Knoxville Regional Transportation Planning Organization

2005-2030 Knoxville Regional Long Range Transportation Plan

September 2007 Update

KNOXVILLE REGIONAL TPO TRANSPORTATION PLANNING ORGANIZATION

Knoxville Regional Transportation Planning Organization

2005-2030 Knoxville Regional Long Range Transportation Plan Update

2007 Update

Adopted by the TPO Executive Board

Adopted by the East Tennessee South Rural Planning Organization

The 2005-2030 Knoxville Regional Long Range Transportation Plan Update covers the following counties in East Tennessee: Anderson, Blount, Jefferson, Knox, Loudon, Sevier and portions of Cocke and Roane. This report was prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration, and Tennessee Department of Transportation.

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I. INTRODUCTION

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. An MPO is a planning agency established by federal law to assure a continuing, cooperative, and comprehensive transportation planning process takes place that results in the development of plans, programs, and projects that consider all transportation modes and supports the goals of the community. Any urbanized area or contiguous urbanized areas, as defined by the U.S. Census Bureau, containing a population of greater than 50,000 are required to have an MPO. Areas outside but contiguous to an existing MPO boundary that have been designated in non-attainment of National Ambient Air Quality Standards (NAAQS) should be considered as part of that MPO's study area.

TPO Organization

The planning boundaries of the TPO consist 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. This area is known as the TPO Planning Area or the TPO Area *(see map 1)*. The TPO is composed of a 13 member Executive Board and a 19 member Technical Committee. The Executive Board is comprised of principal elected officials from the Town of Farragut, City of Alcoa, City of Maryville, Blount County, Loudon County, Lenoir City, Sevier County, the State of Tennessee, East Tennessee Development District, and two elected officials from both Knox County and the City of Knoxville. The Technical Committee is comprised of planners and engineers from TPO member jurisdictions plus representatives from Anderson County, the Lakeway Area Metropolitan Transportation Planning Organization, 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), and the Knoxville- Knox County Metropolitan Planning Commission (MPC). Non-voting members include representatives from the Tennessee Division of the Federal Highway Administration (FHWA) and Region 4 of the Federal Transit Administration (FTA). 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.

2005-2030 Knoxville Regional Long Range Transportation 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, reevaluate 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 FHWA, FTA, and EPA on July 20, 2006.

On April 15, 2004, the U.S. Environmental Protection Agency (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 is 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 to be the entity to prepare the Regional Long Range Transportation Plan and corresponding air quality conformity analysis. The TPO Study Area was created to incorporate all areas within the Knoxville Non-Attainment Area as part of the Long Range Transportation Planning Process. The TPO Study Area is referred to in the LRTP as the Knoxville Region *(see map 2)*.

In September of 2004, the TPO Executive Board approved an agreement with TDOT which will fund the TPO to conduct regional transportation planning and air quality analysis for the Knoxville Non-Attainment Area through August of 2008. The TPO Executive Board also created a Regional Transportation Planning Council (RTPC) consisting of the County Mayors of the non-attainment counties and TDOT. The RTPC was created to assist the Board to address issues outside the TPO Planning Area (see Figure 1).

Note: Since the adoption of the LRTP in April 2005, the duties of the RTPC have been replaced by that of the East Tennessee South Rural Planning Organization (RPO). The South RPO consists of the non-urbanized portions of Anderson, Blount, Cocke, Hamblen, Jefferson, Loudon, Monroe, Roane, and Sevier Counties and was developed by TDOT to address rural transportation planning and ensure that municipalities not represented by a Metropolitan Planning Organization are involved in the State's transportation planning process.

The final step in formalizing the agreement with TDOT was the approval of a Memorandum of Agreement (MOA) in October of 2004 between the TPO, TDOT, and the Lakeway Area Metropolitan Transportation Planning Organization, which extends into Jefferson County. The MOA describes the roles each part has in preparing a Regional Long Range Transportation Plan and the preparation of the conformity analysis. The TPO performed a regional air quality conformity determination and developed a Regional Long Range Transportation Plan for the entire Ozone Non-Attainment Area.

Implementation of the 2005-2030 Knoxville Regional Long Range Transportation Plan Update (LRTP) will lead to the development of an intermodal transportation system that facilitates the safe, efficient movement of people and goods and supports the goals and objectives of the communities throughout the Knoxville Region. The plan was

developed with consultation and input from the public, the TPO Executive Board and Technical Committee members, municipal officials, the Lakeway Area Metropolitan Transportation Planning Organization, TDOT, EPA, FHWA, FTA, and other transportation, economic development, environmental, and land use planning agencies throughout the Region. Several plans and studies were referenced prior to the development of this plan to ensure coordination and to promote consistency between transportation improvements and State and local planned growth and economic development patterns, including:

- *Tennessee Growth Policy Plan*
- *Knoxville- Knox County General Plan 2033*
- *MPC Sector Plans*
- *Knox County Greenways Plan*
- *Major Road Plan for Knoxville and Knox County*
- *Knoxville Regional Bicycle Plan*
- *Town of Farragut Land Use and Transportation Policy Plan*
- *Blount County Policies Plan*
- *Transportation Plan for Blount County*
- *Blount County Roadway Needs Study*
- *Maryville 2020 Vision*
- *The Blount County Growth Strategy*
- *City of Alcoa Land Use Plan*
- *Long Range Transportation Plan for Sevier County*
- *KAT Action Plan*
- *Downtown Knoxville Transportation Linkages Study*
- *East Tennessee Regional Transportation Alternatives Study*
- *Congestion Management Process Plan*
- *McGhee Tyson Airport Master Plan*
- *Tennessee State Airport Systems Plan*
- *Tennessee Statewide Rail Plan*
- *Tennessee Transit Plan*
- *TDOT's PLAN Go, 25-Year Transportation Plan*

The Long Range Transportation Plan Update 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 between these modes. The plan consists of a regional air quality conformity determination that demonstrates that 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. Plans, programs, and projects cannot be included in the TIP and thus considered for federal funding dollars unless they are included in the Long Range Transportation Plan.

On April 5, 2005, the U.S. Environmental Protection Agency designated the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane in non-attainment of the standard for fine particulate matter (PM 2.5). As a result of the PM 2.5 designation, the TPO updated the LRTP in 2006, expanding the TPO Study Area to include that portion

of Roane County not included in the original plan. The TPO performed air quality conformity determination for the new PM 2.5 standards for those areas in non-attainment.

Since the LRTP update was required, the TPO solicited member jurisdictions for changes, additions, and/or deletions to projects in the plan. Sixty new projects were added to the plan, two projects were deleted, and several projects were modified. Most of the projects added to the plan were the SAFETEA-LU Congressional Earmark projects and projects from Blount, Jefferson, and Roane counties. These changes are included in the Streets and Highways sections of Chapters IV and V of the updated LRTP. Given that changes were made to highway projects in counties designated non-attainment for ground level ozone, the TPO had to reassess the air quality conformity analysis for ozone.

The portion of Roane County that was added to the TPO Study Area is Census Block Group 471450307-2, which includes the Tennessee Valley Authority (TVA) Kingston Steam Plant. The Block Group is centrally located in Roane County, north of I-40, west of the Clinch River, and south of the City of Harriman, and has a population of 4,578. The major roads that are located in or border this Census Block are SR 29, Pine Ridge Road, Highland Drive, Hassler Mill Road, Woosley Road, and Swan Pond Road. Norfolk Southern operates several rail spurs within the Census Block that supply coal to the Kingston Plant.

2005-2030 Knoxville Regional Long Range Transportation Plan 2007 Update

The Federal Highway Administration has mandated that all Long Range Transportation Plans must be in compliance with SAFETEA-LU by July 1, 2007. This necessitates an update of the 2005-2030 Knoxville Regional Long Range Transportation Plan. The Update has not added or deleted any projects. However, facing escalating construction costs and flat or declining revenues, adjustments were made in the schedule of several projects. The horizon years for several projects were moved from 2014 to 2020 and from 2020 to 2030 (See Table 22.). As a result, a new conformity determination was conducted and is included in this document as Appendix J. In addition, the Financial Analysis, Operations & Management, Public Involvement and Title VI Assessment were updated.

New features of the LRTP Update are a Congestion Management Process (CMP) that replaces the Congestion Management System (CMS) Plan and the safety and security planning factor being broken out into two separate factors. A section outlining environmental mitigation efforts is also included.

Future Long Range Transportation Plan Updates and Amendments

The Long Range Transportation Plan must be updated on a four-year cycle according to current SAFETEA-LU regulations. However, due to federal air quality conformity standards, the next update will be completed in June 2009.

Adoption of amendments to the plan will follow the TPO's policy for public participation. Amendments to the plan require sponsorship by a member of the TPO Technical Committee, Executive Board, South RPO or TPO staff. Such amendments should define purpose and need, financial constraint, and air quality conformity, if appropriate.

The plan update or amendment will be advertised to the public through public notices and published in local and regional

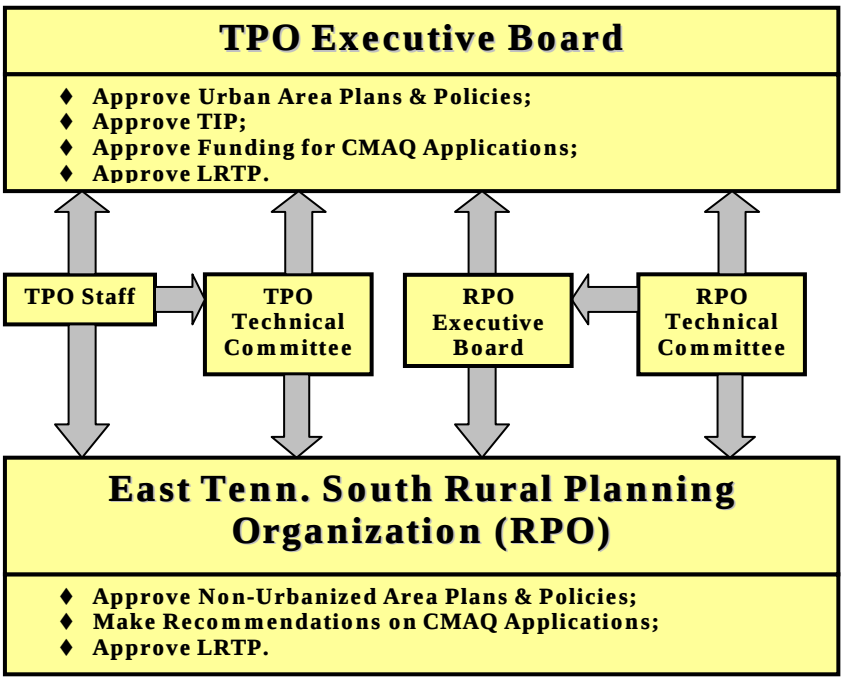
newspapers, including publications that target specific groups such as minorities and Spanish-speaking audiences. These will be given a minimum 30-day comment period prior to adoption. The TPO Technical Committee, South RPO and Executive Board will also accept comments at their public meetings. The Technical Committee, South RPO and Executive Board will be advised of any public comments and the disposition of them at their meetings. The Technical Committee will make a recommendation on the update or amendment to the South RPO and Executive Board at a public meeting. The South RPO and Executive Board will then act to approve, reject or defer approval at a public meeting.

The update or amendment adopted by the TPO Executive Board that requires an air quality conformity determination is not effective until FHWA and FTA, in consultation with EPA, give final approval. These approvals may require up to 45 days from the date of submission to these agencies.

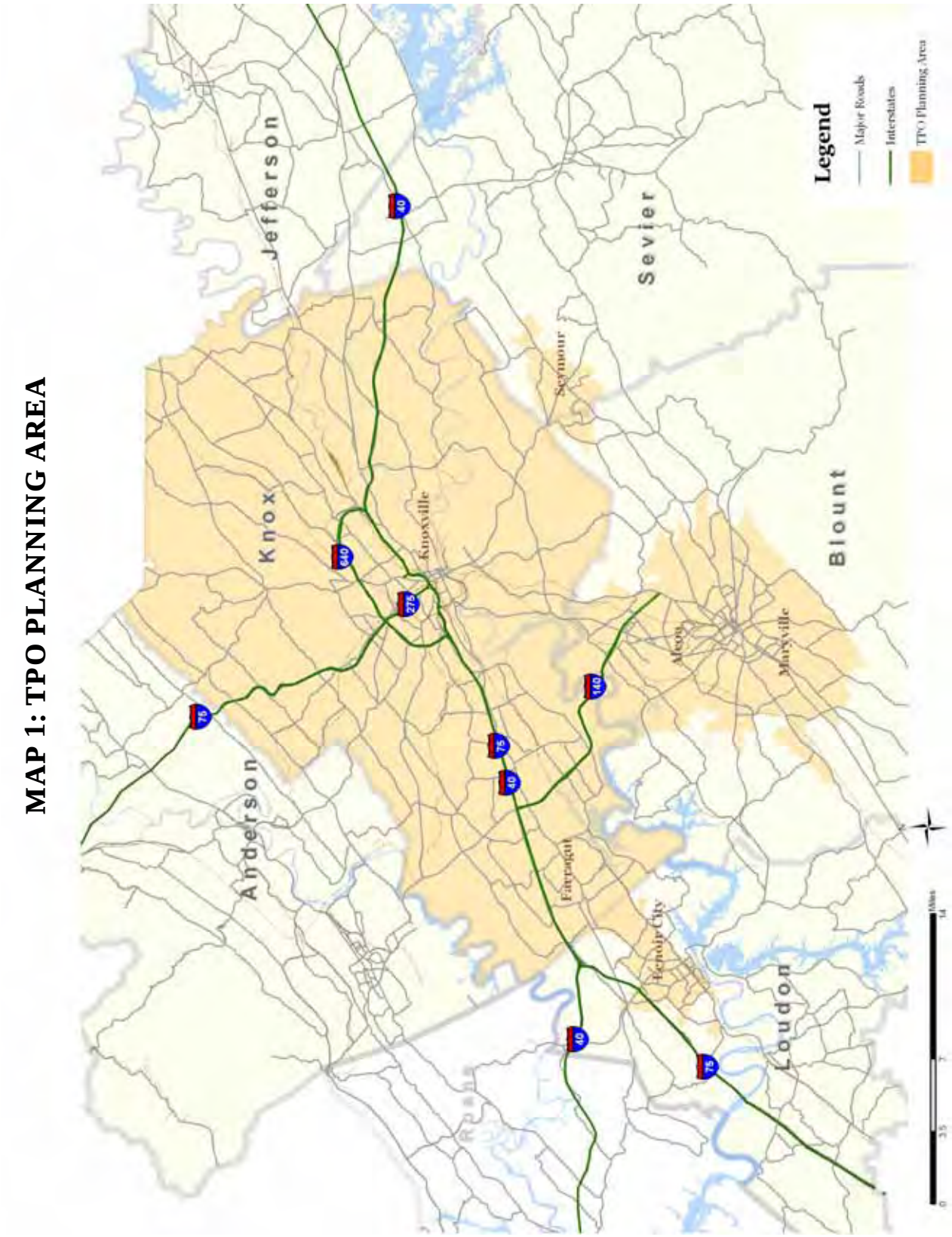
Highway Project Selection Process

The projects listed in this plan were evaluated based on the projects ability to meet the goals and objectives of this plan, including questions that emphasize system maintenance, system efficiency, environmental quality, mobility options, regional approach, financial investments, safety, and security (see appendix for a copy of the application). The TPO solicited a call for projects application to all its member jurisdictions as well as the general public for inclusion in the LRTP. During the LRTP update in 2006, TPO jurisdictions had a chance to add, change, or delete any projects in the original plan, but projects will not be added or changed as part of the 2007 update. The solicitation was advertised in all the local papers as well as posted on the TPO's webpage *(see Chapter XV)*. After the original project applications were submitted to the TPO, they were ranked and prioritized based on the project's score. The result of this process is the highway projects list of this plan (Tables 7, 8, 9, and 10).

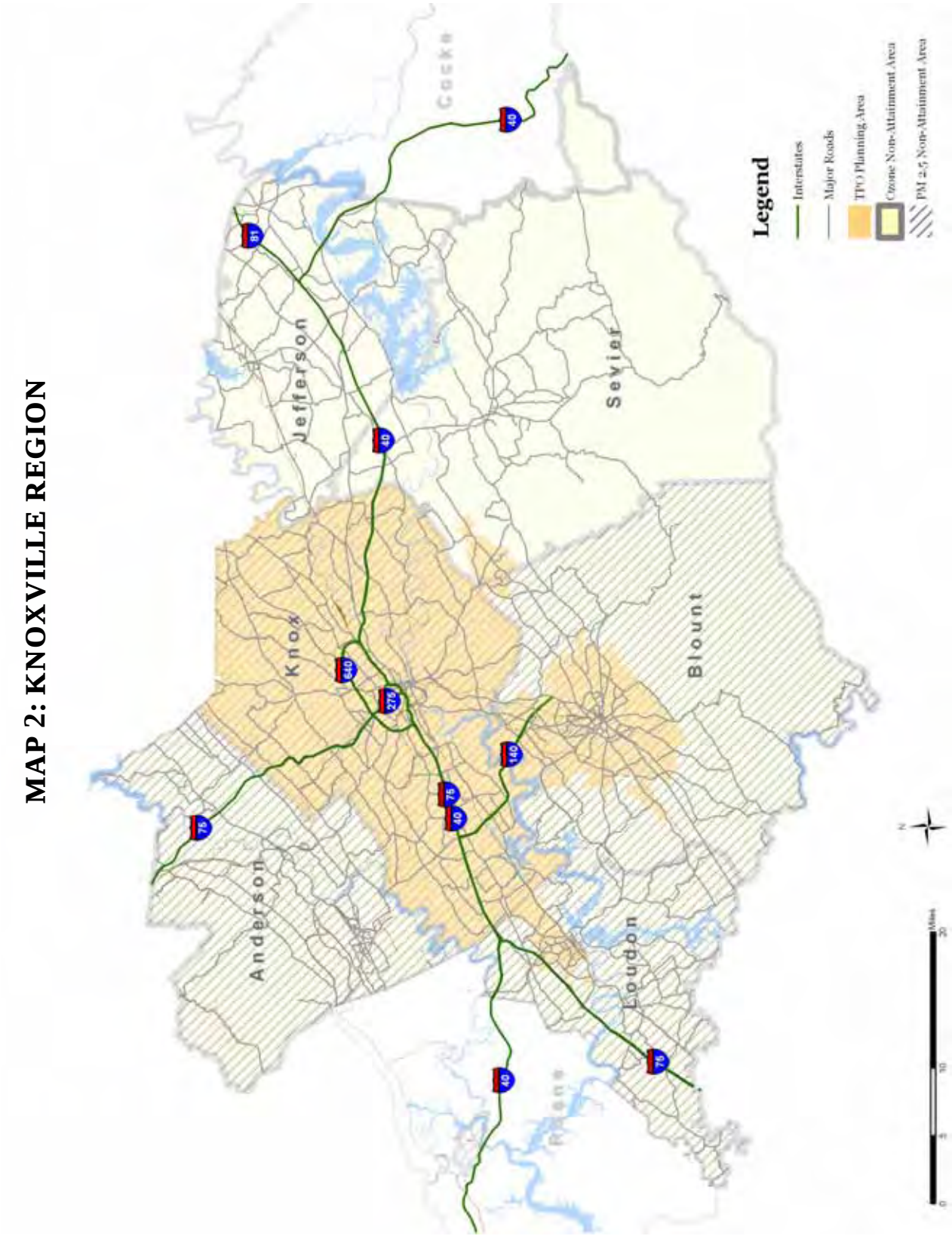
Figure 1: Relationship between TPO Executive Board and East Tenn. South Rural Planning Organization



MAP 1: TPO PLANNING AREA



MAP 2: KNOXVILLE REGION



II. BACKGROUND DATA

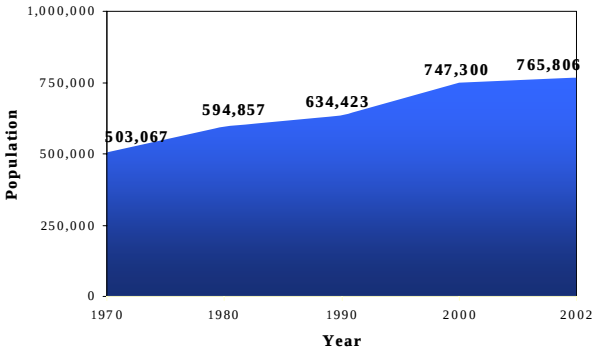
The evaluation of certain demographic, socio-economic, and commuting characteristics is important in developing the Long Range Transportation Plan because they have a substantial impact on the transportation system and assist in planning for the future transportation system. Since major changes in the background data are not expected and updated data is not readily available, the data used for the 2005-2030 Knoxville Regional Long Range Transportation Plan 2007 Update is the same as in the original Plan adopted in 2005.

Data for the Knoxville Region and the Knoxville Urban Area was gathered from the 2000 U.S. Census, the 2002 U.S. Census Bureau American Community Survey, the 2000 Census Transportation Planning Package (CTPP), the Tennessee Statistical Abstract, and the University of Tennessee Center for Business and Economic Research. Since a majority of the data is configured by County, all of Cocke County was included in the evaluation of demographic, socio-economic and commuting characteristics for the Knoxville Region since partial County data is not readily available.

Population

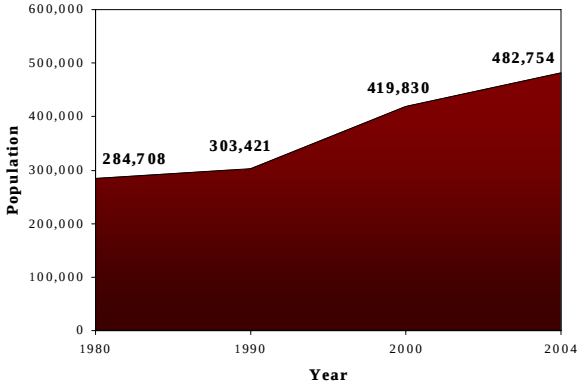
The population of the Knoxville Region has grown steadily over the past few decades *(see Chart 1)*. Between 1990 and 2002, the population has increased 17.79%, with Sevier County experiencing the greatest percentage increase. The population of the Knoxville Region in 2002 was 765,806, an increase from 2000 of 2.48%.

Chart 1: Knoxville Region Population Change 1970-2002



The boundaries of the Knoxville Urban Area have expanded in each of the last two decades. As a result, the urbanized population has increased from 303,421 in 1990 to 419,830 in 2000, comprising 56.18% of the Region's population *(see Chart 2)*. In 2004, the Urban Area boundaries were modified to include areas that have become urbanized since 2000 or are expected to become urbanized within the next 20 years. As a result of the modified boundaries, the population of the Knoxville Urban Area in 2004 was 482,754.

Chart 2: Knoxville Urban Area Population Change 1980-2004



The population of the Knoxville Region is projected to increase 38% by 2025 to 1,055,522, with Sevier County slated to experience the greatest growth (Woods &

Poole Economics, Inc). Blount, Loudon, and Jefferson Counties are expected to see considerable population growth as well.

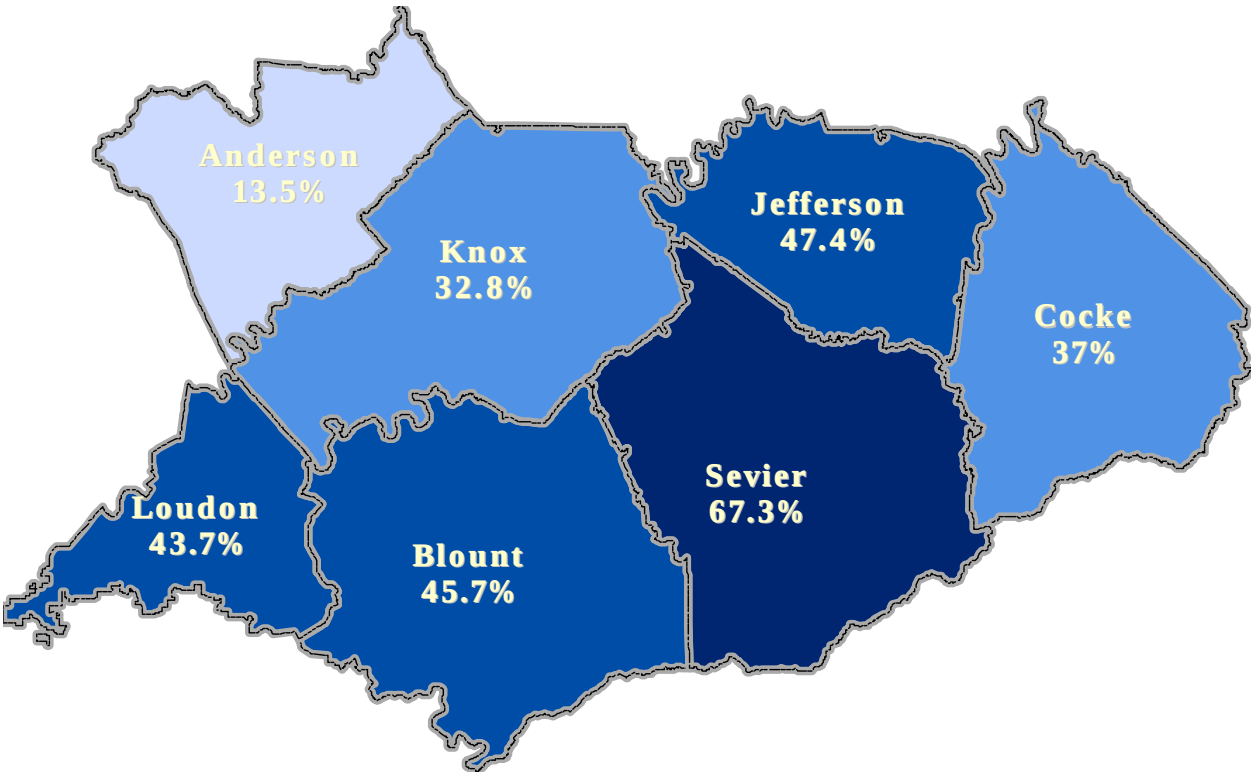
Map 3 shows the percentage increase in population each county is projected to experience by 2025.

Table 1: Knoxville Region Historical Population Trends by County

County	1970	1980	1990	2000	2002[1]
Anderson	60,300	67,346	68,250	71,330	71,627
Blount	63,744	77,770	85,969	105,823	109,849
Cocke	25,283	28,792	29,141	33,565	34,115
Jefferson	24,940	31,284	33,016	44,294	45,801
Knox	276,293	319,694	335,749	382,032	389,327
Loudon	24,266	28,553	31,255	39,086	40,631
Sevier	28,241	41,418	51,043	71,170	74,456
REGION	**503,067**	**594,857**	**634,423**	**747,300**	**765,806**

[1] 2002 population data from the 2002 U.S. Census of Population and Housing

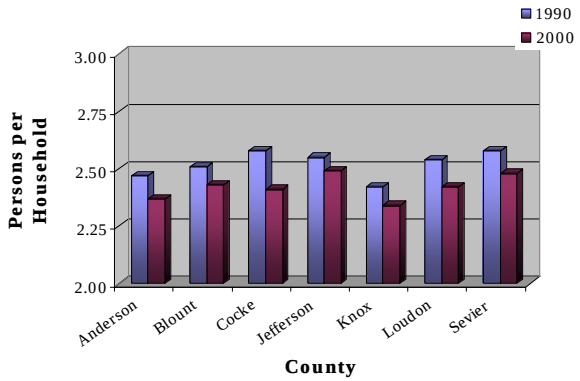
Map 3: Knoxville Region 2002-2025 Projected Increase in Population Percentage (Woods & Poole Economics, Inc)



Households

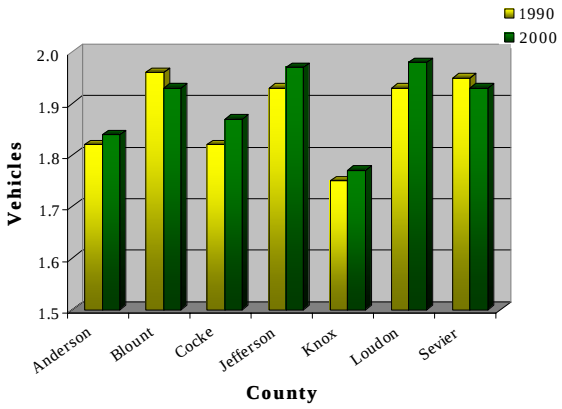
In response to the increase in population, the number of housing units in the Knoxville Region has increased 24.75% from 273,050 in 1990 to 340,641 in 2000. The average household size decreased during this same time period *(see Chart 3)*, with the greatest decrease in Cocke County where the average household size dropped from 2.58 persons in 1990 to 2.41 persons in 2000.

Chart 3: Knoxville Region Average Household Size



While the average household size in the Knoxville Region continues to decrease, in general the number of vehicles per household continues to increase *(see Chart 4)*. Since 1990, the number of households with three or more vehicles has encountered the greatest percentage increase.

Chart 4: Knoxville Region Average Vehicles per Household



Income

Median household income has continued to increase throughout the Region. Sevier, Cocke, and Loudon Counties have experienced the greatest percentage increase in median income since 1990, with Knox and Anderson Counties experiencing the lowest percentage increase. Loudon County consists of the highest median income in 2000, $40,401.

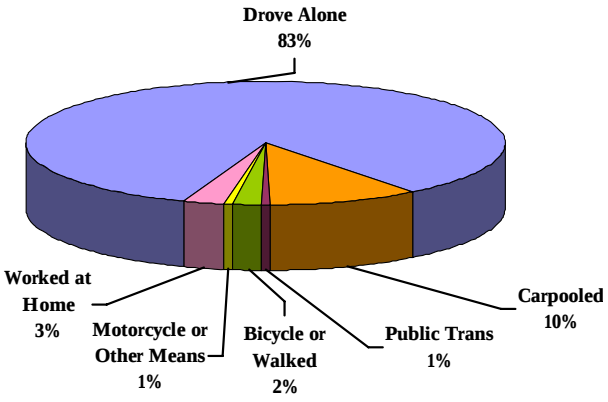
Employment

In 2000, there were 357,080 people employed within the Knoxville Region, an increase from 1990 of 19.06%. Blount, Jefferson, and Sevier Counties have experienced the greatest percentage increase in employment since 1990, although Knox County continues to lead the Region with 187,717 employees in 2000. As of 2000, there are 376,838 people in the labor force throughout the Region, an increase of 17.3% from 1990.

Commuting Characteristics

Understanding the travel characteristics of all transportation modes and the travel patterns of people and goods using the transportation system throughout the Knoxville Region plays an important role in determining future transportation needs. In evaluating the CTPP, the automobile is the predominate choice of transportation within the Region with 84% of workers commuting to work in a single occupant vehicle. Anderson County has the highest percentage of workers driving alone to work, 86.4%. Cocke County has the highest percentage of workers that carpool to work, 16.6%. Within Knox County, 0.7% of commuters utilize public transportation, the highest of any county throughout the Region. Chart 5 offers a breakdown of commuting modes throughout the Knoxville Region in 2000.

Chart 5: Knoxville Region Commute to Work by Mode of Transportation



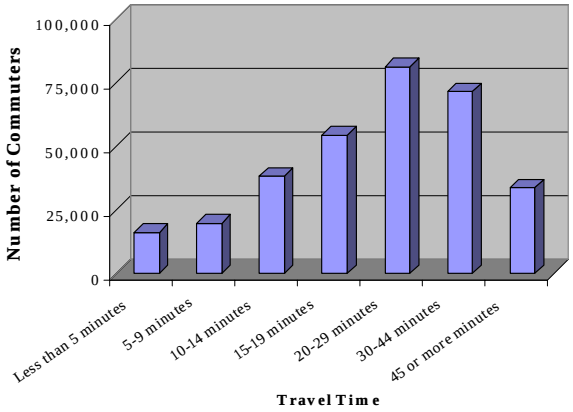
Throughout the Knoxville Region, commuting times are becoming longer as people live further away from their jobs and congestion on area roadways increases *(see Table 2)*. Workers in Cocke County commute an average of 28.5 minutes one way to work, the longest commute time in the Region, while workers in Knox County commute an average of 22.2 minutes one way to work, the shortest.

Table 2: Knoxville Region Average Commute Time to Work (Minutes)

County	1990	2000
Anderson County	20.7	22.9
Blount County	22.3	24.0
Cocke County	24.7	28.5
Jefferson County	22.4	26.4
Knox County	20.5	22.2
Loudon County	22.0	24.8
Sevier County	23.5	25.3
State of Tennessee	21.5	24.5

For the majority of workers, their one way commute is between 20-29 minutes, with slightly less commuting between 30-44 minutes (s*ee Chart 6).*

Chart 6: Knoxville Region Commute Time to Work (Minutes)



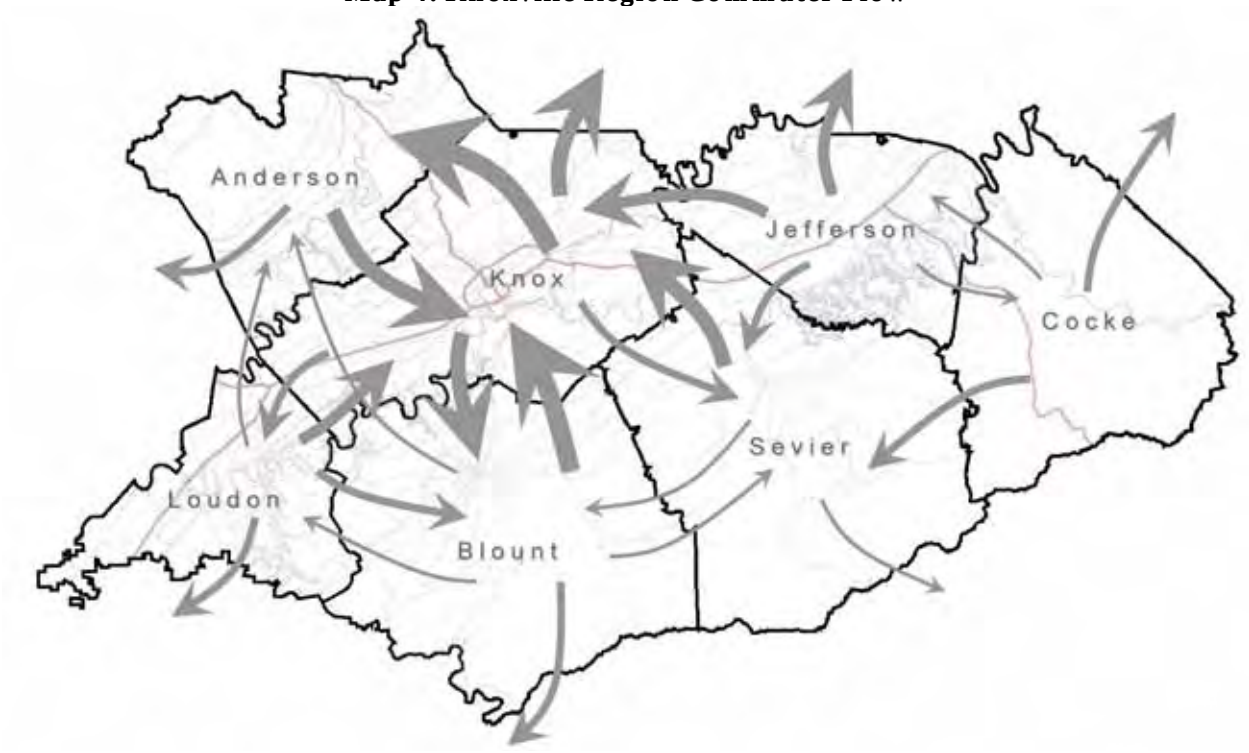
In 2000, the number of people that commuted more than 45 minutes to work increased by 36.12% from 1990. Of all commuters, 30.9% leave home between the hours of 5:00am and 6:59am with 30.8% leaving home between the hours of 7:00am and 7:59am.

The counties of the Region act coherently as a single economic region. Residents from one county often commute to another county for work, with Knox County acting as a major attractor for employment. Some of the larger county to county commuting patterns involve residents from Blount, Jefferson, Loudon, and Sevier Counties commuting to Knox County for work. The majority of Knox County residents, 86%, commute to work within the County. Commuters that leave Knox County for work primarily commute to Anderson County or Blount County. The City of Morristown lies just outside the Knoxville Region and influences commuting patterns in Jefferson County where 23% of the residents commute to work outside the Knoxville Region. Table 3 and Map 4 show county to county commuter flow by direction and commuter volume by weight of the arrow.

Table 3: Knoxville Region County by County Commuter Flows (2000)

Residence County	Anderson County	Blount County	Cocke County	Jefferson County	Knox County	Loudon County	Sevier County
Anderson County	20,029	354	14	14	8,115	133	48
Blount County	730	31,298	50	31	13,611	839	915
Cocke County	0	87	8,260	817	343	0	2,240
Jefferson County	106	127	628	9,007	4,381	14	1,756
Knox County	11,014	5,328	136	518	158,292	1,554	1,634
Loudon County	804	1,076	0	21	4,580	8,951	26
Sevier County	142	904	231	476	6,522	16	25,388

Map 4: Knoxville Region Commuter Flow



III. EXISTING REGIONAL TRANSPORTATION SYSTEM

The Knoxville Region is located within 600 miles of one third of the nation's population and is located at the junction of three major interstates, I-40, I-75, and I-81. The Region consists of a nationally recognized public transportation system in Knoxville Area Transit, contains many miles of greenways/multi-use paths for bicycles and pedestrians, is traversed by two major Class I railroads, is located along a major commercially navigable waterway, is home to a commercial airport, and is the terminus of several major petroleum pipelines. The centralized location along the national transportation network coupled with the existence of these major transportation elements place the Region at a crossroads for the movement of people, goods, and services across the country. In 2002, 21,953 people in the Region were employed in the transportation industry, which includes construction and maintenance of transportation modes, driving and delivery of goods and people, and other transportation supported jobs.

STREETS AND HIGHWAYS

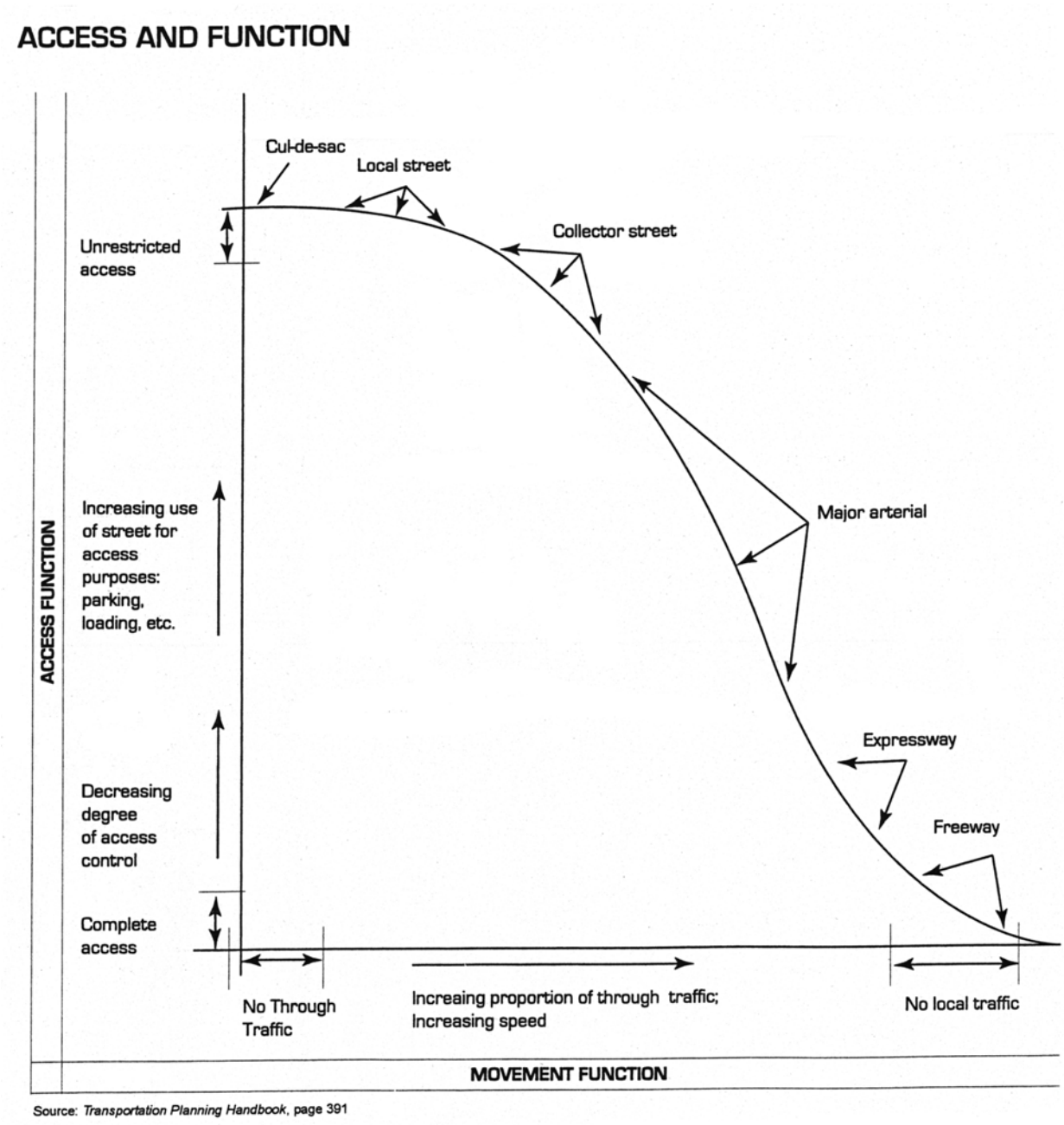
There are approximately 9,000 miles of public roads throughout the Knoxville Region that create a street network hierarchy of interstates, expressway, arterials, collectors, and local streets. More than three fourths of this public road mileage is under the control of county or local municipalities, others are maintained by TDOT. Functional classifications of the transportation system classify roads according to their accessibility, speed, and function. Interstates or expressways move the largest volumes of through traffic at greater speeds and have full access control. Arterials and collectors primarily move through traffic, but also collect traffic from local streets, major commercial, industrial and other major centers, and provide interchange access to interstates or expressways. Local roads provide access to adjoining land, primarily residences and neighborhood services. As classification decreases, from interstate to expressway to arterial to collector to local, the amount of access control and speed decreases and the function becomes increasingly used for localized traffic. Figure 2 shows the relationship between access control and roadway function.

TDOT administers a State Functional Classification System that considers any roadway classified as a collector or above. The Knoxville Urban Area is allowed a certain amount of classified roadway miles, based on its population. The State Functional Classification is used to determine federal funding availability for roads as well as the function, access control, and preferred roadway section.

The City of Knoxville and Knox County maintain a Major Road Plan that identifies the functional classification of roads in the City and County while assigning future right-of-way requirements. The Transportation Plan for Blount County, adopted in 1992, identifies roadway functional classification and outlines a roadway system desired for the future. Throughout the Region, several other municipalities have established their own major road or thoroughfare plans in conjunction with a land use or community master plan.

Figure 2: Function of the Transportation System by Access and Movement

Figure 2 illustrates the relationship between access and movement for each roadway functional classification. As a road's movement function increases, its access function decreases.



Source: *Transportation Planning Handbook*, page 391

TDOT operates a program called the Tennessee Roadway Information Management System (TRIMS), which collects and evaluates data on pavement conditions, roadway design and functionality, and traffic volume among other information. An extensive traffic counting program is conducted annually on statewide roads and can be viewed online at http://gis.tdot.state.tn.us/traffichistory/.

The TPO and City of Knoxville both participate in an annual local traffic counting program. A complete list of traffic count locations with corresponding traffic counts in Knox and Blount Counties is published annually by the TPO.

Table 4 includes a list of major traffic count locations throughout the Region, displaying average daily traffic for 1995 and 2005, along with the percentage of traffic growth or decline during the 10-year timeframe.

Local County Clerk offices maintain data on registered vehicles. There are over 700,000 registered vehicles in the Knoxville Region.

Table 4: Knoxville Region Average Daily Traffic Counts for Select Major Locations

Location	Municipality	1995	2005	% Increase
I-40/75 at Papermill Road	Knoxville	145,722	154,662	5.8%
I-40 at James White Parkway	Knoxville	93,974	99,576	5.6%
I-640 north of Western Ave	Knoxville	63,000	81,409	22.6%
I-75 south of Callahan Road	Knoxville	54,000	68,872	21.6%
Alcoa Highway north of Hunt Road	Alcoa	47,340	52,019	9.0%
I-75 at SR 72	Loudon Co.	33,750	44,763	24.6%
US 441 south of US 321	Pigeon Forge	35,829	44,735	19.9%
I-81 northeast of I-40	Jefferson Co.	29,088	36,266	19.8%
Kingston Pike at Campbell Station Rd	Farragut	27,732	31,218	11.2%
SR 62 north of Knox County line	Oak Ridge	24,700	29,733	16.9%
I-40 south of SR 73	Cocke Co.	19,805	23,463	15.6%
SR 321 east of I-75	Lenoir City	21,375	28,320	24.5%
Chapman Hwy south of SR 338	Sevier Co.	13,239	17,344	23.7%
Clinton Hwy south of SR 170	Anderson Co.	17,804	17,848	0.2%
US 321 east of Tuckaleechee Pike	Blount Co.	10,853	13,768	21.2%
Broadway Downtown Maryville	Maryville	11,641	13,264	12.2%

PUBLIC TRANSPORTATION
Public transportation in the Knoxville Region includes bus, trolley, paratransit, vanpools, taxi cab, and shuttle services. Knoxville Area Transit (KAT), Knox County CAC Transit (formally Knoxville-Knox County Community Action Committee (CAC)), East Tennessee Human Resource Agency (ETHRA), Gatlinburg Trolley System, Pigeon Forge Trolley System, and the Oak Ridge Transit System are the main providers, combining to provide approximately 5.85 million passenger trips per year.

INTERCITY BUS
Greyhound Bus Lines operate several intercity bus routes that connect the Knoxville Region to more than 2,200 destinations across the United States. Buses making stops in Knoxville pass through a terminal on Magnolia Avenue just outside Downtown Knoxville. The facility handles 30-40 buses each day. There are several other regional bus lines whose main purpose is focused on tourism and charters.

BICYCLE
There are limited on-street facilities for bicycle transportation throughout the Knoxville Region. Only one State bike route exists in the Region, extending from Gatlinburg to Jonesborough in Washington County.

Within the TPO Planning Area, separate bike lanes exist along Magnolia Avenue in Knoxville and along Lincoln and Wright Roads in the City of Alcoa. The majority of the arterials and collectors throughout the TPO Area are not favorable for bicycle transportation because of narrow vehicle lanes, insufficient shoulder width, or numerous vehicle access points, all of which exacerbate the conflict between bicyclists and motor vehicles.

Off-street bicycling facilities mainly occur in the form of greenways which are shared with pedestrians.

SIDEWALKS/ GREENWAYS
Sidewalks are typically located alongside streets within the older urbanized areas of the Region. Sidewalks in Knox County exist throughout Downtown Knoxville, the University of Tennessee, Fort Sanders, and nearby north and east neighborhoods. Beyond these areas, sidewalks can be found along a few newly reconstructed arterial and collector roads but for the most part remain very scarce and lack connectivity. In Blount County, sidewalks exist in Downtown Maryville and along certain streets in older neighborhoods in the City of Alcoa.

Throughout the Knoxville Region there are over 90 miles of greenways, the majority of which are paved, shared-use paths.

RAILROAD
There are approximately 310 miles of railroad track within the Knoxville Region, including railroads that are part of the national network, short line railroads, and rail spurs to industrial areas. Two Class I railroads, Norfolk Southern (NS) and CSX Transportation, operate the majority of these railroads providing connections to the national rail network. The Knoxville & Holston River Railroad (KHRR) operates the lone short line railroad in the Region.

There is currently no passenger train service to or from the Knoxville Region. On weekends, The Three Rivers Rambler operates an 11 mile round trip scenic passenger ride on the KHRR railroad tracks adjacent to the Tennessee River.

MARITIME
Beginning east of Knoxville, commercial navigability of the Tennessee River System consists of 652 miles of mainstream channel and 111 miles of tributaries that lead to the

Ohio River near Paducah, KY. The Tennessee-Tombigbee Waterway shortens the trip between Knoxville and the Gulf of Mexico by 882 miles by traversing across Mississippi and Alabama. The Clinch River/ Melton Hill Lake is commercially navigable for 61 miles from the City of Clinton to the Tennessee River in Kingston. The Little Tennessee River/ Tellico Lake can handle barge traffic for 29 miles from near Tallassee to the Tennessee River.

AVIATION

There are four airports in the Knoxville Region that are identified by the Federal Aviation Administration (FAA), one major commercial airport and three local general aviation airports.

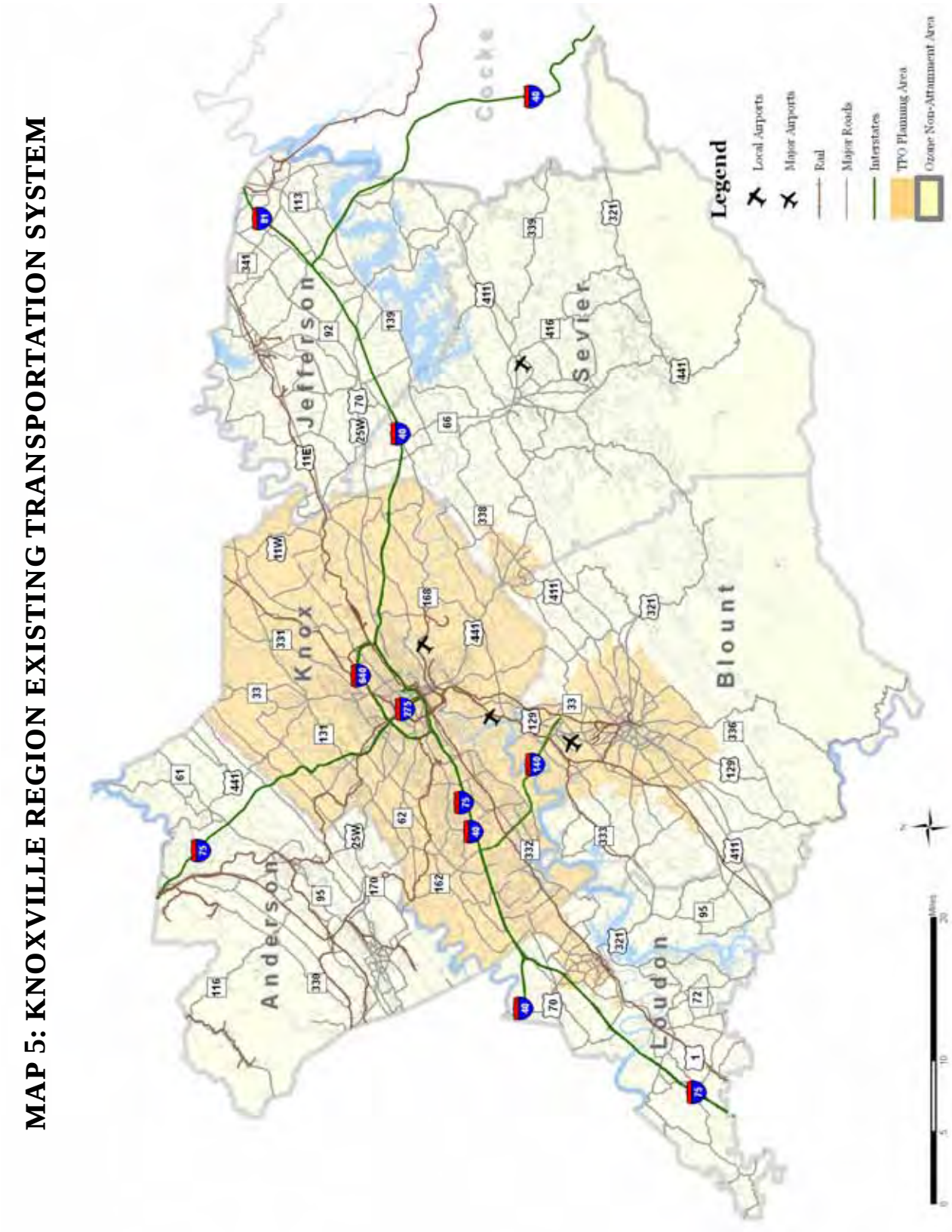
McGhee Tyson Airport

The majority of air cargo, commercial passenger, and general aviation air service in the Knoxville Region passes through McGhee Tyson Airport, located in the City of Alcoa. McGhee Tyson Airport is serviced by eight commercial passenger airlines, six air cargo carriers, two fixed base operators, and the Tennessee Air National Guard.

Other Airports

Knoxville Downtown Island Airport is a general aviation airport located on Dickinson Island near Downtown Knoxville and serves as the base for one fixed base operator and more than one hundred private and corporate aircraft. The Gatlinburg/ Pigeon Forge Airport is a general aviation airport located in Sevierville playing a vital role in supporting the area's tourism industry. Skyranch Airport in South Knoxville is used primarily for smaller, personal aircraft.

MAP 5: KNOXVILLE REGION EXISTING TRANSPORTATION SYSTEM



IV. GOALS AND OBJECTIVES

The goals and objectives of the 2005-2030 Knoxville Regional Long Range Transportation 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.

Goal	Objective	Planning Factors Addressed
1. System Maintenance	➢ Maximize the useful life of existing elements of the transportation system; ➢ Use appropriate management systems to identify and implement optimal maintenance strategies; ➢ Maintain transit vehicles to achieve an efficient, cost effective, and customer friendly system.	➢ Increase the safety and security of the transportation system for motorized and non-motorized users; ➢ Promote efficient system management and operation; ➢ Emphasize the preservation of the existing transportation system.
2. System Efficiency	➢ Maximize street network efficiency through the use of technology and travel demand management strategies; ➢ Minimize traffic congestion; ➢ Maximize cost-effectiveness of public transportation investments; ➢ Increase vehicle occupancy rates.	➢ Increase the safety and security of the transportation system for motorized and non-motorized users; ➢ Protect and enhance the environment, promote energy conservation, and improve quality of life; ➢ Emphasize the preservation of the existing transportation system.
3.Environmental Quality	➢ Reduce mobile source contributions (vehicle emissions) to improve air quality; ➢ Minimize adverse environmental impacts of the urban transportation system such as noise pollution and water runoff.	➢ Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; ➢ Protect and enhance the environment, promote energy conservation, and improve quality of life.

4. Mobility Options	➢ Maximize the availability of alternative transportation; ➢ Facilitate linkages among modes of transportation; ➢ Provide information to the public regarding available transportation choices.	➢ Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; ➢ Increase the accessibility options available to people and freight; ➢ Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
5. Regional Approach	➢ Ensure that regional transportation planning and investments are coordinated with future land uses and economic development initiatives.	➢ Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
6. Financial Investments	➢ Develop a transportation system that is cost effective to maintain over time; ➢ Identify transportation investments requiring further study and other potential revenue sources.	➢ Increase the accessibility options availability to people and freight; ➢ Promote efficient system management and operation; ➢ Emphasize the preservation of the existing transportation system.
7. Safety	➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens.	➢ Increase safety of the transportation system for motorized and non-motorized users; ➢ Increase accessibility options available to people and freight; ➢ Enhance the integration and connectivity of the transportation system, across and between modes, for people and goods.
8. Security	➢ Work with state and local agencies and transportation providers to develop a transportation system that is secure for all citizens.	➢ Increase security of the transportation system for motorized and non-motorized users.

GOALS AND OBJECTIVES ADDRESSED

The following chart identifies the 2005-2030 Knoxville Regional Long Range Transportation Plan Update goals and objectives that are addressed by the each of the Plan elements.

Plan Element	Goals and Objectives Addressed
Streets and Highways	***System Maintenance*** ➢ Maximize the useful life of existing elements of the transportation system. ***System Efficiency*** ➢ Maximize street network efficiency through the use of technology and travel demand management strategies. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality; ➢ Minimize adverse environmental impacts of the urban transportation system such as noise pollution and water runoff. ***Mobility Options*** ➢ Facilitate linkages among modes of transportation. ***Regional Approach*** ➢ Ensure that regional transportation planning and investments are coordinated with future land uses and economic development initiatives. ***Financial Investments*** ➢ Develop a transportation system that is cost-effective to maintain over time. ***Safety*** ➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens. ***Security*** ➢ Work with state and local agencies, emergency response agencies, and transportation providers to develop a transportation system that is secure for all citizens.
Public Transportation	***System Maintenance*** ➢ Maximize the useful life of existing elements of the transportation system; ➢ Maintain transit vehicles to achieve an efficient, cost-effective, and customer friendly system.

	System Efficiency ➢ Maximize cost-effectiveness of public transportation. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Mobility Options*** ➢ Maximize the availability of alternative transportation; ➢ Facilitate linkages among modes of transportation; ➢ Provide information to the public regarding available transportation choices. ***Regional Approach*** ➢ Ensure that regional transportation planning and investments are coordinated with future land uses and economic development initiatives. ***Financial Investments*** ➢ Develop a transportation system that is cost-effective to maintain over time. ***Safety*** ➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens. ***Security*** ➢ Work with state and local agencies, emergency response agencies, and transportation providers to develop a transportation system that is secure for all citizens.
Bicycling	***System Maintenance*** ➢ Maximize the useful life of existing elements of the transportation system. ***System Efficiency*** ➢ Maximize street network efficiency through the use of technology and travel demand management strategies; ➢ Minimize traffic congestion. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality; ➢ Minimize adverse environmental impacts of the urban transportation system such as noise pollution and water runoff. ***Mobility Options*** ➢ Maximize the availability of alternative transportation;

	➢ Facilitate linkages among modes of transportation; ➢ Provide information to the public regarding available transportation choices. ***Financial Investments*** ➢ Develop a transportation system that is cost-effective to maintain over time.
Sidewalks/ Greenways	***System Maintenance*** ➢ Maximize the useful life of existing elements of the transportation system. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Mobility Options*** ➢ Maximize the availability of alternative transportation; ➢ Facilitate linkages among modes of transportation.
Freight and Goods Movement	***System Maintenance*** ➢ Maximize the useful life of the existing elements of the transportation system. ***System Efficiency*** ➢ Maximize street network efficiency through the use of technology and travel demand management strategies; ➢ Minimize traffic congestion. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Mobility Options*** ➢ Maximize the availability of alternative transportation; ➢ Facilitate linkages among modes of transportation. ***Regional Approach*** ➢ Ensure that regional transportation planning and investments are coordinated with future land uses and economic development initiatives. ***Safety*** ➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens. ***Security*** ➢ Work with state and local agencies, emergency response agencies, and transportation providers to develop a transportation system that is secure for all citizens.

Congestion Management Process	***System Maintenance*** ➢ Maximize the useful life of existing elements of the transportation system; ➢ Use appropriate management systems to identify and implement optimal maintenance strategies. ***System Efficiency*** ➢ Minimize traffic congestion.
Transportation Demand Management	***System Maintenance*** ➢ Use appropriate management systems to identify and implement optimal maintenance strategies. ***System Efficiency*** ➢ Minimize traffic congestion; ➢ Increase vehicle occupancy rates. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Mobility Options*** ➢ Provide information to the public regarding available transportation choices.
Intelligent Transportation Systems	***System Maintenance*** ➢ Use appropriate management systems to identify and implement optimal maintenance strategies. ***System Efficiency*** ➢ Maximize street network efficiency through the use of technology and travel demand management strategies. ***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Safety*** ➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens. ***Security*** ➢ Work with state and local agencies, emergency response agencies, and transportation providers to develop a transportation system that is secure for all citizens.
Safety Planning	***System Efficiency*** ➢ Minimize traffic congestion. ***Mobility Options*** ➢ Facilitate linkages among modes of transportation.

	Safety ➢ Work with state and local agencies and transportation providers to develop a transportation system that is safe for all citizens.
Security Planning	***Safety*** ➢ Work with state and local agencies and transportation providers to develop a transportation system that is secure for all citizens. ***Regional Approach*** ➢ Work with state and local agencies, emergency response agencies, and transportation providers to develop a transportation system that is secure for all citizens.
Air Quality Conformity Analysis	***Environmental Quality*** ➢ Reduce mobile source contributions (vehicle emissions) to improve air quality. ***Regional Approach*** ➢ Ensure that regional transportation planning and investments are coordinated with future land uses and economic development initiatives.
Financial Resources	***System Maintenance*** ➢ Maximize the useful life of the existing elements of the transportation system. ***System Efficiency*** ➢ Maximize cost-effectiveness of public transportation investments. ***Financial Investments*** ➢ Develop a transportation system that is cost-effective to maintain over time; ➢ Identify transportation investments requiring further study and other potential revenue sources.

REGIONAL INTERMODAL TRANSPORTATION ELEMENT

V. REGIONAL INTERMODAL TRANSPORTATION ELEMENT

The Knoxville Regional Long Range Transportation Plan Update contains an element for the entire Knoxville Region and an element for the TPO Planning Area only. An element for the TPO Planning Area as well as an element for the remaining Knoxville Region outside of the TPO Planning Area is appropriate as the level of data available outside of the TPO Area is not sufficient to conduct analysis for all modes of transportation. Federal air quality regulations require that a single intermodal long range transportation plan, including air quality conformity determination, be prepared for the entire Knoxville Non-Attainment Area. While not as specific as the element for the TPO Area, the element for the Region must compile transportation studies, plans, programs, and projects of individual communities, including those of the TPO Area, into a single document that identifies how each will coordinate to form a Regional intermodal transportation system. This chapter outlines the Regional Intermodal Transportation Element. The TPO Planning Area Intermodal Transportation Element is included in the following chapter.

REGIONAL STREETS AND HIGHWAYS

Background

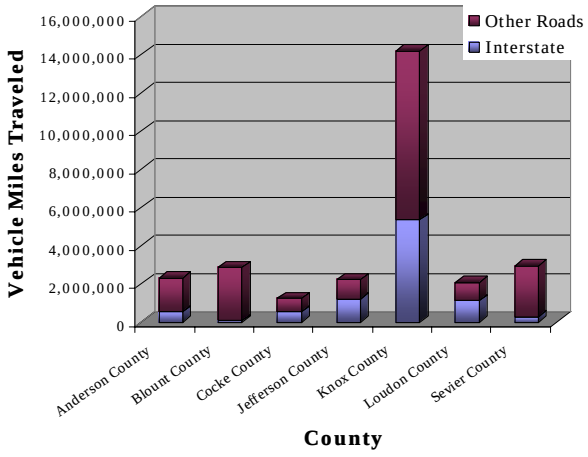
Whether it be passenger, service, or freight vehicles, the street and highway network is responsible for handling a large number of the movements of people and freight throughout the Knoxville Region. Due to its location at the junction of three major interstates, the Region experiences a large amount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

Existing Conditions

In 2002, there was an average of 27,938,882 vehicle miles traveled per day on roadways throughout the Region *(see chart 7)*. Interstate highways handle 33% of vehicle miles traveled but consist of less than 2% the total roadway mileage in the Region.

Since 1990, the number of vehicle miles traveled per day throughout the Region has increased proportionally much greater, 57%, than the increase in population, 21%. This means people are driving more often and are continuing to commute greater distances.

Chart 7: Knoxville Region Vehicle Miles Traveled per Day



Existing or Committed Studies, Plans, Programs, and Projects

The State of Tennessee is in the process of developing a Statewide Long Range Multi-Modal Transportation Plan that, for the first time, will provide a statewide plan integrating all transportation modes. The plan will result in a 25-year transportation

vision, a 10-year transportation program, and a 3-year program of projects.

The Tennessee Department of Transportation (TDOT) is required to develop a State Transportation Improvement Program (STIP), which includes a list of all transportation projects in Tennessee that will receive federal funding. Jurisdictions throughout the Region outside of the TPO can submit projects to be placed in the STIP through the East Tennessee South Rural Planning Organization (RPO), a consultation process that involves TDOT and the East Tennessee Development District (ETDD).

In August of 2003, the Commissioner of TDOT announced the future of the fifteen road projects across the State that were reviewed by a University of Tennessee team. Four of these projects lie within the Knoxville Region.

The Knoxville Parkway is a 1,000' wide corridor extending from the I-40/ I-75 junction in Loudon County, through Hardin Valley, crossing Pellissippi Parkway south of Oak Ridge Highway, continuing into Anderson County, and terminating at I-75 north of Raccoon Valley Road. The Knoxville Parkway Design Resource Team, a group of 19 members made up of government representatives, special interest groups, and community representatives, developed a recommendation on the design and alignment of the SR475 beltway and forwarded this recommendation onto the TDOT Commissioner in April 2006. The recommendation proposes a 4-lane parkway built to a 70mph design speed. The Team also asked TDOT to consider improvements to the local road system and designate the corridor a Tennessee Parkway or Scenic Highway. The Commissioner, in July 2006, accepted this recommendation in full.

The James White Parkway Extension was referred to local government by TDOT for further review. The TPO, in coordination with the Metropolitan Planning Commission and community representatives from the area, developed twelve scenarios that considered facility design, function, and terminus, including a "no build" scenario. The Knoxville City Council, Knox County Commission, and TPO Executive Board adopted resolutions recommending to TDOT that the James White Parkway be extended from the current proposed terminus at Chapman Highway near Little Switzerland Road to Governor John Sevier Highway as a parkway. Also included in the recommendation were proposals to eliminate the Red Bud Road interchange, reevaluate the Island Home interchange, reduce the design speed, make improvements to Chapman Highway, restrict land uses along the corridor, and prepare an Environmental Impact Study all through a Context Sensitive Solutions process.

Pellissippi Parkway, from its terminus at SR 35 to US 321, will proceed as planned. Environmental review is currently underway and design charettes are scheduled to begin in 2007.

The widening of US 321 from Gatlinburg to Pittman Center will proceed, however, significant consultation with local officials and the public will be used to consider modifications to the design of the road. The Federal Highway Administration awarded a Scenic and Cultural Corridor Plan grant to develop a corridor study for US 321 from Lenoir City to Carter County.

Projects throughout the Region recently completed, under construction, or are committed include widening US 321 in Loudon County from 2 lanes to 5 lanes from SR 95 to the Blount County line, widening US 321 (Wears Valley Road) in Sevier County from Waldens Creek Road to US 411, widening US 321 east of Gatlinburg between Glades Road and Buckhorn Road

from 2 lanes to 5 lanes, improving Middle Creek Road to a 4-lane divided highway from US 411 in Sevierville to US 321/ US 411 in Pigeon Forge, and reconstructing SR 66 in Jefferson County including improvements to the interchange of SR 341 and I-81.

Issues

The non-attainment designation for ground level ozone for Anderson, Blount, Jefferson, Knox, Loudon, and Sevier County, 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 County, and a portion of Roane County requires an air quality conformity determination showing that any highway projects identified in the Long Range Transportation Plan for the above counties will not worsen the air quality. Performing this analysis requires the coordination of multiple jurisdictions to meet conformity.

Objectives and Proposed Actions

The Long Range Transportation Plan Update sets aside 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 questions that emphasize system maintenance, system efficiency, environmental quality, mobility options, regional approach, financial investments, safety, and security *(see Appendix A for copy of application)*. 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 and ranking the projects based on their application. Transportation projects that fall outside the TPO Area are approved for inclusion into the plan by the East Tennessee South Rural Planning Organization (RPO).

Planned Projects

Table 7 shows a list of highway projects for the Knoxville Region (not including TPO Area highway projects, which are included in Chapter VI) by completion year. The LRTP # corresponds the project listing to the project location on Map 6, which displays Regional highway projects, color coded by anticipated completion horizon year. Four completion horizon years were used to coincide with air quality conformity determination horizon years: 2009, 2014, 2020 and 2030. Following each highway project are columns that identify which of the goals and objectives are applicable to that project and whether the project addresses a congested corridor or hot spot (a), as identified in Chapter VIII, a high crash location (b), as identified in Chapter XI, or are located in a Title VI area (c), as identified in Chapter XVI.

Conclusion

The list of Regional highway projects includes both projects that are included in the air quality conformity determination and those that are exempt. Projects that are exempt do not involve adding additional capacity that can increase vehicle miles traveled and thus create additional mobile emissions. These projects include intersection improvements, bridge replacement, constructing turn lanes, installing traffic signals and street lighting, reconstructing existing roadways that doesn't add capacity, and resurfacing. All other projects meet air quality conformity determination, the results of which are explained in Chapter XIII.

MAP 6: KNOXVILLE REGIONAL HIGHWAY PROJECTS

REGIONAL PUBLIC TRANSPORTATION

Background

Recently there has been increased attention focused on public transportation or public transit in the Knoxville Region. The TPO prepared the Regional Transportation Alternatives Plan that laid a framework for future transit service throughout a ten county area. Community based efforts like Nine Counties One Vision and Knox County Mayor Ragsdale's Senior Summit have not only provided additional public support for public transportation but have challenged leaders to rethink transit's role in the range of transportation services. These plans and community initiatives provide the framework for the LRTP public transportation element.

Existing Services

East Tennessee Human Resource Agency (ETHRA)

The East Tennessee Human Resource Agency (ETHRA) provides public transportation to residents living in the sixteen counties of East Tennessee. Their goal is to provide affordable, safe, quality, dependable transportation to citizens of a sixteen-county area, including all areas in the Knoxville Region. 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 provides demand response service, typically meaning pick-up and drop-off times are prearranged. It is preferred that trips be reserved 48 hours in advance. As of 2007, ETHRA has 85 vehicles of which approximately 50 operate throughout the Knoxville Region. ETHRA served over 251,000 passengers in fiscal year 2006.

University of Tennessee Commuter Pool and Tennessee Vans

The Knoxville Commuter Pool (KCP) and Tennessee Vans are regional commuter service 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. Tennessee Vans has placed 179 vans with 115 different organizations throughout the region. Over 2,002 individuals are served creating 1 million annual trips.

Gatlinburg Trolley System

The Gatlinburg Trolley System is the fifth largest 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 Centers. The System handles approximately 870,000 passenger trips per year.

Pigeon Forge Fun Time Trolleys (PFFTTS)

The PFFTTS provides service throughout the City of Pigeon Forge with connections to Dollywood, the Gatlinburg Welcome Center, and Sevierville. In 2005, the PFFTT expanded service into the City of Sevierville. With the addition of Sevierville's entirely clean fuels fleet of trolleys, a new route running from the Sevier County Courthouse in Sevierville to Patriot Park in Pigeon Forge linked service between the two cities. The proposed Phase 2 which is scheduled to start in late 2007, will link

the Sevier County Courthouse to the new Sevierville Events Center development north on SR 66. Sevierville will be conducting a trolley routing study in 2007 to determine if other routes are needed. The PFFTT carried 694,000 passenger trips per year in 2006 of which 63,410 were provided on the Sevierville link.

Oak Ridge Transit System

The Oak Ridge Transit System provides service throughout the City of Oak Ridge and is available to all citizens. Oak Ridge Transit operates three ADA accessible and fourteen passenger mini-buses. Mini-buses will pick up passengers and transport them anywhere within the Oak Ridge city limits. In 2006, the system served approximately 25,000 riders.

Existing or Committed Studies, Plans, Programs, and Projects

Regional Transportation Alternatives Plan (RTAP)

The purpose of the RTAP was to identify transportation corridors that will support alternative transportation modes by the year 2030. The initial study area included ten counties and encompassed Anderson, Blount, Cocke, Grainger, Jefferson, Knox, Loudon, Roane, Sevier, and Union Counties. The RTAP study began about the same time Nine Counties One Vision (NC1V) was launched. Both the RTAP and NC1V efforts were conducted in parallel with representatives from both organizations talking to members of the community and conducting public meetings. Both organizations heard many of the same concerns:

- People want choices in transportation;
- The community has an interest in rail;
- Communities still need highways;
- No one transportation mode will provide the solution; and,
- People are concerned about whether mass transit is affordable.

In deciding what mode of transportation is proper for the corridors, it is important to understand the interrelationship between population and employment density and mode and then mode to capacity and costs. As one scales the list of possible technologies (bus, express bus, bus rapid transit, and light rail), the higher density of population is required to support the more intense technology. Each mode has a capacity and operating costs and in order for the service to be successful, certain levels of riders or people and attractors, such as jobs, must be available. All of these factors are important in considering which option is suitable for service in East Tennessee.

Developing an efficient regional public transportation system or mass transit system requires a mass of either people or jobs along a corridor. A population density of approximately 5,750 persons per square mile (three dwelling units per acre and three persons per unit) is required for mass transit. In plotting projected population for 2030 over the ten-county RTAP study area, it was evident that population density meeting this threshold is not overly 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, uniquely it does contain a high density of hotel rooms that house tourists and the abundance of employment generated by the tourist industry. In some of the counties originally included in the study, such as Grainger, Union, and Jefferson, there are less than 2,000 people per square mile, making it difficult to support a mass transit system.

The proposed transit concept starts with a series of express buses connecting the Region *(see Map 7)*. 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 that express buses will meet and where passengers can transfer to different routes or to other local services. In addition, at the beginning and ends of all express routes must be a place where people can park their car to catch the bus and facilities that will make their wait pleasant. Park-and-ride lots can accommodate long term parking allowing persons to leave their car and use transit for the rest of the day.

An important part of the concept is proposed Bus Rapid Transit (BRT) for the Sevierville, Pigeon Forge, and Gatlinburg corridor. This facility would stretch from I-40 to Gatlinburg. BRT is a relatively new service idea that is emerging across the country. BRT is designing a transit system that 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. Communities that are currently designing BRT facilities are envisioning them like light rail corridors with up-scale, attractive, frequent stations and using sleek looking, eye-catching, light rail like buses. A primary reason that communities are turning to BRT is because they are significantly cheaper to build than light rail and the federal government is reducing the amount of new light rail start-ups nationwide. While the BRT seems appropriate for the Sevierville, Pigeon Forge, and Gatlinburg corridor, this opportunity should not foreclose the possibility of a higher capacity system, like light rail, in the future.

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 bus rapid transit system. While this price tag may seem lofty, it is relatively inexpensive when compared to the cost of building a light rail system from I-40 to Pigeon Forge at an approximate cost of $400 million, constructing the Downtown Knoxville I-40/James White Parkway/Hall of Fame Connector project at $160 million, or building the SR 475 Knoxville Parkway at a cost of approximately $593 million.

Based on population and employment densities, the RTAP felt that the possibility of developing light rail transit was more in the far term than in the near. However, because of some unique characteristics of the Region in regards to tourism, economic development, and poor air quality, some feel the issue of developing passenger rail for the Region should be explored in more detail. In February of 2005, the TPO Executive Board endorsed an effort to secure federal funds to conduct a passenger rail feasibility analysis for the Knoxville Non-Attainment Area. At the time of the adoption of the Long Range Transportation Plan, the results of that effort are still pending.

Sevier County Transitway Alternative Analysis

The Alternatives Analysis built on the previous work already undertaken in the RTAP, as well as met the requirements of both the Federal Transit Administration's Alternative Analysis and the scoping requirements for the National Environmental Policy Act process. While the proposed approach for the study is based on public and stakeholder participation, several alternatives were developed as the initial set of alternatives for the public review and comment. The initial set of alternatives were:

- No Build Alternative;
- Transportation System Management (TSM) Alternative;

- Bus Rapid Transit (BRT) Alternative; and,
- Light Rail Transit (LRT) Alternative.

This study does not recommend a specific alternative but presents the pros-and-cons and potential costs. Table 5 shows the potential cost of the alternatives. The next step will be further planning work to refine the options.

Table 5: Potential Cost of Sevier County Transitway Alternatives

Alternative	Design, ROW, Stations (Millions)	Vehicles (Millions)	Total (Millions)
No Build	-	-	$0
TSM	$3.0	$6.0	$9.0
BRT Build	$80.2	$6.0	$86.2
LRT Build	-	-	$705

Regional Transportation Authority (RTA)

Nine Counties One Vision (NC1V) is a community-wide planning initiative that solicited thousands of ideas from citizens across a nine-county area (Anderson, Blount, Grainger, Jefferson, Knox, Loudon, Roane, Sevier, and Union Counties). Key to the NC1V success was participants embracing the idea that all parts of the Region are important to the well being of the whole. One of the top issues identified in the process was the need to provide a variety of transit options to facilitate travel throughout the Region without relying as much on the automobile. It was a desired goal of NC1V that a system be developed that provided transit service to all nine-counties. To create, coordinate, and promote transit throughout such a large area, it was recommended that a Regional Transportation Authority (RTA) be created.

No one county can meaningfully address growing regional transportation impacts, including air pollution. 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. The NC1V Mass Transit Taskforce (now the transitional committee called Regional Mass Transit Initiatives) has continued to support the RTA project and work towards promoting the RTA concept. Plus, to help explore the possibility of forming an RTA, TDOT contracted with a consultant to prepare an issues paper on the benefits of implementing an RTA in the Knoxville Region.

Issues

The RTAP does not specifically define future roles with regard to who should provide regional transit service. While there are several transit providers in the Region, KAT, being the largest provider is in the position to expand to provide many of the services listed. The RTAP does call for the need for local transit in the surrounding communities. The theory behind this is once a passenger arrives via an express route they will need to be shuttled to their final destination. Cities such as Alcoa, Maryville, and Sevierville do not have any true localized transit service. RTAP supports the development of systems in these communities when the time is right. However, to date there has been no financial resources to provide the identified services.

Objectives and Proposed Actions

A regional public transportation strategy could:

- Maximize existing transportation resources;
- Assist in reducing congestion by providing area residents and visitors comparable alternatives to automobile use;
- Improve the quality of life for those persons who cannot drive by providing

opportunities for those persons to participate in regional activities;

- Advocate for a regional land use strategy that supports regional transit and promotes transit use; and,
- Improve the air quality of the Region.

In addition, the following studies should be considered:

- A more detailed TPO study of the RTA; and,
- The TPO Passenger Rail Feasibility Analysis.

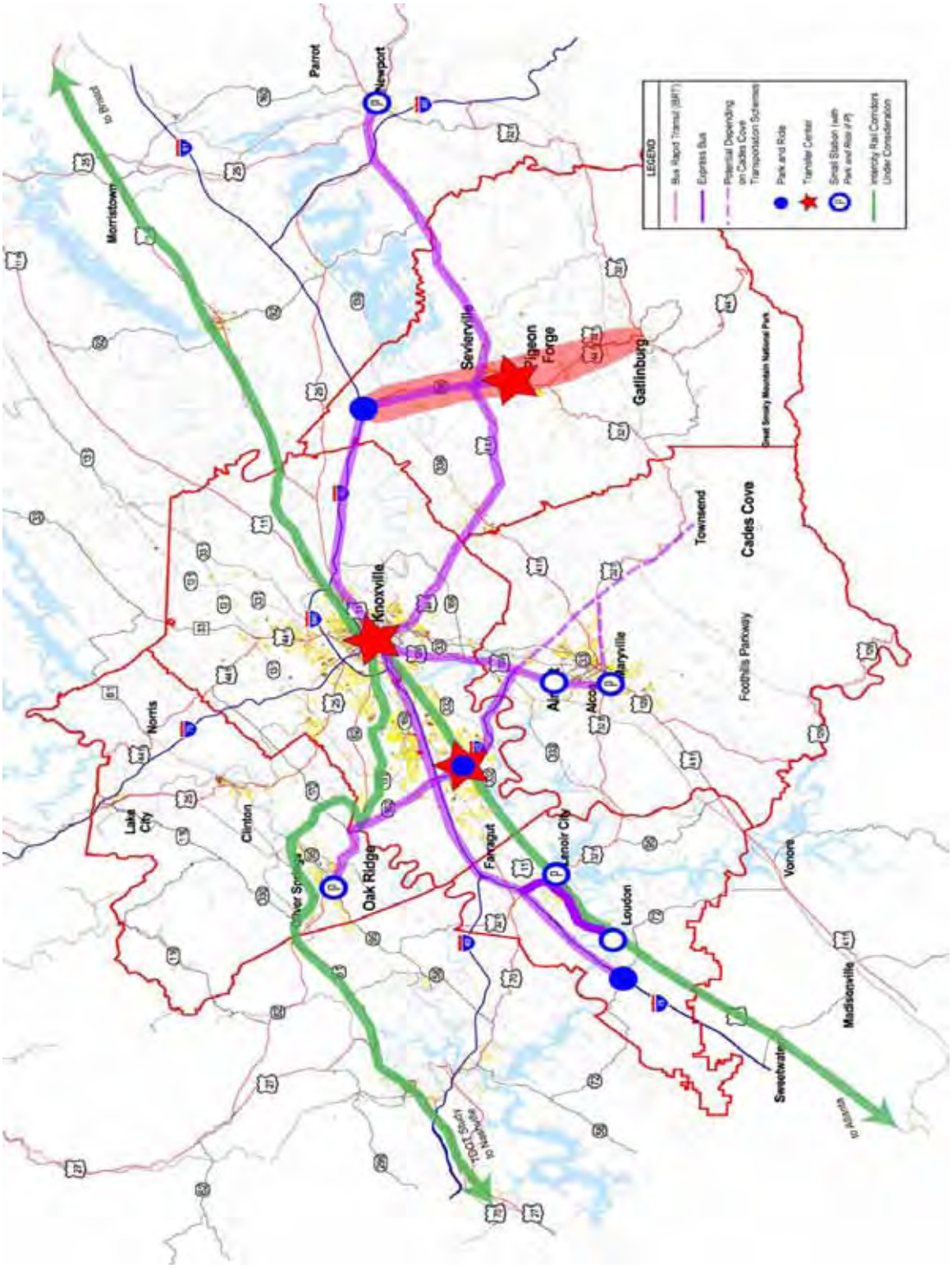
Planned Projects

Planned regional public transportation projects include a more detailed analysis of the Sevier County Transitway, implementation of the Sevierville Trolley System, and replacement of vehicles for ETHRA, Gatlinburg Trolley System, Pigeon Forge Fun Time Trolleys, Sevierville Trolley System, and the Oak Ridge Transit System.

Conclusion

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.

MAP 7: REGIONAL TRANSPORTATION ALTERNATIVES PLAN



REGIONAL BICYCLING

Background
There has not yet been a region-wide bicycle planning effort for the Knoxville Region. TDOT is addressing state bicycle routes through its current multi-modal planning efforts. TDOT recognizes that there needs to be greater continuity of the state bike routes and that connection to the bike routes in the Region must be provided.

Existing Conditions
There are limited on-street facilities for bicycle transportation throughout the Knoxville Region. Only one State bike route exists 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
TDOT is responsible for developing statewide bike routes and maintaining maps and other information about bicycling in Tennessee. TDOT developed a statewide Bicycle Plan as part of its recent Long Range Multi-Modal Transportation Plan. A goal 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
Challenges to bicycle planning on a regional scale include low population densities and unfavorable development patterns. It can also be difficult because most rural areas do not have adequate staffing levels in their planning or engineering departments to dedicate time to this issue.

Objectives and Proposed Actions
When the TPO develops the next Long Range Transportation Plan, a more comprehensive analysis of bicycle transportation in the Knoxville Region will be conducted.

Programmed and Planned Projects
There are currently no planned regional bicycle projects. However, a TDOT policy does call for bicycle accommodation on most new road projects.

REGIONAL SIDEWALKS/ GREENWAYS

Background
Pedestrian facilities discussed in the Long Range Transportation Plan occur in two forms, a sidewalk, which typically runs adjacent to a street, and a greenway, which can either be paved or unpaved and is usually designed for shared use by bicyclists and pedestrians. While some greenways are relatively short and are intended solely for recreational purposes, other greenways provide a linear connection between destination and attraction points and can be used by bicyclists and pedestrians as a system of transportation linkages.

Existing Conditions
Most of the pedestrian travel occurs within the urban centers of the Region. Beyond these areas, sidewalks become very scarce and lack connectivity. Travel between these urban centers is likely to be made by another mode such as automobile or public transportation.

There are over 90 miles of greenways throughout the Knoxville Region, the majority of which are paved. Knox County encompasses the majority of this greenway mileage with over 44 miles. Anderson County has almost 30 miles of greenways, Blount County has over 15 miles of

greenways, Sevier County has over 6 miles of greenways, and Cocke, Jefferson, and Loudon Counties each contain less than 2 miles of greenways *(see Map 22 in Chapter VI)*.

The City of Oak Ridge has an extensive greenway system that aims to eventually link the City's points of interest and natural areas. There are approximately 30 miles of greenways along eleven different dedicated segments that provide trails for bicyclist, walkers, and hikers.

The Townsend Greenway in Blount County is a five-mile paved greenway along US 321 and SR 73. In Sevier County, the River Trail Greenway, which runs along the West Prong of the Little Pigeon River in Sevierville and Pigeon Forge, consists of approximately 3.5 miles. In addition, there are about 4 miles of additional greenways in the City of Sevierville. The Town Creek Greenway in Lenoir City, coupled with smaller loop greenways, provide about a mile of greenway trails. Small greenways in Jefferson City, Dandridge, and White Pine total slightly more than 1 mile.

Existing or Committed Studies, Plans, Programs, and Projects

As with bicycles, there is not a region-wide plan addressing pedestrian movement or greenways. The Metropolitan Planning Commission is currently at work on a countywide parks and greenway plan for Knox County. The Tennessee Trails and Greenways Plan was developed in 2003 as part of the Tennessee State Recreation Plan, outlining strategic policy recommendations that will foster the creation of multi-use trails and greenways throughout the State. The Statewide Long-Range Multi-Modal Transportation Plan includes a Bicycle and Pedestrian Plan that aims to improve pedestrian movement and provide for safer pedestrian facilities.

In 1998, Sevier County developed a Countywide Greenways Plan in an attempt to reserve and protect open areas for recreational use.

Issues

Since population densities in rural areas are fairly low, pedestrian facilities often are not incorporated into street and highway projects or with subdivision and site developments because activity centers are spatially separated by distances that are not favorable for pedestrian activity. Suburban neighborhoods throughout the Region, where densities are higher and activity centers are in closer proximity, consist of cul-de-sac subdivisions. The separation of land uses combined with a lack of pedestrian facilities make them unfavorable for pedestrian activity.

Objectives and Proposed Actions

All communities within the Knoxville Non-Attainment Area are now eligible for Congestion Mitigation and Air Quality (CMAQ) funds. Occasionally, these funds can be used towards the development of greenways if it involves a measurable reduction in mobile emissions. The TPO should consider CMAQ projects from these communities that aid in the reduction of mobile emissions.

Programmed and Planned Projects

Planning is under way for a regional greenway linking downtown Knoxville to the northern border of Blount County. The Knox-Blount Greenway is a partnership of the City of Knoxville, Knox County, the University of Tennessee, and TDOT.

Part of the greenway will be constructed by TDOT as part of its Alcoa Highway project, while other segments are to be built by the City of Knoxville with a combination of local and TDOT funding.

REGIONAL FREIGHT AND GOODS MOVEMENT

Background

The need to integrate freight and goods movement into the long range planning process has became increasingly evident over the past decade. The movement of goods and freight represents a $13 trillion industry in the United States, with over 20 billion tons of freight moved each year, a nearly 30% increase from the early 1990's. Numerous forecasts and projections produced by the Federal Highway Administration show the tonnage of freight moved throughout the country will increase 65% by 2020, placing a strain on the nation's transportation system.

As the demand for goods and services increases, the need for transporting these goods and services to customers increases. In addition, as consumer preferences and needs of goods and services change, the freight industry must respond to remain competitive. Today, the continuing trend of companies moving to reduce capital costs by minimizing inventories and providing just in time shipping has changed the dynamics of freight transportation.

Freight can be moved from origin to destination by truck, rail, barge, airplane, pipeline or a combination of modes. Trucking has the greatest range of accessibility since they can operate on most roads and are not set to a fixed route. Trucks are also able to transport smaller freight shipments, known as less than truckload shipments, at feasible costs.

Shipping freight by rail or barge becomes feasible if there is a large quantity of the same commodity destined for a common location, the commodity is being shipped over a distance greater than 500 miles, or if the size or weight of the commodity exceeds the limitations of trucking. Shipping freight by air is expensive and is typically only done when the commodity has a high value or requires next day delivery over a long distance such as parcels and mail. Pipelines can continuously transport liquid or gas commodities over a fixed route with little interruption and little man power.

In analyzing the movement of freight for the Knoxville Region, it is important to view the freight industry in two aspects. The first aspect concentrates on the Region's role in the national and international freight scene. This involves analyzing the movement of freight originating in, destined to, or passing through the Region.

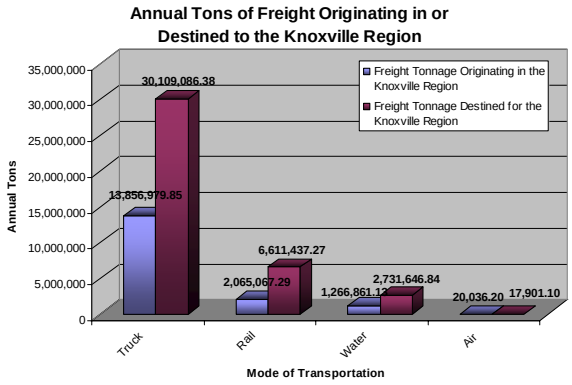
The second aspect, which is discussed in Chapter VI, involves analyzing the everyday movement of freight within the TPO Area, most commonly referred to as urban goods movement.

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 7.93%, 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%), with rail responsible for 8.7 million tons, (15.3%), barge responsible for 4 million tons (7.1%), and aircraft responsible for 40,000 tons (0.07%).

The following chart is a breakdown of the annual tons of freight originating in or destined to the Knoxville Region by mode of transportation.

Chart 8: Annual Tons of Freight Originating in or Destined to the Knoxville Region



There is almost twice as much freight tonnage destined for the Knoxville Region (39.4 million annual tons) than freight tonnage originating in the Region (17.2 million annual tons), making Knoxville more of a consumer market rather than an exporting market.

The origin of 74.7% (29.5 million tons) of the annual freight that is destined for the Knoxville Region originates in locations throughout Tennessee and the states that border Tennessee- Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia. Of that inbound freight, 75.2% (22.2 million tons) is coming just from within Tennessee. The destination of 68.4% (11.8 million tons) of the annual freight that originates in the Knoxville Region is destined for locations throughout Tennessee and the states that border Tennessee- Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia. Of that outbound freight, 72.3% (8.5 million tons) is destined for locations within Tennessee.

The following pie charts show where freight originating in the Region is destined for and where freight destined for the Region comes from.

Chart 9: Annual Tons of Freight Originating in the Knoxville Region by Destination

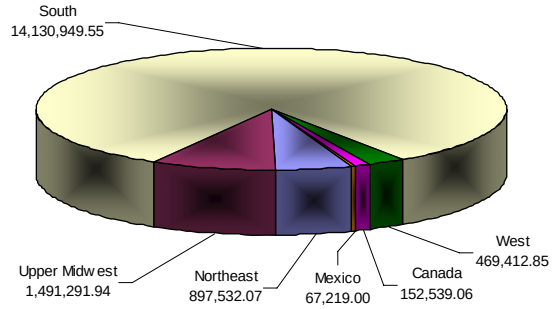
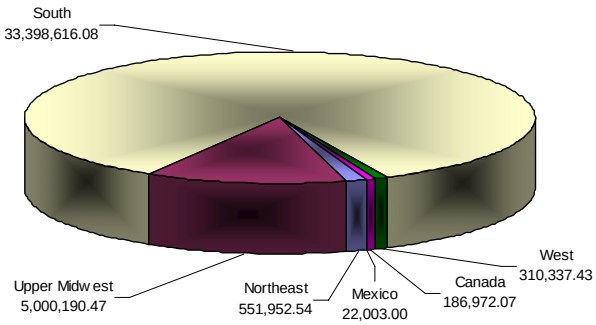


Chart 10: Annual Tons of Freight Destined for the Knoxville Region by Origin



The major commodities that originate in the Knoxville Region include aluminum products, concrete and cement, gravel and sand, miscellaneous field crops, metallic ores, motor vehicle parts or accessories, nonmetal minerals, and products from warehouse and distribution centers.

The major commodities that are destined for the Knoxville Region include aluminum ores, coal, concrete and cement, electrometallurgical products, grain, gravel and sand, metallic ores, nonmetal minerals, petroleum refining products, and products from warehouse and distribution centers.

Trucking

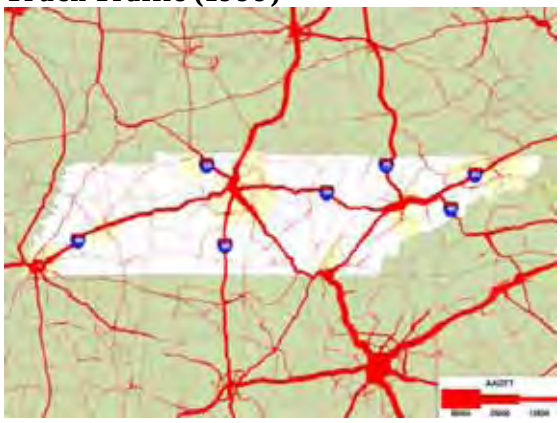
The trucking industry is solely responsible for handling 70% of the more than 20 billion tons of freight that is moved across the nation's transportation system annually. An

additional 18% of freight is handled by truck at some point during its shipment. Nationwide, vehicle miles traveled for heavy duty freight trucks has increased 90% 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. Due to its location along the national transportation system, a large volume of heavy duty truck traffic utilizes 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 either an origin or destination in the Knoxville Region, meaning 76.8% of the truck tonnage and 67.6% of the trucks that enter the Knoxville Region are passing through, meaning they do not have either an origin or destination in the Region.

The graphic below shows average daily truck traffic on interstates and major highways throughout the State. The thicker line weights indicate higher volumes of truck traffic.

Map 8: State of Tennessee Average Daily Truck Traffic (1999)



FHWA Office of Freight Operations

Trucks handle approximately 13.9 million tons, or 80.5% of the annual outbound freight, resulting in an estimated 2.1 million truck trips each year. About 30.1 million tons, or 76.3% of the inbound freight is transported by truck, resulting in nearly 2.0 million truck trips each year. Since Knoxville is a consumer market, generally trucks that deliver goods to the Region maximize their load capacity considerably greater than do trucks that originate in Knoxville or are on backhaul, as indicated by the relatively equal number of inbound and outbound truck trips.

The average trip length of a truck delivering freight is around 500 miles, or about the distance from Washington, D.C. to Knoxville. Due to the proximity, 89.2% of the freight going to or coming from locations throughout Tennessee and the states that border Tennessee- Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia, is transported on truck, resulting in approximately 3.4 million truck trips annually.

Map 9 shows annual tons of truck freight transported along highways throughout the Region. Map 10 shows the estimated daily truck trips on the Region's highways. Listed below is data on specific highways in the Region:

- Annually, approximately 44.7 million tons of freight is moved by truck on I-75 in Anderson County resulting in almost 3 million truck trips. This translates into a daily average of 123,000 tons of freight and 8,200 truck trips.
- Approximately 92.6 million tons of freight is moved by truck on I-81 in Hamblen County on a yearly basis resulting in about 5.5 million truck trips. This translates into a daily average of 254,000 tons of freight and 15,000 truck trips.

- Each year, approximately 138.9 million tons of freight is moved by truck on I-40/75 in West Knoxville, resulting in about 8.3 million truck trips. This translates into a daily average of 380,560 tons of freight and 22,740 truck trips.
- I-75 in Loudon County handles approximately 73.2 million tons of freight annually, resulting in 4.5 million truck trips. This translates into a daily average of 201,000 tons of freight and 12,400 truck trips.

There are fourteen parking areas designated for overnight heavy duty truck parking within the Knoxville Region, providing approximately 1,400 parking spaces. These truck stops also provide a nearly 125 combined diesel fueling bays for trucks. Truck stop electrification units have been installed by IdleAire at several parking spaces throughout the Region to encourage truck drivers to hook up to the alternative power supply rather than idling the truck.

There are over 100 trucking terminals located throughout the Knoxville Region. Along with several major warehouse/ distribution centers, parcel carriers, pipeline terminals, and local distributors. In addition, several major warehouse/ distribution centers such as Wal-mart, HT Hackney, and Lowes lie just outside the study area.

The Knoxville Region is situated on land that is rich with natural resources. Several quarries throughout the Region mine limestone, concrete aggregate, asphalt aggregate, sand, gravel, and coal. Several of these quarries are major generators of truck traffic with contractors continually picking up mined materials for construction.

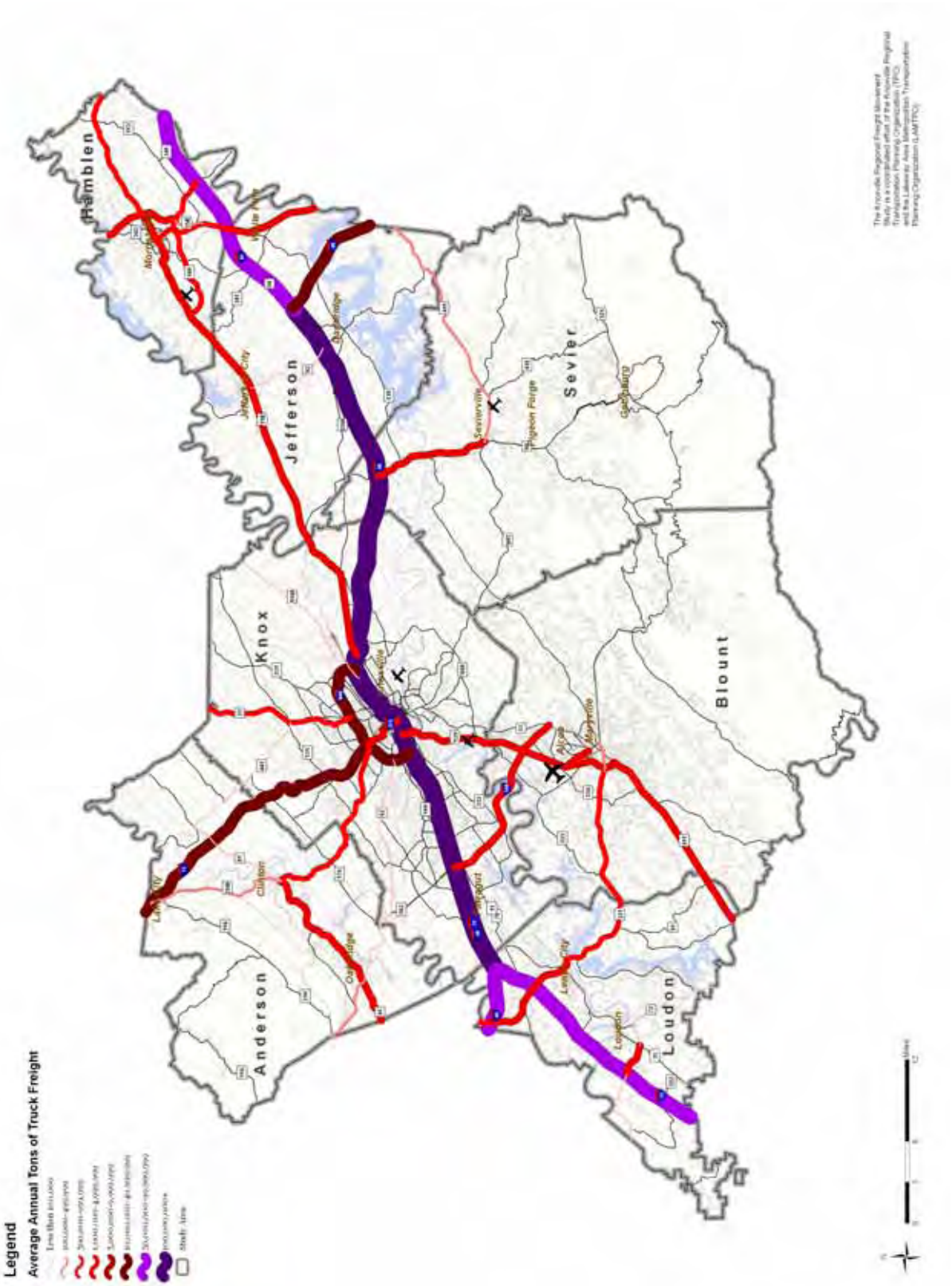
After evaluating the locations of industrial parks, truck generating businesses, talking with these businesses about their logistics operations, and through field studies, a truck activity map was developed. Truck activity centers and major trucking routes, shown on Map 11, were developed and designated as very high, high, medium high, and medium. The busiest truck activity centers are:

- Eagle Bend Industrial Park in Clinton;
- Blount County Industrial Park in Maryville;
- East Tennessee Valley Industrial District in Morristown
- Morristown Airport Industrial District in Morristown;
- SR 431 at the I-81 interchange in Jefferson County;
- SR 66 at the I-81 interchange in Jefferson County;
- Watt Road near the I-40/75 interchange in Knox County;
- Lovell Road near the I-40/75 interchange in the nearby industrial areas contained within Pellissippi Parkway, Lovell Road, and I-40/75 in Knox County;
- Forks of the River Industrial Park in Knox County;
- Middlebrook Tank Farm in Knoxville;
- Cluster of trucking terminals located along Texas Avenue in Knoxville; and,
- Blair Bend Industrial Park in Loudon County.

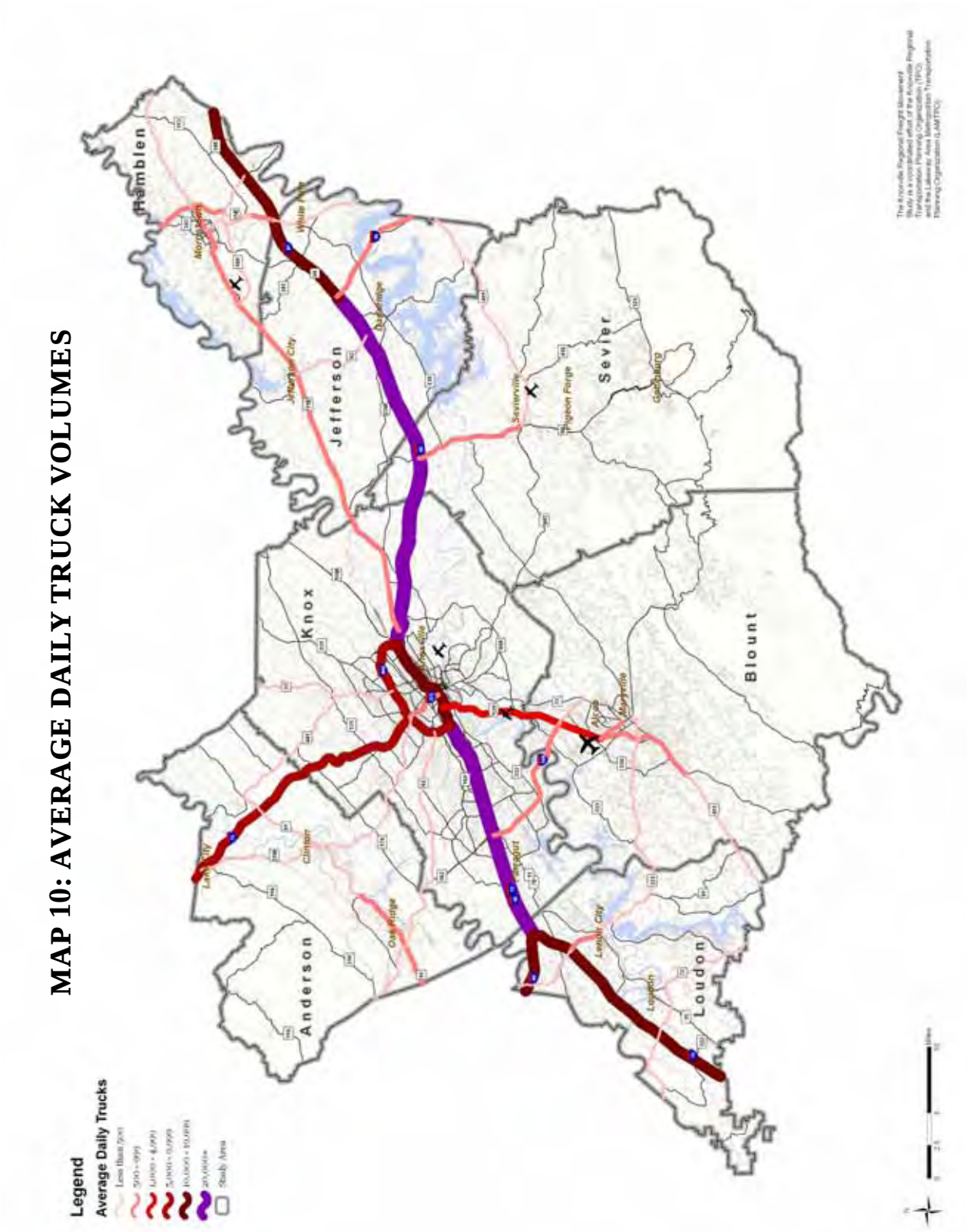
The busiest local truck routes are:

- Middlebrook Pike to Ed Shouse Drive to Western Avenue to I-640;
- Gov. John Sevier Highway to Strawberry Plains Pike to I-40;
- Alcoa Highway from Maryville to Knoxville; and,
- US 25E from I-81 into Kentucky.

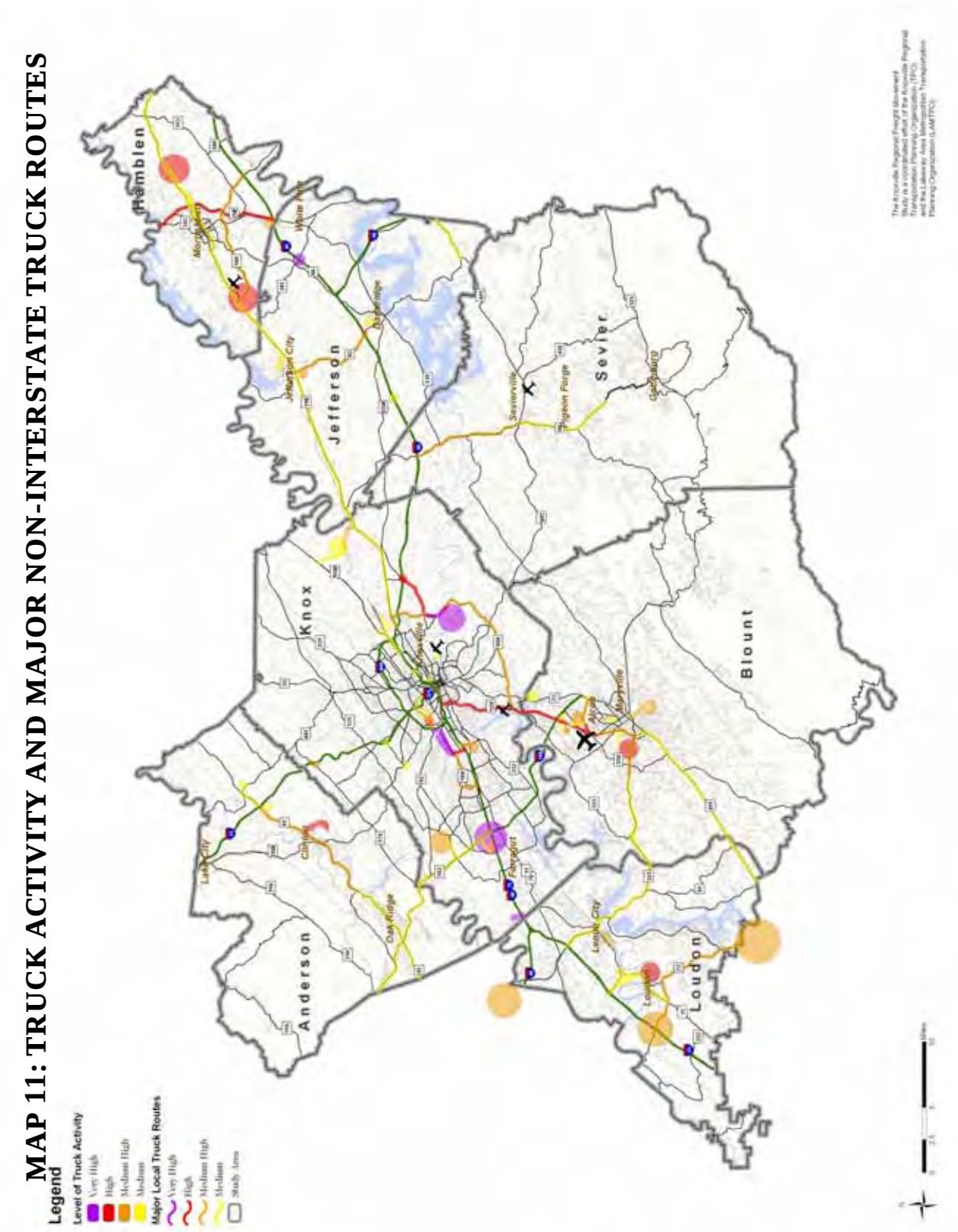
MAP 9: ANNUAL TONS OF TRUCK FREIGHT



MAP 10: AVERAGE DAILY TRUCK VOLUMES



MAP 11: TRUCK ACTIVITY AND MAJOR NON-INTERSTATE TRUCK ROUTES



Rail

Railroads once played a large role in the transportation and freight industries in Knoxville. The Coster Shop Yard in North Knoxville was once the primary switching yard for all major railroads that accessed the Region. With its role diminishing, rail traffic at the Coster Yard decreased to the point that the rail shop was closed in the 1990's, however, it has retained limited rail switching operations between Knoxville & Holston River Railroad trains and CSX and Norfolk Southern trains. Today, the majority of the Coster Shop Yard is being redeveloped into an industrial park.

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% of the freight traveling on railroads throughout the Region is passing through. Railroads handle approximately 2.1 million tons, or 12% of the annual outbound freight and about 6.6 million tons, or 16.8% 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. Norfolk Southern (NS) controls about 215 miles of railroad track throughout the Region that provide connections to Virginia and North Carolina to the northeast, through Jefferson City and Morristown, Middlesboro, KY and Jellico to the north, Chattanooga to the southwest, through Lenoir City and Loudon, Alcoa to the south, and to the main north-south line between Cincinnati and Chattanooga to the west, through Heiskell and Oliver Springs. The Norfolk Southern railroad network within the Region converges on the John Sevier Yard in East Knox County. There is a rail yard just north of Downtown Knoxville under the I-40/I-275 interchange that is used as a staging area for Norfolk Southern trains.

CSX Transportation controls about 76 miles of railroad track throughout the Region, most of which is part of a major north-south line that provides connections to Cincinnati and Louisville to the north and Chattanooga and Atlanta to the south. The CSX railroad network includes industrial spurs to Bull Run Steam Plant, Oak Ridge National Laboratory, and ALCOA, Inc. Minor switching operations of CSX trains occur at the TransFlo facility located alongside the University of Tennessee.

The Knoxville & Holston River Railroad Company operates 19.2 miles of railroad track that provides rail connections from the Forks of the River Industrial Park to Coster Yard, where rail cars are switched to CSX and Norfolk Southern trains.

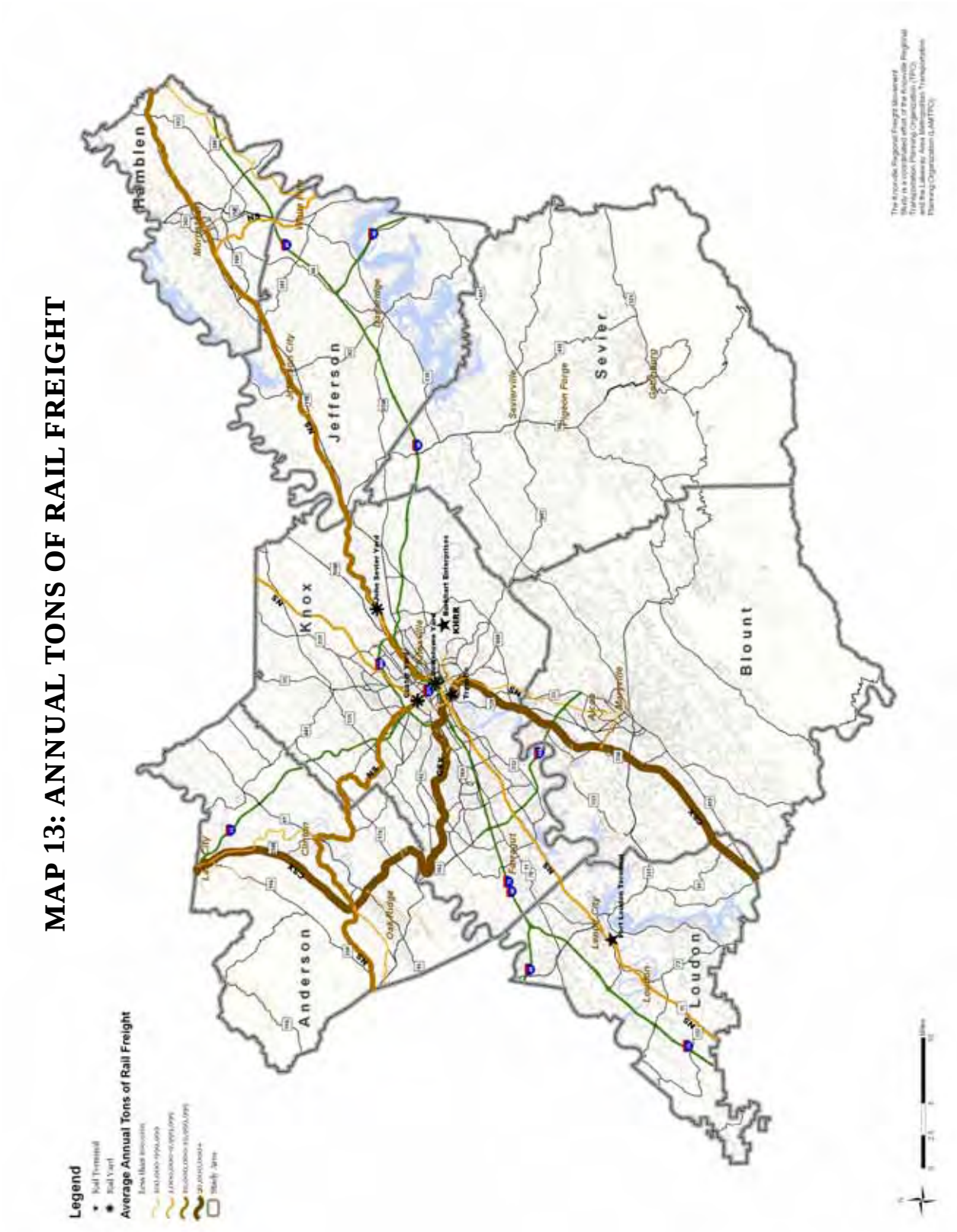
Burkhart Enterprises, Inc., Fort Loudoun Terminal Company, and TransFlo operate major rail terminals in the Knoxville Region that provides service to a range of customers. Burkhart, located near Forks of the River Industrial Park along the Tennessee River, handles bulk transloading between truck, rail, and barge. The site is serviced by the Knoxville & Holston River Railroad. The Fort Loudoun Terminal Company is located along the Tennessee River in Lenoir City. The Terminal is serviced by Norfolk Southern and also handles bulk transloading between truck, rail, and barge. TransFlo is located alongside the University of Tennessee and handles bulk transloading between truck and rail. The site is serviced by CSX. Bulk transloading facilities are equipped to handle the transferring of bulk commodities from rail to trucks or from trucks to rail and differ from intermodal freight facilities in that commodities are not moved in containers, the actual commodity must be transferred.

MAP 12: KNOXVILLE REGION RAIL FACILITIES

The following are major rail lines running throughout the Region. The average annual tonnage handled by rail is shown on Map 13 and the average daily trains are shown on Map 14.

- The major north-south rail movements for Norfolk Southern occur on their tracks to the east of the Region, through Harriman. All of Norfolk Southern's rail lines are engineered to handle freight train speeds of 50 mph.
- Norfolk Southern west-northeast line that runs through Knoxville and Morristown providing connections between the major north-south railroad line in Harriman and Virginia. The number of trains on this line varies from 11-20 in Anderson County to 21-30 in North Knox County to as many as 40 per day in East Knox, Jefferson, and Hamblen Counties. The freight handled along this corridor ranges from 10-20 million annual tons.
- A rail line splits off this line just west of Morristown providing connections to North Carolina through Cocke County. This line handles 6-10 trains per day and 1-10 million tons of freight annually.
- Another rail line splits off this North Carolina line and provides connections into Kingsport, handling 6-10 trains each day and less than 1 million tons annually.
- Norfolk Southern northeast-southwest line that runs from Knoxville to Chattanooga and Atlanta. Anywhere from 11-20 trains operated daily along this corridor handling 1-10 million tons of annual freight.
- Norfolk Southern operates two regional rail spurs, one to Jellico and another to Middlesboro, KY, that provide connections to the coal fields. The Jellico spur extends from Clinton north and handles 6-10 trains each day and less than a million annual tons.
- The Middlesboro spur extends through Northeast Knox County and handles 11-20 trains per day and 1-10 million tons each year.
- Norfolk Southern also operates an industrial spur to ALCOA, Inc that serves about 40-60 rail carloads on less than 6 trains per day. Less than 1 million tons of freight are moved along this spur each year.
- The only CSX rail corridor in the Region is the north-south line that runs through Knoxville and provides connections to Cincinnati to the north and Chattanooga and Atlanta to the south. This major corridor handles more than 30 trains each day and greater than 20 million tons of freight each year most of which are through trips handling coal, automobiles, intermodal containers, and increasingly more retail merchandise.
- CSX operates industrial spurs to Bull Run Stream Plant and Oak Ridge National Laboratory in Anderson County, the Middlebrook Tank Farm in Knox County and ALCOA, Inc in Blount County.
- The Knoxville & Holston River Railroad operates two daily round trips, transporting approximately 2,100 tons of freight annually between the Forks of the River Industrial Park and the Coster Yard.

MAP 13: ANNUAL TONS OF RAIL FREIGHT



MAP 14: AVERAGE DAILY TRAIN VOLUMES

Intermodal

Slightly more than 20 million of the 370 million tons, or 5.4%, 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.

Intermodal containers are classified as either Container on Flat Car (COFC), which are containers that can stacked on barges and rail flat cars and transferred to a truck trailer chassis, or Trailer on Flat Car (TOFC) in which the entire truck trailer with chassis attached is placed on a barge or rail flat car and delivered by truck.

The Surface Transportation Board (STB) defines an intermodal facility as a site consisting of tracks, lifting equipment, paved and/or unpaved areas, and a control point for the transfer of trailers and containers between rail, barge, and truck. Since there are no classified intermodal facilities in the Knoxville Region that handle container freight, none of the intermodal tonnage originates or is destined for the Region. Burkhart Enterprises, Fort Loudoun Terminal Company, and TransFlo are all bulk transfer facilities meaning commodities are moved between modes and not containers. The nearest intermodal facilities are in Nashville, Kingsport, Memphis, Atlanta, Georgetown, KY, or Huntsville, Al.

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 4.0 million tons of annual barge freight has an origin or destination in the Region. Barges handle approximately 1.3 million tons, or 7.4% of the annual outbound freight and about 2.7 million tons, or 6.9% of the inbound freight.

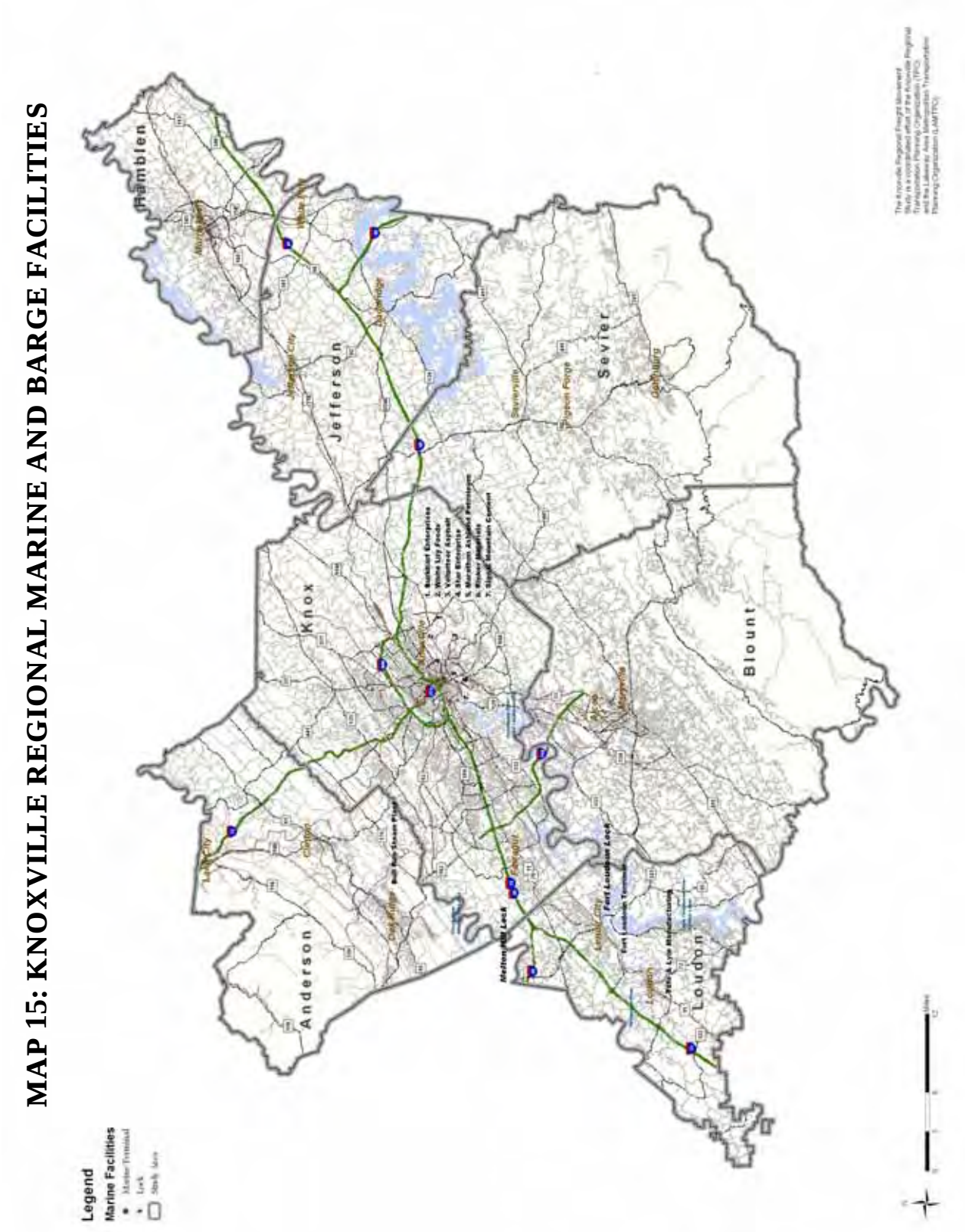
Fort Loudoun Lock is located in Lenoir City and has a barge capacity of one standard barge (195' by 35'), although the size of the Lock is 360' by 60', and takes about 45 minutes to complete an operation. About 550 barges passed through the Lock last year. The Little Tennessee River/ Tellico Lake is connected to the Tennessee River by a canal providing barge access to two major industrial parks in Monroe County.

Melton Hill Lock is located on the border of Loudon and Roane Counties and provides commercial navigation to the Clinch River through a 400' by 75' lock. Melton Hill Lock handles considerably less barge tonnage, 3,800 tons on 24 barges annually, however, allows for large pieces of equipment to be shipped to Oak Ridge National Laboratory Y-12 Plant and the Spallation Neutron Source Plant that cannot be shipped by another mode because of their size. The Lock also allows for coal and other large equipment to be shipped to the Bull Run Steam Plant in Anderson County. Since the Melton Hill Lock is closed to all non-essential traffic and is no longer staffed, the lock operator at Fort Loudoun Lock must operate it upon special request. Prior to the U.S. Corps of Engineers closing the

Lock in August of 2003, 91 barges utilized the lock.

There are twelve facilities in the Knoxville Region that contain active port facilities. Burkhart Enterprises, Volunteer Asphalt Company, White Lily Foods Company, Star Enterprise Corporation, Marathon Ashland Petroleum, Rinker Materials (operates two terminals), and Signal Mountain Cement Company maintain active river terminals in Knox County. Bull Run Steam Plant and Oak Ridge National Laboratory operate in Anderson County. Fort Loudoun Terminal Company and Tate & Lyle Manufacturing Map 15 identifies locks and port terminals in the Region.

MAP 15: KNOXVILLE REGIONAL MARINE AND BARGE FACILITIES



Air

In 2006, approximately 1.7 million passengers arrived or departed through McGhee Tyson Airport passenger terminals, 20% more than in 2003.

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. 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. About 4,000 arrival or departure operations at the Airport are airplanes dedicated to freight.

Air cargo has been the most dynamic growth sector of the air transportation industry since the 1980's. Nearly 40,000 tons of air freight is handled at McGhee Tyson Airport, with only 0.1% of that as mail. In 2003, about 30,000 tons of air freight was handled at the Airport, with air mail consisting of 3.0%. Table 6 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. In comparison, the Nashville International Airport handled approximately 20,000 tons of air cargo in 2006 and the Memphis International Airport, one of the largest air cargo hubs, handled over 3.5 million tons.

Table 6: Historic, Current, and Forecasted Air Cargo Operations at McGhee Tyson Airport (Tons)

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

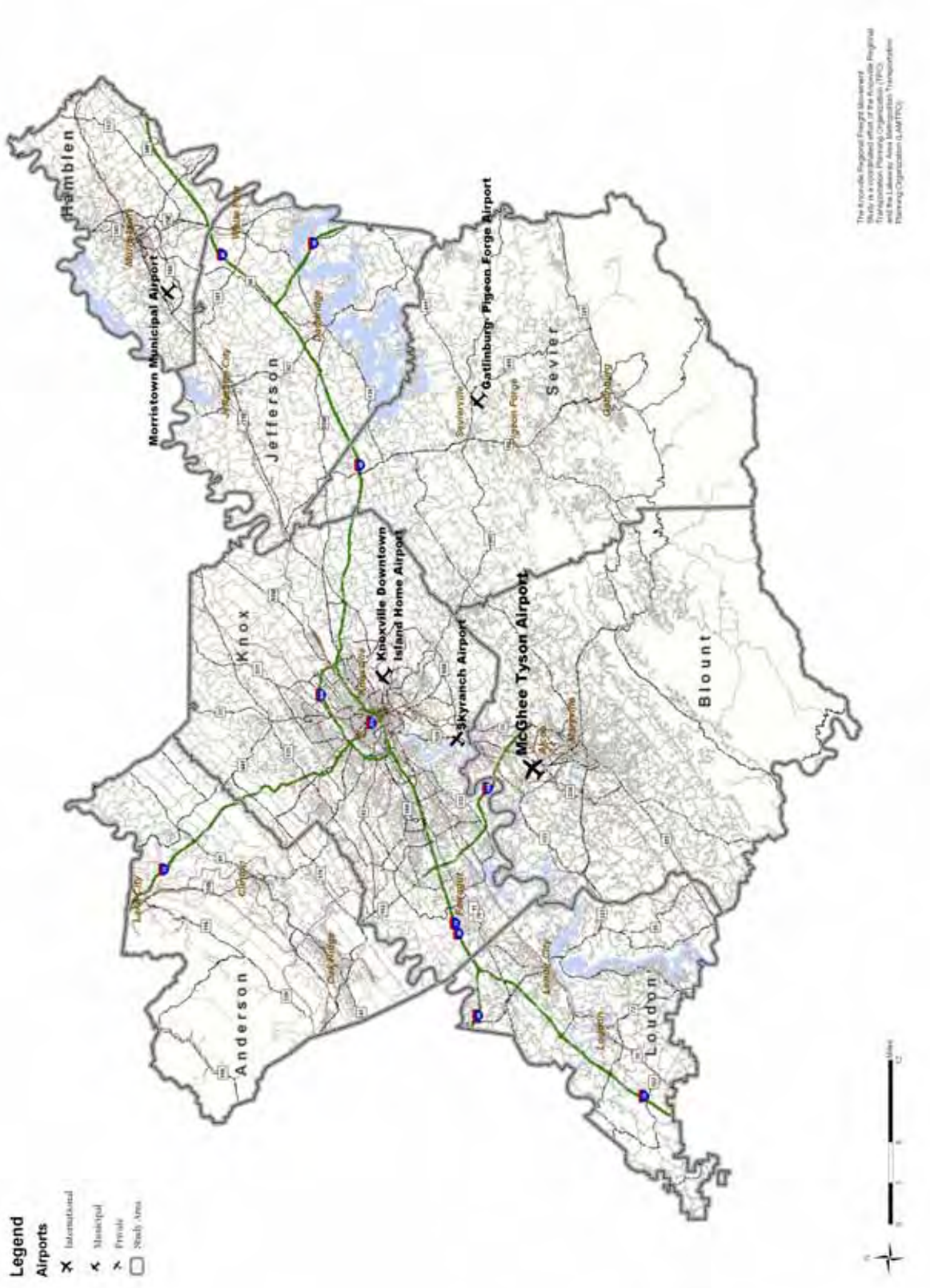
[1] Projections are from the McGhee Tyson Airport 2006 Master Plan

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. Skyranch Airport handled less than 5,000 aircraft operations each year. Map 16 shows the locations of airports throughout the Region.

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.

MAP 16: KNOXVILLE REGIONAL AIRPORTS



Existing or Committed Studies, Plans, Programs, and Projects

The Knoxville Regional Freight Movement Plan is currently under development, however several components have been completed and are included in this Plan. There are also several statewide, multi-state, and national studies and plans that address freight movement that impact the Region that were used to analyze freight trends and issues.

Knoxville Regional Freight Movement Plan

In understanding that a more proactive role must be undertaken locally to include freight and goods movement in their transportation planning activities, the Knoxville Regional Transportation Planning Organization, in coordination with the Lakeway Area Metropolitan Transportation Planning Organization, has undertaken the development of the Knoxville Region Freight Movement Plan.

The Knoxville Region Freight Movement Plan covers Anderson, Blount, Hamblen, Jefferson, Knox, Loudon, and Sevier Counties. This study area was chosen because a) these counties have representatives on either the TPO or LAMTPO technical committee and thus are included in transportation planning activities of one or both organizations, b) major transportation routes pass through these counties that handle large volumes of freight, c) several facilities that receive, ship, or handle freight are located throughout these counties, and d) freight commodity flow data is represented at the county level data so entire counties rather than urbanized areas were included. Excluded from this plan were Greene, Monroe, and Roane Counties which all border the study area and contain major transportation routes and freight generating facilities but limited data availability and a lack of authority of the MPO's to control transportation planning in these areas made them less attractive to incorporate, however, this plan does recognize their importance on regional freight issues.

The Knoxville Region Freight Movement Plan consists of two phases. Phase I will provide an understanding of existing freight characteristics throughout the Region including freight transportation corridors, major freight generating facilities, freight activity areas, commodity flow, and issues and problem areas that inhibit the movement of freight. Phase II will analyze future freight trends and their impact on the Knoxville Region, address the challenges and issues of freight movement identified by freight stakeholders, and establish strategies to improve and enhance the movement of freight.

The overall goal of the Knoxville Regional Freight Movement Plan is to *ensure an ongoing freight planning process that incorporates the interests of the freight community takes place as a part of the overall transportation planning activities of the Knoxville Regional Transportation Planning Organization (TPO) and Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) that results in the development of strategies that improve and enhance the movement of freight to, from, within, and through the Knoxville Region.*

Specific objectives of the Freight Movement Plan are:

1. Gain an understanding of the characteristics of freight movement to, from, within, and through the Knoxville Region;
2. Identify freight stakeholders and develop relationships with the freight community;
3. Understand the issues surrounding the movement of freight and research

ways to improve and enhance the movement of freight;

4. Identify additional sources of funding for freight related projects and planning;
5. Incorporate the interests of the freight community into the development of the Long Range Transportation Plan;
6. Develop criteria as part of the Transportation Improvement Program (TIP) project selection process that would evaluate projects based on their ability to improve freight movement;
7. Develop a Freight Advisory Committee to ensure an ongoing freight planning process occurs; and,
8. Identify future freight trends and establish strategies to improve and enhance the movement of freight.

Knoxville Regional Freight Movement Plan Survey

In order to gain a better understanding of the freight movement throughout the Knoxville Region, the Knoxville Regional Transportation Planning Organization in coordination with the Lakeway Area Metropolitan Transportation Planning Organization and Tennessee Trucking Association developed a survey and distributed it to 256 businesses related to truck load and less-than-truckload carriers, warehouse and distribution centers, local distributors, parcel couriers, and manufactures.

The survey's objective was to obtain information on the number of truck trips to/from a site, peak time for truck activity, general origins and destinations of the truck trips and the routes taken, issues and problems related to the movement of freight as well as potential improvements, location factors, and future freight movement trends. The survey also asked respondents to serve on the Knoxville Regional Freight Advisory Committee. As of December 2006, 47 surveys were returned, making for a 18.36% response rate. The results of the survey are available on the TPO's website at www.knoxtrans.org and will be published as part of the Freight Movement Plan.

Knoxville Regional Freight Advisory Committee

One of the objectives of the Knoxville Regional Freight Movement Plan is to develop a Knoxville Regional Freight Advisory Committee (FAC) made up of various stakeholders from carriers, shippers, receivers, institutions, government agencies, planning and engineering departments, terminal operators, economic development agencies, and chambers of commerce to improve our relationship with the freight community, gain an understanding of the freight industry in the Region, and ensure that the interests of the freight community are well represented in the transportation planning process. The input from the Freight Advisory Committee will aid in the development of the Knoxville Regional Freight Movement Plan, the Knoxville Regional Long Range Transportation Plan, and the Transportation Improvement Program.

The Knoxville Regional Freight Advisory Committee held its first meeting on Tuesday, July 25, 2006 at the National Transportation Research Center. A total of 27 attendees representing shippers, carriers, professional associations, education institutions, terminal operators, public agencies, and economic development agencies discussed issues related to the movement of freight in the Knoxville Region and brainstormed about what the future of freight transportation could be.

McGhee Tyson Airport Master Plan

Locally, the McGhee Tyson Airport Master Plan, completed in 2006, identifies plans for airport facility improvements and expansion,

including improving ground transportation access to air cargo and military facilities, adding capacity to air cargo facilities, constructing a third parallel runway, and potential development of land.

I-81 Corridor Study

As our nation's highways become increasingly congested with passenger and freight traffic, the demands for increased highway capacity are placing great monetary demands on the government. Many areas have begun studies that look at reestablishing rail corridors to divert freight and passenger traffic from highways to rail. The Virginia Department of Transportation is studying the I-81 corridor, identifying deficiencies and developing potential solutions to improve the flow of people and goods along the I-81 corridor. The primary solutions that have warranted further study include improvements to certain congested sections of I-81, adding capacity in the form of additional travel lanes or dedicated truck toll lanes, and/or diverting truck traffic to rail. The study has garnered the attention of nearby states, including Tennessee, and study of the entire multi-state I-81 corridor has gained some strength and has been included in the U.S. Department of Transportation Corridors of the Future Program.

Tennessee Statewide Rail Plan

The Tennessee Statewide Rail Plan, developed by TDOT, evaluates the cost effectiveness of upgrading the railroad system throughout the State to include increased rail freight traffic and potential passenger rail service. The rail corridors studied include Memphis to Nashville, Nashville to Knoxville, Nashville to Chattanooga, Knoxville to Chattanooga, and Knoxville to Tri-Cities. The Nashville to Knoxville corridor is critical in establishing a statewide network and involves reestablishing a rail link through the Cumberland Plateau and upgrading the Nashville and Eastern Railroad (NERR) from Nashville to Monterey in Putnam County. The Knoxville to Chattanooga corridor doesn't serve a large market but has the potential to connect to passenger rail service in Atlanta. The Knoxville to Tri-Cities corridor has the potential to link the State with plans proposed in the I-81 Corridor Study to move truck traffic to rail. This potentially creates a much larger and more feasible network that allows a diversion of freight traffic from truck to rail. The link to the Tri-Cities also provides a connection to the Trans Dominion passenger rail line proposed for Virginia.

Freight Analysis Framework

In 2002, the Federal Highway Administration developed the Freight Analysis Framework (FAF) which integrates data from a variety of sources to estimate commodity flows and related freight transportation activity among states, regions, and major international gateways. The FAF provides freight forecasts for commodity flow and truck movements for interstates and other major roads across the country through the year 2020. In 2005, the FAF was updated but Knoxville was not one of the metropolitan areas reevaluated.

Reebie Transearch® Data

In 2003, the Tennessee Department of Transportation purchased Transearch® freight commodity flow data from Reebie Associates. This provides a comprehensive commodity flow data set, including origin and destination, for nationwide freight trips that are moved by truck, rail, water, or air and use segments of the transportation system in Tennessee.

Other Plans and Programs

There are several other plans and programs developed by TDOT that address the statewide movement of freight. The Shortline Rail Program allows many rural counties to receive and transport rail freight

by providing connections to the national rail system. The Statewide Airport Systems Plan identifies the economic development opportunities for Tennessee's airports. That plan highlights potential projects that address air cargo activities. In its development of the Statewide Long Range Multi-Modal Transportation Plan, TDOT will include, in a single document, the planning for highways, rail, maritime, and air transportation along with other modes. TDOT is also in the process of hiring consultants to conduct an I-40/81 Corridor Study and a statewide freight plan.

The passage of SAFETEA-LU included several programs that provide funding for the improvement of freight movement. The Freight Intermodal Distribution Pilot Grant Program provides funding to states to develop projects that aim to reduce congestion in/out of intermodal ports and inland distribution centers ($30 million over 5 years).

The Truck Parking Facilities Program addresses the shortage of truck parking and includes funds for the construction of new parking facilities and modifying existing facilities. ($25 million over 4 years). The Freight Planning and Capacity Building Program allows for educational opportunities, purchase of data, public-private relationship building, and peer-to-peer exchanges ($3.5 million over 4 years).

The Transportation Infrastructure Finance and Innovation Act (TIFIA) was expanded to include freight rail facilities and intermodal facilities that provide a public benefit to highway users ($610 million over 5 years).

The Capital Grants for Rail Line Relocation Projects allows for local rail line relocation and improvement projects resulting in improved vehicular traffic flow and economic development ($1.4 billion over 4 years).

The National Corridor Infrastructure Improvement Program has grants available for projects of national significance to promote economic development and trade. The funds can be used to connect existing highway system segments, serve increasing freight volume, and reduce congestion and travel time ($1.948 billion over 5 years).

Funding is also set aside for idle reducing facilities located within highway rights-of-way and for the elimination of rail-highway crossings which improve safety and reduce congestion for both the railroad and highway.

Issues

The issues surrounding the movement of freight will continue to escalate over the next decade. Each mode of freight transportation experiences different issues and will face unique challenges but the common theme throughout the freight industry will be added pressure to provide reliable and timely freight transportation for goods at the lowest possible cost.

Many of the challenges faced by the freight industry are associated with the transportation system. As the volume of freight increases, issues surrounding capacity, congestion, system operations, safety, security, and the environment will also intensify. Under ISTEA, TEA-21, and now SAFETEA-LU, freight and goods movement began to be recognized as part of the overall transportation system and projects to improve the freight transportation system could be identified for federal funding. The freight industry is expected to experience increased operating costs due to higher fuel prices, increasing insurance premiums, and heightened efforts to improve air quality.

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The following issues and challenges were submitted with survey responses:

a. Need for updated construction information;

b. Traffic congestion;

c. Need for restricted delivery times in urban areas;

d. Left lane truck restrictions;

e. Parking areas too close to loading docks;

f. Turning radius at Wilbanks Road and Callahan Drive;

g. Traffic light coordination;

h. Congestion on Middlebrook Pike;

i. Bottlenecks on routes leading to interstates;

j. Locks between Knoxville and Chattanooga need reconstruction;

k. Shortage of truck drivers;

l. Lack of flat bed truck carriers;

m. Ramp from Alcoa Highway to I-140 north; and,

n. Rising diesel fuel prices.

The Freight Advisory Committee, during its first meeting on July 25, 2006, discussed the current state of freight transportation in the Knoxville Region and identified several issues and challenges that impact the movement of freight. They are as follows:

a. The volume of through trucks, especially on I-40 in downtown Knoxville;

b. The result the increased cost of asphalt and its transport may have on developing cost estimates for road projects;

c. Questions about whether pavement can continue to withstand the increased wear and tear resulting from additional truck traffic;

d. Congestion around truck stops in urbanized areas- mix of truck traffic and commuter traffic, especially at I-640/ Western Ave, I-40/75 at Lovell Road, I-40/75 at Watt Road, and I-81 at US 25E;

e. Availability and supply of diesel fuel. Existing pipelines are operating at capacity and may not be able to handle increased growth in East Tennessee;

f. Questions surrounding the new 2007 engine standards;

g. The impact of companies potentially moving towards accepting deliveries at off-peak hours or carriers looking to offer variable pricing based on time of day delivery;

h. Shortage of truck driver labor;

i. There may not be enough rail or intermodal traffic in the Knoxville Region to support a public intermodal facility;

j. If intermodal rail traffic increases, several bridges in the Region would require rebuilding to allow for

sufficient clearance of double stacked container rail cars;

k. Questions surrounding the feasibility of Norfolk Southern or CSX to open more rail capacity for Knoxville freight;

l. Truck deliveries to older urban areas can be difficult (loading/ unloading areas, minimal turning radii, and low overhead wires);

m. The decentralization of distribution centers to more rural locations along the interstate and the impact on the rural road system;

n. The majority of truck traffic on Tennessee Interstatess is through traffic, however, Tennesseans are primarily paying the cost of improvements for out-of-state users;

o. Any rail plan needs to be multi-state. The Memphis-Bristol Rail Plan won't be feasible if rail isn't increased in neighboring states; and,

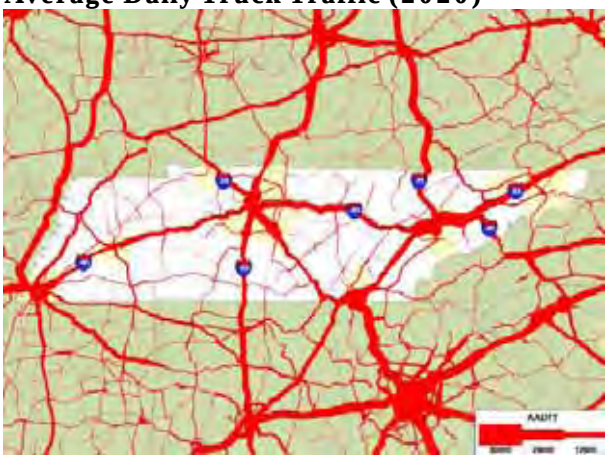
p. Industrial parks need to be placed near interstate interchange locations or along roads with good access to the interstate to maximize their attractiveness.

The following issues relate to specific modes of transportation throughout the Knoxville Region and were derived from the FHWA Freight Analysis Framework, the 2005-2030 Knoxville Regional Long Range Transportation Plan comment process, comments from officials with TPO and LAMTPO member jurisdictions, communications and individual visits with freight stakeholders, and through general freight related meetings.

Trucking

Since 1980, vehicle miles traveled for trucks nationwide has increased 90% while the number of lane miles of public roads has only increased by 4%. Truck vehicle miles traveled are expected to continue increasing 3% annually through 2020. Map 12 shows projected average daily truck traffic on interstates and major highways throughout the State in the year 2020. The thicker line weights indicate higher volumes of truck traffic. Considerable truck traffic increases are expected along the Interstate system, particularly near urban areas.

Map 17: State of Tennessee Projected Average Daily Truck Traffic (2020)



FHWA Office of Freight Operations

The additional truck traffic combined with the growth in commuter travel has worsened congestion, especially in urban areas, and has exacerbated conflicts between freight and passengers.

The section of I-40 through Downtown Knoxville is an area of safety concern. The highway narrows to two lanes in each direction and numerous mergers, some with limited sight distance, create additional conflicts between trucks and passenger vehicles. There are many other highway on/off ramps along I-275 and I-75 that have limited accel or decel distances, creating safety concerns. The SmartFix40 project currently underway addresses these safety issues and will result in the widening of I-40 through downtown and an improved interchange at James White Parkway. The project has been expanded to improved

interchanges along I-275 and to widen I-640 at the I-275/I-75 interchange in anticipation of the temporary closure of I-40 downtown during construction.

The high volume of truck traffic on area roadways reduces the longevity of the pavement and has increased maintenance costs of state and local governments. The area around the I-40/75, Watt Road interchange consists of numerous truck stop facilities. The high volume of truck movements in the area has lead to deficiencies in the pavement of the on/off ramps and required recent maintenance to upgrade the ramps. The truck stops also generate enough truck traffic that local residents have expressed difficulty in maneuvering passenger vehicles around the trucks.

The geometric design of transportation systems can impact the ability to move freight and limit capacity. A number of the roads that provide access to industrial areas or act as trucking routes are narrow, two lane roads where oncoming traffic may conflict with truck traffic. Many of these roads also contain horizontal and vertical curves that have limited sight distance. These roads are suitable for handling residential traffic but were not constructed to handle high volumes of truck traffic.

The local delivery of urban goods is often hindered by a lack of adequate off street loading and unloading facilities. In many instances, delivery trucks must block a travel lane or load and unload from the sidewalk, blocking pedestrian access. Minimum pavement width and turning radii further impede the ability to operate delivery trucks throughout older urban areas.

Rail

Railroads for the most part do not experience delay in the form of congestion due to the amount of trains that operate on the track but rather due to capacity constraints. The fact that most of the Norfolk Southern and CSX rail lines in the Region are single track puts a hindrance on the capacity of the railroads. Single tracks can't handle dual directional trains at the same time and must clear the track, either by switching track or waiting in a rail yard for oncoming trains or other conflicting trains to complete their route.

The rail freight industry is required by the federal government to allow passenger rail the right-of-way over their tracks. Therefore if a passenger train is scheduled to use a section of track, that track can not be used for freight transport until the passenger train has cleared. Since there is no passenger train service in the Region, this is not a local problem, however, a train may be held up on a local section of track waiting for passenger train service elsewhere.

The majority of the railroad system is dated and was engineered for lower train speeds. Grade and other topographic challenges also impact the speed of trains. A through truss bridge in Del Rio, Cocke County would need bracing modifications to make it compatible for double stacking intermodal trains. Due to the grade constraints, the CSX rail line over Jellico Mountain has a capacity of about one train per hour. With about 30 trains operating daily on the CSX line, there is no excess capacity for additional trains.

There is an existing gap in the railroad network between Knoxville and Nashville that drastically limits rail movements to and from the west. During the 1960's, a 31 mile section of railroad between Monterey in Putnam County and Crab Orchard in Cumberland County was removed following the bankruptcy of the Tennessee Central Railroad. This missing link decreases the feasibility to connect passengers and freight by rail to larger economic markets like

Memphis and Nashville because of the increased distances and travel times needed to make the connection. Trains traveling between Nashville and Knoxville must either go south through Chattanooga or north through Kentucky.

Statewide, freight traffic on short line railroads is expected to increase from 2002 levels 48% by 2020. As rail freight volumes continue to increase, Class I railroads will begin upgrading railroads and changing rail equipment to handle heavier rail cars. This will place a strain on short line infrastructure that will not be equipped to handle the new railroad equipment and costs to upgrade will likely go beyond the budgets of short line railroads.

One of the main safety issues involving railroads are the numerous at-grade rail crossings throughout the Region, many of which involve major rail lines crossing major arterials and collectors. At grade rail crossings also increases maintenance costs for railroad companies. Unlike the street and highway system, the system of railroads is primarily in private ownership, meaning the cost of upgrade and increased capacity relies heavily on the railroad industry.

Intermodal

Often, a business or industry ships freight over a distance that is cost effective for rail use, however, the majority of freight relies on truck transportation for secondary movements to or from a rail facility. The rise of intermodal transportation facilitates this movement of freight and goods between rail and truck. Since there is not an intermodal facility in the Knoxville Region, intermodal freight must be trucked to or from an intermodal facility in a nearby city, making it more feasible and cost effective to use truck transportation for the entire length of the trip. Diverting freight from trucks to rail will be difficult without the existence of an intermodal facility in the Region. If intermodal rail freight traffic were to increase in the Region, a through truss bridge in Del Rio, Cocke County would need modifications to make it compatible for double stacked intermodal container trains.

Maritime

The barge industry within the Knoxville Region experiences capacity constraints at Fort Loudoun Lock. The Lock has the capacity to handle one barge and takes about 45 minutes to complete an operation. There has been deposition of sediment along parts of the Tennessee River that has narrowed the channel width and impacted the draft depth.

Shortly after its completion, the Chickamauga Lock, located north of Chattanooga, was discovered to be experiencing structural deficiencies. Temporary repairs were made to the Lock that will allow it to remain in operation through 2010 and partial funding has been approved through a Congressional Earmark to replace the Lock. There had been some discussion about permanently closing the Lock, thus shutting off commercial navigability to the Region from the remainder of the Tennessee River System.

Air

The Tennessee State Airport System Plan forecasts that by 2010, aircraft operations at these airports will increase to the following levels: Gatlinburg/ Pigeon Forge Airport, 70,758 operations and Knoxville Downtown Island Airport, 21,150 operations. The air cargo activity at the Gatlinburg/ Pigeon Forge Airport is expected to increase slightly over the same period to 92 tons annually.

Air cargo capacity at McGhee Tyson Airport is constrained by the limited availability of new air cargo facilities. Currently, existing apron space at the Airport is nearing its capacity during peak operating hours, which

for freight often occurs during the nighttime hours.

The growth of the air cargo industry does not solely rely on the facilities present at the Airport. The availability and efficiency of the ground transportation network serves just as an important role in distributing air cargo from Airport facilities to their destination, which can be up to 100 miles from McGhee Tyson Airport. The McGhee Tyson Airport air cargo facilities are directly accessible to Airbase Road, which intersects with Alcoa Highway at an at-grade, unsignalized intersection. Trucks are not permitted to use Wrights Ferry Road to Topside Road to access I-140, however smaller delivery vans are exempt from this probation. There are deficiencies with both routes and improvements are needed that would provide safer, easier, and more efficient access to the Interstate system.

Pipeline

The petroleum tanks located at the Middlebrook Tank Farm are operating near full capacity. There is demand for additional tanks to store greater volumes of petroleum, however, land is limited and the cost is far greater than the benefit. There is a significant amount of truck traffic generated by the petroleum terminals located at the Tank Farm that adds to the congestion of Middlebrook Pike and the Ed Shouse Drive/Western Ave/ I-640 area.

Objectives and Proposed Actions

The TPO will continue to coordinate meetings of the Knoxville Freight Advisory Committee and complete 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-40/81 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.

A study done by Wendell Cox Consultancy concludes that if by 2025, 25% 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, Volatile Organic Compounds and Nitrogen Oxide) would be reduced by 900,000 tons.

The TPO will study the feasibility of developing an intermodal facility in the Region and identify funding resources available.

Programmed and Planned Projects

There are many highway projects identified in Tables 7, 8, and 9 that will have an impact the regional movement of freight. These projects include the construction of an airport access road between McGhee Tyson Airport and I-140, construction of the Knoxville Regional Parkway (SR 475), improvements to the I-75 interchanges with Merchant Road, Callahan Road, Emory

Road, and Raccoon Valley Road, widening I-40/75 from the Loudon County line to Pellissippi Parkway from 6 to 8 lanes, and widening I-75 from Emory Road to the Anderson County line from 4 to 6 lanes.

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.

Conclusion

Due to its location, access, and the presence of numerous freight operations, the Knoxville Region is a prime location for the development of the freight industry as well as for businesses and industries that rely on freight shipping and receiving, transfer of freight, or ability to deliver just in time services. The development of the Knoxville Regional Freight Movement Plan will provide a snapshot of current freight activities in the area as well as offer solutions to improving freight movement and enhancing the region's role in the freight transportation economy.

Table 7 lists highway projects identified in this Plan that are within the Knoxville Region but lie outside of the TPO Planning Area. Further information on each project can be found in Chapter V and further financial analysis can be found in Chapter XIV. Table 8 lists highway projects identified in this Plan that lie within the TPO Planning Area. Further information on each project can be found in Chapter VI and further financial analysis can be found in Chapter XIV. Projects throughout the Knoxville Region earmarked by Congress for federal funds under SAFETEA-LU are listed in Table 9.

In Tables 7, 8, and 9, project descriptions are defined as follows:

1. Construct new roadway (any number of lanes)- Non-exempt project, entails constructing a roadway on a new location.
2. 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. Multi-lane 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.
3. 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.
4. 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.
5. Add median- Exempt project, entails the addition of a non-traversable median to improve safety of an undivided (typically multi-lane) roadway.
6. Add center turn lane- Exempt project, 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.
7. 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.
8. Modify interchange- Exempt project, entails ramp modifications such as realignment, relocation, etc.

9. Resurfacing- Exempt project, entails repaving a roadway.
10. Install traffic signal- Exempt project, entails the addition of a 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.
11. Signal coordination- Can be either exempt or non-exempt depending on scope, entails retiming traffic signals to optimize traffic flow.
12. LED signal head replacements- Exempt project, entails the replacement of existing traffic signal faces with light emitting diodes (LED), which improve visibility and reduce energy consumption and maintenance costs.
13. Install Street Lighting – Exempt Project, Entails the addition of overhead lighting to enhance night time visibility and improve safety.

Table 7: Long Range Transportation Plan List of Regional Highway Projects

								LRTP Goals Addressed										
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
1	Collier Drive	Sevier County	Rainbow Rd to Middle Creek Rd	Construct new 4-lane road w/ center turn lane	2009	$2,184,050	Non-exempt		√		√		√	√	√			
2	I-81 Interchange	Jefferson County	Interchange w/ SR 341	Modify interchange	2009	$5,132,518	Exempt	√			√		√	√	√			
3	Old Knoxville Highway	Sevierville	Boyds Creek Hwy to US 411/441	Widen 2-lane to 4-lane w/ center turn lane	2009	Local bond	Non-exempt		√				√	√	√			
4	SR 113	White Pine	Intersection w/ SR 32 (US 25E)	Install traffic signal	2009	$54,601	Exempt	√	√				√	√	√			
5	SR 454 (Birds Creek Road)	Sevier County	Glade Rd to SR 416	Reconstruct 2-lane road	2009	$7,316,568	Exempt	√					√	√	√			
6	SR 66	Sevier County	North of Nichols St to SR 338 (Boyds Creek Hwy)	Widen 4-lane to 6-lane	2009	$16,052,768	Non-exempt		√			√	√	√	√		√	
7	SR 66	Sevier County	SR 338 to I-40	Widen 4-lane to 6-lane	2009	$29,593,878	Non-exempt		√			√	√	√	√		√	
9	SR 92	Dandridge	Bridge in Dandridge	Replace Bridge	2009		Exempt	√					√	√	√			
10	SR 92	Jefferson City	US 11E to Hinchey Hollow Rd	Install street lighting	2009	$32,761	Exempt	√						√	√			
11	SR 92	Jefferson City	Intersection at Russell Ave	Install traffic signal	2009	$163,804	Exempt	√	√				√	√	√			
12	SR 95- Oak Ridge Turnpike	Oak Ridge	Westover Dr to SR 62- Illinois Ave	Add median to 4-lane section	2009	$18,346,020	Exempt	√					√	√	√			√
13	Thomas Road Connector	Pigeon Forge	Teaster Lane to Middle Creek Rd at McCarter Hollow Rd	Construct new 4-lane road	2009	$16,380,375	Non-exempt		√		√	√	√	√	√			
14	US 11E	Jefferson City	Intersection w/ George Ave	Intersection improvements	2009	$76,442	Exempt	√	√				√	√	√			√

15	US 11E	Jefferson City	Intersection w/ Russell Ave	Intersection improvements	2009	$65,522	Exempt	√	√				√	√	√			√
16	US 11E	Jefferson City	SR 92 to Morristown City Limit	Install street lighting	2009	$49,141	Exempt	√					√	√	√			√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
16a	US 11E	Jefferson City	All signalized intersections	LED signal head replacements	2009	$120,123	Exempt	√					√	√	√			√
17	US 11E	Jefferson City	Intersection w/ New Hospital	Install traffic signal	2009	$163,804	Exempt	√	√				√	√	√			√
18	US 321 (SR 73)	Loudon County	East of Tennessee River to SR 95	Widen 2-lane to 4-lane	2009	$15,069,945	Non-exempt		√			√	√	√	√			
19	US 321 (SR 73)	Sevier County	Buckhorn Rd to east of Pittman Center	Widen 2-lane to 4-lane	2009	$16,926,388	Non-exempt		√			√	√	√	√			
20	US 411 (SR 73)	Sevier County	Sims Rd to Grapevine Hollow Rd	Widen 2-lane to 4-lane	2009	$38,111,673	Non-exempt		√			√	√	√	√			
21	US 411/ US 25W (SR 35)	Jefferson County	Grapevine Hollow Rd to 4-lane section of SR 9	Widen 2-lane to 4-lane	2009	$27,300,625	Non-exempt		√			√	√	√	√			
22	US 11E	Jefferson County	Intersection at SR 139	Improve intersection- add turn lane	2009		Exempt	√	√	√	√		√	√	√			
188*	Black Oak Road	Jefferson City	Sizer Rd to Rhoten Rd	Resurfacing	2009	$81,902	Exempt	√					√	√	√			√
189*	Agricultural Park Boulevard	White Pine	US 25E to Witts Foundary Rd	Resurfacing	2009	$80,888	Exempt	√					√	√	√			
190*	North Sizer Road	Jefferson City	Black Oak Rd to Rhoten Rd	Resurfacing	2009	$22,461	Exempt	√					√	√	√			√
191*	US 11E (SR 34)	Jefferson City	SR 92S to Odyssey Rd	Signal Coordination	2009	$125,583	Exempt	√					√	√	√			√
610*	SR 29	Roane County	Pine Ridge Rd to SR 61	Widen 2-lane to 4-lane	2009	$125,583	Non-exempt		√				√	√	√			
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
8*	SR 66 Relocation	Jefferson County	North of I-81 at SR 341 to SR 160	Construct new 4-lane road w/ center turn lane	2014	$44,000,000	Non-exempt		√		√	√	√	√	√			
23	Middle Creek Road Extension	Sevierville	US 411 to SR 66	Construct new 4-lane road	2014	Local bond	Non-exempt				√		√	√	√			
24	SR 32 (US 25E)	White Pine	I-81 interchange to SR 341	Install street lighting	2014	$66,562	Exempt	√					√	√	√			
25	SR 72	Loudon County	Pond Creek Bridge to Stockton Valley Rd	Widen 2-lane to 4-lane	2014	$13,312,386	Non-exempt		√				√	√	√			
26	SR 72	Loudon County	US 11 to Vonore Rd	Widen 2-lane to 4-lane	2014	$12,646,766	Non-exempt		√				√	√	√			
27	SR 92	Jefferson City	Near Cherokee Dam	Install street lighting	2014	$33,281	Exempt	√					√	√	√			√
28	Sugar Limb Road	Loudon	US 11 to I-75	Widen 2-lane to 4-lane	2014	$13,978,005	Non-exempt		√				√	√	√			
29	US 11 (SR 2)	Loudon County	Tennessee River to Lenoir City Limit	Widen 2-lane to 4-lane	2014	$25,293,533	Non-exempt		√			√	√	√	√		√	
192*	Maple Street	White Pine	SR 113 to Pebble Ln	Resurfacing	2014	$62,704	Exempt	√					√	√	√			
193*	Witt Foundary Road	White Pine	Hardy Rd to Hamblen County Line	Resurfacing	2014	$45,395	Exempt	√					√	√	√			
194*	East College Street	Jefferson City	Russell Ave to Branner Ave	Resurfacing	2014	$7,690	Exempt	√					√	√	√			√
195*	George Avenue	Jefferson City	US 11E (SR 34) to SR 92	Resurfacing	2014	$53,451	Exempt	√					√	√	√			√
196*	George Avenue	Jefferson City	College St to US 11E (SR 34)	Resurfacing	2014	$47,602	Exempt	√					√	√	√			√
197*	Hinchey Hollow Road	Jefferson City	SR 92 to Jefferson City Line	Resurfacing	2014	$37,744	Exempt	√					√	√	√			√
198*	Mountcastle Street	Jefferson City	Old AJ Hwy to Russell Ave	Resurfacing	2014	$92,203	Exempt	√					√	√	√			√

199*	Overlook Road	Jefferson City	Universal St to Old AJ Hwy	Resurfacing	2014	$46,972	Exempt	√					√	√	√			√
600*	Rocktown Road	Jefferson City	US 11E (SR 34) to Railroad	Resurfacing	2014	$9,152	Exempt	√					√	√	√			√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
601*	Universal Street	Jefferson City	S Sizer Ave to Leon Dr	Resurfacing	2014	$18,632	Exempt	√					√	√	√			√
602*	US 11E (SR 34)	Jefferson City	Intersection at Pearl Ave and at Harrington St	Intersection improvement- add left turn lanes	2014	$47,925	Exempt	√	√	√	√		√	√	√			√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
30	Foothills Parkway	Blount County	US 321 to Sevier County Line	Construct new 2-lane road	2020	Funds for federal lands	Non-exempt				√		√	√	√			
31	Foothills Parkway	Sevier County	Blount County Line to US 321 in Wears Valley	Construct new 2-lane road	2020	Funds for federal lands	Non-exempt				√		√	√	√			
32	Old AJ Highway	Jefferson City	Mossy Creek	Replace bridge	2020	$1,017,529	Exempt	√					√	√	√			√
33	Old AJ Highway	Jefferson City	SR 92 (Westview Ave)	Storm drain replacement	2020	$381,573	Exempt	√		√			√	√	√			√
34	SR 341	White Pine	I-81 (exit 4) to SR 113	Street lighting	2020	$84,794	Exempt	√					√	√	√			
35	SR 341	White Pine	SR 113 (Main St) to SR 32 (US 25W)	Street lighting	2020	$84,794	Exempt	√					√	√	√			
603*	Chucky Pike	Jefferson City	Intersection at US 11E (SR 34)	Intersection improvement- add turn lanes and modify signal	2020	$237,423	Exempt	√	√	√	√		√	√	√			√
611*	I-40/ I-81 Interchange	Jefferson County	I-40/ I-81 Interchange	Modify interchange	2020	$8,100,000	Exempt		√		√		√	√	√			
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Cost**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
35a	All qualifying roads in Jefferson City	Jefferson City		Resurface roads	2030	$2,170,543	Exempt	√						√	√			√
35b	All qualifying roads in White Pine	White Pine		Resurface roads	2030	$327,993	Exempt	√						√	√			
36	Old AJ Highway	Jefferson City	Railroad crossing	Bridge replacement	2030	$4,823,428	Exempt	√					√	√	√			√
37	SR 72	Loudon	US 11 to Corporate Park Dr	Widen 2-lane to 4-lane	2030	$26,528,854	Non-exempt		√			√	√	√	√			
38	SR 72	Loudon County	Vonore Rd to Monroe County Line	Widen 2-lane to 4-lane	2030	$81,998,277	Non-exempt		√			√	√	√	√			
39	US 11 (SR 2)	Loudon	SR 72 to Pond Creek Rd	Widen 2-lane to 4-lane	2030	$24,117,140	Non-exempt		√			√	√	√	√			

Table 8: Long Range Transportation Plan List of TPO Planning Area Highway Projects

LRTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	LRTP Goals Addressed										
								1	2	3	4	5	6	7	8	a	b	c
40	Alcoa Highway (SR 115)	Knoxville	Maloney Rd to Woodson Dr	Widen 4-lane to 6-lane	2014	$27,689,762	Non-exempt		√			√	√	√	√			
41	Alcoa Highway (SR 115)	Alcoa	Singleton Station Rd to Hunt Rd	Phase I & II- turn lanes/ traffic signals	2009	$1,217,608	Exempt	√		√		√	√	√	√		√	
42	Bessemer Street	Alcoa	Intersection w/ Middlesettlements Rd	Intersection improvement, construct westbound right turn lane	2009	$27,301	Exempt	√	√	√	√		√	√	√			√
43	Bradshaw Road Extension	Knoxville	Connect Bradshaw Rd to Western Ave	Construct new 2-lane road	2014	$1,996,858	Non-exempt		√		√		√	√	√			√
44	Campbell Station Road	Farragut	Jamestown Blvd to Parkside Dr/ Grigsby Chapel Rd	Widen 2-lane to 4-lane w/ center turn lane	2014	$4,393,087	Non-exempt		√				√	√	√	√		
45	Cherokee Street	Maryville	Intersection with Sevierville Rd	Intersection improvement, realign and add turn lanes	2009	$671,595	Exempt	√	√				√	√	√			
46	Concord Road (SR 332)	Farragut/ Knox County	Turkey Creek Rd to Northshore Dr	Widen 2-lane to 4-lane w/ center turn lane	2009	$10,649,908	Non-exempt		√				√	√	√			
47	Cusick Road	Alcoa	Alcoa Hwy to Pellissippi Pkwy	Add center turn lane	2009	$2,184,050	Exempt		√				√	√	√			
48	Dry Gap Pike	Knox County	Beaver Creek Dr/ Cunningham Rd to Dante Rd	Widen 2-lane to 4-lane	2014	$9,584,918	Non-exempt		√				√	√	√			
49	Dry Gap Pike	Knox County	Dante Rd to Rifle Range Rd	Widen 2-lane to 4-lane	2014	$3,727,468	Non-exempt		√				√	√	√			
50	East Bessemer Street	Alcoa	Intersection w/ E Watt St	Realign intersection	2009	$21,841	Exempt		√				√	√	√			√
51	Emory Road (SR 131)	Knox County	Bishop Rd to Norris Frwy	Widen 2-lane to 4-lane w/ center turn lane	2009	$14,633,135	Non-exempt		√			√	√	√	√	√		
52	Emory Road (SR 131)	Knox County	Clinton Hwy to Gill Rd	Widen 2-lane to 4-lane w/ center turn lane	2009	$12,230,680	Non-exempt		√			√	√	√	√	√		
53	Gay Street Viaduct	Knoxville	Viaduct over railroad	Replace bridge	2009	$4,149,695	Exempt	√					√	√	√			√
54	Hillwood Drive	Knoxville	Realign w/Island Home Ave	Reconstruct 2-lane section	2009	$2,402,455	Exempt	√					√	√	√			√
55	Hunters Crossing Slip Ramp	Alcoa	Bessemer St to Hunters Crossing Dr	Convert 1-way ramp to 2-way by adding lane	2009	$27,301	Non-exempt	√			√		√	√	√			√
56	I-40	Knoxville	I-275 to Cherry St	Widen 4-lane to 6-lane	2009	$184,552,225	Non-exempt	√	√		√	√	√	√	√	√	√	√
56a	Hall of Fame Drive	Knoxville	Broadway to Summit Hill Dr	New 4-lane road	2009	Included in 56	Non-exempt	√	√		√	√	√	√	√	√	√	√
58	Karns Connector	Knox County	Westcott Blvd to Emory Rd	New 4-lane road	2014	$4,925,583	Non-exempt		√		√	√	√	√	√	√		
59	Lovell Road (SR 131)	Knox County	Gilbert Rd to Schaeffer Rd	Widen 2-lane to 4-lane w/ center turn lane	2014	$10,649,908	Non-exempt		√			√	√	√	√	√		
60	Maynardville Hwy (SR 33)	Knox County	Emory Rd to Union County Line	Widen 2-lane to 4-lane	2014	$27,157,267	Non-exempt		√			√	√	√	√		√	
61	McFee Road	Farragut	Boyd Station Rd to 2,500' south of Old Stage Rd	Widen 2-lane to 3-lane	2009	$1,419,633	Exempt		√	√	√		√	√	√			
62	Middlesettlements Road	Alcoa	Intersection w/ Hunters Crossing Dr	Improve intersection	2009	$382,209	Exempt	√	√	√			√	√	√			
63	Middlesettlements Road/	Alcoa	Hunters Crossing Dr to US 129 Ramp	Realign intersection	2009	$1,630,393	Exempt		√		√		√	√	√			

	Bessemer Street Realignment																			
64	Millertown Pike	Knoxville	Washington Pike to North Mall Road	Widen 2-lane to 4-lane w/ center turn lane	2014	$5,788,292	Non-exempt		√				√	√	√	√		√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
65	Harrison Road	Lenoir City	From Kingston St to 1,000' west	Intersection improvements and reconstruct 2-lane section	2009	$1,092,025	Exempt	√	√		√		√	√	√			
66	Old Knoxville Hwy (SR 33)	Blount County	Wildwood Rd to McArthur Rd	Widen 2-lane to 4-lane	2014	$5,324,954	Non-exempt		√				√	√	√	√		
67	Old Knoxville Highway	Alcoa	Intersection w/ Sam Houston School Rd	Construct turn lanes/ install traffic signals	2009	$60,061	Exempt	√	√	√	√		√	√	√			
68	Old Stage Road/ Watt Road	Farragut	Johnsons Corner Rd to Kingston Pike	Reconstruct 2-lane section	2009	$1,419,633	Exempt	√					√	√	√			
69	Parkside Drive	Knox County	Mabry Hood Rd to Hayfield Rd	Widen 2-lane to 4-lane w/ center turn lane	2014	$10,649,908	Non-exempt		√			√	√	√	√			
70	Pellissippi Parkway (I-140)	Blount County	SR 33 to US 321	Construct new 4-lane highway	2014	$41,800,891	Non-exempt		√		√	√	√	√	√			
71	Pleasant Ridge Road	Knoxville	Schaad Rd to I-640	Add center turn lane	2014	$13,312,386	Exempt		√				√	√	√	√		√
72	Proffitt Springs Road	Blount County	Louisville Rd to Hunt Rd	Reconstruct 2-lane section	2009	$2,457,056	Exempt		√				√	√	√			
73	Sevierville Road (SR 35)	Maryville	Intersection at Northfield Subdivision	Add turn lanes	2009	$524,172	Exempt	√	√				√	√	√			
74	SR 33- Broadway Avenue	Maryville	Intersection with Brown School Rd	Realign and install traffic signal	2009	$349,448	Exempt	√	√				√	√	√	√	√	
75	Topside Road (SR 333)	Alcoa	East of Old Topside Rd to Wrights Ferry Rd	Phase I & II signalization and intersection realignment	2009	$1,118,234	Exempt	√	√	√			√	√	√			
76	Washington Pike	Knoxville	Millertown Pike to I-640	Widen 2-lane to 4-lane w/ center turn lane	2014	$4,476,822	Non-exempt		√				√	√	√	√		√
78	Western Avenue (SR 62)	Knoxville	Texas Ave to Major Ave	Widen 2-lane to 4-lane	2014	$19,702,331	Non-exempt		√			√	√	√	√	√		√
79	Wrights Ferry Road	Alcoa	Topside Rd to Airbase Rd	Add center turn lane	2009	$452,098	Exempt		√	√	√		√	√	√			
80	US 11 (SR 2)	Loudon County	Intersection w/ Shaw Ferry Rd	Intersection improvements	2009	$786,258	Exempt	√	√		√		√	√	√		√	
81	US 321 (SR 73)	Lenoir City	Simpson Rd to SR 2	Widen 2-lane to 4-lane w/ center turn lane	2014	$9,185,596	Non-exempt		√			√	√	√	√		√	
82	US 321 (SR 73)	Loudon County	SR 2 to east of Little Tennessee River	Widen 2-lane to 4-lane	2014	$43,398,377	Non-exempt		√			√	√	√	√		√	
83	US 321 (SR 73)	Lenoir City	Intersection w/ US 11	Reconstruct intersection	2014	$26,624,771	Exempt	√	√	√			√	√	√			
87*	Alcoa Highway (SR 115)	Knoxville	Maloney Rd to Blount County Line	Widen 4-lane to 6-lane	2014	$37,008,432	Non-exempt		√			√	√	√	√	√		
612*	Business Park Access Road	Alcoa	SR 33 to before Sam Houston School Rd	New 4-lane road	2009	$4,870,000	Exempt	√					√	√	√			
613*	I-275	Knoxville	Baxter Ave to I-640	Widen 4-lane to 6-lane	2009		Non-exempt		√			√	√	√	√	√		√
614*	I-640	Knoxville	Interchange with I-75/ I-275	Widen I-75 underpass and add eastbound through lane	2009		Non-exempt		√			√	√	√	√	√		√
168	I-275	Knoxville	Baxter Ave Interchange	Modify interchange	2009	$36,175,710	Exempt	√					√	√	√	√		√
169	I-275	Knoxville	Heiskell Ave Interchange	Modify interchange	2009	$36,175,710	Exempt	√					√	√	√	√		√
170	I-275	Knoxville	Woodland Ave Interchange	Modify interchange	2009	$36,175,710	Exempt	√					√	√	√	√		√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**

57*	I-640/ Broadway Interchange Phase II	Knoxville	I-640/ Broadway Interchange	Reconstruct interchange	2014	$8,919,298	Exempt	√	√		√		√	√	√	√			√
77*	Western Avenue (SR 62)	Knoxville	Schaad Rd to I-640	Widen 2-lane to 4-lane	2014	$26,092,276	Non-exempt		√			√	√	√	√	√			√
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**	
84	Alcoa Highway Bypass	Alcoa	Hunt Rd to Singleton Station Rd	Construct new 6-lane highway	2014	$64,431,946	Non-exempt		√		√	√	√	√	√				
85	Alcoa Highway (SR 115)	Alcoa	Singleton Station Rd to Hunt Rd	Add turn lanes & traffic signals	2014	$563,114	Exempt	√		√			√	√	√				
86	Alcoa Highway (SR 115)	Knoxville	Woodson Dr to Cherokee Trail	Widen 4-lane to 6-lane	2014	$32,349,097	Non-exempt		√			√	√	√	√				
88	Alcoa Highway (SR 115)	Blount County/ Alcoa	Singleton Station Rd to Knox County Line	Widen 4-lane to 6-lane	2014	$64,698,194	Non-exempt		√			√	√	√	√		√		
89	Ball Camp Pike	Knox County	Middlebrook Pike to west of Oak Ridge Hwy	Construct new 4-lane road	2014	$31,949,725	Non-exempt				√	√	√	√	√		√	√	
90	Beaver Creek Drive East	Knox County	Central Avenue Pike to Dry Gap Pike	Widen 2-lane to 4-lane	2014	$13,751,694	Non-exempt		√		√		√	√	√				
91	Boardman Avenue	Maryville	Intersection w/ Court St	Intersection improvement, realign intersection and install traffic signal	2014	$588,407	Exempt	√	√				√	√	√				
92	Central Avenue Pike	Knox County	Beaver Creek Dr to Emory Rd	Widen 2-lane to 4-lane	2014	$2,436,167	Non-exempt		√		√		√	√	√				
93	Chapman Highway (SR 71)	Knoxville	Fronda Rd to Gov John Sevier Hwy	Add turn lanes	2014	$17,306,101	Exempt	√	√	√	√		√	√	√	√			
94	Cumberland Avenue (SR 1)	Knoxville	21st St to 16th St	Pedestrian improvements	2014	$3,744,108	Exempt	√		√	√		√	√	√				√
95	Cunningham Road	Knox County	Dry Gap Pike to Maynardville Hwy	Widen 2-lane to 4-lane	2014	$15,575,491	Non-exempt		√				√	√	√				
96	Dante Road	Knox County	Central Avenue Pike to Dry Gap Pike	Widen 2-lane to 4-lane	2014	$6,456,507	Non-exempt		√				√	√	√				
97	Ellejoy Road	Blount County	River Rd to Jefferson Hollow Rd	Reconstruct 2-lane section	2014	$3,744,108	Exempt	√					√	√	√				
98	Emory Road (SR 131)	Knox County	Oak Ridge Hwy to Clinton Hwy	Widen 2-lane to 4-lane w/ center turn lane	2014	$14,643,624	Non-exempt		√			√	√	√	√				
99	Gallaher View Road	Knox County	Intersection w/ Gleason Dr	Intersection improvement	2014	$3,980,403	Exempt	√		√			√	√	√	√			√
100	Hardin Valley Road	Knox County	Interchange at Pellissippi Pkwy	Modify interchange	2014	$19,968,578	Exempt		√				√	√	√				
101	Henley Street Bridge (SR 33)	Knoxville	Bridge over Tennessee River	Rehabilitate bridge & widen 5-lane to 6-lane	2014	$16,906,730	Non-exempt	√	√	√		√	√	√	√	√			√
102	Hinkle Road	Blount County	US 411 to Burnett Station Rd	Reconstruct 2-lane section	2014	$5,241,752	Exempt	√					√	√	√				
103	I-40/75	Farragut	Interchange w/ Campbell Station Rd	Modify interchange	2014	$29,287,248	Exempt	√	√		√		√	√	√	√			
104	I-75	Knox County	Interchange w/ Emory Rd	Modify interchange	2014	$19,968,578	Exempt	√	√		√		√	√	√	√			
105	James White Parkway Extension (SR 71)	Knoxville/ Knox County	Moody Ave to Chapman Hwy	Construct new 4-lane road	2020	$115,150,349	Non-exempt		√		√	√	√	√	√				
106	Jefferies Hollow Road	Blount County	Ellejoy Rd to Sevier County Line	Reconstruct 2-lane section	2014	$3,744,108	Exempt	√					√	√	√				
107	Lovell Road (SR 131)	Knox County	Schaeffer Rd to Middlebrook Pike	Widen 2-lane to 4-lane w/ center turn lane	2014	$8,420,084	Non-exempt		√			√	√	√	√	√	√		
108	Montvale Road (SR 336)	Maryville/ Blount County	Six Mile Rd to US 321	Add center turn lane	2014	$28,621,629	Exempt	√	√	√	√		√	√	√		√		
109	Morganton Road	Blount County	Foothills Mall Dr to Walker Rd	Widen 2-lane to 4-lane	2014	$6,656,193	Non-exempt		√				√	√	√				
110	Murphy Road Extension	Knoxville/ Knox County	Washington Pike to Millertown Pike	Construct new 4-lane road	2014	$13,046,138	Non-exempt		√		√	√	√	√	√	√			√
111	Nails Creek Road	Blount County	Wildwood Rd to Burnett Station Rd	Reconstruct 2-lane section	2014	$12,813,171	Exempt	√					√	√	√				
112	Northshore Drive (SR 332)	Knoxville	Intersection w/ Kingston Pike	Intersection improvement	2014	$12,646,766	Exempt	√	√	√	√		√	√	√	√	√		√
113	Oak Ridge Highway (SR 62)	Knox County	Schaad Rd to Pellissippi Pkwy	Widen 2-lane to 4-lane	2014	$32,748,469	Non-exempt		√			√	√	√	√	√			√

LRTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	8	a	b	c
114	Old Niles Ferry Road	Blount County	Maryville City Limit to US 129	Widen 2-lane to 4-lane	2014	$3,328,096	Non-exempt		√				√	√	√			
115	Schaad Road	Knoxville/ Knox County	Oak Ridge Hwy to Pleasant Ridge Rd	Widen 2-lane to 4-lane	2014	$5,990,574	Non-exempt		√			√	√	√	√			
116	Strawberry Plains Pike	Knox County	Gov. John Sevier Hwy to Moshina Rd	Widen 2-lane to 4-lane	2014	$3,960,435	Non-exempt		√			√	√	√	√			
117	Strawberry Plains Pike	Knoxville	I-40 to Huckleberry Springs Rd	Add turn lanes	2014	$718,869	Exempt	√	√	√	√		√	√	√			
118	Tazewell Pike (SR 331)	Knoxville	Broadway to Murphy Rd	Add center turn lane	2014	$18,637,340	Exempt	√	√	√	√		√	√	√	√		√
119	Tazewell Pike (SR 131)	Knox County	Emory Rd to Barker Rd	Widen 2-lane to 4-lane	2014	$3,993,716	Non-exempt		√				√	√	√	√		
120	Tazewell Pike (SR 331)	Knoxville	Intersection w/ Old Broadway & Greenway Dr	Intersection improvement	2014	$3,993,716	Exempt		√		√		√	√	√	√		√
121	US 11 (SR 2)	Lenoir City	US 321 (SR 73) to US 70 (SR 1)	Widen 2-lane to 4-lane	2014	$18,637,340	Non-exempt		√			√	√	√	√		√	
122	US 11 (SR 2)	Loudon County	Intersection w/ US 70 (SR 1)	Intersection improvement	2014	$6,656,193	Exempt	√	√	√			√	√	√		√	
123*	US 441 (Sevierville Road)	Blount County	Northfield Dr to Peppermint Rd	Add center turn lane	2014	$4,446,337	Exempt		√			√	√	√	√			
123a*	US 441 (Sevierville Road)	Blount County	Peppermint Rd to Blount County Line	Reconstruct 2-lane section	2014	$40,179,156	Exempt		√			√	√	√	√			
124	Virtue Road	Farragut	Boyd Station Rd to Kingston Pike	Reconstruct 2-lane section	2014	$3,727,468	Exempt	√					√	√	√			
125	Washington Pike	Knox County	I-640 to Murphy Rd	Widen 2-lane to 4-lane	2014	$13,625,360	Non-exempt		√				√	√	√	√		√
126	Westland Drive	Knox County	Morrell Rd to Ebenezer Rd	Reconstruct 2-lane section	2014	$10,649,908	Exempt	√					√	√	√	√		√
127	Westland Drive	Knox County	Northshore Dr to Pellissippi Pkwy	Reconstruct 2-lane section	2014	$7,721,184	Exempt	√					√	√	√	√		
128	Wright Road	Alcoa	Hunt Rd to Alcoa Hwy	Reconstruct 2-lane section	2014	$1,064,991	Exempt	√					√	√	√			
604*	Corridor #1	Alcoa/ Maryville	Home Ave to Calderwood St	Reconstruct 2-lane section, construct new bridge, demolish part of shopping center	2014	$3,534,438	Non-exempt		√		√		√	√	√			√
605*	Corridor #2	Alcoa/ Maryville	Middlesettlements Rd to Louisville Rd	New 5-lane road	2014	$2,536,009	Non-exempt		√		√		√	√	√			
606*	Corridor #4	Maryville/ Blount County	Cochran Rd to Montvale Rd	New 2-lane road	2014	$5,226,443	Non-exempt		√		√		√	√	√			
607*	Corridor #5	Blount County	Ridge Rd to Pleasant Hill Rd	New 2-lane road	2014	$3,216,272	Non-exempt		√		√		√	√	√			
129	Airport Access Road to I-140	Alcoa	Airport Terminus to I-140	Modify interchange	2020	$16,958,814	Exempt				√	√	√	√	√			
130	Andersonville Pike	Knox County	Griffith Rd to SR 33	Widen 2-lane to 4-lane	2020	$12,942,967	Non-exempt		√				√	√	√			
131*	Corridor #3	Maryville	US 321 to Morgantown Rd	Construct new 2-lane road	2020	$2,543,822	Non-exempt		√		√		√	√	√			
132	Burnett Station Road	Blount County	US 411 to Chapman Hwy	Reconstruct 2-lane section	2020	$9,539,333	Exempt	√					√	√	√			
133	Carpenters Grade Road	Blount County	Maryville City Limit to Mint Rd	Reconstruct 2-lane section	2020	$847,941	Exempt	√					√	√	√			
134	Emory Road (SR 131)	Knox County	Maynardville Hwy to Tazewell Pike	Widen 2-lane to 4-lane w/ center turn lane	2020	$18,654,696	Non-exempt		√			√	√	√	√	√	√	
135	Emory Road	Knox County	Norris Frwy to Maynardville Hwy	Widen 2-lane to 4-lane w/ center turn lane	2020	$31,712,983	Non-exempt		√			√	√	√	√	√	√	
136	Gov John Sevier Highway (SR 168)	Knox County	Alcoa Hwy to Chapman Hwy	Widen 2-lane to 4-lane	2020	$41,549,095	Non-exempt		√			√	√	√	√	√		
137	Gleason Drive	Knoxville	Montvue Rd to Gallaher View Rd	Widen 2-lane to 4-lane	2020	$6,783,526	Non-exempt		√				√	√	√	√		√
138	I-75	Knoxville	Callahan Rd Interchange	Modify interchange	2020	$42,397,036	Exempt	√	√		√		√	√	√			

139	I-75	Knoxville	Merchant Dr Interchange	Modify interchange	2020	$50,876,443	Exempt	√	√		√		√	√	√	√	√	√
140	Knoxville Regional Parkway (SR-475)	Knox/ Anderson/ Loudon County	I-40/75 in Loudon County to I-75 in Anderson County	Construct new 4-lane highway	2020	$593,558,501	Non-exempt		√	√	√	√	√	√	√			
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
141	Maryville Pike (SR 33)	Knox County	Gov. John Sevier Hwy to Blount County Line	Widen 2-lane to 4-lane	2020	$10,684,053	Non-exempt		√				√	√	√			
142	Mentor Road	Blount County	Louisville Rd to Wrights Ferry Rd	Add center turn lane	2020	$6,783,526	Exempt		√				√	√	√		√	
143	McFee Road/ Harvey Road	Knox County/ Farragut	McFee Rd to Harvey Rd over railroad	Construct new road or widen railroad underpass	2020	$10,175,289	Non-exempt		√		√		√	√	√			
144	Mint Road	Blount County	Old Niles Ferry to 4 miles east	Reconstruct 2-lane section	2020	$8,479,407	Exempt	√					√	√	√			
145	Northshore Drive (SR 332)	Knoxville	Lyons View Pike to Morrell Rd	Widen 2-lane to 4-lane	2020	$18,654,696	Non-exempt		√			√	√	√	√	√	√	√
146	Northshore Drive (SR 332)	Knox County	Morrell Rd to Ebenezer Rd	Widen 2-lane to 4-lane	2020	$29,508,337	Non-exempt		√			√	√	√	√	√		
147	Northshore Drive (SR 332)	Knox County	Pellissippi Pkwy to Concord Rd	Widen 2-lane to 4-lane	2020	$25,438,221	Non-exempt		√			√	√	√	√		√	
148	Old Highway 95 (Kingston Street)	Lenoir City	Harrison Rd to US 321	Widen 2-lane to 4-lane	2020	$6,953,114	Non-exempt		√				√	√	√			
149	Old Knoxville Highway (SR 33)	Blount County	Hunt Rd to Knox County Line	Widen 2-lane to 4-lane	2020	$49,350,150	Non-exempt		√				√	√	√			
150	Pea Ridge Road	Blount County	River Ford Rd to Patterson Rd	Reconstruct 2-lane section	2020	$3,815,733	Exempt	√					√	√	√			
151	Pellissippi Parkway (SR 162)	Knox County	Dutchtown Rd to Oak Ridge Hwy	Widen 4-lane to 6-lane	2020	$50,876,443	Non-exempt		√			√	√	√	√			
152	Peppermint Hills Drive	Maryville/ Blount County	Wildwood Rd to US 411	Reconstruct 2-lane section	2020	$1,865,470	Exempt	√					√	√	√			
153	Sam Houston School Road	Alcoa/ Blount County	Old Knoxville Hwy to Wildwood Rd	Reconstruct 2-lane section	2020	$4,070,115	Exempt	√					√	√	√			
154	Strawberry Plains Pike	Knoxville/ Knox County	Moshina Rd to I-40	Widen 2-lane to 4-lane	2020	$7,461,878	Non-exempt		√			√	√	√	√			
155	Tazewell Pike (SR 331)	Knox County	Murphy Rd to Emory Rd	Widen 2-lane to 4-lane	2020	$29,508,337	Non-exempt		√				√	√	√	√		√
156	Adesa Parkway Extension	Lenoir City	US 321 (SR 73) to US 70 (SR 1)	Construct new 4-lane road	2020	$14,923,757	Non-exempt		√		√		√	√	√			
157	Vanosdale Road	Knoxville	Buckingham Rd to Middlebrook Pike	Widen 2-lane to 4-lane	2020	$3,391,763	Non-exempt		√				√	√	√	√		√
158	Washington Pike	Knox County	Luttrell Rd to Maloneyville Rd	Widen 2-lane to 4-lane	2020	$5,723,600	Non-exempt		√				√	√	√			√
159	Washington Pike	Knox County	Murphy Rd to Luttrell Rd	Widen 2-lane to 4-lane	2020	$2,713,410	Non-exempt		√				√	√	√			√
160	Wildwood Road	Blount County	Maryville City Limit to US 411	Add center turn lane	2020	$5,935,585	Exempt		√		√		√	√	√			
161	Wilkerson Pike	Blount County	Maryville City Limit to Chilhowee View Rd	Reconstruct 2-lane section	2020	$5,723,600	Exempt	√					√	√	√			
608*	Corridor #6	Maryville/ Blount County	US 321 to Morgantown Rd	Reconstruct 2-lane section	2020	$6,953,114	Exempt		√		√		√	√	√			
LRTP #	**Project**	**Jurisdiction**	**Location**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
162	Broadway Avenue (SR 33)	Maryville	Old Niles Ferry to Wildwood Rd	Widen 2-lane to 4-lane	2030	$33,763,996	Non-exempt		√				√	√	√	√	√	
163	Cedar Lane	Knoxville	East of Central Avenue Pike to Broadway	Add center turn lane	2030	$1,129,199	Exempt		√		√		√	√	√			
164	Chapman Highway (SR 71)	Knoxville/ Knox County	Little Switzerland Ln to Sevier County Line	Add center turn lane	2030	$33,763,996	Exempt	√	√	√	√		√	√	√			
165	Emory Road (SR 331)	Knox County	Tazewell Pike to Grainger County Line	Widen 2-lane to 4-lane w/ center turn lane	2030	$41,481,481	Non-Exempt		√			√	√	√	√			

LRTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	8	a	b	c
166	Gov John Sevier Highway (SR 168)	Knox County	Chapman Hwy to Asheville Hwy	Widen 2-lane to 4-lane	2030	$81,274,763	Non-exempt		√			√	√	√	√	√		
167	Gleason Drive	Knox County	Gallaher View Rd to Ebenezer Rd	Widen 2-lane to 4-lane	2030	$37,381,567	Non-exempt		√				√	√	√	√		√
171	I-40/75	Knoxville/ Farragut/ Knox County	Loudon County Line to Pellissippi Pkwy	Widen 6-lane to 8-lane	2030	$57,881,137	Non-exempt		√			√	√	√	√	√	√	
172	I-75	Knoxville/ Knox County	Emory Rd to Anderson County Line	Widen 4-lane to 6-lane	2030	$26,528,854	Non-exempt		√			√	√	√	√			
173	I-75	Knox County	Raccoon Valley Rd Interchange	Modify interchange	2030	$72,351,421	Exempt	√	√		√		√	√	√			
174	Moody Avenue	Knoxville	Chapman Hwy to Maryville Pike	Construct new 2-lane road w/ center turn lane	2030	$1,688,200	Non-Exempt		√		√		√	√	√			√
175	Morrell Road	Knoxville	Westland Dr to Northshore Dr	Widen 2-lane to 4-lane	2030	$16,881,998	Non-exempt		√				√	√	√	√		
176	Norris Freeway (SR 71)	Knox County	Maynardville Hwy to Raccoon Valley Rd	Widen 2-lane to 4-lane	2030	$51,610,680	Non-exempt		√			√	√	√	√			
177	Northshore Drive	Knox County	Concord Rd to Choto Rd	Widen 2-lane to 4-lane	2030	$36,175,710	Non-exempt		√			√	√	√	√			
178	Papermill Road	Knoxville	Kingston Pike to Weisgarber Rd	Widen 2-lane to 4-lane	2030	$8,440,999	Non-exempt		√				√	√	√	√		√
179	Raccoon Valley Road (SR 170)	Knox County	Norris Frwy to I-75	Widen 2-lane to 4-lane	2030	$24,117,140	Non-exempt		√			√	√	√	√			
182	Tazewell Pike (SR 131)	Knox County	Barker Rd to Union County Line	Widen 2-lane to 4-lane	2030	$19,293,712	Non-exempt		√				√	√	√			
183	Topside Road (SR 333)	Alcoa	E Old Topside Rd to Wrights Ferry Rd	Phase III- Widen 2-lane to 4-lane	2030	$8,456,675	Non-exempt		√				√	√	√			
184	Topside Road (SR 333)	Blount County	Pellissippi Pkwy to Louisville Rd	Widen 2-lane to 4-lane	2030	$36,175,710	Non-exempt		√				√	√	√			
185	Turkey Creek Road	Farragut	Brixworth Blvd to Boyd Station Rd	Construct new bridge and approaches to connect roads	2030	$8,440,999	Non-exempt		√		√		√	√	√			
186	Watt Road	Knox County	I-40/75 Interchange	Modify interchange	2030	$60,292,851	Exempt	√	√		√		√	√	√	√		
187	Woodland Avenue	Knoxville	Central St to Huron St	Add center turn lane	2030	$2,411,714	Exempt		√	√	√		√	√	√	√		√
609*	Corridor #7- Southern Loop Connector	Maryville/ Blount County	US 321 to Topside Rd	New 2-lane Road	2030	$68,010,336	Non-exempt		√		√	√	√	√	√			

Table 9: Long Range Transportation Plan List of SAFETEA-LU Congressional Earmark Projects

							LRTP Goals Addressed										
LRTP #	**Project**	**Jurisdiction**	**Description**	**Year**	**Cost**	**Exempt Status**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**
E1	Melton Lake Greenway	Oak Ridge	Construct the Melton Lake Greenway	2009	$650,000	Exempt		√	√	√		√	√	√			√
E2	Great Smoky Mountain Heritage Highway Cultural and Visitors Center	Maryville	Construct the Great Smoky Mountain Heritage Highway Cultural and Visitors Center	2009	$8,000,000	Exempt						√	√	√			
E3	Transportation and Heritage Museum	Townsend	Construct the Transportation and Heritage Museum	2009	$1,700,000	Exempt						√	√	√			
E4	Improve streetscapes and pavement	Blount County	Improve streetscapes and repair pavement at locations across Blount County	2009	$240,000	Exempt	√					√	√	√			
E5	University of Tennessee Joint Institute for Advanced Materials	Knox County	Support the University of Tennessee Joint Institute for Advanced Materials	2009	$20,000,000	Exempt						√	√	√			
E6	University of Tennessee National Transportation Research Center	Knox County	Support the University of Tennessee Joint Institute for Advanced Materials	2009	$8,000,000	Exempt						√	√	√			
E7	Improvements to Blount Ave and Sevier Ave from Scottish Pike to James White Parkway to support the South Knoxville Waterfront Redevelopment	Knoxville	Add turn lanes where needed and widen one-lane underpass to two lanes	2009	$6,000,000	Non-exempt		√		√		√	√	√			√
E8	I-275 Industrial Park access improvements	Knoxville	Widen railroad underpass and make access improvements	2009	$5,000,000	Exempt		√		√	√	√	√	√			√
E9	Streetscape improvements	Knoxville	Streetscape improvements near the Tennessee Theater	2009	$1,600,000	Exempt	√					√	√	√			√
E10	Improve railroad crossings	Knoxville	Improve circuitry on vehicle protection devices of at-grade railroad crossings throughout Knoxville	2009	$172,000	Exempt	√	√			√	√	√	√			
E11	Cessna Road railroad crossing	Knoxville	Improve the at-grade railroad crossing at Cessna Road	2009	$76,800	Exempt	√	√				√	√	√			√
E12	Unitia Bridge	Loudon County	Replace the Unitia Bridge	2009	$920,000	Exempt		√			√	√	√	√			
E13	Improve streetscapes and pavement	Loudon County	Improve streetscapes and repair pavement at locations across Loudon County	2009	$240,000	Exempt	√					√	√	√			
E14	Veteran's Memorial Bridge	Loudon	Construct lighting on Veteran's Memorial Bridge in Loudon	2009	$200,000	Exempt	√					√	√	√			

LRTP #	Project	Jurisdiction	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	8	a	b	c
E15	Improve streetscape and pavement	Greenback	Improve streetscape and repair pavement at locations across Greenback	2009	$200,000	Exempt	√					√	√	√			
E16	Improve railroad crossings	Loudon County	Improve at-grade railroad crossings across Loudon County	2009	$91,200	Exempt	√	√			√	√	√	√			
E17	Improve railroad crossings	Lenoir City	Improve at-grade railroad crossings across Lenoir City	2009	$83,200	Exempt	√	√			√	√	√	√			
E18	SR 35	Seymour	Construct shoulder and turn lane	2009	$1,200,000	Exempt	√	√	√	√		√	√	√			
E19	US 441 Bus Rapid Transit	Sevier County	Conduct Bus Rapid Transit planning studies	2009	$209,000	Exempt	√	√	√	√	√	√	√	√			
E20	Pedestrian Bridge	Alcoa	Construct a pedestrian bridge over Alcoa Highway	2009	$1,000,000	Exempt	√		√	√		√	√	√			
E21	SR 66	Jefferson County	Relocate SR 66	2009	$1,600,000	Non-Exempt		√		√	√	√	√	√			
E22	SR 35 and US 441	Sevier, Jefferson, and Cocke County	Widen SR 35 and US 441	2009	$1,400,000	Non-exempt		√		√	√	√	√	√			
E23	Central Station Transit Center	Knoxville	Construction of indoor transit facility	2009	$11,027,200	Exempt		√	√	√	√	√	√	√			√
E24	SR 32/US 321	Cocke County	Reconstruct 2-lane section from SR 73 to I-40	2009	$5,000,000	Exempt		√		√	√	√	√	√			
E25	SR 32	Cocke County	Reconstruct 2-lane section	2009	$800,000	Exempt	√			√		√	√	√			
E26	SR 33	Knox County	Widen and improve SR 33	2009	$6,500,000	Non-exempt		√		√	√	√	√	√			
E27	SR 62	Knoxville	Widen SR 62 (Western Ave)	2009	$6,500,000	Non-exempt		√		√	√	√	√	√			√
E28	Campbell Station Road	Farragut	Widen Campbell Station Road	2009	$1,440,000	Non-exempt		√		√	√	√	√	√			
E29	Second Creek Greenway	Knoxville	Construction of greenway	2009	$548,560	Exempt	√	√	√	√		√	√	√			
E30	Railroad underpass	Knox County	Construct new road or widen railroad underpass	2009	$395,440	Non-exempt		√		√	√	√	√	√			
E31	US 321/ US 11 intersection	Lenoir City	Construct overpass at US 321 and US 11	2009	$6,500,000	Exempt		√		√	√	√	√	√			
E32	Foothills Parkway	Sevier County	Construct the Foothills Parkway	2009	$17,500,000	Non-exempt				√	√	√	√	√			
E33	SR 66	Sevier County	Widen SR 66	2009	$2,400,000	Non-exempt		√		√	√	√	√	√			
E34	SR 449	Sevier County	Extension of SR 449	2009	$800,000	Non-exempt		√		√	√	√	√	√			
E35	Alternative fuel buses	Sevierville	Purchase alternative fuel buses	2009	$1,000,000	Exempt	√	√	√	√	√	√	√	√			

For Tables 7, 8, and 9 highway projects meeting Goal #1, System Maintenance, are 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. Projects that reduce traffic congestion such as adding turn lanes, widening roads, constructing new roads, and improving intersections fall under Goal #2, System Efficiency. Projects such as intersection improvements and constructing turn lanes meet Goal #3, Environmental Quality because they aim to reduce mobile source emissions by eliminating congestion while not adding capacity. Goal #4, Mobility Options, includes projects that facilitate movement among modes and between modes such as intersection improvements, new interchanges, new roads, and constructing turn lanes. If a highway project is deemed to be regionally significant, it is listed as meeting the Regional Approach Goal, #5. Projects that occur on roads that are not included in the State Functional Classification and projects that do not involve adding travel lane capacity such as road widening and new construction are not indicated as regionally significant. Projects meet Goal #6, Financial Investments if they are determined to be financially constrained. All projects meet Goal #7, Safety. Projects meet Goal #8, Security if they are deemed to provide a security benefit to the Region.

Highway projects that are located along a congested corridor or at a congested hot spot, as identified in Chapter VIII are identified under column “a”. Projects that address a high crash location, as identified in Chapter XI are identified under column “b”. Projects that lie within a Title VI Assessment area, as identified in Chapter XVI, are identified under column “c”.

Table 10 lists public transportation, bicycle, sidewalk, and greenway projects that are identified in this Plan that lie within the TPO Planning Area. Further information on each project can be found in Chapter VI and further financial analysis can be found in Chapter XIII. As a continued policy of the Knoxville Regional Transportation Planning Organization, bicycle and pedestrian facilities should be incorporated into all highway construction projects unless one of the exceptions outlined in the Accommodation Policy located in Appendix B is identified.

Table 10: Long Range Transportation Plan List of TPO Planning Area Non-Highway Projects

Public Transportation

						LRTP Goals Addressed							
LRTP #	**Project**	**Jurisdiction**	**Description**	**Year[1]**	**Cost[2]**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
200	KAT Buses	KAT	122 buses	2030	$37,988,000	√	√	√	√		√	√	√
201	Lift Vans/Call-A-KAT	KAT	52 vans	2030	$3,053,000	√	√	√	√		√	√	√
202	Trolleys	KAT	47 trolleys	2030	$14,745,000	√	√	√	√		√	√	√
203	Knoxville Central Station	KAT	Indoor bus transfer facility	2030	$27,000,000	√	√	√	√		√	√	√
204	Implementation of ITS Technologies at KAT	KAT	Implementation of ITS technology	2030	$25,000,000	√	√	√	√	√	√	√	√
205	KAT Fare box Replacement	KAT	Replace fare box on buses (2 times Over 25 years)	2030	$6,000,000	√	√	√	√		√	√	√
206	KAT Associated Maintenance Items	KAT	Capital items to assist with operations and fleet maintenance	2030	$52,000,000	√	√	√	√		√	√	√
207	KAT Facility & System Improvements	KAT	Facility and system upgrades	2030	$52,000,000	√	√	√	√		√	√	√
208	KCT Vans	KCT (CAC)	300 vans (replacement)	2030	$18,315,540	√	√	√	√		√	√	√
LRTP #	**Project**	**Jurisdiction**	**Description**	**Year[1]**	**Cost[2]**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
209	ETHRA Vans	ETHRA 16 County Area	500 vans (replacement)	2030	$30,525,000	√	√	√	√	√	√	√	√
210	Tennessee Vans	UT Commuter Pool/Tennessee Vans	300 vans	2030	$7,294,760	√	√	√	√	√	√	√	√
211	Infrastructure & Support Facilities	Sevierville	Initial system infrastructure	2030	$700,000	√	√	√	√		√	√	√
212	Replacement Trolleys	Sevierville	Trolley fleet replacement	2030	TBD	√	√	√	√		√	√	√
213	Sevier County Transitway	Sevier County	Sevier County Transitway Alternatives Analysis Phase 2	2030	$500,000	√	√	√	√		√	√	√
214	Replacement Trolleys	Pigeon Forge	Trolley fleet replacement	2030	TBD	√	√	√	√		√	√	√
215	Replacement Trolleys	Gatlinburg	Trolley fleet replacement	2030	TBD	√	√	√	√		√	√	√
216	Replacement Vans	Oak Ridge	Van replacement	2030	TBD	√	√	√	√			√	√
217	Section 5307 Formula Transit Funds	KAT	Planning, facility, computer, and misc. improvements	2030	$110,000,000	√	√	√	√		√	√	√
218	SmartFix 40 transit related projects	KAT	Measures to mitigate impacts of SmartFix 40 on commuters and area businesses	2014	$5,000,000	√	√	√	√	√	√	√	√
219	Section 5316	TBD	Job Access & Reverse Commute grants	2014	$5,000,000	√	√	√	√	√	√	√	√
220	Section 5317	TBD	New Freedom Program	2014	$5,000,000	√	√	√	√	√	√	√	√
221	Section 5310	TBD	Vans or Services	2014	$4,000,000	√	√	√	√	√	√	√	√

[1] Public transportation projects are given for the entire life of the 2005-2030 Knoxville Regional Long Range Transportation Plan.

[2] Typically, funding for public transportation projects involves 80% federal funds, 10% state funds, and 10% local funds.

Bicycles

LRTP #	Project	Jurisdiction	Description	Year	Cost	1	2	3	4	5	6	7	8
300	Bike Parking Program	TPO Area	Bike racks provided to businesses and agencies at reduced cost	2009	$25,000	√	√	√	√			√	√
301	Bike network improvement projects	Knoxville	Projects that enhance bicycle transportation	2014	$50,000	√	√	√	√			√	√
302	Signage for City of Knoxville bike and greenway network	Knoxville	Improved signage for bicycle transportation	2009	$50,000	√	√	√	√			√	√

Sidewalks

LRTP #	Project	Jurisdiction	Description[2]	Year	Cost[1]	1	2	3	4	5	6	7	8
400	Alcoa Highway Pedestrian Bridge	Alcoa	Construct a pedestrian bridge over Alcoa Highway	2014	$1,000,000		√		√		√	√	√
401	Ball Camp Pike	Knox County	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
402	Brown Gap Road	Knox County	Sidewalk within a parental responsibility zone	2014	$1,500,000		√	√	√			√	√
403	Buffat Mill Road	Knoxville	Sidewalk within a parental responsibility zone	2014	$1,050,000		√	√	√			√	√
404	Carter School Road	Knox County	Sidewalk within a parental responsibility zone	2014	$300,000		√	√	√			√	√
405	Castle Street	Knoxville	Sidewalk within a parental responsibility zone	2014	$420,000		√	√	√			√	√
406	College Street	Maryville	Sidewalk to improve pedestrian travel	2014	$500,000		√	√	√			√	√
407	Concord Road	Farragut/ Knox County	Sidewalk constructed as part of road project	2014	NA		√	√	√			√	√
408	Cumberland Avenue	Knoxville	Pedestrian improvements	2014	$3,744,108	√			√			√	√
409	Dutchtown Road	Knox County	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
410	Hollywood Drive	Knoxville	Sidewalk within a parental responsibility zone	2014	$150,000	√		√	√			√	√
411	Louisville Road	Alcoa	Sidewalk to enhance pedestrian travel	2014	$500,000		√	√	√			√	√
412	McFee Road	Farragut	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
413	Middlebrook Pike	Knox County	Sidewalks constructed as part of road project from Cedar Bluff Rd to Ball Camp Pk	2014	NA		√	√	√			√	√
414	Millertown Pike	Knoxville	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
415	Neyland Drive	Knoxville	Pedestrian improvements	2014	$1,056,000	√		√	√			√	√
416	Oak Ridge Highway	Knox County	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
417	Pickering Street	Knoxville	Sidewalks constructed to improve pedestrian travel	2014	NA		√	√	√			√	√
418	Pedestrian Bridge	Maryville	Pedestrian bridge to connect Blount County Library with Downtown Maryville	2014	$1,000,000		√	√	√			√	√
419	Pleasant Ridge Road	Knoxville	Sidewalks constructed as part of road project	2014	NA	√		√	√			√	√
420	Schaad Road	Knoxville	Sidewalk constructed as part of road project	2014	NA		√	√	√			√	√
421	Sutherland Avenue	Knoxville	Sidewalks constructed as part of Bearden Village enhancements	2014	$990,750	√		√	√			√	√
422	Washington Pike	Knoxville	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
423	Western Avenue	Knoxville	Sidewalks constructed as part of road projects	2014	NA		√	√	√			√	√

LRTP #	Project	Jurisdiction	Description	Year	Cost[1]	1	2	3	4	5	6	7	8
424	Lovell Road	Knox County	Sidewalks constructed as part of road project	2014	NA		√	√	√			√	√
425	Beaman Lake Road	Knoxville	Sidewalk to enhance pedestrian travel	2030	$250,000		√	√	√			√	√
426	Blount Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2030	$250,000		√	√	√			√	√
427	Chapman Highway	Knoxville/ Knox County	Sidewalks constructed as part of road project	2030	NA	√		√	√			√	√
428	Clinton Highway	Knoxville	Sidewalks to enhance pedestrian travel	2030	$1,056,000		√	√	√			√	√
429	Emory Road	Knox County	Sidewalks constructed as part of road project	2030	NA		√	√	√			√	√
430	Fern Street	Knoxville	Sidewalk to enhance pedestrian travel	2030	$250,000		√	√	√			√	√
431	John Sevier Neighborhood	Maryville	Sidewalks near John Sevier Elementary School	2030	$528,000		√	√	√			√	√
432	Martin Mill Pike	Knoxville	Sidewalk to enhance pedestrian travel	2030	$528,000		√	√	√			√	√
433	Old Stage Road	Farragut	Sidewalk constructed within parental responsibility zone	2030	$250,000		√	√	√			√	√
434	Sevier Avenue	Knoxville	Sidewalk to enhance pedestrian travel	2030	$528,000		√	√	√			√	√
435	Smith Road	Farragut	Sidewalk to enhance pedestrian travel	2030	$528,000		√	√	√			√	√
436	Spring Hill Road	Knoxville	Sidewalk within a parental responsibility zone	2030	$264,000		√	√	√			√	√
437	Tazewell Pike	Knoxville	Sidewalk to enhance pedestrian travel	2030	$1,584,000		√	√	√			√	√
438	Woodlawn Pike	Knoxville	Sidewalk to enhance pedestrian travel	2030	$528,000		√	√	√			√	√
439	Valley View Drive	Knoxville	Sidewalk to enhance pedestrian travel	2030	$792,000		√	√	√			√	√

[1] Sidewalk project costs are estimated by a standard $100 per linear foot and do not include right-of-way costs are other non-construction related costs.
[2] Sidewalk projects that are part of a road construction project are not given an individual project cost since the cost is typically tied in with the overall project cost of the road.

Greenways

LRTP #	Project	Jurisdiction	Description	Year	Cost[1]	1	2	3	4	5	6	7	8
500	Caswell Greenway	Knoxville	Construct greenway from Caswell Park to First Creek Park	2014	$292,500		√	√	√			√	√
501	Fountain City Greenway	Knoxville	Construct greenway from Fountain City Park to Adair Dr	2014	$678,300		√	√	√			√	√
502	Fourth Creek Greenway	Knoxville	Construct greenway from Weisgarber Rd to Lakeshore Park	2014	$1,030,350		√	√	√			√	√
503	Halls Greenway	Knox County	Halls Community Park to library on Emory Rd	2014	$792,000		√	√	√			√	√
504	James White Greenway	Knoxville	Extension from Neyland Greenway, across South Knoxville Bridge to Island Home Park	2014	$594,600		√	√	√			√	√
505	Knox/Blount Greenway	Knoxville/ Knox County/ Blount County/ Alcoa	Construct greenway from Neyland Drive to connect into existing Pistol Creek Greenway	2014	$2,925,000		√	√	√			√	√
506	Lower Second Creek Greenway	Knoxville	Construct greenway from Worlds Fair Park to Neyland Greenway	2014	$220,500		√	√	√			√	√
507	Pistol Creek Greenway	Alcoa	Extension of Pistol Creek Greenway	2014	$1,875,000		√	√	√			√	√

LRTP #	Project	Jurisdiction	Description	Year	Cost[1]	1	2	3	4	5	6	7	8
508	Stock Creek Greenway	Knox County	Construct greenway from French Memorial Park to Bonnie Kate Elementary School	2014	$387,300		√	√	√			√	√
509	Ten Mile Creek Greenway	Knox County	Extension from Walker Springs Park to Jean Teague Greenway	2014	$545,400		√	√	√			√	√
510	Upper Second Creek Greenway	Knoxville	Construct greenway from Worlds Fair Park to Old City	2014	$861,900		√	√	√			√	√
511	Victor Ashe Greenway	Knoxville	Construct greenway from Northwest Middle School to Victor Ashe Park	2014	$544,200		√	√	√			√	√
512	Baptist Greenway	Knoxville	Greenway from south side of Tennessee River to Gary Underwood Park	2030	$473,550		√	√	√			√	√
513	Cherokee Bluff Greenway	Knoxville	Greenway from Knox/Blount Greenway near Alcoa Highway to Fort Dickerson	2030	$1,759,050		√	√	√			√	√
514	Danny Mayfield Greenway	Knoxville	Greenway from Malcolm Martin Park to Tyson Park	2030	$799,800		√	√	√			√	√
515	Forty Utility Line Greenway	Knoxville	Greenway from First Creek Greenway to Knoxville Center Mall	2030	$4,139,400		√	√	√			√	√
516	Girl Scout Greenway	Knoxville	Greenway loop along Merchant Drive connecting to Northwest Middle School	2030	$792,000		√		√			√	√
517	Lonsdale Loop Greenway	Knoxville	Greenway loop within Lonsdale Park	2030	$792,000		√		√			√	√
518	Parkside Greenway	Knoxville	Extension along Parkside Drive to Ten Mile Creek Greenway	2030	$3,045,900		√	√	√			√	√
519	Sharps Ridge Greenway	Knoxville	Greenway along the south side of Sharps Ridge	2030	$1,184,850		√	√	√			√	√
520	Smoky Mountain Greenway, Phase I & II	Knoxville	Greenway from Fort Dickerson to Baptist Greenway	2030	$1,962,150		√	√	√			√	√
521	South College Greenway	Knoxville	Greenway along I-40/75 from Weisgarber Rd to Hollywood Dr	2030	$1,402,500		√	√	√			√	√
522	Tennessee River Greenway	Knoxville	Greenway from south side of Tennessee River at Gay St to South Knoxville Bridge	2030	$1,472,250		√	√	√			√	√
523	Victor Ashe Greenway	Knoxville	Greenway from Badgett Field to Third Creek Greenway	2030	$3,348,450		√	√	√			√	√
524	Williams Creek Greenway	Knoxville	Greenway from Sarah Moore Elementary School to James White Greenway	2030	$270,600		√	√	√			√	√
525	Willow Creek Greenway	Knoxville	Extension of Cavet Station Greenway from Middlebrook Pike to Harper's Cave on Bakertown Rd	2030	$1,288,350		√	√	√			√	√

[1] Greenway project costs are estimated by a standard $150 per linear foot and do not include right-of-way costs are other non-construction related costs.

VI. TPO PLANNING AREA INTERMODAL TRANSPORTATION ELEMENT

The second element of the Knoxville Regional Long Range Transportation Plan Update addresses the TPO Planning Area. The TPO Area element includes projects to be considered for placement into future Transportation Improvement Programs. The TPO Area element must be fiscally constrained, meaning the cost of the construction and maintenance of the projects identified must not exceed projected revenues.

TPO PLANNING AREA STREETS AND HIGHWAYS

Background

The TPO Planning Area streets and highway component focuses on the roads that lie within the TPO Area and projects that are eligible for federal funding through the Transportation Improvement Program or are of regional significance.

Existing Conditions

Both Blount and Knox Counties have experienced considerable growth over the last few decades, however, road infrastructure has not kept pace, meaning several roads that serve major traffic generators and function as arterials are deficient both in design and capacity. Many two lane roads consist of a pavement width of 18' or less, have sharp horizontal curves, limited shoulder space, and contain poor vertical curves causing safety concerns as traffic volume increases.

Major interstates through the TPO Area include I-40, I-75, I-640, I-275, and I-140. More than 30 interchanges provide access to the local arterial and collector system. James White Parkway, Alcoa Highway, and Pellissippi Parkway are major expressways.

In 2002, there were approximately 20 million vehicle miles traveled per day on roads throughout the TPO Area, almost double that of 1990.

Progress Since the Adoption of the 2002 Long Range Transportation Plan

The 2002 Long Range Transportation Plan identified several projects that have been completed or have gotten underway. Among the major completed projects are:

- Reconstruction of I-40/75 from Papermill Road to Gallaher View Road;
- Widening and interchange improvements to Alcoa Highway from I-40 to Cherokee Trail;
- Widening of Lovell Road from Kingston Pike to Gilbert Road;
- Construction of Gallaher View Drive from Kingston Pike to Middlebrook Pike;
- Extension of Pellissippi Parkway to SR 33;
- Widening of Hardin Valley Road west of Pellissippi Parkway;
- Widening of Middlebrook Pike from Cedar Bluff Road to Ball Camp-Byington Road;
- Construction of the Campbell Station Road Extension; and,
- Construction of Hall of Fame Drive.

Construction is underway on:

- Widening of I-40 near James White Parkway (SmartFix);
- Adding an auxiliary lane to I-75 between I-640 and Merchant Drive;

- Reconstruction of Ball Camp Pike; and,
- Widening of Dutchtown Road from Pellissippi Parkway to Cedar Bluff Road.

With the passing of the SAFETEA-LU Transportation Bill, over $118 million in federal funds were earmarked by Congressional leaders for projects throughout the Knoxville Region. Among the major earmarks that lie within the TPO Planning Area are $20 million for the University of Tennessee Joint Institute for Advanced Metals, $11 million for construction of the Central Station Transit Center in Knoxville, $8 million to construct the Great Smoky Mountain Heritage Highway Cultural and Visitors Centers in Maryville, $8 million for the University of Tennessee National Transportation Research Center, $6.5 million to widen and improve SR 33 in Knox County, $6.5 million to widen Western Avenue in Knoxville, $6.5 million to construct an overpass at US 321 and US 11 in Lenoir City, $6 million for improvements to Blount Avenue and Sevier Avenue to support the South Knoxville Waterfront Redevelopment, $5 million to make access improvements to the I-275 Industrial Park in Knoxville, $1.6 million for streetscape improvements near the Tennessee Theater in Downtown Knoxville, $1.44 million to widen Campbell Station Road in Farragut, and $1.2 million to construct a turn lane on SR 35 in Seymour. Other earmarked projects are shown as part of Table 9 and indicated on Map 6, Knoxville Regional Highway Projects.

Existing plus Committed Projects

Table 11 lists highway projects that have either been completed or construction has already begun since the year 2000. 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 2000 on the highway network that was in place at that time. 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 Long Range Transportation Plan for our Region.

In addition, a 2002 Base Year network was developed for the model since this was required as one of the analysis years for the less than baseline emissions test used to demonstrate conformity for the area outside of Knox County, therefore the completed projects are also denoted by if they were completed by the end of 2002.

Existing Studies, Plans, and Programs

Several communities have completed studies that include recommendations for transportation improvements. The Blount County Roadway Needs Study completed in 2000 provides an evaluation of the existing street and highway network and identifies future transportation needs. The Blount County Growth Strategy was recently completed for Blount County and the City of Maryville outlining recommended transportation improvement projects over the next 25 years. The City of Alcoa and Town of Farragut have community master plans that provide a land use and transportation vision and recommend future roadways with context sensitive design. The Metropolitan Planning Commission produces Sector Plans and other corridor studies for Knox County and the City of Knoxville that outline possible transportation projects and adjacent land use recommendations. Each municipality produces a capital plan that outlines specific road projects with respective costs.

The TPO has an origin/destination study that provided a basis for the travel demand model on the number of vehicle trips that crossed county lines.

Issues

During the development of the Long Range Transportation Plan, consultation and cooperation among many jurisdictions throughout the Region as well as state and federal agencies was required to develop highway project lists and to meet air quality conformity determination requirements. Federal planning regulations require the plan to be fiscally constrained, meaning the projects identified in the plan may not have a construction or maintenance cost greater than the revenue that is expected over the life of the Plan. Currently, determining future revenue projections are difficult given the uncertain budgets of governments coupled with the unknown future revenue from state and federal agencies for highway projects.

The advanced purchase of right-of-way for future transportation projects has proven to be difficult. Land in the path of the Knoxville Parkway, James White Parkway, Pellissippi Parkway (I-140), and Ball Camp Pike, to name a few, has been developed despite highway plans, increasing land acquisition costs and exacerbating potential conflict.

Table 11: Existing plus Committed Projects List

Project	Jurisdiction	Location	Description	Current Status as of (3/2005)
Alcoa Hwy (SR 115)	Blount/Knox County	Bridge over Little TN River at Knox County Line	Replace Bridge	Complete- 2005
Alcoa Hwy (SR 115)	Knoxville	Neyland Dr to I-40	Widen 4-lane to 6-lane	Complete – 2002
Bradshaw Road	Knoxville	Pleasant Ridge Rd to Ball Camp Pk	Widen 2-lane to 3-lane	Complete
Callahan Dr/ Schaad Road	Knox County	I-75 to Pleasant Ridge Rd	Widen 2-lane to 4-lane	Complete
Campbell Sta. Rd/Concord Rd	Farragut	Kingston Pk to Turkey Creek Rd	New 5-lane/Widen 2-lane to 5-lane	Under Construction
Dry Gap Pike	Knox County	Emory Rd to Beaver Creek Dr	Widen 2-lane to 4-lane	Complete
Dutchtown Road	Knox County	Pellissippi Pkwy to Cedar Bluff Rd	Widen 2-lane to 3-lane	Under Construction
Emory Rd (SR 131)	Knox County	Gill Rd to Bishop Rd	Widen 2-lane to 5-lane	Under Construction
Hardin Valley Road	Knox County	Pellissippi Pkwy to Campbell Station Rd	Widen 2-lane to 3-lane	Complete- 2005
I-40/75	Knoxville	I-640 to Papermill Dr	Widen 6-lane to 8-lane	Complete – 2002
I-40/I-75	Knoxville	West Hills Interchange to Papermill Dr Interchange	Widen 6-lane to 8-lane	Complete- 2006
I-140 (Pellissippi Pkwy)	Blount County	Cusick Rd to Old Knoxville Hwy (SR 33)	New 4-lane Freeway	Complete- 2005
I-640	Knoxville	Broadway to I-275	Widen 4-lane to 6-lane	Complete – 2002
Kingston Pike	Knoxville	Noelton Dr to Lyons View Pk	Add turn lane	Complete
Lovell Rd/I-40 Interchange	Knoxville	I-40 to Gilbert Rd	Widen 2-lane to 4-lane	Complete – 2 002
Middlebrook Pike	Knox County	Hardin Valley Rd to Cedar Bluff Rd	Widen 2-lane to 5-lane	Complete- 2007
Middle Creek Road	Pigeon Forge/Sevierville	US 441 to Dolly Parton Pkwy	Widen 2-lane to 4-lane	Under Construction
Sandy Springs Road Extension	Blount County	Carpenter Grade Rd to Montvale Rd	New 2-lane	Complete
US 321 (Parkway Hwy)	Gatlinburg	Glades Rd to Buckthorn Rd	Widen 2-lane to 5-lane	Under Construction
US 321 (SR 73)	Loudon County	Blount County Line to SR 95	Widen 2-lane to 4-lane	Under Construction
US 321 (Wears Valley Rd)	Pigeon Forge	Walden Creek Dr to US 441	Widen 2-lane to 5-lane	Complete
US 321 (Wears Valley Rd)	Blount County	Kinzel Springs to Wears Valley Rd	Widen 2-lane to 5-lane	Complete – 2002
U.T. Bridge	Knoxville	Ag Campus to Andy Holt Dr	New 4-lane	Complete – 2002
Weisgarber Road	Knoxville	Middlebrook Pk to Papermill Rd	Widen 2-lane to 5-lane	Complete
Westland Drive	Knox County	Ebenezer Rd to Pellissippi Pkwy	Widen 2-lane to 3-lane	Complete

Objectives and Proposed Actions

The Long Range Transportation Plan sets aside 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 questions that emphasize system maintenance, system efficiency, environmental quality, mobility options, regional approach, financial investments, safety, and security (see appendix for copy of application). 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 and ranking the projects based on their application. The TPO Technical Committee makes a recommendation to the TPO Executive Board, which approves projects to be placed into the Long Range Transportation Plan. When projects are moved into the Transportation Improvement Program, they must come from the Long Range Transportation Plan and go through additional selection criteria.

Programmed and Planned Projects

Table 8 shows a list of planned highway projects for the TPO Planning Area by completion year. The LRTP # corresponds the project listing in the table to the project location on Map 18, which displays TPO Area highway projects color coded by

anticipated completion horizon year. Four completion horizon years were used to coincide with air quality conformity determination horizon years: 2009, 2014, 2020 and 2030. Following each highway project are columns that identify which of the goals and objectives are applicable to that project and whether the project addresses a congested corridor or hot spot, as identified in Chapter VIII, a high crash location, as identified in Chapter XI, or are located in a Title VI area, as identified in Chapter XVI.

The following funding sources generally fund projects that are not regionally significant and are exempt from conformity determination. Additionally, projects funded with these funding sources are programmed on an annual basis and are not programmed more than a few years into the future. Therefore, categories of projects typically funded under these sources will be noted so that they are accounted for the plan and referenced but specific projects will not be listed. The plan does financially account for these projects based on the typical percent from previous TIP percentages of dollars allocated to these funding sources. For financial constraint information, see Chapter XIV.

Congestion Mitigation and Air Quality Projects (CMAQ)

Congestion Mitigation and Air Quality (CMAQ) funds are used for projects that improve air quality by reducing transportation related emissions. CMAQ projects are annually programmed in the TIP and have undergone a prescreening and ranking prioritization process that reflects the priorities of CMAQ's guidance. Projects funded with CMAQ funds will generally relate and improve the congested corridors and hot spots listed in the Congestion Management Process in Chapter VIII. Additionally, projects affecting the congested corridors and hot spots in the CMP may include the following activities:

- Transportation activities in an approved SIP or maintenance plan;
- Transportation Control Measures (TCM) to assist areas designated as non-attainment under the Clean Air Act Amendments. At this time no TCM are necessary;
- Extreme low temperature cold starts programs;
- Public-Private partnerships demonstrating strong emission reduction benefits;
- Alternative fuels;
- Traffic flow improvements;
- Transit projects;
- Bicycle and pedestrian facilities and programs demonstrating strong emission reduction benefits;
- Travel demand management;
- Outreach and rideshare activities;
- Telecommuting;
- Fare/fee subsidy programs;
- Intermodal freight;
- Planning and project development activities;
- I/M eligibility;
- Magnetic levitation transportation technology deployment programs; and,
- Experimental pilot projects.

Transportation Enhancement (TE)

Transportation Enhancement (TE) projects are chosen at a statewide level with the TPO endorsing applications from its jurisdictions. Projects funded with Transportation Enhancement dollars must relate to surface transportation. The following are types of TE projects as specified under the federal regulations that may be funded during the life of this plan:

- Provision of facilities for pedestrians and bicycles;
- Provision of safety and educational activities for pedestrians and bicyclists;
- Acquisition of scenic easements and scenic or historic sites;
- Scenic or historic highway programs (including the provision of tourist and welcome center facilities);
- Landscaping and other scenic beautification;
- Historic preservation;
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals);
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails);
- Control and removal of outdoor advertising;
- Archaeological planning and research;
- Environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity; and,
- Establishment of transportation museums.

The TPO encourages the local jurisdictions to fund sidewalk and greenway projects identified in this Plan.

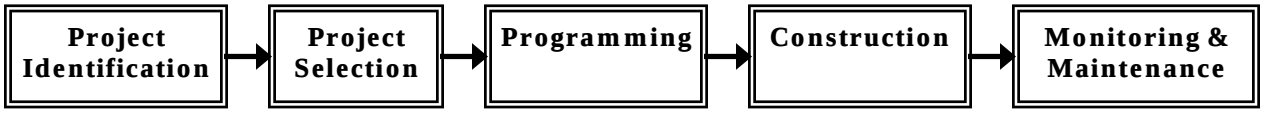
Bridge Replacement and Rehabilitation Program (BRRP)

The Bridge Replacement and Rehabilitation Program (BRRP) provides funds to assist the states in their programs to replace or rehabilitate deficient highway bridges and to seismically retrofit bridges located on any public road. The State of Tennessee chooses specific bridges to fund based on the bridge's deficiency ranking among others in the State. Most of the bridge projects are replacement or repair of existing bridges that do not add capacity or change the traffic patterns on the roadway.

Conclusion

Figure 3 shows the timeline of transportation projects from identification through completion. Projects are identified through numerous plans that have been completed such as local and state community and transportation plans, the Congestion Management Process (CMP) Plan, Knoxville Regional Bicycle Plan, Knoxville Area Transit (KAT) Action Plan 2010, etc., and through jurisdictional and public input. Projects then go through a process for inclusion into the Transportation Improvement Program (TIP), which identifies a program of projects to be funded with federal dollars. The TIP is continuously updated every four years. Once the project is funded, implementation can occur. This involves planning, design, and engineering of the project, as well as environmental impact assessments. The project can then move into right-of-way acquisition and construction. When the project is completed, it must be monitored and maintained to ensure its continued efficiency.

Figure 3: Timeline of Transportation Projects



MAP 18: TPO PLANNING AREA HIGHWAY PROJECTS

TPO PLANNING AREA PUBLIC TRANSPORTATION

Background

A variety of public transportation and transit services are offered throughout the TPO Area. These services range from very intense fixed-route services in the core of the City of Knoxville to demand response services in the suburban and rural portions of the TPO Area.

Existing Conditions

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 Map 19)*. With a capital and operating budget slightly over $14 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 total of 72 buses.

KAT also provides bus service to the University of Tennessee on a comprehensive system called "The T" which consists of on and off campus fixed routes, curb-to-curb minibus service, and ADA paratransit service. Trolleys serve the downtown and University of Tennessee areas on five routes served by eight antique style trolleys and four hybrid propane trolleys. KAT also operates a demand response service for persons with disabilities called the LIFT consisting of 14 twenty-two foot vans. KAT has implemented a comprehensive Clean Fuels Program that includes use of alternative fuel vehicles. KAT has been recognized for its achievements in the transit industry by being named the recipient of the 2004 Outstanding Public Transportation System of the Year by the American Public Transportation Association. Total system ridership for fiscal year 2006 was 3.6 million passengers the highest experienced at KAT in almost twenty years.

Knox County CAC Transit (part of the Knoxville/Knox County Community Action Committee)

Knox County CAC Transit serves to increase access to community resources for all Knox County residents who have no other means of transportation. Knox County CAC Transit serves people of all ages but is limited by restrictions to providing service based on funding and/or by requirements for utilizing services. Knox County CAC Transit has an approximate budget of slightly over $2 million per year. Many of Knox County CAC Transit's funding sources provide strict limitations on who qualifies for subsidized fares. Priority is given to health care related trips. Knox County CAC Transit primarily provides demand response service, meaning that pick-ups and drop-offs are usually prearranged. Knox County CAC Transit also contracts with a wide variety of non-profit agencies and several hospitals and health care organizations. Knox County CAC Transit also offers Job Access service for employment and training related purposes. For FY 2006, Knox County CAC Transit provided over 250,000 one-way trips.

East Tennessee Human Resource Agency (ETHRA)

ETHRA provides demand response services in sixteen counties including Blount, Loudon, and Sevier Counties. ETHRA will generally defer Knox County trips to KAT or Knox County CAC Transit. However, occasionally ETHRA will provide services solely in Knox County. ETHRA does provide a lot of service for trips into-and-out of Knox County.

Knoxville Commuter Pool (KCP) and Tennessee Vans

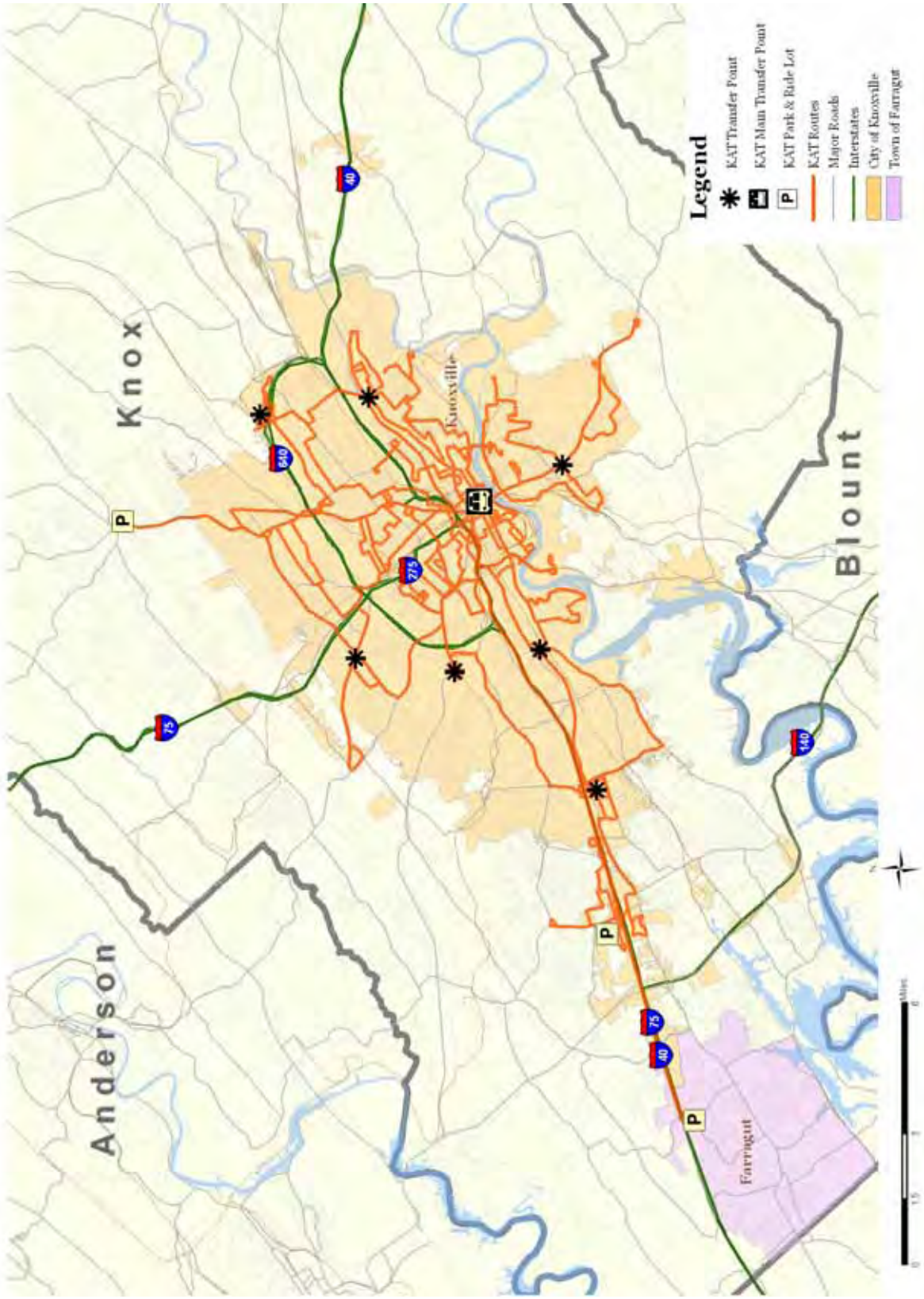
KCP and Tennessee Vans are commuter transportation services designed to help employees use car pools, van pools, and public transit. KCP and Tennessee Vans are located at the University of Tennessee Center for Transportation Research and services are available to employees and residents in the Knoxville Metropolitan Area. Tennessee Vans provides vans and support services throughout the Region for commuting purposes.

Other Providers

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. Taxi cabs provide immediate transportation but at a higher cost to the passenger. Taxi fares are not subsidized and must be paid in full by the user.

TennCare Transportation is provided for those individuals that are enrolled in TennCare. Each client must call their Managed Cared 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 the Tennessee Department of Transportation. The public schools throughout the area all offer transportation services to their students. Knox County Schools alone provides over 5 million trips per year.

MAP 19: KNOXVILLE AREA TRANSIT ROUTE MAP



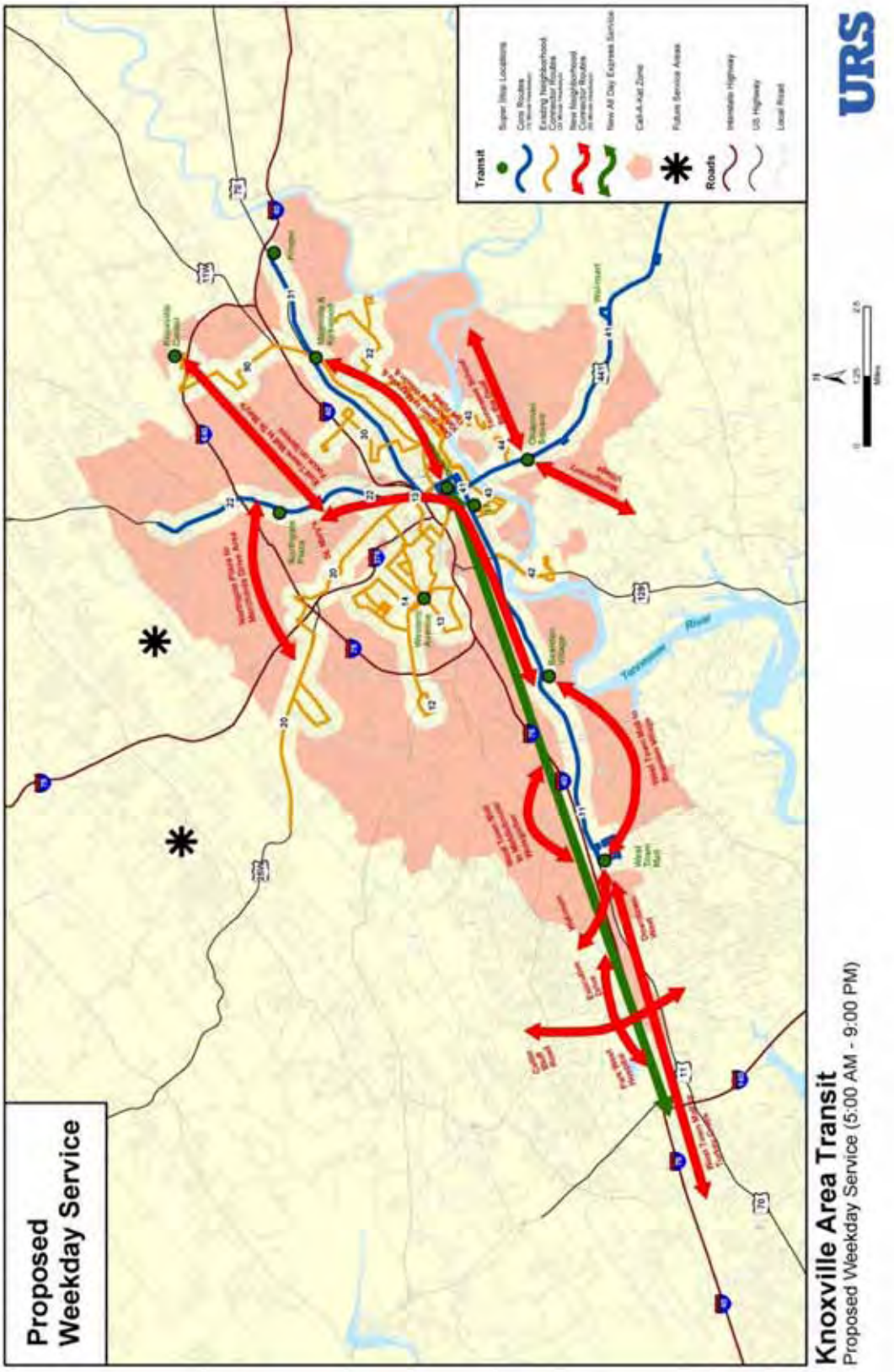
Existing Studies, Plans, and Programs
Several planning studies have been completed over the last few years. Those include the KAT Action Plan 2010 and the Knox County Senior Summit Transportation Task Force. Also, the City of Knoxville has moved forward on developing a transit center in Downtown Knoxville, called Knoxville Station. The Environmental Analysis has underway for a site parallel to the Church Avenue Bridge. Recently, a locally coordinated Human Services Transportation Plan, beginning on page 99, was developed by TPO staff and approved by the TPO Executive Board.

KAT Action Plan 2010
The Knoxville-Knox County Metropolitan Planning Commission, in conjunction with KAT, conducted the KAT Action Plan 2010. This year long study included a detailed evaluation of the transit services provided by KAT and designed a vision for transit in Knoxville's future. The KAT Action Plan 2010 looked at KAT's day-to-day organization, operations, service provisions, and marketing and made recommendations on how to improve these areas. KAT included two components in the planning process to ensure a common vision with realistic expectations. First, a very thorough and complete public involvement process where both riders and non-riders contributed was conducted. Second, the plan included a strategically targeted market research program that used state-of-the-art techniques including focus groups and a random telephone survey to find out what citizens want in a transit system. In the end, a map for the development of transit services in Knoxville was prepared.

The KAT Action Plan 2010 identifies recommendations that will provide a basis for KAT to achieve its goal of being: *an organization that provides a community benefit and service through effective and efficient operations, that is sensitive to the need to be a leader in environmental issues, and, that offers "big city" transportation service with a "small town" touch*. The service recommendations identified in this plan represent about a $5 million annual investment over today's budget. This increase in funding will not come from one source but a variety and is deemed realistic, doable, and can make KAT better.

The basis of the plan *(see Map 20)*, is a three-tiered transportation system that reflects fast and frequent core service on the main routes; neighborhood community based transit service using small, alternative fueled vehicles; and an expanded Call-A-KAT, a demand response network that provides cost-effectiveness in Knoxville's lower density areas.

MAP 20: KAT ACTION PLAN



Key elements of the plan include:

- Fifteen-minute service on Broadway, Magnolia Avenue, Chapman Highway, and Kingston Pike routes on weekdays and 30 minute service on Saturday. This represents the "core service" and will provide highly frequent and accessible service on Knoxville's major corridors;
- Development of a network of "neighborhood connector" routes that will include existing routes such as Western Avenue, Fairmont Boulevard, and College Street routes as well as new routes. These routes will use smaller buses appropriate to the neighborhood and serve as feeders into the core route system;
- Expansion of Call-A-KAT to the entire City of Knoxville. Anywhere in the City, seven days a week, a rider more than ¼ mile from a fixed route can "Call-A-KAT" and get a ride to their destination or the nearest route, which ever is closest;
- Expanded hours of service on weekdays with the Night Rider/Call-A-KAT;
- A downtown bus transit center that will serve as a focal point for downtown trolley services and a transfer point for the KAT routes coming downtown;
- A series of Superstops located throughout the community at key locations where more than one route intersects and transfers can be made. Superstops can be sheltered bus stops to a complete indoor facility with restrooms, vending, and ticket sales. In some cases, Superstops may be part of a larger multi-use development;
- Use of advanced information technology to provide real-time information at the major transit centers and access to KAT's schedules and systems using Internet and PDA technology; and,
- Development of a new bus fleet that will be oriented towards smaller buses, alternative fueled vehicles, and ensuring accessibility to all citizens.

The overall expansion of the system represents about $4.9 million annually in additional operating costs. New vehicles with a total cost of $2 million will be needed, more than what is needed traditionally for a vehicle replacement program. The plan calls for an implementation timeframe of five years, which represents an increase in KAT's operating budget of about 10% annually. Capital budget requirements come from federal and state sources as well as special grants.

One major addition has been the creation of a new transit system for the University of Tennessee. The new system puts a tremendous amount of new service in the University area that encourages students and faculty to use the system to get across campus. The new University of Tennessee system has been extremely successful. KAT has added new programs such as free passes for downtown employees and free bus rides on Air Quality Action Days.

Downtown Knoxville Transportation Linkages Study (DKTLS)

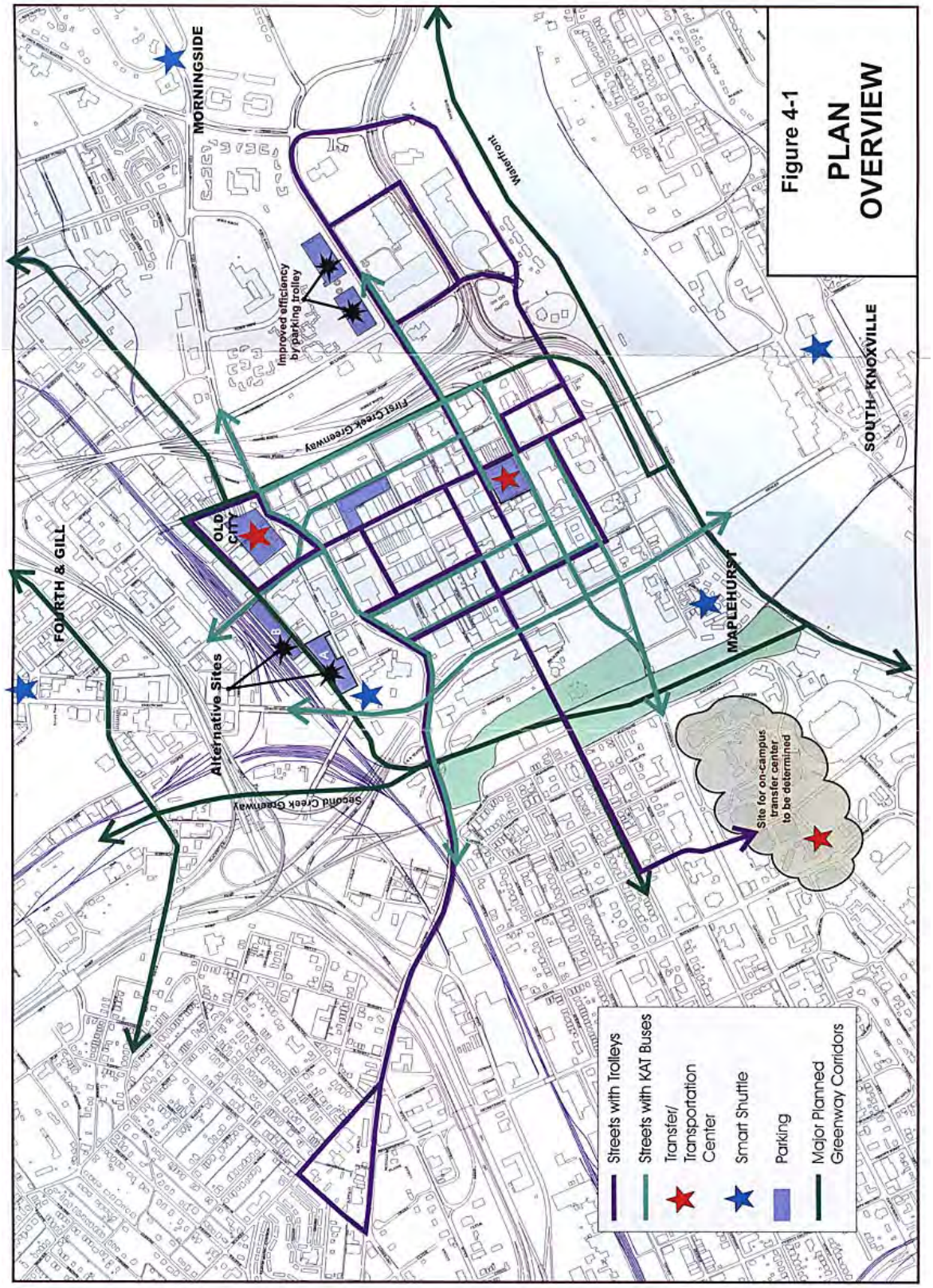
As Downtown Knoxville changes, there is the challenge to link both the new and existing developments to encourage interaction and create the framework for a vibrant downtown core. The DKTLS is a comprehensive, multi-modal transportation plan for downtown and its surrounding neighborhoods that sets out an innovative plan to accomplish the goal of linking sites. The study had an extensive public input

process and was completed in November of 2000.

Downtown Knoxville is blessed with a compact scale as well as a wealth of cultural resources, attractions, and development opportunities. With the new attractions and more residents, accessibility and mobility will become increasingly important. A five-minute framework best summarizes the conceptual vision of the DKTLS. With improved trolley service, Smart Shuttles, and pedestrian improvements, movement within downtown and the adjacent neighborhoods can be accomplished by a five-minute trip on foot or by transit. Transit connections are improved with a centrally located transfer center near the trolley routes. Smart Shuttles are on-call vehicles that can be summoned by a citizen at strategically placed call-boxes within nearby neighborhoods and throughout the downtown. Long-term peripheral parking is made more accessible with trolley service, allowing a "park once" system.

The DKTLS proposals are packaged into short term, mid-term, and long-term phases. Key elements of the plan are more trolley service, Smart Shuttles, three new transfer centers, including one centrally located in the downtown, strategically placed parking, improved pedestrian connections, and more greenways *(see Map 21)*. All of these proposed elements of the DKTLS will make it quicker and easier to move about downtown. By offering a variety of pedestrian, trolley, and shuttle services, residents, workers, and visitors can access downtown or adjacent areas quickly. Making it easier to walk or take a trolley increases pedestrian movements that are essential for a vibrant urban core. Although light rail is not a feature of the immediate plan, a Gay Street line is not ruled out as a long-term consideration.

MAP 21: DOWNTOWN KNOXVILLE TRANSPORTATION LINKAGES STUDY



Knoxville Central Station

The heart of the DKTLS and KAT Action plan 2010 was the need to construct a new, state-of-the-art bus transfer center in Downtown Knoxville. Key to this recommendation was the desire of the passengers to be closer to the geographic center of downtown, improving overall accessibility. Plus, by being in an enclosed or covered facility with passenger amenities, overall transit accessibility and passenger experience is enhanced. A core downtown location also strengthens the connection between regular KAT service and the trolley routes. Several studies have been conducted trying to find the best location in downtown to locate the center.

It is desired that the new transfer center also have a variety of support uses to help transit riders, such as retail, restaurant or snack shops, automatic teller machines (ATM), utility payment services, police substation, laundry services, or even daycare. Parking to replace or to add what supports the transfer center should be included. If at all possible the structural capacity to support future residential, office, and public uses should be provided.

Key to the location of the transfer facility is pedestrian improvements. The facility should be easy to access. If the transfer facility is not in the core of downtown, pedestrian improvements should be made to help link the facility to the core. Knoxville Station should incorporate the architectural treatments of the surrounding buildings and its design should support and complement both existing and planned development through strong urban design techniques and fully integrate transit linkages, pedestrian access, parking opportunities, and signage and take into consideration vehicular traffic interaction.

The facility would accommodate thousands of passengers per week as a point of destination, departure, or transfer. Transfer to and from the downtown trolley system will be key in making any center work.

It is intended that the Center will serve as a catalyst for other downtown redevelopment, including creating linkages to downtown housing, the convention center, and other tourist attractions.

Knoxville Station Update 2007

Currently, a site that parallels the Church Avenue Bridge is being analyzed. Through an extensive public involvement process which re-examined thirty-four sites this location has been proclaimed the preferred by the Mayor of the City of Knoxville. A challenge of the location study is to find a site large enough to handle the KAT's needs. This site meets KAT's program requirements. The preparation of an Environmental Analysis (EA) is underway and should be completed in the summer of 2007.

This site abuts the Church Avenue Bridge and expands 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. If built the new transfer center can act as a catalyst to expand the CBD eastward to the underutilized Knoxville Coliseum area.

While the transfer to buses would not occur in a completely enclosed facility it would be covered by a series of canopies. Climate controlled waiting areas could be located on the platform. Climate controlled areas with

restroom will definitely be located in the KAT building that would be built as part of the project. While at the fringe of the CBD, pedestrian improvements along Church Avenue to Gay Street will be needed. Plus, additional trolley service will need to be added to help passengers access all parts of the downtown.

Human Services Transportation Coordination Plan

The new transportation bill, the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: a Legacy for Users (SAFETEA-LU) requires that a Public Transit-Human Services Transportation Coordination Plan (HSTCP) be prepared. 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. With regard to funding distribution, the regulations call for an open project selection process that allows for all providers to put forth proposed services to be considered for funding. While it is not required to fund all programs, a transparent-selection process must be shown, projects must be fairly considered, and justification of selected projects must be made.

JARC funds are available to communities to help provide transportation services to get people to work or to job training or education related activities. New Freedom funds are designed to help people who are disabled. Typically, they must be used to provide new services that have not been traditionally operated. Section 5310 funds are typically used to buy vans which must predominately carry elderly individuals and those persons who are disabled. Section 5310 funds are also open to non-profits. 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.

SAFETEA-LU developed a new method to distribute JARC funds based on a formula that looks at an area's total population and the respective low income and persons who are disabled populations. The new formula has a major impact in the Knoxville by drastically reducing the amount of JARC funding available by as much as 82.5%. By example, both KAT and Knox County CAC Transit have received annual earmarks averaging $2.4 million a year (50% federal/50% matching funds). For FY 2006, the Knoxville area will be allocated $210,000 federal funds for a total of $420,000 when matched. This action essentially will gut the area's JARC programs, reducing services, possibly costing people jobs, and creating larger gaps in existing services. This action has caused local providers to re-examine how JARC services will be offered and funded in the future and placed even a stronger emphasis on coordination.

The Knoxville Regional TPO Executive Board charged a committee consisting of TPO staff, KAT, Knox County CAC Transit, ETHRA, the University of Tennessee Commuter Pool/Tennessee Vans, Smart Trips, and the TDOT to prepare the local HSTCP. As required by SAFETEA-LU, the HSTCP hopes to maximize local programs by minimizing duplication of services. The report includes the required following "core" elements: (1) an assessment of available services; (2) an assessment of transportation needs for individuals with disabilities, older adults, and people with low income; (3) an identification of strategies or activities to address the needs and to achieve efficiencies in services delivery; and (4) a prioritization of strategies for implementation.

The HSTCP Committee first 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.
4. Create greater access to transit by providing infrastructure and amenities such as sidewalks, shelters, and signs.

Next, the HSTCP Committee identified and ranked more detailed strategies (not in any specific order) as a slate of possible projects that should be worked towards locally. Examples of those projects include:

- Provide new coordinated services to help meet the needs of those passengers that may be impacted by the changes in KAT and Knox County CAC Transit JARC services.
- Additional transit services are needed. Services should be accessible to all citizens including those who are elderly, disabled, or of low income.
- Citizens support increase funding for transit. While passengers should contribute, fares should remain affordable.
- A variety of services should be offered using different sized vehicles that can provide a more efficient service.
- If possible transfers between transit service providers should be made available.
- Often citizens do not realize services are already available. Efforts should be undertaken to inform citizens about the availability of transit services.
- Often medical staffs, counselors, and human service organizations are a first point of referral for transit services. Efforts should be undertaken to inform staff about the availability of transit services.
- First time passenger may feel more comfortable using transit if escorted travel trainers were available.
- Often the most frailest and disabled can not ride a bus or van. Regular escorts or assistants should be available to provide trips in cars or minivans.
- Greater access to transit can be created in infrastructure and amenities such as sidewalks, shelters, and signs were more often provided.
- Area transit services should be coordinated to increase efficiency.
- Using or sharing technology can help create a more conducive coordination environment.

The HSTCP regulations, by default, designated the JARC and New Freedom funds to the Section 5307 recipient (KAT). The regulations allow the Section 5307 recipient to take applications and make recommendations for funding even though they most likely would be applying for the funds themselves. The HSTCP Committee echoed many of the same concerns found across the nation that this may lead to a perceived prejudice or conflict of interest. So, the regulations allow a local decision in deciding if it is more appropriate for a different agency to be the JARC and New Freedom recipient. The HSTCP recommends starting in FY 2007:

1. The TPO to be the designated recipient of Knoxville's JARC & New Freedom Funds.
2. The HSTCP Committee should be made permanent as long as it remains useful.
3. The primary purpose of the HSTPC Committee will be to coordinate services.
4. The TPO staff will be responsible for manage the HSTCP Committee.
5. If funding is available the TPO staff will have an annual call for projects to be funded through JARC, New Freedom, and Section 5310 and take applications.
6. The TPO staff and the HSTCP Committee will work with TDOT with respect to project selection for Section 5310 funds.
7. The HSTCP Committee will provide help designing the competitive selection process.
8. The TPO staff (working with the HSTCP Committee) will evaluate each application and rank projects in priority to be funded. The TPO staff will take the recommend slate of project to be funded for concurrence to the Technical Committee and approval by Executive Board (final decision for Section 5310 rest with TDOT).

In seeking public input in the plan, the HSTCP Committee held two public meetings. Citizens were invited to attend and provide input on issues or concerns and to review the draft plan. The meetings also encouraged providers who might be interested in JARC or New Freedom funding to attend and to express interest in applying for funds. Also, early on, a survey was distributed to over 200 citizens, community groups, and non-profit organizations to help identify needs and gaps in services. The plan was discussed at a variety of meetings, including: the Knox County CAC Transit Citizen Advisory Committee, the KAT Community Advisory Committee, the Knoxville Transportation Authority, TPO Title VI Working Group, Knoxville-Knox County Council on Aging, Workforce Connections, and the Knoxville-Knox County Community Action Committee (CAC) Board. Many of these groups comprise of citizens, transit passengers, social service agencies, and non-profit organizations that have concerns about public transportation. The TPO Executive Board adopted the HSTCP on May 23, 2007. While the HSTCP is not a financially constrained plan the provisions, strategies, and proposed projects do not conflict with the Long Range Plan. In fact, many of the projects are supported by this document.

The HSTCP Committee is encouraged that this plan will led to higher level of coordination in the Knoxville area. Several past coordination efforts have identified many of the same strategies but no progress was ever accomplished. The primary reason that ideas were not implemented was that no one agency could accomplish these tasks alone. Most of the ideas expand beyond the general purpose or service area of each provider. However, the strategies identified can help make transportation more available to the citizens in the community who need it the most. This plan can "kick-off" a new effort and recognizes that by working together in a coordinated effort many of these strategies may be realized.

Knox County Senior Summit Transportation Task Force

For many in our community, the desire to use transit is one of choice. However, for many seniors transit is a critical part of their life. As one ages and becomes unable to drive, transit may be the only lifeline to be able to function in society. Unfortunately,

in portions of Knox County seniors do not have access to the transit services offered. Additionally, some of the seniors that could use transit do not know what is available or how to access the services. Lack of transportation options has a significant impact on not only the individual but also the community as a whole.

Many of the demand response services available today in Knox County are focused on getting people to health care and work, which is a critical need. While informing seniors about current services is very important, the reality is health care trips alone almost outstrip current capacity. Rarely are services available to take seniors shopping, to the beauty salon, to visit a friend, to go out and eat, or to the movies. More capacity, longer hours of operation, and more frequent service are key requests in almost every public study conducted in the last fifteen years. By having ample transit options available seniors can maintain their independence.

The Senior Summit was Knox County Mayor Ragsdale's first step to help structure new initiatives that affect the lives of seniors in Knox County. The goal of the Summit was to engage senior citizens in a process and exchange information to identify needs and services that are not being met or provided. Seven task forces were formed including a Senior Summit Transportation Task Force. The Senior Summit Transportation Task Force met to go over issues identified at the Senior Summit, to augment where needed, and finally to prioritize. The top issues were refined to the following set:

- The need to educate seniors about the availability of transit services;
- The need for additional, affordable medical and non-medical transportation that is accessible and available seven days a week. This could include travel opportunities to special events;
- The need for more responsive transportation services;
- The need for more infrastructure and amenities such as sidewalks, shelters, and signs to allow more access to transit;
- The need for training programs for new riders that could include case managers and escorts or travel trainers;
- The need for additional funding to provide the necessary services and information; and,
- The need for better coordination between existing transit services, including the possibility of a new Knox County Transportation Council.

SmartFix I-40/James White Parkway Congestion Mitigation Plan

The reconstruction of I-40/James White Parkway/Hall of Fame Drive in Knoxville under the Tennessee Department of Transportation SmartFix Project will result in the closure of a segment of the interstate as well as several bridges during the 4-year construction project. SmartFix 40 planning has integrated public education and outreach, innovative contracting provisions, and transportation systems management measures into the project as methods to lessen the impact of the construction on the traveling public. This proposal recommends that in addition to these measures, Transportation Demand Management (TDM) measures be implemented to mitigate impacts on commuters and area businesses. KAT, in conjunction with the TPO and Smart Trips Program, propose a partnership with TDOT that will further alleviate congestion and confusion during the construction process by providing effective and efficient alternatives to driving alone around the Downtown Knoxville area.

As envisioned, this partnership could become a model for mitigating impacts of complex urban road projects across the state. The purpose of the plan is to improve mobility for both people and goods in order to minimize travel delay time, particularly during congested commuter periods, in a manner that:

- Provides a broad array of reasonable and fair travel choices for commuters and shippers;
- Maintain economic vitalization of businesses and urban centers in the corridor;
- Protects the corridor's residential neighborhoods;
- Improves air quality and reduces energy use; and,
- Provides relief and mitigates impact of reconstruction on corridor businesses.

Phases 1 & 2 – SmartFix 40

Marketing - In order to introduce and promote the partnership between TDOT and KAT, a marketing campaign would focus on opportunities for getting to downtown, including alternative modes as well as route changes.

Smart Trips Commuter Challenge- Smart Trips works with employers to develop trip reduction programs, encouraging employees to use alternatives to driving alone. These alternatives include carpooling, taking KAT, telecommuting, compressed work weeks, and biking. This program has been well received initially and with proper support can continue to grow. As part of SmartFix40, Smart Trips would extend their one-week Commuter Challenge to a six-month promotion with enhanced incentives to participants to encourage continued use of alternative transportation.

Vanpool Program- Several areas have been targeted as having potential for vanpools to reduce single occupant vehicle trips to work. Vanpool start-ups would be subsidized for a designated period of time.

Park & Ride Services - Express Bus Services to The University of Tennessee and Downtown from two outlying locations affected by the Phase 2 of the SmartFix project. This creates an alternative for those coming into downtown daily during the I-40 closure. The proposal recommends beginning these programs at least six months before closure to allow for substantial time for marketing and changing of travel patterns. Locations proposed are at Strawberry Plains/ Asheville Highway area (East) and Halls (North). KAT already successfully operates two express buses from the West Knoxville area into downtown, from both Cedar Bluff and Farragut. KAT has received requests for express buses from the east as well as enhanced service from the north.

Phase 2 & 3 - SmartFix 40

Increased frequency (15- to 20-minute service-peak hours) along Magnolia Avenue, Kingston Pike, and Broadway into and out of downtown - Frequent and reliable transit service in a dense commercial corridor, especially during the peak hours, would allow riders to access service literally without a schedule, making service on these already popular routes even more appealing, reducing automobiles on Magnolia Avenue, Kingston Pike, and Broadway. More than 33% of all regular fixed route trips occur on these corridors. This increased frequency was recently ranked by citizens as one of the most significant improvements KAT could make to increase ridership on major corridors.

Evaluation

The vital part of the program would be the evaluation of its success, including KAT ridership numbers, the number of businesses participating in the program, vehicle traffic counts, and marketing/opinion information on the public perception of the partnership program.

Issues

The following is a list of issues concerning the provision of transit services throughout the TPO Area.

Dedicated Funding

In order to expand transit services there will be an eventual 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. In particular, the goals and the objectives of the Senior Summit should be considered when developing transit services.

Inter-City Transportation

Expansion of inter-city transportation services should be encouraged. The demand of 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 the objectives and proposed actions of the Regional Long Range Transportation Plan. These are guiding principles to help shape the future of transit in the TPO Planning Area and draw upon many of the recommendations of the recent transit planning studies that have been completed.

Coordination

It is essential that coordination and communication be improved between TPO area transit providers to gain greater efficiencies in providing services and to generate the public support that is necessary to fully fund increased and improved services.

Transit Training/Assistance

A service should be created that will assist people in learning how to utilize transit. This service would seek to reduce new riders' fears and anxieties by helping familiarize them with transit options.

Expansion of Markets

Transit providers should identify target markets for the development and promotion of additional services. Potential markets should include, but not be limited to, students, elderly, disabled persons, commuters, and shoppers. For each group, specific service design and marketing programs should be developed. Continued expansion of services to late evening and/or

on Saturdays and Sundays should be considered.

Local Fixed-Route Service
Local fixed-route services should continue to play an important role in the transit system. Local fixed-routes should be expanded where population densities or traffic generators justify service. Routes should connect where feasible to provide more travel opportunities. Trunk-lines or core routes should have very frequent service (up to fifteen minute headways).

Neighborhood Circulators
Community based transit services should be introduced where appropriate. Demand response mini-buses or vans should circulate through lower density areas instead of traditional fixed-route services. While these services would remain within a designated neighborhood, there should be strategic locations where passengers could transfer to the transit system and act as a feeder system. If fixed-route transit is warranted, service should be provided with a smaller vehicle.

Suburban Circulators
Services should be designed to facilitate movement within a particular suburban center. Services could be fixed-route or demand response and seek to reduce congestion at these locations. Suburban circulators should connect to a transfer stop where passengers could transfer to the transit system. Suburban centers might include Cedar Bluff, West Town Mall area, Powell, Halls, and Fountain City.

Suburban Demand Response
Throughout some of the suburban portions of the TPO area fixed-route services with large buses is inappropriate. Demand response services should continue serving these areas with smaller vehicles and more flexible services. Suburban demand response programs should be expanded to provide general public transit service. To accomplish this task, a new source of revenue without socio-economic restrictions needs to be established.

Downtown Transit Opportunities
Having a vibrant downtown full of visitors requires the support of transit. 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 and eventually include the introduction of smart shuttles.

Alternative Sized Service Modes
In areas where developmental densities do not support traditional fixed-route services with large buses, transit providers should utilize alternative sized vehicles such as vans or mini-buses.

Marketing
Marketing needs to be made a more integral component of all transit programs. Aspects of the marketing include:

- Increase awareness and acceptance of public transportation;
- Promote specific services;
- Community outreach programs;
- Public/private partnerships;
- Employer/commuter services; and,
- Fare discount programs.

Information on transit programs should be made readily available and in an easy to understand format.

Knoxville Station
A new downtown transfer center should be built to support KAT operations in the core of Downtown Knoxville. The center should emphasize a pleasant waiting environment for transit users and include many amenities. The station should be a focus of downtown

transportation. The station, while retaining a transit center priority, should also be a catalyst for redevelopment. While serving KAT, strong consideration must be given to providing ample connectivity to other modes. This should include making the facility easily accessible by pedestrians.

Transfer Stops
Designated stops should be developed where trunk line routes, cross-town routes, or other service areas intersect, facilitating a timed transfer network. The stops should be clearly identified and include shelters and passenger amenities.

Superstops (Transit Centers)
Satellite centers should be at locations where several trunk route, cross-town, and circulator routes converge. Centers should include off-street passenger loading and unloading. Transit centers could also include restrooms, restaurants, shelters, small shops, and ticket booths.

Commuter Services
Commuter oriented services should be provided throughout the TPO Area. Guaranteed ride home and employer subsidy programs should be promoted. Transit options should be part of the travel demand management strategy. Ridesharing alternatives should be promoted as a partner in the provision of transit services. Transit programs should work with Smart Trips.

Express Bus Operations
In order to promote commuting options, 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 arterial to major attractors. Where practical, reverse commute opportunities as part of express bus services should be explored.

Park and Ride Lots
Parking lots for persons to leave their cars and take carpools, vanpools, or buses should be located throughout the TPO Area. In conjunction with strategies to encourage transit use, additional lots should be located near major travel corridors and be clearly identified.

Services for the Disabled
Transit providers should continue to work towards meeting the ADA regulations by providing comparable paratransit service and accessible fixed-route services to persons who have a disability.

Job Access & Reverse Commute Services
Job access service should be continued. Many studies show that access to transportation is one of the largest stumbling blocks for many lower income persons to get a job. As many of the jobs are spread throughout the TPO Area and no one transit provider services the entire area, KAT, KCT, and ETHRA should all be eligible to provide Job Access service.

Congestion Reduction Measures During Major Construction Projects
Transit providers have the opportunity to reduce congestion, especially through major construction sites. As the TPO Area roadway network continues to expand, congestion due to construction will be an ongoing problem. Transit has the unique opportunity to provide alternatives to individuals sitting in their automobile. The SmartFix40 Congestion Mitigation Plan should be funded and become a model for future projects.

Parking Management Strategies
An overall parking strategy that includes parking policies, pricing that encourage 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.

Alternative Fuels

Transit agencies should promote implementation of both alternative fuels and alternative fuel vehicles. Since the TPO Area is in a non-attainment area, achieving lower emissions is imperative. Transit agencies have an opportunity to be leaders in promoting alternative fuels and alternative fuel vehicle use. Adapting to these new fuel sources will not only help improve air quality but attract a growing segment of choice riders whom are environmentally conscious.

Intelligent Transportation Systems (ITS)

As the world becomes an on-demand society, passengers want technology amenities in connection with transit services. Local transit providers should take advantage of these 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.

Programmed and Planned Projects

Table 12 shows a list of programmed and planned public transportation projects. More detailed discussion occurs in the Transit Financial Analysis section of this report.

Table 12: Programmed & Planned Public Transportation Projects

Item	Total 2005-2025
KAT Buses (units)	122
KAT Lift Vans/Call-A-KAT/ Neighborhood Service (units)	52
KAT Trolleys (units)	47
Knoxville Central Station (millions)	$27
KAT Associated Maintenance Items (millions)[1]	$52
KAT Facility & Systems Improvements (millions)[2]	$52
KAT ITS Implementation	$25
KAT Farebox Replacement	$6
KCT (CAC) Vans (units)	300
Tennessee Vans (units)	300

Costs shown are in millions of dollars

[1]KAT Associated Maintenance Items include parts, tires, maintenance equipment, labor, etc.
[2]KAT Facility & Systems include shelters, benches, facility repair, etc.

Each year area providers and planning agencies receive federal and state capital, operating, and planning funds to assist in providing transit throughout the Region. While large capital purchases, services, or planning projects are outlined in this report, a complete list of smaller projects and programs is unavailable as needs change from year to year and would be impossible to list over a twenty-five year timeframe. Each fiscal year, local transit agencies and planning organizations detail their specific projects in the Transportation Improvement Program and the Unified Planning Work Program. Both of these plans are prepared in a cooperative and coordinated manner, including a proactive public involvement process. The plans and amendments are adopted by the TPO Executive Board. All projects, programs, and purchases in the TIP and UPWP must be consistent with the adopted Long Range Transportation Plan.

TPO PLANNING AREA BICYCLING

Background

Bicycling is growing in importance as a transportation mode because rising vehicle miles traveled (VMT) threatens air quality and increases traffic congestion. Bicycling has many benefits, including lower road maintenance costs, reduced traffic

congestion, improved air quality, and improved health/reduced health care costs.

Many people do not have access to an automobile or cannot drive, including children, the elderly, and people with disabilities. The cost of operating an automobile has increased 300% in the last 20 years. Nationally, 26% of low-income households and 8% of all households do not have an automobile. More than 30% of households have only one motor vehicle, often with more than one employed person in the family. Nationwide, eight million households have no access to a car (1995 Nationwide Personal Transportation Survey, FHWA). Safe, efficient, convenient facilities for non-motorized travel are a requirement for these populations, not an amenity.

In 2001, the TPO Executive Board developed a citizen Bicycle Advisory Committee (BAC) with eleven members (since expanded to twelve members). Duties of the BAC include updating and maintaining the Bicycle Plan for the TPO Planning Area, making recommendations and encouraging the implementation of bicycle provisions and opportunities to the TPO Technical Committee, Executive Board, and implementing agencies, and working with local businesses, agencies, and organizations to encourage bicycling and promoting community investment in bicycle racks, signage, and other facilities/programs.

The BAC, along with TPO staff, began working on an update to the 1995 Bicycle Plan. Once a draft plan was developed, it was sent to various agencies for review and input, including city and county engineering and planning departments, public works/maintenance departments, law enforcement agencies, and University of Tennessee staff. Bike organizations and clubs were invited to review the draft plan and attend a Bike Summit on June 26, 2002. Public meetings were held in three locations in July 2002. The 2002 Knoxville Regional Bicycle Plan was adopted by the TPO Executive Board on October 23, 2002. At that time, the TPO Planning Area covered just Knox and Blount counties. Since then, the TPO has expanded to included portions of Sevier and Loudon counties. When the Bicycle Plan is updated in 2007, the current TPO Planning Area will be included.

Existing Conditions

The Knoxville Region has made significant progress in the construction of multi-use paths (also known as greenways). Please refer to the pedestrian element for more information.

The Region has made less progress in the pursuit of on-street facilities. Magnolia Avenue is the only street with a significant length of bike lanes in Knoxville. The new Hall of Fame Boulevard extension includes bike lanes (completed December 2006), and other bike lanes are to be included on roads currently under design and development. The City of Alcoa has bike lanes on Lincoln and Wright Roads, and has plans for additional lanes.

Progress since the Adoption of the 2002 Long Range Transportation Plan

The Knoxville Regional Bicycle Plan was adopted by the TPO Executive Board in October 2002. Much progress has been made toward implementation of the plan since adoption. Currently, the only projects in the TIP are the bicycle parking grant (CMAQ). All new road projects submitted for inclusion in the TIP must include bicycle accommodation.

Existing Studies, Plans, and Programs

- The TPO continues to provide a half-time bicycle coordinator for the Knoxville Regional Bicycle Program;

- The 12-member bicycle advisory committee continues to meet regularly and address bicycle transportation issues;
- Phase I of the bicycle network (downtown and surrounding neighborhoods) has been identified and improvement projects have been prioritized. Work is underway on Phase II of the network (Knox and Blount counties);
- "Share the Road" signs have been installed on Clinch Avenue and Island Home Boulevard. Other signs have been installed as part of Phase I improvements; and,
- Through the Bicycle Parking Program, more than 350 bike racks have been installed throughout downtown Knoxville, Farragut, Maryville, and other locations throughout the Region. Two bike lockers have been installed at Alstom Power off Pellissippi Parkway. The Commuter Transportation Assistance Program enabled bike lockers to be added at KAT Park and Ride lots.

Design and Engineering

- TDOT has included bike lanes in plans for new projects, including the new Hall of Fame Drive, part of the Northshore Drive project, and the Campbell Station Road project; and,
- The TPO has requested a policy change from TDOT to allow bicyclists on the Pellissippi Parkway Bridge over Fort Loudoun Lake. This request was denied prompting the TPO to appeal the decision.

Enforcement

- The TPO has met with the Knoxville Police Department (KPD) concerning the action steps in the plan. They have committed to developing roll call training for all officers related to bicycle issues and laws;
- The TPO issued a press release in conjunction with KPD, the Knox County Sheriff, and the University of Tennessee Police that clarifies the rules of the road relating to bicycling. A press conference was held on September 30, 2004 to make this announcement;
- KPD is expanding bicycle patrols and training more officers for bike patrol; and,
- The TPO developed a Law Enforcement Handbook on the rules of the road for bicyclists and motorists. This is available to the public, and will be distributed to all enforcement agencies.

Education and Safety

- The TPO recommended to TDOT that they pursue changes to the driver's test to include questions related to bicycling; and,
- The TPO is pursuing the issue of getting police officers trained in reporting crashes involving bicyclists. KPD has responded positively to this idea.

Outreach and Promotion

- A website for the Bicycle Program is hosted by the TPO;
- A *Bicycle Commute Guide* has been developed and published by the TPO. Brochures about the Bicycle Program and the Bike Mentor Program have been printed;
- Four issues of *Pedal Press*, the newsletter of the Knoxville Bicycle Program, have been produced by the TPO;
- The annual spring event, Smart Trips Week, includes bike rides, bike

maintenance classes, and a commuter challenge. The annual Neighborhood Bike Ride is held each October and averages more than 200 participants;

- The Bike Mentor Program matches a potential bike commuter with someone who can help identify a comfortable route to work or school, offer advice on riding with traffic, and answer questions; and,
- A bicycle map of Downtown Knoxville and surrounding areas is very popular and one for Knox County and Blount County are being developed.

Issues

Bicycle issues are discussed in detail in the 2002 Bicycle Plan. Major issues are highlighted below.

Policy and Planning

Existing road conditions on most of the major corridors are inadequate for bicyclists. While the policy is to provide level of service C conditions or above on all roads in the bike network (based on Bicycle Compatibility Analysis, see next paragraph), the reality is that many of these improvements must wait until reconstruction is planned. The plan contains an accommodation policy, based on FHWA's policy statement that calls for bicycle and pedestrian facilities on all new roadways except where one of three conditions is met (where bicyclists are not allowed, where cost for bicycle facilities is greater than 20% of the total project cost, or where the sparsity of population indicates lack of need). A major obstacle to implementation is right-of-way costs, although the area's geography results in few alternatives to the major east-west and north-south corridors. This means that those corridors have a high need for bicycle accommodations despite the high cost of right of way.

The bicycle network is under development. The TPO is utilizing Bicycle Compatibility Analysis (BCI)[1] in order to develop the network and identify improvements that would bring the roads up to Level of Service C or above. The center city of Knoxville was chosen as the first section to analyze because its development patterns are the most favorable for bicycling. Improvement projects for roads within this area have been prioritized and funding is being sought through the City for high priority projects. Once the network is brought up to level of service C conditions, a signage system will be developed using destination based signage.

A major obstacle to bicycle transportation is current land use and development patterns. The traditional grid street system is convenient for bicyclists because a number of alternatives exist for travel. In new developments, most subdivisions use cul-de-sacs that result in all vehicles having to use an arterial at some point to get to their destinations. These major roads usually do not have facilities adequate for bicycle use (either a shoulder, wide outside lane, or bike lane). Destinations in new developments are often separated from neighborhoods by long distances and by major roads.

Bicycle parking is another issue. While bike parking is not currently required, new businesses and multi-family developments should consider planning for short and long-term bike parking needs. The 2002 Bicycle Plan has additional information in the appendix on recommended parking requirements and guidelines for locating racks and lockers.

Design and Engineering

[1] The Bicycle Compatibility Index: A Level of Service Concept, Implementation Manual. Publication No. FHWA-RD-98-095, December 1998.

The adopted Bicycle Plan sets out design guidelines for bicycle facilities, based on AASHTO's publications. These design guidelines address on-street facilities (shared roadways, signed shared roadways, bike lanes, wide outside lanes, and shoulders), sidewalks, shared use paths (greenways), intersections, barriers (rivers, roads, and railroads), traffic calming, signage and pavement markings, universal design/accessibility, and construction access.

One challenge is that in order to communicate effectively among different agencies, standard terminology must be used. Training in bicycle facility development should be required for all TDOT and local engineers so that they are all using the same language and are familiar with the AASHTO design guidelines.

Greater coordination is needed among greenways proponents, engineers, and the TPO Bicycle Program. Whenever possible, greenways should function not only as recreation facilities, but also as transportation corridors. It should be emphasized that shared use paths should only be located adjacent to roadways when certain factors are in place, such as few road crossings/driveways and no room on the roadway for bike facilities.

Maintenance

Maintenance is a critical part of bicycle transportation. Bicyclists are more vulnerable to road hazards like potholes, broken glass, and gravel than motor vehicle drivers are. Sunken drainage grates are a major issue on many road corridors in the City of Knoxville. This occurs when the roadway is resurfaced without being milled down. Sweeping of shoulders and bike lanes is another significant issue. A policy of additional sweeping for roadways that are part of the bike network should be developed.

Enforcement

It would be beneficial for law enforcement officers to receive training in how to report bicycle-motor vehicle crashes. Periodic training on what the traffic laws are in regard to bicyclists would also be helpful. Bicycle patrols should be continued and expanded (law enforcement officers patrolling on bicycles, often in downtowns or along greenways).

Education and Safety

Tracking bicycle crashes is difficult, especially because some jurisdictions do not keep track of them separately. There are few crashes reported, even in the localities that track them separately. This makes it difficult to make useful recommendations based on the data.

A significant challenge is reaching the target audience with safety and education messages. The target audience includes bicyclists, as well as motorists, but the message for each segment of the audience is different. Marketing campaigns are expensive. Public service messages can run for free but must be well-designed to be effective.

Outreach and Promotion

Reaching the target audience is also a challenge, but the variety of events and programs offered by the Knoxville Bicycle Program attempts to address this. Finding responsible volunteers and using them effectively is a big issue with events. The availability of e-mail and the website helps tremendously with communication and outreach. Brochures and newsletters are mailed to people without e-mail addresses and also distributed to various appropriate locations. Continuing to expand our outreach to areas outside the City of Knoxville and Knox County is still an issue the TPO will be working to address.

Objectives and Proposed Actions
The objectives and action steps listed in the 2002 Bicycle Plan are still relevant. The top priorities for the near future are highlighted below:

- Continue development of a bicycle network of designated facilities in a grid pattern with connections every half-mile that serves major destinations;
- Implement bicycle facilities as part of all transportation projects (see Accommodation Policy in Appendix B for three exceptions);
- Ensure that all traffic impact studies, analyses of proposed road changes, and development projects address impacts of bicycling and bicycle facilities;
- Develop and implement destination-based signing system for the bikeway network;
- Ensure that bicycle projects and bicycle facilities in other projects get moved forward to the Transportation Improvement Program. Provide adequate funding for bicycle projects and programs to implement the recommendations of the Bicycle Plan;
- Implement and continue to support the Bicycle Parking Program, which provides bicycle parking facilities to businesses and agencies. Provide bike parking at major bus stops and transfer points, including short-term and long-term parking;
- Revise zoning and subdivision regulations to include bicycle-friendly policies as requirements of developments;
- Provide for appropriate access control on arterial roadways in order to increase the function and safety of these roadways;
- Avoid locating shared use paths adjacent to roadways unless guidelines from 2002 Bicycle Plan are met. Design new shared use paths according to AASHTO standards;
- Consider the needs of bicyclists when designing and reconstructing intersections, including signal timing issues. Consider visual/motion detection at intersections where a high level of bicycle use exists or is anticipated. Adjust sensitivity of loop detectors at existing and new traffic signals to detect bicycles;
- Ensure that at-grade railroad crossings are safe for bicyclists;
- Develop a policy regarding sweeping of roads, including shoulders and bike lanes. Develop and implement an inspection and maintenance program that addresses minor repairs such as potholes, improper drainage grates, broken pavement, and other hazards to bicyclists;
- Raise drainage grates when resurfacing roadways to ensure a smooth, level surface for bicycling. When resurfacing roadways with gutters, taper the asphalt at the edge of the road to meet the gutter edge;
- Provide better signage during construction to indicate work in progress, road or path conditions and, if necessary, alternate route information;
- Educate and train law enforcement personnel in bicycle enforcement policy through recruit training and in-service refresher courses;
- Work with Tennessee Department of Safety on updates to the drivers' manual to strengthen the bicycle section and include exam questions relating to bicycle issues;

- Continue to monitor and improve the data available on bicycle crashes;
- Continue to increase the number of special events and programs to encourage bicycling, including bicycle rides, bike giveaways, and Bike Week events; and,
- Develop a *Safe Routes to School* program that includes bicycling.

Illustrative Projects
These projects to improve bicycling conditions have been envisioned but are not yet funded:

- Bike lanes on Middlebrook Pike;
- Bike lanes on Central Avenue/3 lane conversion between Broadway and Woodland;
- Bike network improvement projects and signage in Knox County costing about $50,000;
- Bike network improvement projects and signage in Blount County costing about $25,000; and,
- Bike lanes on Chapman Highway from Blount Ave to Moody Ave costing about $500,000.

TPO PLANNING AREA SIDEWALKS/ GREENWAYS

Background
Creating a robust regional pedestrian system requires coordinating regional and local development and creating well functioning connections between systems. Greenways can supplement the typical transportation system when connected to major trip generators or attractors. Several of the projects identified in this chapter directly link neighborhoods to schools and commercial centers. These types of linkages can reduce vehicle trips, improve air quality, and provide mobility options.

Existing Conditions
As Knoxville expanded along the street car lines, sidewalks were provided along with development providing residents with safe and direct access to local markets and other services. While sidewalks are present in Downtown Knoxville, the University of Tennessee, and the older neighborhoods of Fort Sanders, Old North Knoxville, and East Knoxville, some networks are in poor condition or discontinuous. Beyond these areas, sidewalks are scarce and lack connectivity.

Sidewalks exist in Downtown Maryville and throughout some older residential areas in the City of Alcoa and Lenoir City. The Town of Farragut has begun a policy that requires pedestrian facilities be incorporated into new subdivisions and developments and have undertaken capital projects that enhance the pedestrian network within the Town.

Map 22 shows existing and proposed greenways in the TPO Area and includes greenways located in Oak Ridge and Sevier County. Knox County currently maintains six greenways totaling 9 miles including the Pellissippi Greenway, Ten Mile Creek Greenway, Sterchi Hills Greenway, Powell Greenway, Carl Cowen Park Greenway, and Concord Park Greenway.

The Town of Farragut maintains six greenways totaling 3.6 miles, four of which are greenway loops within parks. One greenway extends along Campbell Station Road that then meanders through neighborhoods along Grigsby Chapel Road. The Turkey Creek Greenway is located in the southern end of the Town. The majority of the Parkside Greenway runs through the City of Knoxville but terminates in the Town near Campbell Station Road.

The City of Knoxville maintains 24 greenways totaling over 31 miles. Many of

these greenways are loops within parks. Some of the major linear greenways include:

- Cavet Station Greenway along Gallaher View Drive from Middlebrook Pike to Walker Springs Road;
- First Creek Greenway in North Knoxville;
- Jean Teague Greenway, extending from West Hills Elementary to East Walker Springs Road;
- Morningside/Alex Haley Greenway in Morningside;
- Neyland Greenway along Neyland Drive and the Tennessee River;
- Parkside Greenway through Turkey Creek from Lovell Road to Campbell Station Road;
- Sequoyah Greenway in the median of Cherokee Boulevard in Sequoyah Hills;
- Third Creek Greenway from Sutherland Avenue near Forest Park Boulevard to the Neyland Greenway;
- Weisgarber Greenway along Weisgarber Road from Middlebrook Pike to Lonas Road; and,
- Will Skelton Greenway from Ijams Nature Center to Forks of the River Wildlife Management Area.

In Blount County, the 10.5 mile Maryville Greenway/Pistol Creek Greenway links Pearson Springs Park, Sandy Springs Park, and Greenbelt Park in Maryville with Howe Street Park and Spring Brook Park in Alcoa. Extensions branch off to provide access to the Alcoa Municipal Building and other neighborhood parks.

Progress Since the Adoption of the 2002 Long Range Transportation Plan

The pedestrian system in Downtown Knoxville has seen a number of improvements including wider sidewalks and additional room for attractive benches. Wayfinding and directional signs, using themed area, color coded districts, maps, and sign kiosks have also been added serving pedestrians as well as drivers.

Market Square and Krutch Park have been rehabilitated into pedestrian friendly areas that are easily walkable from anywhere within the downtown core. Market Square now has a wider surface area that can service outdoor concerts and fairs and bring pedestrian traffic to the area shops and eateries. Sidewalk improvements have also been made in the areas in proximity to the Knoxville Convention Center, Worlds Fair Park, and the Riverfront.

Knox County has begun incorporating sidewalks into major county road reconstruction projects and has focused pedestrian facility construction around providing safe school routes.

The Cities of Knoxville, Alcoa, and Maryville have continued their efforts to expand existing greenway systems.

Existing Studies, Plans, and Programs

The Downtown Knoxville Transportation Linkages Study outlines pedestrian improvements that can enhance the ability for pedestrians to both maneuver within downtown and between downtown and nearby neighborhoods.

The Knoxville-Knox County General 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.

In 1993, the Knox County Board of Education established guidelines for Parental Responsibility Zones (PRZs) in Knox County, which states that busing will not be provided to elementary students who live within one mile by the shortest route of the school or to middle and high school students with 1.5 miles of school. The guidelines established a need for the 2000 sidewalk study, *An Assessment of Pedestrian Needs within the Parental Responsibility Zones of Knox County*. Detailed accounts as to which areas need improvement can be found in this study.

The TPO is working with local governments, schools, and parents to establish Safe Routes to School programs and seek federal funding to improve conditions for pedestrians and bicyclists within the PRZs.

Issues

The lack of ability to walk to destinations throughout the TPO Area is frustrating to many citizens. According to the Long Range Transportation Plan survey conducted in the fall of 2004, the majority of respondents rated the existing sidewalk system to be poor. Greenways and pedestrian paths were given a fair rating while walkable neighborhoods and commercial centers, safe walking and bicycling routes to school, and safety for pedestrians and bicyclists were rated by respondents as the most important elements to consider over the next 25 years.

Barriers exist that create unsafe conditions for walking, particularly in suburban portions of the TPO Area. Land use influences opportunities for pedestrian travel in that new residential development is typically far removed from town centers where retail shops, schools, and other community services are located. Even where residential development is adjacent to activity centers, the lack of connectivity can make these areas inaccessible and encourages driving. Strip development further encourages auto dependency as it is typically located along busy thoroughfares with substandard, unsafe, or no pedestrian facilities.

Objectives and Proposed Actions

Objectives of local community plans should be followed as much as possible as many call for increased consideration for pedestrian facilities. Specific actions that address pedestrian activity include:

- Providing pedestrian connections to schools within the Parental Responsibility Zones;
- Providing greenway connections that allow uninterrupted travel between different greenway trails;
- Enhancing intermodal travel between greenways and other modes such as automobile, public transportation, bicycling, and walking;
- Creating four-lane boulevards with a grassy median and separating the

sidewalk from the roadway, specifically in corridors such as Western Avenue, Magnolia Avenue, and Kingston Pike, as a plan for road improvement; and,

- Designing sidewalks, such as the ones in Downtown Knoxville, that are wide enough to accommodate several people passing each other.

Proposed Projects

There are several sidewalk and greenway projects planned for communities within the TPO Area. In Knox County, sidewalks are proposed along all or portions of Carter School Road, Brown Gap Road, Middlebrook Pike, Hardin Valley Road, Dutchtown Road, and Lovell Road. In the Town of Farragut, sidewalks are proposed along Kingston Pike, Concord Road, and McFee Road. Within the City of Knoxville, sidewalks are proposed along all or portions of Sutherland Avenue, Western Avenue, Washington Pike, Millertown Pike, Buffat Mill Road, Castle Street, Pickering Street, Pleasant Ridge Road, and Hollywood Drive. Proposed sidewalk projects in Blount County include along Louisville Road in Alcoa, a pedestrian bridge over Pistol Creek to connect the Blount County Public Library with Downtown Maryville, a sidewalk connecting Blount County Public Library to the existing greenway system, along College Street in Maryville, and sidewalk and stairs from Broadway Avenue to Church Avenue in Maryville.

Projects earmarked by Congressional leaders for federal funds include $1 million for a pedestrian bridge over Alcoa Highway in Blount County.

Greenway projects proposed over the next five years include *(see Map 22)*:

In Knox County

- Extension of the Ten Mile Creek Greenway from Walker Springs Park to the Jean Teague Greenway;
- Construction of the Halls Greenway from Halls Community Park to a new library on Emory Road; and,
- Construction of the Stock Creek Greenway from French Memorial Park to Bonnie Kate Elementary School.

In the City of Knoxville

- Caswell Greenway from Caswell Park to First Creek Park;
- Fountain City Greenway from Fountain City Park to Adair Drive;
- Fourth Creek Greenway from Weisgarber Road to Lakeshore Park;
- James White Greenway Extension from Neyland Greenway, across South Knoxville Bridge to Island Home Park;
- Knox/Blount Greenway from Neyland Drive to Blount County Line, eventually tying into the Blount County, Alcoa, and Maryville greenway system;
- Lower Second Creek Greenway from Cumberland Avenue to Neyland Drive, linking World's Fair Park with the Riverfront;
- Upper Second Creek Greenway from World's Fair Park to the Old City; and,
- Victor Ashe Greenway from Northwest Middle School to Victor Ashe Park.

In Blount County

- Extension of the Pistol Creek Greenway in Alcoa along Pistol Creek and extensions to McGhee Tyson Airport and Hunters Crossing Shopping Center.

Sidewalk projects that are planned beyond the next five years include, in Knox County, along all or portions of Emory Road, Tazewell Pike, Ball Camp Pike, Schaad Road, Oak Ridge Highway, and Chapman Highway. In the City of Knoxville, sidewalk projects are planned for all or portions of Valley View Drive, Spring Hill Road, Fern Street, Beaman Lake Road, Clinton Highway, Chapman Highway, Blount Avenue, Martin Mill Pike, Woodlawn Pike, and Sevier Avenue. In addition, pedestrian improvements to Cumberland Avenue and Neyland Drive are planned. In the Town of Farragut, sidewalks are planned along Old Stage Road and Smith Road. In the City of Maryville, sidewalks are planned for the area around John Sevier Elementary School.

Greenway projects that are planned beyond the next five years include *(see Map 22)*:

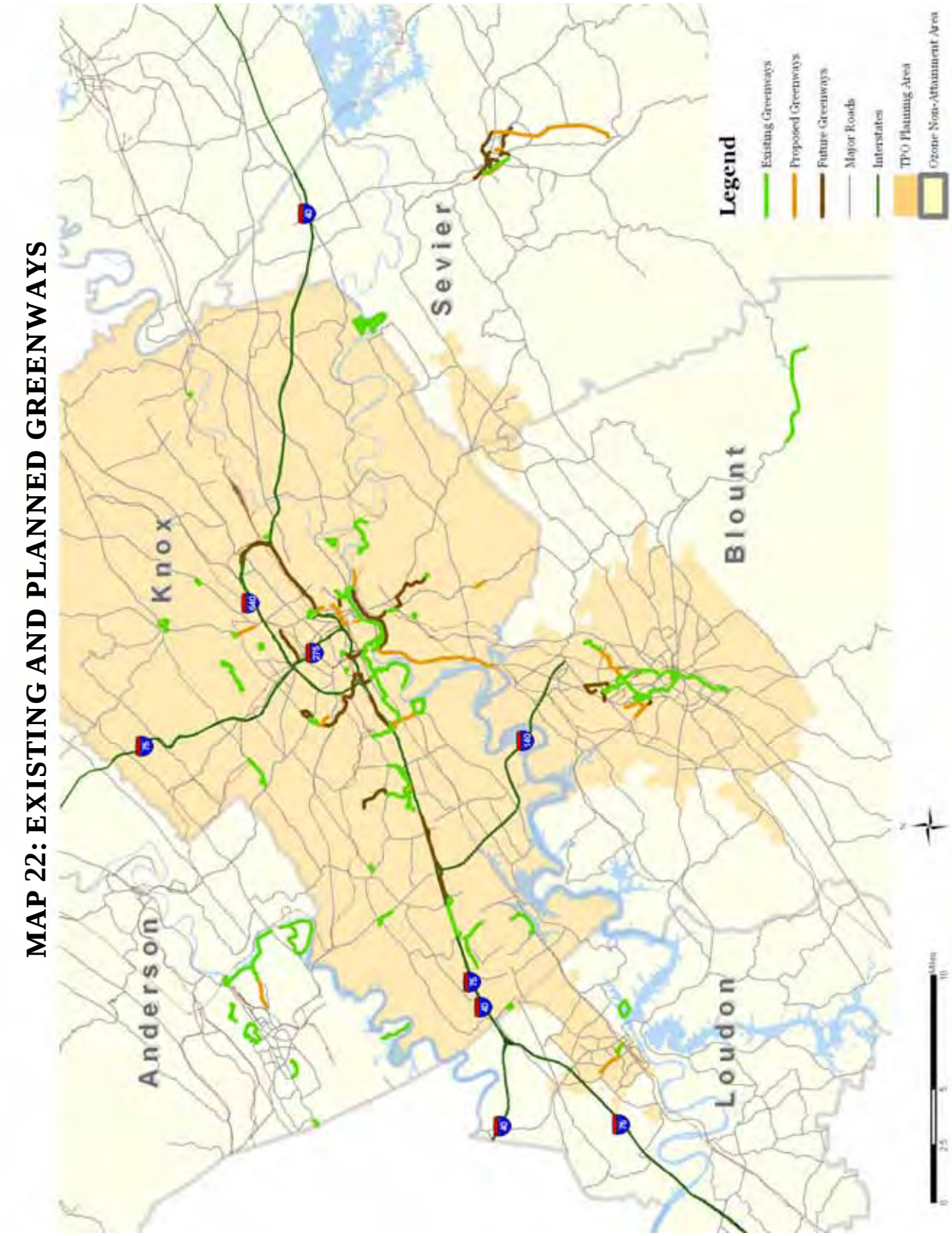
In the City of Knoxville

- Baptist Greenway from Southside of Tennessee River to Gary Underwood Park;
- Cherokee Bluff Greenway from Knox/Blount Greenway near Alcoa Highway to Fort Dickerson;
- Danny Mayfield Greenway from Malcolm Martin Park to Tyson Park;
- Forty Utility Line Greenway from First Creek Greenway to Knoxville Center Mall;
- Girl Scout Greenway, a loop along Merchant Drive connecting to the Northwest Middle School Greenway;
- Lonsdale Loop Greenway within Lonsdale Park;
- Parkside Greenway, crossing Lovell Road and extending along Parkside Drive to Ten Mile Creek Greenway;
- Sharps Ridge Greenway, along the south side of Sharps Ridge;
- Smoky Mountain Greenway, Phase I & Phase II from Fort Dickerson to Baptist Greenway;
- South College Greenway, along I-40/75 from Weisgarber Road to Hollywood Drive;
- Tennessee River Greenway from the south side of Tennessee River at Gay Street to South Knoxville Bridge;
- Victor Ashe Greenway from Badgett Field to Third Creek Greenway entrance on Sutherland Avenue;
- Williams Creek Greenway from Sarah Moore Green Elementary School to James White Greenway; and,
- Willow Creek Greenway, extension of Cavet Station Greenway from Middlebrook Pike to Harper's Cave on Bakertown Road.

Conclusion

Transportation planning should be coordinated with land-use planning, making it possible for alternative transportation modes to be considered. Good pedestrian access should be a part of projects to encourage walking between destinations. Creating four-lane boulevards with a grassy median and separating the sidewalk from the roadway should be considered as a policy for road improvement. The design will separate foot traffic from the busy thoroughfare, improving pedestrian safety. Encouraging mixed-use development with pedestrian safety and access would also encourage more walking. Greenway connections throughout the TPO Planning Area can provide safe, alternative, non-motorized travel among communities, commercial centers, and recreational areas.

MAP 22: EXISTING AND PLANNED GREENWAYS



TPO PLANNING AREA FREIGHT AND GOODS MOVEMENT

Background

As previously mentioned, the second aspect of analyzing the movement of freight is to focus on urban goods movement, the everyday movement of freight within the TPO Area. Examples of urban goods movement include trucks that deliver goods to markets or stores such as food and beverage delivery trucks and petroleum tank trucks, trucks that deliver goods to offices, industries and residents, and mail and parcel delivery trucks.

The Knoxville Regional Freight Movement Plan deals with freight at a regional level and does not differ at the TPO Planning Area level. Therefore, there isn't separate data for the TPO Planning Area and many of the issues and policies identified in the Regional Freight and Goods Movement section found in Chapter V apply for urban goods movement as well.

Existing Conditions

Typically freight delivered to markets throughout a city is done so by truck, either a full size tractor trailer, smaller "pup" trailer, single unit truck, or van. Shippers and distributors that deliver to hundreds of markets throughout an urban area typically utilize a local distribution system of warehouses that can store goods brought in from regional warehouses or manufacturing sites and distribute them within a day. Often times, some minor packaging or bottling is done at the local distribution center to ensure freshness of products. The process of delivering finished goods to local markets for sale is known as urban goods movement.

Trucks are predominately responsible for delivering the goods to their final destinations because of their mobility and accessibility advantages. The distribution of goods throughout an urban area is more costly than long distance shipments because of congestion on urban roads and the smaller vehicles that are needed to navigate the urban streets. Businesses in the central business districts of Knoxville, Maryville, and Lenoir City as well as along the Cumberland Strip do not have adequate off street facilities to handle truck traffic. The majority of the deliveries made within these areas are done at curbside. Many curbside areas are marked as commercial loading/ unloading zones for adjacent businesses and do not allow parking during certain hours. Rail, barge, airplane, and pipelines account for very little in the way of urban goods movement.

Progress since the Adoption of the 2002 Long Range Transportation Plan

Since the 2002 Long Range Transportation Plan, improvements to the interchange of I-640 and Broadway, the widening of Callahan Road to 4 lanes, improvements to Alcoa Highway, improvements to I-40/75 near West Hills, and improvements to Lovell Road at I-40/75 have all facilitated the movement of urban goods. Included in the Transportation Improvement Program are several other highway projects that will impact urban goods movement such as widening Emory Road, Western Avenue, and Lovell Road, and improving I-40 near James White Parkway, Alcoa Highway near the Airport, and I-275.

Existing Studies, Plans, and Programs

Since the Long Range Transportation Plan of 2002, the TPO has begun studying freight characteristics of the Knoxville Region, organized a Knoxville Regional Freight Advisory Committee, and began development of the Knoxville Regional Freight Movement Plan. To support the development of the Plan, the TPO staff has conducted several onsite meetings with various shippers, truck and rail carriers, terminal operators, industry experts, and professional organizations to gain

knowledge on the freight industry and to gage the current conditions of freight movement in the Region.

Issues

The challenges of urban goods movement are highly associated with the urban transportation system, local land use decisions, and the local economy.

The local delivery of urban goods is often hindered by a lack of adequate off street loading and unloading facilities. In many instances, delivery trucks must block a travel lane or load and unload from the sidewalk, blocking pedestrian access. Minimum pavement width and turning radii further impede the ability to operate delivery trucks throughout the TPO Area.

Within the TPO Area, congestion on urban interstates and arterials, especially during peak hours, contributes to delays in freight transport. The overwhelming response from freight stakeholders in response to the question of what the TPO can do to improve freight flow is "reduce delay caused by congestion".

The TPO travel demand model verifies congestion on area roadways, including routes frequently used by trucks to deliver freight. The section of I-40 through Downtown Knoxville is an area of safety concern. The highway narrows to two lanes in each direction and numerous mergers, some with limited sight distance, create additional conflicts between trucks and passenger vehicles. There are many other highway on/off ramps along I-275 and I-75 that have limited accel or decel distances, creating safety concerns.

The high volume of truck traffic on area roadways reduces the longevity of the pavement and has increased maintenance costs of state and local governments. The area around the I-40/75, Watt Road interchange consists of numerous truck stop facilities. The high volume of truck movements in the area has lead to deficiencies in the pavement of the on/off ramps and required recent maintenance to upgrade the ramps. The truck stops also generate enough truck traffic that local residents have expressed difficulty in maneuvering passenger vehicles around the trucks.

A major capacity constraint for both railroads and trucks are at-grade railroad crossings. There are several at-grade rail crossings throughout the TPO Area, many of which involve major rail lines crossing major arterials and collectors. At-grade rail crossings also increases maintenance costs for railroad companies. Unlike the street and highway system, the system of railroads is primarily in private ownership, meaning the cost of upgrade and increased capacity relies heavily on the railroad industry.

The rail and port terminals located throughout the TPO Area do not handle a high enough volume of freight to place capacity constraints on any terminal. Additionally, there are no congestion or capacity constraints related to the movement of trucks to and from the terminals.

The McGhee Tyson Airport air cargo facilities are directly accessible to Airbase Road, which intersects with Alcoa Highway at an at-grade, unsignalized intersection and with Wrights Ferry Road, a rural route that provides access to Topside Road, leading to the interchange at I-140. Both routes provide eventual access to I-40, I-75, and I-81, however, trailer trucks are not permitted to use Wrights Ferry Road, only vans can use this route. The Airport Master Plan identifies deficiencies with both routes and calls for improvements that would provide safer, easier, and more efficient access to Alcoa Highway and Pellissippi Parkway.

The plan also calls for addition cargo capacity at the Airport.

A high volume of truck traffic generated by the Middlebrook Tank Farm as tanker trucks make several daily trips delivering petroleum to regional fuel stations. Truck activity usually begins to peak before 6am and lasts until early evening. This combined with automobile traffic causes congestion along portions of Middlebrook Pike, Ed Shouse Drive, and Western Avenue near the interchange with I-640.

Objectives and Proposed Actions
The TPO will continue to coordinate meetings of the Knoxville Freight Advisory Committee and complete the Knoxville Regional Freight Movement Plan.

As part of the Knoxville Region Freight Movement Plan development, the TPO developed criteria as part of the Transportation Improvement Program (TIP) and Congestion Mitigation and Air Quality (CMAQ) project selection process that would evaluate projects based on their ability to improve freight movement.

The TPO will also research options available to route through trucks on I-40 to I-640 and will work with the City of Knoxville Engineering Department and Tennessee Department of Transportation to improve signage, modify truck routes, improve interchange merges and yields, and identify turning radii that should be reconstructed to meet truck standards.

Many of the traditional congestion reducing techniques that are used for passenger vehicles can also improve the flow of truck traffic. Other possibilities that may more closely relate to trucks include separated through lanes on the interstate which separates the local commuter traffic from long distance travelers, dedicated truck lanes in which truck traffic does not intermix with passenger traffic, and identifying truck routes that have been improved or retrofitted for heavy volumes of truck traffic.

Programmed and Planned Projects
There are many highway projects identified in Tables 7, 8, and 9 that will enhance the movement of freight throughout the TPO Area. These projects include the construction of the Alcoa Highway Bypass, improvements to Alcoa Highway, Ball Camp Pike, Governor John Sevier Highway, Maynardville Highway, Montvale Road, Norris Freeway, Northshore Drive, Oak Ridge Highway, Schaad Road, Strawberry Plains Pike, Topside Road, U.S. 321 in Lenoir City, Washington Pike, and Wrights Ferry Road, along with several intersection improvements.

Conclusion
As the needs of consumers continue to change and become more demanding, the freight industry will be pressed with increased pressure to deal with the challenges of transporting freight throughout urban areas. As urban areas continue to grow and congestion worsens, these challenges will be amplified. Within the TPO Planning Area, facilitating and improving the movement of freight may have to be accomplished through maximizing the existing transportation system and taking advantage of alternative freight transport modes or off peak delivery options.

VII. KNOXVILLE REGIONAL AND TPO PLANNING AREA ROADWAY OPERATIONAL ANALYSIS

Introduction

The TPO performed a roadway operational analysis in order to determine the needs for and impacts of the proposed highway projects that are identified in the Regional and TPO Area highway project lists. The primary tool used to make this analysis was the Knoxville Regional Travel Demand Model that was completed for the TPO in March 2004 using TransCAD transportation modeling software.

Travel Demand Model Background

The Knoxville Regional Travel Demand Model was calibrated to specifically 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, Sevier, and Union Counties plus portions of Grainger, Morgan, and Roane Counties as shown in Map 23. 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).

Map 23: Knoxville Regional Travel Demand Model Boundaries

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, 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 be used to compare alternative improvement strategies in terms of several different aspects and performance measures of interest by changing the appropriate roadway attributes or by adding new links. Some of the key performance measures that are typically considered are traffic volume, average speed, volume-to-capacity ratio (V/C ratio), and level-of-service (LOS). The V/C ratio and LOS are related terms that attempt to describe how well a roadway is operating and the level of congestion motorists are experiencing.

This model referenced previous plans to promote consistency between transportation improvements and local planned growth. The socio-economic inputs which are used to estimate travel demand must be forecasted in order to obtain estimates of future travel activity. The TPO acquired county-level forecasts of socio-economic data from Woods & Poole Economics, Inc. and used various methods to allocate the data to the TAZ-level. Land use information for Knox and Blount counties was available at much more descriptive levels than for other areas in the Region and was in turn more crucial to the modeling since the TAZs are also at a much finer scale in those counties. Since the travel demand model was also a crucial component of the air quality conformity analysis that was performed on the LRTP, additional information on the model development, socio-economic data and TAZ boundaries can be found in the supplemental report entitled *Air Quality Conformity Determination for the 2005 – 2030 Long Range Transportation Plan*.

Initial Roadway Operational Deficiency Analysis

The travel demand model was run for future year socio-economic conditions in years 2009, 2014, 2020 and 2030 (selected in order to satisfy air quality conformity requirements) to determine potential deficient areas on the existing plus committed roadway network in terms of traffic congestion and poor LOS. Committed projects are those which are currently under construction and should be completed within the next couple of years. The results of this analysis were presented to the TPO Technical Committee, and roadways that were not currently identified for improvement projects in the existing LRTP were noted in order to determine whether they should be added to the highway project list along with any other roadways that were previously identified as needing major capacity improvements in the Congestion Management Process Plan. Table 13 lists these projects and notes which ones were added to the highway project list.

In addition to using the travel demand model as a tool to identify project needs, the TPO staff discussed specific areas of needs individually with the member jurisdictions in order to benefit from their local knowledge. Again, the project list already established in the previous LRTP was used as the primary basis for developing the project lists for this Plan.

Table 13: Deficient Roadways not included in the Initial Long Range Transportation Plan List of Highway Projects

Project	Location	Work Description	Added into LRTP
Wright Rd	Hunt Rd to Alcoa Hwy	Reconstruct 2-lane section w/signalization	Yes, LRTP# 128
Sam Houston School Rd	SR 33 to US 411	Reconstruct 2-lane section w/signalization	Yes, LRTP# 153
Ellejoy Rd/ Jeffries Hollow Rd	Tuckaleechee Pike to Sevier County Line	Reconstruct 2-lane section	Yes, LRTP#97 and LRTP# 106
Topside Rd	Pellissippi Pkwy to Louisville Rd	Widen 2-lane to 3/4-lane	Yes, LRTP# 184
Grigsby Chapel Rd	Smith Rd to Campbell Station Rd		No
Mascot Rd	Mine Rd to Rutledge Pike		No
Northshore Dr	Concord Rd to Choto Rd	Widen 2-lane to 4-lane	Yes, LRTP# 177
Morrell Rd*	Westland Dr to Northshore Dr	Widen 2-lane to 4-lane	Yes, LRTP# 175
Papermill Rd*	Kingston Pike to Weisgarber Rd	Widen 2-lane to 4-lane	Yes, LRTP# 178
Boyds Bridge Pike/ Strawberry Plains Pike	Thorngrove Pike to Holston Hills Dr		No
Woodson Dr	Alcoa Hwy to Maryville Pike		No
Pellissippi Pkwy	Westland Dr to Kingston Pike		No

* These roadways/projects were identified in the Congestion Management Process Plan that was adopted by the TPO.

Highway Project Implementation Operational Improvement Analysis

The travel demand model was run again with the proposed Regional and TPO Area highway projects identified in this Plan in order to determine the improvements that are estimated to be achieved in each of the future analysis years. The travel demand model contains a post processing algorithm that automatically estimates the system-wide and county-level impacts on two key measures of traffic flow characteristics – V/C Ratio and Delay.

V/C Ratio

The V/C Ratio compares the estimated traffic volume on a roadway segment with its theoretical maximum carrying capacity. If the V/C ratio is at or near 1.0, then it means that the traffic volume demand is beginning to exceed the supply, which will lead to congestion and uncomfortable driving conditions that often lead to increased crashes. The V/C Ratio can be measured on several different levels such as road miles, lane miles, vehicle hours of travel (VHT), and vehicle miles of travel (VMT). The performance measure used to represent congestion for this case is the percentage of VMT that is at a V/C Ratio of greater than 0.84. This level represents the amount of traffic volume that is exposed to conditions that are generally considered unacceptable for an urban area and was defined as "moderate" or "serious" congestion in the TPO's Congestion Management Process (CMP) Plan.

Delay

Delay is measured as the number of vehicle hours spent above and beyond the free-flow time on the network, and obviously the lesser amount of delay, the better, both in terms of traffic congestion and also typically with the localized air quality impacts. It should be noted that the exact amount of delay hours in terms of the entire roadway system is extremely difficult to measure precisely, however, the travel demand model estimates of delay should be somewhat relative between two different scenarios such that although the absolute value of

delay calculated for one scenario may not be exact, it can still be compared against another scenario in order to determine the relative benefits that are achieved.

The results are summarized in the following table and charts, which highlight the following statistics:

- Amount of average daily vehicle-hours of delay is reduced in each of the build vs no-build scenarios, with the year 2030 showing the greatest reduction in daily delay, 41,777 vehicle hours of delay on the Regional transportation system.
- The amount of Vehicle Miles Traveled (VMT) that are experiencing congested conditions (as defined by the volume-to-capacity ratio exceeding 0.84) is reduced by 14%, 32%, 53%, and 38% in the analysis years of 2009, 2014, 2020, and 2030 respectively.
- The proposed I-475 Bypass appears to have a significant impact in reducing the VMT traveling at congested levels when it is implemented in the 2020 analysis year since the largest amount of travel occurs on the Interstate system.

Table 14: System-Wide Comparison Model Network Scenarios (Shown as daily averages)

Model Network	Vehicle Miles of Travel	VMT at V/C Ratio > 0.84	% VMT at V/C Ratio > 0.84	Delay (vehicle hours)
2005 E+C	26,362,123	400,395	1.52%	65,096
2009 No Build	28,248,164	434,633	1.54%	76,519
2009 Build	28,273,202	376,755	1.33%	73,306
2014 No Build	31,074,889	1,131,600	3.64%	102,474
2014 on 2009	31,110,050	971,583	3.12%	97,804
2014 Build	31,350,536	778,410	2.48%	94,647
2020 No Build	33,502,784	1,505,653	4.50%	119,440
2020 on 2009	33,580,659	1,406,395	4.19%	116,782
2020 on 2014	33,863,424	997,620	2.95%	138,880
2020 Build	34,012,172	718,745	2.11%	115,331
2030 No Build	39,494,947	3,317,130	8.40%	201,218
2030 on 2009	39,670,072	3,140,412	7.92%	203,685
2030 on 2014	39,859,115	2,521,930	6.30%	195,544
2030 on 2020	40,074,474	2,555,815	6.38%	163,624
2030 Build	40,184,607	2,078,172	5.17%	159,441

The following charts provide a comparison between build and no build scenarios.

Chart 11: System-Wide Delay Comparison

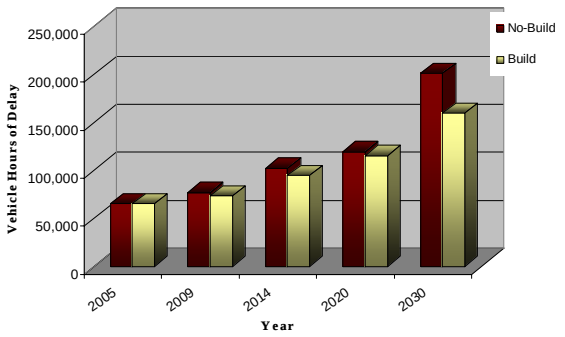


Chart 12: System-Wide V/C Ratio > 0.84 Comparison

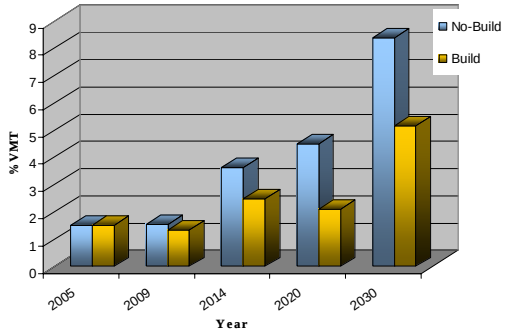


Chart 13: Anderson County Delay Comparison

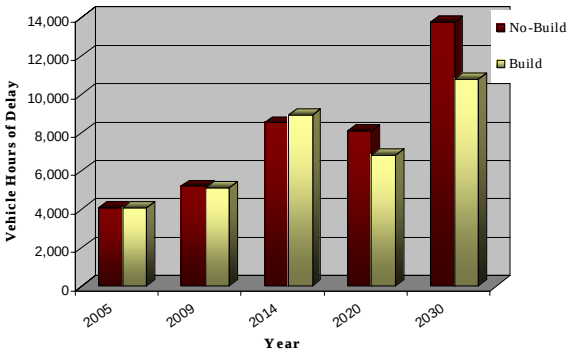


Chart 14: Anderson County Average V/C Ratio Comparison

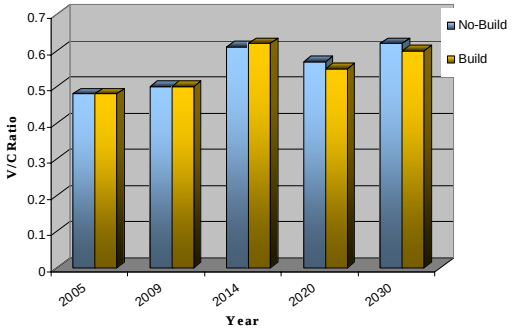


Chart 15: Blount County Delay Comparison

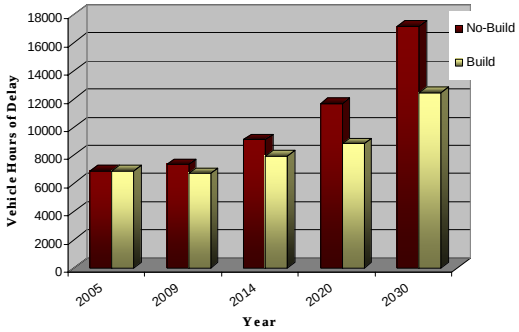


Chart 16: Blount County Average V/C Ratio Comparison

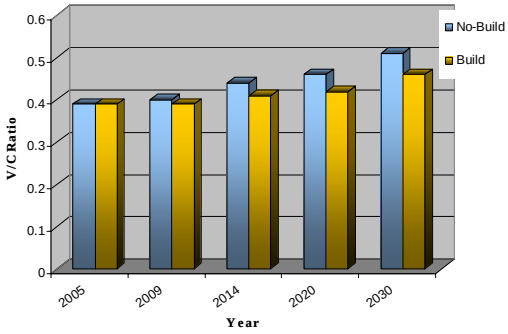


Chart 17: Jefferson County Delay Comparison

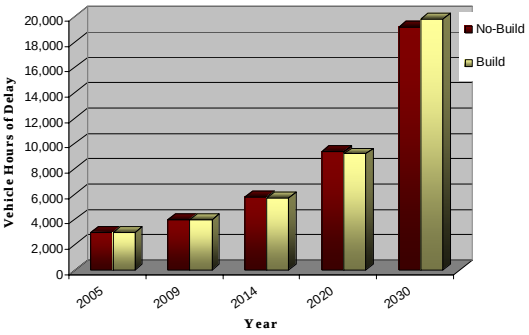


Chart 18: Jefferson County Average V/C Ratio Comparison

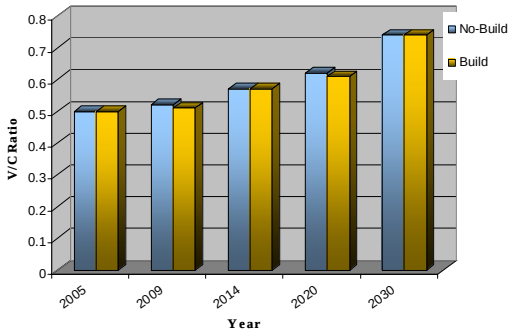


Chart 19: Knox County Delay Comparison

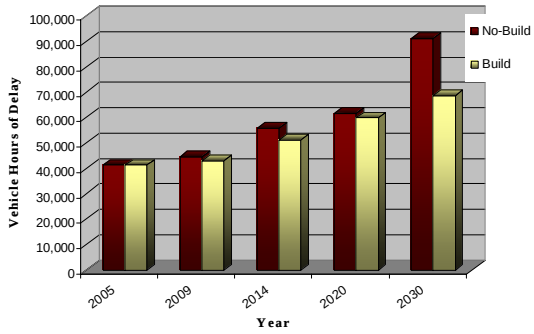


Chart 20: Knox County Average V/C Ratio Comparison

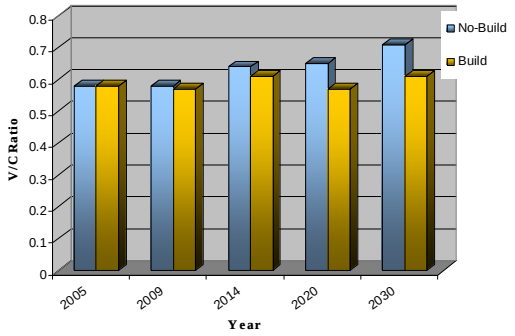


Chart 21: Loudon County Delay Comparison

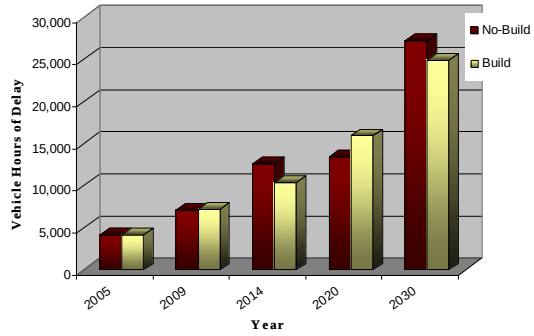


Chart 22: Loudon County Average V/C Ratio Comparison

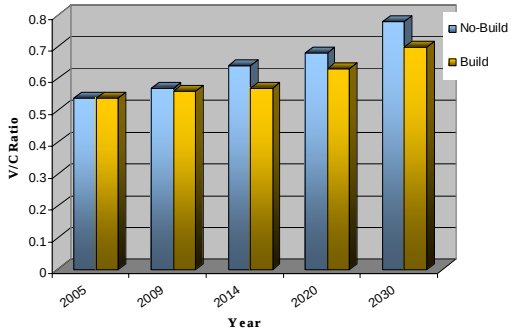


Chart 23: Sevier County Delay Comparison

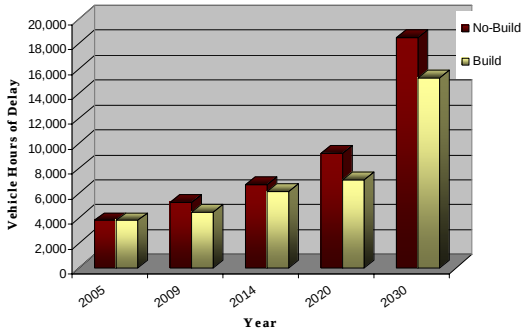
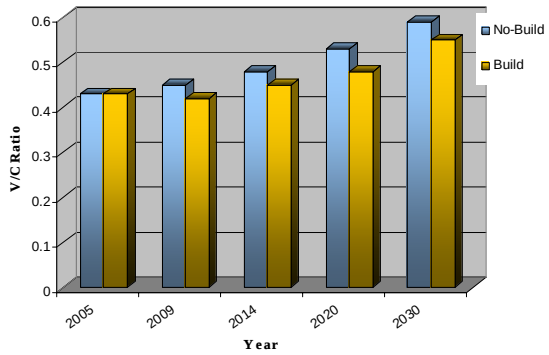


Chart 24: Sevier County Average V/C Ratio Comparison



Final Roadway Operational Deficiency Analysis

The travel demand model outputs were analyzed for each future year with the proposed highway projects fully implemented in order to determine which areas of the roadway network may still be experiencing poor levels of operation and congestion. The criteria is based on the definition of congestion from the Congestion Management Process Plan for the Knoxville Region, which is roadways with a V/C Ratio greater than 0.84 and peak hour travel time greater than 1.5 times the travel time in the off peak period, both of which can be derived from the travel demand model. The following maps and tables highlight the roadways that are found to remain deficient in each analysis year in the Region subsequent to improvement projects being implemented.

Map 24: 2014 Remaining Congested Roadways

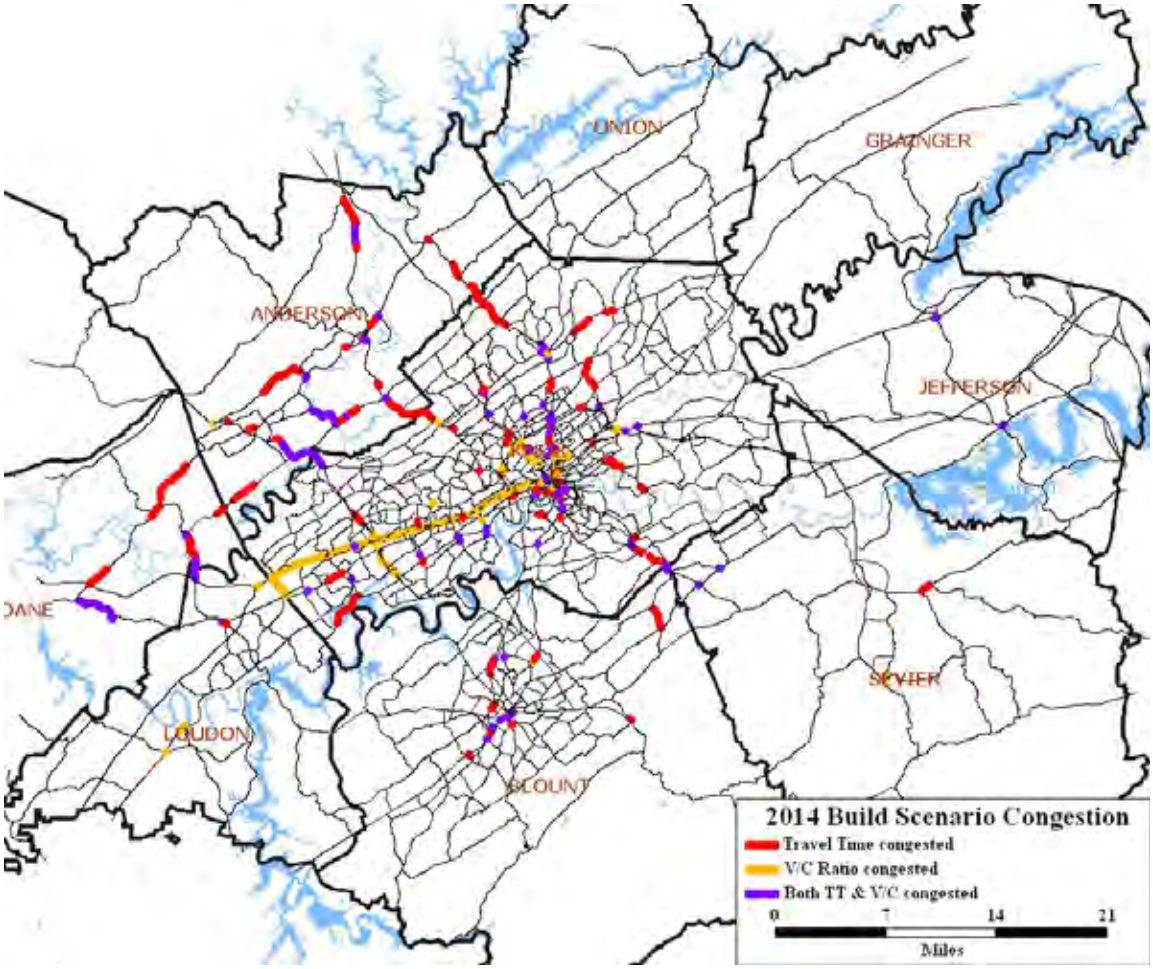


Table 15: 2014 Remaining Congested Roadways Greater than ½ Mile in Length

Roadway	Length (miles)	County	Congestion Criteria
Melton Lake Rd	2.04	Anderson	V/C Ratio
S. Illinois Ave	0.75	Anderson	V/C Ratio
Chapman Hwy	1.03	Knox	V/C Ratio
Emory Rd	0.52	Knox	V/C Ratio
I-140	1.99	Knox	V/C Ratio

Roadway	Length (miles)	County	Congestion Criteria
I-275	2.52	Knox	V/C Ratio
I-40	5.45	Knox	V/C Ratio
I-40/75	28.31	Knox	V/C Ratio
I-640	0.82	Knox	V/C Ratio
Northshore Dr	0.53	Knox	V/C Ratio
Oak Ridge Hwy	1.15	Knox	V/C Ratio
Watt Rd	1.62	Knox	V/C Ratio
Mulberry St	0.56	Loudon	V/C Ratio
SR 95N	0.81	Loudon	V/C Ratio
Charles G. Seviers Rd	1.05	Anderson	Travel Time Ratio
Edgemoor Rd	1.68	Anderson	Travel Time Ratio
Kerr Hollow Rd	1.24	Anderson	Travel Time Ratio
Melton Lake Rd	2.09	Anderson	Travel Time Ratio
S. Illinois Ave	1.63	Anderson	Travel Time Ratio
S. Main Ave	0.98	Anderson	Travel Time Ratio
Scarboro Rd	1.64	Anderson	Travel Time Ratio
SR 61	2.98	Anderson	Travel Time Ratio
US 25W	4.89	Anderson	Travel Time Ratio
US 441	1.68	Anderson	Travel Time Ratio
Alcoa Hwy	0.72	Blount	Travel Time Ratio
Burnett Station Rd	1.47	Blount	Travel Time Ratio
US 129	1.24	Blount	Travel Time Ratio
Andersonville Pike	0.50	Knox	Travel Time Ratio
Boyds Bridge Pike	1.39	Knox	Travel Time Ratio
Broadway	1.15	Knox	Travel Time Ratio
Chapman Hwy	3.19	Knox	Travel Time Ratio
Cherokee Trail	0.51	Knox	Travel Time Ratio
Clinton Hwy	1.22	Knox	Travel Time Ratio
Emory Rd	2.19	Knox	Travel Time Ratio
Gov. John Sevier Hwy	0.61	Knox	Travel Time Ratio
Kingston Pike	0.80	Knox	Travel Time Ratio
Maynardville Hwy	1.09	Knox	Travel Time Ratio
Murphy Rd	0.56	Knox	Travel Time Ratio
Norris Frwy	3.26	Knox	Travel Time Ratio
Northshore Dr	2.76	Knox	Travel Time Ratio
Oak Ridge Hwy	1.15	Knox	Travel Time Ratio
Tazewell Pike	1.20	Knox	Travel Time Ratio
SR 95N	0.81	Loudon	Travel Time Ratio
Oak Ridge Turnpike	3.43	Roane	Travel Time Ratio
Newport Hwy	0.67	Sevier	Travel Time Ratio
Edgemoor Rd	0.71	Anderson	Both
Kerr Hollow Rd	0.89	Anderson	Both
Melton Lake Rd	2.04	Anderson	Both
S. Illinois Ave	1.45	Anderson	Both
US 25W	1.69	Anderson	Both
Alcoa Hwy	0.52	Blount	Both

Roadway	Length (miles)	County	Congestion Criteria
US 129	0.55	Blount	Both
Andersonville Pike	0.50	Knox	Both
Chapman Hwy	1.55	Knox	Both
Maynardville Hwy	0.53	Knox	Both
Oak Ridge Hwy	1.15	Knox	Both
SR 95N	0.81	Loudon	Both

Map 25: 2020 Remaining Congested Roadways

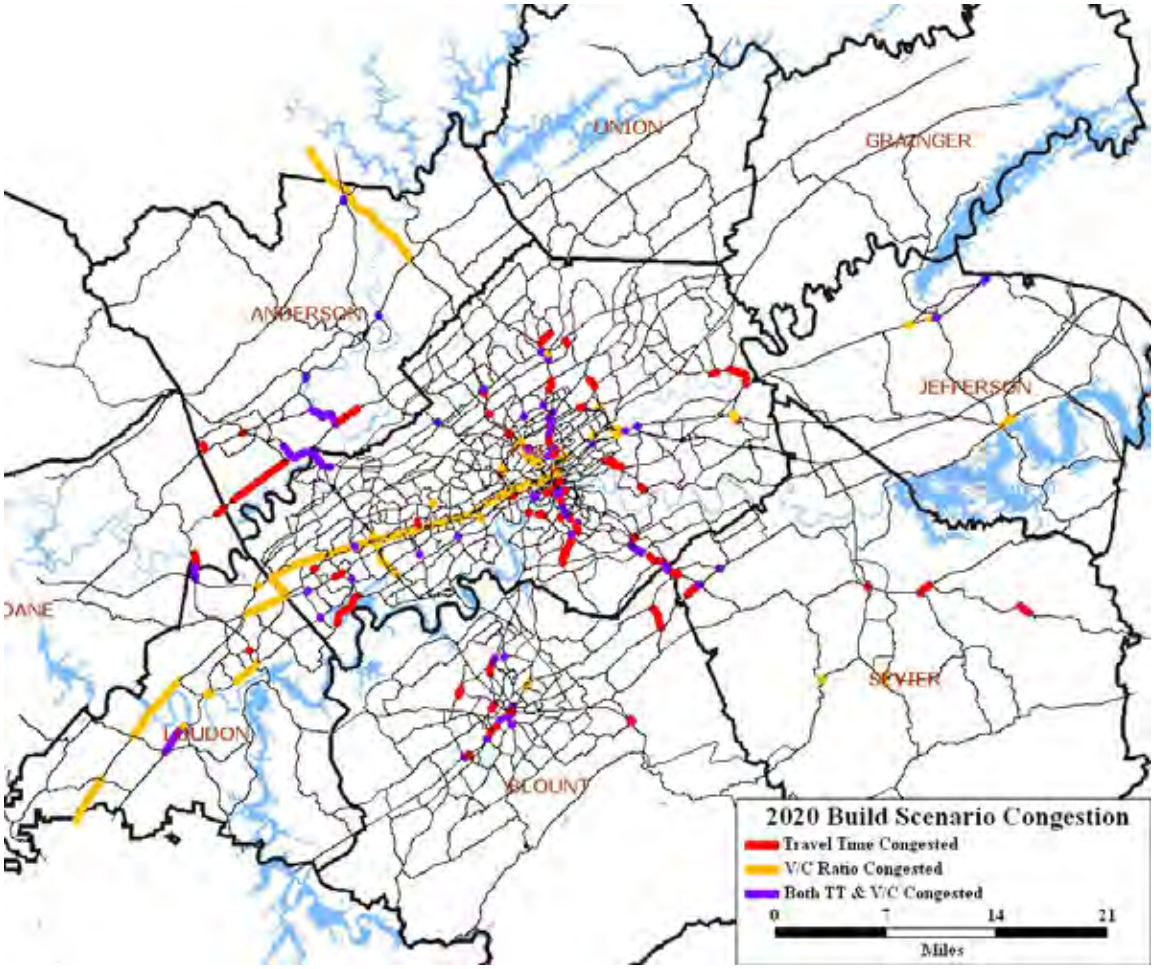


Table 16: 2020 Remaining Congested Roadways Greater than ½ Mile in Length

Roadway	Length (miles)	County	Congestion Criteria
I-75	7.39	Anderson	V/C Ratio
Melton Lake Rd	2.04	Anderson	V/C Ratio
S. Illinois Ave	0.63	Anderson	V/C Ratio
Broadway Ave	0.62	Blount	V/C Ratio
E. Meeting St	0.62	Jefferson	V/C Ratio
Chapman Hwy	2.20	Knox	V/C Ratio

Roadway	Length (miles)	County	Congestion Criteria
I-140	1.99	Knox	V/C Ratio
I-275	2.82	Knox	V/C Ratio
I-40	4.37	Knox	V/C Ratio
I-40/75	27.93	Knox	V/C Ratio
Oak Ridge Hwy	1.15	Knox	V/C Ratio
Watt Rd	1.62	Knox	V/C Ratio
Broadway St	1.79	Loudon	V/C Ratio
I-75	6.79	Loudon	V/C Ratio
Mulberry St	0.80	Loudon	V/C Ratio
US 70E	2.75	Loudon	V/C Ratio
Edgemoor Rd	1.13	Anderson	Travel Time Ratio
Kerr Hollow Rd	0.72	Anderson	Travel Time Ratio
Melton Lake Rd	2.04	Anderson	Travel Time Ratio
S. Illinois Ave	1.51	Anderson	Travel Time Ratio
Scarboro Rd	3.59	Anderson	Travel Time Ratio
Burnett Station Rd	1.47	Blount	Travel Time Ratio
US 129	0.56	Blount	Travel Time Ratio
Boyds Bridge Pike	1.39	Knox	Travel Time Ratio
Broadway	1.41	Knox	Travel Time Ratio
Chapman Hwy	4.33	Knox	Travel Time Ratio
Cherokee Trail	0.51	Knox	Travel Time Ratio
Martin Mill Pike	2.26	Knox	Travel Time Ratio
Mascot Rd	1.95	Knox	Travel Time Ratio
Maynardville Hwy	1.02	Knox	Travel Time Ratio
McCloud Rd	0.91	Knox	Travel Time Ratio
Murphy Rd	0.56	Knox	Travel Time Ratio
Northshore Dr	2.29	Knox	Travel Time Ratio
Oak Ridge Hwy	1.26	Knox	Travel Time Ratio
Mulberry St	1.89	Loudon	Travel Time Ratio
SR 95N	0.81	Loudon	Travel Time Ratio
Jones Cove Rd	0.79	Sevier	Travel Time Ratio
Maryville Hwy	0.99	Sevier	Travel Time Ratio
Newport Hwy	0.67	Sevier	Travel Time Ratio
Kerr Hollow Rd	0.72	Anderson	Both
Melton Lake Rd	2.04	Anderson	Both
S. Illinois Ave	1.45	Anderson	Both
Chapman Hwy	2.42	Knox	Both
Oak Ridge Hwy	1.26	Knox	Both
Mulberry St	1.89	Loudon	Both
SR 95N	0.81	Loudon	Both

Map 26: 2030 Remaining Congested Roadways

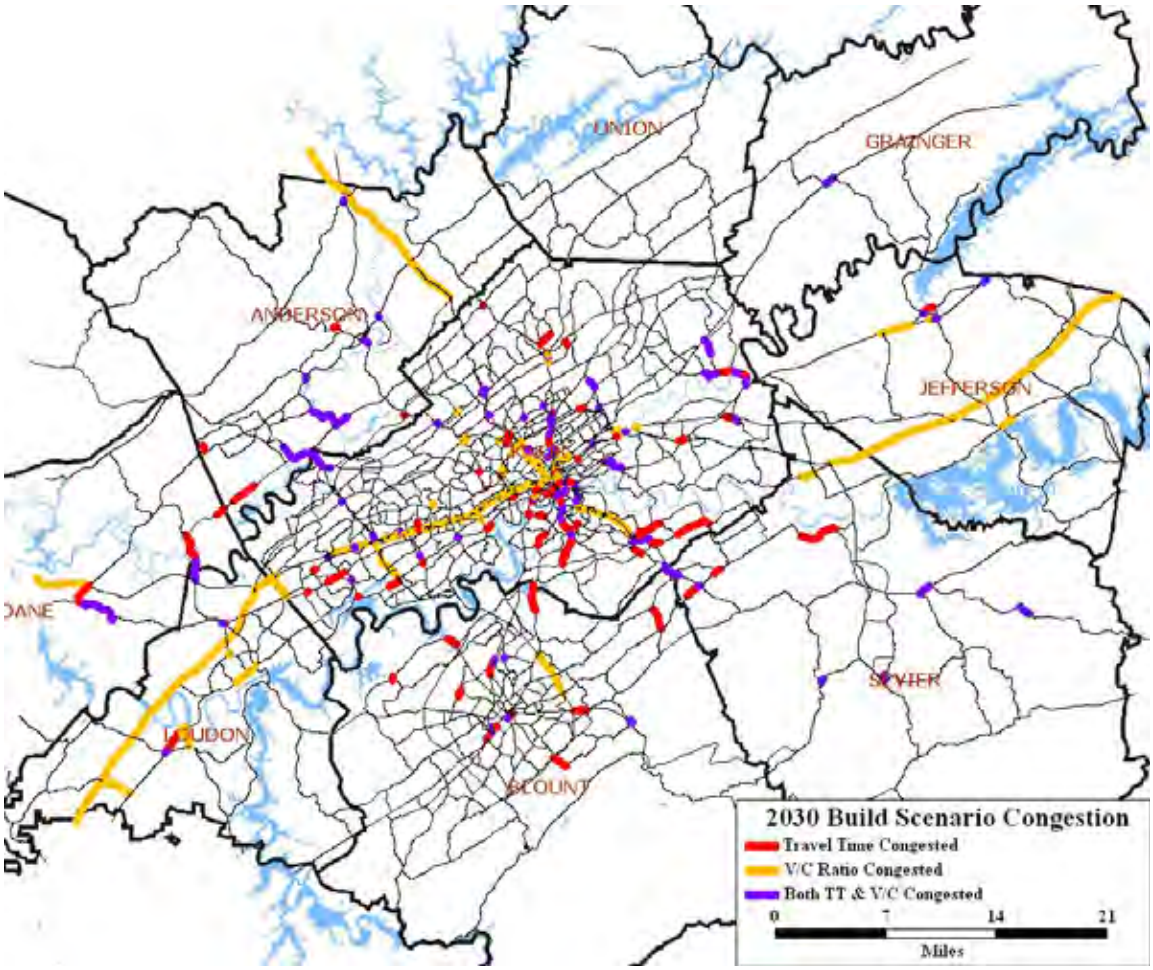


Table 17: 2030 Remaining Congested Roadways Greater than ½ Mile in Length

Roadway	Length (miles)	County	Congestion Criteria
I-75	10.86	Anderson	V/C Ratio
Melton Lake Rd	1.95	Anderson	V/C Ratio
S. Illinois Ave	0.63	Anderson	V/C Ratio
E. Meeting St	0.84	Jefferson	V/C Ratio
I-40	11.47	Jefferson	V/C Ratio
I-81	7.53	Jefferson	V/C Ratio
Chapman Hwy	1.61	Knox	V/C Ratio
I-140	5.08	Knox	V/C Ratio
I-275	3.65	Knox	V/C Ratio
I-40	7.77	Knox	V/C Ratio
I-40/75	18.92	Knox	V/C Ratio
I-640	0.53	Knox	V/C Ratio
Mascot Rd	1.17	Knox	V/C Ratio
Mine Rd	1.03	Knox	V/C Ratio
Murphy Rd	0.56	Knox	V/C Ratio

Roadway	Length (miles)	County	Congestion Criteria
Oak Ridge Hwy	1.15	Knox	V/C Ratio
Sevier Ave	0.57	Knox	V/C Ratio
Sevierville Pike	1.43	Knox	V/C Ratio
Watt Rd	1.62	Knox	V/C Ratio
Broadway St	1.63	Loudon	V/C Ratio
Grove St	1.34	Loudon	V/C Ratio
I-40	0.28	Loudon	V/C Ratio
I-40	0.46	Loudon	V/C Ratio
I-40	0.31	Loudon	V/C Ratio
I-75	17.77	Loudon	V/C Ratio
Mulberry St	0.56	Loudon	V/C Ratio
Pond Creek Rd	2.01	Loudon	V/C Ratio
I-40	2.28	Sevier	V/C Ratio
Kodak Rd	1.06	Sevier	V/C Ratio
Edgemoor Rd	0.71	Anderson	Travel Time Ratio
Kerr Hollow Rd	0.72	Anderson	Travel Time Ratio
Melton Lake Rd	2.04	Anderson	Travel Time Ratio
S. Illinois Ave	1.45	Anderson	Travel Time Ratio
Scarboro Rd	1.64	Anderson	Travel Time Ratio
Alcoa Hwy	0.52	Blount	Travel Time Ratio
Burnett Station Rd	1.47	Blount	Travel Time Ratio
Lamar Alexander Pkwy	0.87	Blount	Travel Time Ratio
Louisville Rd	0.68	Blount	Travel Time Ratio
Old Knoxville Hwy	1.63	Blount	Travel Time Ratio
US 129	0.56	Blount	Travel Time Ratio
US 411	0.55	Blount	Travel Time Ratio
Wilkerson Pike	0.98	Blount	Travel Time Ratio
Asheville Hwy	0.79	Knox	Travel Time Ratio
Boyds Bridge Pike	1.39	Knox	Travel Time Ratio
Broadway	0.87	Knox	Travel Time Ratio
Chapman Hwy	2.51	Knox	Travel Time Ratio
Hendron Chapel Rd	0.51	Knox	Travel Time Ratio
Kimberlin Heights Rd	3.86	Knox	Travel Time Ratio
Kingston Pike	0.97	Knox	Travel Time Ratio
Martin Mill Pike	3.30	Knox	Travel Time Ratio
Maryville Pike	1.06	Knox	Travel Time Ratio
Mascot Rd	3.35	Knox	Travel Time Ratio
McCloud Rd	0.91	Knox	Travel Time Ratio
Mine Rd	1.03	Knox	Travel Time Ratio
Murphy Rd	0.56	Knox	Travel Time Ratio
Oak Ridge Hwy	1.26	Knox	Travel Time Ratio
Sevierville Pike	1.43	Knox	Travel Time Ratio
Tazewell Pike	0.57	Knox	Travel Time Ratio
Westland Dr	0.79	Knox	Travel Time Ratio
Mulberry St	1.10	Loudon	Travel Time Ratio
SR 95N	0.81	Loudon	Travel Time Ratio
Bethel Valley Rd	0.66	Roane	Travel Time Ratio

Roadway	Length (miles)	County	Congestion Criteria
Boyds Creek Hwy	3.11	Sevier	Travel Time Ratio
Jones Cove Rd	0.79	Sevier	Travel Time Ratio
Maryville Hwy	0.99	Sevier	Travel Time Ratio
Newport Hwy	0.79	Sevier	Travel Time Ratio
Edgemoor Rd	0.71	Anderson	Both
Kerr Hollow Rd	0.72	Anderson	Both
Melton Lake Rd	2.04	Anderson	Both
S. Illinois Ave	1.45	Anderson	Both
Alcoa Hwy	0.52	Blount	Both
Boyds Bridge Pike	1.24	Knox	Both
Chapman Hwy	1.81	Knox	Both
Mascot Rd	2.65	Knox	Both
Mine Rd	1.03	Knox	Both
Oak Ridge Hwy	1.26	Knox	Both
Sevierville Pike	1.43	Knox	Both
SR 95N	0.81	Loudon	Both
Jones Cove Rd	0.79	Sevier	Both
Newport Hwy	0.79	Sevier	Both

Conclusion

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 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 chapter will not typically show much effect in the model.

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 along the right-of-way.

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.

Finally, it should be noted that since the Long Range Transportation 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 2020 and 2030.

VIII. CONGESTION MANAGEMENT PROCESS

Background

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 allowed to increase over time. The Knoxville Congestion Management System (CMS) plan that was adopted on February 26, 2003 has set in place a mechanism for identifying congested areas in the TPO Area, and for choosing appropriate solutions to deal with traffic congestion. The TPO staff is in the process of completing a major update to the current CMS plan, which will now be known instead as a Congestion Management Process, or CMP, based on changes brought forth by the latest Federal transportation planning regulations. The following information in this section of the Long Range Transportation Plan is intended to provide an overview of how the Congestion Management Process is conducted and subsequently implemented in the TPO planning area.

The requirement for a CMP Plan 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 the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (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 LRTP, 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 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

The following sections document the required elements of a CMP, and the manner in which the Knoxville Regional TPO CMP is addressing each:

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

Since the street and highway system in the Knoxville Region is the predominant mode of transportation, and 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.

2.) Identify mechanism for selection of appropriate performance measures.

This 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, or other traffic projection techniques, to determine possible future congestion 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 data collected using GPS units attached to vehicles that travel on roadways in times of peak hour congestion. 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. The "Highway Capacity Manual" 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 will provide 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. Congested Corridors are identified as several contiguous segments of roadway (generally greater than one mile in length) that qualified as being congested under the performance measure criteria. The Congested Corridors are depicted in Map 27 and listed in Table 18. 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, depicted in Map 28 and listed in Table 19. Highway projects identified in this Plan that address Congested Corridors or Congested Hot Spots receive greater emphasis and are shown in Map 29.

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 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 has 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. 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 and better tools to evaluate the various mitigation strategies using a quantitative basis.

In cases where capacity or new roadway improvements were identified, the CMP recommends complementary mitigation strategies that should increase the effectiveness of the widening project as shown in Table 20. 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 that was determined to be very important in this region was that of 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.

5.) Identification of an Implementation Schedule.

The mechanism for implementing the mitigation strategies that are identified by the CMP is through the Long Range Transportation 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. Along with continuing to implement stand-alone projects that reduce travel demand and improve operational efficiency such as the Smart Trips program, the freeway Transportation Management System project, and signal synchronization projects, a major emphasis must be placed on implementing these types of strategies as complementary projects along with any SOV capacity increasing project that is being proposed since the Knoxville Region has recently been designated as a non-attainment area for ozone and parts of the Region designated in non-attainment for fine particulate matter (PM 2.5). For example, a roadway project that increases SOV capacity and also includes bicycle facilities will score higher points than an otherwise equal type of project without bicycle facilities when ranking projects for inclusion in the TIP and LRTP. More description of the specific scoring criteria

and complementary congestion mitigation strategies 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 LRTP, 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 LRTP 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.

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 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 LRTP and the TIP.

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

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

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 TDM 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 LRTP Inclusion, is not a step in the CMP per se, but rather is the culmination of the cycle such that as the LRTP is being developed with the appropriate information on congestion having been made available to the decision-making process for selecting and prioritizing the projects to go into the LRTP and subsequently the TIP.

MAP 27: TPO PLANNING AREA CONGESTED CORRIDORS (2002)

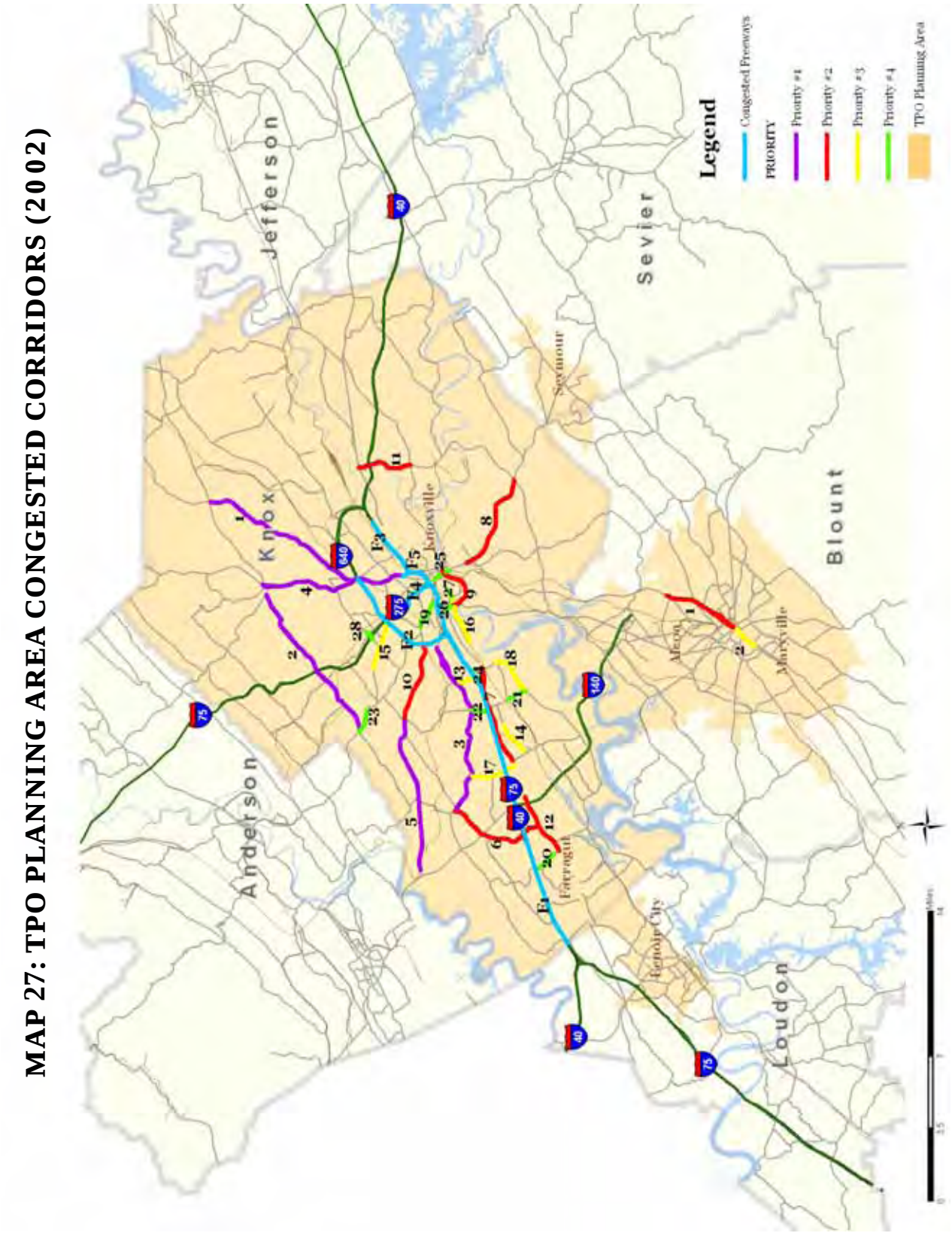


Table 18: TPO Planning Area Congested Corridors (2002)

Map ID	Knox County Segment	Location
F1	I-40 (west segment)	Watt Road to James White Parkway
F2	I-640	I-40 (west side) to Broadway
F3	I-40 (east segment)	James White Parkway to Rutledge Pike
F4	I-275	I-40 to I-640
F5	James White Parkway	I-40 to Summit Hill Drive
1	Tazewell Pike	Broadway to Emory Road
2	Emory Road	Clinton Highway to Norris Freeway
3	Middlebrook Pike	Lovell Road to Ed Shouse Drive
4	Broadway/ Maynardville Highway	Grainger Avenue to Emory Road
5	Oak Ridge Highway	Pellissippi Parkway to Schaad Road
6	Lovell Road	Kingston Pike to Middlebrook Pike
7	Kingston Pike	Peters Road to Bearden Road
8	Chapman Highway	Martin Mill Pike to Governor John Sevier Highway
9	Neyland Drive	Kingston Pike to Walnut Street
10	Western Avenue	Schaad Road to I-640
11	Governor John Sevier Highway	Strawberry Plains Pike to Asheville Highway
12	Kingston Pike	Campbell Station Road to Capital Drive
13	Weisgarber Road	Papermill Drive to Middlebrook Pike
14	Gleason Drive	Ebenezer Road to Downtown West Boulevard
15	Clinton Highway	I-640 to Murray Road
16	Kingston Pike	Lyons View Pike to Alcoa Highway
17	Cedar Bluff Road	Kingston Pike to Middlebrook Pike
18	Northshore Drive	Morrell Road to Lyons View Pike
19	Western Avenue	Texas Avenue to University Avenue
20	Campbell Station Road	Farragut High School Entrance to I-40 Interchange
21	Morrell Road	Northshore Drive to Westland Drive
22	Vanosdale Road	Kingston Pike to Middlebrook Pike
23	Clinton Highway	Beaver Creek Drive (east) to Emory Road (north)
24	Papermill Drive	Kingston Pike to Northshore Drive
25	Henley Street	Blount Avenue to Summit Hill Drive
26	Concord Street	Kingston Pike to Sutherland Avenue
27	Cumberland Avenue	Alcoa Highway to 18th Street
28	Merchant Drive	Merchants Center Boulevard to Central Avenue Pike
Map ID	**Blount County Segment**	**Location**
1	Broadway (east section)/ Old Knoxville Highway	Jackson Hills Drive to Cusick Street
2	Broadway (west section)	Cusick Street to US 129 Bypass

MAP 28: TPO PLANNING AREA CONGESTION HOT SPOTS (2002)

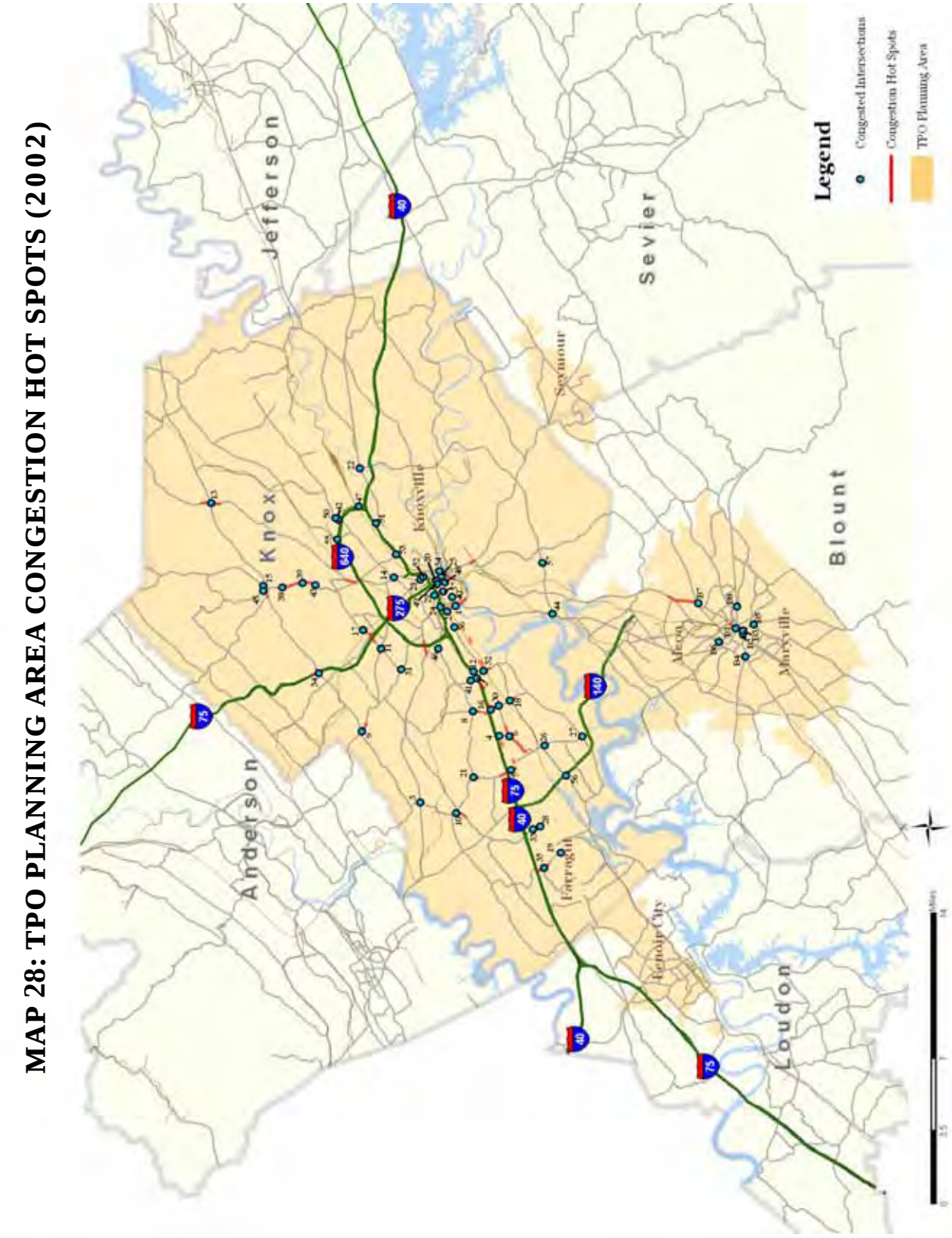


Table 19: TPO Planning Area Congested Intersections (2002)

Map ID	Knox County Intersection	Map ID	Knox County Intersection
1	Kingston Pike @ Concord Street	**30**	Morrell Road @ Gleason Drive
2	Sutherland Avenue @ Concord Street	**31**	Pleasant Ridge Road @ Merchant Drive
3	Oak Ridge Highway @ Beaver Ridge Road	**32**	Kingston Pike @ Northshore Drive
4	Kingston Pike @ Gallaher View Road	**33**	Lovell Road @ Parkside Drive
5	Cedar Bluff Road @ Peters Road	**34**	Emory Road @ I-75 Ramps
6	Gallaher View Road @ Gleason Drive	**35**	Campbell Station Road @ Parkside Drive
7	Papermill Drive @ Weisgarber Road	**36**	Sutherland Avenue @ Liberty Street
8	Middlebrook Pike @ Vanosdale Road	**37**	17th Street @ Highland Avenue
9	Emory Road @ Clinton Highway	**38**	Broadway @ Crippen Road
10	Middlebrook Pike @ Lovell Road	**39**	Broadway @ Brown Gap Road
11	Clinton Highway @ Merchant Drive	**40**	Cumberland Avenue @ 22nd Street
12	Northshore Drive @ Papermill Drive	**41**	Weisgarber Road @ Lonas Road
13	Tazewell Pike @ Emory Road	**42**	Millertown Pike @ Wal-Mart/ Mall Entrance
14	Broadway @ Woodland Avenue	**43**	Broadway @ Jacksboro Pike
15	Maynardville Highway @ Emory Road	**44**	Gov. John Sevier Hwy @ Maryville Pike
16	Kingston Pike @ Morrell Road	**45**	Emory Road @ Andersonville Pike
17	Merchant Drive @ Central Avenue Pike	**46**	Middlebrook Pike @ Ed Shouse Drive
18	Westland Drive @ Morrell Road	**47**	Rutledge Pike @ Loves Creek Road
19	Kingston Pike @ Campbell Station Road	**48**	Cumberland Avenue @ 13th Street
20	Broadway @ Summit Hill Drive	**49**	Western Avenue @ 11th Street
21	Middlebrook Pike @ Cedar Bluff Road	**50**	Millertown Pike @ Loves Creek Road
22	Gov. John Sevier Hwy @ Asheville Hwy	**51**	Rutledge Pike @ Knoxville Zoo Drive
23	Broadway @ Central Street	**52**	Central Street @ Fifth Avenue
24	Middlebrook Pike @ Sutherland Avenue	**53**	Cherry Street @ I-40 Westbound Ramp
25	Cumberland Avenue @ Henley Street	**54**	Cumberland Avenue @ Gay Street
26	Westland Drive @ Ebenezer Road	**55**	Washington Pike @ I-640 Westbound Ramps
27	Northshore Drive @ Ebenezer Road	**56**	Westland Drive @ I-140 Ramps
28	Kingston Pike @ Lovell Road	**57**	Gov. John Sevier Hwy @ Martin Mill Pike
29	Western Avenue @ 17th Street		
Map ID	**Blount County Intersection**	**Map ID**	**Blount County Intersection**
B1	Broadway @ Cusick Street	**B5**	Montvale Road @ Boardman Avenue
B2	Broadway @ Lamar Alexander Parkway	**B6**	Calderwood Street @ Bessemer Street
B3	Lamar Alexander Pkwy @ Montvale Road	**B7**	Broadway @ Wildwood Road
B4	US 129 Bypass @ Lamar Alexander Pkwy	**B8**	Lamar Alexander Pkwy @ Cherokee Street

MAP 29: PROPOSED HIGHWAY PROJECTS THAT ADDRESS CONGESTED AREAS

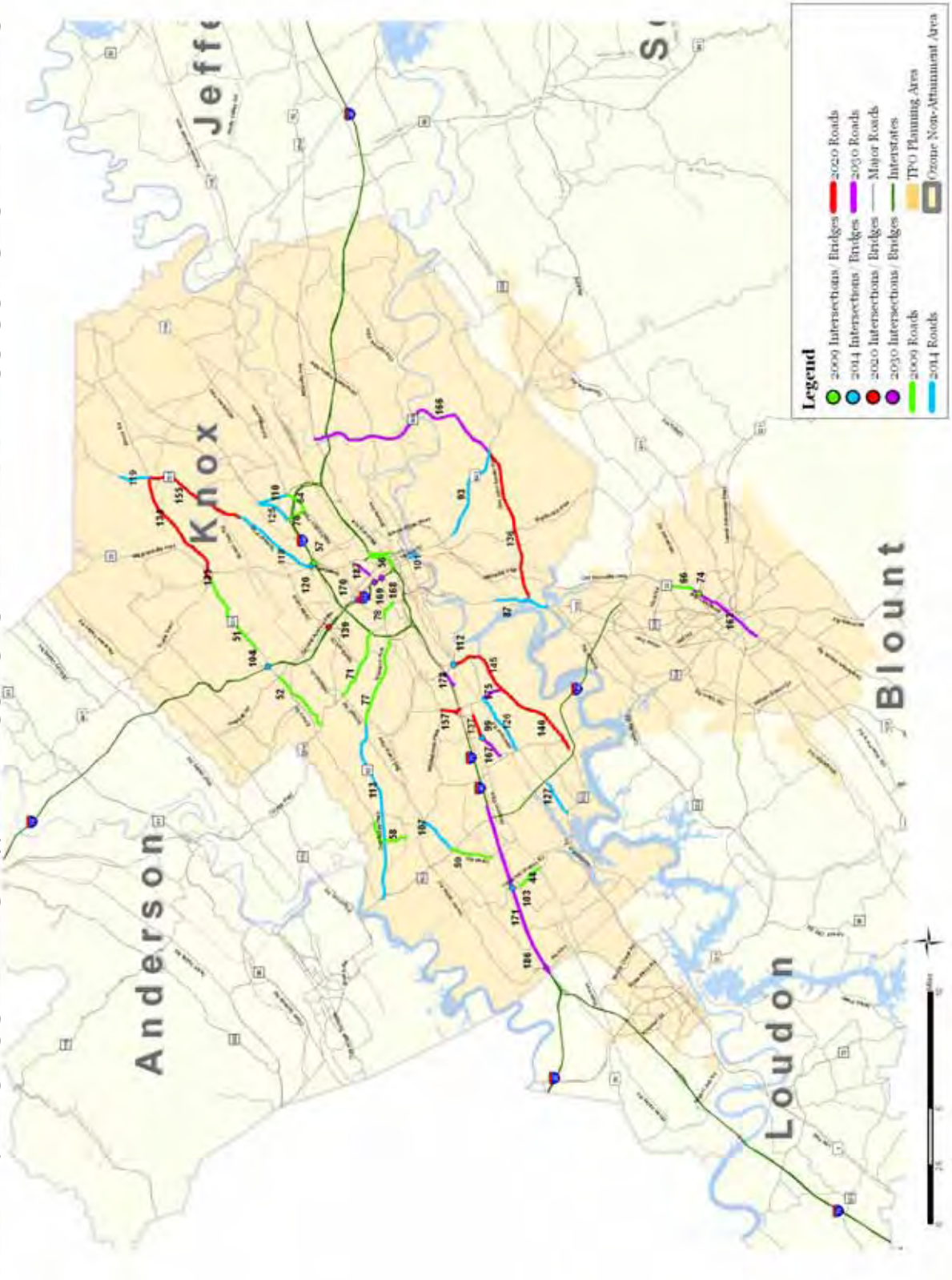


Table 20: Congestion Mitigation Strategies

Map ID	Segment	1A. Growth Management/ Land Use Controls	1B. Congestion Pricing Controls	1C. Ridesharing Programs	1D. Alternative Work Arrangements	1E. Non-Traditional Mode Incentives	2A. Traffic Signal Improvements	2B. Roadway Geometric Improvements	2C. Turn Restrictions	2D. Ramp Metering	2E. Access Management	2F. Construction Management	3A. Transit Capital Improvements	3B. Transit Operational Incentives	4A. Incident Management	4B. Advanced Traffic Management Systems	4C. Advanced Traveler Information Systems	4D. Advanced Public Transportation Systems	5A. Additional Freeway Lanes	5B. Additional Arterial Lanes	5C. New Roadway Construction
F1	I-40 (west)	√		√	√							√			√	√	√		√		
F2	I-640	√		√	√										√	√	√		√		
F3	I-40 (east)	√		√	√							√			√	√	√		√		
F4	I-275	√		√	√										√	√	√				
F5	James White Parkway	√		√	√							√			√	√	√				
1	Tazewell Pike	√		√	√	√		√			√			√						√	
2	Emory Road	√		√	√	√	√				√	√								√	
3	Middlebrook Pike	√		√	√	√	√				√	√								√	
4	Broadway/ Maynardville Hwy	√		√	√	√	√				√		√	√		√					
5	Oak Ridge Highway	√		√	√	√		√												√	√
6	Lovell Road	√		√	√	√	√				√	√									
7	Kingston Pike	√		√	√	√	√				√		√	√		√		√			
8	Chapman Highway	√		√	√	√	√				√		√	√							√
9	Neyland Drive	√		√	√	√	√						√	√							
10	Western Avenue	√		√	√	√	√				√	√	√	√		√				√	
11	Gov. John Sevier Hwy	√		√	√	√	√	√													
12	Kingston Pike	√		√	√	√	√				√		√			√		√			
13	Weisgarber Road	√		√	√	√						√									
14	Gleason Drive	√		√	√	√		√												√	
15	Clinton Highway	√			√	√	√	√			√		√	√		√					
16	Kingston Pike	√		√	√	√	√				√	√	√	√		√		√			

Map ID	Segment	1A. Growth Management/ Land Use Controls	1B. Congestion Pricing Controls	1C. Ridesharing Programs	1D. Alternative Work Arrangements	1E. Non-Traditional Mode Incentives	2A. Traffic Signal Improvements	2B. Roadway Geometric Improvements	2C. Turn Restrictions	2D. Ramp Metering	2E. Access Management	2F. Construction Management	3A. Transit Capital Improvements	3B. Transit Operational Incentives	4A. Incident Management	4B. Advanced Traffic Management Systems	4C. Advanced Traveler Information Systems	4D. Advanced Public Transportation Systems	5A. Additional Freeway Lanes	5B. Additional Arterial Lanes	5C. New Roadway Construction
17	Cedar Bluff Road	√		√	√	√	√	√			√		√	√							
18	Northshore Drive	√		√	√	√		√			√									√	
19	Western Avenue	√		√	√	√						√	√							√	
20	Campbell Station Road	√		√	√	√		√			√									√	
21	Morrell Road	√		√	√	√		√			√									√	
22	Vanosdale Road	√		√	√	√		√													
23	Clinton Highway	√		√	√	√	√														
24	Papermill Drive	√		√	√	√	√	√												√	
25	Henley Street	√		√	√	√	√	√						√		√					
26	Concord Street	√		√	√	√	√														
27	Cumberland Avenue	√		√	√	√	√		√		√			√		√					
28	Merchant Drive	√		√	√	√	√				√										
1	Broadway (east)/ Old Knoxville Hwy	√		√	√	√	√	√			√										
2	Broadway (west)	√		√	√	√	√	√			√										

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 improvements 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.

IX. TRANSPORTATION DEMAND MANAGEMENT

Background
Transportation Demand Management (TDM) is a general term for strategies that result in more efficient use of transportation resources. Some of these strategies improve transportation options, others involve transportation market or price reforms, and others parking and land use management. Examples include telecommuting, rideshare programs, transit service improvements, commuter financial incentives, congestion pricing, access management, and parking management.

A TDM Program is an institutional framework for implementing a set of TDM strategies. Such a program has stated goals, objectives, a budget, staff, and a clear relationship with stakeholders. It may be a division within a transportation or transit agency, an independent government agency, or a public/private partnership. Below are possible responsibilities of a TDM Program:

- Coordinates TDM planning, evaluation, and data collection;
- Implements marketing programs;
- Responds to problems and complaints;
- Provides ride-matching, shuttle services, and pedestrian and bicycle promotion;
- Provides parking management and pricing. Coordinates arrangements for shared parking;
- Supports pedestrian and bicycle improvements and other projects that encourage alternative modes; and,
- Supports integrated transportation and land use planning to improve accessibility and reduce vehicle travel (e.g. access management, smart growth).

For more information on TDM programs and strategies, refer to the *Online TDM Encyclopedia* at http://www.vtpi.org/tdm/.

Existing Conditions
The Knoxville Smart Trips Program is housed within the TPO. Current goals of the Smart Trips Program are to reduce peak-hour traffic congestion on major roadways in the Knoxville Region and reduce long-term parking needs in Downtown Knoxville. The program aims to improve mobility while reducing single occupant vehicle commuter trips and improving air quality. Getting businesses involved in promoting transportation choices and implementing Smart Trips strategies is another important goal of the program.

The main component of the Smart Trips Program is the implementation of Commute Trip Reduction (CTR) programs at individual worksites. The Smart Trips employer outreach coordinator helps develop and initiate these programs, but they need to be sustained in the long-term by the employer.

Another component of the Smart Trips Program is a public information campaign on television and radio. Smart Trips also has a brochure and a website targeted to the general public and holds a Commuter Challenge each April and October. As part of the SmartFix40 efforts, the Commuter Challenge in 2007 will be six months long, rather than one week in spring and fall.

An online ride-matching service is provided by Smart Trips free of charge to the public. The Smart Trips website also allows people to register for the Smart Trips program. If participants log their alternative mode commutes each week, they are eligible for

monthly prizes. This database allows Smart Trips to quantify results, although not everyone who used alternative transportation registers for Smart Trips, and not every participant remembers to log their commutes.

Progress Since Adoption of the 2002 Long Range Transportation Plan

The Smart Trips website has been completed, http://smartrips.knoxtrans.org/. The website links people to the free online carpool ride-matching service and KAT's website, and presents helpful information about biking, walking, guaranteed ride home, and creative work schedules. Visitors to the website can also find out about the IRS commuter tax benefits (for parking and vanpooling).

There are more than 20 participating employers in the program now, compared to just 4 when the LRTP was completed in early 2005. Surveys have been completed at several worksites to identify current commuting habits, points of resistance to change, and degrees of interest in the alternatives. Although survey results vary somewhat from employer to employer, they bear many general similarities:

- 90 to 100 percent of employees drive alone to work;
- The average commute is between 24 miles and 35 miles roundtrip;
- Many seem unaware that they are spending between $3,000 and $5,000 per year to drive alone; and,
- They don't know how to find out information (carpool ride-matching, bus routes, etc.).

Smart Trips Week is held each April and includes a Commuter Challenge. Participants promise to carpool, ride the bus, bike, or walk to work at least once during Smart Trips Week. Nearly 80 commuters took up the challenge in 2004, and more than 200 participated in spring 2006. The 2007 event will be a month instead of a week, and will focus on preparing people for the six-month Commuter Challenge.

A marketing campaign is conducted annually, including radio, television, and web advertising. Four television commercials have been produced by WBIR at no cost. Four radio ads have also been produced to date.

Issues

TDM Programs ensure that specific strategies are complementary and coordinated for maximum effectiveness. For example, transit improvements, pedestrian improvements, and parking pricing can have far greater travel impacts and consumer benefits when implemented as a coordinated program. A general rule is that TDM Programs should include a balance of improved travel choice and incentives to reduce automobile travel.

TDM Programs are usually established and funded by local, regional, or state governments, often within existing transportation agencies, or through grant programs.

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% in motor vehicle travel compared with no TDM efforts, 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% are more realistic for TDM Programs implemented by local or regional governments.

Well-managed Commute Trip Reduction programs can reduce vehicle trips to a particular worksite by 15-30%, or more if implemented with regional TDM strategies such as road pricing and major transit improvements. Commute trips represent only about 30% of total personal vehicle travel (50-80% of travel on congested urban highways). Other types of trips can also be reduced using appropriate TDM strategies. For example, school TDM programs can also achieve 15-30% trip reductions. Land use management strategies such as access management and smart growth can reduce per capita vehicle travel by 20-50% in a specific area.

TDM Programs can provide many benefits including reduced traffic congestion, increased mobility, road and parking cost savings, consumer savings, increased transport choice, reduced traffic crashes, environmental protection, more efficient land use, more livable communities, and increased equity. By providing coordination, TDM Programs can increase the effectiveness of individual TDM strategies. TDM Programs depend on governments for implementation, funding, and enforcement. Their effectiveness depends on support from local businesses and residents, and from other levels of government.

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
The following are objectives of the Transportation Demand Management element of the Long Range Transportation Plan:

- Continue current Knoxville Smart Trips Program; and,
- Expand commuter vanpool program.

Programmed and Planned Projects
TDM Projects currently in the TIP include:

- Knoxville Smart Trips Program, (CMAQ, CTAP, SmartFix40).

TDM Projects submitted during the application process for the upcoming TIP and accepted through the selection process include:

- Knoxville Smart Trips Program, (CMAQ 2008).

TDM Projects envisioned but not programmed include:

- Knoxville Smart Trips Program (2009-2010).

X. INTELLEGANT TRANSPORTATION SYSTEMS

Background

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 short term deployment of the Knoxville ITS involves the use of wireless communications and leased fiber optic land lines for the transmission of video and audio information. In the long term, sole ownership of a region-wide fiber optic system is preferred for optimal communication performance.

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 *(see map 30)* will be constructed.

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, collecting and coordinating all transportation related information, controlling the direction of traffic cameras, and issuing traveler information 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.

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% of the time. Of the vehicles assisted, 79.2% were passenger vehicles and 6.8% were tractor trailers or other heavy duty trucks.

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 pursing ITS technology. Today's 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 provides 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) had a study done that identified potential ITS projects for the Park to utilize. However, due to funding issues, a plan has yet to be developed. It is anticipated that the process will reconvene in 18-24 months with the development of a plan that depicts an ITS architecture for the Park and the identification of specific ITS projects.

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 some key objectives and actions that are recommended by this Plan to ensure the continued use and success of ITS throughout the Knoxville Region.

- Ensure a coordinated and uncomplicated transition of the Regional ITS Architecture between TDOT and TPO to allow maintenance by the TPO;
- 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.

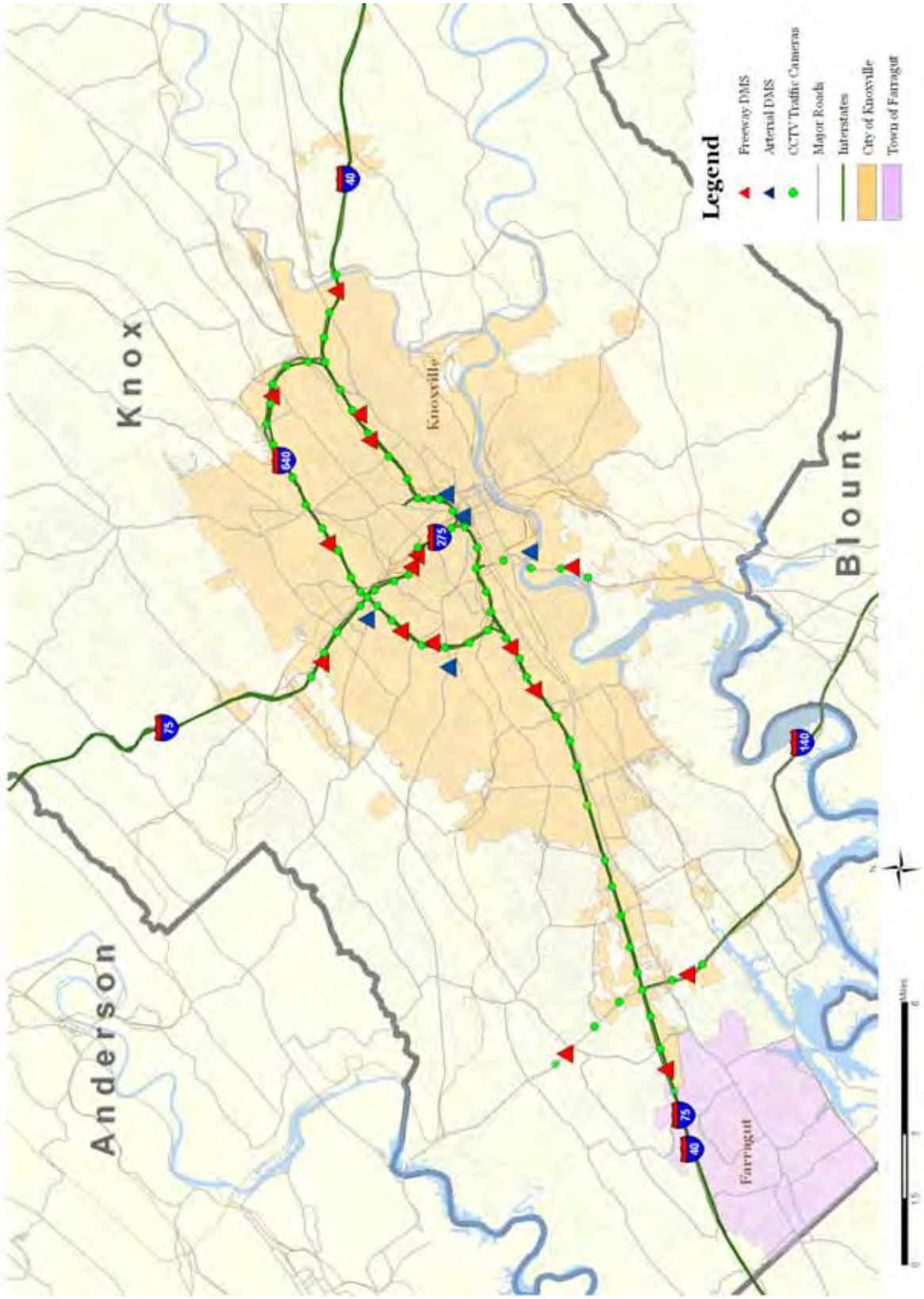
The following objectives relates to incident management:

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

Programmed and Planned Projects

- Various ITS components along I-40, I-640, and I-275 including utilities and communication items; and,
- Operations at the Transportation Management Center such as software/computers and communication.

MAP 30: KNOXVILLE INTELLIGENT TRANSPORTATION SYSTEMS



XI. SAFETY PLANNING

Background

In TEA-21, safety and security were included as a coherent planning factor. With SAFETEA-LU, safety and security are explicitly included as separate planning factors. Safety must be considered as a key goal in the development of metropolitan and statewide transportation plans and programs, which presents many challenges and innovative strategies. For example, it will become necessary for many agencies (MPO's, DOT's, local governments, public safety personnel, emergency services personnel, trucking companies, and others) and the public to communicate and corroborate consistently with one another and build partnerships.

Great efforts have been made in Tennessee to increase safety. Behavioral strategies such as new Traffic Safety Laws (Seatbelt Law, Child 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 the Knoxville Region, involve new technologies such as the Intelligent Transportation System (ITS) and the Strategic Plan for Highway Incident Management, August 2003. Some National, State, and Knoxville Region statistics are given below to provide reality of the existing challenges at hand 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.

2005 National Statistics

*From the National Highway Traffic Safety Administration

- Fatalities- 43,443
- Injuries- 2,699,000
- Property damage- 4,304,000
- Non-motorists:

  Pedestrians killed, injured – 4,749, 70,000

  Pedal cyclists killed, injured – 622, 46,000
- Economic cost of traffic crashes (2000)- $230.6 billion
- Fatalities per 100 million vehicle miles traveled- 1.47
- Fatalities per 100,000 population- 14.66

2005 Tennessee Statistics

- Fatalities- 1,270
- Fatalities per 100 million population- 21.23
- Economic cost of traffic crashes (2000)- $4.628 billion

Knoxville Region Pedestrian and Bicyclists Data

TDOT data for 2002-2004

Pedestrians

- Fatalities- 12
- Injuries- 21

Bicycles

- Fatalities- 0
- Injuries- 48

Knoxville Region Highway-Rail Incidents during Time Frame Jan. 2000 to Sep. 2004

- Anderson County- 8 incidents, 2 injuries, 1 fatality;
- Bounty 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.

Progress Since the 2002 Long Range Transportation Plan

In Tennessee, many steps have been taken to improve safety in the transportation system. In August 2007, the state adopted a Strategic Highway Safety Plan with the goal of reducing the fatality rate by 10 percent by the FY 2008-09. 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. Several initiatives have been taken to improve safety.

In May 2005, TDOT opened a Transportation Management Center (TMC) at its Region 1 office in Knoxville.

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.

The TPO is working with local governments on Safe Routes to School programs at several schools in the Knoxville region. Also, several countdown-style pedestrian were installed in the downtown area.

Strategic Highway Safety Plan

The State of Tennessee has developed a Strategic Highway Safety Plan (SHSF) with the ultimate goal of reducing the fatality rate by 10% by the end of 2008. The plan details eight emphasis areas that will be focused on to obtain this goal:

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.

LRTP and TIP Project Selection Criteria

The project selection criteria for the Long Range Transportation 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. Highway projects identified in this plan that address a high crash location receive greater emphasis and are shown on Map 32. As part of the scoring system to rank projects for funding, projects can receive a maximum of 10 points for meeting Safety & Security goals and objectives.

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."

Regional High Crash Location List

The TPO compiled information from a variety of sources that identified high crash locations on major streets and highways in the Region. Table 21 highlights the number of locations determined to be ranked the most severe hazard locations in the Knoxville Region.

Table 21: Knoxville Region Crash Data (1999-2001)

County	# of locations with a hazard ration >4	Locations on Interstates	Locations on State Routes
Anderson	1	0	0
Blount	1	0	1
Jefferson	0	0	0
Knox	6	2	4
Loudon	0	0	0
Sevier	2	2	0

Although the data was not analyzed by the TPO staff in order to determine the specific causes of crashes at particular locations, some broad observations were made such as:

- Most of the high crash locations listed were located at isolated spots or intersections rather than on longer segments of roadways; and,
- More high crash locations occurred on uncontrolled access roadways than on controlled access roadways such as interstates.

Since the TPO is involved in a regional planning analysis, it is not practical to address all of the individual spot crash locations. This is left to the State or local jurisdictions. The more appropriate means for the TPO to address high crash locations is to advocate safety conscious design principles into roadway improvement projects that are planned in order to promote safe transportation facilities for all modes of travel. Based on the observations above, perhaps one of the single most important elements that can be addressed to improve safety is access control. Access control consists primarily of limiting the number driveways and conflict points on the roadway system and serves to both reduce the number of crashes as well as reduce congestion.

I-40/James White Parkway Interchange Interim Safety Improvement Study

The TPO requested that TDOT conduct a study in order to identify appropriate short-term solutions to the crash problem associated with the I-40/James White Parkway Interchange. Local motorists are very familiar with this deficient section of interstate and associated interchange, which involves a very dangerous left-hand merge

and short weave areas where traffic is entering and exiting the interstate. Although a major reconstruction project is planned for this section, it will still be at least four years before it is completed, therefore, it was decided that immediate action was needed to address the crash problem. TDOT analyzed traffic volumes and patterns and determined several short-term measures would be appropriate in order to reduce the number of crashes and improve safety at this location, including the following:

- Install a left-hand merge warning sign on westbound I-40 prior to the James White Parkway on-ramp;
- Install signage to prohibit "weave" movements from Broadway to James White Parkway on westbound I-40;
- Improve warning signs on James White Parkway ramp to westbound I-40; and,
- Install advisory signs on eastbound I-40 prior to the James White Parkway interchange for through trucks to use the left lane.

Although the TPO is not aware of any follow-up studies to determine the effectiveness of the above measures, it is clear that the situation is improved following their implementation.

SmartFix40

SmartFix40 is an accelerated construction project involving I-40 (from I-275 to Cherry Street), James White Parkway, and Hall of Fame Drive. One additional through lane in each direction will be added to I-40 bringing it to 6 lanes. Auxiliary lanes will also be added between I-275 and James White Parkway and between Broadway and Cherry Street. Hall of Fame Drive will become a new 4-lane street. The purpose of this project is to correct roadway deficiencies and improve traffic flow on I-40.

James White Parkway was closed to traffic on December 17, 2006 and is scheduled to be closed for approximately10 months. The new Hall of Fame Drive and the interchange with I-40 (Exit 389) opened December 14, 2006 and will serve as access to downtown during this time. I-40 is scheduled to be closed to through traffic for approximately 14 months beginning May 2008. During that time, access to downtown from I-40 will be via James White Parkway and Hall of Fame Drive. TDOT will strive to do the best possible job in its public information campaign to lessen any safety issues related to closures and detours.

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;
- 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.

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. Safety conscious planning is discussed further in this chapter.

Some other issues surrounding incorporating safety and security in the Long Range Transportation 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, bikeways 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
The primary objective of the Safety Goal, which involves working with state and local agencies and transportation providers, is essential. Building partnerships with stakeholders is important in the following areas:

- Developing 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;
- Developing an information system for crash data compiling, consolidating, analyzing, and accessing; and,
- Establishing a long term vision that enhances the safety and security of all citizens.

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 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% of all freeway crashes are secondary.

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:

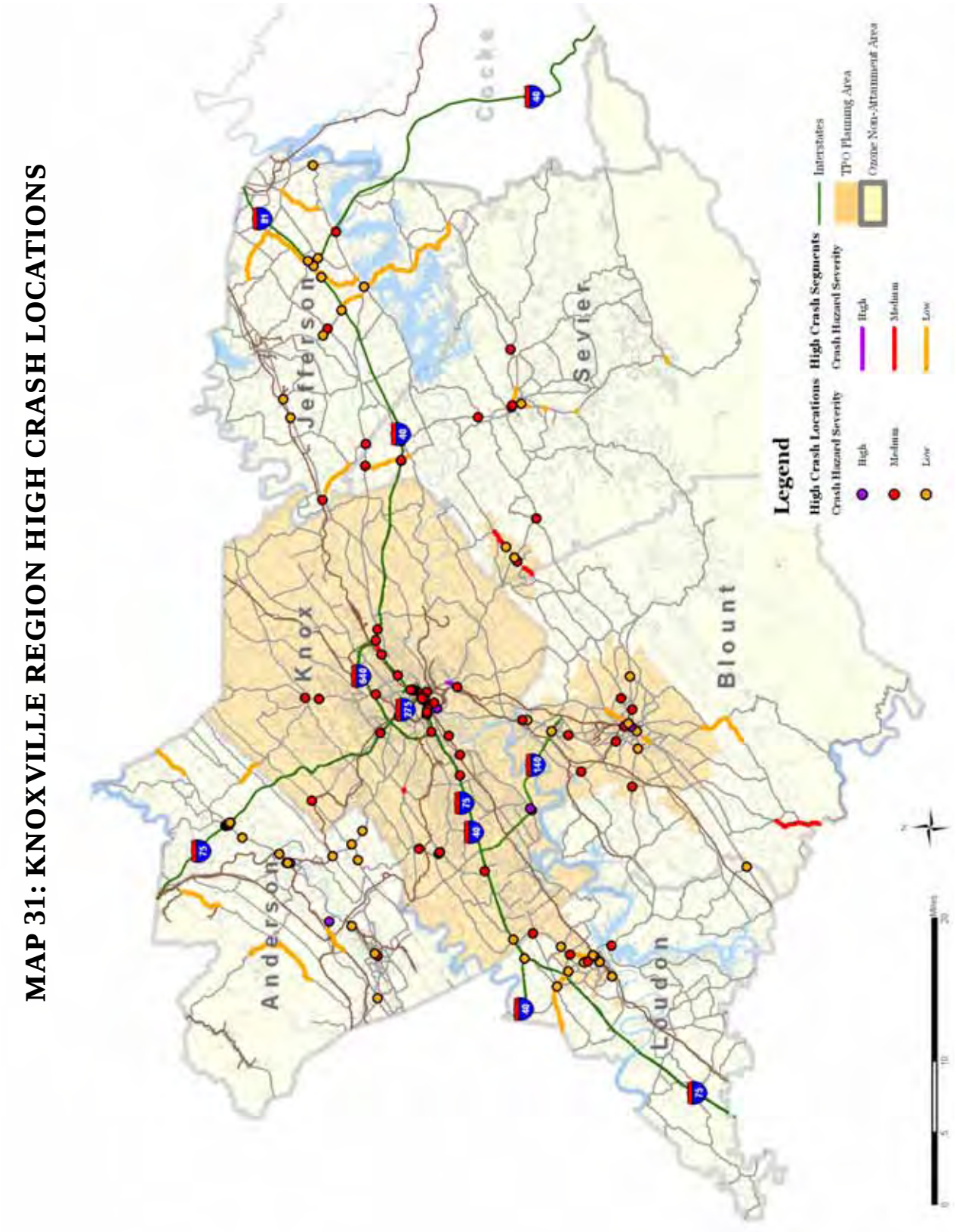
- Regional- growth strategies, major network strategies, etc.;
- City/County- community plans, zoning and subdivision regulations, transportation plans, etc.;
- Small area plans- sector/neighborhood plans, area transportation strategies, corridor and access management strategies, pedestrian and bicycle 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.

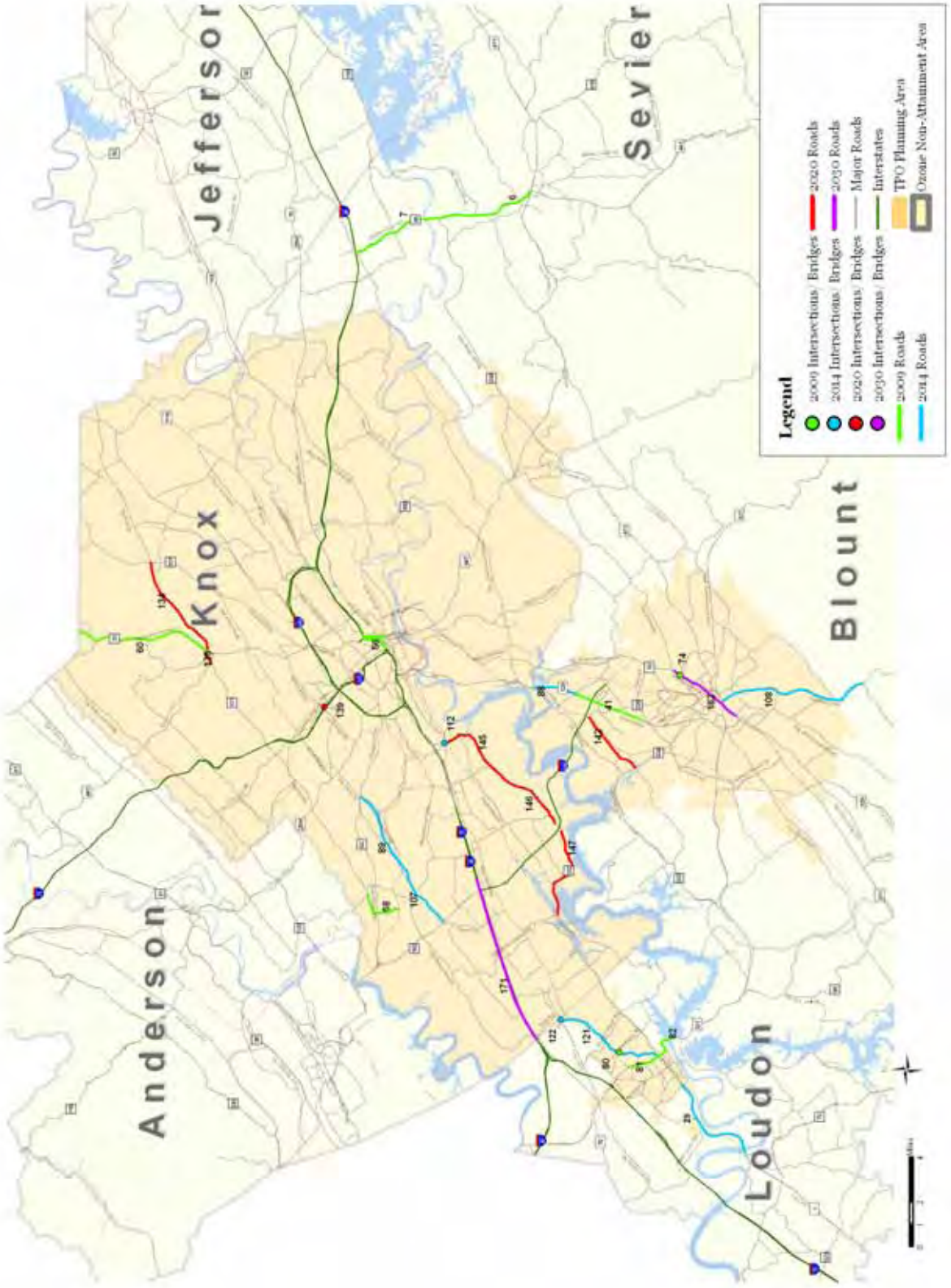
Conclusion

Great strides in improving the safety of the transportation system have been achieved over the course of time through the implementation of behavioral and technological strategies with examples being seat belts and driver education campaigns. Furthermore, among the priorities of the public regarding their transportation system, safety ranks among the top.

MAP 31: KNOXVILLE REGION HIGH CRASH LOCATIONS



MAP 32: PROPOSED HIGHWAY PROJECTS THAT ADDRESS HIGH CRASH LOCATIONS



XII. SECURITY PLANNING

Background
With the development of the 2005-2030 Knoxville Regional Long Range Transportation Plan Update, security has 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 Long Range Transportation Plan and the Transportation Improvement Program projects have been revised to include security. 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 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 Interstatess 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 a look 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 11th, 2001, the efforts with regards to safety and security have reached 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 or 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 in 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.

Progress Since the 2002 Long Range Transportation Plan
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 its on board 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 and Knox County Sheriff, 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

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.

Conclusion

Even though the Knoxville Regional TPO is not directly involved in ensuring the security of the transportation system, the decisions it makes regarding transportation have an impact on emergency response. The TPO will act as a coordinator to ensure that the transportation system is secure and adaptive to emergency response.

XII. AIR QUALITY- TRANSPORTATION CONFORMITY

Introduction

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. This chapter presents a summary of the conformity requirements and analysis used demonstrate that the Long Range Transportation Plan meets Transportation Conformity requirements under federal regulations found in the Clean Air Act Amendments of 1990 and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (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 Amended 2005 - 2030 Knoxville Regional Long Range Transportation Plan"*, which was originally adopted on March 22, 2006 and subsequently amended on May 18, 2006; July 26, 2006 and most recently in September 2007. The latest Conformity Determination Report is included in Appendix J.

The latest amendment addresses the shifting of some projects to a new horizon year based on project delays that have occurred. Table 22 below documents the projects that were moved to new horizon year and necessitated a revised regional emissions analysis:

Table 22: Project Horizon Year Changes

LRTP #	Project	Location	Current Horizon Year	New Horizon Year
40	Alcoa Hwy	Maloney Rd to Woodson Dr	2009	2014
87	Alcoa Hwy	Maloney Rd to Blount County	2009	2014
43	Bradshaw Rd	Connect to Western Ave	2009	2014
44	Campbell Station Rd	Jamestowne Blvd to Parkside Dr	2009	2014
48	Dry Gap Pk	Dante Rd to Rifle Range Rd	2009	2014
49	Dry Gap Pk	Beaver Creek Dr to Dante Rd	2009	2014
58	Karns Connector	Westcott Blvd to Emory Rd	2009	2014
59	Lovell Rd	Gibert Rd to Schaeffer Rd	2009	2014
60	Maynardville Hwy	Emory Rd to Union County Line	2009	2014
64	Millertown Pk	Washington Pk to Mall Rd North	2009	2014
66	Old Knoxville Hwy	Wildwood Rd to McArthur Rd	2009	2014
69	Parkside Dr	Mabry Hood Rd to Hayfield Rd	2009	2014
70	Pellissippi Pkwy	SR 33 to US 321	2009	2014
71	Pleasant Ridge Rd	Schaad Rd to I-640	2009	2014
76	Washington Pk	Millertown Pk to I-640	2009	2014
78	Western Ave	Texas Ave to Major Ave	2009	2014
81	US 321	Simpson Rd to SR 2	2009	2014
82	US 321	SR 2 to East of Little River	2009	2014
83	US 321	Intersection with US 11	2009	2014
105	James White Pkwy	Moody Ave to Chapman Hwy	2014	2020

Background

As documented previously, on June 15, 2004 the Environmental Protection Agency designation of 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 the pollutant

ozone became effective. In addition, on April 5, 2005, the EPA designation as a PM2.5 nonattainment area for the region encompassing all of Anderson, Blount, Knox and Loudon counties as well as a portion of Roane County became effective *(see map 2)*. 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, then an area may lose its ability to obtain federal funding for certain roadway projects.

The TPO entered into a formal agreement with the Tennessee Department of Transportation and the Lakeway Area Metropolitan Transportation Planning Organization that the TPO would be responsible for performing the conformity analysis for the entire Nonattainment Area even though portions are outside of the existing TPO Planning Area. The Lakeway Area Metropolitan Transportation Planning Organization 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 to show attainment of the recently implemented 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 were 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, 2020, and 2030 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 – 8-Hour Ozone

Tables 23 and 24 summarize the results of the emissions analyses used to demonstrate conformity of the LRTP to the 8-Hour Ozone Standard.

Table 23: Test 1- 1 Hour Budget Test for Knox County (tons/ day)

Volatile Organic Compounds (VOC)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	27.45	27.45	27.45	27.45
Projected Emissions	18.97	14.69	11.24	11.34
Oxides of Nitrogen (NOx)	**Analysis Years**			
	2009	**2014**	**2020**	**2030**
Emissions Budget	57.25	57.25	57.25	57.25
Projected Emissions	37.04	22.86	14.59	10.70

Table 24: Test 2- Regional Area No Greater than Baseline 2002 Test (tons/ day)

Volatile Organic Compounds (VOC)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	29.24	22.12	22.12	22.12
Projected Emissions	20.11	14.90	11.12	10.74
Oxides of Nitrogen (NOx)	**Analysis Years**			
	2009	**2014**	**2020**	**2030**
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	29.62	19.83	12.13	9.19

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 2005-2030 Knoxville Regional Long Range Transportation Plan, as amended through 2007.

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 the same as those used for the Ozone analysis – 2009, 2014, 2020, and 2030 as they also fulfill the requirements from the federal transportation conformity regulations. The analysis period for PM 2.5 is annual instead of the daily period analyzed for ozone, therefore the emissions are reported in tons per year.

Conformity Statement – PM 2.5

Table 25 summarizes the results of the emissions analysis used to demonstrate conformity of the 2005-2030 Knoxville Regional Long Range Transportation Plan- 2006 Amendment to the PM 2.5 Standard.

Table 25: No Greater than Baseline 2002 Test (tons/ year)

Direct PM 2.5	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	474.22	474.22	474.22	474.22
Projected Emissions	285.11	211.78	177.71	191.16
Oxides of Nitrogen (NOx)	**Analysis Years**			
	2009	**2014**	**2020**	**2030**
Emissions Budget	30,065	30,065	30,065	30,065
Projected Emissions	18,128	11,894	7,512	5,662

The projected emissions of Direct PM 2.5 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 the 2002 emissions. Therefore, Transportation Conformity under the PM 2.5 standard has been demonstrated for the 2005-2030 Knoxville Regional Long Range Transportation Plan- 2007 Amendment.

Interagency Consultation Summary

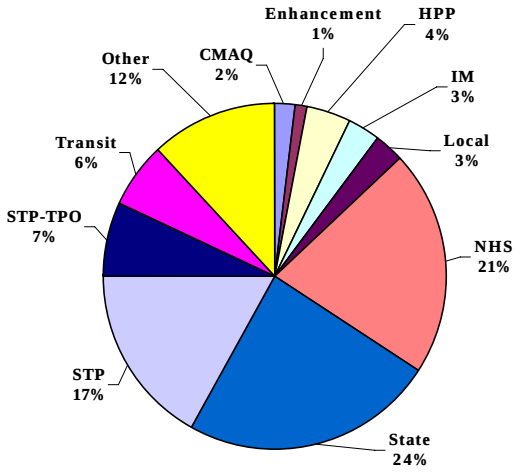
The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation (IAC) process to formally deliberate any issues. The Interagency Consultation Group included participants from EPA, FHWA, FTA, TDOT, Tennessee Department of Environment and Conservation (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 conformity analysis report previously noted as well as the documentation for the subsequent amendments.

XIV. FINANCIAL ANALYSIS

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.

Figure 4: Percent of Funding Sources Spent Annually in the TPO Area.



Federal funding programs account for approximately 88% 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. The following projects are examples funded with this funding source:

- Widen I-40 from Wesley Road to Papermill Drive; and,
- I-40, I-275 to Cherry Street Interchange, Hall of Fame Drive.

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. Within the TPO Area, these funds have been spent for the following projects:

- Construction of ITS dynamic message boards, cameras, and other roadway devices along the interstate; and,
- SmartFix40, I-275 and I-640 interstate improvements.

Surface Transportation System (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 per year. 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. The following are some projects funded with local STP dollars:

- Pleasant Ridge Rd from I-640 to Knoxville City Limits;
- Purchase vans for Knox County Community Action Committee;
- McFee Road from Boyd Station Road to Old Stage Road; and,
- Sandy Springs Road from US 411 to Montvale Station Road.

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. The following are examples of bridge projects funded by Bridge Replacement and Rehabilitation funds:

- Church Avenue Bridge over James White Parkway;
- Alcoa Highway Bridge over Little River;
- Gay Street Bridge over railroad; and,
- East Emory Road Bridge over Flat Creek.

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. The following are some projects that have been funded with CMAQ dollars within Knox County:

- Purchase vans and buses for KAT, CAC, ETHRA, and Knoxville Commuter Pool;
- Traffic signal synchronization and coordination;
- Smart Trips Program;
- Sidewalks/greenways;
- Campbell Station Park-n-Ride lot expansion; and,
- Blount County Diesel Retrofits.

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. Projects funded with HHP within the TPO Area include:

- Highway 321 and Highway 11 overpass;
- Streetscape improvements near Tennessee Theater;
- Henley Street Bridge;
- Construction of a pedestrian bridge in Alcoa; and,
- Construct and widen underpass at intersection of Boyd Station, Harvey and McFee Roads.

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 2 miles). States must set aside from this program 10% to 30% 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.

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.

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. The James White Parkway, Western Avenue, and Pellissippi Parkway are examples of the projects within the TPO Area that will be funded with this program.

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% of project value, however, enforcing and administrating 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.

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% 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. KAT also receives about $1 million a year from the Job Access & Reverse Commute Grant.

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% 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 also provides 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.

Public transportation agencies can also collect revenue from fares and subcontracting. In 2004, KAT collected approximately $2.6 million in fares. KAT also collected about $325,000 in revenue for subcontracting efforts such as providing special transportation services.

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

Federal Funding

The Transportation Enhancement 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. Under SAFETEA-LU, this list has expanded to include safety education activities for pedestrian and bicyclists, establishment of transportation museums, and projects to reduce vehicle caused wildlife mortality. Most of the greenways within the TPO Area have been funded or partially funded with Transportation Enhancement grant dollars.

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.

STREETS AND HIGHWAYS FINANCIAL CONSTRAINT

The following section details the methodology for financially constraining the 2005-2030 Knoxville Regional Long Range Transportation Plan Update. Specifically, all the costs for all the projects in the plan are compared to the projected revenues anticipated to be available for each outyear through 2030. This section supports the plan being financially constrained because the costs of the projects do not exceed the projected revenues.

1.) Tennessee Department of Transportation

TDOT submitted funding spent on new construction during the past five years (1999-2004) for each county. Each county's sum for construction was averaged and this number was projected to year 2030 using a 3% growth rate. Table 26 displays the TPO's sum for TDOT funding for each network year.

Table 26: TDOT Projected Capital Revenues

	2005-2009	2010-2014	2015-2020	2021-2030	Total
Total	$491,500,939	$702,011,341	$991,525,640	$2,098,269,996	$4,283,307,916

2.) Total Sub-Allocated to Funding Categories

The totals for each network year were allocated to funding categories, i.e. NHS, IM, STP, etc., based on historical percentages of previous transportation improvement programs. For example, historically NHS funds have consumed 24% of the total TIP budget. Table 27 displays these historical percentages.

Table 27: Funding Source Percentage Based on Previous TIP

Funding Sources	Percentage
Bridge	6.1%
CMAQ	2.3%
Enhancement	0.9%
HPP	4.9%
IM	3.9%
NHS	24.3%
State	29.2%
STP	19.8%
STP-TPO	8.5%
Total	100.0%

These percentages were applied to the total capital revenues for the TPO. Table 28 displays the funding source breakdown by network year totals.

Table 28: Capital Revenues by Funding Source

Funding Program	2005-2009	2010-2014	2015-2020	2021-2030	Total
Bridge	$29,989,373	$42,833,855	$60,498,831	$128,027,836	$261,349,895
CMAQ	$11,385,172	$16,261,454	$22,967,789	$48,604,515	$99,218,930
Enhancement	$4,541,067	$6,486,011	$9,160,886	$19,386,299	$39,574,263
HPP	$98,594,008	$108,968,804	$48,866,352	$103,411,144	$359,840,308
IM	$18,984,963	$27,116,243	$38,299,168	$81,048,833	$165,449,207
NHS	$119,524,048	$170,716,332	$241,120,920	$510,260,927	$1,041,622,227
State	$143,682,235	$205,221,497	$289,856,251	$613,394,803	$1,252,154,786
STP	$97,431,504	$139,161,526	$196,552,696	$415,945,496	$849,091,222
STP-TPO	$41,739,444	$59,616,494	$84,202,746	$178,190,143	$563,748,827
Total	**$565,871,814**	**$776,382,216**	**$991,525,640**	**$2,098,269,996**	**$4,432,049,666**

3.) Local Jurisdictions

The local revenues for funding spent on new construction were calculated by adding each jurisdiction's capital outlays for each year from 1999 to 2004. In order to find the middle range of numbers, three forecasting methods were used to forecast to 2030. The exponential and trend analyses extrapolate future values that extend a straight line or exponential curve that best describes the existing data. The last forecasting tool was a growth rate projection based on the average growth rate. Table 29 displays the totals for each forecasting tool. The exponential forecast was the preferred prediction because it displayed a medium growth pattern.

Table 29: Local Jurisdiction Capital Revenue Forecast Tools

	2005-2009	2010-2014	2015-2020	2021-2030	Total
Exponential	$117,144,127	$119,500,834	$147,842,931	$257,184,320	$641,672,212
Trend	$116,883,087	$118,818,742	$146,318,781	$252,542,571	634,563,181
Growth Rate	$117,861,548	$124,136,235	$157,717,652	$285,690,600	685,406,035

4.) Total Capital Revenues for TPO Area

The exponential analysis for the local jurisdictions (step #3) and the TDOT totals (step # 2) were added together to get the sum total for the projected roadway construction revenues for the TPO area, displayed in Table 30.

Table 30: Total Capital Revenues for the TPO Area

Funding Program	2005-2009	2010-2014	2015-2020	2021-2030	Total
Bridge	$29,989,373	$42,833,855	$60,498,831	$128,027,836	$261,349,895
CMAQ	$11,385,172	$16,261,454	$22,967,789	$48,604,515	$99,218,930
Enhancement	$4,541,067	$6,486,011	$9,160,886	$19,386,299	$39,574,263
HPP	$98,594,008	$108,968,804	$48,866,352	$103,411,144	$359,840,308
IM	$18,984,963	$27,116,243	$38,299,168	$81,048,833	$165,449,207
NHS	$119,524,048	$170,716,332	$241,120,920	$510,260,927	$1,041,622,227
State	$143,682,235	$205,221,497	$289,856,251	$613,394,803	$1,252,154,786
STP	$97,431,504	$139,161,526	$196,552,696	$415,945,496	$849,091,222
STP-TPO	$41,739,444	$59,616,494	$84,202,746	$178,190,143	$563,748,827
Local Jurisdictions	$117,144,127	$119,500,834	$147,842,931	$257,184,320	$641,672,212
Total	**$683,015,941**	**$895,883,050**	**$1,139,368,571**	**$2,355,454,316**	**$5,073,721,878**

*Forecasts are calculated by averaging each county's capital dollars spent between 1999-2004 and using a 3% growth rate to project to year 2030. The total revenue by outyear was divided into the specific funding source based on the percent of dollars spent per year by funding source in previous Transportation Improvement Programs.

**Forecasts calculated by using a growth trend analysis based on actual 2001-2004 data.

5.) Road Construction Project Cost

Each project cost was projected using the future value function with an inflation rate of 4.5%. The amount of years the future value was inflated to 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 example, it is assumed that for the network year 2005-2009, half of the projects will be funded before year 2007 and half after year 2007. Therefore, all projects programmed for year 2009 will be inflated to year 2007.

Table 31: Road Construction Project Cost

Horizon Year	Year of Inflation
2005-2009	2007
2009-2014	2011.5
2014-2020	2017
2021-2030	2025

6.) Financial Constraint

Projects added to the plan through the 2006 amendment, excluding the HPP projects, are funded with the existing surplus of revenues. The revised Table 32 displays all projected revenues and expenditures by funding source. The table exhibits that the Plan, with the 2006 amendment, is financially constrained for highway construction

Table 32: Streets and Highways Capital Costs vs Revenue by Horizon Year

Funding Program	2005-2009			2010-2014			2015-2020		
	Revenue	Cost	Balance	Revenue	Cost	Cumulative Balance	Revenue	Cost	Cumulative Balance
Bridge	$29,989,373	$16,961,046	$13,028,327	$55,862,182	$51,576,173	$4,286,009	$64,784,840	$64,746,646	$38,194
CMAQ	$11,385,172	$6,439,095	$4,946,077	$21,207,531	$19,580,389	$1,627,141	$24,594,931	$24,580,431	$14,500
Enhancement	$4,541,067	$2,568,285	$1,972,782	$8,458,793	$7,809,795	$648,998	$9,809,885	$9,804,101	$5,783
HPP*	$98,594,008	$55,761,671	$42,832,337	$151,801,141	$131,209,153	$20,591,988	$69,458,340	$69,417,391	$40,949
IM	$18,984,963	$10,737,298	$8,247,665	$35,363,908	$32,650,623	$2,713,285	$41,012,454	$40,988,275	$24,179
NHS	$119,524,048	$67,599,043	$51,925,005	$222,641,337	$205,559,248	$17,082,090	$258,203,010	$258,050,786	$152,224
State	$143,682,235	$81,262,154	$62,420,081	$267,641,578	$247,106,858	$20,534,720	$310,390,971	$310,207,980	$182,991
STP	$97,431,504	$55,104,195	$42,327,309	$181,488,836	$167,564,159	$13,924,676	$210,477,372	$210,353,285	$124,087
STP-TPO	$41,739,444	$23,606,517	$18,132,927	$77,749,421	$71,784,120	$5,965,301	$90,168,047	$90,114,888	$53,159
Local Jurisdictions	$117,144,127	$66,253,034	$50,891,092	$170,391,926	$143,890,753	$26,501,174	$174,344,104	$174,241,320	$102,785
Total	**$683,015,941**	**$386,292,338**	**$296,723,603**	**$1,192,606,653**	**$1,078,731,271**	**113,875,383**	**$1,253,243,953**	**$1,252,505,103**	**$738,850**

Funding Program	2021-2030			Total 2005-2030		
	Revenue	Cost	Cumulative Balance	Revenue	Cost	Balance
Bridge	$128,066,030	$53,143,021	$74,923,009	$261,349,895	$186,426,886	$74,923,009
CMAQ	$48,619,015	$20,175,228	$28,443,787	$99,218,930	$70,775,143	$28,443,787
Enhancement	$19,392,083	$8,047,051	$11,345,032	$39,574,263	$28,229,231	$11,345,032
HPP*	$103,452,093	$42,924,888	$60,527,205	$359,840,308	$299,313,103	$60,527,205
IM	$81,073,012	$33,642,526	$47,430,486	$165,449,207	$118,018,722	$47,430,486
NHS	$510,413,150	$211,803,994	$298,609,157	$1,041,622,227	$743,013,071	$298,609,157
State	$613,577,794	$254,613,791	$358,964,003	$1,252,154,786	$893,190,782	$358,964,003
STP	$416,069,583	$172,654,641	$243,414,942	$849,091,222	$605,676,280	$243,414,942
STP-TPO	$178,243,302	$73,964,872	$104,278,430	$363,748,827	$259,470,397	$104,278,430
Local Jurisdictions	$257,287,104	$106,754,531	$150,532,573	$641,672,211	$491,139,638	$150,532,573
Total	**$2,356,193,166**	**$977,724,542**	**$1,378,468,624**	**$5,073,721,878**	**$3,695,253,254**	**$1,378,468,624**

*HPP funding includes the earmarked projects from TEA-21 and SAFETEA-LU. The earmarked project expenses and revenues from SAFETEA-LU have been equally divided into the 2005-2009 and 2010-2014 horizon years.

Streets and Highways Operations and Maintenance

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

Streets and Highways Operations and Maintenance Costs

Costs associated with operations and maintenance were derived from calculating a cost per lane mile and applying this cost to the number of lane miles built in each horizon year. It is assumed that the same level of services will be maintained by each jurisdiction in the future outyears. Table 33 displays each county's current cost per lane mile.

Table 33: Operating and Maintenance Cost per Lane Mile

Jurisdiction	Current Lane Miles[1]	Current O&M Expenses[2]	Cost Per Mile
Knox County	2,690	$25,598,803	$9,516
Blount County	919	$9,585,049	$10,430
Loudon County	401	$1,826,330	$4,554
Sevier County	578	$6,606,822	$11,430
Total	4,588	$43,617,004	$9,507

[1]Current lane miles are from the travel demand model 2005 existing and committed network year which mostly excludes minor and local roads.

[2]Average cost from 1999-2004 which includes TDOT and local jurisdictions estimates.

The travel demand model produced the total lane miles expected per network based on the list of projects included in this plan, shown in Table 34. Minor collectors and local roads are not accounted for in these figures because of the limitations of the travel demand model.

Table 34: Lane Miles from the Travel Demand Model

Jurisdiction	2005 E+C	2009	2014	2020	2030
Knox County	2,690	2,752	2,870	3,007	3,100
Blount County	919	938	992	1,027	1,065
Loudon County	401	412	447	462	483
Sevier County	578	629	643	648	648
Total	4,588	4,731	4,952	5,144	5,296

To calculate the total lane miles for each network year grouping (i.e. 2005-2009, 2010-2014, etc.), each year's lane mile count was calculated. For instance, to calculate the total lane miles for the network year period from year 2005-2009, each jurisdiction's increase in lane miles from year 2005 to 2009 was divided by four. 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, Knox County's lane miles in year 2005 is 2,690 and it is projected to increase to 2,752 in year 2009, (2,752-2,690 = 62/4 years = 15.5 lane miles). It is assumed that from 2005 to 2009 Knox County will increase its lane miles by 15.5 lane miles per year. Therefore, Table 35 displays that Knox County's total lane miles for the network years 2005-2009 is 13,605.

Table 35: Knox County Total Lane Miles (2005-2009)

Jurisdiction	2005	2006	2007	2008	2009	Total
Knox County	2,690	2,705.5	2,721	2,736.5	2,752	13,605

The above calculation was performed for all jurisdictions for each specific out year in order to get total lane miles for each network year. The cost per mile calculation for each jurisdiction was multiplied to each network years total lane miles in order to derive a county's operation and maintenance cost per out year, shown in Table 36.

Table 36: County Operation and Maintenance Costs per Out Year

County	Cost/ Lane	2005-2009		2010-2014		2015-2020		2021-2030		Total	
	Mile	Lane Miles	Total Cost	Lanes Miles	Total Cost	Lane Miles	Total Cost	Lane Miles	Total Cost	Lane Miles	Total Cost
Knox	$9,516	13,605	$129,469,039	14,114	$134,312,827	17,700	$168,433,462	30,582	$291,022,228	76,000	$723,237,555
Blount	$10,430	4,643	$48,420,665	4,852	$50,605,722	6,075	$63,356,236	10,479	$109,294,592	26,048	$271,677,216
Loudon	$4,554	2,033	$9,256,897	2,165	$9,860,360	2,735	$12,454,113	4,736	$21,567,545	11,668	$53,138,914
Sevier	$11,430	3,018	$34,491,498	3,187	$36,428,965	3,876	$44,298,856	6,480	$74,069,563	16,560	$189,288,882
Total	$9,507	23,298	$221,638,098	24,318	$231,207,875	30,384	$288,542,668	52,276	$495,953,927	130,276	$1,237,342,567

Streets and Highways 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 (1999-2004) for each county. 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 2030 using a 3% growth rate. Table 37 displays the TPO's sum for each network year.

Table 37: Operations and Maintenance Revenues by Jurisdiction per Out Year

Jurisdiction	2005-2009	2010-2014	2015-2020	2021-2030	Total 2005-2030
Knox County	$136,770,774	$157,554,066	$222,530,445	$470,919,699	$987,774,984
Blount County	$51,980,766	$58,993,519	$83,322,852	$176,328,108	$370,625,245
Loudon County	$9,987,121	$11,577,810	$16,352,579	$34,605,383	$72,522,893
Sevier County	$36,128,811	$41,883,194	$59,156,111	$125,186,367	$262,354,484
Total	$234,867,472	$270,008,590	$381,361,986	$807,039,557	$1,693,277,605

Financial Constraint

Table 38 shows that the street and highway operations and maintenance expenses are financially constrained for the life of this plan.

Table 38: Streets and Highways Operations and Maintenance Financial Constraint

Jurisdiction	2005 –2009			2010-2014			2015-2020		
	Revenue	Cost	Balance	Revenue	Cost	Balance	Revenue	Cost	Balance
Knox County	$136,770,774	$129,469,039	$7,301,735	$157,554,066	$134,312,827	$23,241,239	$222,530,445	$168,433,462	$54,096,983
Blount County	$51,980,766	$48,420,665	$3,560,102	$58,993,519	$50,605,722	$8,387,797	$83,322,852	$63,356,236	$19,966,615
Loudon County	$9,987,121	$9,256,897	$730,224	$11,577,810	$9,860,360	$1,717,450	$16,352,579	$12,454,113	$3,898,466
Sevier County	$36,128,811	$34,491,498	$1,637,314	$41,883,194	$36,428,965	$5,454,229	$59,156,111	$44,298,856	$14,857,255
Total	**$234,867,472**	**$221,638,098**	**$13,229,374**	**$270,008,590**	**$231,207,875**	**$38,800,715**	**$381,361,986**	**$288,542,668**	**$92,819,319**
Cumulative Balance			**$13,229,374**			**$52,030,089**			**$144,849,408**

Funding Program	2021-2030			Total 2005-2030		
	Revenue	Cost	Balance	Revenue	Cost	Balance
Knox County	$470,919,699	$291,022,228	$179,897,471	$987,774,984	$723,237,555	$264,537,428
Blount County	$176,328,108	$109,294,592	$67,033,515	$370,625,245	$271,677,216	$98,948,029
Loudon County	$34,605,383	$21,567,545	$13,037,839	$72,522,893	$53,138,914	$19,383,978
Sevier County	$125,186,367	$74,069,563	$51,116,805	$262,354,484	$189,288,882	$73,065,602
Total	**$807,039,557**	**$495,953,927**	**$311,085,630**	**$1,693,277,605**	**$1,237,342,567**	**$455,935,038**
Cumulative Balance			**$455,935,038**			**$911,870,076**

TRANSIT FINANCIAL CONSTRAINT

Knoxville Area Transit (KAT) is the largest provider of public transportation in the Knoxville Region. KAT has approximately 250 employees and over 100 vehicles dedicated to moving people everyday. Approximately 80% of operating costs are drivers' salaries, whom are the backbone of KAT. From the remaining 20% left of the budget, efficiencies may be able to be made in maintenance or capital needs. However, as long as KAT is able to keep buses and equipment updated, the savings are relatively low to the overall cost of operating a transit system.

KAT's Fiscal Year 2005 Operating and Capital budget is over $14 million. KAT's budget is made up of a variety of sources, including primary contributions from the State of Tennessee and the City of Knoxville, special operating grants from the federal government, federal formula capital grants, and fares. Through a comprehensive planning process, KAT has goals to expand service over the next ten years. In order to achieve this expansion, extra funding will be required. Some internal improvements can be made through route modifications that KAT will implement over the next couple of years. However, most of the expansion will require new dollars. In addition, transit operators require a predictable and consistent funding source in order to plan and to make multi-year commitments. Funding needs to be adequate to meet projected level of services and grow as needed to reflect inflation.

Currently, KAT must work within the confines of a budget dictated mainly by local, state, and federal funds. Outside of fare revenues or contracts, KAT is at the mercy of funding levels set

by government. These levels are subject to change based on each sources own financial situation. Many transit agencies nationwide have dedicated funding sources, typically set by government via a dedicated tax or fee. This does not exist for KAT at this time. Therefore, the following analysis looks at two scenarios. First, is a baseline scenario, referenced as Tier 1. Tier 1 represents the existing operation with no service additions and compares expected annual inflation increases in operating and capital expenses with projected increases in revenues.

Tier 2 shows what additional operating and capital resources would be needed to implement the recommendations of the KAT Action Plan 2010 and the transit elements of the Downtown Knoxville Transportation Linkages Study (DKTLS). Tier Two does not consider the transit recommendations of the Regional Transportation Alternatives Plan (RTAP). Out of all the plans, the RTAP is more ambitious in that a regional funding source would need to be identified to assist with costs. Many of the principles discussed in the report would be applicable for RTAP recommendations but at a different scale.

In order to project operating funding needs, a trend analysis was conducted of KAT's past budgets. Typically, a ten year window is examined and the resulting trend is expected to continue in future years. Table 39 shows KAT's annual operating expenses and revenues between 1995 and 2004 (ten years).

Table 39: KAT Revenues

Source	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Federal	$877,130	$413,520	$413,405	$76,717	$0	$0	$0	$0	$0	$0
State	$782,134	$917,400	$1,021,006	$1,061,844	$1,104,320	$1,554,320	$1,554,320	$1,653,529	$1,709,902	$1,709,902
City	$3,375,590	$3,686,327	$3,757,015	$3,955,373	$3,951,720	$4,117,970	$4,284,520	$4,454,570	$4,746,480	$4,793,061
Other State/ Fed	$0	$0	$0	$1,091,210	$1,270,625	$1,621,532	$1,818,801	$1,997,091	$2,054,450	$2,320,135
Operating Revenue	$1,558,905	$1,673,691	$1,869,361	$0	$0	$0	$0	$0	$0	$0
Fare Box	$0	$0	$0	$1,371,119	$1,297,031	$1,323,874	$1,427,961	$1,443,349	$1,912,502	$2,719,306
Other	$0	$0	$0	$212,061	$194,374	$269,961	$303,981	$259,648	$219,274	$325,751
Total Revenue	**$6,593,759**	**$6,690,938**	**$7,060,787**	**$7,768,324**	**$7,818,070**	**$8,887,657**	**$9,389,583**	**$9,808,187**	**$10,642,608**	**$11,868,155**

*Does not include $1.0 million Job Access & Reverse Commute Grant

The analysis examined the percent increase in funding for each category per year then averaged the individual percentages over the ten year period. Over the last ten years, several major changes have occurred in KAT's funding sources that have skewed the trend line data. These changes include both the phasing out of some funding sources and corresponding increases in others. Many of these increases are associated with trying to offset the loss of those sources that were phased out. Plus, over the last decade KAT has seen the introduction of new services funded by untraditional sources that make certain funding categories look as if there has been more of a dramatic increase. The result of this affect on the ten year analysis is that operating expenses are increasing 6.75% per year. This is extremely high and would be not be appropriate to use in the Tier 1 analysis that examines a baseline or inflation scenario. Plus, revenues have been increasing at twice the rate as the expenses. Using these figures in a trend line analysis would also be inappropriate. As an example, if the 2030 forecast showed KAT's annual budget at $50 million per year, the revenue forecast would reflect $100 million per year.

To resolve these issues, a committee of TPO and KAT staff met to make adjustments in the trend line data. It was staff's opinion that in dealing with future projects it was better to be more conservative. Table 40 shows the results of the trend analysis and then shows any adjustment. Justification for each adjustment is discussed in the corresponding text.

Operating Expense

The annual cost of operating KAT has increased by approximately $5 million since 1995. While this seems dramatic, it only represents an increase of approximately 6.75% each year. However, these increases are not all inflation related. Over the last few years, KAT has experienced increases in services, including several major grants or contracts like the Job Access and Reverse Commute Grant and the multi-million dollar contract with the University of Tennessee to supply campus service. In examining the trend data and trying to remove any increases due to new grants or contracts, it was felt that an increase of 4.50% per year was more realistic. Even this figure is higher than local inflation. For this analysis, total revenues and operating cost are considered the same. Because KAT is a non-profit organization that is controlled by the City of Knoxville, all fiscal year budgets end with a zero balance. Any shortfall is covered by the City's contribution and conversely any overage is returned to the City's general fund.

Table 40: KAT Financial Spreadsheet Assumptions

Category	Percent Increase Per Year (1995-2004)	Revised Percent Increase Per Year (Forecast)
Operating Expenses	6.75%	4.50%
Federal Grant Revenue	13.40%	6.70%
State Revenue	9.08%	2.41%
Local Revenue	3.97%	3.87%
Fare Box Revenue	12.09%	6.045%
Other Revenues (sub-contract)	7.42%	2.50%

Federal Grant Revenue

Federal funding for operations was phased out nationally in 1998. As such, the way KAT reported its revenues changed at that time. The federal government still provides capital dollars. Several years ago the federal government eased their definition of capital expenses and began allowing transit agencies to bill part of their maintenance labor to this grant. Therefore, the table under the federal category reflects the original phase out. However, the other state/federal category shows the new classification of various special state and federal grants, including the maintenance labor expenditure. This category also reflects the federal Job Access and Reverse Commute Grant. Originally, special state and federal grants were reported in the operating revenue category that also included fare box revenue. It was felt that it was important to track fare box revenue independently of one-time or special grants, therefore, a fare box category was created. Since this other state/federal category's inception, the amount has increased by 13.40% per year. Though KAT continues to receive Job Access and Reverse Commute Grants, the amount of funding had remained level. KAT staff felt that there was no way this category would continue to see this amount of increase per year in the future. Therefore, to use a more

conservative estimate, it was determined that half or 6.70% increase was more realistic for future years.

State Revenue

The State of Tennessee has increased its contribution by 9.08% a year over the last ten years. As shown, the State began to significantly increase their contribution when the federal government began phasing out their operating funding. While the State has been dedicated to increasing funding for mass transit statewide, KAT staff felt that it would be unrealistic to assume the State could continue to increase funding by the same percent per year as over the last ten years. In fact, the State of Tennessee has struggled in recent years with the overall State budget. As transit allocations from TDOT are not a dedicated funding source, they have been threatened for reduction. When looking at 2000 to 2004, the rate of increase was 2.41% per year. Therefore, staff felt more comfortable with this rate and reduced the State's contribution to a rate of 2.41% per year.

Local Revenue

The City of Knoxville (local revenue) has increased its contribution by 3.97% over the last ten years. The City has increased its contribution to KAT ten consecutive years. When looking at 2000 to 2004, the rate of increase is slightly lower at 3.87%. Though just slightly less, staff felt more comfortable using 3.87% in the forecast. The City, like the State, has increased their contribution over the last decade to help offset other declining funding sources, to help offset rising employee salary and health care costs, and to help match grant programs. Most grants require local participation in the range of 10% to 20%. Traditionally, TDOT has provided half of the local match. This funding arrangement makes grants attractive in that for every ten to twenty cents the City invests, it receives eighty to ninety cents from the federal government.

Fare Box Revenue

Since 1998, fare box revenue has increased by 12.09% per year. This is a fairly significant amount. Much of this can be associated with improvement of many of the core routes and the increase in services. As noted, KAT has seen a strong increase in ridership and subsequently a strong increase in fare box revenue. It is unrealistic to assume that this strong ridership growth would occur every year over the next thirty years. Therefore, staff, wanting to look at a more conservative estimate, reduced the fare box increase in half to 6.045% a year.

Other Revenue

The other category reflects revenue that is collected as part of KAT's subcontracting efforts. If private carriers are unable to fulfill the special service needs of the community, they may contract with KAT to provide the service. Types of services provided may be shuttles for conventions or trolleys for weddings. Subcontract revenue has increased at a rate of 7.42% per year. Subcontracting is a secondary service that KAT provides that must not come at expense of regular service. Therefore, staff was uneasy seeing subcontract work increasing at the same rate over a thirty year timeframe. Because most vehicles are used in everyday service, there is only a certain limit of how much subcontracting service can ultimately be provided. Staff felt that is was more reasonable that subcontracting would increase at the lower rate of 2.5% per year.

Forecasts

KAT's expenses and various revenue sources were forecasted over a 30-year timeframe. For the year 2005, the adopted projected budget for KAT is shown. Year 2005 is the base data from which the forecast is made. Table 41 shows a snapshot by showing years 2005, 2010, 2015, 2020, 2025, and 2030 of the thirty year time frame for the Tier 1 or baseline scenario. The Tier 1 scenario shows KAT's expenses and revenues as they exist now without any major expansions. Each year shown is what the projected budget and revenues would be for that specific year. To not overstate the other state/federal revenue category, the Job Access and Reverse Commute Grant was pulled out as a separate revenue line item. The Job Access and Reverse Commute Grant has been fixed at one million dollars and it is not foreseen to increase in the future. Therefore, if left in the other state/federal revenue category, the $1 million would have compounded yearly at 6.70% a year. This would have represented a staggering amount thirty years from now.

Table 41: KAT Projected Operating Expenses, Baseline (Tier 1) Scenario

Expenses	2005	2010	2015	2020	2025	2030
Operating Expenses	$11,911,000	$14,843,000	$18,497,000	$23,051,000	$28,725,000	$35,797,000
Job Access Grant	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Total Operating Expenses	**$12,911,000**	**$15,843,000**	**$19,497,000**	**$24,051,000**	**$29,725,000**	**$36,797,000**
Other State/ Federal Revenue	$2,083,000	$2,881,000	$3,984,000	$5,510,000	$7,621,000	$10,539,000
State Revenue	$1,710,000	$1,926,000	$2,170,000	$2,444,000	$2,753,000	$3,101,000
Local Revenue	$5,135,000	$6,209,000	$7,507,000	$9,076,000	$10,973,000	$13,268,000
Fare Box Revenue	$2,732,000	$3,405,000	$4,243,000	$5,288,000	$6,589,000	$8,212,000
Other Revenue	$251,000	$283,000	$321,000	$362,000	$410,000	$464,000
Job Access Grant	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Total Revenue	**$12,911,000**	**$15,704,000**	**$19,225,00**	**$23,680,000**	**$29,346,000**	**$36,584,000**
Percent Difference Expense/ Revenue of Existing Operations	0%	0.9%	1.4%	1.5%	1.3%	0.6%

This Table shows a snapshot of what projected operating expenses would be for the year specified. The figures in each column are not cumulative. Figures are rounded to the thousandth.

It is projected that KAT's budget would increase from $12.9 million in 2005 to $15.8 million in 2010. Ten years from now (2015), it is projected that KAT's operating budget would increase by approximately $6.6 million from the 2005 budget to $19.5 million in 2015. Finally, by 2030 it is projected that KAT's operating budget would be approximately $36.8 million. While this seems extremely unrealistic, many people in 1995 never thought KAT's budget would ever pass the $10 million mark.

The percent difference from KAT's projected expenses and revenues are also calculated. For this analysis, staff felt that if the difference was no greater than 3% in either direction, the analysis was acceptable. Forecasting millions of dollars over thirty years is not an exact science and it is unreasonable to assume that an analysis of this nature can match expenses and revenues exactly. Therefore, some level of differential must be acceptable. As shown, revenues slightly lag behind expenses between a low of six-tenths of a percent in 2030 and a high of 1.5% in 2020. Based on the analysis, it can be assumed that if KAT's current revenue sources continue to

increase, based on historic trends, KAT will be able to meet its future expenses based on the Tier 1 baseline scenario.

KAT is committed to continue to grow and improve services. Therefore, a more detailed analysis of KAT's future plans was undertaken. Table 42 shows the Tier 2 scenario analysis that reflects operating expenses if the KAT Action Plan 2010 and the DKTLS were implemented. Capital expenses will be discussed later. The same trend analysis as the baseline scenario was conducted inflating the new operating expenses at the same rate as the baseline expenses. At this point no new revenues are introduced so the revenue analysis remains the same as the baseline revenue. This, however, may not be totally accurate as there should be some corresponding increase in fare box revenue as new services are provided and new passengers are attracted. However, for this analysis, revenues remained the same. When existing revenues are subtracted from the projected new expenses, the amount of new revenue needed is shown.

KAT's expenses were forecasted over a thirty year timeframe. For the year 2005, the adopted projected budget for KAT is shown. Year 2005 is the base data from which the forecast is made. Table 42 shows a line item snapshot by showing years 2005, 2010, 2015, 2020, 2025, and 2030 of the thirty year time frame. Each year shown is what the budget would be for that year.

Table 42: KAT Additional Projected Operating Expenses (Tier 2) Scenario

Expenses	2005	2010	2015	2020	2025	2030
Total Operating Expenses	$12,911,000	$15,843,000	$19,497,000	$24,051,000	$29,725,000	$36,797,000
KAT Action Plan 2010 Improvements	$54,000	$2,565,000	$3,196,000	$3,983,000	$4,963,000	$6,185,000
Total Operating Expenses + KAT Action Plan 2010 Improvements	$12,965,000	$18,408,000	$22,693,000	$28,034,000	$34,688,000	$42,982,000
Downtown Knoxville Transportation Linkages Study Improvements	$0	$1,100,000	$1,712,000	$2,133,000	$2,658,000	$3,313,000
Total Operating Expenses + KAT Action Plan + DKLTS	$12,965,000	$19,508,000	$24,405,000	$30,167,000	$37,346,000	$46,295,000
Revenue Forecast from Tier 1 Baseline	$12,911,000	$15,704,000	$19,225,000	$23,680,000	$29,346,000	$36,584,000
New Revenue to make Improvements	$54,000	$3,804,000	$5,150,000	$6,487,000	$8,000,000	$9,711,000

The KAT Action Plan 2010 and the DKTLS line items represent both the addition of new improvements and annual inflation. Most of the improvements are scheduled for 2006 and beyond. For 2005, a significant part of the improvements scheduled are offset by realigning several routes. The net increase to the KAT budget would be increased by $54,000. If KAT implemented all of the planned recommendations for 2006-2010, the budget would need to be increased by approximately $3.8 million. This is above and beyond the approximate $2.9

million needed under the Tier 1 baseline scenario. For year 2015 the improvements will result in a cost of $5.2 million per year.

Both the City of Knoxville and TDOT have been very supportive of KAT, especially in the last few years. If new services are proposed that will result in tangible increases in transit ridership both the City and TDOT have worked to find additional funding for KAT, however, increasing the KAT budget by approximately $3.8 million dollars annually above normal inflation over the next five years is a tall order. This amount represents about a 20% to 25% overall increase in the budget. Plus, this figure does not take into consideration the operating cost of the new Central Station project. While there will be several uses sharing this site, there will be additional cost associated with Central Station. It is clear that if KAT wants to pursue full implementation of the KAT Action Plan 2010 and the DKTLS, additional revenues will need to be found.

As part of the operating financial analysis, a common question is what kind of contingency funding does KAT have in case a funding source was 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:

- A corresponding increase from another existing funding source;
- Identification of a new public funding source or grant to offset the decrease;
- Implementation of a tax or fee to fund transit;
- Identification of a private/public partnership;
- Subcontracting of services to reduce operating cost;
- Fare increase; and,
- Service reduction.

Capital Expenses

Maintaining an up-to-date fleet of vehicles is a must in providing effective transit service. Vehicles along with drivers are ultimately the backbone of the transit system. They are the most visible component of KAT traveling million of miles 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 equally important component in planning for the future is to calculate KAT's capital needs. Table 43 shows the estimated cost of buses, trolleys, and lift vans over the period of the plan. The cost of vehicles typically has remained steady over the last five years. Therefore, vehicle costs were inflated 10% every five years.

Table 44 shows both the number of vehicles needed to provide the level of service described as Tier 1 or the baseline scenario and the number of additional vehicles needed to provide the Tier 2 level of service. To keep the table manageable, the number of vehicles needed is shown based on five year composites (except the 2025-2030 category that reflects six years). For the Tier 1

level of service, 122 new buses will need to be bought over the 25 year lifetime period of the plan.

Table 43: KAT Vehicle Unit Cost

Years	Bus	Trolley	Lift Van
2005-2009	$250,000	$250,000	$50,000
2010-2014	$275,000	$275,000	$55,000
2015-2019	$302,500	$302,500	$60,500
2020-2024	$332,750	$332,750	$66,500
2025-2030	$366,025	$366,025	$73,259

This is essentially a replacement plan for the existing KAT fleet. To accomplish this replacement schedule, KAT would need to acquire four to five buses a year. Fifty-two (52) new lift vans would be needed, along with 47 new trolleys. This would represent the need to acquire close to two vehicles a year to maintain an updated fleet. In order to provide the additional services planned under the Tier 2 Scenario, KAT would need to acquire 20 new buses, 20 new lift vans, 40 new trolleys, and 9 new smart shuttle vans above and beyond the Tier 1 needs. The DKTLS calls for a major infusion of new trolley service and the introduction of the smart shuttle concept in downtown.

Table 44: KAT Vehicle Needs 2005-2030 (Units)

Tier 1	2005-2009	2010-2014	2015-2019	2020-2024	2025-2030	Total Units
Buses	17	25	25	25	30	122
Lift Vans/ Call-A KAT/ Neighborhood Service	10	10	10	10	12	52
Trolleys	5	10	10	10	12	47
Smart Shuttles	0	0	0	0	0	0
Tier 2	**2005-2009**	**2010-2014**	**2015-2019**	**2020-2024**	**2025-2030**	**Total Units**
KAT Action Plan 2010 Buses	10	0	0	10	0	20
KAT Action Plan Lift Vans/ Call-A-KAT/ Neighborhood Service	5	5	0	5	5	20
Downtown Knoxville Transportation Linkages Study Trolleys	12	8	12	8	0	40
Downtown Knoxville Transportation Linkages Study Smart Shuttles	0	3	3	3	0	9

Table shows a snapshot of how many vehicles are needed over the period of years specified. The figures in each column are not cumulative.

Using both the estimated vehicle cost and the capital needs the amount of funding needed was predicted. The result of the Tier 1 baseline scenario is shown in Table 45. Once again, the dollars are aggregated in five year increments. Also, shown is the Associated Capital Items Grant that is typically used on capital expenditures and any cost shown for the planning and construction of the proposed Central Station.

The FTA has several grants that are distributed each year to transit agencies. 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 that can be mainly used to purchase capital items. The amount of the annual grant KAT receives has been approximately $1.0 million. While KAT's ridership is growing, which under the federal formula could ultimately mean increased funding, the analysis did not show a corresponding increase because the ridership growth has not proven to be a long term trend. In fact, a very conservative estimate was used. The Section 5307 grant was kept at today's level throughout the life of the analysis. The most expensive capital outlay proposed in the Central Station. This would be funded mainly by special Congressional appropriation. Currently, close to $7.5 million has already been secured for this project by the East Tennessee Congressional delegates. It is reasonable to assume that the remainder of this project will be funded and therefore is reflected in the Tier 1 scenario.

Table 45: KAT Capital Needs- Baseline (Tier 1) Scenario 2005-2030[1]

Category	2005-2009	2010-2014	2015-2019	2020-2024	2025-2030	Total
Buses	$4,250,000	$6,875,000	$7,563,000	$8,319,000	$10,981,000	$37,988,000
Trolleys	$1,250,000	$2,750,000	$3,025,000	$3,328,000	$4,392,000	$14,745,000
Lift Vans	$500,000	$550,000	$605,000	$665,000	733,000	$3,053,000
Central Station[2]	$19,500,000	$0	$0	$0	$0	$19,500,000
Associated Capital Items	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$6,000,000	$26,000,000
Total Capital Expenses	**$30,500,000**	**$15,175,000**	**$16,193,000**	**$17,312,000**	**$22,106,000**	**$101,286,000**
Revenue	**2005-2009**	**2010-2014**	**2015-2019**	**2020-2024**	**2025-2030**	**Total**
Federal	$24,400,000	$12,140,000	$12,954,000	$13,850,000	$17,684,000	$81,028,000
State	$3,050,000	$1,517,000	$1,620,000	$1,731,000	$2,211,000	$10,129,000
Local	$3,050,000	$1,518,000	$1,619,000	$1,731,000	$2,211,000	$10,129,000
Total Capital Revenue	**$30,500,000**	**$15,175,000**	**$16,193,000**	**$17,312,000**	**$22,106,000**	**$101,286,000**
Average Funds Needed Per Year	$6,100,000	$3,035,000	$3,239,000	$3,462,000	$3,684,000	

[1]Table shows a snapshot of what projected capital expenses would be for the period of years specified. The figures in each column are not cumulative.

[2]Total cost of the Central Station is estimated at $27 million. A total of $7.5 million has already been secured.

Over the last seven years, KAT has purchased between seven to ten buses a year. The City of Knoxville and State of Tennessee have been partners in the vehicle replacement program. Because of this success, the analysis feels confident that KAT can maintain the required four to five buses needed a year for replacement under the Tier 1 scenario.

Table 46 reflects the additional needed capital dollars to implement any new services above what is being provided today. Once again, the dollars are aggregated in five year increments. The Tier 2 scenario calls for an additional twenty buses over the twenty-five year plan. While the plan calls for most of the vehicles to be acquired over the next five years, the net result is a little less than two more buses a year through the life of the analysis. Based on past trends, it is reasonable to assume that KAT could acquire the necessary buses.

Smaller vans or mini-buses play an important role in providing disabled services for KAT called the Lift. The Americans with Disabilities Act (ADA) requires that public transit agencies that provide fixed route services also provide door-to-door lift equipped van services to those persons

in the community who are disabled and unable to use the regular fixed route services and live within ¾ of a mile from a fixed route. This service has seen a small but steady growth over the last few years. KAT also uses mini-buses to provide the Call-A-KAT service in the evenings and on Sunday. Call-A-KAT service is predominately paid for through a Job Access and Reverse Commute Grant. Finally, mini-buses are used on two different fixed routes where the need for smaller vehicles is appropriate. It is estimated that KAT would need approximately two new mini-buses a year to keep up with the required replacement needs. Under Tier 2, an additional minibus would be needed a year. This would be for a slight expansion of both the Lift program and adding a couple of new mini-buses on fixed routes. Mini-buses are the least expensive service vehicle to buy and based on past capital funds KAT will be able to maintain the existing fleet and would have not problem implementing the expansion.

Table 46: KAT Capital Needs (Tier 2) Scenario 2005-2030[1]

Category	2005-2009	2010-2014	2015-2019	2020-2024	2025-2030	Total
Buses	$2,500,000	$0	$0	$3,328,000	$0	$5,828,000
Trolleys	$3,000,000	$2,200,000	$3,630,000	$2,662,000	$0	$11,492,000
Call-A-KAT/ Lift Vans	$250,000	$275,000	$0	$333,000	$366,000	$1,224,000
Smart Shuttles	$0	$165,000	$182,000	$200,000	$0	$547,000
KAT Action Plan 2010 Other	$1,175,000	$0	$0		$0	$1,175,000
Downtown Knoxville Transportation Linkages Study1	$1,525,000	$0	$0	$14,000,000	$0	$15,525,000
Total Capital Expenses	**$8,450,000**	**$2,640,000**	**$3,812,000**	**$20,523,000**	**$366,000**	**$35,791,000**
Revenue	**2005-2009**	**2010-2014**	**2015-2019**	**2020-2024**	**2025-2030**	**Total**
Federal	$6,760,000	$2,112,000	$3,050,000	$16,419,000	$292,000	$28,633,000
State	$845,000	$264,000	$381,000	$2,052,000	$37,000	$3,579,000
Local	$845,000	$264,000	$381,000	$2,052,000	$37,000	$3,579,000
Total Capital Revenue	**$8,450,000**	**$2,640,000**	**$3,812,000**	**$20,523,000**	**$366,000**	**$35,791,000**

[1]Table shows a snapshot of what projected capital expenses would be for the period of years specified. The figures in each column are not cumulative. DKTLS proposes an additional transfer center/parking garage be built near the Old City.

Trolleys are a free transit service primarily in the downtown area. The trolleys provide a valuable service in moving both downtown workers and visitors. Projections show that only one new trolley a year is needed over the next five years. Starting in 2010, the need will double to two trolleys per year. This need is for replacing aging trolleys. Once again, based on KAT's past ability to leverage federal funds, there is no reason not to expect that these vehicles will be acquired. If KAT wants to implement the trolley recommendations in the DKTLS, a major expansion would need to occur. This expansion is reflected in the Tier 2 analysis and calls for the need of forty additional trolleys over the lifetime of this analysis. The actual expansion would be in 2005-2009 which would be twelve additional trolleys and 2010-2014 which would be eight additional trolleys. This represents actual increase in trolleys on the street. The out years reflect the eventual replacement of these new trolleys.

Finally, KAT has two larger capital acquisitions on the horizon. KAT is currently undertaking an ITS Assessment to outline what technological improvements should be implemented. Depending on the needs identified, the costs could range in the millions of dollars. Plus, through natural wear, KAT's fare boxes need to be replaced. Once again, the cost of this replacement could be significant. Though no particular funding source has been identified both of these

projects can be accomplished. KAT will either pursue a federal earmark, state funding, ITS, or Homeland Security grants, among other options, as a first option for funding. If these sources are not fruitful, then KAT may use a portion of its annual capital federal formula funding.

ANALYSIS

As previously mentioned, SAFETEA-LU requires that the Long Range Transportation Plan be financially constrained. This enables the plan to be realistic in the number of projects it desires to complete by the specific outyears. The final inflated project costs for the life of this plan was approximately $3.7 billion and the federal, state, and local revenues totaled approximately $5 billion. The positive difference implies that costs did not exceed the revenues and therefore the plan is financially constrained. The federal and state revenues on average are $160 million per year and local revenues are based on historic trends of spending close to $25 million per year. Expenditures for operations and maintenance improvements have averaged approximately $30 million a year for local governments and $34 million for the State.

SAFETEA-LU created new programs, increases in available funding, and greater flexibility in transferring funds between different programs. This allows cities and states to use the federal money for different areas of transportation planning and construction that better fit the communities' needs, and it potentially increases the funding amount available for most states. Even though more funding is available for the Knoxville Region, finding and creating new revenue sources will help the TPO fund the projects that were removed from this plan because of financial constraints and provide additionally funding source in case a proposed funding source does not come to fruition.

Evaluation Criteria

Although a number of revenue sources have been identified in this chapter, it is extremely difficult from a political standpoint to implement new revenue sources. Any revenue source is always perceived as an increase in taxes. Based upon our transportation needs and existing revenue potential, it is critical that a dialogue begin now at the metropolitan level to discuss additional revenue sources for transportation infrastructure and operating improvements. To assist in this discussion, there are eight criteria that have been identified when evaluating revenue sources. These evaluation criteria are defined below.

Yield

The two basic components of yield are the amount of revenue that can be produced and the timing of receipts (i.e. whether the source produces a one-time amount or an annual revenue stream). The importance in timing of each source will depend on the types of revenue needed (i.e., to cover up front construction costs or to cover operating costs) as well as the nature of other funding sources.

Stability

Once the initial yield of an alternative is estimated, the primary financial consideration is how the revenue stream is likely to change over time. In analyzing the stability of a source, the key factor is its underlying dynamic (i.e., forces that will influence the revenue in future years). In order to be an acceptable long-term source of funding, a revenue source must be stable in two ways. First, it must have the ability to grow over time to match the growth in expenses. Second, it must not be extremely volatile. A stable source of revenue will provide a relatively predictable

yield over the years and will not have to be supplemented based on its inability to keep up with the growth in expenses.

Marketability
This refers to the ability to the debt-issuing agency to elicit sufficient interest among investors and is related to the return investments as well as the perceived security of the bond or other debt instrument.

Public Acceptance
Public acceptance is important when instituting taxes and/or user charges, which often require a public referendum and can also influence the feasibility of other types of revenue sources or strategies.

Equity
This consists primarily of addressing the question of who is paying. Generally, a tax or user charge should not place an excessive burden upon one group while others do not pay a "fair share." In addition, in evaluating benefit-sharing strategies, equity issues relate to establishing actual assessments based on relative benefits.

Incentive Effects
Certain revenue sources impact the public's behavior by changing the cost structure of certain items or activities. It is important to know whether the incentives promote or detract form general transportation policy or other stated public policies.

Legal and Regulatory
Certain revenue sources require specific authorizing legislation and may require extensive legal research and analysis.

Revenue Collecting/Monitoring Mechanisms
Certain alternatives may require new collection and monitoring mechanisms. A revenue source with a high administrative cost is not as desirable as one that has a lower administrative cost.

XV: PUBLIC INVOLVEMENT

Meetings

The TPO engaged the public in the development of the 2005-2030 Knoxville Regional Long Range Transportation Plan by conducting two rounds of public meetings throughout the TPO Area and one round of regional meetings. During the first round of public meetings held in October 2004, 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. Approximately 30 people attended the three meetings held in Knox and Blount County.

The second round of public meetings was held in March of 2005 where proposed transportation projects were reviewed and a draft of the Plan was presented. Also discussed were the results of the air quality conformity analysis conducted and financial analysis. Approximately 25 people attended the four public meetings held on those two days.

Three regional meetings were also held in March where the draft Plan was presented. There were four attendees at the Loudon County Tourism Office and one attendee at the Sevierville Civic Center. Unfortunately, there were no participants at the Clinton Community Center Meeting.

Over the last year, the Long Range Transportation Plan has been a standing agenda item at all TPO Technical Committee and Executive Board meetings. Since its inception, the Regional Transportation Planning Council has also had the Long Range Transportation Plan regularly on its meeting agenda. Various updates, presentation of data, and discussion of projects occurred at these meetings. In addition to community meetings in March, the draft of the Long Range Transportation Plan was presented at the March 8, 2005 Technical Committee meeting, the March 22, Regional Transportation Planning Council, and the March 23, 2005 TPO Executive Board Meeting. All of the TPO Technical Committee, TPO Executive Board, and the Regional Transportation Planning Council meetings were advertised and open to the public. Additionally, the TPO Technical Committee and Executive Board meetings are broadcasted on public cable television in Knoxville.

The TPO Title VI/Environmental Justice and the Urban Transportation Issues Committee were engaged in both October and March to review the draft Plan. There were 15 representatives from organizations that serve the minority community in attendance. The draft Plan was also presented to the TPO Bicycle Advisory Committee.

Additionally, TPO staff participated in discussing the Long Range Transportation Plan at other community or agency meetings. This included the Knoxville-Knox County Community Action Committee Transportation Advisory meetings and the Knox County Senior Summit Expo. The TPO staff presented information and solicited input at two regional public meetings conducted by TDOT as part of the State's effort to develop a Statewide Long Range Multi-Modal Transportation Plan. TPO staff also presented the draft Plan to the Sevier County Transportation Board in March 2005.

The draft Plan was posted on the TPO website allowing for the public to provide comments. Draft Plans were also sent to

area libraries and available for viewing by the public.

The final Plan was approved by the Technical Committee on April 4, 2005 and by the TPO Executive Board and the Regional Transportation Planning Council on April 11, 2005. Each of these public meetings was advertised in numerous newspapers across the Region. Additionally, the meetings were broadcasted on public cable television in Knoxville/ Knox County.

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Community Meeting Locations

To ensure adequate coverage throughout the Knoxville Region, public meetings were held at the following locations:

- Blount County Public Library;
- Cedar Bluff Public Library;
- Clinton Community Center;
- Farragut Branch Library;
- Fountain City Public Library;
- Loudon County Tourism Office;
- O'Connor Senior Center;
- Pellissippi State Technical Community College – Magnolia Campus; and,
- Sevierville Civic Center.

The meetings took place between the hours of 6:00pm and 8:00pm. These hours were chosen in order to have public transit service available and four of the locations were served by Knoxville Area Transit.

In an attempt to reach the minority community, four public meetings were held in Title VI designated areas.

Meeting Announcements

To advertise the meetings, legal notices were posed in the Knoxville News Sentinel, Maryville Times, The Enlightener, Mundo Hispano (a Spanish newspaper), Farragut Press, Loudon County News-Herald, Halls Shopper, Clinton Courier, Sevierville Mountain Press, and the Oak Ridger. A press release was sent to a wider array of media outlets closer to the actual day of the meetings. A couple of reporters covered the meeting. Also, flyers were sent to the Branch Services office at Lawson McGhee Library and distributed to Blount County Library, Farragut Branch Library, Burlington Branch Library, Cedar Bluff Library, and Sequoyah Branch Library. In addition, over 350 meeting announcements were sent to neighborhood and community groups throughout the Region. Meeting notices were also posted on the TPO website.

TPO Newsletter

The TPO produces a quarterly newsletter that is mailed to hundreds of government officials and staff and area citizens. Over the last year the quarterly featured the Long Range Transportation Plan as the main feature. Articles gave updates on the Long Range Transportation Plan progress and announced future meetings.

Long Range Transportation Plan Survey and Comment Form

Early in the development of the Plan, the TPO conducted an informal public survey seeking the public's opinion on the existing transportation system. The survey was distributed at various public meetings and was available through the TPO website. The survey was available from October 28, 2004 to December 31, 2004 and drew 183 responses (*see Appendix D*). Weekly updates of the responses were also posted on the website.

The survey (*see Appendix C*) 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 twenty-five years. Finally, respondents were asked their preference on funding transportation projects in the future.

Table 47 shows how the respondents 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 48 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 TPO Area has access to transit services, sidewalks, and bike lanes; citizens desire these services and facilities; and citizens will rank the system poor if they do not have access to these types of services and facilities.

Table 47: Respondents Rate the Transportation System

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%

Other key issues identified is that respondents want to see a transportation system that helps protect neighborhoods and historic places and improves air quality and protects natural resources. 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 48: Respondents Rate Transportation Issues for the Next 25 Years

Category	Very Good	Good	Fair	Poor
Better Traffic Signal Operations	8%	42%	37%	14%
Real Time Traffic Information	5%	31%	35%	29%
More Transit Services	30%	45%	22%	2%
More Sidewalks	42%	44%	11%	3%
Maintain Existing Transportation System	17%	52%	22%	9%
More Bike Facilities	48%	31%	14%	7%

Category	Very Good	Good	Fair	Poor
Build New Roads	8%	15%	24%	53%
High Occupancy (HOV) Lanes	18%	29%	33%	21%
Improve the Movement of Goods and Freight	23%	33%	29%	15%
Widen Existing Roads	15%	30%	29%	25%
Protect Historic Resources	36%	42%	18%	4%
Walkable Neighborhoods and Commercial Centers	59%	31%	8%	1%
Protect Community Character	45%	40%	14%	2%
Safe Routes to School	69%	28%	2%	1%
Reduce Travel Time between Places	18%	29%	40%	13%
Improve Air Quality	76%	21%	2%	1%
Protect Natural Resources	65%	30%	4%	2%
Safety for Drivers	44%	41%	13%	2%
Safety for Bicyclists and Pedestrians	72%	25%	2%	1%
Coordinated Land Use and Transportation System	48%	39%	10%	3%

Due to rounding, percentages do not always add up to 100%

While the survey was not scientific, it was used as an additional piece of public input into how the Long Range Transportation Plan's policies, recommendations, and projects were derived.

During the second round of public meetings, a follow up comment form was distributed to the meeting participants *(see Appendix E)*. This comment form solicited the public's opinion and comment of the draft Long Range Transportation Plan presentation and sought feedback about the TPO public involvement process. All of the participants who filled out a comment form thought the meetings to be informative.

Meeting Discussions

Though attendance was small at the public meetings, there were good discussions and many questions were asked. 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.

A list of questions that came up at each meeting was recorded by staff. Appendix F presents the questions along with TPO staff response.

Public Involvement Evaluation

The small turnout for community meetings seems to indicate that in general long range transportation issues do not generate enough interest. Perhaps a "workshop format" for future meetings would allow citizens to discuss transportation topics that do not necessarily pertain solely to their community but to the transportation system

as a whole. Also, specifically linking transportation issues to land use and economic development may generate greater interest from a broader audience. Participants need to feel as if they are contributing to solutions. The TPO will consider using scenario planning as a tool to develop the next long range transportation plan. Scenario planning provides a framework for evaluating and testing future alternatives related to the various sources that impact communities.

In the future, meeting notices/flyers should be accompanied by a personal letter from the TPO staff. The Title VI Working Group and UTIC suggested that combining the Long Range Transportation Plan meetings with another public meeting might be a way to bolster attendance as there would already be citizens present.

Collateral Meetings

Some elements of the Long Range Transportation Plan are based on transportation planning projects the TPO has undertaken over the last few years. Most of these projects, like the KAT Action Plan 2010, the Regional Transportation Alternatives Plan, the Downtown Knoxville Transportation Linkages Study, and the Knoxville Regional Bicycle Plan underwent an extensive public involvement process in themselves. Also, some projects and plans are taken from local jurisdiction transportation system plans that included both public involvement and adoption.

2006 Update

As part of the 2005-2030 Knoxville Regional Long Range Transportation Plan, 2006 Update, the TPO solicited member jurisdictions for additions, deletions, and/or changes to the list of projects.

Air Quality Conformity Determination for PM 2.5 and the reassessment for ozone were performed in cooperation with officials from local jurisdictions, state and federal transportation officials, and local, state and federal environmental officials in a series of Interagency Consultation (IAC) meetings.

The 2005-2030 Knoxville Regional Long Range Transportation Plan- 2006 Update was available for public viewing at Knox County Public Libraries, the Oak Ridge Public Library, Lenoir City Public Library, Sevier County Public Library, Jefferson County Public Library, the library of the Knoxville-Knox County Metropolitan Planning Commission, and online at www.knoxtrans.org. Public comment on the update was available at the TPO Technical Committee meeting on Tuesday, February 14, 2006 and at the TPO Executive Board meeting on Wednesday, February 22, 2006. Both meetings were held at 9:00am in the Small Assembly Room of the City County Building in Downtown Knoxville. Additionally, the TPO Technical Committee and Executive Board meetings are broadcasted on public cable television in Knoxville.

Legal Notice of the two public meetings and locations to view the Plan was advertised in the Knoxville News Sentinel, Maryville Daily Times, Oak Ridger, Enlightener, Loudon County News Herald, Mundo Hispano, Halls Shopper, and Farragut Press. In addition, paid advertisements were taken out in the Knoxville News-Sentinel, Oak Ridger, Maryville Daily Times, Enlightener, Loudon County News-Herald, Mundo Hispano, and Clinton Courier. All comments related to the 2006 Amendment are documented in Appendix G.

2007 Update

Two public meetings were held as part of the 2005-2030 Knoxville Regional Long Range Transportation Plan, 2007 Update. The first was in Knox County at the West Knoxville Branch Library, 100 Gulf Club Road on Monday, July 23, 2007 at 6:00 p.m.

The second public meeting was held in Blount County at the Blount County Library, 508 N. Cusick St, Maryville on Tuesday, July 31, 2007 at 6:00 p.m.

A direct mailing announcement regarding the meetings and an invitation to submit public comment was sent to more than 1,000 interested parties in the Knoxville region. The draft document was available on the TPO's website (www.knoxtrans.org) and at the TPO office. The draft plan was discussed at a number of regularly scheduled public meetings held during the day. It was on the TPO Technical Committee's agenda on July 10, 2007, and August 14, 2007 and will be going before the TPO Executive Board. These meetings were held at 9:00 a.m. in the Small Assembly Room of the City County Building in Downtown Knoxville. Additionally, the TPO Technical Committee and Executive Board meetings are broadcast on public cable television in Knoxville.

Legal Notice of the public meetings and locations to view the Plan were advertised in the Knoxville News Sentinel, Maryville Daily Times, Oak Ridger, Enlightener, Loudon County News Herald, Mundo Hispano, Halls Shopper, and Farragut Press. All comments related to the 2007 Update are documented in Appendix H.

XVI: TITLE VI ASSESSMENT

Introduction
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% of the population *(see Map 33)*. Throughout the Knoxville Region, minorities constitute 8.3% of the total population *(see Map 34)*.

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% 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 5% 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.

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 $3.7 billion in highway projects are programmed throughout the Region in the Long Range Transportation Plan Update. Of these, approximately $810 million are in or border Title VI areas. This represents approximately 21.9% of the total dollars invested in highway projects. As a percentage, this is clearly higher than the 8.3% Regional minority population.

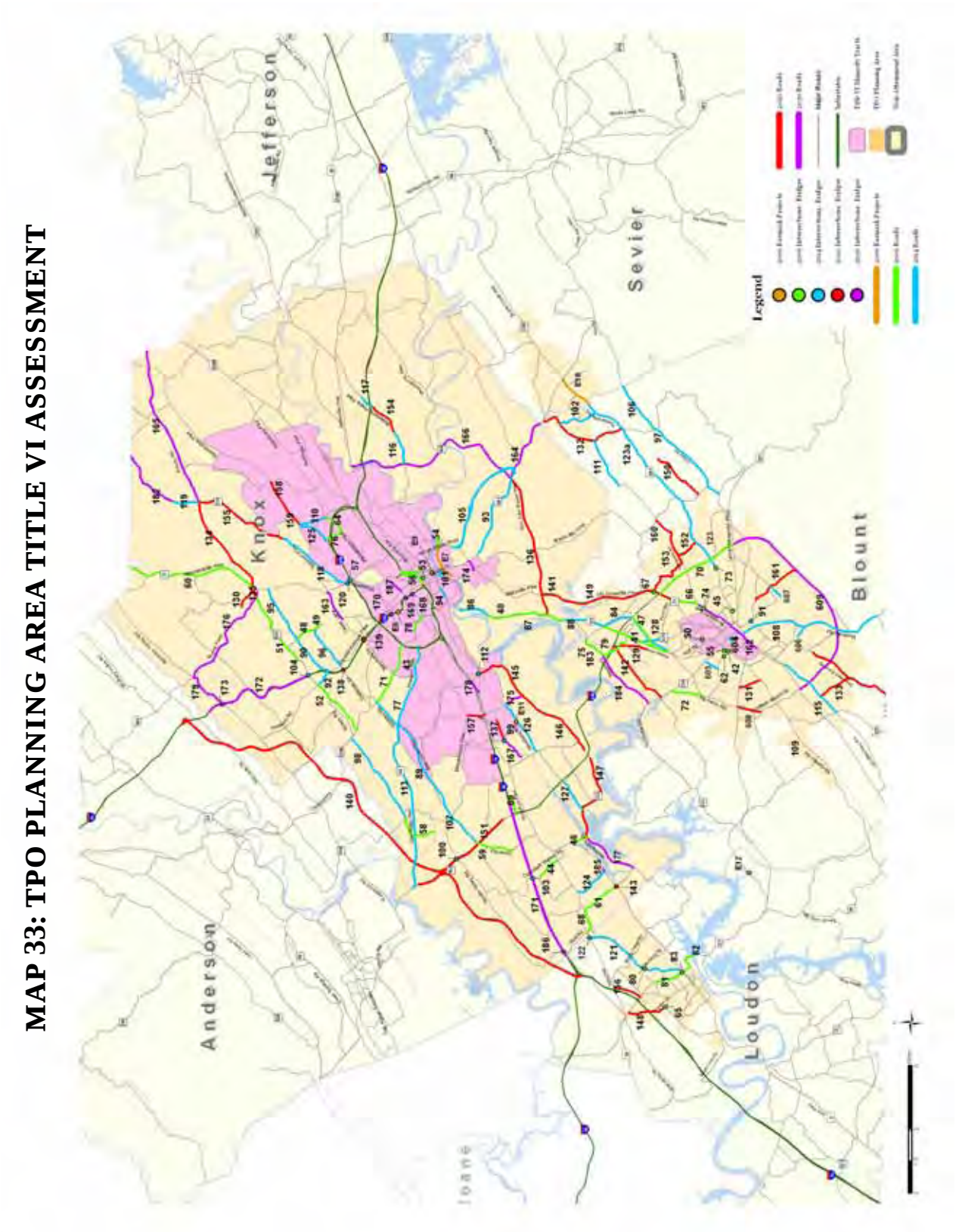
Transportation projects proposed in this Plan that are located in the Title VI areas are as follows:

- Ball Camp Pike (Knox County), Construct new 4 lane road, LRTP#89;

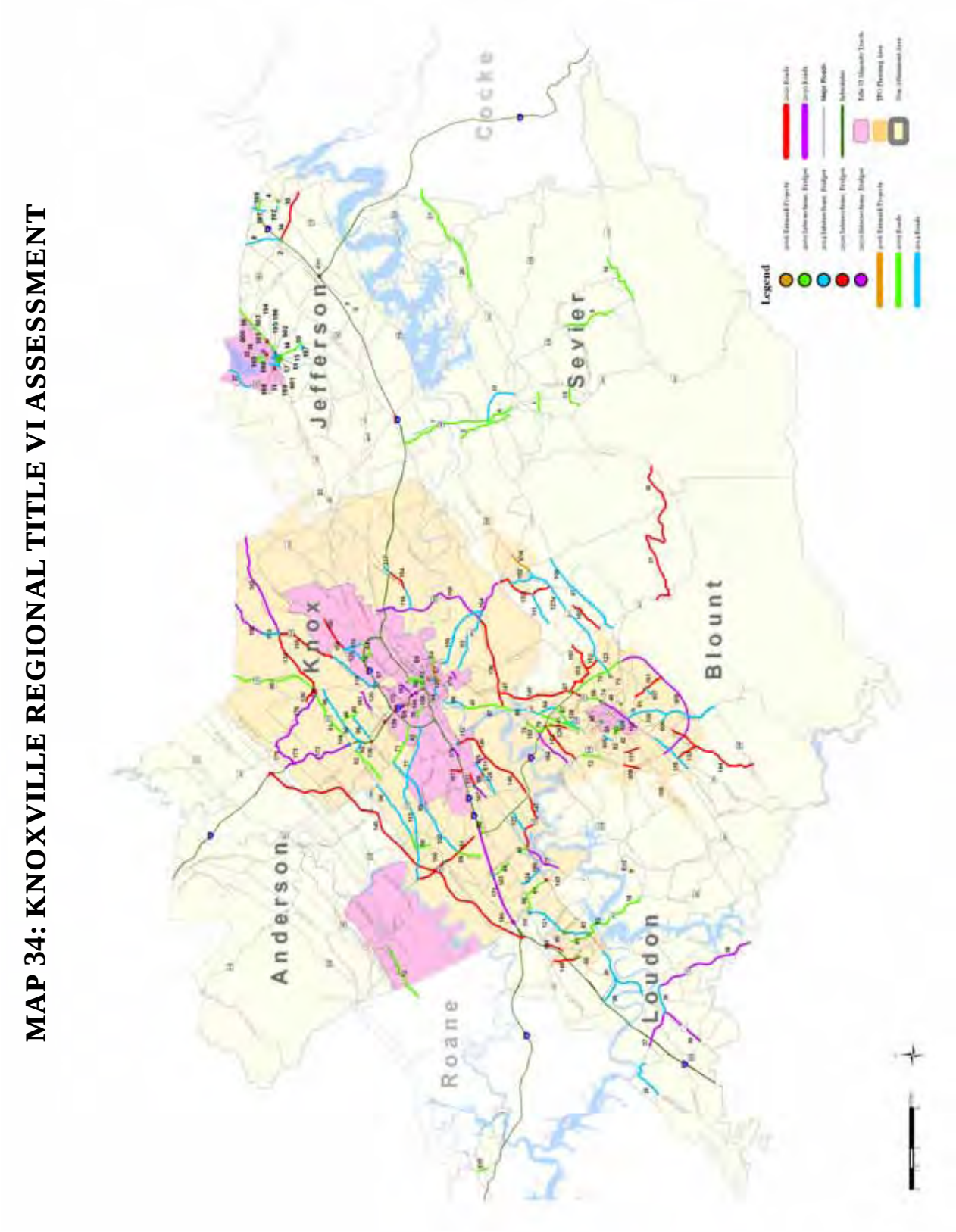
- Bessemer Street/ Middlesettlements Road intersection (Blount County)- Construct turn lane, LRTP#42;
- Blount Avenue and Sevier Avenue (Knox County)- Improvements as part of South Waterfront Redevelopment, LRTP#E7;
- Bradshaw Road Extension (Knox County)- New 2 lane road, LRTP#43;
- Broadway Avenue (Blount County)- Widen to 4 lanes, LRTP#167;
- Cessna Road (Knox County)- Improve at-grade railroad crossing, LRTP #E11;
- Chucky Pike/ US 11E intersection (Jefferson County)- Add turn lanes and modify signal, LRTP#603;
- Corridor #1 (Blount County)- Reconstruct 2-lane section, construct new bridge, and demolish part of shopping center, LRTP#604;
- Cumberland Avenue (Knox County)- Pedestrian improvements, LRTP#94;
- East Bessemer Street/ E Watt Street intersection (Blount County)- Realign intersection, LRTP#50;
- East College Street (Jefferson County)- Resurfacing, LRTP#194;
- Gallaher View Road/ Gleason Drive Intersection (Knox County)- Reconstruct intersection, LRTP#99;
- Gay Street Viaduct (Knox County)- Replace bridge, LRTP#53;
- George Avenue (Jefferson County)- Resurfacing, LRTP#195;
- George Avenue (Jefferson County)- Resurfacing, LRTP#196;
- Gleason Drive (Knox County)- Widen to 4 lanes, LRTP#137;
- Gov. John Sevier Highway (Knox County)- Widen 2-lane to 4-lane, LRTP#166;
- Henley Street Bridge (Knox County)- Widen to 6 lanes, rehab bridge, LRTP#101;
- Hillwood Drive (Knox County)- Reconstruct road, LRTP#54;
- Hunters Crossing Slip Ramp (Blount County)- Conversion to 2-way traffic, LRTP#55;
- I-275/ Baxter Avenue Interchange (Knox County)- Reconstruct interchange, LRTP#168;
- I-275/ Heiskell Avenue Interchange (Knox County)- Reconstruct interchange, LRTP#169;
- I-275 Industrial Park access (Knox County)- Widen railroad underpass and make access improvements, LRTP#E8;
- I-275/ Woodland Avenue Interchange (Knox County)- Reconstruct interchange, LRTP#170;
- I-40/ James White Parkway (Knox County)- Widen to 6 lanes, LRTP#56;
- I-640/ Broadway Interchange (Knox County)- Reconstruct interchange, LRTP#57;
- I-75/ Merchant Drive Interchange (Knox County)- Reconstruct interchange, LRTP#139;
- Millertown Pike (Knox County)- Widen to 5 lanes, LRTP#64;
- Moody Avenue (Knox County)- Construct new 3 lane road, LRTP#174;
- Mountcastle Street (Jefferson County)- Resurfacing, LRTP#198;
- Murphy Road Extension (Knox County)- Construct new 4 lane road, LRTP#110;

- Northshore Drive/ Kingston Pike intersection (Knox County)- Reconstruct intersection, LRTP#112;
- Northshore Drive (Knox County)- Widen to 4 lanes, LRTP#145;
- Oak Ridge Highway (Knox County)- Widen to 4 lanes, LRTP#113;
- Old AJ Highway (Jefferson County)- Bridge replacement, LRTP#32;
- Old AJ Highway (Jefferson County)- Storm drain replacement, LRTP#33;
- Old AJ Highway (Jefferson County)- Railroad crossing improvements, LRTP#36;
- Overlook Road (Jefferson County)- Resurfacing, LRTP#199;
- Papermill Road (Knox County)- Widen to 4 lanes, LRTP#178;
- Pleasant Ridge Road (Knox County)- Widen to 3 lanes, LRTP#71;
- Rocktown Road (Jefferson County)- Resurfacing, LRTP#600;
- SR 92 (Jefferson County)- Install street lighting, LRTP#27;
- SR 95/ Oak Ridge Highway (Anderson County)- Add median, LRTP#12;
- Streetscape improvements near Tennessee Theater (Knox County)- improvements to streetscape, LRTP#E9;
- Tazewell Pike (Knox County)- Widen to 3 lanes, LRTP#118;
- Tazewell Pike (Knox County)- Widen 2-lane to 4-lane, LRTP#155;
- Tazewell Pike/ Old Broadway intersection (Knox County)- Realign intersection, LRTP#120;
- Universal Street (Jefferson County)- Resurfacing, LRTP#601;
- US 11E/ George Avenue intersection (Jefferson County)- Intersection improvements, LRTP#14;
- US 11E/ Pearl Avenue and US 11E/ Harrington St intersections (Jefferson County)- Add left turn lanes, LRTP#602;
- US 11E/ Russell Avenue intersection (Jefferson County)- Intersection improvements, LRTP#15;
- US 11E (Jefferson County)- Install street lighting, LRTP#16;
- US 11E (Jefferson County)- Replace LED signal heads, LRTP#16a;
- US 11E/ New Hospital intersection (Jefferson County)- Install traffic signal, LRTP#17;
- Vanosdale Road (Knox County)- Widen to 4 lanes, LRTP#157;
- Washington Pike (Knox County)- Widen to 5 lanes, LRTP#76;
- Washington Pike (Knox County)- Widen to 4 lanes, LRTP#125;
- Washington Pike (Knox County)- Widen to 4 lanes, LRTP#158;
- Washington Pike (Knox County)- Widen to 4 lanes, LRTP#159;
- Western Avenue (Knox County)- Widen to 4 lanes, LRTP#77;
- Western Avenue (Knox County)- Widen to 4 lanes, LRTP#78;
- Westland Drive (Knox County)- Improve road, LRTP#126; and,
- Woodland Avenue (Knox County)- Widen to 4 lanes, LRTP#187.

MAP 33: TPO PLANNING AREA TITLE VI ASSESSMENT



MAP 34: KNOXVILLE REGIONAL TITLE VI ASSESSMENT



XVII: 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 should be 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 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. A quick regional analysis shows that of the 252 highway projects included in this plan, 184 were identified to intersect or be within 1/8 of a mile of an environmentally sensitive area. As each project level analysis is completed, new or additional environmentally sensitive areas may be discovered and more projects may be found to have impacts. A further breakdown by project type using the thirteen project descriptions identified in the plan shows:

1. 25 new roadway projects that may impact environmentally sensitive areas.
2. 86 road widening projects that may impact environmentally sensitive areas.
3. 27 reconstruction projects that may impact environmentally sensitive areas.
4. 7 bridge projects that may impact environmentally sensitive areas.
5. 1 median project that may impact an environmentally sensitive area.
6. 16 turn lane projects that may impact environmentally sensitive areas.
7. 12 intersection improvement projects that may impact environmentally sensitive areas.
8. 8 interchange modification projects that may impact environmentally sensitive areas.
9. 2 structural projects- the Downtown Transit Center and Transportation and Heritage Museum that may impact environmentally sensitive areas.

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, such as was used with the Knoxville Regional Parkway.

Appendix

Appendix A. Project Application for inclusion into the Knoxville Regional 2030 Long Range Transportation Plan

Project Name _____

Project Description (project description, map, contact person, project sponsor, etc.)

When will the project be completed (circle one)? 2009 2014 2020 2030

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?

Appendix B. Accommodation Policy (from adopted 2002 Knoxville Regional Bicycle Plan)

1. Appropriate bicycle and pedestrian facilities shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- Bicyclists and pedestrians are prohibited by law from using the roadway, whereas a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right-of-way or within the same transportation corridor.
- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding 20% of the cost of the larger transportation project.
- Where sparsity of population or other factors indicate an absence of need.

2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Rumble strips or raised pavement markers are not recommended where shoulders are used by bicyclists unless there is a minimum clear width of 1' from the rumble strip to the traveled way, 4' from the rumble strip to the outside edge of the paved shoulder, or 5' to the adjacent guardrail or curb.

3. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:

- Planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item 1 above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case.
- Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible, and convenient.
- Getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision.
- Designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists should follow design guidelines and standards that are

commonly used, such as the AASHTO *Guide for the Development of Bicycle Facilities* and AASHTO's *A Policy on Geometric Design of Highways and Streets*.

Appendix C: 2030 Knoxville Regional Long Range Transportation Plan Survey and Comment Form - 2005

About Us

The Knoxville Regional Transportation Planning Organization (TPO), established in 1977, is the federally designated Metropolitan Planning Organization (MPO) for the Knoxville Metropolitan Area. The TPO Area includes Knox County and the urbanized areas of Blount, Loudon, and Sevier Counties. An MPO is a planning agency established by federal law to assure a continuing, comprehensive, and cooperative transportation planning and decision-making process for metropolitan areas with more than 50,000 people.

The 2030 Long Range Transportation Plan is the most significant project the TPO does. This Plan must be multi-modal and identify and integrate an intermodal transportation system and facilities that move people and goods. As such, the Plan addresses several modes of transportation including motorized vehicles, bicycles, pedestrian, transit, air, and rail. The Plan provides a vision for our urban area for the next 25 years.

About You

1. Please provide us with the zip code of where you live? _____

.

Existing Conditions

2. Please rate each of the following aspects of the transportation system in your community today, on a scale of 1 to 4 with 1 being poor and 4 being "very good."

	Poor (1)	Fair (2)	Good (3)	Very Good (4)
Traffic conditions on major roads	(1)	(2)	(3)	(4)
Transit services	(1)	(2)	(3)	(4)
Sidewalks and crosswalks	(1)	(2)	(3)	(4)
Bike lanes and wide shoulders	(1)	(2)	(3)	(4)
Greenways and bicycle/pedestrian paths	(1)	(2)	(3)	(4)
Traffic safety and control on major roads	(1)	(2)	(3)	(4)
Overall rating for transportation system	(1)	(2)	(3)	(4)

Transportation Issues

3. Look at the issues below and tell us which are the most important to consider for the next 25 years. Please rate each issue on a scale of 1 to 5, with 1 being the least important and 5 being the most important.

	Least Important				Most Important
Better traffic signal operation	(1)	(2)	(3)	(4)	(5)
Real-time traffic info (i.e., signage, Web)	(1)	(2)	(3)	(4)	(5)
More transit service	(1)	(2)	(3)	(4)	(5)
More sidewalks	(1)	(2)	(3)	(4)	(5)
Maintain existing transportation system	(1)	(2)	(3)	(4)	(5)
More bike facilities	(1)	(2)	(3)	(4)	(5)
Build new roads	(1)	(2)	(3)	(4)	(5)
High occupancy vehicle (HOV) lanes	(1)	(2)	(3)	(4)	(5)
Improve the movement of goods and freight	(1)	(2)	(3)	(4)	(5)
Widen existing roads	(1)	(2)	(3)	(4)	(5)
Protect historic resources	(1)	(2)	(3)	(4)	(5)
Walkable neighborhoods/commercial centers	(1)	(2)	(3)	(4)	(5)
Protect community character	(1)	(2)	(3)	(4)	(5)
Safe routes to school (walk/bike)	(1)	(2)	(3)	(4)	(5)
Reduce travel times between places	(1)	(2)	(3)	(4)	(5)
Improve air quality	(1)	(2)	(3)	(4)	(5)
Protect natural resources	(1)	(2)	(3)	(4)	(5)
Safety for drivers	(1)	(2)	(3)	(4)	(5)
Safety for bicyclists and pedestrians	(1)	(2)	(3)	(4)	(5)
Coordinated land use and transportation	(1)	(2)	(3)	(4)	(5)

4. If you were given $100 in transportation funds, how would you distribute it among these project types?
   Better traffic signal operation $_____
   Adding lanes to existing roadways $____
   Build new roads $____
   Encouraging alternative transportation $_____
   Provide real time traffic information $_____
   Maintaining pavement in good condition $ ____
   Improving road safety $____
   Providing more transit service $____
   Providing bicycle and pedestrian facilities $____
   Other _____ $_____

5. How do you think future transportation projects should be funded?

   Use tolls to fund new projects _____
   Increase the fuel tax ____
   Leave taxes at the level they are now ____
   Charge new development for transportation improvements _____
   Increase sales tax to fund projects _____
   Increase property tax to fund projects ____
   Other (please specify) _____ ____

6. Please comment on other issues you think are important concerning the Long Range Transportation Plan or any other transportation issues.

   _____

   _____

   _____

7. If you would like information on transportation options such as carpools, vanpools, mass transit, etc. please provide us with your name and address or e-mail address below.
   Name and address _____
   _____
   _____

   E-mail address _____

Thank you for your input!

Appendix D. Comments from the Knoxville Regional Long Range Transportation Plan Survey - 2005

1. Reduce Emissions! Encourage walk/bike alternative transportation modes.
2. Too much congestion on I-75 especially on interstate on/off ramps.
3. Reduce truck traffic. Reduce pollution.
4. Need more transit and sidewalks.
5. Need wheel tax and other graduated parking fees (increase long term, decrease short term). Provide funds for senior and handicapped citizen transportation. Recognize that transportation needs for seniors will increase as they give up or are required to give up automobiles. Need shopping routes.
6. Air Quality.
7. KAT does a good job, but ridership is low. Ridership should be encouraged and the system expanded to make it more convenient. Sidewalks and shoulders are nonexistent in most places. This is inexcusable. More bike lanes should be provided. The existing greenway is a good start and should be expanded. Freight shipping should be redirected around the center city via I-640 to ease congestion and make the narrowest sections of I-40 safer. The air quality is a serious issue and affects long-term prospects for Knoxville's economic growth. We cannot continue to ignore it. Higher automobile and/or fuel taxes couple with better public/alternative transport is a solution.
8. We could use a monorail between downtown/campus area and West Knoxville. The traffic between these two areas can be cut dramatically. The congestion on the roads needs intervention other than adding new lanes.
9. Please consider a bike lane along Northshore Drive. Existing greenways at Turkey Creek and 3rd Creek could ask businesses to do more to make them aesthetically appealing (landscape, hide dumpsters, etc). We would love to have the option of train travel -- any chance of getting an Amtrak link with one of the nearby large cities? Why can't KTRANS coordinate with Anderson County to provide services from Campbell Station Rd. to ORNL's Y10 plant?
10. There should be a linkage between energy, transportation, conservation of the natural environment (which is a revenue provider for East Tenn.), and health. I would hope that whatever plan is designed would take into consideration all of the above areas. As we decrease the dependency on oil through increased access to alternative fuels and alternative transit, we will decrease the air and noise pollution in East Tenn. Decreasing pollution decreases negative health effects. Encouraging pedestrian traffic by building walkable neighborhoods and commercial centers and by adding sidewalks, safe crosswalks, bike lanes, safe greenways, and other pedestrian and bicycle facilities will decrease pollution, decrease the demand on the roadways, and increase health and healthy lifestyles. It seems to be that we must think outside the car-only paradigm if we are ever to get control of pollution and move beyond our oil dependency.
11. Implement the proposals in the General Plan
12. Alcoa Highway has to become a priority. It is the most dangerous road I have ever driven on.

13. We desperately need to widen the roads and provide bike paths and sidewalks for those that want to use alternative modes of transportation. I would love to be able to ride my bike more and would do so to run errands and for exercise. However, the roads in my immediate area are simply not bike friendly and are barely motorist friendly. I live just off Northshore, West of Pellissippi and there are wrecks in front of my home several times a month. There is no way I would consider riding my bike anywhere in this area. I have lived in other cities, Miami, Orlando, New York, to name a few and there are so many other choices of transportation. I know it is expensive, but I feel that everyone would benefit if we had more sidewalks and wider roads.
14. I would like to see long term plans that include rail travel along I-40 and Kingston Pike corridor, with bus service spreading out from various stops along the way. I would like to see the new downtown transit center include plans for future rail travel.
15. Land use planning and transportation planning should be done in conjunction. I see them as very related. There should be incentives for development that makes use of under-utilized transportation resources. In other words, there should be incentives for good in-fill development as well as development fees for development in areas that will require new transportation infrastructure.
16. We need safe bike lanes along major roads for bicycle commuters. We also need alternate bike lanes along back streets (designated with signs) for a nicer commute
17. Encourage the crooked politicians that are developers and make them encourage other commissioners to obey the "National Standards of Road Safety Laws." It is a crisis here in Blount County.
18. Mandatory bike lanes on major north, south, east, west, corridor new construction
19. We need the Orange Route to take the pressure off of I-40/I-75. It is the best option among the worst.
20. Get politics out of the LRTP. The road project priority list is formed by local governments and rubber stamped by the TPO. Public input is meaningless and just something that is done to meet federal requirements. For example, the Pellissippi Parkway Extension, which is on the high priority list. Groups formed to oppose the road, and got the TDOT/FHWA to do an EIS because the EA was flawed. Growth consultants have since said Blount County needs to focus on improving existing roads and not building new roads (because the development that follows new roads goes against what folks want to preserve in the county). Instead, because some local governments and State officials want this road built, saying it is a part of an almost 20 year old road plan, that it must be built and built now. No consideration of public input. And the State legislators only hear the final recommendations, which lead them to believe that the people must want it. It was stated that the Pellissippi Pkwy Extension would remain on the list because the county executives requested it. Period. End of the discussion. That is not public process.
21. Knoxville area desperately needs better pedestrian and bike transportation infrastructure. People also need to be encouraged to use public transportation and anything that would make the public transportation system more convenient to use needs to be encouraged. KAT has improved a lot in the last few years, but the use is still very low. Changing this (and thus easing up car traffic) needs to be a

priority.

22. I'd love to see bus routes/light rail to various National Parks/wilderness areas, such as Great Smoky Mountains and Big South Fork
23. Do something downtown about where KAT buses are now expected to line up. There isn't room for all of them, they end up blocking traffic, and I have almost been hit several times by buses pulling out that can't see.
24. Someone needs to figure out what it would take to either get Knoxvillians out of their cars and onto buses or at the very least carpool. I own a car, but I only use it when my bus isn't running, if I need to bring something very large home, or I need to go some places the buses don't go. It amazes me every evening after work how many cars with one occupant are headed west from downtown. I'm not sure how successful the 'park and ride' programs are, but maybe the hours should be extended to give people the option to go to dinner before heading home. That's my only complain about the No. 10 bus: the last bus I can catch home to the back of Sequoyah Hills leaves 15 minutes after I get off work so I can never have dinner at Market Square or grab a beer at a downtown pub unless I want to walk a mile from Kingston Pike down Scenic Drive on a poorly lighted and debris covered sidewalk. I actually do that, but I think I'm one of the few people in Knoxville willing to do such a thing. This might actually explain why downtown dies after work. The people who spend money downtown are forced to leave by bus schedules.
25. Sidewalks and greenways! Knoxville and surrounding communities have done a very poor job in this area. You cannot walk anywhere! For example, try to walk to the Mall on Kingston Pike. You have kids walking on railroad tracks because they feel safer than walking on the streets.
26. We need to work hard to get ahead of the curve. We need to see what other communities are doing to enhance alternatives such as safe pedestrian areas and bike lanes. Why can't Knoxville think outside the box, for a change? All we seem to do is reward developers for our dubious distinction as one of the most sprawling areas in the U.S. with more roads and wider surfaces.
27. Knox County desperately needs more bike/pedestrian facilities! This has to be one of the least bike and walking friendly cities in the nation. I have been hit by a car 3 times in the past year, once on bike and twice on foot! That should say something. We need bike lanes! Closing a few roads to automobiles won't hurt either.
28. Highway 321 from Maryville to Walland needs more and longer turn lanes and perhaps some traffic lights. At certain times of day, it is very hard to enter 321 from side streets.
29. Look at the areas that continually have blockage and fix them. Get good construction companies that get the work done right and quickly, so it doesn't create worse traffic problems for a long time. Don't do work on roads like Pellissippi until the places with huge potholes are fixed. Tearing out the concrete shoulders on Pellissippi was a huge waste of tax money. Why down-grade what is not in poor shape?
30. Look at best practices in other regions in the country for help with land use and transportation needs.

31. We have no public transportation in Blount County and with an aging population, there is a need. I also support the use of neighborhood, smaller schools where youth could walk or ride their bikes to school. We have an obese population at every age level where built in opportunities for walking to get from one place to the next would help impact such a sedentary population.
32. Quality of life for suburban America is greenways, bicycle lanes, and sidewalks. One way to make Knoxville a great city is by creating the most dense network of greenways in the country. I live in Westmoreland near the mall. If we wanted to bike somewhere as a family, there is absolutely nowhere to do it (Westland and Nubbin Ridge have no shoulders or sidewalks). When Toyota was on Kingston Pike, I used to take my car for the afternoon and walk (e.g., risk my life) on Kingston Pike, a short way to Books-a-Million. Sometimes, the trees were so overgrown I actually had to walk in the road. Many times, I have seen people walking (e.g. risking their lives) on Cedar Bluff. They kind of balance on the curb or walk through the weeds. Is this right? Why is there no code that all new neighborhoods should have sidewalks? Were our ancestors so much richer than we were that they had them in early America?
33. Knoxville and the State of TN need to look into coordinating a light rail system into future planning.
34. 1) Decrease dependence on cars by improving and promoting public/alternative transportation. 2) Link up public transportation systems - don't just rely on buses, but explore all technologies available to find a mix suitable for the Knoxville Area. 3) Find a way to create a statewide, high-speed rail service linking all major metro areas (Memphis, Jackson, Nashville, Knoxville, Chattanooga, Tri-Cities). 4) Light rail from McGhee-Tyson to Downtown Knoxville. 5) Work diligently towards implementing many (or all) of the ideas in the 9 Counties 1 Vision project.
35. I would like to see inter-urban public transportation between Knoxville and Chattanooga/Atlanta and between Knoxville and Nashville and between Knoxville and Lexington/Cincinnati, like a high speed monorail in the median of the interstate. I would like to see truck traffic reduced. I cannot understand how a semi can haul freight cheaper than rail can unless it is being subsidized by disproportionately low usage tax
36. Potholes are not good. Traffic signals have major efficiency problems.
37. Think out of the box -- use railroad for comfortable commuting. The nearest KAT bus is probably 5 miles away.
38. The problem isn't that we don't have enough roadways. All of our facilities should be adequate for the current population of the area and even the population thirty years from now. The only transit facilities that I think we could improve upon are the mass transit systems. The bus system should be more efficient, more user friendly, provide a wider area of service. Imagine having to commute thirty years from now. If you are still driving a car at the existing conditions, commuting would be absolutely intolerable, not to mention the toll on the environment and our natural resources. I would gladly pay $250-$500 a year for a mass transit pass if I could get where I needed to be in a timely fashion. Because I wouldn't have to pay for a car, or to maintenance it, or to pay the taxes associated with all of those things. Some people will never agree to use mass transit, no matter how efficient it is. They will still want to drive their cars

everyday. This is the group of people that needs to be convinced of ideas such as carpooling and HOV lanes. So we need to inform people of the advantages of mass transit (once the system is improved), and for those who will never be convinced that it is useful, we need to instill the idea of conservation through carpooling, HOV lanes, and smaller more fuel efficient vehicles. Why not encourage people to live closer to the urban centers of this region by giving them a tax break? Since they will no longer be using the roadways, as they will walk everywhere they go.

39. Interesting question, #5. People who want/use the new projects should pay for them. Same goes for me and my bicycle and public transportation use. Projects should not be ram-rodded through places and areas that they are not wanted (in general). Biggest/heaviest users of transportation services (shipping and public transport) can make the biggest improvements by efficiency gains. Working to encourage sustainable development and efficient community design will encourage more individual adopters. GSMNP needs to charge entrance fees.
40. Air Quality is a major problem. Building more infrastructure for automobiles is only making the air quality problem worse. We need to set aside space for public mass transit now before continuing automobile centered development makes it difficult to do.
41. Eliminate I-40 through Downtown Knoxville. It adds zero economic value and actually detracts from the quality of life. Nashville just announced the desire to remove I-40 through their downtown yet we plan on making it bigger.
42. Regional passenger rail transport (e.g. Knoxville to Nashville, Knoxville to Chattanooga and Atlanta, etc).
43. Greater emphasis on providing good and wide-spread public transportation system for Knoxville that is easily accessible from multiple locations (park and ride).
44. Make sidewalks bicycle friendly by first making sure that bikers can go from one sidewalk, across a road, then one sidewalk without having to jump onto curves.
45. Mass transit. Mass transit. Mass transit. Light rail system centered in Knoxville with spurs to GSMNP, other East Tennessee cities, and eventually Nashville, Virginia/North Carolina/Northeast and Memphis.
46. First, thanks for the many improvements you've made on the greenways. It would be nice to see them linked together/extended. But being a cyclist who scurries through town on my bike, I notice some things that many motorists don't. Perhaps the planners and engineers should jetty around town on bikes and they too will notice these facilities. The sidewalk system sucks. It is not consistently accessible for the handicapped or new bike riders (17th Street, Cumberland Ave. Kingston Pike, Broadway). Bike lanes are needed. Most motorists are rude and frustrated. Increase density to stop the sprawl. Build a light rail system to and from the 'burbs. Blow of I-40 that loops around town. That design is elementary. James White Pkwy is another joke. How many historic sites were demolished so TDOT could spend another million? Bike lanes, bike lanes, and more bike lanes. To my knowledge there are two bike lanes in this town. One on Magnolia and another beside the library on campus that stretches maybe 50 yards. Push all freight trucks to use the 640-Bypass. Hire some folk with progressive minds. The sidewalks in the poorer neighborhoods are the worst. Increase the interval for bus lines. 45 minutes is too long.

47. Focus on people and not their vehicles.
48. Restricted HOV/Hybrid/Alternative Fuel Lanes to encourage less air pollution and more carpooling. Use existing roads as a possibility to minimize new highway construction. Encourage neighborhoods with services that encourage walking and less driving. Increase downtown residency rather than remote neighborhoods.
49. I've been thinking about not letting people turn unless there is a turning lane. Also, bike lanes or connect all the trails or something. I live in Rocky Hill and the roads are too narrow and very crowded. I have to drive my bike somewhere to ride it. Wouldn't it be excellent to be able to just get on and ride somewhere?
50. Encourage the development of light rail to move people and products within and between the metro areas.
51. Number of persons who are actually interested in bicycling to work is probably minimal. Less emphasis there and more on synchronized traffic signals and other means of moving traffic.
52. No matter how you do it, the tax payer is going to get hit. Raising my taxes or charging me a fee is going to decrease my income just as the high fuel is now. We do not need government taking more money from us for another empire building scheme that will do nothing but build another taxpayer funded business.
53. More people are turning to healthier ways of transportation. I am seeing more and more people riding their bikes. They are recreational riders and commuter riders. I see them battling heavy traffic of Knoxville and the surrounding counties. The above mentioned needs to become more aware of riders. We need more bike lanes and greenways for commuting. The shoulders of the roads are a mess. Bikers spend a lot of money on tires and tubes. Not to mention a lot of lost time changing them. Shoulders need to be kept clean. Riders are forced to ride in the road with cars because of all of the debris. We need more "Share the Road" signs and designated bike routes. Drivers need to be educated about riders. They need to know that riders have the same rights on the road as they do. We need bike friendly roads.
54. Would like to see a rail system connect Knoxville, Nashville, and Chattanooga.
55. There is a lack of coordination between TPO and TDOT and land use.
56. We need more bus stops in the county, more bike racks around town, some park and ride lots, and bike lanes and/or wide sidewalks.
57. Cyclist advocacy. Motorist need to be educated on cyclist and their right to use the same roads. Commercial traffic must be removed from rural neighborhood roads, especially parts of Middlebrook Pike where it is being used as a current construction bypass by commercial drivers.
58. Intermodal facilities in major cities to put truck traffic on rail. Compact car rental for local transportation in connection with alternate transportation modes, intercity buses, passenger rail, commuter aircraft. Increased teleconferencing to reduce travel to and from meetings.
59. We can improve highway safety, reduce highway construction and maintenance costs, and reduce the cost of moving goods by shifting long-distance shipping to a revitalized rail system and getting large trucks off the highways. Most of our local roads are unsafe for travel by foot or bicycle. For our health and fitness, our environment, and our national security, we need more safe opportunities to use muscle power rather than oil products to move ourselves. We also need to

actively plan and implement a shift to alternative energy technologies as we have likely reached peak oil production and will see increased world friction in coming years over limited supplies.

60. New roads and road widening projects should always allow room for bicycles and break downs. Sidewalks should be built on at least one side of every major road. Greenways should extend from E-W and N-S, throughout the entire county. Interstate construction should follow the model of every major city. Night construction should be utilized to reduce traffic congestion during construction.
61. More and bigger roads are not the answer. Alternate transportation is the future.
62. Incorporate rail and truck facilities into the plan.
63. I am a big advocate of bicycling in Knoxville. I bike down Gay Street and all over Downtown Knoxville for pleasure and with my business. More bike lanes are needed downtown and access from South Knoxville to downtown via bike lanes.
64. It is important to create real alternatives to main corridors of traffic (Chapman Highway, Kingston Pike, Broadway, Clinton Highway, Magnolia Ave., etc) such as city-wide commuter bike lanes, 24-hour public transportation, greater public transportation, greater public transit route saturation, and subsidized ride-share programs.
65. With Knoxville's air quality decreasing, a large university right in the middle of it, decreasing stability with fossil fuels, and increased interest in revitalizing downtown and urban centers, it makes so much sense for the area to be more bicycle-friendly. Right now, it is extremely hazardous and hostile for cyclist to commute on the roads. Drivers are almost totally ignorant of the laws and rules concerning bicycles on the road. Sidewalks in most places are in such bad condition and so narrow that riding on them is dangerous. A priority for long-range planners should be to take into account a growing number of cyclists and how feasible and safe to ride a bike in Knoxville. More bike racks is a good start, but getting the bikes to the racks is the big problem.
66. There are a lot of people driving from Knoxville to Oak Ridge in a daily commute. Reliable and flexible mass transportation would be nice.
67. Need more public transit early in the morning. Need to connect the existing greenways and to extend greenways to West Knox County.
68. Add to #5 automobile weight tax. Discourage large automobiles. They are dangerous, ugly, and ridiculous and probably pollute more. Train transport is really important and interesting to me. Why build more, wider roads when they, as large as they can become, will be congested no matter what. That money should be invested in mass transit that connects not only surrounding counties to Knoxville, but even Chattanooga and Nashville.
69. The traffic lights in this town are terrible. Timing the lights correctly would do wonders for improving traffic flow. As fuel prices go up, which they will continue to do in the next 25 years, alternative transportation such as walking and bicycling will become more important. Perhaps you should consider what the world would look like in 25 years and then determine just how good of an idea it will be to add more lanes to the freeway.

70. There is little planning as far as the location of retail businesses close to residents, planning the city to grow with less sprawl will be worth the near term opposition and much better for everyone in the long term than just building wider and longer roads. Outside of the immediate downtown area, there are very few sidewalks. Many of the roads are in good enough condition for cars, but not stable for bikes, with drain covers, manholes, small potholes near the edges, which are dangerous to cyclists, who need to ride on the very edge. Road improvement/construction should include sidewalks and at the very minimum enough shoulder for a cyclist to be safely passed by a car. I live on Sutherland Avenue, 1/3 mile from Knox Plaza Shopping Center, and it is almost impossible to walk there, as there are no sidewalks and only one crosswalk for the three roads I have to cross. And it is even harder to walk across Sutherland Avenue, the traffic patterns and planning in Knox County almost mandates automobile use for any trips.
71. Get I-40 out of downtown. Hire a sales person who earns healthy commissions for selling employers on getting their employees to use alternative transportation. Base the commissions on verifiable numbers not just lip service. What ever happened to the street car thing we were throwing around last winter? We brought some people in from Portland. They showed us how to fund it, showed us how much it boosted their bottom line and we said, "Great, let's shove it under the carpet with all the other good ideas and keep doing the stupid things that led us into non-attainment." I think maybe it is time to bring those ideas back. Stop the insane Orange Route now! More freeways = more sprawl = more traffic headaches! What part of this equation don't you people get? The CBID/UT/Fort Sanders trolley system should extend to the "Trolleyburbs."
72. Increase public transportation. Fee to ride public transportation is fine. Don't raise taxes. New development results in more traffic. Let them foot the bill. Historically, increased number of lanes increases traffic. Don't increase the number of lanes. Find ways to make them flow more smoothly through more efficient traffic control signals and more parking.
73. Knoxville and Knox County are too accommodating of new commercial and residential development. They should have to pay for improvements to roads, bike paths, etc.
74. My biggest problem with Knoxville is that it is centered on the automobile as the only viable means of transportation. We need to be more pedestrian friendly by adding sidewalks and crosswalks. Kingston Pike is notoriously unsafe. I would also like to see marked bike paths and additions to the Greenways. The Third Creek greenway is a great example of something Knoxville has done right, but it needs to be expanded and linked in order to make it safe to move around the city without the presence of cars.
75. I think the entire metropolitan area ought to begin requiring vehicle inspection immediately to help encourage good air quality. TVA should also speed up their attempts to clean up the emissions from their coal-burning plants.
76. Seamless access by bicycles to all areas of the city and county.
77. Involve MPC in developing sustainable communities instead of suburbs!
78. In my community, developers are putting in subdivisions all over the area. However, they aren't doing anything to widen the existing road network (old country roads) or provide shoulders for people to walk or bike. There should be a requirement to pay for a better road network when these developments result in a

higher traffic count.

79. Increase lanes on Lovell Road extending past the US Cellular building. This is high traffic and it is getting more congested. Bicycle lanes on designated alternate routes are needed.
80. Put all information in laymen's terms so all individuals can understand. Use television, radio, newspapers (small community) to get the information to where the people are.
81. Actively pursue the means of limiting the effects of fossil-fuel usage by encouraging and facilitating the use of alternative fuels and means of transportation.
82. Coordination with air quality.
83. Need to think outside of the box in land development and move towards townships (higher density) to make it easier to shop and walk, bike, and use public transportation to move between locations.
84. The Knoxville area needs to understand the importance of its strategic geographic location and accept and take advantage of the opportunities that it presents. People think traffic problems will go away if they are ignored, with proper planning and encouragement they can profit from it.
85. Air quality and making it safe for people to walk down the roads without having to worry about reckless driving. In South Knoxville, a lot of the roads are curved making visibility difficult. Dropping the speed limit and enforcing current speed laws are important to me.
86. Traffic calming
87. Do not use transportation to force land use reform.
88. Recognize that transportation needs for services will increase as they give up or are required to give up automobiles. How will they shop for groceries? Need: "Shopping routes" with vehicles configured for passengers with grocery bags, easy on/off possibility.
89. I have a problem with so much money being spent on road projects in Knox Co. and how quick when someone sees a need for something, it gets started and done. I have lived in Blount County all my life and you can't get anything done here! I live five miles out S.R. 336 and it is the same curvy, narrow, substandard road it's always been. Several subdivisions and apartment houses this road serves have been built, traffic has more than quadrupled and yet, we can't even get this dangerous two lane road brought up to state road standards.
90. I want to be able to utilize public transportation, but I find it difficult. The trolleys are fine, but the buses are lacking. They don't run on time or often enough. They don't have enough coverage and I cannot take the bus anywhere I usually go in West Knoxville. I can take the trolley around downtown.
91. Better connectivity between subdivisions can improve bike route choices. It could be as inexpensive as purchasing right-of-ways on strategically adjoining lots.
92. Do what is best to improve the city and the county roads that will allow for economic progress and development.
93. Strict attention needs to be given to the numerous trucks that come thorough our Interstate system. An alternative route for those passing through the city must be resolved ASAP. I-40 improvement projects at "MALFUNCTION JUNCTION"

cannot come up soon enough. Long range planning should include a look at what future changes will affect the Interstate system. Maybe planning ahead for what the city can manage in future traffic flows will be crucial.

94. Development must reflect a need to reduce non-metabolic transportation demand. Safe walking, bicycling, and public transportation should be available to all and should receive priority over the needs of private car users.
95. Comments on March 3, 2005 Draft Plan (and still apply to March 30, 2005 Plan):

    The results of the surveys cited in your report show that people in this Region clearly want more attention on environmental matters and mass transit. Other facts and figures make it clear that innovative solutions are needed to cope with certain trends, such as the huge increase in freight volume carried by trucks. Consequently, we need a transportation plan that breaks away from "business-as-usual" rather than just continuing to focus on more of the same. For example, the plan indicates that plans for future expenditures are based on a percentage increase over the previous TIP. Future expenditures should be based, instead, on identified needs at a given point in time and for the next 20 years. We can't afford to keep spending money on the same kinds of things.

    The plan lacks specific measurable goals. It goes into great detail about certain existing transportation features but leaves the goals vague. Obviously, nobody can predict the future, but in order to have a successful transportation plan for our region, we need to know what our specific goals are, the dates on which these goals are to be met, and how close we are to achieving them at any given time.

    The plan needs to include risk analysis and risk management measures. Many things change over the course of a 20-year plan, so the plan needs to acknowledge risks that have been anticipated and have a mechanism for adapting itself over time.

    What assumptions were made to get to "conformity" and what are the risks that could lead to continued non-attainment for this region? For example, isn't a big new road like the Knoxville Parkway, and the induced traffic it will generate, a significant risk to conformity? Wouldn't the Knoxville Parkway serve better as a bypass (i.e., as a congestion-reducing measure) if it were moved further away from the Knoxville Urbanized Area and/or canceled in favor of other congestion-mitigation measures (e.g. more freight by rail)? How does the TPO intend to work with TDOT on long-range planning? On the discussion about the Knoxville Parkway, it should be noted that a Draft EIS was finished but that the final is still pending. Also, "community groups" should be changed to "community representatives."

    The process by which projects are chosen does not seem to include an analysis of how new projects might undermine the goals and objectives. The report concludes that transportation should be coordinated with land use. What specific things is the TPO going to do to start making that happen? What measurable goals will be proposed?

Appendix E: Long Range Transportation Plan Follow-Up Comment Form - 2005

1. Did you attend the First Round of Public Meetings?

   Yes ____ No____

If so, please skip to question #3

2. If you answered "No" for the first question, what was your reason for not attending the first round of public meetings?

   Did not know about the meeting _____
   Scheduling Conflict ____
   Did not feel that the meeting pertained to me_____
   Other _____

3. How do you generally find out about public meetings?

   Television ____
   Newspaper ____
   Flyers _____
   Word of Mouth____
   Other _____

4. What is your general reaction to what you heard at this meeting tonight?

   Informative ____
   It was what I expected _____
   Did not address my concerns _____
   Other _____

5. Please note any comments that you have about the following topics:
   Air Quality:
   Congestion Management:
   Safety:
   Street and Highway Projects:
   Funding Transportation Projects:
   Other:

6. Additional Comments
   _____
   _____
   _____

Appendix F: Questions and Answers from Knoxville Regional Long Range Transportation Plan Public Meetings - 2005

Q. What is the policy for Vehicle Testing? How do you reduce vehicle emissions?

A. The TPO Board supports the implementation of inspection/maintenance programs for vehicles on a statewide basis. Emissions will be reduced by the introduction of federally mandated cleaner fuels. Other methods include driving less, "smart growth" land use policies, and using alternative modes of transportation such as mass transit and bicycles.

Q. How do you determine the proposed projects that meet the criteria for non-polluting projects?

A. The Long Range Transportation Plan is subject to an analysis called "air quality conformity". The Plan must show that the proposals outlined in the Plan, if implemented, will not result in increased emissions beyond the level found to enable the area to meet air quality regulations. Non-polluting projects would include bicycle and pedestrian related improvements as well as congestion mitigation related projects.

Q. Can you mitigate congestion?

A. Yes, through traffic signal coordination, rideshare programs, bicycle facilities and programs, etc.

Q. How do federal mandates get supported?

A. Through the implementation of transportation plans and programs for the urban and regional area. Federal legislation is passed every six years to support transportation policies and programs.

Q. Is there a way to influence the order of priority for projects?

A. This meeting is the forum to make requests and comments. Discussing your needs with local elected officials and technical staff can also help determine when transportation improvements are implemented.

Q. What portion of ozone non-attainment within our area are we responsible for?

A. The Knoxville TPO has agreed to complete the air quality conformity analysis for the entire Knoxville Non-Attainment Area consisting of Anderson, Blount, Jefferson, Knox, Loudon, Sevier and the portion of Cocke County within the Smoky Mountains National Park. Traditionally the TPO would only be responsible for the portion in the TPO Planning Area, although a formal agreement was signed between the TPO, TDOT, and the Lakeway Area TPO (which covers a portion of Jefferson County) to allow the compilation of a single conformity determination by the TPO.

Q. What if we do not meet ozone attainment?

A. Road projects that increase the capacity for single occupant vehicles could be frozen and not allowed to proceed to the next phase of development. Projects that support mass transit, safety, maintenance, pedestrian, and bicycles would likely continue to proceed.

Q. Can we expand Mass Transit?

A. This Long Range Transportation Plan includes KAT's Action Plan for the year 2010 which outlines significant expansion of public transit services. To expand to areas outside of Knoxville, funding and community support would be needed from the regional area.

Q. What is the ridership per mile for KAT and how is it met?

A. For fiscal year 2005 the passengers per mile figure for KAT is 1.2. This performance statistic is tracked monthly and provided to the Knoxville Transportation Authority (KTA) along with a number of other ridership statistics and performance measures.

Q. Do bus routes pay for themselves?

A. No. All forms of transportation in some manner require a public subsidy.

Q. What is the selection process for the CMAQ projects?

A. The TPO solicits a call for projects from the public and local governments. Once applications are received they are ranked by the amount of emissions reductions that could occur if the project is implemented. The TPO Executive Board then makes the final decision on what projects are funded.

Q. Can money be put into projects if it shows that it does not add to environmental problems?

A. The projects must be in the Long Range Transportation Plan before it can be considered for funding.

Q. Do you do modeling to forecast how we change and grow?

A. We work with land use planners to see where development is going and then we predict the growth in traffic based on future land use plans.
Q. Is the Regional Transportation Planning Council like the one in Atlanta?

A. No
Q. Do you have another plan for particulate matter

A. Particulate matter is not addressed at this time. A conformity determination for the PM2.5 standard is due by April 2006.
Q. How long has the TPO been in existence?

A. 25 Years
Q. Where does the data come from when highways do not exist to fit in projects?

A. The TPO runs a travel demand forecasting model that provides estimates of traffic volumes that will occur based on changes in the land use and transportation system.
Q. Where do the numbers for the Travel Demand Model Come from?

A. The travel demand model is based on a travel survey that was completed by 1,500 households in Knox and Blount counties in the year 2000. A detailed representation of the roadway network is included with most of the data coming from TDOT regarding number of lanes, pavement width, and other characteristics.
Q. What is the reason for the spike in the Vehicle Miles Traveled?

A. Vehicle Miles of Travel (VMT) are predicted to increase due to a number of reasons. First and foremost the fact that the Region is projected to continue to experience steady population growth that will cause an increase in VMT. Also, the travel demand model predicts that new roadway facilities such as the proposed I-475 bypass will cause an increase in VMT.

Q. Where do population projections come from?

A. The TPO uses a variety of public and private sources including Woods and Poole Economics, Inc., and the University of Tennessee Center for Business and Economic Research.

Q. How do you determine work commutes?

A. The 2000 census provided information on the number of people commuting across counties in east Tennessee.
Q. Is there enough staff to create a regional plan?

A. The TPO has a contract with TDOT which will allow for hiring additional employees.
Q. Even if we parked our vehicles, we still are not meeting air quality standards. Why is that?

A. The Tennessee Department of Environment & Conservation (TDEC) has retained consultants to do regional modeling to determine the amount of contribution from local sources versus other more distant sources to our pollution problem. Pollution comes from other states and other parts of Tennessee and from different types of sources such as power plants and industries. Several other reasons contribute to our air quality problems such as our geography, meteorology and through traffic.

Q. How often do you update the Long Range Transportation Plan?

A. Every three years.
Q. Why bother preserving the transportation system? The system is not working.

A. What is meant by "preserving" is ensuring that there are adequate resources available to maintain the system in good working order, including repaving and repairing roads.
Q. Rail needs to be a part of the Plan

A. Rail service needs to be addressed from a national and state perspective. TDOT has recently completed a rail plan that could impact our area several years from now. See Chapter V for more information. The Regional Transportation Alternatives Plan examined the possibility of light or commuter rail for the Region. That study concluded that the area did not have enough population density to support passenger rail at this time or in the near future. The TPO will continue to monitor this situation.
Q. Is there anything in the Plan for a carpool network?

A. The plan discusses carpooling and ridesharing as a key component of developing a balanced transportation system. The Smart Trips program has a free online ridematching database available currently, and employs an employer outreach coordinator to develop programs at worksites. The Knoxville Commuter Pool is available to assist commuter vanpools in starting. See Chapter IX for more details.
Q. The transit system is limited to peak times and it needs to be more flexible. Can you address the distance of routes and the time between routes?

A. KAT operates public mass transit service throughout the City of Knoxville from 6:00am until 12:00 midnight. In some cases they have specialized transit services that operate even later. Most KAT routes operate every thirty minutes which is very good transit service for a city Knoxville's size. There are a few routes that run every hour. KAT would like to see the frequency, especially on main corridor routes, increased to every fifteen minutes. The Long Range Transportation Plan supports this concept. Currently, KAT is seeking funding to implement more frequent service. KAT strives to keep most routes no longer than one hour. However, congestion on many of the main corridors requires KAT to have longer running routes.
Q. I would like to see HOV lanes for cars with more than one occupant and busses. Help people make smarter transportation choices. Also, I would like to see bicycles added to the roadway plan.

A. HOV lanes in Tennessee have not been met with much success but it is something that has been discussed. The Smart Trips program provides information on and encourages alternative transportation (See Chapter IX.). Bicycle accommodations are required with every new federal and state highway project (see Appendix B for the adopted Accommodation Policy). The adopted TPO Bicycle Plan has a set of policies to guide the implementation of bicycle facilities (see the Bicycle Element in Chapter VI).
Q. Shoulders need to be upgraded.

A. Shoulders on the Interstate system are now built like the mainline. On many roads in developing areas it is very expensive to add additional pavement for shoulders due to lack of right-of-way and drainage issues. Sometimes it is difficult to get enough pavement to safely accommodate 2 lanes of traffic.
Q. Do we have a regional public transit system that connects?

A. There is an adopted Regional Transportation Alternatives Plan that shows the frame work for a regional transit system. The study looked at express bus service, bus rapid transit, expanded urban transit services, and regional and urban rail concepts.
Q. If we have specific ideas for a plan, how do we get those suggestions to you?

A. Complete the survey and/or contact the TPO by phone, letter, or e-mail.
Q. What defines congestion?

A. Comparing volume to capacity ratio (V/C). When numbers get to .85 V/C ratio, it is considered to be a sign of congestion.

Q. Does the truck forecasts include the I-81 project?

A. Nationwide freight forecasts (for trucks) were performed in 2001 by the FHWA. The I-81 corridor project includes proposals for transferring freight to rail or using truck toll facilities. The TPO and TDOT are encouraging a multi-state approach to this corridor.
Q. Where do the emission budget numbers come from?

A. They have been developed by TDEC and Knox County based on the determination of what is needed to bring our area into attainment with the air quality standards.
Q. If 2009 is the test year, why use the old 1-hour standard for Knox County?

A. EPA made the designation under the 8-hour standard in June 2004 and set a 1 year deadline to make a conformity determination to the 8-hour standard. On the other hand, the State Implementation Plan that sets the motor vehicle emissions budget for the 8-hour standard is not due until June 2007. EPA determined that until a budget is established for the 8-hour standard that areas with preexisting 1-hour budgets shall use them in the interim.
Q. What contributes most to the emissions in our area?

A. For Knox County the primary source of emissions generated within the county are from motor vehicles since there are no major power plants. Of the mobile sources, the heavy duty diesel trucks contribute over 50% of the emissions even though they make up less than 20% of the traffic.
Q. Is the new particulate matter standard in the Plan?

A. No. EPA has enacted the new PM2.5 standard effective in April 2005 with another one-year deadline to determine conformity, therefore, the TPO will be completing a conformity determination and possibly revising the Long Range Transportation Plan by next April.
Q. How do you determine the 2009 Vehicle Miles Traveled?

A. The Travel Demand Model is relied upon for projecting future traffic volumes. The model was developed using locally obtained travel survey data with which to calibrate mathematical relationships between travel behavior and socio-economic characteristics at the household level. Projections of the socio-economic data were obtained from Woods & Poole Economics, Inc and input to the travel demand model along with changes in the roadway network based on the projects in the transportation plan.
Q. Are past models compared with the present models?

A. The current model being used by the TPO was completed in March 2004 so there has not been an opportunity to test it against the past.
Q. Is the purpose of the highway list to make sure we remain in conformity?

A. The highway list is one element of the Plan. Identifying the proposed highway improvements is necessary in order to conduct air quality conformity analysis.
Q. How does the TPO differ from TDOT?

A. The TPO conducts transportation planning for the urbanized and Non-Attainment Area. TDOT conducts planning on a state-wide basis. Also TDOT builds and maintains streets and highways, the TPO does not.
Q. Is this Plan only dealing with federal funding?

A. This plan addresses all projects regardless of funding source if it has urban or regional significance. If a project is to receive federal funding then it should be referenced in this Plan.
Q. It says that Tazewell Pike, Broadway, and Murphy Road won't be finished until 2014 and it is so important.

A. There are many immediate transportation needs that cannot be met due to insufficient funds to make transportation improvements.
Q. What is the funding level for projects based on?

A. The funding level for the Plan was projected from using historical data from years 1999-2004. These numbers were projected to year 2030 based on a 3 percent growth rate

Q. Murphy Road needs to be widened before more houses are built along it.

A. It is difficult for state and local governments to keep pace with the development community. Sometimes it can take 5 to 7 years to widen or build a new road.

Q. There is a real concern about Tazewell Pike. It would be a dangerous situation if the road were expanded to three lanes.

A. Adding a turn lane can in many situations reduce crashes and reduce traffic delay.
Q. Who would we talk to from the City (Knoxville) about these projects?

A. We would recommend that you talk with the Knoxville Engineering Department.
Q. We have concerns with Phase III of the Broadway/I-640 project. There are too many concerns with traffic coming off of I-640 and no emphasis on Broadway traffic.

A. The TPO has funded, and the city of Knoxville has implemented, several signal improvement projects along Broadway. Any road widening to Broadway would be devastating to adjacent property.
Q. Are we using the enhancement funds?

A. TDOT administers the transportation enhancement program. Projects are approved yearly by TDOT.
Q. How do you determine the priority of sidewalk projects?

A. Local governments set the priority for sidewalk projects. Preference has been given to building sidewalks that serve schools and other major activity centers.
Q. When was the first round of public meetings? Where?

A. The first round of public meetings were October 26, 2004 at the Blount County Library and the Farragut Library and on October 28, 2004 at Pellissippi State – Magnolia Campus.
Q. Building an overpass with interchanges at US 321 and US 129 rather than at-grade intersection should be considered.

A. This project suggestion will be considered with the 2008 plan update.
Q. US 411 improvements should be completed before the Pellissippi Parkway extension to accommodate additional traffic.

A. Good suggestion. TPO staff will discuss this issue with TDOT and local governments.
Q. Money should be spent to improve roadways for current residents before improvements are made to accommodate new residents.

A. Unfortunately development continues to sprawl in areas that the roadway system is deficient and perhaps unsafe.
Q. Montvale Road should be improved to Brick House Road.

A. Extending the improvements to Montvale Road beyond 6 Mile Road will be considered in the next plan update.
Q. What is the difference between Non-Attainment Area and the TPO Area?

A. The Non-Attainment Area is that area defined by the EPA as being in non-compliance with air quality standards. In this case the counties of Anderson, Blount, part of Cocke, Knox, Loudon, Jefferson and Sevier are in non-attainment for ozone. The TPO Area consists of Knox County and the 2000 U.S. Census defined urbanized areas of Blount, Loudon, and Sevier Counties. In this case, the urbanized area is a subset of the Non-Attainment Area.
Q. Is ETHRA considered in the transit plan?

A. Yes
Q. People I know use bicycles for recreation and not for transportation

A. There are a number of people who use their bicycle for more than just recreation. The TPO's Bicycle Advisory Committee has developed a plan that addresses the needs of many different types of bicyclists. One goal of the Long Range Transportation Plan is to offer the community mobility options that are safe and

efficient for all modes of transportation.

Q. Would policy for pedestrian facilities include subdivisions?

A. No. The current federal policy on pedestrian accommodation only applies to projects that are funded by federal or state money. Roads within subdivisions are almost always funded by private dollars.
Q. With the growth of truck traffic do you see a shift to rail?

A. There needs to be a regional and national focus on improving the rail system in order to significantly reduce truck traffic.
Q. Where is the closest intermodal facility?

A. There is one in Nashville. There is a transloading facility in Knoxville but it cannot handle intermodal containers.
Q. How is Smart Trips working out?

A. Smart Trips is making strides with developing worksite programs. The City of Knoxville and Knox County have programs in place for their employees and several other businesses/agencies are in the process. The annual Smart Trips Week is a success in getting the word out about transportation choices and encouraging people to try it at least once that week.
Q. Are the road projects coordinated with the KUB projects?

A. Major utility work is normally coordinated with local and state highway departments. It is the emergency utility fixes that are very frustrating to companies and drivers alike.
Q. Are we subjected to penalties with non-conformity?

A. If transportation conformity cannot be demonstrated with the projects as proposed then the area could enter a lapse period in which only certain types of projects would be allowed to proceed. The draft conformity analysis does not indicate a problem with demonstrating conformity with the proposed projects in this Plan.
Q. How is the minority data from the census tracts used?

A. The data helps us identify areas that have a higher percentage of minority residents. The TPO then assesses how transportation projects may impact those areas from both a positive and negative perspective.
Q. Does TDOT make a social impact anywhere?

A. Social impact analysis are conducted as part of the environmental assessment process.
Q. Whey aren't environmental assessments done on all projects?

A. Environmental assessments are only required of projects that use federal funds. TDOT has conducted environmental studies for state funded projects in the past.
Q. Regarding the flow chart - if the EPA, FHWA, etc. doesn't approve the Plan where does it go from there? Does it come out for another round of public meetings?

A. If significant changes are necessary, the Plan would go out for additional community meetings. Minor changes will be discussed by the TPO Technical Committee, RTPC, and TPO Board at public meetings.
Q. Who did RTAP?

A. The TPO conducted the Regional Transportation Alternatives Plan with assistance from a consultant. There was also an advisory committee consisting of citizens and technical people.

Q. How many monitors measure air quality in Knox County?

A. Several – at least three in Blount and Sevier counties plus two in Knox County, all the monitors in the National Park are related to our area (some specific locations of monitors are mentioned). Some have argued that because of the elevations, etc. in the park, these monitors may not be characteristic of the entire area, EPA wants them all to be counted, protecting the park is important.

Q. Regarding Air Quality Conformity, what kind of measures compensate for all the new growth?

A. EPA requires that we not exceed the 2002 budget year emission level. National standards are being phased in to reduce emissions from fuel and cars (tail pipe standards, SUVs and light trucks, etc) and as the fleet 'turns over' in years to come, most vehicles will be under newer standards – the fleet is also impacted by lower sulfur content of fuels, etc.

Q. What about particulate matter?

A. Conformity with PM 2.5 will begin in April 2005 with a 1 year clock, the conformity analysis will be redone. Not all regulations are out. It used to be PM 10 – it was determined in 1997 that smaller particulates are actually more dangerous, this has been part of a legal battle until recently.

Q. Will you get trucks retrofitted – esp. diesel?

A. National standards apply to new trucks but do not require retrofits. (There is concern that these trucks may not be removed from the vehicle fleet as quickly)

Q. I came in late – did you cover projected road building and specific projects? Has the Hardin Valley 'Orange Route' been decided on?

A. The 'Orange' Route was picked from between three alternatives, and a 1,000 ft wide corridor has been determined. Right now a team of residents, consultants, engineers, and other specialists are studying where to locate the road's specific alignment, within the 1,000 ft corridor. In addition to picking a 300 ft right-of-way, they are looking at other design issues. The EIS also needs to be finished – they have a draft, but not a final.

Q. Is the Ball Camp Pike/Ball Road widening shown?

A. Yes, part is a new alignment, part is widening of existing road.

Q. What is the estimated completion date?

A. It is planned to be done in three phases with completion sometime between 2009 and 2014.

Q. As you review the Plan, does the process allow for "if things change"? What is the 'check' if the project does more harm than good?

A. Every three years we are required to update the Plan. Projects are sometimes removed from the Plan after discussion and review by the local governments.

Q. Does the model factor for induced demand?

A. Yes, based on trip assignments for work, entertainment, school, etc. some induced demand is factored in through the ability for one to reach further destinations in shorter amount of time if a new road is constructed, although land use changes for every scenario are not known.

Q. Regarding truck traffic, if so many are just passing through, is it feasible to have them put on a rail to go through the State?

A. You have to make it economically beneficial for them. If they have to load the truck to travel to an intermodal facility to transfer freight to rail, it is more feasible for them to just drive the truck to the destination. A corridor for truck traffic from Tennessee to Pennsylvania is being looked at. (Needed repairs to Chickamauga Lock were also discussed to prevent switching freight from barges to trucks)

Q. What will work in the long term to get people from Knoxville out of their cars? This Plan doesn't look very different, it's status-quo.

A. The LRTP discusses the Smart Trips Program (see Chapter IX), expanding the KAT system (See Chapter V and VI), and changes to land use regulations that would encourage mixed use, walkable neighborhoods and communities. This Plan is just the first step and it will take a new way of thinking and doing by citizens, businesses and government in order to get people out of their cars.
Q. When do you think this will be wrapped up?

A. Mid-April. This is the last round of public meetings that we have planned.
Q. Regarding the list of roads, what schedule are they on? Are most in design?

A. They are in different stages, the projects dated '2009' are most likely already in pipeline with at least some initial planning taking place and perhaps design work. TDOT also has a role in the scheduling and funding. TDOT is currently doing their own needs-based plan, with more emphasis on the non-urbanized areas. TDOT coordinates with the MPO's within urbanized areas.

Appendix G: Questions and Answers from Knoxville Regional Long Range Transportation Plan-2006 Update Public Meetings

Q. Does the Air Quality Conformity Analysis include the build out of the Knoxville Regional Parkway?

A. Yes, with an anticipate completion outyear of 2020.
Q. Why didn't the Air Quality Conformity Analysis use a 2004 baseline year instead of the 2002 baseline year?

A. The U.S. Environmental Protection Agency requires 2002 to be used in the baseline year test so there was no option there. In any event, based on the downward trend line, it appears that the projected emissions for all of the analysis years would also be below the 2004 levels.

Q. What happens if attainment is not reached?

A. The Federal Highway Administration can hold back funding for transportation projects and there may be some economic development consequences. The area will first develop a plan, known as a State Implementation Plan, that will determine what is needed to bring the area into attainment, whether it be additional reductions in emissions from motor vehicles, industrial plants, or other sources. If the monitors still show non-attainment then there will likely be contingency measures that will kick in to provide for additional reductions.

Q. Did the emissions analysis incorporate any emission reductions from programs being done locally, and what are some local initiatives to reduce emissions?

A. The emissions analysis did not take any credits for actions being done locally, which in fact there are several such as truck stop electrification to reduce truck idling and reduction of speed limits for trucks on the Interstate to 55 mph throughout the non-attainment area. We did not take credit for these at this time because it was not necessary in order for us to demonstrate conformity.

Q. Will the TPO be responsible for performing PM2.5 hotspot analyses for specific projects such as the proposed Knoxville Parkway?

A. The TPO is only responsible for the preparation of the regional conformity analysis and not the project level or hotspot analyses. Hot spot analysis is the responsibility of the project sponsor as part of the environmental review process for a specific project. The TPO will coordinate with project sponsors as necessary, however, specific guidance on hotspot analysis requirements is still forthcoming from EPA.

Q. How and why was the decision to perform the "No greater than baseline year 2002 test" made instead of the "Build no greater than no-build test" since the latter would likely provide a more rigorous analysis of the transportation emissions and be more protective?

A. The decision to perform the "No greater than baseline year 2002 test" was made for the previous 8-hour ozone conformity analysis with concurrence from the Interagency Consultation Group and it made sense to prepare the updated conformity analysis using the same methodology as before. The PM2.5 analysis had to be done in a relatively short timeframe and the test chosen was able to be completed quicker than the Build versus No-build test as it requires less modeling and time to complete. Also, there will be a point in time when conformity will have to be re-demonstrated when the State Implementation Plan budgets are set.

Q. How does the conformity analysis account for growth in the region and the growth due to particular roadway projects such as the proposed Knoxville Parkway?

A. The travel demand forecasting model accounts for growth as key inputs to it include population and employment forecasts for the region. The growth forecasts are sub-allocated to smaller areas known as traffic analysis zones, and the allocation is based on several factors such as land development patterns, future land use

plans, and land suitability. In addition, the models are revisited and updated every few years to account for actual growth that is occurring.

Q. How does the conformity determination address project-specific impacts on air quality particularly with PM2.5 since it is a localized problem, and going forward, will the TPO be analyzing each project with respect to PM2.5 impacts on the areas around roadway projects such as the proposed Knoxville Parkway?

A. It is the TPO's understanding that the project-level impacts and conformity will be the responsibility of the agency sponsoring the project, which will be TDOT in the case of the Knoxville Parkway. The TPO will assist in the process and will participate as needed to provide necessary information or model data. One issue is that the final guidance for implementation of the PM2.5 hotspot requirements has not yet been released by EPA, so we will know more about the TPO role in the process after those regulations are finalized, which should be March 31st of 2006.

Appendix H: Questions and Answers from Knoxville Regional Long Range Transportation Plan-2007 Update Public Meetings

Two public meetings were held in July to discuss three plans: the 2007 Update to the Long Range Transportation Plan, the FY 2008-2011 Transportation Improvement Program and the new Public Participation Plan.

Q and A from Public meeting on July 23, 2007 at West Knoxville Branch Library

1. Citizen complained could not find appropriate contact at TDOT concerning noise barriers on I-40 near Papermill Drive. TDOT was not returning calls.

   Encouraged to call head of Region 1 Office and if still not satisfied to call their State Legislator.

2. Staff asked to discuss LRTP projects specifically in the West Knoxville/ Deane Hill Drive area.

   Staff discussed projects.

3. Citizen concerned that only a portion of Papermill Drive was widened as part of the I-40 project. It made no sense to them that the new five-lane Papermill Drive would abruptly narrow back to two lanes.

   Staff discussed various funding sources and their limitations.

4. Staff asked to review TIP projects specifically in the West Knoxville/ Deane Hill Drive area.

   Staff reviewed projects.

5. Question was asked about the Maynardville Highway widening project.

   Widen to 4 lanes to County line. Project was a high priority project identified in SAFETEA-LU.

6. Staff reviewed the Alcoa Highway project and its different phases. Staff also discussed the Pellissippi Parkway (Blount Co.) and the James White Parkway projects were going through a new environmental review.

   No additional comment.

7. Staff discussed the Kingston Pike and Northshore Drive intersection. Initial solutions were very expensive costing as high a $30 million. A new process to take a comprehensive look at the area will be underway soon to see if there is a different solution or perhaps low cost intermediate solutions.

   No additional comment.

8. Staff mentioned the Transportation Improvement Plan would be approved by the Executive Board in August and the Long Range Transportation Plan in September.

   No additional comment.

9. Citizen asked if the Transportation Improvement Plan covered public transit projects.

   Staff reviewed the transit section of the Transportation Improvement Plan with citizens in attendance.

10. Citizen asked how it is determined which state (TDOT) projects are put into the Transportation Improvement Plan.

TDOT uses a process identified in their Long Range Plan to prioritize projects. Then projects are reviewed with State Legislators where they may be modified, deleted or added. State Legislators approve final budget.

11. Citizen asked who would be in charge of the signal timing project on Sutherland Avenue.

    Officially the City of Knoxville but they would most likely hire a consultant to do the actual work.

12. Citizen asked a question about the air quality calculations in the conformity report and if the calculations include non-mobile sources.

    The emissions budget includes only mobile sources and is calculated using a forecasting model based on projected growth, current development patterns and the kinds of cars that are and will be on the road.

13. Citizen asked a question about biking in greenways.

    Biking and greenway opportunities were discussed at the meeting. Bike lanes and greenway maps distributed to those interested.

Q and A from Public meeting on July 31, 2007 at Blount County Library

1. Citizen asked about the TPO's role, funding sources and jurisdiction.

   Staff reviewed Federally-mandated Metropolitan Planning Organizations and the different planning areas the TPO covers in regards to non-attainment. The TPO is housed with Knoxville/Knox County Metropolitan Planning Commission. Funds come from the Federal government through the state, and the local area contributes a small percentage.

2. Citizen asked where the responses to the Public Participation plan survey come from and if a certain topic brought more people out.

   Staff explained that addresses were not requested, and it was not apparent any responses had particular agendas.

3. Citizen commented that finding the funds to provide the required local match is key to getting Federal funds for transportation projects.

   No comment.

4. Citizen asked if the TIP is reviewed by the state DOT and the Federal agencies and if the plan is used as a lobbying tool.

   Staff explained that staff are not lobbyists and are not permitted to lobby. Federal and state funds are sought for all projects, and occasionally earmarked projects are requested by area representatives. TDOT uses a process identified in their Long Range Plan to prioritize projects. Then project reviewed with State Legislators where projects may be modified, deleted or added. State Legislators approve final budget.

5. Citizen asked if the Long Range Transportation plan or the TIP included the linkages recommended in the Hunter Interests Study for Blount County.

   Staff explained that the Hunter Interests plan is not officially adopted, and it was agreed the identified linkages wouldn't be added to plans until it is adopted.

6. Citizen asked a question about bicycle facilities and mass transit options.

   Staff discussed bicycling and greenway options and the possibility of mass transit options.

Appendix I: Amendments to the 2005-2030 Knoxville Regional Long Range Transportation Plan

This chapter reserves space for amendments to the 2005-2030 Knoxville Regional Long Range Transportation Plan Update that are made after the plan's adoption. Each amendment includes a summary of the amendment, how the amendment conforms to the Plan's goals and objectives, whether the amendment addresses a congested corridor, congested hot spot, or high crash location, reaffirmation of the Air Quality Conformity Determination, financial analysis, the public involvement procedures undertaken, and Title VI analysis.

In addition to being included in this chapter, the amendment will also appear on the highway projects list (Table 8: Long Range Transportation Plan List of Regional Highway Projects, Table 9: Long Range Transportation Plan list of TPO Planning Area Highway Projects, or Table 10: TPO Planning Area List of Non-Highway Projects) and on the map of highway projects (Map 6: Knoxville Regional Highway Projects or Map 13: TPO Planning Area Highway Projects).

AIR QUALITY
CONFORMITY DETERMINATION REPORT

For

The 2005 – 2030
Knoxville Regional
Long Range Transportation Plan
as Amended

and

The FY 2008 – 2011
Knoxville Regional TPO
Transportation Improvement Program

and

The FY 2008 – 2011
Lakeway Area MTPO
Transportation Improvement Program

Prepared by:

KNOXVILLE REGIONAL TPO TRANSPORTATION PLANNING ORGANIZATION

September 2007

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A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION ADOPTING THE FY 2008-2011 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 2008-2011 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 2008-2011 Transportation Improvement Program.

~~September , 2007~~
Date

_____
Mayor Bill Haslam
City of Knoxville
TPO Executive Board Chairman

_____
Jeffrey Welch
TPO Director

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)

Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2007-___

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 2005-2030 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:

_____ _____

Chairman Date

LAMTPO Executive Board

EXECUTIVE SUMMARY

An Air Quality Conformity Determination for transportation plans and programs within the Knoxville Region is required since it is designated as a Nonattainment Area for both the 8-Hour Ozone and Particulate Matter 2.5 (PM2.5) Standards. The analysis included in this report demonstrates that the updated FY 2008 – 2011 Transportation Improvement Program (TIP) of the Knoxville Regional Transportation Planning Organization (KRTPO) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) 2008 – 2011 TIP 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).

The 8-Hour Ozone Nonattainment Area includes Anderson, Blount, Jefferson, Knox, Loudon, Sevier and a portion of Cocke County. The PM2.5 Nonattainment Area includes Anderson, Blount, Knox, Loudon and a portion of Roane County. The designation as a Nonattainment Area under the 8-Hour Ozone Standard became effective on June 15, 2004 while the PM2.5 Standard became effective on April 5, 2005.

A finding of conformity for both the 8-Hour Ozone and PM2.5 standards on the 2005 - 2030 Regional Long Range Transportation Plan (LRTP) was approved by the U.S. DOT on April 3, 2006, and an amendment to the LRTP was subsequently adopted with a conformity finding approved by U.S. DOT on August 1, 2006. The projects included in the updated KRTPO FY 2008 - 2011 TIP originate and are a direct subset from the conforming LRTP; however additional emissions analyses were required due to the fact that it is apparent that some projects included in the first horizon year of the LRTP will not be constructed and opened to traffic by that time based on how they are shown in the updated TIP. The LAMTPO TIP project list comes from a direct subset of the conforming LRTP and therefore the LAMTPO TIP was determined to be conforming.

A revised regional emissions analysis for both ozone and PM2.5 was performed on the first two horizon years of 2009 and 2014, which were the only ones affected by the project delays. Documented below are the results of the emissions analysis that demonstrate transportation conformity for both the KRTPO FY 2008 – 2011 TIP and 2005 – 2030 LRTP:

The Ozone conformity analysis consists 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" (NOx). The results are summarized below:

Knox County 1-Hour Budget Test for Ozone:

	Analysis Year			
Volatile Organic Compounds (VOC):	**2009**	**2014**	**2020**	**2030**
Emissions Budget	29.24	22.12	22.12	22.12
Projected Emissions	20.12	14.98	11.11	10.78
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	29.51	19.88	12.12	9.20

(emissions in tons per day)

No Greater than Baseline Year 2002 Test for Ozone*:

	Analysis Year			
Volatile Organic Compounds (VOC):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	27.45	27.45	27.45	27.45
Projected Emissions	18.83	14.70	11.25	11.34
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	57.25	57.25	57.25	57.25
Projected Emissions	36.90	22.88	14.60	10.71

(emissions in tons per day)

*Analysis includes Anderson, Blount, Jefferson, Loudon, Sevier and portion of Cocke counties.

The PM2.5 analysis consisted of a No Greater than Baseline Year 2002 Test for all counties in the PM2.5 Nonattainment Area for the annual PM2.5-related emissions from on-road mobile sources known as "Direct PM2.5" and "Oxides of Nitrogen" (NOx). The results of the emissions analysis are summarized below:

No Greater than Baseline Year 2002 Test for PM2.5:**

	Analysis Year			
Direct Particulate Matter 2.5:	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	474.22	474.22	474.22	474.22
Projected Emissions	283.63	212.08	177.70	191.4
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	30,065.3	30,065.3	30,065.3	30,065.3
Projected Emissions	18,024.9	11,911.3	7,508.8	5,665.5

(emissions in tons per year)

**Analysis includes Anderson, Blount, Knox, Loudon and portion of Roane counties

The emissions analysis performed by the KRTPO demonstrated that the projected emissions from the proposed transportation system are less than the allowable amount for each of the required analysis years of 2009, 2014, 2020 and 2030; and the Plan is therefore in conformity for both standards. Again, since the KRTPO and LAMTPO TIPs are a direct subset of the LRTP, they also meet the requirements for conformity.

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 purpose of this document is to demonstrate that the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2008-2011 Transportation Improvement Program (TIP) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) 2008 – 2011 TIP meet Transportation/Air Quality Conformity requirements of the Clean Air Act for the pollutants of **Ozone** and **Particulate Matter 2.5 (PM2.5)**.

The KRTPO and LAMTPO are updating their TIPs as is required periodically. A conformity determination must be made on the new TIPs, which will cover fiscal years 2008 through 2011, 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. Transportation Conformity applies because the Knoxville Region is in non-attainment of the air quality standards for both Ozone and PM2.5.

The updated TIPs include only projects that are a direct subset of a conforming Long Range Transportation Plan (LRTP), and in fact all of the projects in the updated TIP were included in a previous TIP except for one (Project #2008-017, Cumberland Avenue). A determination of conformity for the current 2005 – 2030 Knoxville Regional Long Range Transportation Plan was made for both ozone and PM2.5 by the TPO originally on March 22, 2006 and approved by the U.S. DOT on April 3, 2006. The LRTP and conformity determinations were subsequently amended on two separate occasions in May 2006 and July 2006, with the most recent U.S. DOT conformity approval being on August 1, 2006. Copies of the approval letters from U.S. DOT are contained in Appendix C.

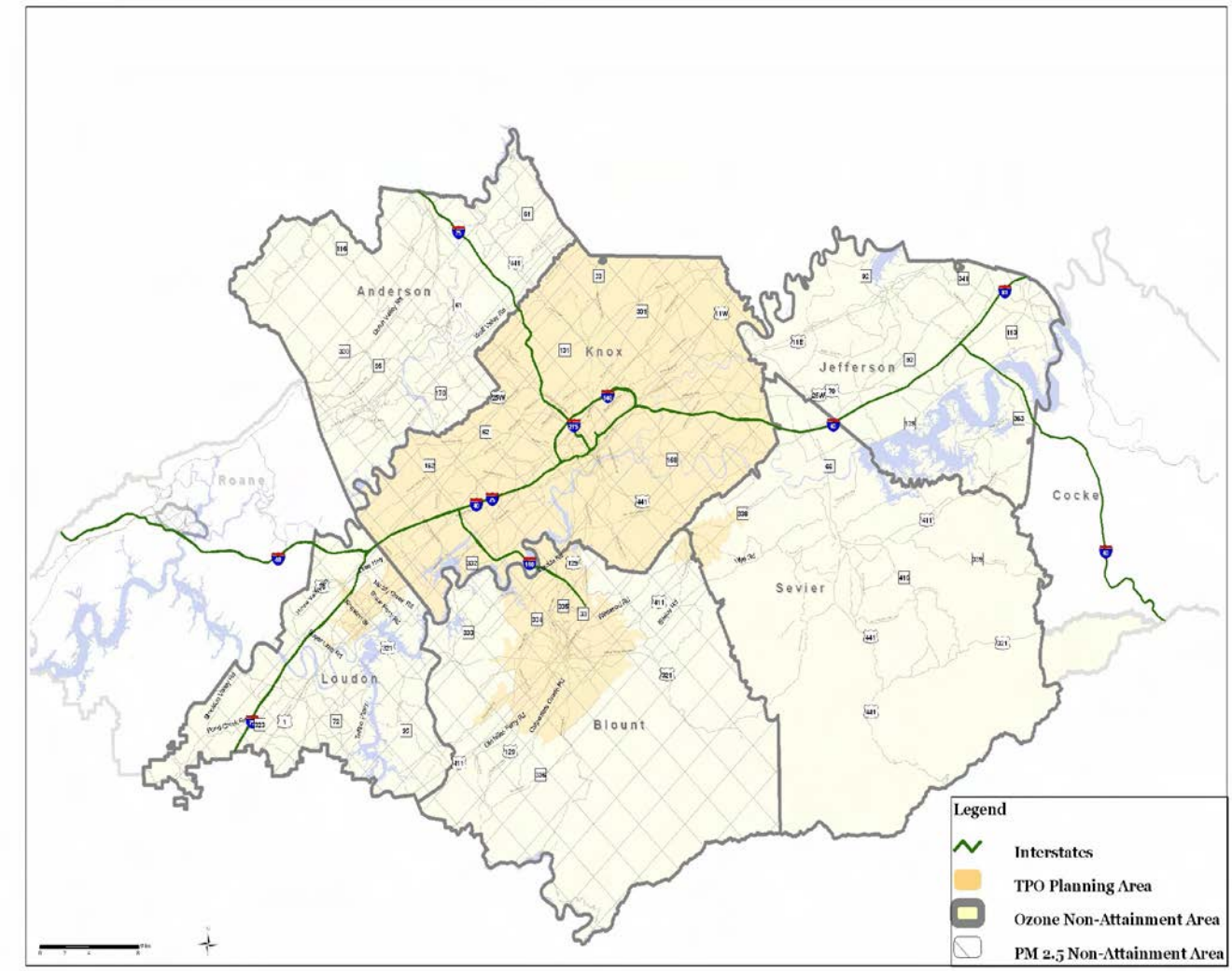
1.1 Background on the Knoxville Region Ozone and PM2.5 Nonattainment Areas

The United States Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for Fine Particulate Matter (also known as PM2.5 since it involves particles smaller than 2.5 microns in diameter) and Ozone, among others, in order to protect human health and the environment from unsafe levels of these pollutants. The Clean Air Act sets maximum limits on exposure levels of these pollutants and regions such as ours which are found to be out of compliance with those limits may be designated as a "Nonattainment Area".

Map 1 depicts the geographical extents of both the Ozone and PM2.5 Nonattainment Areas for the Knoxville Region. 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 PM2.5 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 8-Hour Ozone Standard) were made effective on June 15, 2004 while the designations of PM2.5 areas were made effective on April 5, 2005 by EPA.

MAP 1: KNOXVILLE 8-HOUR and PM2.5 NONATTAINMENT AREAS



1.2 Project Horizon Year Changes:

There are a number of projects included in the KRTPO TIP that have become delayed to the point where it is apparent that they will not be completed within the timeframe that they were originally programmed and accounted for in the previous regional emissions analysis. The LRTP conformity determination included analyses for the horizon years of 2009, 2014, 2020 and 2030 for both ozone and PM2.5 and now it appears as though some projects will not be complete by the end of 2009 based on the phases of work that are programmed in the updated

TIP. It was determined that these projects should be moved out to the 2014 horizon year of the plan. Also, since the costs of the projects that were moved to the 2014 horizon year were inflated it caused the need to push one project out from the 2014 horizon year to the 2020 horizon year in order to maintain financial constraint of the LRTP. No changes were required for any projects in the LAMTPO TIP.

Appendix D includes all of the projects in the proposed KRTPO FY 2008-2011 TIP while Appendix E includes all of the LAMTPO 2008 – 2011 TIP projects. Both project lists include a cross reference of TIP project number to the corresponding project number in the conforming LRTP. Table 1.1 below summarizes the projects that were changed to a new horizon year:

TABLE 1.1: Knoxville Regional LRTP – Project Horizon Year Changes

LRTP #	Project	Location	Current Horizon Year	Proposed Horizon Year
40	Alcoa Hwy	Maloney Rd to Woodson Dr	2009	2014
87	Alcoa Hwy	Maloney Rd to Blount County Line	2009	2014
43	Bradshaw Rd	Connect Bradshaw to Western Ave	2009	2014
44	Campbell Station Rd	Jamestowne Blvd to Parkside Dr	2009	2014
48	Dry Gap Pk	Dante Rd to Rifle Range Rd	2009	2014
49	Dry Gap Pk	Beaver Creek Dr to Dante Rd	2009	2014
58	Karns Connector	Westcott Blvd to Emory Rd	2009	2014
59	Lovell Rd	Gibert Rd to Schaeffer Rd	2009	2014
60	Maynardville Hwy	Emory Rd to Union County Line	2009	2014
64	Millertown Pk	Washington Pk to Mall Rd North	2009	2014
66	Old Knoxville Hwy	Wildwood Rd to McArthur Rd	2009	2014
69	Parkside Dr	Mabry Hood Rd to Hayfield Rd	2009	2014
70	Pellissippi Pkwy	SR 33 to US 321	2009	2014
71	Pleasant Ridge Rd	Schaad Rd to I-640	2009	2014
76	Washington Pk	Millertown Pk to I-640	2009	2014
78	Western Ave	Texas Ave to Major Ave	2009	2014
81	US 321	Simpson Rd to SR 2	2009	2014
82	US 321	SR 2 to East of Little River	2009	2014
83	US 321	Intersection with US 11	2009	2014
105	James White Pkwy	Moody Ave to Chapman Hwy	2014	2020

1.3 Conformity Analysis Process:

Normally the conformity determination process would be fairly straightforward for an updated TIP which included only a direct subset of projects from a conforming Long Range Transportation Plan, however based on the project changes noted above it appears that a new

emissions analysis will be required in order to account for the fact that the projects will not be open to traffic as soon as originally anticipated.

The revised emissions analysis is completely based on the methodology that was established in the previous regional emissions analysis for the LRTP and which is documented in the report titled "Air Quality Conformity Determination Addressing the PM 2.5 and Ozone Standards for The Amended 2005 – 2030 Knoxville Regional Long Range Transportation Plan and The Lakeway Area Metropolitan Transportation Planning Organization Long Range Transportation Plan 2005 – 2030". The previous report should be referenced for all assumptions and MOBILE6.2 model inputs that were agreed upon through an Interagency Consultation (IAC) process for the Knoxville Region.

Other specific procedures and assumptions that are being used for this conformity analysis are as follows:

- The KRTPO and LAMTPO are adopting an update to the LRTP concurrently with the FY 2008 – 2011 TIP based on the requirement to produce a "SAFETEA-LU compliant" LRTP. The modifications to the LRTPs are minor and it is both the TPOs' understanding that this procedure in and of itself does not require a conformity determination.

- Since the project year horizon changes only affect two analysis years – 2009 and 2014 – a revised regional emissions analysis will only need to be performed for those two years.

- The emissions analysis will be based on the same assumptions and methodology as documented in the previous Conformity Determination Report since no new planning assumptions or traffic modeling updates have been completed since that time. Additionally, the travel demand forecasting model still meets the requirement of having been validated to counts from a base year within the last 10 years (year 2000).

Chapter 2
Statement of Conformity

2.0 Introduction

The regional emissions analysis was performed in accordance with 93.119 "Criteria and procedures: Interim emissions in areas without motor vehicle emissions budgets" and used a 1-Hour Budget Test for Ozone in the Knox County portion of the Ozone non-attainment area, a No Greater than Baseline Year 2002 Test for the remainder of the Ozone non-attainment area and a No Greater than Baseline Year 2002 Test for the entire PM2.5 non-attainment area.

2.1 Regional Emissions Analysis Results

The revised emissions analysis was based on previous methodologies as explained earlier in this report. The only variation from previous analyses was in the amount of Vehicle Miles of Travel (VMT) that were generated in the two horizon years of 2009 and 2014, which were affected by the shift in project horizon years for a limited amount of projects. The Knoxville Regional Travel Demand Forecasting Model was used to determine the affects on VMT of changing the horizon years for the projects noted in Table 1.1. Appendix B documents the amount of change in VMT that was observed.

a.) Ozone

TABLE 2.1: Knox County 1-Hour Budget Test for Ozone

	Analysis Year			
Volatile Organic Compounds (VOC):	**2009**	**2014**	**2020**	**2030**
Emissions Budget	29.24	22.12	22.12	22.12
Projected Emissions	20.12	14.98	11.11	10.78
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	29.51	19.88	12.12	9.20

(emissions in tons per day)

TABLE 2.2: No Greater than Baseline Year 2002 Test for Ozone*

	Analysis Year			
Volatile Organic Compounds (VOC):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	27.45	27.45	27.45	27.45
Projected Emissions	18.83	14.70	11.25	11.34
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	57.25	57.25	57.25	57.25
Projected Emissions	36.90	22.88	14.60	10.71

(emissions in tons per day)

*Analysis includes Anderson, Blount, Jefferson, Loudon, Sevier and portion of Cocke counties.

b.) PM2.5

Table 2.3: No Greater than Baseline Year 2002 Test for PM2.5**:

	Analysis Year			
Direct Particulate Matter 2.5:	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	474.22	474.22	474.22	474.22
Projected Emissions	283.63	212.08	177.70	191.4
Oxides of Nitrogen (NOx):	**2009**	**2014**	**2020**	**2030**
Budget (2002 Emissions)	30,065.3	30,065.3	30,065.3	30,065.3
Projected Emissions	18,024.9	11,911.3	7,508.8	5,665.5

(emissions in tons per year)

**Analysis includes Anderson, Blount, Knox, Loudon and portion of Roane counties

2.2 Statement of Conformity – 8-Hour Ozone Standard

In order to demonstrate conformity of the LRTP and TIP with the 8-Hour Standard two interim emissions tests must be passed:

2.2.1 Interim Emissions Test #1 – 1-Hour Budget Test for Knox County

The EPA decided that prior to the development of a Motor Vehicle Emissions Budget (MVEB) for the 8-Hour Standard, areas with existing budgets under the 1-Hour Standard should continue to use them as an interim emissions test to demonstrate 8-Hour conformity. The latest available MVEB is the one that was most recently approved for the 1-Hour Maintenance Plan update for Knox County. The Knox County Maintenance Plan MVEB was published in the Federal Register / Vol. 69, No. 21 on Monday, February 2, 2004 and established the following MVEB for VOC and NOx in tons per day for Knox County:

	2004	2014
VOC	**29.24**	**22.12**
NOx	**33.89**	**22.49**

The budget set for year "2004" above must be used if an analysis year falls between 2004 and 2013, while the budget set for "2014" must be used for analysis years of 2014 and beyond.

The conformity analysis was performed for the years 2009, 2014, 2020 and 2030, which meet the requirements for analysis years specified in 23 CFR 93.106(a)(1) of the Transportation Conformity Rule. Table 2.1 in the above section documents the results of the 1-Hour emissions budget test and demonstrates that the projected emissions are less than the required MVEB from the State Implementation Plan for each analysis year. Therefore, conformity is demonstrated under Interim Emissions Test #1.

2.2.2 Interim Emissions Test #2 – No Greater than Baseline Year 2002 Emissions Test

This test is performed by determining an estimate of the actual emissions that were present in the year 2002 (for VOC and NOx) and showing that projections of future emissions for the life of the LRTP will be less than those 2002 emissions.

An analysis was performed to determine the estimated amount of emissions present in the year 2002 for VOC and NOx using vehicle miles of travel (VMT) obtained from TDOT. The following sum of emissions from the area outside of Knox County, but within the Nonattainment Area was calculated in **~~tons per day~~** for 2002:

	2002
VOC	**27.49**
NOx	**57.29**

The conformity analysis was performed for the years 2009, 2014, 2020 and 2030, which meet the requirements for analysis years specified in 23 CFR 93.106(a)(1) of the Transportation Conformity Rule. Table 2.2 in the above section documents the results of the No Greater than Baseline Year 2002 emission test and demonstrates that the projected emissions are less than those observed in the baseline year of 2002 for each of the analysis years. Therefore, conformity is demonstrated under Interim Emissions Test #2.

2.2.3 Summary of 8-Hour Conformity Findings

Based on the quantitative emissions analysis the TPO staff has determined that the Knoxville Regional 2005 – 2030 LRTP and subsequently the KRTPO FY 2008 – 2011 TIP and LAMTPO 2008 – 2011 TIP demonstrate conformity for the 8-Hour Ozone Standard using the necessary interim 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 TEA-21) has also been demonstrated.

2.3 Statement of Conformity – PM2.5 Standard

Similar to the 8-Hour Ozone standard, there has not yet been a MVEB established for the Knoxville Region for the emissions that comprise PM2.5. The conformity rule therefore requires that an interim emissions test be chosen in the absence of a MVEB, a "No Greater than Baseline Year 2002" test was used similar to the Ozone standard.

An analysis was performed to determine the estimated amount of emissions present in the year 2002 for Direct PM2.5 and NOx using vehicle miles of travel (VMT) obtained from TDOT.

The following sum of emissions from the entire PM2.5 Nonattainment Area was calculated in **tons per year** for 2002:

	2002
Direct PM2.5	**474.22**
NOx	**30,065.3**

2.3.1 Summary of PM2.5 Conformity Findings

Table 2.3 in the section above documents the results of the revised emissions analysis compared with the 2002 baseline values. Based on the quantitative conformity analysis the TPO staff has determined that the 2005 – 2030 LRTP and the KRTPO FY 2008 – 2011 TIP demonstrate conformity for the Particulate Matter 2.5 Standard using the necessary interim 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 TEA-21) has also been demonstrated.

2.4 Overall Summary

The changes in emissions from the previous LRTP conformity determination are very minor as would be expected given the relatively small changes that were made in terms of the projects changing horizon years. The general effect of removing roadway widening projects from a horizon year is to reduce the overall vehicle miles of travel (VMT) on the system as is shown in Appendix B.

In addition, the State Implementation Plan (SIP) for the Knoxville Non-attainment Area does not contain any Transportation Control Measures; therefore, the proposed action of updating the TIP will not interfere with their timely implementation.

Chapter 3
Interagency Consultation and Public Participation

3.0 Interagency Consultation

The CDR was presented to and coordinated with the Knoxville Area Interagency Consultation Group for review and comment. A discussion on the draft CDR occurred on July 27, 2007 the following comments were received:

The revised CDR was discussed at another IAC conference call held on ????, 2007.

Appendix A contains the minutes and participant list from each IAC conference call.

3.1 Public Involvement

The KRTPO provided a 30-day comment period from July 23, 2007 to August 22, 2007. Two public hearings were held on July 23, 2007 in Knox County and on July 31, 2007 in Blount County. The public was also able to comment on the item at both the TPO Technical Committee and Executive Board meetings held on August 14 and August 22, 2007 respectively.

To further address the public involvement requirements, the amendment information and conformity determination report were posted to the KRTPO website to allow easier public access to the information. The public notices were also sent to newspapers targeting minority and Spanish-speaking audiences in addition to the regular daily papers.

3.1.1 Disposition of Public Comments

No public comments were received on the conformity determination report.

Appendix A: IAC Meeting Information

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 7/ 27/07

Background:

The Interagency Conference Call began at 2:00 pm on Friday, July 27, 2007. A set of information was previously emailed to each participant for their information.

Call Participants:

Mike Conger, TPO
Shannon Tolliver, TPO
Lynorae Benjamin, Region 4 EPA
Kelly Sheckler, Region 4 EPA
Tameka Macon, FHWA TN
Angie Midgett, TDOT
Mark McAdoo, TDOT
Marc Corrigan, TDEC
Steve McDaniel, Knox County Dept. of Air Quality Management

Discussion Items:

1.) Discussion of Knoxville LRTP and TIP Update Conformity Process/Draft Conformity Determination Report:

Mike gave a brief overview of the conformity determination that was being performed for the updated FY 2008 – 2011 Transportation Improvement Program for the Knoxville TPO. He stated that a draft conformity determination report (CDR) was already prepared, which was emailed to the IAC group one week prior to today's conference call. He stated that the primary issue was that a revised regional emissions analysis was required due to several roadway projects being delayed to a point where it became obvious that they would not be open to traffic by the time that was originally projected in the previous Long Range Transportation Plan. Mike then detailed the process that was used to complete the revised emissions analysis, which was to rely on previous methodology and to just model the impacts on vehicle miles of travel that resulted in the two affected horizon years of 2009 and 2014. He concluded by noting that the results of the revised emissions analysis showed that all required emissions tests were still passed and therefore conformity was demonstrated for the updated LRTP and TIP.

No comments on the emissions analysis procedure were received from the IAC group, however Mike noted that additional time was available for review and comment since the document had only been out for a week.

Lynorae Benjamin asked for clarification regarding whether this was intended to be a Long Range Plan conformity finding or just for the TIP. Mike stated that he was looking for guidance as to the appropriate terminology to use in the CDR with regard to whether this would be treated as a full LRTP amendment or just an action on the TIP. Kelly Sheckler noted that it would need to be an LRTP amendment and that the language in the Executive Summary of the CDR was correct in stating that conformity was demonstrated for both the TIP and the LRTP. Lynorae noted that additional language would need to be added to the draft resolution reflecting that it was applicable to the LRTP, or otherwise have a separate resolution to that effect.

2.) Discussion of Lakeway MTPO TIP Update Conformity Process:

Mike stated that he would like to receive guidance from the IAC partners regarding the coordination required with the Lakeway Area MTPO, which is also updating their TIP and is within the same ozone nonattainment area. Lynorae stated that the CDR should add language and be reflective of the Lakeway Area TIP in order to be able to have both areas' TIPs be approved for conformity. There was some discussion as to whether the Knoxville TPO's projects could move forward in the case where its TIP was adopted prior to the Lakeway Area's TIP and the possibility was not ruled out, however it would be best to avoid the situation altogether if possible by having both TIPs be adopted in similar timeframes. Mike stated that he would work with the Lakeway MTPO to determine what schedule they were currently on to have the TIP adopted.

3.) Discuss Next Steps and Timeline:

Mike stated that he planned to make some minor changes the draft CDR and also would add language for the Lakeway Area MTPO's TIP. Shannon Tolliver asked if EPA/FHWA was looking for the CDR to be included as part of a single document with the TIP or if it could be referenced in the TIP and be a standalone document. Lynorae responded that she felt that a standalone document would be appropriate in this case since the Lakeway Area MTPO would also be referencing the CDR.

Appendix B: Summary of VMT Changes

The primary impacts of the addition of the two projects occur in Knox County for the Urban Interstate facility type in terms of the travel demand outputs for vehicle miles of travel (VMT), average speeds and the resulting mobile source emissions; however the changes are very minor as noted in the table below:

Before After (Change)	**2009**	**2014**
Knox County VMT	*15,781,554* 15,763,315 (-18,239)	*17,059,882* 17,116,082 (+17,947)
Blount County VMT	*3,632,386* 3,478,043 (-154,343)	N/A
Loudon County VMT	*2,661,377* 2,669,093 (-7,716)	N/A

Appendix C: Long Range Transportation Plan Conformity Finding Approvals

U.S. Department of Transportation

Federal Highway Administration
Tennessee Division Office
640 Grassmere Park, Suite 112
Nashville, TN 37211

Federal Transit Administration
Region 4
61 Forsyth Street, S.W., Suite [illegible]
Atlanta, GA 30303

April 3, 2006

Mayor Edward Ford, III
11408 Municipal Center Drive
Farragut, TN 37922

Subject: Conformity Determination for Knoxville Long Range Transportation Plan

Dear Mr. Ford:

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) in coordination with the Environmental Protection Agency (EPA) have reviewed the 2005-2030 Knoxville Regional Long Range Transportation Plan approved by the Metropolitan Planning Organization (MPO) in April 2005. Based on our review, we find the Conformity Determination appropriate to the requirements of the Clean Air Act Amendments of 1990. Therefore, the FHWA and the FTA approves the PM 2.5 Conformity Determination for the approved 2005-2030 Knoxville Regional Long Range Transportation Plan.

The Federal agencies appreciate the work Knoxville has done to develop an active interagency consultation process as part of the conformity finding. We encourage the MPO to continue to develop the interagency consultation process, to ensure cooperation, communication and timely Federal approvals of future conformity findings.

If you have any questions regarding this approval, please contact Maureen Bluhm (FHWA) at 615-695-4096 or James Garland (FTA) at 404-562-3507. Again, thank you for your efforts.

Sincerely,

Bobby W. Blackmon

Bobby W. Blackmon
Division Administrator
Federal Highway Administration, Tennessee

U.S. Department
of Transportation

Federal Highway Administration
Tennessee Division Office
640 Grassmere Park, Suite 112
Nashville, TN 37211

Federal Transit Administration
Region 4
61 Forsyth Street, S.W., Suite 17I50
Atlanta, GA 30303

August 1, 2006

Mr. Gerald Nicely, Commissoner
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243-0349

Honorable Eddy Ford, TPO Chair
Town of Farragut
11500 Kingston Pike
Farragut, Tennessee 37922

Subject: Conformity Determination for Knoxville Regional Transportation Planning Organization

Dear Messers. Nicely, and Ford:

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 (EPA) have reviewed the Knoxville Regional Transportation Planning Organization's (TPO) amended 2030 Long Range Transportation Plan and amended Conformity determination, adopted on July 19, 2006. The Tennessee Department of Environment and Conservation, the Tennessee Department of Transportation, and Knoxville Area Transit, 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 that meets the Federal Planning Regulations listed under 23 CFR 450.322. FHWA and FTA have reviewed the TPO's amended 2030 LRTP for consistency with the Federal requirements, and have determined consistency.

Therefore, FHWA and FTA found that the LRTP and Conformity Document for the Knoxville Regional TPO meet the five primary criteria of the Transportation Conformity Rule (62 FR 43779, August 15, 1997)

- 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 Revision for the 8-hour Ozone Standard (69FR 40004, July 1, 2004) and the PM 2.5 standard (70 FR 24280).

Therefore, the FHWA and the FTA approve the amended Conformity Determination for the 8-hour ozone standard and PM 2.5 standard for the adopted Knoxville Regional 2030 Long Range Transportation Plan.

If you have any questions regarding this approval, please contact Theresa Hutchins (FHWA) at 615-781-5767 or James Garland (FTA) at 440-562-3507.

Sincerely,

Bobby W. Blackmon
Division Administrator
Federal Highway Administration
Tennessee Division Office

cc: Angie Midgett, TDOT - Planning
James Garland, FTA Region 4
Rachael White, EPA Region 4
Jeff Welch, Knoxville TPO

BUCKLE UP AMERICA

Appendix D: KRTPO TIP/LRTP Project Number Cross-Reference

	Knoxville TPO FY 2008-2011 TIP			
New number	**Old number**	**Project Name**	**Jurisdiction**	**LRTP #**
2008-001	2008-001	Alcoa Hy (SR-115/US-129), Woodson Dr to Bridge over TN River	Knoxville	6
2008-002	2008-002	Alcoa Hy (SR-115/US-129), Pellissippi Pkwy to south of Little River	Alcoa	8
2008-003	2008-003	Alcoa Hy (SR-115/US-129), North of bridge over Little River to Maloney Rd	Knoxville	40
2008-004	2008-004	Alcoa Hy (SR-115/US-129) bypass, Airport Rd to Pellissippi Pkwy	Alcoa	84
2008-005	2008-005	Alcoa/Maryville signal timing	City of Alcoa	CMP
2008-006	2008-006	Asheville Hy corridor signal timing	City of Knoxville	CMP
2008-008	2008-008	Blount County streetscape improvements	Blount County	E4
2008-009	2008-009	Blount/Sevier Rd Corridor improvements	City of Knoxville	E7
2006-010	2006-105	Boyd Station Rd	Farragut	143
2008-011	2008-011	Campbell Station Park-n-Ride lot	Farragut	Public Transportation Chapter
2008-012	2008-012	Campbell Station Rd, Jamestown to Parkside Dr	Farragut	44
2008-013	2008-014	Central Av Pk/Merchant Dr intersection improvement	City of Knoxville	CMP
2008-014	2008-015	Cessna Rd railroad improvements	Knox County	E11
2008-015	2008-016	Concord Rd, Turkey Creek to Northshore Dr	Knox County	46
2008-016	2008-017	Concord Rd/Northshore Dr roundabout	Knox County	CMP
2008-017	2008-018	Cumberland Av, Alcoa Hy to 16th Street	City of Knoxville	94
2008-018	2008-019	Ebenezer Rd/North Westland Dr	Knox County	CMP
2008-019	2008-020	Emory Rd corridor signal timing	City of Knoxville	CMP
2008-020	2008-021	Harrison Rd, Kingston St to 1,000' west	Lenoir City	65
2008-021	2008-022	I-275 Industrial Business Park Improvements	City of Knoxville	E8

New number	Old number	Project Name	Jurisdiction	LRTP #
2008-022	2008-023	I-40, I-275 to Broadway Connector	Knoxville	56
2008-023	2008-024	I-640, Broadway modifications	Knoxville	57
2008-024	2008-025	Improve railroad crossings in Knoxville	Knoxville	E10
2008-025	2008-026	James White Parkway, Chapman to Moody Av	Knoxville	105
2008-026	2008-028	Kingston Pk/Lovell Rd	Knoxville	CMP
2008-027	2006-083	Knox-Blount Greenway	Knoxville	505
2008-028	2008-029	Knoxville ITS (operations)	Knoxville	CMP
2008-029	2008-030	Lovell Rd, Gilbert Rd to Shaeffer Rd	Knox County	59
2008-030	2008-032	McFee Rd, Boyd Station Rd to 2500' south of Old Stage Rd	Farragut	61
2008-031	2008-033	Middlebrook Pk/Old Cedar Bluff	Knox	Intersection Improvement
2008-032	2008-034	Millertown Pk, Washington Pk to I-640	City of Knoxville	76
2008-033	2008-035	Millertown Pk, Kinzel Way to Norfolk Southern	Knoxville	64
2008-034	2008-036	Morrell Rd/I-40 corridor signal timing.	City of Knoxville	CMP
2008-035	2008-037	Northshore Dr/Westland	Knox County	CMP
2008-036	2008-038	Oak Ridge Hy/Ball Rd Traffic Signal	Knox County	Intersection project
2008-037	2008-039	Parkside Dr/Peters Rd Signal Timing	City of Knoxville	CMP
2008-038	2008-040	Pedestrian bridge in Alcoa	City of Alcoa	E20
2008-039	2008-041	Pellissippi Py, SR 33 to SR 73	Alcoa	70
2008-040	2008-042	Pleasant Ridge Rd, Knoxville City Limits to Merchant Rd	Knoxville	71
2008-041	2008-043	Pleasant Ridge Rd, Merchant Rd to I-640	Knoxville	71
2008-042	2008-044	Railroad crossing improvements in Lenoir City	Lenoir City	E17
2008-043	2008-045	Railroad crossing improvements-Knoxville	City of Knoxville	E30
2008-044	2008-046	Rutledge Pk/Harris Rd/Old Rutledge	Knoxville	CMP
2008-045	2006-104	Second Creek Greenway	Knoxville	E29

New number	Old number	Project Name	Jurisdiction	LRTP #
2008-046	2008-047	SR-35, SR 338 to Macon Ln	Sevier County	E18
2008-047	2008-047a	SR-321/US-11	Lenoir City	83
2008-048	2008-048	Streetscape/pavement repair in Lenoir City	Lenoir City	E13
2008-049	2008-049	Sutherland Av corridor signal timing	City of Knoxville	CMP
2008-050	2008-050	Tazewell Pk/Beverly improvements	City of Knoxville	CMP
2008-051	2008-051	Traffic Control Equipment Upgrade-Knoxville	Knoxville	CMP
2008-052	2008-052	Washington Pk, Millertown Pk to I-640	Knoxville	64, 76
2008-053	2008-053	Washington Pk, Greenway Dr to Mill Rd	City of Knoxville	64
2008-054	2008-054	Washington Pk/Millertown Pk corridor	Knoxville	CMP
2008-055	2008-055	Watt Rd, Kingston Pk to Old Stage Rd	Farragut	68
2008-056	2008-056	Weisgarber Rd, Middlebrook Pk to Nightingale Lane	Knoxville	cost overrun
2008-057	2008-057	Weisgarber Rd corridor signal timing	Knoxville	CMP
2008-058	2008-058	Western Av, Major Av to Texas Av	Knoxville	78
2008-059	2008-059	Widen and improve SR-33	Knox County	60
2008-060	2008-060	Wilcox Dr/Sevierville Rd improvements	Maryville	149
2008-061	2008-061	Bridge project cost overruns-local	TDOT	
2008-062	2008-062	Bridge replacement costs-state	TDOT	
2008-063	2008-063	Bridge Replacement-local	TDOT	
2008-064	2008-064	Bridge Replacement-state	TDOT	
2008-065	2008-065	CAC 5310 funds	CAC	208
2008-066	2008-066	Cultural & visitors center in Maryville	Maryville	E2
2008-067	2008-067	Enhancement Program projects	TDOT	
2008-068	2008-068	Highway Safety Improvement Program	TDOT	
2008-069	2008-069	IM-project cost overruns	TDOT	

New number	Old number	Project Name	Jurisdiction	LRTP #
2008-070	2008-070	IM-Project cost overruns	TDOT	
2008-071	2008-071	Interstate 3R improvements	TDOT	
2008-072	2008-072	Job Access Reverse Commute-TPO/MPC	TPO	200, 201, 207, 208
2008-073	2008-073	Job Access/Reverse Commute Grant CAC	CAC	208
2008-074	2008-074	KAT Section 5307 Transit Funds	KAT	206, 207, 200
2008-075	2008-075	National Transportation Research Center	NTRC	E6
2008-076	2008-076	NHS project cost overruns	TDOT	
2008-077	2008-077	NHS-project contingency overruns	TDOT	
2008-078	2008-078	Project Contingency Overruns	TPO	
2008-079	2008-079	Project cost overruns	TPO	
2008-080	2008-080	Purchase KAT vehicles	KAT	200
2008-081	2008-081	Purchase KAT vehicles	KAT	200
2008-082	2008-082	Purchase propane vehicles for CAC	CAC	208
2008-084	2008-084	Purchase up to 5 KAT vehicles	KAT	208
2008-085	2008-085	Purchase Vans for CAC	CAC	208
2008-086	2008-086	Purchase vehicles for CAC	CAC	200
2008-087	2008-087	Section 5309 Bus Purchase/Technology	KAT	200, 207,208
2008-088	2008-088	Section 5317 New Freedom-TPO/MPC	TPO	TDM Chapter
2008-089	2008-089	Smart Trips Program (Ridesharing)	TPO	218
2008-090	2008-090	SmartFix Guaranteed Ride Home	KAT	218
2008-091	2008-091	SmartFix KAT Capital investments	KAT	208
2008-092	2008-092	SmartFix KAT Express Service	KAT	218
2008-093	2008-093	SmartFix Marketing (phase 2)	KAT	218
2008-094	2008-094	SmartFix neighborhood connectors	KAT	218

New number	Old number	Project Name	Jurisdiction	LRTP #
2008-095	2008-095	SmartFix Smart Trips support	KAT	218
2008-096	2008-096	SmartFix TPO Evaluation	KAT	218
2008-097	2008-097	SmartFix Vanpool program	KAT	218
2008-098	2008-098	Spot Safety Improvement program	TDOT	
2008-099	2008-099	State Route 3R improvements	TDOT	
2008-100	2008-100	STP project contingency overruns-state	TDOT	
2008-101	2008-101	STP project cost overruns-state	TDOT	
2008-102	2008-102	Transit center in Knoxville	KAT	E23
2008-103	2008-103	UT Joint Institute for Advanced Materials	UT	E5

Appendix E: LAMTPO TIP/LRTP Project Number Cross Reference

Lakeway MTPO TIP/LRTP #	Regional LRTP #	Project Name	Project Description
2003	191	SR 92S, Russell Ave, George Ave, Odell Ave, Hicks Rd, Chucky Pike, Odyssey Rd	Implementation of signal coordination subsytem using radio-based communication
2059	N/A - Hamblen County Project	25E/ 160	25E interchange/ ramps w/ Hwy 160
2060	8	SR66/ I-81 Exit 4 connector	SR66/ I-81 Exit 4 connector
2061	N/A - Hamblen County Project	11E	11E intersection improvements
2062	N/A - Hamblen County Project	25E	25E interchange improvements
2063	N/A - Hamblen County Project	25E	25E interchange improvements Cove Rd/ Old White Pine Rd/ Progress Parkway area
2024	N/A - Hamblen County Project	Morris Blvd	Construction of dual left turn lane from US 11E
2065	N/A - Hamblen County Project	ITS traffic signal coordination	ITS Traffic Signal Coordination
2005	602	At Pearl Ave and at Harrington St	Addition of separate left turn lanes
2020	N/A - Hamblen County Project	Existing Subsystem	Install 6'x6' traffic monitoring loops (2 sets = 8 loops)
2021	N/A - Hamblen County Project	White Ave, Pearce Dr	Install 8-phase cabinets
2022	N/A - Hamblen County Project	McCrary Rd, E. Economy Rd	Remove from split-phase operation
2025	N/A - Hamblen County Project	Pearce Dr	Curb radii improvements
2035	N/A - Hamblen County Project		S Haun Extension (Morris Blvd to WSCC)
2042	34	Hy 341	Street Lights Hwy 341 (Roy Messer Hwy)
2004	Safety / Enhancement	SR 92S, Russell Ave, George Ave, Odell Ave, Hicks Rd	Pedestrian signal heads and pushbutton activation

Lakeway MTPO TIP/LRTP #	Regional LRTP #	Project Name	Project Description
2056	2	I-81	I-81 Exit 4 bridge/ ramp rebuild
2054	N/A - Hamblen County Project	25E	SR32 (25E)/ SR343 interchange
2055	N/A - Hamblen County Project	25E	SR32 (25E)/ College Park Dr interchange
2052	N/A - Hamblen County Project		Medical District (High St, Mcfarland, 7th North, 3rd North)
2028	N/A - Hamblen County Project	11E area	S Arterial Reliever
2044	15	11E	Intersection Improvements 11E/ Russell Av
2045	16a	11E	LED traffic signal replacement 11E (all signals)
2046	16	11E	Street Lights Hwy 11E from SR92 to Morristown City Limits/
2047	10	SR92	Street Lights SR92 from Hwy 11E to Hinchey Hollow Rd
2050	N/A - Hamblen County Project		Walters Drive Construction
3007	24	25E	Street light improvements Hy 25E from I-81 to Hwy 341
3008	35	Hy341	Street light improvements Hy 341 from Hy 113 to Hy 25E
2053	N/A - Hamblen County Project	I-81	I-81 Exit 8 ramp rebuild
2041	4	25E area	Traffic Light Hwy 25E/ SR 113
2038	11	Hy92	Traffic Signal Hwy 92 & Flat Gap Rd/ Russell St
1013	188	Black Oak Rd	Resurfacing
2043	14	11E	Intersection Improvements 11E/ George Av

Appendix K: Adoption Letters