

Knoxville Regional Transportation Planning Organization

**2005-2030
Knoxville Regional
Long Range Transportation Plan
Update**



March 2006

TPO TRANSPORTATION
PLANNING
ORGANIZATION

Knoxville Regional Transportation Planning Organization

2005-2030 Knoxville Regional Long Range Transportation Plan Update
as Amended May 18, 2006

Adopted by the Southern Rural Transportation Planning Organization on March 21, 2006

Adopted by the TPO Executive Board on March 22, 2006 and amended May 18, 2006

The 2005-2030 Knoxville Regional Long Range Transportation Plan covers the following counties in East Tennessee: Anderson, Blount, Jefferson, Knox, Loudon, Sevier and a portion of Cocke. 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 (MKA), Knoxville Commuter Pool, Knox County Transit (formally Knoxville-Knox County Community Action Committee (CAC), 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

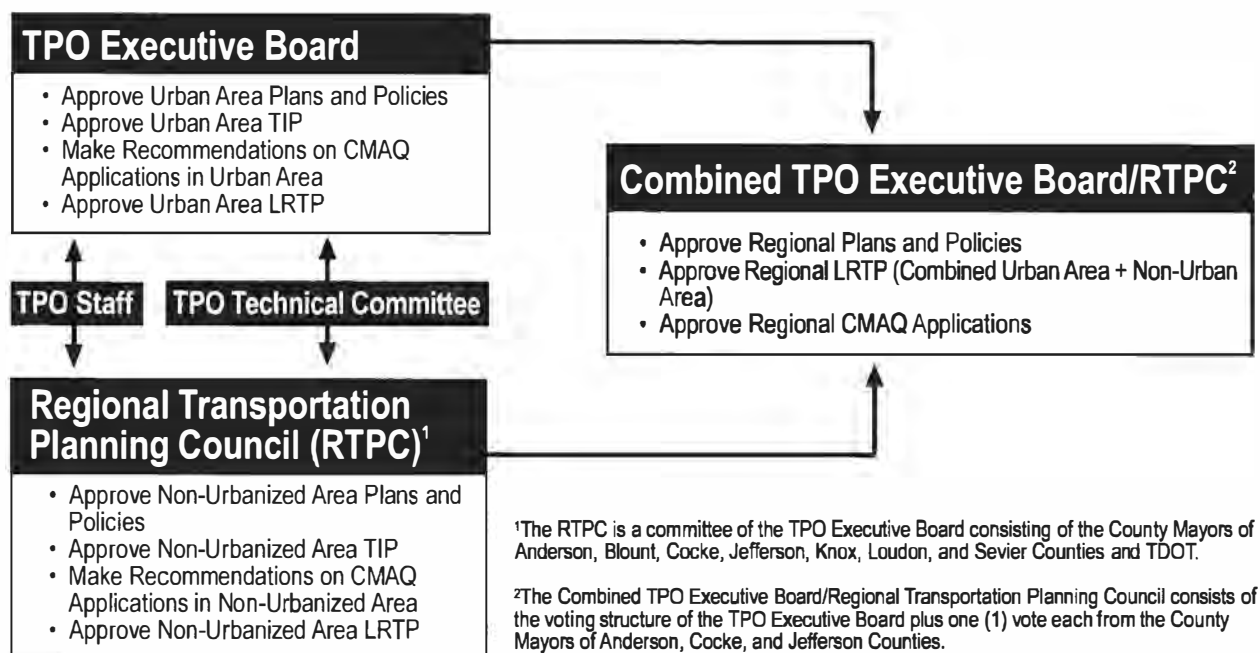
Administration (FHWA) and Region 4 of the Federal Transit Administration (FTA). Several special interest groups, such as the Urban Transportation Issues Committee (UTIC), Title VI Working Group, and Bicycle Advisory Committee were created to provide feedback to the TPO on transportation related issues.

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 in February of 2002 and included only the TPO Planning Area and a finding of conformity was made by FHWA, FTA, and EPA on April 22, 2002.

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 (designated July 28, 2004). 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

Figure 1: Relationship between TPO Executive Board and Regional Transportation Planning Council

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 Southern Rural Transportation Planning Organization (RTPO). The RTPO consists of Anderson, Blount, Cocke, Hamblen, Jefferson, Knox, 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 (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, officials from jurisdictions within the Region, 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, 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 Systems Plan
- McGhee Tyson Airport Master Plan
- Tennessee State Airport Systems Plan
- Tennessee Statewide Rail Plan
- Tennessee Transit Plan

The Long Range Transportation Plan addresses all modes of transportation associated with streets and highways, public transportation, bicycles, pedestrians, rail, air, maritime, and freight and goods movement and supports integration 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 two 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.

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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). Federal transportation planning regulations require that the existing 2005-2030 Knoxville Regional Long Range Transportation Plan, which was adopted for the Knoxville Ozone Non-Attainment Area in April 2005, be updated by April 5, 2006 to show air quality conformity determination for PM 2.5 standards and to plan for new non-attainment areas not included in the original Plan.

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 air quality conformity determination for the new PM 2.5 standards was performed by the TPO for those areas in non-attainment for PM 2.5.

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.

The 2005-2030 Knoxville Regional Long Range Transportation Plan Update includes the same background information and existing conditions as the original Plan

since only one Census Block was added to the Study Area. Chapter 1: Introduction; Chapter XII: Air Quality-Transportation Conformity; Chapter XIII, Financial Analysis; Chapter XIV: Public Involvement; and Chapter XV: Title VI Assessment were updated to reflect the new air quality conformity analysis and changes to the list of highway and non-highway projects. Table 8: List of Regional Highway Projects; Table 9: List of TPO Planning Area Highway Projects; Table 9a: List of Congressional Earmarks; and Table 10: List of TPO Planning Area Non-Highway Projects were also updated, as well as any accompanying maps.

Future Long Range Transportation Plan Updates and Amendments

The TPO Planning Area component of the Long Range Transportation Plan must be updated on a four-year cycle according to current federal transportation planning regulations. However, due to federal air quality conformity standards, the next update will be completed in June of 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, RTPC, 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 14-day comment period prior to adoption. The TPO Technical Committee, Southern RTPO, and Executive Board will

also accept comments at their public meetings. The Technical Committee, Southern RTPO, 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 Plan or amendment to the Southern RTPO and Executive Board at a public meeting. The Southern RTPO and Executive Board will then act to approve, reject, or defer approval at a public meeting.

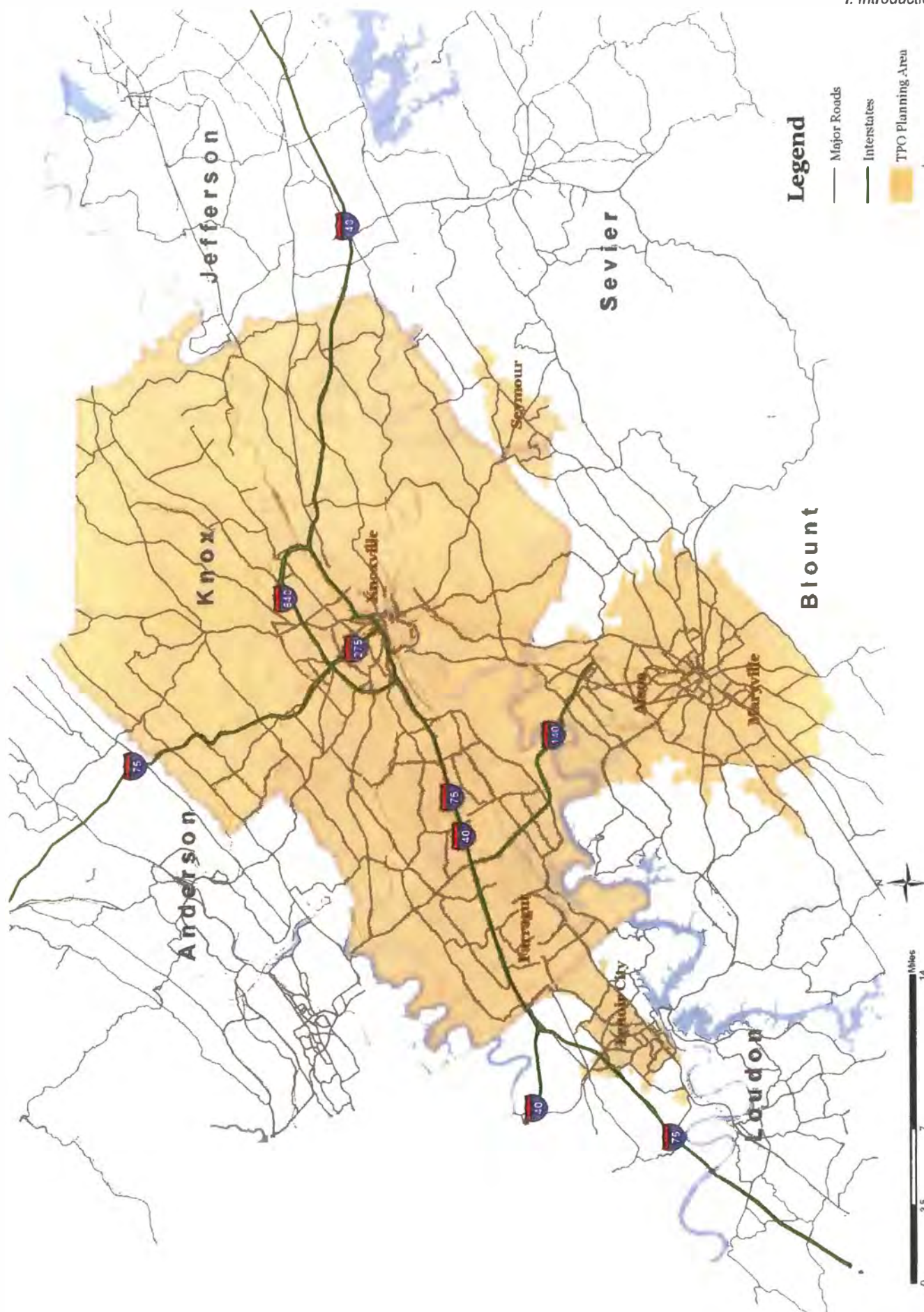
The Plan or amendment adopted by the TPO Executive Board that requires an air quality conformity determination is not effective until FHWA and FTA, in consultation with EPA, give final approval. These approvals may require up to 45 days from the date of submission to these agencies.

Highway Project Selection Process

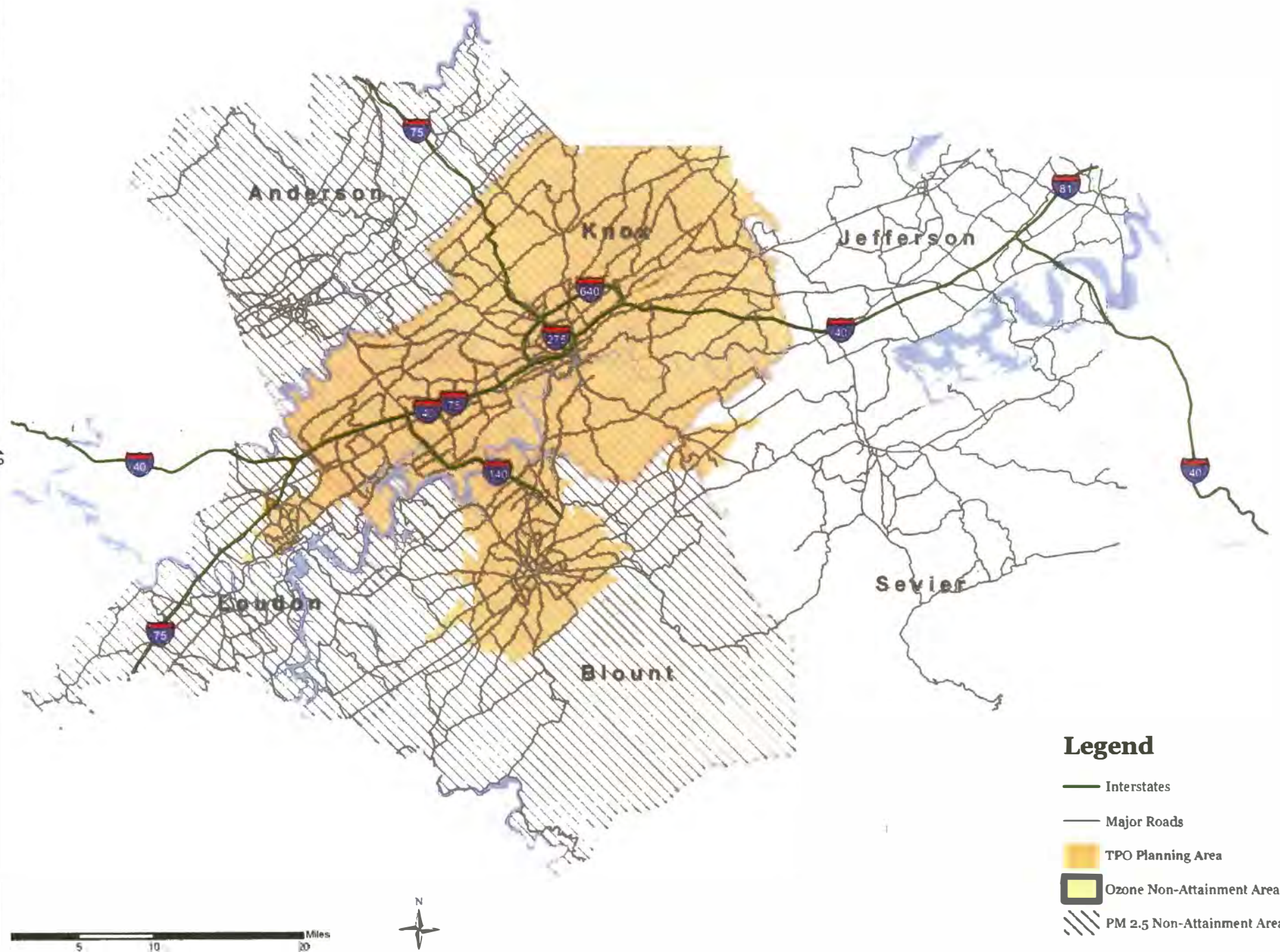
The projects listed in this Plan were evaluated based on the projects ability to meet the goals and objectives of this Plan, including questions that emphasize system maintenance, system efficiency, environmental quality, mobility options, regional approach, financial investments, and safety and security (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. The solicitation was advertised in all the local papers as well as posted on the TPO's webpage (see Chapter XIV).

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 on page 50 of this Plan.

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 Knoxville Regional Long Range Transportation Plan because they have a substantial impact on the transportation system and assist in planning for the future transportation system. 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 17.8%, with Sevier County experiencing the greatest percentage increase. The population of the Knoxville Region in 2002 was 765,806, an increase from 2000 of 2.5%.

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 56.2% 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

Chart 1: Knoxville Region Population Change 1970-2002

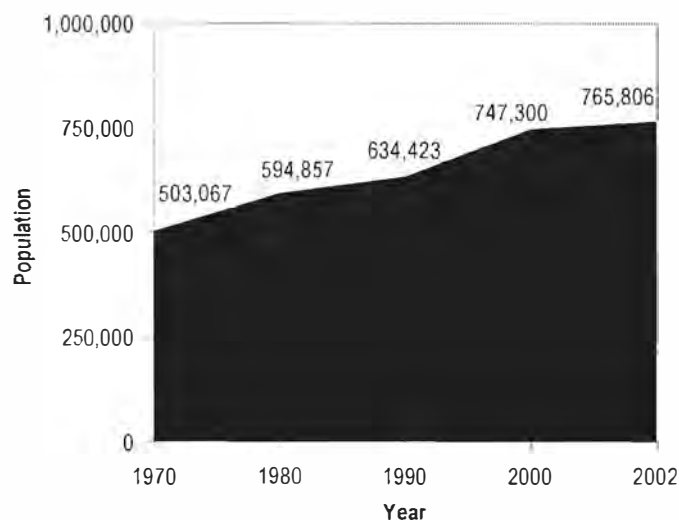


Chart 2: Knoxville Urban Area Population Change 1980-2004

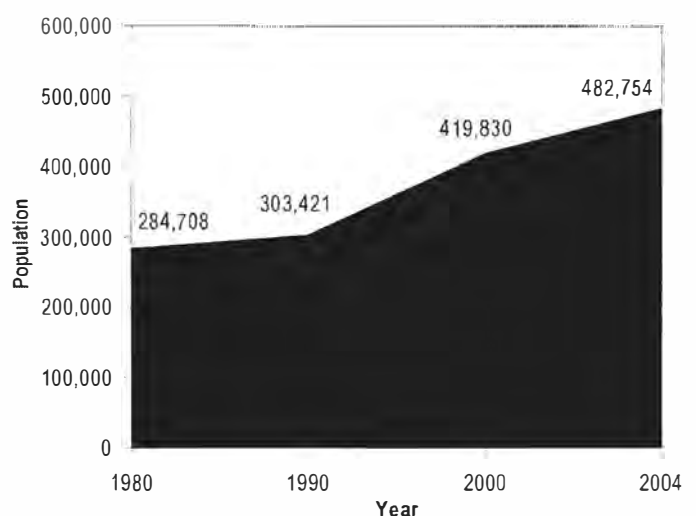


Table 1: Knoxville Region Historical Population Trends by County

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

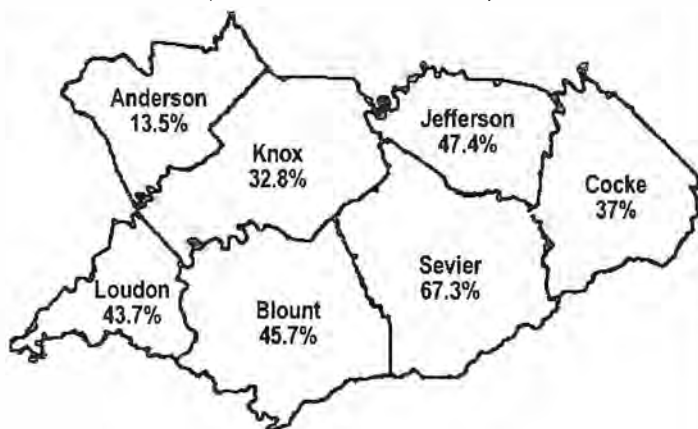
¹ 2002 population data from the 2002 U.S. Census of Population and Housing

a result of the modified boundaries, the population of the Knoxville Urban Area in 2004 was 482,754.

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.

Map 3: Knoxville Region 2002-2025 Projected Increase in Population Percentage

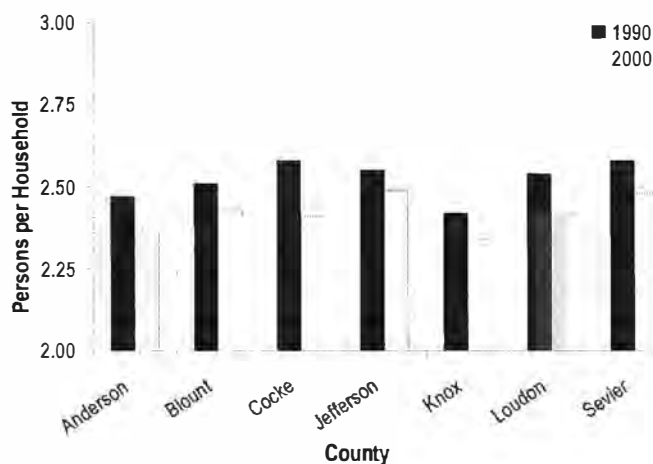
(Woods & Poole Economics, Inc)



Households

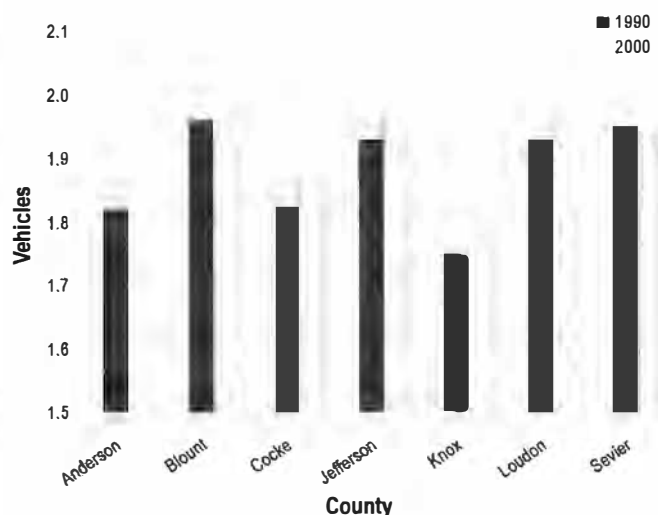
In response to the increase in population, the number of housing units in the Knoxville Region has increased 24.8% from 273,050 in 1990 to 340,641 in 2000. The average household size decreased during this same time period, with the greatest decrease in Cocke County, where the average household size dropped from 2.58 persons in 1990 to 2.41 persons in 2000 (see Chart 3).

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

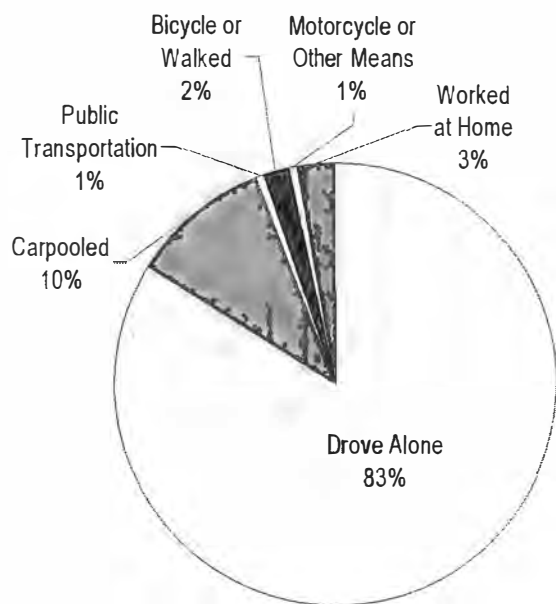
In 2000 there were 357,080 people employed within the Knoxville Region, an increase from 1990 of 19.1%. Blount, Jefferson, and Sevier Counties have experienced the greatest percentage increase in employment since 1990, although Knox County continues to lead the Region with 187,717 employees in 2000. 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 who 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



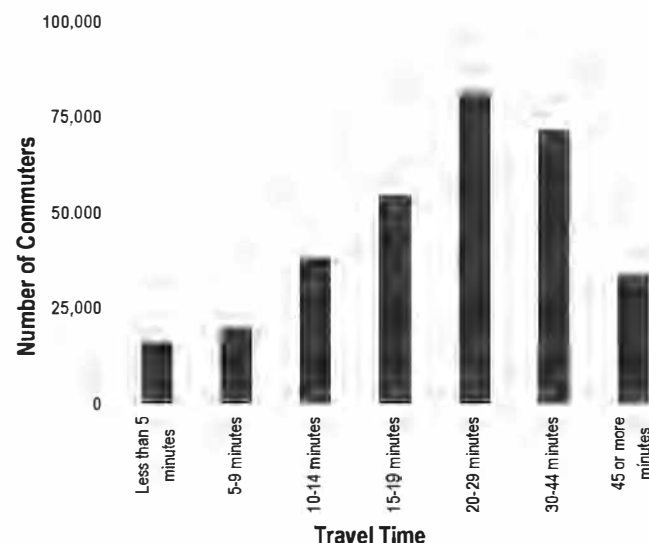
Throughout the Knoxville Region, commuting times are becoming longer as people live further away from their jobs and congestion on area roadways increases (see Table 2). Workers in Cocke County commute an average of 28.5 minutes one way to work, the longest commute time in the Region, while workers in 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 (see Chart 6).

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



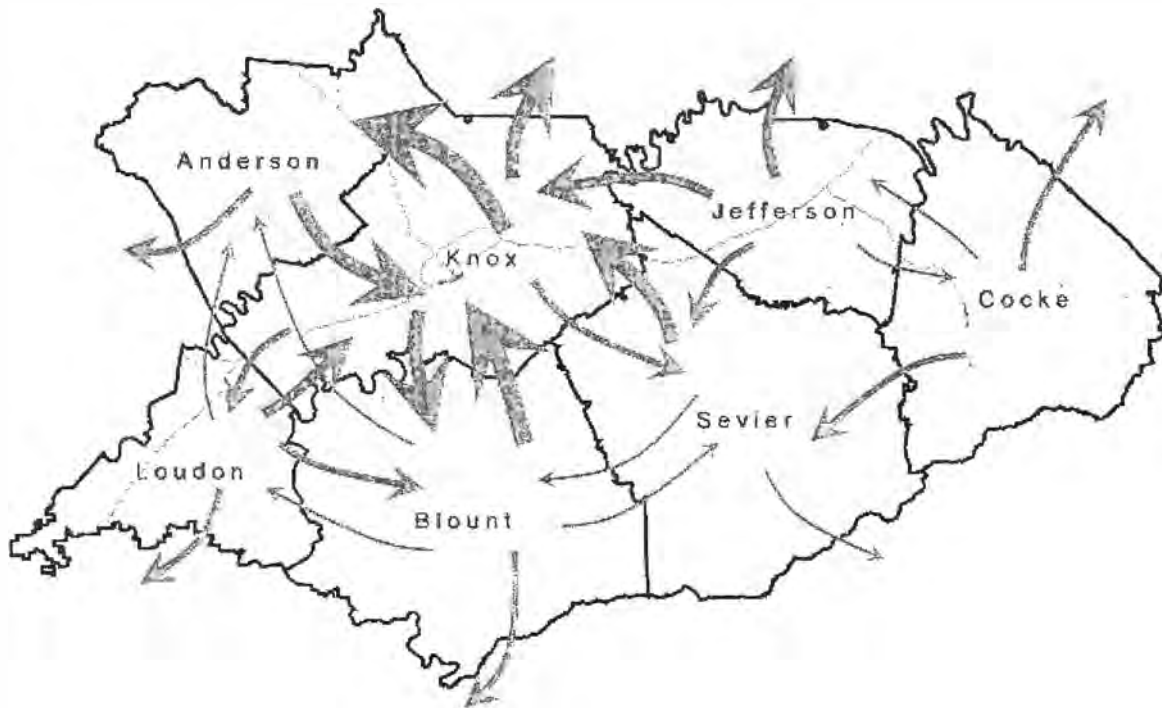
In 2000 the number of people who commuted more than 45 minutes to work increased by 36.12% from 1990. Of all commuters, 30.9% leave home between the hours of 5:00 a.m. and 6:59 a.m., with 30.8% leaving home between the hours of 7:00 a.m. and 7:59 a.m..

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 who 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 has a nationally recognized public transportation system (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, expressways, 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.

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 1993 and 2003, 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.

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, 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 5.3 million passenger trips per year.

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

ACCESS AND FUNCTION

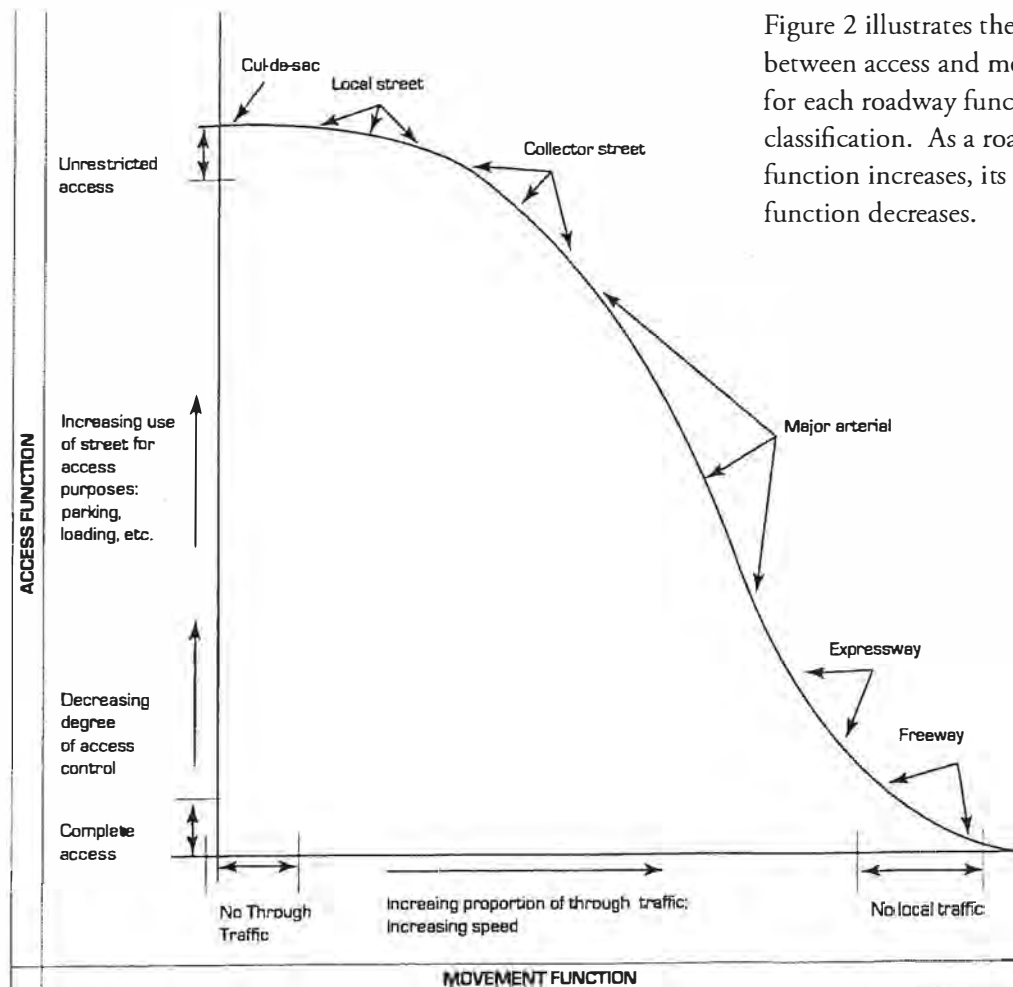


Figure 2 illustrates the relationship between access and movement for each roadway functional classification. As a road's movement function increases, its access function decreases.

Source: Transportation Planning Handbook, page 391

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

Location	Municipality	1993	2003	% Increase
I-40/75 at Papermill Road	Knoxville	123,610	152,129	23.1%
I-40 at James White Parkway	Knoxville	91,612	102,833	12.3%
I-640 north of Western Ave	Knoxville	57,232	75,954	32.7%
I-75 south of Callahan Road	Knoxville	50,303	66,337	31.9%
Alcoa Highway north of Hunt Road	Alcoa	41,201	54,254	31.7%
I-75 at SR 72	Loudon Co.	33,864	47,035	38.9%
US 441 south of US 321	Pigeon Forge	46,253	44,885	-3.0%
I-81 northeast of I-40	Jefferson Co.	24,149	35,458	46.8%
Kingston Pike at Campbell Station Rd	Farragut	23,589	30,336	28.6%
SR 62 north of Knox County line	Oak Ridge	24,673	29,984	21.5%
I-40 south of SR 73	Cocke Co.	17,837	24,767	38.9%
SR 321 east of I-75	Lenoir City	24,567	24,409	-0.6%
Asheville Hwy	Knox County	20,873	23,260	11.4%
Chapman Hwy south of SR 35	Sevier Co.	14,298	18,407	28.7%
Clinton Hwy south of SR 170	Anderson Co.	18,042	16,497	-8.6%
US 321 east of Tuckaleechee Pike	Blount Co.	9,761	12,514	28.2%
Broadway Downtown Maryville	Maryville	7,284	10,922	50.0%

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.

Railroad

There are approximately 370 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 (K&HR) 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 K&HR 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.

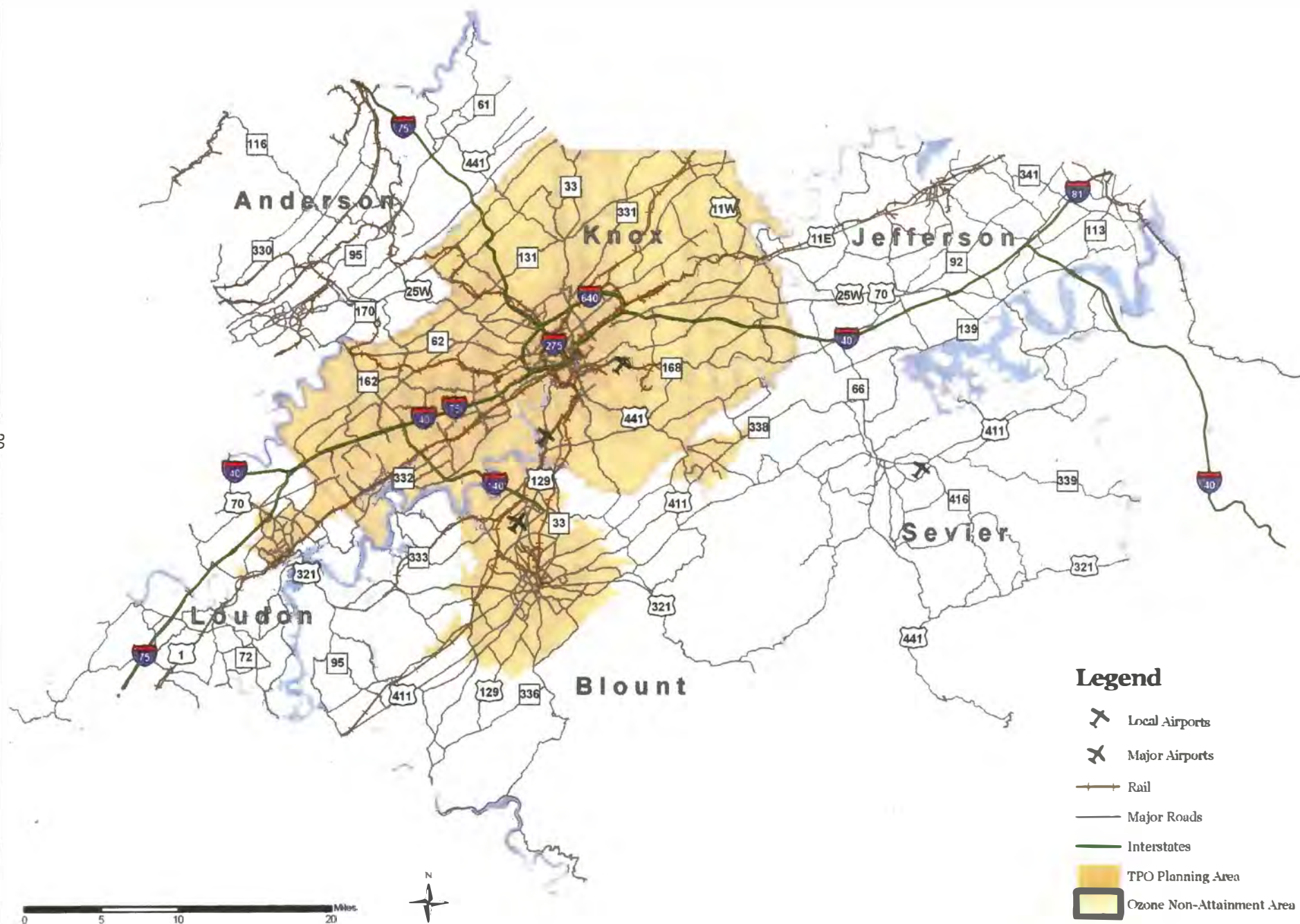
McGhee Tyson Airport

The majority of air cargo, commercial passenger, and general aviation air service in the Knoxville Region passes through McGhee Tyson Airport, located in Blount County. McGhee Tyson Airport is serviced by nine 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. Sky Ranch 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 seven federal planning factors developed under TEA-21 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.

Goal	Objective	Planning Factors Addressed
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 and Security	• Work with state and local agencies and transportation providers to develop a transportation system that is safe and secure for all citizens.	• Increase safety and security 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.

Goals And Objectives Addressed

The following chart identifies the 2005-2030 Knoxville Regional Long Range Transportation Plan 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 and Security • Work with state and local agencies and transportation providers to develop a transportation system that is safe and 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 and Security • Work with state and local agencies and transportation providers to develop a transportation system that is safe and secure for all citizens.

Plan Element	Goals and Objectives Addressed
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 and Security • Work with state and local agencies and transportation providers to develop a transportation system that is safe and secure for all citizens.

Plan Element	Goals and Objectives Addressed
Congestion Management System	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 and Security • Work with state and local agencies and transportation providers to develop a transportation system that is safe and secure for all citizens.
Safety Planning	System Efficiency • Minimize traffic congestion. Mobility Options • Facilitate linkages among modes of transportation. Safety and Security • Work with state and local agencies and transportation providers to develop a transportation system that is safe and secure for all citizens.
Air Quality Transportation Conformity	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.

Plan Element	Goals and Objectives Addressed
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 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 goods and people 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.

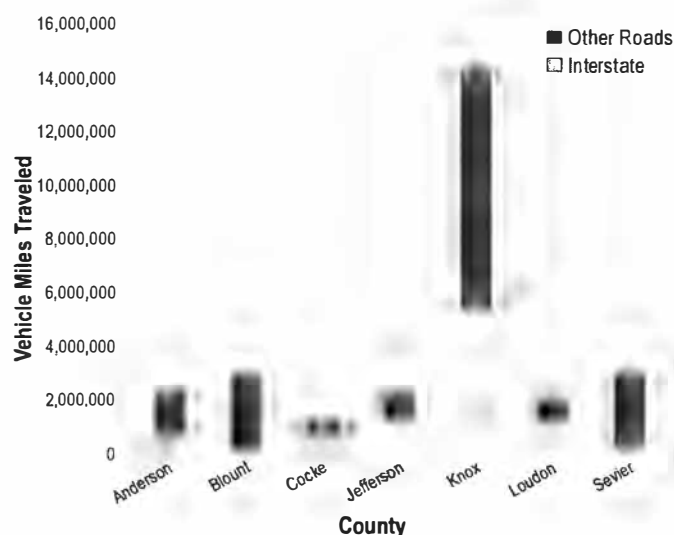
Existing Conditions

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 Plan is expected to be completed during the summer of 2005.

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 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.

TDOT is currently conducting a modified Context Sensitive Solutions (CSS) process for the design of SR 475 Knoxville Parkway (formally known as the Knoxville Regional Beltway Orange Route). The Knoxville Parkway currently consists of 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. A group of 19 members made up of government representatives, special interest groups, and community representatives known as the Knoxville Regional Parkway Design Resource Team will make a recommendation to the Commissioner of TDOT concerning the design of the facility by the spring of 2006.

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 as soon as legal conjunctions are settled and upon completion of environmental documents.

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.

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, and improving

Middle Creek Road to a 4 lane divided highway from US 411 in Sevierville to US 321/ US 411 in Pigeon Forge.

\$1 million in federal dollars have been earmarked by Representative John J. Duncan, Jr. for the construction of the Tuckaleechee Heritage Museum in Townsend.

Issues

The non-attainment designation for ground level ozone for Anderson, Blount, Jefferson, Knox, Loudon, Sevier and a portion of Cocke Counties as well as the non-attainment designation for fine particulate matter (PM 2.5) for Anderson, Blount, Knox, Loudon, and a portion of Roane Counties 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.

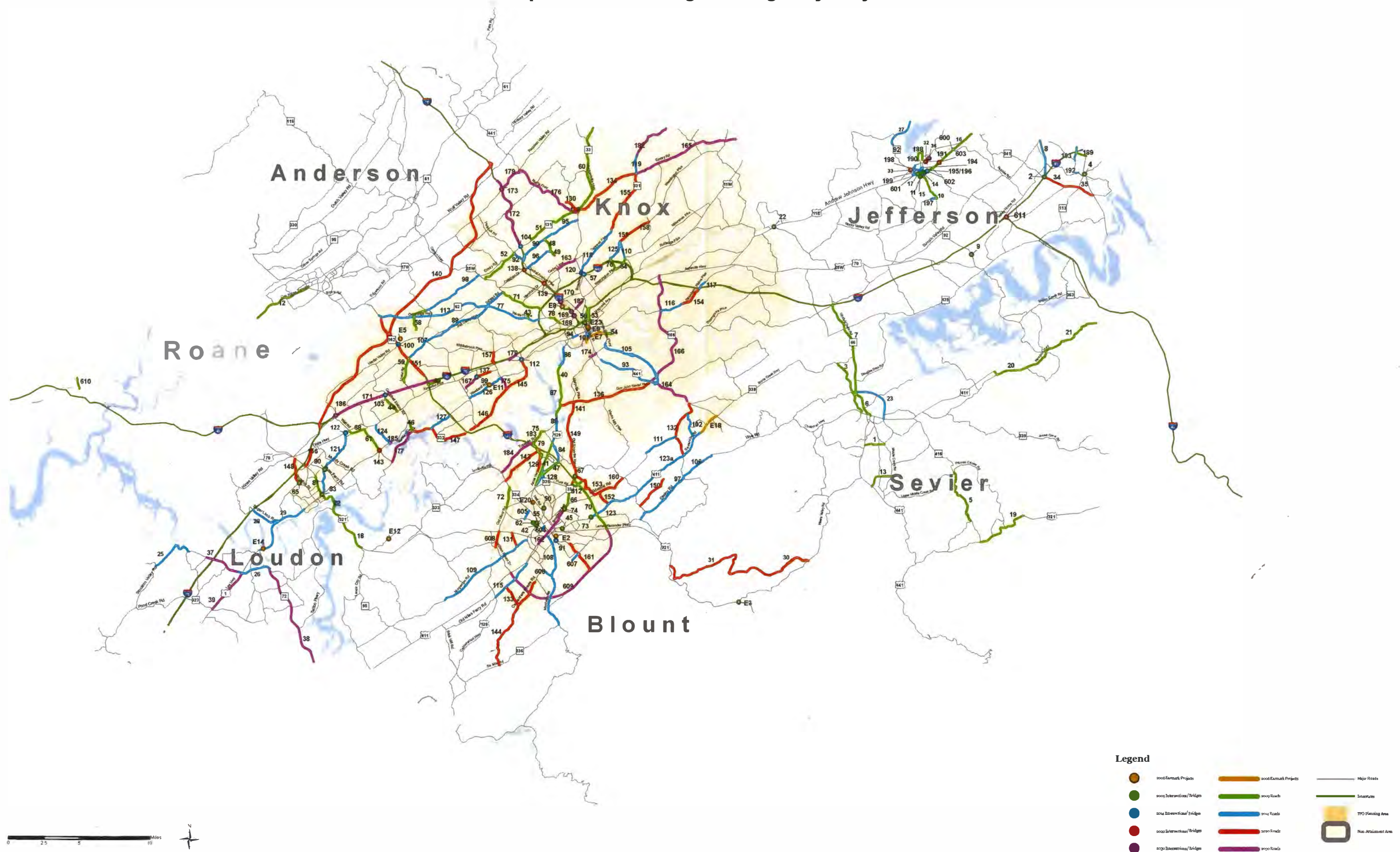
Objectives and Proposed Actions

The Long Range Transportation Plan 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, and 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 Southern Rural Transportation Planning Organization (RTPO).

Planned Projects

Table 8 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

Map 6: Knoxville Regional Highway Projects



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 XV.

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 XII.

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 10-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 re-think 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)

ETHRA provides public transportation to residents living in the 16 counties of East Tennessee. Their goal is to provide affordable, safe, quality, dependable transportation to citizens of a 16-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. Hours of service are Monday through Friday from 8:00 a.m. to 4:30 p.m.. It is preferred that trips be reserved 48 hours in advance. The

cost is \$1.50 per trip, \$3.00 round trip. An additional \$1.50 is charged for every county line crossed. ETHRA has 85 vehicles of which approximately 50 operate throughout the Knoxville Region. ETHRA served over 200,000 passengers in fiscal year 2004.

University of Tennessee Commuter Pool and Tennessee Vans

The Knoxville Commuter Pool (KCP) is a 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 regional commuter van pool service that provides minivans and 15-passenger vans 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 116 vans with 75 different organizations throughout the Region. Over 1,300 individuals are served creating 650,000 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 five 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 930,000 passenger trips per year.

Pigeon Forge Fun Time Trolley System

The Pigeon Forge Fun Time Trolley System provides service throughout the City of Pigeon Forge with connections to Dollywood and the Gatlinburg Welcome Center. The System handles approximately 692,000 passenger trips per year.

Sevierville Trolley System

In spring 2005, Pigeon Forge and Sevierville will be launching a cooperative transit system that will provide integrated service to both cities. The Pigeon Forge Fun Time Trolley system will continue to operate as it has in the past, with the only change being an extension to the north loop that will now provide 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 will fully link the service between the two cities. The

proposed Phase 2 of the cooperative transit service will link the Sevier County Courthouse to the new Sevierville Events Center development north on SR 66 and will incorporate a second fleet of alternatively fueled vehicles to help confront air quality issues in the Region. This phase of the cooperative service is scheduled to come on line in spring 2007.

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 14 passenger mini-buses. Service is provided six days a week, Monday through Saturday, 8:00 a.m. to 5:30 p.m. Mini-buses will pick up passengers and transport them anywhere within the Oak Ridge city limits for \$1.50 per one-way trip. In 2004, the system served approximately 7,000 riders.

Existing or Committed Studies, Plans, Programs, and Projects

Regional Transportation Alternatives Plan (RTAP)

The purpose of RTAP was to identify transportation corridors that will support alternative transportation modes by the year 2030. The initial study area included 10 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;
- 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 cost

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 10-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, it does contain a uniquely 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 upscale, attractive, frequent stations and 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 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 likely 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 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;
- 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,	Vehicles	Total
	Stations (Millions)	(Millions)	(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 so much on the automobile. It was a desired goal of NC1V that a system be developed to provide 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.

Recently, TDOT contracted with a consultant to prepare an issues paper on the possible benefits of implementing an RTA in the Knoxville Region. The TPO has submitted

a request for federal funding to prepare a more detailed plan if the initial issues paper recommends that the Region pursue an RTA.

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 is the largest and could most easily 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 that 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 have 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 them to participate in regional activities;
- Advocate for a regional land use strategy that supports regional transit and promotes transit use;
- Improve the air quality of the Region.

In addition, the following studies should be considered:

- TDOT to finalize an issues paper on the benefits of creating a RTA;
- A more detailed TPO study of the RTA;
- 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.

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. While there is not a statewide plan for bicycle transportation, TDOT is incorporating bicycle elements into the Statewide Long Range Multi-Modal Transportation Plan. A goal of the Plan is to meet alternative transportation needs and provide recreational activity. The Plan will include a proposal to connect various sections of the State Bicycle Route System and to connect population and activity centers.

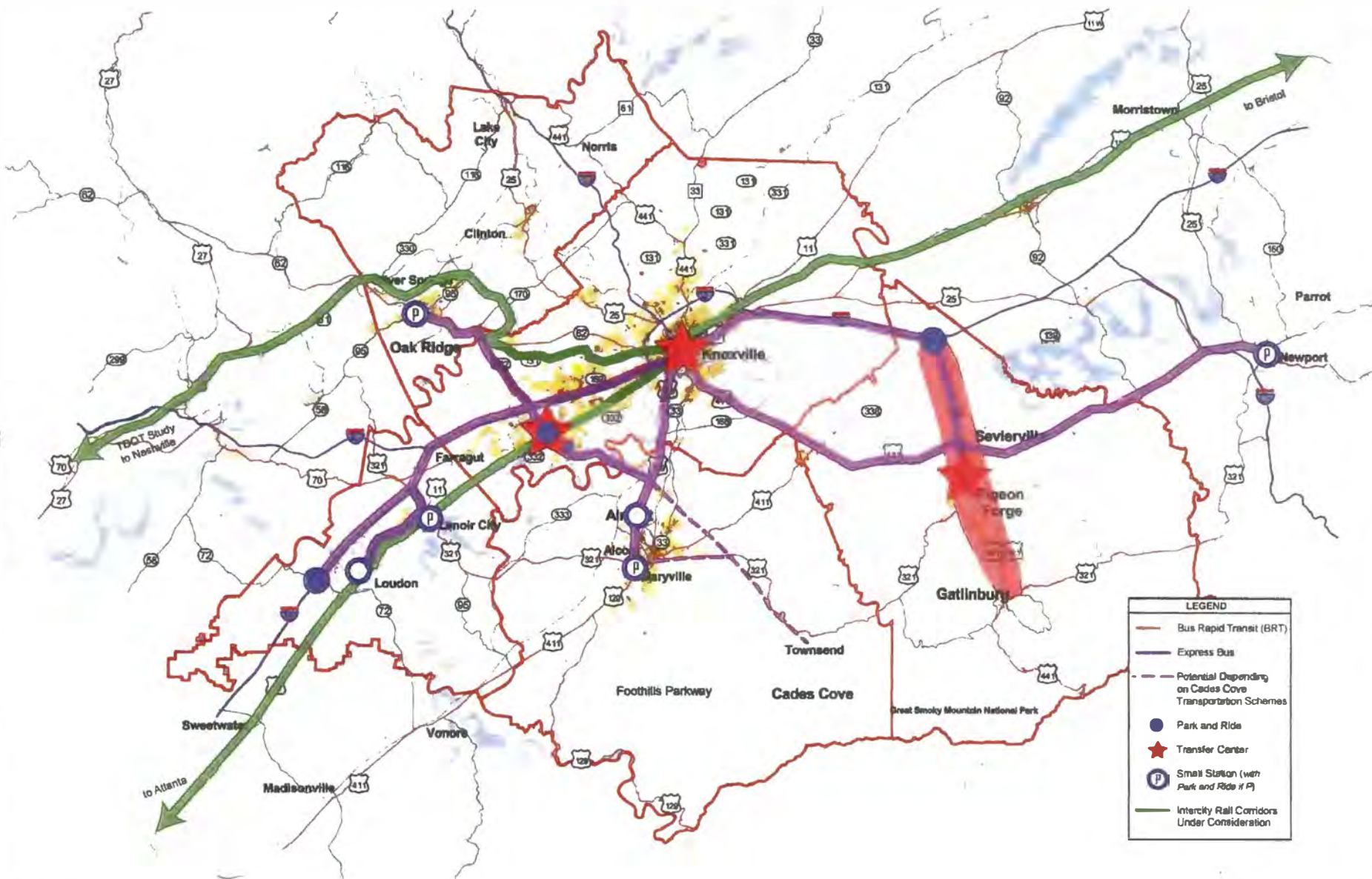
Issues

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.

Map 7: Regional Transportation Alternatives Plan



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 alongside a street and a greenway, which can either be paved or unpaved and is usually wider than a sidewalk, allowing for bicyclists and pedestrians to coexist. While many greenways are relatively short and are intended for recreational purposes, some 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 within 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 17 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 11 different dedicated segments that provide trails for bicyclist, walkers, and hikers.

The Townsend Greenway in Blount County is a 5-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 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 will include an element 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 and the separation of land uses combined with a lack of pedestrian facilities or limit 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

The Emory Valley Greenway in Oak Ridge, when completed, will provide a connection between downtown and residential areas near Melton Hill Lake.

The Middle Creek Road Greenway in Sevier County will consist of 6.6 miles of additional greenways and link Dollywood with the City of Sevierville. The Downtown Greenway, East Prong Greenway, Burden Hill Greenway,

Park Road Greenway, and Old Knoxville Highway Greenway are proposed to add about 6 additional miles.

Regional Freight And Goods Movement

Background

The economy has always played a key role in determining the growth of the freight industry. 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. Trucks have the greatest range of accessibility since they can operate on most roads and are not limited 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 manpower.

Existing Conditions

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.

Trucking

The trucking industry is solely responsible for handling 70% of the more than 15 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. 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 (1998)

FHWA Office of Freight Operations



Nationwide, vehicle miles traveled for heavy duty freight trucks have increased 90% since 1980. Today, as much as 30% of the average daily traffic on portions of the rural interstate throughout the Knoxville Region is attributed to truck traffic.

There are over 100 trucking companies that have terminals or provide freight services within the Knoxville Region.

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 1990s, however, it has retained limited rail switching operations between Knoxville & Holston River Railroad trains and CSX trains. Today, the majority of the Coster Shop Yard is being redeveloped into an industrial park.

Norfolk Southern controls about 275 miles of railroad track throughout the Region. The Norfolk Southern railroad network within the Region converges on the John Sevier Yard in East Knox County, which handles the major rail car switching in the Region for Norfolk Southern. Some minor rail switching is done at a yard just north of Downtown Knoxville. From the John Sevier Yard, Norfolk Southern tracks extend to the west, handling 20 to 25 trains per day, connecting with the major north-south railroad in Harriman; to the south, handling about 20 trains per day, providing connections to Chattanooga and Atlanta; and to the northeast, handling 30 to 35 trains per day, providing connections into Virginia. A rail line splits off this northeast line providing connections to North Carolina through Cocke County. Regional spurs to Jellico and Middlesboro provide connections to the coal fields and handle 6 to 12 trains per day. An industrial spur to ALCOA, Inc. serves about 40 to 60 rail carloads on less than 5 trains per day. The major north-south rail movements for Norfolk Southern occur on their tracks to the east of the Region. The railroad network throughout the Knoxville Region primarily handles major rail movements between this north-south line and the connections to the Northeast and East. All of Norfolk Southern's rail lines are engineered to handle freight train speeds of 50 mph.

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. This line handles about 30 trains per day, most of which are through trips handling coal, automobiles, intermodal containers, and increasingly more retail merchandise. The CSX railroad network includes industrial spurs to Bull Run Steam Plant, Oak Ridge National Laboratory, and ALCOA, Inc. CSX operates a switching yard located alongside the University of Tennessee.

The Knoxville & Holston River Railroad (K&HR) Company operates 19.2 miles of railroad track that provides rail spur connections from Norfolk Southern railroad tracks near the University of Tennessee to the Forks of the River Industrial Park. Trains make two daily round trips, transporting approximately 2,100 tons of freight annually between the Forks of the River Industrial Park and the Coster Yard, where rail cars are switched to CSX trains. Map 9 identifies the Regional rail network.

Maritime

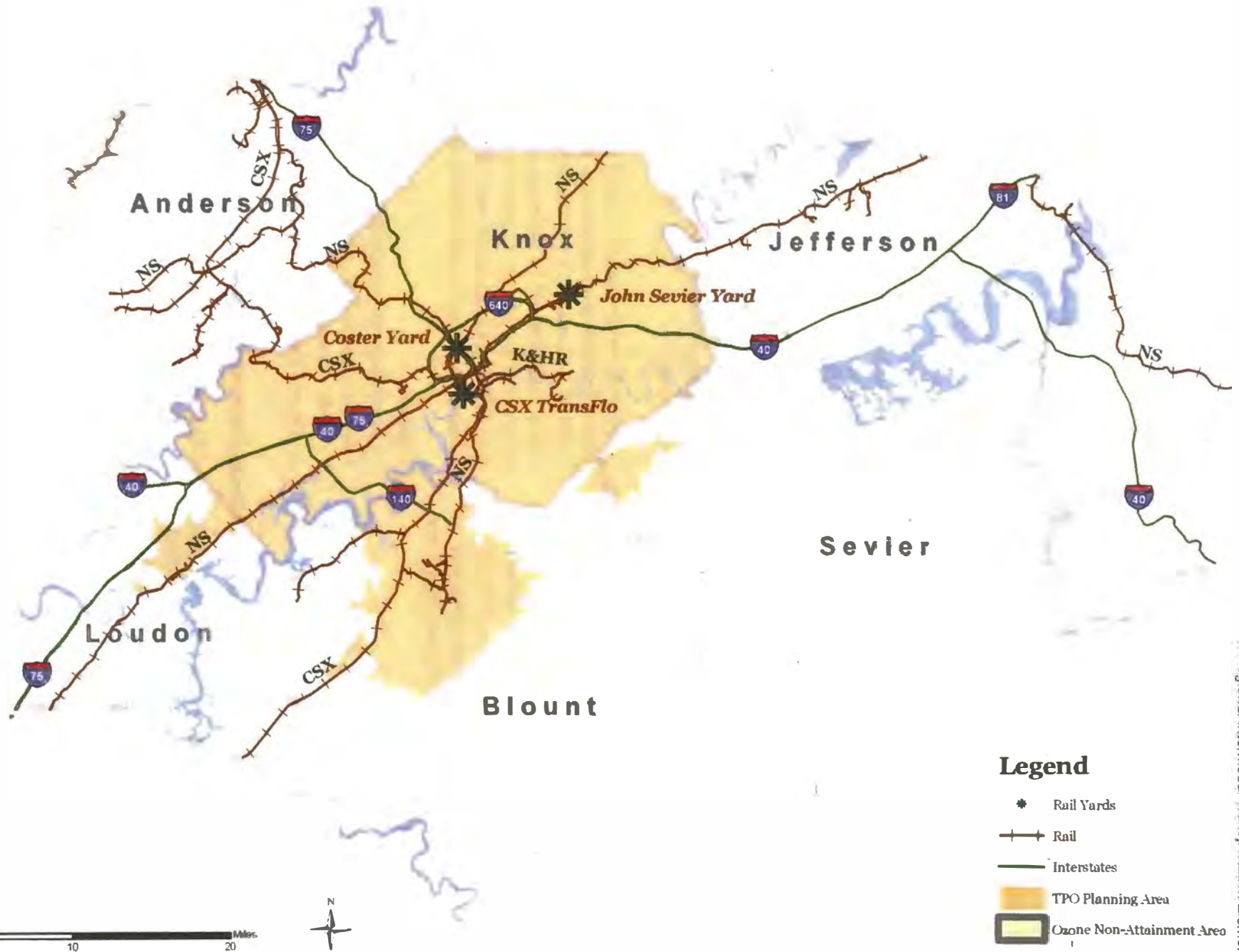
Commercial navigation of the Tennessee River System is made possible by the Tennessee Valley Authority's (TVA) system of dams and locks. The dams create a system of reservoirs that control the current and the depth of water, maintaining a draft depth of at least nine feet. Locks are located at the dams 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.

Fort Loudoun Lock has a barge capacity of one standard barge (195 feet by 35 feet) although the size of the lock is 360 feet by 60 feet. In 2003, 551 barges passed through the lock carrying 565,006 tons of freight, all of which either originated or was destined for Knox County. Barge traffic destined for Loudon County arrives at terminals before reaching the lock. Barge traffic has declined since 2000 when 902 barges carrying 819,467 tons of freight utilized the lock (see Table 6).

Table 6: Barge Activity at Fort Loudoun Lock

Year	Total Vessels	Barges	Freight Tonnage
1997	3,125	525	535,375
1998	3,287	642	619,021
1999	3,087	676	636,791
2000	3,251	902	819,467
2001	2,461	745	682,510
2002	2,805	591	569,785
2003	2,270	551	565,006

Map 9: Knoxville Regional Rail Network



Melton Hill Lock is located on the border of Loudon and Roane Counties and provides commercial navigation to the Clinch River through a 400-foot by 75-foot lock. Melton Hill Lock handles considerably less barge tonnage, 3,810 tons on 24 barges in 2003, however, it 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. Prior to the U.S. Corps of Engineers closing the Lock in August 2003, 91 barges carrying 19,336 tons of freight used it in 2002. The Little Tennessee River/Tellico Lake is connected to the Tennessee River by a canal.

The Fort Loudon Terminal Company is located a mile south of Fort Loudoun Dam and can handle the transfer of bulk goods between barge, rail, and truck. The Tate & Lyle Manufacturing Plant in Loudon County (formally A.E. Staley) is one of the larger users of barge navigation in the Region. The Tellico Public Use Terminal is a public terminal located on Tellico Lake that can handle barge to truck or truck to barge transfers. Map 10 identifies locks and port terminals in the Region.

Air

In 2003, approximately 1.4 million passengers arrived or departed through McGhee Tyson Airport passenger terminals, 0.25% fewer than in 2002. Across Tennessee and nationwide, the number of commercial passenger enplanements has decreased since 2000, primarily due to the terrorist attacks in 2001.

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. Air cargo, the combined

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

Air cargo has been the most dynamic growth sector of the air transportation industry since the 1980s. In 2004, a total of 39,345.8 tons of air cargo was handled at the Airport, of which 97% was freight. United Parcel Service, FedEx, and DHL Express control the majority of the air freight market and the United States Postal Services (USPS) and banks and businesses that contract with the USPS control air mail. In comparison, the Nashville International Airport handled approximately 60,000 tons of air cargo in 2003 and the Memphis International Airport, one of the largest air cargo hubs, handled over 8.8 million tons.

Table 7 shows historical, current, and forecasted air cargo operations at McGhee Tyson Airport. The terrorist attacks in September 2001 had a major impact on the air industry, accounting for the stark decrease in air cargo activity in the following years.

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. Sky Ranch Airport handled less than 5,000 aircraft operations each year. Map 11 shows the locations of airports throughout the Region.

Pipeline

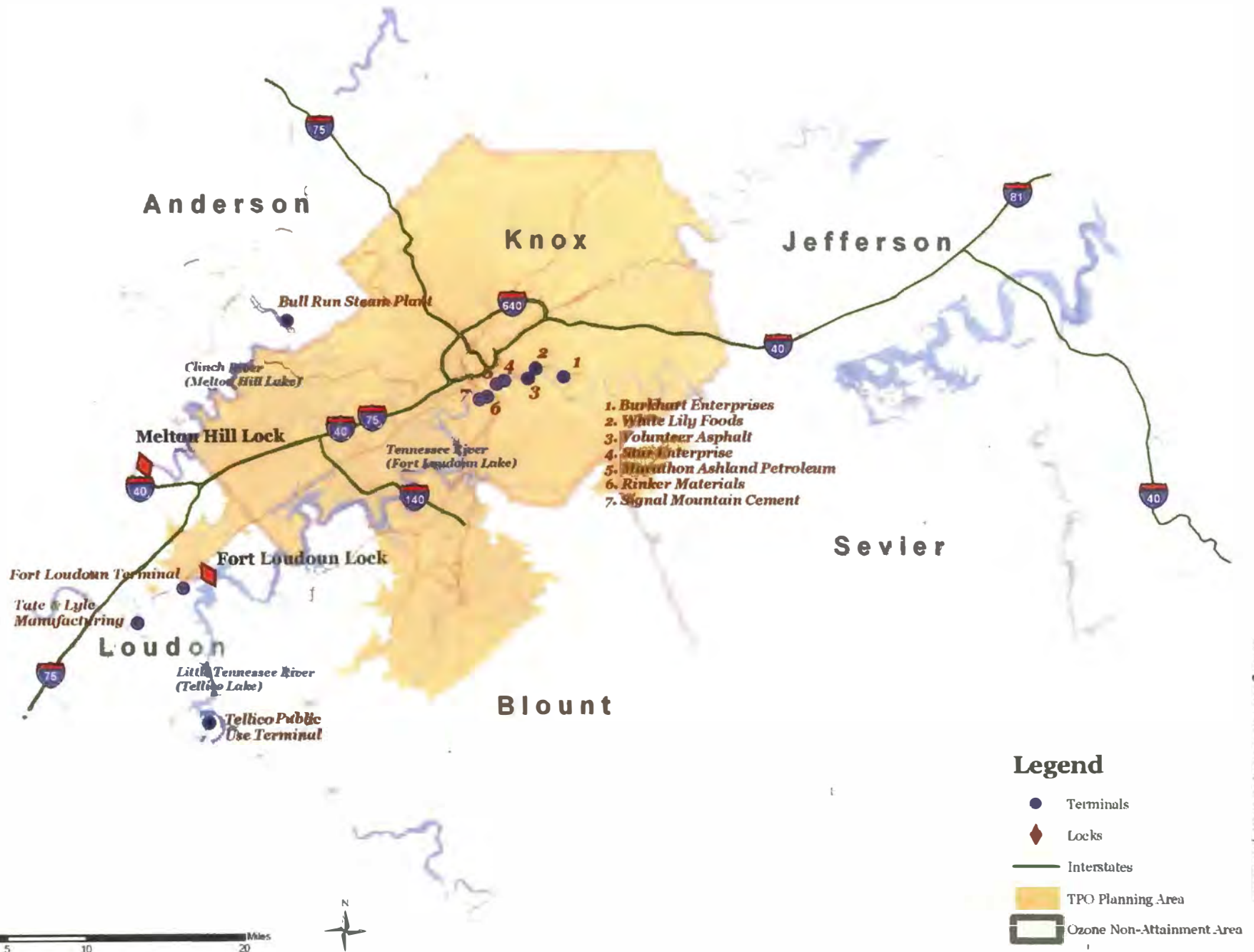
Several major national pipelines controlled by Colonial Pipeline Company, Plantation Pipeline Company, and Shell Pipeline Company transport petroleum products from refineries located along the Gulf of Mexico Coast directly

Table 7: Historic, Current, and Forecasted Air Cargo Operations at McGhee Tyson Airport (Tons)

Year	Enplaned Freight	Deplaned Freight	Enplaned Mail	Deplaned Mail	Total Air Cargo
1990	12,799.3	14,931.8	1,650.2	2,048.3	31,429.6
1995	12,729.4	16,735.1	1,517.1	3,423.4	34,405
2000	15,655.9	15,885	8188.6	9143.9	48,873.4
2001	16,217.8	16,662.2	4,774.1	5,128.4	42,782.5
2002	17,349.7	10,539	684.9	300.4	28,874
2003	18,806.3	10,328.1	596.2	313.6	30,044.2
2004	17,424.9	20,784.3	590	546.6	39,345.8
2005 ¹	29,615.5	25,723	2,085.8	4,004.4	61,428.7
2015 ¹	44,434.8	34,569.6	2,495.5	4,791	86,290.9

¹ Projections are from the McGhee Tyson Airport 1995 Master Plan

Map 10: Knoxville Regional Maritime Facilities



Map 11: Knoxville Regional Airports

Legend

-  Major Airports
-  Local Airports
-  Interstates
-  TPO Planning Area
-  Ozone Non-Attainment Area

0 5 10 20 Miles



to terminals located on Middlebrook Pike near Knott Road in the City of Knoxville. At the terminal locations, tanks capable of storing more than 100,000 barrels of petroleum make up the 23 acre Middlebrook Tank Farm. Tank trucks then transport petroleum products to service stations and other industries throughout the Knoxville Region.

Intermodal

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 rail, barge, or airplane with the ability to upload from or download to a truck trailer without retrofit and with relative ease.

The Surface Transportation Board 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.

There currently are no classified intermodal facilities in the Knoxville Region. The nearest intermodal facilities are in Nashville, Kingsport, Memphis, Atlanta, Georgetown, KY, or Huntsville, AL, although the facility in Kingsport is used primarily for Eastman Chemical Company. There are some facilities in the Region that can handle bulk freight transfers between rail, barge, and truck, between airplane and truck, and between pipeline and truck.

Regional Freight

More than 47 million tons of freight has at least an origin or destination within the Knoxville Region. The trucking

industry handles more than three-fourths of the 15.8 million tons of outbound freight from the Knoxville Region annually, primarily carrying non-metal minerals, grain, miscellaneous warehouse and distribution items, concrete, metal products, forest products, motor vehicle parts, petroleum, and chemicals (see Chart 8).

Rail and barge handle the majority of the remaining outbound freight not shipped by truck, with rail handling 2.1 million tons and barge handling approximately 446,000 million tons of freight. Coal, aluminum, grain/ mill, non-metal minerals, concrete, and chemicals are the main commodities shipped by rail while gravel, sand, stone, grain, iron/steel, and petroleum are the main commodities shipped by barge. Air transportation accounts for less than 1% of annual outbound freight tonnage and primarily handles mail, motor vehicle parts, printed matter, and electronics.

In contrast, approximately three times the annual tonnage of outbound freight, or 31.6 million tons, is inbound from outside the Region (see Chart 9).

The trucking industry is responsible for transporting slightly more than two thirds of inbound freight tonnage. The major commodities shipped by truck include field crops, miscellaneous warehouse/distribution items, metallic ores, non metallic minerals, concrete, motor vehicle parts, forest products, asphalt, chemicals, aluminum, and petroleum. Railroads play a much larger role in handling inbound freight than they do outbound freight with almost 19%, or 5.86 million tons shipped by rail. Coal, grain/mill, iron/ steel, chemicals, wood/lumber, and pulp mill products are the main commodities shipped by rail. Barges handle 1.1

Chart 8: Knoxville Region Inbound Freight

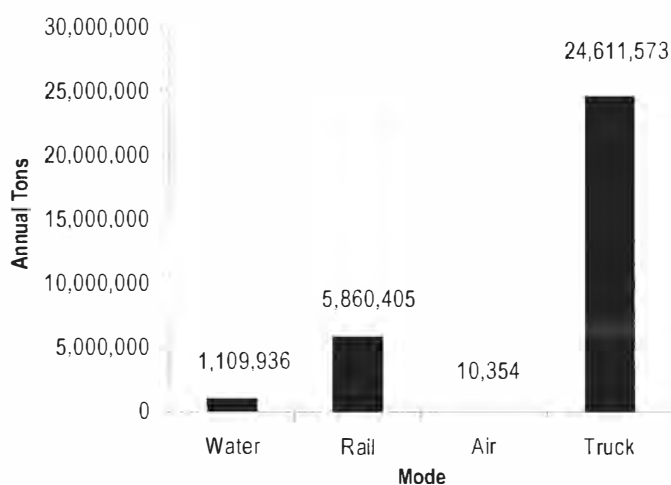
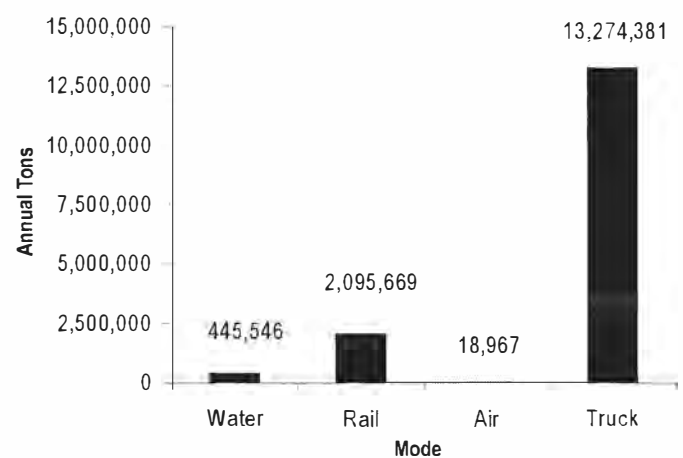


Chart 9: Knoxville Region Outbound Freight



million tons of inbound freight, with gravel, sand, stone, waste/scrap, petroleum, chemicals, iron ores, and grain/mill the most likely commodities to be shipped on water. Like outbound freight, less than 1% of inbound freight is shipped by air, with mail, motor vehicle parts, printed matter, and electronics the being the main commodities.

The majority of inbound and outbound freight that is associated with the Knoxville Region is either shipped to or from locations within the State of Tennessee or within the nearby states of Georgia, North Carolina, Virginia, Kentucky, Arkansas, Mississippi, or Alabama. Nearly 17.2 million tons, or 51%, of inbound freight comes from within Tennessee with an additional 7.2 million tons of inbound freight coming from nearby states. Approximately 47%, or 7.9 million tons of outbound freight is destined for locations within Tennessee. An additional 3.2 million tons of outbound freight is destined for nearby states.

Existing or Committed Studies, Plans, Programs, and Projects

There currently is not a separate plan for the movement of freight in the Knoxville Region. The freight and goods movement element of the Long Range Transportation Plan provides some background and identifies the existing freight industry in the Region. Several national and statewide plans addressing freight movement that impacts the Region were used to analyze freight trends and issues.

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.

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.

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. The main possibilities suggested include adding capacity in the form of dedicated truck toll lanes and 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.

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 passenger 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.

McGhee Tyson Airport Master Plan

Locally, the McGhee Tyson Airport Master Plan, completed in 1995, 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. A subsequent plan, the McGhee Tyson Airport Aviation Related Development Plan, providing a greater level of detail than the 1995 Master Plan, was completed in 2001 to assure that the most functional and economical growth and development of

airport land and facilities are achieved. The Development Plan targeted five land areas within the perimeter of the Airport for potential development.

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.

Issues

The issues surrounding the movement of freight will continue to escalate over the next decade as nationwide freight activity is expected to increase to over 25 billion tons handled by 2020. 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 and then TEA-21, 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.

Trucking

Since 1980, vehicle miles traveled for trucks nationwide have 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.

The additional truck traffic combined with the growth in commuter travel has worsened congestion, especially in

Map 12: State of Tennessee Average Daily Truck Traffic (2020)

FHWA Office of Freight Operations



urban areas, and has exacerbated conflicts between freight and passengers.

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.

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 hinders 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 1960s, 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 (Tennessee Statewide Rail Plan). 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.

Maritime

Fort Loudoun Lock takes 45 minutes to complete an operation and Melton Hill Lock is manually operated due to an electrical problem. 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.

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, but a long term solution is yet to be identified and funding from Congress has yet to materialize. There has been some discussion about permanently closing the Lock, thus shutting off commercial navigability to the Region from the remainder of the Tennessee River System. A study commissioned by Representative John J. Duncan, Jr. concludes that the closure of the Lock will result in the addition of about 45,000 trucks annually to I-75.

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 night. According to the Airport Master Plan (1995), the growth of the air cargo industry is expected to continue at an average rate of 5% per year, and by 2015, the Airport is projected to handle 86,291 tons of air cargo, of which 92% will be air freight.

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.

Objectives and Proposed Actions

The TPO will develop a regional freight overview that at a minimum encompasses Anderson, Blount, Cocke, Jefferson, Knox, Loudon, and Sevier Counties and may include additional counties if desired. The TPO should undertake the following in formulating the regional freight overview:

- Identify the counties to be included in the regional freight overview;
- Identify the resources available to the TPO that can assist in developing the regional freight overview;
- Identify characteristics of the freight transportation network;
- Identify areas and industries throughout the Region that generate significant freight traffic;
- Develop maps that depict regional freight activity;
- Identify the challenges of the transportation system that impede on the movement of freight;
- Develop freight forecasts for commodity flow by mode, origin and destination, and travel route;
- Provide a summary of findings and recommendations including potential projects to be included in future Long Range Transportation Plans and local capital improvement plans that can improve freight flow.

The TPO will continue to be involved in the I-81 Corridor Study and will work with TDOT on implementing the Tennessee Statewide Rail Plan.

The TPO will also work with the Knoxville Metropolitan Airport Authority as needed on implementing the McGhee Tyson Airport Master Plan.

Programmed and Planned Projects

There are many highway projects identified in Tables 8, 9, and 9a that will 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 I-275 interchanges with Baxter Avenue, Woodlawn Avenue, and Heiskell Avenue and 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 four to six lanes.

In March 2005, the TPO Executive Board and RTPC 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. Although this Long Range Transportation Plan does not include a regional freight plan, it does identify information that lays the groundwork for the development of such a plan.

In Tables 8, 9, and 9a, 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 8: Long Range Transportation Plan List of Regional Highway Projects

LRTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	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	Boyd's 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 (Boyd's 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	\$29,593,87	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 Ln. 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	√					√	√			√

Table 8: Long Range Transportation Plan List of Regional Highway Projects (continued)

L RTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	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		√			√	√				
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				√	√	√				
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	√				√	√				√
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	√	√	√	√	√	√				√
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		√		√	√	√				
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 9: Long Range Transportation Plan List of TPO Planning Area Highway Projects

L RTP #Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	a	b	c
40	Alcoa Highway (SR 115)	Knoxville	Maloney Rd to Woodson Dr	Widen 4-lane to 6-lane	2009	\$22,714,120	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/ Middle settlements 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	2009	\$1,638,038	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	2009	\$3,603,683	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	2009	\$7,862,580	Non-exempt		✓			✓	✓			
49	Dry Gap Pike	Knox County	Dante Rd to Rifle Range Rd	Widen 2-lane to 4-lane	2009	\$3,057,670	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	2009	\$4,040,493	Non-exempt		✓		✓	✓	✓	✓	✓	✓
59	Lovell Road (SR 131)	Knox County	Gilbert Rd to Schaeffer Rd	Widen 2-lane to 4-lane w/ center turn lane	2009	\$8,736,200	Non-exempt		✓			✓	✓	✓	✓	
60	Maynardville Hwy (SR 33)	Knox County	Emory Rd to Union County Line	Widen 2-lane to 4-lane	2009	\$22,277,310	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	Middle settlements Road	Alcoa	Intersection w/ Hunters Crossing Dr	Improve intersection	2009	\$382,209	Exempt	✓	✓	✓		✓	✓			
63	Middle settlements Road/ Bessemer Street Realignment	Alcoa	Hunters Crossing Dr to US 129 Ramp	Realign intersection	2009	\$1,630,393	Exempt		✓		✓	✓	✓			
64	Millertown Pike	Knoxville	Washington Pike to North Mall Road	Widen 2-lane to 4-lane w/ center turn lane	2009	\$4,748,179	Non-exempt		✓			✓	✓	✓		✓
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	2009	\$4,368,100	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	2009	\$8,736,200	Non-exempt		✓			✓	✓	✓		
70	Pellissippi Parkway (I-140)	Blount County	SR 33 to US 321	Construct new 4-lane highway	2009	\$34,289,585	Non-exempt		✓		✓	✓	✓			
71	Pleasant Ridge Road	Knoxville	Schaad Rd to I-640	Add center turn lane	2009	\$6,552,150	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	2009	\$3,672,371	Non-exempt		✓			✓	✓	✓	✓	✓
78	Western Avenue (SR 62)	Knoxville	Texas Ave to Major Ave	Widen 2-lane to 4-lane	2009	\$16,161,970	Non-exempt		✓			✓	✓	✓	✓	✓
79	Wright's 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	2009	\$7,534,973	Non-exempt		✓			✓	✓	✓	✓	
82	US 321 (SR 73)	Loudon County	SR 2 to east of Little Tennessee River	Widen 2-lane to 4-lane	2009	\$35,600,015	Non-exempt		✓			✓	✓	✓	✓	✓
83	US 321 (SR 73)	Lenoir City	Intersection w/ US 11	Reconstruct intersection	2009	\$7,644,175	Exempt	✓	✓	✓		✓	✓			
87*	Alcoa Highway (SR 115)	Knoxville	Maloney Rd to Blount County Line	Widen 4-lane to 6-lane	2009	\$30,358,295	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	✓				✓	✓			

Table 9: Long Range Transportation Plan List of TPO Planning Area Highway Projects (continued)

L RTP #Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	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		✓			✓	✓	✓		✓
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	Fronza 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 Pkwy Extension (SR 71)	Knoxville/ Knox County	Moody Ave to Chapman Hwy	Construct new 4-lane road	2014	\$90,391,098	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		✓			✓	✓	✓	✓	✓
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	✓				✓	✓			

Table 9: Long Range Transportation Plan List of TPO Planning Area Highway Projects (continued)

L RTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	a	b	c
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	Middle settlements 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	✓		✓	✓	✓	✓	✓			
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		✓		✓		✓	✓			
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		✓				✓	✓			
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		✓				✓	✓	✓		✓
168	I-275	Knoxville	Baxter Ave Interchange	Modify interchange	2030	\$36,175,710	Exempt	✓					✓	✓	✓		✓

Table 9: Long Range Transportation Plan List of TPO Planning Area Highway Projects *(continued)*

L RTP #	Project	Jurisdiction	Location	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	a	b	c
169	I-275	Knoxville	Heiskell Ave Interchange	Modify interchange	2030	\$36,175,710	Exempt	√					√	√	√		√
170	I-275	Knoxville	Woodland Ave Interchange	Modify interchange	2030	\$36,175,710	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 9a: Long Range Transportation Plan List of SAFETEA-LU Congressional Earmark Projects

L RTP #	Project	Jurisdiction	Description	Year	Cost	Exempt Status	1	2	3	4	5	6	7	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	2009	\$172,000	Exempt	✓	✓				✓	✓			
E11	Cessna Road railroad crossing	Knoxville	Improve the at-grade railroad crossing at Cessna Road	2009	\$76,800	Exempt	✓	✓				✓	✓			✓
			railroad crossings throughout Knoxville													
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	✓					✓	✓			
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 Cooke 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	Cooke County	Reconstruct 2-lane section from SR 73 to I-40	2009	\$5,000,000	Exempt		✓		✓		✓	✓			
E25	SR 32	Cooke 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 8, 9, and 9a 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 and Security. 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 XV, are identified under column "c". Projects with an asterisk (*) have been added or modified since the approval of the Plan in 2005.

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

L RTP #	Project	Jurisdiction	Description	Year ¹	Cost ²	1	2	3	4	5	6	7
Public Transportation												
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	√	√	√	√		√	√
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	√	√	√	√	√	√	√
Bicycles												
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	2014	\$50,000	√	√	√	√			√
Sidewalks												
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		√	√	√			√

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.

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

L RTP #	Project	Jurisdiction	Description	Year ¹	Cost ²	1	2	3	4	5	6	7
Sidewalks (continued)												
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		✓	✓	✓			✓
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 or 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												
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		✓	✓	✓			✓
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		✓	✓	✓			✓

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

LRTP #	Project	Jurisdiction	Description	Year ¹	Cost ²	1	2	3	4	5	6	7
Greenways <i>(continued)</i>												
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 Cavel 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 or other non-construction related costs.

For Table 10, non-highway projects meeting Goal #1, System Maintenance, are projects that don't significantly change the character of the transportation system. Projects that reduce traffic congestion fall under Goal #2, System Efficiency. Projects that aim to reduce mobile source emissions meet Goal #3, Environmental Quality. Goal #4, Mobility Options, includes projects that facilitate movement among modes and between modes. If a non-highway project is deemed to be regionally significant, it is listed as meeting the Regional Approach Goal, #5. Projects meet Goal #6, Financial Investments if they are determined to be financially constrained. Projects meet Goal #7, Safety and Security, if they aim to maintain or improve the safety and security of the transportation system.

TPO Planning Area Intermodal Transportation Element

VI. TPO Planning Area Intermodal Transportation Element

The second element of the Knoxville Regional Long Range Transportation Plan 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, 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 the widening and interchange improvements to Alcoa Highway from I-40 to Cherokee Trail, Reconstruction of the I-640/ Broadway interchange, widening of Lovell Road from Kingston Pike to Gilbert Road, construction of Gallaher View Drive from

Kingston Pike to Middlebrook Pike, improvements to McFee Road, and rehabilitation to the Gay Street Bridge.

Reconstruction of the Alcoa Highway Bridge at the Knox/ Blount County line, widening of Emory Road between Gill Road and Bishop Road, and widening of Hardin Valley Road, and extension of I-140 from Alcoa Highway to Cusick Road are nearing completion.

Construction is underway on the widening of I-40/75 from Winston Road to Papermill Road, Middlebrook Pike from Cedar Bluff Road to Hardin Valley Road, and 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 nad 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 Seymour. Other earmarked projects are shown as part of Table 9a 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.

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	Under Construction
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	Under Construction
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	Under Construction
I-140 (Pellissippi Pkwy)	Blount County	Cusick Rd to Old Knoxville Hwy (SR 33)	New 4-lane Freeway	Under Construction
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 – 2002
Middlebrook Pike	Knox County	Hardin Valley Rd to Cedar Bluff Rd	Widen 2-lane to 5-lane	Under Construction
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

Issues

During the development of the Long Range Transportation Plan and amendments, 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.

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, and 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 9 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 13, 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 XV.

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 XIII.

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 System in Chapter VIII. Additionally, projects affecting the congested corridors and hot spots in the CMS may include the following activities:

- Transportation activities in an approved SIP or maintenance plan;
- Transportation Control Measures to assist areas designated as non-attainment under the Clean Air Act Amendments;
- 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;
- 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;
- Establishment of transportation museums.

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

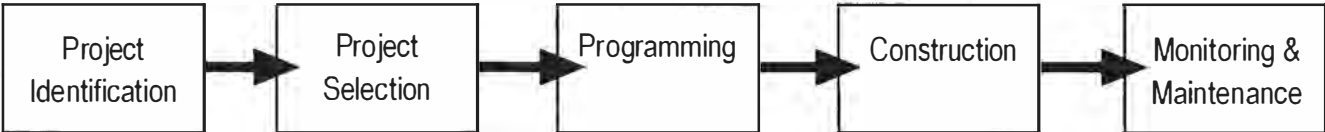
Bridge Replacement and Rehabilitation Program (BRRP)

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.

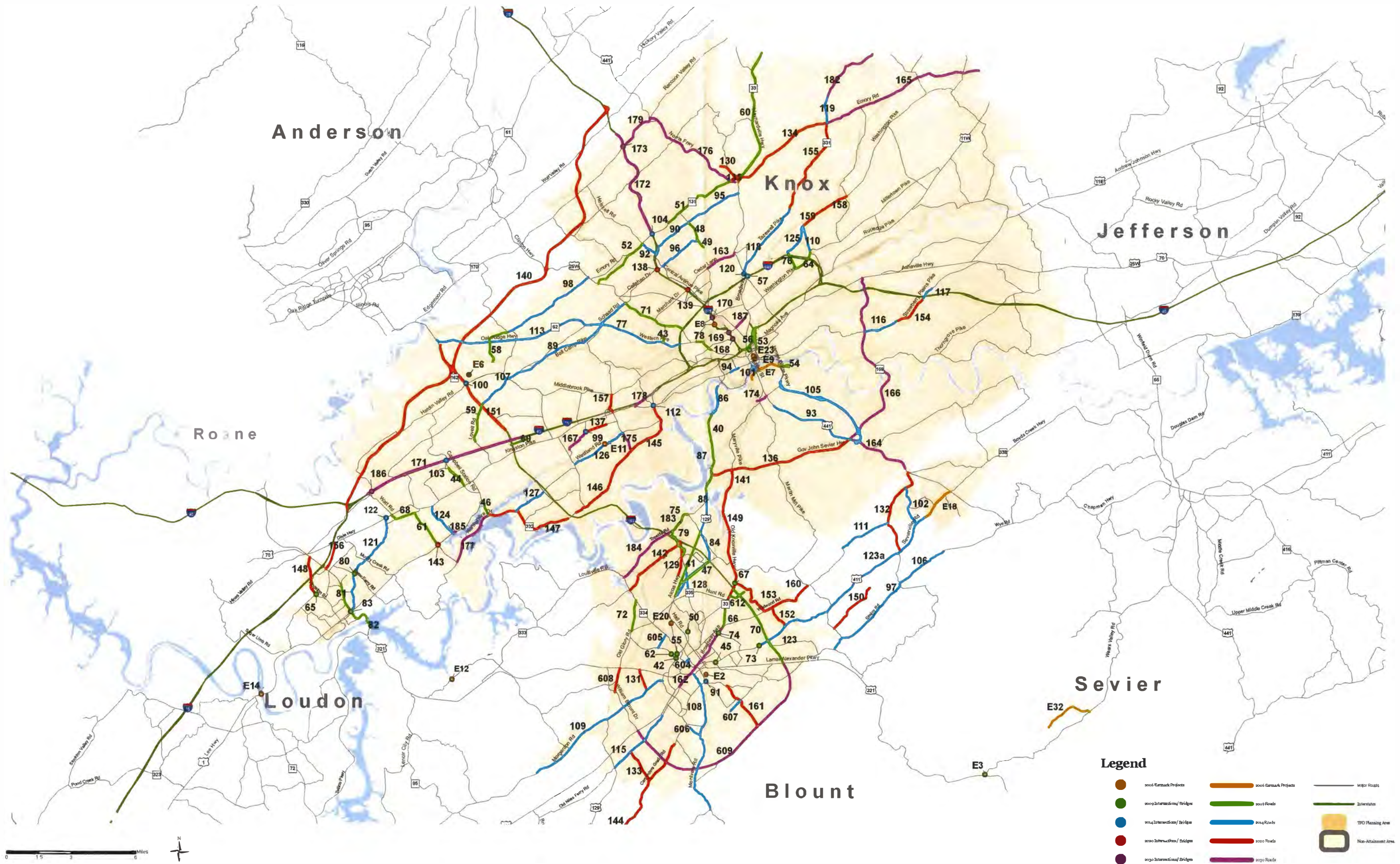
Conclusion

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 Systems (CMS) 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 two 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: Process of Transportation Projects



Map 13: 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)

Knoxville Area Transit 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 14). With a capital and operating budget slightly over \$14 million annually, KAT provides fixed route bus service, downtown trolley circulators, the University of Tennessee campus service, 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. Service is provided from 5:30 a.m. until 12:30 a.m. Monday through Saturday and from 10:00 a.m. until 7:00 p.m. Sundays. 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. Trolley service complements KAT's bus system and serves the downtown and University of Tennessee areas with five routes using eight antique style trolleys and four hybrid propane trolleys. Service is provided from 6:00 a.m. until 6:30 p.m. Monday through Thursday and 8:00 a.m. until 3:00 a.m. Friday and Saturday. KAT also operates a demand response service for persons with disabilities called the LIFT consisting of 14 twenty-two foot vans that operate during the same days and hours as fixed route services.

Total system ridership for fiscal year 2004 (FY04) was 3.2 million passengers or an average of approximately 266,000 passengers per month. FY04 ridership is the highest experienced at KAT in almost 20 years.

Knox County CAC Transit (formally Knoxville/ Knox County Community Action Committee [CAC] Transportation Program)

Knox County Transit (KCT) serves to increase access to community resources for all Knox County residents who have no other means of transportation. The KCT program

serves people of all ages and is limited by restrictions to providing service based on funding and/or by requirements for utilizing services. KCT has an approximate budget of slightly over \$2 million per year. Many of KCT's funding sources provide strict limitations on who qualifies for subsidized fares. Priority is given to health care related trips. Fares are determined on a sliding scale basis ranging from \$.50 cents to \$3.00. KCT primarily provides demand response service, meaning that pick-ups and drop-offs are usually prearranged. Service is offered Monday through Friday. The KCT program also contracts with a wide variety of non-profit agencies and several hospitals and health care organizations. For FY 2004, the KCT Transportation Program provided over 200,000 one-way trips.

KCT also offers Job Access and KCT Guaranteed Ride Home Programs. The Job Access service is a 24-hour a day, 7-day a week demand transportation service for employment and training related purposes. This service focuses on those persons who live outside the KAT service area or whose jobs are outside the KAT service area. Transportation is provided to neighboring counties with side trips for daycare permitted. The KCT Guaranteed Ride Home program provides emergency transportation for employment and training related purposes for eligible persons who pre-register for the service. KCT (CAC) Guaranteed Ride Home program operates 24-hours a day, 7-days a week.

East Tennessee Human Resource Agency (ETHRA)

ETHRA will generally defer Knox County public transportation services to KAT or KCT, but they do on occasion provide trips in Knox County. Most of these are trips whose origin or destination is in Knox County with the other end of the trip in another county. ETHRA does provide transit service in Blount, Loudon, and Sevier Counties.

Knoxville Commuter Pool (KCP) and Tennessee Vans

KCP is a commuter transportation service designed to help employees use carpools, van pools, and public transit. KCP is located at the University of Tennessee Transportation Center and services are available to employees and residents in the Knoxville Metropolitan Area. Tennessee Vans provides vans 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 who are enrolled in TennCare. There are several different companies/agencies providing transportation services in the TPO Area. Each client must call their Managed Care Organization to find out who is responsible for providing their transportation. Many social service agencies, health care providers, and churches provide transportation to individuals participating in their related sponsored programs. Many of these fund their own capital and operating expenses while some are eligible for funds from the Tennessee Department of Transportation. The public schools throughout the area all offer transportation services to their students. Knox County Schools alone provide over 5 million trips per year.

Progress Since the Adoption of the 2002 Long Range Transportation Plan

Several planning studies have been completed over the last three 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 multi-modal transportation center in Downtown Knoxville, called Central Station. The Environmental Analysis has recently been finalized on the Central Station. KAT has continued to improve by implementing many of the recommendations of the KAT Action Plan 2010. Several of the early recommendations are internal to KAT's organization and help realize a new level of efficiency. Recently, KAT implemented a comprehensive Clean Fuels Program that includes use of alternative fuel vehicles and special incentive programs to increase transit usage. KAT also launched the new transit service of the University of Tennessee. Combined, KAT's improvements have led to increased ridership, the highest in 20 years. KAT, KCT, and ETHRA all have received Job Access and Reverse Commute Grants that have led to thousands of riders now taking advantage of employment opportunities that they previously could not. 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 (APTA).

Existing Studies, Plans, and Programs

Recently there have been several planning initiatives concerning public transit in the TPO Planning Area.

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.

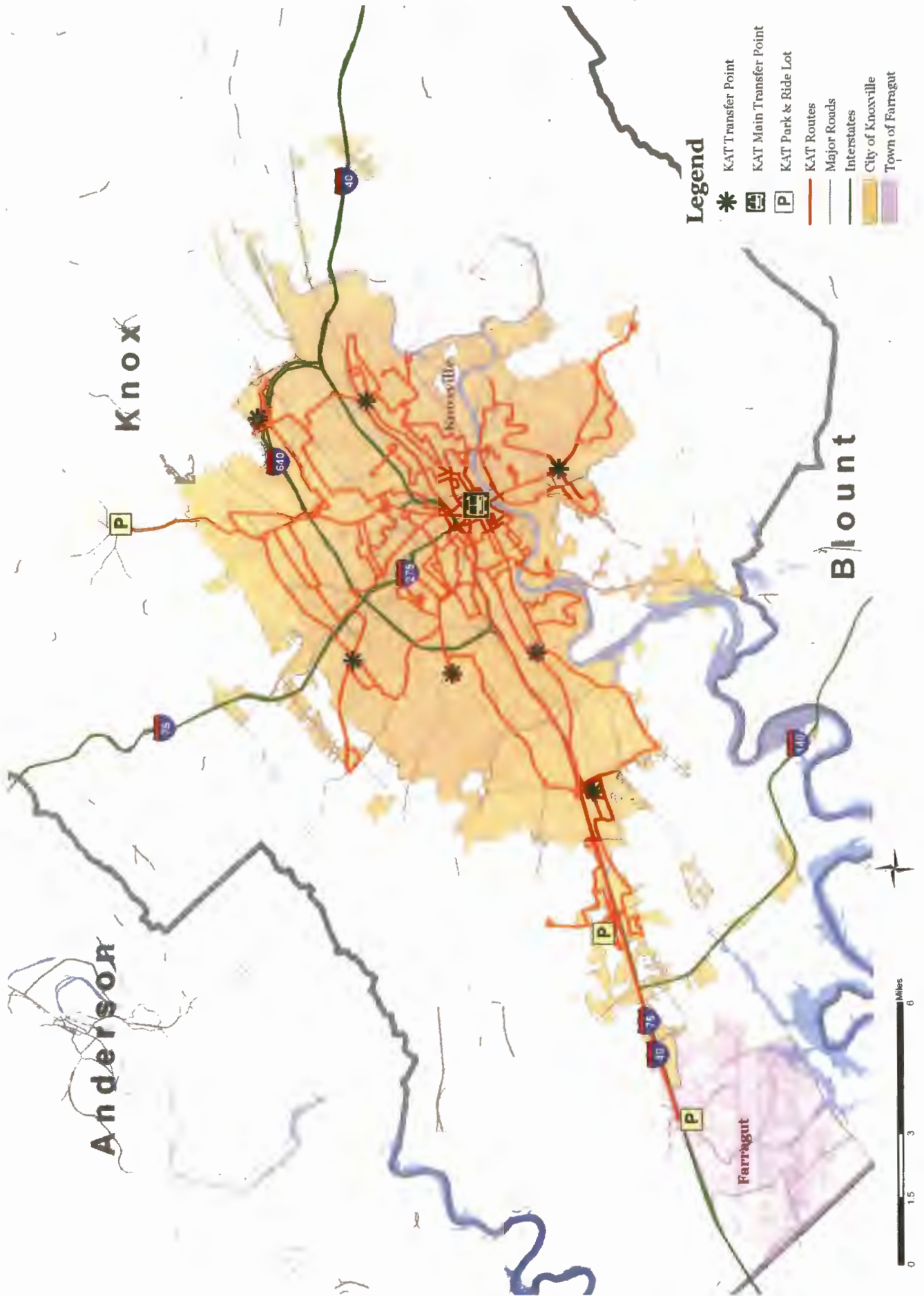
The KAT Action Plan 2010 identifies recommendations that will provide a basis for KAT to achieve its goal of being an organization that provides a community benefit and service through effective and efficient operations, that is sensitive to the need to be a leader in environmental issues, and, that 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 15), 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.

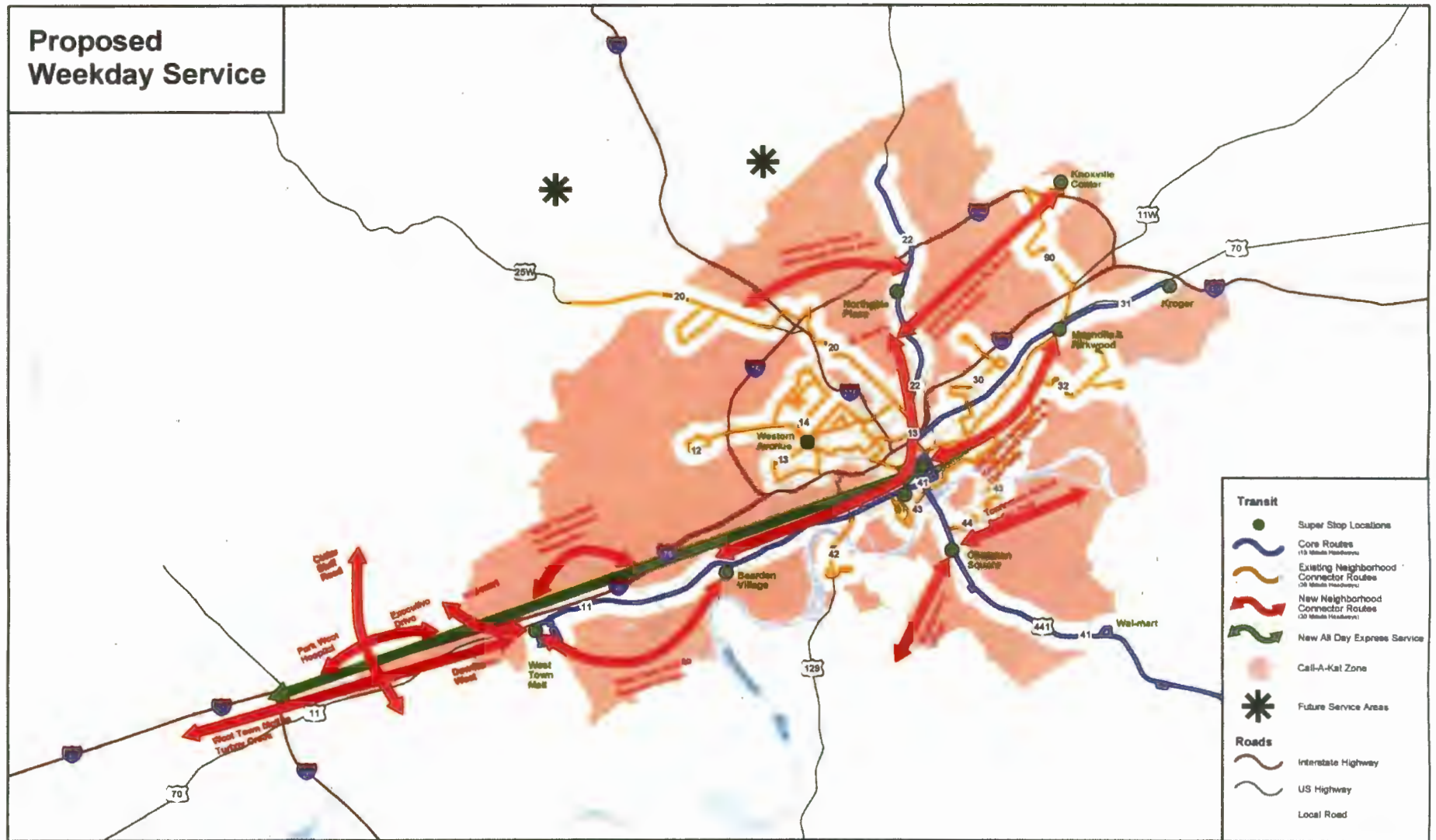
Key elements of the plan include:

- 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;

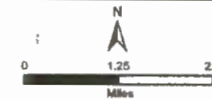
Map 14: Knoxville Area Transit Route Map



Map 15: KAT Action Plan



Knoxville Area Transit
Proposed Weekday Service (5:00 AM - 9:00 PM)



URS

- 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 (5:00 a.m. to 9:00 p.m. on weekdays with the Night Rider/Call-A-KAT service until midnight; 6:00 a.m. to midnight on Saturdays; and 8:00 a.m. to 8:00 p.m. on Sundays);
- 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. The center will be an attractive and inviting place for riders to wait for their buses and potentially include additional retail and residential development;
- 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 as minimal as a sheltered bus stop to a complete indoor facility with restrooms, vending, and ticket sales. In some cases, superstops may be part of a larger multi-use development. Superstops make great collection points for neighborhood based service;
- 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;
- Development of a new KAT bus fleet that will be oriented towards smaller buses and alternative fueled vehicles, 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 KAT’s 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.

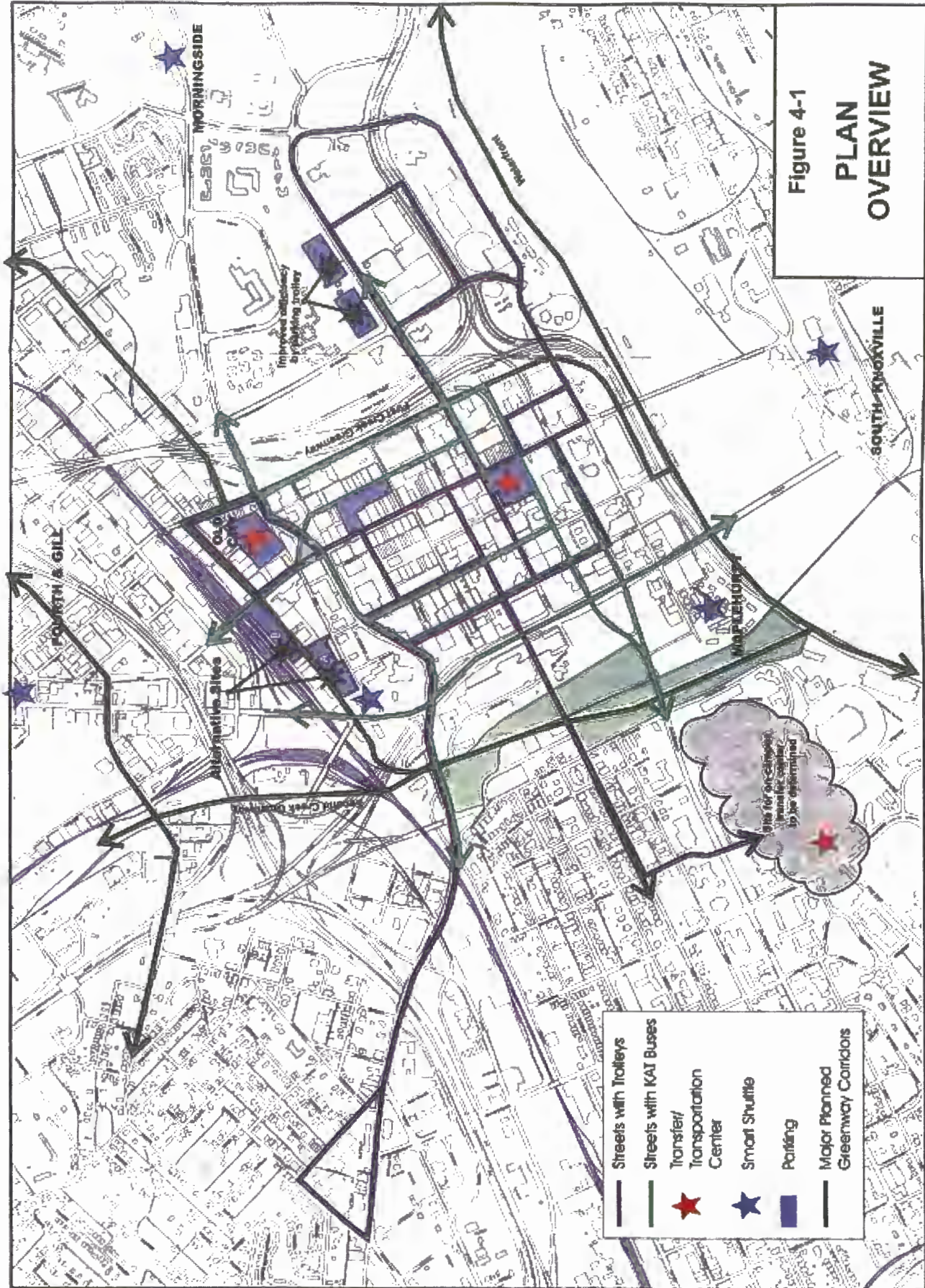
Downtown Knoxville Transportation Linkages Study

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 Downtown Knoxville Transportation Linkages Study (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 2000.

Downtown Knoxville is blessed with a compact scale as well as a wealth of cultural resources, attractions, and development opportunities. With new attractions and more residents, accessibility and mobility will become increasingly important. A five-minute framework best summarizes the conceptual vision of the DKTLS. In the vision, improved trolley service, Smart Shuttles, and pedestrian improvements allow movement within downtown and the adjacent neighborhoods to 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 downtown, strategically placed parking, improved pedestrian connections, and more greenways (see Map 16). All 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 16: 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 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. Finally, a location on State Street between the block of Union Street and Commerce Street with Central Street to the east was settled on.

The Knoxville Central Station is proposed to include a transit transfer facility, retail and/or entertainment activities, police substation, and parking to replace and add to the parking on site. The structural capacity will also support residential, office, and public uses.

Key to the location of the transfer facility is pedestrian improvements. A pedestrian bridge from the State Street site connecting to Gay Street is planned. This link will place transit squarely in the core of downtown. Knoxville Central Station would incorporate the architectural treatments of the surrounding buildings and its design would support and complement both existing and planned development through strong urban design techniques, fully integrating transit linkages, pedestrian access, parking opportunities, and signage, and taking 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 is proposed to occur outside the Center along Gay Street, reinforcing the need for a pedestrian bridge.

It is intended that the Center will serve as a catalyst for other downtown redevelopment, including creative linkages to downtown housing, the convention center, and other tourist attractions downtown. Integrally related to these initiatives would be the expansion of retail opportunities, both as part of the terminal and also tangential to it.

The Area-Wide Job Access and Reverse Commute Plan for Knox County

This plan provides a regional approach targeted at moving welfare recipients and low-income people to jobs regardless of jurisdictional boundaries. KAT, KCT, and ETHRA have been fortunate to receive several Job Access and Reverse Commute grants since the program was initiated in 1998. All of the services have had remarkable success carrying thousands of citizens to work each year.

KAT's Job Access program provides new, fixed route service during the evening hours and on Sundays – times when previously no service was available. Accompanying this service is the innovative "Call-A-KAT" service, in which vehicles pick up passengers whose work or home is not along the fixed route and delivers them to the nearest fixed route.

KCT's Job Access service is called CAC Job-Ride. CAC Job-Ride is transportation for Knox County residents for employment related activities such as work, interviews, training, and job-readiness activities. CAC Job-Ride provides 24-hour-a-day, 7-day-a-week demand responsive van service. CAC Job-Ride provides transportation to jobs throughout Knox County as well as surrounding counties. In addition, the 24-hour-a-day, 7-day-a-week guaranteed ride program is available to those eligible persons pre-registered for the service. The security provided by the guarantee of a ride home in an emergency will encourage individuals to utilize the fixed route public transit system and ride sharing programs.

One issue originally identified that still remains is fixed-route transit service area limitation to the TPO Area. KAT service is primarily limited to the City of Knoxville, except for a few commercial corridors that are in the county proper. An equal amount of, if not more, residents live in the Knox County balance. While KCT plays an important role in providing service to the balance of the county, many of their services are limited by funding restrictions. While the Job Access grant has allowed KCT to provide service for those persons needing transportation to work, there is no real service available for other types of trips. Over and over, through public input, employee surveys, and employer surveys, the need for complete county service was identified as a must.

A final issue concerned how to best serve both residents and jobs that tend to be in lower density areas in a fairly larger county. While densities prohibit traditional forms of fixed-route service, the opportunity has been to provide the suburban service through demand response forms of

alternative transportation. Transportation services need to be a mix of vehicle type that can not only serve dense areas such as the central city but lesser dense areas like the suburbs. Therefore, it is imperative that a mix of vans, mini-buses, neighborhood service vehicles, and buses provide countywide service.

The following are plan goals and recommendations of The Area-Wide Job Access and Reverse Commute Transportation Plan:

- Provide transportation service to many of the industrial parks, such as Forks-of-the-River Industrial Park, where more skilled and higher paying jobs are located;
- Provide transportation service to remote areas of Knox County where a large concentration of Families First, TANE, or Welfare-to-Work participants reside;
- Provide a mix of services and vehicles that can offer a more efficient transportation service to rural residents or outlying job locations;
- Provide a rapid cross-town route that would allow residents to travel quickly across town to access jobs;
- Provide transportation services later in the evening and at night that can accommodate evening and second and third shift work at major employers;
- Provide transportation services seven-days-per-week to accommodate jobs that are available on the weekends;
- Provide additional transportation services to areas where higher concentrations of low-income or subsidized housing are located;
- Provide a 24-hour emergency transportation service to accommodate persons who have an unexpected disruption in their usual mode of travel;
- Provide funding to a "First Wheels" or similar program to help needy individuals purchase, lease, or rent an automobile. This would also include a program to help individuals pay for insurance if needed;
- Provide assistance to persons to help foster new private transportation services that can assist in meeting transportation gaps that public providers can not meet;
- Provide marketing efforts that will include specific efforts to target persons who are disabled to inform them of the job access transportation options available in Knox County;
- Provide transportation information by personally meeting with disability advocacy groups such as Knoxville Advisory Council for the Handicapped, the Office on Aging, and the Disability Resource Center;
- Provide travel training for Job Access services for both persons with low incomes and persons with disabilities.

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 to 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 15 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;
- 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;
- Maintains economic vitalization of businesses and urban centers in the corridor;
- Protects the corridor's residential neighborhoods;
- Improves air quality and reduces energy use;
- 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, an initial marketing campaign would focus on image improvement of both entities, recognizing the challenges of transportation and improvements. As part of this marketing, the other initial projects would be touted as solutions to the construction challenges.

Neighborhood Connector to Downtown; Fourth & Gill, Emory Place, Old City to Downtown - Addressing the concerns of close-in neighborhoods identified by TDOT as affected by the construction process, KAT proposes to offer a shuttle service looping the affected neighborhoods of downtown, including Fourth & Gill, Emory Place, and the Old City. This initial new service is a cost-effective way to address the concerns of some very active neighborhoods, maintain their connection to downtown, and show goodwill by supporting a service to mitigate any negative impacts of construction, as well as a service already requested by many of these neighborhood groups.

Smart Trips/Rideshare Support- 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. The Smart Trips program offers a free online ride matching database that helps people with similar commute patterns form carpools. The Smart Trips program will help reduce the number of cars on the road during construction time. This program has been well received initially and with proper support can continue to grow.

Vanpool Program- Expansion of a vanpool program as an additional drive-alone alternative.

Phase 2 & 3 - SmartFix 40

Park & Ride Services - Express bus services to the University of Tennessee and downtown are proposed from two outlying locations affected by the Phase 2 & 3 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.

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.

Marketing the Service Availability - Crucial to the success of the implementation will be marketing the services to a broad array of users. The partnership between TDOT, cities, employers, KAT, and the TPO will also be promoted. This initiative will show that TDOT recognizes that the unfortunate consequences of making improvements are often the inconveniences of congestion and that by partnering with KAT, TDOT and all the partners are actively pursuing relief for these temporary situations.

Generating Ridership/Other Key Program Elements - Central to providing exceptional transit service are the following key program elements:

- A Guaranteed Ride Home Program for express route passengers. The Guaranteed Ride Home Program allows riders to put their trust in KAT, knowing when they ride the bus that if they have an emergency they will not be stranded;
- Capital equipment (enhanced transit amenities at park & ride locations and neighborhood connector pick-ups). Capital funding, while used primarily for bus leases to accommodate the new service improvements, would also be used to create a positive atmosphere of the transit system at major stops, enhancing a sense of security and comfort for passengers;
- Transit passes for employees. To attract transit riders, employers could provide employees with Transit Chek, which defrays up to \$100 per month of transit fares. The service is a tax free benefit to employees and is tax deductible for employers. Involving more employers in this program requires an education program;
- Global Positioning System (GPS) units for vehicles. A GPS system will assist drivers, dispatchers, and planners in keeping transit on time, especially in a congested corridor. KAT would install GPS units in its vehicles that are used in service associated with this demonstration project so real-time information will allow staff to make immediate decisions about routing alternatives.

Phase 4 - 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, colleges and universities, and 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 KCT 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 15-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 are 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. Key to expansion of the downtown transit opportunities is the completion of the Downtown Central Station.

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;
- Fare discount programs.

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

Central Station

A new downtown indoor 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 Central Station should be a focus of downtown

transportation and an inspiration for the park-once-and-use-transit concept. The Central Station, while retaining a transit center priority, should also be a catalyst for redevelopment. While serving KAT vehicles is a top function of the facility, 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, crosstown 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, crosstown, 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.

Carpooling/Vanpooling

Ridesharing alternatives should be promoted as a partner in the provision of transit services. Carpooling and vanpooling are often more successful in providing a more personalized service. Carpooling and vanpooling should be part of a travel demand management strategy.

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.

Services for Seniors

Services should be designed to help provide travel options for the elderly. The Knox County Senior Summit Transportation Task Force recommendations should be considered when planning senior services.

Congestion Reduction Measures

Transit programs should work with Smart Trips.

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 SmartFix 40 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 encourages transit usage, and coordination between zoning, planning, and public works on actions that include parking and transit use should be established, especially in downtown areas.

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.

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 since needs change from year to year and would be impossible to list over a 25-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.

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	

¹KAT Associated Maintenance Items include parts, tires, maintenance equipment, labor, etc.

²KAT Facility & Systems include shelters, benches, facility repair, etc.

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. 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 include

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. With the construction of Hall of Fame Drive extension and the repaving of Martin Luther King Jr. Avenue, two more corridors in Knoxville will have bike lanes in the near future. 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. There are not currently any bicycle projects in the current Transportation Improvement Program and there were not any bicycle projects submitted during the application process for the TIP update.

Existing Studies, Plans, and Programs

- The TPO continues to provide a half-time bicycle coordinator for the Knoxville Regional Bicycle Program;
- The 11-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;
- “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;
- Through the Bicycle Parking Program, 60 bike racks have been installed throughout downtown, the Old City, and other Knoxville locations. Two bike lockers have been installed at Alstom Power off Pellissippi Parkway, and 95 additional bike racks have been ordered for locations in Knoxville, Farragut, and Maryville.

Design and Engineering

- TDOT has included bike lanes in plans for new projects, including the new Hall of Fame Drive (5th Avenue connector), part of the Northshore Drive project, and the Campbell Station Road project;
- 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.

Education and Safety

- The TPO recommended to TDOT that they pursue changes to the driver's test to include questions related to bicycling;
- 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. Brochures about the rules of the road for motorists and bicyclists have also been developed;
- Two 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 130 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;
- A bicycle map of Downtown Knoxville and surrounding areas is 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 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) in order to develop the network and identify improvements that would bring the roads up to Level of Service C or above. The center 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

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 greenway 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 a 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;
- 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;
- Bike network improvement projects and signage in Knox County costing about \$25,000;
- Bike network improvement projects and signage in Blount County costing about \$25,000;
- Bike lanes on Woodland Avenue with a cost of \$250,000;
- Bike lanes on Chapman Highway from Blount Ave to Moody Ave costing about \$400,000.

TPO Planning Area Sidewalks/ Greenways

Background

The Federal Highway Administration (FHWA) has conducted studies demonstrating that pedestrians are willing to walk an average of two miles to their destinations and are less likely to travel as far as drivers, transit riders, or cyclists. 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 citizens 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 has undertaken capital projects that enhance the pedestrian network within the Town.

Map 17 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 and 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;
- 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.

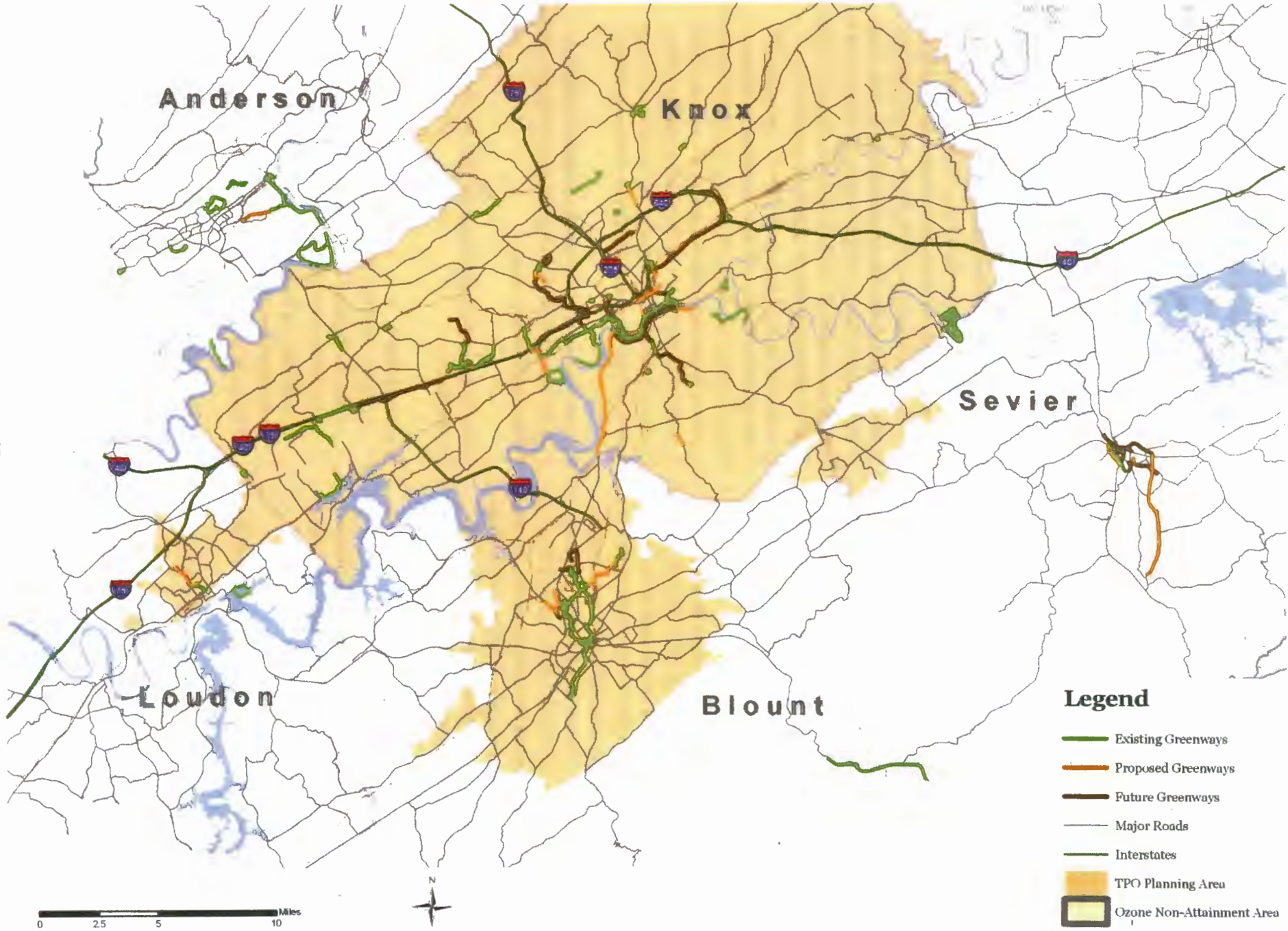
Existing Studies, Plans, and Programs

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, noting 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;
- New subdivisions should be designed to accommodate future developments by providing pedestrian connections as well as street connections.

Map 17: Existing and Planned Greenways



In 1993, the Knox County Board of Education established guidelines for Parental Responsibility Zones (PRZs) in Knox County, which states that transportation will not be provided to elementary students who live within one mile by the shortest route of the 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.

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 as 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 pedestrian travel, or lack thereof, 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 creates an inconvenient and unsafe environment for pedestrians since buildings are 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;
- Provide greenway connections that allow uninterrupted travel between different greenway trails;
- Enhance 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, should be considered as a plan for road improvement;

- Sidewalks such as the ones in Downtown Knoxville should be 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 17):

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;
- 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;
- 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 17):

In the City of Knoxville

- Baptist Greenway from the south side of the 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 the Tennessee River at Gay Street to the South Knoxville Bridge;
- Victor Ashe Greenway from Badgett Field to the Third Creek Greenway entrance on Sutherland Avenue;
- Williams Creek Greenway from Sarah Moore Green Elementary School to James White Greenway;
- 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 methods to be considered. Good pedestrian access, appropriate for existing and planned land uses, should be 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 facilities with proper pedestrian 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.

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.

Existing Conditions

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. Approximately 178 million tons of nationwide freight is moved by truck across the Interstate system in the TPO Area on a yearly basis, translating into approximately 11 million truck trips per year or 29,888 truck trips per day. The average trip length of these trucks is around 500 miles, or about the distance from Washington, D.C. to Knoxville. More than 14 million tons of this freight consists of at least one trip end in the TPO Area, meaning almost 92% of the freight tonnage is overhead freight, or freight passing through the TPO Area. Not included in the nationwide freight are local freight truck trips that remain within the TPO Area.

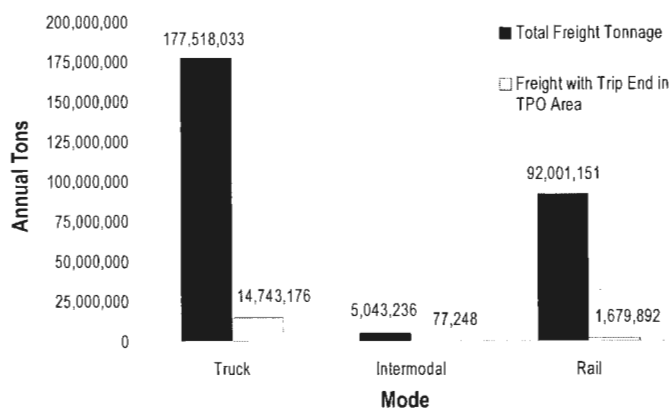
Each day, more than 25,000 heavy duty trucks travel I-40/75 in West Knoxville, I-40 through Downtown Knoxville handles nearly 20,000 trucks, roughly 18,000 trucks use I-40 in East Knox County, and I-75 in North Knox County carries more than 12,000 trucks.

Typically when freight is delivered to a city by rail, barge, airplane, or pipeline, 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.

Since both CSX and Norfolk Southern operate railroads in the TPO Area that act as part of the national network, much of the rail freight tonnage on area railroads is passing through, or overhead freight. Railroads throughout the TPO Area handle 92 million tons of bulk freight with an additional 5 million tons of intermodal freight each year. Only 1.7 million tons of bulk freight and 77,000 tons of intermodal freight have at least one trip end in the TPO Area, meaning 98% of the total bulk freight and 98% of the intermodal freight is overhead freight. The 77,000 tons of intermodal rail freight handled locally is all outbound, with no intermodal rail freight destined for the TPO Area. Although there are not any intermodal facilities in the TPO Area, intermodal freight may be intermodal containers already placed on flat rail cars when they arrive in the TPO Area then loaded with bulk freight. Chart 10 shows the total annual tonnage of freight handled in the TPO Area (dark shaded bars) versus the annual tonnage of this freight that consists of at least one trip end in the TPO Area (light shaded bars).

Chart 10: Annual Freight Tonnage handled in the TPO Planning Area



There is a bulk transloading facility operated by CSX Transflo near the University of Tennessee campus which primarily handles plastic pellet products and bulk materials that can be loaded onto rail cars. Bulk transloading facilities are equipped to handle the transferring of 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 instead.

There are eight facilities in the TPO Area that contain port facilities. Burkhart Enterprises, located along the French Broad River in the Forks of the River Industrial Park, has the capability to transfer freight between barge, rail, and truck. 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 the TPO Area. Maps of freight facilities can be found in Chapter V, Regional Intermodal Transportation Plan.

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, 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.

Existing Studies, Plans, and Programs

Since the Long Range Transportation Plan of 2002, the TPO developed an Overview of Goods Movement for the Knoxville Urban Area that provides a basic understanding of urban goods movement by truck, rail, barge, airplane, and pipeline along with commodity flow data from 2002. The Overview was updated and used in this Plan to identify the existing freight system and some of the issues surrounding the movement of freight throughout the TPO Area.

Issues

The challenges of urban goods movement are 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.

While the Reebe Transearch® data provides an excellent view of the Region's role in the freight industry, much is yet unknown about the movement of freight within the TPO Planning Area. Many studies commissioned to determine

local freight facilities, patterns, routes, volumes, and constraints and opportunities are more than ten years old and are in need of updating.

Trucking

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 led 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 Reebe Transearch® data shows that annually, more than 2 million truck trips on interstates in the TPO Area are operating with empty trailers. This translates into about 6,000 trips per day, accounting for a significant amount, 20%, of the overall truck traffic. Many of these trucks are designed to handle a certain type of commodity or have handled a commodity that leaves traces behind, such as coal, gravel and other natural minerals, petroleum and other liquids, or gases. After delivering the commodity, the truck trailer must return empty unless a common commodity can be returned. Most long haul truck carriers will attempt to maximize their truck usage by arranging a return freight shipment.

Rail

Throughout the TPO Area, capacity constraints exist along both Norfolk Southern lines and CSX lines due to the

large amount of pass through rail traffic. Another 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.

Maritime

The barge industry within the TPO Area 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. The minimum draft depth for the Upper Tennessee River is nine feet, meaning the River can handle barges that protrude no more than nine feet into the water, which is acceptable for inland waterway barge vessels. There has been deposition of sediment along parts of the Tennessee River that has narrowed the channel width and impacted the draft depth. The U.S. Corps of Engineers is scheduled to dredge the channel in the summer of 2005.

The 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.

Air

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, the Airport Master Plan identifies deficiencies with both routes and calls for improvements that would provide safer, easier, and more efficient access to the Interstate system.

Pipeline

The Middlebrook tank farm is 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 tank farm that uses

Middlebrook Pike. Improvements to Ed Shouse Drive, Gallaher View Road, and Weisgarber Road have facilitated truck movements to the Interstate system.

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.

Objectives and Proposed Actions

The following objectives were developed to address urban goods movement within the TPO Area.

The TPO will develop a freight plan. Since freight data is kept countywide, the study area for the freight plan may include all of Knox, Blount, Sevier, and Loudon Counties, even though only portions of Blount, Sevier, and Loudon County are in the TPO Area. The TPO should undertake the following action items in the formulation of the freight plan:

- Identify resources available to the TPO that can assist in planning for the movement of freight and urban goods;
- Identify areas and industries throughout the study area that generate significant freight traffic;
- Identify stakeholders of the local freight community;
- Develop and issue a survey to the freight community that allows the TPO to gain a better understanding of the freight industry and to evaluate how the TPO might participate in freight planning;
- Develop a freight stakeholders group that includes members of the freight community, TDOT, local transportation officials, TPO staff, and the University of Tennessee Transportation Center;
- Collect data on freight trip characteristics including number of trips generated, peak time of day for freight trips, number of stops, mode of transportation, routes taken, and length of trip;
- Identify the challenges of the urban transportation system that impede on the movement of freight;
- Evaluate future land use plans to identify areas where future growth in freight traffic may occur.

As a result of the freight plan, strategies for incorporating freight projects into the TIP and CMAQ application process and into local plans should be identified.

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 that separate 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.

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. In addition, 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 should:

- Study the feasibility of developing an intermodal facility in the Region;
- Identify possible locations for an intermodal facility.

Programmed and Planned Projects

There are many highway projects identified in Tables 8, 9, and 9a 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 feel 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 and goods may have to be accomplished through maximizing the existing transportation system and taking advantage of alternative freight transport modes.

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 way 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 18. To develop the model, mathematical relationships between travel activity and household socio-economic characteristics were derived from an extensive travel behavior survey that was conducted in the year 2000. In this survey, over 1,500 households in Knox and Blount Counties were requested to record their travels in a one-day period, including information on trip purpose, origin

and destination of each trip, mode of transportation used, and time of day the trip was made. The model was then developed based on the assumption that households with similar socio-economic characteristics such as household income, number of school-age children, and vehicle ownership would exhibit similar travel activity. These household characteristics are available from the U.S. Census and are input into the model based on their distribution across smaller geographic areas in the Region known as Traffic Analysis Zones (TAZ).

In addition to the socio-economic inputs at the TAZ-level, the model also includes a mathematical representation of the roadway network through a system of links and nodes. Each link in the model represents a segment of roadway that is described by several attributes such as functional classification, speed limit, number of lanes, pavement width, 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.

Map 18: Knoxville Regional Travel Demand Model Boundaries



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.

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 Knoxville Regional 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 System 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, with adjustments being made as necessary.

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
Ellijoy 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
Boys 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 System 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 System (CMS) 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

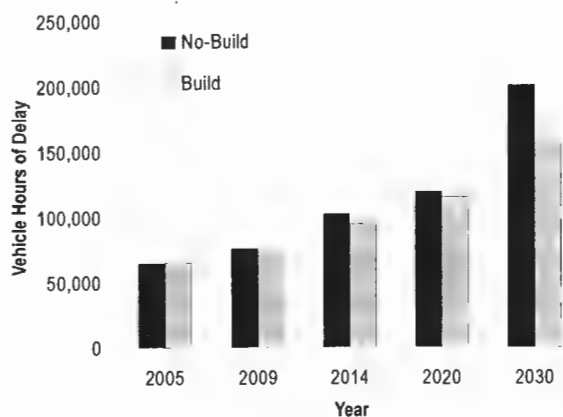


Chart 12: System-Wide V/C Ratio > 0.84 Comparison

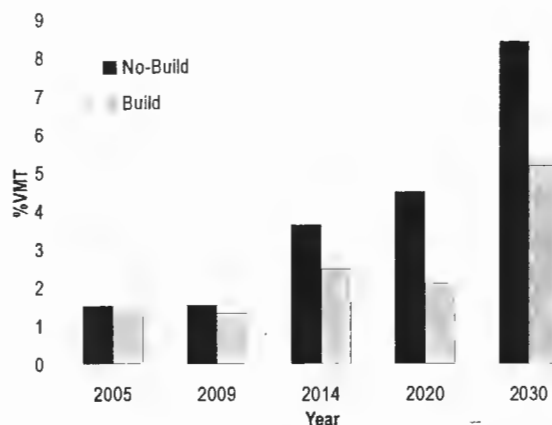


Chart 13: Anderson County Delay Comparison

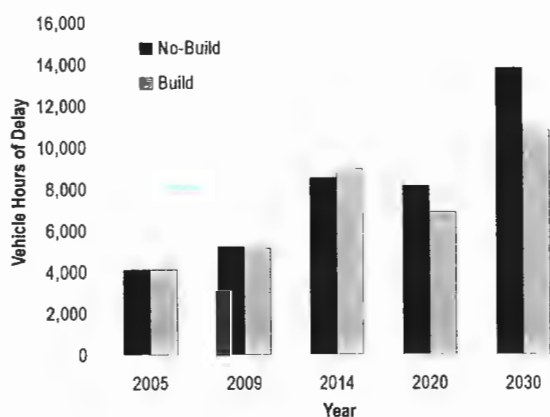


Chart 14: Anderson County Average V/C Ratio Comparison

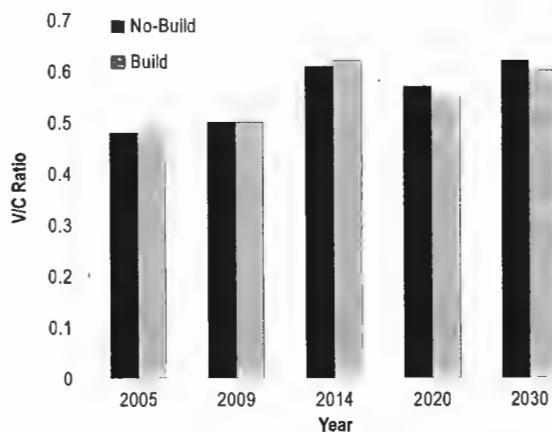


Chart 15: Blount County Delay Comparison

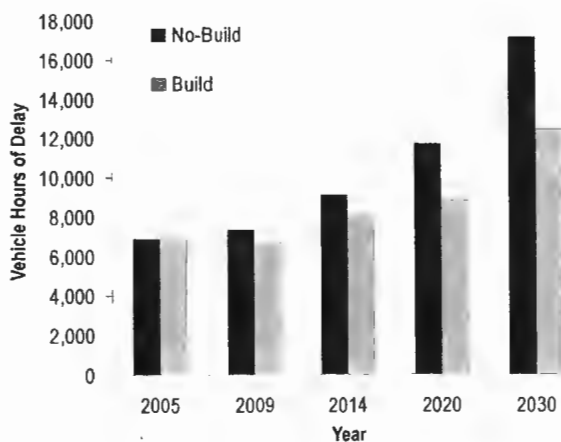


Chart 16: Blount County Average V/C Ratio Comparison

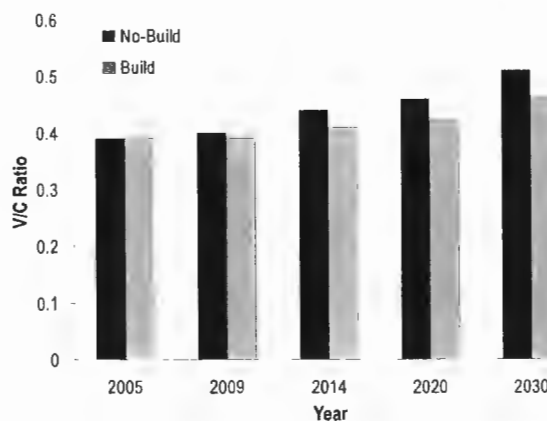


Chart 17: Jefferson County Delay Comparison

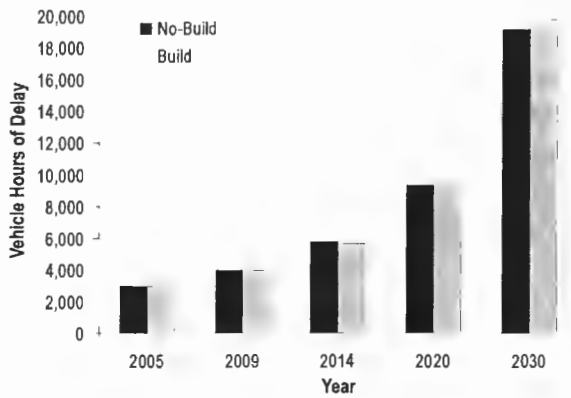


Chart 18: Jefferson County Average V/C Ratio Comparison

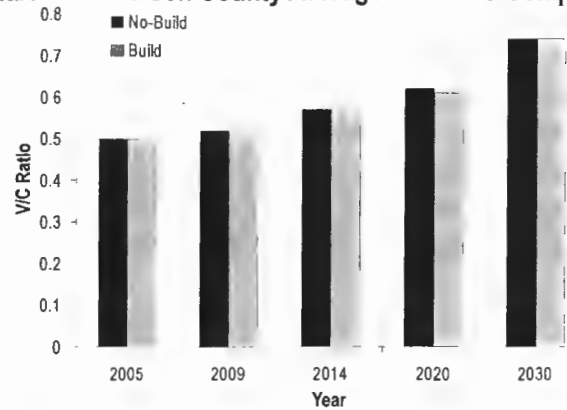


Chart 19: Knox County Delay Comparison

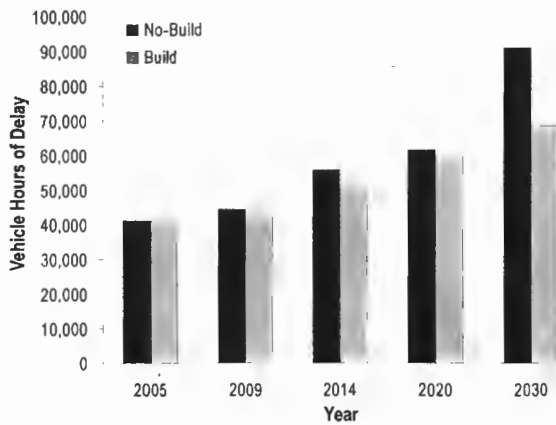


Chart 20: Knox County Average V/C Ratio Comparison

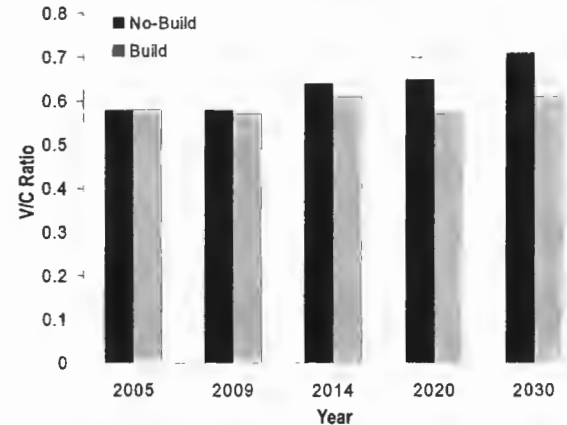


Chart 21: Loudon County Delay Comparison

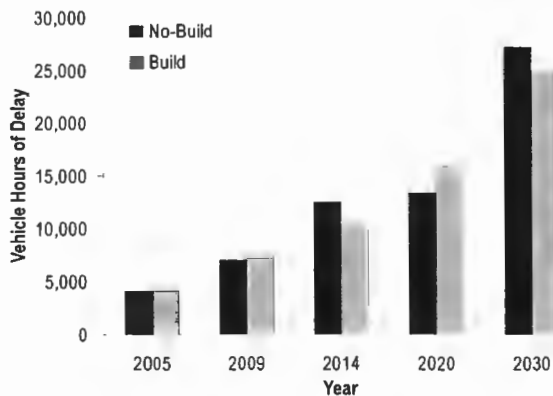


Chart 22: Loudon County Average V/C Ratio Comparison

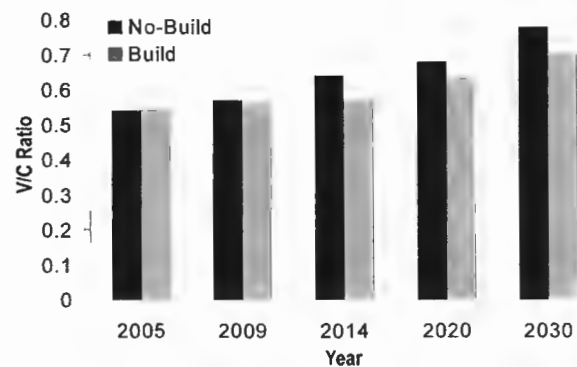


Chart 23: Sevier County Delay Comparison

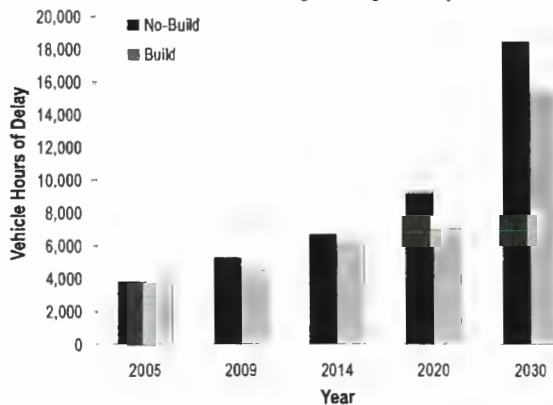
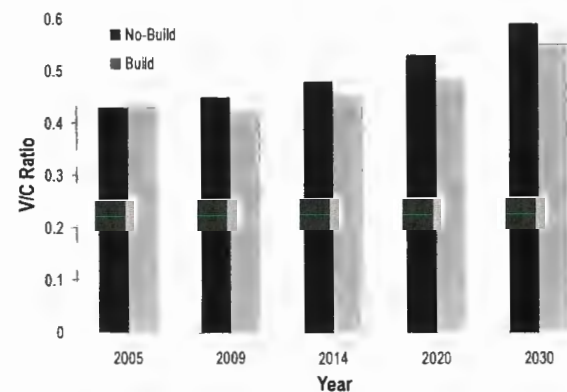


Chart 24: Sevier County Average V/C Ratio Comparison



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

System 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 19: 2014 Remaining Congested Roadways

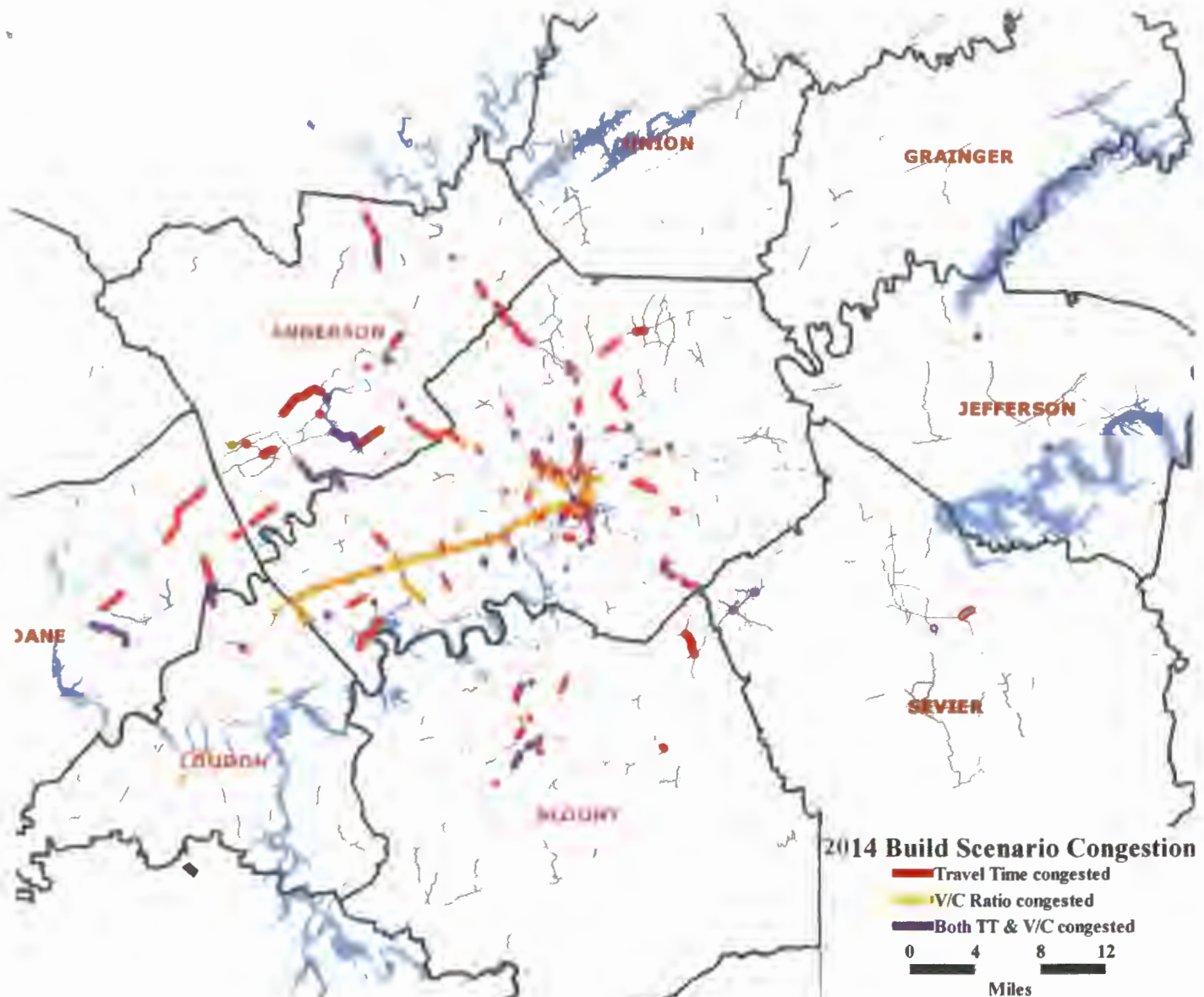


Table 15: 2014 Remaining Congested Roadways Greater than One-Half Mile in Length

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
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. Seviars 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
Boyd's 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
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 20: 2020 Remaining Congested Roadways

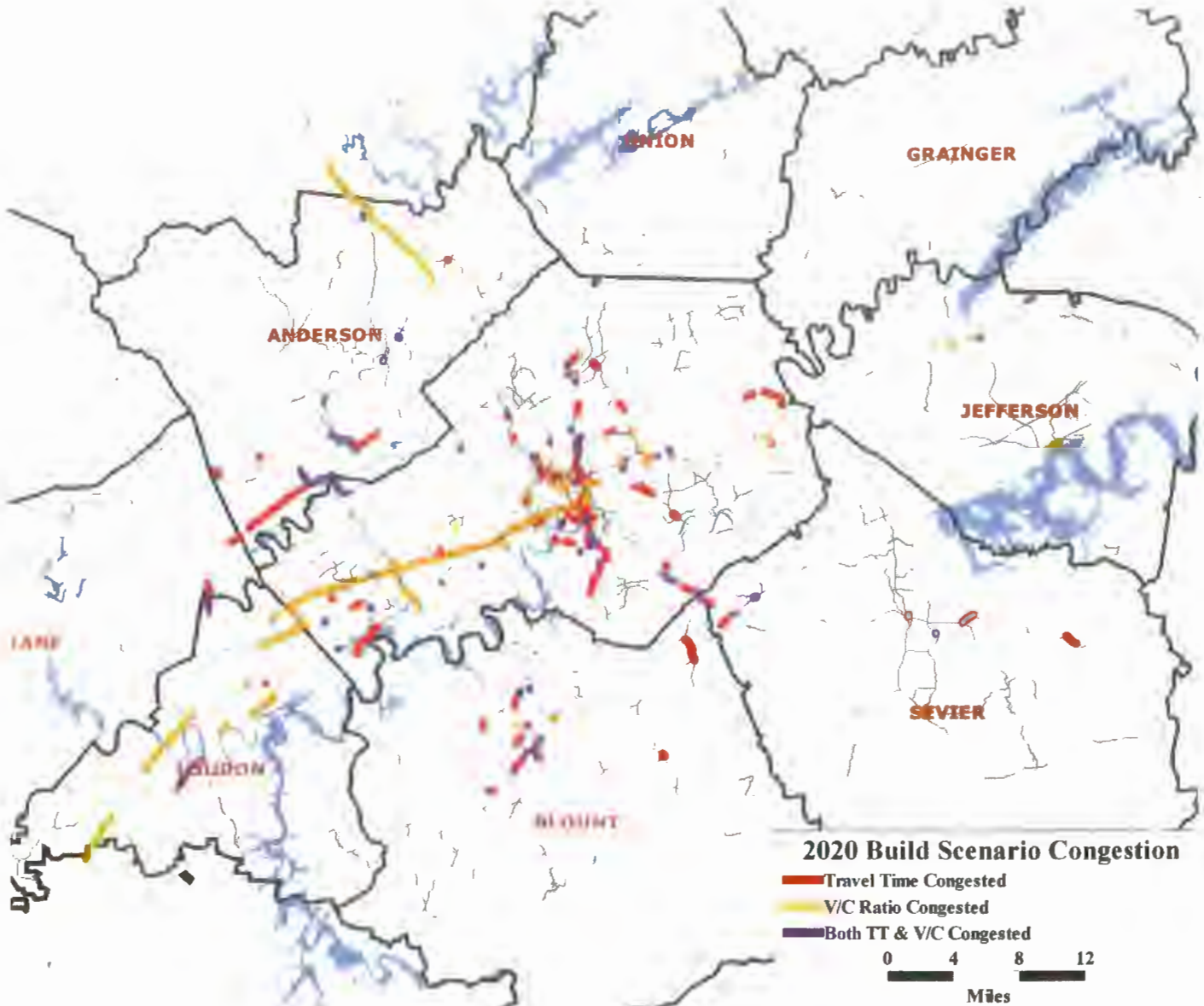


Table 16: 2020 Remaining Congested Roadways Greater than One-Half Mile in Length

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
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 21: 2030 Remaining Congested Roadways

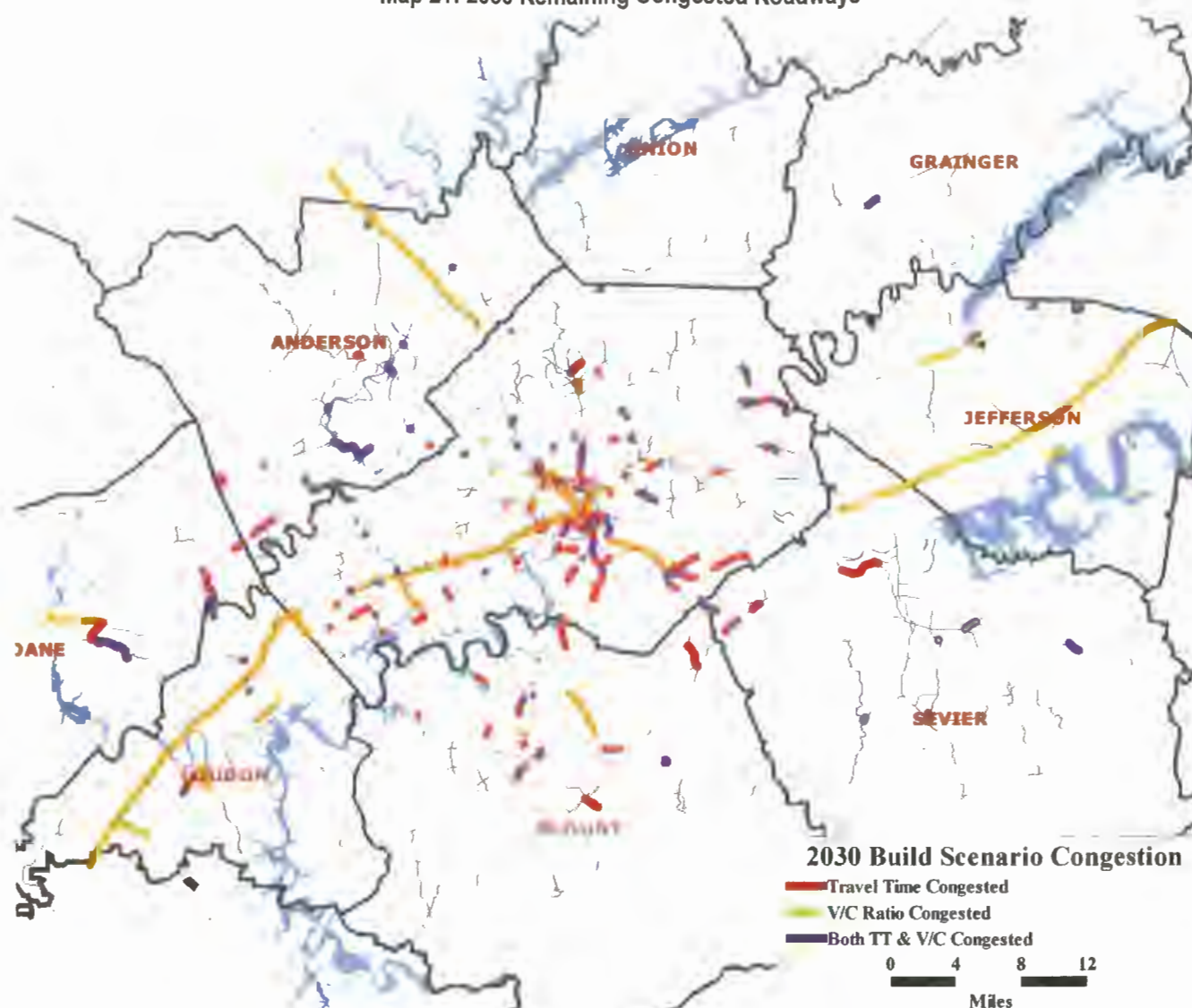


Table 17: 2030 Remaining Congested Roadways Greater than One-Half Mile in Length

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
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

Table 17: 2030 Remaining Congested Roadways Greater than One-Half Mile in Length

Roadway	Length (miles)	County	Congestion Criteria
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
Boyd's 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
Boyd's 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
Boyd's 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 System 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 System 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.

- 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.
- 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 three 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 Systems

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 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 following information in this section of the Long Range Transportation Plan is intended to provide an overview of the CMS Plan, since it is contained in a separate document that provides more detail.

The requirement for a CMS Plan originated from federal regulations related to the Intermodal Surface Transportation Efficiency Act (ISTEA) legislation in 1991, and carried forward in its successor, the Transportation Equity Act for the 21st Century (TEA-21). The federal regulations require that a CMS be established in all metropolitan areas with a population of greater than 200,000, and sets out specific guidelines for six components that must be addressed at a minimum. The six components and the specific ways that they are addressed by the Knoxville CMS are as follows:

System Monitoring

The determination must first be made about which transportation modes are most pertinent to monitor in regards to congestion problems. The street and highway system in the Knoxville Region is the predominant mode of transportation, and affects the mobility of personal vehicles, freight, and public transit; therefore it was determined that the CMS should include all roadways that carry an average daily traffic volume of 10,000 vehicles or greater.

Performance Measures

This involves the definition of parameters used to measure the extent of congestion based on locally determined thresholds for system performance. There were 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 its 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 global positioning system (GPS) units attached to vehicles that travel on roadways in times of peak hour congestion and in times of off-peak traffic conditions. The travel time and average speed are compared for the same roadway in order to determine the extent to which congestion is affecting travel. Serious congestion for our area was determined to be when it takes twice as long to travel the same segment of roadway in the peak hour as it does during the off-peak.

Congestion Identification

This component includes the development of a data collection program that will provide for adequate system monitoring and 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 CMS 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 identified the congestion on two separate levels, Congested Corridors and Congestion Hot-Spots. Congested Corridors were 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 22 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 23 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 24.

Map 22: TPO Planning Area Congested Corridors (2002)

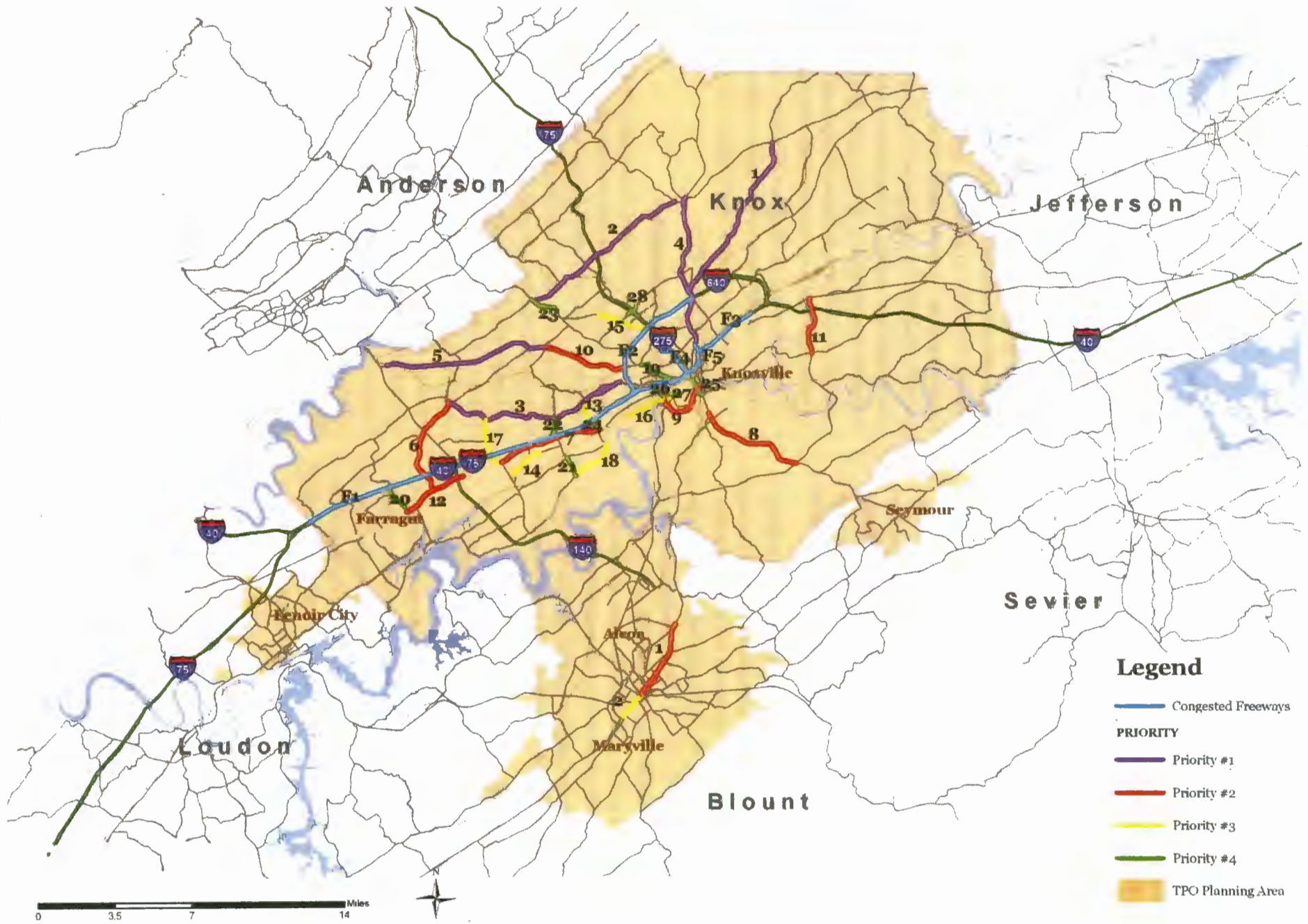


Table 18: TPO Planning Area Congested Corridors (2002)

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 23: TPO Planning Area Congestion Hot Spots (2002)

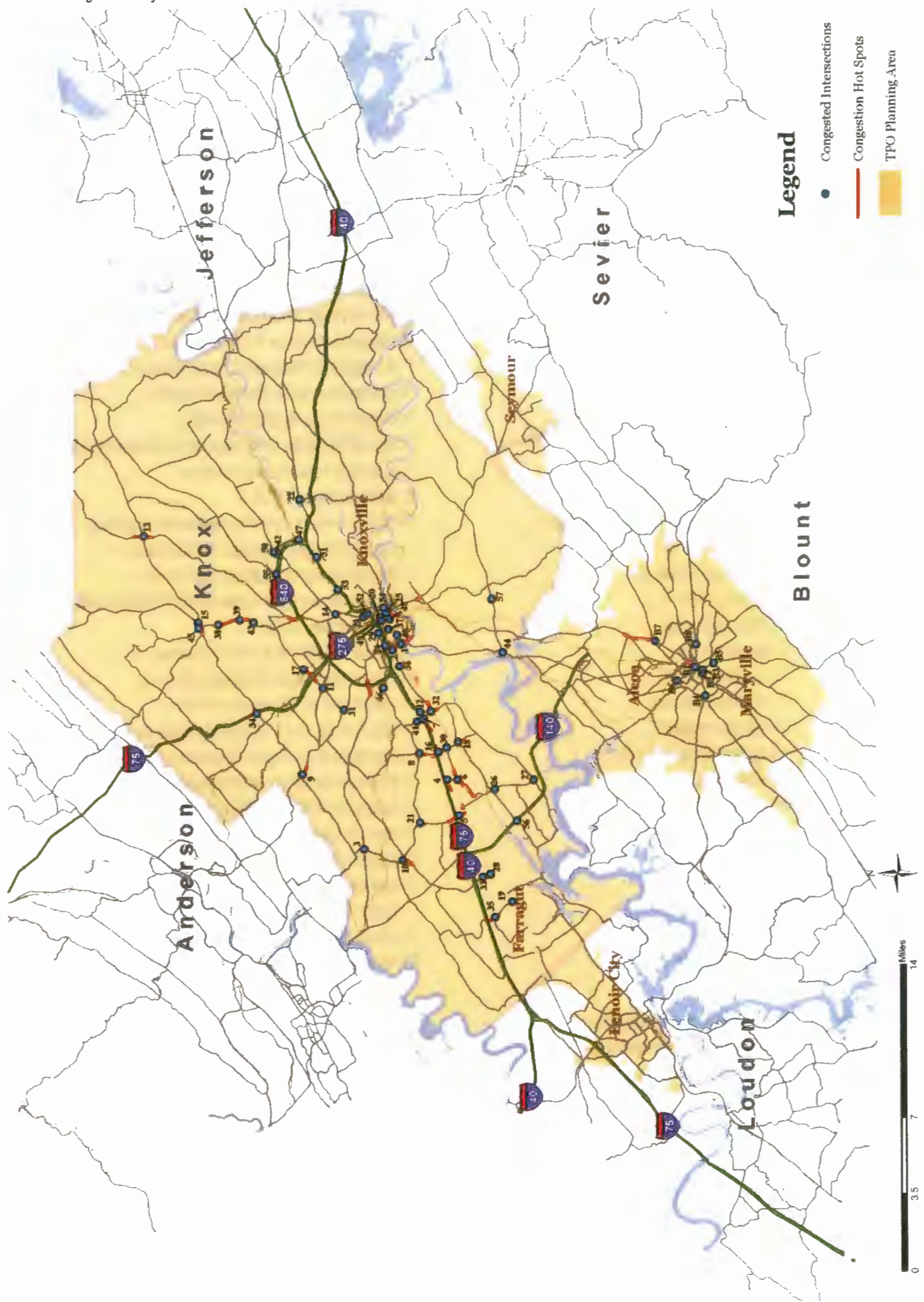


Table 19: TPO Planning Area Congested Intersections (2002)

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 24: Proposed Highway Projects that Address Congested Areas

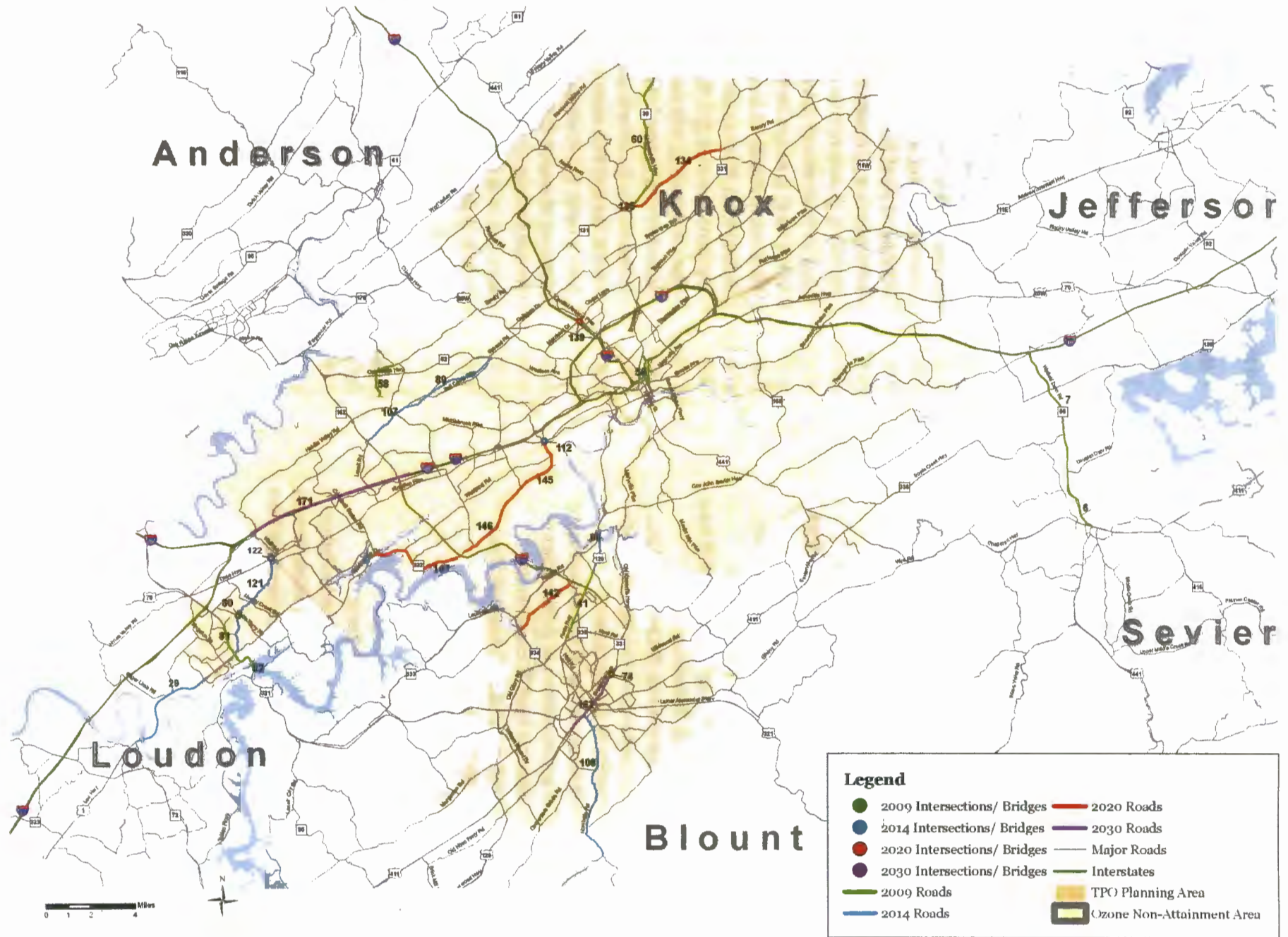


Table 20: Congestion Mitigation Strategies

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	✓		✓	✓	✓	✓				✓	✓	✓	✓		✓		✓			
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)	✓		✓	✓	✓	✓	✓			✓										

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 CMS attempts to identify the most appropriate mitigation strategy on a case-by-case basis. The intent of the CMS regulations is to first investigate mitigation strategies that focus on improving transportation efficiency and reducing travel demand as a means to reduce congestion before resorting to new roadway construction or widening projects that serve single occupant vehicles (SOV). The Knoxville CMS identified a menu of congestion mitigation strategies that provided a stepwise method of evaluating operational and travel demand reducing improvements prior to determining that additional SOV capacity was warranted. The only drawback to this methodology is the lack of technical tools available to the TPO to effectively quantify the amount of congestion reduction that could be expected from some of the mitigation strategies, especially those that involve transportation demand management.

The TPO convened special meetings with representatives from each jurisdiction on the Technical Committee in order to subjectively identify which strategies were appropriate for each congested corridor. In cases where capacity or new roadway improvements were identified, the CMS recommends complementary mitigation strategies that should increase the effectiveness of the outcome as shown in Table 20. For example, all roadway widenings 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.

Implementation Strategy

The mechanism for implementing the mitigation strategies that are identified by the CMS 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.

Monitoring of CMS Effectiveness

A process for periodic assessment of the efficiency and effectiveness of implemented strategies is a key component of a fully operational CMS, although it is also one of the more challenging aspects. 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 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 CMS 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.

Progress Since the Adoption of the 2002 Long Range Transportation Plan

The CMS Plan was completed and adopted by the TPO Executive Board subsequent to the adoption of the 2002 Long Range Transportation Plan. Prior to the formal CMS Plan being developed, the TPO utilized separate mechanisms for defining congestion that were not centralized into the single CMS document that is now available.

Summary of CMS Interaction with the Overall Planning Process

As stated in the CMS Plan document, the CMS is not intended to supercede the other elements of the transportation planning process, nor is it intended to

prioritize all transportation projects. The primary purpose of the CMS 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. A flowchart is included in the CMS Plan document that depicts the interaction of the CMS with the transportation planning process.

Along with the adoption of the CMS, the project selection criteria for the LRTP, TIP, and CMAQ program were revised. The scoring system used in the above criteria provides a direct mechanism for the CMS Plan to be considered in the project selection process, which ultimately determines the projects that are to be implemented.

The LRTP project application lists the following in its scoring criteria under the goal of System Efficiency, which relates directly to the CMS and is assigned 10 out of the total possible 70 points:

1. "Is the project listed as a congested corridor/ intersection in Chapter 3 of the Congestion Management Systems Plan?"
2. "Does the project fulfill the congestion mitigation strategies in Chapter 4 of the Congestion Management Systems Plan?"

The project selection criteria for the TIP includes the following scoring system related to System Efficiency and the CMS (out of a possible 95 points):

1. "Is the project listed as a congested corridor/ intersection in Chapter 3 of the Congestion Management Systems Plan?" (10 points)
2. "Does the project fulfill the congestion mitigation strategies in Chapter 4 of the Congestion Management Systems Plan?" (5 points)
3. "Does the project promote a diversion to High Occupancy Vehicles/Transit?" (5 points)
4. "Does the project include ITS elements?" (5 points)

The project selection criteria for the CMAQ includes the following scoring system related to System Efficiency and the CMS (out of a possible 90 points):

1. "Is the project listed as a congested corridor/ intersection in Chapter 3 of the Congestion Management Systems Plan?" (5 points)
2. "Does the project fulfill the congestion mitigation strategies in Chapter 4 of the Congestion Management Systems Plan?" (5 points)

Summary of Implemented CMS Strategies

Several congestion mitigation strategies have already been implemented or are under development, both as stand-alone projects and as complementary to capacity improvement projects. Perhaps two of the most important strategies in terms of the extent of their overall reach are the travel demand reduction program implemented by the TPO known as Smart Trips and the installation of Intelligent Transportation Systems (ITS) technologies on 41-plus miles of urban interstates in Knoxville, which will be completed in 2005 by TDOT. More information regarding both the Smart Trips Program and the ITS initiatives in the Region are provided in Chapters IX and X of this document.

Six of the congested corridors identified in the CMS were funded for operational improvement projects, primarily intended to analyze the signal progression to provide the most efficient traffic flow possible based on the variations in traffic throughout the day. The six congested corridors that were analyzed were Broadway, Kingston Pike, Middlebrook Pike, Western Avenue, Chapman Highway, and Clinton Highway. Before and after studies have been completed for four of the above corridors and a summary of the operational improvement that was provided follows:

- Broadway (20 signalized intersections between Jackson Avenue and I-640) – The average speeds over the three peak periods of the day increased from 21 mph to 28 mph after the new signal timings were implemented, a 33% increase;
- Kingston Pike (25 signalized intersections between Cherokee Boulevard and Bridgewater Road) – The average speeds over the three peak periods of the day increased from 26 mph to 29 mph, a 12% increase;
- Middlebrook Pike (23 signalized intersections between Cedar Bluff Road and 21st Street) – The average speeds over the three peak periods of the day increased from 28.5 mph to 33.5 mph, an 18% increase;
- Western Avenue (23 signalized intersections between Palmetto Road and Women's Basketball Hall of Fame Drive) – Overall stopped delay was reduced in the three peak periods of the day by 30% and the average speeds increased by 16%.

Issues

The CMS is a challenging process to fully implement as is evidenced by experiences of other MPO areas in the nation. The most challenging aspects of the CMS include the following:

Data Collection

The travel time data collection proved to be an immense task as it was completed by the TPO staff without any contracted assistance. Even though GPS units provide for improved efficiencies in the process, there is still the matter of driving every roadway with greater than 10,000 vehicles per day, which has to be done multiple times in order to obtain a statistically valid sample. The scale of data collection prevents the TPO from updating the CMS more than every three years at this point in time, although once the ITS system has been fully implemented on the urban interstate system it should provide a tremendous amount of data on travel speed and congestion on a daily basis for interstates.

Quantification of Congestion Mitigation Strategies

The TPO requires additional tools to effectively quantify the benefits of some of the congestion mitigation strategies. A new travel demand forecasting model was delivered to the TPO in March 2004, which greatly assists in both identifying congestion as well as measuring the effectiveness of certain strategies, but not all. For the other strategies, the TPO plans to enhance its current methodology of subjectively analyzing and making assumptions of potential benefits of certain strategies through the use of additional computer software programs. Two specific tools that are planned to be utilized in the future are the Travel Demand Management Evaluation Model software and the ITS Deployment Analysis System (IDAS), which will aid in quantifying the benefits of these types of projects for the next update of the CMS plan.

Strategies Beyond the TPO's Control

Certain strategies that deal with land use policies and growth management can be the most effective in managing congestion, although they are somewhat beyond the control of the TPO since land use decisions are made by local jurisdictions. Also, utility districts can exert a great amount

of influence on growth patterns depending on where sewer and water are extended to.

Objectives and Proposed Actions

Since the CMS is a continuing process, there are several proposed actions that the TPO is pursuing in order to enhance and improve the process for identifying and managing congestion in the Knoxville Region. Some of the key objectives and actions include the following:

- Begin data collection for update of the CMS prior to the next LRTP development. The TPO intends to update the CMS at least every three years, which means an update should be completed in 2006. Travel time data collection will likely commence once the development of the current LRTP and conformity determination have been completed;
- Investigate appropriate technical analysis tools for quantifying the effectiveness of congestion mitigation strategies. The TPO will look into available software packages that can be used to analyze congestion reduction such as the IDAS software which analyzes ITS improvements as well as travel demand management software tools;
- The full implementation of ITS on the Interstate system will allow the TPO to obtain much more detailed data, which may be used to revise some of the performance measures used to identify congestion.

Conclusion

The TPO has made great strides since the previous LRTP in the area of congestion management planning. More challenges lie ahead in being able to update the CMS and enhance its effectiveness. 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.

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 ridematching, 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;
- 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. WBIR and Journal Broadcast Group are our media sponsors. Smart Trips also has a brochure and a website targeted to the general public and holds a Commuter Challenge each April.

An online ridematching service is provided by Smart Trips free of charge to the public. The Smart Trips website also provides a registration form for the KAT downtown bus pass program and for the City of Knoxville and Knox County Smart Trips program. A survey tool has been developed that is utilized to collect information on employees' current travel behavior and gauge what types of incentives will work best at that worksite to encourage alternative transportation.

Progress Since Adoption of the 2002 Long Range Transportation Plan

The Smart Trips website was completed, <http://smartrips.knoxtrans.org/>. The website links people to the free online carpool ridematching 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).

Tennessee Valley Authority (TVA), Knoxville Utilities Board (KUB), Knox County, and the City of Knoxville are all official Smart Trips participants. 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 \$2,000 and \$3,000 per year to drive alone;
- They don't know how to find out information (carpool ridematching, bus routes, etc.).

The formal unveiling of the Smart Trips Program for Knoxville and Knox County employees was announced in September 2004. This program includes 60 priority carpool parking spots in the City/County Building, free KAT bus passes, an online ridematching service dedicated to county and city employees, and prizes for participants.

Surveys were conducted at three major sites, the University of Tennessee Campus (24,000 students, faculty and staff), Covenant Health (10,000 employees), and TVA (1,500 employees at Downtown Knoxville site). Several other employers, including UT Medical Center (4,000 employees) and SAIC (900 employees), have agreed to conduct employee surveys.

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.

The marketing campaign for Smart Trips was conducted in spring 2004. Three television commercials were produced by WBIR for free and peak time advertising space was purchased from May 31, 2004 through July 2, 2004. These spots were matched by WBIR. Website space was also purchased for June through September. The animated website ad was developed by WBIR for free. Three radio ads were produced by Journal Broadcast Group and peak time advertising space was purchased by Smart Trips. The purchased ads were matched by the radio stations and website ads were placed on each of the radio stations' websites.

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. They may be organized as a division within a transportation or transit agency, as an independent government agency, or as a partnership between government and other community

organizations, such as a chamber of commerce (called a Transportation Management Association).

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;
- Do not limit TDM programs to commute trips;
- Integrate transportation and land use planning as part of a comprehensive TDM program;

- Involve stakeholders in TDM program planning and implementation, including transportation and land use planning agencies, transit providers, businesses, residents, and employees;
- Be sensitive to equity concerns by applying incentives equally (for example, by applying parking pricing to administrators as well as staff), and by providing positive incentives that balance negative incentives.

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 and expand current Knoxville Smart Trips Program to include the entire Region;
- Expand commuter vanpool program;
- Expand employee bus pass program beyond downtown.

Programmed and Planned Projects

TDM projects currently in the TIP include:

- Knoxville Smart Trips Program (CMAQ and CTAP);
- Downtown bus pass program.

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

- Knoxville Smart Trips Program (CMAQ 2005 round of projects).

TDM projects envisioned but not programmed include:

- Knoxville Smart Trips Program (2006-2009).

X. Intelligent Transportation Systems

Background

Intelligent Transportation Systems (ITS) refer to the use of advanced technologies to enhance the management and operation of transportation facilities, increase safety 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.

During the 1990s, 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 the TEA-21 Highway Trust Fund 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.

Progress Since the Adoption of the 2002 Long Range Transportation Plan

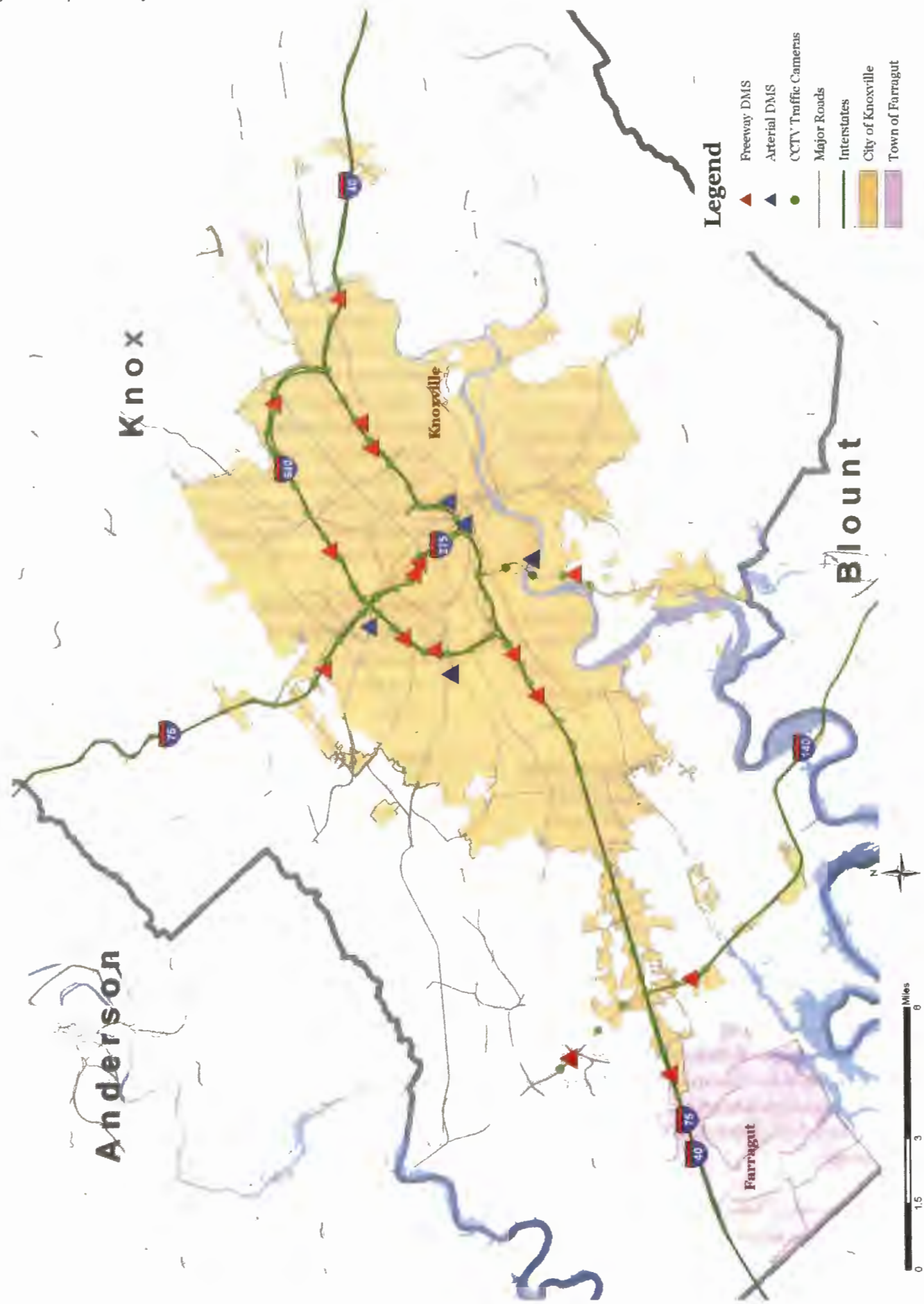
Since the last Long Range Transportation Plan, several ITS activities throughout the Knoxville Region have been initiated.

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), is currently under construction by TDOT to address operations and management of the Interstate system. The Knoxville TMS includes the installation of 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) are being placed at overhead locations along the interstates and expressways displaying traveler information. Eventually, five additional DMS locations along major arterials will be constructed (see Map 25).

The Traffic Management Center (TMC) is under construction at the TDOT Region 1 Headquarters on Strawberry Plains Pike. The TMC will act as a central point for the Knoxville TMS, collecting and coordinating all transportation related information, controlling the direction

Map 25: Knoxville Intelligent Transportation Systems



of traffic cameras, and issuing traveler information on the dynamic message signs. Travelers will also be able to check traffic conditions on a webpage and view real time traffic cameras. This phase of the Knoxville ITS system is planned to be operational in spring 2005. When fully operational, the TPO will be 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, 2003 and June 30, 2004, HELP trucks made 18,132 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 80% of the time. Of the vehicles assisted, 82.7% were passenger vehicles and 8.1% were tractor trailers or other heavy duty trucks.

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. Recently, Knoxville Area Transit (KAT) began an ITS Needs Assessment to help develop a prioritization plan. Based on the recommendation of the KAT Action Plan 2010, KAT is vigorously pursuing 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. Based on the KAT Action Plan 2010 recommendations, KAT (through the TPO) hired a consultant to review operations, make recommendations of what types of ITS technology would be appropriate for a system of KAT's size, prioritize which ITS technology should be implemented first, and to make sure the different types of technology recommended are compatible. Once this plan is completed and based on the recommendations, a second phase will begin. 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.

Both Knox County Transit (KCT) and the East Tennessee Human Resource Agency (ETHRA) are also pursuing ITS technologies. Both agencies already have global positioning 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 2007 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;
- 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;

- 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 objective 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

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

XI. Safety Planning

Background

The TEA-21 legislation consolidated 15 federal planning factors into seven broader factors. In TEA-21, safety is explicitly included as a planning factor. Prior to TEA-21, safety was often an inherent factor in project development and engineering design. Now, 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 (MPOs, DOTs, 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.

The reality of the existing challenges regarding safety planning are evident when reviewing national, statewide, and region-wide statistics for varying modes of transportation from the National Highway Traffic Safety Administration, U.S. Census Bureau, FHWA, and Knox County Health Department. Although there have been improvements and the rates of fatalities and injuries have declined on the national level over the years, there is continued room for improvements (see Map 26).

2003 National Statistics

- Fatalities- 38,252
- Injuries- 1,925,000
- Property damage- 4,365,000
- 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- 1.48
- Fatalities per 100,000 population- 14.66

2003 Tennessee Statistics

- Fatalities- 1,193
- Fatalities per 100 million population- 20.42
- Economic cost of traffic crashes (2000)- \$4.628 billion

Knoxville Region Pedestrian and Bicyclists Data

Hospital discharges involving a motorized vehicle and a

bicyclist in Knox County for 2000-2002:

- 2000- 20 discharges
- 2001- 23 discharges
- 2002- 24 discharges

Hospital discharges involving a motorized vehicle and a pedestrian in Knox County for 2000-2002:

- 2000- 54 discharges
- 2001- 36 discharges
- 2002- 48 discharges

There were 17 pedestrian related fatalities between 2001 and 2004.

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.

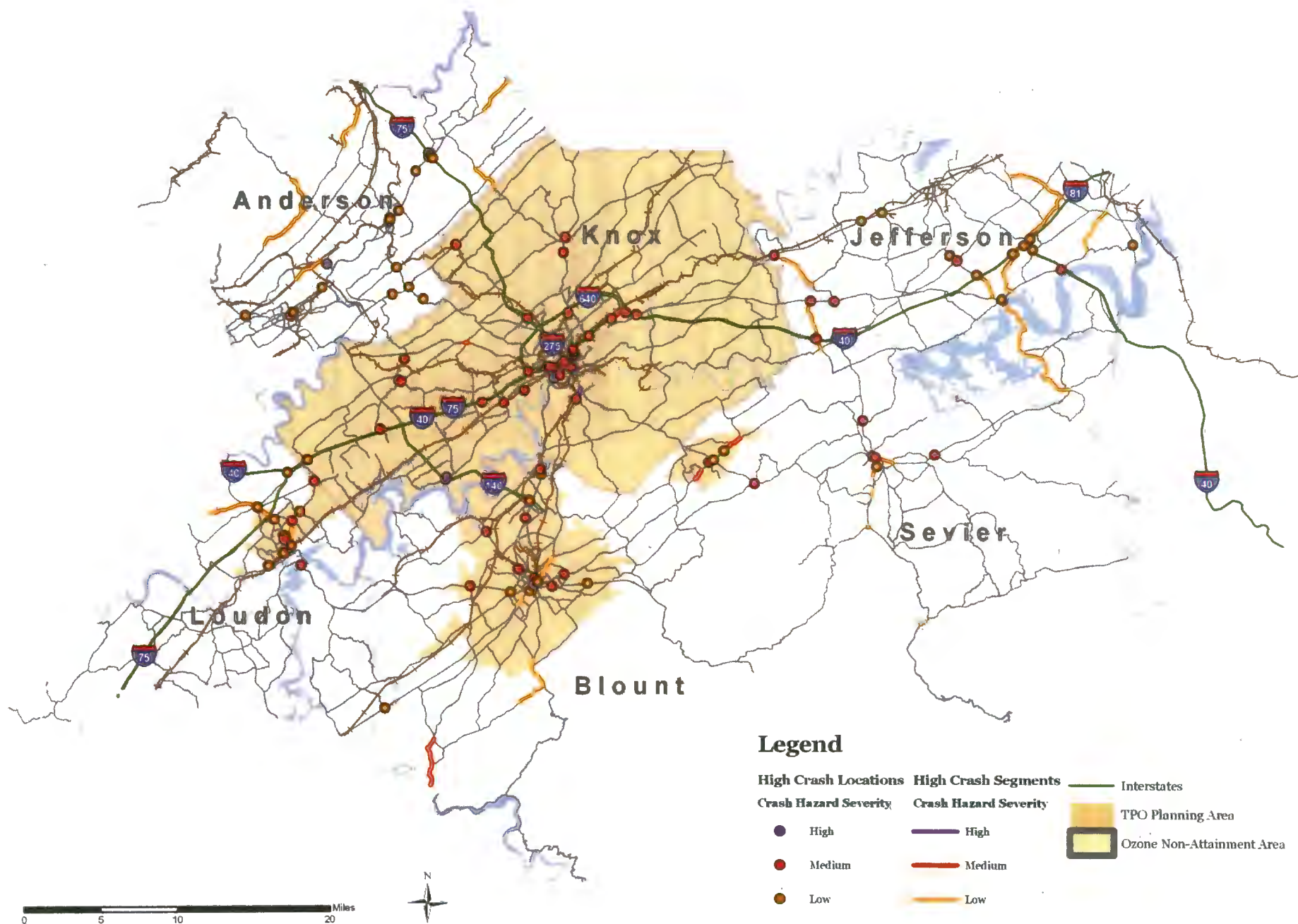
Progress Since the 2002 Long Range Transportation Plan

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 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.

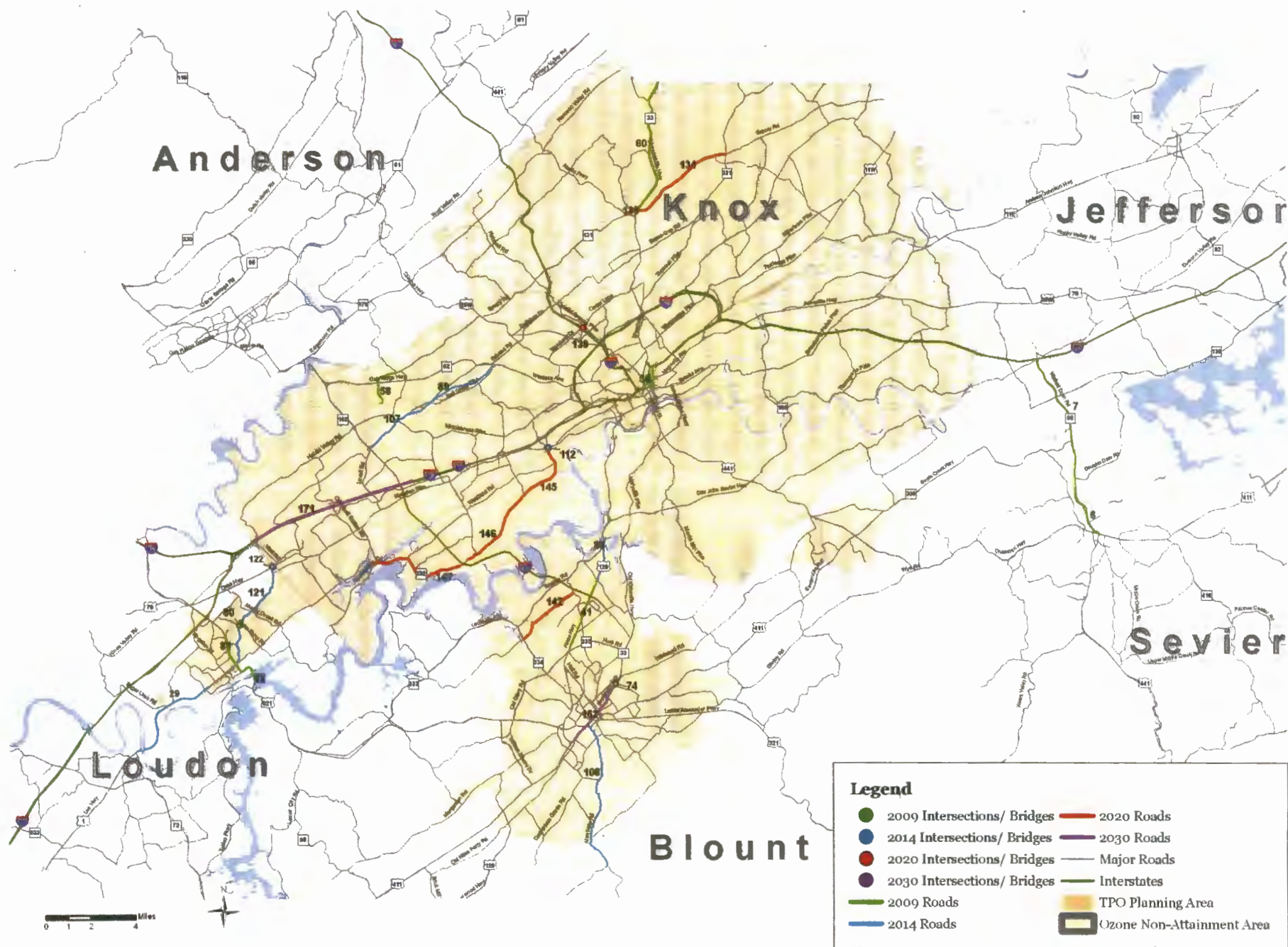
LRTP and TIP Project Selection Criteria

The project selection criteria for the Long Range Transportation Plan and the Transportation Improvement Program projects have been revised. 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 and Security. Highway projects identified in this Plan that address a high crash location receive greater emphasis and are shown on Map 27. As part of the scoring system to rank

Map 26: Knoxville Region High Crash Locations



Map 27: Proposed Highway Projects That Address High Crash Locations



projects for funding, projects can receive a maximum of 10 points for meeting Safety and Security goals and objectives.

The specific question related to safety 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 in the TIP application are:

- Identification of the crash rate;
- “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 (see Map 26).

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

County	# of locations with a hazard ratio >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;
- 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 I-40 westbound prior to the James White Parkway on-ramp;
- Install signage to prohibit “weave” movements from Broadway to James White Parkway on I-40 westbound;
- Improve warning signs on James White Parkway ramp to westbound I-40;
- 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 has improved following their implementation.

Public Transit: Safety and Security

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.

However, since the terrorist attacks of September 11, the efforts with regards to safety and security have reached a new level of importance. The Federal Transit Administration

has undertaken a series of major steps to help local transit providers prepare against a variety of threats. It is critical to integrate security throughout every aspect of transit programs. This commitment must be demonstrated by the continual emphasis on security from the procurement 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.

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.

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;
- 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.

As noted, Knoxville Area Transit is currently undertaking an Intelligent Transportation System (ITS) assessment. This effort will produce a blueprint of which technologies to implement first. Many of the benefits from ITS technologies can be safety and security. Camera systems, global positioning systems (GPS) that allow real-time tracking of vehicles, and better communications systems will all greatly enhance the level of security. Many of the other local providers are following suit and beginning to implement ITS technologies.

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.
- Finding financial resources to fund safety and security improvements.

Objectives and Proposed Actions

The primary objective of the Safety and Security 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;
- Ensuring cooperation and coordination among all agencies in incident management and emergency situations;
- 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;
- Establishing a long term vision that enhances the safety and security of all citizens.

Although the other six goals are not mentioned specifically in this section, increasing or improving safety and security in the transportation network are key planning factors addressed in the System Maintenance and System Efficiency Goals. 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 that 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.;
- 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 and security 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. If the ultimate goal is to eliminate fatalities, injuries, and property damage, then obviously continuous planning, cooperation, education, and research are essential.

In consideration of all the goals and objectives in the Long Range Transportation Plan, Safety and Security may actually be an indicator of the success of the other six goals. Furthermore, among the priorities of the public regarding their transportation system, Safety and Security ranks among the top.

XII. Air Quality-Transportation Conformity

Introduction

As a non-attainment 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 Transportation Equity Act for the 21st Century and subsequent transportation bills. 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”.

Background

As documented previously, on April 15, 2004 the Environmental Protection Agency designated an area encompassing all of Anderson, Blount, Jefferson, Knox, Loudon, and Sevier counties as well as the portion of Cocke County within the Great Smoky Mountains National Park as being in non-attainment of the National Ambient Air Quality Standard (NAAQS) for the pollutant ozone. 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 non-attainment 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 Non-Attainment 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 (NO_x), 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 Non-Attainment Area, the 1-Hour Budget Test for Knox County and the No Greater than Baseline Year 2002 Test for the balance of all other counties in the Non-Attainment Area. The 1-Hour Budget Test for Knox County is required because Knox County is designated as a “Maintenance Area” under the 1-hour ozone standard and has emissions budgets for VOC and NO_x that were previously established to meet that standard. The No Greater than Baseline Year 2002 Test is used in the other counties because emissions budgets have not yet been established and EPA determined that an area can demonstrate transportation conformity in the interim period by showing that on-road mobile source emissions of VOC and NO_x will be less in future years than what was observed in the year 2002.

Projections of on-road mobile source emissions were made using a travel demand forecasting model that has been calibrated using 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 Non-Attainment Area.

Conformity Statement – 8-Hour Ozone

Tables 22 and 23 summarize the results of the emissions analyses used to demonstrate conformity of the LRTP to the 8-Hour Ozone Standard.

Table 22: Test 1- 1 Hour Budget Test for Knox County (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	14.91	11.11	10.78

Oxides of Nitrogen (NOx)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	29.60	19.80	12.12	9.20

Table 23: Test 2- Regional Area No Greater than Baseline 2002 Test (tons/ day)

Volatile Organic Compounds (VOC)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	27.45	27.45	27.45	27.45
Projected Emissions	19.01	14.70	11.25	11.34

Oxides of Nitrogen (NOx)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	57.25	57.25	57.25	57.25
Projected Emissions	37.05	22.88	14.60	10.27

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 2006.

Interim Emissions Test for PM2.5

The emissions of concern from on-road mobile sources that contribute directly to the PM 2.5 pollution problem (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 23a 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 23a: 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	285.02	211.69	177.70	191.4

Oxides of Nitrogen (NOx)	Analysis Years			
	2009	2014	2020	2030
Emissions Budget	30,065	30,065	30,065	30,065
Projected Emissions	18,113	11,883	7,509	5,666

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- 2006 Amendment.

Interagency Consultation Summary

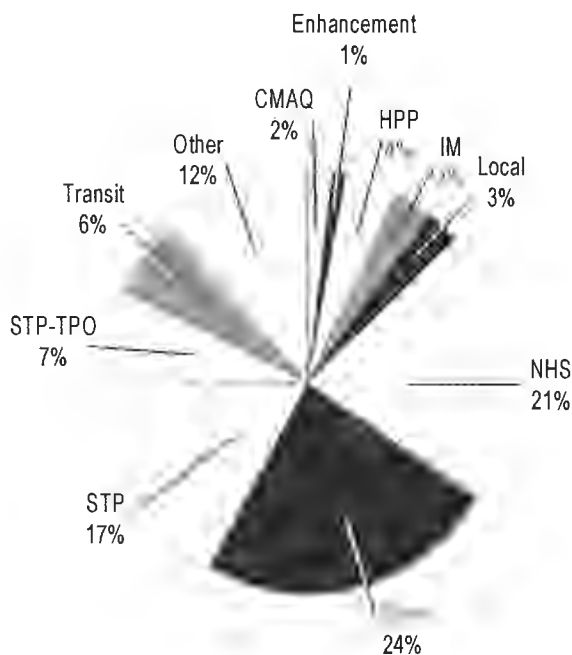
The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation (IAC) process to formally deliberate any issues. The Interagency Consultation Group included participants from EPA, FHWA, FTA, TDOT, Tennessee Department of Environment and Conservation (TDEC), the National Park Service, Knox County Air Quality Management Department, and representatives from affected local jurisdictions. Several 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.

XIII. Financial Analysis

The Transportation Equity Act of the Twenty-First Century (TEA-21) 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.

Chart 25: 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 \$120 million under this program. The following projects are examples funded with this funding source:

- Widen I-40 from Winston Road to Hollywood Road;
- Widen I-640 from I-75 to the Broadway Interchange.

Interstate System/ Interstate Maintenance (IM)

Reconstruction, maintenance, and improvement projects to the National System of Interstate and Defense Highways are eligible for this \$23.8 billion 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 \$120 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;
- Fund construction of the Transportation Management Center at TDOT Region 1 Headquarters.

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. TEA-21 expanded funding for an environmental provision (such as natural habitat mitigation, stormwater retrofit, and anti-icing and de-icing programs), to reduce extreme cold starts and modifications of sidewalks to meet Americans with Disabilities Act (ADA) requirements. 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. TDOT historically has expended approximately \$19 million of STP on state related projects in our Urban Area.

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:

- Weisgarber Road from Middlebrook Pike to Nightingale Lane;
- Purchase vans for Knoxville Commuter Pool;
- Sidewalk projects adjacent to various schools;
- Farragut Park-n-Ride lot;
- Middlebrook Pike from Cedar Bluff Road to Hardin Valley Road;
- Sandy Springs Road from US 411 to Montvale Station Road.

Bridge Replacement and Rehabilitation

Tennessee receives approximately \$67 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;
- Tazewell Pike Bridge over Flat Creek;
- 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 by funding transportation projects and programs that will improve air quality by reducing transportation related emissions. Historically, the TPO has received approximately \$1.5 million from the State. The following are some projects that have been funded with CMAQ dollars within Knox County:

- Purchase vans and buses for KAT, KCT (formally CAC), ETHRA, and Knoxville Commuter Pool;
- Traffic signal synchronization and coordination;
- Smart Trips Program;
- Truck Stop Electrification;
- Sidewalks/greenways;
- Transit improvements.

High Priority Projects (HPP)

The High Priority Projects Program provides designated funding for specific projects (commonly referred to as demonstration projects) identified by Congress. Projects funded with HPP within the TPO Area include:

- Emory Road from Gill Road to Bishop Road;
- Pellissippi Parkway from SR 33 to SR 73.

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 \$660.8 million per year. Of the amount that is collected by TDOT, approximately \$243.5 million was distributed to cities and counties and \$394.3

million was retained by TDOT with the remaining \$22.7 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.

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 Knoxville 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 Highway Rail Grade Crossing Programs.

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, set-aside under TEA-21, 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 TEA-21, 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 of TEA-21.

The following section details the methodology for financially constraining the 2005-2030 Knoxville Regional Long Range Transportation Plan. 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.

Streets and Highways Financial Constraint Methodology

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 24 displays the TPO’s sum for TDOT funding for each network year.

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 25 displays these historical percentages.

Table 24: 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

Table 25: 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 26 displays the funding source breakdown by network year totals.

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 27 displays the totals for each forecasting tool. The exponential forecast was the preferred prediction because it displayed a medium growth pattern.

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 28.

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

Table 26: 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

Table 27: 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

Table 28: 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.

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 (see Table 29).

Table 29: 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

Table 30 displays all projected revenues and expenditures by funding source. The table exhibits that the Plan is financially constrained for highway construction.

Streets and Highways Operations and Maintenance Revenues & Costs

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

Table 30: Streets and Highways Capital Costs vs Revenue by Horizon Year

Funding Program	2005 -2009			2010-2014			2015-2020		
	Revenue	Cost	Balance	Revenue	Cost	Balance	Revenue	Cost	Balance
Bridge	\$29,989,373	\$29,953,776	\$35,597	\$42,833,855	\$42,807,371	\$26,484	\$60,498,831	\$60,391,900	\$106,931
CMAQ	\$11,385,172	\$11,371,658	\$13,514	\$16,261,454	\$16,251,399	\$10,055	\$22,967,789	\$22,927,194	\$40,595
Enhancement	\$4,541,067	\$4,535,677	\$5,390	\$6,486,011	\$6,482,000	\$4,010	\$9,160,886	\$9,144,694	\$16,192
HPP*	\$98,594,008	\$98,565,256	\$28,752	\$108,968,804	\$108,947,412	\$21,392	\$48,866,352	\$48,779,982	\$86,371
IN	\$18,984,963	\$18,962,428	\$22,535	\$27,116,243	\$27,099,477	\$16,766	\$38,299,168	\$38,231,475	\$67,693
NHS	\$119,524,048	\$119,382,176	\$141,872	\$170,716,332	\$170,610,778	\$105,554	\$241,120,920	\$240,694,742	\$512,317
State	\$143,682,235	\$143,511,687	\$170,547	\$205,221,497	\$205,094,607	\$126,889	\$289,856,251	\$289,343,935	\$512,317
STP	\$97,431,504	\$97,315,855	\$115,649	\$139,161,526	\$139,075,482	\$86,044	\$196,552,696	\$196,205,292	\$347,404
STP-TPO	\$41,739,444	\$41,689,900	\$49,544	\$59,616,494	\$59,579,633	\$36,861	\$84,202,746	\$84,053,919	\$148,827
Local Jurisdictions	\$117,144,127	\$117,005,080	\$139,047	\$119,500,834	\$119,426,946	\$73,888	\$147,842,931	\$147,581,621	\$261,310
Total	\$683,015,941	\$682,293,494	\$722,447	\$895,883,050	\$895,375,107	\$507,943	\$1,139,368,571	\$1,137,354,754	\$2,013,817
Cumulative Balance			\$722,447			\$1,230,390			\$3,244,207

Funding Program	2021-2030			Total 2005-2030		
	Revenue	Cost	Balance	Revenue	Cost	Balance
Bridge	\$128,027,836	\$53,143,021	\$74,884,815	\$261,349,895	\$186,296,068	\$75,053,827
CMAQ	\$48,604,515	\$20,175,228	\$28,429,287	\$99,218,930	\$70,725,479	\$28,493,451
Enhancement	\$19,386,299	\$8,047,051	\$11,339,248	\$39,574,263	\$28,209,422	\$11,364,841
HPP*	\$103,411,144	\$42,924,888	\$60,486,256	\$359,840,308	\$299,217,538	\$60,622,770
IN	\$81,048,833	\$33,642,526	\$47,406,307	\$165,449,207	\$117,935,906	\$47,513,301
NHS	\$510,260,927	\$211,803,994	\$298,456,933	\$1,041,622,227	\$742,491,690	\$299,130,537
State	\$613,394,803	\$254,613,791	\$358,781,012	\$1,252,154,786	\$892,564,021	\$359,590,765
STP	\$415,945,496	\$172,654,641	\$243,290,855	\$849,091,222	\$605,251,271	\$243,839,952
STP-TPO	\$178,190,143	\$73,964,872	\$104,225,272	\$363,748,827	\$259,288,324	\$104,460,503
Local Jurisdictions	\$257,184,320	\$106,754,531	\$150,429,789	\$641,672,211	\$490,768,178	\$150,904,034
Total	\$2,355,454,316	\$977,724,542	\$1,377,729,774	\$5,073,721,878	\$3,692,747,897	\$1,380,973,981
Cumulative Balance			\$1,380,973,981			\$2,761,947,962

that includes not expanding or building new highways and placing greater emphasis on maintaining existing roadways since this 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 out years. Table 31 displays each county's current cost per lane mile.

The travel demand model produced the total lane miles expected per network based on the list of projects included in

this Plan. Table 32 displays these numbers. Minor collectors and local roads are not accounted for in these figures because of the limitations of the travel demand model.

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 2,754 in year 2009, $(2,754 - 2,690) = 64 / 4 \text{ years} = 16 \text{ lane miles}$. It is assumed that from 2005 to 2009 Knox County will increase its lane miles by 16 lane miles per year. Therefore, Table 33 displays that Knox County's total lane miles for the network year 2005-2009 is 13,610.

The above calculation was performed for all jurisdictions for each specific out year in order to get total lane miles for

Table 31: 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

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

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

Table 32: 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

Table 33: Knox County Total Lane Miles (2005-2009)

Jurisdiction	2005	2006	2007	2008	2009	Total
Knox County	2,690	2,706	2,722	2,738	2,754	13,610

each network year. The cost per mile calculation for each jurisdiction was multiplied to each network year's total lane miles in order to derive a county's operation and maintenance cost per out year. Table 34 displays this information.

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. Each county's sum was projected to year 2030 using a 3% growth rate. Table 35 displays the TPO's sum for each network year.

Financial Constraint

Table 36 displays that the street and highway operations and maintenance expenses are financially constrained for the life of this plan.

Table 34: County Operation and Maintenance Costs per Out Year

County	Cost/Lane Mile	2005-2009		2010-2014		2015-2020		2021-2030		Total	
		Lane Miles	Total Cost	Lane 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

Table 35: 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

Table 36: 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

Jurisdiction	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 Methodology

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 salaries for drivers, 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 source's 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 37 shows KAT's annual operating expenses and revenues during the ten-year period from 1995 to 2004.

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,

Table 37: 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

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 38 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 38: 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 its contribution when the federal government began phasing out its 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 its 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 10 to 20 cents the City invests, it receives 80 to 90 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 30 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 30-year time frame. Because most vehicles are used in everyday service, there is a certain limit of how much subcontracting service can ultimately be provided. Staff felt that it 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 time frame. 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 39 shows a snapshot by showing years 2005, 2010, 2015, 2020, 2025, and 2030 of the 30-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

Table 39: 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.

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 30 years from now.

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 30 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 40 shows the Tier 2 scenario analysis that reflects operating expenses if the KAT Action Plan 2010 and the DKTLTS 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 30-year time frame. 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 40 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 40: 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 + DKTLTS	\$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. 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;
- 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 41 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 41: 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

Table 42 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.

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.

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 43. 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

Table 42: 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.

Table 43: KAT Capital Needs- Baseline (Tier 1) Scenario 2005-2030*

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 Station2	\$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	

*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.

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

capital outlay proposed is 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.

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 44 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 20 buses over the 25-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 $\frac{3}{4}$ 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 each 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.

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 to replace aging trolleys will double to two trolleys per year. 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

Table 44: KAT Capital Needs (Tier 2) Scenario 2005-2030*

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	\$0	\$1,175,000
Downtown Knoxville Transportation Linkages Study	\$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

*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.

reflected in the Tier 2 analysis and calls for the need of 40 additional trolleys over the lifetime of this analysis. The actual expansion would be in 2005-2009 which would be 12 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, TEA-21 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 out-years. The final inflated project costs for the life of this Plan was approximately \$3.7 billion and the federal, state, and local revenues totaled \$4.9 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.

The passage of TEA-21 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.

Additional funding resources within TEA-21 include Transportation and Community and System Preservation Pilot, Access to Jobs, Transportation Infrastructure Finance and Innovation, and Clean Fuel Formula Grants. 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.

TEA-21 Grant Options

The Transportation and Community and System Preservation Pilot Program TCSP- (section 1221 of TEA-21)

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 (TEA-21 Users Guide, STPP). 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. Currently these dollars are earmarked for specific projects determined within Congress, but they still provide a possible funding tool for future innovative projects.

TEA-21 Transportation Infrastructure Finance and Innovation Act TIFIA- (section 1501 through 1504 of TEA-21)

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. TIFIA authorizes the U.S. Department of Transportation to make secured loans and extend lines of credit for projects up to a total value of \$10.6 billion.

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.

Other Local Funding Options

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 administering this fee is burdensome to the local government.

Bond Financing

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

Toll Roads

The Tennessee Tollway Authority (TTA) is authorized under Sections 54-15-101 to 54-15-120 of the Tennessee Code Annotated to construct, maintain, and operate toll roads, to acquire sites abutting on a toll road, and to issue bonds when the toll is collected. TTA members include the Commissioner of the Tennessee Department of Transportation, Controller of the Treasury, State Treasurer, one member appointed by the Speaker of the Senate, and one member appointed by the Speaker of the House of Representatives. There are approximately 240 toll facilities in the United States today, accounting for more than 5,000 miles of highways. Most of these miles have not been financed with federal support, rather, financing has come from borrowing in the tax-exempt markets. Tolls offer good revenue potential for facilities with sufficient traffic, however, they are sensitive to inflation due to the difficulty of adjusting tolls to match the change in costs. The construction and design costs are usually financed through debt with the money repaid over 20 to 30 years. Tolls are seen as an equitable source of revenue since like vehicles are charged the same amount to use a particular facility. Costs are also allocated to the user and are a direct benefit to the participants choosing to use the facility.

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 \$629.7 million per year of which TDOT collects about \$375.6 million (or 12.8 cents per gallon). Tennessee is ranked the 28th highest gasoline tax state with the national average at 21.61 cents per gallon. Tennessee's diesel tax rate is 18.4 cents per gallon compared to the national average of 21.99 cents, which ranks Tennessee 41st among all other states.

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. This occurred in 2004 when 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.

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 from 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.

XIV: Public Involvement

Meetings

The TPO engaged the public in the development of the 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, and goals and objectives for the Plan. Staff then sought input on major transportation issues for the Region. Approximately 30 people attended the three meetings held in Knox and Blount Counties.

The second round of public meetings was held in March 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 and 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.

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;
- Sevierville Civic Center.

The meetings took place between the hours of 6:00 p.m. and 8:00 p.m. 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 about 100 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 sought three key pieces of information (see Appendix C). First, respondents were asked to rate the current transportation system. Second, respondents were asked to rate a series of transportation issues based on their perceived importance over the next 25 years. Finally, respondents were asked their preference on funding transportation projects in the future.

Table 45 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 46 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 will rank the system poor if they do not have access to them.

Other key issues identified are 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.

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.

Table 45: 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%

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 opinions and comments on 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.

Table 46: 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%
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%

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 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 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 were 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, Enlightner, Loudon County News-Herald, Mundo Hispano, and Clinton Courier. All comments related to the 2006 update are documented in Appendix G. The public involvement process for LRTP amendments is outlined in Appendix H.

XV: 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. With the expansion of the TPO Planning Area, minorities now consist of 10.7% of the population (see Map 28). Throughout the Knoxville Region, minorities constitute 8.6% of the total population (see Map 29). With the 2006 update to the LRTP, the addition of Census Block Group 471450307-2 in Roane County, which includes 203 minorities and a total population of 4,578, doesn't impact the overall minority percentage that much. The Census Block Group has 203 minorities, resulting in 4.4% of the population. Throughout the Knoxville Region, minorities now constitute 8.3% of the total population.

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

It is also important to recognize the presence of the rising Hispanic population in the TPO Area. While 1.3% 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- 2006 Amendment. 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.

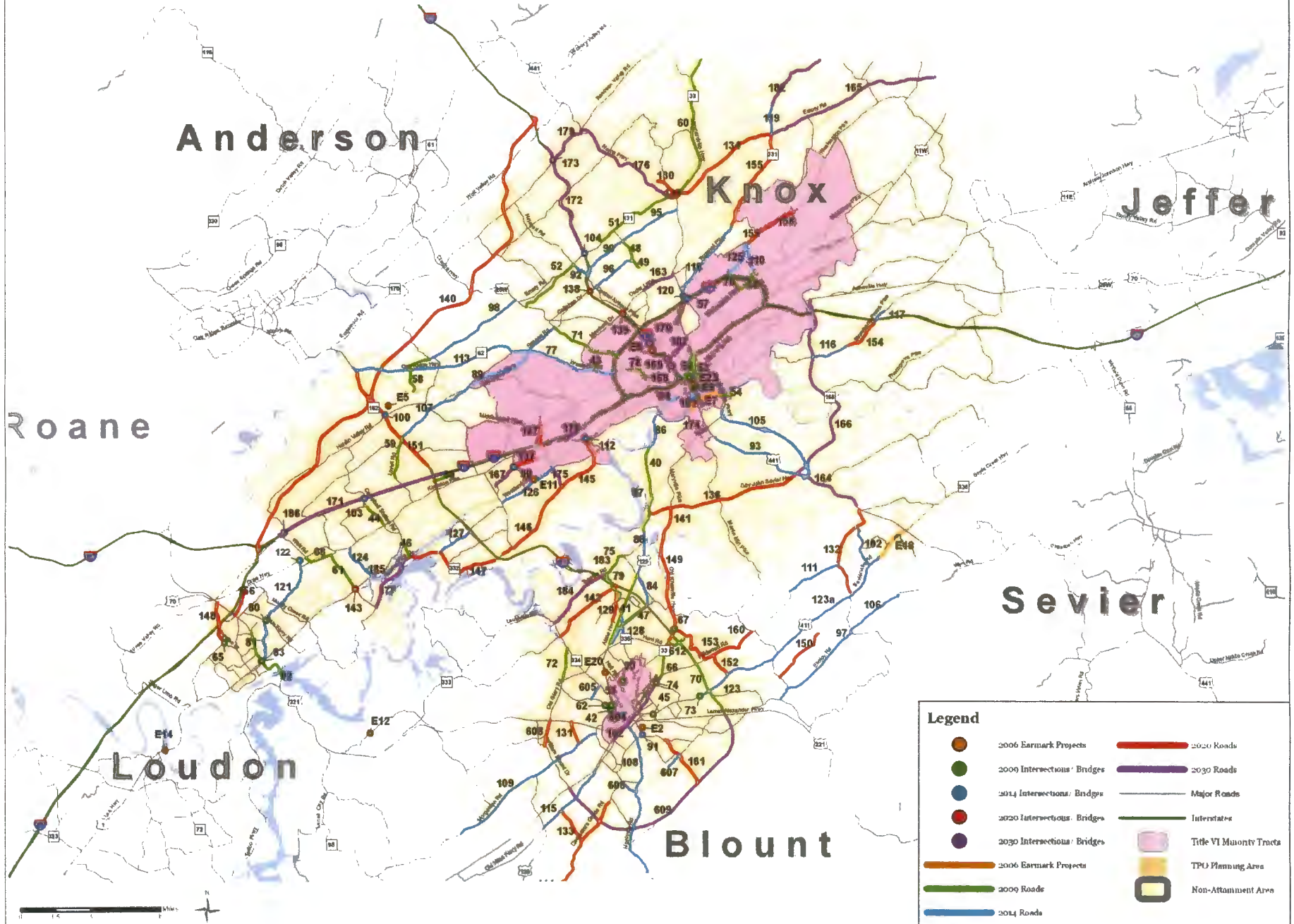
Transportation projects proposed in this Plan and with the 2006 Amendment that are located in the Title VI areas are as follows:

- 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;

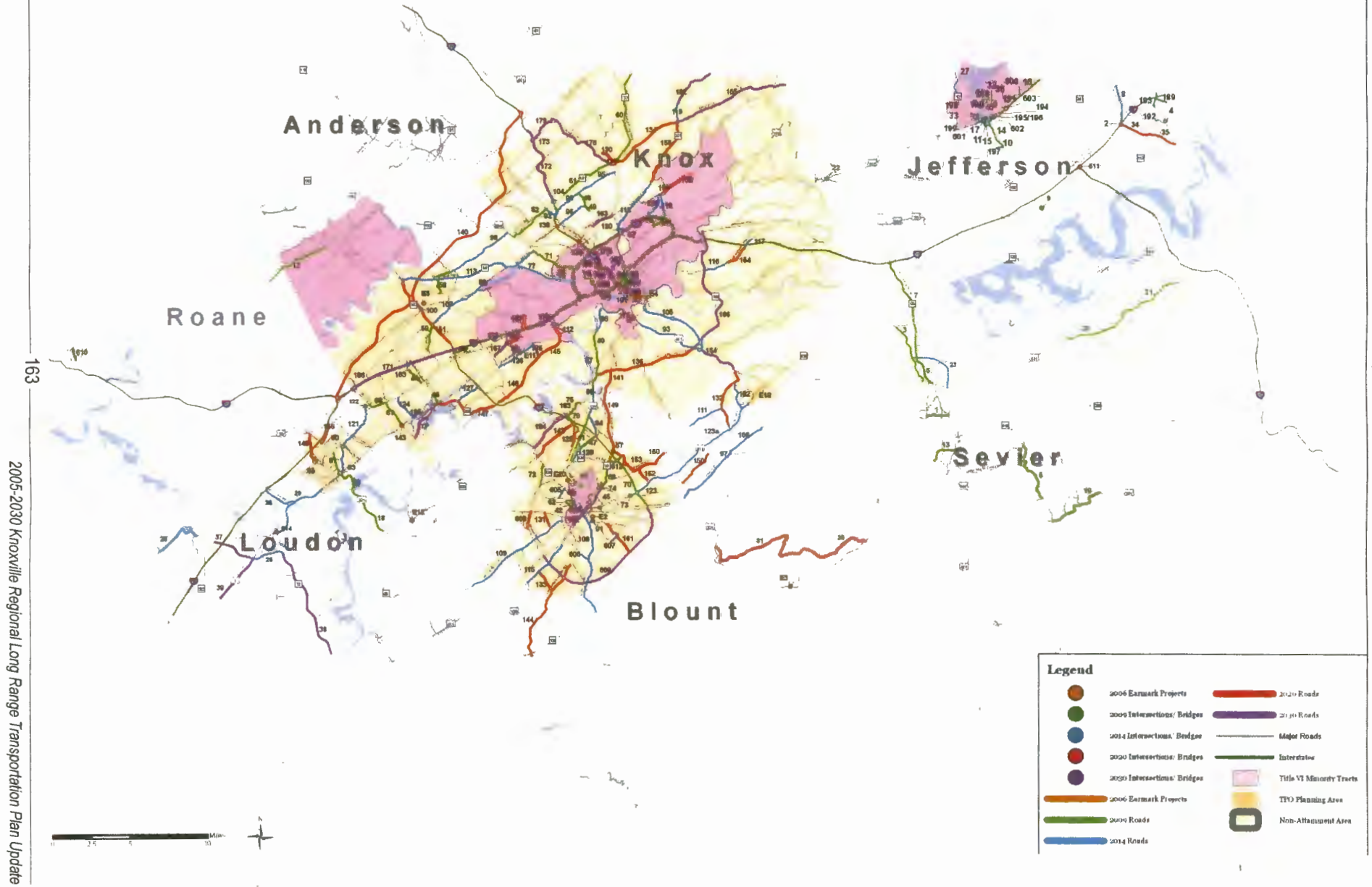
- Cumberland Avenue (Knox County)- Pedestrian improvements, LRTP#94;
- East Bessemer Street/ E Watt Street intersection (Blount County)- Realign intersection, LRTP#50;
- East College Street (Jefferson County)- Resurfacing, LRTP#194;
- Gallaher View Road/ Gleason Drive Intersection (Knox County)- Reconstruct 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;
- Woodland Avenue (Knox County)- Widen to 4 lanes, LRTP#187.

Map 28: TPO Planning Area Title VI Assessment



Map 29: Knoxville Regional Title VI Assessment



Appendices

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 *Policy on Geometric Design of Highways and Streets*.

Appendix C: 2030 Knoxville Regional Long Range Transportation Plan Survey and Comment Form

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

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 coupled 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 Knoxvilleans 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, and 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. I wouldn't have to pay for a car, or to maintain 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 ramrodded 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, to another 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 off 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 the heavy traffic of Knoxville and the surrounding counties. The above mentioned need 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 cyclists 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 breakdowns. 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 it is 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, and 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, and 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

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 Reason _____

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

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 6:00 a.m. 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. Why 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: Amendments to the 2005-2030 Knoxville Regional Long Range Transportation Plan

This chapter includes all the amendments made to the 2005-2030 Knoxville Regional Long Range Transportation Plan since the adoption of the updated Plan on March 22, 2006. 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).

Amendment 1- Business Park Access Road, City of Alcoa, Approved May 18, 2006

Summary

This amendment consists of a new 5,300' 4-lane boulevard road in Alcoa, TN originating at SR 33 north of Hunt Road and terminating just short of Sam Houston School Road. The road will provide access to a new business park. The estimated cost of the project is \$4,870,000.

The placement of this project into the 2005-2030 Knoxville Regional Long Range Transportation Plan allows the road to be eligible for federal funds. The project is identified in Table 9: Long Range Transportation Plan List of TPO Planning Area Projects as #610 with an outyear of 2009 and is shown on Map 13: TPO Planning Area Highway Projects.

Goals and Objectives

The amendment meets Goal #1, System Maintenance because it does not significantly change the character of the transportation system, Goal #6 because it is financially constrained, and Goal #7 Safety and Security.

Air Quality Conformity Determination Reaffirmation

The proposed project is located within the Knoxville Non-Attainment Areas for both the 8-hour Ozone and PM_{2.5} standards, and as such it must be determined whether the

project meets transportation conformity requirements. The Transportation Conformity Rule (40 CFR Part 93) addresses the requirements for determining regional transportation-related emissions in section 93.122, and it is the Knoxville Regional TPO staff's position that this project does not require an amended regional emissions analysis. Instead, a reliance on a previous regional emissions analysis can be used to determine conformity of this proposed amendment based on the language found in 93.122(g)(2) of the Transportation Conformity Rule as documented below:

40 CFR 93.122(g)(2) states: A project which is not from a conforming transportation plan and a conforming TIP may be demonstrated to satisfy the requirements of 93.118 or 93.119 without additional regional emissions analysis if:

1. Allocating funds to the project will not delay the implementation of projects in the Long Range Transportation Plan or Transportation Improvement Plan (TIP) which are necessary to achieve the highway and transit system envisioned by the Plan:

The TPO staff's understanding is that this project will use a special funding source directly allocated by U.S. Congress that was not originally accounted for in the fiscal constraint calculations for the 2005-2030 Knoxville Regional Long Range Transportation Plan (LRTP), therefore, the funding of this project will not use resources allocated to nor affect implementation of other projects in the LRTP or TIP.

2. The regional emissions analysis is still consistent with the requirements of 93.118 (including that conformity to all currently applicable budgets is demonstrated) and/or 93.119, as applicable:

The 2005-2030 Knoxville Regional Long Range Transportation Plan was found to be in conformity under both the 8-hour Ozone and PM_{2.5} standards by the U.S. Department of Transportation on April 3, 2006. The conformity determination was developed with the full consideration of the latest planning assumptions and no new planning assumptions have occurred since the aforementioned conformity demonstration, therefore, the conformity finding is still valid.

A regional emissions analysis was performed and documented in the "Air Quality Conformity Determination Addressing the PM_{2.5} and Ozone Standards for the 2005-

2030 Knoxville Regional Long Range Transportation Plan Update and the Lakeway Area Metropolitan Transportation Planning Organization Long Range Transportation Plan 2005-2030". 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 and a No Greater than Baseline Year 2002 Test for the entire PM 2.5 Non-Attainment Area. All tests were determined to be passed.

The results of the previous regional emissions analysis were as follows:

a.) Ozone

Knox County 1-Hour Budget Test for Ozone:

Volatile Organic Compounds (VOC):	Analysis Year			
	2009	2014	2020	2030
Emissions Budget	29.24	22.12	22.12	22.12
Projected Emissions	20.11	14.91	11.11	10.78

Oxides of Nitrogen (NOx):	Analysis Year			
	2009	2014	2020	2030
Emissions Budget	33.89	22.49	22.49	22.49
Projected Emissions	29.60	19.80	12.12	9.20

(emissions in tons per day)

No Greater than Baseline Year 2002 Test for Ozone*:

Volatile Organic Compounds (VOC):	Analysis Year			
	2009	2014	2020	2030
Budget (2002 Emissions)	27.45	27.45	27.45	27.45
Projected Emissions	19.01	14.70	11.25	11.34

Oxides of Nitrogen (NOx):	Analysis Year			
	2009	2014	2020	2030
Budget (2002 Emissions)	57.25	57.25	57.25	57.25
Projected Emissions	37.05	22.88	14.60	10.71

(emissions in tons per day)

**Analysis includes Anderson, Blount, Jefferson, Loudon, and Sevier Counties and a portion of Cocke County.*

b.) PM 2.5

No Greater than Baseline Year 2002 Test for PM 2.5**

Direct Particulate Matter 2.5:	Analysis Year			
	2009	2014	2020	2030
Budget (2002 Emissions)	474.22	474.22	474.22	474.22
Projected Emissions	285.02	211.69	177.70	191.4

Oxides of Nitrogen (NOx):	Analysis Year			
	2009	2014	2020	2030
Budget (2002 Emissions)	30,065.3	30,065.3	30,065.3	30,065.3
Projected Emissions	18,112.8	11,882.6	7,508.8	5,665.5

(emissions in tons per year)

***Analysis includes Anderson, Blount, Knox, and Loudon Counties and a portion of Roane County.*

3. The project is not regionally significant:

The proposed project is shown in relation with the classified roadway system as modeled in the TPO regional travel demand forecasting model. The proposed roadway would not normally be included in the modeling of the region's transportation network since it is not a through street, and therefore would not be considered regionally significant in terms of the regional emissions analysis. The possibility exists that the roadway could eventually connect to Sam Houston School Road to provide for a through street; however this would still not normally be modeled since Sam Houston School Road only provides for a connection of the proposed roadway to a facility classified as a Local Roadway.

A classification of Principal Arterial or higher would make a roadway regionally significant by definition, however it is clear that the function of this proposed access road will not qualify it as a Principal Arterial on the state classified system of roadways.

Based on the TPO staff's interpretation of the requirements of 40 CFR 93.122(g)(2) the proposed amendment to the 2005 – 2030 Knoxville Regional Long Range Transportation Plan (adopted March 22, 2006) of constructing the Business Park Access Road does not constitute a requirement to perform a new regional emissions analysis in order to determine Transportation Conformity of the project. Instead, the previous emissions

analysis that was approved by the U.S. DOT on April 3, 2006 can be relied on to ensure that the LRTP is in Conformity with all requirements found in the State Implementation Plan (SIP), Clean Air Act, Tennessee Transportation Conformity Regulation, and the MPO Planning Regulations from 23 CFR 450.322.

In addition, the State Implementation Plan (SIP) for the Knoxville Non-Attainment Area does not contain any Transportation Control Measures; therefore, the proposed amendment will not interfere with their timely implementation.

Financial Analysis

The cost of this project is estimated to be \$4,870,000. This project will use a special funding source directly allocated by U.S. Congress that was not originally accounted for in the fiscal constraint calculations of the 2005-2030 Knoxville Regional Long Range Transportation Plan. The funding of this project will not use resources allocated to nor affect the implementation of other projects in the LRTP or TIP.

Public Involvement

The proposed amendment was publicly advertised and information was presented as part of the TPO Technical Committee meetings on April 11 and May 9, 2006 and at the TPO Executive Board meeting on May 18, 2006. The Lakeway Area MTPO held a public comment meeting in Jefferson County on April 26, 2006. This document was also placed on the TPO website for public review. No public comments on the proposed amendment and conformity determination were received.

The proposed project was presented to the Knoxville Area Interagency Consultation Group for review and comment regarding the air quality conformity impacts of the amending the LRTP with this project. Comments received from the IAC group are documented both in the minutes of a conference call that was held on April 20, 2006 to discuss the proposed amendment and changes to this conformity determination report were made as appropriate.

Title VI Analysis

The proposed Business Park Access Road is not located within a Title VI Area.

Appendix I: Adoption Letters

**A JOINT RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
AND THE REGIONAL TRANSPORTATION PLANNING COUNCIL (RTPC) ADOPTING
THE 2030 LONG RANGE TRANSPORTATION PLAN AND AIR QUALITY CONFORMITY
ANALYSIS FOR THE KNOXVILLE AIR QUALITY NONATTAINMENT AREA**

WHEREAS, Transportation Equity Act for the 21st Century requires that each MPO have a current long range transportation plan; and

WHEREAS, the guidance for the development of the long range transportation plan, as found in the Final Rule for Metropolitan Planning in the Federal Register, October 28, 1993 under section 450.322, was followed; and,

WHEREAS, the plan meets the requirements of transportation conformity found in the Clean Air Act Amendment of 1990; and,

WHEREAS, the conformity determination addresses the 1-hour and 8-hour ozone standard requirements and geographical areas; and

WHEREAS, the plan has been circulated for public review and several public meetings were conducted; and,

WHEREAS, the TPO Technical Committee has recommended the adoption of this 2030 Knoxville Regional Long Range Transportation Plan and the Air Quality Conformity Analysis; and,

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD AND THE REGIONAL TRANSPORTATION PLANNING COUNCIL:

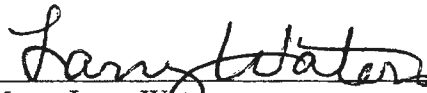
That the 2030 Knoxville Regional Long Range Transportation Plan and Air Quality Conformity Analysis be adopted as the basis for transportation planning decisions in the Knoxville air quality nonattainment area including the TPO planning area.

April 11, 2005

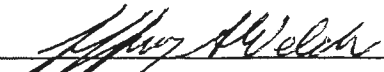
Date



Mayor W. Edward Ford III
Town of Farragut
TPO Executive Board Chair



Mayor Larry Waters
Sevier County
Regional Transportation Planning Council Chair



Jeffrey A. Welch
TPO Director



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 14 2005

4APT-APB

Ms. Maureen Bluhm
Tennessee Division Office
Federal Highway Administration
640 Grassmere Park Rd, Suite 112
Nashville, Tennessee 37211

Dear Ms. Bluhm:

Thank you for the opportunity to review and comment on the "Air Quality Conformity Determination for the 2005-2030 Knoxville Regional Long Range Transportation Plan." EPA Region 4 has completed its review based on the criteria and procedures of the transportation conformity rule (40 CFR 93), and recommends a finding of conformity under the 1-hour ozone standard for the 2005-2030 Knoxville Regional Long Range Transportation Plan.

EPA is not making a recommendation for a finding of conformity under the 8-hour ozone standard at this time. EPA will issue a second letter once the Lakeway Area Metropolitan Transportation Planning Organization adopts its long range transportation plan.

If you have any questions or requests for additional information, please contact Matt Laurita of the EPA Region 4 staff at (404) 562-9044.

Sincerely,

A handwritten signature in black ink, appearing to read "Rich L. Gillam", is written over a horizontal line.

Richard L. Gillam
Acting Chief
Air Quality Modeling and
Transportation Section

cc: Mike Conger, Knoxville TPO
Jeff Welch, Knoxville TPO
Steve McDaniel, Knox County AQM
Marc Corrigan, TDEC
Alan Jones, TDOT
Angie Midgett, TDOT
Doug Frate, FTA Region 4
Teresa Cantrell, GSMNP

Internet Address (URL) • <http://www.epa.gov>

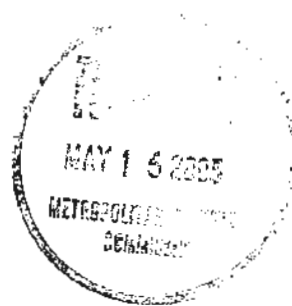
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAY 13 2005



4APT-APB

Ms. Maureen Bluhm
Tennessee Division Office
Federal Highway Administration
640 Grassmere Park Rd, Suite 112
Nashville, Tennessee 37211

Dear Ms. Bluhm:

Thank you for the opportunity to review and comment on the "Air Quality Conformity Determination for the 2005-2030 Knoxville Regional Long Range Transportation Plan." EPA Region 4 has completed its review based on the criteria and procedures of the transportation conformity rule (40 CFR 93), and recommends a finding of conformity under the 8-hour ozone standard for the 2005-2030 Knoxville Regional Long Range Transportation Plan.

If you have any questions or requests for additional information, please contact Matt Laurita of the EPA Region 4 staff at (404) 562-9044.

Sincerely,

A handwritten signature in dark ink, appearing to read "Richard L. Gillam".

Richard L. Gillam
Acting Chief
Air Quality Modeling and
Transportation Section

cc: Mike Conger, Knoxville TPO
~~Jeff Welch~~, Knoxville TPO
Steve McDaniel, Knox County AQM
Marc Corrigan, TDEC
Alan Jones, TDOT
Angie Midgett, TDOT
Doug Frate, FTA Region 4
Teresa Cantrell, GSMNP

Internet Address (URL) • <http://www.epa.gov>

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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 17T50
Atlanta, GA 30303

April 19, 2005

Mr. Gerald Nicely, Commissioner
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243-0349

Mayor Edward Ford, III
11408 Municipal Center Drive
Farragut, TN 37922

Subject: Conformity Determination for Knoxville Long Range Transportation Plan

Messrs. Nicely and Ford:

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) in coordination with the Environmental Protection Agency (EPA) have reviewed the Knoxville Area Metropolitan Planning Organization's Conformity Determination for the Long Range Transportation Plan approved by the 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 Conformity Determination for the approved Knoxville Area Long Range Transportation Plan.

The Federal agencies appreciate the work Nashville 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. Again, thank you for your efforts.

Federal Highway Administration


Bobby W. Blackmon
Division Administrator

Federal Transit Administration

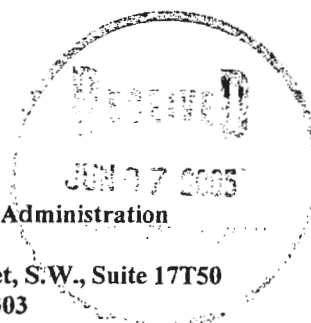

Hiram J. Walker
Regional Administrator



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 17T50
Atlanta, GA 30303



June 1, 2005

Mr. Gerald Nicely, Commissioner
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243-0349

Mayor Edward Ford, III
11408 Municipal Center Drive
Farragut, TN 37922

Subject: Conformity Determination for Knoxville Long Range Transportation Plan

Messer's Nicely and Ford:

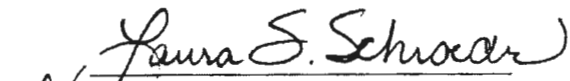
The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) in coordination with the Environmental Protection Agency (EPA) have reviewed the Knoxville Area Metropolitan Planning Organization's Conformity Determination for the Long Range Transportation Plan approved by the MPO in 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 approve the 8-hour ozone standard Conformity Determination for the approved 2005-2030 Knoxville Regional Long Range Transportation Plan.

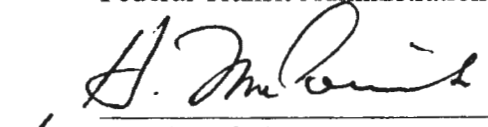
The Federal agencies appreciate the work Knoxville has done to develop an active interagency consultation process as part of the conformity finding. We encourage the MPO to continue to develop the interagency consultation process, to ensure cooperation, communication and timely Federal approvals of future conformity findings.

If you have any questions regarding this approval, please contact Maureen Bluhm (FHWA) at 615-695-4096 or Doug Frate (FTA) at 404-562-3514. Again, thank you for your efforts.

Federal Highway Administration

Federal Transit Administration


Bobby W. Blackmon
Division Administrator

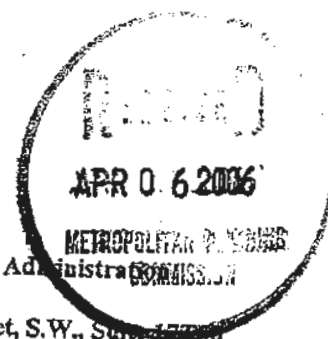

R. F. Krochalis
Acting Regional Administrator



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 4700
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
Division Administrator
Federal Highway Administration, Tennessee

**A RESOLUTION BY THE SOUTHERN RURAL TRANSPORTATION PLANNING ORGANIZATION (RTPO)
ADOPTING AMENDMENTS TO THE 2005-2030 KNOXVILLE REGIONAL LONG RANGE
TRANSPORTATION PLAN AND AIR QUALITY CONFORMITY DETERMINATION FOR THE
KNOXVILLE OZONE AND PARTICULATE MATTER 2.5 NON-ATTAINMENT AREAS**

WHEREAS, the Transportation Equity Act for the 21st Century (TEA-21) and the subsequent Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) requires that each MPO have a current long range transportation plan; and

WHEREAS, the guidance for the development of the long range transportation plan, as found in the Final Rule for Metropolitan Planning in the Federal Register, October 28, 1993 under section 450.322, was followed; and,

WHEREAS, the plan, as amended, meets the requirements of transportation conformity found in the Clean Air Act Amendments of 1990; and,

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke was designated non-attainment for the 8-Hour Ozone Standard with an effective date of June 15, 2004, for which the original conformity determination approval on June 1, 2005 by the U.S. DOT is being updated; and,

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane was designated non-attainment for the Particulate Matter 2.5 standard with an effective date of April 5, 2005, for which the first conformity determination must be made within one year of the effective date; and,

WHEREAS, the Air Quality Conformity Determination, as amended, addresses the 2005-2030 Knoxville Regional Long Range Transportation Plan and 2006-2008 Transportation Improvement Program and covers the entire Knoxville Ozone and PM 2.5 Non-Attainment areas; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the Plan amendments and Air Quality Conformity Determination, as amended, being circulated for public review, presented at two public hearings, and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the TPO Technical Committee has recommended the adoption of the 2005-2030 Knoxville Regional Long Range Transportation Plan, as amended, and the Air Quality Conformity Determination, as amended; and,

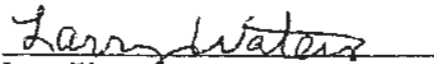
WHEREAS, the Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

NOW, THEREFORE, BE IT RESOLVED BY THE SOUTHERN RURAL TRANSPORTATION PLANNING ORGANIZATION:

That the 2005-2030 Knoxville Regional Long Range Transportation Plan, as amended, the 2006-2008 Transportation Improvement Program, as amended, and the Air Quality Conformity Determination, as amended, be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the TPO planning area.

March 21, 2006

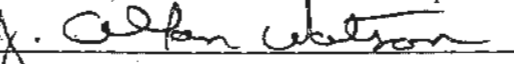
Date



Larry Waters

Mayor, Sevier County

Chairman, ETDD Southern Rural Transportation Planning Organization



J. Allan Watson

Mayor, Monroe County

Vice Chairman, ETDD Southern Rural Transportation Planning Organization

**A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
ADOPTING AMENDMENTS TO THE 2005-2030 KNOXVILLE REGIONAL LONG RANGE
TRANSPORTATION PLAN, 2006-2008 TRANSPORTATION IMPROVEMENT PROGRAM AND AIR
QUALITY CONFORMITY DETERMINATION FOR THE KNOXVILLE OZONE AND PARTICULATE
MATTER 2.5 NON-ATTAINMENT AREAS**

WHEREAS, the Transportation Equity Act for the 21st Century (TEA-21) and the subsequent Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) requires that each MPO have a current long range transportation plan; and

WHEREAS, the guidance for the development of the long range transportation plan, as found in the Final Rule for Metropolitan Planning in the Federal Register, October 28, 1993 under section 450.322, was followed; and,

WHEREAS, the plan, as amended, meets the requirements of transportation conformity found in the Clean Air Act Amendments of 1990; and,

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke was designated non-attainment for the 8-Hour Ozone Standard with an effective date of June 15, 2004, for which the original conformity determination approval on June 1, 2005 by the U.S. DOT is being updated; and,

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane was designated non-attainment for the Particulate Matter 2.5 standard with an effective date of April 5, 2005, for which the first conformity determination must be made within one year of the effective date; and,

WHEREAS, the Air Quality Conformity Determination, as amended, addresses the 2005-2030 Knoxville Regional Long Range Transportation Plan and 2006-2008 Transportation Improvement Program and covers the entire Knoxville Ozone and PM 2.5 Non-Attainment areas; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the Plan amendments and Air Quality Conformity Determination, as amended, being circulated for public review, presented at two public hearings, and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the TPO Technical Committee has recommended the adoption of the 2005-2030 Knoxville Regional Long Range Transportation Plan, as amended, and the Air Quality Conformity Determination, as amended; and,

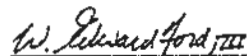
WHEREAS, the Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

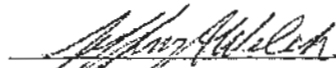
That the 2005-2030 Knoxville Regional Long Range Transportation Plan, as amended, the 2006-2008 Transportation Improvement Program, as amended, and the Air Quality Conformity Determination, as amended, be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the TPO planning area.

March 22, 2006

Date



Mayor W. Edward Ford III
Town of Farragut
TPO Executive Board Chair



Jeffrey A. Welch
TPO Director

**A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
ADOPTING AN AMENDMENT TO THE 2005-2030 KNOXVILLE REGIONAL LONG RANGE
TRANSPORTATION PLAN AND REAFFIRMING THE AIR QUALITY CONFORMITY DETERMINATION
FOR THE KNOXVILLE OZONE AND PARTICULATE MATTER 2.5 NON-ATTAINMENT AREAS**

WHEREAS, the amendment to the 2005-2030 Knoxville Regional Long Range Transportation Plan (LRTP) follows the guidelines for amendments set forth in the Plan; and,

WHEREAS, the TPO's public involvement and Interagency Consultation (IAC) procedures for the Plan amendment and reaffirmed Air Quality Conformity Determination were adhered to by being coordinated with stakeholder and regulatory agencies through the Interagency Consultation process and presented at two public hearings; and,

WHEREAS, the plan, as amended, meets the requirements of transportation conformity found in the Clean Air Act Amendments of 1990; and

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke was designated non-attainment for the 8-Hour Ozone Standard with an effective date of June 15, 2004, for which the conformity determination approval on April 3, 2006 by the U.S. DOT is being reaffirmed; and,

WHEREAS, the Knoxville Region, consisting of the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane was designated non-attainment for the Particulate Matter 2.5 standard with an effective date of April 5, 2005, for which the conformity determination approval on April 3, 2006 by the U.S. DOT is being reaffirmed; and,

WHEREAS, the LRTP amendment consists of constructing a new 5,300' 4-lane boulevard in Alcoa, TN originating at SR 33 and terminating just short of Sam Houston School Road that will provide access for a new business park in Alcoa, TN,

WHEREAS, the cost of the project is estimated at \$4,870,000 and inclusion of the project into the LRTP will allow the City of Alcoa to pursue federal funds for the road; and,

WHEREAS, the TPO Technical Committee has recommended approval of this amendment to 2005-2030 Knoxville Regional Long Range Transportation Plan and reaffirmation of the Air Quality Conformity Determination; and,

WHEREAS, the Conformity Determination Report will be sent to EPA for comment and to U.S. DOT (Federal Highway Administration and Federal Transit Administration) for approval;

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD:

That the amendment to the 2005-2030 Knoxville Regional Long Range Transportation Plan and reaffirmation of the Air Quality Conformity Determination for the Knoxville Ozone and Particulate Matter 2.5 Non-Attainment Areas be adopted.

May 18, 2006

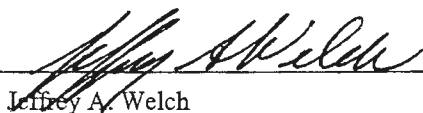
Date



Mayor W. Edward Ford III

Town of Farragut

TPO Executive Board Chair



Jeffrey A. Welch

Director