66

Knox County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.332	0.829	967,821	0.35	0.88
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.381	0.462	258,135	0.11	0.13
Rural Collector	0.414	0.404	396,800	0.18	0.18
Rural Local	0.414	0.404	370,652	0.17	0.17
Rural Ramps	0.417	0.567	5,748	0.00	0.00
Urban Interstate	0.354	0.650	6,053,390	2.36	4.34
Urban Principal Arterial	0.411	0.419	3,685,084	1.67	1.70
Urban Minor Arterial	0.427	0.411	2,364,103	1.11	1.07
Urban Collector	0.436	0.405	1,270,545	0.61	0.57
Urban Local	0.730	0.413	3,816,738	3.07	1.74
Urban Ramps	0.438	0.522	307,697	0.15	0.18
TOTAL			19,496,713	9.79	10.95

Loudon County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.322	0.904	1,401,483	0.50	1.40
Rural Principal Arterial	0.374	0.514	331,302	0.14	0.19
Rural Minor Arterial	0.381	0.492	232,702	0.10	0.13
Rural Collector	0.411	0.406	387,155	0.18	0.17
Rural Local	0.411	0.406	113,263	0.05	0.05
Rural Ramps	0.407	0.593	16,490	0.01	0.01
Urban Interstate	0.325	0.887	98,632	0.04	0.10
Urban Principal Arterial	0.406	0.450	268,506	0.12	0.13
Urban Minor Arterial	0.416	0.434	55,947	0.03	0.03
Urban Collector	0.419	0.403	64,768	0.03	0.03
Urban Local	0.729	0.413	72,991	0.06	0.03
Urban Ramps	0.410	0.586	5,423	0.00	0.00
TOTAL			3,048,664	1.24	2.27

Sevier County 2024 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.412	0.409	299,048	0.14	0.13
Rural Minor Arterial	0.418	0.409	660,721	0.30	0.30
Rural Collector	0.414	0.402	554,960	0.25	0.25
Rural Local	0.414	0.402	724,832	0.33	0.32
Rural Ramps			0	0.00	0.00
Urban Interstate	0.325	0.884	424,488	0.15	0.41
Urban Principal Arterial	0.425	0.404	1,007,114	0.47	0.45
Urban Minor Arterial	0.419	0.405	229,017	0.11	0.10
Urban Collector	0.447	0.407	225,476	0.11	0.10
Urban Local	0.726	0.419	352,152	0.28	0.16
Urban Ramps	0.410	0.584	9,779	0.00	0.01
TOTAL			4,487,588	2.15	2.23

C1.4. Analysis Year 2034:

Anderson County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.293	0.572	1,191,915	0.38	0.75
Rural Principal Arterial	0.379	0.357	173,180	0.07	0.07
Rural Minor Arterial	0.375	0.363	147,183	0.06	0.06
Rural Collector	0.384	0.354	599,221	0.25	0.23
Rural Local	0.384	0.354	191,665	0.08	0.07
Rural Ramps	0.373	0.409	15,853	0.01	0.01
Urban Interstate	0.000	0.000		0.00	0.00
Urban Principal Arterial	0.391	0.349	869,941	0.37	0.33
Urban Minor Arterial	0.402	0.348	332,624	0.15	0.13
Urban Collector	0.403	0.347	98,289	0.04	0.04
Urban Local	0.706	0.346	185,475	0.14	0.07
Urban Ramps	0.000	0.000		0.00	0.00
TOTAL			3,805,346	1.57	1.76

Blount County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.371	0.367	636,051	0.26	0.26
Rural Minor Arterial	0.383	0.351	210,593	0.09	0.08
Rural Collector	0.393	0.344	276,655	0.12	0.10
Rural Local	0.393	0.344	455,287	0.20	0.17
Rural Ramps			0	0.00	0.00
Urban Interstate	0.366	0.376	711,952	0.29	0.30
Urban Principal Arterial	0.383	0.354	1,278,109	0.54	0.50
Urban Minor Arterial	0.400	0.347	854,596	0.38	0.33
Urban Collector	0.418	0.343	481,318	0.22	0.18
Urban Local	0.703	0.347	935,623	0.73	0.36
Urban Ramps	0.449	0.384	32,709	0.02	0.01
TOTAL			5,872,893	2.83	2.29

Jefferson County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.295	0.568	2,106,117	0.68	1.32
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.375	0.360	577,617	0.24	0.23
Rural Collector	0.385	0.351	506,072	0.21	0.20
Rural Local	0.385	0.351	211,778	0.09	0.08
Rural Ramps	0.375	0.409	11,663	0.00	0.01
Urban Interstate	0.298	0.561	72,842	0.02	0.05
Urban Principal Arterial	0.388	0.352	246,868	0.11	0.10
Urban Minor Arterial	0.405	0.347	96,361	0.04	0.04
Urban Collector	0.406	0.345	60,105	0.03	0.02
Urban Local	0.703	0.347	66,891	0.05	0.03
Urban Ramps	0.378	0.407	4,729	0.00	0.00
TOTAL			3,961,043	1.49	2.06

Knox County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.31	0.520	1,118,341	0.38	0.64
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.363	0.374	298,947	0.12	0.12
Rural Collector	0.394	0.344	503,466	0.22	0.19
Rural Local	0.394	0.344	444,628	0.19	0.17
Rural Ramps	0.391	0.402	7,145	0.00	0.00
Urban Interstate	0.332	0.447	6,905,722	2.53	3.40
Urban Principal Arterial	0.393	0.353	4,178,450	1.81	1.63
Urban Minor Arterial	0.407	0.348	2,702,830	1.21	1.04
Urban Collector	0.417	0.343	1,440,002	0.66	0.54
Urban Local	0.703	0.348	4,337,089	3.36	1.66
Urban Ramps	0.410	0.397	338,140	0.15	0.15
TOTAL			22,274,762	10.64	9.55

Loudon County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.299	0.543	1,797,757	0.59	1.08
Rural Principal Arterial	0.356	0.387	401,122	0.16	0.17
Rural Minor Arterial	0.363	0.378	279,252	0.11	0.12
Rural Collector	0.393	0.345	461,234	0.20	0.18
Rural Local	0.393	0.345	141,302	0.06	0.05
Rural Ramps	0.379	0.406	17,149	0.01	0.01
Urban Interstate	0.302	0.538	126,248	0.04	0.07
Urban Principal Arterial	0.387	0.356	344,875	0.15	0.14
Urban Minor Arterial	0.397	0.346	68,842	0.03	0.03
Urban Collector	0.399	0.342	77,585	0.03	0.03
Urban Local	0.702	0.348	92,222	0.07	0.04
Urban Ramps	0.383	0.405	5,695	0.00	0.00
TOTAL			3,813,283	1.46	1.90

Sevier County 2034 Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.394	0.348	349,718	0.15	0.13
Rural Minor Arterial	0.398	0.348	789,130	0.35	0.30
Rural Collector	0.395	0.344	678,466	0.30	0.26
Rural Local	0.395	0.344	869,626	0.38	0.33
Rural Ramps			0	0.00	0.00
Urban Interstate	0.302	0.543	493,103	0.16	0.30
Urban Principal Arterial	0.406	0.343	1,199,027	0.54	0.45
Urban Minor Arterial	0.400	0.343	270,463	0.12	0.10
Urban Collector	0.432	0.343	261,806	0.12	0.10
Urban Local	0.699	0.348	415,370	0.32	0.16
Urban Ramps	0.383	0.405	11,821	0.00	0.01
TOTAL			5,338,529	2.44	2.14

C1.5. Cocke County Ozone Emissions Analysis:

	2002 Summer VMT	2014 Growth Factor	2014 Summer VMT	2024 Growth Factor	2024 Summer VMT	2034 Growth Factor	2034 Summer VMT
Foothills Parkway	5662	1.43	8096.66	1.79	10134.98	2.25	12739.5
Cosby Campground Road	471	1.37	645.27	2.09	984.39	3.17	1493.07
State Route 32	11344	1.07	12138.08	1.23	13953.12	1.41	15995.04
Total	17,477.00		20,880.01		25,072.49		30,227.61
VOC Emissions Rate	1.841		0.721		0.411		0.391
TOTAL VOC Emissions (tpd)	0.0355		0.0166		0.0114		0.0130
NOx Emissions Rate	1.984		0.777		0.413		0.345
TOTAL NOx Emissions (tpd)	0.0382		0.0179		0.0114		0.0115

C2: PM2.5 Analysis**C2.1. Analysis Year 2014:**

Anderson County 2014 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0399	2.7860	217,101,754	9.55	666.73
Rural Principal Arterial	0.0152	0.8400	50,857,133	0.85	47.09
Rural Minor Arterial	0.0152	0.8720	33,599,322	0.56	32.30
Rural Collector	0.0146	0.8040	156,384,417	2.52	138.60
Rural Local	0.0146	0.8040	42,259,448	0.68	37.45
Rural Ramps	0.0399	1.5520	2,786,599	0.12	4.77
Urban Interstate			0	0.00	0.00
Urban Principal Arterial	0.0147	0.7930	242,095,649	3.92	211.62
Urban Minor Arterial	0.0147	0.7810	93,004,437	1.51	80.07
Urban Collector	0.0145	0.7520	27,388,666	0.44	22.70
Urban Local	0.0145	0.7490	51,683,331	0.83	42.67
Urban Ramps			0	0.00	0.00
TOTAL			917,160,756	20.98	1284.01

Blount County 2014 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.0152	0.8850	133214397.4	2.23	129.96
Rural Minor Arterial	0.0152	0.8210	45142901.74	0.76	40.85
Rural Collector	0.0146	0.7760	68192982.81	1.10	58.33
Rural Local	0.0146	0.7760	99929911.42	1.61	85.48
Rural Ramps			0	0.00	0.00
Urban Interstate	0.0147	0.9140	56119070.67	0.91	56.54
Urban Principal Arterial	0.0155	0.8390	406023570.4	6.94	375.51
Urban Minor Arterial	0.0155	0.8070	189124462.2	3.23	168.24
Urban Collector	0.0153	0.7860	158482262.7	2.67	137.31
Urban Local	0.0153	0.7800	227289027.2	3.83	195.42
Urban Ramps	0.0147	0.8370	6169232.95	0.10	5.69
TOTAL			1,389,687,819	23.38	1253.34

Knox County 2014 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0343	2.3510	272,392,591	10.30	705.92
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.0170	0.8590	78,983,801	1.48	74.79
Rural Collector	0.0149	0.7850	110,357,062	1.81	95.49
Rural Local	0.0149	0.7850	110,260,856	1.81	95.41
Rural Ramps	0.0343	1.3900	1,730,626	0.07	2.65
Urban Interstate	0.0260	1.6620	1,950,403,919	55.90	3573.24
Urban Principal Arterial	0.0154	0.8270	1,143,064,859	19.40	1042.04
Urban Minor Arterial	0.0154	0.8040	734,367,557	12.47	650.84
Urban Collector	0.0153	0.7850	380,265,754	6.41	329.05
Urban Local	0.0153	0.7820	1,222,147,632	20.61	1053.51
Urban Ramps	0.0260	1.1570	98,033,341	2.81	125.03
TOTAL			6,102,007,998	133.07	7747.97

Loudon County 2014 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0382	2.6460	457129606.4	19.25	1333.32
Rural Principal Arterial	0.0163	0.9240	96223348	1.73	98.01
Rural Minor Arterial	0.0163	0.8860	67817634.34	1.22	66.23
Rural Collector	0.0149	0.7950	113534028.1	1.86	99.49
Rural Local	0.0149	0.7950	36028167.05	0.59	31.57
Rural Ramps	0.0382	1.5020	4803053.707	0.20	7.95
Urban Interstate	0.0368	2.5510	34471710.3	1.40	96.93
Urban Principal Arterial	0.0204	0.9900	80732310.5	1.82	88.10
Urban Minor Arterial	0.0204	0.9490	15400416.91	0.35	16.11
Urban Collector	0.0154	0.7890	19299167.29	0.33	16.79
Urban Local	0.0155	0.7860	22422396.49	0.38	19.43
Urban Ramps	0.0368	1.4630	1629037.922	0.07	2.63
TOTAL			949,490,877	29.19	1876.57

Roane County 2014 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0396	2.7490	23392103.03	1.02	70.88
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial			0	0.00	0.00
Rural Collector	0.0149	0.7510	3625575.441	0.06	3.00
Rural Local	0.0149	0.7510	1996550	0.03	1.65
Rural Ramps	0.0396	1.5400	704059.377	0.03	1.20
Urban Interstate			0	0.00	0.00
Urban Principal Arterial			0	0.00	0.00
Urban Minor Arterial	0.0147	0.7700	4447741.08	0.07	3.78
Urban Collector			0	0.00	0.00
Urban Local			0	0.00	0.00
Urban Ramps			0	0.00	0.00
TOTAL			34,166,029	1.22	80.51

C2.2. Analysis Year 2024:

Anderson County 2024 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0237	0.9770	253,318,480	6.62	272.81
Rural Principal Arterial	0.0127	0.4560	53,762,813	0.75	27.02
Rural Minor Arterial	0.0127	0.4690	37,581,324	0.53	19.43
Rural Collector	0.0124	0.4470	176,190,598	2.41	86.82
Rural Local	0.0124	0.4470	48,063,343	0.66	23.68
Rural Ramps	0.0237	0.6330	3,152,366	0.08	2.20
Urban Interstate			0	0.00	0.00
Urban Principal Arterial	0.0125	0.4420	269,874,355	3.72	131.49
Urban Minor Arterial	0.0125	0.4370	104,382,603	1.44	50.28
Urban Collector	0.0124	0.4230	30,589,067	0.42	14.26
Urban Local	0.0124	0.4150	57,722,594	0.79	26.41
Urban Ramps			0	0.00	0.00
TOTAL			1,034,637,542	17.41	654.41

Blount County 2024 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.0127	0.4750	177182956.6	2.48	92.77
Rural Minor Arterial	0.0127	0.4490	59708126.89	0.84	29.55
Rural Collector	0.0124	0.4350	80354893.64	1.10	38.53
Rural Local	0.0124	0.4350	128583760.5	1.76	61.66
Rural Ramps			0	0.00	0.00
Urban Interstate	0.0126	0.4960	212498888.6	2.95	116.18
Urban Principal Arterial	0.0127	0.4540	405781931.4	5.68	203.07
Urban Minor Arterial	0.0127	0.4400	227422352	3.18	110.30
Urban Collector	0.0126	0.4330	175421783.6	2.44	83.73
Urban Local	0.0127	0.4210	287100128	4.02	133.24
Urban Ramps	0.0126	0.4830	9502598.53	0.13	5.06
TOTAL			1,763,557,420	24.58	874.10

Knox County 2024 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0210	0.8570	328,526,900	7.60	310.35
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.0133	0.4500	90,450,401	1.33	44.87
Rural Collector	0.0125	0.4350	139,038,632	1.92	66.67
Rural Local	0.0125	0.4350	129,876,545	1.79	62.28
Rural Ramps	0.0210	0.5960	1,951,187	0.05	1.28
Urban Interstate	0.0179	0.6950	2,187,392,617	43.16	1675.78
Urban Principal Arterial	0.0127	0.4490	1,331,605,121	18.64	659.07
Urban Minor Arterial	0.0127	0.4390	854,268,697	11.96	413.40
Urban Collector	0.0127	0.4320	459,111,418	6.43	218.63
Urban Local	0.0127	0.4220	1,379,178,232	19.31	641.56
Urban Ramps	0.0179	0.5550	111,186,156	2.19	68.02
TOTAL			7,012,585,905	114.37	4161.91

Loudon County 2024 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0227	0.9340	475733446.1	11.90	489.80
Rural Principal Arterial	0.0154	0.5480	116088303	1.97	70.13
Rural Minor Arterial	0.0154	0.5230	81538738.65	1.38	47.01
Rural Collector	0.0125	0.4400	135659280.5	1.87	65.80
Rural Local	0.0125	0.4400	39687443.94	0.55	19.25
Rural Ramps	0.0227	0.6190	5597560.931	0.14	3.82
Urban Interstate	0.0222	0.9140	35640792.64	0.87	35.91
Urban Principal Arterial	0.0146	0.4770	97024602.75	1.56	51.02
Urban Minor Arterial	0.0146	0.4610	20216541.46	0.33	10.27
Urban Collector	0.0127	0.4330	23404065.38	0.33	11.17
Urban Local	0.0127	0.4230	26375150.75	0.37	12.30
Urban Ramps	0.0222	0.6130	1959721.953	0.05	1.32
TOTAL			1,058,925,648	21.32	817.79

Roane County 2024 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0226	0.9270	27632850.6	0.69	28.24
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial			0	0.00	0.00
Rural Collector	0.0125	0.4120	3708911	0.05	1.68
Rural Local	0.0125	0.4120	2160070	0.03	0.98
Rural Ramps	0.0226	0.6180	767697.2	0.02	0.52
Urban Interstate			0	0.00	0.00
Urban Principal Arterial			0	0.00	0.00
Urban Minor Arterial	0.0124	0.4240	4991050.15	0.07	2.33
Urban Collector			0	0.00	0.00
Urban Local			0	0.00	0.00
Urban Ramps			0	0.00	0.00
TOTAL			39,260,579	0.86	33.76

C2.3. Analysis Year 2034:

Anderson County 2034 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0220	0.5930	289,409,291	7.02	189.18
Rural Principal Arterial	0.0123	0.3850	58,514,608	0.79	24.83
Rural Minor Arterial	0.0123	0.3950	41,975,423	0.57	18.28
Rural Collector	0.0121	0.3810	195,464,344	2.61	82.09
Rural Local	0.0121	0.3810	54,027,872	0.72	22.69
Rural Ramps	0.0220	0.4310	3,669,572	0.09	1.74
Urban Interstate			0	0.00	0.00
Urban Principal Arterial	0.0122	0.3760	301,173,598	4.05	124.83
Urban Minor Arterial	0.0122	0.3720	113,061,401	1.52	46.36
Urban Collector	0.0121	0.3630	33,856,584	0.45	13.55
Urban Local	0.0121	0.3520	63,888,508	0.85	24.79
Urban Ramps			0	0.00	0.00
TOTAL			1,155,041,201	18.67	548.34

Blount County 2034 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	0.0123	0.3990	222872193	3.02	98.02
Rural Minor Arterial	0.0123	0.3810	73791805.24	1.00	30.99
Rural Collector	0.0121	0.3720	96939837.7	1.29	39.75
Rural Local	0.0121	0.3720	159532555.2	2.13	65.42
Rural Ramps			0	0.00	0.00
Urban Interstate	0.0122	0.4130	257263711.9	3.46	117.12
Urban Principal Arterial	0.0124	0.3820	461844692.6	6.31	194.48
Urban Minor Arterial	0.0124	0.3720	308808322	4.22	126.63
Urban Collector	0.0123	0.3670	173924436.3	2.36	70.36
Urban Local	0.0123	0.3530	338087312.2	4.58	131.56
Urban Ramps	0.0122	0.4180	11819388.41	0.16	5.45
TOTAL			2,104,884,254	28.54	879.78

Knox County 2034 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0195	0.5470	379,620,943	8.16	228.90
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial	0.0128	0.3730	104,751,190	1.48	43.07
Rural Collector	0.0122	0.3710	176,414,569	2.37	72.15
Rural Local	0.0122	0.3710	155,797,622	2.10	63.71
Rural Ramps	0.0195	0.4260	2,425,535	0.05	1.14
Urban Interstate	0.0172	0.4870	2,495,382,618	47.31	1339.59
Urban Principal Arterial	0.0124	0.3800	1,509,883,068	20.64	632.46
Urban Minor Arterial	0.0124	0.3720	976,667,491	13.35	400.49
Urban Collector	0.0123	0.3670	520,344,825	7.06	210.51
Urban Local	0.0123	0.3530	1,567,207,026	21.25	609.83
Urban Ramps	0.0172	0.4240	122,186,973	2.32	57.11
TOTAL			8,010,681,863	126.08	3658.96

Loudon County 2034 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0211	0.5770	610248466.1	14.19	388.14
Rural Principal Arterial	0.0144	0.4180	140553276.6	2.23	64.76
Rural Minor Arterial	0.0144	0.4030	97849840.19	1.55	43.47
Rural Collector	0.0122	0.3750	161616496.8	2.17	66.81
Rural Local	0.0122	0.3750	49512126.9	0.67	20.47
Rural Ramps	0.0211	0.4280	6008923.27	0.14	2.83
Urban Interstate	0.0207	0.5600	45619760.83	1.04	28.16
Urban Principal Arterial	0.0138	0.3800	124620576.8	1.90	52.20
Urban Minor Arterial	0.0138	0.3690	24876075.87	0.38	10.12
Urban Collector	0.0123	0.3660	28035390.39	0.38	11.31
Urban Local	0.0123	0.3530	33324439.46	0.45	12.97
Urban Ramps	0.0207	0.4280	2057860.439	0.05	0.97
TOTAL			1,324,323,234	25.15	702.21

Roane County 2034 Facility Type	PM2.5 Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Annual VMT (miles/year)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.0210	0.5720	32080904.85	0.74	20.23
Rural Principal Arterial			0	0.00	0.00
Rural Minor Arterial			0	0.00	0.00
Rural Collector	0.0122	0.3520	3804292.8	0.05	1.48
Rural Local	0.0122	0.3520	2241830	0.03	0.87
Rural Ramps	0.0210	0.4320	846070	0.02	0.40
Urban Interstate			0	0.00	0.00
Urban Principal Arterial			0	0.00	0.00
Urban Minor Arterial	0.0121	0.3620	5217981.6	0.07	2.08
Urban Collector			0	0.00	0.00
Urban Local			0	0.00	0.00
Urban Ramps			0	0.00	0.00
TOTAL			44,191,079	0.91	25.06

Appendix D: Travel Demand Model and Land Use Allocation Model Development

D.1. Travel Demand Model Development

Background:

The following information related to the development of the Knoxville Regional Travel Demand Forecasting Model and associated planning assumptions is intended to fulfill the requirements under Section 93.105(c)(1)(i) of the Transportation Conformity Rule, which requires interagency review of the models and assumptions used in the regional emissions analysis.

Section 1 – Travel Demand Modeling Parameters:

I. General Information –

- A.) Validation Year: 2006
- B.) Calibration Data: Household Travel Behavior Survey and External Travel Survey conducted in year 2000 in Knox and Blount counties. Data also taken from U.S. Census since it was conducted in 2000.
- C.) Model Geographic Coverage: Eight Full Counties (Anderson, Blount, Jefferson, Loudon, Knox, Roane, Sevier, Union) and part of Grainger County. There are a total of 893 traffic analysis zones consisting of 864 internal and 29 external zones. This represents an increase of 146 TAZs in the “regional” area of the model (those areas outside of Knox and Blount counties)
- D.) Model Structure: Based on Traditional “Four-Step” Process of Trip Generation, Trip Distribution, Mode Split and Traffic Assignment.

II. Model Components –

- A.) Trip Generation: The trip generation component consists of trip production and trip attraction models for the several trip purposes and were estimated using data from the *2000 Knoxville Household Travel Behavior Study*. A variety of statistical analyses were performed to identify how trip rates for various trip purposes were linked to household attributes such as household size, auto ownership, workers per household, students per household and household income.
 - 1.) Trip Production Model – The following six trip purposes were identified from the survey data and cross classification techniques were used to determine number of trips produced for each given the most appropriate socioeconomic predictor variable:
 - Home-Based Work (HBW)

- Home-Based School (HBS)
- Home-Based University (HBU)
- Home-Based Other (HBO)
- Non-Home-Based Work (NHBW)
- Non-Home-Based Other (NHBO)

In addition to the household based trips above, the model also incorporates trips not associated with households such as from on-campus students that reside in group quarters and the short distance truck trips such as mail and delivery trucks.

2.) Trip Attraction Model – The trip attraction model was based on a regression analysis of geo-coded trip ends versus zonal socioeconomic characteristics. The attractions were factored up so that total attractions would approximately balance the productions in the base year. Zonal level variables such as employment, population, households and school enrollment formed the input to this model.

B.) Trip Distribution: The gravity model was used to distribute zonal trip productions and attractions, which is the most widely used model for trip distribution. The gravity model requires base year data on average trip lengths and trip length distributions for each of the trip purposes which were determined by the household survey. Friction factors were calibrated from the trip length distribution data for each trip purpose which describe people's willingness to travel certain distances for different types of trips – for example, people generally will tolerate longer travel times to their place of employment rather than to the grocery store. Socioeconomic adjustment factors, also known as “K-factors” were used to represent zone-to-zone adjustments for selected zonal interchanges when necessitated by special circumstances such as bridges or other perceived travel barriers.

C.) Mode Split: The trip distribution step yields tables of “person trips” by trip purpose and time-of-day. The Knoxville model only assigns the trips that are made by motor vehicles to the roadway network so the person trips were converted to vehicle trips using data from the household travel survey. Factors for vehicle occupancy were also developed and these were determined to vary during different time periods throughout the day and incorporated into the model.

D.) Time-of-Day Models: The Knoxville model allows analyses to be performed for four major time periods – 24-hour (daily), morning peak (6:00 – 9:00 am), afternoon peak (3:00 – 6:00 pm) and off peak (all times other than morning or afternoon peak). The time-of-day model was accomplished using data collected from the household behavior survey on hourly distributions of trips by purpose.

E.) External Models: Trips with at least one trip end outside the study area are considered external trips. The Knoxville model has 29 external stations where traffic can enter or exit the model's roadway network. A consultant performed an external origin-destination survey for the old two-county Knoxville model area in 2000 and an updated study for the interstate stations and one other high volume station was conducted in September 2007. The external-external volumes at the station locations from this survey were used in validating the assignment of the external-external trip table developed for the expanded model area.

F.) Trip Assignment: The assignment of trips to the network is the last step of the sequential modeling process. It provides the foundation for validating the model's performance in replicating base-year (2006) travel patterns. Once the base year is validated, it is further used to forecast future traffic conditions on the network and to evaluate any transportation improvements in the future.

One feature to note of the trip assignment process in the Knoxville model is that it includes a feedback loop from the initial trip assignment back through trip distribution, which runs until convergence is achieved. The reason a feedback loop is made in this fashion is primarily to account for the fact that people will sometimes take congestion into consideration in their decisions for which destinations are chosen, therefore results from the initial assignment, which produce congested speeds are fed back to the gravity model to redistribute the person trips.

III. Model Roadway Network and Traffic Analysis Zone (TAZ) Development –

A.) Roadway Network Information: A substantial effort was undertaken to create a TransCAD-based network that included all the necessary roadways (arterials, collectors and significant local roads) along with appropriate attributes to characterize them. A key resource was the Tennessee Roadway Information System (TRIMS), which is a comprehensive database of roadway attributes (number of lanes, pavement width, posted speed limit, etc) that is maintained by the Tennessee Department of Transportation (TDOT). It should be noted that there is significantly greater detail in terms of the number of roadway links that are represented between the urbanized and rural portions of the model study area. Traffic signals are included in the network as well for an even greater level of precision in replicating traffic operations.

B.) Free-Flow Speed Estimation: A key input to the modeling of traffic on the roadway network deals with correctly estimating the free flow speed on each link. Typically travel demand models use the posted speed limit as a surrogate for the free flow speed however this can overstate the travel time since many times vehicles are traveling at well above the posted speed limit in when there are free flow conditions, i.e. when little or no traffic is present and weather conditions are ideal. The Knoxville model incorporates an estimation procedure borrowed from studies performed in Indiana which relate free flow

speed to roadway characteristics such as the area type, facility type, speed limit and number of lanes. Nonlinear formulas were developed from actual field observations of speed data and then used in the model.

C.) Capacity Estimation: Peak hour capacities of the roadway network were estimated using *Highway Capacity Manual 2000* procedures, which results in much more precise estimates of capacity verses traditional methods used in models that entail using a lookup table based on functional class and area type.

D.) TAZ Development: The study area of the Knoxville regional model was disaggregated into a number of traffic analysis zones (TAZ). The TAZ layer of the model consists of a total of 893 zones. Demographic and employment features of the Knoxville model area are reported for each of the 864 internal zones for use in trip generation, the remaining 29 zones are external zones. Each zone is characterized by 53 zonal attributes including population, households, vehicle ownership, mean household income, school enrollment, university enrollment and employment by the Standard Industrial Classification (SIC) category. The 2000 Census provided much of the data for the base year model, and projection data was purchased from Woods & Poole Economics, Inc. to develop future TAZ attributes.

Section 2 – Model Validation:

I. Validation Criteria – Criteria for acceptable errors between observed and estimated traffic volumes vary by facility type, according to the magnitude of traffic volume. For example, higher volume roadways have stricter calibration guidelines than those with lower volumes. The error standards set for the Knoxville model were developed for use in Michigan by the Michigan Department of Transportation. These error standards meet or exceed the standards set by FHWA for model validation.

Category Acceptable Error

Category	Acceptable Error Range
Total VMT % Error	± 10%
Screenline % Error	± 10%
Freeways	± 7%
Major Arterials	± 10%
Minor Arterials	± 15%
Collectors	± 25%
All Area Types	± 10%
Volume Group 1,000 ~ 2,500 vpd	± 200%
Volume Group 2,500 ~ 5,000 vpd	± 100%
Volume Group 5,000 ~ 10,000 vpd	± 50%
Volume Group 10,000 ~ 25,000 vpd	± 20%
Volume Group 25,000 ~ 50,000 vpd	± 15%
Volume Group > 50,000 vpd	± 10%

Source: FHWA, 1997

The following table illustrates the Knoxville Model validation statistics:

Volume Range	Average Counts	Average Loading	% RMSE	% Error	% Acceptable Range	VMT % Error
1,001 ~ 2,000	1,496	2,393	140.54	59.94	± 200	71.36
2,001 ~ 3,000	2,429	3,691	124.48	51.93	± 200	52.30
3,001 ~ 4,000	3,479	3,445	67.45	-0.98	± 100	4.93
4,001 ~ 5,000	4,463	4,765	65.06	6.76	± 100	7.22
5,001 ~ 6,000	5,522	5,587	61.91	1.18	± 50	6.52
6,001 ~ 8,000	6,958	7,322	44.92	5.24	± 50	11.19
8,001 ~ 10,000	8,901	7,929	40.96	-10.91	± 50	-9.35
10,001 ~ 15,000	12,224	12,008	33.93	-1.76	± 20	-4.75
15,001 ~ 20,000	17,442	16,708	31.09	-4.21	± 20	1.06
20,001 ~ 25,000	22,123	22,732	21.44	2.75	± 20	6.12
25,001 ~ 30,000	27,622	29,635	20.54	7.29	± 15	10.25
30,001 ~ 40,000	33,730	34,777	17.28	3.10	± 15	9.89
40,001 ~ 50,000	44,588	48,432	16.99	8.62	± 15	8.80
50,001 ~ 60,000	54,064	56,035	11.69	3.65	± 10	5.40
> 60,000	71,270	68,761	5.33	-3.52	± 10	-4.40
ALL	12,261	12,617	32.95	2.91	± 10	6.87

II. Model Performance by Facility Type/HPMS Adjustment Factors – The model output of vehicle miles of travel (VMT) for the base year 2006 was compared against the actual highway performance monitoring system (HPMS) estimates of VMT by facility type in each county. Below is a table showing the comparison of the model to HPMS and the resulting adjustment factors that will need to be applied to the model VMT in future analysis years to ensure that all emissions will be accounted for. In general the model appears to be performing very well as most adjustment factors require less than 20% adjustment. Those factors that are outside of the 20% range have been highlighted in yellow and for the most part occur only on the lower-order Collector and Local facility types, which is not much of a concern.

County	2006 Vehicle Miles Travelled									
	Urban					Rural				
	Interstate	Principal Arterial	Minor Arterial	Collector	Local	Interstate	Principal Arterial	Minor Arterial	Collector	Local
Anderson HPMS	0	610,468	235,080	69,109	130,411	525,104	132,751	83,625	401,658	104,852
Anderson Model	0	577,788	259,711	7,651	78,038	556,124	115,400	79,643	461,429	19,590
Anderson HPMS Factor	N/A	1.06	0.91	9.03	1.67	0.94	1.15	1.05	0.87	5.35
Blount HPMS	88,195	945,065	423,659	359,756	506,068	0	293,921	97,644	157,969	222,733
Blount Model	82,763	887,429	405,456	298,140	54,059	0	253,405	85,590	203,038	89,651
Blount HPMS Factor	1.07	1.06	1.04	1.21	9.36	N/A	1.16	1.14	0.78	2.48
Jefferson HPMS	43,766	164,800	62,284	44,205	43,822	1,130,831	0	346,602	299,503	120,012
Jefferson Model	40,571	139,688	76,919	45,202	0	1,255,353	0	386,211	319,495	13,746
Jefferson HPMS Factor	1.08	1.18	0.81	0.98	no model	0.90	N/A	0.90	0.94	8.73
Knox HPMS	4,923,358	2,739,448	1,691,103	874,555	2,889,986	633,667	0	197,584	281,149	252,600
Knox Model	5,233,200	2,697,002	1,529,432	819,782	1,015,149	730,901	0	218,241	353,125	282,056
Knox HPMS Factor	0.94	1.02	1.11	1.07	2.85	0.87	N/A	0.91	0.80	0.90
Loudon HPMS	84,350	187,325	37,627	45,383	52,483	1,094,254	197,692	165,414	257,367	83,540
Loudon Model	101,017	140,076	32,131	44,318	1,096	1,254,651	179,522	200,941	293,221	3,109
Loudon HPMS Factor	0.84	1.34	1.17	1.02	47.89	0.87	1.10	0.82	0.88	26.87
Sevier HPMS	293,356	859,680	129,136	182,092	271,982	0	230,750	486,339	400,269	534,681
Sevier Model	340,607	765,175	129,922	164,315	19,069	0	182,104	510,657	469,303	99,427
Sevier HPMS Factor	0.86	1.12	0.99	1.11	14.26	N/A	1.27	0.95	0.85	5.38

III. Average Speed Calibration – In addition to calibrating the travel demand model so that it accurately replicates roadway traffic volumes according to validation criteria, the model was also calibrated to replicate observed average speeds for different time periods of the day. Average speed data that was collected from floating car studies in support of the regional congestion management system plan in the urbanized area was compared with outputs of post-processed speeds from the model. In general there was very good agreement between the model speeds and the actual speeds with good root mean square errors, however there are no national validation standards for average speeds.

D.2. Land Use Allocation Model Development

Background:

The ULAM planning package is designed to provide an automated process to allocate future growth in the form of county-wide population and employment control totals at the traffic analysis zone (TAZ) level producing files ready for input into most standard travel demand forecasting models. The ULAM model is designed to utilize existing zonal data data files to the maximum extent possible to reduce the need for duplication of data entry.

The most important input variable to the ULAM model is the vacant acreage information by land use type which is developed from parcel level GIS data. The vacant land information is used to incorporate physical, environmental and policy constraints into the land use allocation process, ensuring that growth is not allocated to areas already builtout and that growth is not allocated to wetlands or other types of environmentally sensitive areas. By separating vacant land by land use type, the model is able to reflect the current zoning restrictions and land use regulations. It ensures that the model does not allocate unacceptable types of land uses in areas where that type of development is not permitted.

Control variables for individual traffic zones include: vacant buildable acreage by land use type, allowable land use densities, approved development, population per dwelling unit, percentage of vacant or seasonal units, auto ownership information, variables for the life style trip generation model, and other restrictions for each TAZ.

A market index or desirability score for each TAZ and each type of land use is computed using approved development, historical trends and the real estate market information designed to reflect unique local market conditions. The real estate market index is then used by the ULAM model in the allocation process to determine which TAZs will be developed first for a particular type of land use.

The impacts of changes in the transportation network on future land development patterns are reflected in the ULAM Real Estate Market Index. The model ranks each TAZ for different types of development based upon travel time and accessibility to major land use activity centers and based upon socio-economic conditions within a given travel time around each traffic zone. As the transportation network is changed, the travel time on the network changes which also changes the ranking of each TAZ for different types of development. As an example if a new expressway is added to the network the travel time from those TAZs around that expressway to major land use activity centers decreases making those TAZs more accessible and giving them a higher ranking for most types of development. In addition the market area based upon travel time has increased in size, meaning more population and employees are within that market area or drive time of that TAZ. The larger market area population and employment of that TAZ makes that TAZ more desirable for retail and other types of new development.

Knoxville ULAM Model Development:

The ULAM model was developed and tailored specifically to the Knoxville Region through a process involving input from several various sources. Data was collected for each county in the modeling region in order to provide the necessary inputs to ULAM as described above. A real estate market index charrette was conducted with local developers in order to determine the specific conditions affecting development decisions in this region. The proposed roadway projects were fed into the travel demand model and a new market index was generated based upon the improved accessibility of areas affected by roadway improvements. This information was then input to ULAM again in order to generate a new land use input file for the travel demand forecasting model.

Appendix E: MOBILE6 Input Description and Updated Planning Assumptions

Presented for IAC Review on April 12, 2010

I. Background:

The Knoxville Region is currently designated Nonattainment under the following National Ambient Air Quality Standards:

- 1997 8-hour Ozone Standard
- 1997 Annual Fine Particulate Matter (PM_{2.5}) Standard
- 2006 Daily Fine Particulate Matter (PM_{2.5}) Standard

An air quality conformity determination for the 2006 Daily PM_{2.5} Standard is due by December 14, 2010. An update to the current FY 2008 – 2011 Transportation Improvement Programs (TIP) for both the Knoxville Regional TPO and Lakeway Area MTPO is due by October 2010. It is currently unknown whether any non-exempt project changes will occur with the TIP updates that would necessitate a revised regional emissions analysis.

The intent of this document is to establish the current planning assumptions for the conformity analysis that will be undertaken principally to meet the deadline of December 14, 2010 for the first conformity determination required for the Daily PM_{2.5} Standard. Following are other conformity triggers that may also be satisfied concurrently:

- Requirement for Conformity Determination within 2 years of an Adequacy Finding for Annual PM_{2.5} Standard Attainment Demonstration SIP MVEB.
- Conformity Requirements associated with development of the FY 2011 – 2014 TIP (due by October 2010).
- Currently a redesignation request to Attainment with a Maintenance Plan for the 1997 8-hour Ozone Standard is being pursued and a budget test will be performed against the Maintenance Plan MVEB if available in time.

The planning assumptions used to address conformity for the above standards are proposed to be based largely on those used in the most recent Regional Emissions Analysis for the development of the 2009 update to the Knoxville Regional Long Range Mobility Plan, which was approved by U.S. DOT on June 1, 2009.

II. Planning Assumptions for developing Travel Demand Forecasts:

Documentation for the current travel demand forecasting model process is included in the most recent conformity determination report (CDR) for the above noted 2009 – 2034 Knoxville Regional Mobility Plan. The model is validated to a base year of 2006 and appropriate HPMS adjustment factors have been developed to ensure accurate replication of the amount of travel in the region.

Future year socioeconomic forecasts have been updated through the purchase of new projection data from Woods & Poole Economics, Inc. The previous forecasts were based on projections purchased from W&P in 2007, which is before the recent economic recession. The new data reflects a reduction in the forecast of population and in particular employment that has resulted as shown in the following comparison table:

County	"Old" Year 2035 W&P Population Forecast	"New" Year 2035 W&P Population Forecast	"Old" Year 2035 W&P Employment Forecast	"New" Year 2035 W&P Employment Forecast
Anderson	100,972	90,246	93,715	71,630
Blount	209,924	201,204	98,613	94,483
Jefferson	77,453	72,756	29,007	28,705
Knox	574,950	606,629	481,664	441,752
Loudon	79,010	78,673	28,861	30,410
Sevier	170,928	163,111	95,939	89,497
TOTAL	1,213,237	1,212,619	827,799	756,477
Difference (New - Old)		-618		-71,322

The county-level control totals for population and employment are input to a land use model that the Knoxville TPO maintains known as "ULAM". The ULAM model is used to allocate the population and employment totals to the Traffic Analysis Zone (TAZ) level that is used by the TPO's travel demand forecasting model. Further documentation of the ULAM model is also available in the previous CDR.

III. Latest Emissions Model:

The EPA has officially released a new emissions factor model known as "MOVES2010" however there is a 2-year grace period prior to it being required for use in preparing a conformity determination, i.e. March 2012. This conformity analysis will be conducted using MOBILE6.2 primarily because this was the model used to develop the MVEB for the Annual PM_{2.5} Attainment Demonstration.

IV. Emissions Tests:

(For Annual & Daily PM_{2.5}) –

Use budget test against the Annual PM_{2.5} SIP MVEB (assuming adequacy finding is officially approved by EPA). Emissions are calculated based on using the “single-run approach” whereby average annual inputs are used for MOBILE6.2.

The MVEB established for Direct PM_{2.5} emissions and NO_x emissions are as follows:

Pollutant	2009 MVEB (tons/year)
PM _{2.5}	283.63
NO _x	18,024.90

(For Ozone) –

If necessary due to changes to a non-exempt project from the FY 20011 – 2014 TIP update. Use interim emissions tests assuming that Maintenance Plan MVEB is not available in time.

All Counties except Knox – Emission Test of “Less than Baseline Year 2002 Emissions” for NO_x and VOC. Following are the Baseline Year 2002 emissions from the most recent CDR:

Pollutant	2002 Emissions (tons/day)
VOC	25.11
NO _x	57.94

Knox County – Emission Test against the 1-Hour Ozone Maintenance Plan MVEB for NO_x and VOC. Following are the MVEB established in the 1-Hour Ozone Maintenance Plan for Knox County:

Pollutant	2014 MVEB (tons/day)
VOC	22.12
NO _x	22.49

V. MOBILE6.2 Inputs:

Following is documentation for the proposed inputs for MOBILE6.2, which is based on the “Technical Guidance on the Use of MOBILE6.2 for Emission Inventory Preparation” published by EPA in August 2004.

1.) Calendar Year of Evaluation:

(Ozone and Annual & Daily PM2.5) –

- 2014 – Year within 5 years of conformity determination, Attainment Year for Daily PM2.5 and Year with a 1-Hour Ozone Maintenance Plan Budget
- 2024 – Year such that there are no more than 10 years between analysis years
- 2034 – Last Year of current LRTP

2.) Month of Evaluation:

(Ozone) – Use “7” (July) as it is most appropriate for ozone season analysis.

(Annual & Daily PM2.5) – Use “7” (July) based on single-run approach used in Annual PM2.5 SIP.

3.) Temperature:

(Ozone) – The IAC group has previously agreed to use **66/96** as the **MIN/MAX** temperature input for the ozone analysis. This is based on the requirement to remain consistent with the temperature input that was used in the Knox County 1-Hour Maintenance Plan.

(Annual & Daily PM2.5) – The Annual PM2.5 SIP established the average annual **MIN/MAX** temperature of **50.1/70.0**.

4.) Absolute Humidity:

(Ozone) – Use the MOBILE6.2 default value of **75 grains/lb** primarily in order to remain consistent with the 1-hour Ozone Maintenance Plan which also used the default value for humidity.

(Annual & Daily PM2.5) – The Annual PM2.5 SIP established the absolute humidity value of **52 grains/lb**.

5.) Vehicle Age Distribution:

(Ozone and Annual & Daily PM2.5) – The TPO proposes to use the vehicle age distribution that was developed by UTCEE for Knoxville region, which was used for both the 2002 emissions inventory development as well as the original 8-hour ozone standard conformity determination. The vehicle age distributions are only available for the light duty vehicle and light duty truck categories at a local level, the MOBILE6.2 defaults are used for the others. The EPA guidance recommends using local data for this input where available.

The TPO recognizes that the vehicle registration data used to develop this input is becoming old and should be updated soon. TDOT has proposed developing new statewide vehicle age inputs for the MOVES2010 model, which has a different input structure than does MOBILE6.2. Since this information will not be available in the correct format prior to completing this conformity determination the TPO proposes to use what is currently available.

One potential issue with using outdated vehicle age distribution data is if fewer old vehicles are being replaced than is typical, which could cause emissions to be under-predicted since older vehicles typically emit higher amounts of pollution due to breakdown of emission control equipment and/or not being subject to stricter emissions standards. Therefore, household vehicle ownership survey data from Knox and Blount counties obtained in both year 2000 and year 2008 was reviewed in order to verify that the vehicle age distribution has not changed significantly in the past 8 – 10 years. The following chart shows the percentage of vehicles in 5-year increments in Knox & Blount counties:

Vehicle Age	Year 2000 Survey Data % Owned	Year 2008 Survey Data % Owned
0 - 5 Years	36.87%	38.98%
6 - 10 Years	30.45%	32.88%
11 - 15 Years	20.05%	16.27%
16 - 20 Years	6.21%	5.88%
> 21 Years	6.41%	5.99%

The above table demonstrates that a higher proportion of the vehicle fleet was greater than 10 years old in the year 2000 (32.7%) versus the year 2008 (28.1%). In addition, the median vehicle age for the entire area is 7 years old in both the 2000 and 2008 surveys and therefore there can be reasonable confidence that the current vehicle age distribution input is still valid.

6.) Vehicle Activity:

(Ozone) – The TPO forecasts future vehicle activity using a travel demand forecasting model in the entire Ozone nonattainment area except for the portion in Cocke County.

The VMT on local roadways is projected using an off-model technique due to the small number included in the travel demand model in all counties outside of Knox County. The methodology involves using historical trend data reported for local roadway VMT and develop a growth rate to apply to the baseline year 2002 HPMS estimate.

The TPO has previously used historical traffic volume and visitation data to determine a growth factor to apply to existing VMT estimates for Cocke County roadways within the partial-county nonattainment area and will continue this methodology for the update.

For ramp facilities the methodology recommended by the technical guidance is to assume that the HPMS data for Freeway facilities can be broken out as 92% VMT on the actual freeway and the other 8% on ramps. Since the model network was expanded to include all ramps in the study area the actual model output values will be used rather than the default percentage breakdown.

(Annual & Daily PM2.5) – Basically the same as above with the ozone analysis for a slightly different study area, which does not include any portions of Cocke, Jefferson or Sevier counties but adds a small portion of Roane County. All of the PM2.5 Nonattainment Area is covered by the TPO's travel demand forecasting model.

7.) VMT by vehicle classification:

(Ozone and Annual & Daily PM2.5) – The VMT by vehicle classification is available from TDOT vehicle classification data. The TDOT data has to be further disaggregated to the several vehicle types recognized by MOBILE6.2 from the three major classifications that TDOT uses. Classification data from the year 2006 will be used for this analysis. The VMT by vehicle classification for future years accounts for the potential of increasing heavy-duty truck utilization based on various projections.

8.) VMT by functional classification:

(Ozone and Annual & Daily PM2.5) – The TPO model allocates estimates of VMT into the appropriate functional classification as defined by TDOT. There are four driving cycles used by MOBILE6.2, the following table shows the Driving Cycle proposed for each FHWA functional classification category:

FHWA Highway Functional System	MOBILE6.2 Driving Cycle
Rural Interstate	Freeway and Freeway Ramp
Rural Other Principal Arterial	Arterial/Collector*
Rural Minor Arterial	Arterial/Collector
Rural Major Collector	Arterial/Collector
Rural Minor Collector	Arterial/Collector
Rural Local	Arterial/Collector
Urban Interstate	Freeway and Freeway Ramp
Urban Other Freeways	Freeway and Freeway Ramp
Urban Other Principal Arterial	Arterial/Collector
Urban Minor Arterial	Arterial/Collector
Urban Collector	Arterial/Collector
Urban Local	Local Roadway

* The technical guidance recommends the Freeway and Freeway Ramp driving cycle for the Rural Other Principal Arterial class; however the arterial/collector cycle seems to be more appropriate in this region due to the lack of access control on these types of facilities.

9.) VTM Fraction by Average Speed by Hour of the Day:

(Ozone and Annual & Daily PM2.5) – The TPO travel demand model has three time periods - AM Peak (6 - 9 am), PM Peak (3 - 6 pm) and the rest of the day. Therefore an average speed can be developed for each of these time periods, by direction of travel in order to capture the peaking effect on speed. The command has a single VMT distribution for the AM peak three-hour period, a single VMT distribution for the PM peak three-hour period and one for the other 18 hours of the day. Separate scenarios will be run for Interstates, Arterials and Collectors which would be handled with setting the appropriate field in the VMT BY FACILITY command to 1.0.

10.) Weekday and Weekend Day Activity:

(Ozone) – The technical guidance states that “for most purposes, EPA will not expect States to develop local estimates that vary by day of the week”. There is no mention of season variation factors although it is fairly standard practice to apply a seasonal adjustment factor (SAF) to account for differences in travel during the summer months since the HPMS data and travel demand model VMT estimates are normalized to an average annual daily traffic volume. There are seasonal variation factors available from TDOT which will be used to develop an appropriate SAF, and will be documented in the conformity report.

(Annual & Daily PM2.5) – Since the PM2.5 analysis is based on computing annual emissions and the travel demand model was calibrated to match the HPMS estimates of daily vehicle miles of travel the emissions were calculated first at the daily level and then converted to an annual amount by multiplying by 365.

11.) Gasoline Volatility:

(Ozone) – A Reid Vapor Pressure (RVP) value of **9.0** will be used since that is the type of fuel that is distributed in the Knoxville region during the ozone season months.

(Annual & Daily PM2.5) – As established by the Annual PM2.5 SIP, the annual average RVP value is **11.98**.

12.) Diesel Sulfur Content:

(Ozone) – The diesel sulfur content is only applicable to Particulate Matter modeling and will not be used.

(Annual & Daily PM2.5) – The technical guidance states that in the absence of survey data EPA recommends that past data be taken from an EPA spreadsheet called “Diesel Sulfur Levels by County” located at <http://www.epa.gov/otaq/m6.htm>. This spreadsheet was reviewed for the counties located in the Knoxville PM2.5 nonattainment area for the 2002 Analysis Year – the Annual Diesel Sulfur Level Average was the same for each county and was calculated to be **358 ppm** based on the information in the spreadsheet.

Beginning in the 2006 calendar year more stringent sulfur levels are phased in going from the current level of 500 ppm to 15 ppm. The technical guidance recommends using the value of **11 ppm** for any analysis year after May 2010.

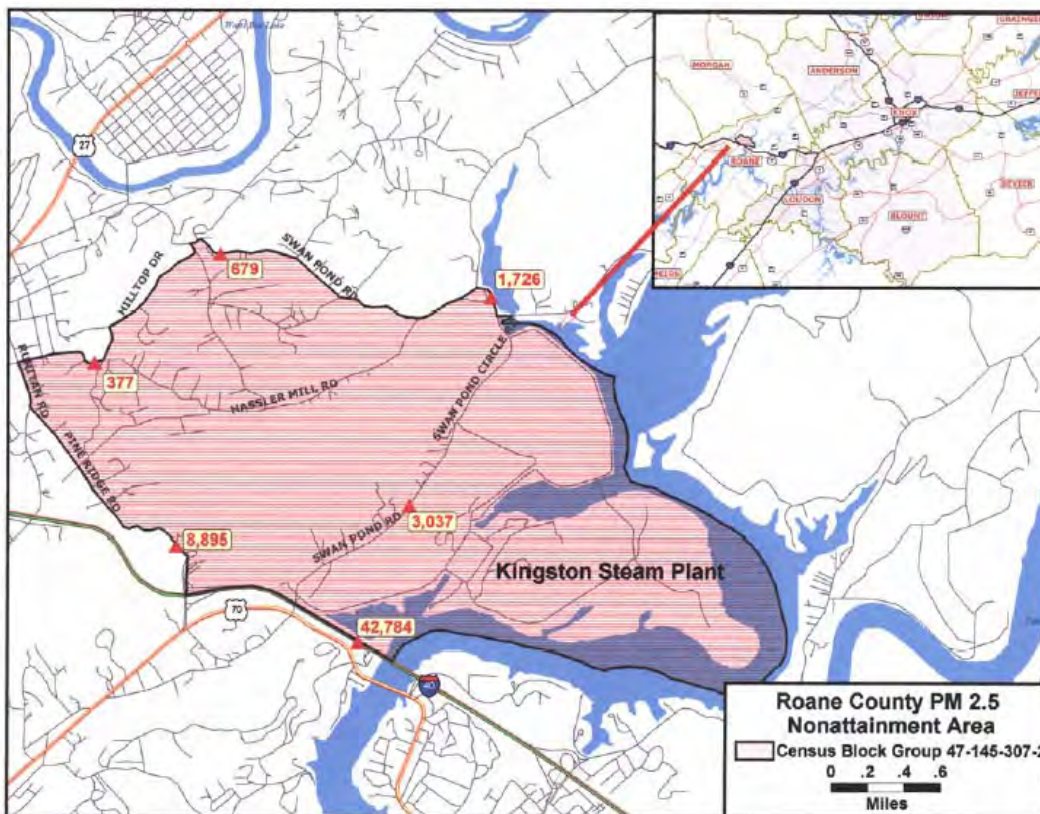
Appendix F: Roane & Cocke County Partial County Emissions Analysis Methodology

Background:

The methodology used to calculate emissions from the partial county PM_{2.5} nonattainment area located in Roane County has been updated from previous conformity determinations due to the travel demand model coverage area being expanded to include the portion of Roane County in nonattainment. The previous methodology was an “off-model” analysis that used several assumptions for VMT growth. The Cocke County emissions analysis methodology was performed in the same manner as previous analyses however updated traffic count data was obtained from the Great Smoky Mountains National Park, which was used to calculate new growth rates.

Roane County Methodology:

The PM_{2.5} partial nonattainment area in Roane County consists of one Census Blockgroup around the TVA Kingston Steam Plant and is shown in the map below:



There are five facility types represented within this area: Rural Freeway, Rural Ramp, Urban Minor Arterial, Rural Collector and Rural Local. The total VMT was calculated for the base year 2002 based on actual TDOT traffic counts also shown in the above map. The

2002 model VMT by facility type within the area was compared to the actual VMT in order to obtain correction factors. The local VMT was calculated based on the length of local roads versus the total length of rural local roads in Roane County. The correction factors and local VMT percentage were assumed to remain constant and were applied to the travel demand model VMT as shown below:

2002	2002 Actual VMT	2002 Model VMT	Correction Factor
Rural Freeway	51,564	87,765	0.59
Urban Minor Arterial	11,777	14,835	0.79
Rural Collector	9,472	10,028	0.94
Freeway Ramp	1,816	2,986	0.61
Rural Local	4,472	0	N/A
Total	79,101		

2014	2014 Model VMT	Correction Factor	Corrected VMT
Rural Freeway	108,624	0.59	64,088
Urban Minor Arterial	15,425	0.79	12,245
Rural Collector	10,567	0.94	9,981
Freeway Ramp	3,162	0.61	1,929
Rural Local	5,470	N/A	5,470
Total	143,248		

2024	2024 Model VMT	Correction Factor	Corrected VMT
Rural Freeway	128,316	0.59	75,706
Urban Minor Arterial	17,309	0.79	13,741
Rural Collector	10,810	0.94	10,211
Freeway Ramp	3,448	0.61	2,103
Rural Local	5,918	N/A	5,918
Total	165,801		

2034	2034 Model VMT	Correction Factor	Corrected VMT
Rural Freeway	148,971	0.59	87,893
Urban Minor Arterial	18,096	0.79	14,366
Rural Collector	11,088	0.94	10,473
Freeway Ramp	3,800	0.61	2,318
Rural Local	6,142	N/A	6,142
Total	188,097		

Note: The Rural Freeway correction factor accounts for the fact that the model segment length is 1.74 times the length of the actual segment of freeway that is included within the nonattainment boundary, i.e. the model segment is 2.16 miles versus the 1.24 mile segment within the nonattainment boundary. A comparison of equal length segments would yield a

correction factor of only 0.98 (actual 2002 VMT = 89,721 versus 2002 model VMT = 87,765). A more recent year of 2006 was also checked and the correction factor remained at 0.98 (actual 2006 VMT = 94,490 versus 2002 model VMT = 93,035).

Cocke County Methodology:

Updated traffic counts were received and input into a spreadsheet. Using Excel growth trend computation procedures the counts for each of the three roadways within the Ozone Nonattainment Area were extrapolated to year 2034 as shown below:

SR 32 = 8.5 miles				
	ADT	VMT	Growth Rate	
2000	729	6196.5		
2001	789	6706.5		
2002	888	7548		
2003	857	7284.5		
2004	804	6834		
2005	899	7641.5		
2006	808	6868		
2007	847	7199.5		
2008	878.0399	7463		
2009	890.0613	7566		
2010	902.2474	7669		
2011	914.6002	7774		
2012	927.1223	7881		
2013	939.8157	7988		
2014	952.683	8098	1.07284	
2015	965.7264	8209		
2016	978.9484	8321		
2017	992.3514	8435		
2018	1005.938	8550		
2019	1019.71	8668		
2020	1033.672	8786		
2021	1047.824	8907		
2022	1062.17	9028		
2023	1076.712	9152		
2024	1091.454	9277	1.22911	
2025	1106.397	9404		
2026	1121.545	9533		
2027	1136.9	9664		
2028	1152.466	9796		
2029	1168.245	9930		
2030	1184.239	10066		
2031	1200.453	10204		
2032	1216.889	10344		
2033	1233.55	10485		
2034	1250.438	10629	1.40815	

Foothills Parkway East				
	ADT	VMT	Growth Rate	
2000	1,235	6,919		
2001	995	5,570		
2002	1,011	5,662		
2003	1,117	6,257		
2004	1,163	6,513		
2005	1,076	6,026		
2006	1,290	7,224		
2007	1,272	7,125		
2008	1,287	7,205		
2009	1,293	7,241		
2010	1,323	7,406		
2011	1,353	7,575		
2012	1,383	7,747		
2013	1,415	7,924		
2014	1,447	8,104	1.4314	
2015	1,480	8,289		
2016	1,514	8,477		
2017	1,548	8,671		
2018	1,584	8,868		
2019	1,620	9,070		
2020	1,657	9,277		
2021	1,694	9,488		
2022	1,733	9,704		
2023	1,772	9,925		
2024	1,813	10,151	1.79292	
2025	1,854	10,382		
2026	1,896	10,619		
2027	1,939	10,860		
2028	1,984	11,108		
2029	2,029	11,361		
2030	2,075	11,619		
2031	2,122	11,884		
2032	2,170	12,155		
2033	2,220	12,432		
2034	2,270	12,715	2.24575	

Cosby Campground/Picnic Area Access Road				
	ADT	VMT	Growth Rate	
2000	188	452		
2001	142	341		
2002	196	471		
2003	177	425		
2004	146	351		
2005	114	274		
2006	181	435		
2007	173	414		
2008	354	849		
2009	218	524		
2010	228	547		
2011	237	570		
2012	248	594		
2013	258	620		
2014	269	646	1.3723	
2015	281	674		
2016	293	703		
2017	305	733		
2018	318	764		
2019	332	797		
2020	346	831		
2021	361	867		
2022	377	904		
2023	393	943		
2024	410	983	2.0867	
2025	427	1,025		
2026	445	1,069		
2027	464	1,115		
2028	484	1,162		
2029	505	1,212		
2030	527	1,264		
2031	549	1,318		
2032	573	1,374		
2033	597	1,433		
2034	623	1,495	3.173	

Source: NPS, Public Use Statistics Office

Cosby Campground/picnic area access road is 2.4 miles in length

Foothills Parkway East is 5.6 miles in length.

Emissions Analysis Calculations for Cocke County

	Length	2002 Summer ADT	2002 Summer VMT	2014 Growth Factor	2014 Summer VMT	2024 Growth Factor	2024 Summer VMT	2034 Growth Factor	2034 Summer VMT
Foothills Parkway	5.6 miles	1011	5662	1.43	8096.66	1.79	10134.98	2.25	12739.5
Cosby Campground Road	2.4 miles	196	471	1.37	645.27	2.09	984.39	3.17	1493.07
State Route 32	9.2 miles	1233	11344	1.07	12138.08	1.23	13953.12	1.41	15995.04
Total			17,477.00		20,880.01		25,072.49		30,227.61
VOC Emissions Rate			1.841		0.721		0.411		0.391
TOTAL VOC Emissions (tpd)			0.0355		0.0166		0.0114		0.0130
NOx Emissions Rate			1.984		0.777		0.413		0.345
TOTAL NOx Emissions (tpd)			0.0382		0.0179		0.0114		0.0115

Summer is defined as average of June, July and August

A summertime Recreational Seasonal Adjustment factor of 0.72 was applied to the State Route 32 ADT

Appendix G: Regional Significance Screening Criteria

Background:

This document is intended to serve as a tool for assisting with determining whether a roadway facility in the Knoxville Region is “Regionally Significant” with respect to the air quality conformity requirements found in the Transportation Conformity Rule (40 CFR Part 93). The purpose is to provide pertinent information to the Interagency Consultation (IAC) group on the characteristics that would normally be used to consider the regional significance of a transportation project and in particular one that is on a roadway facility classified as a Minor Arterial or lower. The IAC will make the final determination of regional significance on a case-by-case basis as needed, and additional criteria beyond what is being presented in this document may be used at the IAC’s discretion.

Federal Conformity Rule Definition of Regional Significance:

Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals themselves) and would normally be included in the modeling of a metropolitan area’s transportation network, including at a minimum all principal arterial highways and all fixed guide way transit facilities that offer an alternative to regional highway travel.

Proposed Regional Significance Screening Criteria Interrogatories:

- 1.) What are the Exempt status and Functional Classification of the roadway project?

A non-exempt project on a roadway facility classified as a Principal Arterial or higher will generally be considered Regionally Significant.

A project determined to be Exempt under 40 CFR 93.126 or 93.127 will generally be considered Non-Regionally Significant unless the IAC group determines that it will have regional impacts for any reason.

- 2.) Is the facility either included in the Regional Travel Demand Forecasting Model, or would it be if it does not currently exist?

It is the practice of the Knoxville TPO to include most “major” roadways (most major collectors and above) in order to improve model performance so if a roadway is not modeled it can generally be considered to be Non-Regionally Significant.

- 3.) Does the facility provide direct connection between two roadways classified as a Principal Arterial or higher?

Direct connections between major principal arterials and in particular connections to the Interstate can generally be considered Regionally Significant.

4.) Does the facility provide the primary regional connectivity to a “Major Activity Center”?

This is a criterion listed in the federal Regional Significance definition; however there can be different interpretations as to what constitutes a major activity center. In the Knoxville Region the following are suggested as general types of major activity centers, with specific locations to be determined on a case-by-case basis:

- Major Hospitals and Regional Medical Centers
- Central Business Districts of cities with greater than 5,000 population
- Major Regional Retail Centers and Malls (greater than 1,000,000 sf)
- Major Colleges and Universities
- Tourist Destinations
- Airports
- Freight Terminals and Intermodal Transfer Centers
- Sports Complexes

5.) Does the project add significant vehicular capacity?

A project adding general purpose through lanes will typically be more significant than one that is adding “auxiliary” lanes or a continuous center turn lane or other projects that do not add significant roadway capacity.

6.) What is the length of the roadway segment being improved and what is the overall corridor length?

Projects extending (or completing) long sections (typically greater than 1 mile) will tend to be more regionally significant.

If the corridor is lengthy and there is an absence of other principal arterials in the vicinity then the roadway will tend to be more regionally significant.

7.) What is the current Average Daily Traffic of the roadway segment?

This is less important in determining Regional Significance although it will provide additional information to be considered along with the above criteria. Obviously high traffic segments will tend to be more correlated with the increased regional significance of a roadway.

Appendix H: Highway Project List

H.1. List of Primary Project Types and Exempt Status:

- 1.) Construct new roadway (any number of lanes) – Non-exempt Project, Entails constructing a roadway on new location.
- 2.) Modify Interchange – Exempt Project, Entails ramp modifications such as realignment, relocation, etc...
- 3.) Widen roadway from x lanes to y lanes – Non-exempt Project, Entails addition of capacity through construction of additional through travel lanes on an existing roadway. Multilane facilities will generally include either a non-traversable median or a center turn lane. The final design will usually determine the median configuration, and a project calling for a center turn lane in the project list may end up with a non-traversable median or vice versa, however there is no difference between the two in terms of air quality impacts or treatment in the travel demand forecasting model.
- 4.) Install traffic signal – Exempt Project, Entails addition of traffic signal at a single intersection, may also involve additional improvements at the intersection such as realignment of approaches or additional turn lanes to maximize efficiency of the traffic signal.
- 5.) Reconstruct 2-lane road – Exempt Project, Entails the improvement of an existing 2-lane roadway to bring it up to modern standards in terms of lane widths and geometric design chiefly to enhance the safety of the roadway, it may also involve the construction of turn lanes at major intersections. There are numerous roadways in the region that were not designed to accommodate the type an amount of suburban development that is occurring, which leads to unsafe operating conditions.
- 6.) Replace Bridge – Exempt Project, Entails the replacement of an existing bridge that has been determined to be structurally deficient. The new bridge may include safety enhancements such as wider lanes and shoulders, but will not have more through lanes than the previous structure had.
- 7.) Install Street Lighting – Exempt Project, Entails the addition of overhead lighting to enhance night time visibility and improve safety.
- 8.) Intersection improvements – Exempt Project, Entails the modification of a single intersection to include the addition of separate turn lanes or realignment of approaches to improve safety.
- 9.) Signal Coordination – Can be either exempt or non-exempt depending on scope, Entails retiming traffic signals to optimize traffic flow.
- 10.) Add Center Turn Lane – Entails addition of a two way left turn lane on an undivided roadway of two or more lanes, also usually involves reconstructing the roadway to modern design standards for lane width and geometric design. In previous conformity analyses this type of project has been determined to be “Exempt”, however it has since been determined that these projects will be considered “Non-Exempt” if they involve turn lanes at more than one intersection or greater than one quarter mile in length.

H.2. Regional Highway Projects

L RTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
104	Blockhouse Valley Road	SR 9 to Clinton City Limits	Clinton/Anderson County	0.4	Reconstruct 2-lane section and add sidewalks	2014	STIP #0105	Exempt	No
201	East Bessemer Street	Intersection w/ E Watt St	Alcoa	0.0	Realign intersection	2014		Exempt	No
203	Old Knoxville Hwy (SR 33)	Hunt Rd (SR 335) to Pellissippi Pkwy (SR 162)	Alcoa	0.5	Widen 2-lane to 4-lane w/center turn lane	2014	Local/SIA	Non-Exempt	Yes
204	Pellissippi Place Access Road	Connect Old Knoxville Hwy (SR 33) to Wildwood Rd through Pellissippi Place Research Park	Alcoa	1.2	Construct new 2 and 4-lane road w/center turn lane	2014	Local/SIA	Non-Exempt	Yes
206	US 129 Bypass (SR 115)	Intersection with Louisville Rd (SR 334)	Alcoa	0.0	Intersection improvements	2014	TDOT Spot Safety	Exempt	No
208	Improve Streetscapes & Pavement	Locations throughout Blount County	Alcoa/ Maryville/ Blount County	N/A	Improve streetscapes and repair pavement	2014	2011-006	Exempt	No
211	Morganton Road Phase 1	Foothills Mall Dr to William Blount Dr (SR 335)	Blount County	2.2	Reconstruct 2-lane section	2014	2011-030	Exempt	No
237	E. Broadway Avenue (SR 33)	Intersection with Brown School Rd	Maryville	0.0	Realign and install traffic signal	2014		Exempt	No
259	McCammon Avenue Relocation	Intersection with Bessemer Street in Alcoa	Maryville	0.1	Re-align McCammon Avenue with Hamilton Crossing entrance to create signalized, 4-way intersection	2014	2011-056	Exempt	No
261	Hall Road (SR 35)	Intersection with Alcoa South Plant Entrance	Alcoa	0.0	Add southbound left turn lane	2014	2011-034	Exempt	No
301	Chucky Pike	Intersection at US 11E (SR 34)	Jefferson City	0.0	Intersection improvement- add turn lanes and modify signal	2014	LAMTPO TIP #20	Exempt	No
305	Odyssey Rd	Intersection at US 11E (SR 34)	Jefferson City	0.0	Add left and right turn lanes	2014	LAMTPO TIP #14	Exempt	No
306	Odyssey Rd	US 11E (SR 34) to Old AJ Hwy	Jefferson City	0.9	Add center turn lane	2014	LAMTPO TIP #14	Non-exempt	No
309	Old AJ Highway	Intersection at SR 92	Jefferson City	0.0	Signalize Intersection	2014	LAMTPO TIP Bucket	Exempt	No
310	Old AJ Highway	Intersection at Mountcastle St	Jefferson City	0.0	Signalize Intersection	2014	LAMTPO TIP Bucket	Exempt	No
312	US 25E (SR 32)	In White Pine	White Pine	1.9	Replace "Reduced Speed Limit" Signs	2014		Exempt	No
315	SR 92	US 11E to Hinchey Hollow Rd	Jefferson City	2.3	Install street lighting	2014		Exempt	No
317	US 11E (SR 34)	Intersection w/ George Ave	Jefferson City	0.0	Intersection improvements	2014	LAMTPO TIP #2043	Exempt	No
318	US 11E (SR 34)	Intersection w/ Russell Ave	Jefferson City	0.0	Intersection improvements	2014	LAMTPO TIP #2044	Exempt	No
319	US 11E (SR 34)	SR 92 to Morristown City Limit	Jefferson City	4.8	Install street lighting	2014		Exempt	No

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
320	US 11E (SR 34)	All signalized intersections	Jefferson City	0.0	LED signal head replacements	2014	LAMTPO #2045	Exempt	No
321	US 11E (SR 34)	SR 92S to Hicks Rd	Jefferson City	1.7	Install Pedestrian Signals and Pushbutton Activation	2014	LAMTPO TIP #7000	Exempt	No
322	US 11E (SR 34)	SR 92S to Odyssey Rd	Jefferson City	0.5	Signal Coordination	2014	LAMTPO TIP #7000	Exempt	No
324	US 411/ US 25W (SR 35)	Grapevine Hollow Rd to 4-lane section of SR 9	Jefferson County	3.7	Widen 2-lane to 4-lane	2014	STIP #45020	Non-Exempt	Yes
326	Old AJ Highway	Railroad Crossing	Jefferson City	0.0	Bridge replacement	2014	LAMTPO ID#55	Exempt	No
400	Harrison Road	From Kingston St to Lenoir City Limits (approx. 7,000 ft.)	Lenoir City	1.3	Intersection improvements and reconstruct 2-lane section	2014		Exempt	No
401	Improve RR Crossings	Various locations in Lenoir City	Lenoir City	N/A	Improve at-grade RR crossings	2014	2011-027	Exempt	No
402	Improve Streetscapes and Pavement	Various locations in Loudon County	Loudon County	N/A	Improve streetscapes and repair pavement	2014	2011-041	Exempt	No
403	Improve Streetscapes and Pavement	Various locations in Greenback	Greenback	N/A	Improve streetscapes and repair pavement	2014	STIP #53010	Exempt	No
404	Unitia Rd	Unitia Rd Bridge	Loudon County	0.0	Replace Bridge	2014	STIP #53017	Exempt	No
405	US 11 (SR 2)	Intersection w/ Shaw Ferry Rd	Loudon County	0.0	Intersection improvements	2014		Exempt	No
406	US 11 (SR 2)	Intersection w/ US 70 (SR 1)	Loudon County	0.0	Intersection improvements	2014	2011-012	Exempt	No
407	US 11 (SR 2)	Intersection w/ Loudon H.S. Entr.	Loudon	0.0	Intersection improvements	2014		Exempt	No
408	US 321 (SR 73)	I-75 Interchange to Simpson Rd	Lenoir City	1.7	Intersection Improvements from Corridor Study	2014	2011-044	Exempt	No
409	US 321 (SR 73)	US 11 (SR 2) to east of Little Tennessee River	Loudon County	1.7	Construct 4-lane road on existing and new alignment	2014	2011-053	Non-Exempt	Yes
410	US 321 (SR 73)	Intersection w/ US 11 (SR 2)	Lenoir City	0.0	Intersection Improvements	2014	2011-036	Exempt	No
411	Veteran's Memorial Bridge	Veteran's Memorial Bridge	Loudon	N/A	Install lighting	2014		Exempt	No
423	US 321 (SR 73)	Simpson Rd to US 11 (SR 2)	Lenoir City	1.1	Widen 4-lane to 6-lane	2014		Non-Exempt	Yes
504	Veterans Blvd (SR 449) Extension	US 411 (SR 35) to SR 66	Sevierville	3.5	Construct new 4-lane road	2014		Non-Exempt	Yes
505	Bird's Creek Road (SR 454)	Glade Rd to SR 416	Sevier County	4.6	Reconstruct 2-lane section	2014		Exempt	No
506	SR 66	North of Nichols St to Boyds Creek Hwy (SR 338)	Sevierville/Sevier County	4.2	Widen 4-lane to 6-lane	2014		Non-Exempt	Yes
507	SR 66	Douglas Dam Rd (SR 139) to I-40	Sevierville/Sevier County	2.0	Widen 4-lane to 6-lane	2014	STIP #78021	Non-Exempt	Yes
508	Chapman Hwy (SR 71) (US 441)	Boyd's Creek Hwy (SR 338) to Macon Ln	Sevier County/Sevier County	0.7	Add center turn lane	2014	2011-035	Non-Exempt	Yes
512	I-40/ SR 66 Interchange	Interchange at SR 66	Sevierville	0.3	Modify Interchange to improve capacity including addition of new Interstate access ramps	2014		Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
600	Old Stage Road/Watt Road Extension	Old Stage Rd. from Johnson's Corner Rd. to Town Limits, Watt Road from Old Stage Rd. to Kingston Pk (SR 1) (US 11/70)	Farragut	1.4	Improve Old Stage Road to 2-lane road with sidewalk from Johnson's Corner Rd to western Town limits and Extend Watt Road from Old Stage to SR-1 with three lanes, sidewalk, curb & gutter	2014	2011-052	Non-Exempt	No
601	Campbell Station Road	Jamestown Blvd to Parkside Dr/ Grigsby Chapel Rd	Farragut	0.9	Widen 2-lane to 4-lane w/center turn lane	2014		Non-Exempt	Yes
602	Outlet Drive	Lovell Rd (SR 131) to Campbell Station Rd	Farragut/Knox County	1.6	Construct new 2-lane road w/center turn lane along existing and new alignment	2014		Non-Exempt	No
603	Emory Road (SR 131)	Clinton Hwy (SR 9) (US 25W) to Gill Rd	Knox County	2.9	Widen 2-lane to 4-lane w/center turn lane	2014	2011-055	Non-Exempt	Yes
607	Halls Connector	Norris Fwy (SR 71) (US 441), Emory Rd (SR 131), Maynardville Hwy (SR 33)	Knox County	0.4	Reconfigure intersections and add SB thru lane on Norris Fwy from Emory Rd to Maynardville Hwy	2014		Non-Exempt	No
608	Lovell Road (SR 131)	Pellissippi Pkwy (SR 162) SB Ramps to Schaeffer Rd	Knox County	0.2	Widen 2-lane to 4-lane w/center turn lane	2014		Non-Exempt	Yes
609	Emory Rd (SR 131)	Intersection w/Tazewell Pk (SR 331)	Knox County	0.0	Intersection improvement	2014		Exempt	No
610	Western Avenue (SR 62)	Texas Ave to Major Ave	Knoxville	0.8	Widen 2-lane to 4-lane	2014	2011-045	Non-Exempt	Yes
611	I-640/Broadway (SR 33) (US 441) Interchange Phase II	I-640/Broadway (SR 33) (US 441) Interchange	Knoxville	0.0	Construct additional ramps and access improvements	2014	2011-018	Non-exempt	Yes
612	Western Avenue (SR 62)	Schaad Rd to I-640	Knoxville	3.7	Widen 2-lane to 4-lane w/center turn lane	2014	2011-040	Non-Exempt	Yes
613	Cumberland Avenue (SR 1) (US 11/70)	Alcoa Hwy to 16th St	Knoxville	0.8	Pedestrian Improvements and Reduce from 4 lanes to 2 lanes with center turn lane	2014	2011-020	Non-Exempt	Yes
614	Henley Street Bridge (SR 33/71) (US 441)	Bridge over Tennessee River	Knoxville	0.4	Rehabilitate bridge & add bike lanes	2014	2011-038	Exempt	No
617	South Knoxville Waterfront Roadway Improvements	Sevier Ave / Blount Ave from Scottish Pk to James White Pkwy (SR 71)	Knoxville	1.9	Add turn lanes where needed and widen one-lane underpass to two lanes	2014	2011-032	Non-Exempt	Yes
618	I-275 Industrial Park Access Improvements	I-275 Corridor	Knoxville	0.5	Extend Blackstock Ave from Fifth Ave to Bernard Ave and realign Marion Street. Improve intersections of University Ave with W Fifth Ave and Bernard Ave.	2014	2011-001	Non-Exempt	No
619	Various Railroad Crossings	Various Railroad Crossing Locations	Knoxville	N/A	Improve circuitry on vehicle protection devices of at-grade RR crossings throughout Knoxville	2014	2011-026	Exempt	No
620	Cessna Road RR Crossing	Cessna Rd RR crossing	Knoxville	0.0	Improve the at-grade RR crossing at Cessna Rd	2014	2011-019	Exempt	No

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
621	I-40/75	From I-140 to Lovell Rd (SR 131) Interchange Westbound Direction	Knoxville	0.5	Add full auxiliary lane westbound between interchanges (approx 2,700 ft)	2014	2011-016	Non-Exempt	Yes
622	I-40/75 at Weigh Station	Eastbound and Westbound Truck Weigh Stations	Knoxville	0.0	Extend on and off ramps at weigh stations	2014	2011-017	Exempt	No
623	I-140 (Pelissippi Pkwy)	I-40 to Dutchtown Rd	Knoxville	0.4	Restripe to add one lane on northbound I-140 and remove one lane from the ramp from I-40	2014		Non-Exempt	Yes
624	Cedar Bluff Road	Cross Park Dr to Peters Rd	Knoxville	0.4	Intersection and Operational Improvements	2014		Exempt	No
626	Chapman Highway (SR 71) (US 441)	Blount Ave to Boyd Creek Hwy (SR 338) in Sevier County	Knoxville/ Knox County	10.7	Operational and Safety Improvements including turn lanes at various locations	2014		Exempt	No
632	Concord Road (SR 332)	Turkey Creek Rd to Northshore Dr (SR 332)	Farragut/ Knox County	0.8	Widen 2-lane to 4-lane	2014	2011-021	Non-Exempt	Yes
694	I-140 (Pelissippi Pkwy)/Northshore Dr (SR 332) Interchange	I-140 EB Off Ramp to Northshore Dr (SR 332)	Knoxville	0.2	Construct new slip ramp from existing off ramp to serve the Northshore Town Center Development	2014		Non-Exempt	Yes
695	Dutchtown Road	Murdock Rd to E of Pelissippi Pkwy southbound ramps	Knox County	0.3	Widen to 4-lanes with center turn lane, add eastbound decel lane at Pelissippi ramps	2014		Non-Exempt	No
696	Downtown Knoxville Wayfinding Project	Downtown Knoxville	Knoxville	0.0	Create a consistent signage system to include gateway signs, pedestrian directional, trolley signs, etc...	2014	2011-013	Exempt	No
697	Central Street	Woodland Ave to Depot St	Knoxville	1.2	Road Diet and Streetscape Project, reduce from 4 lanes to 2 lanes with center turn lane	2014	2011-031	Non-Exempt	No
698	Kingsion Pike (SR-1)(US 11/70)	Intersection w/Everett Rd	Farragut	0.2	Intersection Improvements to include center turn lane and traffic signal	2014	2011-046	Exempt	No
102	SR 29	Pine Ridge Rd to SR 61	Harriman/Roane County	0.8	Widen 2-lane to 4-lane	2024		Non-exempt	Yes
202	Hunter Growth Study Corridor #2 - Robert C. Jackson Dr Extension	Middlesettlements Rd to Louisville Rd (SR 334)	Alcoa	0.7	New 4-lane road w/center turn lane	2024	2011-015	Non-Exempt	No
207	Wright's Ferry Road	Topside Rd (SR 333) to Airbase Rd (SR 429)	Alcoa	1.5	Add center turn lane	2024		Non-exempt	No
209	Ellejoy Road	River Rd to Jeffries Hollow Rd	Blount County	3.7	Reconstruct 2-lane section	2024		Exempt	No
210	Jeffries Hollow Road	Ellejoy Rd to Sevier County Line	Blount County	2.7	Reconstruct 2-lane section	2024		Exempt	No
212	E. Broadway Avenue (SR 33)	Wildwood Rd to McArthur Rd	Blount County	1.2	Reconstruct 2-lane section	2024		Exempt	No
213	Old Niles Ferry Road	Maryville City Limit to Calderwood Hwy (SR 115) (US 129)	Blount County	3.3	Reconstruct 2-lane section	2024		Exempt	No
214	Sevierville Rd (SR 35) (US 411)	Washington St (SR 35) to Dogwood Dr	Maryville	1.4	Construct 2-lane road w/center turn lane	2024	2011-029	Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
302	E. Main St/N. Chucky Pk	Intersection at Old AJ Hwy	Jefferson City	0.0	Realign Intersection	2024		Exempt	No
303	Municipal Dr	Intersection at Old AJ Hwy	Jefferson City	0.0	Add left and right turn lanes	2024		Exempt	No
304	Old AJ Highway	Intersection at Chucky Pk	Jefferson City	0.0	Add left and right turn lanes	2024		Exempt	No
307	Old AJ Highway	Mossy Creek E. of Branner Ave	Jefferson City	0.0	Replace bridge	2024		Exempt	No
308	Old AJ Highway (SR 92)	Main St to Overlook Rd	Jefferson City	0.7	Add center turn lane and sidewalks	2024		Non-exempt	No
313	SR 66 Relocation	North of I-81 at SR 341 to SR 160	Jefferson County	3.1	Construct new 4-lane road	2024	STIP #32015	Non-Exempt	Yes
314	SR 92	Bridge in Dandridge	Dandridge	0.4	Replace Bridge	2024		Exempt	No
316	SR 92	Intersection at Old AJ Hwy	Jefferson City	0.0	Add left and right turn lanes	2024		Exempt	No
323	US 11E (SR 34)	Intersection at Pearl Ave and at Harrington St	Jefferson City	0.0	Intersection improvement- add left turn lanes	2024		Exempt	No
502	Dolly Parton Pkwy (US 411) (SR 35)	Intersection w/ Veterans Blvd (SR 449)	Sevierville	0.0	Improve Intersection	2024		Exempt	No
503	Old Knoxville Highway	Boyd's Creek Hwy (SR 338) to US 411/441 (SR 71)	Sevierville	4.2	Widen 2-lane to various 3 and 4 lane divided cross sections	2024		Non-Exempt	No
514	SR 66	Boyd's Creek Hwy (SR 338) to Douglas Dam Rd (SR 139)	Sevierville/Sevier County	2.2	Widen 4-lane to 6-lane	2024	STIP #78022	Non-Exempt	Yes
509	Thomas Road Connector	Teaster Lane to Veterans Blvd (SR 449) at McCarter Hollow Rd	Pigeon Forge	1.6	Construct new 4-lane road	2024		Non-Exempt	Yes
510	US 411 (SR 35)	Sims Rd to Grapevine Hollow Rd	Sevier County	6.2	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
604	Maynardville Hwy (SR 33)	Temple Acres Dr to Union County Line	Knox County	5.9	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
605	Schaad Road Extension	Middlebrook Pike (SR 169) to west of Oak Ridge Hwy (SR 62)	Knox County	4.6	Construct new 4-lane road	2024		Non-Exempt	Yes
615	Washington Pike	I-640 to Murphy Rd	Knoxville	1.6	Widen 2-lane to 4-lane	2024	2011-049	Non-Exempt	Yes
616	Pleasant Ridge Rd/Merchant Dr Phase II	Knoxville City Limits to Merchant Dr / Pleasant Ridge Rd to Wilkerson Rd	Knoxville	1.6	Add center turn lane	2024	2011-047	Non-Exempt	No
625	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	Knoxville/ Knox County	1.5	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
627	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Woodson Dr	Knoxville	1.4	Widen 4-lane to 6-lane	2024		Non-Exempt	Yes
628	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Blount/Knox County Line	Knoxville	3.0	Widen 4-lane to 6-lane	2024	2011-004	Non-Exempt	Yes
101	Edgemoor Rd (SR 170)	Oak Ridge Hwy (SR 62) to Clinton Hwy (SR 9) (US 25W)	Oak Ridge/Anderson County	6.2	Widen 2-lane to 4-lane	2024		Non-exempt	Yes
103	Park Lane	Andersonville Hwy (SR 61) to End of Route	Anderson County	7.3	Reconstruct 2-lane section	2024		Exempt	No
215	Airport Access Road to I-140	Airport Terminus to Pellissippi Pkwy (I-140) (SR 162)	Alcoa	0.0	Add new interchange ramps to service airport cargo area	2024		Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
216	Alcoa Highway (SR 115) (US 129)	Pellissippi Pkwy (SR 162) to Knox/Blount County Line	Blount County/ Alcoa	3.2	Widen 4-lane to 6-lane plus 2 auxiliary lanes between Singleton Station Rd and Topside Rd (SR 333)	2024	2011-003	Non-Exempt	Yes
217	Alcoa Highway (SR 115) (US 129)	Singleton Station Rd to Hunt Rd (SR 335)	Alcoa	3.6	Improve intersections including signals and turn lanes where warranted (upon completion of proposed Bypass)	2024		Exempt	No
218	Alcoa Highway Bypass (SR 115) (US 129)	From Hall Rd (SR 35)/Alcoa Hwy (SR 115) Interchange to Proposed Interchange serving McGhee Tyson Airport	Alcoa	1.3	Construct 8-lane freeway on existing and new alignment	2024	2011-005	Non-Exempt	Yes
257	Alcoa Highway Bypass (SR 115) (US 129)	From Proposed Interchange serving McGhee Tyson Airport to Pellissippi Pkwy (SR 162)	Alcoa	2.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2024	2011-037	Non-Exempt	Yes
258	Alcoa Highway Bypass (SR 115) (US 129)	From Pellissippi Pkwy (SR 162) to Near Singleton Station Rd	Alcoa	1.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2024		Non-Exempt	Yes
219	Wright Road	Hunt Rd (SR 335) to Alcoa Hwy (SR 115) (US 129)	Alcoa	1.1	Reconstruct 2-lane section	2024		Exempt	No
220	Hunter Growth Study Corridor #1 - Home Ave Extension	Home Ave to Calderwood St	Alcoa/ Maryville	0.2	Reconstruct 2-lane section, construct new bridge, demolish part of shopping center	2024		Non-Exempt	No
221	Burnett Station Road	Sevierville Rd (SR 35) (US 411) to Chapman Hwy (SR 71) (US 441)	Blount County	4.4	Reconstruct 2-lane section	2024		Exempt	No
222	Carpenters Grade Road	Raulston Rd to Mint Rd	Blount County	2.3	Reconstruct 2-lane section	2024		Exempt	No
223	Carpenters Grade Road	Cochran Rd to Raulston Rd	Maryville	0.9	Reconstruct 2-lane section	2024		Exempt	No
224	Foothills Parkway	Lamar Alexander Pkwy (SR 73) (US 321) to Sevier County Line	Blount County	11.3	Construct new 2-lane road	2024		Non-Exempt	Yes
225	Hinkle Road	Sevierville Rd (SR 35) (US 411) to Burnett Station Rd	Blount County	1.9	Reconstruct 2-lane section	2024		Exempt	No
226	Hunter Growth Study Corridor #5 - Ridge Rd Extension	Ridge Rd to Pleasant Hill Rd	Blount County	0.7	Construct new 2-lane road	2024		Non-Exempt	No
227	Mentor Road	Louisville Rd (SR 334) to Wrights Ferry Rd	Blount County	3.2	Reconstruct 2-lane section	2024		Exempt	No
228	Mint Road	Old Niles Ferry Rd to Barkshed Rd	Blount County	3.4	Reconstruct 2-lane section	2024		Exempt	No
229	Morgantown Road Phase 2	William Blount Dr (SR 335) to Walker Rd	Blount County	3.3	Reconstruct 2-lane section	2024		Exempt	No
230	Nails Creek Road	Wildwood Rd to Burnett Station Rd	Blount County	2.5	Reconstruct 2-lane section	2024		Exempt	No
231	Old Knoxville Highway (SR 33)	Pellissippi Pkwy (SR 162) to Knox County Line	Blount County	4.6	Reconstruct 2-lane section	2024		Exempt	No
232	Pellissippi Parkway (SR 162)	Old Knoxville Hwy (SR 33) to Lamar Alexander Pkwy (SR 73) (US 321)	Blount County	4.4	Construct new 4-lane freeway	2024	2011-025	Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
233	Proffit Springs Road	Louisville Rd (SR 334) to Hunt Rd (SR 335)	Blount County	1.5	Reconstruct 2-lane section	2024		Exempt	No
234	Wildwood Road	Maryville City Limit to Sevierville Rd (SR 35) (US 411)	Blount County	6.1	Reconstruct 2-lane section	2024		Exempt	No
235	Wilkinson Pike	Maryville City Limit to Chilhowee View Rd	Blount County	2.6	Reconstruct 2-lane section	2024		Exempt	No
236	Brown School Rd	E. Broadway Ave (SR 33) to Sevierville Rd (SR 35) (US 411)	Maryville	1.5	Reconstruct 2-lane section	2024		Exempt	No
238	Hunter Growth Study Corridor #3 - Robert C. Jackson Dr Extension	Lamar Alexander Pkwy (SR 73) (US 321) to Morganton Rd	Maryville	0.9	Construct new 2-lane road	2024	2011-015	Non-Exempt	No
239	Montvale Road (SR 336)	Maryville South City Limits to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	2.7	Add center turn lane	2024	2011-039	Non-Exempt	No
240	Sandy Springs Rd	Intersection w/ Montgomery Ln	Maryville	0.0	Intersection Improvements	2024		Exempt	No
241	Tuckaleechee Pk	Lamar Alexander Pkwy (SR 73) (US 321) to Grandview Dr	Maryville	1.0	Reconstruct 2-lane section	2024		Exempt	No
242	W. Broadway Avenue (SR 33) (US 411)	Old Niles Ferry Rd to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	0.8	Add center turn lane	2024		Non-exempt	Yes
243	Wilkinson Pk	Court St to Maryville City Limits	Maryville	0.9	Reconstruct 2-lane section	2024		Exempt	No
244	Peppermint Rd	Wildwood Rd to Sevierville Rd (SR 35) (US 411)	Blount County	1.1	Reconstruct 2-lane section	2024		Exempt	No
245	Sevierville Rd (SR 35) (US 411)	Dogwood Dr to Peppermint Rd	Maryville/ Blount County	3.0	Add center turn lane	2024		Non-Exempt	Yes
246	William Blount Dr Extension (SR 335)	US 411 (SR 33) @ Wm. Blount Dr to Old Niles Ferry Rd	Maryville/ Blount County	0.6	Construct new 2-lane road	2024		Non-Exempt	Yes
260	McCammon Avenue Extension	720 ft. South of Bessemer Street to Foch Street	Maryville	1.0	Reconstruct existing 2-lane road to 2-3 lanes and extend on new alignment to tie-in with Watkins Road	2024		Non-Exempt	No
325	I-40/ I-81 Interchange	I-40/ I-81 Interchange	Jefferson County	0.1	Safety Improvements to increase length of acceleration ramps	2024	STIP #45005	Exempt	No
412	Old Highway 95 (Kingston Street)	Harrison Rd to US 321 (SR 73)	Lenoir City	1.8	Reconstruct 2-lane section	2024		Exempt	No
413	SR 72	US 11 (SR 2) to Corporate Park	Loudon County	4.2	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
414	US 11 (SR 2)	Lenoir City Limits to US 321 (SR 73)	Lenoir City	1.8	Streetscape improvements, Potential "Road Diet" (reduce from 4-lane to 3-lane)	2024		Non-Exempt	Yes
415	US 11 (SR 2)	Blair Bend Rd to Lenoir City Limit	Loudon County	3.8	Reconstruct 2-lane section	2024		Exempt	No
416	US 11 (SR 2)	US 321 (SR 73) to US 70 (SR 1)	Lenoir City	5.1	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
511	Foothills Parkway	Blount County Line to US 321 (SR 73) in Wears Valley	Sevier County	2.5	Construct new 2-lane road	2024		Non-Exempt	Yes
513	US 321 (SR 73)	Buckhorn Rd (SR 454) to east of Pittman Center Rd (SR 416)	Sevier County	1.4	Widen 2-lane to 4-lane	2024	STIP #78032	Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
515	SR 139	SR 66 to Bryan Rd	Sevierville/TDOT	1.1	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
516	Bryan Road	E. Dumplin Valley Rd. to SR 139	Sevierville/Sevier County	2.1	Widen 2-lanes to 4-lanes	2024		Non-Exempt	Yes
517	I-40 (mile 408)	New Interchange Proposed near Mile Marker 408	Sevierville/Sevier County	N/A	Construct new interchange	2024		Non-Exempt	Yes
629	I-40/75 / Campbell Station Road Interchange	Interchange w/ Campbell Station Rd	Farragut	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
630	Virtue Road	Boyd Station Rd to Kingston Pike (SR 1) (US 11/70)	Farragut	1.7	Reconstruct 2-lane section	2024		Exempt	No
631	Turkey Creek Road	Brixworth Blvd to Boyd Station Rd	Farragut	0.2	Construct new 2-lane bridge and approaches to connect roads	2024		Non-Exempt	No
633	Parkside Drive	Mabry Hood Rd to Hayfield Rd	Knox County	1.1	Widen 2-lane to 4-lane	2024		Non-Exempt	No
634	Pellissippi Pkwy (SR 162)/ Hardin Valley Road Interchange	Hardin Valley Rd Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
635	Karns Connector	Westcott Blvd to Oak Ridge Hwy (SR 62)	Knox County	0.9	Construct New 2-lane road	2024		Non-Exempt	No
636	Emory Road (SR 131)	Oak Ridge Hwy (SR 62) to Clinton Hwy (SR 9) (US 25W)	Knox County	5.0	Add center turn lane	2024		Non-Exempt	Yes
637	Lovell Road (SR 131)	Schaeffer Rd to Middlebrook Pike (SR 169)	Knox County	1.7	Widen 2-lane to 4-lane	2024		Non-Exempt	
638	Oak Ridge Highway (SR 62)	Schad Rd to Byington-Beaver Ridge Rd (SR 131)	Knox County	4.2	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
639	Strawberry Plains Pike	Gov. John Sevier Hwy (SR 168) to Moshina Rd	Knox County	1.6	Widen 2-lane to 4-lane	2024		Non-Exempt	No
640	Tazewell Pike (SR 331)	Murphy Rd to Emory Rd (SR 131)	Knox County	4.7	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
641	Tazewell Pike (SR 131)	Emory Rd (SR 131) to Barker Rd	Knox County	1.2	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
642	Westland Drive	Morrell Rd to Ebenezer Rd	Knox County	2.7	Reconstruct 2-lane section	2024		Exempt	No
643	Emory Road (SR 131)	Maynardville Hwy (SR 33) to Tazewell Pike (SR 331)	Knox County	4.9	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
644	Gov John Sevier Highway (SR 168)	Alcoa Hwy (SR 115) (US 129) to Chapman Hwy (SR 71) (US 441)	Knox County	6.5	Widen 2-lane to 4-lane	2024		Non-Exempt	Yes
645	Northshore Drive (SR 332)	Morrell Rd to Ebenezer Rd	Knox County	3.5	Reconstruct 2-lane section	2024		Exempt	No
646	Northshore Drive (SR 332)	Pellissippi Pkwy (I-140) to Concord Rd (SR 332)	Knox County	4.5	Reconstruct 2-lane section	2024		Exempt	No
647	Pellissippi Parkway (SR 162)	Edgemoor Rd (SR 170) to Dutchtown Rd	Knox County	6.0	Widen from 4-lane to 6-lane	2024		Non-Exempt	Yes

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
648	Pellissippi Parkway (SR 162)/ Lovell Rd (SR 131) Interchange	Lovell Rd (SR 131) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
649	Pellissippi Parkway (SR 162)/ Oak Ridge Highway (SR 62) Interchange	Oak Ridge Hwy (SR 62) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
650	Byington-Beaver Ridge Road (SR 131)	At One-Lane Railroad Underpass	Knox County	0.2	Construct new road or widen railroad underpass	2024		Non-Exempt	No
651	I-40/75/ Watt Road Interchange	Watt Rd Interchange at I-40/75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
652	I-75/ Emory Road (SR 131) Interchange	Emory Rd (SR 131) Interchange at I-75	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
653	Alcoa Highway (SR 115) (US 129)	Woodson Dr to Cherokee Trail	Knoxville	1.1	Widen 4-lane to 6-lane	2024	2011-002	Non-Exempt	Yes
654	I-640/ I-275/ I-75 Interchange	Interchange at I-640 & I-75/I-275	Knoxville	1.4	Interchange improvements to include additional through lanes on I-75 north and southbound ramps	2024		Non-Exempt	Yes
655	Millertown Pike	Washington Pike to I-640	Knoxville	0.6	Reconstruct 2-lane section	2024		Exempt	No
656	Millertown Pike	I-640 to Mill Rd	Knoxville	0.6	Widen 2-lane and 4-lane sections to 4-lane and 6-lane sections	2024		Non-Exempt	Yes
657	Washington Pike	Millertown Pike to I-640	Knoxville	0.6	Add center turn lane	2024		Non-Exempt	No
658	Northshore Drive (SR 332)	Intersection w/ Kingston Pike (SR 1) (US 11/70)	Knoxville	0.0	Intersection improvement	2024		Exempt	No
659	Tazewell Pike (SR 331)	Intersection w/ Old Broadway & Greenway Dr	Knoxville	0.0	Intersection improvement	2024		Exempt	No
660	Gleason Drive	Montvue Rd to Gallaher View Rd	Knoxville	1.0	Reconstruct 2-lane section	2024		Exempt	No
661	I-75/ Callahan Rd Interchange	Callahan Rd Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
662	I-75/ Merchant Dr Interchange	Merchant Dr Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2024		Exempt	No
663	Northshore Drive (SR 332)	Lyons View Pk to Morrell Rd	Knoxville	2.2	Reconstruct 2-lane section	2024		Exempt	No
664	Broadway (SR 33) (US 441)	Intersection with Hall of Fame Dr	Knoxville	0.0	Intersection improvement	2024		Exempt	No
665	Murphy Road Extension	Washington Pike to Millertown Pike	Knoxville/ Knox County	1.3	Construct new 4-lane road	2024		Non-Exempt	Yes
666	South Knoxville Boulevard (SR 71)	Moody Ave to Chapman Hwy (SR 71) (US 441)	Knoxville/ Knox County	5.3	Construct new 4-lane road	2024	2011-022	Non-Exempt	Yes
667	Strawberry Plains Pike	Moshina Rd to south of I-40	Knoxville/ Knox County	1.4	Widen 2-lane to 4-lane	2024		Non-Exempt	No
699	Kingston Pike (SR 1) (US 11/70)	Intersection w/ Campbell Station Rd	Farragut	0.0	Intersection improvement to add additional eastbound left turn lane	2024	2011-051	Exempt	No
700	Campbell Station Road	Snyder Road to Yarnell Road	Farragut/ Knox County	1.8	Add center turn lane	2024	2011-050	Non-Exempt	No

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
247	Sam Houston School Road	Old Knoxville Hwy (SR 33) to Wildwood Rd	Alcoa/ Blount County	2.7	Add center turn lane	2034		Non-Exempt	No
248	Topside Road (SR 333)	Alcoa Hwy (US 129) (SR 115) to Wrights Ferry Rd	Alcoa	1.2	Reconstruct 2-lane section	2034		Exempt	No
249	Montvale Rd (SR 336)	Maryville City Limits (near Hill Ct) to Six Mile Rd	Blount County	2.7	Reconstruct 2-lane section	2034		Exempt	No
250	Sevierville Road (SR 35) (US 411)	Peppermint Rd to Chapman Hwy (SR 71) (US 441)	Blount County	10.5	Reconstruct 2-lane section	2034		Exempt	No
251	Topside Road (SR 333)	Pellissippi Pkwy (SR 162) to Louisville Rd (SR 334)	Blount County	3.0	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
252	Hunter Growth Study Corridor #4 - Cochran Rd Extension	Carpenters Grade Rd to Montvale Rd (SR 136)	Maryville/ Blount County	0.8	Construct new 2-lane road	2034		Non-Exempt	No
253	Hunter Growth Study Corridor #6 - Old Glory Rd Extension	S. Old Glory Rd to William Blount DR (SR 335)	Maryville/ Blount County	0.6	Reconstruct 2-lane section	2034		Exempt	No
254	Hunter Growth Study Corridor #7 - Southern Loop Connector	US 321 (SR 73) @ proposed Pellissippi Pkwy (SR 162) extension to Old Niles Ferry Rd @ proposed Wm Blount Dr (SR 335) extension	Maryville/ Blount County	10.7	Construct 2-lane road along existing and new alignment	2034		Non-Exempt	Yes
417	SR 72	Corporate Park to Stockton Valley Rd	Loudon County	3.3	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
418	SR 72	US 11 (SR 2) to Vonore Rd	Loudon County	2.1	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
419	SR 72	Vonore Rd to Monroe County Line	Loudon County	7.0	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
420	Sugar Limb Road	US 11 (SR 2) to I-75	Loudon	2.3	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
421	US 11 (SR 2)	SR 72 to Pond Creek Rd	Loudon	3.4	Reconstruct 2-lane section	2034		Exempt	No
422	US 321 (SR 73)	I-75 to Simpson Rd	Lenoir City	1.6	Widen 4-lane to 6-lane	2034		Non-Exempt	Yes
668	Kingston Pike (SR 1) (US 11/70)	Smith Rd to Campbell Station Rd	Farragut	1.4	Widen 4-lane to 6-lane	2034		Non-Exempt	Yes
669	Everett Road	Proposed Snyder Rd Extension to Kingston Pk (SR 1) (US 11/70)	Farragut	2.1	Reconstruct 2-lane section	2034		Exempt	No
670	Snyder Road Extension	Campbell Station Rd to Everett Rd north of I-40	Farragut	2.5	Construct new 2-lane road	2034		Non-Exempt	Yes
671	Central Avenue Pike	Beaver Creek Dr to Emory Rd (SR 131)	Knox County	2.3	Reconstruct 2-lane section	2034		Exempt	No
672	Dante Road	Central Avenue Pike to Dry Gap Pk	Knox County	2.1	Reconstruct 2-lane section	2034		Exempt	No
673	Oak Ridge Highway (SR 62)	Byington-Beaver Ridge Rd (SR 131) to Pellissippi Pkwy (SR 162)	Knox County	4.2	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
674	Westland Drive	Northshore Dr (SR 332) to Pellissippi Pkwy (I-140)	Knox County	1.7	Reconstruct 2-lane section	2034		Exempt	No
675	Maryville Pike (SR 33)	Gov. John Sevier Hwy (SR 168) to Blount County Line	Knox County	1.2	Reconstruct 2-lane section	2034		Exempt	No

LRTP #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	Proposed Horizon Year	FY 2011 - 2014 TIP ID	Exempt Status	Regionally Significant
676	Emory Road (SR 331)	Tazewell Pike (SR 131) to Grainger County Line	Knox County	7.8	Reconstruct 2-lane section	2034		Exempt	No
677	Gov John Sevier Highway (SR 168)	Chapman Hwy (SR 71) (US 441) to Asheville Hwy	Knox County	9.2	Widen 2-lane to 4-lane	2034		Non-Exempt	Yes
678	Gleason Drive	Gallaher View Rd to Ebenezer Rd	Knox County	1.1	Add center turn lane	2034		Non-Exempt	No
679	I-75/ Raccoon Valley Rd Interchange	Raccoon Valley Rd Interchange at I-75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2034		Exempt	No
680	Northshore Drive	Concord Rd (SR 332) to Choto Rd	Knox County	2.8	Reconstruct 2-lane section	2034		Exempt	No
681	Raccoon Valley Road (SR 170)	Norris Frwy (SR 71) (US 441) to I-75	Knox County	2.0	Reconstruct 2-lane section	2034		Exempt	No
682	Tazewell Pike (SR 131)	Barker Rd to Union County Line	Knox County	3.1	Reconstruct 2-lane section	2034		Exempt	No
683	McFee Road/ Harvey Road	McFee Rd to Harvey Rd over railroad	Knox County/ Farragut	0.1	Construct new road or widen railroad underpass	2034	2011-007	Non-Exempt	Yes
685	Vanosdale Road	Buckingham Rd to Middlebrook Pike (SR 169)	Knoxville	0.9	Add center turn lane	2034		Non-Exempt	No
686	Cedar Lane	East of Central Avenue Pike to Inskip Rd	Knoxville	1.0	Add center turn lane	2034		Non-Exempt	No
687	Moody Avenue	Chapman Hwy (SR 71) (US 441) to Maryville Pike (SR 33)	Knoxville	0.4	Construct new 2-lane road w/ center turn lane	2034		Non-Exempt	No
688	Morrell Road	Westland Dr to Northshore Dr (SR 332)	Knoxville	0.9	Add center turn lane	2034		Non-Exempt	No
689	Papermill Road	Kingston Pike (SR 1) (US 11/70) to Weisgarber Rd	Knoxville	0.6	Add center turn lane	2034		Non-Exempt	No
690	Woodland Avenue	Central St to Huron St	Knoxville	0.6	Add center turn lane	2034		Non-Exempt	Yes
691	I-40/75	I-40/I-75 Interchange to Lovell Rd (SR 131) Interchange	Knoxville/ Farragut/ Knox County	6.7	Widen 6-lane to 8-lane	2034		Non-Exempt	Yes
692	I-75	Emory Rd (SR 131) to Raccoon Valley Rd (SR 170) Interchange	Knoxville/ Knox County	4.8	Widen 4-lane to 6-lane	2034		Non-Exempt	Yes

Appendix I: KRTPO FY 2011 – 2014 TIP Project List

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-001 / 618		Access Improvements to I-275 Business Park	Extend Blackstock Ave from Fifth Ave to Bernard Ave and realign Marion Street. Improve intersections of University Ave with W Fifth Ave and Bernard Ave.	Access improvements to the I-275 Business Park in Knoxville.	City of Knoxville	2011 2011 2012 2013	PE-D PE-N ROW CON	HPP HPP HPP HPP TOTAL	\$500,000 \$500,000 \$1,000,000 \$2,894,375 \$3,624,375	\$400,000 \$400,000 \$800,000 \$2,894,500 \$4,499,500	\$0 \$0 \$0 \$0 \$0	\$100,000 \$100,000 \$200,000 \$724,875 \$1,724,875	\$0 \$0 \$0 \$0 \$0	
2011-002 / 663	100241.03	Alcoa Hwy (SR-115 / US-128)	Woodson Dr to north of Cherokee Tr.	Widen from 4 lanes to 6 lanes.	TDOT	2012	ROW	NHS TOTAL	\$14,000,000 \$14,000,000	\$11,200,000 \$11,200,000	\$2,800,000 \$2,800,000	\$0 \$0	\$0 \$0	
2011-003 / 216	100241.01	Alcoa Hwy (SR-115 / US-128)	Pellissippi Pkwy to Knox / Blount County line	Reconstruct from 4 to 6 lanes with 2 auxiliary lanes between Singleton Station Rd and Topside Rd (SR 333).	TDOT	2012	ROW	NHS TOTAL	\$32,200,000 \$32,200,000	\$25,760,000 \$25,760,000	\$6,440,000 \$6,440,000	\$0 \$0	\$0 \$0	
2011-004 / 628	100241.02	Alcoa Hwy (SR-115 / US-128)	Knox / Blount County line to Maloney Rd	Widen from 4 to 6 lanes, including pedestrian and bicycle facilities.	TDOT	2013	ROW	NHS TOTAL	\$4,100,000 \$4,100,000	\$3,280,000 \$3,280,000	\$820,000 \$820,000	\$0 \$0	\$0 \$0	
2011-005 / 218	101851.01	Alcoa Hwy (SR-115 / US-128)	Hall Rd (SR-35) / Alcoa Hwy (SR-115) south of Airport Rd to proposed interchange serving McGhee Tyson Airport	Construct new 8 lane facility.	TDOT	2012	ROW	STP TOTAL	\$10,308,396 \$10,308,396	\$8,246,717 \$8,246,717	\$2,061,679 \$2,061,679	\$0 \$0	\$0 \$0	
2011-006 / 208		Blount County Streetscape Improvements		Improve streetscape and repair pavement. HPP #2005, TN-164	Blount County	2011	PE-N/PE-D/IR	HPP TOTAL	\$270,000 \$270,000	\$216,000 \$216,000	\$0 \$0	\$54,000 \$54,000	\$0 \$0	
2011-007 / 683		Boyd Station Rd, McFee Rd, Harvey Rd Underpass		Construct and widen underpass at intersection of Boyd Station, Harvey, and McFee Rds. ID #2385 TN157.	Town of Farragut	2011 2011 2012 2012	PE-D PE-N PE-D PE-N	HPP HPP HPP HPP TOTAL	\$134,314 \$134,313 \$49,430 \$49,430 \$387,487	\$107,451 \$107,451 \$38,544 \$38,544 \$293,990	\$0 \$0 \$0 \$0 \$0	\$28,863 \$28,862 \$9,886 \$9,886 \$73,497	\$0 \$0 \$0 \$0 \$0	
2011-010 / Consistent with Chapter 6		Kingston Pk Greenway in Farragut Rd	Old Stage Rd to Virule Rd	Construction of 2,050 linear feet of greenway / sidewalk along south side of Kingston Pk (SR-1) between Old Stage Rd and Virule Rd.	Town of Farragut	2011 2012	ROW CON	L-STP L-STP TOTAL	\$310,800 \$643,978 \$954,778	\$248,840 \$515,152 \$763,992	\$0 \$0 \$0	\$62,160 \$128,766 \$190,956	\$0 \$0 \$0	
2011-011 / 917	107380	Second Creek Greenway in Knoxville	World's Fair Park to the Old City via World's Fair Park Dr and Jackson Ave	Construction of Second Creek Greenway in Knoxville.	City of Knoxville	2011	PE-N/PE-D/IR	HPP-TN157 TOTAL	\$620,073 \$620,073	\$492,849 \$492,849	\$0 \$0	\$127,224 \$127,224	\$0 \$0	
2011-012 / 406		Dixie Lee Junction (US 11 and US 70)		Dixie Lee Junction intersection improvements	Loudon County	2011 2011 2012 2012	PE-D PE-N CON ROW	L-STP L-STP L-STP L-STP TOTAL	\$100,000 \$100,000 \$1,650,000 \$900,000 \$2,750,000	\$80,000 \$80,000 \$1,320,000 \$720,000 \$2,200,000	\$20,000 \$20,000 \$330,000 \$180,000 \$550,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-013 / 686		Downtown Knoxville Wayfinding Project		Downtown wayfinding signage project to create a consistent signage system to include gateway signs, pedestrian directionals and maps, trailblazers, trolley signs, auto signs, parking garages, etc.	City of Knoxville	2011	CON	L-STP TOTAL	\$1,200,000 \$1,200,000	\$960,000 \$960,000	\$0 \$0	\$240,000 \$240,000	\$0 \$0	
2011-014 / Consistent with CMP	107034	Ebenezer Rd / N Westland Dr Intersection		Construct a combined left/through westbound turn lane on Westland Dr and a northbound right turn lane on Ebenezer Rd. The existing turn lanes plus the proposed turn lanes will be 200' in length.	Knox County	2011	PE-D	CMAQ TOTAL	\$70,000 \$70,000	\$70,000 \$70,000	\$0 \$0	\$0 \$0	\$0 \$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-015 / 202, 238		Robert C. Jackson Dr Extension	Middleselements Rd to Louisville Rd and US-321 to Morganton Rd	Transportation Planning Report for the Extension of Robert C. Jackson Dr.	City of Maryville	2014	TPR	L-STP TOTAL	\$50,000 \$50,000	\$40,000 \$40,000	\$0 \$0	\$10,000 \$10,000	\$0 \$0	
2011-016 / 621	112532	I-40 Auxiliary Lane	Lovell Rd to I-140 (Pelissippi Pwy), auxiliary lane westbound only	Lovell Rd to I-140 (Pelissippi Pwy), auxiliary lane westbound only.	TDOT	2011	PE-D	IM TOTAL	\$100,000 \$100,000	\$80,000 \$90,000	\$10,000 \$10,000	\$0 \$0	\$0 \$0	
2011-017 / 622	112534	I-40 Weigh Station Ramp Extension		Extend I-40 weigh station ramps.	TDOT	2011	PE-D	IM TOTAL	\$100,000 \$100,000	\$90,000 \$90,000	\$10,000 \$10,000	\$0 \$0	\$0 \$0	
2011-018 / 611	103028	I-40, Broadway Modifications		Interchange at N Broadway (Phase 2). Reconstruct and relocate ramps at I-40 and Broadway, signalize and widen from 4 lanes to 5 lanes on Old Broadway.	TDOT	2011	ROW	NHS TOTAL	\$2,100,000 \$2,100,000	\$1,680,000 \$1,680,000	\$420,000 \$420,000	\$0 \$0	\$0 \$0	
2011-019 / 620		Cassara Rd Railroad Improvements		Improve Cassara Rd at-grade railroad crossing. HPP #65 (TN091)	City of Knoxville	2011	CON	HPP TOTAL	\$86,390 \$86,390	\$69,112 \$69,112	\$0 \$0	\$17,278 \$17,278	\$0 \$0	
2011-020 / 613		Cumberland Ave (US- 70/11 and SR-1)	Alcoa Hwy to 16th St	Improve Cumberland Ave streetscape and pedestrian environment from 16th St to Alcoa Hwy. Sidewalks and proposed 3 lane section are main changes. Utilities are relocated.	City of Knoxville	2011 2012	PE-DIRWIC PE-DIRWIC	L-STP L-STP TOTAL	\$4,925,000 \$9,675,000 \$14,600,000	\$3,040,000 \$7,740,000 \$11,680,000	\$0 \$0 \$0	\$985,000 \$1,935,000 \$2,920,000	\$0 \$0 \$0	
2011-021 / 632	107777.00	Concord Rd	Turkey Creek Rd to Northshore Dr	Widen existing 2 lane roadway to 4-12 ft lanes with raised median, 4 ft bicycle lanes, curb and gutter, 5 ft sidewalk, and 8 ft greenway.	TDOT	2011 2012	ROW CON	L-STP L-STP TOTAL	\$1,585,671 \$4,572,857 \$6,158,528	\$1,281,137 \$3,658,266 \$4,939,423	\$304,534 \$914,571 \$1,219,105	\$0 \$0 \$0	\$0 \$0 \$0	
2011-022 / 666	101420	James White Pwy (SR 71)	Chapman Hwy to Moody Ave	Construct new 4 lane.	TDOT	2014	ROW	STP TOTAL	\$19,600,000 \$19,600,000	\$15,680,000 \$15,680,000	\$3,920,000 \$3,920,000	\$0 \$0	\$0 \$0	
2011-024 / Consistent with Chapter 6		Papemill Bluff Greenway	Weisgarber and Lonas Dr to Papemill and Holman Rd	Construct greenway from Papemill Dr to Weisgarber Rd.	City of Knoxville	2011	CON	ES - LOCAL TOTAL	\$757,000 \$757,000	\$757,000 \$757,000	\$0 \$0	\$0 \$0	\$0 \$0	
2011-025 / 232	101423.00	Pelissippi Pwy (SR- 162) Extension	Old Knoxville Hwy (SR- 33) to SR-73 (US-321)	HPP #TN053 (Section 1002-TEA21). Construct new 4 lane.	TDOT	2011 2014	PE-D ROW	HPP HPP TOTAL	\$800,000 \$9,290,163 \$10,090,163	\$840,000 \$7,432,130 \$8,072,130	\$160,000 \$1,858,033 \$2,018,033	\$0 \$0 \$0	\$0 \$0 \$0	
2011-026 / 619		Railroad Crossing Improvements - Knoxville		Railroad crossing improvements for each railroad crossing to improve circuitry on vehicle protection devices installed. HPP #1837 (TN147)	City of Knoxville	2011	CON	HPP TOTAL	\$51,294 \$51,294	\$41,035 \$41,035	\$0 \$0	\$10,259 \$10,259	\$0 \$0	
2011-027 / 401		Railroad Crossing Improvements - Lenoir City		HPP #1065 (TN129). Improve vehicle efficiencies by installing signal lights at at- grade highway railroad crossings in Lenoir City.	Loudon County	2011 2012	CON CON	HPP HPP TOTAL	\$54,881 \$20,800 \$75,681	\$43,805 \$16,640 \$60,445	\$0 \$0 \$0	\$10,676 \$4,160 \$15,136	\$0 \$0 \$0	
2011-028 / 619		Railroad Crossing Improvements - Knoxville		Railroad crossing improvements on vehicle protection devices installed at highway railroad crossings in Knoxville. HPP #1875 (TN140)	City of Knoxville	2011 2012	CON CON	HPP HPP TOTAL	\$83,375 \$31,600 \$114,975	\$66,700 \$25,280 \$91,980	\$0 \$0 \$0	\$16,675 \$6,320 \$22,995	\$0 \$0 \$0	
2011-029 / 214		Sevierville Rd Reconstruction	Washington St to Dogwood Dr	Reconstruct Sevierville Rd (SR-35) from 2 lane road to 3 lanes, curb and gutter, and sidewalks with intersection improvements.	City of Maryville	2011 2012 2013 2014	EA ENG ROW ROW	L-STP L-STP L-STP TOTAL	\$250,000 \$500,000 \$500,000 \$1,000,000	\$200,000 \$400,000 \$400,000 \$800,000	\$50,000 \$100,000 \$100,000 \$200,000	\$0 \$0 \$0 \$450,000	\$0 \$0 \$0 \$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-030 / 211		Morgan Rd Roadway Improvement	Foothills Mall Dr to William Blount Dr (SR- 335)	Reconstruct 2 lane section on Morgan Rd, totaling 2.3 miles in length. HPP, TN- 280.		2011 2012	PE-NPE-DIR CON	HPP HPP TOTAL	\$187,500 \$750,000 \$937,500	\$150,000 \$600,000 \$750,000	\$0 \$0 \$0	\$37,500 \$150,000 \$187,500	\$0 \$0 \$0	
2011-031 / 687		N Central St Road Diet and Streetscape Project	Woodland Ave to Depot St	Road diet and streetscape project on N Central St from Woodland Ave to Depot St. Project will take a 4 lane road section and develop it into a 2 or 3 lane section, depending upon location. Remainder of public ROW used for bike lanes, street parking, or wider sidewalks.	City of Knoxville	2011 2012 2013	PE-D PE-N CON CON	L-STP L-STP L-STP L-STP TOTAL	\$50,000 \$50,000 \$1,200,000 \$1,200,000 \$2,500,000	\$40,000 \$40,000 \$980,000 \$980,000 \$2,000,000	\$0 \$0 \$0 \$0 \$0	\$10,000 \$10,000 \$240,000 \$240,000 \$500,000	\$0 \$0 \$0 \$0 \$0	
2011-032 / 617	100677	Blount Ave / Sewer Ave Corridor Improvements	Blount Ave and Sevier Ave from Scottish Pk to James White Pwy	South Knoxville Waterfront roadway improvements. Blount Ave/Sewer Ave will be improved from Scottish Pk to James White Pwy with turn lanes where needed as well as pedestrian and bicycle accommodations where feasible. HPP, TN-255 (4893).	City of Knoxville	2011 2012	CON CON	HPP HPP TOTAL	\$3,967,707 \$1,500,000 \$5,467,707	\$3,168,166 \$1,200,000 \$4,368,166	\$0 \$0 \$0	\$761,541 \$300,000 \$1,061,541	\$0 \$0 \$0	
2011-033 / 919		South Waterfront Rivewalk Shoals Promenade		South Waterfront Rivewalk, Shoals Promenade phase 1 will begin near the railroad bridge over Blount Ave and continue along the river to the Gay St bridge for 2,450 ft.	City of Knoxville	2011	CON	TCSP TOTAL	\$688,076 \$688,076	\$534,461 \$534,461	\$0 \$0	\$133,615 \$133,615	\$0 \$0	
2011-034 / 201		Hall Rd (SR-35) at ALCOA South Plant Entrance		Construct southbound left turn deceleration and storage at ALCOA South Plant entrance.	City of Alcoa	2011	CON	L-STP TOTAL	\$90,000 \$90,000	\$72,000 \$72,000	\$0 \$0	\$18,000 \$18,000	\$0 \$0	
2011-035 / 508	104850.01	Chapman Hwy (SR- 71) Improvements	SR-35 and SR-338 to Macon Ln	HPP #1004 (TN123). Widen 4 lane to 5 lane with curb and gutter.	TDOT	2011	PE-D	HPP TOTAL	\$100,000 \$100,000	\$80,000 \$80,000	\$20,000 \$20,000	\$0 \$0	\$0 \$0	
2011-036 / 410	101403	US 321 (SR 73) and Hwy 11 (SR 2)		Intersection modification at Hwy 321 and Hwy 11 (SR 2).	TDOT	2012	PE-NPE-DIR	NHS TOTAL	\$9,500,000 \$9,500,000	\$7,600,000 \$7,600,000	\$1,900,000 \$1,900,000	\$0 \$0	\$0 \$0	
2011-037 / 257	101651.02	SR 115 / US 129 (Alcoa Hwy)	Interchange serving McGhee Tyson Airport to Pellissippi Pwy (SR- 162)	Construct new 6 lane with auxiliary lanes. Hwy 11 (SR 2).	TDOT	2012	ROW	STP TOTAL	\$18,030,884 \$19,030,884	\$15,224,707 \$15,224,707	\$3,806,177 \$3,806,177	\$0 \$0	\$0 \$0	
2011-038 / 614	100662	SR 33 (Henley St bridge)		Henley St bridge over Tennessee River and SR-158. HPP #TN047 (Section 1602- TEA21).	TDOT	2011	CON	HPP TOTAL	\$9,017,900 \$9,017,900	\$7,214,320 \$7,214,320	\$1,803,580 \$1,803,580	\$0 \$0	\$0 \$0	
2011-039 / 239	101725.00	SR-336 (Montvale Rd)	Maryville south city limits to SR-73 (US 321)	Add a center turn lane, changing the road from 2 lanes to 3.	TDOT	2011	PE-D	STP TOTAL	\$600,000 \$600,000	\$480,000 \$480,000	\$120,000 \$120,000	\$0 \$0	\$0 \$0	
2011-040 / 612	100690	SR-82 (Western Ave) Widening	West of Schaad Rd to west of I-75 / I-640	Widen from 2 lanes to 5 lanes.	TDOT	2011	CON	STATE TOTAL	\$18,400,000 \$18,400,000	\$0 \$0	\$18,400,000 \$18,400,000	\$0 \$0	\$0 \$0	
2011-041 / 402		Streetscape / Pavement Repair in Lenoir City		HPP #2005 (TN183). Improve streetscape and repair pavement in Lenoir City.	Lenoir City	2011 2012	CON CON	HPP HPP TOTAL	\$158,308 \$80,000 \$238,308	\$126,647 \$45,000 \$171,647	\$0 \$0 \$0	\$31,661 \$12,000 \$43,661	\$0 \$0 \$0	
2011-042 / Consistent with CMP	107033	Tazewell Pk / Beverly Rd Intersection		Construction of westbound and eastbound turn lanes from Tazewell Pk onto Beverly Rd and signalization of the intersection.	Knoxville	2011	PE-D	CMAQ TOTAL	\$130,000 \$130,000	\$130,000 \$130,000	\$0 \$0	\$0 \$0	\$0 \$0	
2011-043 / 644		Tennessee River Pedestrian Crossing		Greenway connecting Knoxville's South Waterfront to UT.	City of Knoxville	2011	PE-D	TCSP TOTAL	\$686,900 \$686,900	\$533,520 \$533,520	\$0 \$0	\$133,380 \$133,380	\$0 \$0	
2011-044 / 408		US-321 (SR-73) corridor improvements	I-75 southbound ramp to Simpson Road	US-321 (SR-73) corridor improvements in Lenoir City including signal upgrades and median modifications.	Lenoir City	2011	CON	L-STP TOTAL	\$1,000,000 \$1,000,000	\$800,000 \$800,000	\$200,000 \$200,000	\$0 \$0	\$0 \$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-045 / 610	101204	Western Ave (SR 62)	Major Ave to Texas Ave	Widen from 2 to 4 lane section with curb and gutter.	TDOT	2011	ROW	STP TOTAL	\$2,800,000 \$2,800,000	\$2,240,000 \$2,240,000	\$560,000 \$560,000	\$0 \$0	\$0 \$0	
2011-046 / 606		Kingston Pike/Everett Rd Intersection Improvements	From 1,200 ft west of Everett Rd to approximately 500 ft east of Everett Rd	Add center turn lane. Also includes widening of bridge over Little Turkey Creek, traffic signal, etc.	Town of Farragut	2011	CON	L-STP SPOT SAFETY TOTAL	\$1,000,000 \$800,000 \$1,800,000	\$800,000 \$0 \$800,000	\$200,000 \$0 \$1,000,000	\$0 \$0 \$0	\$0 \$0 \$0	
2011-047 / 616	101008.00	Pleasant Ridge Rd	Knoxville city limits to and including the Merchant Dr intersection to Wilkerson Rd	Add Center Turn Lane on Pleasant Ridge Rd from Merchant Dr to city limits and on Merchant Dr from Pleasant Ridge Rd to Wilkerson Rd.	City of Knoxville	2013	PE-D PE-N	L-STP TOTAL	\$87,000 \$87,000 \$174,000	\$89,800 \$89,800 \$139,200	\$0 \$0 \$0	\$17,400 \$17,400 \$34,800	\$0 \$0 \$0	
2011-048 / E+C	101424.00	Pleasant Ridge Rd	Merchant Dr to I-440	Widen from 2 lanes to 3 lanes with sidewalks. Include drainage and lighting work.	City of Knoxville	2011	OVRUN	L-STP TOTAL	\$100,000 \$100,000	\$80,000 \$80,000	\$0 \$0	\$20,000 \$20,000	\$0 \$0	
2011-049 / 615	110301.00	Washington Pk	North of I-440 to Murphy Rd	Widen from 2 lanes to a 5 lane section with curb, gutter, sidewalk, and bike lanes.	City of Knoxville	2011 2012 2014	ENG ROW CON	L-STP L-STP L-STP TOTAL	\$750,000 \$2,598,000 \$11,800,000 \$15,146,000	\$600,000 \$2,078,800 \$9,440,000 \$12,116,800	\$0 \$0 \$0 \$0	\$150,000 \$519,200 \$2,360,000 \$3,029,200	\$0 \$0 \$0 \$0	
2011-050 / 700		Campbell Station Rd Widening	North of I-4075 from Snyder Rd to Yamell Rd	Conduct Transportation Planning Report. Initial concept is to widen to 3 1/2-ft lanes with 4-ft bike lanes, curb and gutters, sidewalk, and walking trail.	Town of Farragut	2011 2013 2013	TPR PE-D PE-N	L-STP L-STP L-STP TOTAL	\$50,000 \$200,000 \$200,000 \$450,000	\$40,000 \$160,000 \$160,000 \$360,000	\$0 \$0 \$0 \$0	\$10,000 \$40,000 \$40,000 \$90,000	\$0 \$0 \$0 \$0	
2011-051 / 606		Kingston Pike/Campbell Station Rd Intersection Improvements		Widen to allow an additional left turn lane for eastbound motorists turning onto northbound Campbell Station Rd.	Town of Farragut	2013	PE-D	L-STP	\$150,000	\$120,000	\$30,000	\$0	\$0	
2011-052 / 600	107015	Watt Rd Extension and Old Stage Rd Improvements	Watt Rd: From Kingston Pk (SR-1) to Old Stage Rd. Old Stage Rd: From SR-2 to Dixon Rd	Widening of Old Stage Rd from Johnson's Corner Rd to west town limits and extension of Watt Rd from its current terminus to Old Stage Rd.	Farragut	2011 2012	ROW CON	L-STP L-STP TOTAL	\$414,400 \$3,522,400 \$3,936,800	\$331,520 \$2,817,920 \$3,149,440	\$0 \$0 \$0	\$82,880 \$704,480 \$787,360	\$0 \$0 \$0	
2011-053 / 409	100489.00	US-321/SR-73 - New Bridge	SR-2 (US-11) to east of Little Tennessee River (R. Loudoun / Tellico Dam)	Construct new 4 lane.	TDOT	2011	CON	NHS TOTAL	\$33,000,000 \$33,000,000	\$26,400,000 \$26,400,000	\$6,600,000 \$6,600,000	\$0 \$0	\$0 \$0	
2011-054 / Consistent with Chapter 4		I-140 (Pelissippi Pkwy)	Interchange area at SR-115 / US-129 (Alcoa Hwy)	Install traffic cameras and associated hardware / software, etc.	TDOT	2011	CON	IM TOTAL	\$500,000 \$500,000	\$450,000 \$450,000	\$50,000 \$50,000	\$0 \$0	\$0 \$0	
2011-055 / 603	100997.0	SR-131 (Emory Rd)	SR-9 (US-25W) to south of Gill Rd (Winwood Rd in Powell)	Widen to 4 lane facility with center turn lane.	TDOT	2011	CON	STATE TOTAL	\$20,500,000 \$20,500,000	\$0 \$0	\$20,500,000 \$20,500,000	\$0 \$0	\$0 \$0	
2011-056 / 259		McCammon Ave Relocation		Realign McCammon Ave at Bessemer St to create a signalized 4-leg intersection.	City of Maryville	2011	CON	STP STP TOTAL	\$400,000 \$200,000 \$600,000	\$320,000 \$160,000 \$480,000	\$0 \$0 \$0	\$80,000 \$40,000 \$120,000	\$0 \$0 \$0	
2011-057 / Consistent with CMP	105732	Traffic Control Equipment Upgrade - Knoxville		Purchase of signal controllers, signal monitors, closed loop equipment and software.	City of Knoxville	2011	PUR	L-STP TOTAL	\$1,000,000 \$1,000,000	\$800,000 \$800,000	\$0 \$0	\$200,000 \$200,000	\$0 \$0	
2011-058 / Consistent with Chapter 4		I-40/I-75 Interchange Traffic Cameras		Install traffic cameras and associated hardware/software, etc.	TDOT	2011	CON	IM TOTAL	\$500,000 \$500,000	\$450,000 \$450,000	\$50,000 \$50,000	\$0 \$0	\$0 \$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-069 / 816	030608.01	Knox/Blount Greenway - Phase I	Buck Kames Bridge to CLT #122, Parcel 3 at Alcoa Highway	Construction of approx. 8,500 linear feet of off-road trail from the south side of Buck Kames bridge to CLT #122, Parcel 3 at Alcoa Highway.	City of Knoxville	2011	CON	ENHANCE TOTAL	\$1,451,975 \$1,451,975	\$1,161,580 \$1,161,580	\$0 \$0	\$290,395 \$290,395	\$0 \$0	
2011-080 / 915	030608.02	Knox/Blount Greenway - Phase II	Connect Phase I to Alcoa Highway Bridge over the Little River at the Blount County Line to and connect to I.C. King Park.	Construction of an off-road trail that will connect Phase I of the Knox/Blount Greenway to existing pedestrian and bicycle facilities on Alcoa Highway Bridge.	City of Knoxville	2010	CON	ENHANCE TOTAL	\$1,451,975 \$1,451,975	\$1,161,580 \$1,161,580	\$0 \$0	\$290,395 \$290,395	\$0 \$0	
2011-081 / Consistent with LRTP		Pellissippi Place Greenway - Phase I	Connecting Alcoa Greenway Trail at McNutt Ave. terminating at Pellissippi Research Center.	Construction of a 6,200 ft greenway connecting to the existing Alcoa Greenway Trail. 10-foot-wide paved trail.	TDOT	2011	PE-NIPE-DR	ENHANCE TOTAL	\$414,288 \$414,288	\$345,240 \$345,240	\$0 \$0	\$69,048 \$69,048	\$0 \$0	
2011-082 / Consistent with LRTP		Halls Greenway - Phase II	Halls Elementary School through Clayton Park to existing greenway	Construct 5,410 ft of new greenway, mostly 10-foot paved path, with some sections of wetland boardwalks and a pedestrian crossing over the North Fork of Beaver Creek.	TDOT	2011	PE-NIPE-DR	ENHANCE TOTAL	\$601,538 \$601,538	\$501,282 \$501,282	\$0 \$0	\$100,256 \$100,256	\$0 \$0	
2011-083 / Consistent with LRTP		Lenoir City Downtown Streetscape	Broadway between A Street and Kingston St	Improvements to the intersection at "A" Street and Broadway (US Highway 11/SR- 2), utility relocations, pedestrian LED lighting and landscaping along Broadway between "A" Street and Kingston Street. Existing light fixtures will be removed and replaced with new period pedestrian LED light fixtures.	TDOT	2011	PE-NIPE-DR	ENHANCE TOTAL	\$96,230 \$96,230	\$80,242 \$80,242	\$0 \$0	\$16,048 \$16,048	\$0 \$0	
2011-200 / 860		KAT Section 5307 Transit Funds		5307 formula transit funding for Knoxville.	KAT	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5307 SECTION 5307 SECTION 5307 SECTION 5307 TOTAL	\$5,000,000 \$5,000,000 \$5,000,000 \$5,000,000 \$20,000,000	\$4,000,000 \$4,000,000 \$4,000,000 \$4,000,000 \$16,000,000	\$500,000 \$500,000 \$500,000 \$500,000 \$2,000,000	\$500,000 \$500,000 \$500,000 \$500,000 \$2,000,000	\$0 \$0 \$0 \$0 \$0	
2011-201 / 861		Section 5309 - CAC		Section 5309 funds for CAC.	CAC	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5309 SECTION 5309 SECTION 5309 SECTION 5309 TOTAL	\$625,000 \$210,000 \$220,000 \$230,000 \$1,285,000	\$500,000 \$174,300 \$182,600 \$190,900 \$1,047,800	\$82,500 \$17,850 \$18,700 \$19,550 \$118,600	\$82,500 \$17,850 \$18,700 \$19,550 \$118,600	\$0 \$0 \$0 \$0 \$0	
2011-202 / 866		CAC 5310 Funds		Purchase vehicles to provide transportation to elderly and disabled Knox County residents who have no other means of transportation by providing safe, reasonably comfortable transportation.	CAC	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5310 SECTION 5310 SECTION 5310 SECTION 5310 TOTAL	\$190,000 \$200,000 \$220,000 \$240,000 \$850,000	\$146,400 \$166,000 \$182,600 \$196,200 \$691,200	\$15,300 \$17,000 \$18,700 \$20,400 \$71,400	\$15,300 \$17,000 \$18,700 \$20,400 \$71,400	\$0 \$0 \$0 \$0 \$0	
2011-203 / 868		Section 5317 New Freedom - TPO/MP		Fund services, programs, capital items, administration, planning or technical assistance to be funded with Section 5317 New Freedom funds.	TPO/MP	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5317 SECTION 5317 SECTION 5317 SECTION 5317 TOTAL	\$370,000 \$390,000 \$410,000 \$430,000 \$1,600,000	\$185,000 \$165,000 \$205,000 \$215,000 \$800,000	\$92,500 \$97,500 \$102,500 \$107,500 \$400,000	\$92,500 \$97,500 \$102,500 \$107,500 \$400,000	\$0 \$0 \$0 \$0 \$0	
2011-204 / 869		Section 5309 Bus Purchase / Technology	5309 Discretionary Grant Program	Implementation of ITS technologies. Improve operations management and passenger and public information.	KAT	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5309 SECTION 5309 SECTION 5309 SECTION 5309 TOTAL	\$1,500,000 \$1,500,000 \$1,500,000 \$1,500,000 \$6,000,000	\$1,000,000 \$1,000,000 \$1,000,000 \$1,000,000 \$4,000,000	\$250,000 \$250,000 \$250,000 \$250,000 \$1,000,000	\$250,000 \$250,000 \$250,000 \$250,000 \$1,000,000	\$0 \$0 \$0 \$0 \$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-205 / 887		5316 - Job Access Reverse Commute - TPO/MPC		Funds services, programs, capital items, administration, planning or technical assistance to be funded with Section 5316 funds.	TPO/MPC	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5316 SECTION 5316 SECTION 5316 SECTION 5316 TOTAL	\$560,000 \$300,000 \$650,000 \$870,500 \$2,540,000	\$295,000 \$315,000 \$325,000 \$335,000 \$1,270,000	\$147,500 \$167,500 \$162,500 \$167,500 \$635,000	\$0 \$0 \$0 \$0 \$0		
2011-206 / 889		Section 5310 Elderly and Disabled Program (Non-Profits and Local Governments)		Purchase of vehicles by non-profits or local governments through the Section 5310 program managed by TDOT. Vehicles are used to supplement transportation services to elderly and disabled residents of the urban area.	TDOT	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5310 SECTION 5310 SECTION 5310 SECTION 5310 TOTAL	\$210,000 \$210,000 \$210,000 \$210,000 \$840,000	\$175,000 \$175,000 \$175,000 \$175,000 \$700,000	\$17,500 \$17,500 \$17,500 \$17,500 \$70,000	\$0 \$0 \$0 \$0 \$0		
2011-207 / 891		Vehicle and/or Technology Systems Purchase		Knox County CAC Transit will purchase up to 4 paratransit vehicles each year to continue providing demand response transportation to the residents of Knoxville and Knox County.	CAC	2011 2012 2013 2014	PUR PUR PUR PUR	L-STP L-STP L-STP L-STP TOTAL	\$287,750 \$298,750 \$311,250 \$323,750 \$1,221,500	\$230,200 \$239,000 \$249,000 \$259,000 \$977,200	\$0 \$0 \$0 \$0 \$0	\$57,550 \$59,750 \$62,250 \$64,750 \$244,300		
2011-208 / 890		Transit Center in Knoxville		Knoxville Central Station Transit Center funding.	KAT	2011	CON	SECTION 5309 TOTAL	\$2,130,399 \$2,130,399	\$1,704,319 \$1,704,319	\$0 \$0	\$426,080 \$426,080	\$0 \$0	
2011-209 / 899		KAT Facility Upgrade		Magnolia Ave transit maintenance and operations facility expansion, upgrade, and equipment purchase.	KAT	2011	CON	SECTION 5309 TOTAL	\$2,319,800 \$2,319,800	\$1,855,680 \$1,855,680	\$0 \$0	\$463,920 \$463,920	\$0 \$0	
2011-210 / 894		ADA Paratransit Vehicles - KAT	5309 Discretionary Grant Program	Purchase of ADA paratransit vehicles for replacement and expansion.	KAT	2011	PUR	SECTION 5309 TOTAL	\$1,500,000 \$1,500,000	\$1,000,000 \$1,000,000	\$250,000 \$250,000	\$250,000 \$250,000	\$0 \$0	
2011-211 / 892		Purchase KAT Vehicles		Purchase of fixed route buses for replacement and expansion.	KAT	2011 2012 2013 2014	PUR PUR PUR PUR	L-STP L-STP L-STP L-STP TOTAL	\$1,831,000 \$1,831,000 \$1,831,000 \$1,831,000 \$7,324,000	\$1,464,800 \$1,464,800 \$1,464,800 \$1,464,800 \$5,859,200	\$0 \$0 \$0 \$0 \$0	\$366,200 \$366,200 \$366,200 \$366,200 \$1,464,800	\$0 \$0 \$0 \$0 \$0	
2011-212 / 894		Purchase KAT Vehicles		Purchase of fixed route trolley buses for replacement and expansion.	KAT	2012	PUR	L-STP TOTAL	\$2,125,000 \$2,125,000	\$1,700,000 \$1,700,000	\$212,500 \$212,500	\$212,500 \$212,500	\$0 \$0	
2011-213 / 894		Neighborhood Service Vehicle Purchase - KAT	5309 Discretionary Grant Program	Purchase of neighborhood service vehicles for replacement and expansion.	KAT	2011 2012 2013 2014	PUR PUR PUR PUR	SECTION 5309 SECTION 5309 SECTION 5309 SECTION 5309 TOTAL	\$2,500,000 \$1,500,000 \$1,500,000 \$1,500,000 \$7,000,000	\$2,000,000 \$1,000,000 \$1,000,000 \$1,000,000 \$5,000,000	\$250,000 \$250,000 \$250,000 \$250,000 \$1,000,000	\$250,000 \$250,000 \$250,000 \$250,000 \$1,000,000	\$0 \$0 \$0 \$0 \$0	
2011-214 / Consistent with LRTP		Pilot Locomotive Diesel Retrofit Project	Estimated emission reductions: 16.6 tpy nitrogen oxides (NOx), 1 tpy hydrocarbons and 0.42 tpy particulate matter (PM).	Retrofit 12 Norfolk Southern locomotives that perform switching and local freight delivery operations with automatic stop- start idle reduction systems to reduce idling and reduce diesel emissions.	TDOT	2011	DSEL RET	CMAQ-ST TOTAL	\$157,368 \$157,368	\$125,694 \$125,694	\$0 \$0	\$31,474 \$31,474	\$0 \$0	
2011-300 / Consistent with LRTP		Bridge Bond Bucket		Bridge replacement, rehabilitation, systematic repair, and preservation projects in the urbanized areas. (Projects using this funding category will be processed through the advance construction procedures.)	TDOT	2011 2012 2013	PERW/CN PERW/CN PERW/CN	STATE - BRBD STATE - BRBD STATE - BRBD TOTAL	\$20,100,000 \$100,000 \$100,000 \$20,300,000	\$0 \$0 \$0 \$0	\$20,100,000 \$100,000 \$100,000 \$20,300,000	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	
2011-301 / Consistent with LRTP		Bridge Replacement Cost Overruns - Local		Funds to cover cost overruns on project phases which were included in previous STIPs (local).	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	BRR-L BRR-L BRR-L BRR-L TOTAL	\$10,000 \$10,000 \$10,000 \$10,000 \$40,000	\$8,000 \$8,000 \$8,000 \$8,000 \$32,000	\$0 \$0 \$0 \$0 \$0	\$2,000 \$2,000 \$2,000 \$2,000 \$8,000	\$0 \$0 \$0 \$0 \$0	

TIP # / L RTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-302 / Consistent with L RTP		Bridge Replacement - Local		Local bridge replacement, rehabilitation, and preservation projects in the urbanized areas to be determined during the annual bridge selection process (local).	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	BRR-L BRR-L BRR-L BRR-L TOTAL	\$500,000 \$500,000 \$500,000 \$500,000 \$2,000,000	\$400,000 \$400,000 \$400,000 \$400,000 \$1,600,000	\$0 \$0 \$0 \$0 \$0	\$100,000 \$100,000 \$100,000 \$100,000 \$400,000	\$0 \$0 \$0 \$0 \$0	
2011-303 / Consistent with L RTP		Bridge Replacement - State		Bridge replacement, rehabilitation, systematic repair, and preservation projects in the urbanized areas to be determined during the annual bridge selection process (state).	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	BRR-S BRR-S BRR-S BRR-S TOTAL	\$3,000,000 \$3,000,000 \$3,000,000 \$3,000,000 \$12,000,000	\$2,400,000 \$2,400,000 \$2,400,000 \$2,400,000 \$9,600,000	\$800,000 \$800,000 \$800,000 \$800,000 \$3,200,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-304 / Consistent with L RTP		Bridge Replacement Cost Overruns - State		Funds to cover cost overruns on project phases which were included in previous STIPs (state).	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	BRR-S BRR-S BRR-S BRR-S TOTAL	\$50,000 \$50,000 \$50,000 \$50,000 \$200,000	\$40,000 \$40,000 \$40,000 \$40,000 \$160,000	\$10,000 \$10,000 \$10,000 \$10,000 \$40,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-305 / Consistent with L RTP		Enhancement Program Projects	Tennessee Roadscapes grant program will partner with communities to provide right of way landscaping at community gateways. Landscaping will include a mixture of flowers, shrubbery, and appropriately located and sized trees. Some projects will also include irrigation, benches, trash cans, paths, and "Welcome To" signage.	Fund projects to build sidewalks, build bike and pedestrian trails, and renovate historic train depots and other transportation related structures.	TDOT	2011 2012 2013 2014	CON CON CON CON	ENHANCE ENHANCE ENHANCE ENHANCE TOTAL	\$3,000,000 \$3,000,000 \$3,000,000 \$3,000,000 \$12,000,000	\$2,400,000 \$2,400,000 \$2,400,000 \$2,400,000 \$9,600,000	\$0 \$0 \$0 \$0 \$0	\$600,000 \$600,000 \$600,000 \$600,000 \$2,400,000	\$0 \$0 \$0 \$0 \$0	
2011-306 / Consistent with L RTP		Freeway Service Patrols		Operation of motorist assistance service.	TDOT	2011 2012 2013 2014	OPER OPER OPER OPER	STP STP STP STP TOTAL	\$1,570,560 \$1,727,640 \$1,600,400 \$2,060,400 \$7,289,020	\$1,256,464 \$1,382,112 \$1,520,320 \$1,672,320 \$5,831,216	\$314,116 \$345,528 \$380,080 \$418,080 \$1,457,804	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-307 / Consistent with L RTP		Highway Safety Improvement Program		Fund projects that include highway hazard elimination, such as alignment spot, intersection improvements, signalization, guardrails, lighting, marking, and railroad crossings (install pads, bells, lights, and pavement markings).	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	HSIP HSIP HSIP HSIP TOTAL	\$2,000,000 \$2,000,000 \$2,000,000 \$2,000,000 \$8,000,000	\$1,800,000 \$1,800,000 \$1,800,000 \$1,800,000 \$7,200,000	\$200,000 \$200,000 \$200,000 \$200,000 \$800,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-308 / Consistent with L RTP		IM - Project Contingency Overruns		Funds to cover projects contained in the current STIP where cost overruns have resulted in an increased cost overrun less than 30 percent.	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	IM IM IM IM TOTAL	\$200,000 \$200,000 \$200,000 \$200,000 \$800,000	\$180,000 \$180,000 \$180,000 \$180,000 \$720,000	\$20,000 \$20,000 \$20,000 \$20,000 \$80,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	
2011-309 / Consistent with L RTP		IM - Project Cost Overruns		Funds to cover cost overruns on project phases which were included in previous STIPs.	TDOT	2011 2012 2013 2014	PERW/CN PERW/CN PERW/CN PERW/CN	IM IM IM IM TOTAL	\$200,000 \$200,000 \$200,000 \$200,000 \$800,000	\$180,000 \$180,000 \$180,000 \$180,000 \$720,000	\$20,000 \$20,000 \$20,000 \$20,000 \$80,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	

TIP # / LRTIP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-310 / Consistent with LRTIP		Interstate 3R Improvements		Resurfacing, slide repair, guardrail signing, signalization, marking, and other preventive maintenance.	TDOT	2011	CON	IM	\$100,000	\$80,000	\$10,000	\$0	\$0	
						2012	CON	IM	\$100,000	\$80,000	\$10,000	\$0	\$0	
						2013	CON	IM	\$100,000	\$80,000	\$10,000	\$0	\$0	
						2014	CON	IM	\$100,000	\$80,000	\$10,000	\$0	\$0	
						TOTAL			\$400,000	\$360,000	\$40,000	\$0	\$0	
2011-311 / CMP	104162	Knoxville ITS (Operations)		Operations and utilities/power/communication, maintenance, construction, etc.	TDOT	2011	MAINT	IM	\$3,100,000	\$2,790,000	\$310,000	\$0	\$0	
						2011	OPER	IM	\$800,000	\$720,000	\$80,000	\$0	\$0	
						2011	UTIL	IM	\$200,000	\$180,000	\$20,000	\$0	\$0	
						2012	OPER	IM	\$800,000	\$720,000	\$80,000	\$0	\$0	
						2012	UTIL	IM	\$200,000	\$180,000	\$20,000	\$0	\$0	
						2013	OPER	IM	\$800,000	\$720,000	\$80,000	\$0	\$0	
						2013	UTIL	IM	\$200,000	\$180,000	\$20,000	\$0	\$0	
						2014	OPER	IM	\$800,000	\$720,000	\$80,000	\$0	\$0	
						2014	UTIL	IM	\$200,000	\$180,000	\$20,000	\$0	\$0	
						TOTAL			\$7,100,000	\$6,390,000	\$710,000	\$0	\$0	
2011-314 / Consistent with LRTIP		NHS - Project Contingency Overruns		Funds to cover projects contained in the current STIP where cost overruns have resulted in an increased cost overrun less than 30 percent.	TDOT	2011	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2012	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2013	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2014	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						TOTAL			\$2,000,000	\$1,600,000	\$400,000	\$0	\$0	
2011-315 / Consistent with LRTIP		NHS - Project Cost Overruns		Funds to cover overruns on project phases which were included in previous STIPs.	TDOT	2011	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2012	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2013	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2014	PERWON	NHS	\$500,000	\$400,000	\$100,000	\$0	\$0	
						TOTAL			\$2,000,000	\$1,600,000	\$400,000	\$0	\$0	
2011-316 / Consistent with LRTIP		Project Contingency Overruns		Lump-sum project to cover costs less than 30 percent of the project phase and projects are in the current TIP.	MPO	2011	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2012	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2013	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2014	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						TOTAL			\$2,000,000	\$1,600,000	\$0	\$400,000	\$0	
2011-317 / Consistent with LRTIP		Project Cost Overruns		Lump-sum project to cover cost increases for projects appearing only in previous STIPs. This included 7 percent of the STP allocation and 10 percent of the CMAQ allocation. Conformity status: Exempt.	TPO	2011	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2012	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2013	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						2014	OVERUN	L-STP	\$500,000	\$400,000	\$0	\$100,000	\$0	
						TOTAL			\$2,000,000	\$1,600,000	\$0	\$400,000	\$0	
2011-318 / Consistent with LRTIP	109167.00	Roadkill Mitigation Program (I-75)			TDOT	2011	PERWON	STP	\$1,400,000	\$1,120,000	\$280,000	\$0	\$0	
					TOTAL				\$1,400,000	\$1,120,000	\$280,000	\$0	\$0	
2011-319 / Consistent with LRTIP		Safe Routes to School Projects	It will fund the planning, development, and implementation of infrastructure projects, as well as education and outreach activities.	Fund projects that focus on increasing levels of walking and bicycling to school among elementary and middle school students.	TPOMPC	2011	PERWON	SRTS	\$750,000	\$750,000	\$0	\$0	\$0	
						2012	PERWON	SRTS	\$750,000	\$750,000	\$0	\$0	\$0	
						2013	PERWON	SRTS	\$750,000	\$750,000	\$0	\$0	\$0	
						2014	PERWON	SRTS	\$750,000	\$750,000	\$0	\$0	\$0	
						TOTAL			\$3,000,000	\$3,000,000	\$0	\$0	\$0	
2011-320 / Consistent with LRTIP		Spot Safety Improvement Program		Such as signalization, intersection modifications, sight distance modification, adding turn lanes, school flashing signals, flashing beacons, acquisition of land, R/R grade crossing improvements, etc.	TDOT	2011	PERWON	STP	\$100,000	\$80,000	\$20,000	\$0	\$0	
						2012	PERWON	STP	\$100,000	\$80,000	\$20,000	\$0	\$0	
						2013	PERWON	STP	\$100,000	\$80,000	\$20,000	\$0	\$0	
						2014	PERWON	STP	\$100,000	\$80,000	\$20,000	\$0	\$0	
						TOTAL			\$400,000	\$320,000	\$80,000	\$0	\$0	

TIP # / LRTP #	TDOT #	Project Name	Limits	Description	Lead Agency	Year	Phase	Source	Total Funding	Federal Funding	State Funding	Local Funding	Other Funding	Status
2011-321 / Consistent with LRTP		State Route 3R Improvements		Resurfacing, slide repair, guardrail, signing, marking, other preventive maintenance, etc.	TDOT	2011	CON	STP	\$50,000	\$40,000	\$10,000	\$0	\$0	
						2012	CON	STP	\$50,000	\$40,000	\$10,000	\$0	\$0	
						2013	CON	STP	\$50,000	\$40,000	\$10,000	\$0	\$0	
						2014	CON	STP	\$50,000	\$40,000	\$10,000	\$0	\$0	
								TOTAL	\$200,000	\$160,000	\$40,000	\$0	\$0	
2011-322 / Consistent with LRTP		STP Project Contingency Overruns - State		Funds to cover projects contained in the current STIP where cost overruns have resulted in an increased cost of less than 30 percent.	TDOT	2011	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2012	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2013	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2014	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
								TOTAL	\$2,000,000	\$1,600,000	\$400,000	\$0	\$0	
2011-323 / Consistent with LRTP		STP Project Cost Overruns - State		Funds to cover cost overruns on project phases which were included in previous STIPs.	TDOT	2011	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2012	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2013	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
						2014	PER/WCN	STP	\$500,000	\$400,000	\$100,000	\$0	\$0	
								TOTAL	\$2,000,000	\$1,600,000	\$400,000	\$0	\$0	

Appendix J: LAMTPO FY 2011 – 2014 TIP Project List

2011-2014 TIP id	Regional LRMP ID	outyear	Project Location	In 2008-2011 TIP? ID#	Project type	City/ County	Length	From	To
2070		2014	E 2nd N St	yes, 2070	resurfacing/ repaving	Morristown	2100	Anderson St	King Ave
2071		2014	W 1st N St	yes, 2071	resurfacing/ repaving	Morristown	2610	Mars St	N Fairmont Ave
2077	consistent	2014	Argicultural Park Blvd	yes, 2077	resurfacing/ repaving	White Pine	2275	RR Bridge	Witt Foundry Rd
2072		2014	Signal at W1N and Jackson	yes, 2072	traffic signalization, mast arms	Morristown			
2045	320	2014	11E LED traffic signal replacements	yes, 2045	LED traffic signal replacements	Jefferson City		SR92 by Hospital	Odyssey Rd
2073		2014	SR343/ Lincoln Ave/ Algonquin Ave traffic signalization	yes, 2073	traffic signalization, mast arms	Morristown		Lincoln Ave/ Algonquin Ave/ SR 343	Lincoln Ave/ Algonquin Ave/ SR 343
2074	consistent	2014	Chucky Pike	yes, 2074	resurfacing/ repaving	Jefferson City	2654	11E	Clearbrook Dr
2075	consistent	2014	Mountcastle Ave	yes, 2075	resurfacing/ repaving	Jefferson City	1470	Russell St	Bishop Av
2076	consistent	2014	Old AJ Hy	yes, 2076	resurfacing/ repaving	Jefferson City	720	200 feet east of Beacon Rd	Jefferson City Corporation Boundary
2050		2014	Walters Dr	yes, 2050		Morristown	1600	W AJ Hy	N Economy Rd
2028		2014	Veterans Parkway	yes, 2028		Morristown	3,800	Bellwood Rd	S Sugar Hollow Rd
14	305, 306	2014	Odyssey Road resurfacing restriping for 3 lanes	no		Jefferson City			
10	301	2014	Chucky Pike / 11E Intersection improvements	no		Jefferson City			
2044	318	2014	Russell Av and 11E Intersection Improvements	no		Jefferson City			
2043	317	2014	George Av and 11E Intersection Improvements	no		Jefferson City			
15			road rehab morristown	no		Morristown			
2000			US 11E/ Walters Dr traffic signalization/ mast arms	no		Morristown			
29			ITS Traffic signal coordination			Morristown			
55	326		Old AJ Hy bridge replacement			Jefferson City			

Note: The shaded cells in the above table indicate projects that are located within Morristown/Hamblen County which is not subject to the requirements of air quality conformity as it has not been designated nonattainment for any of the National Ambient Air Quality Standards as of this report.

Appendix K: Memorandum of Agreement

MEMORANDUM OF AGREEMENT

Between the Tennessee Department of Transportation (TDOT), the Knoxville Regional Transportation Planning Organization (TPO) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) for the development of the Transportation Conformity Determination(s) under the 8-Hour Ozone and Particulate Matter 2.5 Standards

I. PURPOSE

This Memorandum of Agreement (MOA) is for the purpose of conducting cooperative planning and analysis of, and determining transportation conformity for, all transportation projects outside the TPO metropolitan planning area, but within the nonattainment or maintenance area.

II. BACKGROUND

- A. The U.S. Environmental Protection Agency (EPA) has designated the Knoxville Nonattainment Area for ozone as being the counties of Anderson, Blount, Jefferson, Loudon, Knox, Sevier and a portion of Cocke County. This ozone nonattainment became effective on June 15, 2004.
- B. The EPA designated the Knoxville Nonattainment Area for Particulate Matter less than 2.5 microns in diameter (PM 2.5) as being the counties of Anderson, Blount, Knox, Loudon and a portion of Roane County. This PM 2.5 nonattainment became effective on April 5, 2005.
- C. The above nonattainment areas include, and are larger than, the TPO planning area. In addition, a portion of the Ozone Nonattainment Area in Jefferson County lies within the jurisdiction of the LAMTPO planning area.
- D. 23 CFR 450.310(f) states that if the metropolitan planning area does not include the entire nonattainment or maintenance area, there shall be an agreement among the state department of transportation, state air quality agency, affected local agencies and the metropolitan planning organizations describing the process for cooperative planning and analysis of all projects outside the metropolitan planning area but within the nonattainment or maintenance area. The agreement also must indicate how the total transportation-related emissions for the nonattainment or maintenance area, including areas both within and outside the metropolitan planning area, will be treated for the purposes of determining conformity in accordance with the US Environmental Protection Agency (EPA) conformity regulation. The agreement shall address policy mechanisms for resolving conflicts concerning transportation-related emissions that may arise between the metropolitan planning area and the portion of the nonattainment or maintenance area outside the metropolitan planning area.

- E. Tennessee has a State Transportation Conformity Rule (1200-3-34-.01), which applies to designated nonattainment and maintenance areas and implements the requirements of the federal transportation conformity rule (40 CFR Part 93, Subpart A) concerning several of the requirements in part D above. This MOA is intended to only address the assumption of the responsibility by the TPO for completing conformity analyses/determinations for the entire Knoxville Nonattainment Area.
- F. The TPO, TDOT and LAMTPO have come to an agreement that the TPO will perform the air quality analyses and conformity determinations for the entire nonattainment area based primarily on the factors that the TPO has previous experience with preparing conformity determinations and maintains a travel demand forecasting model that covers the majority of the nonattainment areas. Thus, the TPO is in the best position to develop projections of future traffic demand and air quality impacts of proposed transportation projects in a holistic manner.

III. RESPONSIBILITIES

A. TPO:

1. The TPO, in coordination with TDOT and other affected agencies will prepare the transportation conformity analysis for the entire nonattainment area which will comply with the applicable requirements of 40 CFR Part 93. If analysis requirements for the non-TPO area are not specific, clear or well defined, the interagency consultation process will be used to determine appropriate analysis procedures.
2. The TPO will facilitate meetings of the Interagency Consultation Group as necessary in order to define the specific processes and adhere to schedules required to complete the conformity determination within the appropriate timelines to ensure that the area does not enter a conformity lapse.
3. The TPO will be responsible for the development of a comprehensive and multimodal "Urban Long Range Transportation Plan (LRTP)" that identifies a fiscally constrained transportation project listing for the TPO planning area, which is comprised of urbanized portions of Knox, Blount, Loudon and Sevier counties.
4. The TPO will be responsible for development of a "Regional LRTP" that identifies a single listing of transportation projects for each nonattainment area (for both PM_{2.5} and ozone). The Regional LRTP will include input from TDOT on projects in the non-urban counties.
5. The TPO will provide for public input opportunities on both the Urban and Regional LRTPs and accompanying conformity analysis.

B. TDOT:

1. TDOT, in coordination with local affected agencies, is responsible for the development of a transportation project listing on state-funded roadway system for the non-urbanized portions of the nonattainment area at appropriate horizon years to be compatible with the conformity analysis.
2. TDOT will provide for public involvement opportunities within the non-urbanized portions of the nonattainment area.

C. LAMTPO:

1. LAMTPO will provide to the TPO a list of fiscally constrained transportation projects that result from a LRTP prepared for the Lakeway Area planning boundary that are within Jefferson County with projects listed in the appropriate horizon years to be compatible with the conformity analysis.

IV. PROCEDURAL CONSIDERATIONS**A. Data Sources:**

1. Travel Demand Model – The TPO will maintain a validated travel demand forecasting model in order to project future vehicle miles of travel within the nonattainment area for purposes of determining conformity of the transportation projects that are proposed. If, through the interagency consultation process, a project is determined to be regionally significant but not included in the model then appropriate off model data forecasting methodologies will be pursued.
2. Off Model Projections – Highway Performance Monitoring System (HPMS) and traffic count data will be used to develop future projections of travel along with other assumptions agreed upon through the interagency consultation process in order to determine conformity of projects in geographic areas unrepresented in the regional travel demand forecasting model such as the portion of Cocke County.

B. Conformity Submittal Protocol:

1. The TPO will develop a single conformity determination for the entire nonattainment area on an as needed basis, which will support both the Knoxville Regional TPO and the LAMTPO Long Range Transportation Plans and Transportation Improvement Programs.

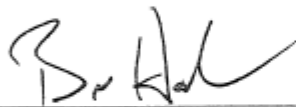
2. The TPO will submit the conformity determination to the Federal Highway Administration and the Federal Transit Administration for their review and approval concurrent with EPA.
3. The LAMTPO will include the ozone conformity determination documentation within their transportation plans as an appendix.

V. AGREEMENT TERMS

- A. This MOA shall remain in effect as long as each of the parties is in agreement with its terms. The interagency consultation process shall be used for revision of the MOA as necessary.

VI. SIGNATORIES

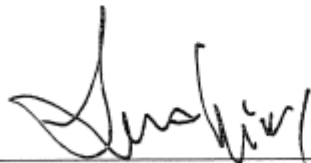
The following signatory parties do hereby agree to comply with the provisions and terms of this MOA.



Bill Haslam, TPO Executive Board Chair



David Purkey, LAMTPO Executive Board Chair



Gerald Nicely, TDOT Commissioner

9/20/2007

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Appendix B: Accommodation Policy

To view TDOT's adopted policy, see www.tdot.state.tn.us/bikeped/pdfs/policy.pdf

RESPONSIBLE OFFICE: Planning Division, Bicycle and Pedestrian Coordinator

AUTHORITY: TCA 4-3-2303

If any portion of this policy conflicts with applicable state or federal laws or regulations, that portion shall be considered void. The remainder of this policy shall not be affected thereby and shall remain in full force and effect.

PURPOSE: It is the intent of the Department of Transportation to promote and facilitate the increased use of non-motorized modes of transportation, including developing facilities for the use of pedestrians and bicyclists and promoting public education, and safety programs for using such facilities.

APPLICATION: Department of Transportation employees involved in the planning, design and construction of projects, as well as, consultants and contractors participating in the same.

DEFINITIONS: None

POLICY:

The policy of the Department of Transportation is to routinely integrate bicycling and walking options into the transportation system as a means to improve mobility and safety of non-motorized traffic. This policy pertains to both bicycle and pedestrian facilities.

Bicycle:

TDOT is committed to the development of the transportation infrastructure, improving conditions for bicycling through the following actions:

- Provisions for bicycles will be integrated into new construction and reconstruction of roadway projects through design features appropriate for the context

and function of the transportation facility.

- The design and construction of new facilities should anticipate likely future demand for bicycling facilities and not preclude the provision of future improvements.
- Addressing the need for bicyclists to cross corridors as well as travel along them, the design of intersections and interchanges should accommodate bicyclists in a manner that is accessible and convenient.
- The design of facilities for bicyclists will follow design guidelines and standards as developed by the department.
- The measurement of usable shoulder width does not include the width of a gutter pan.
- Where shoulders with rumble strips are installed, a minimum clear path of 4 feet of smooth shoulder is to be provided.
- In cases where a minimum shoulder width of 4 feet cannot be obtained, such as in restrictive urban areas, an increased curb lane width will better accommodate bicycles and motor vehicles within the shared roadway. The recommended width for shared use in a wide curb lane is 14 feet.

Pedestrian:

TDOT is committed to the development of the transportation infrastructure, improving conditions for walking through the following actions:

- In urbanized areas, sidewalks or other types of pedestrian travel ways should be established in new construction or reconstruction projects, unless one or more of the conditions for exception are met as described in this policy.
- The design and construction of new facilities should anticipate likely future demand for walking facilities and not preclude the provision of future improvements.
- Addressing the need for pedestrians to cross corridors as well as travel along them, the design of

intersections and interchanges should accommodate pedestrians in a manner that is accessible and convenient.

- The design of facilities for pedestrians will follow design guidelines and standards as developed by the department.
- Provisions for pedestrians will be integrated into new construction and reconstruction projects through design features appropriate for the context and function of the transportation facility.
- Pedestrian facilities must be designed to accommodate persons with disabilities in accordance with the access standards required by the Americans with Disabilities Act (ADA). Sidewalks, shared use paths, street crossings (including over- and under-crossings) and other infrastructure must be constructed so that all pedestrians, including people with disabilities, can travel independently.

exceptions on Federal-aid highway projects, concurrence from the Federal Highway Administration must be obtained.

5. Facilities for bicyclists and pedestrians which conflict with local municipality plans to accommodate bicycles and pedestrians or as requested by the Commissioner of the Department of Transportation.

Exceptions:

There are conditions where it is generally inappropriate to provide bicycle and pedestrian facilities. These instances include:

1. Facilities where bicyclists and pedestrians are prohibited by law, such as interstates, from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists elsewhere within the same transportation corridor.
2. The cost of providing bicycle and pedestrian facilities would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty (20%) of the cost of the project.
3. Bridge Replacement/ Rehabilitation projects funded with Highway Bridge Replacement and Rehabilitation Program (HBRRP) funds on routes where no pedestrian or bicycle facilities have been identified in a plan advanced to the stage of having engineering drawings nor any state bridge maintenance funded projects.
4. Other factors where there is a demonstrated absence of need or prudence. Exceptions for not accommodating bicyclists and pedestrians in accordance with this policy will be documented describing the basis for the exception. For

Appendix C: Congestion Management Process

Required Elements of a CMP

The following tables are part of the required elements of a CMP and are referenced in Chapter 4.

Table 36: TPO Regional Congested Corridors

Congested Corridors - Knox County

Map ID	Corridor	Priority 1 Corridor Limits	Priority 2 Corridor Limits	Priority 3 Corridor Limits	LRMP Project Addressing Corridor Cross Reference
K1	Alcoa Highway			County Line - Cherokee Trail	627,628,653
K3	Asheville Highway	John Sevier Hwy - I-40 E Ramps		AJ Hwy - Gov. John Sevier Hwy	693 (Priority 1 section)
K4	Ball Rd/Ball Camp Pk			Middlebrook Pk - Oak Ridge H	605
K5	Broadway	Central St - Summit Hill Dr, Grainger Ave - Brown Gap Rd	Grainger Ave - Central St		
K6	Byington - Beaver Ridge Rd	Emory Rd - Hardin Valley Rd			636,650
K7	Callahan Drive			Central Ave Pk - Pleasant Ridge Rd	
K8	Campbell Station Rd	Kingston Pk - Parkside Dr			601
K9	Cedar Ln	Central Ave Pk - Broadway			686
K10	Cedar Bluff Road		Middlebrook Pk - Kingston Pk		624
K11	Central Avenue Pike		Emory Rd - Bruhin Rd		671
K12	Chapman Highway	Blount Ave - Lindy Rd	Lindy Dr to County Line		626,666
K13	Clinton Highway		I-275/I-640 - Emory Rd		
K14	Concord Road	Turkey Creek Rd - Northshore Dr			632
K15	Cumberland Avenue	Alcoa Hwy Ramps - Volunteer Blvd			
K16	Ed Shouse Rd		Western Ave - Middlebrook Pk		
K17	Emory Road	Clinton Hwy - Gill Rd	Tazewell Pk - Maynardville Pk, Beaver Ridge Rd - Clinton Hwy	Dry Gap Pk - I-75N Ramps	603,636,643 (Priority 1 & 2 sections)
K18	Gleason Drive			Montvue Rd - Ebenezer Rd	678
K19	Gov. John Sevier Hwy	Martin Mill Pk - Alcoa Hwy	Chapman Hwy - Martin Mill Pk	Asheville Hwy - Chapman Hwy	644,677
K20	Grigsby Chapel Rd		Smith Rd - Campbell Station Rd		
K21	Hardin Valley Road		Campbell Station Rd - Bryant Ln	Bryant Ln - Pellissippi SB Ramps	
K22	Henley Street		Summit Hill Dr - Blount Ave		614
K23	Kingston Pike	Jamestowne Blvd - Mabry Hood Rd, Cedar Bluff Rd - Gallaher View Rd, Morrell Rd - Northshore Dr, Lyons View Pk - Alcoa Hwy N Ramps	Mabry Hood Rd - Cedar Bluff Rd, Gallaher View Rd - Morrell Rd, Northshore Dr - Lyons View Pk	Loudon County Line - Jamestowne Blvd	668
K24	Lovell Road	Kingston Pk - Gilbert Dr, Pellissippi Pkwy - Schaeffer Rd	Gilbert Dr - Middlebrook Pk		608,637
K25	Lyons View Pike	Northshore Dr - Kingston Pk			
K26	Magnolia Avenue			Prosser Rd - Cherry St	
K27	Maryville Pk			Blount County Line - Chapma	675
K28	Maynardville Hwy	Emory Rd - Brown Gap Rd	C.L. - Emory Rd		604,607
K29	Merchant Drive		Central Ave Pk - Pleasant Ridge Rd		616
K30	Middlebrook Pike		Gallaher View Rd - Ed Shouse Rd	Cedar Bluff Rd - Gallaher View Rd, Ed Shouse Rd - Western Ave	
K31	Millertown Pike	Loves Creek Rd - Mill Rd	Washington Pk - Loves Creek Rd		656,657
K32	Morrell Road	Northshore Dr - Westland Dr			688
K33	Neyland Drive			Center Dr - Lake Loudoun Blvd	
K34	Northshore Drive	Kingston Pk - Papermill Dr, Morrell Rd - Westland Dr	Ebenezer Rd - Morrell Rd, Concord Rd - I-140 E Ramps	Choto Rd - Concord Rd, I-140 - Ebenezer Rd	646,658,663,680
K35	Oak Ridge Highway	Byington-Beaver Ridge - Harrell Rd	Pellissippi Pkwy - Byington-Beaver Ridge, Harrell Rd - Schaad Rd		638,673
K36	Papermill Dr		Kingston Pk - Weisgarber Rd	I-40 W Ramps - Liberty St	689 (Priority 2 section)
K37	Parkside Drive	Mabry Hood Rd - Seven Oaks Dr		Campbell Station Rd - Lovell Rd	633 (Priority 1 section)
K38	Pellissippi Parkway		County Line - Guinn Rd	Guinn Rd - Dutchtown Rd	647
K39	Peters Road			Kingston Pk - Ebenezer Rd	
K40	Pleasant Ridge Road		Callahan Dr - Merchant Dr	Merchant Dr - Sanderson Rd	616 (Priority 2 section)
K41	Schaad Road	Pleasant Ridge Rd - Oak Ridge Hwy			605
K42	Smith Rd			Kingston Pk - Grigsby Chapel Rd	
K43	Sutherland Avenue	Hollywood Rd - Liberty St	Liberty St - Middlebrook Pk		
K44	Strawberry Plains Pk		John Sevier Hwy - Cracker Barrel Ln		639,667
K45	Tazewell Pike	Jacksboro Pk - Old Broadway	Jacksboro Pk - Emory Rd		640,665

Table 36: TPO Regional Congested Corridors

Congested Corridors - Blount County

Map ID	Corridor	Priority 1 Corridor Limits	Priority 2 Corridor Limits	Priority 3 Corridor Limits	LRMP Project Addressing Corridor Cross Reference
B1	Alcoa Highway	US 411 - Louisville Rd	Louisville Rd - I-140	I-140 - C.L.	206,216,218
B2	Bessemer St	US 129 - Hall Rd			
B3	Broadway Ave/US Hwy 411	US 129 - Washington St	William Blount Dr - US 129		242
B4	Carpenters Grade Rd		Raulston Rd - Sandy Springs Rd		223
B5	Court St			Memorial Dr - U.S. 321	
B6	Cusick Street/Calderwood St		US Hwy 411 - Alcoa Hwy		
B7	Hall Rd/Washington St		Lincoln St - US 321		232
B8	Hunt Rd/Old Glory Rd			US 321 - Old Knoxville Hwy	
B9	Lamar Alexander Pkwy		Broadway Ave - Washington St	Broadway Ave - William Blount Dr	232
B10	Lincoln Rd		Hall Rd - Old Knoxville Hwy		
B11	Louisville Rd			Alcoa Hwy - Topside Rd	
B12	Morganton Rd			Foothills Mall Rd - Henry Ln	211,229
B13	Montvale Road	Boardman Ave - Lamar Alex Pkwy			239
B14	Montvale Sta. Rd			Carpenter Grd Rd - Montvale Rd	
B15	Old Knoxville Hwy	Sam Houston School Rd - Hunt Rd	Hunt Rd - Washington St	Sam Houston Rd - Knox County Line	203,212,231
B16	Old Niles Ferry Rd			Calderwood Hwy - Broadway Ave	213
B17	Sandy Springs Rd		Montvale Station Rd - U.S. 411		240
B18	Sevierville Road		Brown School Rd - High St	Brown School Rd - Sevier County Line	214,245,250
B19	Topside Rd		Alcoa Hwy - Louisville Rd		251
B20	Wildwood Rd			Old Knoxville Hwy - Andy Harris Rd	234
B21	William Blount Dr			U.S. 321 - U.S. 411 South	
B22	Wright Rd			U.S. 129 - Hunt Rd	219
B23	Wright Ferry Rd			U.S. 129 - Topside Rd	207

Congested Corridors - Loudon County

Map ID	Corridor	Priority 1 Corridor Limits	Priority 2 Corridor Limits	Priority 3 Corridor Limits	LRMP Project Addressing Corridor Cross Reference
L1	SR 2 (US 11E)		US 321 - Kingston Pk		416
L2	SR 73 (US 321)		US 11 - I-75 SB Ramps	I-75 SB Ramps - US 70	422

Congested Corridors - Knox County Freeways

Map ID	Corridor	Priority 1 Corridor Limits	Priority 2 Corridor Limits	Priority 3 Corridor Limits	LRMP Project Addressing Corridor Cross Reference
F1	I-40	Loudon County Line - James White Pkwy			684,691
F2	I-40		James White Pkwy - Midway Rd		
F3	I-75		Anderson County Line - Emory Rd		691,692
F4	I-640		I-40W - I-275		684
F5	I-140	I-40 - Dutchtown Rd			623
F6	I-140		Northshore Dr - I-40		

Congested Corridors - Regional Nonattainment Area

Map ID	Corridor	County	Priority 1 Corridor Limits	Priority 2 Corridor Limits	Priority 3 Corridor Limits	LRMP Project Addressing Corridor Cross Reference
R1	I-75	Anderson		SR 61 - Knox County Line		684
R2	I-75	Anderson			U.S. 25 - SR 61	
R3	Melton Lake Rd	Anderson		Oak Ridge Turnpike - Emory Valley Rd		
R4	SR 170 (Edgemoor Rd)	Anderson	SR 62 - Clinton Hwy			101
R5	SR 61	Anderson		SR 9 - I-75	Melton Lake Rd - SR 9	
R6	SR 9 (Clinton Hwy)	Anderson		Knox County Line - Edgemoor Rd		
R7	SR 95 (Oak Ridge Turnpike)	Anderson		Roane County Line - New York Ave	New York Ave - Melton Lake Rd	
R8	US 441 (Norris Fwy)	Anderson			Knox County Line - SR 61	
R9	SR 32	Jefferson			SR 341 - Cocke County Line	
R10	US 25W / US 70	Jefferson			SR 92 - SR 113	
R11	I-40	Loudon			SR 95 - I-75	
R12	I-75	Loudon			SR 72 - I-40	
R13	SR 2 (US 11E)	Loudon	Grove St - Sugar Limb Rd	Sugar Limb Rd - Browder School Rd	SR 72 - Grove St	415,421
R14	SR 73 (US 321)	Loudon	Tellico Pkwy - US 11			409
R15	Sugar Limb Rd	Loudon			I-75 - U.S. 11	420
R16	SR 139 (Douglas Dam Rd)	Sevier		SR 66 - Jefferson County Line		
R17	SR 338 (Boyd's Creek Hwy)	Sevier	Chapman Hwy - SR 66			
R18	SR 35 (Dolly Parton Pkwy)	Sevier	SR 66 - Veterans Blvd	Veterans Blvd - Jefferson County Line		502,510
R19	SR 416	Sevier			U.S. 411 - SR 454	
R20	SR 449 (Veterans Blvd)	Sevier			Parkway - Teaster Ln	
R21	SR 66	Sevier	I-40 - Chapman Hwy			506,507
R22	SR 71 (Chapman Hwy)	Sevier		Boyd's Creek Hwy - Knox County Line	SR 66 - Boyd's Creek Hwy	508,626
R23	SR 71 (Parkway)	Sevier	SR 73 - Collier Rd			
R24	SR 73 (US 321)	Sevier		SR 454 - Cocke County Line		513
R25	SR 72	Loudon		I-75 - US 11		418

Table 37: TPO Regional Congested Intersections (Hot Spots)

KNOX COUNTY URBAN AREA CONGESTION HOTSPOTS

Map ID	Route	Intersection	Priority
7	Broadway	Woodland Ave	1
13	Byington Beaver Ridge Rd	Oak Ridge Hwy	1
15	Callahan Rd	Central Av Pk	1
16	Callahan Rd/Schaad Rd	Clinton Hy	1
23	Cedar Ln	Central Ave Pk	1
44	Emory Rd	Andersonville Pk	1
43	Emory Rd	Tazewell Pk	1
46	Gallaher View Rd	Gleason Dr	1
55	Kingston Pk	Morrell Rd	1
70	Middlebrook Pk	Western Ave	1
12	Broadway	Cedar Ln	2
19	Cedar Bluff Rd	Sherrill Ln	2
21	Cedar Bluff Rd	N Peters Rd	2
22	Cedar Bluff Rd	Kingston Pk	2
26	Central St	Woodland Ave	2
32	Clinton Hwy	Merchant Dr	2
47	Gallaher View Rd	Kingston Pk	2
57	Kingston Pk	Northshore Dr	2
61	Lovell Rd	I-40 E Ramps	2
10	Maynardville Hwy	Emory Rd	2
68	Middlebrook Pk	Vanosdale Rd	2
72	Morrell Rd	Northshore Dr	2
73	Morrell Rd	Westland Dr	2
74	Northshore Dr	Westland Dr	2
78	Northshore Dr	Baum Dr	2
88	Western Ave	11th St	2
90	Woodland Ave	St Marys St	2
5	Broadway	I-640 W Ramps	3
14	Byington Beaver Ridge Rd	Byington-Solway Rd	3
18	Cedar Bluff Rd	Middlebrook Pk	3
24	Cedar Ln	Inskip Rd	3
35	Cumberland Ave	Metron Center	3
38	Cumberland Ave	Henley St	3
41	Ebenezer Rd	Westland Dr N	3
45	Emory Rd	Brickyard Rd	3
53	Kingston Pk	N Peters Rd	3
69	Middlebrook Pk	Liberty St	3
82	Sutherland Ave	Hollywood Rd	3
89	Westland Dr	Mourfield Rd	3
1	17th Street	Cumberland Ave	4
2	Alcoa Hwy	Gov. John Sevier Hwy	4
3	Asheville Hwy	Gov. John Sevier Hwy	4
4	Asheville Hwy	I-40 E Ramps	4
6	Broadway	Washington Pk	4
8	Broadway	Central St	4
9	Broadway	Summit Hill Dr	4
11	Broadway	Hotel Rd	4
17	Campbell Station Rd	Parkside Dr	4
20	Cedar Bluff Rd	I-40 E Ramps	4
25	Central Ave Pk	Emory Rd	4
27	Central St	Fifth Ave	4
28	Central St	Magnolia Ave	4
29	Chapman Hwy	Colonial Dr	4
30	Chapman Hwy	Moody Ave	4
31	Chapman Hwy	Blount Ave	4
33	Concord Rd	Kingston Pk	4
34	Concord Rd	Northshore Dr	4
36	Cumberland Ave	22nd St	4
37	Cumberland Ave	11th St	4

Table 37: TPO Regional Congested Intersections (Hot Spots)

40	Ebenezer Rd	Westland Dr S	4
Map ID	Route	Intersection	Priority
42	Ed Shouse Rd	Western Ave	4
48	Gleason Rd	Morrell Rd	4
49	Gleason Rd	Downtown West Blvd	4
50	Gleason Rd	Ebenezer Rd	4
51	Hardin Valley Rd	Pellissippi SB Ramps	4
52	Kingston Pk	David Ln	4
54	Kingston Pk	West Hills Ramps	4
56	Kingston Pk	Papermill Dr	4
58	Kingston Pk	Bearden Rd	4
59	Kingston Pk	Neyland Dr/Concord St	4
60	Lovell Rd	Parkside Dr	4
62	Lovell Rd	I-40 W Ramps	4
63	Lovell Rd	Schaeffer Rd	4
65	Merchant Dr	Pleasant Ridge Rd	4
66	Merchant Dr	David Rd	4
67	Middlebrook Pk	Piney Grove Ch Rd	4
71	Millertown Pk	Kinzel Way	4
75	Northshore Dr	I-140 E Ramps	4
77	Northshore Dr	Lyons View Pk	4
79	Oak Ridge Hwy	Harrell Rd	4
80	Peters Rd	Town & Country Cir	4
81	Peters Rd	George Williams Rd	4
83	Tazewell Pk	Jacksboro Pk	4
84	Vanosdale Rd	Bennington Rd	4
85	Volunteer Blvd	Andy Holt Ave	4
86	Washington Pk	Murphy Rd	4

BLOUNT COUNTY URBAN AREA CONGESTION HOTSPOTS

Map ID	Route	Intersection	Priority
95	Bessemer St	Calderwood St	1
91	US 129 Bypass	Lamar Alexander Pkwy	1
93	US 129 Bypass	Louisville Rd/Calderwood St	1
103	Broadway Ave	Lamar Alexander Pkwy	2
106	Foothills Mall Dr	Lamar Alexander Pkwy	3
110	Lamar Alexander Pkwy	Old Glory Rd	3
99	Old Knoxville Hwy	Wildwood Rd	3
94	Topside Rd	Alcoa Hwy	3
107	Washington St	High St	3
96	Bessemer St	Hall Rd	4
102	Broadway Ave	Foothills Mall Dr	4
101	Broadway Ave	Sandy Springs Rd	4
105	Calderwood St	Gill St	4
104	Cusick St	McCammon Ave	4
109	Hunt Rd	Wright Rd	4
111	Lamar Alexander Pkwy	Montvale Rd	4
112	Montvale Rd	Boardman Ave	4
97	Old Knoxville Hwy	Jackson Hills Dr	4
98	Old Knoxville Hwy	Hunt Rd	4
100	Old Knoxville Hwy	Washington St	4
92	US 129 Bypass	Foothills Mall Dr	4
108	Washington St	Lamar Alexander Pkwy	4

LOUDON COUNTY URBAN AREA CONGESTION HOTSPOTS

Map ID	Route	Intersection	Priority
113	U.S. 11	U.S. 321	4

Table 38: Congestion Mitigation Strategies

LRMP Project #	Route	Termini	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Congested Corridor ID	Additional Measures to Preserve Roadway Capacity
627	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Woodson Dr	1.4	Widen 4-lane to 6-lane	2009 - 2014	K1	Alcoa Hwy projects will include a concrete median barrier to provide partial to full access control. Project also includes a separated multi-use path for pedestrians and bicyclists that will connect several mile corridor btwn Knox & Blount. These projects have completed the design phase already.
628	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Blount/Knox County Line	3.0	Widen 4-lane to 6-lane	2009 - 2014	K1	
653	Alcoa Highway (SR 115) (US 129)	Woodson Dr to Cherokee Trail	2.2	Widen 4-lane to 6-lane	2015 - 2024	K1	
216	Alcoa Highway (SR 115) (US 129)	Pellissippi Pkwy (SR 162) to Knox County Line	2.7	Widen 4-lane to 6-lane	2015 - 2024	B1	
218	Alcoa Highway Bypass (SR 115) (US 129)	Singleton Station Rd to Hunt Rd (SR 335)	4.1	Construct new 6-lane freeway	2015 - 2024	B1	
601	Campbell Station Road	Jamestown Blvd to Parkside Dr/ Grigsby Chapel Rd	0.9	Widen 2-lane to 4-lane	2009 - 2014	K8	Project will include continuous center turn lane, sidewalks and bicycle lanes on both sides. This project has completed the design phase already.
632	Concord Road (SR 332)	Turkey Creek Rd to Northshore Dr	0.8	Widen 2-lane to 4-lane	2015 - 2024	K14	Project will include continuous center turn lane, sidewalks and bicycle lanes on both sides. This project has completed the design phase already.
603	Emory Road (SR 131)	Clinton Hwy (SR 9) (US 25W) to Gill Rd	2.9	Widen 2-lane to 4-lane	2009 - 2014	K17	Project will include continuous center turn lane and sidewalks on both sides. This project has completed the design phase already.
643	Emory Road (SR 131)	Maynardville Hwy (SR 33) to Tazewell Pike (SR 331)	4.9	Widen 2-lane to 4-lane	2015 - 2024	K17	Project should include median and accommodations for bicycles and pedestrians.
644	Gov John Sevier Highway (SR 168)	Alcoa Hwy (SR 115) (US 129) to Chapman Hwy (SR 71) (US 441)	6.5	Widen 2-lane to 4-lane	2015 - 2024	K19	Project should include median and accommodations for bicycles and pedestrians.
677	Gov John Sevier Highway (SR 168)	Chapman Hwy (SR 71) (US 441) to Asheville Hwy	9.2	Widen 2-lane to 4-lane	2025 - 2034	K19	Project should include median and accommodations for bicycles and pedestrians.
614	Henley Street Bridge (SR 33/71) (US 441)	Bridge over Tennessee River	0.4	Rehabilitate bridge & widen 5-lane to 6-lane	2009 - 2014	K22	Project will include continuous center turn lane, sidewalks and bicycle lanes on both sides. This project has completed the design phase already.
254	Hunter Growth Study Corridor #7- Southern Loop Connector	US 321 (SR 73) @ proposed Pellissippi Pkwy (SR 162) extension to Old Niles Ferry Rd @ proposed Wm Blount Dr (SR 335) extension	10.7	Construct 2-lane road along existing and new alignment	2025 - 2034	B3, B9	Project should include turn lanes where necessary and accommodations for bicycles and pedestrians.
691	I-40/75	I-40/I-75 Interchange to Lovell Rd (SR 131) Interchange	6.7	Widen 6-lane to 8-lane	2025 - 2034	F1	Project should employ construction management techniques to maintain existing traffic and extend current coverage of Freeway Transportation Management System
621	I-40/75	From I-140 to Lovell Rd (SR 131) Interchange Westbound Direction	1.8	Add full auxiliary lane westbound between interchanges (approx 2,700 ft)	2009 - 2014	F1	Bottleneck alleviation project - freeway lane currently ends between two interchanges.
692	I-75	Emory Rd (SR 131) to Raccoon Valley Rd (SR 170) Interchange	4.8	Widen 4-lane to 6-lane	2025 - 2034	F3	Project should employ construction management techniques to maintain existing traffic and extend current coverage of Freeway Transportation Management System
668	Kingston Pike (SR 1) (US 11/70)	Smith Rd to Campbell Station Rd	1.4	Widen 4-lane to 6-lane	2025 - 2034	K23	Project should include median and accommodations for bicycles and pedestrians.
684	Knoxville Regional Parkway (SR-475)	I-40/75 in Loudon County to I-75 in Anderson County	24.3	Construct new 4-lane freeway	2025 - 2034	F1, F3, F4	Project proposed to be constructed as full-access control freeway facility and is currently in EIS process
608	Lovell Road (SR 131)	Pellissippi Pkwy (SR 162) SB Ramps to Schaeffer Rd	0.2	Widen 2-lane to 4-lane	2009 - 2014	K24	Project will include continuous center turn lane, sidewalks and bicycle lanes on both sides. This project has completed the design phase already.
637	Lovell Road (SR 131)	Schaeffer Rd to Middlebrook Pike (SR 169)	1.7	Widen 2-lane to 4-lane	2015 - 2024	K24	Project should include median and accommodations for bicycles and pedestrians.
604	Maynardville Hwy (SR 33)	Temple Acres Dr to Union County Line	5.9	Widen 2-lane to 4-lane	2009 - 2014	K28	Project will include continuous center turn lane and full width shoulders that can accommodate bicycles. This project has completed the design phase already.
656	Millertown Pike	I-640 to Mill Rd	0.6	Widen 2-lane and 4-lane sections to 4-lane and 6-lane sections	2015 - 2024	K31	Project should include median and accommodations for bicycles, pedestrians and buses.
665	Murphy Road Extension	Washington Pike to Millertown Pike	1.3	Construct new 4-lane road	2015 - 2024	K45, K48	Project should include median and accommodations for bicycles and pedestrians.

Table 38: Congestion Mitigation Strategies

LRMP Project #	Route	Termini	Length (miles)	Type of Improvement	Proposed Completion Timeframe	Congested Corridor ID	Additional Measures to Preserve Roadway Capacity
638	Oak Ridge Highway (SR 62)	Schaad Rd to Byington-Beaver Ridge Rd (SR 131)	4.2	Widen 2-lane to 4-lane	2015 - 2024	K35	Project should include median and accommodations for bicycles and pedestrians.
673	Oak Ridge Highway (SR 62)	Byington-Beaver Ridge Rd (SR 131) to Pellissippi Pkwy (SR 162)	4.2	Widen 2-lane to 4-lane	2025 - 2034	K35	Project should include median and accommodations for bicycles and pedestrians.
203	Old Knoxville Hwy (SR 33)	Hunt Rd (SR 335) to Pellissippi Pkwy (SR 162)	0.5	Widen 2-lane to 4-lane	2009 - 2014	B15	Project will include median, sidewalks and bicycle lanes. This project has completed design phase already.
633	Parkside Drive	Mabry Hood Rd to Hayfield Rd	1.1	Widen 2-lane to 4-lane	2015 - 2024	K37	Bottleneck alleviation project - connects existing 4-lane sections on either end. This project has completed the design phase already.
232	Pellissippi Parkway (SR 162) (I-140)	Old Knoxville Hwy (SR 33) to Lamar Alexander Pkwy (SR 73) (US 321)	8.9	Construct new 4-lane freeway	2015 - 2024	B7, B9, B15	Project proposed to be constructed as full-access control freeway facility and is currently in EIS process.
625	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	1.5	Widen 2-lane to 4-lane	2009 - 2014	K41	Project proposed to include divided median and sidewalks on both sides.
605	Schaad Road Extension	Middlebrook Pike (SR 169) to west of Oak Ridge Hwy (SR 62)	4.6	Construct new 4-lane road	2009 - 2014	K4	Project will include divided median and sidewalks on both sides. This project has completed the design phase already.
666	South Knoxville Blvd (SR 71)	Moody Ave to Chapman Hwy (SR 71) (US 441)	5.3	Construct new 4-lane road	2015 - 2024	K12	Project proposed to be constructed as full-access control freeway facility and is currently in EIS process.
639	Strawberry Plains Pike	Gov. John Sevier Hwy (SR 168) to Moshina Rd	1.6	Widen 2-lane to 4-lane	2015 - 2024	K44	Project should include median and accommodations for bicycles and pedestrians.
667	Strawberry Plains Pike	Moshina Rd to south of I-40	1.4	Widen 2-lane to 4-lane	2015 - 2024	K44	Project should include median and accommodations for bicycles and pedestrians.
641	Tazewell Pike (SR 131)	Emory Rd (SR 131) to Barker Rd	1.2	Widen 2-lane to 4-lane	2015 - 2024	K45	Project should include median and accommodations for bicycles and pedestrians.
640	Tazewell Pike (SR 331)	Murphy Rd to Emory Rd (SR 131)	4.7	Widen 2-lane to 4-lane	2015 - 2024	K45	Project should include median and accommodations for bicycles and pedestrians.
251	Topside Road (SR 333)	Pellissippi Pkwy (SR 162) to Louisville Rd (SR 334)	3.0	Widen 2-lane to 4-lane	2025 - 2034	B19	Project should include median and accommodations for bicycles and pedestrians.
416	US 11 (SR 2)	US 321 (SR 73) to US 70 (SR 1)	5.1	Widen 2-lane to 4-lane	2015 - 2024	L1	Project should include median and accommodations for bicycles and pedestrians.
422	US 321 (SR 73)	US 11 (SR 2) to I-75	2.7	Widen 4-lane to 6-lane	2025 - 2034	L2	Project should include median and accommodations for bicycles and pedestrians.
615	Washington Pike	I-640 to Murphy Rd	1.6	Widen 2-lane to 4-lane	2009 - 2014	K48	Project should include median and accommodations for bicycles and pedestrians.
610	Western Avenue (SR 62)	Texas Ave to Major Ave	0.8	Widen 2-lane to 4-lane	2009 - 2014	K50	Project will include continuous center turn lane, sidewalks on both sides and full width shoulders that can accommodate bicycles. This project has completed the design phase already.
612	Western Avenue (SR 62)	Schaad Rd to I-640	3.7	Widen 2-lane to 4-lane	2009 - 2014	K50	Project will include continuous center turn lane, sidewalks on both sides and full width shoulders that can accommodate bicycles. This project has completed the design phase already.

Table 39: Regional Mobility Plan projects with addition of Significant SOV Capacity

Strategy Class	Strategy Group	Representative Strategies
Strategy 1 - Transportation Demand Management	A. Growth Management/Land Use Controls	1. Promote Infill, Compact and Mixed-use Development 2. Enforce Growth Boundaries - Limit Rural Area Growth 3. Development Standards - Require sidewalks with new subdivisions
	B. Congestion Pricing Controls	1. Road User Fees/Peak Hour Tolls 2. Parking Fees
	C. Ridesharing Programs	1. Carpool/Vanpool Incentives 2. HOV Priority Systems 3. Employer Trip Reduction Programs 4. Guaranteed Ride Home Program
	D. Alternative Work Arrangements	1. Telecommuting 2. Flexible work hours
	E. Non-Traditional Mode Incentives	1. Improved/Expanded bicycle network 2. Bicycle storage systems 3. Improved/Expanded pedestrian network
Strategy 2 - Operational Improvements	Traffic	A. Traffic Signal Improvements
		1. Signal re-timing 2. Addition of vehicle presence detection 3. Additional signal department staffing
		B. Roadway Geometric Improvements
		1. Bottle-neck alleviation 2. Turn lane additions at intersections 3. Re-striping/lane assignment modifications
		C. Turn Restrictions
		1. Time-of-day restrictions on turning movements
Strategy 3 - Public Transportation Improvements		D. Ramp Metering
		1. Meter freeway entrances to manage traffic flow
		E. Access Management
		1. Driveway Management 2. Median Management
		F. Construction Management
		1. Encourage construction activities in off-peak times 2. Coordinate traffic management plans
	A. Transit Capital Improvements	1. New exclusive right-of-way service (bus or rail) 2. Fleet expansion 3. Transit Support Facilities
	B. Transit Operational Improvements	1. Route enhancements 2. Increased marketing of transit services 3. Fare incentives 4. Signal priority
Strategy 4 - Intelligent Transportation Systems (ITS)	A. Incident Management	1. Incident detection/surveillance 2. Incident response/service patrols
	B. Advanced Traffic Management Systems	1. Traffic Management Centers 2. Traffic signal coordination/traffic adaptive signal timing
	C. Advanced Traveler Information Systems	1. Dynamic Message Signs 2. Highway Advisory Radio
	D. Advanced Public Transportation Systems	1. Automated vehicle location 2. "Smart" bus stops
	E. National ITS Architecture	1. Additional user services from ITS Architecture
Strategy 5 - Additional System Capacity	A. Additional Freeway Lanes	1. Adding capacity with construction of general purpose travel lanes
	B. Additional Arterial Lanes	1. Adding capacity with construction of general purpose travel lanes
	C. New Roadway Construction	1. Construction on new alignment, "bypass" type routes

Appendix D: Public Participation Plan and supporting documents

This Regional Mobility Plan update development and review followed the guidelines adopted in the TPO's Public Participation Plan. Most of the discussion on the methods used to involve the public and seek participation is in Chapter 2 of this document. The consultation process is outlined here.

Consultation with Interested Parties

The TPO will provide notice of upcoming public review meetings or review periods being held on the draft and final LRMP and the draft and final TIP. Notice will be provided to known interested parties:

- public transportation employees
- freight shippers
- providers of freight transportation services
- private providers of transportation
- users of public transportation
- users of pedestrian walkways and bicycle facilities
- disabled
- elderly
- low-income
- limited English-speaking populations
- providers of non-emergency transportation services receiving financial assistance from a source other than title 49, U.S.C., Chapter 53.

Amendments to the LRMP or TIP requiring an air quality conformity analysis (e.g., addition of a regionally significant project) shall also require consultation with interested parties and other appropriate public review activities.

Consultation with Federal, State and Local Agencies

In developing the LRMP and TIP, the TPO shall consult, as appropriate, with local and regional agencies and officials responsible for other planning activities within the Knoxville area. This consultation shall include, as appropriate, contacts with regional, local and private agencies responsible for planned growth, economic

development, environmental protection, airport operations, freight movements, land use management, natural resources, conservation and historic preservation.

An increased emphasis is placed on consultation with resource agencies responsible for natural resource management and historic preservation. The Tennessee Department of Transportation (TDOT) took the lead in establishing consultation procedures, and the TPO will contact federal and state agencies using the agreed upon process. Formal coordination with these agencies will help to identify effective mitigation strategies for potential impacts of projects included in the TPO's Long Range Mobility Plan (LRMP).

TDOT's Consultation Procedure

Each state and federal agency identified by TDOT and listed in the Public Participation Plan document was sent a letter asking them to supply TDOT with all available conservation plans, maps and inventories of natural and historic resources, as well as a list of potential areas in which to carry out environmental mitigation activities, if available and appropriate. Appropriate mitigation strategies for these areas were also requested. Additionally, each agency was also asked to provide TDOT copies of any ongoing updates and additions to those materials.

The TPO will compare proposed transportation improvements in their area to the agencies' plans, maps, inventories, etc. to assess potential environmental impacts. The assessments will be included in the draft Mobility Plan document, to be circulated to the public and to the environmental agencies for at least 30 days prior to adoption.

The LRMP and TIP shall be developed with due consideration of other related planning activities within the Knoxville area, including the design and delivery of

transportation services within the area that are provided by:

- recipients of assistance under title 49, U.S.C., Chapter 53;
- governmental agencies and nonprofit organizations (including representatives of the agencies and organizations) that receive federal assistance from a source other than the U.S. Department of Transportation to provide non-emergency transportation service; and
- recipients of assistance under 23 U.S.C. 204.

Interagency agreements will be maintained between the TPO and other local and regional agencies such as the Lakeway MPO, East Tennessee North Rural Planning Organization (RPO), East Tennessee South RPO and the East Tennessee Development District. The agreements will describe the TPO's role and responsibility in relation to the other agencies' work

Appendix E: Limited English Proficiency (LEP) Baseline Report

Executive Order 13166 “Improving Access to Services for Persons with Limited English Proficiency” requires all recipients of federal funds to provide meaningful access to persons who are limited in their English proficiency (LEP). The United States (U.S.) Department of Justice defines LEP individuals as those “who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English” (67 FR 41459). Data about LEP populations was gathered in the U.S. Census 2000. For data analysis purposes, the Census divides the states of the United States into counties, divides counties into tracts and divides tracts into block groups.

Within area block groups, Census data do not record the presence of persons who describe their ability to speak English as less than “Very Well.” The table below shows the percentages of adults who speak English less than “Very Well” by language category. Additionally,

0 households or 0.0% of households within area block groups reported to the Census that their household was linguistically isolated, meaning that all household members over the age of fourteen had at least some difficulty with English. Thus, Census data do not indicate the presence of LEP populations.

Since LEP is partially defined as a limited ability to read and write English, literacy data were also consulted. Indirect literacy estimates for adults were calculated by the National Center for Education Statistics based on 2003 survey data for states and counties. The percentages of adults who lack basic prose literacy skills for Anderson County, Blount County, Jefferson County, Knox County, Loudon County and Sevier County are 11%, 11%, 14%, 10%, 12% and 12% respectively. While literacy estimates do not differentiate between low literate English speakers and low literate LEP populations, literacy data should be considered along with other LEP

Table 40. Census Data: Percent of Adult Speakers Who Speak English Less than Very Well*

Census Geographies	Total Adult Population	Percent of Adult Speakers Who Speak English Less than Very Well			
		Spanish Language Speakers	Other Indo European Language Speakers	Asian and Pacific Island Language Speakers	Other Language Speakers
Block group 2					
Tract 307.00	591	0.0%	0.0%	0.0%	0.0%
Anderson County					
Tennessee	54,822	0.6%	0.5%	0.5%	0.0%
Blount County					
Tennessee	81,676	0.4%	0.3%	0.4%	0.1%
Jefferson County					
Tennessee	34,146	1.0%	0.2%	0.1%	0.1%
Knox County					
Tennessee	297,011	0.6%	0.4%	0.4%	0.1%
Loudon County					
Tennessee	30,551	1.1%	0.1%	0.1%	0.0%
Sevier County					
Tennessee	54,811	0.7%	0.4%	0.2%	0.0%

Data Source: United States Census 2000 (Table P19) as of February 9, 2008 for persons age 18 and older.

** The data on ability to speak English represent the Census respondent's own perception about his ability to speak English (United States Census 2000 Metadata).*

indicators in determining how to best provide access to LEP populations.

To supplement Census and literacy data, area school district (ISD) data were consulted for indicators of LEP populations. School districts collect data on the number of English Language Learners as defined by each state's Department of Education and migrant students as defined in 34 CFR 200.81(d). For school year 2005-06, ROANE COUNTY SCHOOL DISTRICT reported unknown percent of students as English Language Learners and unknown percent as migrant students. In conclusion, the data do not indicate the likelihood of LEP populations in the area.

To determine the languages of the LEP populations, Census data were consulted for project area counties. The table below details the top five languages spoken by the total adult population (LEP and non-LEP) for each county.

Therefore, the block groups data does not indicate the presence of LEP language groups that exceed the Department of Justice's Safe Harbor threshold of 5% or 1,000 persons. Thus, the requirements of Executive Order 13166 appear to be satisfied.

Table 41. Census Data: Top Five Languages Spoken by the Adult Population

Census Geographies	Language 1	Language 2	Language 3	Language 4	Language 5
Anderson County Tennessee	English 96.5%	Spanish/Spanish Creole 1.5%	German 0.5%	French (Patois, Cajun) 0.4%	Chinese 0.2%
Blount County Tennessee	English 96.7%	Spanish/Spanish Creole 1.3%	German 0.5%	French (Patois, Cajun) 0.5%	Japanese 0.2%
Jefferson County Tennessee	English 97.0%	Spanish/Spanish Creole 2.0%	German 0.3%	French (Patois, Cajun) 0.2%	Italian 0.1%
Knox County Tennessee	English 95.3%	Spanish/Spanish Creole 1.7%	German 0.4%	French (Patois, Cajun) 0.4%	Chinese 0.2%
Loudon County Tennessee	English 97.0%	Spanish/Spanish Creole 2.1%	French (Patois, Cajun) 0.2%	Other West Germanic languages 0.1%	Italian 0.1%
Sevier County Tennessee	English 97.0%	Spanish/Spanish Creole 1.4%	German 0.3%	French (Patois, Cajun) 0.3%	Italian 0.1%

Data Source: United States Census 2000 (Table PCT10) as of February 9, 2008.

Appendix G: Adoption Letters

**A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
FINDING THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN AND 2008-2011
TRANSPORTATION IMPROVEMENT PROGRAM MEET AIR QUALITY CONFORMITY
REQUIREMENTS**

WHEREAS, the Clean Air Act Amendments of 1990 (CAAA) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment of an air pollution standard; and,

WHEREAS, the Knoxville Region consisting of the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier and portion of Cocke was designated nonattainment by the United States Environmental Protection Agency (EPA) for the 8-Hour Ozone Standard with an effective date of June 15, 2004, for which the original conformity determination approved on June 1, 2005 by the U.S. DOT is being updated; and,

WHEREAS, the Knoxville Region consisting of the counties of Anderson, Blount, Knox, Loudon and a portion of Roane was designated nonattainment by the EPA for the Particulate Matter 2.5 Standard with an effective date of April 5, 2005, for which the original conformity determination approved on April 3, 2006 by the U.S. DOT is being updated; and,

WHEREAS, the conformity determination used the latest emissions model approved by the EPA; and,

WHEREAS, conformity was demonstrated using the required interim emissions tests prior to the development of mobile source emission budgets in a SIP; and,

WHEREAS, the conformity determination addresses the planned transportation improvements included in the 2009-2034 Knoxville Regional Mobility Plan and covers the entire Knoxville Ozone and PM2.5 Nonattainment Areas; and,

WHEREAS, the Knoxville Regional TPO FY 2008-2011 Transportation Improvement Program is a subset of the 2009-2034 Knoxville Regional Mobility Plan; and,

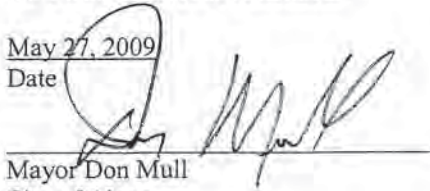
WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the Air Quality Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

That the 2009-2034 Knoxville Regional Mobility Plan and 2008-2011 Transportation Improvement Program have been found to conform to air quality requirements of the Tennessee SIP in accordance with the Clean Air Act as Amended.

May 27, 2009
Date


Mayor Don Mull
City of Alcoa
TPO Executive Board Chair


Jeffrey A. Welch
TPO Director

**A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
ADOPTING THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN**

WHEREAS, the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) requires that each MPO have a current long range transportation plan; and

WHEREAS, the guidance for the development of the long range transportation plan, as found in the Final Rule for Metropolitan Planning in the Federal Register, February 14, 2007 under section 450.322, was followed; and,

WHEREAS, the long range transportation plan must address all modes of transportation in an urban area, have a planning horizon of at least 20 years, and be financially constrained; and,

WHEREAS, the 2009-2034 Knoxville Regional Mobility Plan includes the planned improvements to the transportation network for the entire Knoxville Region that is in nonattainment for either Ozone or Particulate Matter 2.5 out to the year 2034; and,

WHEREAS, the 2009-2034 Knoxville Regional Mobility Plan meets the requirements of transportation conformity found in the Clean Air Act Amendments of 1990; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the TPO Technical Committee has recommended the adoption of the 2009-2034 Knoxville Regional Mobility Plan; and,

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

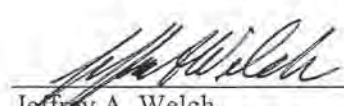
That the 2009-2034 Knoxville Regional Mobility Plan be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the TPO planning area.

May 27, 2009

Date



Mayor Don Mull
City of Alcoa
TPO Executive Board Chair



Jeffrey A. Welch
TPO Director

**A RESOLUTION BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION
(RPO)
ADOPTING THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN AND AIR QUALITY
CONFORMITY DETERMINATION FOR THE KNOXVILLE OZONE AND PARTICULATE
MATTER 2.5 NON-ATTAINMENT AREAS**

WHEREAS, the East Tennessee South RPO, developed by the Tennessee Department of Transportation (TDOT), is responsible for ensuring that areas not included in a Metropolitan Planning Organization are involved in the state's transportation planning process; and,

WHEREAS, the 2009 – 2034 Knoxville Regional Mobility Plan meets the requirements of transportation conformity found in the Clean Air Act Amendment of 1990; and,

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone and PM2.5 Non-attainment Area, including the RPO/TDOT planning area within the region, which has determined that all proposed transportation projects meet the air quality conformity requirements; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the East Tennessee South RPO Technical Committee has reviewed the 2009-2034 Knoxville Regional Mobility Plan and the Air Quality Conformity Determination; and,

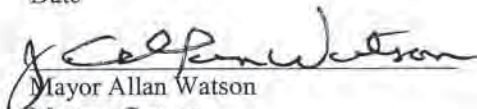
WHEREAS, the Air Quality Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

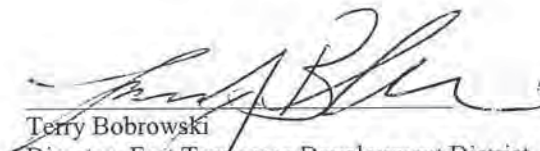
NOW, THEREFORE, BE IT RESOLVED BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION EXECUTIVE BOARD:

That the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the East Tennessee South RPO planning area.

May 12, 2009

Date


Mayor Allan Watson
Monroe County
East Tennessee South RPO Chair


Terry Bobrowski
Director, East Tennessee Development District

**A RESOLUTION BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION
(RPO)
ADOPTING THE 2009-2034 KNOXVILLE REGIONAL MOBILITY PLAN AND AIR QUALITY
CONFORMITY DETERMINATION FOR THE KNOXVILLE OZONE AND PARTICULATE
MATTER 2.5 NON-ATTAINMENT AREAS**

WHEREAS, the East Tennessee South RPO, developed by the Tennessee Department of Transportation (TDOT), is responsible for ensuring that areas not included in a Metropolitan Planning Organization are involved in the state's transportation planning process; and,

WHEREAS, the 2009 – 2034 Knoxville Regional Mobility Plan meets the requirements of transportation conformity found in the Clean Air Act Amendment of 1990; and,

WHEREAS, the Knoxville IPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone and PM_{2.5} Non-attainment Area, including the RPO/TDOT planning area within the region, which has determined that all proposed transportation projects meet the air quality conformity requirements; and,

WHEREAS, the IPO's public involvement and Interagency Consultation procedures were adhered to with the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at more than two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the East Tennessee South RPO Technical Committee has reviewed the 2009-2034 Knoxville Regional Mobility Plan and the Air Quality Conformity Determination; and,

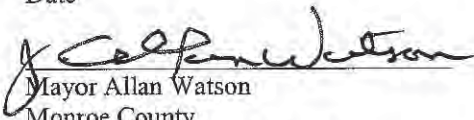
WHEREAS, the Air Quality Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

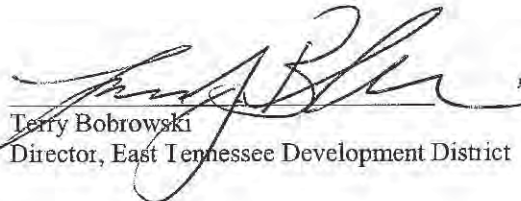
NOW, THEREFORE, BE IT RESOLVED BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION EXECUTIVE BOARD:

That the 2009-2034 Knoxville Regional Mobility Plan and Air Quality Conformity Determination be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the East Tennessee South RPO planning area

May 12, 2009

Date


Mayor Allan Watson
Monroe County
East Tennessee South RPO Chair


Terry Bobrowski
Director, East Tennessee Development District



Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2009-008

**A RESOLUTION BY THE LAKEWAY AREA METROPOLITAN
TRANSPORTATION ORGANIZATION (LAMTPO) ADOPTING THE
2034 LONG RANGE TRANSPORTATION PLAN (LRTP)**

WHEREAS, in accordance with the Federal requirements of the US Dept. of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Transportation Planning Organization, and

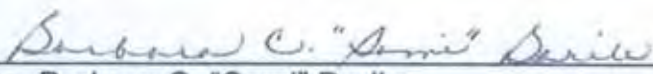
WHEREAS, this is the second Long Range Transportation Plan (LRTP) for the Lakeway Area Metropolitan Transportation Planning Organization; and

WHEREAS, the LRTP must be updated at least every four years in non-attainment areas; and

WHEREAS, no local highway and transit projects are eligible for Federal funds until they are programmed in the LRTP; and

WHEREAS, the 2034 LRTP has been prepared by the local planning staff and the Technical Advisory Committee subcommittee, with an endorsement from the LAMTPO Technical Advisory Committee;

NOW, THEREFORE BE IT RESOLVED, the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) Executive Board hereby approves and adopts the 2034 Long Range Transportation Plan on Wednesday, May 27, 2009.



Mayor Barbara C. "Sami" Barile
Chair, LAMTPO Executive Board



Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2009-009

**A RESOLUTION APPROVING THE AMENDED AIR QUALITY CONFORMITY
DETERMINATION REPORT AS PREPARED BY THE KNOXVILLE TPO**

WHEREAS, a comprehensive, cooperative, and continuing transportation planning process is to be carried out in the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) study area; and

WHEREAS, The Executive Board of the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) serves as a forum for cooperative decision making on transportation issues in the Urbanized Area; and

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization promotes the safety, protection, and enhancement of transportation corridors within its jurisdictional boundaries, and


WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization and the Knoxville TPO are within the same nonattainment area for the 8-Hour Ozone Standard and have a Memorandum of Agreement to cooperatively address transportation conformity requirements for ozone, and

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone Non-attainment Area, including the LAMTPO planning area within Jefferson County, which has determined that all proposed transportation projects from the LAMTPO 2034 Long Range Transportation Plan and the LAMTPO 2008-2011 Transportation Improvement Program (both are SAFETEA-LU compliant) meet the air quality conformity requirements.

NOW, THEREFORE, BE IT RESOLVED, that the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) Executive Board approves the air quality conformity determination report as prepared by the Knoxville TPO.

This Resolution shall be effective upon its passage and approval.

ATTEST:


Mayor Barbara C. "Sami" Barile
Chairman, LAMTPO Executive Board

May 27, 2009
Date



U.S. Department
of Transportation

**Federal Highway Administration
Tennessee Division Office
404 BNA Drive, Suite 508
Nashville, TN 37217**

**Federal Transit Administration
Region 4
230 Peachtree St. N.E. Suite 800
Atlanta, GA 30303**

June 01, 2009

Mr. Gerald Nicely
Commissioner
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243

The Honorable Don Mull
Mayor, City of Alcoa
223 Associates Boulevard
Knoxville, Tennessee 37701

The Honorable Sammy Barile
Mayor, City of Morristown
P.O. Box 1499
Morristown, Tennessee 37816

Dear Messrs. Nicely, Mull and Ms. Barile:

The Tennessee Division of the Federal Highway Administration (FHWA) and Region 4 of the Federal Transit Administration (FTA) in coordination with Region 4 of the Environmental Protection Agency, have reviewed the 2034 Knoxville Regional Transportation Planning Organization's and Lakeway Area Metropolitan Transportation Planning Organization's Long Range Transportation Plans and Conformity Determination, adopted by the Executive Boards on May 27, 2009. The Tennessee Department of Environment and Conservation, the Tennessee Department of Transportation, and the Metro Transit System, also had an opportunity to review and comment on the above-mentioned documents.

The Conformity Determination must be based on a Long Range Transportation Plan (LRTP) that meets the Federal Planning Regulations listed under 23 CFR 450.322. The FHWA and FTA reviewed Knoxville Regional Transportation Planning Organization and Lakeway Area Metropolitan Planning Organization's 2034 Long Range Transportation Plans for consistency with the Federal requirements, and has determined consistency.



The FHWA and FTA found that the Conformity Document for the Knoxville Area TPO and the Lakeway Area TPO meet the five primary criteria of the Transportation Conformity Rule (69 FR 40004, July 1, 2004):

- use of the latest planning assumptions;
- use of the latest emissions model;
- use of appropriate consultation procedures;
- consistency with the mobile source emission budgets in the State Implementation Plan (SIP); and
- provisions for timely implementation of transportation control measures in the SIP.

We also found that these documents met the criteria outlined in the Transportation Conformity Rule for the 8-hour ozone and PM 2.5 standards.

Therefore, the FHWA and the FTA approve the Conformity Determination for the 8-hour ozone and PM 2.5 standards for the 2034 Knoxville TPO and Lakeway MPO Long Range Transportation Plans.

If you have any questions regarding this approval, please contact Tameka Macon (FHWA) at 615-781-5767 or Abigail Rivera (FTA) at 440-865-5624.

Sincerely,



Bobby W. Blackmon
Division Administrator
Federal Highway Administration
Tennessee Division

cc: Ed Cole, Chief Environment & Long Range Planning, TDOT
Angela Midgett, MPO Program Manager, TDOT
Rich DesGrosseilliers, MPO Coordinator, Lakeway TPO
Abigail Rivera, Community Planner, FTA Region 4
Tameka Macon, Planning & Air Quality Specialist, FHWA
Kelly Sheckler, Environmental Scientist, EPA Region 4

Appendix G: TIP/Mobility Plan Project Application Form

Project Application for inclusion into the 2009-2034 Knoxville Regional Mobility Plan

Project Name _____

Project Description (project description, map, contact person, project sponsor, etc.)

When will the project be completed (circle one)? 2009 2014 2024 2034

Estimated Project Cost (today's dollars)

	Estimated Cost	Funding Source
Engineering		
Right-of-Way		
Construction		

Total

The project will be ranked according to the criteria outlined in the goals and objectives of the Long Range Transportation Plan.

System Preservation (10 points)

How does the project maintain and preserve the existing transportation system (this includes projects that increase the efficiency, such as turn lanes, ITS, signal timing, repaving, etc)?

System Efficiency (10 Points)

- a) Is the project listed as a congested corridor/intersection in Chapter 3 of the Congestion Management Plan (circle one)?

No (please answer section B) Yes

- b) Does the project fulfill the congestion mitigation strategies in Chapter 4 of the Congestion Management Plan (Circle one)?

No Yes (please describe)

Environmental Quality (10 Points)

Describe how the project will impact air, water, and sound quality.

Mobility Options (10 Points)

Describe how the project complies with the Bicycle and Pedestrian Accommodation Policy (see attachment). Please note that projects must comply with the Bicycle and

Pedestrian Accommodation Policy to be included in the Transportation Improvement Plan.

Does the project contain transit facilities?

Does the project facilitate the movement of freight?

Regional Approach (10 Points)

How does this project support planning for future land uses and regional economic development initiatives?

Financial Investments (10 Points)

Is the project sponsor financially committed and able to maintain the project?

Safety and Security (10 Points)

How does the project improve or promote safety and security for the users?

H. Transit Financial Analysis

The implementation of the University of Tennessee service in 2003 has been an enormous benefit to KAT. The cost of providing the service is approximately \$1.8 million. The effect on the operating budget seems significant but it had a budget neutral impact. A goal of KAT is to find partners in the Knoxville community that can help provide funding to allow KAT to expand services. KAT operates open-public transit service in-and-around the University of Tennessee campus. The University of Tennessee provides a subsidy to KAT. Thousands of students are riding KAT around the campus and many are now utilizing other KAT routes that stretch throughout the City. This influx in ridership has also provided an increase in funding as ridership is a component in the formula that distributes Federal grant dollars.

Providing public transportation is not cheap and has always been a challenge. Throughout the United States public transit does not pay for itself. It must be highly subsidized, typically through government grants, and this is true of public transit in Knoxville. In the current economic environment, tax revenues that transit uses to help offset the cost of public transit are shrinking at the local, state, and National level. KAT administrators are battle tested in facing budget problems through, resourcefully controlling expenses, fighting for increases in revenues, and striving for efficiencies. Approximately, 80% of operating costs are driver's salaries and benefits. Drivers are the backbone of KAT. The remaining 20% left of the budget is made up of administration, marketing, maintenance, and other capital needs. KAT operates very efficiently and stretches every revenue dollar to provide service. The City of Knoxville has been a fine steward helping KAT offset funding deficits and keeping services at acceptable levels. However, recently the budget has been inundated with increasing costs with what some may call a "perfect storm" of budget crises.

Over the years KAT received Federal Transit Administration (FTA) Job Access and Reverse Commute (JARC) grants. The Tennessee Department of Transportation helped providing matching funds. These grants provided valuable night service, running from around 7:00 p.m. to midnight. It provided fixed route service along major corridors and what was called – Call-A-KAT – a demand response feeder service. Late night service was identified as one of the most important improvements KAT could make to help people with employment. The funding, approximately \$1.0 million, was originally awarded to KAT by FTA on the basis of a competitive grant process. Eventually, Congress began earmarking JARC funding and Knoxville's Representatives were effective in maintaining KAT's funding including slightly increasing the awards. Other Knoxville area transit programs received JARC funding above-and-beyond KAT's totals. In 2007, Congress decided to change the JARC program from earmarks to a formula that divided the funding to all major cities. Plus, the funding was then to be divided further locally to multiple projects based on a competitive selection process. In effect, this decision reduced the availability of JARC funding coming to Knoxville by approximately 80% or to around \$225,000 a year.

Grant funding can be a mixed blessing to transit providers. Grant funding often provides a source of funding to start services that would typically not be able to be implemented. Grant funds have very little risk. Most require a match but usually a very small percentage. Grant funding allows local transit agencies to take a chance on services, assess the success, and determine the long term viability. FTA used to provide a yearly operating grant but the funding was phased out in the mid 1990s. Since then, specialized grants like JARC have been the mechanism through which FTA has distributed sources of operating funding. The downside to grants is that eventually they run out leaving

the locals to decide if services should continue and then trying to determine how to fund them. KAT and the City of Knoxville realized that the night service was valuable to the community and for many a requisite to staying employed. KAT modified the JARC service and the City of Knoxville absorbed the cost into its funding contribution.

The increase cost of fuel, health care, and wages has driven the cost of providing public transit dramatically higher over the last year or two. The volatility of fuel prices have almost made it impossible to set a budget. The same high gas prices that draw riders to transit, increases transit's operating costs. Just as our Country seeks to protect the economy from the affects of an unstable oil market, transit must protect itself from the havoc unstable fuel costs can place on its budget. At this time, KAT is exploring options to purchase fuel but is currently still exposed to the unpredictability of fuel prices. Increases in health care and wages are common issues that all businesses are facing and impact transit as well.

All of these issues have also impacted the cost of providing Americans with Disabilities Act (ADA) demand response paratransit service. Demand response paratransit service is door-to-door service, typically scheduled in advance, and provided with a wheel chair lift equipped van to persons who are disabled. The ADA requires public transit operators to provide comparable paratransit service. An area $\frac{3}{4}$ of a mile to either side of a fixed route must be served with paratransit service. Comparable service also includes similar operating times. KAT has provided paratransit service that goes above-and-beyond the ADA requirements. KAT has generally been covering the entire City limits with ADA paratransit service. The City limits have expanded through finger annexation of commercial property in the suburbs along the interstates and major roadways. And, as development has continued to spread to the suburbs the demand for trips to serve these distant locations have increase. The cost of providing paratransit service has increased dramatically over the last couple of years. These increased costs and the impact on the paratransit budget will be weighed as KAT must balance a budget and weigh the social implications and the costs of providing service beyond what is required by the ADA.

Financial Analysis

In order to project operating funding needs, a trend analysis was conducted of KAT's past budgets. A ten year window between 1999 and 2008 was examined and a summary is shown in Table 42.

The analysis examined the average percent increase over a ten year period for each funding source. Over the last ten years, several major changes have occurred to KAT's funding, including adding the University of Tennessee service and absorbing the JARC service. These types of influxes have skewed the trend line data. In reviewing historic averages from past Long Range Transportation Plans and other transit development plans and average increase in KAT's total budget of 8.23% is too drastic. At that rate KAT's \$17,234,037 budget would be over \$125 million in 2034.

To resolve these issues the TPO and KAT staff examined past data and studies, including the last Long Range Transportation Plan (2005-2030 Knoxville Regional Long Range Transportation Plan, September 2007 Update) and made adjustments to the trend line data. The same review and consultation process was undertaken during the last Long Range Transportation Plan. It was felt that many of the same adjustments were still valid so many of the same percentages were kept. Farebox revenue and the Other Federal and State funding were reduced slightly further. It was staff's opinion that in dealing with future projections it was better to be more conservative. It was felt that recent surges in ridership which has had a positive impact on farebox revenue would not continue over a 25 year period. Table 43 shows the results of the trend analysis and then shows the adjustments. Justification for adjustments follows after the table.

City of Knoxville Revenue

The City of Knoxville has increased its contribution on average by 7.06% a year over the last ten years. The City has increased its contribution to KAT every year of the ten year period. The City has increased their contribution to help offset rising employee salaries and health care costs. Recently, the last couple of years the City had to make a significant increase in funding to help offset the increased fuel cost and the lost of the JARC grant. While there is still a level of uncertainty over the

Table 42. KAT Operating Revenues FY1999 and 2008

Source	1999	2008	Average Annual Change 1999-2008
City of Knoxville	\$3,951,720	\$7,814,850	7.06%
State of Tennessee	\$1,104,320	\$1,971,310	5.97%
Federal, Other State Sources	\$1,270,625	\$3,263,082	9.89%
Fares	\$1,297,031	\$3,657,537	10.92%
Other funding	\$194,374	\$527,258	10.49%
Total	\$7,818,070	\$17,234,037	8.23%

Table 43. KAT Financial Spreadsheet Assumptions

Source	Trend Analysis Result 1999-2008	2005-2030 Long Range Transportation Plan (2007 Update)	Revised Forecast For Mobility Plan
City of Knoxville (Revenue)	7.06%	3.87%	3.87%
State of Tennessee (Revenue)	5.97%	2.41%	2.41%
Federal, Other State Sources (Revenue)	9.89%	6.70%	5.0%
Fares (Revenue)	10.92%	6.045%	5.0%
Other funding (Revenue)	10.49%	2.5%	2.5%
Operating Expense	8.23%	4.5%	4.5%

next few years due to the economy and fuel cost, it was not reasonable to expect the City to continue to increase their contribution by 7.06% a year for the next twenty-five years. It was felt that the same adjustment to 3.87% made in the Long Range Transportation Plan (2007) would still be appropriate for the Mobility Plan.

State of Tennessee Revenue

The State of Tennessee has increased its contribution seven of the last ten years for an average of 5.97% a year. While the state has been dedicated to increasing funding for mass transit statewide it was felt it would be unrealistic to assume the state could continue to increase funding by 5.97% for the next 25 years. In fact, with the recent economic downturn the state has struggled with its overall budget. As transit allocations are not a dedicated funding source they have been threatened at times for reduction. When looking at 2000 to 2004, the rate of increase was 2.41% per year. Therefore, it was felt this percentage was a conservative rate to use over a 25 year time frame. It was also the percent used in the last Long Range Transportation Plan (2007).

Federal and State Other Sources

Federal funding for operations was phased out nationally in the mid 1990s. The federal government still provides

capital dollars and in the late 1990s eased their definition of capital expenses and began allowing transit agencies to bill part of their maintenance labor to this grant. This category includes several Federal and State grants and includes the maintenance labor expenditure. This funding category has seen an annual average increase of 9.89% from 1999 to 2008. This is down from 13.4% calculated (but later adjusted) in the Long Range Transportation Plan (2007) which looked at the time period 1995 to 2004. It was felt that a downward trend would continue so an adjustment to an annual inflation rate of 5.0% was used. This is reduced from the 6.7% adjustment used in the Long Range Transportation Plan 2007.

Fares

From 1999 to 2008, fare revenue almost tripled from approximately \$1.3 million in 1999 to \$3.7 million in 2008. This is an annual average of 10.92% a year. Much of this increase has come from the increases in services. A major part of the fare revenue increase is the University of Tennessee services. The financial contribution by the University is recorded as fare revenue giving a false impression of the increases. Even subtracting out the UT subsidy, fare revenue has increased on the regular routes. The University

of Tennessee service has had a residual effect on the regular routes as students have crossed over from the University routes to the regular routes. The increase ridership associated with the JARC services has added to the increase in fare revenue. KAT also saw a major ridership increase when gas prices sky-rocketed which increased fare revenue. However, an increase of 10.92% a year for the next twenty-five (25) years is unrealistic. This would increase fares from approximately \$3.7 million in 2008 to close to \$55 million in 2034. An adjustment to an annual increase of 5 percent was used. This is even more conservative than the 6.045% used in the Long Range Transportation Plan (2007).

Other Revenues

This category reflects revenue that is collected through other programs and grants. Some of this is subcontracting special services. Over the study period of 1999 to 2008 the other revenues category increased by an annual rate of 10.5 percent a year. Recent changes in the Federal requirements associated with subcontracting makes predicting revenue difficult. Therefore, a very conservative rate of 2.5 percent a year is used.

KAT Operating Expenses

The annual cost of operating KAT has increased by close to \$10 million from 1999 to 2008. While this seems dramatic, it only represents an 8.23% a year. However, these increases are not all inflation related. During the ten year period, the University of Tennessee services was added and the lost Federal JARC funding was absorbed. In examining the trend data and trying to remove any increases due to grants, contracts, and subsidized services it was felt that an annual increase of 4.5% a year was more realistic. This was the same percentage used in the Long Range Transportation Plan (2007). For this analysis, total revenues and operating expenses are considered the same. KAT is a non-profit organization overseen by the City of Knoxville. As a non-profit, all fiscal year budgets end with a zero balance. Any shortfalls are covered by the City's contribution and conversely and overage is returned to the City's general fund.

Transit Financial Forecasts

KAT's expenses and revenue sources were forecasted over a 25 year time frame. For the year 2009, the adopted

projected budget for KAT is shown. Year 2009 is the base year from which the forecast is made. Table 44 shows a snapshot of the 25-year forecast by showing years 2014, 2024 and 2034. Each year shown is the forecasted of what the budget and revenues would be for that year.

It is projected that KAT's budget would increase from \$17.5 million in 2009 to \$21.7 million in 2014. In 2024 KAT's budget is projected to be \$33.5 million. Finally, in 2034, the last year of the plan, KAT's budget is projected to be \$52.8 million. While this seems extremely unrealistic, many never thought KAT's budget would increase by \$10 million between 1999 and 2008.

The percent difference from KAT's projected expenses and revenues are also calculated. For this analysis, it was felt that if the difference was not greater than 3%, over-or-under, the analysis was acceptable. Forecasting millions of dollars over twenty-five (25) years is not an exact science and it is unreasonable to assume that an analysis of this nature can match expenses and revenues exactly. Based on this analysis, KAT will be able to meet its future expenses.

This analysis assumes a no growth scenario. Because of the recent economic downturn, increases in expenses, and the unreliability of revenues; KAT is currently in a conservative growth mode. KAT is committed to continue to grow and improve. There have been several studies over the last ten years: the Regional Transportation Alternatives Plan, the KAT Action Plan 2010, and the Downtown Knoxville Transportation Linkages Study. All of these studies call for improved and expanded transit services. The City of Knoxville has been very supportive of KAT. If new services are proposed that will result in tangible increases in transit ridership the City will consider providing funding. However, if substantial increases in transit service are going to be made throughout the Knoxville region other funding will be required. Transit operators require a predictable and consistent funding source in order to plan and make commitments. Funding needs to be adequate to meet projected level of services and grow as needed to reflect inflation. Many transit agencies nationwide have a dedicated funding source, typically set by government via a dedicated tax or fee. This does not exist for KAT at this time.

Table 44. KAT Projected Budget and Revenues

Category	2009 Budgeted	2014	2024	2034
Projected Annual Budget (Expenses)	\$17,547,151	\$21,866,942	\$33,958,693	\$52,736,812
Revenues				
City	\$7,900,620	\$9,552,385	\$13,964,106	\$20,413,359
State	\$1,991,023	\$2,242,787	\$2,845,848	\$3,611,066
Federal and Other State Funding	\$3,224,173	\$4,114,953	\$6,702,824	\$10,918,194
Fares	\$4,081,335	\$5,208,933	\$8,484,802	\$13,820,849
Other Funding Sources	\$350,000	\$570,113	\$1,512,680	\$4,013,590
Total Revenue	\$17,547,151	\$21,689,121	\$33,519,261	\$52,777,058
Percent Difference Expenses/Revenue	0%	.8%	1.3%	-.1%

As part of the operating financial analysis, a common question is what kind of contingency funding does KAT have in cases a funding source is significantly reduced. Since KAT operates on a “zero balance” year ending budget, they are not able to save any budget overages for emergency purposes. Essentially, each year KAT operates the amount of service it has funding to provide. Under a hypothetical scenario where an existing funding source saw a significant cut, the following options would be considered each with a varying degree of probability of being implemented:

1. A corresponding increase from another existing funding source;
2. Identification of a new public funding source or grant to offset the decrease;
3. Implementation of a tax of fee to fund transit;
4. Identification of a private/public partnership;
5. Subcontracting of services to reduce operating cost;
6. Fare increase, and
7. Service reduction.

Capital Expenses

Maintaining an up-to-date fleet of vehicles is a must in providing effective transit service. Vehicles are the most visible component of KAT traveling million of miles throughout the City every year. Many passengers will determine satisfaction with their trip based on cleanliness, comfort, and the internal climate of the bus. Paramount to transit’s ultimate success is the ability of buses to stay on time. Any mechanical failure causing a bus to break down leaving passengers stranded is a serious issue. It is impossible to eliminate all mechanical

failures but by maintaining an up-to-date fleet, incidents will be dramatically reduced. Therefore, an equal component in planning for the future is to calculate KAT’s capital needs.

KAT uses essentially four vehicles types. Buses are used for regular fixed route and the University of Tennessee services. Trolleys are used on the downtown circulator. Lift equipped vans are used both on neighborhood fixed routes and in providing ADA paratransit services. Table 45 shows the estimated cost of buses, trolleys, and lift vans (neighborhood service vans) over the period of the plan. The cost of vehicles typically has remained steady over the last few years. Therefore, vehicle costs were inflated 5 percent every five years.

Table 45. KAT Vehicle Unit Cost

Years	Bus	Trolley	Lift Van/ Service Van
2009-2013	\$350,000	\$350,000	\$75,000
2014-2018	\$367,500	\$367,500	\$78,750
2019-2023	\$385,875	\$385,875	\$82,688
2024-2028	\$405,169	\$405,169	\$86,822
2029-2034	\$425,427	\$425,427	\$91,163

Table 46 shows the number of vehicles needed to maintain the current level of service over the next 25 years. This is essentially a replacement plan for the existing KAT fleet. To keep the table manageable, the number of vehicles needed is totaled and shown in five year increments (except for 2029-2034 which is six years).

Table 46. KAT Vehicle Needs

Years	Bus	Trolley	Lift Van/ Service Van
2009-2013	50	10	25
2014-2018	40	8	25
2019-2023	40	7	25
2024-2028	50	8	25
2029-2034	40	9	30
Total Units	220	42	130

Over the course of the Mobility Plan KAT would need to purchase approximately 220 buses, 130 Lift Vans (Neighborhood Service Vehicles) and 42 Trolleys. The number of buses is a little higher than a normal replacement plan because the current KAT fleet is behind schedule. Therefore, it reflects an aggressive plan to catch KAT up and then to maintain the fleet.

Using the estimated vehicle costs and the capital needs the amount of funding needed and is predicted in Table 47. Once again to keep the table manageable the funding is totaled and presented in five year increments. Also shown, is the associated capital items grant that is

typically used on capital expenditures, such as shelters, maintenance items, and shop equipment.

FTA has a variety of grants that fund capital equipment purchases, including vehicles. Each year, KAT receives a Section 5307 grant that can be used to purchase capital items. Part of the Section 5307 funding is used for the associated capital items but part of the funding can be used to purchase vehicles though not very many at one time. The main source of funding that will be used to buy vehicles is federal dollars either directly granted (or earmarked) to KAT or pass through Federal funding awarded by the State of Tennessee. While the capital forecasts are for a no-growth scenario, diligence will be needed to secure consistent funding. It is estimated that KAT will need to secure approximately \$5,738,088 a year to meet the capital needs. Based on federal capital funding secured over the last few years KAT should be able to meet this need, at least over the next ten years. Forecasting over 25 years is difficult. A dedicated source of funding would be helpful.

Table 47. KAT Vehicle Needs, 2009-2034

Years	Buses	Trolleys	Lift Vans/ Service Vans	Associated Capital Items	Total
2009-2013	\$17,500,000	\$3,500,000	\$1,875,000	\$5,152,267	\$28,027,267
2014-2018	\$14,700,000	\$2,940,000	\$1,968,750	\$5,550,455	\$25,159,205
2019-2023	\$15,435,000	\$2,701,125	\$2,067,200	\$5,979,416	\$26,182,741
2024-2028	\$20,258,450	\$3,241,352	\$2,170,550	\$6,441,529	\$32,111,881
2029-2034	\$17,017,080	\$3,828,843	\$2,734,890	\$8,390,302	\$31,971,115
Total Expenses	\$84,910,530	\$16,211,320	\$10,816,390	\$31,513,969	\$143,452,209
Revenues-----					
Federal	\$67,928,424	\$12,969,056	\$8,653,112	\$25,211,175	\$114,761,767
State	\$8,491,053	\$1,621,132	\$1,081,639	\$3,151,396	\$14,345,220
Local	\$8,491,053	\$1,621,132	\$1,081,639	\$3,151,396	\$14,345,220
Average Annual Need	\$3,396,421	\$648,453	\$432,566	\$1,260,559	\$5,738,088